Title of Proposal - Tassal Finfish Aquaculture at Okehampton Bay, Tasmania

Section 1 - Summary of your proposed action

Provide a summary of your proposed action, including any consultations undertaken.

1.1 Project Industry Type

Aquaculture

1.2 Provide a detailed description of the proposed action, including all proposed activities.

The Proposed Action is to farm Atlantic Salmon on an existing marine lease MF236 in Okehampton Bay, Tasmania. MF236 sits within the Great Oyster Bay and Mercury Passage Marine Farming Development Plan. MF236 (approximately 100 ha lease) is currently utilised by Spring Bay Seafoods for blue mussel ad seaweed farming, and is also licensed for farming of marine finfish. Tassal has entered into an agreement with Spring Bay Seafoods to utilise 86 ha of the existing lease area and integrate salmon farming with the culture of other species, including mussels and seaweed. Tassal intends to stock 86 ha of MF236 with Atlantic salmon for growout. Prior to harvest these fish would potentially occupy a maximum of 28 sea cages or pens. The Okehampton Bay Zone is the only zone (out of 17 zones) within the Great Oyster Bay and Mercury Passage MFDP area that is licensed for farming of finfish – all other zones are specified for either shellfish and or seaweed only.

The proposed action in Okehampton Bay requires the construction and placement of new infrastructure along with the movement of existing infrastructure within the lease area. This infrastructure includes:
• Mooring and grid system - comprising of 1 x 10 pen bay and 1 x 18 pen bay mooring grids to be used in conjunction with existing moorings and longline infrastructure
• Sea pens - 168 m circumference sea pens, of approximately 54 m diameter and 15 m depth will be used at the site. Construction material will be black in colour in order to minimise loss of visual amenity and to comply with regulatory requirements.
• Other supporting infrastructure - existing Spring Bay Seafoods land base; on-water structures (e.g. vessels, permanently moored feed barge).

Fish size and stocking density:
• Approximately 800,000 fish will be input to the site each production cycle, initially weighing between 100-150g. Stock splits will occur in order to maintain lowest possible stocking densities. The maximum stocking density of fish will be 15kg/m3 of cage volume. Fish will be harvested at approximately 5kg around 18 months after initial transport to sea.
• The transportation of juvenile fish will be carried out by land to the existing Spring Bay Seafoods landbase and across water by a vessel to the farm.

The operation of the proposed finfish farm requires a range of activities including:
• Boat movements - multiple times a day to sea pens and the on-site feed barge to undertake a

range of maintenance and stock husbandry tasks. Vessels will service the proposed zone in daylight hours under normal operational circumstances.
• Feed system maintenance – the feed barge will support a centralised feeding system. Generators and blowers on the feed barge will operate during daylight hours only and have sound mitigation equipment in line with marine farming licencing conditions and company policy.
• Fish feeding - fish cultured by Tassal are fed commercial extruded salmon feeds. Projected monthly feed amounts will vary according to water temperature, fish size and harvest profile.
• Fish health - Tassal has a comprehensive biosecurity procedural manual. Vessel, staff and equipment transfer between sites is minimised to reduce any chance of biosecurity breaches. Vessels and equipment are washed down with Virkon-S when they are required to move between different leases. Due to the isolated nature of the Okehampton Bay lease relative to other finfish aquaculture, it is unlikely vessels will be required to leave the area to support other operations.
• Noise levels from operations will be in line with regulatory requirements.
For further detail regarding vessels refer Attachment 1 (Commercial in Confidence) uploaded to section 1.4.

Tassal requests the information in Attachment 1 not be published as it comprises of information which is commercial-in-confidence, the release of which would cause commercial detriment to Tassal. The information is not in the public domain, is not required to be disclosed under any Commonwealth, State or Territory law, and is not readily discoverable. This information, if released, would be used to Tassal's commercial detriment. Tassal does not have the ability to obtain this information from its competitors and the release of such information would be of serious competitive disadvantage to Tassal.

The information in Attachment 1 is considered trade secret as it is of such a strategic and technical nature that it gives Tassal an advantage over its competitors. The details in Attachment 1 go to the core of Tassal's farming operations and profit making ability. The technical specifications of both vessels are highly confidential and the disclosure of such information would be to the commercial disadvantage of Tassal. Tassal competes in a highly competitive market in which innovation and advances in both farming practices and technology provide competitive edge.

1.3 What is the extent and location of your proposed action? Use the polygon tool on the map below to mark the location of your proposed action.

Area	Point	Latitude	Longitude
MF236	1	-42.521819778912	147.97767981849
MF236	2	-42.521819778912	147.97767981849
MF236	3	-42.525362178791	147.9820571836
MF236	4	-42.529283887225	147.97939643226
MF236	5	-42.527196556932	147.97398909888
MF236	6	-42.521819778912	147.97767981849

1.5 Provide a brief physical description of the property on which the proposed action will take place and the location of the proposed action (e.g. proximity to major towns, or for off-shore actions, shortest distance to mainland).

The Proposed Action will be undertaken within Zone 4 in the Great Oyster Bay and Mercury Passage MFDP located in MF236 Okehampton Bay. The zone extends towards the south east and is approximately 700 m from the beach at Okehampton and 500 m from the cliffs towards Lords Bluff. The shortest distance to the Tasmanian mainland is approximately 440 m to the west. Zone 4 is currently occupied by an existing long-line mussel farm and seaweed culture site. The area of Zone 4 is completely enclosed within marine waters where the depth varies between 24-28 m and the substrate consists of unconsolidated, unvegetated sediments (sand).

Refer to section 1.4 of this submission for attached images (images of proposed area) and additional information (Attachments 3, 4, 5 and 14). Tassal requests the information in Attachment 14 not be published as it comprises of information which is commercial-in-confidence, the release of which would cause commercial detriment. The information is not in the public domain, is not required to be disclosed under any Commonwealth, State or Territory law, and is not readily discoverable. The licence fees paid and the licence conditions are confidential and disclosure would cause commercial detriment to the leaseholder and to Tassal. It is not possible to obtain this information from Spring Bay Seafood's or Tassal's competitors.

1.6 What is the size of the development footprint or work area?

Zone 4 (Okehampton Bay) is 203.5 ha and the maximum leasable area within Zone 4 is approximately 100 ha.

1.7 Is the proposed action a street address or lot?

Lot

1.7.2 Describe the lot number and title. Zone 4 (Okehampton Bay) of the Great Oyster Bay and Mercury Passage Marine Farming Development Plan

1.8 Primary Jurisdiction.

Tasmania

1.9 Has the person proposing to take the action received any Australian Government grant funding to undertake this project?

No

1.10 Is the proposed action subject to local government planning approval?

No

1.11 Provide an estimated start and estimated end date for the proposed action.

Start date 08/2017

End date 12/2026

1.12 Provide details of the context, planning framework and State and/or Local government requirements.

The Environmental Protection Authority Tasmania is responsible for environmental regulation of the Salmon-farming Industry.

All of Tassal's marine farming operations must be licenced under the *Living Marine Resources Management Act (1995)*. Each licence includes environmental monitoring conditions specific to that licence to ensure that activities carried out under licence are managed in ways that prevent unacceptable impacts to the marine environment.

The Marine Farming Planning Act (1995) provides a legislative mechanism for the development and approval of marine farming development plans, such as the Great Oyster Bay and Mercury Passage Development Plan 1998, which allocate zones for marine farming and lease areas within these zones. These plans document mandatory management controls for each planning area, environmental controls related to carrying capacity and monitoring, controls on disease management, waste, use of chemicals and controls to visual impacts and the safe marking of lease areas.

