Solid Waste Management Plan

Visy Pulp & Paper Tumut Mill

Issued By: HSE Manager
Issued Date 13 June 2023
Document no. PLANS-VPP-TUM-HSE-009-7
This is a controlled document

VISY
FOR A BETTER WORLD

Table of Contents

1.0 Introduction

1.1 Background

Visy Pulp and Paper Pty Ltd (Visy) is the operator of the Visy Pulp and Paper Tumut Mill at 1302 Snowy Mountains Highway, Tumut. The Visy Pulp and Paper Tumut Mill produces industrial grade paper products including Kraft paper and white top liner, which are used for the packaging and building industries.

This Solid Waste Management Plan (SWMP) is one of a suite of plans that governs the operation of the Visy Pulp and Paper Mill.

Visy is committed to adhere to the principles of Ecologically Sustainable Development (ESD) which implies "closing loops" between waste streams and inputs. One essential component of ESD is the "cleaner production" principle which leads to feasible waste minimisation, re-use and recycling. This cleaner production principle underlies the Visy Pulp and Paper Mill's Solid Waste Management Plan.

The Visy Pulp and Paper Tumut Mill generates a variety of solid wastes, most of which will either be used as fuel to the power boiler, have been trialled as soil amendment products or reused under Resource Recovery Orders and Exemptions or for the manufacture of new products.

1.2 Purpose

This SWMP has been developed to:

- Detail the potential waste management sources, quantities and characteristics from the operation of the mill
- Outline the management measures (including reuse, recycling or disposal) for each key waste stream
- Identify monitoring and reporting requirements

This SWMP provides an overall framework for solid waste management during operation. It has been developed to satisfy the requirements of:

- Condition 6 of the Development Consent Conditions for the Tumut Mill Expansion (Section 75W modification of PA_06_0159), which requires an updated Solid Waste Management Plan to be prepared for the existing plant (DA 6/98) and the project (06_0159)
- Condition 41 of the Development Consent Conditions (S96/00598)
- Conditions 2.21 to 2.24 of the Project Approval Conditions (06_0159)
- Clause L5 of the Environment Protection Licence (EPL 10232)
- Visy's Environmental Management System (EMS), including ISO14001
- Applicable legislation and regulatory requirements
- Requirements of relevant government agencies

In the event of any inconsistencies in the above documents, the Project Approval prevails.

1.3 Environmental Management System

1.3.1 Visy Corporate EMS

This SWMP has been developed and will be implemented in accordance with Visy's corporate EMS. This EMS has been developed, implemented and certified in accordance with the Internal Standard for Environmental Management Systems AS/NSZ ISO 14001.

Throughout the operation of the facility, Visy will undertake periodic reviews and audits of the works to ensure the corporate commitments are fulfilled. Visy's EMS, as implemented at the Visy Pulp and Paper Mill, will be periodically audited as part of the corporate EMS re-certification and ongoing validation process.

1.3.2 Visy Pulp and Paper Tumut Mill OEMP

This SWMP is a sub-plan to the Visy Pulp and Paper Tumut Mill Operational Environmental Management Plan (OEMP). The OEMP is based on the ISO 14001 Environmental Management System, which provides for continual improvement in environmental performance.

The OEMP is intended as an over-arching environmental management document that forms the basis for development of detailed sub plans (such as this) and procedures for managing specific environmental aspects and impacts. It includes a number of subordinate environmental planning and management instruments (e.g. sub plans, procedures, instructions, forms etc.) that will be implemented during operation of the facility.

1.3.3 Sub-Plans

In accordance with the Development Consent, a number of sub plans are required to document Visy's management approach to identified risks (e.g. air quality, wastewater, surface water, native vegetation etc). These sub plans identify potential impacts as they relate to the operation of the Visy Pulp and Paper Mill and outline the physical and management safeguards, mitigation measures, responsibilities and monitoring requirements to be implemented to minimise potential impacts on the environment.

1.3.4 Procedures and Forms

In addition to the environmental management documents nominated above, Visy uses a suite of additional processes and procedures for its EMS. These management tools (described below) are referred to in this SWMP:

- Procedures – provide instructions to Visy staff and subcontractors to guide the completion of tasks required during the operation of the mill. The implementation of these procedures will ensure consistency in approach and quality of results. Specific procedures are developed for management issues including Job Safety and Environmental Analysis (JSEA) for reviewing works to identify hazards and appropriate control measures, and environmental monitoring etc.
- Forms are used to document environmental issues, actions and/or performance against requirements. Typical forms include incident reporting, inspection checklists, audit protocols, complaints/feedback reports etc

2.0 Legal Requirements

The following is a summary of key legislative and statutory requirements that apply or may impact on the operation of the mill with respect to solid waste management:

- Key NSW Legislation
- Relevant conditions of the Environment Protection Licence (EPL 10232)
- Relevant conditions of the Development Consent: 6/98 dated 1998
- Relevant conditions of the Modifying Instrument: MOD-45-5-2003i dated 3 March 2005
- Relevant conditions of the Project Approval and Concept Approval: 06_0159 dated 1 May 2007

If there is any inconsistency between the above documents, the most recent document shall prevail to the extent of the inconsistency. However, the conditions of the Project Approval shall prevail to the extent of any inconsistency.

