

Department of Health

Industrial Lead Emissions (ILE) Taskforce Meeting
DoH notes



Date: Friday, 20 June 2025

Time: 10:00 – 11:00am

Agenda No:	Agenda Item:	Notes from Meeting	Actions from Meeting
1	Introduction		
	Attendance and Apologies	<p>Present: EPA: Catherine Murdoch (Chair), Kate Duttmer, Cindy Ong DoH: George Clarke (Exec Lead); Dr Mark Veitch (Medical Lead); Hannah Matthews (observer) DPAC: Matt Healey WorkSafe Tasmania: Brad Parker DSG: Tim Davies</p> <p>Apologies: Shane Gregory (DPAC) Jenna Cairney (DSG)</p>	
2	Situation Update		
2.1	Current situation	<p>EPA:</p> <ul style="list-style-type: none"> • No environmental permits or regulations have been breached. • No environmental assets in exposure areas that need review. • Require guidance to inform monitoring program to identify exposure pathways for environmental and human health risk assessments. <p>DoH:</p> <ul style="list-style-type: none"> • Overdue reassessment of circumstances of major industrial sites for emissions. • Process is for assessment of adequacy of monitoring; ensuring methods and standards are fit-for-purpose. • Lots of unknowns with emissions – especially how much and where. • Lot of work been undertaken but not systematic. Need systematic sampling and data collection to inform reassessment. 	

3	Governance		
	Heads of Agency Taskforce	<ul style="list-style-type: none"> • Strategic oversight of Multi-Agency Working Group (MAWG) • Coordination and lead Ministerial and high-level stakeholder briefings. • Approve MAWG action plans; public communications strategy. • Mobilise resources to assist implementation of action plans. 	
	Multi-Agency Working Group (MAWG)	<ul style="list-style-type: none"> • Operational matters including development and implementation of the Action Plan. • Development of public communications strategy. 	
	Agency roles	<ul style="list-style-type: none"> • EPA: lead for testing, environmental monitoring and associated comms. • DoH: lead for immediate human health advice, and further/ongoing advice as required. George Clarke, Executive Lead on behalf of Secretary; Dr Mark Veitch, clinical lead. • WST: lead for workplace risks. • DSG: engagement and business support if issue presents greater impact on operations. • DPAC: Ministerial/Government liaison, advice and resource support. 	
4	Key issues		
	Communications resourcing	<ul style="list-style-type: none"> • EPA and DoH-PHS have limited resourcing to support communications. • DPAC can provide comms support (not to moderate messaging but support). 	
	Agency resourcing for environmental sampling and human health risk assessment	<ul style="list-style-type: none"> • Likely to be more complex than Rocherlea. • Consultant to be engaged to support initial assessment and sampling to inform human health risk assessment; and determine ongoing monitoring/assessment requirements. • From Rocherlea: minimal consultant options available – EPA responsibility to put forward request to seek direct selection outside of Procurement TI. • EPA to share Rocherlea consultant scoping letter with DoH to modify for this matter. 	
	Sequence of briefings	<p>WST – business engagement:</p> <ul style="list-style-type: none"> • Regularly in contact with business/site. • Intend to act quickly to determine source and ensure adequate controls in place to protect workers, contractors and site visitors. • Consideration of other business onsite at Lutana. <p>DPAC – Premier/Ministerial briefings:</p>	

		<ul style="list-style-type: none"> Confirmation with Premiers Office re interest. Government will need to be briefed so as to ensure not blindsided. Priority: written briefings and holding lines ready to go by Monday. Need to demonstrate appropriate response based on results but not alarm (communicate openly and objectively but not alarming). <p>EPA – business engagement:</p> <ul style="list-style-type: none"> Nyrstar Lead Management Plan has been submitted – provides opportunity to commence discussions, highlight additional information due to sampling results and notification of WST. <p>MAWG: Next meeting Tuesday, 24 June at 10:00am.</p> <ul style="list-style-type: none"> Ascertain scope of external work required. Determine additional resources required Review draft communications (& associated strategy) for Taskforce clearance. 	
6	Key Actions/Next Steps		
	Tuesday 24 June 2025	<ul style="list-style-type: none"> Draft Communications material: key messages from EPA & DoH DPAC convene joint briefing to Ministers (EPA lead) MAWG 10:00am 	EPA to invite DPAC to MAWG. EPA & DoH to commence work on key messages and briefings.
	Wednesday 25 June 2025	<ul style="list-style-type: none"> EPA meet with Nyrstar re Lead Management Plan; WST meet with Nyrstar post-EPA. 	
	Future meetings	Taskforce to meet until Action Plan finalised and implementation commenced. Convene: prior to Tuesday briefings; plus check-point later in week.	EPA convene meetings – same group.
7	Next meeting	Thursday, 26 June 2025 – to be determined by EPA.	

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Industrial Lead Emissions (ILE) Taskforce Meeting Notes & Actions

Date: Thursday, 3 July 2025
Time: 08.30am – 09.30am

Agenda No:	Agenda Item:	Notes from Meeting	Actions from Meeting
1	Introduction		
	Attendance and Apologies	<p>Present: EPA: Catherine Murdoch (Chair), Kate Duttmer, Cindy Ong DoH: George Clarke (Exec Lead); Dr Mark Veitch (Medical Lead); Hannah Matthews (observer) DPAC: Shane Gregory WorkSafe Tasmania: Brad Parker DSG: Jenna Cairney, Tim Davies</p> <p>Apologies: Matthew Healy (DPAC)</p>	
2	Agenda		
	Briefings	<p>EPA:</p> <ul style="list-style-type: none"> • Joint briefings have been completed for the Minister of Health and the Minister of Environment. • Briefing paper will be circulated to the Taskforce. • Nyrstar has been briefed and MMG is being briefed today on the preliminary sampling results. • Nyrstar expressed interest in involvement in the taskforce and or working group. It was agreed by taskforce members to involve companies at meetings with a structured agenda approach and proactive communication. <p>WST:</p> <ul style="list-style-type: none"> • WorkSafe has complete one site inspection (Nyrstar) and (MMG) to be completed early next week. • Blood monitoring results across the site have been requested to ensure their program of monitoring is sufficient. 	

