Sundial Urban Winery
and
100 Beaches Brewery

Waste Management Plan

Prepared By: **Mattew Tice and Susie Mills**

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Introduction

The purpose of the Waste Management Plan is to describe the principles, procedures and management of the waste generated by Sundial Urban Winery and 100 Beaches Brewery PTY Ltd. Susie Mills and Matthew Tice have developed this Plan to ensure wastes are reduced, reused and recycled wherever possible.

This Waste Management Plan outlines measures to manage and mitigate waste generation and resource consumption during the operation of the development. Please note that this plan has been provided in conjunction with a Sustainability Plan which is central to our goal of creating an ethical business underpinned by a desire to reduce our impact on climate change.

The Plan includes details on the following:

- The types of waste generated during operation]
- Procedures to collect and dispose of waste
- Measures that will be implemented to minimise gernaration associated with the develoipment and
- 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, 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.

1 Waste Types

The operation of Sundial Urban Winert and 100 Beaches Brewery Pty Ltd will generate a range of wastes, including recyclable solid waste, Putrescible solid wastes to be composted, general solid wastes, spent grains, grape waste and obsolete/worn infrastructure (e.g. kettles and casks).

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	Waste Stream	Waste Destination
Paper Waste	S	Landfill (soiled) or recycling	Council waste transfer station or Contractor
Plastic Packaging	S	Recycling	Recycling depot
Plastic Bags	S	Recycling	Recycling depot
Cardboard Packaging	S	Recycling	Recycling depot
Rags	S	Landfill	Council waste transfer station or Contractor
Pallets	S	Returned	Contractor
Empty 50litre Plastic Drums	S	Reuse/Recycle	Council waste transfer station or Contractor
Sanitary Products	S	Incinerated	Contracted Approved Sanitary disposal Services
Spent Grain & Grape waste	S	Composting	Donate to Local Farm
Yeast Waste	S	Composting	Donate to Local Farm
Fermentation Solids	S	Composting	Donate to Local Farm
Grey and Black Water	L	Filtered and Sewer Disposal	Onshore services provide or approved Contractor

Table 1: Waste Types

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

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

Landfill.

1.1.1 Re-use

If surplus materials can be used in future operations they are classified as materials which can be re-used, i.e. tubs and casks. 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.

1.1.2 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. solid waste may be composted as potential fertilisers (e.g., spent grains from brewing or grape residue from wine making).

1.1.3 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 casks). 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.

1.1.4 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 or non-biological waste be dumped into the ocean.

2 Waste Collection and Disposal

2.1 Solid Waste Management - All recyclable solid wastes to be segregated and recycled, Recyclable wastes include:

- Clean water streams
- Yeast bottoms and hops for beer and grape stalks, skins and MOG (material other than Grapes) collected during grape harvesting
- Paper and cardboard
- Aluminium and ferrous metals (e.g., damaged cans and caps)

2.2 Putrescible solid wastes to be composted (on or off site), including:

- filtration sludges
- trub / spent grain
- tank sludges
- yeast wastes
- fermentation solids
- grain dusts

Category	Waste minimization opportunities
Solid waste reduction	Buy materials (e.g. cleaning chemicals, additives) in bulk containers where possible. Use reusable, returnable, refillable or recyclable containers. Segregate waste streams to enable more efficient disposal. For example separate plastics from cardboard packaging to enable recycling. Compact waste to reduce disposal volumes and costs. Look at the brewery's/winery's packaging waste. Divert organic solid wastes such as yeast wastes, trub, grain dusts, spillages from general waste to animal feed, or compost applications.

2.3 Wastewater

Category	Waste minimisation opportunities
Waste water volume reduction	• Dry sweep spills where possible using brooms, scrubbers and squeegees. This reduces both water use and organic load of the wastewater. • Ensure that storage bins and tanks are not overfilled; • For areas where there is a high risk of a spill occurring have equipment close at hand to divert and collect product spills; • Collect the first rinses from tanks for incorporation into any composting operations. This will make effluent treatment easier; • Resettle trub during wort decanting process; and • When evaluating different fining agents, select the one that produces the most compact trub for the desired quality improvement. • Install mesh sieves over drainage channels and pits to prevent solid wastes from entering the effluent stream. • Spot mop and clean up spills promptly before they spread over a larger area. • Install automatic shut off valves on hose outlets. This will reduce water wastage as hoses will not run when not required. • Do not clean tanks and vessels by overflowing with water for extended periods. • Repair water leaks in a timely manner. • Eliminate unnecessary production runs. This will reduce cleaning requirements. • Separate stormwater from general process effluent. Stormwater is clean and does not require treatment. Ideally it should be collected and used. Including it with general effluent unnecessarily increases wastewater volumes. • Segregate tank sludges and incorporate into composting activities. This will reduce solid loading of the liquid effluent stream.
Recovery	• recovery of cooked malt for animal feed; • recover CIP chemicals (acids or alkali solutions) for reuse • recover CIP rinses for use in other operations such as neutralisation of wastewater; • improve the wort recovery with membrane filtration techniques; • heat exchange hot waste water streams with incoming water;

3 Monitoring

Sundial Urban Winery PTY Ltd and 100 Beaches Brewery Pty Ltd are committed to minimising the risks associated with the generation of wastes overall.

The monitoring of the quantity and types of wastes being generated by both operations will be recorded in the wastes logbook 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 were possible for products that are less wasteful and/or considered to be environmentally friendly.

All waste storage containers will be inspected monthly 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.

Susie Mills (Sundial Urban Winery PTY Ltd) and Matthew Tice (100 Beaches Brewery PTY Ltd) 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 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 operations and monitor them.