Submissions Report- Modify the approval for the Commercial Shellfish Aquaculture Leases in Jervis Bay NSW Project (SSI-5657)

21 May 2024

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List of acronyms

ANZECC - Australian and New Zealand Environment and Conservation Council

CDP - Construction and Deployment Plan

CDTMP – Construction and Deployment Plan and Traffic Management Plan

DPPM - Disease, Parasite and Pest Management Plan

DCCEEW – Australian Government Department of Climate Change, Energy, the Environment and Water

EIS - Environmental Impact Statement

EMP - Environment Management Plan

EPBC Act - *Environment Protection and Biodiversity Conservation Act 1999*

HCNSW - Heritage Council of NSW

IALA - International Association of Marine Aids to Navigation and Lighthouse Authorities

JBMP- Jervis Bay Marine Park

LALC - Local Aboriginal Land Council

MEM Act – *Marine Estate Management Act 2014*

MWSAS - NSW Marine Waters Sustainable Aquaculture Strategy

NSW DPI - NSW Department of Primary Industries

NSW DPHI - Department of Planning, Housing and Infrastructure

NSW EHG - NSW Environment and Heritage Group, within the NSW Department of Climate Change, Energy, Environment and Water.

ROV- Remote Operating Vehicle

SCM - South Coast Mariculture

SSI - State Significant Infrastructure

TfNSW - Transport for NSW

TOC - Total Organic Carbon

UCH - Underwater Cultural Heritage

UTS - University of Technology Sydney

WQBMP - Water Quality and Benthic Monitoring Program

Executive Summary

NSW Department of Primary Industries (NSW DPI) prepared a modification report seeking approval for the relocation and expansion of Commercial Shellfish Aquaculture Leases in Jervis Bay NSW Project (SSI-5657). The modification was initiated to correct a geospatial coordinate error of the existing leases, improve community amenity by relocating the leases and provide a means for the mussel farm operator, South Coast Mariculture Pty Ltd (SCM), to improve efficiency and capacity.

The modification report was on public exhibition from Tuesday 28 November 2023 until Monday 11 December 2023. The Department of Planning, Housing and Infrastructure (NSW DPHI) received 54 submissions (Appendix 1). This included six from state government agencies, one from the local Council, and 47 from individuals or community members. Comments made by the NSW DPHI were also provided to NSW DPI and addressed in this report.

Of the 47 individuals or community members, 33 objected, seven supported and seven provided comment on the proposed modification.

The key issues raised included:

- concerns about the potential risks of cultivating a perceived invasive species *Mytilus galloprovincialis* in Jervis Bay Marine Park (JBMP)
- visual impacts particularly around Callala Bay
- biosecurity threats associated with translocation of *M. galloprovincialis* spat from Twofold Bay into Jervis Bay
- interactions of the proposed expanded lease area with wildlife including dolphins, sharks, and whales
- increased risk of mussel biofouling on infrastructure and natural shorelines
- water quality and waste issues
- interactions with other waterway users causing navigation and safety issues.

The purpose of this report is to respond to issues raised in the submissions. In doing so, NSW DPI and SCM have provided more photographs, articulated extra technical information, and referred to additional literature and scientific papers. This is new information that was not in the modification report.

As a result of the response to submissions an additional twelve actions have been proposed. These include the instigation of a new spatfall monitoring program, relevant changes to and continuation of the existing benthic monitoring, water quality and marine fauna programs, continuation and reviews of several existing plans and annual reporting as a condition of the Determination Notice, new Marine Park permits will be sought, and typographical corrections have been made.

In conclusion, NSW DPI maintains its position in that the proposed modification, if approved, would be a low impact activity that provides an opportunity to move and expand the leases with relative ease and low environmental and community impact.

Introduction

Short summary of project

In Jervis Bay, there are three approved shellfish aquaculture leases with a total area of 50 hectares. South Coast Mariculture Pty Ltd (SCM) is the aquaculture business that operates these leases in accordance with an aquaculture permit issued by the NSW Department of Primary Industries (NSW DPI).

The aquaculture leases were approved in 2014 by the NSW DPHI as a State Significant Infrastructure (SSI) development (approval SSI-5657) in accordance with the *Environmental Planning and Assessment Act 1979*. An Environmental Impact Statement (EIS) was provided by NSW DPI at the time and can be viewed on the NSW DPHI website and SCM website.

NSW DPI and SCM are seeking approval from the NSW DPHI and the Minister for Planning and Public Spaces to modify the activities approved under SSI-5657 on the three aquaculture leases in Jervis Bay. Several changes to the original approval have been proposed for better community amenity outcomes, and a switch to the latest best-practice aquaculture systems.

The proposed modification is displayed in Figure 1. The proposed modification (illustrated by green polygons) would include relocating aquaculture leases AL15/001 and AL15/002 slightly north-west of their current positions, and a 5-hectare expansion to each of these leases, from 20 to 25 ha. The proposed leases would still be within the Habitat Protection Zone of the Jervis Bay Marine Park (JBMP) as are the currently approved lease sites.

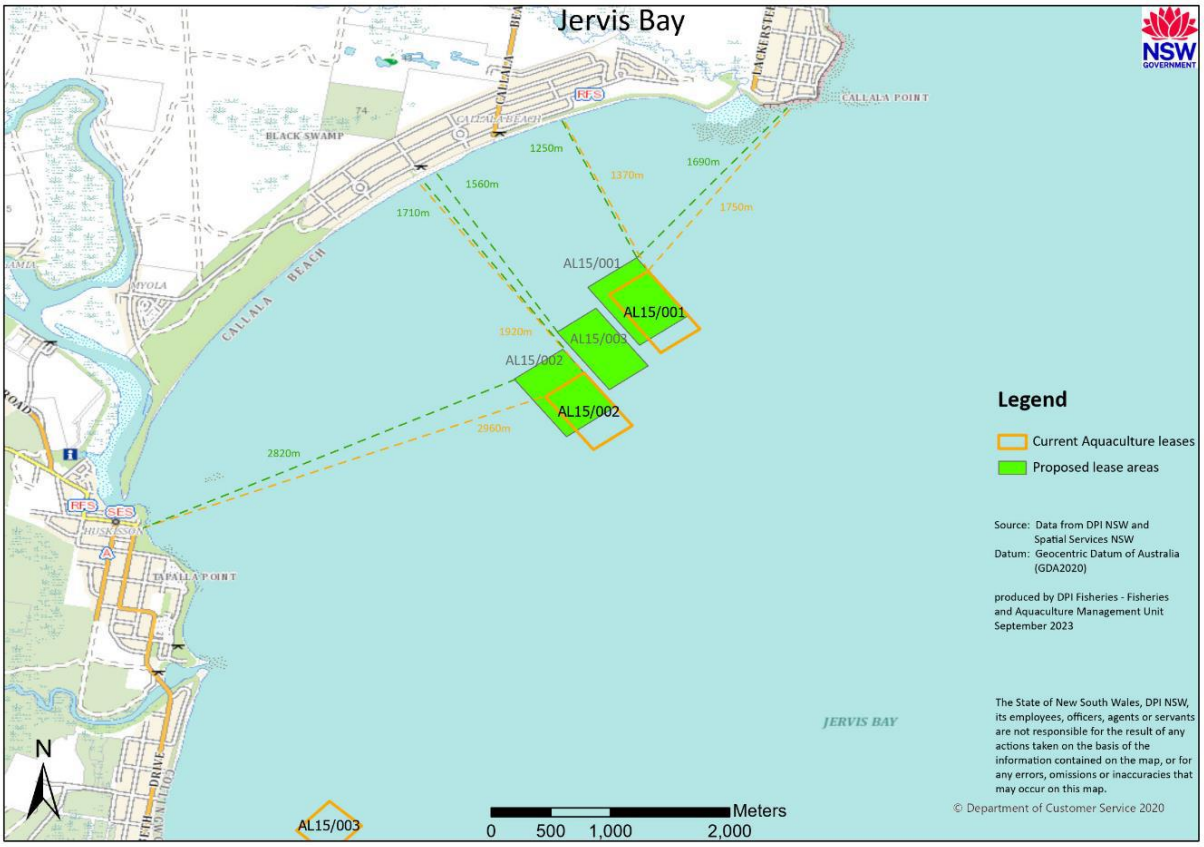

Figure 1. Map of Jervis Bay showing the current location (orange outline) and proposed location (green filled polygons) of the three leases.

The proposed modification will also include the relocation of a third lease AL15/003 from Vincentia to Callala Beach. It is proposed that the third lease will also be expanded from 10 hectares to 20 ha. This will result in a 20-hectare increase in lease area across the three leases, resulting in a total of 70 hectares in Jervis Bay. The slight total expansion (50 to 70ha) is still well below the 440ha cap within the JBMP, as outlined in the Marine Estate Management (Management Rules) Regulation 1999.

The proposed modification will result in the three leases at Callala Beach situated slightly closer to the shore than the current position of the two approved leases. Approximate new distances are as follows: AL15/001 will be 120m closer to shore. It is currently 1,370m from the shore and would be approximately 1,250m from the shore if approved. AL15/002 will be 210m closer to shore. It is currently 1,920m from the shore, and would be approximately 1,710m from the shore if approved. AL15/003, the new lease in Callala Beach, will be 1,560m from shore. It was 650m from the shore at Vincentia.

The proposed modification was lodged by NSW DPI to the NSW DPHI and was publicly displayed on 28 November – 11 December 2023 on the NSW DPHI Major Projects Planning Portal. This proposed modification aims to:

- Improve community amenity by relocating the inshore Vincentia lease to align with offshore Callala Beach leases
- Correct an error in Callala leases' coordinates, created when maps were digitised in 2013
- Increase the lease area of the three leases (a total increase of 20ha) to allow for the realignment of longlines and provide the area to do this while still in production to enhance the economies of the business
- To adopt industry best practice to secure longlines and reduce the risk of faunal and environmental impacts.

In addition to the above modification, NSW DPI are seeking amendments to the conditions of consent outlined in SSI-5657. These amendments include;

- Delete definitions of 'lease 1' and 'lease 1 & 2'
- Remove mention of 'Vincentia' throughout
- Replace definitions of 'leases' to reflect AL15/001, AL15/002 and AL15/003
- Add the modification report as a term of approval (g) in condition B.2
- Remove B.7 entirely
- Update 40ha to 70ha in B.8
- Remove C.6 & C.7 as there is no need for AL15/003 to be treated differently now
- Review C.14 to permit screw anchors to remain in situ where it is considered of lower risk to the environment to do so
- Update Figure 1 to reflect locations of relocated leases
- Replace Figure 2 with Figure 22 from the modification report
- Replace Figure 3 to include a screw anchor diagram (i.e., the diagram in the modification report or similar).

Assessment to date

The risk assessment for the proposed modifications was informed by data and reports from the existing SCM mussel farming activities that have been underway since 2019, changes to operational activities as anticipated by SCM, and outcomes from preliminary community, departmental and research group consultation. It was also informed by mussel farming operations at Vincentia undertaken from 1979-2008.

As part of the modification report NSW DPI undertook a risk assessment of 24 key issues (Appendix 3). Each issue was grouped into categories: amenity, environment, other waterway users, and social licence, then listed in order of significance for the proposed modification.

Of the 24 issues identified in the modification report, 22 were originally raised during the development of the EIS in 2013 (Appendix 4). The two new issues that were not originally addressed in the EIS but assessed in the Modification Report were, 1) increases in mussel biofouling, and 2) further long line aquaculture expansion in Jervis Bay.

During the submission stage, a further 5 issues were raised: 1) potential impacts of screw anchors and screw anchor removal, 2) the origin of the mussel species *M. galloprovincialis* being cultivated, 3) increased mussel biofouling specifically on boats in Currambene Creek that are causing environmental and economic problems, 4) seahorse management, and 5) potential impacts on shark and dolphin populations.

Analysis of Submissions

Breakdown of submissions

A total of 54 submissions either supporting, commenting on, or opposing the proposed modifications were received (Appendix 1). The NSW DPHI also provided an issues letter to the NSW DPI which is addressed in this report.

A breakdown of submissions by individual, group or government agency is provided in the tables, figures and text below. The relevant section where the issues are addressed is also noted.

Overview of State or Commonwealth agency submissions

Stakeholder	Key issues and recommendations
NSW Department of Planning (NSW DPHI)	Perception and concern of risks of exotic/invasive species *Mytilus galloprovincialis* in JBMP. Section 12. Mussel spat distribution and biofouling on boats. Section 13. Anchoring system potential for inconsistency with approved anchor system, and removal of infrastructure on decommissioning. Section 1. Visual impacts, with a need to provide photos to demonstrate change and consider any impacts. Section 14. More detailed information about staging of the relocation procedure is required. Section 2.

	Noise impacts during construction and operation have not been adequately addressed. They should be quantified where possible. Section 15. Mapping needs to include seagrass, mangrove, saltmarsh and benthic habitat with respect to the location of proposed leases areas. Section 3. The reduced risk of climate change to the proposed activities needs clarification. Section 16. Locations of water quality and benthic monitoring control sites need to be confirmed. Section 17. A table of mitigation measures must be provided. Section 10 and Appendix 2. Stage 3: Full Commercialisation, March 2023 report requires inclusion and clarification. Section 7.
Heritage Council of NSW (HCNSW)	Broader assessment of the possible effects of the proposed activities to Underwater Cultural Heritage (UCH) such as wrecks and aircraft crashes. Section 9.
Transport for NSW (TfNSW)	Advice on number of lit cardinal marks (4) and lit special marks (2). Section 14. No concerns in relation to impact on navigation.
Environment and Heritage Group (EHG), within the NSW Department of Climate Change, Energy, the Environment and Water.	Recommendation that the Marine Fauna Interaction Plan be updated to reflect new changes in related protocols and seeks the advice of the Marine Fauna Interaction Committee in updating the plan. Section 20. Clarification on the provenience and species of mussels cultivated. Section 12. Reference to increased fouling of mussels on recreational vessels and increased spatfall reports. Section 13. Recommendation that *Mytilus planulatus* is grown instead of *M. galloprovincialis.* Section 12.
Heritage NSW	Agreement that there are no known Aboriginal heritage sites or Aboriginal places located in the vicinity of the proposed leases. No response required, no Section.
Department of Climate Change, Energy, the Environment and Water (DCCEEW)	Mussel spat distribution and biofouling on boats. Section 13. Recommendation that any self-assessment determining if the development should be referred under EPBC Act is thoroughly documented and this document may be requested if allegations of non-compliance are received. Section 25.

The issues and advice raised by government agencies are broken down in Figure 2, and listed here in order of importance based on how many times the issue or advice was raised, including reference to the relevant Section in this report where the issue is discussed.

- the risk of increased spatfall on structures and natural environments of Jervis Bay (14%), Section 11.
- concerns regarding the origin of the species under cultivation (10%), Section 12.
- anchor decommissioning, recommendations on mapping (10%), Section 1.
- noise impacts (10%), Section 15.
- water quality and circulation (5%), Section 17.
- genetics tied to risks of introducing non-native species to Jervis Bay (5%), Section 24.
- staging the relocation (4%), Section 2.
- clarification on the Stage 3 Full Commercialisation plans (5%), Section 7.
- better assessment of Underwater Cultural Heritage (5%), Section 9.
- typological errors in the Mitigation measures report (5%), Section 10.
- visual impacts (5%), Section 14.
- potential impacts to coastal processes and any exacerbation caused by climate change (5%), Section 16.
- clarity on navigation risk considerations (5%), Section 19.
- clarified management of entanglement and ingestion of marine debris by fauna (5%), Section 20.
- clarification of mitigation measures of risks to threated / protected species and matters of National Environmental Significance (5%), Section 25.
- additional assessment undertaken on the risks of noise during construction and deployment (5%), Section 15.

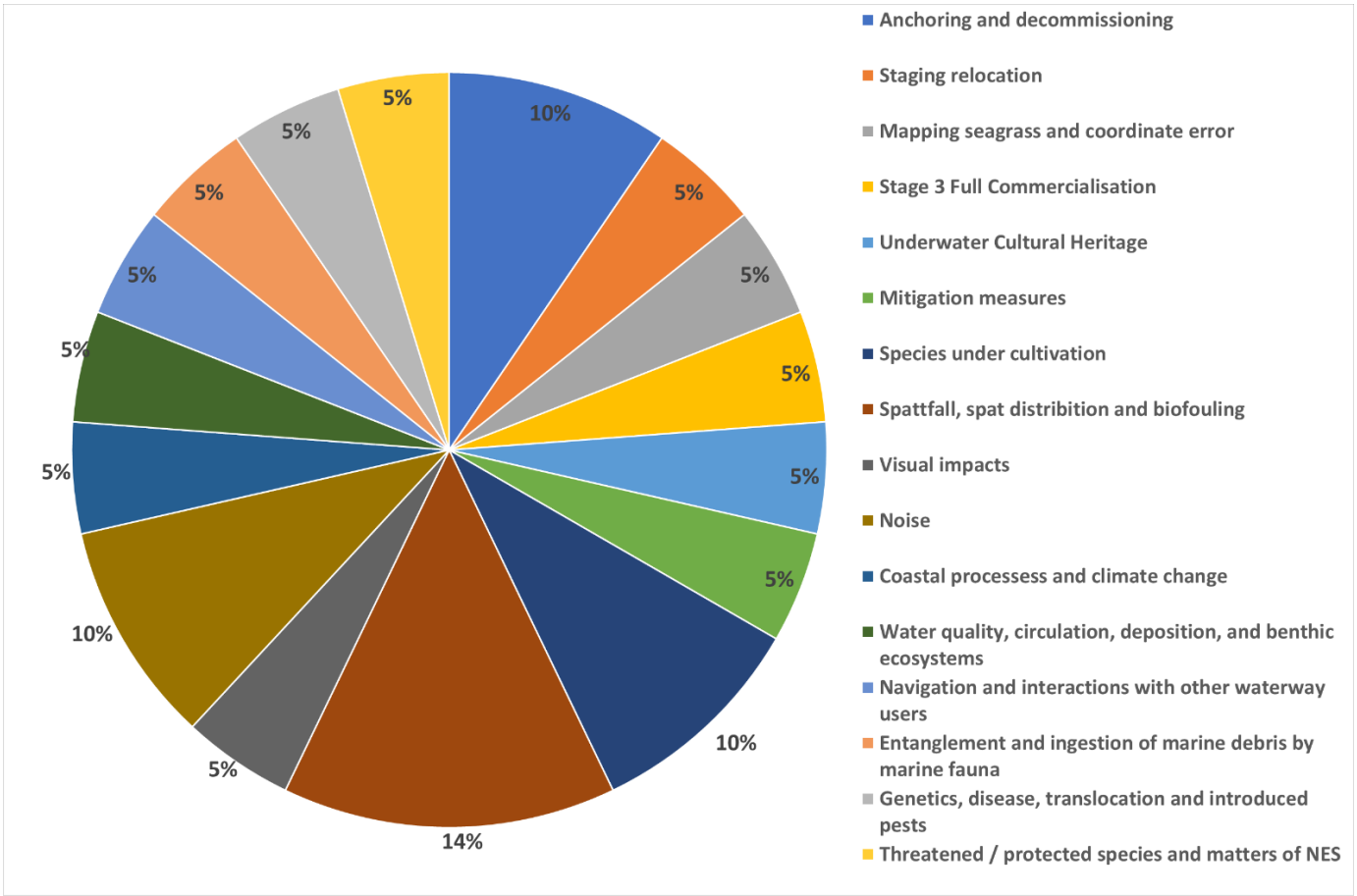

Figure 2. Issues and advice raised by government agencies (%).

Overview of community submissions, including special interest groups, and individuals and councils submissions.

Stakeholder	Key issues and recommendations
Our Future Shoalhaven in conjunction with Keep Jervis Bay Unspoilt, Treading Lightly Inc, National Parks Association Milton Branch and the Nature Coast Marine Group Inc.	Species origin and potential for invasion. Section 12. Biosecurity threats associated with translocation of spat from Twofold Bay. Section 24. Costs to the community from potential ecological impacts. Section 21. It is recommended that independent research be undertaken to establish the level of spread of *M. galloprovincialis* including financial costs to the community of such spreading. Section 12. Potential biosecurity threats are assessed, including any new threats from increased boat traffic to Twofold Bay. Section 24. More work is needed to understand the impacts of the mussel farm on the ecosystem (including fish, benthic organisms). Sections 13 and 17.
Huskisson Woollamia Community Voice (x2)	Biofouling in boats in Currambene Creek potentially caused by increased spat fall from the mussel farm. Section 13.

