Visy Pulp & Paper Tumut Mill

Environmental Compliance and Monitoring Report 2021



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1. INTRODUCTION

1.1. SCOPE

This Annual Environmental Compliance and Monitoring Report (ECMR) for Visy Pulp and Paper Tumut has been prepared and submitted to satisfy the reporting requirements of the Development Consent Condition number 12. The assessment of compliance covers the operational period from 1st July 2020 to 30th June 2021 and is against the Part 4 Development Consent Approvals with references to Part 3A approvals where relevant. The ECMR also assesses the compliance against the Concept and Project Approval conditions to meet reporting requirements under Concept Approval Condition No. 6.3. The compliance assessment is provided in full in Appendix 1.

The ECMR report has been developed and makes reference to the following documents, the Environmental Impact Statement (EIS) 1998 and Commission of Inquiry report, Environmental Assessment (EA) for Stage 2 (where applicable in this document) 2007 and the Operational environmental management plan developed initially as per the development consent conditions and upgraded and submitted during 2009 – 2010 as per the Project approvals for the EA for Stage 2. Information presented has been compiled based on information and data collated during the reporting period. Records of all analysis that have been summarized in this report have not been provided but are readily available on request.

1.2. BACKGROUND DEVELOPMENT

Visy Pulp and Paper, Tumut facility is located approximately 7 kilometers west of Tumut, New South Wales, Figure 1.1. Landholding with recent property acquisitions now encompasses approximately 2,124 Hectares. Stage 1 approval for the 300,000 tonne per annum Kraft Pulp and Paper Mill was granted in October 1998 and became operational in May 2001. The commissioning and fine-tuning period for the initial plant due to the complexity of the process extended over an 18-month period. This is before the mill was able to achieve steady state operations.

Approval of the mill's expansion to 700,000 tonnes of paper per annum was approved in May 2007. The components of the expansion first became operational between July 2009 and October 2009. The mill has completed the commissioning phase and full steady state operations have been achieved.

In July 2017 approval was granted by the NSW Department of Planning & Environment for the maximum production tonnage limit increase to 800,000 tonnes of paper per annum.

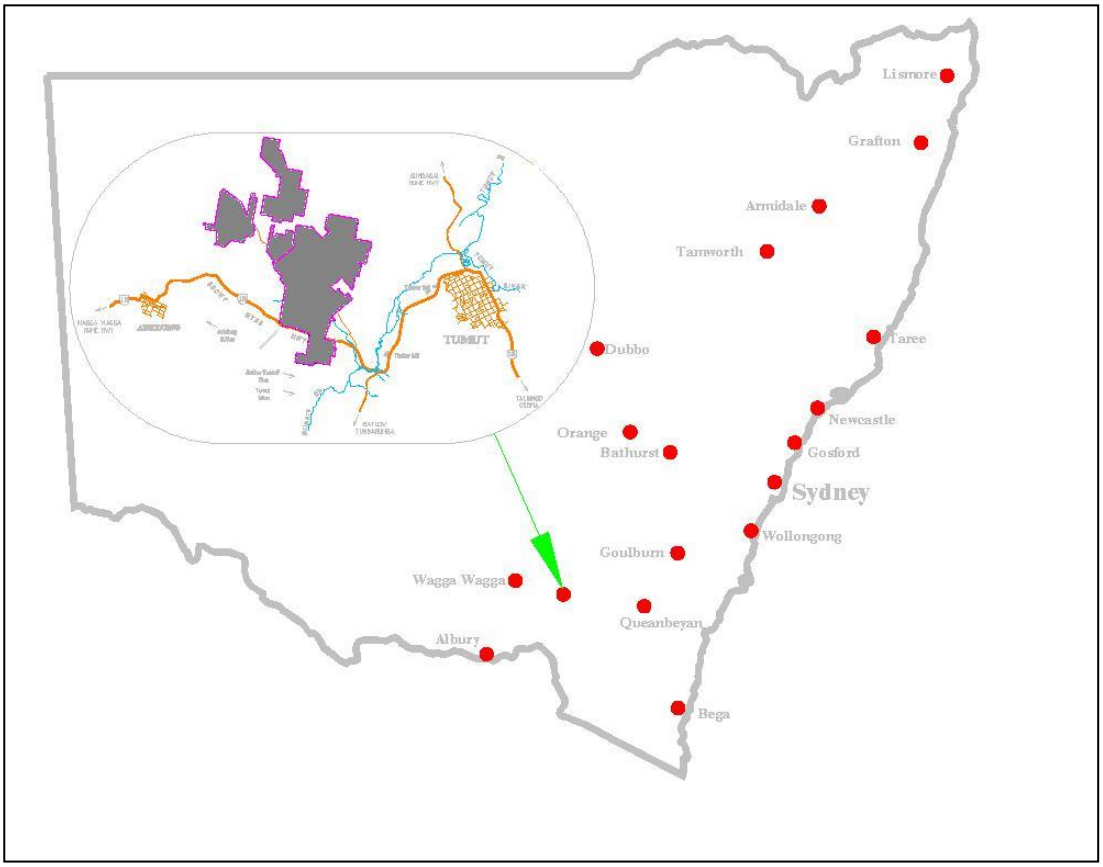

Figure 1: Location of Visy Pulp and Paper, Tumut facility

1.3. PRODUCT AND MARKET

During 2020/2021 approximately 689,388.83 tonnes of paper was manufactured from 1,892,614.30 tonnes of wood products and 210,943.17 tonnes of waste paper. Approximately 49.99% of the finished product was sold to markets overseas. The local product was mainly supplied to Visy Board where it was further processed into cardboard for the packaging industry.

1.4. CONSENT, LEASE AND LICENCES

Visy Pulp and Paper operates a *Kraft* pulp and paper mill at Tumut in the south eastern region of NSW under the following approvals and licences, Table 1.

Table 1: Visy Pulp and Paper, Tumut - Approvals and Licences

Approvals/Licence	Relevant Legislation	Issue Date (Latest)	Details/Comments
Development Approval 6/98	Section 91 and 91A,B (2) of the Environment Planning and Assessment (EP&A) Act 1979	29/11/1998	Stage 1 approved 300,000 tpa Kraft Liner Pulp and Paper Mill with approval for Stage 2 of 450,000 tpa.
Modification Approval MOD-45-5-2003-i	Section 96(1A) of the Environment Planning and Assessment (EP&A) Act 1979	3/03/2005	Approval to utilise a proportion of Non-standard fuels in existing Power Boiler up to 50% of total solid fuels.
Concept Approval 06_0159	Section 75 O of the Environment Planning and Assessment (EP&A) Act 1979	1/05/2007	Visy Tumut Mill expansion to increase Paper Manufacturing Capacity to 700,000 tpa.
Project Approval 06_0159	Section 75 J of the Environment Planning and Assessment (EP&A) Act 1979	1/05/2007	Visy Tumut Mill expansion to increase Paper Manufacturing Capacity to 700,000 tpa.
Modification Approval 06_0159 Mod 1	Section 75 W of the Environment Planning and Assessment (EP&A) Act 1979	6/08/2007	To change the total reduced sulphides limit for main stack 2 as a result of changes to the installation of phasing of certain project components.
Modification Approval DA 06/98 Mod 3	Section 75 W of the Environment Planning and Assessment (EP&A) Act 1979	5/10/2012	Construction of a diesel refueling facility. (Construction has not commenced).
Modification Approval MP 06_0159 MOD2	Section 75 W of the Environment Planning and Assessment (EP&A) Act 1979	25/09/2015	Construction of new storage buildings and new coating kitchen facility.
Modification Approval PA 06_0159 MOD 3 & CP 06_0159 MOD 1	Section 75 W of the Environment Planning and Assessment (EP&A) Act 1979	7/07/2017	Maximum production tonnage limit increase to 800,000 tpa.
Modification Approval MP06_0159-Mod4	Section 4.55(1A) of the Environmental Planning and Assessment (EP&A) Act 1979	21/08/2020	The inclusion of Noise Limit Exemptions for Sensitive Receivers with Noise Agreements.
Environmental Protection Licence No. 10232	Section 55, Protection of the Environment Operations Act 1997	27/03/2014	Licence varied by notice 1521029 after section E9 Continuous Emissions Monitoring Quality Assurance Plan, was removed due to satisfying this PRP requirement.
Water Licence 40AL412076 (Part of 40WA412077 Work Approval). Formally 40BL191801 –	Water Management Act, 2000; Murrumbidgee River, Water Sharing Plan, 2004; Water Act 1912	16/01/2012	Deep Bore no. DB6 & 10, for extraction industrial use.

40BL191802			

Under changes to the POEO Act that came into effect in July 2012, a monthly summary of monitoring data is published on the Visy website www.visy.com.au, 14 days after the end of each month. Also published are summaries of exceedances and correction logs that have occurred during the month.

1.5. EMPLOYMENT STATUS

There are approximately 310 employees on the Visy Tumut site of which 209 are Visy employees. Visy engage local firms to undertake contract cleaning and maintenance work. Of those employed, approximately one quarter has been recruited for their vast pulp and paper industry experience and knowledge from overseas facilities. The majority of the overseas employees have relocated and now established in Tumut with their families.

1.6. COMMUNITY

The Visy Community Consultative Committee (VCCC) established under Development Consent Condition No. 72, have continued to meet on a two-monthly basis. The VCCC continue to take an active role as liaison with the local community and to monitor Visy's environmental compliance.

Council representation has been reinstated to the Committee since December 2012, with two Council representatives joining. A representative from the local Business Chamber of Commerce was also appointed, filling all available VCCC positions.

Visy through the Pratt Foundation continues to support and provide funding to the Community Foundation for Tumut under the Visy Community Grants Program. During the year the Pratt Foundation continued to work with consultants to investigate the best way to distribute the funds ($1M over 10 years). The Foundation is currently investigating suitable projects for this funding.

Visy Tumut provides on average $20,000 per annum for sponsorship/funding to the local community including schools and community events.

1.7. ENVIRONMENTAL MANAGEMENT SYSTEM (EMS)

The EMS is integrated into the Visy Corporate Health Safety Environment (HSE) Management System. The site EMS also consists of site-specific Environmental Management Plans, environmental procedures, a detailed monitoring program covering all emissions and extensive reporting and auditing requirements.

The Visy HSE Management System comprises of the following 13 standards and various codes of practice that define the minimum HSE requirements for all Visy employees and contractors working at Visy sites.

1. Leadership, Accountability & Commitment
2. Planning, Objectives & Measurement
3. Risk & Change Management
4. Incident Management
5. Emergency Crisis and Business Interruption

6. Health Management
7. Competency & Training
8. Communication & Engagement
9. Contractors & Suppliers
10. Legal Compliance & Document Control
11. Evaluation & Review
12. Environmental Management
13. Operational Reliability

The Visy HSE Management System at Tumut is certified to ISO 14001:2015 Environmental Management System (EMS), ISO 9001:2015 Quality Management System and ISO 45001:2018 Safety Management System.

1.8. ENVIRONMENTAL MANAGEMENT TARGETS

The key site Environmental Management Target for the reporting period was zero fines and penalties from environmental non-conformance and this target was achieved. Environmental Management Targets have been set for the 2021-22 reporting period. A review of performance against these targets will be carried out at the end of the reporting period and new targets will be set. The 2021-22 targets are detailed in Appendix 10.