	Additional Environmental Monitoring	<ul style="list-style-type: none"> Results of the swabs data conducted on the 20th of June have been returned to EPA. The recent sampling indicates that dust is being deposited in new areas. Dr M Veitch outlined that the results are inconclusive, and no result received would have triggered an investigation. It was agreed that no further testing should occur prior to the consultants being engaged and that all future testing should be completed in accordance with the systematic sampling design. The Limited tender approach developed for the EPA for environmental and human health risk advisory and assessment services was supported and will be sent to relevant consultants today. It is anticipated that work of data investigation and sample design will commence in August. 	
	Action Plan	<ul style="list-style-type: none"> The action plan was circulated to the taskforce for approval. The taskforce requested until COB 4 July to complete final comments. It was raised that this initial plan will be a phase 1 edition and when the contractor has been obtained, a more detailed plan and timeline will be provided. The MAWG will need to create a new plan for phase 2. 	
	Communications Plan	<ul style="list-style-type: none"> The resources to support the development of a communications plan was raised as a gap. DPAC committed to providing a resource and Shane Gregory will discuss with the comms team this week. DoH have been working on an outline of a comms plan, practical advice for the public with basic messaging and contextual messaging and FAQ draft. Health will be ready to share this information early next week. 	
3	Key Actions/Next Steps		
	Thursday 3 July 2025	<ul style="list-style-type: none"> EPA to meet with MMG Limited Tender Documentation to be finalised 	
	Monday 7 July 2025	<ul style="list-style-type: none"> Draft Action Plan to be signed off and sent to MWAG 	
	Wednesday 9 July 2025	<ul style="list-style-type: none"> WST meet with MMG post-EPA 	
4	Next meeting	Thursday, 17 July 2025 9.00am – 10.00am	

EPA Sampling and Data Review for Metals in Dust Emissions from Nyrstar Hobart, and MMG Rosebery

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ENVIRONMENT PROTECTION AUTHORITY

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Executive Summary

Emissions of lead to air from the Hobart zinc smelter and from mining operations in Rosebery have been reviewed following studies of lead in dust originating from a metal recycling facility in Rocherlea, Launceston, completed in 2024.

The National Pollution Inventory (NPI) database contains self-reported emission data for Australia. The two largest emitters of lead to air in Tasmania are the Hobart zinc smelter and the multi-metal mine at Rosebery. For the Hobart smelter, the typical annual emissions of lead to air are reported at near 600 to 700 kg. For the Rosebery mine, annual emissions of lead are reported at near 500 kg.

The metal recycling facility at Rocherlea does not report to the NPI, but analysis of data collected at Rocherlea enabled an estimate to be made of a lower limit to the annual mass of lead emitted to air as dust from that site as being approximately 3.6 kg.

The greater mass of lead emitted annually from the Hobart smelter and the Rosebery mine compared to the metal recycler at Rocherlea was the immediate driver for the review.

Lutana and Eastern Shore Sampling

Limited sampling by the EPA in December 2024, May 2025, and June 2025 was undertaken to search for the presence of lead (and other metals) in surface dust across Lutana and the Eastern Shore. The December 2024 sampling identified that lead, cadmium, and zinc were present on surfaces at easily detectable levels. The May and June 2025 sampling was undertaken to check the December findings and to extend the spatial area.

In general, lead levels decreased as distance from the smelter increased, consistent with the prevailing downriver winds and the river valley topography. A similar spatial pattern was seen for cadmium in the surface dust swabs.

The limited sampling showed that that metal dust deposition had occurred on surfaces in Lutana and the Lindisfarne area between the December 2024 and mid-2025 sampling.

Rosebery mine data review

At Rosebery, the mine operator runs an extensive air monitoring network that includes a Dust Deposition Gauge (DDG) network at eleven sites at the mine and around the township. The DDG samples are analysed for total dust-fallout rates and metal content.

Rosebery DDG data from late 2019 to late 2024 for lead, cadmium and zinc were reviewed. For lead, the site averages for the 2019 to 2024 range from 2,600 $\mu\text{g}/\text{m}^2/\text{month}$ to 93,000 $\mu\text{g}/\text{m}^2/\text{month}$. The greatest values are at DDG stations on the mine property. At the four DDGs in residential areas the mean monthly 2019–2024 lead deposition rates range from 2600 $\mu\text{g}/\text{m}^2/\text{month}$ to 10700 $\mu\text{g}/\text{m}^2/\text{month}$.

Note that while verifying the DDG data supplied by MMG in June 2025, it was discovered the results from 2019-2024 may be compromised due to samples being contaminated. Therefore, the monthly lead deposition results presented in this report should not be relied upon as accurate.

1. Background

During 2023-2024, the EPA and the Tasmanian Department of Health considered potential for dust containing lead and other metals to be blown offsite from a metal recycling plant in Rocherlea, Launceston. The EPA commissioned a Human Health Risk Assessment focussed on the surrounding community.

Further information, including a summary report on this work, is available at <https://epa.tas.gov.au/news/rocherlea-industrial-area-lead-exposure-event-frequently-asked-questions>

2. Nyrstar

2.1. Estimated annual lead emission to air from the NPI

Nyrstar annual lead emissions are reported in the National Pollution Inventory (NPI)¹. Recently, the lead emissions to air from Nyrstar have been around 600 kg to 700 kg per annum, with around 70% of these being fugitive emissions, and the remainder being stack emissions. Annual emissions reported to the NPI by industrial facilities are estimates using established methodologies and algorithms based on quantities such as annual production rates for stack emissions, and volumes of material handled for fugitive emissions.

For context, in the 2023–2024 NPI reported data, Nyrstar Hobart is Australia's 47th largest lead-to-air emitter with 620 kg. Twenty-eight facilities are listed with annual emissions greater than 1000 kg of lead-to-air. The top five emitters are listed as Mt Isa Mines (Qld) at 150,000 kg, Abra Base Metals (WA) at 71,000 kg, Nyrstar Port Pirie (SA) at 46,500 kg, MacArthur River (NT) at 23,600 kg, and Perilya Broken Hill (NSW) at 23,000 kg.

2.2. Surface-dust swabs, Lutana and Eastern Shore, Hobart: December 2024

Swabs of surface dust were collected from publicly accessible infrastructure (e.g. electrical boxes, rubbish bin covers in public reserves) to gather information on dust deposition in Lutana and the Eastern Shore suburbs of Lindisfarne and Rose Bay. The dust build-up on these surfaces is likely to be a sum of deposition minus the losses due to rainfall and wind. It cannot be used to derive a deposition rate as the exposure duration is not known, but it does provide an indication of whether metal dust-deposition is occurring.