	Species origin and potential for invasion. Potential biosecurity threats are assessed, including any new threats from increased boat traffic to Twofold Bay. Sections 12 and 24. It is recommended that independent research be undertaken to establish the level of spread of *M. galloprovincialis.* Section 12.
Jervis Bay Cruising Yacht Club	Interference with racing courses and reducing access for sailing between Callala Bay and Huskisson. Navigation hazards were also of concern. Section 19. Biofouling on sailing hulls and moorings was raised as increasing problem members are reporting. Section 13. No recommendation was provided.
Jervis Bay Community Cruise Ship Coalition (JBCCC)	Species origin and potential for invasion. It was recommended that independent research be undertaken to establish the level of spread of *M. galloprovincialis.* Section 12. Biosecurity threats associated with translocation of spat from Twofold Bay. It was recommended that the translocation of spat from Twofold Bay be reconsidered. Section 24.
Across all submissions x 42	Perception and concern of risks of exotic invasive species *M. galloprovincialis* being cultivated in JBMP. Section 12. Concerns of visual impacts of modification particularly around Callala Bay. Section 14. Potential for invasion, and biosecurity threats associated with translocation of *M. galloprovincialis* spat from Twofold Bay into Jervis Bay. Section 24. Interactions of the proposed expanded lease area with wildlife including dolphins, sharks, and whales. Section 20. Increased risk of mussel biofouling in the nearby areas including rocky shores, benthic seafloor and artificial structures including boats. Section 13. Interactions with other waterway users causing navigation and safety issues. Section 23. There was a concern that this modification risks setting a precedent for further aquaculture expansion in Jervis Bay. Section 4. There was concern that increased mussel farming is increasing waste from faeces onto the seafloor beneath, impacting sediment quality, benthic ecosystems and ecological health generally. Sections 5 and 17. The was concerns for the true benefits to the community and that the proposed modification is viewed by some as a 'punishment' for government agency mistakes. Section 18.

Shoalhaven City Council	No objection or comments raised.

The issues raised by community groups and individuals are broken down in Figure 3, and listed here in order of importance based on how many times the issue was raised, including reference to the relevant section in this report where the issue is discussed.

- risk of increased spat fall on nearby structures and natural environments of Jervis Bay (17%), Section 13.
- concerns regarding the species under cultivation (17%), Section 12.
- visual impacts (9%), Section 14.
- genetics tied to risks of introducing non-native species to Jervis Bay (9%), Section 24.
- water quality (8%), Section 5 and Section 17.
- risks of behavioural changes to marina fauna (6%), Section 26.
- concerns of the validity of claims of economic benefits to the community (6%), Section 21.
- concerns with the consultation process (4%), Section 8.
- concerns over the impacts to navigation and other waterway users (4%), Section 19.
- concerns over structural integrity and stability (4%), Section 6.
- community relations (3%), Section 18.
- entanglement and ingestion of marine debris by fauna (3%), Section 20.
- issues of safety (2%), Section 23.
- anchoring decommissioning (1%), Section 1.
- risks of further expansion (1%), Section 4.
- mussel faeces and waste (1%), Section 5.
- noise impacts to marine fauna (1%), Section 15.
- Aboriginal heritage (1%), Section 22.
- threatened species (1%), Section 25.

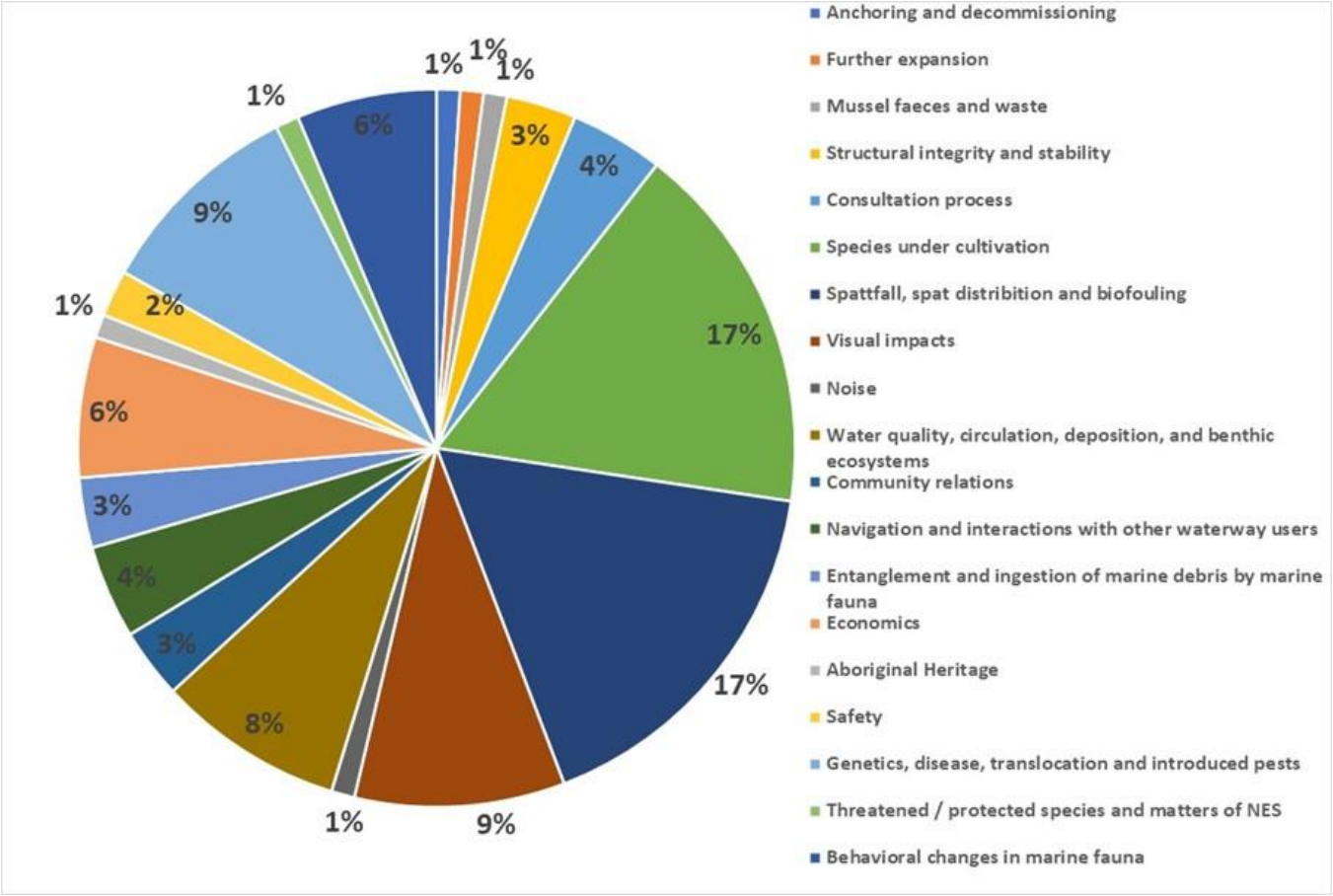

Figure 3. Issues raised by community groups and individuals (%).

A breakdown of the submissions by geographic region, and those who support, opposed or commented generally is in the below tables.

Proportion of submissions from local (<5km from the site), regional (5-100km from the site) and broader (<100km from the site) stakeholders.

Local	57%
Regional	28%
Broader	15%

The number of people who oppose, support or commented on the project

Support	7
Oppose	33
Commented	7

Actions taken since exhibition

- Correction of new coordinates of the lease (pages 20-22). The coordinates have also been changed in a revised modification report (Appendix 3).
- Addition of seagrass, mangrove, saltmarsh mapping, showing both the proposed and current lease locations (Figure 4).
- Addition of UCH database searches (Figure 5).
- A screw anchor removal risk assessment has been developed (Appendix 9). The WQBMP will be reviewed to include ROV surveys of the areas where 88 screw anchors would remain in situ rather than being removed, in accordance with the outcomes of the Screw Anchor Risk Assessment.
- The DPHI-Crown Lands has been consulted with regard to screw anchors being left in situ. The Department has no objection to leaving the anchors in situ, provided that the anchors are assets managed by NSW DPI, subject to DPI policy and procedure.
- A seahorse expert has been consulted and will be invited to be a member of the Marine Fauna Interaction Committee.
- The Vincentia control sites in the Water Quality and Benthic Monitoring Program have been reconsidered and will be moved closer to the relocated Callala Bay leases. The exact location of the new control sites will be determined based on Remote Operating Vehicle (ROV) assessment of the benthic floor at the time of lease development.
- NSW DPI has contacted the Department of Defence confirming lease coordinate changes and decommissioning. A Department of Defence response is pending.
- NSW DPI has confirmed the requirement for marine park permits to be sought.
- SCM will undertake a visual inspection of the seabed with ROV with NSW DPI involvement prior to drilling to confirm that the proposed lease areas are suitable in terms of benthic habitat and to ensure no impact on sensitive habitats and threatened species, noting the areas are within a Habitat Protection Zone of Jervis Bay Marine Park (JBMP).
- SCM will undertake a visual inspection of the seabed with ROV. If UCH sites are found prior to works being undertaken, a Statement of Heritage Impact will be done. If UCH are found unexpectedly during works, an Unexpected Finds Policy will be developed, in line with the *Underwater Cultural Heritage Act 2018.*
- SCM will relocate the Xylem weather monitoring buoy to the northern-most point (i.e., downstream) of the proposed lease areas to maximise the chances of detecting impacts to water quality due to farming activities.
- NSW DPI will design and coordinate a Spatfall Monitoring Program to test if spatfall increases when the farm is moved and increases in area. Collectors will be deployed and monitored each year for two years to see if spatfall changes over time. In the event there is a statistically significant difference in spatfall from baseline records, spat will be collected and compared with farmed stock for genetic analyses. The Spatfall Monitoring Program outcomes will be incorporated into SCM annual reporting in relation to compliance with condition D.4, published online. The monitoring program will be reviewed

after two years, and future continuation of the program considered in consultation with NSW DPHI.

- SCM will update their Disease, Parasite and Pest Management Plan (DPPM Plan) in consultation with NSW DPI, including the Aquatic Biosecurity unit. The update will address the recommendation to reassess the risk of invasive species in light of new pest species and increased boat traffic to Twofold Bay. The NSW DPI Spat Translocation Protocol 2022 is reviewed as necessary to ensure the risk assessment and process remains current, and effective, which will be captured in the reviewed DPPM.
- SCM will update their Marine Fauna Interaction Management Plan as per EHG recommendation, taking into consideration the current Marine Wildlife Management Manual and inclusion of the local Aboriginal community if carcasses are discovered as a result of entanglement with farming operations.
- SCM provided additional photos of the current lease areas from Callala Beach to contribute to the revised visual amenity impact assessment.
- NSW DPI have consulted with dolphin tourism operators that commented anecdotally that they have not observed any significant changes to dolphin behaviour in relation to the location and operation of the mussel farm leases.
- NSW DPI have considered Jervis Bay Yacht Club course maps on the Club's website in a reassessment of the potential impacts of the modification to their routes.
- NSW DPI reassessed the potential impacts of construction and operation noise on local residents, stakeholders and marine fauna.
- The Mitigation Measures Table (Appendix 2) has been updated.
- NSW DPI has undertaken additional consultation with some representatives of the local Aboriginal community.

Response to submissions

NSW DPI responses to each of the issues raised have been grouped into five categories in accordance with NSW DPHI guidelines, and further divided into sub-categories to address specific matters.

1. The Project
2. Procedural Matters
3. Economic, environmental and social impacts
4. Justification and evaluation
5. Issues beyond the scope of the project

The Project

1. Anchoring system and decommissioning

Submissions: NSW DPHI, 1 x individual

Summary of Issues Raised:

Clarity is sought regarding the current use of screw anchor technology in Callala Bay leases, which would appear inconsistent with a claim that the current approval approves the use of stingray anchors. Also, the modification report doesn't provide information regarding the procedures for the removal of the screw anchors, as per approval conditions (C.14 and C.15).

It is recommended that additional detail be provided to confirm the screw anchor technology currently used on the Callala Beach leases is consistent with the approval, and that additional details are provided to explain the process for the removal of screw anchors.

Response

The type of anchor to secure cultivation infrastructure was not specified in the approval conditions. The proponent was required to carry out the development 'generally in accordance with' the SSI Application, the EIS, the Response to Submissions, the Environmental Management Plan, Development Plans and condition C.1 Deployment of Lease Infrastructure. The proponent was also required to prepare and implement a Construction and Deployment Environmental Management Plan, which is publicly available on the SCM website. Under condition C.11, the proponent was also required to prepare and implement a Structural Integrity and Stability Monitoring Program, prior to deployment and to the satisfaction of the Secretary.

Within the EIS (Appendix 4) there was no reference to any specific type of anchor system, but throughout the EIS are references to requirement to use best practice systems that would be tailored and/or engineered according to environmental conditions using the latest technology. Screw anchors were the preferred option as they are more environmentally friendly and have a higher load bearing capacity. During installation, screw anchors have minimum to no impact on the benthic floor, as seen in a video taken by SCM during installation available on the NSW DPI website.

The EIS also required the annual servicing of anchors. Maintaining anchors to appropriate standards including 'adaptive management' to adapt to climate change, wave height, tidal range, swell and wind speed i.e., 'design and modification use of proven technologies' and the 'latest engineering knowledge' and that the 'anchoring system consist of suitably sized anchor/s to suit conditions'.

The EIS required the use of the latest engineering knowledge to mitigate the risk of equipment failure. For example, screw anchors and longline systems are used in a range of climate zones, engineered to withstand cyclones. Furthermore, the Director General Environmental Assessment Requirements included that 'proposals for adaptive management' must be in the EIS.

Screw anchors, including the specific type used by SCM – Marine Flex – have been encouraged by NSW DPI as a more seagrass friendly mooring system (NSW DPI 2008), and other similar-concept types of screw anchors have been deployed by NSW DPI as an environmentally friendly option for mooring of recreational vessels. Additionally, benthic monitoring surveys (Appendix 6) undertaken by the University of Newcastle have shown that there is no evidence of harm to the benthic habitat because of insertion of screw anchors or aquaculture activities.

The Deployment and Management Plan 2019 described and illustrated the navigation aids and anchoring system. This was approved by Transport for NSW (TfNSW). The anchoring system required a marine park permit, which was issued by NSW DPI. SCM received this permit (MEAA23/51) which specifically refers to and permits screw anchors. The Deployment and Management Plan 2019 also illustrates that screw anchors are being used in preference of other types of moorings because they are more environmentally friendly.

With regard to the removal of screw anchors, a risk assessment was undertaken, which determined that it is generally a lower risk to leave the screw anchors in situ (total 88) than remove them (Appendix 9).

In accordance with condition C.15 of the approval, a Decommissioning Management Plan has been prepared for the existing aquaculture lease areas. If the proposed modification is approved, then an updated Decommissioning Management Plan would be prepared. The updated Decommissioning Management Plan would include the requested details about the processes and approach for removal of infrastructure, in consultation with NSW DPI. The updated Decommissioning Management Plan will also be developed in consultation with the Department of Defence. NSW DPI has communicated with the Department of Defence regarding the decommissioning approach including leaving anchors in situ that fall within naval waters; a response is pending. DPHI - Crown Lands have been consulted being the landowner of the seabed, and have responded indicating no objection to leaving the screw anchors in situ provided the anchors remain NSW DPI managed assets, subject to NSW DPI policy and procedure and subject to any other applicable legislation.

Local Aboriginal communities will be consulted on the revised Decommissioning Management Plan noting the decommissioning activities may affect their Sea Country (as noted in the Screw Anchor Risk Assessment Appendix 9). The final Plan will note and provide responses/address consultation outcomes.

The Benthic Monitoring Program will also be reviewed to include the assessment of the sites where the screw anchors have remained in situ using ROV.

In addition to screw anchors, there are currently eight cardinal markers in situ held in place with 300kg concrete mooring blocks. If the modification application is approved, four cardinal markers including their concrete block anchors will be completely removed, and four will be repositioned to mark the related leases. Concrete block anchors are used in order to allow for removal for annual inspection and maintenance. The reviewed Decommissioning Risk Management Plan will be updated with this information.

Furthermore, SCM is required to comply with the NSW DPI aquaculture lease security arrangement (bond system) in accordance with part 3 of the Fisheries Management (Aquaculture) Regulation 2017. The lease security bond system was introduced to ensure that the industry shares the responsibility in the future for problems arising from lease management and maintenance issues. The bond system exists as a last resort, when all reasonable measures to get a lessee or permit holder to rectify a lease management problem, such as removal of infrastructure, have failed. Lessees and permit holders are required to comply with notices issued by NSW DPI to carry out work on a lease area. If they fail to comply with a notice, then NSW DPI can carry out the work required under the notice. If NSW DPI incurs a cost from the work completed on a lease, then the lessee or permit holder is asked to pay that amount within a certain period. If they fail to pay, then NSW DPI will commence debt recovery action. Only after all reasonable options to recover payment have been exhausted would the bond be drawn on.

2. Staging relocation procedures

Submissions: NSW DPHI

Summary of Issues Raised:

The modification report provides limited information on the staging of the lease relocation works, including removal and redeployment. More information is required.

Response

Staging the proposed modification includes the timing of the installation of anchors, attachment of lines and removal of existing infrastructure. This series of events will depend on the acquisition of a new boat, weather conditions, harvest schedules, and outcomes of the pre-deployment visual inspection of the seabed (see Section 9).

As has been the approved process for the existing operations, SCM will continue to provide annual reports to NSW DPHI with updates of removal and redeployment activities.

As per approval condition C.1, SCM operate in accordance with an approved Construction Deployment and Traffic Management Plan V4.2 2023. This plan illustrates the layout of the currently approved leases and talks the reader through the steps taken prior to and during deployment. This plan also includes a Decommissioning Management Plan. A requirement of this plan was that it be approved by the Secretary one month prior to deployment.

If the proposed modification is approved, SCM will update the Construction Deployment and Traffic Management Plan to indicate the proposed removal and redeployment activities including a revised expected timeframes and duration schedule. This update cannot occur too far ahead of activities, as the relocation of lines depends on the harvest and cleaning schedules. While these are planned and predictable, they do change if environmental or market conditions change. The specific lines to be harvested and relocated, therefore, cannot be accurately known until close to the relocation time.

The intention is to first install screw anchors on the proposed relocated lease to support the attachment of lines. Backbones ropes and buoys are then installed on the relocated lease area. As lines are harvested from the current leases, the lines will be relocated to the new coordinates/lease area and deployed one by one as they are harvested and made available from the current leases. New lines may also be used.

Consistent with the existing Construction Deployment Traffic Management Plan, screw anchors will be deployed in a line-by-line formation running crossways, deployed two at a time to cap the longline ends.

The anticipated process is to relocate lease AL15/003 first including the deployment of new screw anchors, backbones and culture rope. The expectation is to install 6-12 screw anchors per day. Anchor lines are deployed with the screw anchor and then backbone attached. Leases AL15/001 and AL15/002 (i.e., the existing operating leases) would then be decommissioned. The screw anchors take approximately 50 minutes per anchor to install. SCM will be installing up to 224 anchors. The screw anchors would be left undisturbed 4-6m under the substrate.

3. Mapping seagrass

Submissions: NSW DPHI

Summary of Issues Raised:

The modification report provides mapping of the existing leases in relation to the location of existing seagrass, mangrove and saltmarsh and benthic habitat types. However, these layers have not been mapped for the proposed lease locations. The recommendation is that additional maps are provided to demonstrate the location of the proposed leases with respect to existing seagrass, mangrove and saltmarsh and benthic habitat types.

Furthermore, there was a coordinate error identified by NSW DPI in the modification report which must be corrected.

Response

The location of the proposed leases and existing leases with respect to seagrass, mangrove and saltmarsh habitat types is provided in Figure 4. These habitat types were mapped in 2020 (i.e., the most recent macrophyte layer in the NSW DPI database). Regarding benthic habitat types, the modification report provides a map of the existing leases overlaying the benthic habitat types (for example sand, drift algae etc...) that were mapped in 1994.

The modification report also provides a map of the current and proposed leases overlayed on marine landform data (i.e., reefs, scarps, plains) mapped in 2019. Benthic habitat types can change in short periods of time due to oceanic currents and therefore more recent sediment maps are not available. In order to determine the benthic characteristics of the proposed lease area, if the proposed modification is approved, SCM will take ROV video footage prior to drilling to confirm that the proposed lease areas are suitable in terms of benthic habitat and threatened species (if present) are avoided. NSW DPI will take part in this process, noting this area is within the Habitat Protection Zone of JBMP.

