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Solid and Liquid Waste Management Plan

"Livingstone Valley" ILEF, Livingstone NT

Report Number 23919.80251



Prepared for



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1. Purpose

The Solid and Liquid Waste Management Plan (SLWMP) for the Wellard Rural Export (Wellard) Integrated Live Export Facility (ILEF) outlines Wellard's requirements for managing solid and liquid waste. Wellard's have adopted a risk based approach to the management of waste.

The purpose of this plan is to provide guidance at Wellard's Sites, specifically the ILEF, and to the employees, contractors, and visitors performing or involved in activities on the safe handling, management options and disposal of waste generated during the site preparation, construction and operation of the ILEF.

2. Scope

This document is applicable to all wastes generated during the site preparation, construction and operation of the Wellard ILEF but not limited to:

- The legislative requirements for the management of wastes;
- The waste management hierarchy;
- Activities resulting in the generation of waste;
- The transfer of wastes within and between properties as well as the external transport of wastes from the site;
- Incident management and emergency response; and,
- Record keeping.

3. Regulatory Framework

3.1 Territory and Commonwealth Legislative Requirements

Table 1 below details the Territory and Commonwealth legislation that relates to the generation, handling and disposal of waste. The table also details the Australian Standards relevant to waste.

Table 1 Territory and Commonwealth legislation relevant to waste.

Commonwealth Legislation
Australian Dangerous Goods Code 2007
Northern Territory Legislation
Waste Management and Pollution Control Act 2014
Waste Management Pollution Control (Administration) Regulation
Litter Act
Agricultural and Veterinary Chemical (Northern Territory) Act
Dangerous Goods Act
Fines and Penalties (Recovery) Act
Environmental Assessment Act
Environmental Offences and Penalties Act
Environmental Protection (National Pollution Inventory) Objective
Water Act
Water Regulation
Draft Waste Management Strategy 2014
Australian Standards
AS1940:2004 – The storage and handling of flammable and combustible liquids
AS1216:2006 – Class labels for dangerous goods
AS3780:1994 – The storage and handling of corrosive substances

3.2 Related Documents

The following provides a list of documents that should be read in conjunction with this SLWMP. These documents outline additional procedures that should be undertaken to prevent incidents from occurring and address how to respond to these incidents relevant to waste:

- National Pollutions Inventory Guide,
- Wellard's ILEF Emergency Response Plan; and,
- Wellard's ILEF Environmental Management Plan.

4. Waste Minimisation

In all cases, the employee and contractors responsible for the construction and operation on the site will be expected to adhere to the *Waste Management and Pollution Control Act* and the *Waste Management and Pollution Control (Administration) Regulation* to minimise the amount of waste generated on site, and consequently, achieve the best environmental outcomes. The following figure presents the Hierarchy that should be followed:

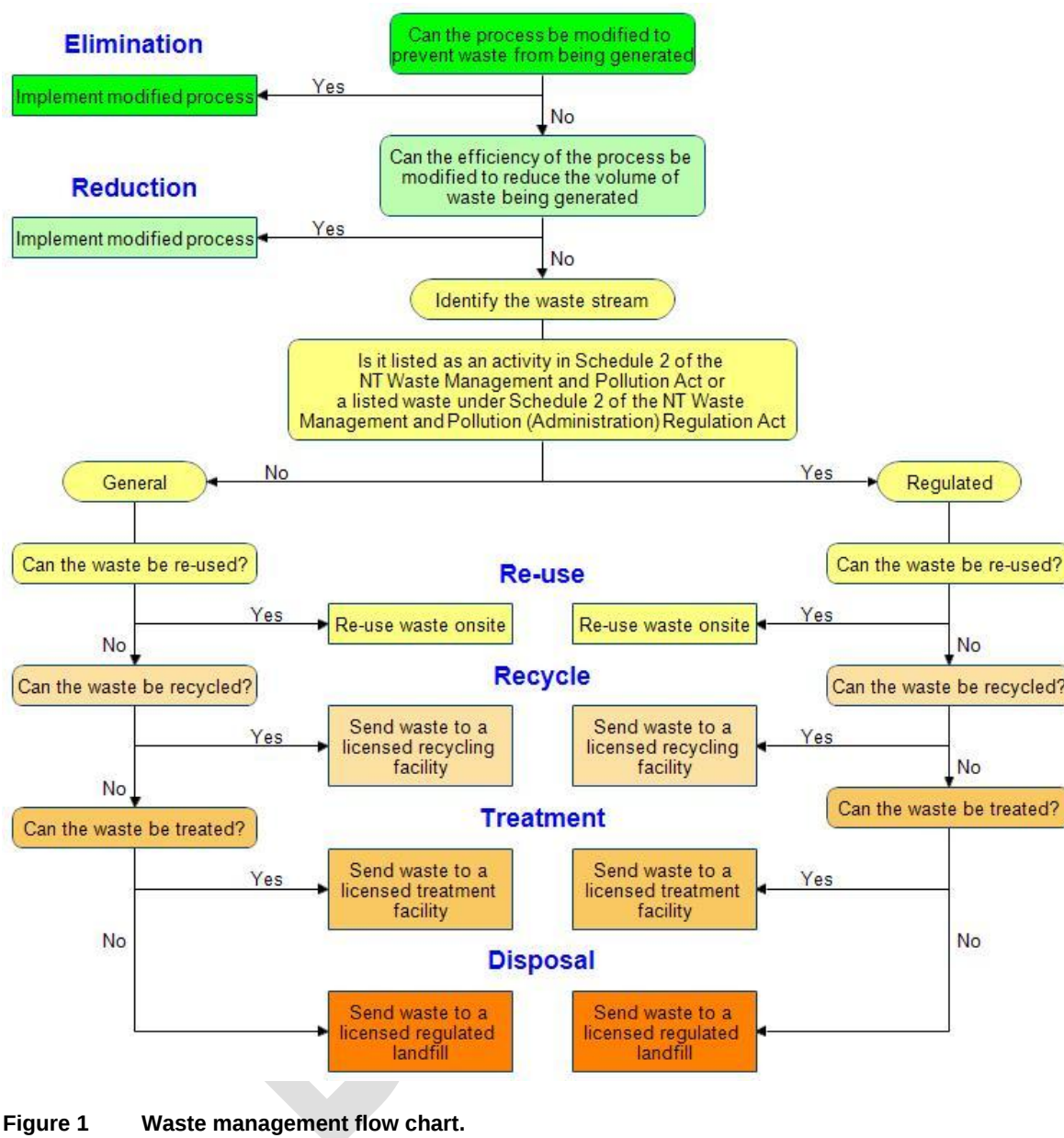


Figure 1 Waste management flow chart.

5. Activities Resulting in the Generation of Waste

The waste expected to be generated during the construction and implementation phases of the ILEF are shown in the table below:

Table 2 Construction activities resulting in waste generation.

Waste Type	Source(s)	Management Method	Approximate Quantity
Cleared Vegetation	Regrowth in old quarry	Vegetation removed, chipped and composted and reused onsite	<250m ³ of chipped material
Excavated Waste (Soil)	Earthworks, primary wastewater treatment pond, wet weather storage pond, freshwater runoff dam, freshwater supply turkeys nest	Top soil reused where possible, unsuitable soils stockpiles for use in earthen bunds.	Approximately 600,000m ³ as part of construction
Old Timber and Steel	Old shed structures to be demolished	Taken to a licenced landfill for disposal.	<50m ³
Asbestos containing products	Old buildings	Removal by a certified professional, wrapped in suitable plastic bag or sheeting, disposed of at a licenced waste management facility	<25m ³
Concrete	Old shed structures, drainage, pads	Taken to a licenced landfill for disposal or recycling	<50m ³
Steel/Metal offcuts	Pen and yard fences, property fences, shed supports, buildings, power transmission line	Reused where possible, taken to licenced landfill for disposal or recycling.	<100m ³
Batteries and tyres	Internal cars only	Taken to a licenced landfill for disposal.	<5 batteries <10Tyres
Paints and resins	Water supply pipeline, workshop, buildings	Disposed of at a licence waste management facility.	<10L paints and resins
Poly offcuts	Water supply pipeline, wastewater pipeline,	Re-used where possible, taken to a licenced recycling facility.	<25m ³
General Wastes including putrescibles & organic (food waste), some plastics and paper	Construction office	Where possible recyclables separated and disposed of at the local recycling facility, other wastes to be disposed of at a licenced waste management facility.	<50m ³
Sewage Effluent	Construction office	Portable ablutions facilities will be provided on the site during the construction phase.	1,200L/day (60 litres per person per day using an average of 20 persons)

Table 3 Operations activities resulting in waste generation.

