

JBS&G 64627 – 154,525

L006 (Interim Audit Advice - Tarago Woodlawn Siding Rev 0)

2 February 2024

[REDACTED]
Project Manager – Land Management, Regional Property & Asset Renewal | Network & Assets

Transport for NSW

Via email: [REDACTED]

L006 Interim Audit Advice (0503-2303-006) – Tarago Woodlawn Siding NSW – Air Quality and Surface Water Monitoring Changes

Dear Joanne,

1. Introduction and Background

Andrew Lau of JBS&G Australia Pty Ltd (JBS&G), has been engaged by Transport for NSW (TfNSW, the client) to conduct a site audit on a portion of the Goulburn – Bombala Country Regional Network (CRN) rail corridor in Tarago NSW identified as part Lot 22 in Deposited Plan (DP) 1202608 (the site). The site occupies a strip of land of approximately 3 hectares. The extent of the site area and the location of the site are shown in Figure 1, in **Attachment 2**.

The site incorporates the former Woodlawn Mine ore concentrate load-out complex which operated between the 1970s and 1990s. The Woodlawn Mine which operated between 1978 and 1998 producing lead, zinc and copper concentrates was located approximately eight kilometres to the west of the railway line. Historical load out of ores from trucks to rail cars for processing has been identified as a potential source of contamination of the site.

Within the rail corridor, ballast within the rail siding, loop line, main line and adjacent soils have been identified as being contaminated with lead. Lead impacted spoil had also been generated during loop extension works with approximately 750 cubic metres of fouled ballast (herein referred to as ‘the stockpile’) remaining stockpiled (covered with geofabric and stabilised sand) on private land (Lot 1 DP 595856) located to the west of Tarago railway station.

Airborne dust and surface water monitoring have been undertaken across or within the vicinity of the site to characterise contaminant impacts associated with the historical use of the site. Periodic on-site and off-site surface water monitoring commenced in 2019 and ceased in July 2021 following consistent observation of low risks posed by site contamination to the receiving environment. Air quality monitoring (lead in particulate form, ambient airborne fractions and deposited dust) was conducted between April 2020 and August 2021.

On 25 March 2020, the rail corridor at Tarago (part Lot 22 DP 1202608) was declared (Declaration No. 20201103) to be significantly contaminated land under s11 of by the *Contaminated Land Management Act 1997* (CLM Act) by the NSW EPA. On 28 May 2020, the NSW EPA approved a Voluntary Management Proposal (VMP) (VMP No. 20211711) under the CLM Act to be undertaken by TfNSW for part of the Tarago Rail Corridor on part Lot 22 DP 1202608. The EPA determined that regulation of contamination from lead in soil was required. On 9 March 2022, the NSW EPA issued a notice amending the VMP (Notice No. 20224403). The amendment was issued to reflect updated timelines due to changes in the methodology for the remediation works.

The VMP requires achieving the objectives for three stages of works within the specified timeframes. The stages are as follows:

- Stage 1 – Assessment of Contaminant at or Originating from the Site
- Stage 2 – Remediation Action Plan
- Stage 3 – Remediation and Validation

The *Tarago Lead Management Action Plan* (Ramboll 2023g) prepared as part of the Stage 1 works under the VMP provides for interim management of risks to off-site human health and ecological receptors from identified lead impacts in soil at the site until a permanent remedial strategy is implemented. Monitoring of surface water and airborne dust is required under the Lead Management Action Plan for verification of the effectiveness of the plan in mitigating off-site migration of lead.

On 6 September 2022, a Prevention Notice was issued to TfNSW in relation to deficiencies in the implementation of the Tarago Lead Management Plan¹ and both surface water and air quality monitoring were reinstated to assess temporal and geographic trends.

Andrew Lau is a Site Auditor accredited by the NSW Environment Protection Authority (EPA) under the *Contaminated Land Management Act 1997* (CLM Act 1997) (Accreditation Number 0503).

Interim Audit Advice (IAA) has previously been prepared in relation to pre-remediation surface water and air quality monitoring (JBS&G 2022) and the Lead Management Plan (JBS&G 2023).