1.9. NATIONAL POLLUTANT INVENTORY

The National Pollutant Inventory (NPI) is a measure of substance emissions to air, water and land generated by the activities on site. The measures were introduced by the Commonwealth Government in 1999, and it requires reporting emissions of 90 substances. The NPI calculations are based on triggering a certain threshold for different categories of a substance. The amount of substance emitted is calculated by measurements taken at source or where no measurements have been taken from industry-based emission factors. Results can be obtained from the NPI website at www.npi.gov.au.

1.10. ENERGY EFFICIENCY OPPORTUNITY

In July 2011, Visy committed to the public campaign for companies to reduce their energy use by 10%. The 10% Challenge program is used to identify opportunities to reduce our energy use across the business by a target of 10%.

Divisional Energy Champions have been appointed to assist in identifying opportunities for energy savings across their business divisions and understand how reductions will be measured. Although Visy already has projects and initiatives underway that look at energy efficiency, the role of the energy champions is to further identify opportunities and drive these initiatives within their business divisions.

Under the Energy Efficiencies Opportunity Act 2006, Visy Tumut is required to:

- Undertake an assessment of their energy efficiency opportunities to a minimum standard in order to improve the way in which opportunities are identified and evaluated.
- Report publicly on the outcomes of that assessment in order to demonstrate to the community that Visy does effectively manage their energy.

The energy efficiency opportunity assessment for Tumut was undertaken for the period January 2010 to May 2011 in accordance with the approved assessment criteria (ASC). The assessments were carried out by the Visy Mill Technical Manager and process engineers with assistance from Covey Consulting.

The Visy Public Report on the EEO can be found on the following link to the Visy Website
http://www.visy.com.au/media/90243/eeo_public_report_visy_2012.pdf

2. OPERATIONS DURING REPORTING PERIOD

2.1. PAPER PRODUCTION

During the reporting period a total of 689,388.83 tonnes of Kraft linerboard was produced on the combined VPP9 and VPP10 paper machines. This is over the Stage 1 approval of 300,000 t/a, but well under the Visy Expansion approval of 700,000 t/a as provided below in Table 2. The VPP10 machine at the end of this reporting period was operating at 108.4% of design capacity, with fine tuning and optimisation of the plant continuing throughout the reporting period. Overall paper production increased by 27,662.55 tonnes (4.01%) from the previous reporting period. On the 7 July 2017, the Department of Planning, Industry & Environment granted approval for the maximum production tonnage limit increase to 800,000 tonnes of paper per annum.

Visy has also commenced WTL (White Top Liner) paper manufacturing, using purchased BKP (Bleached Kraft Pulp) which is delivered to site in bales. During the reporting period a total of 63,788 tonnes of White Top Liner paper grades were produced for both the domestic and export markets. This was an increase on the previous reporting period which was 58,110 tonnes.

Table 2: Paper production, July 2020 to June 2021

Paper Machine No.	Production (ADt)	EIS approval 1998	EA approval 2007	EA approval 2017
VPP9	252,654.88	300,000	300,000	
VPP10	436,733.95		400,000	
Total	689,388.83	300,000	700,000	800,000

2.2. RAW MATERIAL PROCESSING

The main source of fibre for paper manufacturing is *Pinus radiata* sourced from sustainably managed forest plantations. This wood fibre is delivered to the mill in the form of pulpwood logs and sawmilling chips. The pulp logs are sourced from plantations mainly located in the local Hume region, and supplemented with supplies from the Bathurst, Bombala, Canberra and Macquarie regions. Sawmill chips, a waste product from sawmilling operations are mainly sourced from local sawmills located in Tumut and Tumbarumba but also supplied from as far away as Bombala, Canberra and Rapville regions utilising back loading of heavy vehicles where possible. During the year a total of 1,526,874 tonnes of pulpwood logs and 505,570 tonnes of sawmill chips were delivered to site for processing. The pulpwood logs are 22.06% more than that predicted EA (2017) but the sawmill chips are -28.84% less than the predicted EA (2017).

Visy management are continuing to investigate means to secure more local pulpwood logs as well as sawmill chip/fibre to maintain production levels for the Tumut operations. Following a severe bushfire in January 2020, which affected a substantial area of local plantation timber; Visy completed a burnt wood salvage operation which required additional log and sawmill chip deliveries and chipping operations to occur 24/7.

The other source of fibre for paper manufacturing is Wastepaper. Wastepaper is mainly sourced from Visy Recycling Division that collects recyclable waste from the main urban centres of Sydney, Melbourne, Adelaide, Brisbane and the ACT and then sorts and bales wastepaper for transport to the Tumut mill. Visy Tumut also

accepts wastepaper collected and transported from various local rural municipalities (i.e., Tumut, Wagga etc.). The quantity of wastepaper received for manufacturing was 210,943 tonnes which is 34.08% less than that predicted EA (2017). Comparisons to EIS and EA are provided below in Table 3.

Bleached Kraft Pulp is another source of fibre used to manufacture White Top Liner paper grades at the mill. During the reporting period a total on 27,742 tonnes of BKP was consumed.

Table 3: Raw material consumption - July 2020 to June 2021

Raw Materials	Raw Materials 2019 - 2020	Raw Materials 2020-2021	EIS 1998	EA 2007	EA 2017
Pulpwood Logs	1,466,471	1,526,874	566,000	1,190,000	1,190,000
Sawmill Chip	506,576	505,570	512,000	710,500	710,500
Wastepaper	224,374	231,928.17	80,500	175,000	320,000
Bleached Kraft Pulp	24,886	27,742	-	30,000	60,000

Figures 2 and 3 below show the raw material supply by region

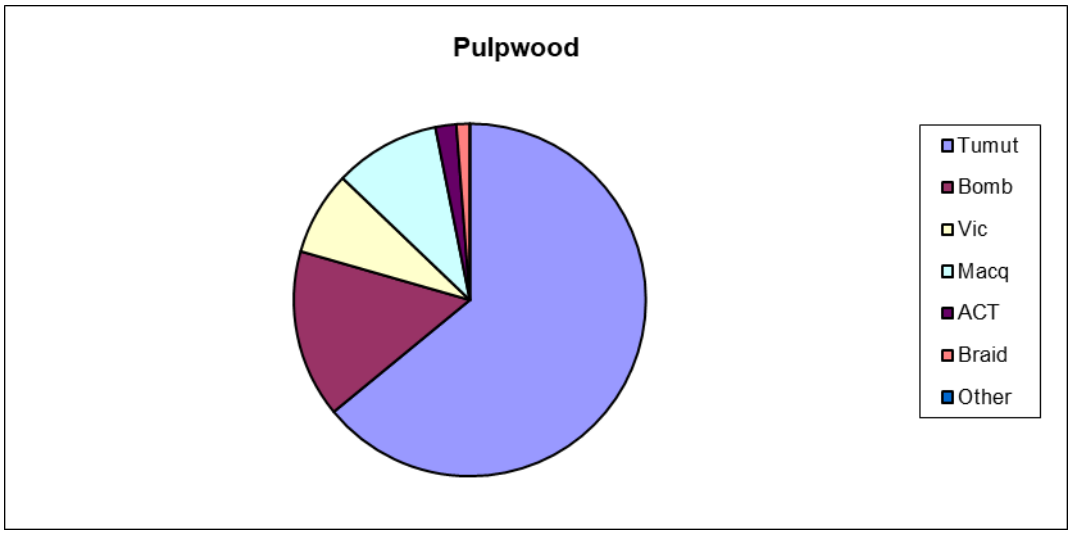

Figure 2: Pulpwood supply by region for 2020 – 2021

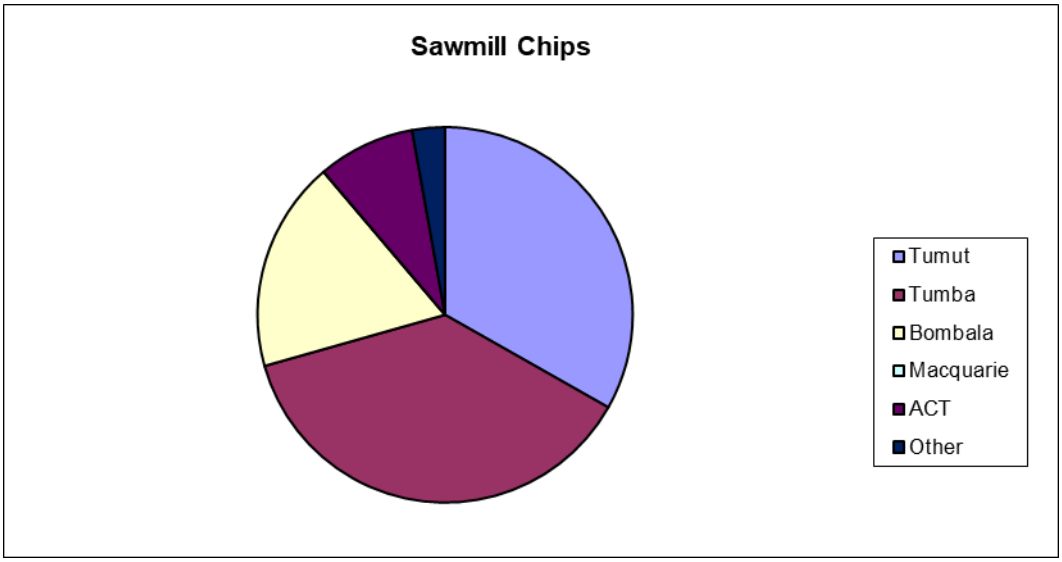

Figure 3: Sawmill chip supply by region for 2020 – 2021

Raw fibre for pulp production is sourced from both local and more distant regions. The quantity sourced from each region during the last financial year and the forecast for the next financial year is provided below, Table 4.

Table 4: Raw material supply forecast by region for the 2020 – 2021 financial year

Raw material	Region	Tonnes Predicted 20/21	Tonnes Actual 20/21	Difference %	Tonnes Predicted 21/22
Sawmill chip	Local (Tumut, Tumbarumba)	309,100	359,864	+14.11%	299,766
	Distant (Bombala, Canberra, Rapville)	112,200	149,771	+25.09%	241,350
Pulpwood logs	Local (Forests NSW and private plantations in the Hume region)	1,120,000	922,086	-17.67%	735,591
	Distant (Forests NSW Macquarie, Monaro, Braidwood, ACT)	597,000	517,312	-13.35%	751,397

3. ENVIRONMENTAL MANAGEMENT

3.1 COMPLAINT AND INCIDENT MANAGEMENT

Visy operates a 24-hour free call hotline number for complaints handling. Visy encourages the community to call this number to raise observations, issues or concerns. All complaints are logged into an electronic database system and investigated by operational personnel.

The total complaints received during the reporting period have been tabulated and are presented below, Figure 4. Comparisons with historical monthly complaints are illustrated in Table 5.

