

Appendix C - Summary of Applicant response to issues raised by representations made under s. 39 of the Marine Farm Planning Act 1995 in relation to the Draft amendment no. 5 to the Tasman Peninsula and Norfolk Bay Marine Farming Development Plan November 2005.

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1 Introduction

The Planning Authority sought a response from Tassal in relation to the issues raised by representors. The applicant provided a response as follows within this document.

2 Impacts on the Natural Environment

2.1 Water quality

Nutrient Dispersion Model

Concerns were raised in relation to the validity of nutrient dispersion modelling used in section 6.1.1 of the EIS and the associated Appendix 21. The modelled outputs described in EIS include assumptions for a range of parameters (i.e dispersal period, particle decay rate, seasonal influence, etc) that have been determined based on best current knowledge.

As stated in the Appendix 21, the modelling (CONNIE3) is in early stages and are only indicative of the system conditions. In order to fully categorise the system, a greater level of model validation and observations would need to be tested and confirmed. However, there have been a range of ecological and hydrological studies undertaken in Storm Bay by the CSIRO and IMAS (Clementson et al. 1989, Harris et al. 1991 and Crawford et al. 2011) which provide a sound platform of local knowledge and understanding of coastal processes for Storm Bay. This, in conjunction with comprehensive experience in regards to fish farming impacts, offers a high degree of confidence that forecasted modelled outputs will assist in management decision-making and the development of an appropriate environmental monitoring program.

Furthermore, the need for a greater level of observations is mitigated through the staged approach to production through the Storm Bay TPDNO. The indicated initial TPDNO levels are similar to those that currently exist in the Huon Estuary and D'Entrecasteaux Channel which are considered to be suitable levels for the system to cope with. This initial limit level, combined with the implementation of the broadscale monitoring will contribute to the validation of the dispersion model. Also, the monitoring data will lend to the development of the proposed biogeochemical model which in turn will inform the adaptive management of salmon farms in the Storm Bay area.

In regards to concerns of combined nutrient emissions from the three Storm Bay proposed developments impacting habitats for species such as handfish refer to section 6.1.1.3.4 of the EIS. The proposed Storm Bay developments are located in exposed waters and it is unlikely that the environmental effects from dissolved emissions would impact upon reef communities or sensitive habitats within Storm Bay. Modelled simulations describing the combined dispersions of farm derived soluble emissions for the proposed developments also suggest that the receiving environment is highly dispersive and although soluble emissions are shown to be wide-spread they are in low concentrations. The studies listed in the table below describe the extent of environmental impacts anticipated from soluble emissions. While these impacts are shown to be restricted to a scale of hundreds of metres, they are not anticipated to result in significant or broadscale effects to the water quality characteristics or ecosystem structure and function within Storm Bay or nearby reef communities.

The modelled simulations of cumulative feed inputs will be complemented by near-field and broadscale environmental monitoring of pelagic, benthic and reef communities to validate the

expected ecological response and changes in nutrient concentrations over and above current background levels.

The high energy environment in Storm Bay (current flows and wind), combined with a naturally high dissolved oxygen (DO) concentration of the marine waters means that the environmental risks associated with the proposed West of Wedge development are considerably reduced compared to other farming areas where the natural environmental conditions are known to take longer to assimilate emissions (i.e. Macquarie Harbour). Nevertheless, Tassal will take a cautious approach to production within Storm Bay to enable an assessment of how the environment responds to the impacts of fish farming at a more conservative level of farming.

Changes to water quality and increase in intertidal algae in Nubeena area

Recognised effects of fish farming emissions on water quality and associated concerns are discussed in section 6.1.1 of the EIS. Table 1 also provides a summary of studies on the pelagic and broadscale effects of soluble emissions for finfish farming.

Voluntary environmental monitoring for water quality, nutrients and phytoplankton communities in the Eastern Farming Zone has been undertaken by Tassal since February 2014 and has continued on a monthly basis (figure below shows the five water quality (WQ) sampling sites). Results indicate that no significant change in water quality parameters has been detected. Detailed descriptions of the sampling results can be found in section 5.1.4.1 of the EIS. Additionally, Tassal has a historically high compliance record for its existing farming leases in the area (MF190 Creeses Mistake and MF193 Badger Cove) with underwater survey footage indicating a range of marine fauna. Species commonly found in the Nubeena area include hermit crabs, spider crabs, squat lobsters, scallops, polychaetes, isopods, nebalia, and a wide variety of native fish.



A number of concerns have been raised around the increase in nuisance algal cover in intertidal areas (such as bays and beaches). Two dominant species identified include *Ulva* spp. (sea lettuce) and *Hormosira banksii* (Neptune's necklace). Recently released findings from FRDC project 2015/024 'Reassessment of intertidal macroalgal communities near to and distant from salmon farms and an evaluation of using drones to survey macroalgal distribution', found that there were 'no clear patterns in abundance of *Ulva* or *Hormosira* with distance from salmon farms, even though

production from salmon farms has increased substantially over this time.’ However, the results did find a decrease in abundance of *Hormosira* from the 2002/03 surveys, with a significantly higher *Ulva* cover percentage. These results were consistent across the survey sites, suggesting ‘factors other than nutrients from salmon farms’ were influencing abundance (Crawford and Harwin, 2018). Another study by Oh et al (2015), did detect changes but only in close proximity to salmon farms, on a scale of hundreds of metres (not kilometres).

With the implementation of an appropriate monitoring and management framework to mitigate against the known potential environmental effects of finfish aquaculture, Tassal considers that the proposed development would not result in any significant environmental impacts to the waters of Storm Bay or inshore waters such as Wedge and Parsons Bay. In turn, no significant changes to intertidal algal abundance is expected as a result of the proposal.

Harmful Algal Blooms

In Tasmania, there is little evidence to suggest that finfish farming increases the risk of harmful algal blooms (HABs). A review by the Scottish Executive and Environmental Group in 2006, found that, in general, there was little indication that harmful algal blooms were developed, or sustained, by the nutrient inputs associated with salmon aquaculture facilities. It also found that waste composition, water quality and oceanographic conditions required to initiate and sustain a harmful algal bloom are very complex and very much species specific. This study also found that at most farm sites, enrichment levels are low and primary production attributable to fish farm nutrients is small relative to that generated by other marine and terrestrial nutrient inputs.

Additionally, a recent report from Seafood Watch (2014) showed that studies to date had generally failed to detect an ecological response from plankton around salmon farms, with one study suggesting an increase in heterotrophic bacterial communities (rather than plankton) is the primary ecological response to salmon farm effluent.

Tassal regularly monitors for HABs and jellyfish in daily algal trawls and associated observational on-ground work.

Food Conversion Ratio and nutrient outputs

The nitrogen released into the environment by fish farms is regulated via total permissible dissolved nitrogen outputs (TPDNO). The nitrogen inputs from farms are based on feed input data provided by industry to the Director of Marine Resources in a quarterly report. The feed data provided is converted into net loads of nitrogen released into the environment based on a conservative Food Conversion Ratio (FCR) of 1.35 (i.e. 1.35kg required to produce 1 kg of fish), a digestibility coefficient of 90%, the nitrogen content of feed (7.2% N) and the nitrogen content of the fish produced (3% N). This equates to approximately 5% of total feed entering the environment as nitrogen, 85% of which is released as dissolved nitrogen and 15% particulate nitrogen (Ross & Macleod, 2013).

Table 1 Pelagic and broadscale effects of soluble emissions from marine cage aquaculture

Author	Title	Farmed species	Region	Measured Effect	Environmental Effect
Valentine et al. 2015	Understanding broad scale impacts of salmonid farming on rocky reef communities.	Atlantic salmon (<i>Salmo salar</i>)	South east Tasmania	Subtidal reef communities	Analysis of data from Maria Is, Tinderbox and Ninepin Pt MPA monitoring sites (1992-2015) showed no consistent pattern of broad scale change in macroalgal community structure over time. This study agreed with Crawford (2006) which found no consistent evidence of changes in macroalgal assemblages attributable to salmon farms.
Macleod et al. 2016	Clarifying the relationship between salmon farm nutrient loads and changes in microalgal community structure/distribution.	Atlantic salmon (<i>Salmo salar</i>)	South east Tasmania (D'Entrecasteaux Channel)	An assessment of increased nutrient loads on subtidal reef communities	This study found that abiotic drivers and environmental conditions may be key determinant to understanding ecosystem structure and function of microalgal assemblages in reef systems. The study also found little evidence of nutrient enrichment effects of the study reefs.
Crawford et al. 2011	Development of broad scale environmental monitoring and baseline surveys in relation to sustainable salmon aquaculture in the D'Entrecasteaux Channel region.	Atlantic salmon (<i>Salmo salar</i>)	South east Tasmania (D'Entrecasteaux Channel)	Intertidal algae	Results from intertidal communities (in particular the dominant species <i>Ulva</i> and <i>Hormosira</i>) showed natural variation and no clear trends in abundance with distance from salmon farms.
Dalsgaard and Krause-Jensen 2006	Monitoring nutrient release from fish farms with macroalgal and phytoplankton bioassays.	Sea bream (<i>Sparus aurata</i>) and Sea bass (<i>Dicentrarchus labrax</i>)	Mediterranean Sea (Greece, Cyprus, Italy and Spain)	Macroalgal and phytoplankton bioassay analysis	This study showed that fish farms clearly stimulated the pelagic primary production of the receiving environment. The effects of nutrient emissions release was observed up to a distance of about 150 m downstream in the dominant current direction.
Oh 2009	Macroalgal assemblages as indicators of the broad-scale impacts of fish farms on temperate reef habitats.	Atlantic salmon (<i>Salmo salar</i>)	South east Tasmania (D'Entrecasteaux Channel and Port Esperance)	Subtidal macroalgae	This study suggested that fish farms were associated with increased cover of opportunistic algae within 100-400 m of the farms.
Sanderson et al. 2008	Distribution of nutrients for seaweed cultivation around salmon cages at farm sites in north-west Scotland.	Atlantic salmon (<i>Salmo salar</i>)	Badcall, north-west Scotland	Ammonium concentration	Salmon farm derived enhancements of 1 µM were detected at distances >200 m.
Volkman et al. 2009	Numerical Hydrodynamic Modelling of the D'Entrecasteaux Channel and Huon Estuary.	Atlantic salmon (<i>Salmo salar</i>)	D'Entrecasteaux Channel and Huon Estuary	Nutrient concentrations modelled using particle traces.	The particle trace modelling showed that it is possible for a plume having concentration of 10% (i.e. 10:1 dilution) of the source concentration to exist up to 500 m from the net cage on occasion.