This IAA has been undertaken in accordance with the requirements provided by the client, to provide an independent review of the surface water and air quality monitoring conducted since reinstatement of monitoring in September 2022. The objectives of this review were to assess any changes in potential risks posed to off-site receptors and the frequency of monitoring required.

2. Documents Reviewed

The following documentation was reviewed in the preparation of this IAA:

- *Tarago Air Quality Monitoring Report November 2022*. Version 2, 13 February 2023, Ramboll Australia Pty Ltd (Ramboll 2023a)
- *Tarago Air Quality Monitoring Report December 2022*. Version 1, 13 February 2023, Ramboll Australia Pty Ltd (Ramboll 2023b)
- *Tarago, NSW December 2022 Surface Water Monitoring Report*. Revision 1, 17/4/23, Ramboll Australia Pty Ltd (Ramboll 2023c)
- *Tarago, NSW June 2023 Surface Water Monitoring Report*. Revision 0, 24/7/23, Ramboll Australia Pty Ltd (Ramboll 2023d)
- *Tarago Air Quality Monitoring Report September 2023*. Version 1, 8 September 2023, Ramboll Australia Pty Ltd (Ramboll 2023e)
- *Tarago Air Quality Monitoring Report October 2023*. Version 1, 20 October 2023, Ramboll Australia Pty Ltd (Ramboll 2023f)
- *Tarago, NSW September 2023 Surface Water Monitoring Report*. Revision 0, 6/11/23, Ramboll Australia Pty Ltd (Ramboll 2023h)

Review of the report has been undertaken against the requirements of *Consultants Reporting on Contaminated Land: Contaminated Land Guidelines* (NSW EPA 2020) and the *National Environment Protection (Assessment of Site Contamination) Measure 1999* (NEPC 2013).

The following additional documents were also considered as part of this audit and preparation of this IAA:

¹ *Tarago Loop Extension: Further Intrusive Assessment and Lead Management Plan*. 318000780-01-Rev3. Ramboll Australia Pty Ltd (Ramboll 2019).

- *L02 Interim Audit Advice (0503-2303-02) – Tarago Rail Corridor – Interim (Pre Remediation) Monitoring Requirements.* 62556 – 147,001, 23 August 2022. JBS&G Australia Pty Ltd (JBS&G 2022)
- *Tarago Lead Management Action Plan. Rev 7,* 27 October 2023. Ramboll Australia Pty Ltd (Ramboll 2023g)
- *L004 Interim Audit Advice (0503-2303-004) – Tarago Woodlawn Siding NSW.* 64627 – 155,779, 17 November 2023. JBS&G Australia Pty Ltd (JBS&G 2023)

3. Air Quality Monitoring

Air quality monitoring undertaken since September 2022 has comprised of:

- Deposited dust and lead measured continuously each month at four locations; and
- Total suspended particulates (TSP) including lead measured for one 24 hour period every six days using a high volume sampler at one location.

Deposited dust sampling was reinstated at the same locations as previous sampling with the exception of 96 Mulwaree Street Tarago where access was denied. A new location at 72 Mulwaree Street, referred to as DDG4-B, located 200 metres south-south-west of former location DDG4, was sampled and considered to be representative of potential impacts to the west of the rail siding.

Air quality sampling locations are shown in Figure 4 in Attachment 2.

Deposited dust and lead results for air sampled between October 2022 and October 2023 are presented in Table 1.

Table 1: Summary of Deposited Dust and Lead Analytical Results

Monitoring Period	DDG1 Stewart St		DDG2 Station Masters Cottage		DDG3 Boyd St		DDG4-B Mulwaree St	
	Lead (µg)	Insoluble Solids (g/m ² /mth)	Lead (µg)	Insoluble Solids (g/m ² /mth)	Lead (µg)	Insoluble Solids (g/m ² /mth)	Lead (µg)	Insoluble Solids (g/m ² /mth)
Oct/Nov 2022	<1	0.3	<1	0.5	<1	1.2	N/A*	N/A ^a
Nov/Dec 2022	<1	0.9	<1	1.3	<1	2.2	<1	2.2
Dec/Jan 2023	<1	<0.1	<1	0.3	<1	1.2	<1	4.7
Jan/Feb 2023	<1	0.4	<1	0.5	<1	0.7	<1	0.7
Feb/Mar 2023	<1	0.9	<1	1.5	<1	1.1	<1	0.7
Jun/Jul 2023	<1	0.1	<1	0.3	<1	0.1	<1	0.4
Jul/Aug 2023	<1	0.3	<1	0.9	<1	0.6	<1	0.9
Aug/Sep 2023	<1	0.2	<1	0.3	<1	0.2	<1	0.2

