

Ok Birim Tailings Storage Facility Project

Environmental and Social Impact Assessment

Appendix K

Soils characterisation technical report





Klohn Crippen Berger

Ok Tedi Mining Limited

OTML Lowlands TSF Feasibility Study

Soils Characterisation Technical Report

Final

25 May 2026

Ok Tedi Mining Limited
PO Box 1
Tabubil, Western Province
Papua New Guinea

Alan Bong
General Manager, Strategy, Business Development and Optimisation

Dear Alan:

**OTML Lowlands TSF Feasibility Study –Soils Characterisation Technical Report
Final**

Klohn Crippen Berger (KCB) is pleased to submit the Soils Characterisation Technical Report presenting the findings of the soil sampling and characterisation study conducted for the proposed Ok Birim Tailings Storage Facility (TSF) and associated infrastructure.

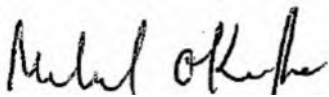
This report provides interpretation of laboratory test results, updated soil maps, and an assessment of soil conditions relevant to the Environmental and Social Impact Assessment (ESIA). It also presents baseline geoscientific information to support impact assessment, materials management, and rehabilitation planning.

A draft version of this report was previously provided to Ok Tedi Mining Limited (OTML) and Tetra Tech for review and comment. As no comments were received, this report is issued as final.

Please contact the undersigned should you have any queries regarding this submission.

Yours truly,

KLOHN CRIPPEN BERGER



Michael O'Keeffe
Project Manager

RN:JJ

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1 INTRODUCTION

TetraTech has been engaged by Ok Tedi Mining Limited (OTML) to prepare the Environmental and Social Impact Assessment (ESIA) required for the proposed Lowlands Tailings Storage Facility (TSF) to be constructed in Western Province, Papua New Guinea (PNG).

As part of the broader ESIA program, TetraTech commissioned KCB Australia Pty Ltd (KCB), via OTML, to develop a Soil Characterisation Technical (SCT) report for the proposed TSF and associated infrastructure corridors. The SCT report will form a supporting technical appendix to the ESIA submission and provide baseline geoscientific information relevant to the impact assessment, materials management, and rehabilitation planning for the development.

To support this assessment, a soil characterisation campaign has been conducted to develop a soil classification map for the project footprint.

1.1 Scope of Works

The Site Investigation (SI) has been completed in general accordance with KCB's site investigation and execution plan dated 8 August 2025. The required scope of work is listed below:

- A desktop study to produce a preliminary Land Facet Group map that can be used as a reference for the target soil sampling locations.
- Undertaking of soil mapping and sampling campaign across the proposed TSF and nearby infrastructure footprints.
- Provide input to the potential impact of the proposed project on the handling, storing and rehabilitation of soil during the construction and operations.
- Complete a suite of laboratory tests for soil mechanics characterisation (including factors affecting erodibility), identification of acid sulfate soils, metals, organic matter and other parameters requested by TetraTech.
- Preparation of a draft factual SCT report.
- Preparation of a final SCT report, including a Land Facet Group map.

On completion of the field campaign, a draft factual SCT report was issued, presenting KCB's soil sampling methodology, preliminary site investigation findings, the generated soil map, soil sample locations, and the suite of proposed laboratory tests for both soil index and geochemical testing. The factual report was issued to OTML on 17 December 2025 and did not receive any review comments.

Following receipt of the laboratory test results, KCB prepared an updated draft Soils Characterisation Technical Report, dated 11th March 2026, to present the interpretation of the laboratory test results, updated soil maps and the preliminary interpretation of soil conditions relevant to the ESIA. The updated draft report provided OTML and Tetra Tech the opportunity to review and comment on the findings prior to finalisation of the report.

No comments have been received to date, and the report herein is therefore issued as final.

1.2 Definitions

The list below outlines the definitions of technical terminology used in this report.