2.1 Applicable Legislation

The following legislation is applicable to solid waste management at the Visy Pulp and Paper Tumut Mill:

- *Waste Avoidance and Resource Recovery Act 2001*
- *Protection of the Environment Operations Act 1997*
- *Protection of the Environment Operations (Waste) Regulation 2014*
- *Contaminated Land Management Act 1997*

The *Waste Avoidance and Resource Recovery Act 2001* and the *Protection of the Environment Operations Act 1997* prohibit the transport of waste to locations that are not legally authorised to accept it. In addition, these Acts require sites that generate, and transporters who carry certain nominated waste to hold EPA licences and undertake specified reporting. Consequently, Visy has a responsibility to:

- Determine the classification of each waste generated in accordance with NSW EPA (2014) 'Waste Classification Guidelines Part 1: Classifying Waste' (refer Section 4.1)
- Hold an Environment Protection Licence for wastes that trigger licensing requirements in the *Protection of the Environment Operations Act 1997* (refer Section 2.2)
- Confirm that waste transporters and disposal locations hold appropriate approvals and licences (refer Section 4.2).

2.2 Environment Protection Licence 10232

Environment Protection Licence 10232 applies to the site. Relevant conditions include:

L5 Waste

L5.1 The licensee must not cause, permit or allow any waste generated outside the premises to be received at the premises for storage, treatment, processing, reprocessing or disposal or any waste generated at the premises to be disposed of at the premises, except as expressly permitted by the licence.

L5.2 The following wastes may be received at the premises:

(a) waste paper or cardboard for reprocessing into recycled paper;

(b) wood residues for pulping;
(c) standard fuels;
(d) non standard fuels.

R4 Other reporting conditions

R4.1 The licensee must complete and submit to the EPA an Annual Waste Summary Report each financial year.
R4.2 The Annual Waste Summary Report must be submitted to the EPA via the online Waste and Resource Reporting Portal (WARRP) within 60 days of the end of the financial year.

E8 Sludge Disposal

E8.1 Sludge from the Wastewater Treatment Plant may be disposed on site in accordance with the document Wastewater Treatment Plant Sludge Disposal By Land Application On Site procedure or as subsequently amended and approved in writing by the EPA.

2.3 Development Consent

The following Development Consent (S96/00598) conditions are relevant to solid waste management at the Visy Pulp and Paper Mill:

41. Prior to the commencement of operations, the Applicant shall prepare a Solid Waste Management Plan in consultation with the Council and the EPA for the approval of the Director-General. The plan should be incorporated into the Operational EMP required by Condition 11 and include but not be limited to:

(a) details regarding the continued viability of solid wastes returning to the pulping process;
(b) details regarding ongoing analysis and monitoring for solids being disposed by landfill;
(c) details of priority investigations into the beneficial reuse of purge fly ash and purge lime mud; and
(d) other measures to reduce the amount of waste going to the Council's landfill sites.
49. The Applicant shall ensure that the transport of waste to:
(a) the Tumut landfill is restricted to the Snowy Mountains Highway (SH4) and Boonderoo Rd; and
(b) the Adelong landfill is restricted to the Snowy Mountains Highway (SH4) and MR280.

57. Prior to the commencement of operations, a detailed monitoring program shall be prepared in consultation with the EPA and DWLC and submitted for approval by the Director-General. The program shall cover all aspects of environmental performance (both operational and organisational), and compliance with the reporting requirements and all conditions of consent, including Conditions 58 to 70. The program shall include all measures for monitoring stack and fugitive emissions, noise, water quality and waste management. The program which should be incorporated into the operational

EMP required by Condition 11 shall include but not be limited to:
(a) provisions for monitoring the implementation and effectiveness of the management plans required by this consent;
(b) sampling locations, sampling frequencies and parameters to be tested;
(c) characteristics of the existing environment, in particular, the existing ambient air levels; and
(d) timing of monitoring reports.
All monitoring analysis is to be undertaken by a suitably accredited NATA registered laboratory, or as otherwise agreed by the EPA.

2.4 Modifying Instrument

Modifying instrument (MOD-45-5-2993-i) permits the use of urban wood residues and compost manufacturing residues as Non-Standard wood fuel in the power boiler.

2.5 Project Approval

The following Project Approval (06_0159) conditions are relevant to solid waste management at the Visy Pulp and Paper Mill:

- *2.21 All waste materials removed from the site shall only be directed to a waste management facility lawfully permitted to accept the materials.*
- *2.21 The Proponent shall maximise the treatment, reuse and/or recycling on the site of any waste oils, excavated soils, slurries, dusts and sludges associated with the project, to minimise the need for treatment or disposal of those materials outside the mill facility.*
- *2.23 The Proponent shall not cause, permit or allow any waste generated outside the site to be received at the site for storage, treatment, processing, reprocessing, or disposal on the site, except as expressly permitted by a licence under the Protection of the Environment Operations Act 1997, if such a licence is required in relation to that waste.*
- *2.24 The Proponent shall ensure that all liquid/or non-liquid waste generated and/or stored on the site is assessed and classified in accordance with Environmental Guidelines: Assessment, Classification and Management of Liquid and Non-Liquid Wastes (DECC, 20014), or any future guideline that may supersede that document.*

2.6 Modification to Expand the Tumut Mill

Visy submitted a modification to increase the approved production limit of the Kraft Pulp and Paper Mill located in Tumut NSW.

The current project approval (PA 06_0159) allows for the phased expansion of the mill to achieve an expected production capacity of 700,000 tonnes per year (tpy). Production at the mill is now approaching the approved limit and market indicators suggest potential for ongoing growth to meet domestic and international demand.

Visy proposes to modify the existing project approval (PA 06_0159) under Section 75W of the *Environmental Planning and Assessment Act, 1979* (EP&A Act) to enable an increase in production limit to 800,000 tpy. Any production increase under this modification will be achieved entirely through efficiency gains within the existing paper production processes at the Mill and by increasing the volume of recycled wastepaper and purchased pulp (bleached Kraft pulp) in the feedstock for the mill.