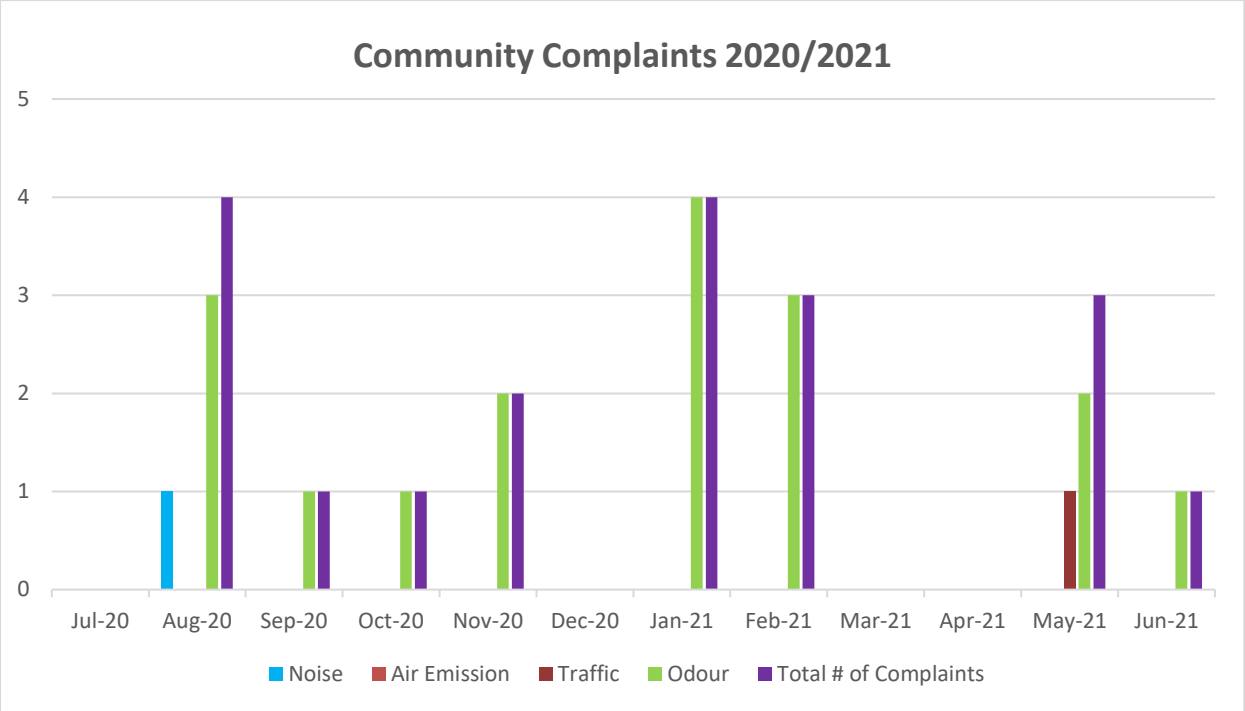

Figure 4: Community complaints for 2020 – 2021

Table 5: Historical complaints table

Month	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Jan	19	22	24	0	5	3	3	6	19	5	8	6	10	9	2	7	6	2	1	4
Feb	34	24	21	22	5	3	5	1	5	5	6	3	7	7	6	11	8	3	5	3
Mar	26	62	39	26	8	7	7	6	12	4	10	6	8	0	3	9	12	4	1	0
Apr	34	63	25	20	6	19	5	6	8	3	6	10	1	1	4	7	1	4	1	0
May	26	40	15	6	9	26	4	4	11	1	9	4	5	4	7	6	2	4	1	3
Jun	25	57	17	6	6	11	2	3	8	0	3	11	6	4	2	1	0	6	3	1
Jul	34	60	10	10	7	3	11	14	6	1	9	6	6	2	1	2	2	4	0	
Aug	32	11	7	12	8	14	1	16	3	3	11	2	8	2	4	13	4	2	4	
Sep	27	44	14	8	6	3	4	6	7	6	6	4	5	1	2	3	7	6	1	
Oct	15	25	3	11	7	9	1	7	6	5	3	2	3	2	2	0	2	1	1	
Nov	14	15	9	3	10	5	3	5	3	5	6	6	4	0	2	11	2	1	2	
Dec	11	7	5	8	3	4	5	15	5	7	8	3	1	6	5	8	5	2	0	
Total	**297**	**430**	**189**	**132**	**80**	**107**	**51**	**89**	**93**	**45**	**85**	**63**	**64**	**38**	**40**	**78**	**51**	**39**	**20**	**11**

For this reporting period the mill has received in total 17 odour complaints, a decrease on the same period last year which was 25 odour complaints. These odour complaints are further discussed below. A copy of the Complaints Register Summary can be found attached in Appendix 9.

Environmental incidents such as spills are also logged into the electronic database system and investigated by operational personnel. During the reporting period there were 2 spill incidents reported. All were contained within the mill site. There were no externally reportable environmental incidents during the reporting period.

3.2 AIR QUALITY MANAGEMENT

The main air emissions discharge points to atmosphere are at the exits of Stack 1 and Stack 2. These points are defined as Point 1 and Point 22 respectively in the Site's Environment Protection Licence. Stack 1 has various combustion units contributing to emissions as tabled below, Table 6.
Stack 2 has only Recovery Boiler B as its source of emissions. Although the Power Boiler does not discharge directly to atmosphere, it too is considered as a licenced discharge point for specific pollutants.

All five combustion units have been designed with modern emissions control technologies. Each combustion unit further utilizes Electrostatic Precipitators for the efficient removal of particulates from the flue gases prior to discharging into the stacks. Each of the Recovery Boilers has two electrostatic precipitators installed for the removal of particulates. This allows the mill to achieve very low emission levels to allow it to comply with the more stringent Group 6 Emissions standards specified in the Protection of the Environment Operations (Clean Air) Regulation 2010.

Visy Tumut undertakes continuous and routine monitoring of emissions from each of its emission points to ensure emission levels are maintained below the permissible limits.

3.2.1. CONTINUOUS EMISSIONS MONITORING

A Continuous Emissions Monitoring System (CEMS) is installed to monitor emissions from the following locations on a continuous basis in accordance with Development Consent Condition (DCC) #60, Project Approval (PA) #2.9, PA #2.10 and the Environment Protection (EP) Licence.

Table 6: Identification of Licenced Discharge Points to Atmosphere

Discharge Point	EP Licence Point	Other EP Licence Points	Combustion Unit
Stack 1	Point 1	NA	Recovery Boiler A
		Point 3 (Power Boiler Duct)	Power Boiler
		NA	Lime Kiln A
		NA	Lime Kiln B
Stack 2	Point 22	NA	Recovery Boiler B

For clarity the following table denotes the current status under Phase 1A of the additional monitoring discharge points for the Visy Expansion, as originally identified in Table 1 in PA #2.9, Table 7.

Table 7: Identification of Air Monitoring and Discharge Points for Phase 1A

Monitoring Discharge Point	Monitoring Discharge Point Location identified under PA	Installed Monitoring Discharge Point under Phase 1A
Main Stack 2	Main Stack 2	Main Stack 2
Recovery Boiler 2 (B)	In the discharge duct downstream of Recovery Boiler 2 and before the junction with Main Stack 2	Main Stack 2
Natural Gas Boiler	In the discharge duct downstream of the Natural Gas Electrostatic Precipitator and before the junction with Main Stack 2	Not installed
Multi-fuel Boiler	In the discharge duct downstream of Multifuel Boiler after the fabric filters and before the junction with Main Stack	Not installed
Lime Kiln 2 (B)	Lime Kiln 2 discharge duct before the junction with Main Stack	Lime Kiln B discharge duct before the junction with Main Stack 1
Gas Turbine	In the discharge stack from the gas turbine	Not installed

Under Phase 1A, the Natural Gas Boiler, Multifuel Boiler and Gas Turbine have not been installed. As Recovery Boiler B is the only combustion source to Main Stack 2, (i.e. the gases are not mixed with other sources), the monitored discharge point is located in Main Stack 2 also identified as Point 22 under the EP Licence.

A summary of monitoring undertaken at these points throughout the reporting period are provided below in Table 9 and 10. A summary of monitoring results from the continuous emissions monitoring equipment during the reporting period for each specific parameter is provided in Table 8.

Table 8: Summary of CEMS air monitoring

Parameter	**Units**	**Average result**	**EP licence limit**	**Comment**
Point 1 **Main Stack 1**				
Nitrogen Oxides (NOx)	mg/m^3	191.36	400	No exceedance events (No exceedances in previous reporting period).
Hydrogen chloride	mg/m^3	1.81	50	No exceedance events (No exceedances in previous reporting period).
Sulphur dioxide	mg/m^3	23.77	250	4 exceedance events (1 event in previous reporting period). The main causes are summarized below: • Diverted NCG to the Power Boiler to steam out line for flame arrester cleaning. • Recovery Boiler A, Burner 3 ignitor failed. Gases diverted to Power Boiler.
Total reduced sulphides	mg/m^3	0.83	3.60	No exceedance events (No exceedances in previous reporting period).
Opacity	%	5.68	20	66 exceedance events (97 events in the previous reporting period). The majority of the exceedance events during the reporting period were due to CO spikes in the Lime Kilns. The CO spikes trip the electrostatic precipitators and cause the high opacity. Other causes of Opacity exceedances on the Main Stack were due to the following: • Kiln trip due to high CO spike. • ESP trip due to a high CO spike. • Kiln upsets with ring formations that had to be removed. • Shear pin breakages on ESP1 Ash Rotary Feeder. • Boiler trip.

Total Solid Particles	mg/m³	73.25	50	4 exceedance events (4 exceedances in previous reporting period). The main causes are summarized below: The main cause is related to CO spikes on the lime kilns resulting in some performance issues with Lime Kiln Electrostatic Precipitators as well as dust accumulating in the Lime Kiln inlet collection screens. Another cause is the performance of the Power Boiler Electrostatic Precipitator.
Point 3 Power Boiler				
Nitrogen Oxides (NOx)	mg/m³	112.21	300	No exceedance events (No exceedances in previous reporting period)
Point 4 Lime Kiln				
Total Solid Particles	mg/m³	180	23	1 exceedance (1 exceedance in previous reporting period).
Point 22 Main Stack 2				
Nitrogen Oxides (NOx)	mg/m³	126.33	400	No exceedance event (No exceedances in previous reporting period).
Hydrogen chloride	mg/m³	2.07	50	No exceedance events (No exceedances in previous reporting period)
Sulphur dioxide	mg/m³	1.081	250	No exceedance events (No exceedances in previous reporting period).
Total reduced sulphides	mg/m³	1.21	3.60	1 exceedance event (No exceedances in previous reporting period).
Opacity	%	9.15	20	43 exceedance events (17 events in previous reporting period). The main cause was issues with Electrostatic Precipitator 2, Field 1 due to an internal fault. Other causes included: • Faulty Gateway removed causing ESP to trip; • Interlock on fan damper de-selected causing the fan to trip; • SIR unit off with dead short and SIR unit 2 tripping intermittently causing exceedances.

Continuous emissions monitoring exceedance event details including the date of the recorded exceedances and the level recorded can be found in Appendix 2.

3.2.2. PERIODIC STACK TESTING

Periodic stack testing is undertaken by specialist stack testers in accordance with the test methods specified in the EP Licence. Samples taken are sent to NATA registered laboratories for analysis. A summary of all monitoring results are provided below, Table 9 and 10. All samples were taken under steady state conditions.