- **Land Facet:** Defining areas based on the landscape's geomorphology, linking particular rock and surficial deposits with expected uniform soil and water profiles, including, but not limited to, ridge crests, free faces, pediments, and gullies (van Schalkwyk and Price 1990).
- **Land Facet Group:** A system to group individual facets based on regional landforms, bedrock geology, soil profile, or engineering behaviours (van Schalkwyk and Price 1990).
- **Fly Platform:** Is a geomorphological feature referring to a stable, elevated surface within a mountainous region that contains the older erosion level or structural surface.
- **Braidplain:** A broad, relatively flat area where the interweaving river channels of a braided river will split and rejoin around temporary sandbars. The river channels and sandbars will migrate throughout the flat area due to high sediment loads and variable water discharges.
- **Floodplain:** A gently sloping to flat area that is adjacent to a river that is periodically inundated when a flooding river overflows its banks. During the inundation, the region experiences rapid sediment deposition across the inundated area.
- **Tributary:** A smaller stream or river that feeds into a larger river or mainstream rather than feeding directly into the ocean.
- **Marshland:** A low-lying wetland area that is dominated by dense vegetation, and the soil is saturated for long periods following intense rainfall.
- **Ridgeline:** line formed along the highest points of the topography around the crests and summits. Outlining the top of the mountainous landscape.

2 BACKGROUND INFORMATION

2.1 Site Location

The proposed TSF and associated infrastructure are located at co-ordinates 9367421 N and 512856 E in a relatively remote and undeveloped area of the Western Province of PNG. The project site is situated approximately 60 km south of the OTML mine site. The site is bounded on the east by the north to south flowing Ok Tedi, with the Ok Birim present to the north of the site. The Ok Tedi and Ok Birim confluence is located approximately 0.8 km to the east of the proposed TSF. Formal (Kungim Village) and informal settlements are evident within approximately 1 km to 2 km of the TSF footprint.

The location of the study area is provided in Figure 2.1.



Figure 2.1 Location of the TSF project area relative to Bige and Tabubil

2.2 Project Background

KCB previously completed a Preliminary Feasibility Study (PFS) in 2014 for a Tailings Storage Facility (TSF) at Ok Birim, including site investigations and geotechnical characterisation. Subsequent project stages—PFS, Environmental and Social Impact Assessment (ESIA), and Multi-Criteria Alternatives Analysis (MAA)—were undertaken by or in collaboration with KCB.

Following completion of the 2024 MAA and PFS reports, the OTML Board approved progression of the TSF project to Feasibility Study (FS) in Q4 2024, with detailed design targeted for 2026 and construction commencing in 2027.

At this stage, preliminary infrastructure proposed for the development comprises:

- Tailings storage facility;
- Cyclone house and choke station;
- Sediment ponds;
- Potential Levees;
- Proposed new river bridge and access roads;
- Pipelines;
- Site offices; and
- Temporary laydown areas.

The development footprint is expected to occupy a cumulative area of approximately 2 000 hectares. This is based on the general arrangement Option C7 that has been developed for the project, as shown on KCB drawing number 1000-CV-SKT-104 included in Appendix I.

The proposed pipeline routes are being designed by Fortine Pipelines Ltd.

2.3 Environmental Guidelines

The environmental guidelines that are incorporated into this assessment are summarised in Table 2.1.

Table 2.1 Summary of Guidelines used for this assessment

Guidelines	Descriptions	References
Acid Sulfate Soils Guidance	Used for acid sulfate soils sampling and identification methods	(Sullivan et al. 2018) (Queensland Government 2025)
Australian and New Zealand Guidelines for Fresh and Marine Water quality	Default guideline values (DGVs) for trace metals and metalloid	(ANZWQG 2024)
Australian Soil Classification	Soil classification	(Isbell and NCST 2021)

3 SITE CHARACTERISTICS

3.1 Regional Geomorphology

The study area falls within the Fly platform, the most significant geomorphological feature of the lowlands of Papua New Guinea, which extends from the south coast northwards to the foot of the central ranges. The main braided rivers of the Fly River system that influence the project area are the Ok Tedi and Ok Birim. The site is situated on the western bank of both rivers, with the convergence of the Ok Tedi and Ok Birim located in the north-eastern corner of the project area.