Waste Type	Source(s)	Management Method	Approximate Quantity per Year
Feed spoilage	Feedmill, pen and yards	Placed into windrows for composting	<500m ³
Batteries and tyres	Internal cars only	Taken to a licenced landfill for disposal.	<5 batteries <10Tyres
Paints and resins	Water supply pipeline, workshop, buildings	Disposed of at a licence waste management facility.	<10L paints and resins
General Wastes including putrescibles & organic (food waste), some plastics and paper	Operation office, workshops, feedmill	Where possible recyclables separated and disposed of at the local recycling facility, other wastes to be disposed of at a licenced waste management facility.	<500m ³
Sewage Effluent	Operation office, staff amenities	Treated and disposed of onsite using an AWTS, sludge build up in the system to be pumped out and disposed of by an authorised contractor. Treated Wastewater will be pumped to the primary wastewater treatment pond.	650,000L/Year (1,800 litres/ day based on 20 people)
Effluent	Pens, yards, manure storage pad, truck wash	Liquid effluent from the system will flow into the primary wastewater treatment pond for anaerobic treatment and reuse on the irrigation areas.	190 ML
Manure	Pens, yards, trucks, sediment basin, truck wash	Stockpiled and composted on site. Compost to be sold off site or reused on site for fodder/crop production.	Up to 15,000m ³ of manure/feedstock/sludge
Biohazardous waste	Veterinary products, blood samples, quarantine products, carcasses, out of date chemicals	Disposed of at a certified waste facility.	<500tonne
Dead carcasses	Death by natural causes	To be sent to pet food supplier, or sent for rendering at the AA Co Meat Processing Facility, via negotiated commercial arrangement or disposal on site via composting.	Approximately 5 per year

6. Waste Management Requirements

6.1 Waste Tracking

Waste listed under Schedule 2 of the Waste Management and Pollution Control Regulation must be disposed of at a licensed and regulated landfill. A copy of Schedule 2 is attached in Appendix B.

All waste removed from the site requires a receipt from the facility it is disposed at. Disposal should only be at a licensed facility.

All manure compost removed from the site should be recorded in a spreadsheet maintained at the office detailing the person receiving the product, the date received, the amount taken and location it is taken to. A copy of the manure compost tracking sheet (SLWM FORM 1) is attached in Appendix A of this management plan.

6.2 Waste Storage Requirements

6.2.1 Manure

Frequent, scheduled pen cleaning will ensure the depth of dry manure is maintained at 50mm or less. Pens will be cleaned, at minimum, every 13 weeks. Manure waste is to be stored on the manure compost pad on the north of the site. The manure is to be stockpiled in windrows as in Figure 2, and turned over regularly to facilitate the composting process.

Table 4 describes the compost conditions that will be maintained to ensure an efficient composting process that does not create undue dust or odour. These conditions will be monitored on a daily basis or as otherwise required based on the compost windrow's age and process performance.

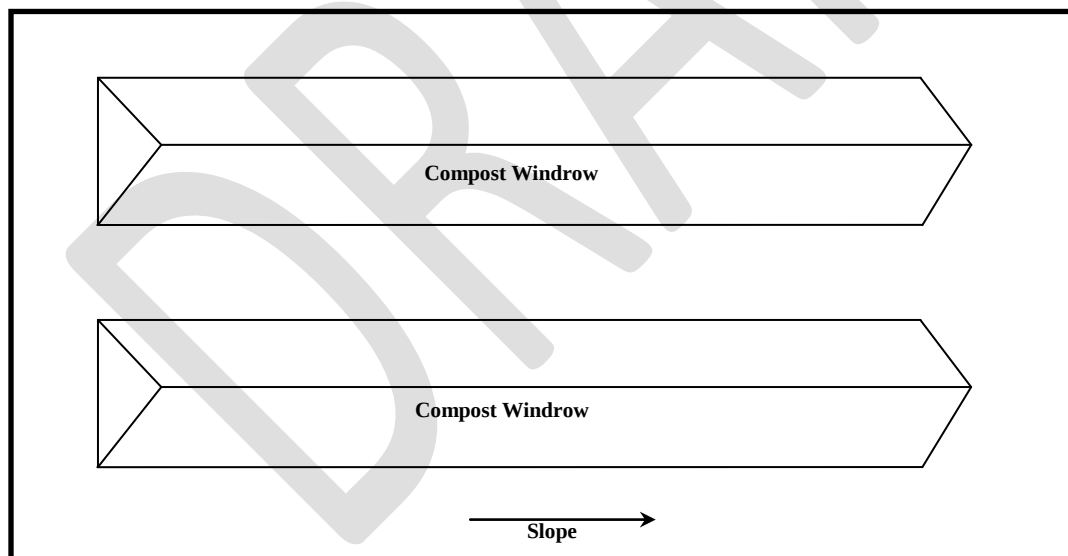


Figure 2 Manure, sedimentation sludge and spoilt feed are placed in a windrow for composting.