The legislative framework and processes for regulating marine farming in Tasmania provides security and certainty for industry, input and consultation with community and stakeholder groups, and the environmental protection required to maintain the integrity of marine ecosystems.

The current management of marine farming in Tasmania does allow for implementation of a contemporary environmental management regime for finfish farming in Okehampton Bay, in that the relevant legislation provides an adaptive management approach, where the regulator can impose relevant licence conditions for specific sites having regard to contemporary research and data.

1.13 Describe any public consultation that has been, is being or will be undertaken, including with Indigenous stakeholders.

At a local level, Tassal is actively engaged in the communities in which it operates. Tassal has a Corporate Engagement and Communication team, including a dedicated Community Engagement Officer, a role that invests time in the community, coordinates community activities, partnerships and research collaborations and liaises with non-government organisations and advisory forums. Community and stakeholder engagement is an overarching and ongoing

activity within Tassal. Fostering an engagement culture in the company supports transparency and allows freedom for all employees to engage on issues important to them. Community engagement activities occur regularly throughout the year and are not necessarily tied to any specific project or proposal.

For the proposed action at Okehampton Bay, the specific consultation and engagement activities undertaken by Tassal have included the following:

15/05/2016

Community Information Session

Community

6/6/2016

Meeting – Proposal Summary for Stakeholders

Pennicott Wilderness Journeys - tourism

22/6/2016

Informal conversation

2nd Danish Seine fisher

22/6/2016

Presentation & meeting

Tasmanian Association of Recreational Fishing

30/6/2016

Presentation and Q&A

East Coast Regional Tourism Association

13/09/2016

Presentation and Q&A

Glamorgan Spring Bay Council – Councillors

28/10/2016

In-person Meeting/Presentation

Tasmanian Rock Lobster Fishery Association Annual General Meeting

7/11/2016

Presentation and Q&A

Sailing Tasmania, Royal Yacht Club Tasmania, Bellerive Yacht Club, Derwent Sailing Squadron, Kettering Yacht Club, others

17/11/2016

In-person display/presentation - Education & Careers Expo, Triabunna

East Coast and south-east Tasmanian Communities

5/12/2016

In-person Meeting

Glamorgan Spring Bay Council, East Coast Tourism, local business, Natural Resource Management (NRM) East

06/02/2017

Meeting – Storm Bay update re navigation outcomes from sailing groups feedback

MaST & Marine Farming Branch of DPIPWE

29/03/2017

Meeting – Prosser Catchment Plan Review (Glamorgon Spring Bay Council-led) - Committee Meeting

Community stakeholder representatives (NRM East, Tourism, business, etc)

11/04/2017

In-person Meeting – Okehampton developments

Glamorgan Spring Bay Council & Spring Bay Seafoods

3/05/2017

In-person Meeting

Orford/Triabunna Community representatives

24/05/2017

Public Employment Information Day

Tassal Environment and Sustainability Deopartment and Human Resources Staff

Tassal has conducted an Aboriginal Heritage Assessment through Aboriginal Heritage Tasmania (AHT). The assessment report shows no there are no Aboriginal Heritage sites recorded within or close to the lease and given its location, it is highly unlikely Aboriginal Heritage would be present. Refer to Attachment 15 in section 1.13.1 of this submission for correspondence with AHT.

1.14 Describe any environmental impact assessments that have been or will be carried out under Commonwealth, State or Territory legislation including relevant impacts of the project.

There have been a range of discrete environmental related studies conducted in the Okehampton Bay and surrounding areas. The key assessments and reports have been uploaded in section 1.14.1:

Environmental Baseline Survey - Attachment 2

IMAS Zone Assessment - Attachment 7

FRDC Rocky Reef Project - Attachment 8

Marine Solutions - Seagrass & Macrocystis survey report - Attachment 9

Aquenal & Marine Solutions Okehampton Summary report - Attachment 10

1.15 Is this action part of a staged development (or a component of a larger project)?

No

1.16 Is the proposed action related to other actions or proposals in the region?

Yes

1.16.1 Identify the nature/scope and location of the related action (Including under the relevant legislation).

A development application has been lodged by Tassal with Glamorgan Spring Bay Council for a water service pipeline in a nearby location ("Pipeline DA")

A development application has been lodged by Spring Bay Seafoods with Glamorgan Spring Bay Council for a marine farming shore facility ("Shore Base DA") in a nearby location.

Tassal considers the Pipeline DA and Shore Base DA to be separate from the proposed action. The Proposed action is not dependent on the approval of either the Pipeline DA or the Shore Base DA.

Section 2 - Matters of National Environmental Significance

Describe the affected area and the likely impacts of the proposal, emphasising the relevant matters protected by the EPBC Act. Refer to relevant maps as appropriate. The interactive map tool can help determine whether matters of national environmental significance or other matters protected by the EPBC Act are likely to occur in your area of interest. Consideration of likely impacts should include both direct and indirect impacts.

Your assessment of likely impacts should consider whether a bioregional plan is relevant to your proposal. The following resources can assist you in your assessment of likely impacts:

• Profiles of relevant species/communities (where available), that will assist in the identification of whether there is likely to be a significant impact on them if the proposal proceeds;

• Significant Impact Guidelines 1.1 – Matters of National Environmental Significance;

• Significant Impact Guideline 1.2 – Actions on, or impacting upon, Commonwealth land and Actions by Commonwealth Agencies.

2.1 Is the proposed action likely to impact on the values of any World Heritage properties?

No

2.2 Is the proposed action likely to impact on the values of any National Heritage places?

No

2.3 Is the proposed action likely to impact on the ecological character of a Ramsar wetland?

No

2.4 Is the proposed action likely to impact on the members of any listed threatened species (except a conservation dependent species) or any threatened ecological community, or their habitat?

No

2.5 Is the proposed action likely to impact on the members of any listed migratory species, or their habitat?

No

2.6 Is the proposed action to be undertaken in a marine environment (outside Commonwealth marine areas)?

Yes

2.6.1 Is it likely to impact on the Commonwealth Marine environment?

No

2.6.2 Describe the nature and extent of the likely impact on the whole of the environment.

Aquaculture has the potential to impact on the marine environment, both near-field and broadscale, affecting water quality and sediments. The severity of these impacts is influenced by such factors as the type and intensity of the farming activity and the capacity of the marine receiving environment to assimilate any impact.

Tassal acknowledges that environmental impacts from finfish aquaculture emissions in Tasmanian coastal waterways can occur – and these impacts may be visible at the near-field spatial scale (predominantly on the seafloor within marine farm lease areas). Management and regulatory controls (through the Tasmanian EPA) are in place to ensure that there are no unacceptable environmental impacts extending beyond 35 metres outside the boundary of marine farming leases. If a significant impact is detected within or outside the lease areas from compliance monitoring surveys, targeted management responses may be required, in addition to possible further investigation and depositional modelling as directed by the regulator.

There have been a range of significant improvements over the last 22 years in the management of impacts from finfish aquaculture in Tasmania, resulting in improved water quality and sediment health. This has been observed through improvements in feeding practices, feed formulation and better understanding fish behaviour through improved technology (i.e. underwater cameras and real time water quality sensors). In addition, siting marine farm leases in waters of suitable depth, with sufficient flushing rates is also known to mitigate impacts on the environment.

The release of nutrients into the environment from finfish farming is largely associated with feed input. Approximately 5% of the total feed input from salmon farming is released into the receiving environment as a form of nitrogen (Wild-Allen 2005), of which 85% is released as dissolved nitrogen (predominantly ammonium) and 15% in particulate form.

