

Torque Africa Exploration

GHS Classification & Waste Assessment Report


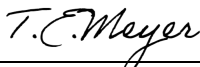
Combined Drill Waste

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REPORT REVIEW AND APPROVALS		
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[Classification of Torque Africa Exploration, 'Combined Drill Waste', in terms of the Globally Harmonized System of Classification and Labelling of Chemicals (GHS) as mandated by GN R 634 (2013) and GN R 5524 (2024).]

DISCLAIMER: *The information in this Waste Classification Report and associated Safety Data Sheet (SDS), where relevant, has been developed on the basis of the information available to Intervaste at the time of submission, and provides Intervaste's best reasonable and professional assessment of the intrinsic hazards posed by the subject waste streams. INTERWASTE MAKES NO WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE OR COURSE OF MANAGEMENT OR USAGE OF TRADE. It remains the waste generator's responsibility for determining whether their waste is fit for a particular purpose and suitable for user's/waste manager's method of use, management or application. Given the variety of factors that can affect the management, transport, storage and handling of the waste, some of which are uniquely within the generator's knowledge and control, it is essential that the generator evaluate the subject Report and SDS to determine whether they are fit for the particular purpose and suitable for third party user's / manager's method of use or application. Intervaste cannot be held liable for changes in the waste's constituents caused by a change in process, or raw material input into the process. The make-up of waste is, by its very nature, variable. The manner in which the waste is to be handled may vary depending on its constituents.*

1. BACKGROUND AND INTRODUCTION

Torque Africa Exploration commissioned Interwaste Environmental Solutions (Pty) Ltd (hereinafter referred to as 'Interwaste') to classify their 'Combined Drill Waste' stream in terms of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS)¹.



Figure 1: 'Combined Drill Waste' photograph, 2025.

1.1 Globally Harmonised System (GHS) Classification

The above-mentioned material falls within the ambit of the definition of 'waste' provided for in the National Environmental Management: Waste Amendment Act, 2014 (Act 26 of 2014)[NEM:WAA]², and thus needs to be managed in accordance with the relevant provisions of the Act, as well as any relevant Regulations promulgated thereunder. Regulation 4 (2) of the Department of Forestry, Fisheries and the Environment' (DFFE) Waste Classification and Management Regulations (GN R 634, 2013)³ as amended⁴, hereinafter referred to as 'the Regulations', have been used as the legal trigger toward the requisite classification of this waste stream. Accordingly, in terms of Regulation 4 (2), Interwaste has classified the waste according to the relevant provisions of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS)¹.

1.2 Assessment for Landfill Disposal

The assessment of waste samples for disposal to landfill is a critical process to ensure environmental protection and regulatory compliance. In South Africa, this process is governed by the National Norms and Standards for the disposal of waste to landfill, as outlined in Government Notices GN R 634³, GN R 635⁵, and GN R 636⁶ of 2013, as well as their respective amendments (GN R 5522⁷, 5523⁸ and 5524⁴ of 7 November 2024). The aforementioned Regulations are promulgated under the provisions of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)[NEM:WA]⁹.

These regulations establish the requirements for assessing, classifying and managing different types of waste to minimize risks to human health, ecosystems, and water resources. A methodology is provided therein to assess waste specifically for i.) disposal to landfill, as well as ii.) a revised landfill classification system with updated corresponding liner design specifications. This report assesses the subject waste in accordance with these norms and standards to ensure compliance with regulatory stipulations and promotes sustainable waste management practices.

¹ Globally Harmonised System of Classification and Labelling of Chemicals (GHS), 2023. UNITED NATIONS, New York and Geneva, (10th revised Edition).

² National Environmental Management: Waste Amendment Act, 2014 (Act no. 26, 2014). Government Gazette 37714, 2 June 2014.

³ National Environmental Management: Waste Act, 2008. (Act No. 59 of 2008). DEPARTMENT OF ENVIRONMENTAL AFFAIRS. Waste Classification and Management Regulations. GN R 634, GG. 36784, 23 August 2013.

⁴ National Environmental Management: Waste Act, 2008. (Act No. 59 of 2008). DEPARTMENT OF FORESTRY, FISHERIES AND THE ENVIRONMENT. NEMWA: Amendments to the Waste Classification and Management Regulations, 2013. GN R 5524, GG. 51522, 7 November 2024.

⁵ National Environmental Management: Waste Act, 2008. (Act No. 59 of 2008). DEPARTMENT OF ENVIRONMENTAL AFFAIRS. National Norms and Standards for the Assessment of Waste for Landfill Disposal. GN R 635, GG. 36784, 23 August 2013.

⁶ National Environmental Management: Waste Act, 2008. (Act No. 59 of 2008). DEPARTMENT OF ENVIRONMENTAL AFFAIRS. National Norms and Standards for Disposal of Waste to Landfill. GN R 636, GG. 36784, 23 August 2013.

⁷ National Environmental Management: Waste Act, 2008. (Act No. 59 of 2008). DEPARTMENT OF FORESTRY, FISHERIES AND THE ENVIRONMENT. NEMWA: Amendments to the National Norms and Standards for the Assessment of Waste for Landfill Disposal, 2013. GN R 5522, GG. 51520, 7 November 2024.

⁸ National Environmental Management: Waste Act, 2008. (Act No. 59 of 2008). DEPARTMENT OF FORESTRY, FISHERIES AND THE ENVIRONMENT. NEMWA: Amendments to the National Norms and Standards for Disposal of Waste to Landfill, 2013. GN R 5523, GG. 51521, 7 November 2024.

⁹ National Environmental Management: Waste Act, 2008 (Act no. 59, 2008). Government Gazette 32000, 10 March 2009.

2. SCOPE OF WORKS

Interwaste's technical GHS Waste Classification Report and SDS, is targeted towards a Scope of Works detailing the following services:

- Waste analysis and characterisation;
- Waste Classification, in terms of the GHS, as required under Regulation 4 (2) of the National Waste Classification and Management Regulation amendments of 7 November 2024 (GN R 5524, 2024)¹⁰, reporting and development of 16-point Safety Data Sheet (SDS) for the subject waste streams, where applicable.
- Assessment of the subject wastes for disposal to landfill, in terms of the Standard for such under the 2013 Waste Classification and Management Regulation amendments (GN R 5522 - 5524 of 7 November 2024)^{10,11,12}.

It must be noted that radio-activity is not a 'hazard' class expressly dealt with under GHS, and that this report accordingly does not cater to the analysis/assessment of any issues related thereto; be these direct, or incidental.

3. WASTE GENERATION PROCESS

The waste material is generated during rotary drilling operations through weathered sand and sedimentary strata of the Molteno Formation, mudstone aquiclude layers, and coal-bearing units of the Beaufort Group and Eccra Group. Drill cuttings are produced by mechanical fragmentation of these formations and are returned to surface in circulation with water-based drilling fluids.

4. SAMPLING

As per the amendments¹¹ to paragraph 3 of the Norms and Standards, GN R 635 (2013)¹³, the inclusion of subsection (c) in Section 3(1) stipulates that sampling and analysis must be conducted in accordance with the *Guideline for Sampling and Analysis of Wastewaters, Soils and Wastes*¹⁴. The subject waste was therefore sampled and analysed in accordance with this guideline.

5. ANALYTICAL METHODS

Laboratory analysis related to this report were performed at Interwaste's internal waste analytical laboratory (which is SANAS accredited) in Germiston, Gauteng.

6. RESULTS

According to the National Environmental Management: Waste Act (59/2008): Waste Classification and Management Regulations. GG 36784, GN R 634 (23 August 2013)¹⁵ & its amendment, the GN R 5524 (7 November 2024)¹⁰, Sections 4 and 6 (1) all waste generators must ensure that the waste they generate is classified in accordance with GHS within one hundred and eighty (180) days of generation. Accordingly, the subject waste has been classified in compliance with these regulations.

7. GHS WASTE CLASSIFICATION

All analytical results received were converted to a percentage by mass basis, in order to assess the contaminant concentrations against the prescribed cut-off values / concentration limits (Table 1) to be applied for human health and environmental hazard classes as per GHS¹⁶. The application of the cut-off values, shows eight (x8) (Aluminium Oxide, Iron (III) Oxide, Calcium Carbonate, Quartz, Kaolinite, Rutile, Muscovite and Montmorillonite) contaminants in the waste to be considered potentially relevant to the classification thereof in terms of GHS¹⁶; with 'relevance' and reasons indicated where applicable, in Table 1.

¹⁰ National Environmental Management: Waste Act, 2008. (Act No. 59 of 2008). DEPARTMENT OF FORESTRY, FISHERIES AND THE ENVIRONMENT. NEMWA: Amendments to the Waste Classification and Management Regulations, 2013. GN R 5524, GG. 51522, 7 November 2024.