2.2 Substrates and Fauna

Waste management (fish faeces and uneaten feed) and impacts to fauna

Many studies have been conducted on the impact of marine farming to the benthic environment around fish farms with known effects reasonably well established and understood (Black et al. 1997, Hargrave et al. 1997, Crawford et al. 2002, Macleod et al. 2002, Kalantzi and Karakassis 2006, Forrest et al. 2007). There is a recognised gradient of impact on the seabed that decreases with increasing distance from farm locations (Forrest et al. 2007, Keeley 2013). Refer to section 6.1.2 of the EIS.

The benthic footprint for the proposed West of Wedge development was modelled using the software package DEPOMOD v2.4.1. Discussion of the potential effects of this footprint are discussed in section 6.1.2.3 of the EIS. The overall consideration is that the additional organic loading from the proposed leases would not lead to irreversible changes to the substrates and fauna and would only result in minor adverse impacts to the receiving environment within the lease areas (i.e. localised to within lease boundaries).

Based on the understanding that impacts to benthic substrates is considered to be localised to within lease boundaries and the closest hard reef (habitat for concerned species) is approximately 1.5 km away, the likelihood of marine fauna such as abalone and lobster being impacted from sedimentation is very low, if not negligible.

In regards to concerns raised regarding management of waste, the first approach to managing solid waste is site selection and assimilation capabilities of the site. The high energy environment in Storm Bay (current flows and wind), combined with a naturally high dissolved oxygen (DO concentration) of the well-mixed marine waters means that assimilation of solid emissions by the natural environment at the proposed West of Wedge development is considerably enhanced. Hence, the use of Tassal's waste capture system at the site is not required.

The waste capture system is intended for limited application, where natural flora and fauna below the pens cannot break down the organic matter. In Macquarie Harbour, the unusually low oxygen at the bottom of the basin limits the amount of flora and fauna present and therefore, the rate the organic matter breaks down. Tassal farming sites in the south-east differ by having highly oxygenated water from top to bottom. Tassal has a long-lasting history of industry-leading compliance standards (100% for more than 10 years) and a healthy benthic environment for these sites.

In addition, logistically and from a cost perspective, roll-out of waste capture systems in an environment, where historically similar sites have high compliance and no long-term impacts, is unsustainable from a financial and operational perspective.

Major changes to feeding practices and feed formulation has led to significant improvements in waste management at Tassal's marine farming sites. Tassal uses monitoring equipment within each cage to ameliorate nitrogenous emissions due to uneaten fish feed. Staff are trained in recognising changes in feeding behaviour and are able to adapt to dynamic changes in demand. Live feed video cameras and dissolved oxygen probes are used throughout feeding operations to determine optimum feed input (i.e. ensure no feed goes uneaten by the salmon). Other management practices to optimise feed intake include daily algal tows, visual stock assessments by dive crews and predator interaction history records from wildlife officers. Feed staff take all of the above management principals into consideration before feeding commences.

Cameras at the proposed development will be set up at a depth of approximately 5 m, facing towards the feed input source. Feeding is immediately ceased if a pellet is seen to fall below the camera's field of view. Cameras are intentionally set well above the base of the net as this allows for a further 15 m where fish can access feed before it sinks through the net. Hence, the likelihood of uneaten feed falling below the nets is very limited. In turn the likelihood of wild fish (including Tiger Flathead) eating this feed is low with effects to wild species deemed very minor.

Other concerns...

Concerns were raised around impacts from the proposed development on the key values of the Bruny Island Bioregion, however, based on the distance and current experience of high levels of marine life around existing marine sites such as MF190 Creeses Mistake, impacts on this bioregion are considered negligible.

2.3 Marine Vegetation

Section 6.1.1.4.1 of the EIS details the range of ecological studies and monitoring that has been undertaken in the West of Wedge region by Tassal in relation to potential impacts on biological assemblages from fish farming activities. These surveys include:

- subtidal surveys for EPBC species (i.e. Giant Kelp and handfish) (2013 and 2015)
- intertidal surveys of rocky shores (2013)
- understanding broadscale impacts of salmonid farming on rocky reef communities (2015)
- monthly water quality monitoring program (Feb 2014-ongoing).

In addition to a range of FRDC projects (described in section 6.1.1.4.1 of the EIS), specific Giant Kelp surveys were undertaken in 2013 (winter), 2015 (summer), 2016 (winter) and 2017 (summer) to assess the relative health of Giant Kelp stands and associated biological assemblages at each of the survey locations. Figure below identifies the survey sites.



Eastern Storm Bay – Tassal monitoring locations for water quality (WQ Sites 1-4), giant kelp (GK 1-5) and the IMAS Storm Bay monitoring station (IMAS WQ Site 5). The proposed West of Wedge development is enclosed by the yellow border.

Results from the TSGA funded FRDC project 2014/042 '*Understanding broad scale impacts of salmonid farming on rocky reef communities*' showed that there was no consistent directional pattern of change in macroalgal community assemblages over time – or any indication that salmon farms were having a direct impact to ecosystem structure or function. The study also showed no evidence of reduced health of macroalgal communities across sampling sites.

Results from the recent FRDC project 2014/214 '*Reassessment of intertidal macroalgal communities near to and distant from salmon farms and an evaluation of using drones to survey macroalgal distribution*', suggest that factors other than nutrients from salmon farms were also influencing the abundance of intertidal algae, as the results were consistent across sites, regardless of distance from salmon farming operations.

Additionally, study results by Oh, et al. (2015) indicated that effects of fish farms on subtidal reef communities is localised to within hundreds of metres but rarely kilometres. The proposed leases are more than 2 km from the nearest reef (Wedge Island) and more than 8 km from the nearest seagrass communities (located in Wedge Bay (LISTMap, 2018)).

Based on study results, distance and the dynamic, high-energy environment of the proposed development it is considered that impacts to macroalgal communities and seagrasses will be low if not negligible. However, reef survey sites will be incorporated into the statutory environmental monitoring and management program proposed for Storm Bay.

2.4 Birds

In regards to concerns raised regarding impacts on birds, particularly Shearwaters, marine farms can potentially have general impacts on birds ranging from habitat modification to entanglement, these impacts and others were extensively considered in section 6.1.4 of the EIS.

Tassal has stringent internal bird protocols to mitigate potential interactions around its marine farms. These protocols seek to protect birds and provide guidance to Tassal employees to assist with the passive exclusions of birds from sea cages, removal of birds that may be trapped in pens, and reporting of any entanglements of birds in exclusion nets.

As discussed in the EIS, Wedge Island is home to approximately 150 pairs of Little Penguins and 25,000 Short-tailed Shearwaters, with Storm Bay being a feeding and congregational area for these birds. The population of these species on Wedge Island accounts for approximately 0.025% (Little Penguin) and 0.2% (Shearwater) of global populations with neither species considered endangered. Additionally, the foraging ground for both species is extensive with both species known to venture further than just the boundaries of Storm Bay (which is a significant area in itself). The proposed development covers an approximately 360ha area (of which only 180ha will have farming infrastructure installed). This equates to approximately 0.36% of the total area of Storm Bay meaning the alienation of the feeding and congregation of these bird species due to the development is considered to be extremely minimal.

Nocturnal illumination impact is considered to be low due to the minimal lighting at the proposed site. Pen lighting will not be installed in pens at the proposed leases and if future installation were to be proposed, Tassal would ensure appropriate measures were taken to mitigate any potential impacts. In addition, marine vessels servicing the leases routinely operate during daylight hours (with the exception of night-watch vessels which only operate occasionally for security purposes at the site) and lighting on barges will be low-emitting, downward facing LED lights to avoid skyward illumination.

Regarding marine debris, Tassal is focussing on stopping marine debris at the source, and company staff respond promptly to requests from the public to clean up marine debris for both the marine debris from Tassal farms and other sources. Whilst the presence of marine debris on beaches poses a threat to nesting birds, the removal of marine debris from beaches can also pose a threat to nesting birds unless undertaken outside breeding season. When developing clean-up regimes Tassal will consider that beaches are critical nesting, feeding and resting (roosting) habitats for resident and migratory shorebirds, and resident each summer (especially Wedge Island). All human activities on beaches during this period have the potential to disturb nesting birds resulting in nesting failure. Tassal have a Marine Operations Waste Management Plan (MOWMP) that includes marine debris clean-ups. Further details on the MOWMP are detailed in section 10 of this document.

In addition to internal protocols, Tassal certifies its marine farms to the Aquaculture Stewardship Council (ASC) Salmon standard. The ASC Salmon standard includes criteria regarding interactions with wildlife (including birds). These criteria are intended to ensure that certified farms have minimal impact on populations of wildlife, placing limits on both accidental and intentional mortalities. The criteria ensure that endangered species do not have negative interactions with the farm and dictate the transparent reporting and wildlife mortalities for threatened and non-threatened species. Good management practices with regards to how to reduce risk of future incidents are also required.

Additionally, the ASC Standard requires certified farms to conduct an assessment of the farms potential impacts on biodiversity and nearby ecosystems. The assessment includes all habitat and species that could be reasonably impacted by the farm, and must also describe the strategies and programs implemented to eliminate or minimise identified impacts.

The criteria ensure that a farm is aware of any nearby critical, sensitive or protected areas, understands the impacts it might have on those areas. The ASC standard does not allow for farms to be sited in protected or High Conservation Value Areas (HCVAs). Therefore, maintaining and protecting the Wedge Island sanctuary for bird life (particularly Shearwaters and Little Penguins) is considered a key initiative for Tassal. Tassal will continue to work with Birdlife Tasmania to develop appropriate mitigation strategies to prevent unnecessary habitat degradation and reduce potential interactions between birds and the proposed West of Wedge development.

Tassal will pursue ASC certification for the proposed West of Wedge development.

Tassal also reports all bird interactions (both alive & release and mortalities) on their Sustainability Dashboard within 30 days of occurrence, and annually in their Sustainability Report.

2.5 Marine Mammals

Concerns were raised in representations relating to interactions between marine mammals and fish farms in addition to seal welfare and management.

Refer to section 6.1.5 of the EIS for details on the potential impacts and mitigation measures.

