



2021 ANNUAL WASTE MANAGEMENT REPORT

HYDRO ALUMINIUM KURRI KURRI SMELTER

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2021 SPL Recycling Status

[Note: The purpose of this section of the report is to comply with EPL No. 1548 Condition E2.3 and EHC Act Licence No. 5 Condition 10]

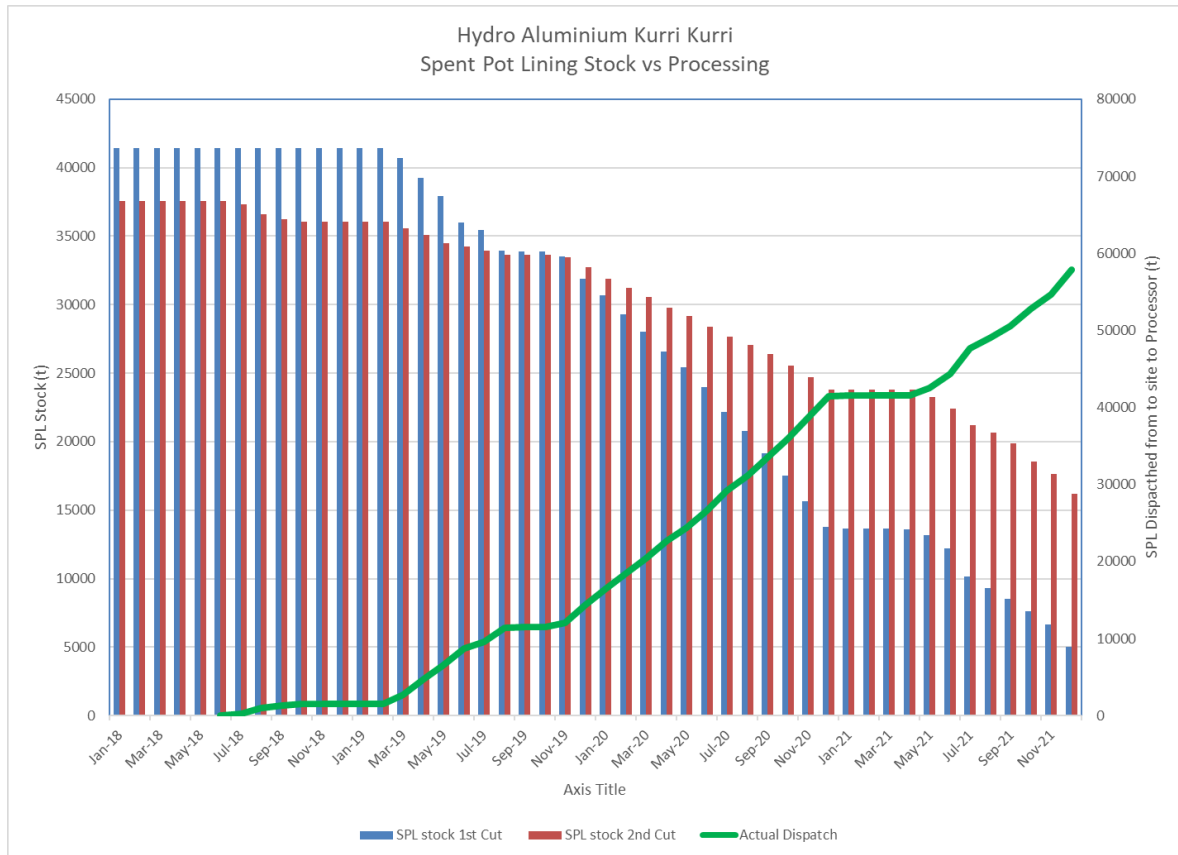


Figure 1: SPL Recycling status

At the beginning of 2021, the SPL stock at Hydro totalled 37575t. During 2020, 16416t have been dispatched off site for processing, resulting in a final stock level at the end of 2021 of 21159t.

Regain Services Pty Ltd

REGAIN SITE, LOCATED WITHIN THE TOMAGO ALUMINIUM SITE
576-638 Tomago Road, TOMAGO, NSW, 2322

EPL No. 13269

Hydro has dispatched 16419t of spent pot lining to Regain during 2021. Based on continued satisfactory performance by Regain will continue to receive, process spent pot lining under contract with Hydro.