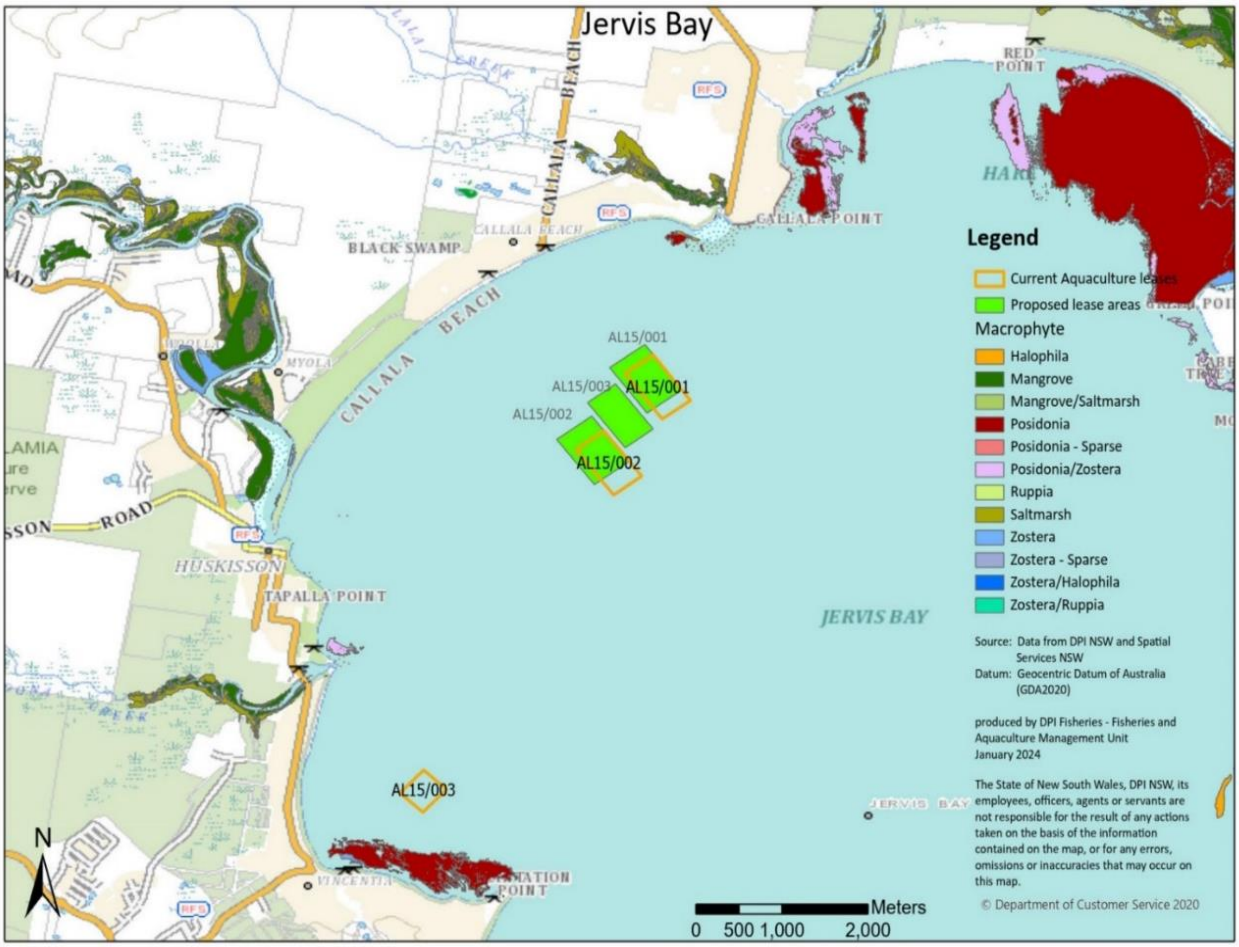

Figure 4. Location of the proposed leases with respect to existing seagrass, mangrove and saltmarsh and benthic habitat types, NSW DPI 2024.

The coordinate error identified in the modification report was a typographical error which has been resolved. The modification report has been updated with the corrected coordinates, and an excerpt provided in the tables below. NSW DPI has written to the Department of Defence with regard to the proximity of the proposed leases to the Safety Trace in Jervis Bay. The response from the Department of Defence is pending.

AL15/001 Callala Beach

Current coordinates	Proposed modification coordinates
-35° 1' 11.899" 150° 42' 39.666"	-35° 1’ 31.889” 150° 42’ 37.331”
-35° 1' 27.615" 150° 42' 53.655"	-35° 1’ 16.200” 150° 42’ 23.298”
-35° 1' 33.944" 150° 42' 43.147"	-35° 1’ 8.184” 150° 42’ 36.536”
-35° 1' 18.228" 150° 42' 29.158"	-35° 1’ 23.879” 150° 42’ 50.561”

AL15/002 Callala Beach

Current coordinates	Proposed modification coordinates
-35° 1' 38.188" 150° 42' 21.156"	-35° 1’ 56.639” 150° 42’ 17.533”
-35° 1' 53.796" 150° 42' 35.324"	-35° 1’ 41.031” 150° 42’ 3.365”
-35° 2' 0.206" 150° 42' 24.887"	-35° 1’ 32.948” 150° 42’ 16.549”
-35° 1' 44.597" 150° 42' 10.720"	-35° 1’ 48.571” 150°42’ 30.703”

AL15/003 Vincentia to be moved to Callala Beach

Current coordinates	Proposed modification coordinates
-35° 3' 35.483" 150° 41' 13.244"	-35° 1’ 37.432” 150° 42’ 39.679”
-35° 3' 42.122" 150° 41' 21.910"	-35° 1’ 43.902” 150° 42’ 29.145”
-35° 3' 49.960" 150° 41' 13.027"	-35° 1’ 28.303” 150° 42’ 14.987”
-35° 3' 43.321" 150° 41' 4.361"	-35° 1’ 21.833” 150° 42’ 25.521”

4. Further expansion

Submissions: Community Stakeholders (1)

Summary of Issues raised:

There was concern that if this modification were approved, it would set a precedent for further expansion of other aquaculture in Jervis Bay in the future.

It was requested that the criteria that are used to assess further potential aquaculture applications from other businesses to operate in the JBMP, is provided.

Response

As indicated in the modification report, NSW DPI has no intention of seeking additional areas for longline aquaculture in Jervis Bay.

All site selection criteria for potential aquaculture applications are in the NSW Marine Waters Sustainable Aquaculture Strategy 2018 (MWSAS). The MWSAS site constraints criteria were used to assess the proposed modification and determined that the identified area for the proposed modification is the most suitable area in Jervis Bay for longline mussel aquaculture.

MWSAS criteria determine where aquaculture operations would not be permissible, and include: conservation exclusion zones, marine conservation areas, areas with pipelines and cable, navigation channels and shipping port approaches, Department of Defence operational areas, areas over rocky reef, areas over seagrass, areas within 1km of marine heritage items (for example shipwrecks), areas within 1km artificial reef, areas within 1km of marine infrastructure and monitoring equipment, the area must be compatible with commercial, recreational and Aboriginal cultural fishing and tourism uses, and areas that are of suitable distance from other aquaculture areas.

Any proponent (government or private) wishing to undertake commercial marine aquaculture in any part of NSW marine waters must comply with MWSAS site constraints criteria. The MWSAS is publicly available on NSW DPI's website.

5. Mussel faeces

Submissions: Community Stakeholders (1)

Summary of Issues Raised:

A concern was raised regarding the waste generated from the mussel farm. The community member claims that a mussel filters up to 300L of water per day, creating about 35g/m^3 of waste. Concerns were raised about how this waste will be captured and disposed of, and what impact this may have on other water users including aqua sports and swimmers.

Response

Condition of approval (D.12) requires SCM to have in place a Water Quality and Benthic Monitoring Program (WQBMP, Appendix 6). Details about the WQBMP including experimental design, statistical analyses, and a breakdown of results are provided in Section 17. The WQBMP is undertaken independently by the University of Newcastle.

With regard to waste (in the form of faeces) from the farm, and how this may impact water quality and other water users, the WQBMP results show that mussel farming has not increased the accumulation of waste on the benthic floor.

While benthic-pelagic coupling (i.e., removing suspended materials from the water column and making it available as a food source to the benthic fauna) is one of the ecosystem services bivalves provide and one that has been significantly reduced in most estuaries (including Jervis Bay), excessive localised sediment or organic matter deposition can cause reductions in species richness, abundance, and biomass due to oxygen depletion and build-up of toxic by-products (ammonia and

sulphide) associated with the breakdown of these materials. Accordingly, total organic carbon (percent TOC) and sediment composition (grain size and percentage of mud) were measured in the WQBMP to monitor for this possibility.

The WQBMP showed that after installation of infrastructure and farming began, the percent TOC of the sediment was not significantly different between baseline and post-farming samples measured across the nine sites in 2020 and 2022. TOC was significantly higher at the only site in Vincentia where farming has not begun. Mean sediment grain size did not differ significantly between the baseline and after farming began. However significantly more mud was detected in the baseline survey compared to after farming.

As part of the WQBMP water quality parameters are also measured in control sites and within lease areas. Parameters included are temperature, salinity, pH, turbidity and dissolved oxygen. As with the benthic survey, there was no significant difference in water quality parameters between farmed and non-farmed sites, or between before and after farming began.

In addition to the WQBMP, SCM are required to be licenced with the NSW Food Authority Shellfish Program. The NSW Shellfish Program is a compulsory, industry funded program that assists in ensuring the public health safety of shellfish grown and harvested from NSW waters. As part of this program, SCM assess the risk of shellfish contamination by pathogenic bacteria and viruses, biotoxins and chemicals derived from the growing area; controls the harvest of shellfish in accordance with the assessed risk; and protects shellfish from contamination after harvesting.

It is thought that appropriate lease site selection with good water flow, and the natural capacity of the environment to deal with benthic-pelagic coupling reduces the risk of localised waste accumulation. Observations of higher portions of mud and TOC at Vincentia (the lease that is not in operation) are likely due to external factors such as stormwater outflows (Platell et al., 2023).

Additionally, under the NSW Flood Sector Development Funding initiative, SCM and the University of Technology (UTS) have deployed a 1.7m wide Xylem Water Quality Monitoring Sensor- Weather Buoy in the Jervis Bay (December 2022) and Twofold Bay (March 2023). These buoys monitor salinity, pH, temperature, dissolved oxygen, turbidity, conductivity, chlorophyll, and phycoerythrin. The buoys also monitor water, and wind velocity and direction (see Section 17). Public access to the live-time data is available via these links Jervis Bay Weather Buoy and Twofold Bay Weather Buoy.

Together, the Shellfish Program data and the sensor data will provide additional ongoing publicly available data to inform the community of the general environmental conditions on the leases. Without mussel farming in Jervis Bay, this routine water quality assessment would not occur and little data, if any, would be available on the condition of Jervis Bay water quality and benthic environment.

SCM is also the first, and one of only two Australian mussel farms to be Best Aquaculture Practices (BAP) certified (details are provided in Section 17). BAP certification means that SCM is independently assessed to be demonstrating the highest international standards of environmental responsibility, social accountability, animal health and welfare and food safety.

The combination of results from the WQBMP, the Shellfish Program and Xylem water quality monitors indicate that the seafloor and water quality of Jervis Bay is not being impacted by current mussel farming activities, and therefore there is no indication the farming activities would be creating waste to an extent that is harmful to recreational waterway users.

The WQBMP results indicate that waste is not accumulating on the seafloor, and therefore SCM are not in a position to collect any such waste as requested.

The WQBMP, the Shellfish Program and Xylem monitoring, and annual reporting (see SCM website) will continue if the proposed modification is approved. The WQBMP will include the use of management responses such as a reduction in stocking density or fallowing if required if sediment or water quality parameters are triggered, which would indicate that waste levels are problematic. Trigger levels are described in detail in Section 17.

6. Structural integrity and stability

Submissions: Community Stakeholders (3)

Summary of Issues Raised:

Concerns were raised about the potential impacts of the anchors since they were installed. The perception is that the anchors have been there for possibly 10 years, and it seems necessary to find out what impacts the anchors have had on the marine life surrounding the anchors on the seafloor before permitting removal and relocation. Concerns were raised that high wind velocity and wave actions would have caused movement of the anchors and damaged the seafloor.

There were concerns of mussels falling off the ropes during storms (wave surge), and there were concerns about the fate of the dead mussels that may be falling off onto the seafloor.

Clarification was sought regarding whether moving the leases closer to Callala Beach will bring operations into shallower waters by approximately 5 meters depth and increase the risk of storm surge. Also, there have been several storms since operations began in 2019, and one or more 160L buoys have broken free and been observed on Callala Beach (with no apparent attempt to retrieve them). Clarification is sought with regard to the number of buoys (and other infrastructure) that have been 'lost' and with the additional two leases operating will there be a risk of more washing ashore?

Response

The lease infrastructure has been in Callala Beach leases for four years (not 10 as claimed). Since installation, the anchors have not moved, and benthic monitoring indicates the anchors have not caused harm to the seafloor (section 17). There have been no major infrastructure faults either.

SCM are required to submit an annual report to NSW DPHI. The Callala North (AL15/001) and Callala South (AL15/002) lease infrastructure has been monitored in accordance with the Structural Integrity and Stability Program outlined in attachment 8 of their EMP (Appendix 7) and available on the SCM website. Inspections of the lease infrastructure have been conducted weekly during the reporting period, focusing on evidence of faults, damage, excessive biofouling and loose lines or buoys. Inspections have been particularly important after severe weather in order to minimise marine fauna entanglements and navigation hazards.

A detailed service inspection was undertaken after every severe weather event to cover all aspects of the infrastructure including cardinal marks, anchors, and ropes. When heavy storms are active, SCM completes routine beach patrols to collect any floats that may have been damaged and broken free. On average, less than a dozen floats are damaged annually, but are retrieved during beach clean-ups, or if notified by the public, or NSW DPI staff. SCM does its best to ensure that measures are taken to control such occurrences and will continue such measures if the modification is approved.

The anchors used are screw anchors, not concrete blocks. The screw anchors are located 4m under the sand and do not move. The screw anchors have not caused any damage to the seafloor. Screw anchors are widely used in the New Zealand aquaculture industry and are considered environmental best practice because they do not move or cause damage to the seafloor. A video of a screw anchor being installed at the seafloor is available on the NSW DPI website.

With regard to mussels falling off ropes, SCM have not reported any unusually high loses of mussels due to falling off ropes during storm surge. Elsewhere, the excessive loss of mussels or the discarding of shell has not changed the structure of sediment below the leases and altered the benthic community present. The existing benthic monitoring program has shown that neither of these issues has occurred (Section 17).

Regarding concerns about moving the lease into shallower waters (up to 5 m shallower): Callala Beach leases will move 120m and 210m closer to Callala Beach respectively. As stated in the modification report, the depth profile of the current and proposed locations is very similar ranging from about 10 – 14 m (SCM Annual Report 2020), and not 5 m shallower as stated in the submission.

7. Stage 3 full commercialisation

Submissions: NSW DPHI

Summary of issues Raised:

The modification report refers to a document titled 'Stage 3: Full Commercialisation March 2023'. The purpose of this document is not clear, and it has not been provided as an appendix.

The recommendation is that further explanation is provided as to the purpose of this document and details of what constitutes Stages 1 and 2 for context. A copy of any relevant documentation must also be provided.

Response

Contrary to how it is presented in the modification report, 'Stage 3: Full Commercialisation March 2023' is not a standalone document. It is a reference to the approved project timeframes and reporting system that SCM adopted in their Environmental Management Plan (Appendix 7).

As per approval condition C.1, SCM was required to develop a Construction and Deployment Plan (CDP) as part of the Environmental Management Plan. The CDP is to be approved by the Secretary of NSW DPHI at least one month prior to deployment. The CDP outlined the anticipated construction and deployment timeline, broken down into three stages: Stage 1 pilot commercialisation 2019 – 2020, Stage 2 full commercialisation late 2020 onward and Stage 3 full commercialisation mid 2021 onward.

CDP version 4 was provided to NSW DPHI in July 2023, which states that Stage 3 is planned for 2023. This was approved by NSW DPHI as part of a 2021 review of the Environmental Management Plan. Annual reports provided by SCM to NSW DPHI indicate that Stage 3 was underway in early 2023. CDP version 4, and annual reports are on the SCM website.

Procedural Matters

8. Consultation Process

Submissions: Community Stakeholders (4)

Summary of issues Raised:

Concerns were raised that there was insufficient time allocated for public exhibition and for the community to understand the proposal, its impacts, and to respond. The timing of the consultation period (just prior to Christmas holidays) was also not ideal and people were experiencing issues with the Major Projects Planning Portal. This caused confusion with the submission date deadline and ease of submissions, with some objectors being unable to lodge submissions.

There were claims that the '2015 public consultation' was flawed and that objections/comments were dismissed and that there was no data presented to address previously expressed community concerns.

The proposed modification lacks objectivity, and only focuses on positive outcomes without acknowledging impacts to Callala Bay community. It was considered biased with an overall lack of balanced and effective communication with stakeholders.

Response

The proposed modification was exhibited as per NSW DPHI guidelines and instructions, using the Major Projects Planning Portal. Two weeks exhibition time was consistent with NSW DPHI Guidelines. Preliminary consultation began in October 2023 at which time 30 stakeholder groups (including community groups and associations, the Jerrinja Local Aboriginal Land Council and government agencies) were contacted via phone, email and/or in person. The list of stakeholders contacted is provided in the modification report. Stakeholders were provided with links to an advisory page on the NSW DPI website that hosts a Frequently Asked Questions section and links to all relevant information sources. NSW DPI notified stakeholders via email of the exhibition of the modification report and NSW DPHI contacted all previous stakeholders who made submissions on the 2013 SSI application.

Planning Portal issues are managed by NSW DPHI (the consent authority), not NSW DPI. Any technical issues of this nature should be communicated directly with NSW DPHI.

Regarding the consultation on the EIS in 2013 (not 2015 as reported), all data gathered during the response to submissions was made publicly available and was included in the EIS. The consultation in 2013 was extensive and included several media releases, community drop-in days and email updates. The EIS and responses (as an appendix within the EIS) are available on the SCM website.

Regarding claims that the proposed modification is biased and has focused on the positive outcomes of the activities, the modification report was informed by the preliminary consultation in October 2023, consultation undertaken as part of the EIS in 2013, and the SCM complaints register. Four complaints have been received through this register since operations began. Any potential negative impacts were addressed through SCM management plans (including research and monitoring requirements), as per approval conditions. All SCM management plans and annual reports, and complaints register, are assessed by the NSW DPHI and are available on the SCM website.

9. Underwater Cultural Heritage

Submissions: HCNSW

Summary of issues Raised:

HCNSW claim that no inspection or assessment of the seabed in the proposed lease areas has been undertaken to ascertain if UCH sites exist in the area, and that the heritage database / registers were not adequately consulted, providing only brief notes on p38 and 71.

HCNSW is concerned that there may be other UCH in the area, including sediment-submerged UCH, which must also be considered. HCNSW request that:

- The number of screw anchors that would be installed for the proposed modification is provided
- That NSW DPI addresses the *NSW Heritage Act 1977*, the *Control of Naval Waters Act 1918* and the *National* Parks *and Wildlife Act 1974* with relation to regulation of UCH, including Aboriginal UCH
- That NSW DPI undertakes a desktop analysis of UCH using NSW Maritime Heritage Database, NSW State Heritage Inventory, AHIMS database, the Local Council database and any Commonwealth databases.
- An underwater visual inspection of the seabed with divers/side scan sonar prior to works is undertaken by qualified archaeologists.
- If UCH sites are found, a Statement of Heritage Impact will be required. If UCH are found during works an Unexpected Finds Policy will be required.
- All works that may affect UCH would require approved permits by NSW DPHI.

Response

Further inspection and assessment of the seabed has been undertaken to ascertain UCH sites exist in the area. The number of screw anchors proposed to be installed if the proposed modification were approved is 224. The number will be reviewed as required and reported on in the annual report and in a revised Construction and Deployment Plan (Appendix 10) that SCM must submit to NSW DPHI (approval condition C.1).

The modification report has been amended to include reference to the *NSW Heritage Act 1977.* Reference to the *Control of Naval Waters Act 1918* was already included in the modification report.