Tasmanian Parks and Wildlife, DPIPW, and Commonwealth Department of Environment and Energy regulate wildlife interactions with marine farming. These agencies already have extensive and complex array of legislation, regulations and policy relating to management of marine wildlife interactions for a wide array of wildlife. Tassal has detailed its commitment to minimising wildlife interactions, and addressing the Commonwealth and State regulatory frameworks, through internal interaction procedures including its Wildlife Management System (seals), Whale Response Protocol

(applies to whales and dolphins) and Bird Protocol (birds). The key measures found in these documents to reduce the impact on marine mammals include:

- Shut down of vessels and any noise generating operations on a lease if a whale is spotted within 1km of operations
- Limit of vessel speed to 5 knots within lease boundaries
- Regular inspection of mooring lines and nets to ensure they are properly tensioned
- Entanglement response protocol and kits
- Recording of interactions to help inform ongoing management

In relation to seal welfare and management:

Tassal considers the inclusion of management controls in the MFDPs for management of seal interactions including seal relocation as redundant as such measures will create unnecessary regulatory duplication. Currently, the Department of Primary Industries, Parks, Water and Environment (DPIPWE) Seal Management Framework regulates industry interactions with seals. The Framework contains the minimum requirement for the mitigation of seal interactions with aquaculture farm staff and infrastructure. This includes protocols for trapping, holding and transport of seals, which are designed to ensure seal welfare is maintained. The Seal Framework is now under review with input from the broader industry. Under the current Framework, there are no approved relocation sites in Tasmania and trapped seals may be 'released on any part of the marine farming lease area within which the individual seal was captured'.

Tassal does not expect an increase in seal numbers within the vicinity of the proposed West of Wedge development. Experience shows that seals do not stay in areas where they cannot access food. Tassal has developed the Sanctuary Pen concept to protect its farmed fish from seals. To date, these pens have proven 100% effective at stopping seals from preying on salmon. At present, Tassal is converting all its marine farming sites to Sanctuary Pens with the plan to complete a total roll out by 2020. Tassal will install only Sanctuary Pens at the proposed West of Wedge development.

Reports on seal interactions can be found on the Tassal Sustainability Dashboard (<http://dashboard.tassalgroup.com.au/>), within 30 days of occurrence, and annually in Tassal's Sustainability Report.

2.6 Threatened species

Within the EIS, listed threatened and migratory species under the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC) and *Tasmanian Threatened Species Protection Act 1995* (TSPA) were identified through desktop studies (refer to Table 24 in section 5.2.6 of the EIS). These species were selected on the basis of their inclusion in:

- the Australian Government's online EPBC Protected Matters Report
- the Tasmanian Government's Natural Values Atlas
- the Tasmanian Government's online list of Threatened Species

In addition to desktop studies, for particular species such as Giant Kelp communities and Gunn's Screwshell (*Gazameda gunnii*), physical surveys were conducted to establish their presence in and around the proposed development.

For both the EPBC Protected Matters Report and the report generated using the Tasmanian Natural Values Atlas, buffers of 5 km from the outer extent of the proposed zone were adopted to ensure adequate coverage across Storm Bay, including important habitats where listed threatened or migratory species likely occur, breed, or forage for food.

The list of species identified were broadly categorised into six species groups with a range of mitigation measures proposed to reduce the potential impacts to acceptable levels. For the details on potential impacts and mitigation measures identified refer to section 6.1.6 of the EIS.

The overall effect on threatened species was categorised as being low for most species. This classification was reached as a result of developing a risk matrix based on criteria outlined in the EPBC Matters of Environmental Significance and the implementation of mitigation measures for threatened species at and surrounding the proposed West of Wedge development.

2.7 Reservations

Key impacts on conservation areas and reserves in the vicinity of the proposed West of Wedge development are discussed in section 6.2.5 of the EIS. Potential impacts of noise, visual amenity and on-shore farm debris were considered. Based on distance from the identified conservation areas and mitigation measures being implemented regarding noise and marine debris, the impact to these areas was considered low.

2.8 Chemicals

Antibiotics

The vast majority of Tassal's fish are never exposed to antibiotic and Tassal does not feed antibiotics routinely, nor for performance reasons. In the unlikely event fish need antibiotics, they go through an extended withdrawal process before harvest, guided by a history of extensive residue testing, that ensures the fish are harvested only when they are well below Australian and international maximum residue levels.

Due to Tassal being ASC certified, part of the strict requirements are the release of all antibiotic use data to the public, including any use within hatcheries. This data is accessible through the Tassal Sustainability dashboard (<http://dashboard.tassalgroup.com.au/>). Data must be made available within 30 days of treatment occurring.

Concerns have been raised around the level of antibiotic use, especially after data was released for the FY15/16 reporting period. During this period, Tassal started changing the antibiotic used from one that was administered at a standard dose of 30mg per kilogram to a different antibiotic prescribed at a dosage of 100mg per kilogram. This continued during most of reporting period. Therefore, while the total weight of antibiotic has increased since 2015, it is because of the different prescribing rates.

The number of fish receiving antibiotics at Tassal's marine farms has actually declined each year since FY13/14. This has been achieved through the strategic use of available vaccines. It is a responsible practice to ensure that when antibiotics are used, they are prescribed at an effective dose for a sufficient period of time, and that the type of antibiotic used is changed so as to reduce the potential for development of resistance. Tassal does not use antibiotics considered to be critical for human health.

Most importantly, Tassal has not used any antibiotics since December 2016.

Feed composition

Tassal’s primary fish feed supplier is Skretting Australia, who is part of the Nutreco Group and is the largest Australian producer of aquaculture feed. All of its products meet global quality standards, being manufactured in accordance with: Full traceability - Nutrace®; ISO 9001 Quality Management System; ISO 14001 Environmental Management System; HACCP certification; FeedSafe™ certification and GlobalG.A.P. CFM certification.

Skretting’s supplies of fishmeals and fish oils are governed by Nutreco’s vendor policy which subscribes to and promotes the fishery management principles of the FAO Code of Conduct for Responsible Fisheries. Nutreco expects its suppliers to work towards complying with the principles specified in the code.

Supplies of poultry and mammalian products are derived from Australian producers which are Australian Renderers Association (ARA) accredited and are approved for use in aquaculture feeds in Australia and New Zealand. They are a sustainable co-product of animals reared for human consumption and are treated according to controlled processing parameters which maintain the integrity of the raw material. Rendered raw materials have a high nutritional value for fish and enhance the sustainability of the aquaculture industry.

Aquaculture feeds may include the following ingredients:

Antioxidants	Maize gluten meal	Tapioca starch
Attractants	Meat meal	Tuna fish trimmings
Crystalline amino acid	Mammalian blood meal	Vegetable oil
Essential oils	Mould inhibitors	Vitamin/mineral/pigment premixes
Faba bean meal	Potato starch meal	Wheat gluten meal
Fishmeal	Poultry meal	Wheat starch meal
Fish oil	Poultry oil	Whole wheat
Glucans	Shrimp meal	Yeast and yeast-like product
Lupin dehulled meal	Soy protein concentrate	

Skretting Australia has also maintained a ‘GMO DNA-free’ status for aquaculture feeds. All vegetable raw materials are purchased as non-GMO and supplier certifications are documented.

Importantly, aquaculture feeds do not contain antibiotics (unless specifically prescribed by a registered veterinarian for the purpose of treating sick fish) or hormones.

Additionally, all Skretting feed supplied to Tassal is compliant with the Aquaculture Stewardship Council (ASC) Salmon Standard Compliance, specifically:

- Principle 2: Conserve Natural Habitat, Local Biodiversity and Ecosystem Function

- Principle 4: Use Resources in an Environmentally Efficient and Responsible Manner

As a requirement for ASC certification, the proponent is required to illustrate feed products are sustainable. To address these requirements, Skretting Australia requested an assessment of stock status of marine fish used in their fish feed. Formal assessments have been undertaken since 2014.

Each assessment outlines the species and population/fishery, and presents the current IUCN listing for the species/populations required in Criterion 4.3 of the ASC Salmon Standard. Skretting uses the mass balance system to demonstrate compliance to origin of marine ingredients. At the beginning of each new quarter purchased volumes of fishmeal and fish oil which meet the criteria in the ASC standard 4.3.2 and 4.3.4 are recorded. Based on the average inclusion rate of fishmeal and fish oil in Salmon diets, these purchased volumes of raw materials are transferred into 'ASC Feed Certificates'.

The ASC is currently in the last stages of developing a 'Responsible Feed Standard', and future assessments will be aligned to this new Standard rather than the Criterion 4.3 of the Salmon Standard.

Further information relating to feed input/fish output ratios and feed materials can be found on pages 27 and 28 of Tassal's 2017 Sustainability Report.

Colouring

In regards to concerns around salmon colouring, the red/pink colour of salmon flesh, and that of sea trout, is species specific and results from the presence of carotenoid pigments. There are more than 600 naturally occurring carotenoids. The group of carotenoids found in fish are known as xanthophylls and include astaxanthin. The red/pink colour in salmon comes from these carotenoid pigments which are found in the fishes' diet, in the wild these usually come from shrimp-like krill or other crustaceans that the salmon eat. Salmon extract these pigments and store in their muscles. Astaxanthin is not just a pigment, it is closely related to beta-carotene (the precursor for vitamin A), and plays a role in the fish's immune system and acts as a powerful antioxidant, promoting the good health of the fish. As salmon are unable to synthesise these pigments, wild and farmed salmonids must take them in as part of their diet. The carotenoids astaxanthin are added to the diets of farmed salmon to ensure the salmon are healthy and have all the nutrients they require. The pigments may come from crustaceans, from bacterial culture or, more usually, from nature identical synthesised products, which is the same compound eaten by wild salmon. While the astaxanthin is synthesised it is a pure version of what is eaten by wild salmon, hence why it is referred to as 'nature identical'. The vast majority of farmed salmon around the world are fed diets with nature-identical astaxanthin. Given its health benefits in salmon feed, it is poor practice to make feeds for this species without astaxanthin, and it is not natural for salmon to be depleted of this nutrient. Salmon are not naturally white fleshed and thus farmed salmon are not naturally white fleshed. Astaxanthin is approved for addition to the diet of farmed salmon and trout globally and approved in Australia. Astaxanthin has been declared safe for human consumption by the exacting standards of the European Panel on Additives and Products or Substances used in Animal Feed (FEEDAP). Tassal is also currently trialling a natural form of astaxanthin in its feed.

Please refer to Tassal's Sustainability Dashboard for recent data, and the Tassal website for access to Sustainability Reports.

2.9 Species Escape

Refer to section 6.1.9 of the EIS and section 15 of this document.

There have been no significant escape events within Tassal's farming zones in the last nine years. The rarity of escape events combined with the fact that there is no major non-endemic diseases present in Tassal's salmon, means there is a low risk associated with the spread of disease from escaped fish. Tassal also has an Escape Prevention and Response Protocol that incorporates escape prevention, escape response kits, net inventory, weighting systems, smolt input and harvest operations, as well as inventory management and incidental losses.

