

Attachment I

Circumstances for Consideration Under Section 42T(5)

Introduction

Concerns have been raised by the public, community groups, and members of parliament since 2019 about the salmon farm at Long Bay, Port Arthur causing environmental impacts. This includes submissions (e.g., Tasman Peninsula Marine Protection Inc. (TPMP) - an affiliate of the Tasmanian Alliance for Marine Protection Inc. (TAMP) – 20 October 2023, Tasmanian Independent Science Council (TISC) – 15 September 2023, Hon. Meg Webb MLC – 12 September 2023) and complaints from members of the public. Some parties (i.e., TPMP/TAMP and TISC) recently requested that the Environmental Licence at Long Bay not be renewed beyond 30 November 2023.

The majority of these concerns were in regard to observations of diminished water quality and increased algal growth in the Port Arthur region. To address these complaints, the EPA has introduced numerous monitoring requirements and management responses including reduced scale of finfish farming and increased water quality monitoring, research initiatives and management arrangements as described below.

Broadscale Environmental Monitoring Program (BEMP)

The Tasman Peninsula and Norfolk Bay BEMP commenced in 2017. The Program initially focused on water quality monitoring and was modified in 2020 to include seagrass monitoring at four sites in Long Bay and Port Arthur and an extra water quality site in Long Bay north of the finfish lease (Figure 2). The [BEMP](#) produces monthly water quality reports and annual reports on habitats, sediment chemistry and biota. There have been no non-compliances for BEMP reporting requirements under Environmental licence conditions to date.

The most recently published BEMP found that there were no exceedances of rolling water quality median indicator limit values in 2021/2022 for the Nubeena compliance site NUB5 (See Figures 1 and 2 for survey sites). At Port Arthur, the rolling annual median for Chlorophyll for compliance site PA2 was above the indicator limit value between July and August 2021. The farm at Port Arthur was destocked in February/March 2021, hence it is very unlikely that the exceedances in July and August 2021 were related to finfish farming operations (that had ceased some 4-5 months earlier). There were no exceedances at Port Arthur for TAN or dissolved oxygen.

Sediment chemistry and biota and water quality results indicated that there are no consistent trends that provide strong evidence of organic enrichment at the monitoring sites sampled under the BEMP. Trends in seagrass cover differed for the four transects, with some showing stability and others declining. Trends in epiphyte abundance were also variable across the four sites.