An environmental assessment (EA) was prepared to support the Section 75W modification application and included a detailed description of the project, a consistency assessment with the existing project approval and consideration of the potential environmental impacts arising from modification.

The EA was submitted to the Department of Planning and Environment (DPE) and placed upon public exhibition on the major projects website. Submissions were received and responded to in a Response to Submissions Report in May 2017.

Condition of Consent 6 requires an updated Solid Waste Management Plan to be prepared for the existing plant (DA 6/98) and the project (06_0159), as modified, in consultation with the EPA, and to the satisfaction of the Secretary.

The Plan must:

- Describe the type, quantity, handling, storage and disposal of all waste streams generated on site, consistent with the Protection of the Environment Operations Act 1997, Protection of the Environment Operations (Waste) Regulation 2014 and the Waste Classification Guideline (Department of Environment, Climate Change and Water, 2009);
- Describe how waste is managed in accordance with the EPA's waste hierarchy for the life of the existing plant and project;
- Include a landfill diversion strategy that:
- Investigates reuse and recycling opportunities and identifies the approvals required for these activities;
- Details timeframes for the implementation of reuse and recycling activities;
- Includes a monitoring program to measure the volume and composition of waste captured by the reuse and recycling activities and the waste sent to landfill; and
- Detail the contingency measures to ensure suitable management and disposal of waste.

3.0 Solid Waste Streams

3.1 Bark and Wood Residues

The types and typical sources of wood residues are listed below in Table 1.0.

Table 1.0 Wood Residue Sources

Type	Source
Bark	Debarker drum
Fines	Screening plant
Wood residues (softwood and hardwoods residues)	Sawmills
Forest residues	Plantation forest
Urban wood residues	Landfill, commercial and industrial timber processing
Compost manufacturing residues	Landfills, horticulture and landscaping

3.2 Paper Machine Rejects

The paper machine rejects (PMR) are sourced from the Recycled Fibre Plant (RCF). There are three main sources of PMR:

1. 'Coarse' rejects - small heavy particles (i.e. glass, sand rocks etc.) removed by the reject sedimentator
2. 'Thickened' rejects - material which has passed through the compactor to a consistency of approximately 60% and contains more contaminants (i.e. plastics)
3. 'Fibrous rejects' - contain more fibre and in the past have been suitable for use as a fuel for burning in the power boiler. The site have since ceased using this product as a fuel due to operational issues and changes to the legislation.

The fibrous rejects is a fuel which was previously classified as a "Known Fuel Not Requiring Further Testing" a sub-classification under Non Standard Fuel, which designates testing, is not required. Under the new legislation the paper machine rejects (fibrous) will require formal written approval from the EPA prior to the use of this material as an onsite fuel, under EPL 10232 Clause E6.1.

3.3 Wastewater Treatment Plant Sludge

Sludge from the wastewater treatment plant is generated in the sequencing batch reactor (SBR) and in the cooling ponds. The sludge is usually dark brown in colour and is of a highly liquid consistency. Sludge from both sources usually contains low levels of nutrients and heavy metals, though contains beneficial properties for agricultural application.

3.4 Domestic Wastewater Screenings

Domestic wastewater screenings is produced from the ROTAMAT Microstrainer screening unit. Prior to treatment, the domestic wastewater will be mixed with a small quantity of mill wastewater and passed through the screening unit to remove floating, settleable and suspended material. The screenings are washed and the solids retained and dewatered to approximately 40% dry solids.

3.5 Green Liquor Dregs

Green Liquor Dregs are a by-product of the filtration process and consist largely of carbonaceous materials, acid insolubles and other inorganics which are concentrated to around 50% solids and discharged as a solid by-product. The following table provides typical composition of the Green Liquor Dregs.

Table 2.0 Composition of Green Liquor Dregs

Component	% by weight
Ignition loss (76%) and moisture (44%)	46
$CaCO_3$	47
MgO	1.7
Na_2O	0.7
Total S	0.5
Agricultural nutrients	40.1
Acid insolubles	10
TOTAL	**100**
Neutralising value	**100**

3.6 Slaker Grits

Slaker grits consist of insoluble materials resulting from poor conversion efficiencies in the lime kiln. These are typically small rocks of $CaCO_3$ which are “hardburned” or not slaked uniformly.

Table 3.0 Composition of Slaker Grits

Parameter	% by weight
Calcium carbonate	61.2
Magnesium carbonate	0.4

Silica	2.7
Aluminium oxide	0.4
Iron oxide	0.8
Agricultural nutrients	24.5
Acid insolubles	10
TOTAL	100

3.7 Purge Lime Mud

Lime mud is mainly $CaCO_3$ and is a by-product of the causticising process that is mainly re-used back into the process. The solids are separated in the PDW filter and dried on a vacuum drum filter prior to being fed to the lime kiln. In the kiln, the lime is converted to CaO or 'quicklime' which is combined with green liquor in the causticiser to produce white liquor. Imported Lime is also used to make up for any losses in the system. A small amount of lime mud is purged from the system on a regular basis to maintain non-process element balance.

Table 4.0 Composition of Lime Mud

Parameter	% by weight
Calcium carbonate	70.4
Magnesium carbonate	0.4
Silica	2.2
Aluminium oxide	0.2
Iron oxide	0.1
Agricultural nutrients	26.7
Acid insolubles	10
TOTAL	100

3.8 Power Boiler Fly Ash

The fly ash is of a dark greyish colour with a crumbly consistency. It mainly consists of carbon, inorganic residues together with remaining organic components that have not been fully combusted in the power boiler combustion chamber. The fly ash (unburnt particles) is removed from flue gases in the power boiler electrostatic precipitator. Table 5.0 shows the typical composition of power boiler fly ash.