Table 9: Compliance with licence concentration limits (EPL condition L3.1): Periodic stack testing results for Point 1 Main stack 1, Point 22 Main stack 2

Parameter	Units	Number of samples	Average Result	EP licence limit	Percent compliance in reporting period
Point 1 Main Stack 1					
Chlorine	mg/m^3	1	<0.01	100	100
Type 1 and Type 2 substances	mg/m^3	1	<0.038	1	100
Sulfuric acid mist (SO_3)	mg/m^3	1	0.56	20	100
TCDD (eq)	ng/m^3	1	0.0062	0.1	100
Total Solid Particles	mg/m^3	4	73.25	50	100
Point 22 Main Stack 2					
Chlorine	mg/m^3	1	<0.001	100	100
Type 1 and Type 2 substances	mg/m^3	1	<0.02	1	100
Sulfuric acid mist (SO_3)	mg/m^3	1	0.085	20	100
TCDD (eq)	ng/m^3	1	0.00087	0.1	100
Total Solid Particles	mg/m^3	4	13.825	50	100

Table 10: Compliance with licence concentration limits (EPL condition L3.1): Periodic stack testing results for Point 3 Power Boiler

Parameter	Units	Number of samples	Average of results	EP licence limit	Percent compliance in reporting period
Point 3 Power Boiler					
Cadmium	mg/m^3	0	0	0.006	100
Hazardous substances	mg/m^3	0	0	0.6	100
Mercury	mg/m^3	0	0	0.06	100
TCDD	ng/m^3	0	0	0.1	100

Total Solid Particles	mg/m³	1	58	30	100

Note: The limits detailed for Point 3 are only applicable when non-standard fuel is being burnt in the Power Boiler, as per EPL L3.5.

Periodic stack testing was conducted quarterly as per EP Licence requirements by stack testing company Ektimo. Grab samples are collected and sent to an analytical laboratory where the gases are analyzed for their chemical components. During this reporting period all results were below the licence concentration limits, except for Total solid particles in Main stack 1 (Point 1). The main cause is related to CO spikes on the lime kilns resulting in some performance issues with Lime kiln electrostatic precipitators as well as dust accumulating in the Lime kiln inlet collection screens. The limits detailed in Point 3 are only applicable when non-standard fuel is being burnt in the Power Boiler. As non-standard fuels were not burnt in the Power Boiler, the result for Total Solid Particles is considered as compliant. Further maintenance and routine work was carried out in the annual maintenance shutdown in October 2021.

3.2.3. AMBIENT AIR MONITORING

During the EP Licence review carried out in June 2013 the four ambient air stations were removed from the EP Licence and decommissioned. These have since been replaced with two new meteorological monitoring stations which were commissioned in mid-2014. These new monitoring sites are located to the southeast of the mill site (Monitoring Point 8) and on top of the Recovery Boiler B building (Monitoring Point 7).

3.3 ODOUR MANAGEMENT

Due to the nature of the *Kraft* process odour control is considered a challenge by the industry. Considerable investment has been undertaken at the Tumut mill in the odour control systems and when compared to industry standards Visy Tumut is recognized as industry best practice. Visy Tumut continues to work to improve the control of odour from its operations to minimize the impact on the community.

The main sources of odour and the management of those odours have been well described in the Air Quality Management Plan. The design of the new plant and equipment for the Visy Expansion has incorporated new processes that are either directly or indirectly used for control of odorous emissions.

Odour monitoring is undertaken on a routine basis from the main diffuse odour sources. The results are compared with historical to establish if there are any trends that indicate any increase in odour over time. The results of odour monitoring carried out during the reporting period are summarised below.

3.3.1. ODOUR COMPLAINTS

During the reporting period, January 2021 recorded the highest number of odour complaints with a total of four.

The first complaint was due the Reflux tank pump (Evaporator area) was drained and flushed due to an issue with a pump. When this was done, odour was generated by the foul condensate on the ground floor of the evaporators. The others were most likely due to Operations bypassing the Recovery Boiler A vent gas scrubber system to wash the heat exchanger.

3.3.2. ODOUR MONITORING

The main diffuse air emission sources that emit odours are from:

- Cooling Towers
- VPP9 Vacuum Pump Outlets
- Paper Machine Building Ventilation
- WWTP Cooling Ponds
- Main Stacks 1 & 2

A monitoring program is undertaken to measure odour from these sources. Duplicate samples were taken at the same locations in August 2020 and February 2021, using a Teflon tube that feeds into a Nalophan sample bag and these were analyzed using dynamic olfactometer to record concentrations in odour units (OU). The results are summarized below in Table 11 and are provided in full in Appendix 3.

The odour concentrations when compared to Maximum Odour Concentrations from Table 59 of the EA 2007 indicate odour concentrations are higher in the Vacuum Pump Exhaust and Paper Machine Hood Ventilation and lower in the Cooling Towers and Cooling Ponds. The odour concentrations for Cooling Ponds are generally lower than the previous reporting period. One round of odour monitoring for main stack 1 wasn't done due to bad weather.

In comparing the Odour emission rate for each of the sources, Main Stack 1 and the Vacuum Pumps are the largest contributors, followed by the Paper Machine hood fans and Main Stack 2. There is a higher margin of error in the odour measurement results when comparing from different sampling periods due to the likely olfactory sensitivity differences between the members of different odour panels. The consistency and accuracy is greater when comparing from different sources taken at the same time and all run through the same odour panel.

Table 11: Odour monitoring results for August 2020 and February 2021

Location	**Odour Concentration (OU)**			**Odour Emission Rate (OU/min)**		
	EA 2007	**22/08/2020**	**25/02/2021**	**EA 2007**	**22/08/2020**	**25/02/2021**
Vacuum Pump exhaust 3	2,560	15000	5700	3,563,520	3500000	1500000
Vacuum Pump exhaust 7		5000	10000		1300000	2800000
Cooling Tower - No. 1 Paper machine side	1,425	190	59	75,000,000	NT	NT
Cooling Tower - No. 2 Paper machine side		92	67		NT	NT
Paper Machine 9 hood vent exhaust	1,475	3,000	11000	2,000,100	2700000	1,000,0000
Paper Machine 10 hood vent exhaust		5,200	9300		8400000	15000000
Cooling Pond A	3,320	160	120	169,320	9000	6500
Cooling Pond B		74	130		4200	7200
Main Stack 1		730	NT		3900000	NT
Main Stack 2		510	340		1700000	1300000

1. From Environment Assessment, 2007, Appendix K Table 4. Odour sources and emissions for existing operations (Holmes Air Sciences). (EA figures have been multiplied by 60 to give OU/min).
2. Parts per billion.

The odour concentrations at each source and sampling date are shown below in Figure 5.

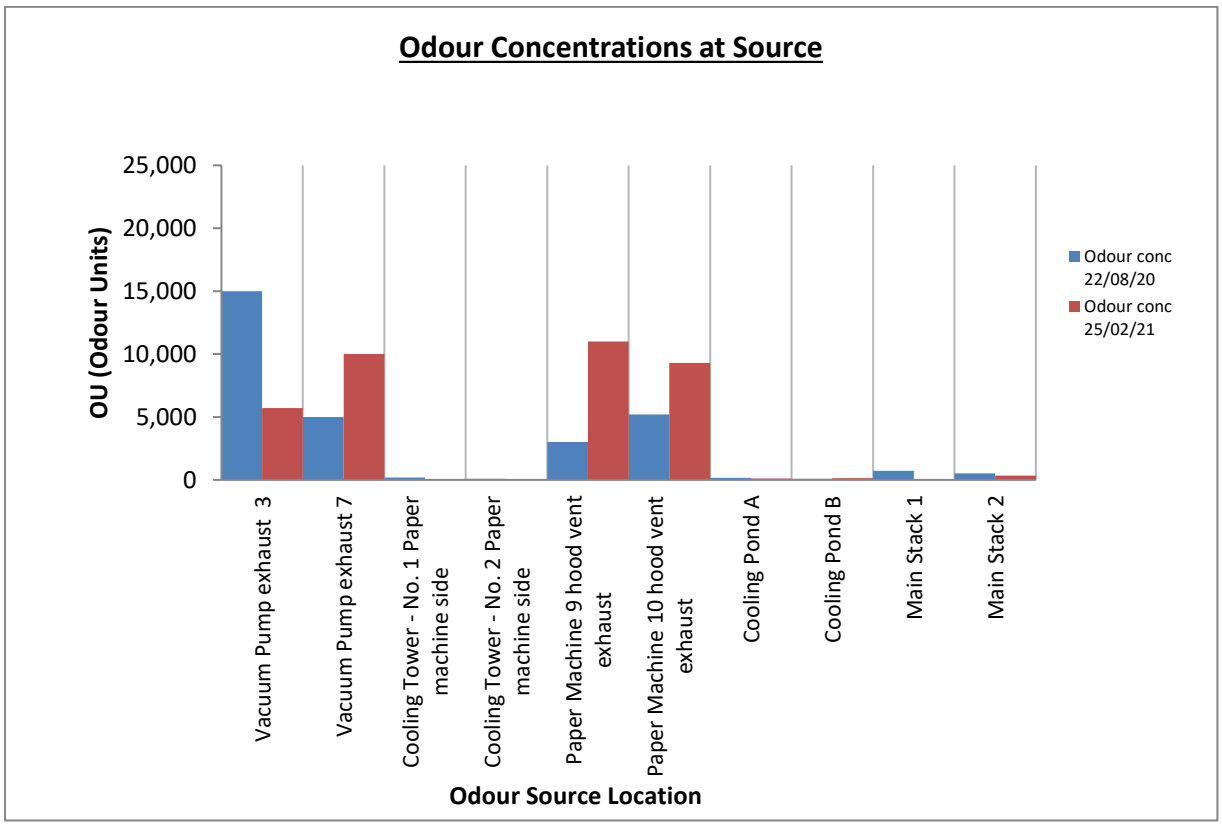

Figure 5: Odour concentrations at source

3.4 NOISE MANAGEMENT

During the reporting period Visy had site noise compliance testing carried out in January 2021. This monitoring is carried out as an annual follow-up to the noise compliance monitoring which was done in 2012 as required by the Project Approval conditions.

EMM undertook the noise compliance assessment for the site (ref. Noise Compliance Report – February 2021). The scope of the works was to assess the noise emissions from the subject site and assess compliance with the Environment Protection Licence no.10232 (Condition L6.1) and the project approval dated 1st May 2007.

The investigation included attended noise monitoring at the relevant assessment locations and was completed in accordance with the site NMP to satisfy the requirements of the PA and EPL.

The applicability of noise limits was assessed with reference to the site weather station wind speed data, and temperature inversion conditions determined using the Pasquill-Guilford method as per the INP (Industrial Noise Policy). This assessment identified that noise limits were not applicable for all evening and night-time measurements for this monitoring period due to the presence of temperature inversion conditions greater than F stability category or winds greater than 3 m/s at the time. Notwithstanding, where noise limits were deemed inapplicable due to meteorological conditions, estimations of any audible noise contributions from the site were made and compared to the noise limits for completeness, where possible.

Attended monitoring results show that site noise was inaudible during seven out of the 24 measurements, including during the day at Brentwood, Glengarry, Beale and Gentle, and during the evening at Brentwood, Deep Creek and Glengarry.

Site LAeq, 15min noise contributions satisfied the relevant limits at all locations during the day and evening periods, including where limits were not applicable. Site LAeq, 15min noise contributions satisfied the relevant limits at all locations during the night period. Site LAmax noise contributions satisfied the relevant limits at all locations during the night-time, except for at Deep Creek.