2.10 Disease and biosecurity

Biosecurity

Best biosecurity practice does not require each individual lease, or farm, to be separated from another such that their individual tidal excursions do not overlap, but that leases or farms within an area defined by their tidal excursions are managed under an Area Management Agreement. The tidal excursion distance will vary according to the specific hydrodynamics of the water body concerned, for example in Scotland in some areas it is taken as 3.6km (Murray et al, 2010) but in other areas may be 5km (Scottish Executive, 2018). Area Management Agreements specify how the impinging farms are to be managed to mitigate biosecurity risks, manage fallowing and how health surveillance is to be carried out. The existing leases at Nubeena (Creeses Mistake and Badger Cove) and the proposed West of Wedge development site are within the same tidal excursion defined area (based either on a 3.6km or 5km figure). As both are operated by Tassal management can be easily coordinated for this defined area. The nearest operative lease occupied by another farming company is 14km distant and is outside the area of influence of the proposed West of Wedge development site.

Tassal is committed to working constructively with the rest of industry, and through the TSGA processes, to produce better biosecurity outcomes, including ensuring adequate buffer zones between different epidemiological areas, building on current risk management frameworks and working towards all the best biosecurity practices inherent in area management. Such an approach is recognised by the ASC and Tassal's accreditation with ASC is independent evidence that it operates under such practices.

There is undoubted benefit in maintaining a restricted population size in any hydrographic region however, that does not need to be on just one farm. It can be split across a number of farms in each area (i.e. the proposed developments into Storm Bay). The most important element is that there are epidemiologically defined areas separated by at least 5 km. Within each area, each of the farms needs to be managed in the same way – the same year class of fish, synchronous fallow, and health surveillance across the area. This can be achieved and managed by Area Management Agreements.

Disease

Fish pathogens (in the form of viruses, bacteria and parasites) have the potential to be shed in the faeces of fish, this being a route of horizontal transmission between susceptible hosts. However, there are a number of factors that need to be considered in assessing the relative risk of this in comparison to the risk from the fish population itself.

Scientific evidence shows that fish viruses (1) do not replicate outside the host (van Regenmortel, 2000) and (2) in natural seawater and sediments at Tasmania water temperatures they will only survive for a few days in the majority of cases (up to 14 days in the case of very resistant viruses) due to the natural environmental bacterial loading and the presence of viral inhibiting compounds (Bovo

et al, 2005). So whilst there is a risk it is small as the viral load declines from the moment it leaves the fish body.

Likewise bacteria shed in faeces are subject to degradation from the natural environment. Fish pathogens are adapted to life in their fish host. Fish pathogenic bacteria are likely to last only a couple of weeks, but also at declining numbers.

In the medium term (weeks) to long term, fish faeces cannot be considered to be a significant source of infection. This is the why fallowing of sites for a few weeks is effective.

Once the population of fish is removed, the level of shed pathogens in the environment rapidly declines.

Parasites may form relatively stable resting forms, but even those are subject to the degradation processes inherent in the nutrient recycling going on at the benthic surface. In addition, many parasites have specific life cycle requirements which do not involve faecal transmission. The health surveillance carried out on Tassal farms has not identified parasites that would pose a risk through faecal shedding.

Where farms are in close vicinity (as defined by the relevant tidal excursion distances) then those farms need to be managed as an epidemiologically linked unit. As existing sites and the proposed development in the area would both be managed by Tassal, and fall under the same active health surveillance programme, they can be managed in a complimentary way according to best biosecurity practice. This also applies for the management between the four leases within the proposed zone.

The proposed production strategy in section 6.1.1.2.1 for the proposed West of Wedge development has been reviewed by Tassal since the EIS was released for public consideration. Tassal's production strategy now proposes to only stock a single year class within the proposed zone.

2.11 Waste Streams on Land

Aquaculture Stewardship Council (ASC) certification promotes industry best practice to minimise the environmental and social footprint of commercial aquaculture. Farms seeking ASC certification must have documentation to demonstrate compliance with Principle 8 of the ASC Salmon standard. Principle 8 contains a full suite of requirements for responsible salmon farming at freshwater smolt sites. All facilities providing smolt to Tassal marine farms are required to comply with these criteria.

Compliance criteria for freshwater facilities include:

- Regulatory compliance
- Best practice regarding nutrient emissions
- Escape prevention and ecosystem maintenance
- Climate change awareness
- Best practice fish health management
- Disease and biosecurity
- Community engagement
- Calculation of total Phosphorus released into the environment per metric ton (mt) fish
- Benthic macroinvertebrate surveys

- Development and implementation of Biosolids Management Plan

Tassal report on freshwater compliance annually in its Sustainability Report (all accessible via the Tassal website (<http://tassalgroup.com.au/>)).

2.12 Introduced marine pests (IMPs)

Refer to section 6.1.12 of the EIS.

Tassal has strict and documented internal biosecurity protocols in place for all its current operations. These protocols will be adopted for any operations at the West of Wedge proposal. Additionally, Tassal adheres to state regulations and management controls mitigating the risks associated with the potential for IMP incursions. It is the company's best interest that IMPs are not translocated or spread as they have the potential to harm fish stocks.

2.13 Marine and Coastal

Off-shore aquaculture

Off-shore aquaculture is an emerging approach to marine farming where fish farms are placed some distance from shore, in deeper and less sheltered waters, where higher energy ocean currents are stronger and nutrients can be more effectively assimilated in the receiving environment.

Tassal understands the confusion the term 'offshore' can bring and therefore, prefers the use of the term 'high energy sites' to describe locations within state waters, which are exposed to rough sea conditions and stronger currents. Currently, Tassal operates high energy sites, such as MF78 Lippies and MF190 Creeses Mistake, which have a long history of strong compliance.

Hydrodynamic of proposed West of Wedge development

Refer to sections 5.1.3, 6.1.1.3.1, 6.1.1.3.2 and 6.1.2.3 of the EIS for discussions on hydrodynamics and nutrient dispersion as it relates to the proposed West of Wedge development.

As shown in the EIS, extensive work was undertaken to determine the hydrodynamic system (including swell, wind and water currents) in which the proposed West of Wedge development will operate within. Deployments of Acoustic Doppler Current Profilers (ADCPs) collated data on current velocity and direction, with hindcast models informing wind direction and speed. The dispersion of nutrient emissions was shown through the CSIRO *Connie 3* model which also informed the Nutrient Dispersion Model (Hadley et al, 2017).

2.14 Climate change and Greenhouse gas emissions

Climate change

Tassal recognises climate change and increasing sea temperatures is likely to present a range of challenges to the aquaculture industry, and understand that long term strategies are required to protect the industry from the effects of rising sea temperatures. Tassal maintain a comprehensive risk management system to manage the long-term risks, issues and opportunities presented by climate change and respond accordingly.

Tassal currently works with an annual fluctuation in temperature of over 10°C and have developed mitigation strategies and contingencies to cope with daily temperature fluctuation, temperature variation between farming zones and vertical temperature stratification within the water column.

Tassal mitigates the impacts of seasonal temperature and oxygen fluctuation through husbandry strategies that include lowered stocking density, optimised seasonal diets and by optimising water flow and oxygen availability through net hygiene and venturation. Managing stock performance in different environmental conditions is an ongoing husbandry focus.

Tassal are actively engaged in research with CSIRO, IMAS and FRDC to identify emerging climate trends and system responses and have developed considerable options for adaptation via selective breeding, modification of farming technologies and practices, and geographic diversification. Tassal have developed a research project funded by FRDC to use the most up to date models to predict sea surface temperatures throughout South East Tasmania up to 3 months in advance. Predictions are updated monthly and forecasted temperatures are pivotal to the development of operational plans. Tassal has also supported research undertaken at Deakin University into understanding the mechanisms behind thermal tolerance in fish stock. Thermal tolerance refers to the ability of fish to cope with higher temperatures. The research also ties in with industry's Atlantic Salmon Selective Breeding Program (SBP) of which Tassal is a major stakeholder. The SBP actively targets genetic lines that have an increased temperature tolerance, assisting Tassal with the challenges of climate change.

Regarding concerns relating to ocean acidification and effects on fish health, ocean acidification on its own is of less concern for direct health outcomes for salmon. At worst, changes in acidity would simply make the acid-base balance in fish work a bit harder, however, this is determined to not be detrimental to fish health.

Fossil fuels

Tassal complete a detailed Life Cycle Assessment (LCA) of our supply chain every second year in order to better understand the environmental impacts of producing our products and to highlight areas for improvement.

LCA is a comprehensive, methodological framework that quantifies the environmental impacts that occur over the life cycle of a product. The LCA incorporates upstream and downstream impacts associated with the production of Tassal products.

Tassal undertakes to identify and assess environmental risk and act to eliminate or minimise environmental impacts that arise from the manufacturing and processing of its products, and throughout its operations. Measurable objectives and targets are established and aim to prevent pollution and improve environmental performance. Tassal monitor and review these measures to ensure that all operations continually improve.

Tassal have internal policies and procedures in place to ensure that its activities comply with all applicable environmental standards relating to water, emissions, energy, effluents, transport, waste and use of materials.

2.15 Environmental Management

Baseline and Cumulative impact monitoring

As outlined in Appendix 20 of the EIS, the design of Storm Bay regulation framework is based on the existing process used in the Huon Estuary and D'Entrecasteaux Channel MFDP. Salmon farming has occurred in this area for over a decade with the BEMP running for the past 9 years. This significant dataset has indicated that whilst there is some evidence of farm effects, the system does appear to be coping with current farming production levels. The initial TPDNO level of 30,000 tonnes for the combined proposed developments in Storm Bay is similar to the capped level for the Huon Estuary and D'Entrecasteaux Channel MFDP.

The regulation of the proposed developments into Storm Bay will be implemented through an adaptive management framework, with three main components:

- regulation of feed inputs through caps on annual production in the form of a Total Permissible Dissolved Nitrogen Output (TPDNO) (staged approach);
- a comprehensive Broadscale Environmental Monitoring Program (BEMP); and
- development of a biogeochemical model to interpret environmental monitoring and the effects of any changes to farming operations in the region.

The staged approach to production for the Storm Bay developments (initial limit of approximately 30,000 tonnes) provides the opportunity for assessment of environmental responses. This assessment will be established through the robust BEMP which includes not only water quality and benthic sediment monitoring sites, but also inshore reef and deep-water reef monitoring sites (refer to Appendix 20 of the EIS for details on the BEMP).

