

INSERT COMPANY LOGO

Waste Management Plan

Prepared By:

Insert Author

Insert Month Year

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1 Introduction

The purpose of the Waste Management Plan is to describe the principles, procedures and management of the waste generated by the **INSERT LEASE NAME**. **INSERT PROPONENT** has developed this Plan to ensure wastes are reduced, reused and recycled wherever possible.

In accordance with consent condition **INSERT DETAILS (E.g. D22 and D23 of the State Significant Infrastructure Approval SS1-5118)**, the Waste Management Plan outlines measures to manage and mitigate waste generation and resource consumption during the operation of the development. The Plan includes details on the following:

- **LIST DOT POINTS OF CONSENT CONDITIONS**
- **E.g. The types and quantities of waste generated during operation;**
- **E.g. Procedures to collect and dispose of waste;**
- **E.g. Measures that will be implemented to minimise waste generation associated with the development; and**
- **E.g. A program for monitoring the effectiveness of these measures.**

The Waste Management Plan is designed to support an ecological based management approach underpinned by adaptive management principles.

Surplus or waste materials arise from either the materials imported to the site or from those generated on the site. Imported materials are those which are brought to the site for inclusion in the operations. Generated materials are those that occur during the daily operations of the site i.e. damaged stock and waste water.

This Plan also considers other aspects to waste management such as waste reduction, segregation of waste, disposal of waste, financial impacts of waste disposal and recording, monitoring, education and reviewing. This Plan outlines the waste management procedures that have been put in place and demonstrate the benefits to the environment, how we can measure the effects and how these procedures and practices are sustainable.

2 Waste Types

The operation of the **INSERT LEASE NAME** will generate a range of wastes, including bio waste (i.e. biofouling and damaged stock), general waste (e.g. plastic, containers and bags), obsolete/worn infrastructure (e.g. **ropes and nets**) and contaminated/hazardous wastes (e.g. human wastes and diseased stock).

2.1 Waste Categories

Table 1 provides an overview of the potential wastes, their classification and avenues of disposal.

Table 1: Waste types and waste management practices (Australian Waste Classification system AA004643 - 2011).

Waste Types	Waste Form	Australian Waste Code	Waste Origin Code	Waste Stream	Waste Destination
Dead shellfish	L & S	K100	1120	Composting/ensiling	EPA Approved Contractor
Paper Waste	S	Un-coded	1120	Landfill (soiled) or recycling	LOCATION waste transfer station or Contractor
Plastic Packaging	S	Un-coded	1120	Recycling	Recycling depot
Plastic Bags	S	Un-coded	1120	Recycling	Recycling depot
Cardboard Packaging	S	Un-coded	1120	Recycling	Recycling depot
Rags	S	Un-coded	1120	Landfill	LOCATION waste transfer station
Pallets	S	Un-coded	1120	Returned	Contractor
Waste Rope	S	Un-coded	1120	Recycled polypropylene	Recycling depot
Empty 20 litre Steel Drums	S	Un-coded	1120	Reuse on site Or Recycled	Recycled via Contractor or sent back to supplier
Empty 200 litre Steel Drums	S	Un-coded	1120	Reuse on site Or Recycled	Recycled via Contractor or sent back to supplier
Sanitary Products	S	Un-coded	1120	Incinerated	Contracted Approved Sanitary disposal Services
Waste oil	L	J120	1120	Recycled	Approved Contractor
Grey and Black Water	L	Bio-solid	1120	Sullage tank on vessels – land based sewage systems	Onshore services provide or approved Contractor

Waste materials fall into four categories for management, which include:

- Re use;
- Recycle;
- Residual wastes; and
- Landfill.

2.1.1 Re-use

If surplus materials can be used in future operations they are classified as materials which can be re-used, i.e. rope off cuts and spare netting. Materials that can be reused in their present form are surplus to requirements and need to be removed from site will be reused. The surplus products will be labelled and storage area recorded for future reference.

2.1.2 Recycling

If surplus materials cannot be reused in their present form but could be used in a different form, they will be sent to recycling or labelled as future recycling i.e. damaged stock and biofouling may be composted as potential fertilisers.

2.1.3 Residual Waste

Residual waste can come in several forms including:

- Waste that cannot be disposed of due to its category, class or material (e.g. old tyres, metals and contaminated waste). Ways of reusing or disposing of the waste from the site needs to found; and
- Unused machinery, spare parts or discarded parts. All items of this nature will be identified and dated. These items will be assessed quarterly to gauge their importance for potential future use. Once an item is deemed to have little or no future potential to be utilised, it will be either assessed for reuse in another form or disposed of from the site.

Residual waste can be an eyesore, fire hazard and has potential to impact on the environment through leachates. All residual wastes will be identified and new residual wastes will be added to the residual waste catalogue for quarterly auditing. Residual wastes that are deemed essential or have the potential for future use will be stored in a neat and tidy manner and where possible under cover to avoid or reduce the potential for further corrosion or damage to the product.