A total of 20 swabs were collected in Lutana, Selfs Point, Lindisfarne and Rose Bay on 19 December 2024. At two locations in Lutana, duplicate swabs were taken of the same surface, so that 18 distinct locations were swabbed. A 'field blank' was created by handling a cotton pad in the same way as for the other cases, but this pad was not applied to a surface. It was exposed to the air for approximately 2 minutes in Rose Bay, then sealed in a zip lock bag.

Figure 1 shows the locations of the swabs.

¹ <https://www.npi.gov.au/npidata/action/load/individual-facility-detail/criteria/state/TAS/year/2024/jurisdiction-facility/TAS+I20>

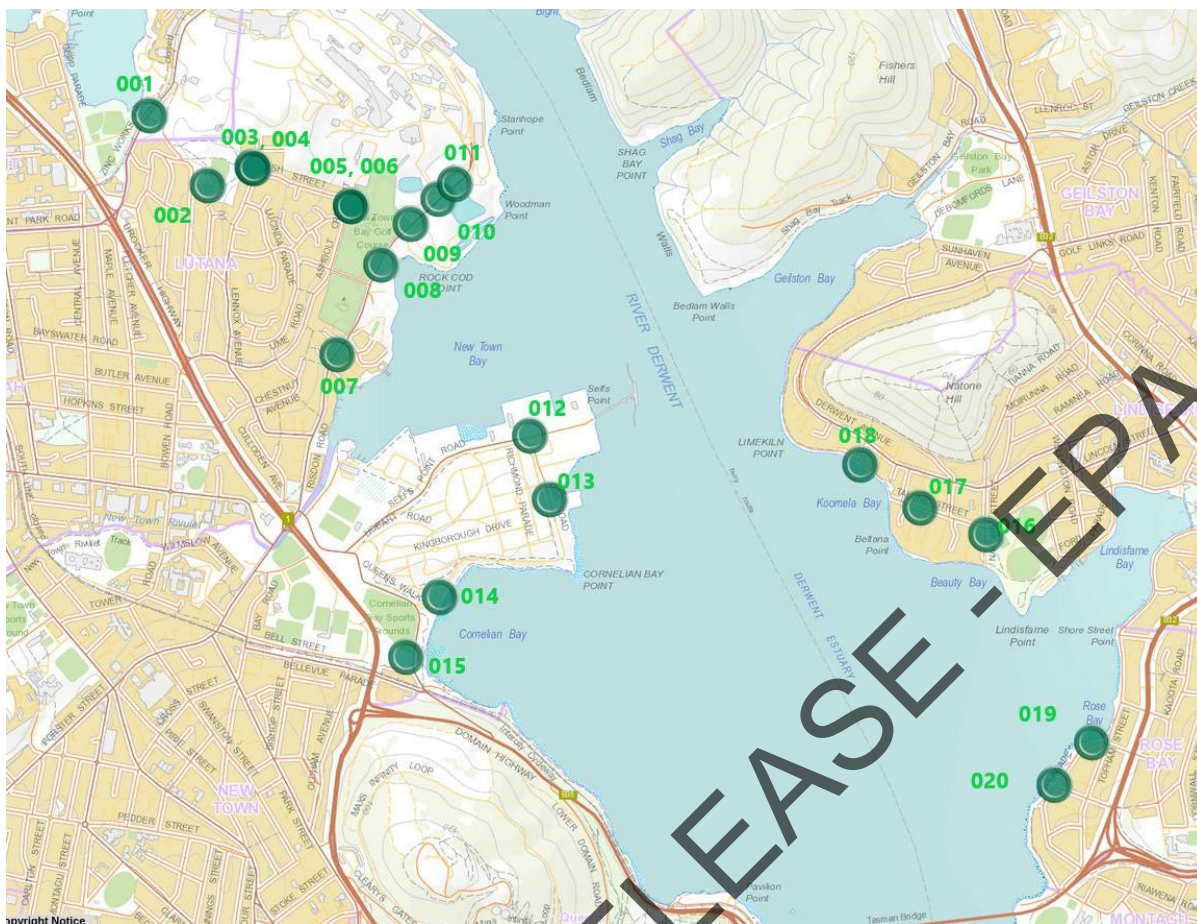


Figure 1 Locations of surface swabs 19 December 2024

2.2.1. Areal-concentrations of lead from the cotton swabs

The area swabbed was measured and recorded. Together with the mass of lead determined from the swab by laboratory analysis, a mass-per-area of lead of the swabbed surface can be derived. Table 1 gives the results of the lead mass-per-area concentrations for the 19 December 2024 sampling. The lead areal concentrations are shown in a spatial representation in Figure 2. There was no detectable lead on the field blank.



Figure 2 Lead areal-concentrations ($\mu\text{g}/\text{m}^2$) from surface swabs on 19 December 2024

Table 1 Areal-concentration of lead from 19 December 2024 cotton pad swabs

Filter	Site Name	w mm	l mm	area m^2	Pb μg	Pb conc. $\mu\text{g}/\text{m}^2$
MLE-001	Elec Box 'Cleanaway' Derwent Park Rd	102	100	0.0102	114	11176
MLE-002	Frame of sign - Lutana Woodlands Res.	1200	55	0.0660	5	76
MLE-003	415 V Transf. Lennox Av near Ash St	180	100	0.0180	11	611
MLE-004	415 V Transf. Lennox Av near Ash St (duplicate sample of MLE-003)	160	100	0.0160	23	1438
MLE-005	Green post box Ashbolt Cres near Ash St (back left corner)	110	180	0.0198	52	2626
MLE-006	Green post box Ashbolt Cres near Ash St (front right edge - duplicate of MLE-005)	185	70	0.0130	153	11769
MLE-007	Elec Box 169 Risdon Rd	250	70	0.0175	27	1543
MLE-008	Elec Box Risdon Rd (opposite golf course club rooms)	180	140	0.0253	93	3676
MLE-009	2 Plastic caps power pole #56 Risdon Rd (boundary golf course and Nyrstar)	2x90	diam	0.0127	175	13780
MLE-010	2 Plastic caps power pole #60 Risdon Rd (BOC entrance)	2x90	diam	0.0127	148	11654
MLE-011	2 Plastic caps power pole #62 Risdon Rd (North of BOC entrance)	2x90	diam	0.0127	336	26457
MLE-012	Elec Box Selfs Point Rd (Outside Puma Bitumen, near Gas Rd)	185	93	0.0172	24	1395
MLE-013	Elec Box Gas Rd (Outside Origin Energy)	250	130	0.0325	11	338
MLE-014	White boom gate – partial top of post (Cornelian Bay, near back gate Cemetery)	165 \varnothing	140 chord	0.0385	11	286