One of the main environmental concerns relating to fish farming in Tasmania is the potential for nutrient inputs to cause eutrophication, or organic enrichment of the ecosystem. In south-eastern Tasmania, the primary management (and regulatory) tool for ensuring that eutrophication of the marine environment does not occur is through the Total Permissible Dissolved Nitrogen Output (TPDNO) regulated by the Tasmanian EPA. In addition, a range of Management Controls are also included as Marine Farming licence conditions to ensure that impacts from finfish farming are controlled within acceptable levels. As with all Tasmanian marine farms, the EPA will determine an appropriate monitoring program to compare existing environmental baseline levels with those observed when emissions may be entering the

receiving environment.

Recently there has been increased interest in the benthic environmental impacts at Macquarie Harbour, on Tasmania's west coast. These issues relate specifically to the naturally low levels of dissolved oxygen experienced in the bottom waters of Macquarie Harbour – which is very different to the waters off south-eastern Tasmania which are well mixed and oxygenated. Assimilation of solid emissions is very effective in these conditions, hence Tassal's strong record of environmental compliance within the south-eastern region of Tasmania.

Both near-field monitoring (i.e. remote operated vehicle (ROV) compliance surveys) and broadscale monitoring (i.e. the Broadscale Environmental Monitoring Program (BEMP)) activities are also undertaken routinely to provide knowledge of how well the ecosystem is functioning with an increased nutrient load and to allow any significant temporal and spatial trends to be detected. This work has recently been augmented by studies (Aquenal and IMAS) aimed at extending our understanding of potential broadscale impacts from finfish aquaculture to rocky reef communities.

Tassal has also supported a study aimed at assessing the health of rocky reef communities in south east Tasmania. The 2016 study entitled "Understanding the broadscale impacts of salmonid farming on rocky reef communities" involved the establishment of 26 reef monitoring sites from Maria Island on Tasmania's east coast to Actaeon Island off Tasmania's south coast. Reef health was characterised based on an assessment of macroalgal community assemblages at each of the sites, with ecological and video surveys undertaken to assess and measure reef condition and health over time.

This study also focused on three Tasmanian Marine Protected Areas (MPAs) – Ninepin Point, Tinderbox and Maria Island (7 km to the east of the prosed action at Okehampton Bay). An analysis of data collected from MPA monitoring sites for the period 1992-2015 was undertaken to assess reef health and identify whether there are any patterns of broad-scale change in macroalgal community structure over time. This project aims to augment existing monitoring programs with a more refined monitoring program that continues to monitor pelagic, benthic and rocky reef ecosystems. Tassal understands that similar monitoring will be required by the Tasmanian EPA to complement the 34 consecutive monthly water quality sampling events undertaken at Okehampton Bay (existing lease) and 4 additional sites within the Mercury Passage.

IMAS also commenced a three-year industry-funded research project in 2015 (FRDC Project 2015-024 - Managing ecosystem interactions across differing environments: building flexibility and risk assurance into environmental management strategies). This study will examine interactions between Tasmania's salmon industry and reef communities and consider whether the impacts and interactions of salmon farming may have changed markedly over the last 15 years. With changes to farming technology being adopted by industry, combined with a reliance on more exposed farming locations, this project is positioned to improve our understanding of environmental impacts from modern farming practices. The project recognises that the salmonid industry in Tasmania has changed over the last 10 years, and is proposing to change further in order to grow sustainably (within the bounds of community acceptance) into the future.

Tassal has also implemented a Fish Health Management Plan (FHMP) that includes a combination of compliance, best practice, and regulation through biosecurity management controls and Marine Farming licence conditions. The FHMP addresses detailed, standard operating procedures to prevent disease and pests from entering the region, to prevent the spread and impact of disease in farming regions and to respond to emergency disease situations. The proposed finfish farming development at Okehampton Bay is not anticipated to result in increased risk to current biosecurity arrangements but will continue to work closely with the EPA in this regard.

A submission from IMAS to the Tasmanian Marine Farming Planning Review Panel regarding finfish aquaculture at Okehampton Bay provides a useful synthesis of the level of scientific understanding that has underpinned the development of the Tasmanian salmon industry for over two decades. This document can be sourced from the following link (http://www.imas.utas.edu.au/__data/assets/pdf_file/0008/909368/MFRP-Enquiry-Okehampton-Bay-IMAS-SubmissionWeb-Version-15-11-16.pdf).

2.6.3 Do you consider this impact to be significant?

No

2.7 Is the proposed action likely to impact on any part of the environment in the Commonwealth land?

No

2.8 Is the proposed action taking place in the Great Barrier Reef Marine Park?

No

2.9 Will there be any impact on a water resource related to coal / gas / mining?

No

2.10 Is the proposed action a nuclear action?

No

2.11 Is the proposed action to be taken by the Commonwealth agency?

No

2.12 Is the proposed action to be undertaken in a Commonwealth Heritage Place Overseas?

No

2.13 Is the proposed action likely to impact on any part of the environment in the Commonwealth marine area?

No

Section 3 - Description of the project area

Provide a description of the project area and the affected area, including information about the following features (where relevant to the project area and/or affected area, and to the extent not otherwise addressed in Section 2).

3.1 Describe the flora and fauna relevant to the project area.

The project area is located in Okehampton Bay on the east coast of Tasmania. Okehampton Bay is part of a bioregion which extends from Cape Bernier to the north-eastern tip of Tasmania. The marine flora and fauna in the project area are characteristic of those in the broader Freycinet bioregion which is biodiverse, and includes a cool temperate assemblage of species and sub-antarctic species (Parsons 2011). Flora and fauna found in Okehampton Bay are also found throughout the Freycinet bioregion and elsewhere in near coastal Tasmanian environments.

Benthic Flora and Fauna

Three major benthic habitat types are present in Okehampton Bay. These include soft sediments (sand), rocky reef, seagrass beds and various iterations of these habitat types (e.g. patchy seagrass, sparse seagrass, patchy reef, reef, etc). *Heterozostera sp.* (likely *tasmanica*), among other species of seagrass are present in a patchy band of seagrass roughly following the shape of the coast. Reef flanks the western and eastern sides of Okehampton Bay and supports a mixed macroalgae community.

Analysis of macrobenthic samples in 2000 (Aquenal) indicated a highly diverse and abundant macroinvertebrate fauna living in the Okehampton lease area. A total of 182 species and 3,463 animals were collected from the 54 grab samples. The fauna observed appeared typical of that present in depths of 20-40 m at sites on the east coast with well sorted sand and moderate water movement. The most common species collected were an ampharetid polychaete, the introduced gastropod *Maoricolpus roseus*, a sabellid polychaete that is probably the introduced species *Euchone limnicola*, the *ostracod Euphilomedes* sp., and an ampeliscid amphipod. In terms of biomass, the introduced screw shell *Maoricolpus roseus* was overwhelmingly predominant.

Although historically present, no giant kelp, *Macrocystis pyrifera,* remains within Okehampton Bay or in suitable habitat in the surrounding environment. This is evident by a lack of surface canopy within 4 km to both the north and south of Okehampton Bay. For the past several decades, wide scale declines of *M. pyrifera* has been recorded around Tasmania. These declines are attributed to southward extension of warm, nutrient poor waters from the East Australian Current. *M. pyrifera* is listed under the *Environment Protection and Biodiversity Conservation Act 1999* (the EPBC Act) as a threatened ecological community.

For more detail and images refer to Attachment 6 (uploaded to section 3.1.1 of this submission).