The BEMP dataset will feed into further development and validation of the Storm Bay biogeochemical model. The model will estimate natural assimilation of salmonid derived nutrients at varying spatial and temporal scales relative to specific biomass output. This model will inform the overarching adaptive management framework by forecasting the potential environmental impacts of salmonid farming in Storm Bay, which in turn informs decisions in relation to the TPDNO cap. The progression to the next stage of production level limits is informed by the outcomes of the BEMP and model. The development of the biogeochemical model and BEMP will commence simultaneously.

As outlined in section 5.1.4 of the EIS, since February 2014, Tassal has commissioned an independent voluntary water quality monitoring program in eastern Storm Bay. One of the sites is located within the proposed West of Wedge development and as such, data from this site can be used as a baseline reference prior to operations. This is additional to the mandatory baseline survey that is required to be undertaken in line with regulatory requirements before construction of the proposed development commences.

Operational environmental management

Tassal's well-resourced environmental and sustainability department has in-house expertise in conducting environmental monitoring surveys and reporting. This team undertakes regulatory annual video surveys of the benthic environment within and outside of all marine farming leases. As part of regulatory licence conditions, there must be no significant visual, physico-chemical or biological impacts at or extending beyond 35 m from the boundary of the lease area. As noted previously, Tassal has a strong history of compliance for its south-east leases, however if a non-compliance was to be recorded, Tassal would implement immediate internal management controls based on the severity of the impact. In addition, Tassal undertakes internal intermediate inspection

surveys to ensure best practice management of lease areas. Tassal also uses historical knowledge of its sites based on these surveys to determine areas of leases that are more susceptible to impacts and adjusts its operations to accommodate for these areas.

For the proposed development, Tassal expects that licence conditions will be similar to those used for existing salmon farming leases. As such, the internal management controls utilised for non-compliance would be implemented at the proposed West of Wedge development.

A number of concerns referred to the non-compliance in Macquarie Harbour. Unexpected changes in ecological and physical conditions within Macquarie Harbour lead to unexpected non-compliance survey results. This included unusually low oxygen at the bottom of the basin which limited the amount of flora and fauna present and therefore, the rate of organic matter break down. Tassal took a range of immediate steps (including more frequent environmental monitoring and benthic remediation studies, and waste capture systems) to assist in the natural recovery of the benthic ecosystem within its leases (refer to Tassal's 2017 Sustainability Report pg. 48). Tassal farming sites in the south-east differ by having highly oxygenated water from top to bottom. Tassal has a long-lasting history of industry-leading compliance standards (100% for more than 10 years) and a healthy benthic environment for these sites. Records of compliance are accessible through the Tassal Sustainability Dashboard. It is expected that the proposed development will be compliant with regulatory conditions based on the high-energy and biophysical characteristics of the site.

Decommissioning and Rehabilitation

As outlined in section 3.7 of the EIS, when the proposed leases are no longer in use, Tassal will remove all mooring and associated subsurface infrastructure to allow any organic enrichment existing in the retired lease space to be metabolised by biologically assimilative processes. Any impacts from farming would be remediated by these means.

The costs and timeframes associated with this work are difficult to predict however Tassal has the resource capacity (both financially and operationally) to decommission and rehabilitate leases in line with licence conditions and any other regulatory requirements.

2.16 Freshwater Resources

The amount of freshwater required will vary depending on the production strategy, year class, bathing method and selective breeding program for AGD (amoebic gill disease). Tassal intend to use current dam infrastructure at Nubeena to supply freshwater for the proposed West of Wedge bathing requirements.

All fish farmed by Tassal are a product of the Tasmanian Atlantic salmon Selective Breeding Program which has been selecting for increased resistance to AGD for 14 years. Genetic selection has already reduced the number of freshwater baths required to treat AGD by approximately 50%. Resistance to AGD will continue to be a key selection trait within the breeding objective for many years to come, resulting in an ongoing reduction in freshwater use for the treatment of AGD. Tassal anticipates that only 4 bathes per year class will be required for fish at the proposed West of Wedge leases.

3 Impacts on the Human Environment

3.1 Visual

Refer to section 6.2.1 and Appendix 14 of the EIS.

Tassal acknowledges that as the proposed development would be a new landscape (seascape) element, users and residents in the Nubeena, White Beach and Roaring Beach area have the potential to notice a visual change to the seascape. However, based on implementations of mitigation measures and distance of residents from the proposal this impact is considered to be minor.

In regards the concerns raised, Tassal commissioned further work to establish a clearer picture of the amount of visibility observer groups may have to the development and lease infrastructure.

High-quality photographs were taken from particular aspects around the Nubeena area (including viewpoints from Roaring Beach – elevated and sea levels and White Beach Rd) looking towards the proposed development location. In order to provide better context, a vessel was positioned at the closest proposed lease. In order to distinguish the vessel within the photographs one needs to zoom in on the vessel. Therefore, it is considered that whilst there will be rows of pens and barges on the lease, their low profile and colour will make them difficult to distinguish on calm, sunny days and likely completely obstructed on choppy, windy days.

The high-quality photos and integrated photomontages have been provided as a supplement for this section of the document.

Currently, the colour and height of pens are designed to make them less visible to distant observers. For the proposed development, the distance of the leases from observer groups will help to offset the visual impact.

As discussed in section 15 of this document, current capacity for fish farming both in engineering and safety doesn't allow for development of sites further offshore (near continental shelf) than the currently proposed development.

3.2 Navigation

Refer to section 6.2.2 of the EIS, for information relating to navigation.

Navigational markers/lighting

Recommendations were made through submissions to update the hydrographic survey of marine leases. Tassal has no control over configuration of marine navigation charts with the inclusion and update of nautical charts being the prerogative of individual chart companies. Mariners can access up to date positions of marine farm boundaries through marine farming charts on LISTMap (<https://maps.thelist.tas.gov.au/listmap/app/list/map>) or by contacting the Marine Farming Branch.

The colour of all marine farming equipment (including fish pens, barges and vessels) on Tassal leases comply with MFDP management controls. Tassal also complies with all DPIPWE regulations for marking and lighting of marine farming leases. The industry uses the IALA special marks on the corners of each lease area which are coloured yellow and may have yellow flashing lights and a cross. The markings of leases and colour of marine farming equipment for the proposed development will be determined by the regulatory authorities.

Tassal is investigating the potential use of automatic identification systems (AIS) for electronic lease recognition on its leases (including the proposed development). The Australian Maritime Safety Authority (AMSA) regulates AIS usage. Tassal will consider implementing AIS as part of a broader area navigation scheme and in consultation with AMSA, MaST and other marine stakeholders.

Additionally, Tassal adjusts navigational lighting schemes for its leases on the advice of DPIPW and MaST, and in consultation with the broader industry and marine stakeholders. Tassal will investigate the recommendation of the potential use of synchronising navigational lights on the proposed West of Wedge development.

For further detail relating to navigation and marine debris refer to section 10 of this document.

3.3 Reservations

Refer to section 6.2.5 of the EIS.

No marine reserves have been identified within the proposed zone or surrounding area. Tassal does not expect any significant impacts on the Tasman National Park or other conservation areas identified in the vicinity of the proposed development.

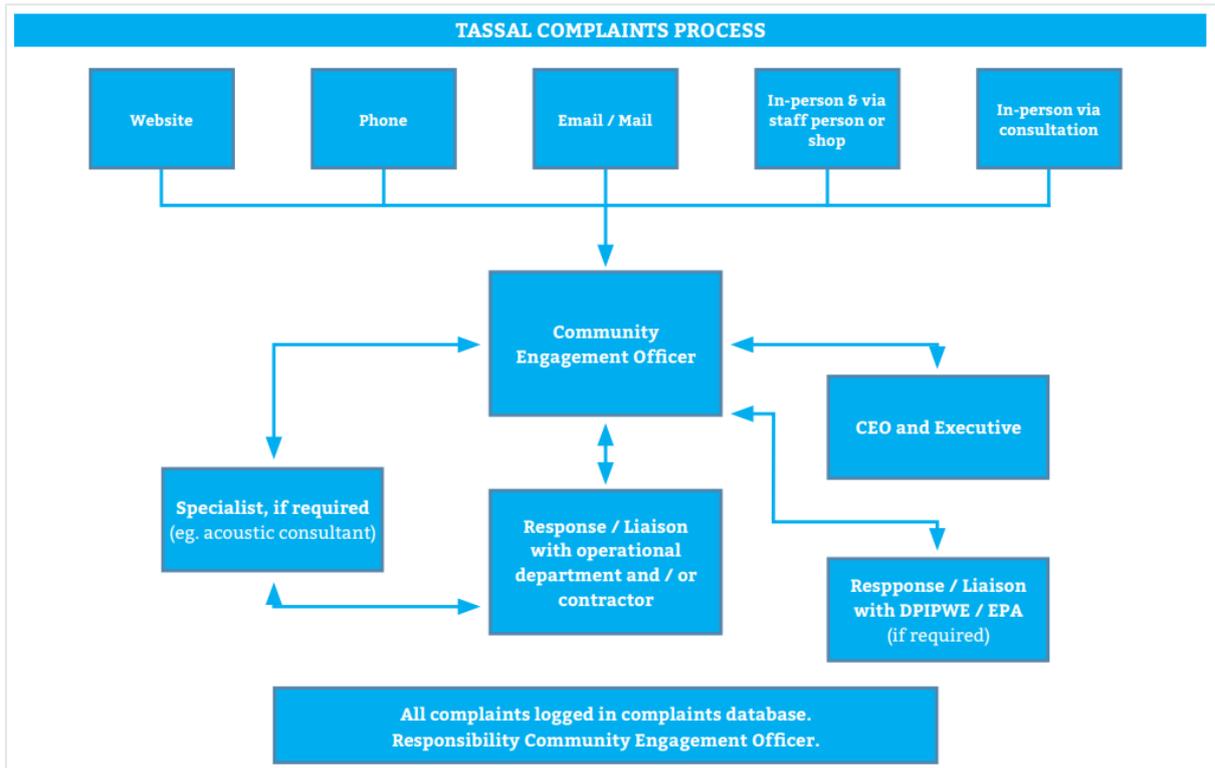
3.4 Noise

Refer to section 6.2.6 of the EIS.

Pen lighting and venturation was not considered in the EIS as Tassal does not anticipate use of either operation. However, if venturation or pen lighting were to be utilised the addition of these operations would not significantly increase the total noise levels from the leases. In section 6.2.6.3 of the EIS, table 35 calculates the total noise levels in a 'worst-case scenario' (all four lease operating all possible operations at one time). The total noise level for this scenario is 34 dBA which is 11 dBA below the day time limit. Further consultation with a noise specialist, confirmed that use of venturation and pen lighting operations would not increase the noise levels past this limit. Additionally, the likelihood of the 'worst-case scenario' occurring at the proposed site is extremely low, hence the actual noise levels produced at the leases will be well below the calculated 34 dBA.