Filter	Site Name	w mm	l mm	area m ²	Pb µg	Pb conc. µg/m ²
MLE-015	Elec Box Cornelian Bay Playing field (opposite toilet block)	140	70	0.0098	37	3776
MLE-016	Elec Box Natone St, near Lincoln St (Lindisfarne, near Beltana Bowls club)	185	130	0.0240	28	1167
MLE-017	Elec Box, 9 Talune St, Lindisfarne	246	190	0.0467	54	1156
MLE-018	Green rubbish bin top, end of Paloona St	190	75	0.0143	8	559
MLE-019	Playground fence-rail top, Esplanade Rose Bay, near Lenna St	260	40	0.0104	86	8269
MLE-020	Top of rubbish bin, Esplanade Rose Bay, near Yolla St	290	84	0.0244	7	287
MLE-021	Field Blank - 2 minute exposure	-	-	-	0	-

2.2.2. Estimated total lead in dust in the study area from the areal-concentration data

The 'areal-concentration' surface data was used to infer the total amount of lead present in surface dust over the study area. This calculation yields a total lead mass of just over 12 kg. Assuming the annual lead emission from Nyrstar is around 700 kg, and that this is uniform throughout the year, 12 kg represents about 6 days of average emission. Note that there was a significant rain event on 8 December, some 11 days before the samples were collected.

2.2.3. Inferring a source location

The areal-concentration data can be used to infer the approximate source location assuming that the values will decrease at a rate inversely proportional to distance from the source. That is, when the distance doubles, the concentration decreases to one-half.

For the 19 December 2024 Lutana-Eastern Shore samples, a 25 x 25 grid was constructed over the study area and the centre of each grid cell was mathematically assessed for how well the measurements fit the inverse-distance relation. The grid cell where the fit is best can be considered to be the source.

In Figure 3 the large red rectangle shows the total area of the 25 x 25 grid. The small red rectangle, just to the south of Nyrstar, shows the grid cell that was mathematically identified as the origin of the lead-dust, assuming the concentrations decrease at a rate inversely proportional to distance from the source.

The data are relatively few, but the inferred origin is not inconsistent with the smelter location.



Figure 3 Mathematically identified source of the lead in dust, from 19 December 2024 swab data

2.2.4. The gradient in lead areal-concentration along Risdon Road

The results show an increase in the lead areal-concentration along Risdon Rd towards the BOC site. One interpretation is that it is likely delineating the mean (statistical) location of the lead plume over a time-interval characteristic of the deposition.

Another interpretation is that it represents a more local deposition, with material being tracked along Risdon Rd from Nyrstar by vehicle traffic. The decrease with distance from Nyrstar would represent that less material is carried to greater distances, having been deposited along the way. This would in turn suggest that there would likely be a 'corridor' of elevated lead in dust, confined to perhaps several tens of metres along Risdon Rd, and would require some source at Nyrstar accessible to vehicle traffic.

However, swab MLE-005 was taken in Ashbolt Crescent (the first swab of two), and returned a lead areal-concentration near $2,600 \mu\text{g}/\text{m}^2$. This location is more than 200 metres from Risdon Rd, and approximately 20 metres higher in elevation. It appears unlikely that local vehicle-entrained dust on Risdon Rd could be the explanation for this elevated lead result in Ashbolt Crescent. Interpreting the pattern of lead areal-concentrations as the consequence of fallout from a more widespread, airborne, dust plume seems to be a better interpretation of the data.

2.2.5. Cadmium and zinc from 19 December 2024 swabs

Figure 4 and Figure 5 show spatial representations of the cadmium and zinc areal– concentrations found from the 19 December 2024 swabs. There are similarities with the spatial pattern seen for lead, such as higher levels near the BOC site in Risdon Road.



Figure 4 Cadmium areal–concentrations from the 19 December 2024 surface– swabs

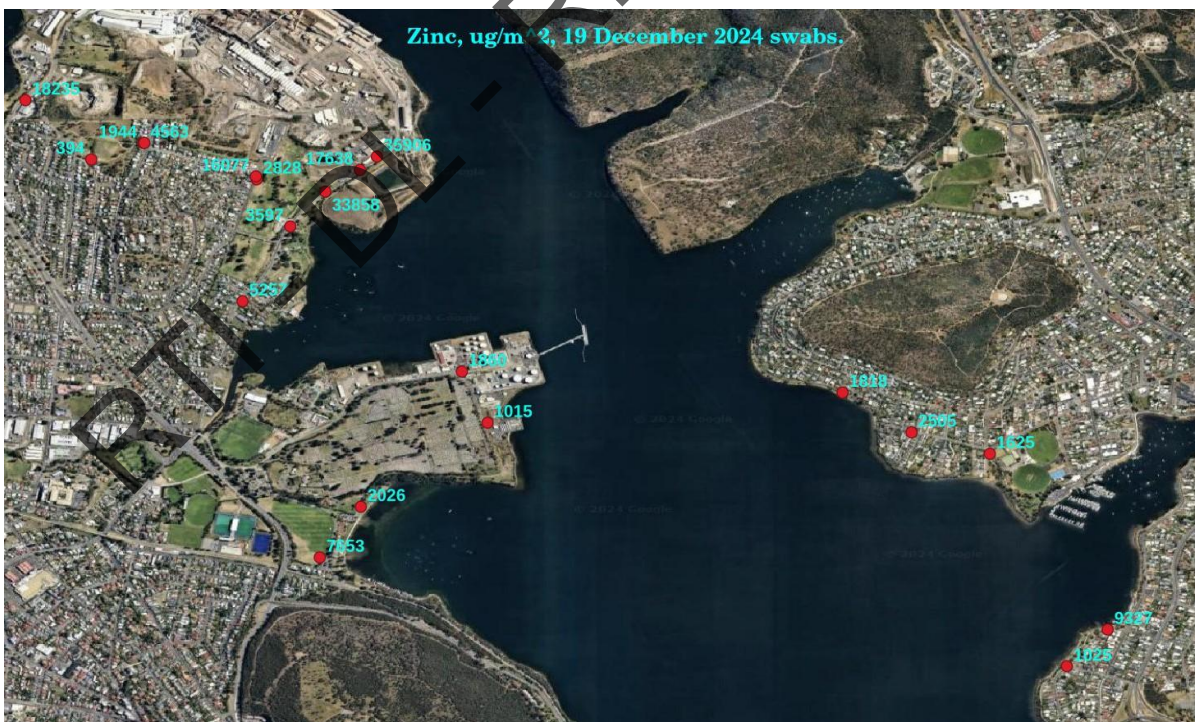


Figure 5 Zinc areal–concentrations from the 19 December 2024 surface–swabs

2.3. EPA dust–swabbing, Lutana and Eastern Shore, May and June 2025

Two sampling rounds were conducted in May and June 2025, to check the results of the December 2024 swabs, and to sample across a wider area. The June 2025 sampling including Dowsings Point, Goodwood, the area around Bender Drive, Geilston Bay, further areas of Lindisfarne and Rose Bay, Montagu Bay, Bellerive and Warrane.