Other Hazardous / Restricted Wastes

During 2021, in addition to the storage and movement of spent pot lining off site for processing (covered in the previous section of this report), the predominant activities on the Hydro Aluminium Kurri Kurri site were associated with the ongoing demolition and remediation works.

These demolition and remediation activities have produced several wastes streams including wastes which are classified as hazardous or restricted, as well as general solid wastes, recyclable metals and concrete / refractory material suitable for reuse on site.

The following table describes in more detail, the amount and fate of the hazardous and restricted wastes managed during 2022.



Waste Material	Definition	Sourced From	Receiver	Approximate Amount
AFFF Lightwater	Three sealed containers of AFFF Lightwater containing PFAS	Two fire cabinets in the eastern side and central part of the Main Yard	Cleanaway in Kooragang Island, NSW	3x 20L containers
Other hazardous wastes: pitch, silica gel and asbestos-impacted coal tar bitumen	Pitch and silica gel: used in electrical equipment Asbestos-impacted coal tar bitumen: used as corrosion protection adhesive on subsurface sections of steel hydrant pipe	Pitch: Electrical cabinets in Switchrooms 38A/B and 38C, Silica gel: electrical infrastructure in the Main Yard, asbestos-impacted coal tar bitumen: corrosion protection adhesive on sections of hydrant pipe	Cleanaway in Kooragang Island, NSW	14 tonnes
NICAD and Lead Acid Batteries	Batteries that were within Switchrooms 38A/B and 38C	Switchroom 38A, Switchroom 38C	Ecocycle	2.414 tonnes
Asbestos waste	Materials impacted with bonded asbestos, including concrete and water hydrant pipe segments from which corrosion protection adhesive was removed	Footings, water hydrant pipe	Suez Raymond Terrace Resource Recovery Park, NSW Bingo Waste Services, Eastern Creek, NSW	228.82 tonnes
Transformer Oil (PCB-impacted and non-PCB)	Transformer oil drained from transformers, switches, capacitors and resistors	Majority of electrical equipment in the Switchyard	Coopers Environmental Waste Recycling in Sydney, NSW	84,075 Litres
Oily Water	Waste generated from the clean out of the oil/ water interceptor pit and from the removal of oil-impacted stormwater, classified as Liquid Waste under NSW EPA (2014) Waste Classification Guidelines, Part 1 Classifying Waste	Oil/ water interceptor pit, Unexpected Find No. 1 Odorous Soil Excavation	Cleanaway in Kooragang Island, NSW	36,720 Litres
PCB contaminated soil	Surface soils contaminated with PCBs that were remediated from test pits TP22 and TP23, which classified as General Solid Waste	Test Pits TP22 and TP23	Suez Raymond Terrace Resource Recovery Park, NSW	123.24 tonnes
PCB-impacted items	Transformers, switches, circuit breakers containing PCB-impacted oils from the Switchyard	Main Yard	Coopers Environmental Waste Recycling in Sydney NSW	134 items
Stained concrete	Stained concrete associated with leaking transformer oil, which classified as Restricted Solid Waste	Main Transformers TM1 to TM4, C1, CT1, CT2, Substation 29A, Substation 38C	Suez Kemps Creek Resource Recovery Park, NSW	150.8 tonnes
Stained Ballast and Soil	Stained ballast and soil excavated from areas where transformer oil had leaked, which classified as General Solid Waste	C1, CT1, CT2, Substation 29A, Substation 38C	Suez Raymond Terrace Resource Recovery Park, NSW	Approximately 70.4 tonnes
Black slag	Black slag used as bedding sand beneath Pot Line 3 foundations and beneath the stormwater line extending east/ west across the Switchyard Site, which classified as Hazardous Waste	Pot Line 3 footings, service trench associated with the stormwater line draining stormwater to oil/ water separator, oil/ water separator	Resource Co, South Australia	1060.90 tonnes

Commercial-in-confidence

Asbestos containing material from House Demolition

Hydro owns a number of residential houses within its buffer zone and as part of the current activities, Hydro has been demolishing older, poorer quality dwellings. In 2021, two (2) of these old houses were demolished which contained asbestos containing building materials.