¹¹ National Environmental Management: Waste Act, 2008. (Act No. 59 of 2008). DEPARTMENT OF FORESTRY, FISHERIES AND THE ENVIRONMENT. NEMWA: Amendments to the National Norms and Standards for the Assessment of Waste for Landfill Disposal, 2013. GN R 5522, GG. 51520, 7 November 2024.

¹² National Environmental Management: Waste Act, 2008. (Act No. 59 of 2008). DEPARTMENT OF FORESTRY, FISHERIES AND THE ENVIRONMENT. NEMWA: Amendments to the National Norms and Standards for Disposal of Waste to Landfill, 2013. GN R 5523, GG. 51521, 7 November 2024.

¹³ National Environmental Management: Waste Act, 2008. (Act No. 59 of 2008). DEPARTMENT OF ENVIRONMENTAL AFFAIRS. National Norms and Standards for the Assessment of Waste for Landfill Disposal. GN R 635, GG. 36784, 23 August 2013.

¹⁴ Available at: <https://sawic.environment.gov.za/documents/18620.pdf> (Accessed: 21 January 2025).

¹⁵ National Environmental Management: Waste Act, 2008. (Act No. 59 of 2008). DEPARTMENT OF ENVIRONMENTAL AFFAIRS. Waste Classification and Management Regulations. GN R 634, GG. 36784, 23 August 2013.

¹⁶ Globally Harmonised System of Classification and Labelling of Chemicals (GHS), 2023. UNITED NATIONS, New York and Geneva, (10th revised Edition).

Table 1: Relevant ingredient hazard data and the classification matrix of the ‘Combined Drill Waste’ waste stream.

Raw Material	Constituent Concentrations (%)	CAS #	Corrosive to Metals	Acute Oral	Acute Dermal	Acute Inhalation	Skin Irritation / Corrosion	Eye Irritation / Corrosion	Skin Sensitiser	Respiratory Sensitiser	Carcinogenicity	Mutagenicity	Reproductive Toxicity	STOT-SE	STOT-RE	Aspiration	Acute Aquatic	Chronic Aquatic	Relevant	Reason
GHS Cut-off Values			≥1.0%	≥1.0%	≥1.0%	≥1.0%	≥1.0%	≥1.0%	≥0.1	≥0.1	≥0.1	≥0.1	≥0.1	≥1.0%	≥1.0%	≥1.0%	≥1.0%	≥1.0%		
Aluminium oxide	1.28	1344-28-1																	✓	> 1.0%
Iron Oxide	1.11	1309-37-1																	✓	> 1.0%
Calcium Sulphate	0.64	7778-18-9																	✗	> 0.1% but not C, M or R
Calcium Carbonate	6.80	471-54-1																	✓	> 1.0%
Quartz low	48.00	14808-60-7									Cat 1A				Cat 1				✓	> 0.1% and C, M or R
Kaolinite 1A	9.30	1318-74-7																	✓	> 1.0%
Rutile	0.10	1317-80-2									Cat 2								✓	≥0.1% and C, M or R
Muscovite 2M1	2.10	1318-94-1 and 12001-26-2					Cat 2	Cat 2							Cat 3				✓	> 1.0%
Montmorillonite	3.70	1318-93-0																	✓	> 1.0%
pH Level	9.74																			
FINAL RATING (2025) Cat 3																				

*C = Carcinogenic, M = Mutagenic or R = Reproductive Toxin (with cut-off values of 0.1% relevant to these hazard classes, as opposed to 1% for all remaining human health and aquatic hazard classes).

8. WASTE ASSESSMENT

The subject waste stream ('Combined Drill Waste') was assessed as a Type 3 waste.

Laboratory report(s) are attached in **Annexure A**:

- **IW2026-0050**

9. CONCLUSIONS

Torque Africa Exploration engaged Interwaste to classify their 'Combined Drill Waste' in accordance with the Globally Harmonized System (GHS¹⁷) and to evaluate its suitability for landfill disposal in accordance with the South African Regulations. The following conclusions were reached:

The 'Combined Drill Waste' classified as hazardous. Intrinsic hazards posed by the waste relate predominantly to Skin Irritation (Category 3).

As per the 'Waste Classification and Management Regulations, 2013 (GN R 634)¹⁸, a safety data sheet (SDS) is required for this waste stream (please refer to **Annexure B**).

Disposal requirements for the specified waste type are Class A, B or C landfills.

No further restrictions were identified concerning disposal to landfill.

¹⁷ Globally Harmonised System of Classification and Labelling of Chemicals (GHS), 2023. UNITED NATIONS, New York and Geneva, (10th revised Edition).

¹⁸ National Environmental Management: Waste Act, 2008. (Act No. 59 of 2008). DEPARTMENT OF ENVIRONMENTAL AFFAIRS. Waste Classification and Management Regulations. GN R 634, GG. 36784, 23 August 2013.

10. REFERENCES

1. Globally Harmonised System of Classification and Labelling of Chemicals (GHS), 2023. UNITED NATIONS, New York and Geneva, (10th revised Edition).
2. National Environmental Management Act, 1998 (Act 107 of 1998)[NEMA]. Government Gazette 19519, 27 November 1998.
3. National Environmental Management: Waste Act, 2008 (Act no. 59, 2008). Government Gazette 32000, 10 March 2009.
4. National Environmental Management: Waste Amendment Act, 2014 (Act no. 26, 2014). Government Gazette 37714, 2 June 2014.
5. National Environmental Management: Waste Act, 2008. (Act No. 59 of 2008). DEPARTMENT OF ENVIRONMENTAL AFFAIRS. Waste Classification and Management Regulations. GN R 634, GG. 36784, 23 August 2013.
6. National Environmental Management: Waste Act, 2008. (Act No. 59 of 2008). DEPARTMENT OF FORESTRY, FISHERIES AND THE ENVIRONMENT. NEMWA: Amendments to the Waste Classification and Management Regulations, 2013. GN R 5524, GG. 51522, 7 November 2024.
7. National Environmental Management: Waste Act, 2008. (Act No. 59 of 2008). DEPARTMENT OF ENVIRONMENTAL AFFAIRS. National Norms and Standards for the Assessment of Waste for Landfill Disposal. GN R 635, GG. 36784, 23 August 2013.
8. National Environmental Management: Waste Act, 2008. (Act No. 59 of 2008). DEPARTMENT OF FORESTRY, FISHERIES AND THE ENVIRONMENT. NEMWA: Amendments to the National Norms and Standards for the Assessment of Waste for Landfill Disposal, 2013. GN R 5522, GG. 51520, 7 November 2024.
9. National Environmental Management: Waste Act, 2008. (Act No. 59 of 2008). DEPARTMENT OF ENVIRONMENTAL AFFAIRS. National Norms and Standards for Disposal of Waste to Landfill. GN R 636, GG. 36784, 23 August 2013.
10. National Environmental Management: Waste Act, 2008. (Act No. 59 of 2008). DEPARTMENT OF FORESTRY, FISHERIES AND THE ENVIRONMENT. NEMWA: Amendments to the National Norms and Standards for Disposal of Waste to Landfill, 2013. GN R 5523, GG. 51521, 7 November 2024.
11. National Water Act, 1998 (Act No. 36 of 1998) [NWA]. DEPARTMENT OF WATER AND SANITATION. NWA: National Water Act, 1998 (Act No. 36 of 1998). GN R 508, GG. 18522, 26 August 1998.
12. Occupational Health and Safety Act, 1993 (Act No. 85 of 1993) [OHSA], as amended. DEPARTMENT OF EMPLOYMENT AND LABOUR. OHSA: Occupational Health and Safety Act, 1993 (Act No. 85 of 1993). GN R 159, GG. 13716, 8 October 1993.
13. Recommendations on the TRANSPORT OF DANGEROUS GOODS. Model Regulations. UNITED NATIONS, New York and Geneva 2023, Twenty Third Revised Edition, Volumes 1 & 2 (Orange Book).

ANNEXURE A: LABORATORY RESULTS

1. The laboratory analysis containing the landfill assessment and elemental composition with reference number(s) 'TW2026-0050'.
2. Additional results have the following reference numbers: 63282 GROTPH, Interwaste26-1 and SDS 60188 - 60189.

