

SHOALHAVEN STARCHES ENVIRONMENTAL PROCEDURE

TITLE: [WASTE MANAGEMENT PLAN](#)

PURPOSE: This procedure details the methods used to adequately handle waste products produced by the Shoalhaven Starches site to meet food safety requirements and adhere to environmental guidelines for recycle, reuse and disposal of factory and farm waste.

SCOPE: This procedure applies to waste generated at the site's factory and environmental farm.

SPECIFICATION: Adequate waste removal must occur to maintain plant cleanliness and in a manner that does not pose a risk to food safety, human health and the environment.

ACTION ON NON-CONFORMANCE:

- Notify the Quality Assurance Manager
- Notify the Environmental Coordinator
- Notify waste removal company

FREQUENCY: This procedure is carried out daily, weekly and as required to maintain control over plant waste.

REFERENCES:

Plant Cleaning and Sanitation Schedules.

Environmental Protection Licence 883.

NSW EPA Waste Classification Guidelines.

Protection of the Environment Operations (Waste) Regulation 2014

Biosecurity Waste Disposal procedure [AA-P-0005](#)

Cleaning of Biosecurity Areas procedure [AA-P-0007](#).

1. PURPOSE:

This procedure is to be carried out to ensure that:

1. All waste is properly stored, controlled and removed from the site.
2. Waste does not build up and provide areas for rodent infestation.
3. To maintain the plant in a clean and orderly state.
4. To comply with environmental legislation relating to the disposal of waste from the operation.
5. To encourage the most efficient use of resources by implementing the waste hierarchy of Avoidance & Minimisation, Reuse, Recycling, Recovery & Disposal.

2. RESPONSIBILITIES:

- The Environmental Coordinator: is responsible for ensuring all waste is disposed of in accordance with environmental legislative requirements, including the monitoring volumes of waste being disposed of off-site and ensuring all companies that transport “waste” from the site have written agreements with the company.
- Quality Assurance Manager: is responsible for ensuring satisfactory levels of plant cleaning and sanitation is undertaken to meet food safety requirements.
- Plant Managers: are responsible for ensuring their area of responsibility is kept clean and tidy and removal of waste occurs in accordance with this procedure.
- Employees: All employees are to dispose of “wastes” in accordance with this procedure.
- Contractors: All contractors are to ensure that their worksite (s) is cleaned at the conclusion of each day and wastes are disposed of in accordance with this procedure.

3. WASTE DISPOSAL REQUIREMENTS:

- Waste shall be removed on a regular basis and not build up in food handling or processing areas. Designated waste accumulation areas shall be maintained in a clean and tidy condition until such time as external waste collection is undertaken.
- Trolleys, vehicles waste disposal equipment, collection bins and storage areas shall be maintained in a serviceable condition and cleaned and sanitized regularly so as not to attract pests and other vermin.
- Waste shall be contained in appropriate, covered and labelled containers, and maintained in a clean and tidy condition.
- Inedible waste designated for animal feed shall be stored and handled so as to not cause a risk to the animal or to further processing.
- Plant areas and equipment are cleaned in accordance with Plant Cleaning and Sanitation schedules and procedures.

4. PROCEDURE:

4.1 FACTORY – SOLID WASTE

- **Gluten and Starch Plant**

1. Clean uncontaminated waste from the Gluten Plant is reprocessed within the production plant as necessary; wet gluten waste that cannot be re-processed is stored in bins & transferred to a licensed composting facility or transferred to the site's waste water treatment plant (WWTP)
2. Reject liquid starch waste from the Starch Plant may be re-assigned to fermentation or re-processed within the production plant as necessary.
3. Damaged or out of spec packed powdered product from the Starch Plant is recycled back at the beginning of the process at the Flour Loader or Ethanol Fermentation.
4. Clean uncontaminated dry product spills are to be collected in appropriate bags / containers for reprocessing through the factory and / or re-processing through the ethanol fermentation plant.
5. Damaged bags of starch are neatly stacked onto pallets for tipping into waste bulk bags for reprocessing through the ethanol fermentation plant.
6. Damaged bags of gluten are re-tipped and reprocessed through the dedicated recycling hopper or sent back to the Manildra Flour Mills for re-processing.