The modification report addresses the *National Parks Wildlife Act 1974* on pages 24 and 70 with regard to UCH and Aboriginal Places, specifically s.84 of the Act. During preliminary consultation, NSW DPI also contacted the Jerrinja Local Aboriginal Council (LALC). Then, and in follow up emails with the LALC, no issues have been raised regarding the proposed modification.

The Modification Report assessed Aboriginal and European heritage (pages 24, 25, 38, 42, 69 – 72 and Appendix 7- Aboriginal Heritage Information Management Report – Jervis Bay 2023). This included a search of the NSW Atlas of Aboriginal Places, NSW Historic Shipwrecks Database and the Australian National Shipwreck Database, and an Aboriginal Heritage Information Management System database search.

51 Aboriginal sites were identified on land around the foreshores of Jervis Bay, including new land sites that were not identified in the EIS of 2013. No aboriginal sites were identified in the water. Two wrecks were identified in the Modification Report: Fairey Firefly aircraft and the Mercury shipwreck (Figure 27, page 72). The distance of these sites from the closest lease, the northern Callala Lease, is approximately 2 km and 2.4 km respectively.

As requested, NSW DPI has undertaken additional searches of UCH databases including NSW Maritime Heritage Database, NSW State Heritage Inventory, Local Council Database and

Commonwealth Australasian Underwater Cultural Heritage Database. These searches suggest no presence of UCH in or around the proposed lease areas (Figure 5. Screen shots of UCH database searches. Left: Maritime Heritage Database. Centre: NSW State Heritage Inventory. Right: Australasian Underwater Cultural Heritage Database. These maps have also been included in the revised modification report (Appendix 3).

Maritime Heritage Database reports four unlocated shipwrecks in Jervis Bay. Three of which were reported to be wrecked near the heads of Jervis Bay. The fourth and closest wreck was a 10m trawler that was reported in the Database in 2015. It ran aground in 1943 on Callala Beach and was damaged by fire.

The NSW State Heritage Inventory identified heritage listed buildings on land. No heritage items were in the waters of Jervis Bay.

The Australasian Underwater Cultural Heritage Database search identified a vessel wreck of an approximately 6m long buried in the mud close to the township of Myola along the edges of Currambene Creek. The vessel is likely to be the remains of either a small fishing boat or rowboat.

Part 1 of the Heritage Items in the Shoalhaven Local Environmental Plan 2014 (i.e., the Local Council Database) shows no heritage items near the proposed lease areas.

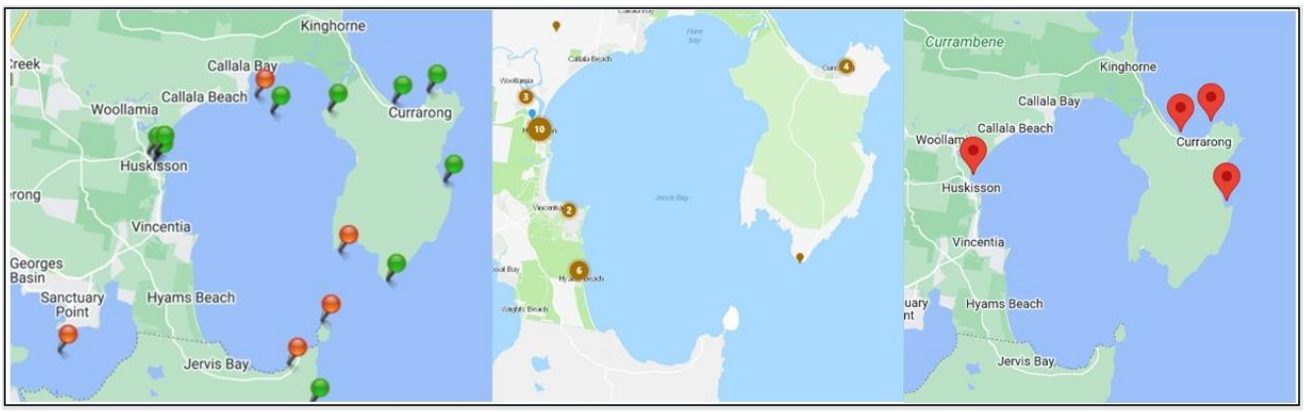

Figure 5. Screen shots of UCH database searches. Left: Maritime Heritage Database. Centre: NSW State Heritage Inventory. Right: Australasian Underwater Cultural Heritage Database.

If the proposed modification is approved, SCM will undertake a visual inspection of the seabed of the proposed lease area with ROV. If UCH sites are found prior to works being undertaken, a Statement of Heritage Impact will be done. If UCH are found unexpectedly during works, an Unexpected Finds Policy will be developed.

The Justification and Evaluation of the Project as a Whole

10. Mitigation measures

Submissions: NSW DPHI

Summary of Issues Raised:

The table of mitigation measures provided in Appendix 19 of the Modification Report mistakenly retained a draft watermark.

The recommendation is that a final table of mitigation measures must be provided and that any additional mitigation measures proposed as a result of the assessments undertaken in response to matters raised in the submissions process, must be included in the final list of measures.

Response

A summary of updated mitigation measures is provided in Appendix 2. This summary includes measures proposed in the modification report, and new measures proposed in response to the public submission recommendations. Any recommendation that has not been adopted as recommended, either in part or in full, has also been addressed. A brief justification for all measures is included.

11. Marine park permit requirements

Summary of Issues Raised:

NSW DPI notes that the lease expansion will involve placement of anchors resulting in habitat disturbance. A seafloor survey of the new area will be conducted to identify any threatened or sensitive habitats prior to installation of the new screw anchors. A marine park permit is required to damage habitat within the Habitat Protection Zone. After the infrastructure is installed, a marine park permit to conduct extensive aquaculture is also required. NSW DPI recommends that any planning approval notes the requirement for relevant marine park permits to be obtained.

Response

If the modification is approved, the appropriate marine park permits will be sought.

The modification report refers to section 55 of the *Marine Estate Management Act 2014* (MEM Act) and the Marine Estate Management (Management Rules) Regulation 1999. This includes reference to further detailed requirements of s55 of the MEM Act, such as zone purposes, permissible uses of zones and management plans. If the proposed modification is approved the three leases would remain within the Habitat Protection Zone (HPZ) of JBMP. The majority of the proposed modification activities will also be undertaken in currently approved and used areas, in accordance with planning approvals.

Aquaculture in a HPZ is permissible with consent of the relevant Ministers for the marine estate and subject to the management rules for the Jervis Bay Marine Park (s1.18 (1) and (2); Marine Estate Management (Management Rules) Regulation 1999).

SCM, as advised, will apply for marine park permits for two types of activity in Jervis Bay Marine Park. Firstly, consent for harm to habitat (s1.16) during construction, operation and decommissioning of lease infrastructure. Secondly, for consent to conduct aquaculture in the JBMP HPZ (s1.18).

If the proposed modification is approved, SCM will also take Remote Operating Vehicle (ROV) video footage prior to drilling to confirm that the prosed lease areas are suitable in terms of benthic habitat and to detect sensitive habitats and threatened species, which, if present will be avoided. NSW DPI's marine park staff will take part in this process.

Economic, Environmental and Social Impacts

12. Species under cultivation

Submissions: Community Stakeholders (16), NSW DPHI, EHG

Summary of Issues Raised:

Concerns have been raised about the origin of the cultivated species *M. galloprovincialis*. It is considered by some members of the community to be a non-indigenous/exotic species to the area.

Furthermore, the introduction of any exotic animal into a marine park is an offence under the Marine Estate Management Rules (Management Rules) Regulation 1999.

Specific concerns are that the cultivation, particularly an increase in cultivation of *M. galloprovincialis* could threaten the genetic integrity and ecosystem functions of the other native mussel *M. planulatus* through hybridization and genetic homogenization and could out-compete native epifauna. There is also confusion around the classification of 'Australian Blue Mussels' as it isn't possible to visually distinguish *M. galloprovincialis* from other native mussel species. When the EIS was submitted in 2013, *M. edulis* (i.e., not *M. galloprovincialis*) was the proposed species, and so clarification is sought as to why the species name has changed for the proposed modification activities.

The recommendation is that the precautionary principle is adhered to, so that adequate research prior to approval, can remove all doubt about the potential impacts and provide solutions to any problems found.

Community stakeholders recommend that either SCM and/or NSW DPI undertake independent research and a detailed scientific literature review to determine if the cultivated species is native or exotic to JBMP.

Response

M. galloprovincialis is a commonly farmed species in many countries and while it is an invasive species in parts of the world (Blixt 2020), *M. galloprovincialis* found in the southeast of Australia is a regional subspecies. This subspecies co-occurs with the native *M. planulatus,* and hybrids of the two species are common in most areas tested (Zbawicka et al., 2022).

Hybridisation is a natural process and has likely been underway since *M. galloprovincialis* first entered the area approximately 1 million to 600,000 years ago (Popovic et al., 2019, Gerard et al., 2008). Self-sustaining populations of *Mytilus* hybrids are found in every state where the environmental range extends (Zbawicka et al., 2022; Riginos & Cunningham 2005; Hilbish et al., 2000). The Australian *M. galloprovincialis* is therefore considered a regional endemic subspecies (Bramwell et al 2024; Zbawicka et al 2022; Daguin & Borso 2000; Hilbish et al 2000). No evidence has been found of the introduction of *M. galloprovincialis* from human activity in Australia (Popovic 2019).

Studies have found populations of 'pure' *M. planulatus* in higher abundance in Tasmania than other states (Zbawicka et al., 2022, Popovic et al., 2019) and the concern raised was that *M. galloprovincialis* could hybridize and/or outcompete with *M. planulatus*. Since *M. galloprovincialis* has had at least 600,000 years in coexistence with *M. planulatus*, the risk of genetic hybridization, homogenisation and competition are unlikely to increase as a result of the increase in mussel aquaculture in Jervis Bay. Both species co-exist now, with certain pure stocks of *M. planulatus* persisting regardless of the presence of *M. galloprovincialis* (Zbawicka et al., 2022).

Research into dispersion of *M. galloprovincialis* elsewhere in the world has indicated that where the species was introduced for commercial purposes in the twentieth century, a spread of about 115km per year was observed in some places (Lockwood and Somero 2011; Branch and Steffani 2004). This dispersion has not been observed in NSW including in estuaries where mussel aquaculture does and does not occur. It is reasonable to suggest if such spread was going to occur in NSW it would have already.

Regarding the use of "*M. edulis*" in the 2013 EIS, conditions of approval granted by NSW DPHI were for *M. galloprovincialis*, and other bivalves including, scallops, clams and oysters which are naturally occurring in the Jervis Bay region. Other species that can be extensively cultured (i.e., without the use of additional feed) were also considered in the EIS. Sources of spat considered in the EIS included hatchery sources and natural spat fall from Jervis Bay and nearby Twofold Bay, both of which have farmed mussels for over 40 years.

As genetic technology has improved, studies began to highlight the existence of two species and hybrids. In 2016, Ab Rahim et al. found that 98.5% of mussels sampled from Australian populations were *M. galloprovincialis* and so this name was adopted as being more probable. This was also consistent with the Fisheries Research Development Corporation fish names database, which currently recognises only one commercial blue mussel species (*M. galloprovincialis*). This database underpins the nomenclature NSW DPI uses as the basis of its permitting system. Therefore, reference to *M. edulis* in the EIS was outdated, recognised in the NSW DPHI approvals and referred to in the modification report using the current nomenclature *M. galloprovincialis.*

Given this information, it is not recommended that further research is required on species identification. Literature indicates this species has been in NSW for over half a million years.

Vectors of mussel introductions can include other vessels such as those operated by the Department of Defence, and entry of recreational and commercial vessels from other estuaries throughout NSW into Jervis Bay. No change is proposed to the species of mussels being cultivated under the current approval.

However, NSW DPI will design and coordinate a Spatfall Monitoring Program (Section 13). In the event there is a statistically significant difference in spatfall from baseline records (i.e., Borschmann 2022), spat will be collected and compared with farmed stock for genetic analyses.

13. Spatfall, spat distribution and biofouling on boats

Submissions: Community Stakeholders (16), NSW DPHI, DCCEEW, EHG

Summary of Issues Raised:

Concerns were raised regarding reports from owners, snorkellers and divers that the population of mussels in Jervis Bay has spread and the volume of mussels has increased since the start of the mussel farm operations in 2019. The increase in the mussel biofouling of equipment has had a significant financial cost to boat owners. Anecdotal reports also suggests that mussels are becoming more abundant in Currambene Creek, and there are concerns that increased recruitment and fouling could interfere with the ecosystem integrity and processes in JBMP.

It has also been observed by members of the public, on at least one occasion that bags of harvested mussels have fallen from the truck during transportation, where the bags have split open, spilling mussels on the road, as well as other marine life such as crabs that were invertedly collected along with the mussels.

It has been recommended that additional information is provided about:

- any research that has been undertaken on the level of spread of mussels occurring as a result of the farm be provided, including level of spread and sources of mussel fouling in Currambene Creek
- management measures including cleaning, and harvesting prior to spawning (Condition D.4)

- confirmation of the age of the mussels that are harvested
- regularity of harvest including number of mussels harvested after spawning

And that if approved, conditions include:

- an ongoing independent spatfall monitoring program including trigger points and management
- an assessment of the impact of increased spatfall on biodiversity in the JBMP, and
- community monitoring included in the above

Response

a) Level of spread, including in Currambene Creek, and links to mussel farming.

There is evidence of seasonal mussel biomass on boating infrastructure in Jervis Bay. Historical observations from community members in the area have confirmed this to be the case, however contradictory community observations also exist.

Recent work by the University of Wollongong, assisted by NSW DPI, has investigated mussel recruitment in Jervis Bay (Borschmann 2022). The report found that mussel recruitment was not significantly higher on lines deployed 'near 'mussel leases than on lines deployed farther away from mussel leases in Jervis Bay (Figure 6).

Work has begun to investigate biofouling on the Jervis Bay leases. Fifty different species have biofouled mussel shell on the farm (at 2m and 4m depths), dominated by red algae *Polysiphonia* sp, the hydroid *Solanderia fusca*, *M. galloprovincialis* and barnacles (McAlpine 2023, unpublished thesis). These results develop on existing knowledge of mussel settlement preferences for surfaces with macroalgae and established *M. galloprovincialis* populations. The source of the mussel biofouling described in this thesis was not known.

Studies on the recruitment patterns of mussels on artificial structures in Jervis Bay are limited. Historical evidence of the presence and abundance of wild mussel populations in Jervis Bay must also be considered with regard to mussel abundance in Jervis Bay more generally speaking, and whether farming operations may be driving an increase in these populations.

While these studies have not specifically investigated mussel biofouling in Currambene Creek, they are consistent with existing knowledge of wild mussel recruitment. That is, recruitment can be quite variable and determined by a complex suite of environmental factors of Jervis Bay. It is known that bivalves such as mussels and scallops follow boom/bust cycles of variable spatial distribution. Historical evidence indicates that mussel recruitment varies dramatically from year to year and place to place (Maclean 1972, Wisely 1958). Studies in Sydney harbour in the 1940s and 50s found spatfall varied greatly between years, commonly varying between 100s to 1000s, with some sites showing recruitment in some years and not others. Similarly, research on shellfish in Jervis Bay in the early 1990s saw heavy sets of mussels in some years and not others (Dr Wayne O'Connor., *pers comm* 2024).

Anecdotal reports from a local resident of Jervis Bay for over 70 years noted he had harvested oysters from Currambene Creek, as did his father. He has not noticed a significant change to mussel over catch on moorings in Currambene Creek, and over catch has always been consistent (letter received from the Woollamia Voice, December 2023).

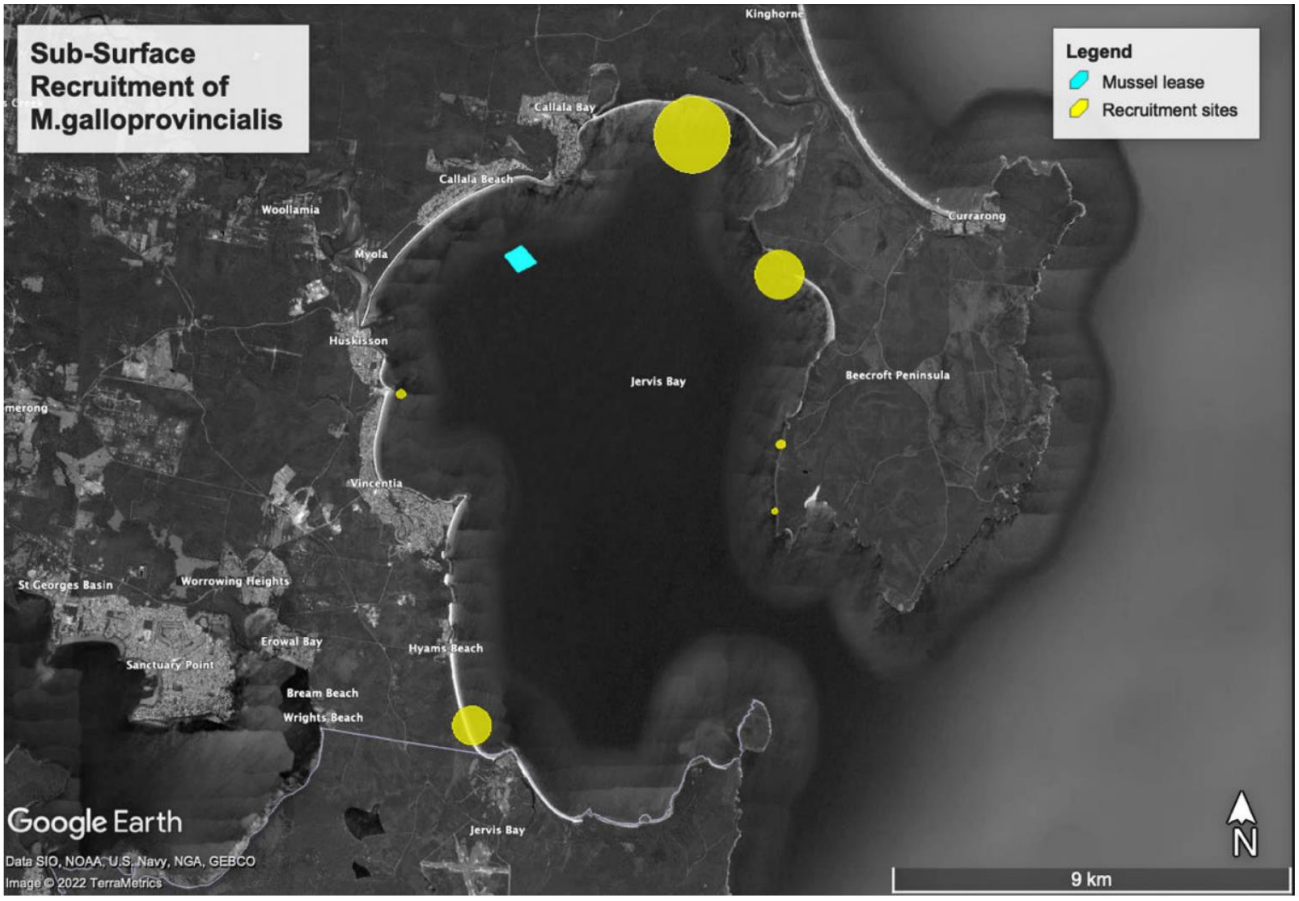

Figure 6. Mussel recruits attached to float lines deployed in 2022 (Borschmann 2022). A larger yellow circle indicates a higher mussel abundance.

Elsewhere, southern hemisphere populations of *M. galloprovincialis* in New Zealand and on shorelines and pilings around southeast Australia and New Zealand also show boom bust patterns of spat fall (Atalah et al., 2017, Atlas of Living Australia Figure 7).

The ability for mussel recruitment to be driven by distant populations is well established. The planktonic life of mussels is from 30 days to 6 months (Azpeitia et al., 2019) and may travel in excess of 200 km depending on currents (Suchanek et al., 1997). Settlement and development of Mytilus species are also impacted by temperature, salinity and food availability (Azpeitia et al., 2019). Jervis Bay has an average flushing rate of 21 days (Holloway et al.,1996), well before mussel larvae are competent to settle. Meanwhile, the southeast position of Jervis Bay entrance opens onto the dominant southeast swells from the outer ocean that can easily introduce larvae into Jervis Bay (Lu et al., 2019) and act as a vector for new mussel recruits.

Despite evidence of fouling on marine infrastructure within Jervis Bay being higher in recent years there have been no significant conclusions drawn about mussel spatfall patterns linked to mussel aquaculture activities in Jervis Bay.