Table 5.0 Composition of Power Boiler Fly Ash

Parameter	% by weight
Calcium carbonate	25
Magnesium carbonate	1.9
Silica	39.2
Aluminium oxide	7.1
Iron oxide	3.6
Agricultural nutrients	7.2
Acid insolubles	16
TOTAL	100

3.9 Power Boiler Bottom Ash

Power boiler bottom ash consists mainly of sand from the fluidised bed of the boiler, carbonaceous material, rocks and pieces of metal that may have come in through the boiler fuel that have not been extracted by the magnets on the incoming conveyors. The bottom ash is extracted from the bed, screened and the returned back to the bed. The oversized components which make up approximately 30 – 40% of the bottom ash were previously disposed of to landfill. This material is now sent for reuse via a NSW EPA Resource Recovery Order and Exemption.

3.10 Recovery Boiler Purge Fly Ash

The fly-ash from the recovery boiler mainly consists of sodium sulphate. As the boiler is an important component of the chemical recovery process, the majority of the fly ash is returned to the process via the ash/black liquor mixing tank. In order to control certain chemicals (i.e. potassium, chlorides) that can cause deposits to building up on the boiler tubes a component of the fly ash from the recovery boiler further processed.

This portion of the ash is sent to the recrystallisation process where inorganic salts i.e. sodium sulphate and potassium sulphate are reprocessed and chlorides are removed. This process produces a liquid brine waste. An additional system was commissioned in February 2016 which further processes, settles and dewaters the liquid brine waste. This produces a solid waste stream which is sent to landfill and significantly reduces the total volume of waste from this process.

3.11 Trackable Solid Waste

The following trackable wastes have been identified as part of the site operations:

- Spill waste

- Oily/greasy rags
- Oil filters
- Laboratory waste
- Spent dangerous goods packaging
- Grease
- Fluorescent light globes

Trackable wastes are those wastes that cannot be disposed to general waste and require specific disposal and documentation.

3.12 Recyclable Waste

The Visy Pulp and Paper Mill site has implemented a comprehensive recycling program onsite to reduce the amount of waste going to landfill. This includes the segregation and recovery of:

- Office paper and cardboard
- Metal (scrap steel, stainless steel)
- Aluminium cans
- Plastic
- Glass
- Wood waste
- Electronic waste
- Used machine clothing
- Batteries
- Printer cartridges
- Steel drums
- IBCs (Intermediate Bulk Containers)

3.13 Overview of Waste Quantities

Table 6.0 summarises the sources of by-products and wastes, current quantities, waste classification and method of disposal.

Table 6.0 By-products and Solid Waste Produced, Estimated Quantities and Method of Disposal/Reuse

Waste stream	Estimated quantity tonnes/yr	Classification	Method of disposal/re-use Preferred option
Bark, pins and fines	104,921	General solid waste (non-putrescible)	Power boiler fuel
Paper machine rejects - fibrous	17,762	General solid waste (non-putrescible)	Resource recovery order & exemption – Compost and Landfill
Paper machine rejects - plastics	67,844	General solid waste (non-putrescible)	Landfill (current). Resource recovery order & exemption – recycled plastic products

Wastewater treatment sludge (biosolids)	472 KL	General solid waste (non-putrescible)	Soil improving agent
Domestic wastewater screenings	0.006	General solid waste (non-putrescible)	Landfill
Green liquor dregs and slaker grits	8,179	General solid waste (non-putrescible)	Resource recovery order & exemption – soil rehabilitation
Purge lime mud	1,149	General solid waste (non-putrescible)	Lime kilns reclaiming/Resource recovery order & exemption – soil rehabilitation
Power boiler fly ash	986	General solid waste (non-putrescible)	Resource recovery order & exemption – soil rehabilitation
Power boiler bottom ash (sand)	331	General solid waste (non-putrescible)	Resource recovery order & exemption – soil rehabilitation
Recrystallisation plant product	1,482	General solid waste (non-putrescible)	Landfill
Trackable waste (i.e. laboratory waste, sharps waste, reagent bottles, spill waste, oily/greasy rags, oil filters, grease, dangerous goods packaging)	10.5	Special/hazardous waste	Authorised agent
Fluorescent light globes	11 boxes	Special waste	Authorised agent
Recyclables (paper, glass, plastic, aluminium, steel, timber, E waste etc.)	414	General solid waste (non-putrescible)	Paper, glass, plastic, aluminium, steel, timber & E waste recycling facilities
General Waste (site skip bins etc.)	286	General solid waste (non-putrescible)	Landfill

4.0 Solid Waste Management

4.1 Waste Classification

Classification of wastes generated at the Visy Pulp and Paper Tumut Mill will be undertaken in accordance with the EPA (2014) Waste Classification Guidelines.