HUB LABORATORY FINAL TEST REPORT

Requested By:	Nothando Ntuli	Waste Name:	Combined Drill Sample
Generator:		Received Date:	2026/01/20
Lab Reference:	IW2026-0050	Analysis Date:	2026/01/20 - 2026/02/09
No. of Samples:	1	Report Date:	2026/02/09
Sample Description	Dark Brown Mud	Waste Profile No:	C_WPS-23244

Table 1: Miscellaneous tests for sample: IW2026-0050

Parameter Tested	Unit	IW2026-0050
Sample Moisture Content*	% (w/w)	18.67
Conductivity	uS/cm	223
Initial Sample pH	pH Units	9.74
Sample pH after HCl Addition	pH Units	5.3
Leach Solution Applied	Solution Type	2.9
Final Leach Solution pH	pH Units	4.52
Physical State	N/A	Solid
Water Miscibility	N/A	Immiscible
Calorific Value*	MJ/kg	NT
Flash Point*	°C	NT
Flammability*	N/A	
Oxidation Potential*	N/A	NT
Additional Information	N/A	Low Odour

UTD = Unable to determine; NT = Not tested; * = Not a SANAS accredited method; Conductivity and pH measured by electronic conductivity and pH meter at ~22C (10% H2O extracts of solids). Moisture by mass loss on heating at ~103C for 30 mins.

Table 2: XRF metals analysis for sample: IW2026-0050

Contaminant Name	Symbol	Detection Limit (mg/kg)	Concentration (mg/kg)
Arsenic*	As	1	BDL
Boron*	B	UTD	UTD
Barium*	Ba	4	537.69
Cadmium*	Cd	6	78.53
Cobalt*	Co	3	BDL
Chromium*	Cr	2	333.39
Copper*	Cu	3	11.29
Mercury*	Hg	2	BDL
Manganese*	Mn	3	134.72
Molybdenum*	Mo	1	BDL

Nickel*	Ni	4	15.23
Lead*	Pb	2	18.07
Antimony*	Sb	10	BDL
Selenium*	Se	1	BDL
Vanadium*	V	1	BDL
Zinc*	Zn	1	31.7
Chloride*	Cl	50	BDL
Iron*	Fe	10	10560.5
Aluminium*	Al	10	BDL
Sulphur*	S	10	1500.1

UTD = Unable to determine; NT = Not tested; BDL = Element below indicated detection limit; * = Not a SANAS accredited method; All elements measured by XRF; Only tested contaminants listed under section 6 of GNR635 are indicated.

Table 3: ICP-OES leachable metals analysis for sample: IW2026-0050, leach solution 2.9

Contaminant Name	Symbol	Detection Limit (mg/L)	Concentration (mg/L)
Arsenic	As	0.016	BDL
Boron	B	0.023	BDL
Barium	Ba	0.044	1.178
Cadmium	Cd	0.026	BDL
Cobalt	Co	0.049	BDL
Chromium	Cr	0.027	BDL
Copper	Cu	0.034	BDL
Mercury	Hg	0.026	BDL
Manganese	Mn	0.038	6.304
Molybdenum	Mo	0.031	BDL
Nickel	Ni	0.036	BDL
Lead	Pb	0.047	BDL
Antimony	Sb	0.035	BDL
Selenium	Se	0.157	BDL
Vanadium	V	0.036	BDL
Zinc	Zn	0.031	BDL

UTD = Unable to determine; NT = Not tested; BDL = Element below indicated detection limit; * = Not a SANAS accredited method; All elements measured by ICP-OES.

Table 4: GC-MS total and leachable organics for sample: IW2026-0050

Contaminant Name	Detection Limit (mg/kg)	Concentration (mg/kg)	Theoretical Max. Leach Concentration (mg/L)
1-Methylnaphthalene*	2.000	BDL	BDL
2,4,6-Trichlorophenol*	2.000	BDL	BDL
2,4-Dichlorophenol*	2.000	BDL	BDL

2,4-Dinitrotoluene*	2.000	BDL	BDL
2,4-Dimethylphenol	2.000	BDL	BDL
2-Chloronaphthalene*	2.000	BDL	BDL
2-Chlorophenol*	2.000	BDL	BDL
2-Methylnaphthalene*	2.000	BDL	BDL
2-Methylphenol (o-Cresol)*	2.000	BDL	BDL
2-Methylphenol*	2.000	BDL	BDL
4-Methylphenol*	2.000	BDL	BDL
Acenaphthene*	2.000	BDL	BDL
Acenaphthylene*	2.000	BDL	BDL
Anthracene*	2.000	BDL	BDL
Benz(a) anthracene	2.000	BDL	BDL
Benzo(b) fluoranthene	2.000	BDL	BDL
Benzo(g,h,i) perylene*	2.000	BDL	BDL
Benzo(k)fluoranthene	2.000	BDL	BDL
Benzo(a)pyrene*	2.000	BDL	BDL
Chrysene*	2.000	BDL	BDL
Di (2-ethylhexyl) phthalate*	2.000	BDL	BDL
Dibenz(a,h)anthracene	2.000	BDL	BDL
Fluoranthene*	2.000	BDL	BDL
Fluorene*	2.000	BDL	BDL
Hexachlorobutadiene	2.000	BDL	BDL
Indeno[1,2,3-cd]pyrene*	2.000	BDL	BDL
Naphthalene*	2.000	BDL	BDL
Nitrobenzene*	2.000	BDL	BDL
Phenanthrene*	2.000	BDL	BDL
Phenol*	2.000	BDL	BDL
Pyrene*	2.000	BDL	BDL
1,1,1,2-Tetrachloroethane*	0.002	BDL	BDL
1,1,1-Trichloroethane	0.002	BDL	BDL
1,1,2,2-Tetrachloroethane	0.002	BDL	BDL
1,1,2-Trichloroethane	0.002	BDL	BDL
1,1-Dichloroethane	0.002	BDL	BDL
1,1-Dichloroethylene	0.002	BDL	BDL
1,1-Dichloropropene	0.002	BDL	BDL
1,2,3-Trichlorobenzene	0.002	BDL	BDL
1,2,3-Trichloropropane	0.002	BDL	BDL

1,2,4-Trichlorobenzene	0.002	BDL	BDL
1,2-Dibromo-3-chloropropane	0.002	BDL	BDL
1,2-Dibromoethane	0.002	BDL	BDL
1,2-Dichlorobenzene	0.002	BDL	BDL
1,2-Dichloroethane	0.002	BDL	BDL
1,2-Dichloropropane	0.002	BDL	BDL
1,3,5-Trimethylbenzene	0.002	BDL	BDL
1,3-Dichloropropane	0.002	BDL	BDL
1,4-Dichlorobenzene	0.002	BDL	BDL
2,2-Dichloropropane	0.002	BDL	BDL
4-Chlorotoluene	0.002	BDL	BDL
Benzene	0.002	BDL	BDL
Bromobenzene	0.002	BDL	BDL
Bromochloromethane	0.002	BDL	BDL
Bromodichloromethane	0.002	BDL	BDL
Bromoform	0.002	BDL	BDL
Carbon Tetrachloride	0.002	BDL	BDL
Chlorobenzene	0.002	BDL	BDL
cis-1,2-Dichloroethene	0.002	BDL	BDL
cis-1,3-Dichloropropene	0.002	BDL	BDL
Dibromochloromethane	0.002	BDL	BDL
Dibromomethane	0.002	BDL	BDL
Dichloromethane	0.002	BDL	BDL
Ethylbenzene	0.002	BDL	BDL
Hexachlorobutadiene	0.002	BDL	BDL
Isopropylbenzene	0.002	BDL	BDL
m-Xylene	0.002	BDL	BDL
Naphthalene	0.002	BDL	BDL
n-Butylbenzene	0.002	BDL	BDL
n-Propylbenzene	0.002	BDL	BDL
o-Xylene	0.002	BDL	BDL
p-Xylene	0.002	BDL	BDL
sec-Butylbenzene	0.002	BDL	BDL
Styrene	0.002	BDL	BDL
tert-Butylbenzene	0.002	BDL	BDL
Tetrachloroethylene	0.002	BDL	BDL
Toluene	0.002	BDL	BDL

trans-1,2-Dichloroethene	0.002	BDL	BDL
trans-1,3-Dichloropropene	0.002	BDL	BDL
Trichloroethylene	0.002	BDL	BDL
Trichloromethane(Chloroform)	0.002	BDL	BDL

UTD = Unable to determine; NT = Not tested; BDL = Element below indicated detection limit; * = Not a SANAS accredited method; All elements measured by GC-MS analysis

Table 5: Semi-quantitative analysis for sample: IW2026-0050

Contaminant Name	Detection Limit (mg/kg)	Concentration (mg/kg)	Theoretical Max. Leach Concentration (mg/L)
TDS*	N/A	1449.50	72.48
Chromium (VI)*	3	5	0.25
Chloride*	500	BDL	25
Sulphate*	200	640	32
Nitrate-N*	10	BDL	0.5
Fluoride*	2	BDL	0.1
Cyanide Total*	1	BDL	0.05