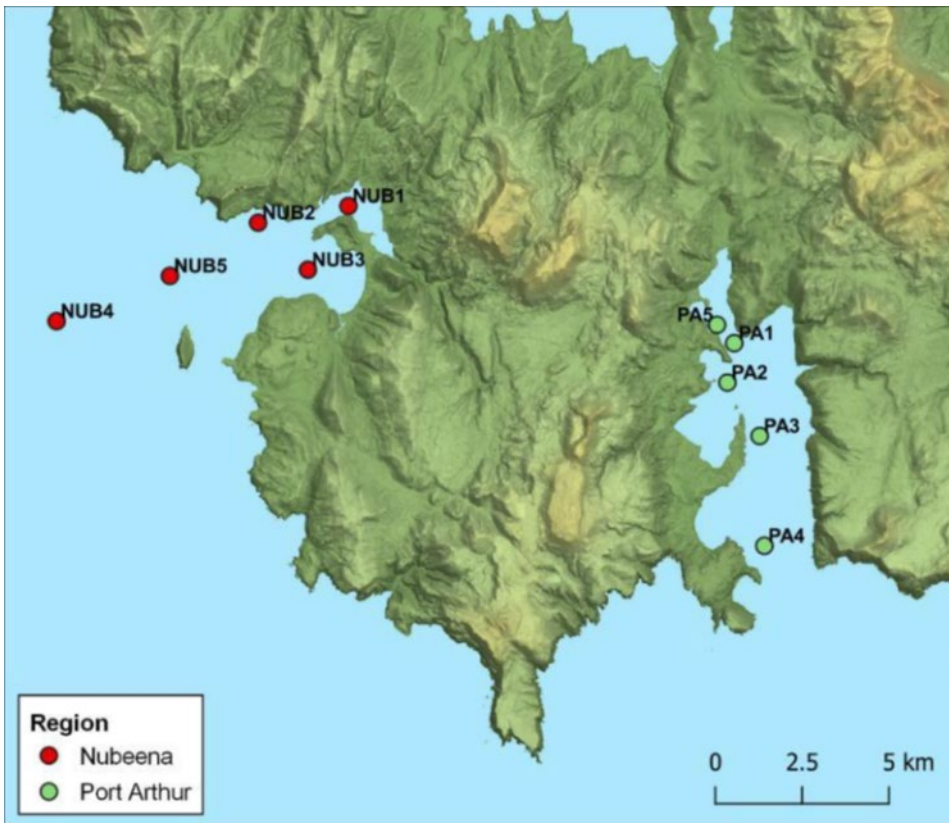


Figure 1: Location of ten water quality sites (NUB = Nubeena; PA = Port Arthur) monitored for sediment (annual) and water quality (monthly) as part of the Tasman Broadscale Environmental Monitoring Program.

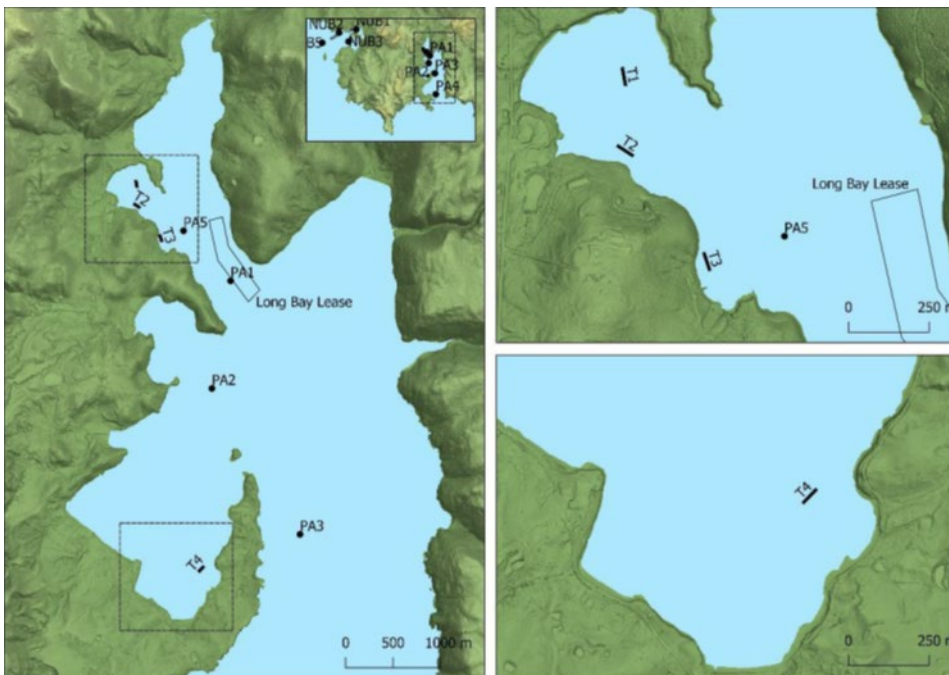


Figure 2: Location of four seagrass survey sites in Port Arthur monitored monthly as part of the Tasman Broadscale Environmental Monitoring Program.

EPA Water Quality Monitoring

[The Port Arthur Monitoring Program](#) was established by the EPA in December 2019 in response to concerns received by EPA from members of the public. The program included a water quality program which aims to:

- Increase the understanding of water quality in the Port Arthur area and in particular Long Bay.
- Collect data on key indicators for comparison against Default Guideline Values (DGVs) for aquatic ecosystems developed for the Port Arthur area.
- Investigate if any departures from background conditions (DGVs) are attributable to anthropogenic or natural sources and if possible show attribution.
- Provide a summer snapshot for the extent of epiphytic growth on seagrass habitat.
- Provide water quality information to assist nutrient dispersion modelling and biogeochemical model development and validation.
- Independently validate the water quality information collected on a monthly basis by Tassal as required under the environmental licence conditions for lease MF55 (Long Bay Port Arthur).

Default Guideline Values (DGVs) for aquatic ecosystems

[Default Guideline Values \(DGVs\)](#) for aquatic ecosystems have been derived for the Port Arthur Area. These were assessed from available data from August 2013 to July 2017 and are based on the Oil Spill Response Area (OSRA) segments and provide further refinement compared to the interim [Default guideline values for Coastal and Marine waters](#) based on the [IMCRA bioregion](#). DGVs provide annual and seasonal information on key water quality parameters. The DGVs can be used for comparison against current conditions within the area and, where warranted, provide targets for water quality improvement.

