Technical Memorandum

To:	**Joanne Daneel** **Sam Ryumugabe**	**From:**	**Vibhishan Moodley** **Dr Andrea Baker**
Company:	**Trinity Metals**		**SLR Consulting (Africa) Proprietary Limited**
cc:		**Date:**	**6 August 2025**
		Project No.	**713.000084.00001-2-3**

RE: Trinity TA4 Legacy Tailings & River Rehab Geochemistry & Soil Science Study

1.0 Introduction

Trinity Metals is in the process of updating the Environmental and Social Impact Assessments (ESIAs) and Management Plans for all three mines in line with Rwandan law and international best practice. Technical assistance (TA) programs have been developed to identify and assess existing environmental and social (E&S) impacts of the operational and historical mining legacies and implement management plans and programs to address those E&S impacts identified. As part of TA 4, the development of legacy tailings management and river rehabilitation plans look to include different specialist studies and technical task teams to address the impacts. Geochemical baseline assessment of the legacy tailings material, river sediments and soils associated with these stockpiles will be undertaken to assess the physical and chemical stability of the tailings and the capacity of the sediments and soils to remediate any metal leaching and acid rock drainage that might be emanating from these stockpiles.

2.0 Scope of Work

The proposed scope of work to achieve the project objectives is detailed below.

1. Desktop study:
   a. Gap analysis and request for information.
   b. Sampling schedule plan development using regular point sampling methodology (or gridding) in QGIS and expert knowledge to plot sampling locations.

2. Site sampling visits to Rutongo, Musha and Nyakabingo mine complexes to
   a. Locate QGIS and expert knowledge determined sampling points,
   b. Undertake visual soil assessment to classify the soils based on the IUSS working group WRB,
   c. Collect designated soil and sediment samples for analysis to confirm classification, OM content and delineate any contaminants,
   d. Identify, describe and sample representative legacy tailings for geochemical assessment.

3. Specialist laboratory analysis program
   a. Soil and river sediment assessment analysis will include:
      i. Particle size analysis
      ii. pH, electrical conductivity, cation exchange capacity, bioavailable macro nutrients, trace metals and organic matter content.

b. Geochemistry assessment analysis will include:
   i. Total concentrations on solids for waste classification Total leachable on solids for waste classification
   ii. Acid based accounting and sulfur speciation Net acid generation and carbon speciation
   iii. XRD minerology
   iv. Synthetic Precipitation Leachate Procedure for source term modelling.

4. Baseline soil assessment, waste classification, geochemical risk assessment for acid rock drainage and metal leaching potential of the legacy tailings.

5. Provide mitigation measures and recommendations to inform legacy tailings management and river rehabilitation plans.

6. Reporting will include 3 technical geochemical and soil baseline assessment reports for each mine site.

3.0 Field Work Program

Representatives from SLR Consulting (Africa) (Pty) Ltd mobilised to Trinity Metals mine sites from the 13 to 25 July 2025 to undertake soil and geochemical specialist assessments. Trinity Rutongo is the largest concession within the Trinity Metals portfolio and consists of 6 mining sites namely, Gisanze, Karambo, Mahaza, Masoro, Gasambya and Nyanyumba. Consequently, the SLR field team started their campaign at this concession which commenced from the 14th to 18th of July. The following week the consultants visited Trinity Musha and Ntunga mines and ended the field visit at Trintiy Nyakabingo mine. A technical training workshop was held at Nyakabingo Coffee Mine venue to raise awareness of the importance of geochemical and soil assessments amongst different departments from all three Trinity Metals concessions. Refer to Table 1 for an overview of the field work program and the Appendix for field work photographs.

Tabel 1: TA4 Legacy Tailings and River Rehabilitation Field Work Program

Date	Sites	Tasks
14 - 18 July 2025	Rutongo	Legacy tailings, soil and sediment sampling. Visual soil assessment and classifications.
21 July 2025	Musha	
22 July 2025	Ntunga	
23 July 2025	Nyakabingo	
25 July 2025	Nyakabingo	Technical Workshop

4.0 Methodology

4.1 Sampling Program

The SLR field team worked closely with various mine geologists and environmental team members from the respective Trinity concessions to undertake the specialist assessments. Their input was crucial in identifying the representative lithologies or rock types that are associated with the legacy tailings stockpiles at the various mine sites and in identifying appropriate locations that are part of the surface water monitoring program for each site. The water monitoring points guided the SLR consultants in identifying appropriate upstream and downstream areas from the mine footprint for the river sediment sampling initiative. The downstream areas were also used to locate undisturbed areas for the visual soil assessment, classification and sample collection.

4.1.1 Legacy Tailings Sampling Protocol

Sampling of the legacy tailings piles on the respective mines was facilitated by the mine geologists. They assisted in identifying the lithologies that are diagnostic of the site and assisted in selecting representative samples of each lithology. The SLR consultants decided on which samples to retain which was largely determined by the degree of weathering and size of the sample. After selecting the sample, the samples were described and GPS coordinates recorded. A photograph of the sample was taken before bagging. A total of 33 legacy tailings samples were sampled from the Trinity Rutongo, Trinity Nyakabingo, Trinity Musha and Ntunga mining concessions. Refer to Table 2 for a summary of the sampling details.