During the night period measurement at Deep Creek, one truck movement on the access road exceeded the LAmax criteria by up to 4 dB. This exceedance only occurred in one instance during the measurement period after a review of the monitoring data, it was identified that low frequency noise modification factors were not applicable during all attended measurements. During the night period measurement at Deep Creek, one truck movement on the access road exceeded the LAmax criteria by up to 4 dB. This exceedance only occurred in one instance during the measurement period. Furthermore, a negotiated agreement with the resident of Deep Creek was completed in March 2021.Therefore, monitoring results showed that Visy Tumut Pulp and Paper Mill satisfied the noise requirements of the PA and EPL at most assessment locations for this round of monitoring.

The Industrial Noise Policy (Section 11.1.3) recognizes there is a small variability due to climatic factors (e.g. temperature, humidity) that affect noise compliance monitoring, and therefore exceedances of 2dB or less are considered to be compliant.

According to the NSW EPA Industrial Noise Policy, Non-Standard weather effects can be considered to be present if the cloud cover is less than 40% and the wind speed (at 10m height) is less than 1m/s.

Based on numerous studies undertaken for the site it is observed that weather conditions are a fundamental aspect to be considered when determining if the site is in compliance with the noise limits. Therefore, the status of compliance of the site varies depending on these conditions.

A summary of the noise compliance monitoring results can be found in Appendix 4.

The most recent consent modification (MP06_0159-Mod-4, August 2020) specifies that noise limits do not apply to any residence where a noise agreement is in place (Condition 2.16A). Visy has completed negotiated agreements (as per Section 8 of the NSW Industrial Noise Policy (EPA 2000)) in place with eight residences, all of which are included in this assessment. These agreements include acoustic treatments to dwellings, where accepted by the resident/owner, and in all instances, the resultant noise levels contributed by the site operations are accepted by the affected resident.

The residences with agreements are as listed below:

• Glengarry – signed negotiated agreement (May 2017) and acoustic treatment completed.

• Reka – signed negotiated agreement (January 2020), no acoustic treatment requested.

• Whispering Pine – signed negotiated agreement (January 2020), acoustic treatment completed.

• Pleasant View – signed negotiated agreement (March 2020), acoustic treatment completed.

• Brentwood – signed negotiated agreement (August 2020), acoustic treatment completed.

• Nolte – signed negotiated agreement (August 2020), acoustic treatment completed.

• Poverty Lane – signed negotiated agreement (March 2021), acoustic treatment completed; and

• Deep Creek – signed negotiated agreement (March 2021), acoustic treatment completed.

Visy has also completed all agreements in accordance with the noise mitigation action plan. The plan included scheduling for site noise acoustic assessment and acoustic treatment recommendations, review and implementation of recommendations and regular review and updating of the plan. A copy of the completed Noise Mitigation Action Plan can be found in Appendix 5.

A site noise acoustic assessment and recommendation of acoustic treatments was completed by Benbow Environmental in August 2014. The assessments identified the following as main sources of noise that have the potential to cause noise disturbance at night under noise enhancing meteorological conditions.

- Wood yard
- Vacuum Blower exhaust
- VPP10 Paper Machine Hood Heat Recovery System

3.4.1 NOISE COMPLAINTS

During the reporting period there was only one noise complaints received. There were two noise complaints during the previous reporting period.

3.4.2 WOOD YARD

Attended noise monitoring was carried out in January 2021 at various residences that are most affected by noise from the Wood yard. Noise monitoring was conducted during daytime and night-time periods and comparisons made to noise limits and the results from the previous annual monitoring.

Comparison of the noise levels measured as part of this study with those of the previous assessments show no deterioration of the local noise environment. Noise emissions from the site are constant in nature, with no tonal, impulsive or other annoying characteristics.

The noise monitoring conducted as part of the most recent assessment has shown that noise emissions from the site comply with the relevant acoustic criteria detailed in the Director General's Environmental Assessment Report at all locations, when limits were applicable.

3.4.3 NOISE CONTROL FROM WOOD YARD ACTIVITIES

The noisy Wood yard activities have historically been set today/evening-time periods by Visy, with log feed, debarking and chipping operations ceasing between the hours 10pm to 7am. Following a severe bushfire in January 2020, which affected a substantial area of local plantation timber; Visy completed a burnt wood salvage operation which required additional log deliveries and chipping operations to occur 24/7.

Visy submitted Modification 4 to 06_0159 (MP06_0159-Mod4), accompanied by Statement of Environmental Effects - *Visy Tumut – Critical Wood Supply, Modification to project approval*. The modification application for the inclusion of Noise Limit Exemptions for Sensitive Receivers with Noise Agreements was approved on the 21 August 2020. As mentioned in the previous sections, all noise agreements were completed in March 2021.

In the Woodyard pre-cast concrete walls are installed around the hopper to reduce the impact noise from the log feed system and, on the north-west wall of the building enclosing the debarker and chipper, to reduce noise impacts to the more sensitive receptors located to the north-west of the mill.

Visy is continually investigating further methods to reduce noise from the Wood yard area including:

- Noise attenuation of the infeed hopper and Debarker/chipper building;
- Modifying the chain guides on the reclaim conveyors, replacement of sprockets or addition of dampers;
- Crane's alarm.

3.4.4 VACUUM BLOWER EXHAUST AND VPP10 HEAT RECOVERY SYSTEM

Noise from the Vacuum Blowers was identified as a major source of noise. Recommendation to reduce the impact from the noise including sealing of wall penetrations and acoustically insulating the section of Vacuum Blower exhausts duct that extends from outside the building wall, up to the silencer located on the roof. These works were completed in March 2012.

The noise from the VP10 heat recovery system has been controlled by optimising the hood fan speeds. This has been effective in reducing the noise and vibration impacts on the residents located to the south west of the mill.

Visy is continually investigating further methods to reduce noise from this area including:

- Insulation and cladding of Vacuum Blower discharge pipe work;
- Sealing of all openings present on roof of Vacuum Blower room;

- Sealing of all openings present on walls of Vacuum Blower room.

3.5 TRAFFIC AND TRANSPORT MANAGEMENT

The average predicted daily truck movements from the EIS, the Environmental Assessment (2007), the Traffic Management Plan (2009) and the actual total truck movements recorded over the Visy Weighbridge during the 2020-2021 reporting period is shown for comparative purposes below in Table 12. The total average calculated from monthly total truck movements was 494, which is lower than that predicted for the EA which was 531 and higher than the previous reporting period which was 487. The number of peak heavy vehicle movements predicted in the Traffic Management Plan was 576.

As production and container loads continue to increase, the number of truck movements across to Wagga Wagga will also increase. To mitigate this, Visy Logistics commenced running A-Double trucks in 2021. The average weight of these trucks is 50 tonnes and the benefits of the inter-modal transport are:

- reduced total truck movements, with the ability to carry two containers in one trip;
- reduces the double handling of paper reels;
- lessens damage caused by loading the reels into containers at the ports;
- the reduction in the overall tonnages of material being transported on the regional and interstate road network; and
- reduction in CO_2 emissions by utilizing rail from Wagga Wagga to Melbourne and Sydney.

Table 12: Predicted and actual daily average truck movements for each route

Route description	Maximum daily truck volume – EIS estimate 2000	Daily traffic movements EA Assessment 2007 (1)	Daily traffic movements Traffic Management Plan 2009	Average daily truck volumes over reporting period (2020-2021) (2)
via Talbingo / Tumut	6	1		14
via Buccleuch / Tumut (Brungle Rd)	86	63		12
via Gundagai / Tumut (Gocup Rd)	112	135		149
Tumut direct	116(3)	85		66
via Wondalga (Batlow Road)	112	148		144
via Snowy Mountains Highway / Adelong	94	99		109

Total	410[4]	531	576[5]	494[6]

1. From Tables 3.12 and 4.2 Traffic Assessment EA 2007.
2. Average truck movements calculated from monthly total truck movements during reporting period.
3. Extrapolated from Table 11 and Figure 11.2 EIS. Previous CSR Sawmill chip that was being transported to Laminex at Wagga Wagga at time of EIS preparation is now delivered to Visy from Carter Holt Harvey Sawmill (previously CSR Sawmill).
4. Total number does not include Tumut direct in EIS figures.
5. Note that 2009 assessment included inter-modal transport option of container trucks to Wagga Wagga for rail interlink. In the EIS all trucks were considered to be empty for the return journey, whereas nearly all waste paper delivered to site comes as a backload.
6. Average daily backloads removed from total average daily truck movements.

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The heavy vehicle movement data for route and time period for each month is provided in Appendix 6.

The current truck configurations are generally as detailed below:

- Log's average 94% on B doubles and 6% on semi-trailers with an average payload for log trucks B double of 39 tonnes, and for semi-trailer 28 tonnes;
- Sawmill chips 52% B doubles and 48% semi-trailers at an average payload of 37 tonnes for a B double and 29 tonnes for a semi-trailer.
- Forest residue chip for boiler fuel and normal boiler fuel were all semi-trailers.
- Finished paper:
    - Export - finished paper destined for export is loaded into 40 ft shipping containers for transport by A-double trucks with payloads of up to 50 tonnes to a freight terminal near Wagga Wagga and then onto rail cars.
    - Domestic - destined for Visy box plants and other Australian customers, 20% A Double, 70% B doubles and 5% semi-trailers. At an average payload of 50 tonnes for a A double, 36 tonnes for a B Double, 36 tonnes for a B Double and 24 tonnes for semi-trailer.

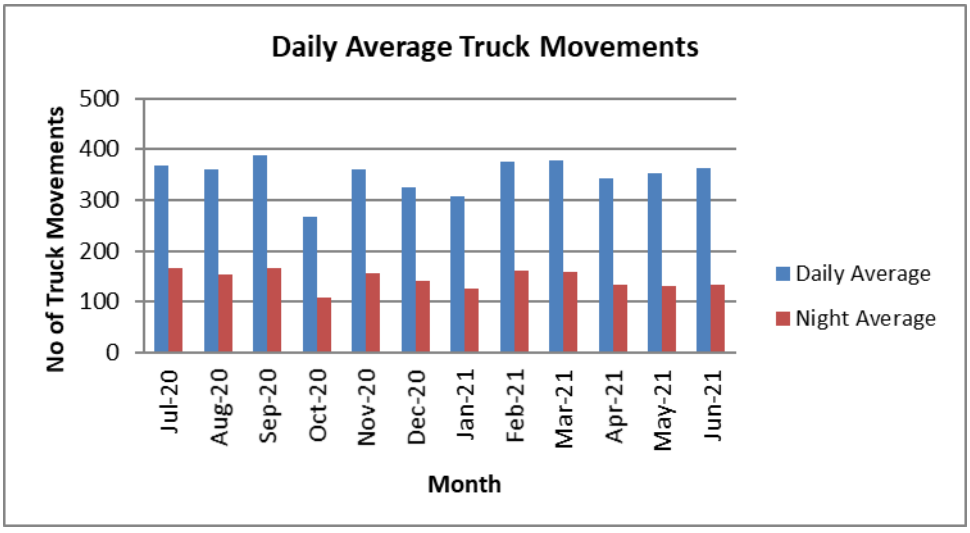


Figure 6: Daily average truck movements

As predicted in the EA and the Traffic Management Plan there is a greater number (71%) of truck movements during the daytime period (7am to 10pm) compared to the night period. The main heavy vehicle nighttime movements from 10pm to 7am are due to pulp log, sawmill chip and finished paper.