The EPA has collected monthly water quality parameters for DGVs in the Port Arthur Region since 2019 and has published [4 reports on the EPA website](#) including December 2019, October to March 2021, October 2021 to May 2022 and August 2022 to May 2023.

Results to date indicate that the water quality in the Port Arthur area remains similar to results during the baseline period on which the DGVs were derived with most parameters remaining within the overall range of the baseline dataset. Water within the Port Arthur area is chiefly of marine origin in nature. The upper section of Long Bay is at times subject to catchment runoff following rainfall events. Some elevation in TAN and Nitrogen (total) is discernible within waters near the finfish farm leases. These elevations are not persistent over the period surveyed and seem to be limited to the surface water in the immediate vicinity of some finfish farm leases. Nutrient availability from marine inputs, catchment runoff and the finfish lease contribute to the elevated Chlorophyll a levels noted within Long Bay. Though elevated, the trophic status based on Chlorophyll a levels has not changed since the baseline period and mean annual Chlorophyll a levels continue to represent oligotrophic to mesotrophic conditions at sites PA1, PA2, PA3 and PA4.

Epiphytic Algal Growth in SE Tasmanian waters - Investigations and Monitoring

Photographic monitoring of near-shore benthic environments in southeastern and eastern marine waters began in early 2021 in response to community feedback regarding elevated levels of epiphytic algal growth coating shorelines near marine finfish farms. The project aims to determine the percent cover of 'nuisance algae' in both seagrass and reef habitats, and to detect any changes over time in the percent cover of such algae. Nuisance algae, including epiphytic algae and filamentous algae, and both red and green algae, are indicative of increased nutrient loads in the environment.

The spatial reach of the project spans from Mercury Passage near Triabunna, through Boomer Bay, the northern reaches of Storm Bay, Port Arthur, Nubeena, the D'Entrecasteaux Channel and the Far South.

Since March 2021, a total of 749 sites visits have been made to 122 individual sites (Figure 3). Up to six photographs of a 50cm x 50cm quadrat are taken at each site per visit, resulting in a dataset of 4,384

photographs. Each individual photograph has been given a rating of 0 to 5 based on the percent cover of epiphytic growth in the quadrat. Summaries of findings for the Port Arthur region have been published on the EPA website under Port Arthur Monitoring Results [October 2021 to May 2022](#) and [August 2022 to May 2023](#).

Analysis of the data is ongoing. The EPA continues to undertake research to determine whether any areas are showing significant changes in levels of epiphytic growth and whether there is any relationship to proximity to anthropogenic factors such as marine finfish farms and sewerage outfall posts or whether they are influenced by environmental factors such as benthic flora type, current speed, and flushing rates.

EPA Nutrient Investigation February 2022 to April 2022

The [investigation](#) surveyed nitrogen, phosphorus and chlorophyll a levels whilst the Long Bay finfish lease was stocked and destocked (fallow) across the survey area within Long Bay. The study showed that the amounts of some indicators (chlorophyll a, phosphorus and TAN) respond to the presence of nutrients from the stocked finfish lease and that the spatial extent and degree of response reduces within weeks of the lease becoming fallow. These findings suggest that the phytoplankton biomass is in part coupled with (i.e. effected by) nutrients released from the finfish lease as well as from the surrounding environment.

EPA Fluorometry as a Tool for Assessing Impacts of Finfish Aquaculture – Long Bay and Boomer Bay Study

The [Fluorometry as a Tool for Assessing Impacts of Finfish Aquaculture](#) demonstrated there is a strong link between finfish lease stocking and increases in both the median value and variability of primary production in Long Bay. This was especially so in Spring 2022/Summer 2023 when chlorophyll a variability increased beyond values previously observed. chlorophyll a values and variability in Boomer Bay remained relatively low for the period of the deployment. Dissolved oxygen values for both locations were similar during the fallow period but differed during the stocked period in concert with increasing chlorophyll a values in Long Bay. This relationship reinforces the link between nutrient enrichment related to finfish farming and increases in primary production in the environment.