Relevant flora and fauna surveys and investigations (Attachments 2 and 8) can be found uploaded in section 1.14.1 of this submission.

3.2 Describe the hydrology relevant to the project area (including water flows).

The Okehampton Bay lease is situated within the south-eastern facing Okehampton Bay in 21 m to 28 m of water. Some protection is afforded to the lease area from northerly and westerly weather by the headlands flanking the bay. The East Australian Current brings warmer water to the area during summer, while waters from cool temperate currents dominate winter months. At any given time, wind driven surface currents and localised weather events can influence circulation within the bay and the Mercury Passage.

Tides in the region are semidiurnal (two tides per day) with unequal daily high tides and low tides. The spring tide range is approximately 1.1 m above mean sea level of 0.7 m Chart datum. The bulk movement of water through the Mercury Passage is in a northwards direction up the Tasmanian coastline (Craig and McLoughlin 1994). Tidal currents in Mercury Passage are generally weak, although large scale wind induced currents may persist for days on some occasions (Marine Solutions 2008). These persistent currents may be attenuated at times by the effect of tides. Currents close to shore are generally weak, although currents in the middle of the passage and toward the southern end of the passage may be stronger. Studies in Great Oyster Bay, to the immediate north of the Mercury Passage, found current speeds to be generally low (0-5 cm-2 or 0-5 km day-1) (Craig and McLoughlin 1994).

The CSIRO recently developed the Maria Island Model which includes the entire Mercury Passage with the influences of winds, atmospheric pressure, tides and the offshore ocean state. It supplies fine resolution tidal modelling which incorporates global and regional real time data which is used to force the model. The model has also been shown to reproduce observed tidal and sea level signals. Tassal has purchased real time current profiler and water quality profiler equipment for the site which will link into the model to calibrate the hydrodynamics for the Okehampton Bay region. Through this collaborative project Tassal water quality monitoring data sets will also inform the larger model to strengthen the confidence of this high resolution model. Tassal actively work collaboratively with CSIRO on a range of similar projects and data sharing around the state. The current model and model animation is congruent with existing observations and previously published data in that the bulk water movement appears to be to the north, and that at fine scales the current can alter over shore periods of time in response to tidal and/or wind signals.

Wind waves are generated locally from the northeast and to a lesser extent the south, however the strongest winds are generally from the northwest to southwest and may also generate a substantial wind chop in the eastern sections of the Mercury Passage (Marine Solutions 2008).

In early 2000, Aquenal collected over two months of current flow data from the centre of the lease using current metres deployed at 6 m, 9 m and 24 m. Current flows throughout this deployment were predominantly relatively slow compared to other east Tasmanian sites,

however they rarely fell below 1.1 cm sec-1, suggesting that the consistent flow of seawater into the bay from Mercury Passage provides flushing around the lease area. Flow direction was variable, but was predominantly to the northeast at 6 m depth, southwest at 9 m and east at 24 m. Biofouling was found to be an issue to these deployments with this older type of single point current monitoring equipment.

Marine Solutions deployed an Acoustic Doppler Current Profiler (ADCP) for 6 weeks from the 7/11/2014 at a point approximately 500 m off Okehampton Beach (42°31'55.20" S, 147°58'38.64"E). The data collected from the ADCP provided current velocity and direction data through the water column. Once the real time ADCP previously mentioned is deployed at the site current direction and velocity will be recorded continuously within the bay.

Data from the logged ADCP deployment were composited into depth bins. Polar plots of current velocity and direction were prepared for each depth bin. A negative correlation between depth and current velocity was observed, with the highest velocity currents being present in the surface waters. The average velocity of the shallowest depth bin was notably higher than all deeper depth bins, which can be attributed to wind-driven surface current. Likewise, maximum current velocity was relatively consistent throughout all but the surface depth bin, where a maximum velocity approximately 3 times that of any other depth bin was observed.

The current plot for surface waters of the proposed Okehampton Bay lease shows surface water is strongly dominated by north/north westerly flows at a speed of 0.5-0.75 m/s.

The current plot for surface waters of the proposed Okehampton Bay lease shows water at 8.5 m depth is dominated by north easterly flows.

The current plot for surface waters of the proposed Okehampton Bay lease shows water at 13.5 m depth is dominated by north/north east and westerly flows.

The current plot for surface waters of the proposed Okehampton Bay lease shows water at 19 m depth is dominated mainly by westerly flows.

The current plot for bottom waters at a depth of 24.5 m at Okehampton Bay are dominated by westerly flows.

When the current is grouped into three bins, (surface, mid and bottom), and compared with flow velocity data from two existing marine farming sites with similar depths and exposure in the south-east of Tasmania, it is apparent Okehampton Bay has similar trends through the water column, and the absolute velocity of water movement is also similar.This information is important for both environmental assimilation related to water exchange and animal health aspects.

Significant wave height and direction data was also collected during the ADCP deployment. Significant wave height ranged from 0.15 m to 1.94 m during the six week deployment, with a mean of 0.5 m. Significant wave direction was predominantly from east to west in a height range of 0.25 -0.5 m. This reflects the shelter the location receives from the North and West.

Refer to Attachment 6 for full details, images and tables (uploaded to section 3.1.1 of this submission).

3.3 Describe the soil and vegetation characteristics relevant to the project area.

Soil

Sediment analysis was conducted by Aquenal (2000) within the Okehampton Bay marine farming zone and included visual assessments, particle size analysis, redox potential, organic content, and biological analysis (including laboratory analysis).

In summary, sediments were uniformly grey-brown in colour and ranged from fine to coarse sand and shell grit across the lease, indicating both temporal and spatial variation in water movement at the seabed. Particle size analysis revealed predominantly fine sandy sediments at all sites across the lease, indicating a constant, moderate level of water movement at the seabed. Surface redox varied across the lease, reflecting different organic content, grain size composition and water movement. Sediment redox at 4 cm accurately reflected the prevailing oxidation environment of soft sediments. The organic content of sediments was within the typical range for the sandy marine sediments within the lease zone. Variation of organic content across sites reflected the variation in particle size distribution of sediments. The macroinvertebrate fauna living in the lease area was highly diverse and abundant. The fauna was typical of that present in depths from 20 m to 40 m with well sorted sand and moderate water movement.

Based on desktop research, the land surrounding Okehampton Bay is composed of brown and Podzolic soils on dolerite to the north east and south west, Podzol and Podzolic soils on sandstone to the west, and undifferentiated alluvial soils immediately north.

Vegetation

The marine vegetation within Okehampton Bay is characterised by a mixed algal community typical of the Freycinet bioregion.

Above sea level, Okehampton Bay has a coastal saltmarsh community located behind the beach zone connected to the marine environment by a river on the western side. This saltmarsh is a vulnerable community as listed in the EPBC report. The saltmarsh ecosystem is in good condition and as such scored high on the condition/naturalness category (DPIPWE, 2014).

This particular saltmarsh habitat is not tidally impacted and is behind the dune system at Okehampton Bay, therefore it is unlikely the saltmarsh habitat would be influenced or receive any inputs from the bay.

For further detail and images refer to Attachment 6 (uploaded to section 3.1.1 of this submission).

3.4 Describe any outstanding natural features and/or any other important or unique values relevant to the project area.

Tassal is unaware of any unique or outstanding geological or biological values relevant to the project area. The land forms and biota present within the project area are well represented within the Freycinet bioregion. The project area is approximately 7 km from a marine protected area off northern Maria Island.

The Freycinet bioregion in which Okehampton bay is located has a variety of coastal land forms ranging from granite mountains to saltmarshes and sandy beaches. Okehampton Bay has a sandy beach with a coastal saltmarsh located behind the beach dunes.