More truck movements occur on Monday to Saturday during the daytime hours of 7am to 10pm, with not as many movements occurring on Sunday as predicted in the Truck scheduling report. Pulp log, sawmill chip deliveries and finished paper leaving the site constitute the highest average truck movements per hour.

3.6 WASTE MANAGEMENT

The expected amounts of solid waste generated during the operation of the mill, was predicted in the EIS, 1998 and the EA 2007. All waste or materials for recycling are measured and tracked with all trucks over 3 tonnes being weighed and tracked via the electronic weighbridge database. The expected volumes as detailed in the EA, 2007 and the current waste volumes have been provided for comparative purposes below, Table 13. All waste stream amounts for the reporting period were less than predicted in the EA, 2007, except for Paper Machine Rejects.

During the reporting period, waste was sent to four different landfills, Visy's CoGen plant as well as the Woodlawn mine rehabilitation site.

Investigations into alternate reuse options are ongoing with a Resource Recovery Exemption application submitted to the EPA in September 2012 for the filled based reuse of Dregs & Grits, Power Boiler Fly Ash and Boiler Sand being granted approval in March 2013. Visy were unable to identify a suitable Processor and this exemption expired in March 2015.

Another Resource Recovery Exemption applied for by a local composting company was approved in August 2014. This exemption was for the use of Visy Fly Ash as a hard stand additive. This project has since been completed and the Resource Recovery Exemption expired August 2016.

During the 2016/2017 reporting period Visy was granted a one-off Resource Recovery Order and Exemption for Lime Mud. A total of 1,149 tonnes of excess lime mud was used in the rehabilitation of a derelict mine site.

Based on the success of the Lime Mud Resource Recovery Order and Exemption, Visy started working on a beneficial waste reuse project that would achieve a long-term solution for Lime mud/Dregs and Grits, Fly Ash and Boiler Sand and reuse option for the Paper Machine Reject (PMR) Fibrous material.

A Resource Recovery Order & Exemption titled 'The Woodlawn PHR acid mine tailings trial Order & Exemption 2019' was approved on the 27 August 2019. Removal of the combined product of Dregs & Grits, Fly Ash and Boiler Sand commenced on the 16 September 2019. During the reporting period, a total of 3,337.9 tonnes was sent to the Woodlawn mine rehabilitation site, diverting this product from landfill.

Visy have also continued to investigate and implement process improvements to reduce the fibre and moisture content in the Paper machine rejects.

Further details on all waste streams, waste volumes produced and their destination for the reporting year are provided over page in Table 14.

Table 13: Predicted and actual waste volumes for July 2020 to June 2021

Waste type	EA 2007 Prediction (tonnes)	Produced 2020–2021 (tonnes)	Management
Paper machine rejects	37,500	Plastics: 58,126.8 Fibrous: 24919.2 Fibrous:372.3 **Total: 60918.3**	Landfill/CoGen Landfill Reuse
Power boiler Fly Ash	11,520	1226.2 534.1 **Total: 1760.3**	Landfill Reuse
Dregs and Grits	11,830	8367.0 2603.5 **Total: 10970.5**	Landfill Reuse
Lime mud	7,910	0	Reused in process
Recovery boiler-Recrystallisation Plant waste	1,242	1194.14	Landfill

From EA, 2007 Main report Table 64, p. 200.

Table 14: By-product, fuel and waste disposal/re-use activities status from July 2020 to June 2021

By-product, Fuel or Waste stream	Current Status of Use	Approximate Quantities (during reporting period)
Bark, fines and pins	Bark is removed from incoming logs on the debarker and is utilized in the solid fuel Power Boiler as a fuel. The fines and pins are from the pulpwood and sawmill residue chip feedstock that passes through the screens at the screening plant prior to being conveyed into the process. This material is unsuitable for pulping process but is utilized as a fuel in the Power Boiler.	96,431 tonnes (bone dry)
Paper machine rejects – plastics	Material coming in with the wastepaper that is separated in the RCF plant based on weight. This material has a large proportion of various types of plastics. A smaller portion of this material contains heavier material including metal, glass, wire, sand, rocks etc. This material is currently disposed of to landfill and CoGen.	50876.2 tonnes (landfill) 7250.6 tonnes (CoGen) 58126.8 tonnes (TOTAL)
Paper machine rejects – fibrous	Generated on site, from the RCF plant. This material is homogeneous made up of small paper fibres that have passed through screens and removed in the cleaners. This material is dewatered through a bell and screw press and can be used as a source of fuel for the Power Boiler. As a	24919.2 tonnes (Landfill) 372.3 tonnes (re-use)

	result of some process issues in the Power Boiler during the reporting period, the majority of this material was sent to landfill and some was also taken for re-use to a compost facility in Wagga Wagga.	
Wastewater Treatment Sludge	Wastewater treatment sludge which is regularly removed from the Sequencing Batch Reactor (SBR) and used for land application.	130.50 KL
Domestic Wastewater Screenings	This small waste stream has been sent to landfill in sealed plastic bags as outlined in the OEMP.	500g per month is removed and sent to landfill.
Recovery Boiler Ash	A new Recrystalisation Plant was commissioned in July 2015, which reprocesses the sodium sulphate back into the system. Previously the sodium sulphate was packaged onsite and stored for future reprocessing.	0 tonnes
Recovery boiler-Recrystallisation Plant waste	In early 2016 process changes were implemented to convert the Recrystallisation Plant liquid waste stream to solid waste.	1194.14 tonnes
Waste Oil	Waste oil is generated on an ongoing basis from lubrication oil changes, while more may be generated during major shutdowns from draining equipment, motors etc. Waste oil is collected by EPA licensed contractors and transporters and is taken to a recycling facility.	16.30 KL
Lime Mud	Lime mud (98% CaCO3) is a by-product that gets re-used in the process. Typically, only 3% of lime mud is used together with dregs as a pre coat for the filter screen to prevent build-up of non-process elements. However, this percentage can increase during annual maintenance shuts, etc. Classified as inert waste when compared to the NSWEPA Waste Classification Guidelines.	0 tonnes
Dregs and Grits	Dregs and Grits is essentially a mixture of sodium and calcium carbonates, lime and a small a fraction of unburnt organics. During the reporting period Dregs and Grits were sent to the Bald Hill Landfill – Jugiong, Hi Quality Landfill – Goulburn, Woodlawn and Tumblong Landfill. During the reporting period 2,603.50 tonnes of Dregs and Grits were also sent to the Woodlawn resource recovery project.	8367.0 tonnes (landfill) 2,603.50 tonnes (reuse)
Power Boiler Fly Ash	Fly ash is a fine light powdery material collected from the Power Boiler Electrostatic Precipitators. During the reporting period Fly Ash was sent to the Bald Hill Landfill – Jugiong, Hi Quality Landfill – Goulburn, Woodlawn and Tumblong Landfill. During the reporting period 534.10 tonnes of Fly Ash were also sent to the Woodlawn resource recovery project.	1226.2 tonnes (landfill) 534.10 tonnes (reuse)
Bottom Ash Sand	Bottom ash is mainly sand and carbonaceous materials from the boiler bed and is of no agricultural benefit. Sand is recycled by screening to the sand silo but impurities which are classified as an inert waste are disposed of to landfill. During the reporting period 200.3 tonnes of sand was also sent to the Woodlawn resource recovery project.	457.10 tonnes (landfill) 200.3 tonnes (reuse)
General Waste	General non-recyclable waste disposed of into skips. The total volume this reporting period was similar to the previous reporting period. This waste stream is taken to the local landfill.	275.47 tonnes

Waste Steel	Waste steel includes steel, stainless steel, electric motors and electrical cable from general maintenance and construction works. Waste steel was collected by Sims Metal Management.	299.90 tonnes
Trackable/Hazardous Waste	Includes Grease, Oil Filters, Oily/greasy Rags, Spill Waste, Sulphamic Acid Bags, Laboratory waste (testing vials, reagent bottles etc.), dangerous goods packaging and any other trackable waste which is separated from the main waste stream and collected by a licensed hazardous waste contractors Cleanaway (ERS Australia) and Hi-Quality for disposal in an approved manner.	24.25 tonnes
Fluorescent Light Globes	Disposed as trackable waste is delivered to Snowy Valleys Council's Recycling Facility.	80 boxes
Electronic Waste	Electronic waste is delivered to Snowy Valleys Council's Recycling Facility.	40 kg
Red Oil (1)	Red Oil (Sulphate Turpentine) is removed from the evaporation process. This by-product after modifications were made on the process is now being burnt in Recovery Boiler, where emissions are controlled and energy generated.	235 tonnes
Turpentine	Removed by licensed facility for reuse.	353.86 tonnes

1. Table addresses items as discussed in the Solid Waste Management Plan – red oil included for completeness of waste/recyclable material removed from site during reporting period.

3.7 ENERGY MANAGEMENT

Approximately 301,233 MWh of electricity has been exported from the grid over the reporting period. This is more than that predicted 245,280 MWh in the EA (2007). The total amount of electricity generated was approximately 201,455 MWh. There was also 821,323 GJ of natural gas consumed over the reporting period mainly used for the calcining process in the Lime Kilns.

The majority of the electricity generated on site is from renewable fuels. Consumption of renewable fuels is considered as carbon neutral as the amount of CO_2 emissions released is the same as that released from the natural decaying process. These renewable types include bark, sawmill residue chips, forest residues, paper machine rejects all utilised in the Power Boiler and the organic component of Black Liquor extracted from wood, burned in the Recovery Boilers. Approximately 117,295.66 (bone dry) tonnes of solid fuel was generated (96,427.64 tonnes generated on site and 20,868.02 tonnes purchased from off-site sources). A total of 117,295.66(bone dry) tonnes were burnt in the Power Boiler and total of 603,029 tonnes of black liquor solids was burnt in the Recovery Boilers over the reporting year. The inorganic chemical component of black liquor, used for pulping is recovered in the smelt from the Recovery Boiler and after further processing, re-used back in the process. The 'Green' energy produced qualifies for Renewable Energy Certificates (REC) under the Federal Government's Renewable Energy Scheme and certificates under the NSW Greenhouse abatement scheme for the use of thermal energy in the process from renewable energy source.

3.8 WATER MANAGEMENT

Water consumption during the reporting period was on average 3.02 m^3 per tonne of paper produced which is below the volumes predicted in the EIS (1998) and SOEE (2001) but higher than predicted in the Water Management Plan (2009) (2.6 – 2.8 m3/ADt). Monthly water consumption figures per unit of production over the reporting period are shown below, Table 15. Consumption ranged from 2.89 to 3.46 m^3/tonne of paper.