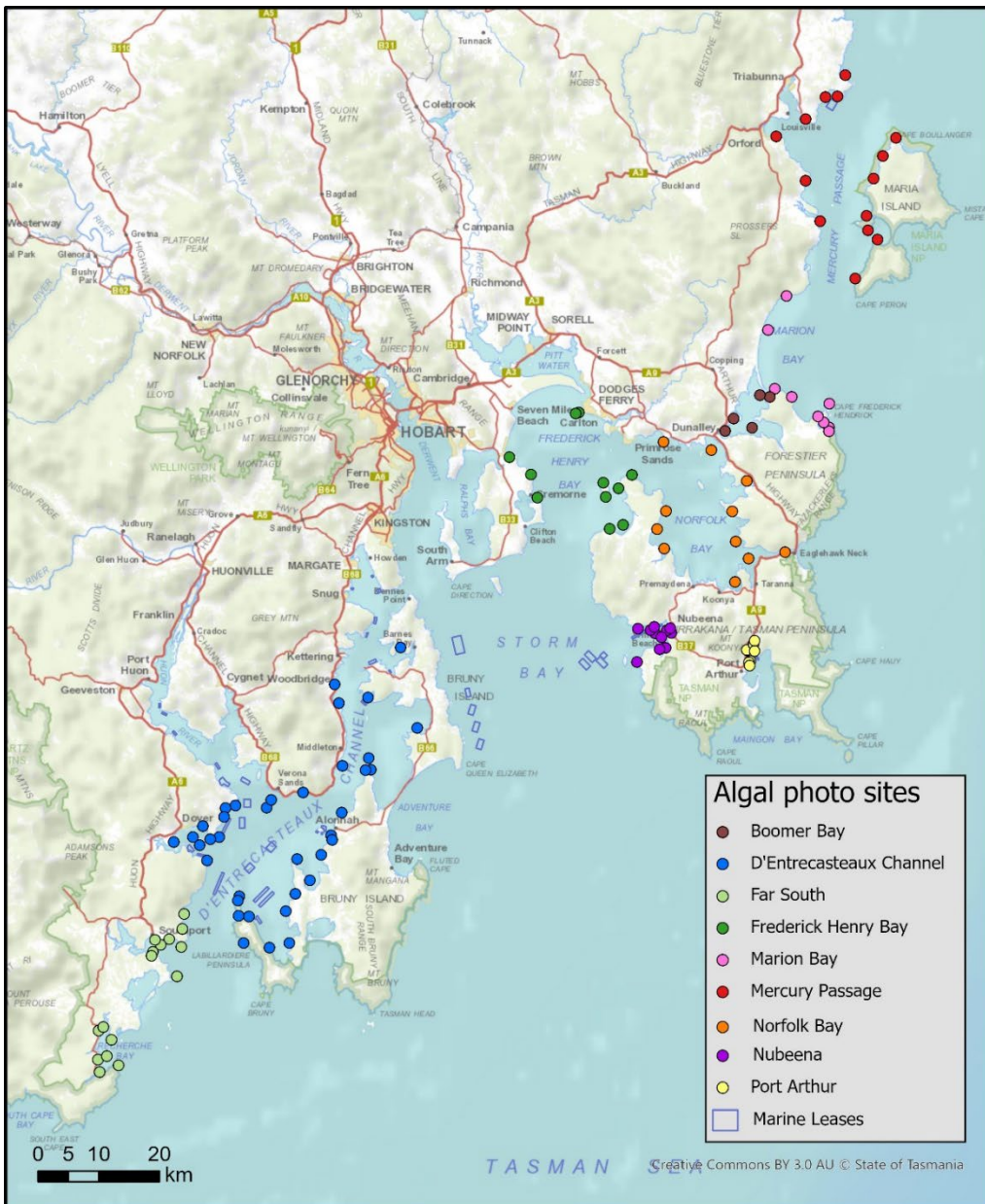


Figure 3: Epiphytic Algal Growth in SE Tasmanian waters - Investigations and Monitoring sites 2021-2023.