In its upper reaches, the Ok Tedi and its tributaries drain a heavily dissected ridge and ravine landscape. The ridges rise to over 2,000m in the north, but most of the basin lies between 200 and 800 m. Upstream from Ningerum village, the Lower Ok Tedi emerges from its gorge into a gradually widening valley filled with Pleistocene alluvial sediments. These include weathered and indurated sand and gravel deposits topped by distinctive red soils. Initially, these “red beds” form valley edges and confine the channel. Still, as the valley widens, they form terraces or terrace remnants, and the Ok Tedi develops a currently active floodplain within them. A braided channel develops, and forested islands have formed on some of the more stable braid bars (Bolton 2009).

The significant geomorphological features to the west of the rivers include low, closely spaced dendritic ridges, narrow valleys, hogbacks, and some cuetsas. The ridges are generally homoclinal, with moderate to steep slopes. Characteristically, the summit levels of the ridges are very even, forming a perfect plain and sloping consistently to the south. This is clearly an indication that the area constitutes a former continuous piedmont alluvial plain which is now being dissected by numerous streams and river channels (Loffler 1977).

3.2 Geological Setting

According to the published geological map, Papua New Guinea 1:250 000 geological series: Blucher Range (Sheet SB 54-7), the site is underlain by the Pleistocene age Awin Formation (QPa on Figure 3.1). The Awin Formation, which has a strong influence on the residual soils and geomorphology of the project area, is described by Davies and Norvick (1974) as a 500 m thick formation that includes clean quartz sandstone and conglomerate, bluish-grey volcanoclastic arenite, siltstone, mudstone, thin lignite seams, and white sandy clay.

Based on mapping completed in drainage channels during the 2014 PFS Study, the Awin Formation at Ok Birim typically comprises moderately to highly weathered sandstone and siltstone, with low rock strength noted in outcrops. Bedding generally dips gently towards the south-east, and the dominant joint sets are mostly near vertical. No outcrops were observed outside of drainage channels as bedrock is masked by residual soil and tropical forest cover (KCB 2013b). The Awin Formation at the site lies unconformably over the Birim Formation and is mostly conformably overlain by Quaternary alluvium along drainage channels.

A layer of soft to firm residual soil, comprising mainly clay and silt, covers a significant portion of the area. The underlying Awin Formation has been observed to comprise interbedded siltstone and sandstone, conglomerate, and minor lignite. Weathering decreases with depth, grading from residual soils underlain by extremely weathered rock becoming highly to moderately weathered rock with depth. The strength of the rock typically improved with depth (KCB 2014).