Table 15: Water consumption, wastewater production and irrigation and production volumes and water consumption per tonne of paper produced in 2020 – 2021

Month	**Water consumption (m^3)**	**Production (tonnes)**	**Consumption per unit of production (m^3/tonne)**	**Wastewater production (m^3)**	**Waste water Return (m3)**	**Irrigation (m^3)**
July	176,077.0	59,010.85	2.98	54,627	16,748	0
August	174,656.00	59,664.89	2.93	53,939	18,582	0
September	173,693.00	57,561.46	3.02	55,934	22,611	0
October	132,965.00	38,459.76	3.46	46,781	9,204	0
November	177,210.00	59,021.66	3.00	52,716	26,700	0
December	183,840.00	61,733.57	2.98	55,911	29,318	112,839
January	189,226.00	60,523.64	3.13	56,287	32,917	87,751
February	164,762.00	54,802.41	3.01	54,040	33,465	49,813
March	180,586.00	60,064.29	3.01	57,071	32,826	74,217
April	181,007.00	57,927.82	3.12	54,840	24,169	100,368
May	177,134.33	61,039.83	2.90	55,056	22,925	87,538
June	171,924.29	59,578.67	2.89	55,980	17,277	0
Total	**2,083,080.62**	**689,388.83**	**3.02**	**653,182**	**286,742**	**512,526**

3.9 WASTEWATER MANAGEMENT

Wastewater production was 653,182 m^3 for the year. A total of 286,742 m^3 (44%) was recycled back into the process as make-up to the Cooling Water system. This amount of water returned to the process replaces fresh water that would be normally diverted from the river system. A total of 366,440 m^3 of wastewater was discharged to the wastewater re-use scheme. The total amount of wastewater irrigated on Gadara Park was 512,526 m^3.

Monitoring undertaken as part of the wastewater management is as follows and is described in more detail in sections below:

- Wastewater monitoring
- Groundwater monitoring
- Soil monitoring

3.9.1 WASTEWATER MONITORING

Wastewater monitoring was undertaken during the reporting period in accordance with the Water Management Plan. The full results of wastewater monitoring are provided in the *Farm and Environmental Monitoring Report 2020/21* report attached as Appendix 7. A summary of results with interpretation is provided below in Table 16.

Table 16: Wastewater results interpretation summary

Chemical analyte	**Summary interpretation of results**
Biochemical Oxygen Demand (BOD)	BOD levels ranged from <2mg/L to 19mg/L with a mean of 8.4mg/L, which is classed as low strength effluent (<40mg/L) for irrigation (DEC, 2004) and below the licence limit of 40mg/L.
Total Dissolved Solids (TDS)	TDS ranged from 182mg/L to 592mg/L, all results are classed as a low strength effluent (<600mg/L) for irrigation, (DEC, 2004).
Sodium and SAR	The mean SAR of 4.1 is classed as a low strength effluent (<4.5) for irrigation, (DEC, 2004).
Nitrogen and phosphorus	The levels of total nitrogen range from below the detection limit of <2mg/L to 5mg/L. All results are below the Licence limit of 20 mg/L. The mean of 2.8mg/L is classed as a low strength effluent (<50mg/L) for irrigation, (DEC, 2004). Phosphorus levels were below the Licence limit of 5mg/L with the highest reading of 0.98mg/L. Phosphorus levels have stayed relatively steady since monitoring began in 2003. The wastewater is classed as a low strength effluent (<10mg/L) for irrigation, (DEC, 2004).
pH	The pH of the wastewater samples was around neutral with a range of 6.8 to 8.0. This spread of data is inside the suitable range of 6.0 to 8.5 for irrigation, (ANZG, 2018).
Suspended solids	The suspended solids readings ranged from <2mg/L to 26mg/L which are below the EPA Licence limit of 45mg/L.
Zinc	Low levels of zinc were found in all samples. The highest of these concentrations was 0.062mg/L. The results were under the guidelines for irrigation of 2mg/L, (ANZG, 2018).

3.9.2 GROUNDWATER MONITORING

Groundwater monitoring was undertaken during the reporting period in accordance with the Water Management Plan. The full results of groundwater monitoring are provided in the *Farm and Environmental Monitoring Report 2020/21* attached as Appendix 7.

The groundwater piezometric levels in 2020/21 mostly increased from the depths monitored in the 2019/20 period, trending generally higher levels at almost all bore sites. Historically, the groundwater piezometric levels are quite dynamic with a peak in the months October to December following recharge from winter and spring rains. Above average rainfall during the 2020/21 monitoring period saw this trend continue with some bores experiencing peak levels in February. The shallow alluvial aquifers at Gadara Park rely heavily on recharge from rainfall to maintain a constant level. The cyclic trend of groundwater piezometric levels corresponding with rainfall as explained by Coffey is apparent from the historical monitoring data (Coffey, 2003).

Background bores exhibit low levels of EC and nitrate.

The irrigation bores exhibit elevated levels of nitrate compared to the background and winter storage bores. The irrigation bores exhibit steady levels of EC typical of alluvial aquifers. The levels of EC in the irrigation bores are slightly higher than in the background bores as a historical comparison. This same comparative trend was noted by Coffey (Coffey, 2003).

Winter storage bores exhibit elevated levels of pH and EC compared to the background and irrigation bores, especially in bores 16 and 17. Levels have remained relatively stable since 2003, with some minor seasonal fluctuations consistent with the background and irrigation monitoring bores. Overall, the bores have remained relatively stable (with some seasonal fluctuations) in piezometric depth and chemical composition since monitoring commenced, pre-mill construction.

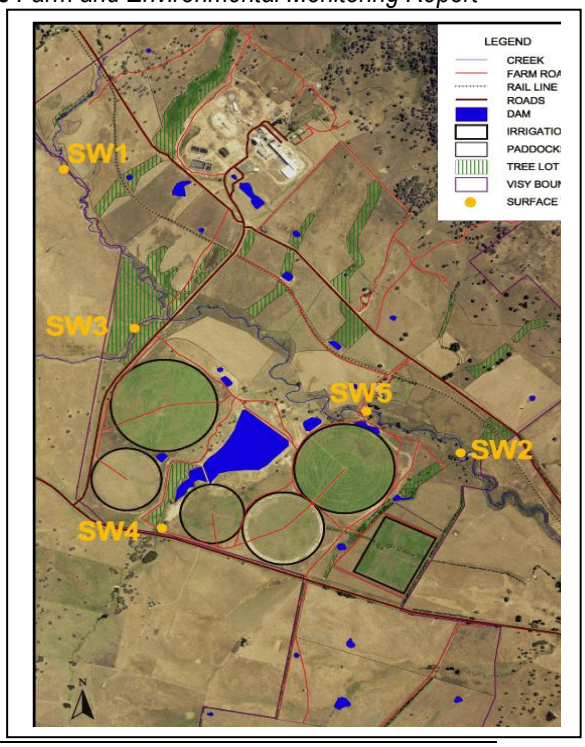
3.9.3 SURFACE WATER MONITORING

Surface water monitoring was undertaken during the reporting period in accordance with the Water Management Plan. The full results of surface water monitoring are provided in the *Farm and Environmental Monitoring Report 2020/21* attached as Appendix 7.

Monitoring locations:

The surface water monitoring sites can be observed in the following map of the Visy Mill and Gadara Park farm site are shown in Figure 7. Three of the monitoring sites are upstream (SW1, SW3 and SW4) of all mill and irrigation activities and the other two sites are downstream (SW2 and SW5).

The monitoring results from sites upstream of the mill are compared with those downstream to determine if the mill and irrigation activities are having an effect on water quality.



The following results with an interpretation summary are provided below in Table 17. All results are provided in Appendix 7.

Table 17: Summary and interpretation of surface water monitoring results

Chemical analyte	**Summary interpretation of results**
TDS	All sites exhibit low levels (<500mg/L) of TDS except for SW1 in February 2021 which had an elevated reading of 1020mg/L, SW3 in February 2021 which had a reading of 850mg/L and SW5 in February 2021 which had a reading of 961mg/L. There are no significant long-term trends developing other than seasonal peaks in summer, consistent with lower surface water flows.
EC	All sites exhibited relatively low and stable EC, with values ranging from 151µS/cm (SW1, November 2020) to 550µS/cm (SW3, May 2021).
BOD	All BOD readings met the (ANZG, 2018) criteria of 15mg/L. The highest level of BOD was 14mg/L for SW2 in December 2020.
pH	The surface water pH for all sites ranged from 7.1 to 7.9. The recommended pH range for upland streams is between 6.0 and 7.5, (ANZG, 2018). Although the surface water pH is sometimes above the upper guideline value, pH results are consistent between all upstream and downstream monitoring sites suggesting this is inherent to the locale, (ANZG, 2018). Historical data shows similar pH levels since monitoring commenced in 2003.
Faecal coliforms	All surface water monitoring sites exhibit generally low to moderate levels of faecal coliforms with a range between 40fcu/100mL (SW4, December 2020) and 27,800fcu/100mL (SW4, January 2021). The mean level of faecal coliforms across all sites for the 2020/21 monitoring period was 1920fcu/100mL per month, which was lower than the historical mean of 2000fcu/100mL.
Nitrogen and phosphorus	Nitrogen levels all ranged from below detectable levels, <2mg/L (multiple readings) to 4mg/L (SW4, February and March 2021) except for one elevated reading of 59mg/L (SW1, February 2021). Phosphorus ranged from <0.01mg/L (multiple readings) to 0.40mg/L (SW4, March 2021) and was consistent across all sites. The nitrogen and phosphorus levels are consistent with historical data.
Oil and grease	Oil and grease readings ranged from <1mg/L (multiple sites) to 10mg/L (SW1, November 2020) which is marginally higher compared to the previous year. Some higher readings have been recorded at all sites since 2003 when monitoring commenced although all sites, except SW1, have generally been below the (ANZG, 2018) recommended level of 5mg/L for the 2020/21 monitoring period. The Hexane Extractable Matter (HEM) APHA 5520 D EPA method was used to test for oil and grease. This test detects non-volatile hydrocarbons, chlorophyll, animal fats, vegetable oils, waxes, soaps, greases etc. The HEM method is not designed specifically to detect fuel or fuel oil. The results that are above detectable levels could be due to the detection of any of the above material and is likely to be from a natural source. No known fuel-related, grease-related or oil-related contaminating activities take place at or upstream of the surface water sites.

3.9.4 SOIL MONITORING

Soil monitoring was undertaken during the reporting period in accordance with the Water Management Plan. The full results of soil monitoring are provided in the *Farm and Environmental Monitoring Report 2020/21* attached as Appendix 7.

3.9.4.1. SOIL MONITORING SITES

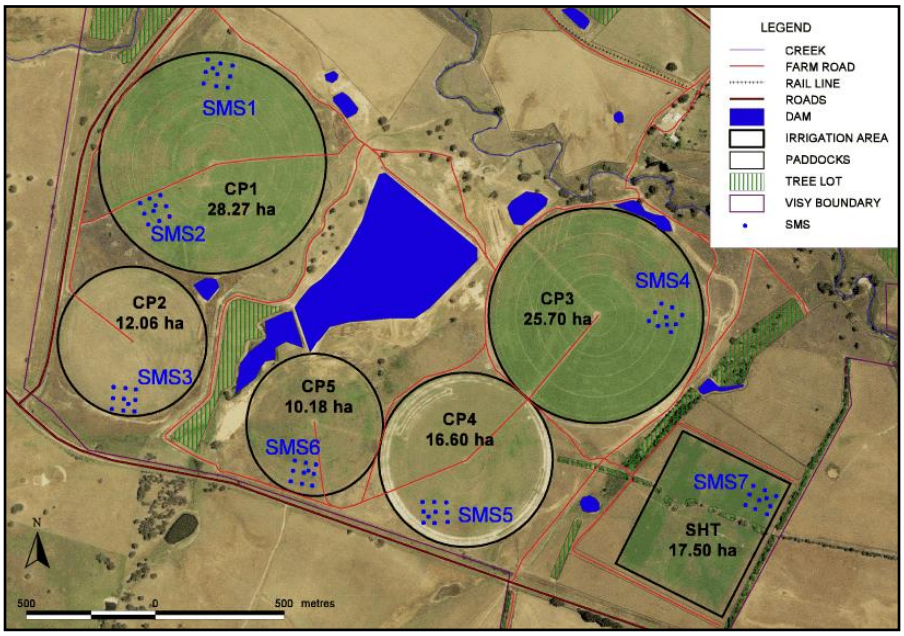
There are seven soil monitoring sites at Gadara Park, Figure 9. These seven soil monitoring sites are split into three sample regions:

- West of the Winter Storage.
- East and South of the Winter Storage; and
- South-East corner.