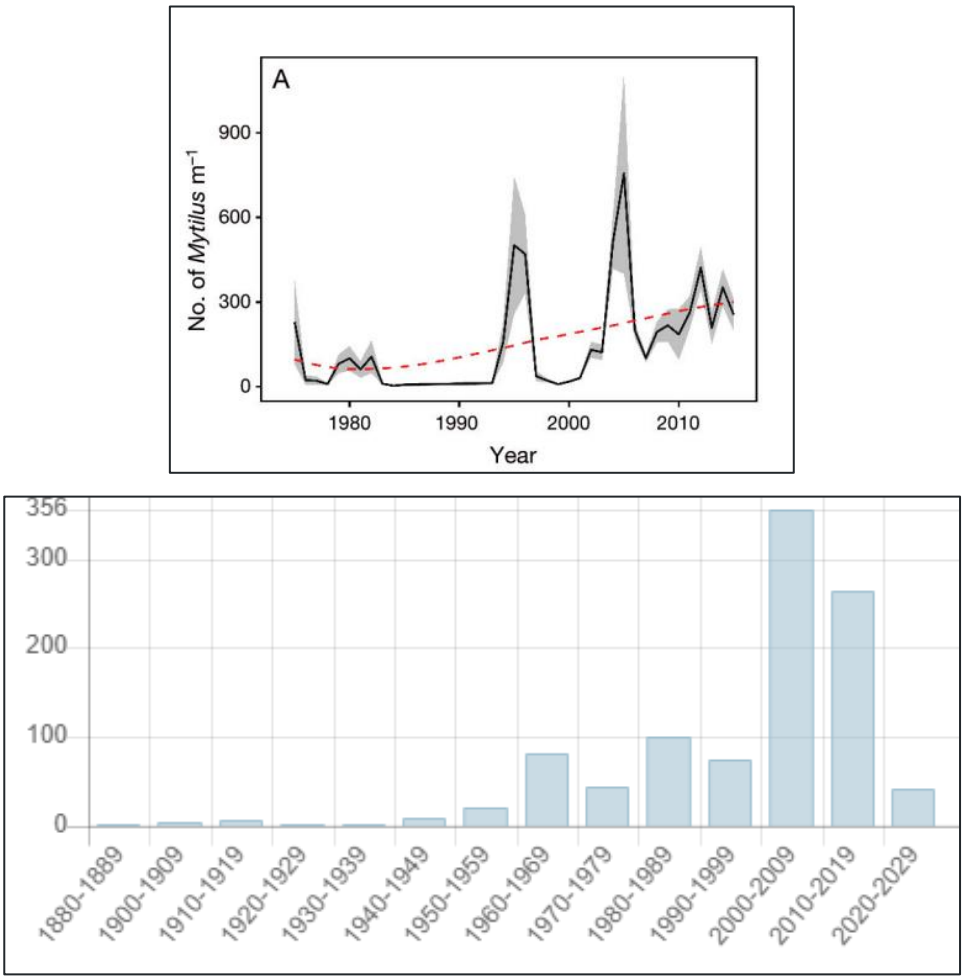

Figure 7. Graph taken from Atalah et al., 2017 indicating boom bust recruitment patters of *Mytilus galloprovincialis* biofouling on mussel farms on the west coast of New Zealand (top), and recorded sightings of *M. galloprovincialis* on shorelines and pilings of south east Australia and New Zealand grouped by decade, taken from the Atlas of Living Australia.

The University of Wollongong study (Borschmann 2022) has shown that there is no significant difference in mussel spatfall around the bay and has now established a baseline for the level of mussel spatfall occurring in Jervis Bay with the current farming regimen. To test if spatfall increases if the proposed modification is approved, NSW DPI will design and coordinate a Spatfall Monitoring Program whereby collectors will be deployed at the same study sites used by Borschmann 2022 within Jervis Bay and with relevant control sites to monitor recruitment each year for two years to see if spatfall changes over time. In the event there is a statistically significant difference (e.g., guided by a two-way ANOVA) in spatfall from baseline records, spat will be collected and compared with farmed stock for genetic analyses. The future of the monitoring program will be reviewed after two years, and future actions considered in consultation with NSW DPHI.

b) Management measures including harvesting practice.

Clarification was sought regarding the management measures including cleaning, and harvesting prior to spawning, the age the mussels are harvested and the regularity of harvest including number of mussels harvested after spawning.

Farm operators have observed less biofouling if the stock is stripped and reseeded onto lines a second time during the duration of the grow-out period, when the mussels are about 30mm in length. This involves removing and "declumping" the mussels in a machine. This tosses the loose mussels around with sea water. The mussels are then reseeded onto the lines and put back into the water for the rest of the duration of the grow-out period.

The mussels are harvested at about 18 months of age when they are about 65-80mm (McAlpine 2023, unpublished thesis). SCM harvest every weekday (except in case of severe weather conditions), and mussel condition is monitored to ensure flesh quality and condition are optimal for harvest (i.e., before spawning). In the University of Newcastle study, mussel condition fluctuated from good to premium quality during the 12-month study period, which didn't necessarily suggest mussels had spawned but rather that mussels grow more slowly in winter which could explain lower condition values (McAlpine 2023, unpublished thesis).

SCM aim to harvest prior to spawning where possible, as per condition of approval (D.4), noting that mussel price is dependent on condition and there is strong economic incentive to harvest before the mussels spawn (when they become unsaleable). It is known that mussels show peak spawning periods during warmer summer months and the recent University of Newcastle study results indicate that condition can be monitored through time which can be used to time harvests prior to an anticipated spawning event. SCM already apply this logic and research to their monitoring techniques and harvest procedure to harvest prior to spawning as best as possible.

In addition to this current practice, if the modification proposal is approved, the NSW DPI Spatfall Monitoring Program outcomes will also be incorporated into SCM annual reporting in relation to compliance with condition D.4 and published online. The future of the monitoring program will be reviewed after two years, and future actions considered in consultation with NSW DPHI.

c) Mussels falling off a truck.

Regarding the report of mussels spilling on to the road, SCM confirmed that this happened once in 2019, where a ratchet released while going around a corner, due to human error. To limit the possibility of this happening again, the team amended the process by checking tie-down twice before starting to drive. SCM log all incidents and accidents in its vessel management system-Seaflux. Any events of this nature in the future can be reported to SCM directly via the complaints and feedback register on the SCM website.

14. Visual impacts

Submissions: Community Stakeholders (9), NSW DPHI

Summary of Issues Raised:

Views of Jervis Bay are highly valued for their pristine, untouched qualities. The proposed modification is thought to impact an area of outstanding natural beauty and negatively impact the tourism appeal and economy.

The community raised concerns about visual pollution from an increase in daily operations of 'barges' and relocation of leases and associated infrastructure (including 'fishing buoys, netting, and structures') closer to Callala Beach. Additionally, there was a claim that an increase in lease area will occupy the entire view corridor from all Callala Beach public access points to the iconic Jervis Bay Heads.

The visual impact assessment done by NSW DPI concluded that visual amenity impacts from the proposed modification would be negligible based on the distance from shore, use of submerged buoys and a low angle of view from beach. However, the modification report did not discuss the visual impact of the buoys (hundreds) that are not submerged. Further, the visual impact risk assessment did not consider the two-metre-high yellow 'navigation buoys' that are highly visible to the naked eye at most times of the day and constantly during the night. It is considered that moving the buoys closer to the beach will only increase their impact despite NSW DPI and SCM's assertions that the impact will be less because they propose to reduce buoy numbers. Other sites within Jervis Bay are considered more suitable for the proposed modification.

NSW DPHI recommends that a more detailed assessment of the potential visual impacts is undertaken, including photos to demonstrate the change in visual impact of the proposed modification (i.e., using a comparative distance to the existing leases) which would inform a revised visual impact assessment including cumulative impacts. It is advised that the Visual Impact Assessment by O'Hanlon Design Pty Ltd 2014 is also considered.

Response

a) Boating traffic

With regard to concerns around increased daily operations of 'barges', this is a misunderstanding. SCM will not be operating a barge. SCM intention is to acquire a second smaller vessel to support operations such as on-farm maintenance, water sampling and seeding mussels. In line with the current approval, acquisition of the second smaller vessel will occur to support current operations, irrespective of if the proposed modifications are approved.

Furthermore, if the proposed modification is approved, SCM will not be required to traverse Jervis Bay to travel to the Vincentia lease, which will decrease the company's movements in Jervis Bay.

b) Surface buoys and farming infrastructure

As stated in the modification report the number of surface buoys will not increase from the currently approved operations. The surface buoys are dark in colour and not visible unless within a few hundred meters of the lease itself. For comparison, O'Hanlon 2014 showed what the surface buoys look like from the shore at 200m away in Twofold Bay. On a calm day, the buoys to the naked eye are small, dark and uniform that sit flush with the horizon. From Callala Beach (approximately 1,250m away from the nearest point from the proposed leases) buoys cannot be seen. O'Hanlon 2014 also determined that viewers on tourist boats travelling toward the open sections of the bay to the southeast are likely to have a very short duration view of the leases in transit at distances around 800-1, 000m.

As requested, new photographs (Figures 8-11) have been provided here to illustrate the anticipated visual impact during daylight hours of the proposed modification. The images show the approximate distance of the current leases (which will largely overlap with the proposed modification location), taken from Callala Beach. These photos have been used to undertake a revised assessment of visual impacts, including cumulative visual impacts. Figure 9 captures a randomly selected day (17 January 2024) showing two dolphin tourism vessels, as seen from Callala Beach. Figures 10-12 show the current view of the corridor (naked eye 55mm focal length), and 2X magnification taken from vantage points on Callala Beach, showing the SCM vessel Blue Revolution working the lease, as captured on 17 and 18 Jan 2024 in clear and cloudy conditions.

As stated in the modification report, if the proposed modification is approved, the surface buoys will meet industry best practice, such that they are dark in colour. No netting is used or will be used if the proposed modification is approved. Other than surface buoys and cardinal markers, all infrastructure including lines and sub-surface buoys is below the surface and not visible from the shore. The buoys pay a critical role in the structural integrity and stability of the aquaculture operations. They keep the culture lines taut to minimise drag, which would otherwise alter water flow and increase risk of engagement and negative interactions with marine fauna.

c) Lit cardinal markers and other buoys.

Regarding concerns about lights on the cardinal markers causing visual pollution at night, the use of lights is unavoidable due to navigational safety requirements in accordance with Section 17 of the *Maritime Safety Act 1998*. However, as stated in the modification report the number of cardinal markers (and therefore lights) will decrease if the proposed modification is approved, from ten markers with a light to six markers with a light. The impact of artificial lights will therefore decrease, further reducing the risk to the visual amenity of Jervis Bay.

Regarding concerns of the 'two-meter-high yellow navigation buoys', this is a misconception. There is one yellow buoy which, as stated in the modification report, is a Water Quality Monitoring Sensor and Weather Buoy deployed by the University of Technology Sydney, and SCM in Jervis Bay in December 2022. The real time weather information is shared with UTS, JBMP, the Department of Defence and other interested stakeholders via publicly available website links. Without the mussel aquaculture in Jervis Bay, these weather buoys (and therefore water quality data) would be removed.

d) Consideration of other sites.

Regarding more suitable locations to move the leases, as mentioned in the modification report, the proposed modification has been considered in accordance with the MWSAS site constraints criteria. The identified area for the proposed modification of Jervis Bay is the only area in Jervis Bay suitable for longline mussel aquaculture. Site constraints such as conservation exclusion zones with the JBMP, Department of Defence operational areas, substrate type, marine heritage items and navigational channels mean that the areas identified are the most suitable within the bay. Any proponent (government or private) wishing to undertake commercial marine aquaculture in any part of NSW marine waters must comply with MWSAS sites constraints criteria.

Jervis Bay is a shared use zone. There are a number of marine based activities and existing infrastructure that impacts on the visual amenity of Jervis Bay. Existing water-based activities including sailing vessels, recreational boats, NSW DPI vessels, Department of Defence and tourism vessels may create visual pollution. Department of Defence activities such as vessels and aircrafts also utilise the bay, as pictured in the EIS (Appendix 4). The activities resulting from the proposed modification, if approved, are therefore not expected to impact the visual amenity of Jervis Bay.

e) Visual Impact Assessment by O'Hanlon Design 2014.

As requested, further assessment has been undertaken with inclusion of additional photos and more detailed regard of the Visual Impact Assessment by O'Hanlon Design Pty Ltd 2014, the methodology and outcomes of which remain relevant to the proposed modification.

O'Hanlon 2014 methodology was based on models developed by the Forest Commission of Victoria and the landscape assessments of the U.S Department of Agriculture. The assessment provided a landscape assessment, scenic quality assessment, and a visual impact assessment and summary of the proposed development. The assessment concluded that the impacts of the (now approved) activities would be sufficiently low to satisfy the majority of viewers and that scenic quality is not significantly diminished. Some mitigation measures were recommended (and adopted by SCM), including use of darker coloured buoys, minimal number of buoys and balancing floatation levels. Viewers around Vincentia beaches and Plantation Point rock platform would have had views that were moderately impacted, and more elevated public places and residences would have varied from minimal to moderate impacts. As the proposed modification would move the Vincentia lease to the Callala Beach area, moderate visual impacts to Vincentia and Plantation Point rock platform viewpoints would no longer be a risk.

Figure 8. Eco1 Jervis Bay Wild Dolphin Tour boat northwest of the lease AL15/001 (marked in yellow). Teakin2 & Port Venture viewing dolphins south of lease AL15/002 (marked in red).

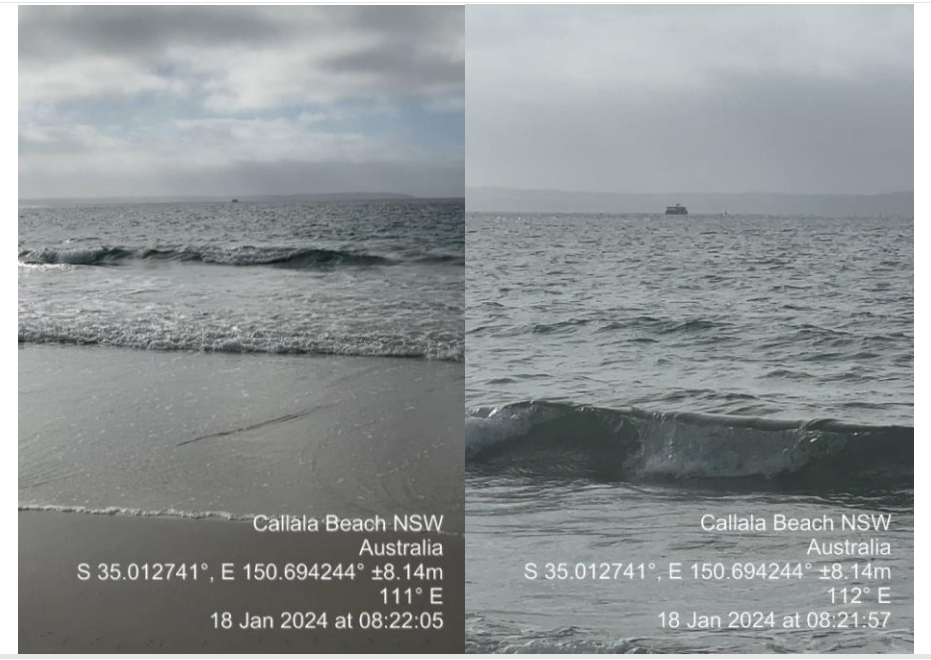

Figure 9.Blue Revolution in operation at marine leases approximately 1,300m offshore, as seen from the naked eye (left) and at x2 magnification (right).

Figure 10.: Blue Revolution in operation at marine leases approximately 1,300m offshore, as seen from the naked eye 55mm focal length.

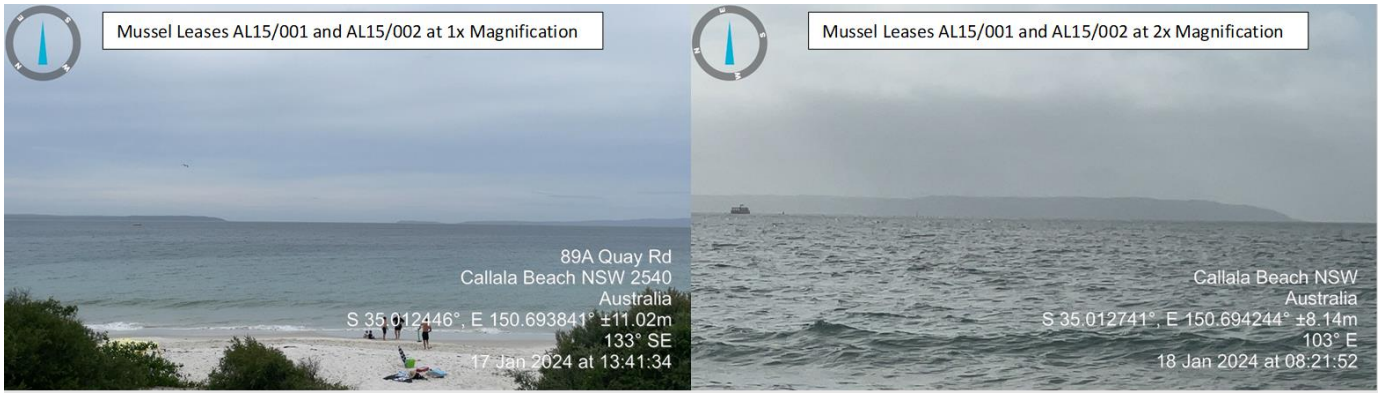

Figure 11.Blue Revolution in operation at marine leases approximately 1,300m offshore, as seen from the naked eye 1x magnification, and 2x magnification.

15. Noise

Submissions: Community Stakeholders (1), NSW DPHI, EHG

Summary of Issues Raised

Concerns were raised that insufficient evidence was provided to support the conclusions around noise impacts. The recommendation was that further assessment of noise during construction and operations is required.

Consideration should also be given to noise impacts on marine fauna, and that noise impacts should be quantified where possible.

Response

The EIS provided a detailed assessment of potential noise and its impacts generated during construction and operations. SCM have addressed noise issues in their Construction and Deployment Plan and Traffic Management Plan (CDTMP; Appendix 10), in accordance with approval condition C.1. There have been no registered complaints from the community regarding noise generated at the land base or on the leases.

The EIS noise impact assessment was informed by the DCCEEW Interim Construction Noise Guidelines 2009. The assessment outcome determined that the impact of noise generated from the construction, pre-deployment, deployment of the longline infrastructure and on-water operations was considered to be low when considered in context with the proposed location. In accordance with the Interim Construction Noise Guidelines 2009, a qualitative assessment method was appropriate as the construction and deployment works are short-term, and not likely to affect an individual or sensitive land use for more than three weeks in total; and mitigation measures (for example use of noise control devices and community notification) are consistent with qualitative methods in these Guidelines. Operation works, while not short term, are not likely to affect an individual or sensitive land use (further details provided below).

Construction and pre-deployment activities are undertaken at the existing land base site in an industrial zone. If the proposed modification is approved, these activities will continue to be undertaken at the land base, and in accordance with these best practice management strategies. There will be no increase in the level of construction and pre-deployment works being undertaken and therefore the impacts of noise generated by construction and pre-deployment activities to the community are considered to remain low.

Industry best practice to minimise the impacts of construction and pre-deployment noise include: the use of well-maintained sound suppression devices (e.g., barriers, baffles and mufflers); ensuring machinery and vehicles are regularly maintained; maintaining good communication between the community and project staff; minimising the operation of site machinery and vessels during early morning and early evening where practicable and operating during weekdays except for emergency responses; routine maintenance of the vessels including chandlery, pumps, motors and filters, cleaning equipment, winches and routine services of bushings, bearings and mechanical components of winches, cleaning machines, pumps and engines and hydraulic equipment.

During the construction and deployment of the mussel farm off Callala Beach in 2019, and during ongoing maintenance and harvesting operations to date, the noise impact assessment to communities and other waterway users was considered low due to the context of the operating environment and the mitigation strategies used by SCM. Jervis Bay is used by a range of vessels from small tinnies to commercial tourist vessels and large Naval vessels including helicopters.

The CDTMP provides an expected timeframe for construction and deployment activities (to be approved by DPHI one month prior to deployment activities). The installation of screw anchors and backbone lines and buoys takes about 21 days per lease over a series of months, to fit in with harvest schedules. If the proposed modification is approved, the timeline for the installation of screw anchors, and relocation and deployment of backbones lines and buoys will be provided in an updated CDTMP.