2.1.4 Landfill

If the above options cannot be satisfied then the only alternative left is to send the surplus materials to landfill. Under no circumstances will biological (except biofouling) or non-biological waste be dumped into the ocean.

3 Waste Collection and Disposal

3.1 Dead and Diseased Stock

Dead and diseased shellfish/finfish will be put into waste storage bins on service vessels where lids will be tightly secured to prevent spillages, attraction of pests or odour issues. The waste bins

will then be returned to land and depending on the quantity of waste, it will be disposed of potentially through the **INSERT NAME** waste disposal facility or transported by road to an appropriate composting or waste disposal facility in the local area.

The containers will then be cleaned and disinfected before being returned to the service vessels (Worth & Joyce, 2001). All dead and diseased **shellfish/finfish** will be taken ashore for disposal – under no circumstances will dead or diseased **shellfish/finfish** be disposed of at sea (Environment Protection Authority, 2007).

3.2 Biofouling

The **INSERT LEASE NAME** infrastructure will be colonised naturally by a range of marine biofouling organisms, such as algae, ascidians, molluscs and barnacles. The removal of this biofouling from the infrastructure is important to reduce its resistance to currents and wave action which may jeopardise the integrity of the infrastructure e.g. stress moorings and cause the stock to sit too closely to the seabed (Braithwaite *et al.*, 2007). Biofouling removal is also important to maintain water quality, reduce the availability of habitat for diseases and parasites and to minimise the attraction of wild fauna (e.g. herbivorous fishes) which feed on it and can cause damage to the infrastructure (Braithwaite *et al.*, 2007).

Infrastructure including culture apparatus will either be taken to the land based site for cleaning, cleaned *in situ* or it will be cleaned on-site using pressure cleaning equipment. On board pressure cleaning equipment used for the culture apparatus (which will depend on the types of species cultured), would consist of a power unit (pump), filter unit and cleaning unit. A winch will be used to pull the longlines up from the water, which will then be attached to rollers along the side of the vessel. **Lines, nets, cages, baskets and/or trays containing the shellfish/finfish will be pulled onto the vessel and positioned on a conveyor belt that will take them through a cleaning unit consisting of a series of high pressure sprays and collection tanks (Umwelt, 2003). Biofouling and sediment will be removed and then the lines, cages and/or nets will be returned to the leases.**

Water used in the on board cleaning process will be pumped from and returned to **Jervis Bay**. The water from the cleaning process will flow to the filter unit and pass through a series of meshes and collection boxes before it is discharged back into the **bay**. No chemicals will be involved in the cleaning process. All material that is collected in the filters and tanks will be disposed of at an approved land based treatment facility (Umwelt, 2003).

Dumping of bio waste (i.e. biofouling, damaged stock or sediment) overboard or near public facilities (e.g. jetties, ramps) will not be allowed - all material will have to be disposed at an approved waste facility. Biofouling waste and damaged stock could also potentially be used for composting.

3.3 Longline Infrastructure

During the operation of the leases, the longline, anchor and mooring infrastructure, including ropes, culture apparatus, buoys and moorings will wear and need to be replaced. In addition, the daily operation of the **INSERT LEASE NAME** will also generate general waste, such as paper, plastics, containers and bags. These wastes will be secured in waste bins on the service vessels and returned to land to be transported by road to either land base facilities or directly to an appropriate waste disposal facility in the area.

Waste materials held at land base sites will be stored in designated waste bins ready for collection, sorting and recycling by recognised waste contractors.

Where possible waste recycling contractors will provide waste reports/certificates identifying waste materials sorted and recycled by category and by weight.

3.4 Chemicals

Storage of waste chemicals such as oils will be held to an absolute minimum on the land based sites.

Drums and tanks containing waste oil or other chemicals will be stored within impervious bunds. Adequate absorption materials shall be readily available to collect and recover any liquid spillages.

Chemical wastes will be disposed of through an approved waste contractor.

3.5 Sanitary, Grey and Black Water Wastes

All sanitary products will be contained within receptacles supplied by a contractor on board vessels or at land bases. The contractor will also be responsible for disposal of these wastes.

Grey and black water will be retained onboard vessels for disposal through approved pump out facilities located at the respective port or by approved contractors. Land based sites will dispose through the connected sewage system.

3.6 Contaminated / Hazardous Wastes

All materials generated on the **INSERT LEASE NAME** and the land based sites will be fully evaluated for potential contamination.

Notice to staff will be given immediately if hazardous materials or conditions are found onsite that are in unprotected environments including the following:

- Asbestos or material containing asbestos;
- Flammable or explosive liquids or gases;

- Toxic or contaminated materials;
- Radiation or radioactive materials;
- Noxious or explosive chemicals;
- Tanks or other contaminated substances.