Monitoring Period	DDG1 Stewart St		DDG2 Station Masters Cottage		DDG3 Boyd St		DDG4-B Mulwarae St	
	Lead (µg)	Insoluble Solids (g/m ² /mth)	Lead (µg)	Insoluble Solids (g/m ² /mth)	Lead (µg)	Insoluble Solids (g/m ² /mth)	Lead (µg)	Insoluble Solids (g/m ² /mth)
Sep/Oct 2023	<1	1	<1	0.9	<1	1.1	<1	0.2
Rolling Annual Average	<1	0.5	<1	0.7	<1	0.9	<1	1.3

* Averaged in next reporting period (short exposure period)

Concentrations of deposited dust (insoluble solids) were recorded below the annual average criterion of 4 g/m²/month at all locations with the exception of DDG4-B sampled in Dec/Jan 2023. The rolling annual average was below the criterion at all locations. Lead was not measured above the detection limit (1 µg) at any of the monitoring locations.

Concentrations of lead were recorded below the annual average criterion of 0.5 µg/m³ at all locations. Concentrations of TSP were recorded below the annual average criterion of 90 µg/m³.

Based on the data collected during the monitoring period, lead containing TSP originates from the west to west-northwest of the monitoring location, in the direction of the siding. The highest TSP lead concentration was recorded on a day when regional winds originated from the south-east.

4. Surface Water Monitoring

Surface water monitoring currently involves quarterly sampling at upstream and downstream locations for three culverts which direct surface water beneath the on-site rail formation:

- Northern culvert – surface water discharges to an adjacent agricultural property. During high rainfall, discharge is directed to a dam on the agricultural property.
- Middle culvert – surface water discharges across a causeway on Boyd Street to an adjacent vacant block.
- Southern culvert – surface water discharges beneath Goulburn Street to a tributary of the Mulwarae River located on agricultural land.

Surface water sampling locations are shown in Figure 3 in Attachment 2.

Monitoring of surface water includes measurement of physico-chemical parameters and laboratory analysis of samples collected from each surface water sampling location.

Summaries of lead analytical results for surface water sampled at locations on or near the site and in Mulwarae River for the period between August 2019 and September 2023 are presented in Table 2.

Table 2: Summary of Surface Water Lead Analytical Results*

Analyte	No. of Samples	No. of Detects	Minimum (mg/L)	Maximum (mg/L)	Average (mg/L)	Exceedances of Criteria and Trends
On or Near Site (SW1_UP, SW1, SW2, SW3, SW4, SW5 and SW6)						
Total lead	76	59	<0.001	0.17	0.02	No exceedances Stable (SW1_UP and SW4), decreasing (SW2) or no trend (SW1, SW3 and SW4).
Dissolved lead	69	43	<0.001	0.033	0.006	No exceedances Stable (SW1_UP, SW4 and SW5), decreasing (SW3) or no trend (SW1, SW2 and SW6).
Mulwaree River (SW8, SW9 and SW10)						
Total lead	30	7	<0.001	0.002	0.001	No exceedances. Concentrations reported at least 50 times lower than the recreational water criterion. Stable (SW8, SW9 and SW10) or decreasing trend (SW7).
Dissolved lead	28	0	<0.001	<0.001	<0.001	All samples reported concentrations below laboratory limit of reporting and adopted ecological criterion.

* While the metals analytical suite includes other metals, only results for lead (which has been identified as the 'substance of concern' under the VMP and therefore requires review by the auditor) have been presented.

Based on the surface water monitoring results, the following conclusions have been drawn (Ramboll 2023h):

- There is no evidence that contaminant concentrations above the adopted guideline levels are migrating from the site;
- There are no exceedances of the adopted human health criteria for the contaminant of concern; [REDACTED] concentrations are stable or decreasing.
- Risks to human health and ecological receptors from detected concentrations of lead in surface water are considered to be low.