UTD = Unable to determine; NT = Not tested; BDL = Element below indicated detection limit; * = Not a SANAS accredited method; All elements measured by semi-quantitative analysis except for TDS value

Table 6: Landfill assessment for: IW2026-0050

Contaminant Name	Total (mg/kg)	Leachable(mg/L)	Waste Type
Metal Ions			
Arsenic	1.00	0.016	Type 3
Boron	UTD	0.023	UTD
Barium	537.69	1.178	Type 3
Cadmium	78.53	0.026	Type 3
Cobalt	3.00	0.049	Type 4
Chromium	333.39	0.027	Type 4
Chromium(VI)	5.000	0.250	Type 3
Copper	11.29	0.034	Type 4
Mercury	2.00	0.026	Type 3
Manganese	134.72	6.304	Type 3
Molybdenum	1.00	0.031	Type 4
Nickel	15.23	0.036	Type 4
Lead	18.07	0.047	Type 3
Antimony	10.00	0.035	Type 3
Selenium	1.00	0.157	Type 3
Vanadium	1.00	0.036	Type 4

Zinc	31.70	0.031	Type 4
Inorganic Anions			
TDS	1449.500	72.48	Type 4
Sulphate	640.000	32.000	Type 4
Nitrate	10.000	0.500	Type 4
Fluoride	2.000	0.100	Type 4
Cyanide	1.000	0.050	Type 4
Chloride	500.000	25.000	Type 4
Organic Compounds			
Benzene	BDL	BDL	Type 3
Benzo(a)pyrene	BDL	BDL	Type 3
Carbon tetrachloride	BDL	BDL	Type 3
Chlorobenzene	BDL	BDL	Type 3
Chloroform	BDL	BDL	Type 3
2-Chlorophenol	BDL	BDL	Type 3
Di (2-ethylhexyl) phthalate	BDL	BDL	Type 3
1,2-Dichlorobenzene	BDL	BDL	Type 3
1,4-Dichlorobenzene	BDL	BDL	Type 3
1,2-Dichloroethane	BDL	BDL	Type 3
1,1-Dichloroethylene	BDL	BDL	Type 3
1,2-Dichloroethylene	BDL	BDL	Type 3
Dichloromethane	BDL	BDL	Type 3
2,4-Dichlorophenol	BDL	BDL	Type 3
2,4-Dinitrotoluene	BDL	BDL	Type 3
Ethylbenzene	BDL	BDL	Type 3
Formaldehyde	NT	NT	UTD
Hexachlorobutadiene	BDL	BDL	Type 3
Methyl ethyl ketone	NT	NT	UTD
MTBE (Methyl t-butyl ether)	NT	NT	UTD
Nitrobenzene	BDL	BDL	Type 3
PAHs (total)	BDL	N/A	Type 3
Petroleum H/Cs, C6 to C9	NT	N/A	NT
Petroleum H/Cs, C10 to C36	NT	N/A	NT
Phenols (total, non-halogenated)	BDL	BDL	Type 3
Polychlorinated biphenyls	NT	NT	UTD
Styrene	BDL	BDL	Type 3
1,1,1,2-Tetrachloroethane	BDL	BDL	Type 3

1,1,2,2-Tetrachloroethane	BDL	BDL	Type 3
Tetrachloroethylene	BDL	BDL	Type 3
Toluene	BDL	BDL	Type 3
Trichlorobenzenes (Total)	BDL	BDL	N/A
1,1,1-Trichloroethane	BDL	BDL	Type 3
1,1,2-Trichloroethane	BDL	BDL	Type 3
Trichloroethylene	BDL	BDL	Type 3
2,4,6-Trichlorophenol	BDL	BDL	Type 3
Vinyl Chloride	NT	NT	UTD
Xylene	BDL	BDL	Type 3

UTD = Unable to determine; NT = Not tested; BDL = Element below indicated detection limit.

Determining the landfill site class for disposal:

The assigned waste type determines the class of landfill site where a particular waste stream may be disposed. A waste type of one (Type 1) is assigned to waste that presents the most risk to the environment when disposed of at a landfill site and therefore requires disposal at a site with stringent engineering controls corresponding to a so called "Class A" site. Type four (Type 4) waste presents a low risk to the environment when disposed of to a landfill site and therefore may be disposed of at a less stringently engineered, "Class D" site. Type zero waste (Type 0) may not be disposed of to any landfill site in South Africa without prior treatment. The National Waste Classification and Management Regulations detail specific requirements surrounding the classification and assessment of waste for disposal to landfill (See references). Note that a GHS (SANS10234) compliant classification and safety data sheet is required before a final waste management decision should be taken and should be read in conjunction with this assessment.

Standard Operational Procedure:

Identification of analysis methods:

IW-S-1: Determination of Metals in Liquids and solids using ICP-OES Optima 8300; IW-S-2: Determination of the VOC content of liquid and solids using GC6850, MS5976C; IW-S-3: pH Measurement; IW-S-4: EC Measurement; IW-S-5: Calibration and measurement of samples using Supercal Modular calorimeter; IW-S-6: Toxicity characteristic leaching procedure – TCLP; IW-S-7: Field Portable X-ray Fluorescence FTXRF; AS 4439.1-1999: Wastes, sediments and contaminated soils - Preparation of leachates - Preliminary assessment; AS 4439.3-1997: Wastes, sediments and contaminated soils - Preparation of leachates - Bottle leaching procedures.

Disclaimer/s:

Analysis results relate only to the samples submitted. The laboratory has no control over the sampling protocol, the presentivity of the samples and the manner in which the samples were collected, transported, stored, preserved, or otherwise handled outside of the laboratory facility and therefore takes no responsibility whatsoever for these activities. Third parties using INTERWASTE results can verify the results by contacting the laboratory. INTERWASTE is not liable or responsible for the customer use and/or interpretation of test results. This certificate cannot be reproduced without the written consent of INTERWASTE laboratory. Unless otherwise indicated, the condition of all the samples on this report was acceptable on receipt. Measurement of uncertainty for all accredited methods is available on request. Table six refers to statement of conformity and the decision rule is based on Government Notice R.635, National Environmental Management: Waste act.

Confidentiality notes:

The information contained in this report is privileged and confidential and intended only for the use of the person or entity to which it is addressed. If the reader of this message is not the intended recipient, you are hereby notified that any retention, dissemination, distribution or copying or the taking of action in reliance to the information on this report is strictly prohibited.

Scope of Accreditation:

Materials/Products Tested	Types of Tests	Standard Specifications, Equipment/Techniques Used
1 - Waste (Solid, sludge and liquid)	Quantification of metals by ICP-OES following ASLP, reagent water (Ag, Al, As, B, Ba, Be, Bi, Cd, Co, Cr, Cu, Fe, Hg, Mn, Mo, Ni, Rb, P, Pb, Sb, Se, Sn, Sr, Ti, Tl, U, V, Zn)	IW-M-01 - Based on method 6010C
2- Solids & Liquids	Determination of VOC; BTEX by GC/MS Headspace	IW-M-02 - Based on method EPA 8260B; EPA 5030B(Liquid) and EPA 5035 (solid)
3- Potable water & leachates	pH at 25 °C	IW-M-03
4- Potable water & leachates	Electrical Conductivity at 25°C	IW-M-04

References

1.) Government Notice R.365, National Environmental Management: Waste Act (59/2008): National norms and standards for the assessment of waste for landfill disposal, Gazette No. 36

Signed by:Tendani Mudau
Signed at:2026-02-09 06:08:18 +02:00
Reason:Witnessing Tendani Mudau

[Signature]

CLIENT: Interwaste

DATE: 30 January 2026

SAMPLES: 2 Samples (IW2026-0049 & 0050)

ANALYSIS: Qualitative and quantitative XRD

The material was prepared for XRD analysis using a back loading preparation method.

Diffraction patterns were obtained using a Malvern Panalytical Aeris diffractometer with PIXcel detector and fixed slits with Fe filtered Co-K α radiation. The phases were identified using X'Pert Highscore plus software.

The relative phase amounts (weight %) were estimated using the Rietveld method).