2.3.1. Swabs – 23 May 2025

The study area on 23 May 2025 was similar to that on 19 December 2024. Several locations were resampled, in some cases with re–swabbing of the same area sampled in December and of a not–previously sampled area on the same surface. Table 2 gives the results for cadmium, lead, and zinc areal–concentrations. A field blank was also used, as per the December sampling. Analysis of the field blank showed no cadmium, lead or zinc to the method limit–of–detection².

Table 2 Swab results of cadmium, lead, and zinc areal–concentrations from 23 May 2025. A result of zero signifies no detectable metal at the method level- of-detection

filter ID	location	latitude	longitude	Cd (µg/m ²)	Pb (µg/m ²)	Zn (µg/m ²)	Comment
MNS001	Green Bin Rose Bay	-42.8595	147.3520	50	3055.6	8555.6	
MNS002	Blue Bin Rose Bay	-42.8590	147.3521	15.2	347.8	2369.6	Prev swabbed
MNS003	Playground fence Rose Bay	-42.8579	147.3538	0	1666.7	9479.2	Prev swabbed
MNS004	Playground fence Rose Bay	-42.8579	147.3538	100	3500	19714.3	New area
MNS005	Rail on sign Rose Bay	-42.8579	147.3539	265.6	4761.9	157509.2	
MNS006	Elec Box Natone	-42.8501	147.3484	78.9	2919.1	14319.5	Prev swabbed
MNS007	Elec Box Natone	-42.8501	147.3484	49.3	3217.4	8550.7	New area
MNS008	Elec Box Talune	-42.8491	147.3450	98.4	3123.7	13842.5	Prev swabbed
MNS009	Elec Box Talune	-42.8491	147.3450	71.7	2582.5	13797.2	New area
MNS010	Dog bin Talune	-42.8486	147.3434	53.9	1323.5	8921.6	
MNS011	Green bin Palooona	-42.8474	147.3420	57.3	1778.7	9743.1	Prev swabbed
MNS012	Dog bin Palooona	-42.8474	147.3420	69	3055.6	12277.8	
MNS013	Box Derwent Av	-42.8454	147.3395	90.9	4628.1	11349.9	
MNS014	Elect box Cleanaway	-42.8343	147.3053	803.6	7202.4	21726.2	New area
MNS14A	Elect box Cleanaway	-42.8343	147.3053	510	3100	15200	Prev swabbed
MNS015	Sign Jim Percy	-42.8369	147.3083	18.2	181.8	1287.9	Prev swabbed
MNS015A	Sign Jim Percy Bowen Rd	-42.8370	147.3083	15.2	166.7	1212.1	New area
MNS016	Transf Lennox Av	-42.8362	147.3106	35.7	1357.1	5142.9	New area
MNS016A	Transf Lennox Av	-42.8362	147.3106	40	850	3900	Prev swabbed
MNS017	Post Box Ashbolt	-42.8377	147.3157	39.8	5113.6	5511.4	New area
MNS17A	Post Box Ashbolt	-42.8377	147.3157	0	1262.6	2676.8	Prev swabbed
MNS018	Elect box opp Golf drive	-42.8399	147.3173	250	12388.9	12388.9	New area
MNS18A	Elect box opp Golf drive	-42.8399	147.3173	186.5	5357.1	10357.1	Prev swabbed
MNS019	Power pole 56 – caps	-42.8384	147.3188	55.1	2834.6	9133.9	Prev swabbed
MNS020	Power pole 62 – caps	-42.8369	147.3210	299.2	9212.6	37559.1	Prev swabbed
MNS021	Polymer bracket BOC	-42.8369	147.3210	722.2	47111.1	102222.2	New area
MNS022	Elect Box Puma SelfsPt	-42.8464	147.3249	32.4	1898.1	6203.7	New area
MNS022A	Elect Box Puma SelfsPt	-42.8464	147.3249	64.3	1052.6	8187.1	Prev swabbed
MNS023	Elect Box Cornellian Bay	-42.8548	147.3186	36.8	2368.4	5105.3	New area
MNS023A	Elect Box Cornellian Bay	-42.8548	147.3186	0	840.3	2100.8	Prev swabbed
MNS024	Elec Box Railway Queens	-42.8558	147.3193	0	250	1708.3	
MNS026	New Town air station	-42.8546	147.3151	0	84.2	1684.2	

The results show there was metal dust deposition on surfaces in Lutana and the Lindisfarne area between the 19 December 2024 and the 23 May 2025 sampling. Levels of cadmium, lead and zinc are mostly higher than in December 2024.

Some surfaces that did not have detectable cadmium in December 2024 returned measurable cadmium results in May 2025.

² This is 0.5 µg for cadmium, and 1 µg for lead and zinc.

2.3.2. Swabs – 20 June 2025

The sampling of 20 June 2025 repeated some areas of Lindisfarne and Rose Bay, but also extended the spatial coverage of measurements. The June samples were from Dowsings Point, Goodwood, the area around Bender Drive to the north of the smelter, Geilston Bay, further areas of Lindisfarne and Rose Bay, Montagu Bay, Bellerive and Warrane. Table 3 presents the results for cadmium, lead and zinc.