5. Auditor Opinions

Based on the information reviewed as part of this Interim Audit Advice and subject to the limitations in **Attachment 1**, the following audit opinions are provided:

- Based on lead not being detected in deposited dust above the detection limit at any monitoring location and concentrations of lead in particulates detected below the annual average criterion during the nine months of air quality monitoring between October 2022 and October 2023, the auditor is satisfied that ongoing air quality monitoring prior to remedial or other activities that may result in the disturbance of ground surfaces at the site, is not required.
Should air quality monitoring (dust deposition, lead deposition and TSP measurement) be altered or ceased then the Lead Management Action Plan (Ramboll 2023g) will require amendment.
- Surface water monitoring conducted upstream and downstream of the site between August 2019 and September 2023 has not detected concentrations of contaminants that pose unacceptable risks to human health or ecological receptors. The auditor concurs with the conclusions reached by the consultant (Ramboll 2023h) and is satisfied that ongoing surface water monitoring prior to remedial or other activities that may result in the disturbance of ground surfaces at the site, is not required.
Should surface water monitoring be altered or ceased then the Lead Management Action Plan (Ramboll 2023g) will require amendment.

Please note that this interim advice does not constitute a Site Audit Statement or a Site Audit Report, but is provided to assist in the assessment and management of contamination issues at the site in regard to requirements of the site audit. The information provided herein should not be considered pre-emptive of the final audit conclusions, but rather represent the findings of the audit based on a preliminary review of available site information. Furthermore, the interim advice should not be regarded as approval of any proposed investigations or remedial activities, as any such approval is beyond the scope of an independent auditor.

Should you require clarification, please contact the undersigned on 0412 512 614 or by email alau@jbsg.com.au.

Yours sincerely:



Andrew Lau

NSW EPA Accredited Site Auditor

Accreditation Number 0503

JBS&G Australia Pty Ltd

Attachments:

- 1) Limitations
- 2) Site Plans

Attachment 1 – Limitations

This audit was conducted with a reasonable level of scrutiny, care and diligence on behalf of the client for the purposes outlined in s.47 (1) of the *Contaminated Land Management Act 1997*. The data used to support the conclusions reached in this audit were obtained by other consultants and the limitations which apply to the consultant's report(s) apply equally to this audit report.

Every reasonable effort has been made to identify and obtain all relevant data, reports and other information that provide evidence about the condition of the site, and those that were held by the client and the client's consultants, or that were readily available. No liability can be accepted for unreported omissions, alterations or errors in the data collected and presented by other consultants. Accordingly, the data and information presented by others are taken and interpreted in good faith.