4.1.2 River Sediment Sampling Protocol

River sediment sampling from the different mines was undertaken in consultation with the respective mine environmental team. They assisted in locating the upstream and downstream positions from where they take samples as part of their water quality monitoring program. The SLR consultants assessed the locations in relation to the mines footprint as well as the presence of illegal mining and quarrying activities in the vicinity of the identified locations. Surface sediment samples from the riverbed/stream channel was collected using a spade that was cleaned between sampling events. The sample description and GPS positions was recorded, and a photograph of the sediment sample was taken. A total of 18 river sediment samples were collected from the various Trinity mining concessions. Refer to Table 3 for a summary of the sediment samples collected.

4.1.3 Soil Classification and Sampling Protocol

The soil assessment mainly focused on the downstream areas in relation to the mine footprint. This was recommended as the downstream areas are receptors for the migration of materials and contaminants from upstream activities which are predominately anthropogenic. Furthermore, these areas are often closer to human settlements or agricultural land use which can contribute towards long-term environmental monitoring data and potential remediation planning.

The soil assessment involved locating undisturbed areas for the visual soil assessment. Two downstream areas were identified for a assessment, with the most downstream sample collected for laboratory analysis. Once identified, notable site conditions and GPS coordinates were recorded on the soil log sheet. A handheld soil augur was used to extract soil cores and emptied onto sheets in the sequence of removal so that the soil profile could be constructed above ground.

Coring continued up to a depth of at least 0.5 m were feasible. The soil was then visually assessed based on its physical properties and master horizons were identified and recorded on the soil log sheet. After the visual assessment, a photograph of the soil profile was taken and a top-soil sample (0 – 30 cm depth) was collected and placed into a labelled zip lock bag at each observation point. A total of 18 soil visual assessments were undertaken throughout the various Trinity mining concessions from which 9 top-soil samples were selected for analysis. Refer to Table 4 for a summary of the sampling details.

Table 2: Trinity Mines Legacy Tailings Sampling Network

Mine	Sample ID	Latitude	Longitude	Description
Gasambya	GA-TS-10	1°47'44.5"S	30°03'05.5"E	Schist
	GA-TS-11	1°47'44.5"S	30°03'05.5"E	Quartzite
	GA-TS-12	1°47'44.5"S	30°03'05.5"E	Quartz vein
Gisanze	GS-TS-21	1°46'31.0"S	30°01'04.9"E	Quartzite
	GS-TS-22	1°46'31.0"S	30°01'04"E	Phyllite
	GS-TS-23	1°46'31.0"S	30°01'04"E	Quartz vein
Karambo	KE-LT-27	1°46'04.5"S	30°03'14.3"E	Fe rich quartz vein
	KE-LT-28	1°46'04.5"S	30°03'14.3"E	Quartz vein
	KE-LT-29	1°46'04.5"S	30°03'14.3"E	Phyllite
	KE-LT-30	1°46'04.5"S	30°03'14.3"E	Quartzite
Mahaza	MAH-TS-16	1°47'53.1"S	30°04'57.9"E	Quartz vein
	MAH-TS-17	1°47'53.1"S	30°04'57.9"E	Quartzite
	MAH-TS-18	1°47'53.1"S	30°04'57.9"E	Phyllite
Masoro	MAS-BV-05	1°49'25.7"S	30°02'44.9"E	Schist
	MAS-BV-06	1°49'25.7"S	30°02'44.9"E	Quartz vein
	MAS-BV-07	1°49'25.7"S	30°02'44.9"E	Quartzite
Musha	MU-LT-32	1°55'48.7"S	30°20'46.8"E	Sandstone
	MU-LT-33	1°55'48.7"S	30°20'46.8"E	Quartz vein
	MU-LT-34	1°55'48.7"S	30°20'46.8"E	Quartzite
	MU-LT-37	1°55'30.8"S	30°20'20.9"E	Schist
	MU-LT-38	1°55'30.8"S	30°20'20.9"E	Quartzite
	MU-LT-39	1°55'30.8"S	30°20'20.9"E	Sandstone
	MU-LT-40	1°55'30.8"S	30°20'20.9"E	Quartz vein
Ntunga	NTU-LT-42	1°57'49.4"S	30°21'44.1"E	Pegmatite
	NTU-LT-43	1°57'49.4"S	30°21'44.1"E	Quartz vein
	NTU-LT-44	1°57'49.4"S	30°21'44.1"E	Metased sandstone
Nyakabingo	NYK-LT-45	1°51'48.1"S	29°58'20.8"E	Shale
	NYK-LT-46	1°51'48.1"S	29°58'20.8"E	Quartz vein
	NYK-LT-47	1°51'48.1"S	29°58'20.8"E	Metased sandstone
Nyanyumba	NYA-SN-01	1°48'14"S	30°02'58"E	Quartz vein
	NYA-SN-02	1°48'14"S	30°02'58"E	Quartzite
	NYA-SS-03	1°48'22"S	30°03'06"E	Quartz vein
	NYA-SS-04	1°48'22"S	30°03'06"E	Quartzite