3.5 Describe the status of native vegetation relevant to the project area.

There are three major benthic habitat types present within Okehampton Bay, including unvegetated sediments, vegetated sediments (including *Caulerpa* spp. and seagrasses) and rocky reef.

Within the rocky reef habitat there are areas of healthy and declining macroalgal communities. Recent field assessments conducted by Marine Solutions within Okehampton Bay have attributed declines to stress caused by silt loading and urchin barrens, where high densities of sea urchins have overgrazed rocky reef habitats.

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

The bathymetry of the project area has been mapped by Marine Solutions previously (Marine Solutions 2017), refer to Attachment 6 in Appendix A. The bathymetry of the project area was found to be typical of a coastal marine environment, whereby depth increased with increasing distance from shore. The area within the proposed lease was the deepest of the survey area, with depths ranging from approximately 20 m to 26 m. To the west, the mouth of Spring Bay was notably shallower. There were no other noteworthy features detected in bathymetric mapping. There is also a Navionics output provided as Attachment 6 (uploaded to section 3.1.1 of this submission).

3.7 Describe the current condition of the environment relevant to the project area.

Okehampton Bay represents a moderately disturbed habitat with nearby fisheries and agricultural operations that have impacted the Okehampton Bay marine environment. The operational shellfish fishery within the project area is likely to have altered the immediate environment, with increased nutrient inputs, biofouling and vessel movements. Agricultural operations around Okehampton Bay may have also increased nutrient and turbidity inputs due to land-based runoff.

Significant pressure from recreational and commercial fishers has undoubtedly influenced the ecological community composition of the bay. Some species that historically were present within the project area are not anymore, including the giant kelp, *Macrocystis pyrifera*. Invasive species were identified within the project area, including the introduced gastropod *Maoricolpus roseus*, a sabellid polychaete that is probably the introduced species *Euchone limnicola*, and the introduced screw shell *Maoricolpus roseus* was overwhelmingly predominant.

Despite impacts to the project area due to nearby anthropogenic processes, there are beneficial environmental processes, such as current movements, that contribute to sustained ecosystem health within Okehampton Bay. The project area has good water quality and established marine habitats characteristic of other areas where established marine leases exist in the south-east of Tasmania.

Refer to Attachment 6 (uploaded to section 3.1.1 of this submission) for the findings from water quality sampling undertaken in Okehampton Bay from Sep. 2014 to May 2017.

3.8 Describe any Commonwealth Heritage Places or other places recognised as having heritage values relevant to the project area.

A search of the EPBC Protected Matters Search Tool (EPBC, 2015), did not identify any Commonwealth Heritage Places within 5 km of Okehampton Bay.

3.9 Describe any Indigenous heritage values relevant to the project area.

Aboriginal Heritage Tasmania (AHT) has completed a search of the Aboriginal Heritage Register (AHR) regarding the proposed marine lease at Okehampton Bay, and can advise that there are no Aboriginal heritage sites recorded within or close to the lease. Given the location, within Okehampton Bay itself, it is highly unlikely that Aboriginal Heritage would be present.

Accordingly there is no requirement for an Aboriginal heritage investigation and AHT have no objection to the project proceeding.

Refer to Attachment 15 (uploaded in 1.13.1 of this submission) for the correspondence with AHT.

3.10 Describe the tenure of the action area (e.g. freehold, leasehold) relevant to the project area.

MF236 within Zone 4 (Okehampton Bay) is an active marine farming lease that is renewed annually through the *Living Marine Resources Act 1995*. This licence whilst in force authorises the holder to carry on marine farming within the lease area in accordance with conditions and restrictions specified in licence schedules. The species specified on the current marine farming licence include mussels, seaweed and Atlantic salmon.

3.11 Describe any existing or any proposed uses relevant to the project area.

The project area is an operational marine farming lease, currently culturing mussels and seaweed.

Recreational and commercial fishing (rock lobster, abalone and scalefish) occur in the vicinity of the project area but outside of the existing lease area. It is expected that these activities will continue within Okehampton Bay. Evidence of this is provided elsewhere around other marine farming zones in south east Tasmania.

There are two terrestrial farms in the vicinity of Okehampton Bay. No other residents live in close proximity to the project area. Given that no residences occur within at least 1.5 km of the lease area, residential impacts from noise are highly unlikely to occur; likewise, there will be no observable impact on visual amenity from any residence. Tassal now has considerable experience of noise mitigation and have successfully resolved such issues in the past and will continue to employ an acoustic specialist to assist with noise mitigation across all sites as required.

Both marine and land based tourism operations are relatively limited in the immediate area surrounding Okehampton Bay.

Section 4 - Measures to avoid or reduce impacts

Provide a description of measures that will be implemented to avoid, reduce, manage or offset any relevant impacts of the action. Include, if appropriate, any relevant reports or technical advice relating to the feasibility and effectiveness of the proposed measures.

Examples of relevant measures to avoid or reduce impacts may include the timing of works, avoidance of important habitat, specific design measures, or adoption of specific work practices.

4.1 Describe the measures you will undertake to avoid or reduce impact from your proposed action.

A risk assessment process has been used to identify whether the proposed action at Okehampton Bay would significantly impact upon any Matter of National Environmental Significance (MNES). Significant Impact Criteria were used against each of the species and threatened communities identified as potentially interacting with the proposed action, or where their habitat may be impacted from the marine farming activities. The proposed action is considered unlikely to impact on any MNES identified in this process.

Tassal possesses an extremely sound record of environmental management, and has achieved certification to the Aquaculture Stewardship Council (ASC) Standards for all its farms. Through this program, Tassal has continued to minimize the environmental and social footprint by addressing key impacts and continuing to improve its environmental performance. In meeting Principle 2 of the ASC Standards – Conserve natural habitat, local biodiversity and ecosystem function, Tassal continues to ensure that its farms have minimal impact on populations of wildlife. This is undertaken by adopting best practice management of marine farming operations, understanding when to take action, and reducing the risk of potential interactions through continual improvement processes.

Tassal adopts a range of measures to prevent unnecessary interactions with MNES, including:

Adoption of feeding practices that maximize food conversion ratios and minimize waste

Exclusion of predators (i.e. seals) and birds from entering sea cages

Dedicated wildlife management team to control wildlife interactions and design non-lethal predator control plans

Design of sea cage configurations to avoid entanglement of MNES and escape of farmed salmon

Routine and regular inspections of sea cage configuration and associated equipment

Adoption of biosecurity protocols and farm hygiene practices at all sites

Implementation of Fish Health Management Plans and Protocols

Minimise discharge of waste to the marine environment wherever possible

Broadscale monitoring of water quality and reef communities

In addition to the internal measures that will be undertaken by Tassal to avoid or reduce the impact of the proposed action at Okehampton Bay, the Great Oyster Bay and Mercury Passage Marine Farming Development Plan includes Regulatory Management Controls to satisfactorily manage and mitigate any negative environmental effects from marine farming activities. These include:

Controls limiting the total permissible dissolved nitrogen output

Controls to ensure there are no unacceptable impacts 35 metres outside the boundary of the lease area

Environmental controls relating to carrying capacity

Environmental controls relating to environmental monitoring

Chemical controls

Controls on waste

Disease controls

Visual controls

Access controls

Reporting controls

Tassal considers that the full range of mitigation measures that it has implemented throughout its operations, both voluntary (i.e. ASC) and for regulatory purposes (i.e. through the Tasmanian EPA), are comprehensive, and provide a high degree of confidence that Tassal's operations will not significantly impact on any MNES.