Comment:

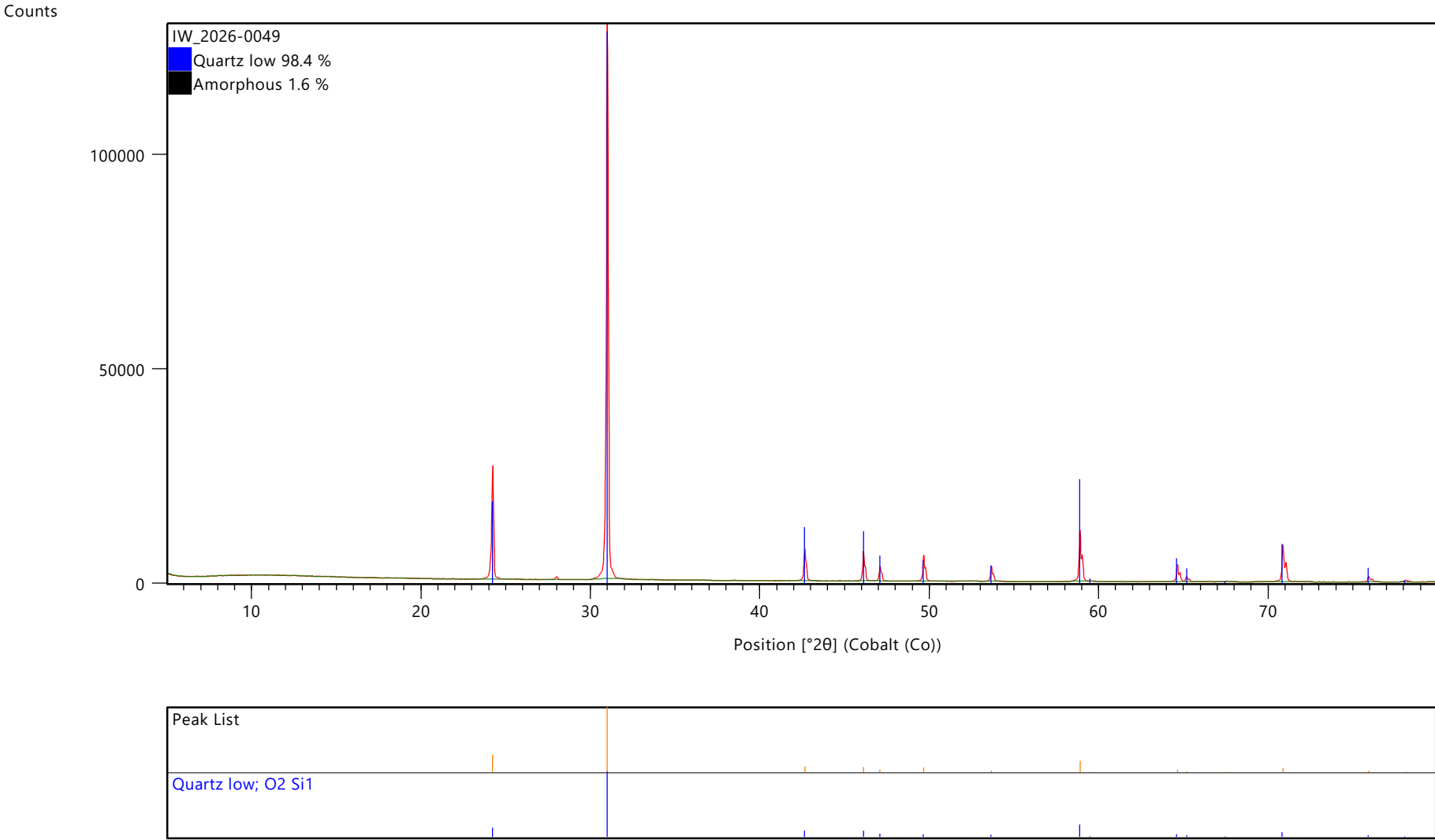
- **In case the results do not correspond to results of other analytical techniques, please let me know for further fine tuning of XRD results.**
- Mineral names may not reflect the actual compositions of minerals identified, but rather the mineral group.
- Smectite, lizardite (serpentine), vermiculite, chlorite, and kaolinite peaks overlap and further test would be necessary to distinguish. Identification is largely based on peak shapes and positions.
- Due to preferred orientation and crystallite size effects results may not be as accurate as shown. Amounts below 0.5-1 weight % may not be reliable.
- Traces of additional phases may be present. Some small peaks could not be matched. 0 = n.d. – not detected above the detection limit of 0.5-3 weight per cent.
- The amorphous content was determined by the “external Standard method (k-factor)”. Determination of amorphous content can carry an error of +/- 15 weight per cent.

If you have any further queries, kindly contact me.

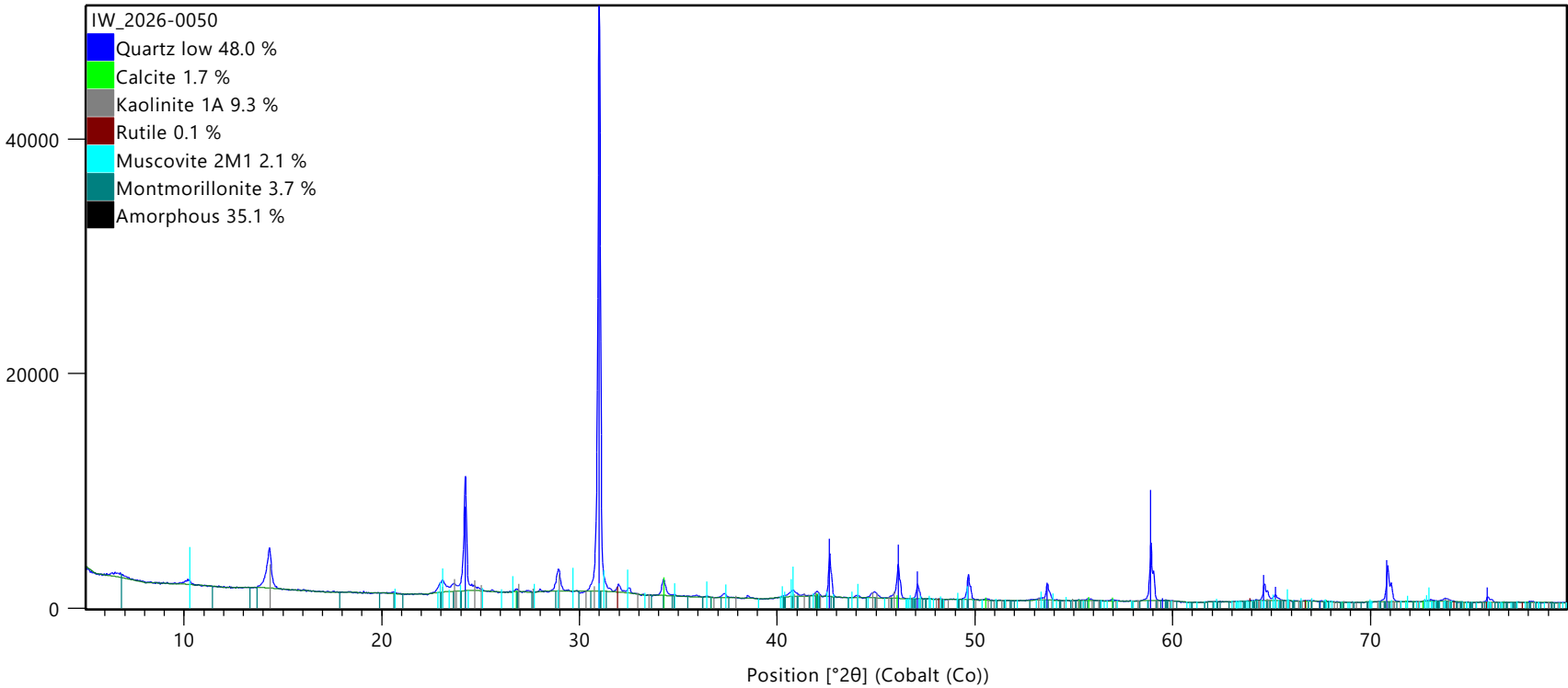


Dr. Sabine Verryn (Pr.Sci.Nat)

Samples will be stored for 3 months after which they will be discarded.