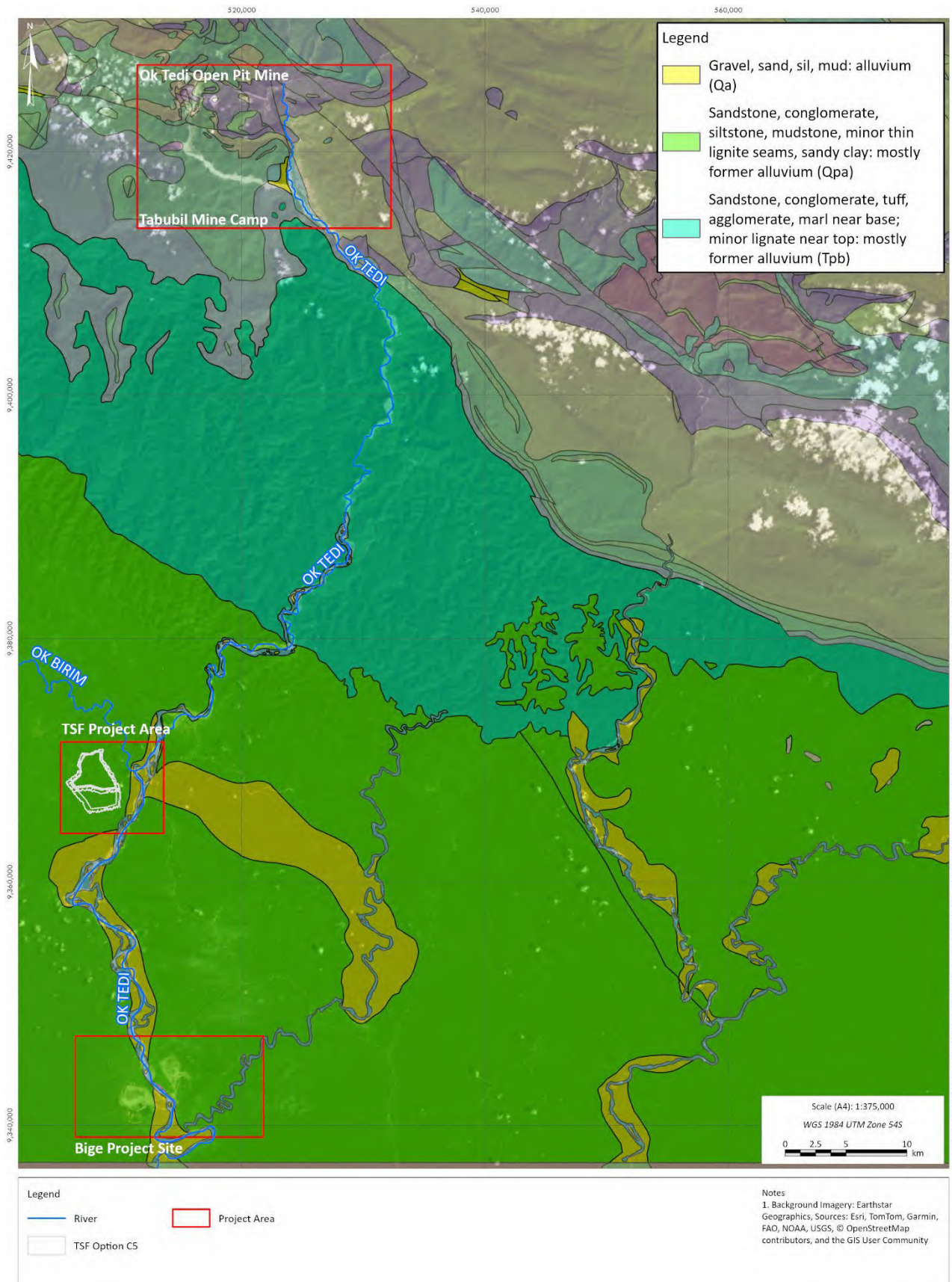


Figure 3.1 Regional geology

4 METHODOLOGY

The soil characterisation study comprised three key stages as follows:

- Desktop Study aimed at producing an interim Land Facet Map to guide the intrusive investigation to follow.
- Field investigation campaign to excavate test pits and log the soil profile for each facet group identified from the desk study, as well as retrieve representative soil samples.
- Laboratory tests to classify and characterise the engineering and geochemical properties of the soils on site.

The methodology followed for each stage of the study is discussed below.

4.1 Desktop Study

KCB conducted a desktop study of available geological data and previous site observations to build an understanding of the area's geomorphology and underlying geology. Based on this assessment, a preliminary Land Facet Map was produced (Figure 4.1), dividing the study area into distinct land facets.

The facets were determined based on the landscape's geomorphology, linking particular rock and surficial deposits with expected uniform soil and water profiles, including, but not limited to, ridge crests, free faces, pediments, and gullies (GV Price, MSc 1981).