Under the NSW *Protection of the Environment Operations Act 1997*, waste is classified under the following groups:

- General solid waste (putrescible)
- General solid waste (non-putrescible)
- Restricted solid waste
- Hazardous waste
- Liquid waste
- Special waste (including clinical and related waste, asbestos waste and waste tyres)

In summary, the process applying for each waste is as follows:

- Refer to *Table 1* of the Waste Classification Guidelines for inclusion of the waste. If the waste is included (i.e. readily identified), it shall be handled, packaged, transported and disposed according to EPA requirements by appropriately licensed contractors and waste disposal facilities (e.g. landfill)
- If waste not included in *Table 1* of the *Guideline*, determine its classification through application of methods outlined in *Appendix 1 (Stage 1-4)* of the *Guideline* (i.e. sample and test and assess against the acceptance criteria for each waste classification including Inert, Solid, Industrial and Hazardous). These wastes shall be handled, treated if required, packaged, transported and disposed according to EPA requirements by appropriately licensed contractors and waste disposal facilities (e.g. landfill);
- Records of wastes leaving site as well as documentation of classification process, is required to be maintained on site.

The Waste Classification Guidelines have been used to assist in classifying the typical wastes that are generated at the Visy Pulp and Paper Tumut Mill (see Table 6.0).

4.2 Waste Handling, Storage, Reuse, Recycling and Disposal

Visy aims to maximise the treatment, reuse and/or recycling on the site of any waste associated with the Visy Pulp and Paper Mill. Visy is committed to finding reuse opportunities wherever practicable. Where wastes can be successfully reused, these materials are considered by-products. As detailed in the following sections, bark and fines are biomass and can be used as fuel in the power boiler to generate energy. The paper machine fibre rejects, boiler ash, slaker grits, green liquor dregs and purge lime mud have beneficial agronomical properties and have been used as composting and soil improving agents.

For any waste that cannot be treated, reused and/or recycled onsite and once the waste has been classified (section 4.1), the appropriate disposal/treatment method will be established through consultation with landfill operators and EPA to ensure the landfill/waste facility accepting the waste is appropriately licensed to receive and/or treat the waste.

Visy will confirm that waste transporters and disposal locations hold appropriate approvals and licences.

4.2.1 Bark and Wood Residues

Wood residues are classed as Non Standard Fuels in accordance with EPL 10232.

The wood residues will be conveyed to the power boiler and utilised for energy generation for the process as a substitute for fossil fuels. The material will be transported to a stockpile prior to reclaiming in the boiler. A stockpile of 25,000 m^3 is available to allow storage of up to 12 days stock of the wood residues. This assumes a pile height of 16 metres, a density of 0.35 tonne/m^3 and a factor to allow for the slope of 2.

Non Standard Fuels are highly variable in quality and have a greater potential for contamination and therefore must undergo a strict quality assurance process to meet the 'Fuel Specification' to verify its suitability for usage as a fuel in the power boiler. The verification process has been developed through extensive trials documented in the "Report on Trial Period for Beneficial Re-use of Urban Wood Residues and Compost Manufacturing Residues at Visy Pulp and Paper Tumut – August 2004".

The usage of Non Standard fuels in the power boiler will be in accordance with:

- EPL 10232 conditions L7.1, E1, E2, E3, E4 and E5
- Instruments of approval approved under modification (MOD-45-5-2003-i)
- The following procedures:
    - VP9-10-10.4-OP-030 General Requirements and Specifications for Supply of Non Standard Fuel
    - VP9-10-10.4-OP-031 Quality Assurance and Quality Control Procedure for Non-standard Fuels
    - VP9-10-10.4-OP-032 Sampling Procedure for Non-standard Fuels
    - VP9-10-10.4-OP-033 Laboratory Preparation and Test Methods for Non Standard Fuels
    - VP9-10-10.4-OP-034 Stockpile Numbering System for Non Standard Fuels

4.2.2 Paper Machine Rejects

The PMR will be sorted, screened and dewatered at the RCF plant. The three streams will be stored in separate bunkers in the RCF Plant. A portion of the 'fibrous' rejects are collected for reuse in a composting operation via a NSW EPA Resource Recovery Order and Exemption. The remainder may be sent to landfill.

The 'coarse' and 'thickened' rejects, which are predominantly plastics, will be combined and loaded into trucks for disposal at an appropriately licensed landfill.

4.2.3 Wastewater Treatment Plant Sludge

The SBR will be purged of sludge every 3 or 4 weeks. Sludge from the SBR will be extracted to a silo where it is decanted into a dedicated sludge tanker and applied to paddocks on the Visy property at a rate recommended by an Agronomist. Sludge generated from the cooling ponds will be removed on an annual basis and also applied to dedicated paddocks around the Visy property.

Sludge by-product application will be undertaken in accordance with:

- EPL 10232 condition E8, and
- Wastewater Treatment Plant Sludge Disposal by Land Application on Site procedure.

4.2.4 Domestic Wastewater Screenings

The pressed domestic waste will be automatically bagged in 250 x 300 mm bags. Beneath the bagging system a 2 m^3 skip will collect the bagged material. The skip will then be emptied into the general waste skips and taken to an appropriately licensed landfill.

4.2.5 Green Liquor Dregs, Slaker Grits and Purge Lime Mud

Slaker grits, green liquor dregs and purge lime mud have been trialled in accordance with the EPL as soil amendment products in consultation with qualified Agronomist and EPA. Results have demonstrated their suitability as a soil improving agent and been reported in Soil Amendment Trial report dated 2006. The trial was completed under notice by the EPA in 2005. These lime by-products could then no longer be applied as a soil improving agent, as they were not approved due to the variability of some contaminants levels.

For a long period these lime by-products were sent to landfill. However during this time Visy were investigating opportunities for the reuse of Slaker Grits, Green Liquor Dregs, Purge Lime Mud, Power Boiler Fly Ash and Power Boiler Bottom Ash. The initiative for reuse of these materials was re-invigorated in 2016, and by 2020, buy-in had been realised by the market (the NSW mine site approving a trial) and the regulators (the NSW EPA issuing a Resource Recovery Order and Exemption under the Protection of the Environment (Waste) Regulation 2014) to the point where laboratory scale trials could commence.