Tabe 3: Trinity Mines River Sediment Sampling Network

Mine	Sample ID	Latitude	Longitude	River sediment locations
Gasambya	GASED-13	1°47'33.8"S	30°03'02.5"E	Upstream
	GASED-14	1°47'42.1"S	30°03'23.8"E	Downstream
Gisanze	GSED-20	1°46'40.2"S	30°00'54.0"E	Upstream
	GSED-24	1°46'23.2"S	30°01'11.5"E	Downstream
Karambo	KSED-25	1°46'11.4"S	30°03'01.6"E	Upstream
	KSED-26	1°46'07.7"S	30°03'21.1"E	Downstream
Mahaza	MAHSED-15	1°47'27.1"S	30°04'55"E	Upstream
	MAHSED-19	1°47'45.8"S	30°04'51.9"E	Downstream
Masoro	MASED-09	1°50'03.8"S	30°02'45"E	Downstream
	MASED-31	1°49'05.7"S	30°02'46.1"E	Upstream
Musha	MUSED-35	1°56'43.1"S	30°21'16.5"E	Upstream (Agri channel sediment)
	MUSED-36	1°55'45.6"S	30°21'31.7"E	Downstream (Agri channel sediment)
Ntunga	NTUSED-41	1°58'13.3"S	30°21'58.2"E	Downstream
Nyakabingo	NYKSED-48	1°52'50.6"S	29°58'20.1"E	Midstream
	NYKSED-49	1°53'21.4"S	29°58'20.3"E	Downstream
	NYKSED-50	1°52'32.1"S	29°58'16.0"E	Side stream
Nyanyumba	NYASED-02	1°48'19.7"S	30°03'19.1"E	Downstream
	NYASED-03	1°48'19.7"S	30°03'20.9"E	Upstream

Table 4: Trinity Mines Soil Observation and Sampling Network

Mine	Sample ID	Latitude	Longitude	Sample Depth (cm)	Note
Gasambya	GAS-01	1°47’40.1”S	30°03’21.9”E	0 - 30	Discarded
	GAS-02	1°47’50.6”S	30°03’36.6”E		Submitted
Gisanze	GSS-01	1°46’21.9”S	30°01’11.8”E		Discarded
	GSS-02	1°46’20.11”S	30°01’12.9”E		Submitted
Karambo	KSS-01	1°46’070”S	30°03’20.6”E		Discarded
	KSS-02	1°46’13.4”S	30°03’44.4”E		Submitted
Mahaza	MHS-01	1°47’25.5”S	30°04’55.8”E		Discarded
	MHS-02	1°47’44.3”S	30°04’54.0”E		Submitted
Masoro	MAS-01	1°49’57.2”S	30°02’39.8”E		Discarded
	MAS-02	1°50’05.3”S	30°02’42.5”E		Submitted
Musha	MUS-01	1°56’07.8”S	30°21’17.1”E		Submitted
	MUS-02	1°55’43.3”S	30°21’28.6”E		Discarded
Ntunga	NTUS-01	1°58’12.6”S	30°21’58.0”E		Discarded
	NTUS-02	1°58’17.4”S	30°22’00.1”E		Submitted
Nyakabingo	NYKSS-01	1°52’51.0”S	29°58’20.5”E		Discarded
	NYKSS-02	1°53’19.8”S	29°58’21.0”E		Submitted
Nyanyumba	NYAS-01	1°48’18.3”S	30°03’05”E		Discarded
	NYAS-02	1°48’19.6”S	30°03’20.9”E		Submitted

Note: the highlighted cells indicate the soil samples that were submitted for laboratory analysis.

5.0 Next Steps

The samples will to be shipped by the client to an accredited geochemistry and soil laboratory in South Africa for comprehensive analysis. Once the analytical results are released, interpretations, modelling and technical reporting will commence.

Refer to Table 5 below for the estimated timeline for completion of the study.

Table 5: Estimated timeframe for completion of study

Period	Task
28 July – 10 August	Shipment of samples to designated laboratories and laboratory admin
10 August – 7 September	Up to 4 weeks will be required to complete the static lab analysis and receive the results
7 September – 19 October	Once the lab analysis has been received six weeks will be required to complete the geochemical interpretations, modelling and produce the 3 final draft technical reports.
19 – 31 October	Client review and finalize report.

Regards,

SLR Consulting (Africa) Proprietary Limited

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APPENDIX: FIELD WORK PHOTOGRAPHS

Figure 1: Nyakabingo Legacy Tailings Samples

Figure 2: River Sediment Samples – Gisanze Mine

Figure 3: Soil Profile and Sample – Musha