Using the preliminary Land Facet Map, provisional test pit and soil sampling locations were identified to ensure coverage of the key geological areas targeted for soil profiling and sampling. A summary of the proposed test pit and soil sampling locations is provided in Table 4.1.

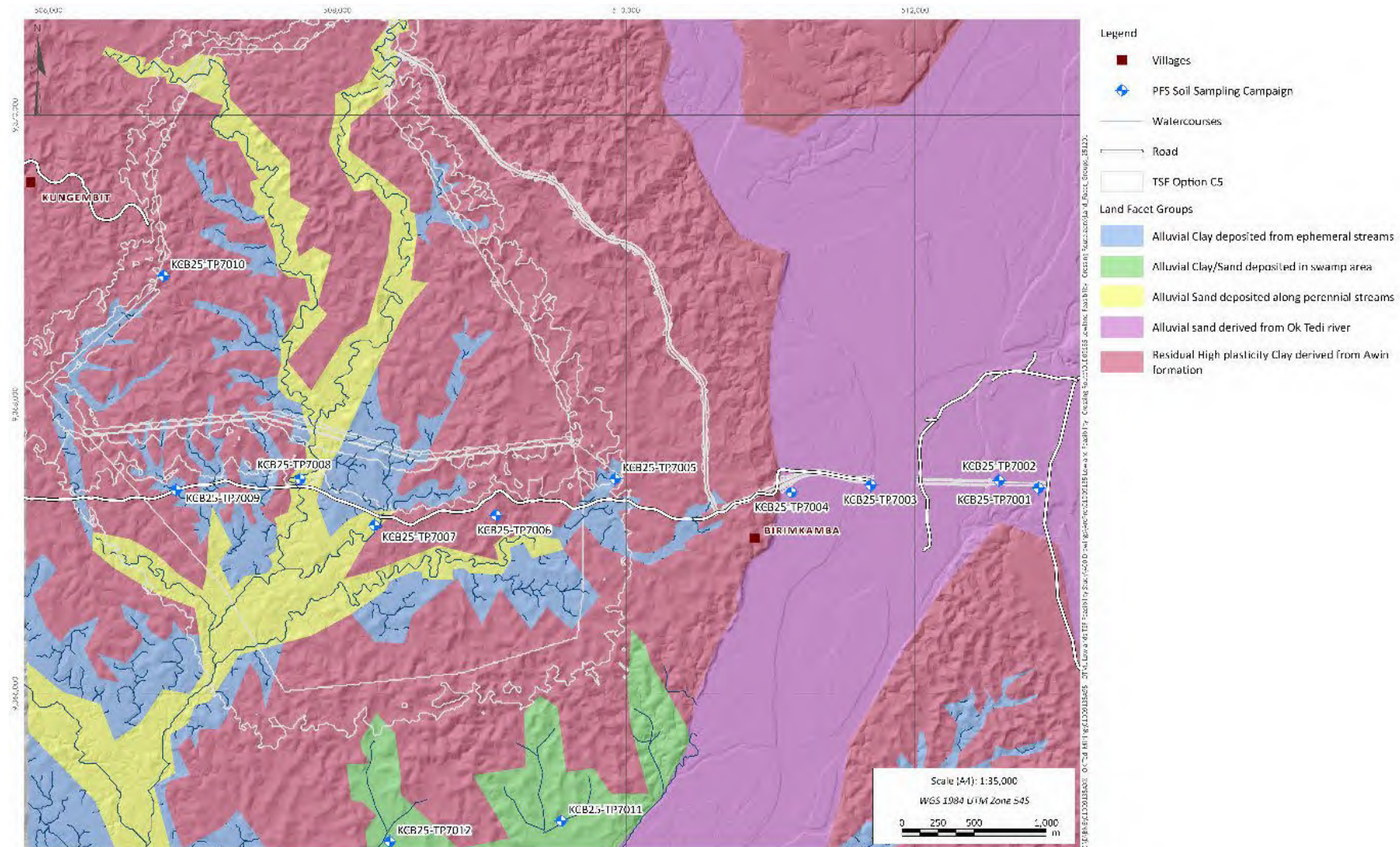


Figure 4.1 Preliminary Land Facet Map based on the desktop study

Table 4.1 Summary of proposed test pit/soil sampling locations

Land Facet	Proposed Test Pits
Alluvial clay deposited from ephemeral streams	KCB25-TP7005, KCB25-TP7009
Alluvial clay/sand deposited in swamp area	KCB25-TP7011, KCB25-TP7012
Alluvial sand deposited along perennial streams	KCB25-TP7007, KCB25-TP7008
Alluvial sand derived from Ok Tedi	KCB25-TP7001, KCB25-TP7002, KCB25-TP7003, KCB25-TP7004
Residual high plasticity clay derived from the Awin Formation	KCB25-TP7006, KCB25-TP7010

4.2 Field Investigation

The field investigation was completed over two different site mobilisations, between the period of 15 August 2025 and 19 October 2025. The investigation comprised a site walkover survey and the excavation and profiling of test pits.

4.2.1 Test Pit Methodology

Due to the densely vegetated and undeveloped nature of the site, the proposed test locations were inaccessible by vehicular or mechanical excavation plant. The site was, therefore, traversed on foot with the test pit excavations performed using a Quick Drill Hand Auger and a shovel.

To prevent contamination between different soil horizons in a drill hole, the test pits were advanced in 0.1m increments, from surface, to a depth of approximately 0.8m. Practical limitations of hand augering in clay soil resulted in a maximum depth of 0.8m being achieved. The recovered soil was sorted into different lithologies and logged in accordance with Australian Standard AS1726:2017. Following the logging, disturbed samples were collected for laboratory testing. The test pits were then backfilled by hand upon completion.