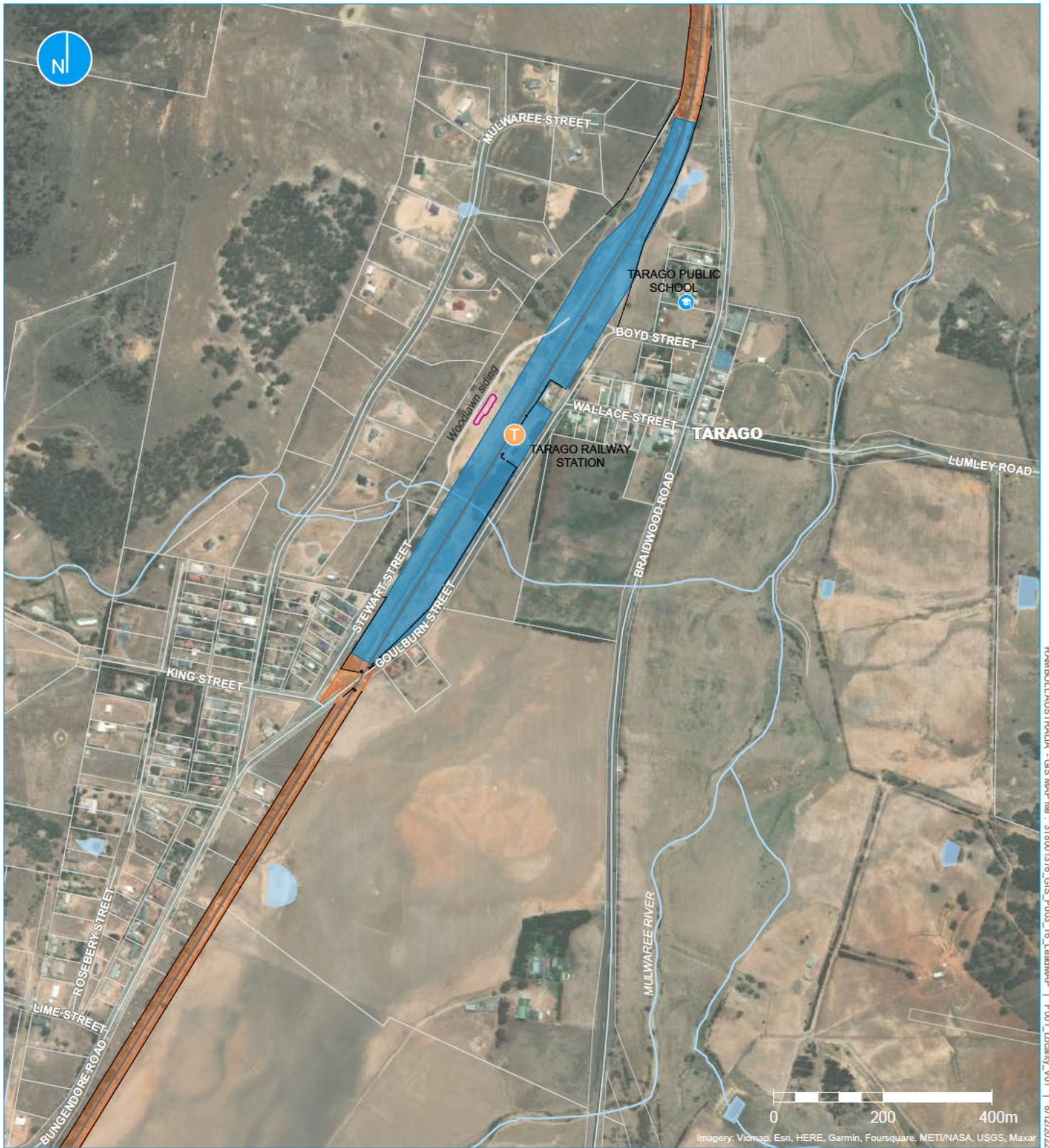
Sampling and chemical analysis of environmental media is based on appropriate guidance documents made and approved by the relevant regulatory authorities. Conclusions arising from the review and assessment of environmental data are based on the sampling and analysis considered appropriate based on the regulatory requirements.

Limited sampling and laboratory analyses were undertaken as part of the investigations reviewed, as described herein. Ground conditions between sampling locations and media may vary, and this should be considered when extrapolating between sampling points. Chemical analytes are based on the information detailed in the site history. Further chemicals or categories of chemicals may exist at the site, which were not identified in the site history and which may not be expected at the site.

Changes to the subsurface conditions may occur subsequent to the investigations described herein, through natural processes or through the intentional or accidental addition of contaminants. The conclusions and recommendations reached in this audit are based on the information obtained at the time of the investigations.

This report does not provide a complete assessment of the environmental status of the site, and it is limited to the scope defined herein. Should information become available regarding conditions at the site including previously unknown sources of contamination, JBS&G and the Site Auditor reserve the right to review the report in the context of the additional information, subject to meeting relevant guideline requirements imposed by the EPA.