- **Micro Laboratory Quarantine Waste**

1. After microbiological product testing is completed, collect all left over product and place in the designated quarantine (clinical) waste bin located outside the main entrance of the micro laboratory.
2. Clean up all spills and work area and dispose of waste into the clinical waste bin.
3. A designated waste company (Daniels Health Pty Ltd), licensed to handle, transport and dispose of the waste, will collect the waste and provide a replacement bin.
4. The Microbiologist is responsible for this waste bin.

- **QC laboratory Waste**

1. After QC product testing is completed, collect all left over product and place in the designated general waste bin in laboratory.
2. Samples of glucose syrup and ethanol can be returned to their respective plants as required.
3. Hazardous laboratory chemicals to be disposed of as per the hazardous disposal section of this procedure.

- **Glucose Plant**

1. Glucose waste, or out of spec glucose, is transferred to the Ethanol Plant for fermentation.

- **Packaging Waste, Paper Bags and Cardboard**

1. All paper bags & cardboard waste is to be collected and placed in designated paper and cardboard recycling bins for pick up on a daily basis by the general duties team.
2. Paper/cardboard is transferred to larger recycling bins for pick-up on a weekly basis.
3. No full bags of product are to be placed in these bins.
4. Any plastic lined bags must be placed in the general waste bins as they are not recyclable.

5. If extra pick-ups are required due to excessive waste the General Duties Supervisor is to be notified and will co-ordinate extra pick-ups.

- **Empty Plastic and Metal Drums**

1. Empty plastic and metal drums are to be placed in the designated drum collection areas and either sold or gifted to an accredited drum recycler.

- **Plastic Pallecons – DDG Plant**

1. Plastic pallecons are to be cleaned and flushed with water to remove all residues, labels removed and neatly placed adjacent to the DDG Loading facility.
2. The pallecons are then issued to DDG Syrup customers for re-use.
3. The DDG Shift Supervisor is responsible for managing plastic pallecons.
4. Any pallecons that are damaged or unfit for re-use are to be placed in the bulk general waste bin.

- **Timber**

1. Timber is placed in a dedicated timber waste bin at the western end of the site. Any contaminated timber (treated pine, particle board, painted timber) is to be placed in the General Waste Bin.
2. Contractors may collect timber as necessary; the majority of timber is sent to a local recycling company.

- **Black Steel / Stainless Steel and Other Metal**

1. Black Steel / Stainless Steel and other metals are to be placed in the dedicated recycled metal skip bins.
2. Metals are either re-used / recycled by the Maintenance Crew or sold to a commercial recycler.
3. A metal recycling company comes in on a regular basis to change out the scrap metal bins.

- **Mechanical Spares, Projects, Maintenance,etc**

1. At the completion of work, maintenance refuse and spares are to be removed from the operational areas and placed in designated racks and containers or returned to the store.
2. All redundant equipment, pipework, etc, is to be placed in scrap metal bins, or contact the local scrap metal company for pick-up.
3. Plant & equipment suitable for re-use may be neatly stored at the laydown area at the Environmental Farm. The equipment is to be logged into the maintenance system inventory.
4. Equipment containing oil is to be stored on impervious surfaces, preferably under cover, or drained of oil if storing on unsealed areas. Contact the Engineering Manager for advice.

- **Boiler and Fly Ash**

1. Boiler and fly ash from the coal-fired boilers is transferred by conveyor belts into a dedicated “ash pit” located behind the Boilerhouse.
2. The majority is used by the company as a base for roads, new infrastructure and mixed with soil to level depressions in irrigation paddocks on the Environmental Farm.
3. Some of the ash is taken off site by a licensed commercial Composter and Landscapers.
4. The Boiler and Services Manager is responsible for Boiler and Fly Ash waste.