During the field investigation, a few of the test pits were repositioned due to accessibility. As a result, no test pits were excavated within the Braidplain Facet Group as this area is blanketed by cobbles and could not be excavated with the hand auger or shovel. Table 4.2 lists the final test pit locations and their updated facet group. The detailed test pit profiles and test pit photographs are presented in Appendix II and Appendix III.

Following completion of the investigation, the preliminary Facet Group Descriptions were revised and is discussed in detail in Section 5.

Table 4.2 Summary of the completed test pit and soil sampling locations

Test Pit ID	Interim facet group	Easting*	Northing	Final Depth (m)
KCB25-TP7001	Floodplain	512856	9367421	0.6
KCB25-TP7002		512582	9367444	0.8
KCB25-TP7003		511534	9367459	0.8
KCB25-TP7004		511145	9367415	0.8
KCB25-TP7005	Seasonal tributaries	509980	9367364	0.8
KCB25-TP7006	Ridgeline	509118	9367434	0.8
KCB25-TP7007	Perennial tributaries	508260	9367191	0.8
KCB25-TP7008		507903	9367566	0.8
KCB25-TP7009	Seasonal tributaries	506858	9367419	0.8
KCB25-TP7010	Ridgeline	506884	9368889	0.8

Test Pit ID	Interim facet group	Easting*	Northing	Final Depth (m)
KCB25-TP7011	Marshland	509551	9365119	0.8
KCB25-TP7012		508364	9364976	0.8

*WGS 84 co-ordinate system

4.2.2 Soil Sampling Methodology

Once the soil profile was logged, representative soil samples from the soil horizon were collected from each test pit during the site investigation, as summarised in Table 4.3.

For the engineering classification of the soil, soil samples were taken from each sampling location, comprising 1 kg bulk samples that were placed in a thick zip lock bag to retain as much moisture as practically possible.