To install screw anchors either the same vessel will be used, and/or a second vessel specific for this purpose will be acquired. The installation of screw anchors requires the use of a hydraulic rig drill. The use of hydraulic units, as opposed to diesel or pneumatic units, is an acceptable and quieter mitigation strategy for controlling noise at the source as per the DCCEEW Interim Construction Noise Guidelines 2009.

The EIS provided a noise assessment study summary which used an online modelling program to calculate the damping of sound level with distance from five residential areas in Jervis Bay. The loudest noise in this assessment was generated by the outboard motors at 84 dB, which was equivalent to 8.6 dB and 14.4 dB at Callala Beach respectively from the closest lease at Callala Bay

(north lease). This noise level was considered to be 'difficult to hear' from the nearby beaches. The screw anchor hydraulic drill emits about 110 decibels during the 50 minutes it takes to install one anchor.

Other noise mitigation strategies used on the vessels during deployment and on-farm operations include: use of rubber marring or an equivalent noise insulating material to reduce noise generated from work implements and infrastructure striking surfaces; lifting and work equipment is secured while not in use; insulating the power unit (hydraulic pumps and diesel motor); mounting the power unit of anti-vibration mounts to reduce transmission of noise and vibration through the hull of the boat and using transit routes to and from the leases set at least 400 m from the foreshore where possible. Workers are made aware that sound travels across water and that every effort should be made to minimise noise.

In conclusion, if the proposed modification is approved, deployment including screw anchor installation and operating on the leases is not going to increase noise impacts to nearby communities since the leases will still be over 1km to the nearest shoreline and existing noise mitigation practices will remain in place in accordance with CDTMP.

With regard to impacts on dolphins and cetaceans, the impact remains to be considered low. Noise mitigation described above, when paired with an operating exclusion distance of a 50 - 300m from dolphins and cetaceans depending on the species has a low risk on behavioural effects and masking will be low for such scenarios (Arranz et al., 2021). Whales migrate north past Jervis Bay between May and July each year, however these occurrences are infrequent and predominantly outside of Jervis Bay. Southern migration occurs between August and November, with studies determining through an extensive reporting period, the majority of within-bay observations occurred during the late-season migration period of October and November (Bruce 2014). No whale sightings/interactions have been reported by SCM on the lease area in their Marine Fauna Interaction Plan.

As per SCM Marine Fauna Interaction Plan, a nominated observer must be present during all vessel movements and SCM activities to minimise the risk of vessel strikes and navigational issues, as well as monitor marine fauna interactions. Particular attention will be given to dolphins and the movements of threatened and protected species, migratory species (e.g., Humpback and Southern Right whales) and light sensitive species (when conducting night work if necessary), as well as any vessel strike events, behavioural changes, entanglements, and predatory interactions. An observer will be particularly important during the deployment of the mussel lines and construction works. Appropriate distances from marine fauna where practicable will be maintained by service vessels when in transit. As per the Marine Fauna Interaction Plan, observer protocol will be upheld, and may be reviewed if required. NSW Environment and Heritage Group (NSW EHG) will be consulted during any revision.

16. Coastal processes and climate change

Submissions: NSW DPHI

Summary of Issues Raised:

The modification report indicated that the risk of climate change to the proposed modification has changed since the original approval.

This statement is not clear. The recommendation is that additional information is required to clarify the conclusions made regarding the risk of climate change to the proposed modification.

Response

There was a typographical error in the modification report which has been corrected. It should have said “The risk of climate change to the proposed modification has therefore *not* changed since the original approval”. This is consistent with the risk assessment summary of outcomes presented in Table 3 of the modification report.

The risk of climate change stressors on the aquaculture activities if the proposed modification is approved was assessed and compared to the risk assessment done in the EIS for the existing approved activity. Environmental stressors related to climate change, for example, increased water temperatures and increased frequency of storms or cyclones was considered. As stated in the modification report, the outcome of an independent audit undertaken in 2022 by Molino Stewart (available on SCM website) concluded that the risk of climate change significantly impacting the operation of the proposed modifications was assessed to be low when considered in context with the characteristics of Jervis Bay (good flushing rate), the relatively broad temperature and salinity tolerances of the proposed species, the ability of the proposed species to adapt to climatic changes, the availability of controlled hatchery facilities and the use of existing longline technologies (i.e. screw anchor technology) that have been proven to withstand cyclonic conditions. Screw anchors used by SCM, for example, can achieve holding capacity of at least 25 tonnes per anchor.

The risk status, therefore, did not change, it remained low.

17. Water quality, circulation, deposition, and benthic ecosystems

Submissions: Community Stakeholders (8), NSW DPHI

Summary of Issues Raised:

Concerns were raised about the broader ecological implications of the mussel aquaculture in Jervis Bay, including on the benthic environment, water quality, and water circulation. Submissions made referred to research which has suggested that mussel farming may have negative impacts on benthic habitats if increased mussel biofouling on the subtidal surfaces and benthic floor coming from farm recruitment, can form monocultures leading to reduced benthic biodiversity.

The existing approved Water Quality and Benthic Monitoring Program (WQBMP) provides details of six control sites that are used as part of the SCM monitoring program, but it is not clear from the modification report if these sites will be continued to be monitored if the proposed modification is approved. Clarification regarding the use of trigger values and 'significant' differences between observations made prior to and after farming began was requested.

There were concerns about significant differences in fish assemblages between surveys undertaken prior to and after farming began, however, due to the limited understanding of fish assemblages in the area there remain unknown reasons for these differences.

Questions about the impacts on the carrying capacity of Jervis Bay were also raised.

The recommendations are that; independent research on the potential impacts of mussel farming on benthic ecosystems and water quality be undertaken, including the requirement to clarify if the existing control sites would continue to be used if the proposed modification is approved. It was also recommended that trigger levels are incorporated into the benthic monitoring program and a management plan in place if trigger values are exceeded. Also, that the potential impacts of the proposed modification on waves, currents and associated environmental processes should be part of ongoing environmental management and monitoring programs.

Response

a) Water Quality and Benthic Monitoring Program

I. Benthic monitoring

As stated in the modification report, condition D.12 of the approval is that SCM undertake an independent benthic monitoring program and annual reporting for a minimum of three years from the commencement of operations. The WQBMP (Appendix 6) has addressed this condition, with independent assessments undertaken by the University of Newcastle.

The WQBMP includes a baseline survey that was undertaken in 2019 prior to infrastructure being installed, followed by sampling in 2020 and 2022 (i.e., after operations and mussel stocking began). Sampling was planned for 2021 but COVID restricted this. Sampling occurred during winter. The survey included the Vincentia lease area, which historically had raft mussel aquaculture from a previous operator, that ceased in 2008.

Sediment was sampled from within each lease, and from two control sites within 500m of each lease (a total of nine sample sites) before infrastructure was installed and at the same time each year for

two years after farming began. Six sediment grab samples were collected at each sampling location and at each time.

Parameters included sediment composition (grain size and percentage mud), percent Total Organic Carbon (TOC), macrofaunal assemblages and fish assemblages. Finer grain size (i.e., mud) is possibly an indicator of free sulphide generated by microbes and may trigger the need for free sulphide analyses.

TOC and sediment composition were analysed using a two-way Analysis of Variance (ANOVA) that factored Time and Site into the design, with the understanding that a minimum number of samples (replicates) were obtained at each Site for each Time (n=6). 'Variance' is a mathematical term that encompasses the differences between the means of a group of samples with that of the mean of each individual sample in that group, taking into account the number of samples. A two-way ANOVA, testing for Time and Site, uses an F-test for statistical significance. The F-test is a groupwise comparison test, which compares the variance of each group mean (for example the TOC in sediment samples at Time 1, Time 2, Time 3) to the overall variance in the dependent variable (for example the TOC across all samples across all Times). And likewise, the test would do the same comparison of variances between Sites (i.e., sites with farming and control sites with no farming). If the variance within groups is smaller than the variance between groups, the F-test will find a higher F value, and therefore a higher likelihood that the difference observed is real and not due to chance. A 'real' difference would be considered a significant difference and, in this case, trigger the need for further analyses, including benthic invertebrate assemblages.

Prior to the installation of infrastructure, the baseline TOC was determined to be 0.068 (i.e., the average of six sediment samples taken from each of the nine sites). After installation of infrastructure and farming began, the TOC was not significantly different between baseline and post-farming samples measured across the nine sites in 2020 and 2022. TOC was significantly higher at the only site in Vincentia where farming has not begun. Mean sediment grain size did not differ significantly between the baseline and after farming began. However significantly more mud was detected in the baseline survey compared to 2022 (i.e., post farming).

There was no requirement to analyse benthic invertebrate assemblages because there were no significant differences in TOC or sediment composition between sites or time. The reason being that monitoring programs are designed to avoid unnecessary analyses but must include caveats for additional investigations if trigger levels are exceeded. The samples of benthic invertebrates have been stored as reference material. If an increase or significant difference in TOC or sediment composition were detected between farms and nonfarmed sites and / or through time in any site, this would be the trigger to undertake further benthic assemblage sampling, assessment, and management. Management responses could include, for example, fallowing lines for certain periods.

In addition to sediment grab samples, qualitative ROV footage was taken at the sample sites. This footage is used to monitor for changes in floral and faunal assemblages that are indicative of impact and can detect changes that would implement management strategies before significant impacts occur.

If the proposed modification is approved, the intention is for the benthic monitoring program (including annual reporting) to continue. Benthic sampling will be reinstated once the third lease is in operation, and existing trigger values will continue to be used. As per the current program, benthic assemblages will be surveyed only if trigger values are met (i.e., where water quality values described below, sediment composition or TOC differs significantly from baseline). Additional

management actions (e.g., a reduction in stocking density or fallowing schedule) will be implemented if benthic assemblages are impacted. Management actions will be built into the WQBMP (Appendix 6).

With respect to clarification on the number of control sites, the six current control sites are shown in Figure 12. Control sites must be at least 500m away from the leases. Therefore, three of the six current control monitoring sites will continue to be used (sites 1, 2, and 4). Control site 3 will need to be moved about 260m north-west to accommodate a 500m buffer from AL15/003. Control sites 5 and 6 in Vincentia will also be moved closer to the relocated leases in Callala Bay. The exact location of the three control sites to be moved (3, 5 and 6) will be determined by NSW DPI based on ROV footage to ensure samples are being collected from sandy substrates. Once locations are finalised, the six control sites will continue to be used in the WQBMP.

Monitoring sites within each of the different lease areas will be identified for comparative sampling (e.g., a new monitoring site under AL15/003) while the monitoring sites at Vincentia will be dropped. There will remain a total of three monitoring sites, one for each lease.

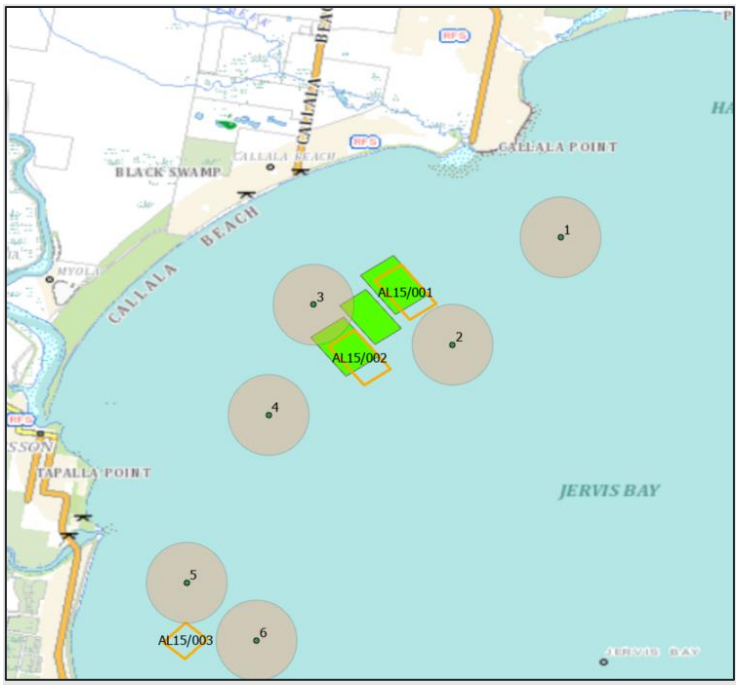

Figure 12. Existing (Orange polygon) and proposed (green polygon) leases, showing six benthic monitoring and water quality control monitoring sampling sites and 500m buffer. Control sites 1, 2, and 4 will remain in the current location. Control site 3 would need to be moved about 260m northwest. Control sites 5 and 6 would be moved from Vincentia to suitable areas in Callala Bay.

II. Water quality monitoring

As part of the WQBMP described above, water quality parameters are also measured in control sites and within lease areas. Water parameters are measured at the surface and at depth at the approximate centre location of each study site. Depth ranges from the shallowest in Vincentia Lease (8.2m), to the deepest at Callala North Control site (14.8m). Parameters included are temperature, salinity, pH, turbidity and dissolved oxygen (Appendix 6).

As with the benthic survey, there was no significant difference in water quality parameters between farmed and non-farmed sites, or between before and after farming began.

As with the benthic monitoring, if the proposed modification is approved, the intention is for the water quality monitoring program (including annual reporting) to continue. Water quality sampling will be reinstated once the third lease is in operation, and existing trigger values will continue to be used. As per the current program, benthic assemblages will be surveyed only if trigger values are met (i.e., where water quality values, sediment composition or TOC differs significantly from baseline). Additional management actions (e.g., a reduction in stocking density or fallowing schedule) will be implemented if benthic assemblages are impacted. Management actions will be built into the WQBMP (Appendix 6).

Additionally, as discussed in Section 5, a 1.7m wide Xylem Water Quality Monitoring Sensor-Weather Buoy was deployed in Jervis Bay (December 2022) and Twofold Bay (March 2023). These buoys monitor salinity, pH, temperature, dissolved oxygen, turbidity, conductivity, chlorophyll, and phycoerythrin. The buoys monitor water at 1 and 3 meters depth. Public access to the live-time data is available via these links Jervis Bay Weather Buoy and Twofold Bay Weather Buoy.

b) Water circulation

With regard to potential impacts on waves, currents and associated environmental impacts, the Molino and Stewart 2022 independent audit determined that actual impacts are considered to be in line with predicted impacts. There have been no reported issues with coastal processes or water flow. If the proposed modification were to be approved, and therefore an increase in the number of mussel lines deployed the potential impacts to water flow are considered to remain low as the lines would never all be stocked with mussels at any one point in time. The cyclical nature of harvest cycles results in a portion of lines being fallow at any point in time.

Water movements can also be monitored by the Xylem Water Quality Monitoring Sensor- Weather Buoy in the Jervis Bay deployed on SCM leases in December 2022 which measures water velocity and water direction (Figure 13).

If the proposed modification was approved, the weather buoy could be repositioned to the northern most section of the leases. Due to the clockwise direction of prevailing currents in Jervis Bay, if water flow were to be impacted by the proposed modification, it is anticipated that it would be most noticeable at the northern most corner.

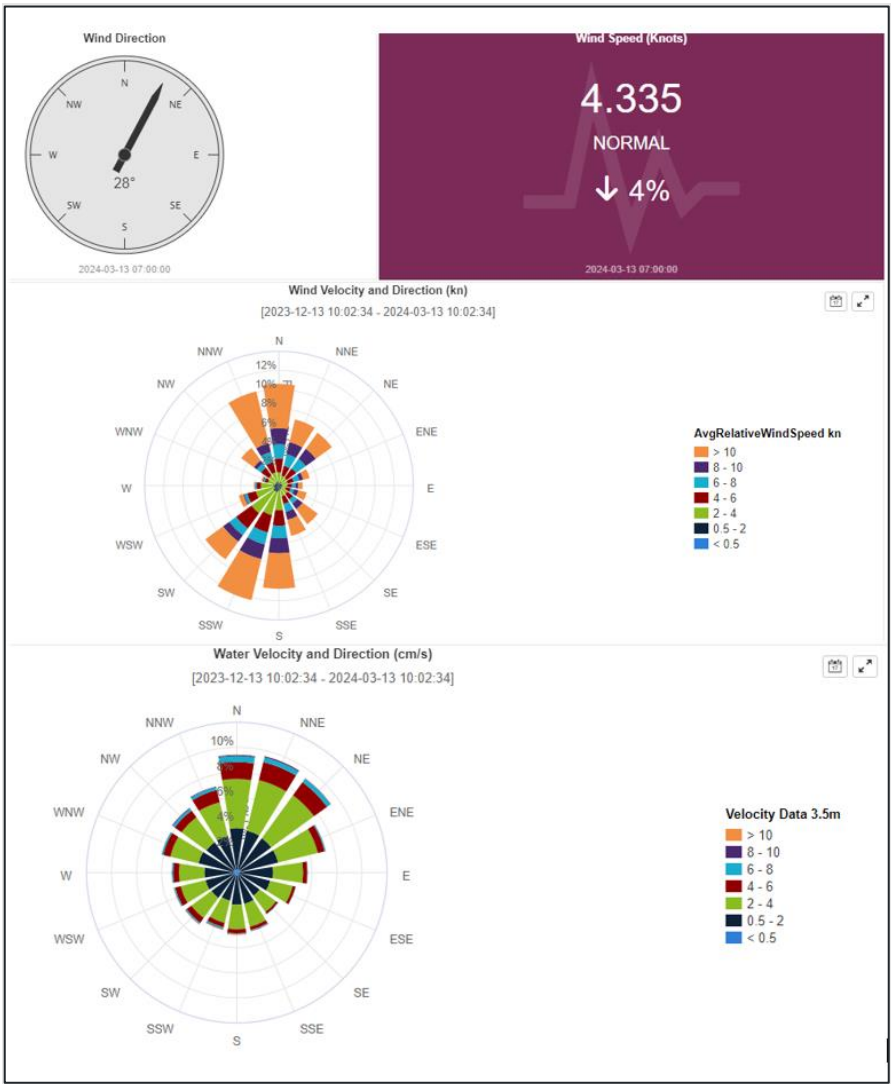

Figure 13. A snapshot of some of the data (wind direction, wind velocity and distance and water velocity and direction) collected by the Xylem Weather Buoy.

a) Fish assemblages

Regarding concerns about the impacts of the farm on fish assemblages, baited remote underwater video systems (BRUVS) and ROV footage was used to monitor fish assemblages as part of the WQBMP. Multivariate analyses showed that differences in fish assemblages were found between sites prior to and after farming began, but these may not be biologically significant, as there is still a limited understanding of the fish assemblages in the study area.

It is noteworthy that fish assemblages at the site at which mussels were stocked did not differ significantly to the fish assemblages at any other site in the study area including Vincentia.

If the proposed modification is approved, as stated above the WQBMP will continue, which include ROV footage of the sample sites.

b) Carrying capacity

With regard to carrying capacity of Jervis Bay, complex models including hydrodynamics, phytoplankton abundance, light intensity and mussel energetics (for instance filtration capacity) have been used. Joyce et al., 2010 calculated that the optimal ecological carrying capacity for

shellfish in Jervis Bay based on the resident time (time it takes to flush Jervis Bay) is between 53,280 - 146, 600 mussels/ha. The commercial stocking rate for mussels on grow out lines is usually 200 to 400 mussels/m of rope (EIS). SCM harvest schedule ensures that this density is well within the suggested carrying capacity range.

As also stated in the EIS, to ensure that the commercial aquaculture leases have a minimal impact, the leases are separated from each other, appropriate culture techniques are implemented (including biofouling removal) and the water quality and benthic environment will be monitored regularly. The current WQBMP indicates there has been no impact of the faming activities on sediment composition and water quality which includes measures of phytoplankton. These metrics can be used as indicators of carrying capacity (Grant et al., 2007).

Furthermore, an indicator of phytoplankton depletion (and therefore impacts on carrying capacity) is restricted mussel growth (Grant et al., 2007). If mussel growth was declining/reduced SCM would quickly detect this and implement management strategies.

c) Broader environmental considerations

Some research has suggested that mussel aquaculture may have negative impacts on the environment. As raised in the responses, a recent thesis by researchers at the University of Wollongong (Borschmann 2022) suggested a higher mean abundance of mussel recruits on foreshore sites closer to the mussel leases of Callala Beach than in sites further away from the leases. However, this finding was not statistically significant. More detailed information about biofouling and spatfall is provided in Section 13.