Rapid visual assessment of rocky reef assemblages in Port Arthur

In 2020, the EPA commissioned [IMAS to undertake rapid visual assessment surveys](#) and stable isotope analysis on reef ecosystems in Long Bay and across the broader Port Arthur region. The primary aim of the surveys was to evaluate the condition of inshore rocky reef ecosystems and the potential nutrient enrichment from the Long Bay salmon lease using 15 sites directly adjacent to the lease at 100m, 400m and 1,000m distances in north, south, east and west transects.

Observations of rocky reefs at sites 100m from the farm and to a lesser extent 400m to the west of the farm were consistent with the influence of increased nutrient enrichment from the salmon farm. This was also confirmed with nitrogen isotope data. While elevated abundances of epiphytic, filamentous nuisance algae at 400m and 1,000m sites were observed, attribution of to the effects of salmon farming was problematic due to impacts from terrestrial nutrient sources.

Total Permissible Dissolved Nitrogen Output (TPDNO) Determination

In response to the IMAS inshore rocky reef study, BEMP and independent water quality monitoring results, the EPA imposed a Total Permissible Dissolved Nitrogen Output (TPDNO) determination on Marine

Farming Lease No. 55 at Long Bay (MF55). The determination was made on 7 July 2023 and is valid from 1 August 2023 until 31 July 2026.

The TPDNO allocation is 48 tonnes per annum, which is an approximate 20% reduction in dissolved nitrogen outputs compared to recent years.

In addition, the Director made a direction imposing additional monitoring requirements for MF55 Long Bay to assess the effectiveness of the TPDNO determination in reducing the organic enrichment effects on the inshore rocky reef assemblages within Long Bay. The direction commenced 1 August, is ongoing and will be reviewed biennially by EPA.

The [Statement of Reasons for TPDNO Determination and Direction to conduct inshore reef monitoring and additional water quality monitoring for Marine Farming Lease No. 55 Long Bay](#) is particularly relevant to the issues raised by the Hon. Meg Webb and contained within the TISC and TPMP/TAMP submissions. In summary, the Statement of Reasons notes that:

- Environmental monitoring results and IMAS reef research have identified organic enrichment effects in Long Bay that are linked to finfish farming activities in Long Bay.
- The aim of the TPDNO determination is to reduce the impacts of elevated dissolved nitrogen on inshore rocky reefs within Long Bay.
- The aim of the direction to include inshore reef monitoring and increase the number of water quality monitoring sites within Long Bay is to ascertain the effectiveness of the reduction in TPDNO in reducing environmental impacts on inshore rocky reefs.
- The EPA Director believes that the implementation of a TPDNO that results in an approximate reduction of 20% in dissolved nitrogen outputs, compared to feed input levels since 2019, is warranted and that this level should be maintained for a period of three years, subject to review at the Director's discretion, to allow evaluation of results of inshore rocky reef and water quality monitoring.
- The resultant TPDNO for MF55 is 48 tonnes *p.a.*

In making the above TPDNO determination, the Director considered a range of monitoring results and scientific reports to investigate potential linkages between environmental impacts and finfish farming activities in Long Bay. These were:

- [IMAS Inshore Reef Study 2021/2022](#)
- [EPA Default Guideline Values for Port Arthur](#)
- [EPA Environmental Monitoring](#)
- [EPA Nutrient and Chlorophyll *a* Investigation 2022](#)
- [Port Arthur Water Quality Monitoring 2013-2023](#)

In addition, knowledge gaps in the Long Bay/Port Arthur ecosystem and ecology were acknowledged in the determination, stating “*Despite the significant volume of environmental monitoring and research effort that has been undertaken by Tassal, EPA and IMAS since 2013 in relation to MF55, some knowledge gaps exist in relation to water currents and residence times, nutrient sources, nutrient budget and recycling and biological processes that operate in the marine waters of Long Bay and Port Arthur*”.

The imposition of a TPDNO is expected to reduce dissolved nitrogen concentrations arising from lease MF55 and it is EPA's expectation that the inshore rocky reef monitoring is fit for purpose to detect measurable improvements in environmental condition of inshore rocky reefs over time.

The IMAS study, BEMP Reports, TPDNO determination, direction for additional reef and water quality monitoring including the accompanying Statement of Reasons are all available on the EPA website at [Turrakana / Tasman Peninsula and Norfolk Bay | EPA Tasmania](#). In addition, results and reports from the EPA Port Arthur water quality monitoring program are available on the EPA website at [Port Arthur Monitoring Program | EPA Tasmania](#).