Table 3 Swab results of cadmium, lead, and zinc areal-concentrations from 20 June 2025. A result of zero signifies no detectable metal at the method level- of-detection

filter ID	location	latitude	longitude	Cd $\mu\text{g}/\text{m}^2$	Pb $\mu\text{g}/\text{m}^2$	Zn $\mu\text{g}/\text{m}^2$	Comment
MNS027	elec box 13 Karoola	-42.8410	147.3562	12.8	3427.1	1918.2	
MNS028	elec box 20 Karoola	-42.8419	147.3574	0	111.6	622	
MNS029	415 V transf 51 Lincoln Av	-42.8466	147.3569	0	688.3	2955.5	
MNS030	elec box 32 Derwent Av	-42.8406	147.3474	27.2	2585	4081.6	
MNS031	elec box 54 Derwent Av	-42.8411	147.3447	30.3	813.4	4497.6	
MNS032	elec box 178 Derwent Av	-42.8474	147.3439	41.5	1116.4	6172.2	
MNS033	elec box 9 Talune St	-42.8491	147.3450	61.2	1294.1	9835.3	preswabbed
MNS034	elec box 9 Talune St	-42.8491	147.3450	54.3	1800	8371.4	New area
MNS035	elec box 44 Raminea Rd	-42.8460	147.3516	38.5	2980.8	4871.8	
MNS036	swab of wiped glove (44 Raminea)	-42.8460	147.3516	0	277.8	1166.7	
MNS037	elec box Natone St	-42.8501	147.3484	55.1	1048.5	6492.8	preswabbed
MNS038	elec box Natone St	-42.8501	147.3484	47.6	2409	6974.8	New area
MNS039	elec box Park Rd	-42.8510	147.3522	66.7	6600	10966.7	
MNS040	elect box Esplanade	-42.8481	147.3552	19.4	1861.1	2777.8	
MNS041	Green box Simmons Park	-42.8491	147.3593	31.3	898.4	4882.8	
MNS042	RecyBin Simmons Park	-42.8495	147.3593	25	805.6	4194.4	
MNS043	elec box 51 Esplanade	-42.8524	147.3571	25	2650	3650	
MNS044	handrail opp 68 Esplanade	-42.8555	147.3554	80.6	5322.6	12258.1	
MNS045	Rose Bay Historic Marker	-42.8581	147.3530	131.6	6886	20657.9	
MNS046	elec box 81 Esplanade	-42.8585	147.353	35.1	861.2	5071.8	
MNS047	415V transf Chatsworth St	-42.8612	147.3521	236.4	17757.6	33030.3	Frayed surface
MNS048	elec box opp 41 Topham St	-42.8621	147.3535	46.3	1913.6	6296.3	
MNS049	elec box Conara Rd	-42.8644	147.3543	38.3	2066.3	4617.3	
MNS050	elec box Rosny Esp nr Hesket	-42.8702	147.3541	40	2000	4300	
MNS051	elec box opp 91 Bastick St	-42.8725	147.3591	35.9	2488	4449.8	
MNS052	elect box nr Tasman Hwy/G'hill Rd	-42.8606	147.3723	33.5	1602.9	4186.6	
MNS053	elec box G'hill Rd/Coolac Ct	-42.8570	147.3719	11.2	287.1	1786.3	
MNS054	415V transf King St Bellerive	-42.8770	147.3655	50.5	1767.7	6666.7	
MNS055	elec box 38 King St Bellerive	-42.8782	147.3674	29.6	2253.3	3667.8	
MNS056	green pump box Impact entrance	-42.8301	147.3118	830.8	24461.5	47461.5	
MNS057	Box on pole Impact retaining basin	-42.8300	147.3111	514.8	16834.3	31952.7	
MNS058	box 3 Sunmont St Weatherfoil	-42.8293	147.3067	29.8	1785.7	2916.7	
MNS059	box 5 Sunmont St LRA	-42.8300	147.3067	0	305.6	1055.6	
MNS060	box 12 BenderDr Gunns	-42.8283	147.3055	43.1	5114.9	11206.9	
MNS061	box 11 BenderDr Pepperberry Pods	-42.8281	147.3045	24	1040	6120	
MNS062	box Tasnetworks Surveyors Dr TAFE	-42.8281	147.3077	16.7	466.7	3366.7	
MNS063	aircon ThinkBig Derwent Park Rd	-42.8304	147.3077	558.7	8571.4	19619	
MNS064	elec box 28 Gepp Pde	-42.8334	147.3011	29.1	654.5	2800	
MNS065	bincover Giblins Reserve	-42.8303	147.2970	0	69.4	277.8	
MNS066	green box 142 Howard Rd	-42.8244	147.2957	0	167.1	935.7	
MNS067	415V transf Techno lower carpark	-42.8242	147.3022	0	3280	2480	
MNS068	box Technopark outside Tasmanet	-42.8225	147.3038	60	8200	9760	
MNS069	box 94 Bowen Rd	-42.8393	147.3072	20.6	961.1	915.3	
MNS070	Aircon NT Res Lab	-42.8561	147.2909	0	98.5	172.4	

Figure 6 and Figure 7 respectively show spatial plots of the lead and cadmium areal-concentrations from all three campaigns. These data are of areas swabbed only on the date indicated – i.e. no ‘pre-cleaned’ surface areas are shown. These results represent a ‘snap-shot’ metal concentration, which is likely to represent the sum of dust-deposition and losses due to wind and rain etc., over a recent, undefined time-interval.

Consequently, a single, unambiguous, interpretation of all these data, obtained over a 6 month interval, is not possible. However, these data do show the highest metal concentrations in dust occur near the smelter, and in general decrease with increasing distance from the smelter.