Several studies provide evidence of the positive environmental impacts that shellfish farming can have on surrounding environments. Being filter feeders, shellfish reduce turbidity and increase light penetration, thereby enhancing the benthic productivity of important habitats like seagrass (Sharma et al., 2016; Smyth et al., 2018; Wall et al., 2008), which in turn improves water quality (by reducing the availability of nutrients for phytoplankton) and provides food and habitat for many species (Filippini et al., 2022). Additionally, shellfish aquaculture, through habitat provision for juvenile fish and substitutability of aquaculture-produced seafood products, can combat excess fishing pressure (Theuerkauf et al., 2019). These ecosystem services provided by filter feeding bivalves provide the impetus for the extensive and costly efforts underway in NSW and elsewhere to restore our bivalve reefs.

Mussels remove between 275-581 kg of nitrogen per hectare in a year (Barrett et al., 2022). A recent report estimated the economic value of nutrient removal by shellfish aquaculture in NSW to be $5.6 million ($400,000 of this attributable to current mussel faming in Jervis Bay and Twofold Bay). Eutrophication of coastal waters is a serious environmental problem with high costs for society globally. Effects of excess loading of nutrients to the marine environment can be mitigated by mussel farms (Lindahl et al., 2005; Rose et al., 2015; Petersen et al., 2016).

Aquaculture gear and the organisms cultivated on and within them can provide three-dimensional structured habitat that can benefit fish and invertebrates. Farms can provide refugia for juvenile fish and invertebrates, functioning in a similar way to natural nursery grounds (Costa-Pierce and Bridger, 2002; Barrett et al., 2019, The Nature Conservancy 2021).

SCM are working with The Nature Conservancy (TNC) to contribute to research of restorative aquaculture, including conservation and restoration of ecosystem services, and environmental impacts/benefits of mussel aquaculture. TNC has deployed mussel and oyster seed in 13 locations

around Australia (not in Jervis Bay) to restore these shellfish reefs and the ecosystem services that they provide (Figure 14, TNC, 2022).

Within Australasia, declines in reefs formed by the Australian blue mussel (*Mytilus planulatus/galloprovincialis*) in Australia, and the green-lipped mussel (*Perna canaliculus*) in New Zealand, have motivated recent restoration projects (Alder et al., 2021; Gillies et al., 2015; The Nature Conservancy Australia, 2018; Wilcox et al., 2017, 2019).

Studies of the effects of mussel restorative activities, found that 'overall, mussel clump size has increased over time, creating large patches with a variety of epibiota. Mussels, when aggregated in beds, are ecosystem engineers, creating habitat, which increases habitat heterogeneity and diversity' (Jones et al., 1995). This effect has the potential to increase species richness through the provision of substrata for colonisation (Borthagaray & Carranza, 2007) and provide refuges from predation, nursery areas (Díaz et al., 2015) and can become an important food provision for benthic communities (Freire & González-Gurriarán, 1995). The mussel cover also contributes to the sequestration of carbon by 'locking' carbon into the seabed; an important regulating ecosystem service in the drive to mitigate climate change (van der Schatte Olivier et al., 2018; Bridger et al., 2022).

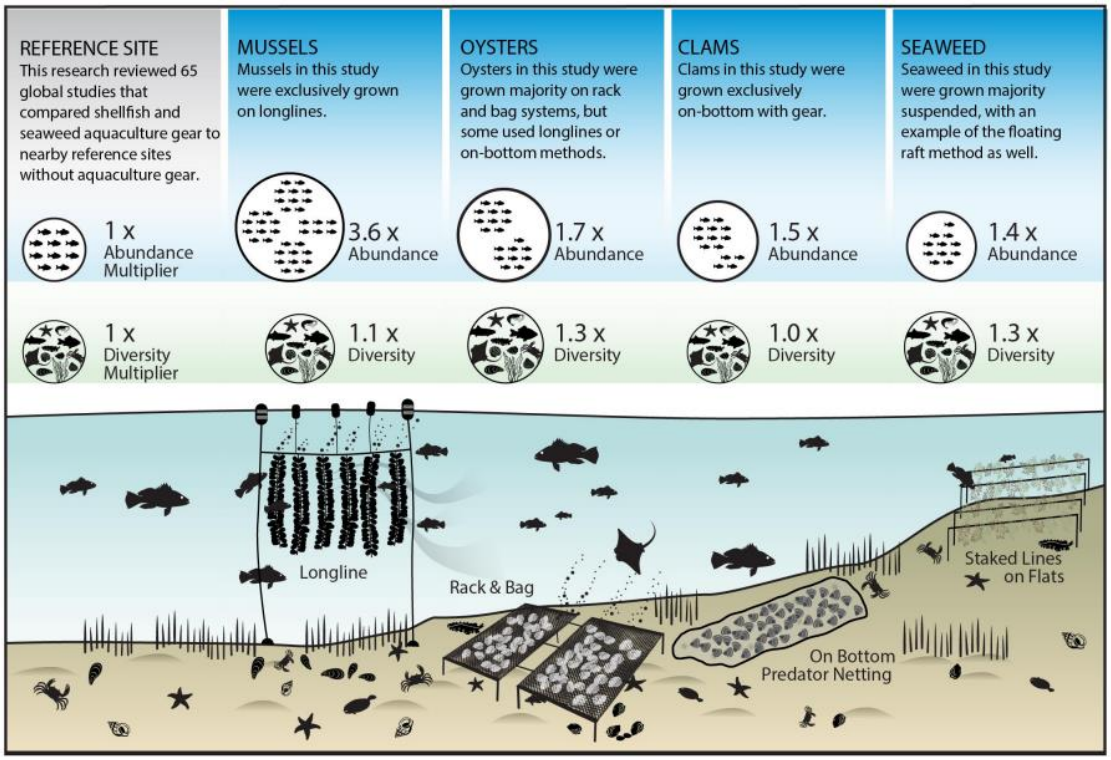

Figure 14. From The Nature Conservancy 2022, 'Monitoring for restorative aquaculture', showing the abundance and diversity of organisms associated with mussel longline systems.

d) Best Aquaculture Practices certification

SCM is the first, and one of only two Australian mussel farms to be Best Aquaculture Practices (BAP) certified (Figure 15). BAP certification means that SCM is independently assessed to be demonstrating the highest international standards of environmental responsibility, social accountability, animal health and welfare and food safety. BAP standards are endorsed by the Global Food Safety Initiative and the Global Sustainable Seafood Initiative. BAP certifiers must be

accredited to the current version of the ISO/IEC 17065 standard with an accreditation body and must also be a member firm with the Association of Professional Social Compliance Auditors.

BAP certification requires adherence to eight standards for environmental best practice, including sediment monitoring and management practices conducted using methods that conform to accepted international standards.

The sediment monitoring program methodology used in Jervis Bay is consistent for all marine aquaculture operations in NSW for both intensive (feeding) and extensive (no-feeding) farms including those operations located within Marine Parks. This monitoring approach is also consistent with international best practice and has resulted in BAP certification for SCM.

If the proposed modification is approved, SCM will review and maintain BAP certification.


NSF

Best Aquaculture Practices

ANSI ACCREDITED
ISO/IEC 17065
Product Certification Body
#1181

South Coast Mariculture

Shed 5, 6 Bolton Road
Huskisson, New South Wales 2540 Australia

was evaluated by NSF Certification, LLC
and found to meet the requirements of
Best Aquaculture Practices (BAP)

Mollusk Farm Standard

Version 1, May 2016

Product Species: Mytilus galloprovincialis

Facility #: F12026

Registration #: NSF SF 21565

Announced Evaluation Date: 26 - 27 July 2021

Certificate Issue Date: 26 August 2021

Certificate Expiration Date: 26 August 2022

Sarah Krol

NSF Certification, LLC
789 N. Dixboro Road
Ann Arbor, Michigan 48105 USA
www.nsf.org

Certificate not valid unless the facility is listed on BAP website. This certificate was executed in accordance to the requirements of ISO/IEC 17065 and is issued after initial assessment and is validated through periodic assessment. This certificate remains the property of NSF Certification, LLC and must be returned immediately upon request. 12249-11.

Figure 15. Best Aquaculture Practices (BAP) certificate issued to SCM.

18. Community relations

Submissions: Community Stakeholders (3)

Summary of Issues Raised:

There were concerns that the 'lessees' commitment to regular updates since lease inception have not occurred. Furthermore, there haven't been upgrades to the boat ramps at Myola or Currambene Creek. The proposed modification is viewed by some as a 'punishment' for government agency mistakes and that the area has suffered from aquaculture with no benefit in return.

Response

SCM have met the requirements of conditions of approval to keep the community informed.

As per condition E.5 of approval, SCM prepared and implemented a Community Stakeholder Plan, available on the SCM website. The Community Stakeholder Plan must identify all relevant

community and other stakeholders, details of procedures and mechanisms used to inform the community, processes to receive and manage feedback and complaints and 24-hour contact details. Furthermore, condition E.6 requires that within two years of the date of approval, SCM must submit a report to the Secretary demonstrating that they have actively attempted to work with local businesses, community groups, local aboriginal communities, or other local bodies to incorporate regional tourism and local employment and/or training opportunities into the farming activities.

SCM have met all these requirements, as indicated in an independent audit (Molino Stewart 2022). SCM keep the community informed via Jervis Bay Mussels Facebook and Instagram pages which are regularly updated. SCM attend meetings with the local rate papers and provide annual reports. Meeting examples, photos, and annual reports are available on the SCM website. SCM have also participated in community beach clean ups at Callala Beach and at the local boat ramps, the most recent being Tide to Tip in early 2024. On 3/3/22, a local TV media outlet ran a story on SCM and its operations within the area which included interviews with SCM employees.

Regarding upgrades to boat ramps, Council oversees management of all boat ramps in their LGA and is out of the scope of the modification application. However, and as stated in the modification report Woollamia boat ramp is located about 1 km from Woollamia Industrial Estate where SCM land base is. This boat ramp provides users access to Jervis Bay via Currambene Creek. SCM does not use the boat ramp, only the wharf. The boat ramp has two lanes, wharf facilities on both sides and a parking area with over 40 formal parking bays. The ramp is currently used by both commercial and private vessel operators with peak usage during summer. Since 2014 when the original EIS was written, there have been upgrades to the boat ramp, car parking and wharf/jetty areas increasing the space and area for commercial and recreational boat users which has assisted in mitigating potential user conflicts. SCM do not use any boat ramps to access Jervis Bay.

Regarding purported lack of benefits to the community of the mussel farm, 35 full time and 17 part time jobs have been created by the farm in Jervis Bay and a retail shop front in the Woollamia Industrial Estate since it began. The modification report outlines the list of community events and charities SCM has been involved in since operations began, including several food and wine festivals, beach clean ups, and sponsorships and support to charity organisations. In addition, the mussel farm has installed and managed a weather buoy which provides real time publicly available water quality data from Jervis Bay. Without the farming operations this data would probably not be collected or available. The leases provide a popular diving and recreational fishing site, and fishers can tie up to lease buoys while fishing. The benefits of the mussel farm are therefore broad and SCM has committed to maintaining their involvement with charities, clean ups and local events going forward.

SCM will update their Community Stakeholder Communications Management Plan (version 4), to reflect any new engagements opportunities, events, charities, and communications with stakeholders in Jervis Bay

19. Navigation and interactions with other waterway users

Submissions: Community Stakeholders (4), TfNSW

Summary of Issues Raised:

Concerns were raised about the potential navigational issues that might arise if the leases are to be moved and expanded, including permanent loss of access to highly valued public assets, and

increased risks to vulnerable species and Marine Park's capacity to manage such risks. One suggestion was to move the existing leases out of the Defence safety trace, but without expanding.

In the existing area the leases are interfering with the Jervis Bay Cruising Yacht Club racing courses, although the original EIS claimed no interference would occur. If the farms are moved a further 250-350m closer to Callala Beach, this would make it more difficult to negotiate a number of our set sailing courses. This is because a lease between the two existing leases at Callala Beach will effectively cut the bay in half between Callala Bay and Huskisson. This means sail boats will have to go a significant distance further when traversing between moorings in Currambene Creek and the Club house in Callala Bay.

Response

If the proposed modification is approved, SCM would continue to implement measures for safe navigation and interaction with other waterway users. SCM would communicate with other waterway users and update information about general boating rules in the vicinity of the aquaculture leases. Additionally, SCM must notify the Australian Hydrographic Office and NSW TfNSW of the lease coordinates, ensuring that a 'Notice to Mariners' is issued and official charts and maps are amended. These are publicly available reports.

Under condition E.8, SCM maintains a 24-hour emergency, 7 days a week hotline 1300 330 910 to report all emergency events including navigational incidents and break aways of navigational markers. This hotline, and SCM publicly available complaints register, can also be used to report issues of marine fauna entanglement emergencies. SCM will also update their Marine Fauna Interaction Management Plan (condition D.9) to ensure that is includes the change lease area if the proposed modification is approved.

The leases, both existing and proposed, are non-exclusive areas, meaning that other water users are free to access and use the lease area, as long as they don't interfere with any infrastructure or operations. The proposed modification would provide for a 50m corridor between each lease. The current leases are compliant under the IALA Buoyage system, and as stated in the modification report, would continue to be compliant under this system. The SCM website also provides information regarding how to tie up to the leases correctly and safely for fishing and diving, to support other water users.

A concern was raised by the Jervis Bay Cruising Yacht Club (JBCYC) that the leases would be 250-350m closer to Callala Beach than they already are, and that this would make it more difficult to negotiate a number of our set sailing courses. This is on the assumption that a lease between the two existing leases at Callala Beach will effectively cut the bay in half between Callala Bay and Huskisson. This means sail boats will have to go a significant distance further when traversing between moorings in Currambene Creek and the Club house in Callala Bay. This is a misunderstanding. The leases would be no closer than 210m to Callala Beach. If the proposed modification is approved there would be at least 1,370m between the leases and the shore for safe navigation of powered or sailing vessels.

The JBCYC racecourses are mapped and available online. The maps include the current mussel lease sites. Furthermore, no map indicates that there is insufficient space to traverse the northern side of the leases (i.e., in between the leases and Callala Beach). From the scale bar provided in the course maps it appears that approximately 1 nautical mile is available to traverse between the leases and

Callala Beach at present. Moving the leases up to 210m toward the beach is equivalent of a 0.1 nautical mile. The proposed modification therefore does not appear to impact these racing courses adversely, or the traversing route between Currambene Creek and the club house in Callala Bay.

20. Entanglement and ingestion of marine debris by marine fauna

Submissions: Community Stakeholders (3), EHG

Summary of Issues Raised:

Concerns were raised about the lack of evidence provided in relation to the entanglement or death of large fauna (a photograph of a seemingly dead whale was included in the submission). Also, that no data has been presented for the monitoring that has been undertaken.

EHG recommends that SCMs Marine Fauna Interaction Management Plan is updated, with advice from the Marine Fauna Interaction Committee, to reflect changes in the protocols for marine fauna entanglement and carcass disposals since the management plan was developed. For example, where possible, as part of a process for managing marine wildlife carcasses, appropriate representatives of the local Aboriginal community (LALC, Elders, etc.) should be offered the opportunity to express and practice relevant cultural or spiritual protocols. The updated plan could adopt new technologies, i.e., remote underwater cameras/videos which would provide valuable sightings / data.

Response

As stated in the Modification Report, there have been no marine fauna entanglements reported since operations began in 2019 (annual reports are available on SCM website). One turtle was seen traversing the Callala Beach lease. Of note, there have been no reports of marine entanglement in any of SCM leases in Jervis or Twofold bays.

Reporting protocols for marine fauna `are mandatory and in place. Under approval conditions, SCM have a Marine Fauna Interaction Management Plan in place (D.9) which must include procedures for recording all observations of marine fauna interactions, contact details of an Entanglement Committee and response procedures including drills and training if entanglement incidents were to occur.

The EIS contains several mitigation measures that will continue to be implemented as part of the proposed modification measures to minimise the risk of entanglement, and ingestion of marine debris including:

- Implementation of the Structural Integrity and Stability Monitoring Program in accordance with approval condition C.11
- Implementation of daily operational and maintenance procedures that minimise the attraction of wild fish and other potential predators
- Implementation of the Waste Management Plan in accordance with condition D.13 & D.14
- Implementation of the Marine Fauna Interaction Management Plan in accordance with approval condition D.9 including the Committee
- Implementation of the Marine Fauna Entanglement Avoidance Protocol

The photograph provided of a stranded whale during the submissions period is not accompanied by any evidence of where the whale was located, or its cause of death. Furthermore, SCM reported zero major infrastructure malfunctions since operations began, meaning no backbones or lines have been

lost and unrecovered and therefore could not have been ingested. NSW DPI reject the use of this image as any evidence that mussel farming operations may be causing harm to marine fauna as a result of ingestion of marine debris in NSW.

SCM will update their Marine Fauna Interaction Management Plan as per EHG recommendation, taking into consideration the current Marine Wildlife Management Manual and inclusion of the local Aboriginal community if carcasses are discovered as a result of entanglement with farming operations.

21. Economics

Submissions: Community Stakeholders (6)

Summary of Issues Raised:

There was a request for evidence that the farm employs 30 people, and thereby substantiates claims that the farm supports local businesses. Community groups also raised concerns that Jervis Bay has strong eco-tourism values, and the entire area relies on this for local income. This includes concerns that the local dolphin population (approximately 80) may be impacted by the farm, and that some species have been displaced as observed by local divers. For example, Juvenile Port Jackson Sharks (*Heterodontus portusjacksoni*) which are found in higher numbers around the leases than in Booderee National Park or Fairy Firefly wreck where they have been seen previously. Also, increases in fish have been observed in the Dent Rick since the old smaller Vincentia lease was removed, believed to be as a result of the lease ending.

Concerns were raised that the leases were acquired cheaply in the public tender, using taxpayers' money, with claims that there were no resulting financial benefits to the taxpayer.

The increased mussel biofouling on boats is costly for boat owners ($2,400 to clean a 30ft boat, or 6 hours of intensive cleaning).

Response

SCM has provided evidence of the number of people they employ, and other assessments have been used to determine the potential economic benefit of the proposed modification to Jervis Bay.

SCM provided NSW DPI a list of employees, demonstrating the employment of 43 people (a combination of full time and part time) in January 2024. This is an increase from the 30 employed at the time of writing the modification application. The list provided to NSW DPI included the average income (i.e., salary) of each. Due to commercial in confidence, this data cannot be shared.

An aquaculture permit condition is that all permit holders notify NSW DPI of their annual production (tonnes and dollar value). SCM have upheld their production return responsibilities since operations began. Production return information is published on the NSW DPI aquaculture website. However, as there as < 5 mussel producers in NSW, the output of the mussel industry is not published for confidentiality reasons. However, and as stated in the modification report, an economic survey completed in 2023 estimated that aquaculture operations directly contribute about $425 million to the NSW economy each year. SCM was included in this survey.

The SCM Woollamia processing facility is where the majority of SCM employees work. This facility includes a shop front called the Jervis Bay Shellfish Market, which is open to the public Tuesdays to Sundays. From here customers can see staff in the shop and coming and going around the

processing facility. On the Jervis Bay Shellfish Market website inquiries can also be made, including for tours.

With regards to impacts to local tourism operators, the proposed modification is unlikely to change the current observations. For example, if dolphins are observed in the existing mussel farm, the slight shift in coordinates and expansion closer to Callala Beach are not likely to impact current dolphin sightings, or the dolphin watching cruises which benefit from this activity. Similarly, snorkellers and divers are benefiting from the fish activity around the leases. SCM has a good relationship with SCUBA and snorkelling communities and encourages and allows the use of the farm as a dive site.

The issue of increased biofouling removal costs to boat owners is not expected to get worse if the proposed modification is approved. As discussed in section 13, studies have indicated no significant difference in mussel biofouling on lines deployed close to and far from the mussel farm. Furthermore, as discussed in the modification report, currents in Jervis Bay move in a clockwise direction and it is therefore very unlikely that any spat originating from mussels on the farm would travel in an anticlockwise direction into Currambene Creek.

In broader terms, and as stated in the modification report, the ecosystem services provided by bivalve shellfish including mussels are quantifiable. Mussels filter water thereby improving water quality including the removal of dissolved nitrogen and phosphorus. Reefs and mussel farms provide habitat for fish, invertebrates, and algae species, and provide coastal protection from storms.