4.2.6 Power Boiler Fly Ash

Power boiler fly ash has been trialled in accordance with the Environment Protection Licence as soil amendment product in consultation with qualified Agronomist and EPA. Results demonstrated its suitability as a soil improving agent and been reported in Soil Amendment Trial report dated 2006. The trial was completed under notice by the EPA in 2005. The Fly Ash could then no longer applied as a soil improving agent, as it was not approved due to the variability of some contaminant levels.

Visy sent the Power Boiler Fly Ash to a local composting company to be reused as a hardstand additive under Visy's specific approved Resource Recovery Order and Exemption. This project was completed in April 2016.

As noted above, Visy has been successful in obtaining a NSW EPA Resource Recovery Order and Exemption for the reuse of this material.

4.2.7 Power Boiler Bottom Ash

Power boiler bottom ash will be purged from the bed of the boiler on a daily basis. After screening the rejects will be collected and loaded into trucks for disposal to an appropriately licensed landfill. Monitoring of the bottom ash has shown that it is effectively inert and suitable for disposal at the local landfill.

As noted above, Visy has been successful in obtaining a NSW EPA Resource Recovery Order and Exemption for the reuse of this material.

4.2.8 Recovery Boiler Purge Fly Ash

The purge fly ash is able to be beneficially reused back into the process. Liquid brine waste is further processed, settled and dewatered to produce a solid waste stream which is sent to landfill. This additional process was commissioned in February 2016 and significantly reduces the total volume of waste produced from this process.

4.2.9 Trackable Solid Waste

Trackable wastes will be collected in designated labelled receptacles placed around the site. Collection, responsibilities and locations of the receptacles are outlined in Procedure VP9-10-10.4-OP-006 Trackable Solid Waste Disposal Procedure.

The above trackable waste will be collected and disposed under contract to Visy by an authorised agent. The authorised agent will be responsible for tracking this waste under the provisions of *Protection of the Environment Operations (Waste) Regulation 2014*. Records of all trackable waste that leaves the site will be maintained for minimum of 4 years.

4.2.10 Recyclable Waste

Dedicated bins have been placed around site for different waste streams and a waste sorting and collection area has been established. This area has been set up with bunkers separating they key recyclable materials and general waste. There are two workers employed full time to collect and sort the waste and recover as much recyclable material as possible.

Office paper and cardboard is recycled through the mill's RCF (Recycled Fibre Plant) pulping process, metal is collected by a local metal merchant, wood waste is reused or sent to a local landscape company and aluminium, glass, plastic, batteries and electronic waste is sent to a recycling facility in Tumut.

Other wastes produced on site such as putrescible waste are sent to landfill if not able to be re-used/recycled.

The recycling program was enhanced in early 2014 to remove a greater volume of recyclable material which was being sent to landfill. General solid waste (non-putrescible) to landfill has decreased from 227 (8m^3) skip bins in 2013/2014 to 119 (8m^3) skip bins in 2021/2022.

4.3 Changes to Waste Management Associated with Proposed Modification

As outlined previously, Visy recently submitted a modification to increase the approved production limit of the Kraft Pulp and Paper Mill located in Tumut NSW, which includes the following elements:

- Alter the approved production limit from 700,000 to 800,000 tpy
- Permit the increased use of recycled wastepaper in the mill feedstock from the 220,000 tpy described in the EA supporting the initial Project Application to 320,000 tpy
- Permit the increased the use of purchase pulp (Bleached Kraft Pulp) from the 30,000 described in the EA supporting the initial Project Application to 60,000 tpy.

Other wastes produced on site will be sent to landfill if not able to be re-used/recycled. The activity requiring the proposed modification is predicted to increase the waste requiring off-site reuse or disposal

from 71,245 tpy to 84,515 tpy. The expected increased volume of waste flows can be adequately accommodated within the existing mill processing facilities and are directly related to the increased volume of waste paper received from other facilities for recycling through the mill.

The estimated increase in waste generated represents a 19 per cent increase in total waste output, which is a relatively small increase.

Nevertheless, waste avoidance, reuse and resource recovery have always been a key focus for Visy's site management, centred around achieving genuine sustainability. Economic feasibility of reuse options is always an important consideration, and it is noted that desired outcomes can be more difficult to achieve in practice than theory may suggest.

Therefore, as a short- to medium-term fall-back option, Visy has assessed a suite of landfill destinations with capacity to accept the projected increase in waste production from the site.

Further details of the long term waste management strategies and interim landfill arrangements are provided in the following section, which describes the Landfill Diversion Strategy.

5.0 Landfill Diversion Strategy

Condition 6 of the Modification requires a landfill diversion strategy to be prepared that:

- Investigates reuse and recycling opportunities and identifies the approvals required for these activities
- Details timeframes for the implementation of reuse and recycling activities
- Includes a monitoring program to measure the volume and composition of waste captured by the reuse and recycling activities and the waste sent to landfill.

5.1 Investigation of Reuse and Recycling Opportunities

5.1.1 Waste Avoidance in Recovered Paper Supplies

The Tumut mill consumed 241,733 tonnes of purchased waste paper in FY2022, sourced from Visy and external MRF's (Materials Recovery Facility) and other suppliers, diverting this material from landfill. The purchased waste paper bales are made up of three streams including:

- Cardboard
- Clippings (box factory offcuts)
- Commons (domestic kerbside collections).

Due to the varying sorting processes and capacities of the MRF's, contamination within the waste paper bales exists mainly within the commons stream and accounted for 132,640 tonnes or 55% of the waste paper consumed at the mill.