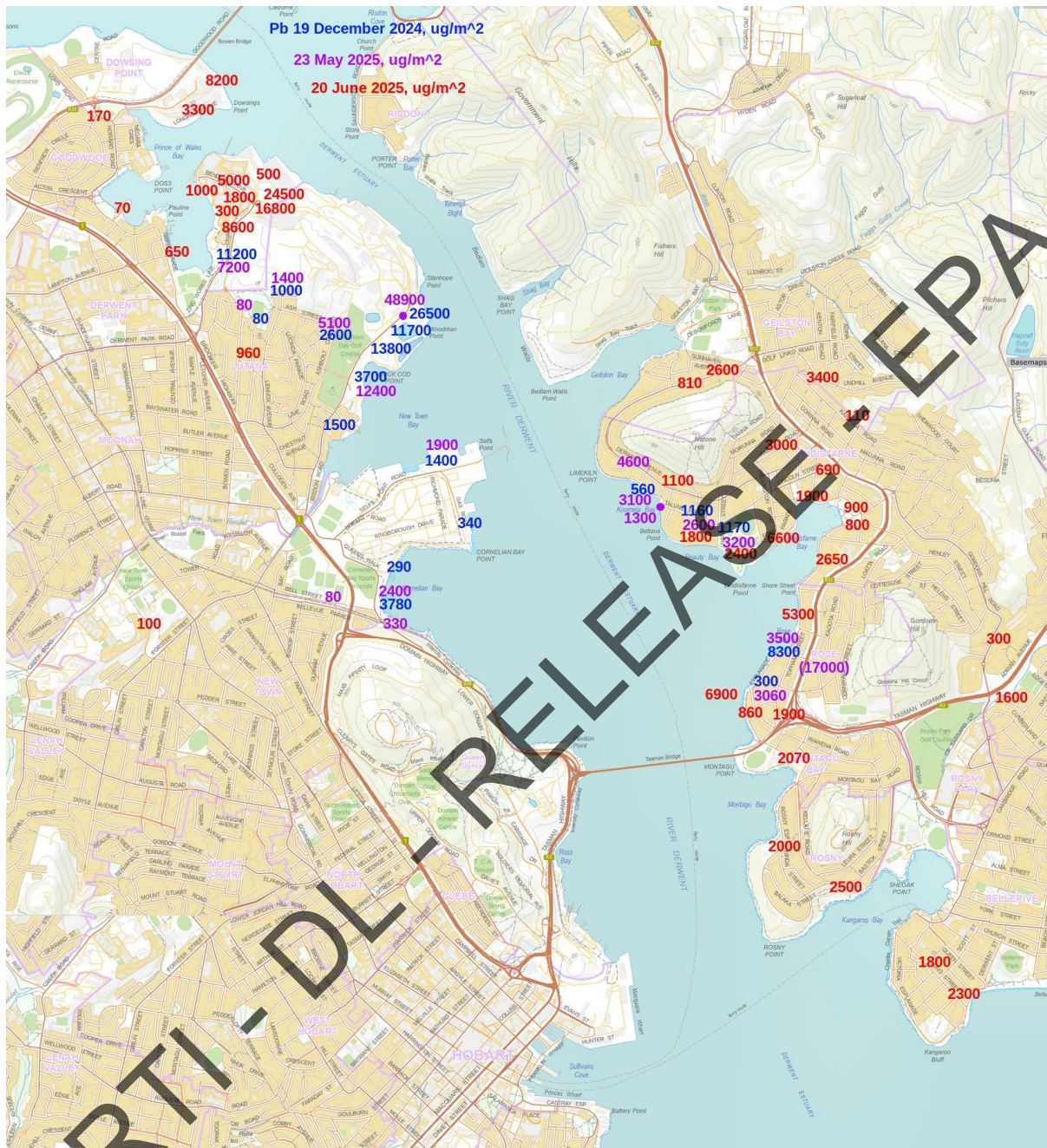


Figure 6 Lead areal-concentrations (in $\mu\text{g}/\text{m}^2$) from swabs on 19 December 2024 (blue text), 23 May 2025 (magenta text) and 20 June 2025 (red text). These data are all of surface areas swabbed only on the date indicated – i.e. no reswabbed surface areas are shown



Figure 7 Cadmium areal-concentrations (in $\mu\text{g}/\text{m}^2$) from swabs on 19 December 2024 (blue text), 23 May 2025 (magenta text) and 20 June 2025 (red text). These data are all of surface areas swabbed only on the date indicated – i.e. no reswabbed surface areas are shown. Concentrations below the level-of- detection are not shown.

3. MMG Australia – Rosebery, West Coast Tasmania

3.1. Estimated annual lead emission to air from the NPI

MMG Australia Ltd operates a metalliferous underground mine at Rosebery. In the NPI, the MMG Rosebery operations currently have the second highest annual emissions of lead to air in Tasmania, after Nyrstar Hobart. In the last three financial years the lead emissions to air have been near 500 kg per annum and are classed entirely as fugitive emissions³. It is likely that the fugitive emissions will have a significant component, by mass, of larger-sized particles which are more likely to deposit than remain suspended in air.

MMG Australia operates an extensive air monitoring network at Rosebery for assessing compliance with the mine operating conditions. This includes monitoring at four locations with high-volume air sampling (HVAS) instruments for Total Suspended Particulate (TSP) and PM₁₀ and metal concentrations (including lead) operating on a 1-day-in-six program, co-located with an optical particle counter for continuous PM_{2.5} and PM₁₀. Lead in air (as TSP) is assessed against the compliance limit.

MMG Australia also operates a network of 11 dust deposition gauges (DDGs) both on their site and around Rosebery to assess compliance with a nuisance dust limit of 4 g/m² per month in total and 2 g/m² per month above background. The DDG material is analysed for metal content. There is no prescribed limit, or target, for lead in deposited dust in the environmental regulatory requirements for the mine.

3.2. Rosebery DDG data - 2019 to 2024

The MMG Australia Rosebery DDG data from late 2019 to late 2024 were inspected to assess the monthly lead-dust fallout rates. Fallout rates for the mean monthly lead deposition for 2019 to 2024 for the 11 stations were found to range from 2600 µg/m²/month to over 90,000 µg/m²/month. These mean values are shown with station identifiers for the Rosebery area in Figure 8.

The highest values are at DDG stations on the mine property (e.g. AD23, AD5), but DDGs AD11 (mean = 10700 µg/m²/month), AD21 (mean = 7000 µg/m²/month), AD22 (mean = 8100 µg/m²/month), and AD4 (Giblin St, mean = 2600 µg/m²/month) are in residential areas of the town.

³ <https://www.npi.gov.au/npidata/action/load/emission-by-individual-facility-result/criteria/state/TAS/year/2023/jurisdiction-facility/TAS%20121>