In regards to concerns relating to noise from vessels and trucks in the area, Tassal will comply with guidelines on noise emissions made under the *Environmental Management and Pollution Control Act 1994*. Furthermore, it is anticipated that with due diligence and care, in conjunction with open community liaison, that noise will not have a nuisance impact and adversely affect amenity for residents in the White Beach and Lory Point area. Tassal's experience of noise control will enable any unexpected noise issues to be addressed in a thorough and timely manner.

Tassal takes complaints very seriously and in all instances works with the complainant and operational staff to solve issues that may arise. It is a main objective to maintain the support and goodwill of neighbours surrounding farming operations. Tassal also employs a rigorous complaints mechanism that encompasses any Tassal activity (see flow chart below).



3.5 Odour

Refer to section 6.2.7 of the EIS.

Tassal currently operates in accordance with specific strategies on a company-wide basis to mitigate potential odour impacts. These include:

- timely removal of any deceased stock from farm cages – dive teams currently collect any dead stock from cages twice per week and they are placed in sealed plastic bins for transport
- on-shore storage of deceased stock within refrigerated containers awaiting transport to Triabunna plant
- appropriate transport of stock mortalities in accordance with transport environmental requirements
- feed is delivered directly to the on-site feed barge or land base where it is stored in a completely sealed hopper from which feed is directly dispersed to the fish pens
- appropriate containment and disposal of harvesting wastes produced at marine sites – bloodwater is collected and held within harvest vessels and treated at Dover WWTP
- management of equipment to ensure it is kept clean and in good working order
- secure and appropriate storage of chemicals including petroleum products

The current strategies outlined above will be implemented at the proposed West of Wedge development in conjunction with any related regulatory controls.

3.6 Commercial fishing

Refer to section 6.2.8 of the EIS for potential impacts to commercial fishing and mitigation measures.

The main commercial fisheries in the vicinity of the proposed West of Wedge development include abalone, rock lobster and scalefish fisheries. Tassal consulted with representatives of these fisheries including the Tasmanian Seafood Industry Council (TSIC).

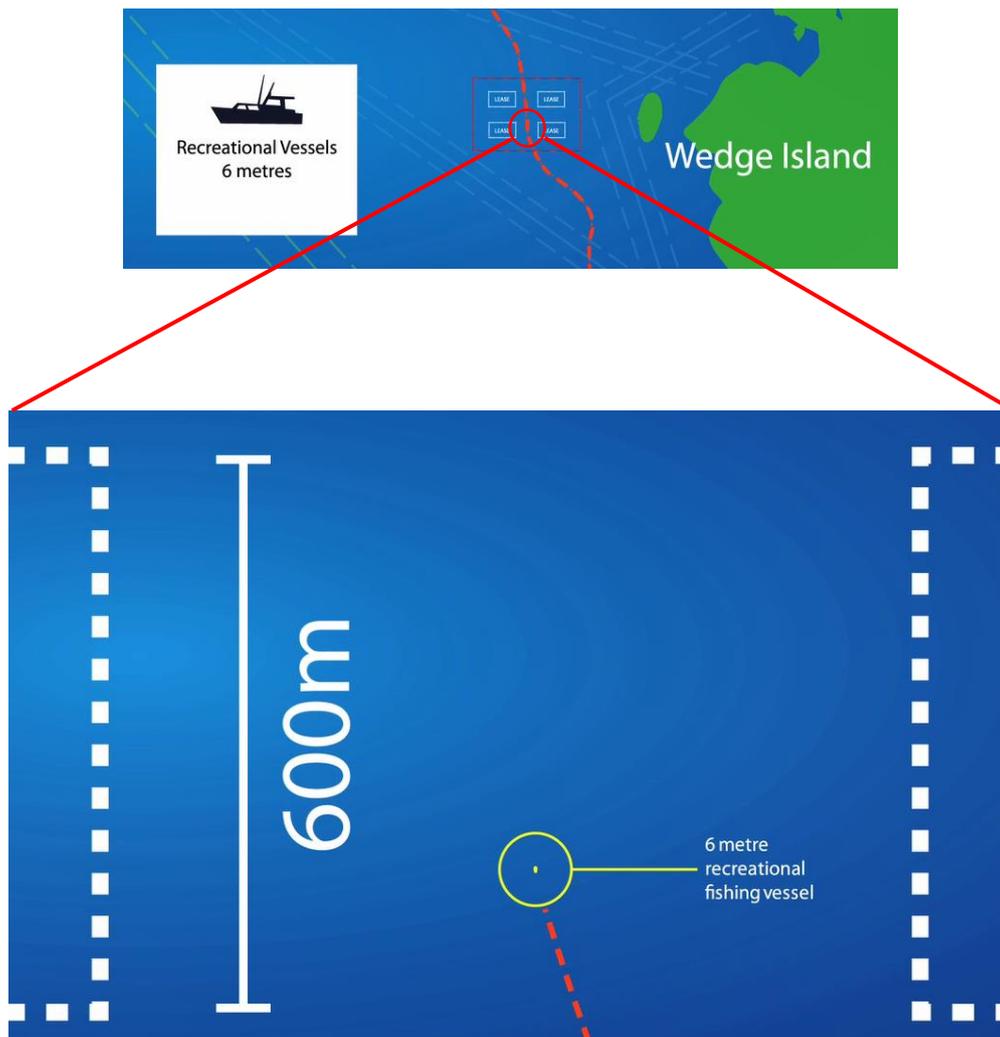
Commercial fishing is discussed in sections 5.5.3 and 6.2.8 of the EIS. It was found that there is limited commercial fishing activity in the waters of the proposed development due to the location being over unconsolidated/unvegetated sandy sediments. Additionally, whilst the key Tasmanian wild fishery sectors (i.e. abalone, rock lobster and scalefish) continue to record catches from fishing blocks adjacent to the proposed lease area, these catches represent a minor component of overall fishery production for each of these key sectors. Also, a key compliance requirement for salmon farming leases is that significant adverse environmental impacts do not extend beyond 35 m from the lease boundary. As commercial fisheries such as abalone and rock lobster occur on hard reef habitats, it is unlikely that emissions from the lease areas will impact these activities due to the spatial separation of the lease areas to hard reef habitats, therefore Tassal does not support the recommendation from the Tasmanian Abalone Council to move the proposed development a further 1km northwest. Furthermore, Tassal is engaging collaboratively with the commercial fishing industry to provide synergistic options for the management of shared marine resources. For example, Tassal conducts daily algal trawls on all its sites as part of their water quality monitoring program; this algal monitoring program could be beneficial to the abalone and rock lobster industries as the data obtained may be used as an indicator/early warning system for PST producer blooms. This collaboration could be of benefit in managing adjacent fishing blocks.

One of the main concerns raised in the public exhibition process was impacts of the proposed development on Tiger Flathead Danish Seine fishery. Tassal engaged in communication with the two Danish Seine fishers in the region. As outlined in the EIS, in an effort to mitigate the impact of the proposed development on these fishers, Tassal moved the proposed location of the development 400 m northwards. Since the finalisation and submission of the EIS, Tassal has continued engagement with one of the Danish Seine fishers who has had on-going concerns regarding displacement of fishing grounds. Though Tassal acknowledges that some displacement of this fishery would occur as a consequence of the proposed development, this displacement (including the lease and zone area of the proposal) is considered relatively small (approximately 1.73% of the total area of Storm Bay) in comparison to the total fishing grounds used by this fishery.

In regards to other concerns raised, no records of commercial pilchard fisheries were found to occur in the vicinity of the proposed West of Wedge development and there are no reports of sea lice found in Tasmanian salmon farming.

3.7 Recreational fishing

As discussed in section 6.2.9 of the EIS, Tassal acknowledges that there will be some displacement of fishing grounds as a result of the proposed West of Wedge development. However, traversing between leases and the area between lease and zone boundaries is permissible therefore, displacement of fishers will only apply to the four lease areas. These traversable spaces (as shown in the diagram below) are easily transited by recreational fishing vessels.



For discussion on impacts to abalone and rock lobster fishing activities refer to discussion in section 3.6 of this document.

Tassal is also committed to on-going consultation with users of the area and have developed dedicated Community Advisor Groups (CAG). The establishment of these groups aim to ensure all (100%) of Tassal operations are formally engaged with local communities and gives delegates a community representative voice to highlight areas of concern. Refer to section 8 for further detail on CAGs.

In regards to the Community Offset Program, Tassal is continuing to engage with key stakeholders to develop programs that provide synergistic options for the management of shared marine resources.

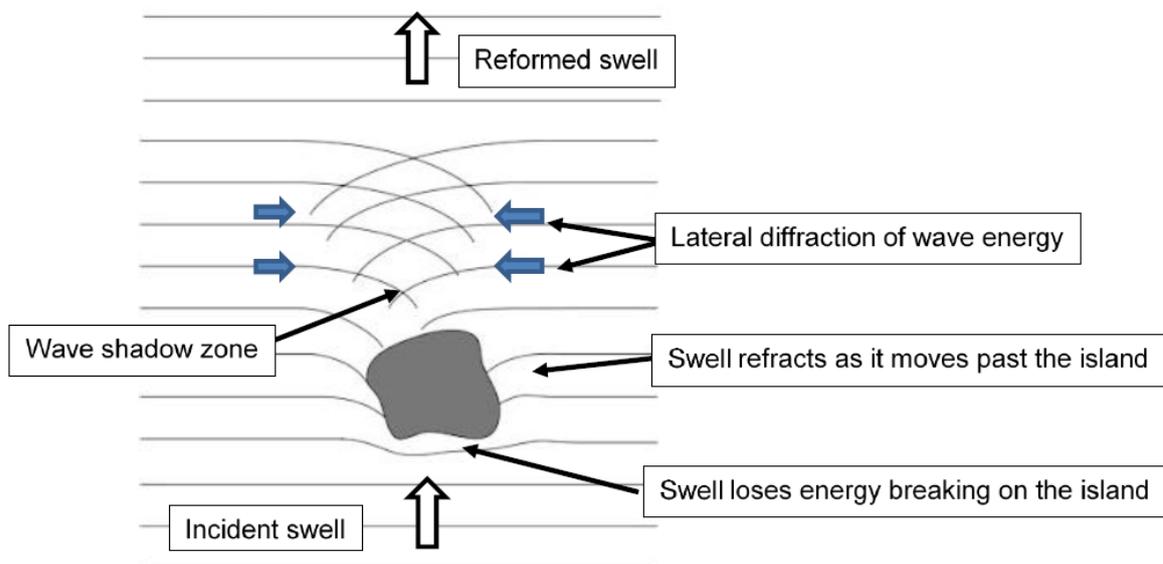
3.8 Recreational activities

Refer to section 6.2.10 of the EIS. As outlined in section 3.7 of this document, displacement of recreational activities from the proposed development will be limited to the lease areas only. The area between leases and the zone area is accessible by the public therefore, the impact to recreational users is considered to be minor in this aspect.