A summary of the economic benefits of mussel aquaculture is listed here:

Source	Component	Mechanism	Species	AUD Value
Barrett et al. 2022	275-581 kg N/yr	Bio extraction	Oyster Mussel and Seaweed	$ 128- 770
Barrett et al. 2022	348-110 kg/ha/yr	Habitat provisioning	Oyster Mussel and Seaweed	$ 3,142- 8,168
Barrett et al. 2022	581 kg/ha/yr	Nitrogen Removal	Mussel	$ 28,626
Gentry et al 2019	170 kg/ha/yr	Nitrogen Removal	Bivalve	
BDO Econ 2023		NSW Aquaculture Production 2021/22		$ 101,901,580
BDO Econ 2023	2321 FTE	Full time jobs created by NSW aquaculture		$ 145,100,000
BDO Econ 2023	6.7 kg N/ tonne	Nitrogen Removal	Mussels	$ 1,300,000
BDO Econ 2023	0.5 kg N/ tonne	Phosphorus Removal	Mussels	$ < 100,000

22. Aboriginal Heritage

Submissions: Community Stakeholders (1)

Summary of Issues Raised:

The original EIS said that the mussel farm would create jobs for Aboriginal people, but there has been no indication as to whether this has occurred.

Response

SCM has a history of employing Aboriginal people, and SCM maintains communications with local Aboriginal people with regard to employment opportunities.

Condition E.5 of the current approval states that SCM must have in place a Community Stakeholder Communication Plan which includes details of procedures and mechanisms used to inform the community including local Aboriginal communities of the developments progress and the potential employment opportunities. The Community Stakeholder Communication Plan was developed in 2019 and the third revision was published in September 2021 on the SCM website. Of particular importance SCM has been in communication and consultation with the Jerrinja community which commenced at the very start of the project. The SCM Managing Director has had a number of meetings with Jerrinja Local Aboriginal Land Council to discuss plans to develop leases, investment opportunities to develop a processing facility on land owned by the Jerrinja Local Aboriginal Land Council and job opportunities on the farm and in the processing facility. As per existing process, the Community Stakeholder Communication Plan will be reviewed and updated (i.e., version 4) to reflect progress, and plans in this space.

23. Safety

Submissions: Community Stakeholders (2)

Summary of Issues Raised:

A community member raised concerns about decreasing navigational markers from 10-6, claiming the navigational markers are already hard to see in choppy waters, and are likely to increase the risk of an accident.

Another submission claimed that the increased biofouling (anecdotally attributed to the farm) was causing the blocking of hull fittings such as engine cooling water, cockpit drains, bailage pump outlets and could pose a substantial risk to vessels to operate safely.

Response

If approved, the modification is not considered to increase risks to safe navigation due to a decrease in navigational markers and/or fouling and blockages of boat components.

The reduction of navigational markers has been supported by TfNSW and is in line with international standards of markings, compliant with the IALA buoyage system. Due to the protected nature of Jervis Bay, wave energy is generally small, and it is unlikely that the swell would reach a height that obscures the cardinal markers used on the lease.

It is a requirement of NSW DPI Aquatic Biosecurity that vessel owners keep their vessels clean from biofouling. Regardless of the source of the increased biofouling, it is the vessel owner's responsibility for their own safety associated with this. The ANZECC Code of Practice for Antifouling

and In-Water Hull Cleaning and Maintenance is applicable in all states and the Northern Territory, and includes how to treat internal seawater systems, application of antifouling, waste and effluent disposal and record keeping and reporting.

24. Genetics, disease, translocation and introduced pests

Submissions: Community Stakeholders (9), EHG

Summary of Issues Raised:

Concerns were raised about the risk of introducing marine pests as a result of the translocation of mussel spat and equipment from Twofold Bay into Jervis Bay. SCM grow the mussel spat in Twofold Bay and relocate them for farming in Jervis Bay. Twofold Bay is a port for international vessels, which is considered a high-risk area for marine pests and diseases. Marine pests listed as Notifiable marine pests under the *Biosecurity Act 2015* and the Biosecurity Regulation 2019 are found in Twofold Bay including European fan worm *Sabella spallanzanii*, European Green Crab *Carcinus maenas*, and New Zealand Screwshell *Maoricolpus roseus.* Non listed pests found in Twofold Bay include Lightbulb Ascidian *Clavelina lepadiformis* and the toxic dinoflagellate *Dinophysis acuminata*.

Concerns were also raised about whether there would be an impact on the genetic integrity of wild mussel populations in Jervis Bay, as well as a possible increase in competition for resources. The question was asked if there has been any monitoring to assess this issue and why *M. planulatus* (the native Australian mussel) was not grown instead of *M. galloprovincialis* (perceived to be an invasive mussel).

Recommendations include that the biosecurity risk of translocating stock from Twofold Bay to Jervis Bay is reassessed considering new pest species and increased boat traffic to Twofold Bay, and that SCM transition to a stocking process that relies wholly on locally sourced stock. Where locally sourced stock is not sufficient, a rigorous risk management and 'best practice' approach is recommended.

Response

The risks of introducing marine pests into Jervis Bay, and risks to the genetic integrity of mussel populations in Jervis Bay are not expected to increase as a result of the proposed modification due to existing movement control restrictions and management strategies in place.

In 2018, the NSW Chief Veterinary Officer approved the Blue Mussel spat protocol Twofold Bay to Jervis Bay (NSW DPI Protocol 2022). The purpose of the protocol is to describe the biosecurity conditions and requirements that have been developed on a risk management basis to minimise the risk of the introduction of diseases and pests from Twofold Bay into grow out leases in Jervis Bay via translocation of Blue Mussel spat (juvenile seed stock) produced by SCM. The protocol outlines the requirements that SCM must implement, as a condition of their NSW DPI aquaculture permit, including pre-translocation inspections, pre-deployment treatment (such as washing in freshwater), reporting conditions and shipment documentation. The protocol is published online (NSW DPI Protocol 2022).

The development and implementation of the protocol have been informed by AQUAPLAN: Australia's National Strategic Plan for Aquatic Animal Health. AQUAPLAN 2022 – 2027 is the most recent iteration that sets out national priorities to strengthen Australia's aquatic animal health management systems. The sub-committee on Aquatic Animal Health (SCAAH) provides scientific

and technical advice to the Animal Health Committee (AHC) on aquatic animal health issues, including national policy and program development.

SCM developed and maintains a Disease, Parasite and Pest Management Plan (DPPM Plan), which was assessed by NSW EHG and NSW DPI. Development and operation under the DPPM Plan are an aquaculture permit condition. The DPPM Plan was reviewed (version 3) in 2021 and will be revised as a condition of the modification approval if the proposed modification is approved. It is available on the SCM website.

A review of the DPPM will address the recommendation to reassess the risk of invasive species in light of new pest species and increased boat traffic to Twofold Bay and will be shared for assessment with the above listed agencies as per the document control register (versions 1 – 3). Specifically, it will identify and describe management of notifiable pests in Jervis Bay. Of note, European Green Crab is reported to exist in Jervis Bay since 1988 (Atlas of Living Australia) and 1992 (Ahyong 2005), and NSW Food Authority water quality data samples have detected *D. acuminata* since 2005 when sampling began. The NSW DPI Protocol 2022 is reviewed routinely to ensure the risk assessment and translocation process remains current, and effective in reducing the risk of introductions of pests and diseases into Jervis Bay.

In regard to *M. planulatus* being cultivated instead of *M. galloprovincialis*, as previously stated in Section 12, SCM cultivates mussels that naturally occur in Jervis Bay and Twofold Bay and pose no threat to the genetics of the local population.

The recommendation for SCM to transition to stocking based on locally sourced stock only is not commercially viable. There is not enough local mussel spat. Where locally sourced stock is not sufficient, a rigorous risk management and 'best practice' approach is already in place, that being, the permit condition requirements to adhere to the Protocol. SCM also sources spat from biosecure hatcheries (interstate and intrastate) using local broodstock. SCM has already sourced batches of mussels from a NSW hatchery using local broodstock and is undertaking the approval requirements to import spat from an interstate hatchery.

25. Threatened/protected species and matters of National Environmental Significance

Submissions: Community Stakeholders (1), DCCEEW

Summary of Issues Raised:

There was concern raised about the potential impact from the increase in mussel biofouling caused by the farming operations on matters of National Environmental Significance listed under the EPBC Act.

A community member also raised a question about how the removal of seahorses (listed as protected species under the FM Act) is managed during the harvesting operation, including what evidence or data exists on impacts of seahorse handling during harvesting.

NSW DPI clarified with the DCCEEW that NSW DPI is the proponent, and not SCM. DCCEEW recommended that a self-assessment is undertaken, and that NSW DPI document all potential impacts in this report with regard to matters of National Environmental Significance under the EPBC Act. This includes documenting new listings for example, White's Seahorse. Furthermore, that if any

concerns are raised by the community, how and why has the decision been made to refer or not refer the modification to the DCCEEW.

Response

During the development of the EIS in 2012, NSW DPI undertook a self-assessment that thoroughly documented the considerations and potential impacts of the activity on matters of National Environmental Significance (Appendix 4). NSW DPI was advised by the then Department of Sustainability, Environment, Water, Population and Communities that the mussel farming activities in Jervis Bay were not deemed to be a controlled action under the EPBC Act, provided that the proposed actions were to be undertaken in the manner set out in their decision. Specifically:

1. the backbone line rope on the longline culturing system were at least 25mm in diameter
2. that the visual inspections of the backbone lines and buoys are to be undertaken weekly (weather permitting) to ensure that all backbone ropes are taut, and that
3. the longline culturing system's anchors, chains and moorings are to be serviced at least once a year to maintain good order and condition.

In line with the DCCEEW guidelines, and as indicated in the modification report, NSW DPI have reviewed this self-assessment and undertaken further assessment using the Protected Matters Search Tool.

If the proposed modification is approved, the farming operations will continue to be undertaken in line with these provisions. Furthermore, as the location and type of farming operations is not changing to an extent that would change impacts on threatened or endangered species, this assessment outcome has informed the decision made by NSW DPI to not refer the modification to the DCCEEW.

With regard to potential impacts of mussel recruitment on matters of national environmental significance under the EPBC Act, nine matters of national environmental significance to which the EPBC Act applies are: world heritage properties, national heritage places, wetlands of international importance, nationally threatened species and ecological communities, migratory species, Commonwealth marine areas, the Great Barrier Reef Marine Park, nuclear actions, a water resource, in relation to coal seam gas development and large coal mining development.

Using the Protected Matters Search Tool, nationally important wetlands have been mapped in Currambene Creek. No other of the eight matters of national environmental significance are in Currambene Creek. In Currambene Creek, mussel recruitment would not meet the significant impact criteria as described in the self-assessment guidelines (including for example destruction of wetlands, substantial change to water quality like salinity or pollutants; MNES Significant Impact Guidelines 1.1 2013).

Furthermore, recruitment to the benthic habitats in Currambene Creek (i.e., intertidal rocky shores where recruitment of this species would be most prevalent) is unlikely to impact listed species including Pipefish, sharks, White's Seahorse and Cauliflower Coral which inhabit deeper waters, and waters further offshore. Some of these species have not been observed in Jervis Bay.

Appendix 17 of the modification report provides the results of an EPBC Act Protected Matters Report conducted in 2023 and comparing to the same Report from 2012, outlining threatened species within Jervis Bay. *Hippocampus whitei* commonly known as White's Seahorse, Crowned

Seahorse, or Sydney Seahorse is listed as a critically endangered fish under the EPBC Act. The fish family *Syngnathidae* (seahorses, pipefish, pipehorses and seadragons) is fully protected in New South Wales, Australia. Seahorses have been found in and around the leases, however the species have not been taxonomically identified. The former Vincentia mussel raft was a well-known site for divers to observe seahorses.

Of note, the seahorses seen on the leases currently have not been identified to the species level, and White's Seahorse has never been formally sited in Jervis Bay.

With regard to the removal of seahorses, this will be managed by SCM during the harvesting operations through tailored and existing monitoring and management plans. Seahorses have been predominately observed on anchor lines (i.e., not the harvest lines), as reported by divers. Occasionally SCM have seen seahorses detaching from the harvest lines when removed from the water, dropping back into the water after releasing their prehensile tail. If seahorses remain attached to harvest lines, harvesting is stopped, the seahorse is removed and is returned to the water. The handling will continue to be minimal, involving gently releasing the prehensile tail from the mussel equipment, avoiding touching gills while doing so, and carefully returning the seahorse to the water as close to retrieval site as soon as possible, to minimise handling stress. The capture and restraint handling must be done with care, to protect the animals' well-being, and avoid unnecessary discomfort, stress or physical harm (as per Australasian Regional Association of Zoological Parks and Aquaria- ARAZPA Accreditation Standards).

Sygnathiformes will be managed in accordance with the Marine Fauna Entanglement Plan in the EMP, and the Marine Fauna Entanglement Avoidance Protocol and the Marine Fauna Interaction Plan will be reviewed and updated to reflect best practice management of seahorses. As part of these plans a Marine Fauna Interaction Committee was established. In response to observations of seahorses on the leases, the membership of this committee will be reviewed, and a seahorse expert invited to be a member.

The current best practice for seahorse management on nets, for example swimming nets and on removal from artificial structures, is outlined below and will inform seahorse management by SCM (taken from Harasti et al., 2010):

- Net cleaning regimes involve removing growth only from the top section of the net, leaving epibiota on the bottom (within 1.2 m of the sea floor). This would ensure that seahorses still have suitable habitat and food while reducing the weight of the net.
- If the bottom sections of a net must be cleaned, this should be done in small sections at a time to ensure that sufficient suitable seahorse habitat is always present on the net.
- It is also recommended that the cleaning of the net be undertaken during the winter period (non-breeding season) when seahorse abundance on the net is likely to be reduced, ensuring that mating animals are not affected by the cleaning.
- Finally, to minimize large-scale disturbance to the seahorses in one event, it is recommended that only a maximum of half the net be cleaned or replaced each year to ensure there is sufficient epibiotic growth to maintain the seahorse population.

These criteria are met by the mussel operations, as only small sections of line are harvested at one time, leaving sufficient seahorse habitat present on the lines at any one time.

26. Behavioural changes in marine fauna

Submissions: Community Stakeholders (6)

Summary of Issues Raised:

Community stakeholders claimed there was a lack of data for evidence provided in relation to entanglement or death of large marine fauna.

There were also fears that sharks will be further attracted to the rich feeding areas and will increase the danger of shark frequency and attacks at Callala Beach.

One community member claimed that dolphins now primary feed at the leases, rather than coming close to shore which was a much loved and asset to the local community that has been permanently lost, now down to an estimated 10% of pre-lease frequency. Additionally, it was claimed that dolphins now prefer the leases over the foreshore so much that Jervis Bay tourist vessels are now frequent that location as priority. This has created a change in the natural feeding environment of marine life in Jervis Bay.

Additionally, claims of behavioural changes of Juvenile Port Jackson Sharks, which were commonly found in two locations in Jervis Bay (Booderee NP waters and Fairy Firefly wreck), but have only been found under the mussel farm in recent years.

Response

There is no evidence to suggest that the mussel aquaculture is have any negative impact on marine fauna.

Mussel aquaculture has been shown to increase the biodiversity of an area (Murray et al. 2007; Byron et al. 2011a) by promoting and enhancing biodiversity. Aquaculture lines create structure and habitat for other marine species and provide a larger variety and biomass of associated invertebrates and finfish than a similar area without farms (Shumway et al. 2003). Mussel farming habitat can act as a floating artificial reef system for both pelagic and benthic fish species (Suplicy 2018; Wang et al., 2015).

SCM has not observed any apex predator shark sightings (i.e., Tiger and bull sharks) as compared to pelagic/bottom dwelling in or around the leases. The anecdotal evidence surrounding the juvenile Port Jackson sharks suggest that the enriched benthic habitat and associated fish assemblages are providing a high quality environment for these sharks. Port Jackson sharks feed on benthic organism such as sea urchins, molluscs, crustaceans and fishes, meaning that they may prefer a mussel farm ecosystem over a sandy seafloor, with lower abundance and diversity of prey.

In regard to dolphin aggregation patterns, SCM records marine mammal sightings as per the Marine Fauna Interaction Plan, and no notable increased dolphin observations have been reported by the teams. It is also worth noting that this concern was raised by an individual who attended the Callala Beach Progress Association meeting in December 2023, and this was the first time SCM was made aware of these claims, and others in attendance disputed this.

SCM have provided additional information about their relationship with dolphin tour operators. SCM Operations Manager has volunteered to skipper their vessels on weekends to gain a better understanding of their operations. SCM have a good rapport with the dolphin tour operator in Jervis Bay. SCM were asked to write up a document of mussel farming facts they could share with their skippers, so they were able to inform their clients as they cruised passed the leases. SCM have also on occasion chartered the dolphin tour vessel to take visitors to the lease. A dolphin tourism

operator has provided advice that they have not observed any significant changes to their behaviour however, there has been no official studies done therefore they cannot comment on this topic specifically. They also noted that with an increase in whale populations it's likely that more whales will use Jervis Bay as a resting point in their migration.

27. Supportive submissions

Submissions: Community Stakeholders (7)

Summary of Issues Raised:

Seven formal submissions in support of the proposed modification were made.

To summarise, stakeholders support the proposed modification for the reasons that mussel farming is an extensive (does not require input of feed) type of aquaculture, which is an environmentally sensitive form of protein production. Mussels are nutrient dense, and consumers are very pleased to be able to see such an industry grow and contribute to their local economy.

Jervis Bay has been identified as a suitable location for mussel farming; current operations and best practice management have demonstrated it is done sustainably and the environmental conditions are conducive to commercially viable levels of production. Local restaurants are also pleased to see the proposed expansion may provide for more local mussels in the hospitality and tourism industry.

Response

NSW DPI note the positive submissions and have considered them throughout our response.

Updated Project Justifications

NSW DPI (the proponent) have considered the submissions made with regard to the proposed modification of SSI-5657.

The proposed modification includes the relocation of the existing 10-hectare inshore Vincentia lease to an area offshore between the existing Callala Beach leases. The Vincentia lease, in its new offshore area, would be increased from 10 to 20-hectares. The two existing offshore Callala Beach leases would also be increased from 20 to 25-hectares each. Overall, the leases total footprint would increase from 50 to 70 hectares. The leases would be realigned northwest and be approximately 200m closer to the shores of Callala Beach than the existing Callala Beach leases.

In undertaking the additional risk assessments of the proposed modification in response to the concerns and advice made by community stakeholders and government agencies, the level of risk of the proposed modification has not changed.

The mussel farming activities that would occur if the proposed modification were approved have not changed. That is, the approved species of mussel being cultivated, the source of stock, the infrastructure used and farming operations, will not change.

However, 88 screw anchors that would be made redundant due to the proposed modification would remain in situ based on outcomes of the Screw Anchor Risk Assessment (Appendix 9). NSW has sought the views of the Department of Defence and a response is pending. Feedback has been provided by DPHI – Crown Lands who advised they have no objection to leaving the anchors in situ, provided that the anchors are assets managed by NSW DPI, subject to DPI policy and procedure.

Local Aboriginal communities will be consulted on the revised Decommissioning Management Plan noting the decommissioning activities may affect their Sea Country (as noted in the Screw Anchor Risk Assessment Appendix 9). The final Plan will note and provide responses/address consultation outcomes. This is a change from the original approval, in which all infrastructure was to be removed. However, as indicated in Section 1, the Director General Environmental Assessment Requirements included that 'proposals for adaptive management' must be in the EIS. The use of screw anchors rather than concrete blocks was a means of adaptive management, described in the Deployment and Management Plan 2019 and approved by TfNSW and permitted with a Marine Park permit.

The environmental concerns raised regarding the risk of mussel biofouling on artificial and natural surfaces in Jervis Bay due to the increase in lease area and mussel farming capacity has been addressed by the inclusion of a new monitoring measure, that is NSW DPI will design and coordinate a Spatfall Monitoring Program as per Section 13.

NSW DPI has provided additional supporting information throughout the response to submissions document. An updated mitigation measures table (Appendix 2) has been developed, which indicates which management actions will be taken by NSW DPI and SCM if the proposed modification is approved.

It is the opinion of NSW DPI that the risks identified in the modification report and submissions made during the public exhibition period have been addressed and that the application to modify the approval SSI-5567 should be approved.

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Appendix

Appendix 1 - Submissions register

Appendix 2 - Updated mitigation measures table

Appendix 3 - Modification Report (revised post submissions)

Appendix 4 - Environmental Impact Statement 2013

Appendix 5 - Compilation of Submissions

Appendix 6 - Water Quality and Benthic Monitoring Program

Appendix 7 - SCM Environmental Management Plan

Appendix 8 - 2016 Visual Impact Assessment

Appendix 9 - Screw Anchor Risk Assessment

Appendix 10 – Construction and Deployment Plan & Traffic Management Plan 2023 v4