- **Soil**

1. Any soil excavated during construction activities is stockpiled for transport to the Environmental Farm for blending and used in farm levelling work.
2. Soil must be tested in accordance with the relevant waste legislation for contamination prior to re-use. Contact the Environmental Coordinator for advice.

- **General Rubbish**

1. General rubbish is to be placed into rubbish bins across the site which will be emptied on a regular basis (daily) by General Duties personnel.
2. Yard rubbish is to be picked up and placed into classified waste bags and then placed in general waste bins provided for regular removal.
3. No hazardous substances or other chemicals are to be placed with the general rubbish.

- **Co-mingled Recycling**

1. Dedicated co-mingled recycling bins (in yellow lid bins) are available across the site.
2. No food scraps or general waste are to be placed in these bins, only recyclable materials such as cans, plastic bottles, paper and cardboard.
3. Bins are picked up on a weekly basis and sent to a recycling company.

- **Grain Waste**

1. Grain waste generated from the Grain Unloader & Flour Mill that cannot be re-processed must be disposed of in designated Biosecurity waste bins located on the ground floor of the Flour Mill and picked up by a licensed Biosecurity waste provider Daniels Health Pty Ltd; refer to Biosecurity Waste Disposal procedure [AA-P-0005](#).

- **Mill Feed Waste**

1. Any Mill Feed waste from the Flour Mills that has not been processed through the DDG Dryers must be disposed of in a Biosecurity waste bin for pick-up by a licensed Biosecurity waste provider; refer to Biosecurity Waste Disposal procedure [AA-P-0005](#).

- **Dried Distillers Grain (DDG) Waste**

1. Any DDG waste (including DDG pellets) that cannot be re-processed in the plant is collected and transported to the Environmental Farm for cattle feed.
2. Contaminated DDG waste not fit for animal consumption is collected in a skip bin for collection by a licensed composting facility.

- **Electronic Waste (E-waste)**

1. E-waste includes computers & accessories, printer cartridges, mobile phones & batteries.
2. All E-waste must be returned to the IT department for collection.
3. Printer cartridges can be placed in dedicated cartridge recycling bins.
4. The IT Manager is responsible for maintaining the e-waste and contacts either the General Duties Supervisor for collection to local e-waste drop-off locations (eg. OfficeWorks), or organises pick-up by Tech-collect.
5. Batteries can be returned to the Maintenance Store for recycling.

- **Waste Tyres**

1. Waste tyres are to be neatly stacked and collected by a licensed waste transport provider and disposed of at a licensed waste facility in accordance with environmental legislative requirements.
2. Contact the Environmental Coordinator for handling and disposal advice.

- **Asbestos Waste**

1. Any person that suspects waste material may contain asbestos, which may be exposed as a result of the disturbance/demolition of buildings, or excavation of soils, must reported to the Work Health & Safety (WHS) Manager.
2. The WHS Manager maintains the site Asbestos Register and will organise inspection and testing of the material by an accredited asbestos assessor.
3. All asbestos waste is to be handled and disposed of in accordance with the relevant WHS and environmental legislative requirements, which includes the use of licensed asbestos waste transport providers and licensed waste facilities.

- **Biosecurity Waste**

1. Strict controls are in place to ensure Biosecurity waste is not mixed with general waste on site.
2. The following Biosecurity waste items associated with Imported Grain processing must be contained and disposed of in accordance Biosecurity Waste Disposal procedure [AA-P-0005](#):
 - Grain waste, including screenings from the Flour Mill.
 - Mill Feed waste (that has not been processed through the DDG Dryers)
 - Any items that come into direct contact with the above wastes must be thoroughly cleaned and signed off by an Accredited Person, or disposed or in a Biosecurity waste bin.

- These items may include filter socks, sifters, overalls, dust marks, cloths, etc. refer to Cleaning of Biosecurity Areas procedure [AA-P-0007](#).

4.2 FACTORY – LIQUID WASTES

- **Drains / Sump Waste**

1. Sump/drain waste is removed on an as is required basis.
2. The waste is removed by contract cleaning companies and is disposed of at the Company's Environmental Farm Waste Water Treatment Plant (WWTP)
3. The Area Maintenance Supervisors are responsible for removal of sump wastes.