Depending on the type of material and the danger level of the material, storage and handling procedures may be required. The **INSERT LEASE NAME** should not require high volume high-level hazardous products to be on the site.

If contaminated wastes are evident, the Marine Operations Manager will be advised so that arrangements can be made for the engagement of appropriately qualified specialists in hazardous materials handling. Any contaminated waste will be managed in accordance with relevant WH&S policies.

4 Waste Minimisation

Wastes from the **INSERT LEASE NAME** operation have the potential to impact on the environment and the viability of the aquaculture activities. The Waste Management Plan has been developed to manage the risk associated with the potential impacts including minimising waste generation.

INSERT PROPONENT will implement all possible waste minimisation procedures and therefore reduce the amount of waste to be removed from sites. Management, staff, design teams, contractors and suppliers will all be encouraged to look at ways to minimise the amount of waste generated at the work sites.

Industry Best Practice

INSERT PROPONENT will follow industry best practice guidelines such as:

- Waste materials will be reduced, reused and recycled where possible;
- Lease infrastructure removed from the lease will be returned to shore for processing, recycling or disposal;
- General wastes will be returned to shore for processing or disposal;
- All sewage wastes will be contained on service vessels in onboard holding tanks or chemical toilets and disposed of through an approved vessel sewage discharge point on return to port; and
- Residual materials that cannot be reused or recycled will be disposed of at an approved waste management facility.

The Marine Operations Manager or appointed delegate will be responsible for ensuring the instruction of workers and contractors, implementation and overseeing of the Waste Management Plan during induction processes.

The onsite induction relating to waste management will include advice on appropriate separation, handling, recycling, reuse methods to be used by all parties conducting operations onsite where applicable.

Regular toolbox meetings will include discussion of waste management issues and updates on how to minimise wastes.

The monitoring of wastes generated will provide an opportunity to review the wastes being generated and ways in which they can be reduced (See Section 5).

Training

INSERT PROPONENT recognises the need for staff and contractors to be appropriately trained in the tasks that they are to undertake to reduce the chance of wastes being produced.

5 Monitoring

INSERT PROPONENT are committed to minimising the risks associated with the generation of wastes in the operation of the **INSERT LEASE NAME**.

The monitoring of the quantity and types of wastes being generated by the **INSERT LEASE NAME** operations will be recorded in the wastes log book and kept on site at all times so that regular reviews can be undertaken.

All products that are considered to be of a concern in relation to the waste being generated will be replaced where possible for products that are less wasteful and/or considered to be environmentally friendly.

All waste storage containers will be inspected weekly to ensure that they are maintained in a condition appropriate for their use and containment of the specific waste.

Skips and/or bins will need to be monitored regularly to ensure that cross contamination doesn't occur. All waste removed from site including products for reuse will also be monitored to ensure no cross contamination.

INSERT PROPONENT will continue to review the type of surplus materials produced and where possible change the site design and operation to minimise products that go to landfill. Recycling or reuse of wastes are a priority.

The Waste Management Plan and its importance will be communicated to the whole team regularly. Business wide updates including improved recycling amounts will be communicated and discussed at management and toolbox meetings.

The Waste Management Plan will be analysed to produce key performance indicators and it will be the individual site manager's responsibility to develop best practice solutions throughout the **INSERT LEASE NAME** operations and monitor them. Results will be recorded in the quarterly site audit.

A Water Quality and Benthic Environment Monitoring Program will be implemented to monitor potential impacts of biofouling and assist with the development of environmentally sustainable practices (See Appendix 3).

As part of the above monitoring activities the Marine Operations Manager or delegate will undertake quarterly audit of sites.

6 Consultation

In the preparation of the Waste Management Plan the following personnel were consulted.

- E.g. Name (Environment Manager), Company;
- E.g. Professor XXXXXX (*Principal Research Scientist*), NSW Department of Primary Industries; and
- E.g. XXXXXXXX (*Manager, Marine Park*), NSW Department of Primary Industries, and
- E.g. XXXXXXXX (Acting Site Manager, Institute), Company.

7 References

- Braithwaite, R.A., Cadavid Carrascosa, M.C. and McEvoy, L.A. (2007) Biofouling of salmon cage netting and the efficacy of a typical copper-based antifoulant. *Aquaculture* **262**: 219-226.
- Environment Protection Authority (2007) *EPA Guidelines - Managing aquaculture stock mortalities*. EPA, South Australia.
- Umwelt Pty Ltd (2003) *Proposed Pearl Farm - Environmental Impact Statement*. Prepared for Port Stephens Pearls, Salamander Bay.
- Worth, G. and Joyce, N. (2001) *Environmental Impact Statement For A Commercial Snapper Farm Proposed For Providence Bay, NSW*. Pisces Marine Aquaculture Pty. Ltd., Nelson Bay.