Waste paper is processed through a RCF (Recycled Fibre) Plant hydro-pulper, followed by a series of screens and cleaners to remove the various contaminants (rejects) including mixed plastics, steel, glass and sand, with plastics comprising between 80 to 90% of the total rejects.

The clean fibre is used in the paper making process and the rejects enter a bunker where they are removed via front end loader to be loaded into trucks for landfill. In FY22 the total volume of rejects removed from the RCF Plant for landfill was 81,143 tonnes.

Visy Tumut, with the assistance of the Visy Insights and Innovation Group, is continually working with the waste paper suppliers to reduce the contamination at the source. For example,

Visy has a *Fibre Classification – Recycled Mills* document which specifies the allowable contamination rate (Prohibitive materials) for each waste paper stream. Onsite bale audits are routinely conducted to check contamination rates and depending on results waste paper loads can be downgraded to a lower grade (lower price paid) or even rejected and sent back to the supplier.

5.1.2 Reuse and Recovery of RCF Rejects (Plastics)

In previous years Visy's waste reduction strategy involved working with a company called Newtecpoly in an attempt to find a value added solution to the plastic waste from Visy Tumut's RCF Plant. Newtecpoly manufactured a prototype PolyWaste melter which can convert plastic waste into reusable products including sleepers, garden stakes and recycled outdoor furniture.

Newtecpoly trialled Visy Tumut's plastic waste in its PolyWaste melter and with some pre-sorting were successful in processing the waste stream.

Newtecpoly faced challenges raising capital and securing markets for potential products and nothing further has progressed at this stage.

In FY22 a small volume (1,799 tonnes) was sent to Visy's CoGeneration plant at Coolaroo as a fuel source and diverted from landfill.

5.1.3 Reuse and Recovery of RCF Rejects (PMR - Fibrous)

In 2021 Visy Tumut was granted a NSW EPA Resource Recovery Order and Exemption for the use of PMR (Paper Machine Rejects) – Fibrous as a compost ingredient with a local company. The composition of PMR – Fibrous, which is a by-product of the RCF Plant, is mainly fine reject paper fibre, with a small amount of sand and grit. This opportunity was a direct influence on the replacement of the existing Bell Press in the RCF Plant. The Bell Press had reached the end of its useful life, with the downtime and maintenance requirements increasing. Due to this the water content of the PMR was high, up to 70% moisture, and therefore a high volume of water being sent to Landfill.

The Bell Press was replaced with a ReCo press, this would be more efficient and be able to process more material at a faster rate, and also reduce the overall moisture content, having a further benefit of Landfill cost savings. As a result of this opportunity, others arose to further separate waste that previously would have been found in the PMR, thus ensuring a clean, uncontaminated product could be supplied to the composting company.

5.1.4 Reuse and Recovery of Lime Mud, Dregs and Grits, Fly Ash and Boiler Sand

Visy has previously sought resource recovery exemptions from the EPA to enable it to reuse Lime mud/dregs and grit, fly ash and boiler sand by-products for soil amendment on Visy Tumut's farm in 2007 and 2008. These applications have been declined.

In 2016, Visy met with the EPA's Resource Recovery Division to discuss a new resource recovery exemption for reuse on the farm and this was again declined mainly due to the variability of some of the contaminants.

Visy was granted a resource recovery exemption in 2013 for use of the by-products in road making. Unfortunately, the road-making company did not proceed with the project and an alternative company was unable to be identified prior to the expiry of the resource recovery exemption in 2015.

A locally based composting company were granted approval to reuse Visy Tumut's Fly Ash as a constituent for a hardstand material under a resource recovery exemption in 2014. This exemption expired in 2016 following the completion of the hardstand works.

In 2016 Visy applied for, and was granted, a resource recovery order and exemption for the reuse of lime mud (up to 1,500 tonnes) generated at mill in the rehabilitation of the derelict Kangiara Copper Mine. Remediation works were successfully completed for the site manager, the NSW Department of Planning and Environment, Division of Resources and Geoscience, Derelict Mines Program (DMP) in mid-2017.

Based on the success of the Kangiara Copper Mine rehabilitation, Visy worked on a beneficial waste reuse project that would achieve a long term (>10 years) solution for up to 100 % of the Lime mud/Dregs and Grits, Fly Ash and Boiler Sand and by 2020, buy-in had been realised by the market (the NSW mine site approving a trial) and the regulators (the NSW EPA issuing a Resource Recovery Order and Exemption under the

Protection of the Environment (Waste) Regulation 2014) to the point where laboratory scale trials could commence.

The short-term interim measures to address the challenges included commencing the laboratory scale trial, which ran through 2019, to demonstrate to all key stakeholders the potential upside of the project. To that end, the laboratory trials showed promising results.

Thereafter, the first load of a combined waste stream of the Dregs and Grits, Fly Ash and Boiler Sand was trucked off-site under the permissibility of the Resource Recovery Order and Exemption issued by the NSW EPA that allowed for up to 10,000 tonnes of the waste to be beneficially reused in the small (4ha) site trials in September 2019. This timing did, however, also coincide with the COVID-19 pandemic and regional bushfires around Tumut. Notwithstanding these challenges, in 2020, the Resource Recovery Order and Exemption (titled The Woodlawn PHR acid mine tailings trial order and exemption 2020) was revised to allow for up to 75,000 tonnes of waste to be beneficially reused in the mine site rehabilitation trials. Another Resource Recovery Order and Exemption (titled The Captains Flat alkaline material trial order and exemption 2022) was approved for a different site in 2022. This was only for a 12 month period and 10,000 tonne, but for the same application.