This demolition was carried out by RTC Services (Asbestos removal licence no. 212833) who removed and disposed a total of 4.9 tonnes of material at the Suez Recycling & Recovery facility at Raymond Terrace (NSW EPL 7628).

Capped Waste Stockpile

At the time writing this report Hydro has recently been granted approval, via a State Significant Development application (No. 6666), to excavate the contents of the capped waste stockpile, and place in to a new purpose-built containment cell, along with other non-recyclable process and demolition waste and contaminated soils. These activities will commence in 2021 and will be regulated under the conditions of consent for the SSD as well as the current EPL (1548).

Gas Monitoring

In expectation of the approval of the SSD application no gas monitoring was completed during 2021.

Ground Water Monitoring

Results in Tables 2 and 3 shows that the near surface contaminated ground water remains similar to previous years, and that deeper ground water remains uncontaminated with natural slightly acidic properties. Further details are contained within the 2021 Groundwater Report prepared by Ramboll.

Table 2: Near Surface Ground Water Quality from around the Hydro Aluminium Kurri Kurri Smelter for 2021

Borehole ID	Month	Depth to Water Level (metres)	pH	Fluoride (mg/L)	Total Cyanide (mg/L)	TSS (mg/L)	TDS (mg/L)
E3 20 metres east	MAR	1.7	9.4	790	49	10.1	5400
	JUN	1.6	9.7	600	6.4	5.2	3600
	SEP	1.6	9.5	650	40	21	6600
	DEC	1.2	9.5	23	15	32	5900
E4 50 metres east	MAR	1.5	9.6	690	46	80	17000
	JUN	1.4	10.0	1400	32	12	15000
	SEP	1.8	9.7	730	150	31	19000
	DEC	0.5	9.7	26	100	44	5700
E5 0 metres east	MAR	dry	dry	dry	dry	dry	dry
	JUN	dry	dry	dry	dry	dry	dry
	SEP	2.1	9.1	290	0.01	360	11000
	DEC	1.2	8.7	770	78	350	13000
E6 0 metres east	MAR	1.2	8.2	1.2	0.01	7.8	5600
	JUN	1.2	8.3	<0.5	0.09	6.4	4700
	SEP	1.6	8.2	<0.5	<0.005	14	5800
	DEC	1.2	8.4	<0.5	0.013	8.3	5100
E7 80 metres east	MAR	1.4	8.0	21	1.3	80	15000
	JUN	0.9	8.9	43	0.3	270	3000
	SEP	2.1	8.8	47	0.9	740	4700
	DEC	0.8	7.9	120	0.2	290	2600
E8 50 metres east	MAR	1.5	9.1	140	54	70	1600
	JUN	1.2	9.4	270	7.7	2.6	1500
	SEP	1.1	9.3	280	34	900	7700
	DEC	0.9	8.7	470	30	32	8200
E9 40 metres east	MAR	1.4	8.6	190	16	90	3000
	JUN	1.3	8.5	100	0.7	53	2400
	SEP	1.8	8.7	99	1.8	35	2700
	DEC	1.3	8.3	550	3.4	21	2700
E10 130 metres east	MAR	4.2	7.8	8.1	0.24	90	1700
	JUN	4.2	7.6	0.7	1.0	2.6	1500
	SEP	4.2	8.5	0.8	0.55	11	1600
	DEC	4.1	7.8	0.8	0.35	7.2	1500
E11 60 metres east	MAR	2.4	8.6	90	2.4	210	6600
	JUN	2.2	9.1	34	0.7	400	2600
	SEP	2.1	8.7	42	1.4	910	3200
	DEC	1.6	7.6	4.9	0.05	270	1200
F8 220 metres southeast	MAR	1.2	6.7	21	0.006	30	300
	JUN	1.2	6.8	10	<.005	17	220
	SEP	0.9	6.6	24	0.006	15	270
	DEC	0.3	6.8	6.1	0.011	8	210
F13 10 metres south	MAR	1.6	6.7	6.9	0.02	110	230
	JUN	1.4	7.6	7.3	<.005	170	200
	SEP	1.0	7.6	4.4	0.013	9.4	290
	DEC	0.7	7.1	4.4	0.007	19	290
		*TSS (Total Suspended Solids)					
		*TDS (Total Dissolved Solids)					