Individual dead carcasses will be sent to a pet food supplier or sent to be rendered at AA Co Meat Processing Facility, via a negotiated commercial arrangement. If these options, aren't available the carcasses will be placed within the windrows and covered with manure to assist in the composting process.

Effective carcass composting requirements as described in the MLA National Guidelines for Beef Cattle Feedlots include:

- Carcasses should be placed in purpose built compost bays;
- They should be placed on at least 300mm of the material being used as a carbon source and be covered with the same material to a similar depth on all sides;
- The composting area should be protected from scavenging animals; and
- A front end loader should be used to turn the compost pile every 2-3 months.

Table 4 Compost conditions recommended by the National Beef Cattle Feedlot Guidelines

Parameter	Acceptable range	Optimum range
Carbon:Nitrogen	15:1 – 40:1	25:1 – 30:1
Moisture levels (%)	45-65	50-60
Oxygen levels (%)	>5	>5
pH	5.5 – 8.0	5.5 – 8.0
Temperature (°C)	40 – 65	55 – 60
Particle size diameter (mm)	5 – 50	5 – 25

6.2.2 Wastewater Treatment

Wastewater generated by livestock onsite is drained to the primary wastewater treatment pond for reuse on the irrigable area. The drainage system is designed with a sedimentation basin at the bottom of each feed lane to remove solids from the wastewater system. This reduces the sludge and nutrients entering the wastewater system.

The primary wastewater treatment pond is alongside the wet weather storage pond. This provides an area where the treatment pond can overflow during the wet season and during periods of extreme weather events. The primary wastewater treatment pond and wet weather storage pond will be de-watered prior to the wet season to ensure maximum capacity.

All ponds will have compacted clay lining and where required a HDPE synthetic liner placed around the inner batter to prevent vegetation growth. All ponds will possess batters with a 33 degree angle and include a crest that can be accessed by a body truck so that sludge can be removed using a vacuums pump and/or front end loader. Sludge will be scraped up or vacuumed and added to the manure stockpile for composting, or disposed of at a licenced waste management facility. All Ponds will be 3-8 m deep, with an additional 0.75 m dead/storage space, and are designed for rapid dewatering.

In addition, the primary wastewater treatment pond will be constructed so that it is cut below the natural surface and will have an embankment of about 2-3m above the surface. The pond lining will be further “reinforced” to prevent lining ‘push out’ by the subsurface flow. Further, to reduce the risk of structural failure of the inner embankment and floor, a rock armouring will be implemented to improve stability during periods of heightened transient groundwater flow. Compacted material under the clay liner will undergo stability treatment. A piezometer should be placed above and below the pond to monitor shallow groundwater depth (quarterly) and quality (biannually) and to function as an early warning leak detection system.

Monitoring of treated wastewater (nitrogen, phosphorus, potassium, sodium) and irrigation block soil (nitrogen, phosphorus, P-sorption capacity, sodium) will be carried out at minimum biannually and results maintained for a minimum of 5 years.

6.2.3 *General Waste*

General waste from the site (including putrescibles & organics (food waste), some plastics and paper) is to be placed in the skip bin, which will be taken to a licenced waste management facility and emptied on a regular basis.

6.2.4 *Construction Waste*

Construction waste is to be separated and stockpiled, where possible, into waste type (e.g. Steel, plastic, timber, organic). Where possible, waste is to be reused or recycled in the first instance. In the second instance waste is to be transported to a licenced waste management facility for disposal.

6.2.5 *Biohazardous Waste*

Biohazardous waste is to be contained to one area of the site. All needles are to be disposed of in a certified sharps disposal container. Biological waste and veterinary waste are to be removed from the site by a certified agent.