5.1.5 Disposal to Landfill

Landfill disposal is considered a last-resort in Visy's waste strategy.

The landfill arrangements for waste from the mill for FY22 included:

- Tumblong landfill – up to 40 loads per week (Average = 40.7 tonnes/load).
- Bellette's landfill – varies on demand (Average = 40.7 tonnes/load)
- Hi Quality, Goulburn – 5 loads per week (Average = 36.0 tonnes/load.

Visy has examined options for FY22 and beyond, which include:

- Tumblong Landfill (60km)
- Hi Quality Landfill, Goulburn (260km)
- Bald Hill Landfill, Jugiong (90km)
- Bellette's Landfill, Tumut (9.5km)

Due to the proximity to the site, Tumblong and Bellette's landfills are the most efficient options for Visy.

5.2 Timeframes for Implementation

The long-term vision for the Dregs and Grits, Fly Ash and Boiler Sand reuse project was to beneficially utilise the waste material as a resource for mine site rehabilitation. As such, Visy were early adopters of the circular economy paradigm, which, in the early 2000s was simply knows as recycling. This has now been achieved through the approval of the Resource Recovery Order and Exemption to supply the combined material to the Woodlawn Zinc-Copper Project Mine Site.

The landfilling issue of the combined Dregs and Grits, Fly Ash and Boiler Sand has been resolved for a period of time approaching four years, and based on the current research program, will likely have an ongoing

research and development solution for another three to four years. By this time, around 70,000 tonnes of waste will have been diverted from landfill for beneficial reuse.

Longer term, the current mine site can accommodate the waste for its rehabilitation program for up to between approximately 15 to 20 years, where after an alternate site will be found should the waste streams remain a by-product of the production process at that time.

5.3 Monitoring Program

Monthly sampling and analysis of each waste stream is ongoing. The current monitoring program covers all parameters required for Resource Recovery Order and Exemptions. The weighbridge data system will be used to record volumes removed from site and Visy will follow the monitoring requirements specified in any approved Resource Recovery Order and Exemptions.

Monthly sampling and analysis is completed by a consultant, as per the requirements in the relevant Resource Recovery Order and Exemptions. i.e. One composite sample monthly for each of the three separate waste streams (3 samples per month) is required for the Dreg and Grits, Fly Ash and Boiler Sand RRO. The Resource Recovery Order describes the specific sampling, chemical and other attributes (Table 1 column 1 of the RRO document), test methods and the absolute maximum concentrations (Table 1 column 2 of the RRO document).

The Dregs and Grits, Fly Ash and Boiler Sand have a designated storage area onsite. This is a bunded hardstand area with a loading ramp and runoff collection dam.

The material is loaded as a combined product at the approximate production ratio of Dregs and Grits (approx. 78%), Fly Ash (approx. 16%), and Boiler Sand (approx. 6%).

The stockpile area is designed to hold a month's worth of stockpiled material (between 400-600 tonnes), while the previous month's material is loaded offsite daily (Monday to Friday).

Runoff from the collection dam is manually pumped back into the site's process water system.

The Paper Machine Rejects – Fibrous have a separate concrete bunker for storage in the reject yard. The frontend loader uses a smaller designated bucket for handling and loading this material, to avoid contamination with other waste streams. This material is collected daily (Monday to Friday) as required, currently between 300-450 tonnes per month.

Runoff is contained within the concrete reject yard and directed back into the site's process water system.

6.0 Auditing and Monitoring

6.1 Monitoring and Reporting

Monitoring will be in accordance with the OEMP.

All by-products (PMR – Fibrous, lime mud, dregs & grits, power boiler fly ash and bottom ash) will be sampled and analysed on a monthly basis for a range of parameters including heavy metals as outlined in the Monitoring and Measurement Table VP9-10-10.5-OP-001-A01.

6.2 Auditing

During annual EMS reviews, the HSE Manager will monitor compliance with the requirements of this plan and any amendments that need to be made.

7.0 Responsibilities

Solid waste management responsibilities for key positions include:

HSE Manager

- Arranging for the required monitoring of the by-products as specified in the Monitoring and Measurement Table VP9-10-10.5-OP-001-A01
- Applying for Resource Recovery Order and Exemptions and investigating and implementing potential reuse and recycling options to reduce landfill volumes. It is anticipated that implementation of the landfill diversion strategy would be undertaken by third party contractors once commercial arrangements are in place with receiving sites
- Ensuring storage, sampling and collection of material is completed in accordance with the relevant Resource Recovery Order and Exemptions
- Management of the material storage areas, including separation, loading and runoff collection
- Determining if by-products can be utilised for soil amendment based on Agronomist recommendations and approvals
- Instructing the Farm workers to apply by-products to soil amendment site in accordance with the application rates recommended by the Agronomist
- Management of the recycling system
- Management of solid waste to landfill
- The HSE Manager is also responsible for overseeing that all facets of the plan are met.

Shift Supervisor

- Advising the Farm workers prior to sludge removal for land application
- Ensuring that wastewater treatment plant sludge is applied to the land using the dedicated sludge tanker.

Farm Workers

- Application of by-products to designated soil amendment areas
- Monitoring by-product application to the Visy site
- Ensuring that wastewater treatment plant sludge is applied to the land using the dedicated sludge tanker.

8.0 Training, Awareness and Competence

General waste management training is incorporated into general awareness aspect of inductions etc.

Those personnel involved with specific tasks associated with waste management as outlined in Section 7.0 will be trained in their obligations.