4.2 For matters protected by the EPBC Act that may be affected by the proposed action, describe the proposed environmental outcomes to be achieved.

Outcome 1. There will be no significant impact to any MNES

Outcome 2. The proposed action will not result in population decrease in the size of an

important population of a listed or migratory species

Outcome 3. There will be no reduction in area of occupancy of an important population within the planned footprint of operation

Outcome 4. There will be no introduction of disease that may cause the decline of a listed species.

Outcome 5. There will be no indirect impacts to threatened communities (i.e. Giant Kelp)

Outcome 6. Additional broadscale environmental monitoring will be undertaken by Tassal to monitor the health of habitats adjacent to the proposed action.

Outcome 7. The proposed action will not substantially modify, destroy or isolate an area of important habitat for a migratory species

Outcome 8. Tassal will continue to work with recognised experts and institutions to deliver improved environmental outcomes in all of its activities.

Refer to Attachment 16 (uploaded to section 4.3 of this submission) for the relevant listed species that a likely or known to occur in area of the proposed action.

Section 5 – Conclusion on the likelihood of significant impacts

A checkbox tick identifies each of the matters of National Environmental Significance you identified in section 2 of this application as likely to be a significant impact.

Review the matters you have identified below. If a matter ticked below has been incorrectly identified you will need to return to Section 2 to edit.

5.1.1 World Heritage Properties

No

5.1.2 National Heritage Places

No

5.1.3 Wetlands of International Importance (declared Ramsar Wetlands)

No

5.1.4 Listed threatened species or any threatened ecological community

No

5.1.5 Listed migratory species

No

5.1.6 Commonwealth marine environment

No

5.1.7 Protection of the environment from actions involving Commonwealth land

No

5.1.8 Great Barrier Reef Marine Park

No

5.1.9 A water resource, in relation to coal/gas/mining

No

5.1.10 Protection of the environment from nuclear actions

No

5.1.11 Protection of the environment from Commonwealth actions

No

5.1.12 Commonwealth Heritage places overseas

No

5.2 If no significant matters are identified, provide the key reasons why you think the proposed action is not likely to have a significant impact on a matter protected under the EPBC Act and therefore not a controlled action.

Tassal considers that the proposed action at Okehampton Bay is complementary to its existing marine farms in south east Tasmania, as such it will be subject to the same level of interactions with MNES as occurs at all other marine farms in this area of the state.

The proposed action is already a working marine farm that includes much of the same equipment as is used in finfish farming, such as moorings, lines and submarine structures. Therefore, there is an existing footprint where significant impacts to MNES have not previously occurred. The addition of finfish to this site will result in impacts which are localized and controlled through regulation and environmental monitoring at the broadscale level.

Tassal possesses a sound environmental record, where interactions with MNES (such as seals) are known to occur, but are managed in a way that prevents unnecessary or negative impacts. Potential impacts to EPBC listed species will be limited to minor interactions – and these interactions are not considered to be significant, or affect the population levels of listed species.

The main key reason why Tassal considers that the proposed action is not likely to have a significant impact on any MNES is because the company possesses an extremely good working knowledge of the environment and ecosystems where marine farming is undertaken, and possesses the skills and capabilities to design and develop appropriate mitigation strategies to minimize the level of interactions with wildlife and other MNES. The depth and breadth of Tassal's operations are continually (and independently) audited against the Aquaculture Stewardship Council (ASC) Standards, and the Tasmanian regulatory framework within which Tassal must operate is robust.

Refer to Attachment 17 (uploaded in section 4.3) for the detail of Tassal's risk and consequence methodologies that have been used to assess the likely risks to Matters of National Environmental Significance from the proposed action.

Section 6 – Environmental record of the person proposing to take the action

Provide details of any proceedings under Commonwealth, State or Territory law against the person proposing to take the action that pertain to the protection of the environment or the conservation and sustainable use of natural resources.

6.1 Does the person taking the action have a satisfactory record of responsible environmental management? Please explain in further detail.

Tassal possesses a successful and distinguished record of salmonid aquaculture in Tasmania, and is now recognised as an international leader in sustainable seafood production. In 2014, Tassal achieved a global first for any salmon company, gaining full Aquaculture Stewardship Council (ASC) certification across its entire area of operations.

In August 2016, Tassal was ranked as the number one salmonid company in the Seafood Intelligence global report measuring 150 key corporate, social and environmental performance indicators.

In Tassal's latest sustainability report, 97.9% environmental compliance was recorded across all of Tassal's marine sites. For freshwater compliance, 96.8% was recorded at the Rookwood Road Hatchery and 100% at the Russell Falls Hatchery.

6.2 Provide details of any past or present proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources against either (a) the person proposing to take the action or, (b) if a permit has been applied for in relation to the action – the person making the application.

Tassal Operations is involved in litigation in both the Federal Court of Australia and the Supreme Court of Tasmania in relation to operations in Macquarie Harbour. The actions were not taken against Tassal. The proceedings were instituted by one of Tassal's competitors against the State regulators in the Supreme Court of Tasmania and against the State and Federal regulators in the Federal Court. Tassal has joined the proceedings as co-respondents in both jurisdictions alongside the regulators. We emphasise the proceedings were not taken by regulators against Tassal, rather by an organisation against the regulator.

6.3 Will the action be taken in accordance with the corporation's environmental policy and planning framework?

Yes

6.3.1 If the person taking the action is a corporation, please provide details of the corporation's environmental policy and planning framework.

Tassal will be undertaking this action in accordance with its Environmental Policy (uploaded in 6.3.2 as Attachment 11). The key aspects of the policy are to:

- Identify and assess environmental risk and act to eliminate or minimise environmental impacts that arise from Tassal products, services and operations.

- Establish measurable objectives and targets aimed at preventing pollution and improving environmental performance; and monitoring and reviewing these measures to ensure that Tassal continually improve.

- Encourage equivalent environmental commitment from Tassal suppliers and contractors.

- Consult with and engage internal and external stakeholders, including local communities and regulators on relevant environmental matters.

- Implement and maintain Aquaculture Stewardship Council (ASC) certification.

- Encourage a sense of environmental responsibility among all employees through training, education and communication.

- Provide information of Tassal's environmental initiatives to the public through the Tassal website and other forums of open communications.

- Ensure the long term sustainability of the aquaculture salmonid industry, the environment Tassal operate within and all community and commercial partnerships.

As mentioned above Tassal is committed to ASC certification across all its operations and as such the action of finfish farming at Okehampton Bay will be audited against the ASC standard when peak biomass is reached in 2018. In preparation for this Tassal will ensure that compliance with the ASC standard is implemented from the point in which fish enter the water. During the planning phase, Tassal will develop and implement systems to support compliance, including policies, procedures and risk maps. Tassal also has a dedicated Environmental Certification Officer responsible for managing its environmental certifications and educating employees on certification requirements.

The relevant criteria under the ASC standard that will be applied to the action include:

- Criterion 1.1 compliance with all applicable local and national legal requirements and regulations (4 indicators);

- Criterion 2.1 benthic biodiversity and benthic effects (4 indicators);

- Criterion 2.2 water quality in and near the site of operation (5 indicators);

- Criterion 2.3 nutrient release from production (1 indicator);

- Criterion 2.4 interactions with critical or sensitive habitats (2 indicators);

- Criterion 2.5 interactions with wildlife, including predators (7 indicators);

- Criterion 4.5 non-biological waste from production (2 indicators); and

- Criterion 4.7 non-therapeutic chemical inputs (5 indicators).