The location of the proposed development has given rise to concerns that the size of waves may be reduced on Roaring and Clifton Beach, in turn effecting surfing activities. Fortunately, the proposed development is considered to have a negligible impact on surfing as fish pens do not absorb energy from passing swell (hence not influencing it) and the wave shadow zone of any obstacle (in this case fish pens) to swell waves is limited because the waves reform as they move away from the obstacle.

A study by Rusu and Onea (2016) examined the wave shadow zone of a 9.5km line of wave farm (wave power extraction devices) parallel to the shoreline. It was found that the influence of the wave farm line dropped off with distance, with little impact on waves at the coast when the line of devices was 7km or further from the coast. The fish pens at the proposed development has a footprint to incoming swell that is far smaller than 9.5km and the pens, by design, extract almost no power from the passing waves. Therefore, any limited wave shadow zone created by the proposed development will be much less than the 5km to Roaring Beach (or Clifton Beach).

This effect is illustrated in the below diagram, where swell moving past an island reforms as it moves beyond the island's wave shadow zone, due to the lateral energy diffraction from the unaffected part of the wave train.



3.9 Tourism

In regards to concerns raised in relation to the tourism sector and the Tasmanian brand, it is considered that neither will be negatively impacted upon by the development of salmon farming into Storm Bay. As outlined in the EIS, Tassal recognises that the Tasman Peninsula is an important area for tourism in Tasmania, with a significant increase in tourist numbers in the region in the past five years. This increase has coincided with Tassal operating marine farms in Nubeena and Port Arthur for many years. Co-existence of both industries in not just the Tasman Peninsula but also in other areas of Tasmania suggests that both industries are expanding with no correlation that one industry directly effects or negatively impacts the other.

Sections 4.1.4, 4.2.5, 5.7.2 and 6.2.11 of the EIS detail the consultation with key tourist stakeholders that operate in the vicinity of the proposed development and assessment of key tourist attractions in the region. Outcomes indicated no negative effects on tourism activities (including the Three Capes Walk and the Port Arthur Historic Site) or operators (such as Pennicott Wilderness Journeys)

on the Tasmanian Peninsula or any other Tasmania tourist areas (such as Bruny Island) as a consequence of the proposed West of Wedge development.

3.10 Socio-economic impacts

As described in section 3.9 of this document, Tassal recognises the importance of the tourism industry for the Tasmanian economy and the significance of the Tasmanian brand. Tassal considers salmon to be a part of the Tasmanian brand and strives to ensure that the industry reflects a positive image for the brand through sustainable environmental and operational practices. Both industries have grown in recent years, indicating one doesn't necessarily affect the other, or have a negative impact. Therefore, negative impacts on Tasmanian economy are considered negligible.

Concerns were also raised in relation to commercial impacts on fishing businesses. This concern is discussed in section 6.2.8 of the EIS. There is limited commercial fishing activity in the waters of the proposed development and the area of displacement from the proposed leases is small (approximately 1.73%). Tassal is committed to on-going consultation with the commercial fishing industry to ensure any potential impacts are minimised.

4 Marine Farming Planning Process

This is matter for government.

5 Holistic Impact Assessment

A significant body of research that explores impacts on water quality and ecosystems have been reviewed as part of the development of the EIS. On-going research and development will further extend the knowledge of Storm Bay and the ecosystems it supports. This information will link into the adaptive management framework of the salmon industry in Storm Bay and work to achieve successful balance of salmonid farming and natural ecosystems.

Refer to section 6.2.1 of the EIS for details on the modelling of the emissions from all three proposed developments in Storm Bay. The cumulative impact from the proposed developments is expected to be low due to the high-energy environment of Storm Bay. However, to ensure impacts of the ecosystem are managed adequately, an adaptive management framework with a staged approach to production and ongoing monitoring will be implemented (refer to section 2.15 of this document).

6 Land-Based Salmon Farming

Presently, Tassal leads the Tasmanian industry for growing fish onshore having grown fish in its land-based nursery to up to 400g before transfer to sea. Tassal is presently exploring potential for further development of its onshore facilities to grow a greater proportion of its production on land. Tassal expects that any increase in its production onshore will complement its marine operations. It has no immediate plans to reduce its marine operations in favour of land based production. While there has been recent investment in land based growout of salmon overseas, evidence provided to date strongly recommends that, at this time, land based fish farming systems are best suited to the early grow out phase of Atlantic salmon and not the best alternative for the commercial production of the entire grow-out of the species to meet the global food demands (International Salmon Farmers Association, 2016).

Furthermore, Tassal consider that present Tasmanian offshore operations are managed, and regulated to ensure environmental sustainability and long term economic viability. Presently onshore farming is not cost effective and raises unanswered questions in relation to sustainability, especially in relation to waste disposal, power usage, land space requirement, increased carbon footprint, increased stocking densities and animal welfare.

7 Moratorium

The salmon industry works within a robust regulatory framework and is required to comply with management controls and licence conditions as they apply to marine farming leases. Tassal currently has a 100% benthic compliance status for all its marine farming operations with records for each lease available on Tassal's Sustainability Dashboard (<http://dashboard.tassalgroup.com.au/>).

For new development proposals, an established formal and in-depth procedure is followed (see Tasmanian Marine Farming website for details <http://dpiwwe.tas.gov.au/sea-fishing-aquaculture/marine-farming-aquaculture/marine-farming-development-plans/marine-farming-development-process>). Once a proposal is approved, a baseline environmental survey must be conducted before operations are to commence. This survey further informs the monitoring program (BEMP) and adaptive management framework. Furthermore, recent changes to Tasmanian finfish farming regulations and the development of the *Sustainable industry growth plan for the salmon industry* facilitates an enhancement to the previous planning and regulatory system for salmon farming in Tasmania (refer to www.dpiwwe.tas.gov.au/salmonplan for more information).

In 2015, a senate inquiry into the regulation of fin-fish farming was conducted. Outcomes of this inquiry concluded that there are appropriate systems and regulatory frameworks in place to support real-time responsive management of the industry. For the full report refer to https://www.aph.gov.au/Parliamentary_Business/Committees/Senate/Environment_and_Communications/Fin-Fish/Report.

8 Stakeholder Consultation

Section 4 of the EIS details the extent of stakeholder engagement activities Tassal undertaken as part of the consultation process for the proposed West of Wedge development. Extensive consultation is evident with consultation beginning in July 2013. In addition to dates provided in the EIS, on the evenings of 15th December 2017 and 11th January 2018, community consultation question and answer sessions were held in Nubeena. These sessions were advertised in the Mercury newspaper, the local Tasman Gazette, Tassal Community Facebook page and the Tasman Council Facebook page. Timing of the various community sessions were arranged on weekends and evenings to enable not only local residents to attend but also non-residents such as shack owners and recreational users.

As part of the consultation process, Tassal conducted a community survey to gain a comprehensive list of stakeholder views regarding the proposed development. As discussed in detail in section 4.2.2.2 of the EIS, the survey was not able to ascertain the level of support (or otherwise) within the local community as the results are not considered to be statically representative of the views of the Tasman Peninsula residents. The survey results did however, provide insight into the community based issues and concerns that existed in relation to the proposed development, which allowed for these concerns to be directly addressed within the EIS.

Tassal is committed to continued engagement with stakeholders and have developed Community Advisory Groups (CAGs) in all its regions. The CAGs provide an important avenue in which valuable

community stakeholders can express views and opinions within a consultative forum about aquaculture within the regions. The purpose of the groups and associated forums are to provide opportunities for:

- Consultation & feedback both to and from Tassal
- Inform planning and decision making process
- Discussion regarding areas of community concerns in relation to Tassal's operations
- A forum to instigate joint initiatives/projects with stakeholders
- Support collective stakeholder partnerships and discussion
- Community education about salmon farming practices

Tassal has encouraged representatives from environment, education, community, tourism and local business groups as well as Council delegates to form the CAG's.

9 Independent and baseline studies

Recently changes have been made to the regulation of salmon farming through the introduction of the *Finfish Farming Environmental Regulation Act*. Additionally, the Tasmanian government has introduced a Sustainable Industry Growth Plan for the Salmon Industry with two key mechanisms:

- 1) ensure access to public natural resources on terms that encourage the industry to meet world's best standards of sustainable farming practices, research, development and innovation, and effective biosecurity; and
- 2) facilitate a robust, appropriately resourced and independent planning and regulatory system.

The industry was already regulated under a robust and comprehensive system, so these changes only stand to reinforce this system and enhance the sustainable practices and transparency of the industry.

In regards to concerns around the independency of the collection of data and development of the EIS document, the proponent (Tassal), commissioned contractors, the regulatory authority and research organisations such as CSIRO and IMAS all contributed to the formation of the EIS. The document is prepared in accordance with guidelines set out by the Planning Authority that include a comprehensive set of core matters that must be addressed and explain any possible impacts and all proposed mitigation measures. These guidelines have input from the Marine Farming Review Panel (the Panel).

At the end of the process, if the Minister approves the draft plan or amendment, then prior to commencement of any marine farming operations, a lease and marine farming licence must be issued (under MFPA and LMRMA respectively), as well as an environmental licence under EMPCA. One of the conditions under these licences will be a requirement of an environmental baseline survey with specifications set by the regulatory authority (EPA), which will influence the monitoring and conditions implemented on the marine farming lease. There is also the potential of a proposal needing to be assessed under the Commonwealth *Environmental Protection and Biodiversity Conservation Act 1999*. All these aspects contribute to an overall comprehensive process that ensures an independent and informed decision on a proposal is made.

Furthermore, the independence of monitoring activities, analysis and research was examined as part of the Senate inquiry into the salmon farming industry in 2015. The outcomes of the inquiry considered the management of the fin-fish industry is based on a comprehensive and robust monitoring regime and evidence was provided that aligns the outcomes of monitoring programs conducted by consultants or companies with those of the Environmental Protection Authority (EPA). A full report on the outcomes of the inquiry can be found at https://www.aph.gov.au/Parliamentary_Business/Committees/Senate/Environment_and_Communications/Fin-Fish/Report.