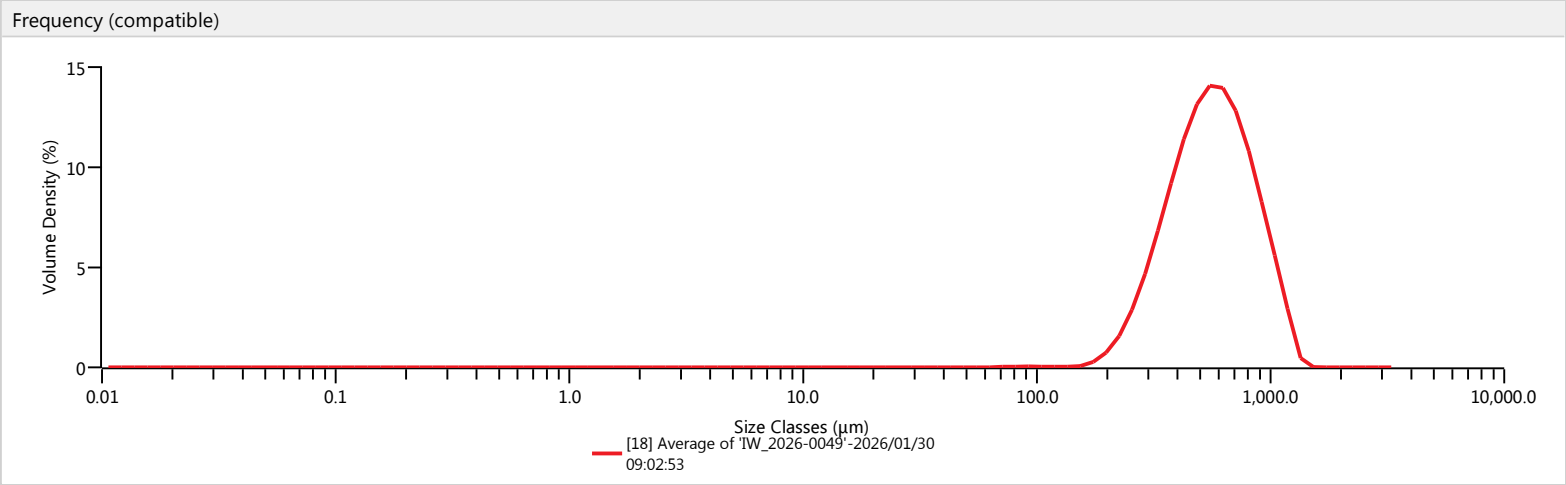


Counts



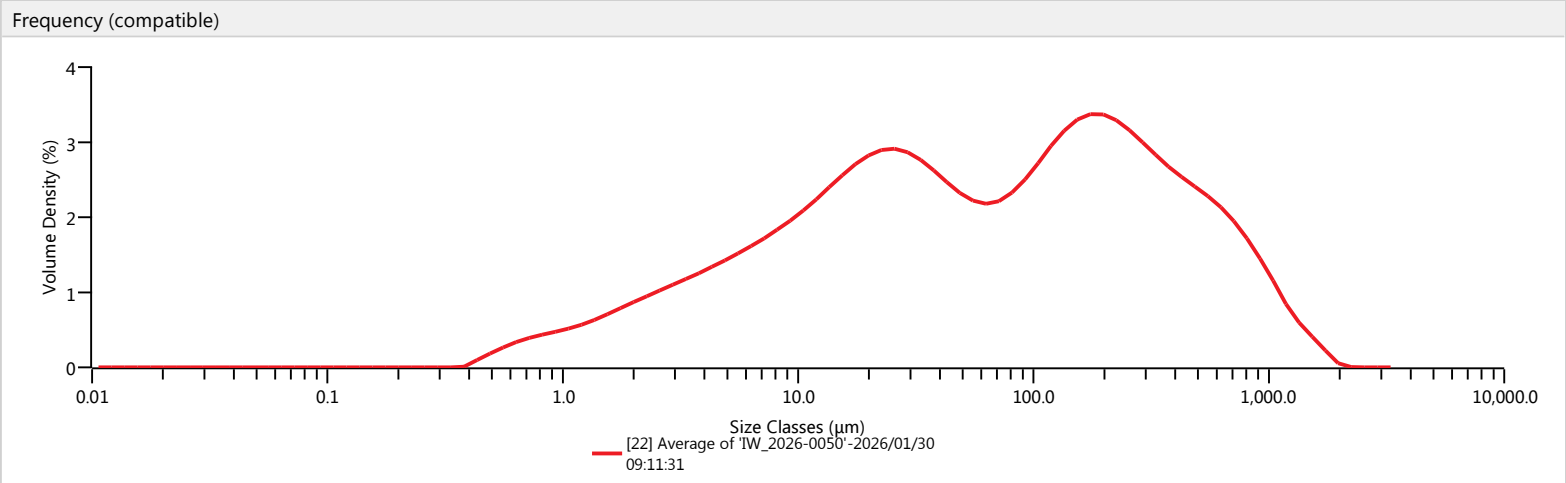
Peak List	
Quartz low; O2 Si1	
Calcite; C1 Ca1 O3	
Kaolinite 1A; H4 Al2 O9 Si2	
Rutile; O2 Ti1	
Muscovite 2M1; H1.828 Al2.472 F0.172 Fe0.315; K1 O11.828 Si3.28	
Montmorillonite; H1 Al2 Ca0.5 O12 Si4	

Measurement Details	Measurement Details
Sample Name Average of 'IW_2026-0049'	Measurement Date Time 2026/01/30 09:02:53
SDS 60188	Analysis Date Time 2026/01/30 09:02:53
SOP File Name Default + 60us LV.msop	Original Record Number 18
Analysis	Analysis
Particle Name Default 1.0	Particle Refractive Index 1.520
Dispersant Name Water	Dispersant Refractive Index 1.330
Particle Absorption Index 1.000	Laser Obscuration 2.95 %
Weighted Residual 0.93 %	Scattering Model Mie
Analysis Model General Purpose	Analysis Sensitivity Normal
Result	Result
Concentration 0.1946 %	Span 1.089
Uniformity 0.331	Result Units Volume
Specific Surface Area 11.32 m²/kg	Dv (10) 320 µm
D [3,2] 505 µm	Dv (50) 560 µm
D [4,3] 594 µm	Dv (90) 929 µm



Result											
Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under	Size (µm)	% Volume Under
0.0100	0.00	0.146	0.00	1.65	0.00	18.7	0.00	98.1	0.09	976	92.64
0.0114	0.00	0.166	0.00	1.88	0.00	20.0	0.00	111	0.12	1110	97.33
0.0129	0.00	0.188	0.00	2.13	0.00	21.2	0.00	127	0.15	1260	99.77
0.0147	0.00	0.214	0.00	2.50	0.00	25.0	0.00	144	0.17	1430	100.00
0.0215	0.00	0.243	0.00	2.75	0.00	27.4	0.00	163	0.20	1630	100.00
0.0278	0.00	0.314	0.00	3.12	0.00	31.1	0.00	186	0.42	1850	100.00
0.0315	0.00	0.357	0.00	3.55	0.00	35.3	0.00	211	0.99	2100	100.00
0.0358	0.00	0.405	0.00	4.03	0.00	38.0	0.00	240	2.29	2390	100.00
0.0407	0.00	0.460	0.00	4.58	0.00	40.1	0.00	272	4.61	2710	100.00
0.0463	0.00	0.523	0.00	5.21	0.00	44.0	0.00	310	8.57	3080	100.00
0.0526	0.00	0.594	0.00	5.92	0.00	45.0	0.00	352	14.25	3500	100.00
0.0597	0.00	0.675	0.00	6.72	0.00	51.8	0.00	400	21.95		
0.0679	0.00	0.767	0.00	7.64	0.00	58.9	0.00	454	31.42		
0.0771	0.00	0.872	0.00	8.68	0.00	63.0	0.00	516	42.48		
0.0876	0.00	1.00	0.00	10.0	0.00	66.9	0.00	586	54.24		
0.0995	0.00	1.13	0.00	11.2	0.00	75.0	0.02	666	65.99		
0.113	0.00	1.28	0.00	14.5	0.00	76.0	0.02	756	76.67		
0.128	0.00	1.45	0.00	15.0	0.00	86.4	0.06	859	85.73		

Measurement Details	Measurement Details
Sample Name Average of 'IW_2026-0050'	Measurement Date Time 2026/01/30 09:11:31
SDS 60189	Analysis Date Time 2026/01/30 09:11:31
SOP File Name Default + 60us LV.msop	Original Record Number 22
Analysis	Analysis
Particle Name Default 1.0	Particle Refractive Index 1.520
Dispersant Name Water	Dispersant Refractive Index 1.330
Particle Absorption Index 1.000	Laser Obscuration 11.56 %
Weighted Residual 0.22 %	Scattering Model Mie
Analysis Model General Purpose	Analysis Sensitivity Normal
Result	Result
Concentration 0.0149 %	Span 8.648
Uniformity 2.657	Result Units Volume
Specific Surface Area 554.8 m ² /kg	Dv (10) 4.13 μm
D [3,2] 10.3 μm	Dv (50) 62.0 μm
D [4,3] 184 μm	Dv (90) 540 μm