Tassal and its employees work hard to maintain its compliance against the 152 individual compliance criteria within the ASC standard. Tassal are continually making improvements and preparation for each audit is ongoing throughout the business.

6.4 Has the person taking the action previously referred an action under the EPBC Act, or been responsible for undertaking an action referred under the EPBC Act?

Yes

6.4.1 EPBC Act No and/or Name of Proposal.

Tassal was a proponent in an industry-wide (other proponents included Petuna and Huon Aquaculture) referral submission regarding the action of finfish farming in Macquarie Harbour. Referral number/title - *EPBC 2012/6406: The expansion of marine farming operations in Macquarie Harbour, on the west coast of Tasmania (as described in EPBC Act referral 2012/6406).*

Section 7 – Information sources

You are required to provide the references used in preparing the referral including the reliability of the source.

7.1 List references used in preparing the referral (please provide the reference source reliability and any uncertainties of source).

Reference Source	Reliability	Uncertainties
CSIRO, 2017. Maria Island Hydrodynamic Model Project Outline. http://www.emg.cmar.csiro.au/www/en/emg/projects/S-E--Tasmania/Project-description.html	Strong	Nil
IMAS, 2014. A numerical ocean model for the continental shelf off Eastern Tasmania (ETAS) http://imos.org.au/fileadmin/user_upload/shared/IMOS%20General/ACOMO/ACOMO_2014/presentations/Tuesday/EricOliver_ACOMO_ETAS.pdf	Strong	Nil
Natural Values Atlas – Online Tool	Strong	Nil
Professor Colin Buxton, 2017. Advice to The Minister for Primary Industries and Water on Salmon Farming Operations Okehampton Bay.	Strong	Nil
Tassal Annual Sustainability Report, 2016. http://www.tassal.com.au/sustainability/our-sustainability-reports/#our-sustainability-reports	Strong	Nil
Great Oyster Bay and Mercury Passage Marine Farming Development Plan October, 1998. (Modified May 2010). http://dpipwe.tas.gov.au/Documents/GOBMP-MFDP-October-1998-(Modified-May-2010).pdf	Strong	Nil
Amendment No.1 (February, 2017) to the Great Oyster Bay	Strong	Nil

Reference Source	Reliability	Uncertainties
and Mercury Passage Marine Farming Development Plan. October 1998. http://dpipwe.tas.gov.au/Documents/updated%20Amendment%20No%201%20to%20Great%20Oyster%20Bay%20and%20Mercury%20Passage%20MFDP%20Aug%202016.pdf		
Aquenal (2016) Okehampton Bay Studies – Summary Report for Tassal Limited, 17pp.	Strong	Nil
Marine Solutions (2016) Baseline seagrass and Macrocystis surveys in the vicinity of proposed fish farming, Okehampton Bay Tasmania, Report for Tassal, 21pp.	Strong	Nil
Baseline Environmental Assessment of Marine Farming Lease # 236 at Okehampton Bay Finfish Farm. February, 2000. Report to Spring Bay Salmon by Aquenal Pty Ltd.	Strong	Nil
Living Marine Resources Management Act 1995 (section 78) Marine Farming Licence No: 236, May 2017.	Strong	Nil
Conservation Advice, Fairy Prion (southern) Pachyptila tutur subantarctica, 2015. http://www.environment.gov.au/biodiversity/threatened/species/pubs/64445-conservation-advice-01102015.pdf	Strong	Nil
Pizzey, G. & F. Knight (1999). The Graham Pizzey and Frank Knight Field Guide to the Birds of Australia. Pymble, Sydney: Angus and Robertson.	Strong	Nil
Marchant S, Higgins PJ (Eds) (1990) Handbook of Australian, New Zealand and Antarctic Birds. Volume 1: Ratites to Ducks. Oxford University Press,	Strong	Nil

Reference Source	Reliability	Uncertainties
Melbourne.		
Blaber S, Battam H, Brothers N, Garnett ST (1996) Threatened and migratory seabird species in Australia: an overview of status, conservation and management. In The Status of Australia's Seabirds: Proceedings of the National Seabird Workshop, Canberra, 1–2 November 1993. (Eds GJB Ross, K Weaver and JC Greig) pp. 13–27. Biodiversity Group, Environment Australia, Canberra.	Strong	Nil
Hooded Plover, Thinornis rubricollis, Parks and Wildlife Service Tasmania. http://www.parks.tas.gov.au/indeX.aspX?base=17069, DPIPWE, 2002.	Strong	Nil
Threatened Species Scientific Committee (2012). Advice to the Minister for Sustainability, Environment, Water, Population and Communities from the Threatened Species Scientific Committee (TSSC) on Amendments to the List of Ecological Communities under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act). Giant Kelp Marine Forests of South East Australia ecological community.	Strong	Nil
Bell, P. and Mooney, N. J. (1999). Wedge-tailed Eagle Recovery Plan, 1998-2003. Tasmania, Department of Primary Industries, Water, and Environment.	Strong	Nil
Threatened Species Section (2006). Threatened Tasmanian Eagles Recovery Plan 2006-2010. Hobart.	Strong	Nil
Wiersma, J. and Richardson, A. (2009). Foraging of White-	Strong	Nil

Reference Source	Reliability	Uncertainties
bellied Sea Eagles Haliaeetus leucogaster in relation to marine fish farms in Tasmania. Corella 33(3): 71-79.		
Rosenbaum, H.C., Maxwell, S.M., Kershaw, F. and B. Mate. (2014). Long-range movement of Humpback Whales and their overlap with anthropogenic activity in the South Atlantic Ocean. Conservation Biology. 00:1-12.	Strong	Nil
Bruce, B.D and R.W Bradford (2008). Spatial dynamics & habitat preferences of juvenile white sharks: identifying critical habitat and options for monitoring recruitment. Final Report to the Department of the Environment, Water, Heritage and the Arts - Marine Species Recovery Program. [Online]. Hobart.	Strong	Nil
Bruce, G.D., J.D. Stevens & H. Malcolm (2006). Movements and swimming behaiour of white sharks (Carcharodon carcharias) in Australian waters. Marine Biology. 150:161-172. [Online]. Available from: http://web.ebscohost.com/ehost/pdfviewer/pdfviewer?vid=5&hid=15&sid=e92b4861-0c33-4972-81be-796819288dd2%40sessionmgr4.	Strong	Nil
Regulation of the fin-fish aquaculture industry in Tasmania, 21 August 2015. Commonwealth of Australia 2015 http://www.aph.gov.au/Parliamentary_Business/Committees/Senate/Environment_and_Communications/Fin-Fish/Report	Strong	Nil
Marine Solutions (2008). Environmental Impact Assessment prepared for	Strong	Nil

Reference Source	Reliability	Uncertainties
Spring Bay Seafoods – Friend of the Sea Application, November 2008.		
Huon Estuary Study, 2000. Huon Estuary Study - Environmental Research for Integrated Catchment Management and Aquaculture http://www.frdc.com.au/research/Final_Reports/1996-284-DLD.pdf	Strong	Nil
Swift Parrot Recovery Plan, 2001-2005. Department of Primary Industries, Water and Environment http://www.environment.gov.au/system/files/resources/a1580450-35ba-4f52-bf50-ad1e36ae2272/files/swift-parrot.pdf	Strong	Nil
Keith, K. & M.P. Hines (1958). New and rare species of birds at Macquarie Island during 1956 and 1957. CSIRO Wildlife Research. 5:50--53.	Strong	Nil
Brothers NP (1984) Breeding, distribution and status of burrow-nesting petrels at Macquarie Island. Australian Wildlife Research 11, 113–131.	Strong	Nil
Garnett S, Crowley GM (2000) The Action Plan for Australian Birds 2000. Environment Australia, Canberra.	Strong	Nil
Blaber S, Battam H, Brothers N, Garnett ST (1996) Threatened and migratory seabird species in Australia: an overview of status, conservation and management. In The Status of Australia's Seabirds: Proceedings of the National Seabird Workshop, Canberra, 1–2 November 1993. (Eds GJB Ross, K Weaver and JC Greig) pp. 13–27. Biodiversity Group, Environment Australia,	Strong	Nil