7. Objectives, Constraints and Drivers

The objective of this SLWMP is to ensure Wellard Rural Exports minimises waste related impacts, protect the environment and health and safety of personnel and the community. This will be achieved through responsible handling and disposal of any waste that may be generated during activities, to minimise impacts on local infrastructure.

- To ensure that all waste material generated on site is handled in a responsible manner, and in accordance with legislative requirements whilst promoting sustainable resource use.
- To establish procedures and management actions consistent with the waste minimisation hierarchy principles of avoid, reduce, reuse, recycle and dispose.
- To increase employee and subcontractor awareness and their obligations to waste management.
- To maximise the reuse of materials during the project such as spoil reuse in backfilling, establishment of earthen bunds, pad and road construction and rehabilitation works.

8. Implementation

8.1 Roles and Responsibilities

The roles and responsibilities pertaining to this plan are highlighted in table 1.

Table 5 Responsibilities under the SLWMP

Position	Responsibilities
ILEF Manager	Ensure that this SLWMP is implemented and that each type of waste is disposed of properly; Ensure that all personnel are aware of and adhere to SLWMP procedures; Carry out staff training and induction to make staff aware of their obligations under the SLWMP; Review SLWMP annually and additionally when changes occur (including any legislative changes); Ensure that testing of the treated wastewater (nitrogen, phosphorus, potassium, sodium), irrigation block soil (nitrogen, phosphorus, P-sorption capacity, sodium), and piezometers at primary wastewater treatment pond is carried out twice a year; Ensure that asbestos is disposed of at certified landfills and retain invoices; Maintain records of emergency use of gypsum or lime to treat sources of odour; Monitoring of the water levels in the primary wastewater treatment pond and wet weather storage pond on a weekly basis; and Sample the primary wastewater treatment pond and wet weather pond in the event of an overtop event.
Livestock Officer	Ensure that manure is cleaned at least every 13 weeks, and maintained below 50mm dry manure; Undertake weather monitoring program to ensure odour does not carry to sensitive receptors through wind; and Ensure that dead carcasses are sent to pet food supplier, rendering facility or disposed on site via composting.
Feedmill/Farming Officer	Daily monitoring of compost moisture levels and ensure that these levels are optimal to reduce dust and increase composting efficiency (45-65% moisture content, 40-65°C); Turn compost windrows, but only in low wind conditions and when moisture levels are optimal; Ensure that compost will only be loaded for transport offsite when wind conditions are favourable; Monitor compost piles for presence of vermin, temperature and moisture daily, so that there are no areas where wet manure can accumulate without being disturbed and aerated; Ensure that all compost will be removed (sold) off site prior to the wet season; Fill out Manure Compost Tracking Sheet (Appendix A) for manure transported off site; Monitor irrigation schedule to ensure that the irrigation block is not saturated with water; and Holding water is recirculated with an input of lime to adjust the pH and remove odorants.
All employees and contractors	Any cracks or leaks in bunding or dam/pond walls are reported; and Any odours coming from wastewater, compost manure pad and irrigation block are reported.

8.2 Training and induction

All employees and contractors entering the site to undertake work activities will be inducted prior to commencing work. This will ensure that they are aware of their obligations under the SLWMP. Re-training will be undertaken if there are any changes to the procedures outlined in this plan, or if there are any non-conformances to procedures noted by management or external authorities. Records of training will be kept onsite for a minimum of five years.

8.3 Incident and Emergency Management

Materials and waste related incidents should be recorded in the Environmental Management Plan. Spill kits will be available in the workshop and emergency showers are available in the ablution block and workshop.

8.3.1 *Mass Death*

In an event of a mass death occurs at the site then the National AUSVET management plan for the same will be invoked. People that would need to be advised about the mass death issue are the Chief Vet and the Australian Quarantine Inspection Services (AQIS).

The site will be a secure quarantine facility. Entry will be appointment only and the facility will be design to limit entry by the general public. All entry and exit points will be monitored by CCTV. The site will be fenced with a 5 barb boundary fence with an electric fence offset from this main fence.

All workers on the site will sign in and out each day. All contractors will be “approved” contractors. An office will be located prominently at the main access road (next to the truck weighbridge). The office will be manned during operating hours.

8.3.2 *Incident Reporting*

If a spill or an environmental incident occurs the QA process must be followed, and all relevant people notified. In the event of a pollution emergency, alert the pollution incident hotline on 1800 064 567 and dial 000 if Police, Fire or Ambulance are required.