Result											
Size (μm)	% Volume Under	Size (μm)	% Volume Under	Size (μm)	% Volume Under	Size (μm)	% Volume Under	Size (μm)	% Volume Under	Size (μm)	% Volume Under
0.0100	0.00	0.146	0.00	1.65	3.84	18.7	29.36	98.1	56.95	976	97.27
0.0114	0.00	0.166	0.00	1.88	4.51	20.0	30.60	111	59.15	1110	98.24
0.0129	0.00	0.188	0.00	2.13	5.22	21.2	31.68	127	61.74	1260	98.94
0.0147	0.00	0.214	0.00	2.50	6.22	25.0	34.81	144	64.33	1430	99.44
0.0215	0.00	0.243	0.00	2.75	6.86	27.4	36.56	163	67.01	1630	99.78
0.0278	0.00	0.314	0.00	3.12	7.77	31.1	38.93	186	69.92	1850	99.96
0.0315	0.00	0.357	0.00	3.55	8.76	35.3	41.22	211	72.71	2100	100.00
0.0358	0.00	0.405	0.00	4.03	9.80	38.0	42.49	240	75.48	2390	100.00
0.0407	0.00	0.460	0.08	4.58	10.91	40.1	43.41	272	78.06	2710	100.00
0.0463	0.00	0.523	0.24	5.21	12.12	44.0	44.91	310	80.63	3080	100.00
0.0526	0.00	0.594	0.46	5.92	13.38	45.0	45.27	352	82.98	3500	100.00
0.0597	0.00	0.675	0.74	6.72	14.72	51.8	47.42	400	85.21		
0.0679	0.00	0.767	1.06	7.64	16.16	58.9	49.28	454	87.31		
0.0771	0.00	0.872	1.43	8.68	17.69	63.0	50.23	516	89.32		
0.0876	0.00	1.00	1.85	10.0	19.51	66.9	51.09	586	91.22		
0.0995	0.00	1.13	2.27	11.2	21.06	75.0	52.74	666	93.00		
0.113	0.00	1.28	2.73	14.5	24.98	76.0	52.93	756	94.62		
0.128	0.00	1.45	3.24	15.0	25.54	86.4	54.87	859	96.06		

TEST REPORT

63282A

Test Description: Gasoline Range Organics and Total Petroleum Hydrocarbons

Test Method: EPL-T-012 (GRO) and EPL-T-011 (TPH)

Client and Project Information

Client: Interwaste Environmental Solutions

Address: 2 Brammer Street
Germiston South
1400

Attention: Tendani Ramaru

Tel: (011) 792-9330

Email: tendanimu@interwaste.co.za

Project number: N/A

Project name: N/A

Sample Information

Matrix: Soil

Storage: Fridge at 0-6°C

Container: Plastic

Date Received: 2026/01/27

Date Analysed: 2026/01/27

Date Issued: 2026/01/28

<u>SAMPLE ID</u>	<u>GRO C7-C9</u>	<u>TPH C10-C14</u>	<u>TPH C15-C36</u>	<u>DILUTIONS</u>
IW2026-0049	<200 µg/kg	<20 mg/kg	<22 mg/kg	GRO=20, TPH=1
IW2026-0050	480 µg/kg	<20 mg/kg	130 mg/kg	GRO=20, TPH=1

Disclaimers

- 1) The results only relate to the test items provided, in the condition as received.
- 2) This report may not be reproduced, except in full, without the prior written approval of the laboratory.
- 3) Parameters marked " * " are not included in the SANAS Schedule of Accreditation for this laboratory.
- 4) A = Concentration outside calibration range, O = Outsourced analysis, UTD = Unable to Determine.
- 5) Uncertainty of measurement for all methods included in the SANAS Schedule of Accreditation is available on request.
- 6) Deviation: Sample received in plastic container, may impact results.

Reinardt Cromhout
Authorised Signatory

ANNEXURE B: SAFETY DATA SHEET

GHS Safety Data Sheet for 'Combined Drill Waste'

GHS Safety Data Sheet

Torque Africa Exploration

Combined Drill Waste

Section1: Product & Generator Identification			
Waste Type	Combined Drill Waste	Synonym(s)	-
Waste Generator	Torque Africa Exploration	E-mail: braam.j@torqueafrica.co.za	
	PO Box 367	Emergency Contact Person	Braam Jankowitz
	Rayton 1001	Emergency No.	C: +27 83 635 2018
Waste Origin	The waste material is generated during rotary drilling operations through weathered sand and sedimentary strata of the Molteno Formation, mudstone aquiclude layers, and coal-bearing units of the Beaufort Group and Eccia Group. Drill cuttings are produced by mechanical fragmentation of these formations and are returned to surface in circulation with water-based drilling fluids.		
Section 2: Hazards Identification			
Physical	Health	Environmental	
N/A	Skin Irritation - Category 3	N/A	
GHS Hazard Symbol(s)			
Not Applicable			
Signal Word	Warning		
Hazard Statement(s)	H316: Causes mild skin irritation		
Precautionary Statement(s)	Precautionary statements provided to assist with safe handling and use.		
	P264: Wash eyes thoroughly after handling.		
	P270: Do not eat, drink or smoke when using this product.		
	P281: Use personal protective equipment as required.		
	P332+P317: If skin irritation occurs: Get medical help		
	P391: Collect spillage.		
	P308+P313: If exposed or concerned: Call a POSION CENTRE or doctor/physician.		
P501: Dispose of contents/container in appropriate waste skips			
Section 3: Composition / Information on Ingredients			
Common Chemical Name	Synonym(s)	CAS#	Concentration (%/weight)
Aluminium oxide	-	1344-28-1	1.28
Iron Oxide	-	1309-37-1	1.11
Calcium Carbonate	-	471-34-1	5.29
Quartz Low	-	14808-60-7	48.00
Kaolinite 1A	-	1318-74-7	9.30
Rutile	-	1317-80-2	0.10

Muscovite 2M1	-	1318-94-1 and 12001-26-2	2.10
Montmorillonite	-	1318-93-0	3.70
The 'Combined Drill Waste' consists of the above-mentioned ingredients, which may be present within their indicated concentration ranges in this waste stream.			
Section 4: First Aid Measures			
General advice	When consulting a physician. Show this safety data sheet to the doctor in attendance.		
Contact with Skin	If skin irritation occurs: Get medical help		
Contact with Eyes	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. If eye irritation persists: Get medical help.		
Inhalation	Do not breathe mists. IF INHALED: Remove person to fresh air and keep comfortable for breathing.		
Ingestion	Never give anything by mouth to an unconscious person. Rinse mouth with water. DO NOT induce vomiting. If exposed or if you feel unwell: Call a POISON CENTRE or doctor/physician.		
PPE for First Aid Responders	Wear protective gloves/protective clothing/eye protection/face protection/respiratory protection.		
Section 5: Fire-fighting Measures			
Extinguishing Media	Use extinguishing medium suitable to the surrounding environment.		
Potential Products of Combustion	Not determined.		
Protective equipment / precautions for fire-fighters	Wear self-contained breathing apparatus for firefighting as necessary.		
Section 6: Accidental Release Measures			
Personal Precautions / PPE	Response and clean-up crews must be properly trained. Wear protective gloves/protective clothing/eye protection/face protection/respiratory protection. Do not inhale dusts or mist. Ensure adequate ventilation.		
Environmental Precautions	Avoid release to the environment. Prevent further spillage or leakage if safe to do so. Do not let product enter drains or waterways. Absorb spillage to prevent material damage.		
Clean-up Method / Materials & Containment	SMALL SPILL	LARGE SPILL	
	As per large spill →	Clear area of all unprotected personnel. Approach release from upwind. Dike liquid fraction of waste (if present) with non-reactive absorbent. Collect spilled waste manually, and place into appropriate receptacle, noting that any materials used during the clean-up reflects the same hazards as the 'Combined Drill Waste'. Dispose of solid residues at an authorized site. If a significant quantity of material enters drains, advise emergency services.	
Materials/containers NOT to be Used for Clean-up	Not determined. .		
Section 7: Handling and Storage			
Precautions for Safe Handling	Do not handle until all safety precautions have been read and understood. Handle in accordance with good industrial hygiene and safety practice. Do not breathe dust or mist. Wash hands thoroughly after handling. Ensure adequate ventilation. The personal protection and controls identified in Section 8 of the SDS should be used as appropriate.		
Precautions for Safe Storage	Apply relevant license or regulatory conditions and or National Waste Storage Standards, as relevant. Store in a corrosion resistant container with a resistant inner liner. Dispose of contents/container to the appropriate landfill according to the GN R 635 and 636 (2013) as amended (7 November 2024).		
Compatibility Issues	Not determined.		