Reference Source	Reliability	Uncertainties
Canberra.		
Marchant S, Higgins PJ (Eds) (1990) Handbook of Australian, New Zealand and Antarctic Birds. Volume 1: Ratites to Ducks. Oxford University Press, Melbourne.	Strong	Nil
Wild-Allen, K., Parslow, J., Herzfeld, M., Sakov, P., Andrewartha, J., and Rosebrock, U. (2005). Biogeochemical Modelling of the D'Entrecasteaux Channel and Huon Estuary. Aquafin CRC Project 4.2 (FRDC Project No. 2001/097). Aquafin Cooperative Research Centre, Fisheries Research and Development Corporation, Commonwealth Scientific and Industrial Research Organisation. Published by CSIRO Marine and Atmospheric Research.	Strong	Nil
Craig P D & McLoughlin R J 1994 Modelling Scallop Larvae Movement in Great Oyster Bay Chapter 16 pp 307-326, in The Bio-physics of Marine Larval Dispersal Ed Sammarco P W & Heron, M L	Strong	Nil

Section 8 – Proposed alternatives

You are required to complete this section if you have any feasible alternatives to taking the proposed action (including not taking the action) that were considered but not proposed.

8.0 Provide a description of the feasible alternative?

There are no feasible alternatives to undertaking marine finfish aquaculture within the existing marine lease.

The development of an integrated aquaculture site (shellfish, salmon and seaweeds) requires a marine lease that is licenced for all three species through the Tasmanian State Government, is of adequate exposure, meets specific depth requirements and is of suitable size to culture the beforementioned species. There are no other marine leases within the Great Oyster Bay and Mercury Passage Marine Farming Development Plan Area (MFDP) that satisfy these criteria and existing marine space within Tasmania is limited. There are no alternatives to the proposed use of the existing shellfish marine farm.

8.1 Select the relevant alternatives related to your proposed action.

8.27 Do you have another alternative?

No

Section 9 – Contacts, signatures and declarations

Where applicable, you must provide the contact details of each of the following entities: Person Proposing the Action; Proposed Designated Proponent and; Person Preparing the Referral. You will also be required to provide signed declarations from each of the identified entities.

9.0 Is the person proposing to take the action an Organisation or an Individual?

Organisation

9.2 Organisation

9.2.1 Job Title

Aquaculture

9.2.2 First Name

~~Tassal Operations Pty Ltd.~~ Mark

9.2.3 Last Name

~~Tassal Operations Pty Ltd.~~ Ryan

9.2.4 E-mail

tassal@tassal.com.au

9.2.5 Postal Address

GPO Box 1645
Hobart TAS 7001
Australia

9.2.6 ABN/ACN

ACN

106324127 - TASSAL OPERATIONS PTY. LTD.

9.2.7 Organisation Telephone

0408 514 519 / 0429 134 768

9.2.8 Organisation E-mail

matt.barrenger@tassal.com.au

9.2.9 I qualify for exemption from fees under section 520(4C)(e)(v) of the EPBC Act because I am:

Not applicable

Small Business Declaration

I have read the Department of the Environment and Energy's guidance in the online form concerning the definition of a small a business entity and confirm that I qualify for a small business exemption.

Signature:..... Date: .....

9.2.9.2 I would like to apply for a waiver of full or partial fees under Schedule 1, 5.21A of the EPBC Regulations

No

9.2.9.3 Under sub regulation 5.21A(5), you must include information about the applicant (if not you) the grounds on which the waiver is sought and the reasons why it should be made

Person proposing the action - Declaration

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

Signature:..... Date: 31.5.17

I, _____, the person proposing the action, consent to the designation of _____ as the proponent of the purposes of the action describe in this EPBC Act Referral.

Signature:..... Date: .....

9.3 Is the Proposed Designated Proponent an Organisation or Individual?

Organisation

9.5 Organisation

9.5.1 Job Title

CEO

9.5.2 First Name

Mark

9.5.3 Last Name

Ryan

9.5.4 E-mail

mark.ryan@tassal.com.au

9.5.5 Postal Address

GPO Box 1645
Hobart TAS 7001
Australia

9.5.6 ABN/ACN

ACN

106324127 - TASSAL OPERATIONS PTY. LTD.

9.5.7 Organisation Telephone

0408 514 519

9.5.8 Organisation E-mail

tassal@tassal.com.au

Proposed designated proponent - Declaration

I, Mark Ryan, the proposed designated proponent, consent to the designation of myself as the proponent for the purposes of the action described in this EPBC Act Referral.

Signature:..... Date: 29 May 2017

9.6 Is the Referring Party an Organisation or Individual?

Organisation

9.8 Organisation

9.8.1 Job Title

Aquaculture

9.8.2 First Name

Tassal Operations Pty Ltd

9.8.3 Last Name

Tassal Operations Pty Ltd

9.8.4 E-mail

tassal@tassal.com.au

9.8.5 Postal Address

GPO Box 1645
Hobart TAS 7001
Australia

9.8.6 ABN/ACN

ACN

106324127 - TASSAL OPERATIONS PTY. LTD.

9.8.7 Organisation Telephone

0408 514 519

9.8.8 Organisation E-mail

tassal@tassal.com.au

Referring Party - Declaration

I, MARK RYAN, I declare that to the best of my knowledge the information I have given on, or attached to this EPBC Act Referral is complete, current and correct. I understand that giving false or misleading information is a serious offence.

Signature:..... Date: 29 May 2017

Appendix A - Attachments

The following attachments have been supplied with this EPBC Act Referral:

1. attachment_1_-commercial_in_confidence_-_barge_vessels.docx_.pdf
2. attachment_2_-_mf236_okehampton_bay_environmental_baseline_survey_2000.pdf
3. attachment_3_-_great_oyster_bay_and_mercury_passage_mfdp.pdf
4. attachment_4_-_amendment_no_1_to_great_oyster_bay_and_mercury_passage_mfdp_aug_2016.pdf
5. attachment_5_-_signed_covering_letter_and_panel_report_re_salmon_farming_at_okehampton_bay.pdf
6. attachment_6_-_description_of_the_project_area.pdf
7. attachment_7_-_imas_zone_assessment.pdf
8. attachment_8_-_frdc_2014-042-rocky_reef_study.pdf
9. attachment_9_-_marine_solutions_-_seagrass_macrocystis_survey_report.pdf
10. attachment_10_-_aq_ms_okehampton_bay_summary.pdf
11. attachment_11_-_tassal_environmental_policy.pdf
12. attachment_12_-_okehampton_epbc_protected_matters_report.pdf
13. attachment_13_-_csiro_mercury_passage_hydrodynamic_model.pdf
14. attachment_14_-_commercial_in_confidence_-mf236_marine_farming_licence_-_2017-2018.pdf
15. attachment_15_-_aboriginal_heritage_assessment_may_2017.pdf
16. attachment_16_-_list_of_species_relevant_to_epbc_referral.pdf
17. images_of_proposed_area.pdf