10 Marine debris

Tassal recognises that the industry has a social responsibility to maintain a level of social acceptance within Tasmanian communities. To do this the industry must ensure that it continues to improve and *exceed* expectations across social, environmental, and economic contributions. In this event, Tassal has undertaken a number of initiatives aimed at reducing marine debris, especially over the last 18 months. Tassal acknowledges that the salmon industry and aquaculture more broadly need to take ownership of this issue.

Tassal has implemented a Waste Management Plan with three key strategies to ensure that the company minimises marine debris originating from its leases. These strategies include:

- Zero harm policy and procedure where incidents of marine debris from Tassal sites are minimised and any debris leaving sites is retrieved within a reasonable time
- Adopt a Shoreline (discussed below)
- Marking, colour coding and identification of all Tassal floating equipment

Tassal has adopted a leadership role in community effort to clean-up of marine debris from all sources in State fish farming areas. Tassal works with the Tasmanian Salmonid Growers Association (TSGA) and other marine farm operators by adopting large areas of shoreline for clean-up. In addition to site specific shoreline clean-up activities, Tassal farm crews regularly clean adopted shorelines as part of their routine farming activities. Further, Tassal has engaged Pakana Services (indigenous employment organisation) for one day per week to clean adopted and additional shorelines as required.

In addition to shoreline clean-up, the Tasmanian industry through the TSGA has implemented a 1300 marine debris hotline for reporting of marine debris in all State fish farming areas. As this is a novel initiative, the TSGA is presently further developing and improving the marine debris hotline. The TSGA hope to compliment the hotline with an app and or Facebook interface to enable the public to report and geo-reference the position of marine debris in real time.

Tassal commits to full transparency in relation to marine debris. Through consultation with DPIPWE and MaST, Tassal has agreed to mark and colour code all its floating equipment so that it may fully traceable. This may take a few years as Tassal replaces and marks existing equipment such as rope and feed pipe. All future purchase of rope will be black with grey fleck and Tassal feed pipe will be black with green stripe. Further, Tassal is undertaking investigation into GPS enabling its key floating assets. Presently, all Tassal boundary markers in the lower D'Entrecasteaux Channel, Huon estuary and Port Esperance are GPS enabled.

As a part of the Shoreline Clean-Up Program Tassal seeks cooperation and advice from BirdLife Tasmania to ensure that nesting shorebirds are protected from disturbance during their breeding

season on the shoreline areas during clean-up days. In addition, Tassal responds promptly to all requests by community members to retrieve marine debris from any area along the coast.

Regarding management of the breakaway of marine farming equipment from a lease, upon becoming aware of the missing equipment, Tassal will act as soon as is reasonably possible to recover it. Tassal will notify Marine Farming Branch and MaST as soon as reasonably possible after it becomes aware of the missing equipment and determines that the missing equipment constitutes a risk to safe navigation.

It is also company policy that where Tassal becomes aware that a lease boundary marker has moved outside of the lease area, or that a navigation light has failed, Tassal will rectify the situation as soon as practically possible. If, for whatever reason, Tassal is unable to rectify the issue immediately and the issue causes a potential hazard to safe navigation then Tassal will immediately notify DPIW and MaST. Once Tassal has rectified any issue causing a risk to safe navigation, it is policy to notify MaST.

In order to assist with the recovery of broken away marine farming equipment there is a 1300 hotline. This hotline was a combined industry initiative under the Tasmanian Salmon Growers Association (TSGA). Presently, the 1300 hotline covers all marine farming regions in Tasmania and is managed by the TSGA.

Also, as part of the ASC certification, Tassal is required to comply with key principles related to marine debris. These include:

- Principle 1 of the ASC Salmon standard requires certified farming operations to comply with all applicable local and national legal requirements and regulations. Farms must demonstrate a pattern of legal and responsible behaviour, including the implementation of corrective actions for any legal violations.
- Principle 4 of the ASC Salmon standard addresses non-biological waste from production and requires waste produced by a certified farm to be recycled, reused or disposed of properly without affecting neighbouring communities. Criteria include the presence and evidence of a functioning waste management policy.

Tassal is committed to eliminating marine debris as a consequence of its farming operations and will endeavor to achieve zero-harm to the environment and people through zero-waste.

Tassal is also supportive of any government/regulatory initiatives that aims to eliminate marine debris in the Tasmanian marine environment.

11 Increase in juvenile production

In regards to concerns around the effects of an increase in production of juvenile fish in Nubeena, the amount of salmon produced within the existing leases and the proposed development will be contained to Tassal's allocation of the Storm Bay TPDNO (30% of the industry-wide TPDNO). Initially, Tassal will maintain production for these existing and proposed leases at approximately 75% of its total TPDNO allocation (i.e. 516.4 tonnes of nitrogen). Details on the TPDNO allocation and the staged approach to production is described in section 3.1 of the EIS and section 2.15 of this document.

12 Location

The proposed West of Wedge development is considered to be highest energy fish farming site in the world. Current operational requirements (freshwater bathes) and limits on current technologies prevents development of fish farming marine sites further than that proposed for the West of Wedge development. As technology develops, the industry will continue to move into higher energy, further 'offshore' sites.

13 Lighting

Lighting at the proposed development will be restricted to only what is necessary for safety and navigation purposes. Potential impacts from nocturnal illumination is considered to be low due to the minimal lighting at the site. Pen lighting will not be installed in pens at the proposed West of Wedge development. If future installation were to occur, Tassal would ensure appropriate measures were taken to mitigate any potential impacts the lighting may have on fauna and human amenities (including noise generation). Marine vessels servicing the leases will only operate during daylight hours with the exception of night-watch vessels. Night-watch vessels may be used periodically for security purposes with spot lights possibly used during the patrol. With any patrols that may occur all noise and light avoidance protocols will be followed. Deck lighting on barges will be low-emitting, downward facing LED lights to avoid skyward illumination and reduce attraction from bird species such as Shearwaters as well as human visual amenity.

In regards to concerns raised regarding lighting and impacts on the *Aurora Australis* (southern lights), as detailed above, Tassal will only be utilising lighting necessary for safety and navigation purposes. Hence, the proposed development is not anticipated to materially add to the illumination of the surrounding nightscape. Mitigation measures will be implemented at the site to limit skywards illumination.

14 Integrated Multi-Trophic Aquaculture (IMTA)

MF236 Okehampton Bay is Tassal's first integrated multi-trophic farm. This eco-aquaculture site aims at reducing environmental impact through the growth of shared species in shared spaces – including salmon, mussels, native oysters and seaweed. Tassal has also been conducting seaweed cultivation trials for the past two years at a number of its sites. The movement into the potential of IMTA is a relatively new venture and whilst Tassal is dedicated to developing the potential of its Okehampton Bay site into a successful IMTA farm, there is currently no immediate plans to integrate IMTA at the proposed development.

15 Engineering and insurance

Tassal acknowledges that the proposed development is a high-energy environment and is dedicated to ensuring that all infrastructure (pens, moorings, barges, etc.) used at the proposed development is adequate to cope with severe weather conditions including extreme storm events. Tassal has a dedicated audit and risk management team that has conducted comprehensive assessments on risk and infrastructure development for the proposed leases.

Like Tasmania, the Norwegian salmon industry is facing the challenges of establishing farms at higher energy sites. This process is fuelled by significant research and development programs being undertaken by both the major producers and suppliers.

Tassal have availed themselves of the latest pen design technology by engaging with Aqualine and AKVA, the two largest and leading international salmon pen providers with significant in-house pen design experience and skilled development teams, to look specifically at the proposed West of Wedge development, and appropriate technologies.

In the unlikely event that infrastructure from the proposed development was to break away as a result of a storm event (or severe weather), Tassal, as a requirement of regulatory controls, would be obligated to retrieve this equipment. Refer to section 10 of this document for further detail. Tassal also has Escape Management Protocols and kits to manage any escape of stock as a result of pen/net breakage. Tassal has the financial and resource capabilities to deal with any potential issues that may arise.

16 Waste Capture

Addressed in section 2.2 of this document.

17 Environmental monitoring and compliance

Refer to section 2.15 of this document.

18 Stocking density and fish health/wellbeing

Tassal aims to keep stocking density as low as possible whilst still maintaining the viability of the farm. The RSPCA has examined stocking density and welfare in details and specify a maximum pen stocking density of 17kg/m³, with an across site average of 15kg/m³. Tassal operates within these standards.

The RSPCA standards have been set conservatively. Peer reviewed science indicates that stocking densities of up to 20-22kg/m³ would not result in adverse welfare outcomes (Oppedal et al, 2011 and Turnbull et al, 2005). Another study (Liu et al, 2015) showed that biochemical stress markers and immunological status of fish were only adversely affected at stocking densities of 30-61kg/m³. Tassal operates well below all these scientifically established limits.

Tassal are focussed on a variety of important factors other than stocking density when considering fish welfare including good skilled husbandry, appropriate pen infrastructure, good environmental conditions at farming sites and proper nutritionally designed feed delivered to the fish in a sufficient amount. These factors are implemented through the following:

- comprehensive monitoring of dissolved oxygen levels in water
- in-pen cameras
- visual on-site fish inspections
- health monitoring programme
- fish health technical staff based in each farming zone
- fish health managers
- veterinarians on staff
- infrastructure to support good in pen environments, including capacity to improve oxygen levels in emergency events and net cleaning equipment to ensure good water flows

Additionally, Tassal has a comprehensive fish health programme which includes:

- participation in the Tasmanian Salmonid Health Surveillance Programme
- pro-active health sampling and inspections

- full diagnostic investigations in the event of a fish health issue – using the Tasmanian government diagnostic laboratory and international expertise where needed
- use of vaccines to improve the immune status of the fish against known challenges
- investment in research and development in health improvement projects including the selective breeding programme and new vaccine developments

19 Heavy metals

Prior the commencement of any construction at the proposed development, an environmental baseline survey will be required. Sampling and analysis of heavy metals in sediment will be a requirement of this baseline survey. Results of these samples will dictate if measures need to be taken to mitigate against release of heavy metals from sediments as a consequence of laying mooring systems.

20 Land Use and Development

Concerns were also raised around the dams used for Tassal operations at Nubeena. The Badger Creek dam was constructed 30 years ago and is on the government dam register. A government water licence is in place that ensures environmental flow, and maximum take amounts are specified and adhered to by Tassal. The Hirts' dam (Stinking creek) was constructed over 50 years ago and is leased by Tassal. The dam increased in capacity in 2015, following approval from the assessment committee for dam construction. The process was advertised and a water licence is in place for the use of the dam. There are no plans to expand the dams for use at the proposed West of Wedge development.

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