Section 8: Exposure Controls / Personal Protection			
Exposure Limits	Component	Source	Limit (mg/m ³ unless otherwise stated)
	Aluminium oxide	OSHA PEL	15 mg/m ³ (total dust, 8-hr TWA) 5 mg/m ³ (respirable fraction, 8-hr TWA)
		NIOSH REL	10 mg/m ³ (total dust) 5 mg/m ³ (respirable dust)
		ACGIH TLV	1 mg/m ³ (respirable fraction, 8-hr TWA)
	Iron Oxide	OSHA PEL	10 mg/m ³ (total dust, 8-hr TWA) 5 mg/m ³ (respirable fraction)
		NIOSH REL	5 mg/m ³ (respirable, 10-hr TWA)
		ACGIH TLV	5 mg/m ³ (respirable fraction)
	Calcium Carbonate	OSHA PEL	15 mg/m ³ (Total dust 8-hr TWA) 5 mg/m ³ (Respirable fraction 8-hr TWA)
		NIOSH REL	10 mg/m ³ (Total dust 10-hr TWA) 5 mg/m ³ (Respirable dust 10-hr TWA)
		ACGIH TLV	10 mg/m ³ (Inhalable fraction 8-hr TWA) 3 mg/m ³ (Respirable fraction 8-hr TWA)
	Quartz Low	OSHA PEL	50 µg/m ³ (respirable dust, 8-hr TWA) ³
		NIOSH REL	50 µg/m ³ (respirable, 10-hr TWA)
		ACGIH TLV	0.025 mg/m ³ (respirable fraction, 8-hr TWA)
	Kaolinite 1A	OSHA PEL	15 mg/m ³ (Total dust 8-hr TWA) 5 mg/m ³ (Respirable fraction 8-hr TWA)
		NIOSH REL	10 mg/m ³ (Total dust 10-hr TWA) 5 mg/m ³ (Respirable dust 10-hr TWA)
		ACGIH TLV	2 mg/m ³ (Respirable fraction 8-hr TWA)
	Rutile	OSHA PEL	15 mg/m ³ (Total dust 8-hr TWA)
		NIOSH REL	2.4 mg/m ³ (Fine TiO ₂) 0.3 mg/m ³ (Ultrafine TiO ₂)

	Muscovite 2M1	ACGIH TLV	10 mg/m ³ (Inhalable fraction 8-hr TWA)
		OSHA PEL	~3 mg/m ³ (TWA (8-10 hr) – respirable fraction)
		NIOSH REL	3 mg/m ³ (TWA (8-10 hr) – respirable fraction)
	Montmorillonite	ACGIH TLV	3 mg/m ³ (TWA (8-10 hr) – respirable fraction)
		OSHA PEL	15 mg/m ³ (Total dust) 5 mg/m ³ (Respirable fraction)
		NIOSH REL	10 mg/m ³ (Total dust 10-hr TWA) 5 mg/m ³ (Respirable dust 10-hr TWA)
		ACGIH TLV	3 mg/m ³ (Respirable fraction 8-hr TWA)

Engineering Controls	Clean up contaminated areas. Ensure good ventilation.		
Personal Protective Equipment	Eye Protection	Safety glasses or goggles.	
	Skin Protection	Gloves and clothing covering body as determined by a risk assessment.	
	Respiratory Protection	Suitable respiratory equipment to be selected under guidance by the relevant occupational health and safety authority, in areas where exposure limits are likely to be exceeded.	

Section 9: Physical and Chemical Properties

Appearance		Physical Characteristics (continued)	
Physical state	Solid	Initial boiling point	Not determined.
Colour	Dark Brown	Flash point	Not determined.
Odour		Auto ignition temperature	Not determined
Odour	Low Odour	Decomposition temperature	Not determined
Odour threshold	Not determined	Solubility	Not determined
Physical Characteristics		Partition coefficient: n-octanol/water	Not determined
pH	9.74	Viscosity	Not determined
Melting point	Not determined	% volatile(s)	Not determined
Flammability	Not determined	Evaporation rate	Not determined

Section 10: Stability and Reactivity

Chemical stability	Stable under normal conditions.
Possibility of Hazardous Reactions	Not determined.
Hazardous Decomposition Products	Not determined.
Incompatible Substances / Materials	Not determined.
Conditions to Avoid	Incompatible materials.

Section 11: Toxicological Information			
Likely Routes of Exposure		Dermal, inhalation, and eye contact	
Acute Symptoms and Effects	Skin/eye Contact	Skin contact can cause mild skin irritation	
	Inhalation	*In its current form, inhalation hazards are not expected, as there would be no respirable fraction. However, if the waste were to dry out and become disaggregated or mechanically disturbed, the generation of respirable dust may occur. Under such circumstances, inhalation-related hazards (e.g., carcinogenicity, STOT-SE, or STOT-RE) could become relevant.	
	Ingestion / Oral exposure	-	
Constituent / Ingredient Toxicity		LD ₅₀	LC ₅₀
		Oral	Inhalation (Dust)
Combined Drill Waste		N/A	N/A
Specific Target Organ Toxicity		Not in its current form.	
Germ Cell Mutagenicity		-	
Carcinogenicity		Not in its current form.	
Reproductive toxicity		-	
Irritancy		-	
Sensitization		-	
Section 12: Ecological Information			
Constituent Ecotoxicity	LC ₅₀	ErC ₅₀	
Combined Drill Waste	N/A	N/A	
Persistence and Degradability	Not determined.		
Bioaccumulation Potential	Not determined.		
Mobility in Soil	Not determined.		
Other Adverse Effects	Not determined.		
Section 13: Disposal Considerations			
As assessed in terms of the South African National Standard for the Assessment of Waste for Landfill Disposal (GN R 635 of 23 August 2013) – Type 3 waste.			
Potential Landfill Prohibition / Restrictions		None.	
Treatment Prior to Disposal		Not determined.	
Section 14: Transport Information			
Waste Classification	Not Regulated	Labelling Required	*Not required under the UN Model Regulations
UN number	-		
Shipping Name	-		
Packing Group	-		
UN Model Regulations / Transport Hazard Class(es)	-		
Marine Pollutant	-		
Special Instruction(s)	-		

Section 15: Regulatory Information	
Safety, Health and Environmental Legislation / Standards / Guideline	Comments / Applicability
National Environmental Management Act, 1998 (Act 107 of 1998)[NEMA]	Principles, aims and objectives from environmental management in South Africa.
National Environmental Management: Waste Act, 2008 (Act 59 of 2008)[NEM:WA]	Principles, aims and objectives for sound waste management practices in South Africa. Provides for, <i>inter alia</i> , the definition of 'waste'
National Waste Classification and Management Regulations (GN R 634 of 23 August 2013) and its amendment, (GN R 5524, of 7 November 2024)	Covers the requirements for waste management, classification and assessment for disposal to landfill of waste in South Africa.
National Standard for the Assessment of Waste for Disposal to Landfill (GN R 635 of 23 August 2013) and its amendment, (GN R 5522, of 7 November 2024)	Covers the requirements for the assessment of waste for disposal to landfill; where disposal is relevant.
National Standard for the Disposal of Waste to Landfill (GN R 636 of 23 August 2013) and its amendment, (GN R 5523, of 7 November 2024)	Covers the requirements (incl. prohibitions) for the disposal of waste to landfill; where disposal is relevant.
UN Model Regulations (Orange Book) (Recommendations on the Transport of Dangerous Goods)	Standard cover the identification of dangerous goods that are capable of posing significant risk to health and safety or to property and the environment; where such is linked to transport requirements for the transport of such goods.
GHS (10th revised Edition), (Globally Harmonised System of Classification and Labelling of Chemicals)	Covers the classification of hazardous substances, including waste, for their safe transport, use at the workplace or in the home according to their health, environmental and physical hazards, for example, acute toxicity and flammability.
National Water Act, 1998 (Act 36 of 1998)[NWA]	Promotes the protection of water resources in the National interest.
Occupational Health and Safety Act, 1993 (Act 85 of 1993)[OHSA], as amended	Provides for the health and safety of persons at work.

Section 16: Other Information

Physical Hazards		Health Hazards		Environmental Hazards	
Explosives	X	Acute Toxicity: Oral	X	Acute Toxicity – Acute	X
Flammable Gases	X	Acute Toxicity: Skin	X	Acute Toxicity – Chronic	X
Flammable Aerosols	X	Acute Toxicity: Inhalation	X		
Oxidizing Gases	X	Skin Corrosion/Irritation	✓		
Gases Under Pressure	X	Serious Eye Damage/Eye Irritation	X		
Flammable Liquids	X	Respiratory Sensitization	X		
Flammable Solids	X	Skin Sensitization	X		
Self-Reactive Substances	X	Germ Cell Mutagenicity	X		
Pyrophoric Liquids	X	Carcinogenicity	X		
Pyrophoric Solids	X	Toxic To Reproduction	X		
Self-Heating Substances	X	Specific Target Organ Toxicity – Single Exposure	X		
Substances That, On Contact With Water, Emit Flammable Gases	X	Specific Target Organ Toxicity – Repeated Exposure	X		
Oxidizing Liquids	X	Aspiration Hazard	X		
Oxidizing Solids	X				
Organic Peroxides	X				
Corrosive To Metals	X				

KEY	
Applicable	✓
Not applicable	X