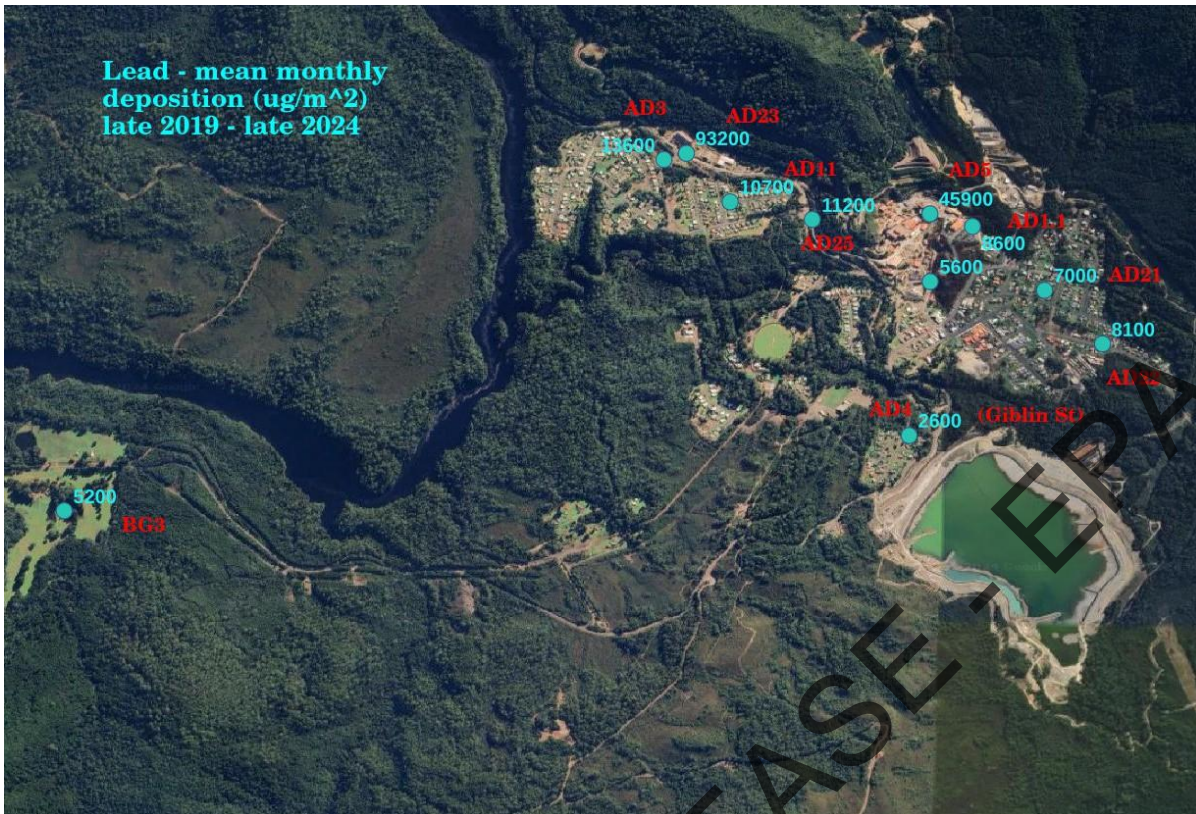


Figure 8 Mean lead monthly deposition rates, in $\mu\text{g}/\text{m}^2/\text{month}$ (blue text), and station identifiers (red text) for late 2019 to late 2024 for the 11 MMG Australia Rosebery dust deposition gauges

- The mean lead deposition-rate at station BG3 (approximately 2.5 km west of Rosebery, at the Rosebery Golf Course) for the 2019 to 2024 interval was $5600 \mu\text{g}/\text{m}^2/\text{month}$. This is larger than found at Giblin St (AD4). It is not clear at present as to why this is the case. Several possibilities arise: Dust from Rosebery could move to BG3, possibly in a katabatic air flow along the Lake Pieman valley
- Some of the soil at the golf course may have been previously transported from Rosebery, either unintentionally or for landscaping or other uses, where it is stirred up by local vehicle movement or other processes
- BG3 is approximately 5 km west of the Renison Bell mine and tailings dam. Over the last 6 years the NPI lists the Renison Bell mine as emitting between 18 kg and 85 kg of lead per annum, all as fugitive emissions. BG3 is downwind of Renison Bell due to the prevailing westerly winds in this area.

It is important to clarify the reason/s for the high lead fallout at BG3.

Figure 9 and Figure 10 show the monthly–mean cadmium and monthly–mean zinc deposition, in $\mu\text{g}/\text{m}^2$, averaged over the late 2019 to late 2024 interval. The general spatial pattern for these metals is similar to that seen for lead. Zinc and cadmium levels at BG3 are higher than at Giblin St (AD4), as was seen for lead. The NPI listed emissions to air for cadmium for MMG for the three years from 2020/2021 are 1.6 kg, 3.0 kg, and 2.9 kg.



Figure 9 Mean cadmium monthly deposition rates, in $\mu\text{g}/\text{m}^2/\text{month}$ for late 2019 to late 2024 for the I I Rosebery MMG Australia dust deposition gauges



Figure 10 Mean zinc monthly deposition rates, in $\mu\text{g}/\text{m}^2/\text{month}$ for late 2019 to late 2024 for the I I Rosebery MMG Australia dust deposition gauges

4. Australian and US EPA lead-in-air standards

The overarching air quality standards in Australia are defined in the *National Environmental Protection (Ambient Air Quality) Measure* (known as the Air NEPM)⁴. This was first made in 1998. The standard for lead in air in the 1998 Air NEPM was $0.5 \mu\text{g}/\text{m}^3$ as an annual average measured as TSP. This standard has not changed through the various revisions of the Air NEPM (latest revision is May 2021) and remains as the current standard.

The US EPA issued its first standard for lead in air as TSP in 1978, at $1.5 \mu\text{g}/\text{m}^3$ for a calendar quarter (i.e. 3 months). This standard appears to have been used in Australia prior to the making of the first Air NEPM in 1998 and may be the rationale for use of an identical limit in the 1996 permit for Nyrstar.

However, in 2008 the US EPA tightened this standard by a factor of ten, to $0.15 \mu\text{g}/\text{m}^3$, for a calendar quarter. A 2016 review by the US EPA left the standard unchanged from the 2008 level⁵.

There does not appear to have been any work to review the Australian standard for lead since the making of the first Air NEPM in 1998. The New Zealand National Environmental Standard (NES) pollutants do not include lead in air. The second edition of the WHO Air Quality Guidelines for Europe⁶, issued in 2000, specified a guideline of $0.5 \mu\text{g}/\text{m}^3$ as an annual average for lead in air, which is identical with the Australian Air NEPM standard. The 2022 WHO Air Quality Guidelines did not update this guideline level.

There currently is no Australian standard for lead in deposited dust. As far as can be determined, the only deposited dust 'standard' in use in Australia is the NSW nuisance-dust compliance limit of $4 \text{g}/\text{m}^2/\text{month}$ total, or $2 \text{g}/\text{m}^2/\text{month}$ above background.

⁴ <https://www.legislation.gov.au/F2007B01142/latest/text>

⁵ <https://www.epa.gov/criteria-air-pollutants/naaqs-table>

⁶ <https://www.who.int/publications/i/item/9789289013581>