Attachment 2 – Site Plans



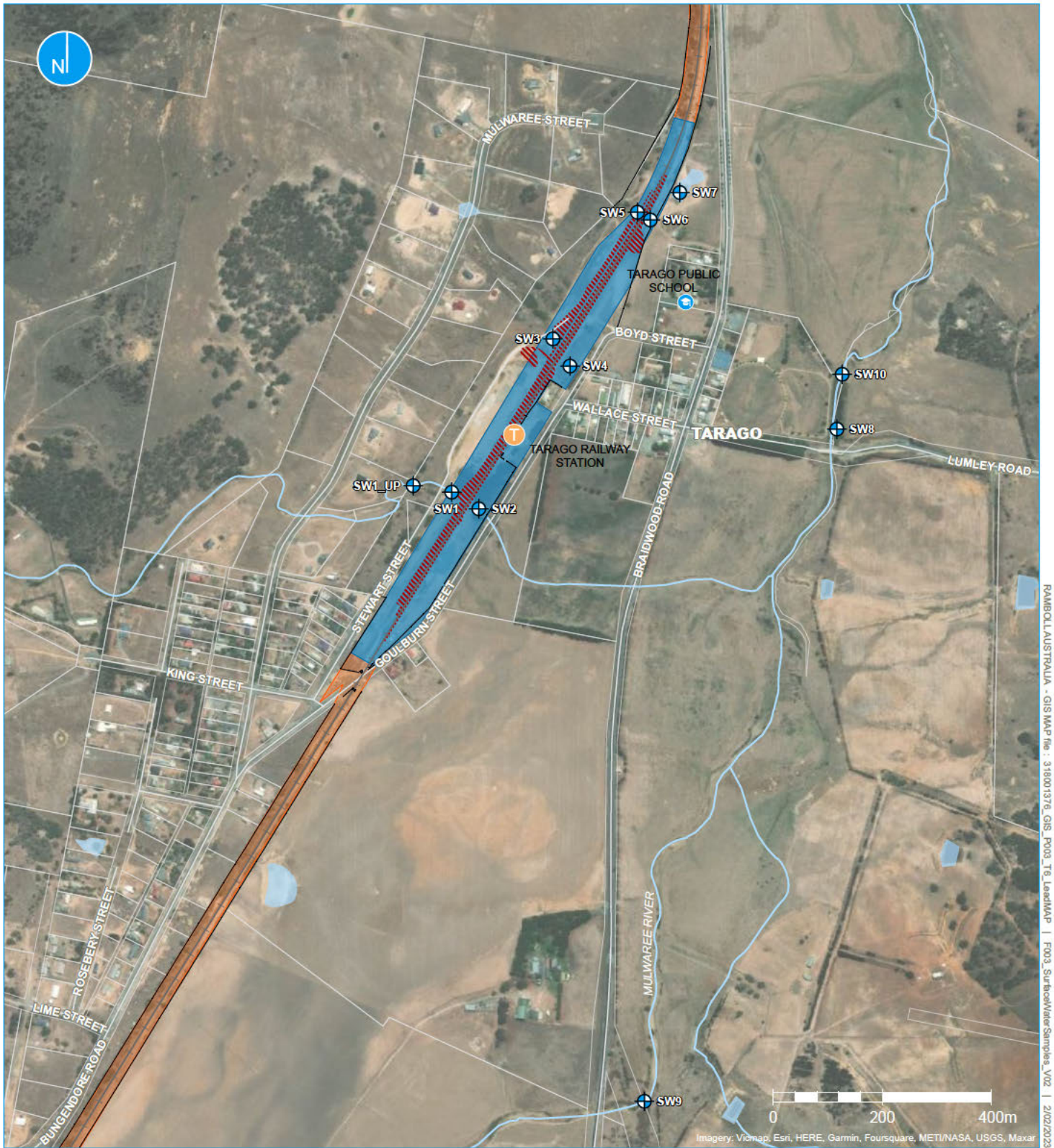
Legend

- Site boundary
- Rail corridor
- Approximate location of contaminated stockpile
- Rail corridor fence






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Figure 1 | Locality Plan



Legend

-  Surface water sampling location
-  Site boundary
-  Rail corridor
-  Rail corridor fence
-  Lead impacted area

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Figure 3 | Surface water and sediment sampling locations



Legend

- Site boundary
- Rail corridor
- Rail corridor fence

Sampling locations

- Deposited dust and lead (from dust deposition gauge)
- TSP and lead (from high volume air sampler)
- Continuous PM10 and PM2.5 (from particle counter)
- Regional meteorological monitoring from DPIE Air quality monitoring station (see location inset)

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Figure 4 | Air quality monitoring locations