3.9.4.2. SOIL ANALYSIS

Topsoil sampling and analysis was undertaken in October 2020 and April 2021. Subsoil sampling and analysis was also undertaken which is part of Visy's Environment Protection Licence that stipulates it is carried out every three years. McMahon conducts subsoil testing every year to gain better understanding on the sustainable assimilation of nutrients and provide management recommendations based on the results, Attachment D.
Overall soil health appears to be good, with adequate humus levels and abundance of earthworms in the topsoil. Topsoil organic carbon levels (as an average across the 7 SMS) have risen from 2.0% in 2003 to 2.14% in April 2020 due to an introduction of perennial crops such as Lucerne into the cropping program. Over the last 15 years, macro nutrients have improved to more desirable levels due to a comprehensive fertilizer program and topsoil pH has risen with the application of soil ameliorants.

Figure 8: Soil monitoring sites within irrigation area, Centre pivots and Soft hose traveler, at Gadara Park



SOIL QUALITY RESULTS - OCTOBER 2020

Topsoil (0-10cm) analysis was undertaken in October 2020 to coincide with the start of the spring/summer irrigation season. Fertilizer recommendations for the crops were made based on the nutrient budget. The results are summarized below in Table 18.

Table 18: Summary interpretation of soil monitoring results for October 2020

Chemical analyte	Summary interpretation of results
pH	Soil pH is at a desirable level for all of the sampling points except SMS2 (5.0 pH (CaCl2)) and SMS7 (5.1 pH (CaCl2)). Typically, the application of alkaline soil ameliorants has been highly successful with an improvement in topsoil pH to within the desirable range of 5.5 to 7(CaCl2), (NSW Agriculture, 1998). A neutral soil pH will improve nutrient and water availability for plants.
Cations	Calcium and magnesium ratios are typical for soils of the local area. Potassium % levels range from 1.8 to 7.2 with the higher percentages among SMS 1, 2, 4 and 6 although considered typical for soils of the local area. Sodium levels average 1.2% which is at a suitable level (NSW Agriculture, 1998).
Aggregate stability	Emerson Aggregate Tests were performed by reference to AS1289.3.8.1 and all soils were categorized as class number 7. A class 7 soil will not undergo mechanical slaking but will swell when immersed in water.
Organic carbon	Organic carbon levels are averaging 2.23%, this is desirable and is similar to the 2019/20 monitoring period.
Salinity	Salinity indicators were very low indicating nil short-term salinity risk. Sodium as a percentage of cations is also low ranging from 0.45% to 2.3%. Excessive sodium can cause the soil structure to deteriorate.
Chloride	Chloride levels in October were low with all readings below the detectable limit of 10ppm, which is below the 2019/20 monitoring period levels.
Nitrogen	Nitrogen and nitrate levels are generally satisfactory for agricultural production and can be improved by the addition of fertilizer if required.
Phosphorus	Phosphorus levels are generally satisfactory for agricultural production and can be improved by the addition of fertilizer if required.

3.10 FARM MANAGEMENT

The property known as Gadara Park is run as an operating farm by Pratt Pastoral with a total land area of approximately 2,124 hectares. Gadara Park is an established cattle and sheep enterprise focused on prime beef and lamb production. In July 2016 Pratt Pastoral commenced a grazing rights agreement with JR Farming and Management Solutions, who presently runs both cattle and sheep. Pratt Pastoral sees to the overall management of the farming property, ensuring that the property is maintained in accordance with the Native Vegetation Plan.

3.10.1. PASTURE IMPROVEMENT

As an ongoing pasture improvement program, paddocks are developed and renovated on a rotational basis every 5 to 10 years. Perennial pasture species are introduced to suitable paddocks to maximize production over the summer months. In some paddocks where weed burden is high, annual crops are grown for two to three years to prepare them for a wider range of crop and perennial pasture options.

The pasture improvement includes many management facets that are integral to the successful development program. They include:

* Soil testing and analysis.
* Regular paddock inspections.
* Weed monitoring and control programs.
* Insect monitoring and control programs.
* A pasture variety rotation assessment.
* Seasonal assessment and outlook considerations; and
* Budgetary assessment.

3.10.2. NATIVE VEGETATION MANAGEMENT

In total Gadara Park currently has 73 hectares of planted native tree lots in riparian zones and along drainage lines. The tree lots have been established and maintained over the last 14 years as part of a riparian/drainage line stabilization and habitat improvement program that links the creek flats to the timbered hills.

The areas of tree plantings can be seen in Figure 9.

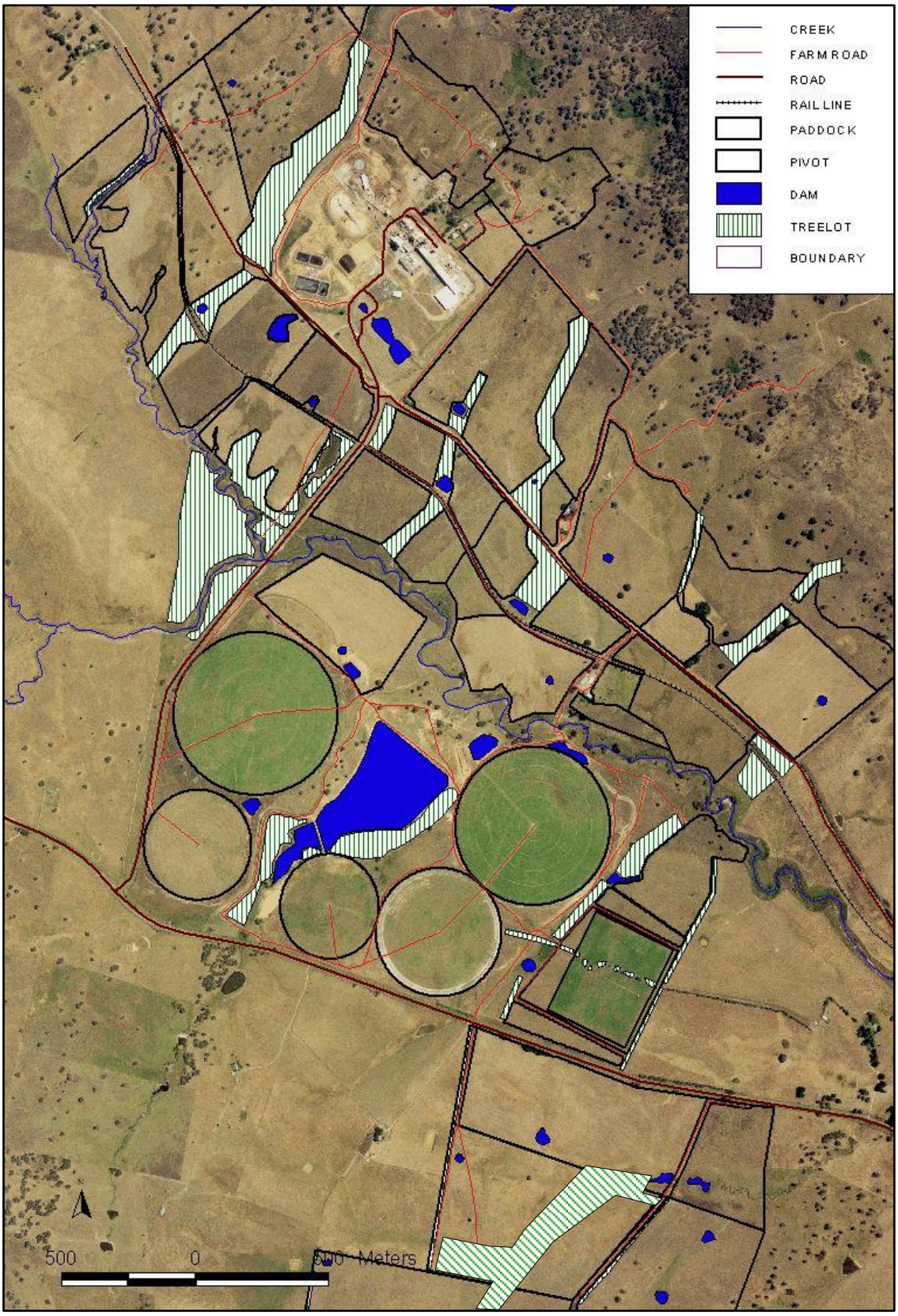


Figure 9: Tree planting areas on Gadara Park

3.10.3. WEED MANAGEMENT

The Weed Management Plan for Gadara Park was completed and approved as part of the Landscape and Native Vegetation Management Plan in the Operational Environmental Management Plan (OEMP). Two further properties were acquired in 2007 and 2008, "Havilah" and "Woomera" respectively. Weed management has also been undertaken on these properties as discussed for Gadara Park below. A range of weed control methods are employed as part of the land management on land owned by the company including spraying, insect control and "crash grazing" on the centre pivots where the sheep flock or cattle are put on in larger numbers and left for 2 to 3 weeks. This means that the pasture and weeds are grazed, the pasture recovers and continues to grow but the weed growth is checked.

Comments and observations for 2020/21 are as follows:

• Bathurst Burr has been controlled to a point with ongoing inspection and edification of any new germination. This is a summer weed and required some spraying and chipping for control this year.

• Bracken Fern - an ongoing reduction program exists, and the fern is mainly occurring in the more inaccessible areas.

• Blackberry – ongoing maintenance program of spraying and treatment of any re-infestations continues.

• Paterson's curse is subject to ongoing management. Visy began working with the CSIRO and the Department of Primary Industries (DPI) on a biological control program using four types of insect for the control of Paterson's curse, in 2007 initially within the vegetation corridors, where spraying was unable to be undertaken. The insects however have now spread throughout the property and results have been outstanding. The DPI conducted an Open Day in September 2008 to monitor insect numbers and results and discuss with other landholders the use of these insects, which attracted over 40 people. Overall, the insect control has been very successful. Some spraying has been undertaken on thicker areas away from the tree lines.

• Cape Weed - a pasture weed that has been subject to an ongoing spraying program with a good kill rate.

• Saffron Thistle - a spraying program was undertaken for this weed later in the season. It is a difficult weed to control, occurring on the lower slopes with a late germination period.

The requirements of the Weed Management Plan will continue to be implemented.

3.10.4. FERAL ANIMAL MANAGEMENT

At Gadara Park there are three main feral animals controlled being: rabbits; foxes; and pigs. Each animal is assessed on a routine basis and baiting, trapping or shooting programs are implemented accordingly. Baiting of foxes using 1080 can be implemented on an individual farm or regional basis which is run by the Livestock Health and Pest Authorities. Rabbits are controlled by shooting, baiting, using 1080 and harbor destruction. Wild pigs are sometimes present at Gadara Park and are controlled by shooting and trapping.