- **Wastewater / Condensate from Factory**

1. Starch and glucose plant liquid waste is pumped to the ethanol fermentation process for re-processing where possible.
2. All factory wastewater condensates are pumped to the WWTP for treatment and subsequent re-use in the plant or disposal via irrigation at the Farm.

- **Wash-down Water from Factory**

1. Dry cleaning of areas should occur prior to wash down to minimise water used and hence wash down water generated. There are specific Cleaning and Sanitation procedures available in each area.
2. All wash down water from the factory is pumped to the WWTP for treatment and subsequent re-use in the plant or disposal via irrigation at the Farm.

- **Hazardous Waste**

1. All chemicals classified as hazardous (both solids and liquids) are to be disposed of by a licensed hazardous waste company.
2. All empty drums containing hazardous substances must be flushed thoroughly with water to remove all residues, and labels removed prior to placing in the general waste bin.
3. All container washings shall contained and diverted to the site's WWTP via the site's drainage system. Consult with the Farm Manager prior to disposal.
4. Where possible, the empty containers should be returned to the supplier or collected by an accredited drum recycler.
5. No hazardous substances or other chemicals are to be placed with the general rubbish.
6. Consult the Environmental Coordinator for advice on handling and disposal.

5. ENVIRONMENTAL FARM – SOLID WASTE

- Machinery and Scrap Metal - stockpiled on the farm for sale or re-use in the future.
- Analytical Vials – returned to supplier.

- Settled Solids in Ponds (bio-solids) - sub-surface injected into grazing land as the solids are beneficial as a slow release fertiliser. Alternatively solids are used as nutrient additive on dry land pasture areas.

6. ENVIRONMENTAL FARM – LIQUID WASTE

- **Treated Wastewater**

Treated waste water will be disposed or re-used by:

1. Irrigation on the Environmental Farm; or
2. Sent to the Wastewater Recovery Plant (Reverse Osmosis) to produce clean water to be re-used in the factory.

N.B. Treated wastewater for irrigation must be effluent that has been treated through the bulk volume fermenter (BVF) and sulphur oxidation (SO) basin. Retentate from the reverse osmosis (RO) plant is blended with the treated water prior to irrigation. Refer to condition O4 of Shoalhaven Starches Environment Protection Licence 883 for effluent storage and treatment requirements.

7. WASTE CLASSIFICATION AND MONITORING

The QA and Environmental Coordinator is responsible for monitoring the volumes of wastes generated and subsequently disposed of off-site; and classifying the waste in accordance with the NSW EPA Waste Classification Guidelines (refer to Appendix A).

Waste volumes from each company / contractor who transports certain waste(s) from the site for disposal are recorded each month and incorporated into the annual Environmental Performance Report.

8. ENVIRONMENTAL PROTECTION LICENCE 883

No waste generated outside the premises are to be received at the site for storage, processing or disposal unless permitted under the sites Environmental Protection Licence (refer to section L4 of the Shoalhaven Starches Environment Protection Licence 883).

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Appendix A - Waste Classification