Table 3: Deep Ground Water Quality near the Hydro Aluminium Kurri Kurri Smelter for 2021

Borehole ID	Month	Depth to Water Level (metres)	pH	Fluoride (mg/L)	Total Cyanide (mg/L)	TSS (mg/L)	TDS (mg/L)
F2 190 metres east	MAR	4.8	5.0	0.9	0.010	90	6700
	JUN	4.6	4.7	<0.5	<.005	210	6600
	SEP	4.5	4.6	<0.5	0.16	17	6000
	DEC	4.5	5.0	<0.5	0.018	21	6500
F9 30 metres southeast	MAR	7.4	6.6	0.8	0.011	10	1400
	JUN	7.3	6.9	<0.5	<0.005	17	1300
	SEP	7.3	7.0	<0.5	0.01	2.4	1400
	DEC	7.2	7.8	<0.5	<0.005	<5	1400
F12 80 metres east	MAR	dry	dry	dry	dry	dry	dry
	JUN	dry	dry	dry	dry	dry	dry
	SEP	dry	dry	dry	dry	dry	dry
	DEC	dry	dry	dry	dry	dry	dry
G1 80 metres east	MAR	7.1	7.1	1.4	0.015	75	3100
	JUN	7.2	7.2	<0.5	0.06	21	3100
	SEP	7.0	7.2	0.5	0.017	13	3200
	DEC	6.8	8.4	<0.5	0.012	10	2900
G2 90 metres east	MAR	7.5	7.7	0.6	0.005	65	3200
	JUN	dry	dry	dry	dry	dry	dry
	SEP	dry	dry	dry	dry	dry	dry
	DEC	dry	dry	dry	dry	dry	dry
G5 420 metres east	MAR	2.8	7.5	1.3	0.005	90	1900
	JUN	2.8	8.0	1.0	<.005	15	1900
	SEP	2.4	7.7	1.0	0.011	7.8	2300
	DEC	2.1	7.2	<0.5	<0.005	39	3200
G6 380 metres east	MAR	4.6	4.7	0.9	0.021	290	4100
	JUN	4.3	5.9	<0.5	<.005	20	4100
	SEP	4.1	3.5	0.5	0.010	12	4300
	DEC	3.9	4.8	0.8	<0.005	76	4400
G7 320 metres east	MAR	6.9	5.7	2.9	<0.005	180	7100
	JUN	7.0	6.5	1.3	<.005	90	8100
	SEP	6.7	6.3	<0.5	0.025	62	9600
	DEC	6.5	6.6	<0.5	<0.005	120	8800
G8 220 metres southeast	MAR	6.6	7.1	0.9	0.012	80	550
	JUN	6.7	6.9	<0.5	<.005	69	8900
	SEP	6.5	6.6	<0.5	0.009	14	560
	DEC	6.4	6.9	<0.5	0.021	74	600
G9 30 metres southeast	MAR	dry	dry	dry	dry	dry	dry
	JUN	dry	dry	dry	dry	dry	dry
	SEP	dry	dry	dry	dry	dry	dry
	DEC	dry	dry	dry	dry	dry	dry
G10 10 metres south	MAR	n/a	n/a	n/a	n/a	n/a	n/a
	JUN	n/a	n/a	n/a	n/a	n/a	n/a
	SEP	n/a	n/a	n/a	n/a	n/a	n/a
	DEC	n/a	n/a	n/a	n/a	n/a	n/a
ANZECC Water Quality Criteria:							
		Irrigation	4.5 - 9.0	1.0			
		Livestock	-	2.0			
		Aquatic Ecosystems	6.5 - 9.0	-			
		* TSS (Total Suspended Solids)					
		* TDS (Total Dissolved Solids)					



Shallow Groundwater Wells

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