8.4 Review

This SLWMP applies current management practices, guidelines and policies and will be reviewed annually and when circumstances change that may affect the content of this plan.

9. Appendices

Appendix A.	Manure Compost Tracking Sheet	A-1
Appendix B.	Schedule 2 – Waste Management and Pollution Control Regulation	B-1

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Appendix A. Manure Compost Tracking Sheet

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Wellard ILEF – SLWM FORM 1 – Manure Tracking Form			
Date	Name (Person/Company receiving product)	Address/Location (Where the product is going)	Amount (kg)
12/07/2015	Joe Bloggs, Peter Pan Enterprises	"Neverland", 123 Hook Road, Tinkerbell NT	250

Appendix B. Schedule 2 – Waste Management and Pollution Control Regulation

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Schedule 2

Schedule 2

regulation 2A

Acidic solutions or acids in solid form
 Animal effluent and residues (abattoir effluent, poultry and fish processing waste)
 Antimony, antimony compounds
 Arsenic, arsenic compounds
 Asbestos
 Barium compounds other than barium sulphate
 Basic solutions or bases in solid form
 Beryllium, beryllium compounds
 Boron compounds
 Cadmium, cadmium compounds
 Ceramic-based fibres with physico-chemical characteristics similar to those of asbestos
 Chlorates
 Chromium compounds that are hexavalent or trivalent
 Clinical and related wastes
 Cobalt compounds
 Containers that are contaminated with residues of a listed waste
 Copper compounds
 Cyanides (inorganic)
 Cyanides (organic)
 Encapsulated, chemically fixed, solidified or polymerised wastes
 Ethers
 Filter cake
 Fire debris and fire washwaters
 Fly ash
 Grease trap waste
 Halogenated organic solvents
 Highly odorous organic chemicals (including mercaptans and acrylates)
 Inorganic fluorine compounds excluding calcium fluoride
 Inorganic sulfides

Schedule 2

Isocyanate compounds
 Lead, lead compounds
 Mercury, mercury compounds
 Metal carbonyls
 Nickel compounds
 Non-toxic salts
 Organic phosphorus compounds
 Organic solvents excluding halogenated solvents
 Organohalogen compounds that are not otherwise specified in this Schedule
 Perchlorates
 Phenols, phenol compounds including chlorophenols
 Phosphorus compounds other than mineral phosphates
 Polychlorinated dibenzo-furan (any congener)
 Polychlorinated dibenzo-p-dioxin (any congener)
 Residue from industrial waste treatment or disposal operations
 Selenium, selenium compounds
 Sewage sludge and residues including nightsoil and septic tank sludge
 Soils contaminated with a listed waste
 Surface active agents (surfactants) that contain principally organic constituents and that may contain metals and inorganic materials
 Tannery wastes (including leather dust, ash, sludges and flours)
 Tellurium, tellurium compounds
 Thallium, thallium compounds
 Triethylamine catalysts for setting foundry sands
 Tyres
 Vanadium compounds
 Waste chemical substances arising from research and development or teaching activities, including those substances which are not identified and/or are new and the effects of which on human health and/or the environment are not known
 Wastes containing peroxides other than hydrogen peroxide
 Waste, containing cyanides, from heat treatment and tempering operations
 Waste from the manufacture, formulation and use of wood-preserving chemicals
 Waste from the production, formulation and use of biocides and phytopharmaceuticals

Schedule 2

Waste from the production, formulation and use of inks, dyes, pigments, paints, lacquers and varnish

Waste from the production, formulation and use of organic solvents

Waste from the production, formulation and use of photographic chemicals and processing materials

Waste from the production, formulation and use of resins, latex, plasticisers, glues and adhesives

Waste from the production and preparation of pharmaceutical products

Waste mineral oils unfit for their original intended use

Waste mixtures, or waste emulsions, of oil and water or hydrocarbon and water

Waste pharmaceuticals, waste drugs and waste medicines

Waste resulting from surface treatment of metals and plastics

Waste tarry residues arising from refining, distillation and any pyrolytic treatment

Waste substances and articles containing or contaminated with polychlorinated biphenyls (PCBs), polychlorinated naphthalenes (PCNs), polychlorinated terphenyls (PCTs) and/or polybrominated biphenyls (PBBs)

Waste of an explosive nature not subject to the *Dangerous Goods Act* or the *Work Health and Safety (National Uniform Legislation) Act*

Wool scouring waste

Zinc compounds