Process Area	Waste Generated	Waste Classification	Resource Recovery Exemption (if applicable)	Disposal Method (Including Reprocessing / Re-use or Recycling)
SOLID WASTE				
Grain Unloader / Flour Mill	Import Grain / Mill Feed waste	Biosecurity waste	-	Disposal in accordance with Department of Agriculture Biosecurity requirements and Approved Arrangements 3.1 - Grain Processing
Flour Unloader	Flour waste	General Solid Waste (putrescible)	-	Recycled back at the beginning of the process at the Flour Unloader.
Starch / Gluten Plant	Gluten waste / damaged / out of spec	General Solid Waste (putrescible)	-	Damaged bags of gluten are re-tipped and reprocessed through the dedicated recycling hopper, or sent to a licensed composting facility.
	Starch waste / damaged / out of spec	General Solid Waste (putrescible)	-	Reassigned to fermentation or reprocessed within production plant as necessary.
	Wet Gluten	Food Waste	Liquid Food Waste Order 2014 http://www.epa.nsw.gov.au/resources/waste/ro14-liquid-food.pdf	Where possible, re-tipped and reprocessed through Starch /Gluten Plant; or sent to a licensed composting facility.
Glucose	Carbon filter aid	Filter Cake	-	Reused on the farm for agricultural purposes; or sent to a licensed composting facility.
Laboratory	Clinical Waste (previously Quarantine waste)	Clinical and related Waste	Exemption for Tracking Waste No. 2001 E01 https://www.epa.nsw.gov.au/your-environment/waste/tracking-transporting-hazardous-waste/waste-tracking-exemptions/exemption-clinical-waste	Placed in a designated contaminated waste bin. A licensed waste company collects the material for ultimate disposal.
Coal Fired Boilers	Boiler Ash and Fly Ash	Fly Ash	Coal Ash Order 2014 http://www.epa.nsw.gov.au/resources/waste/ro14-coal-ash.pdf	Taken off site by a licensed commercial Composter and Landscaper to be re-used; also used by Shoalhaven Starches as a base for roads, for new infrastructure and to be mixed with soil to level depressions in irrigation paddocks on the Environmental Farm.
All areas of the plant and farm including main store, office/lab, workshops and packing operation	Cardboard and paper bags	General Solid Waste (non-putrescible)	-	Collected in designated bins & sent to recycling company.
	Metal	General Solid Waste (non-putrescible)	-	Collected in designated bins and routinely recycled by the maintenance crew or sold to a commercial recycler.
	Timber	General Solid Waste (non-putrescible)	-	Collected in timber waste bin and sent to licensed company for recycling.
	Empty metal and plastic drums	General Solid Waste (non-putrescible)	-	Collected in designated drum collection areas and sold or gifted to accredited drum recycler.
	Plastic Pallecons (IBCs)	General Solid Waste (non-putrescible)	-	Issued to DDG Syrup customers for re-use; or collected in designated drum collection areas and sold or gifted to accredited drum recycler.
	General rubbish (including plastic wrapping, food scraps, etc)	General Solid Waste (putrescible)	-	Collected in bins and taken off-site by local waste contractor on a daily basis for disposal to landfill.
Stillage / DDG Plant	DDG waste	General Solid Waste (putrescible)	-	Sent to the Environmental Farm for cattle feed.
Maintenance	Waste Oil & Grease	Waste Oil / Hydrocarbons	Exemption for Tracking Waste No. 2006-E4 https://www.epa.nsw.gov.au/your-environment/waste/tracking-transporting-hazardous-waste/waste-tracking-exemptions/exemption-hydrocarbon-oil	Collected in drums and recycled by licensed oil & grease recycling company.
Excavations	Building and demolition waste	General Solid Waste (non-putrescible)	-	SCCCR quarries or landfill.
	Bricks, concrete, aggregates		Recovered Aggregate Exemption 2014 http://www.epa.nsw.gov.au/resources/waste/rre14-aggregate.pdf	Sent to SCCCR quarries.
	Soils		VENM & ENM Exemptions; NEPM D soil classification.	Re-used on site
Environmental Farm	Biosolids from WWTP	General Solid Waste (non-putrescible)	The Biosolids Order 2014 http://www.epa.nsw.gov.au/resources/waste/ro14-biosolids.pdf	Sub-surface injection into grazing land as the solids are beneficial as a slow release fertiliser; used as a nutrient additive on dry land pasture areas.
	Machinery/Scrap metal	General Solid Waste (non-putrescible)	-	Left on the Farm for sale or reuse in the future.
	Analytical vials	-	-	Returned to supplier.
LIQUID WASTE				
Factory Site	Liquid waste water (includes sumps, condensates, product & chemical spills)	Liquid Waste	-	Pumped to the sites Environmental Farm Waste Water Treatment Plant. Treated water is either re-used back at the Factory or irrigated on the Environmental Farm