The environmental samples were taken directly from the hand auger using Nitrile Powder-Free gloves to prevent contamination. Once collected, the samples were placed in a chiller bag for transport back to camp, where they were stored in a freezer or fridge according to the laboratory-prescribed sample storage requirements. At the end of the rotation, the samples were transported to the OTML Environmental laboratory to be shipped to ALS Limited (ALS) laboratory. The acid sulfate soils were oven-dried at 85 °C 24 hours before shipment, as per ALS laboratories instructions for international shipment.

Each engineering and environmental sample was labelled with the test pit ID, depth interval, date when the sample was taken and if possible, type of material based on the logs. All sample collection, handling, and storage was carried out following the Australian Standard AS1726.

Samples were sent to either the OTML Bige Soil Laboratory, or to ALS Environmental Lab in Brisbane for the determination of the engineering classification and environmental analysis of the soil.

Table 4.3 Summary of collected samples during the site investigation

Test Pit ID	Sample Type	Depth Range (m)	Field Material Description	Sample ID
KCB25-TP7001	ES ¹	0.2-0.3	Gravelly CLAY	KCB25-TP7001-0.2-0.3
	SD ²	0.2-0.4	Gravelly CLAY	KCB25-TP7001-0.2-0.4
	ES	0.4-0.5	Gravelly CLAY	KCB25-TP7001-0.4-0.5
	SD	0.4-0.6	Gravelly CLAY	KCB25-TP7001-0.4-0.6
KCB25-TP7002	SD	0.2-0.4	Sandy CLAY	KCB25-TP7002-0.2-0.4
	ES	0.3-0.4	Sandy CLAY	KCB25-TP7002-0.3-0.4
	SD	0.4-0.8	CLAY	KCB25-TP7002-0.4-0.8
	ES	0.6-0.7	CLAY	KCB25-TP7002-0.6-0.7
KCB25-TP7003	ES	0.2-0.3	Sandy CLAY	KCB25-TP7003-0.2-0.3
	SD	0.2-0.4	Sandy CLAY	KCB25-TP7003-0.2-0.4
	ES	0.5-0.6	Sandy CLAY	KCB25-TP7003-0.5-0.6
	SD	0.6-0.8	Sandy CLAY	KCB25-TP7003-0.6-0.8
KCB25-TP7004	ES	0.3-0.4	Sandy CLAY	KCB25-TP7004-0.3-0.4
	SD	0.2-0.5	Sandy CLAY	KCB25-TP7004-0.2-0.5
	ES	0.7-0.8	Sandy CLAY	KCB25-TP7004-0.7-0.8
	SD	0.5-0.8	Sandy CLAY	KCB25-TP7004-0.5-0.8
KCB25-TP7005	ES	0.1-0.2	CLAY	KCB25-TP7005-0.1-0.2
	SD	0.2-0.4	CLAY	KCB25-TP7005-0.2-0.4

Test Pit ID	Sample Type	Depth Range (m)	Field Material Description	Sample ID
	ES	0.4-0.5	CLAY	KCB25-TP7005-0.4-0.5
	SD	0.5-0.8	Sandy CLAY	KCB25-TP7005-0.5-0.8
KCB25-TP7006	ES	0.2-0.3	CLAY	KCB25-TP7006-0.2-0.3
	SD	0.2-0.4	CLAY	KCB25-TP7006-0.2-0.4
	ES	0.5-0.6	CLAY	KCB25-TP7006-0.5-0.6
	SD	0.6-0.8	CLAY	KCB25-TP7006-0.6-0.8
KCB25-TP7007	ES	0.2-0.3	Sandy CLAY	KCB25-TP7007-0.2-0.3
	SD	0.2-0.4	Sandy CLAY	KCB25-TP7007-0.2-0.4
	ES	0.4-0.5	Sandy CLAY	KCB25-TP7007-0.4-0.5
	SD	0.5-0.8	Sandy CLAY	KCB25-TP7007-0.5-0.8
KCB25-TP7008	SD	0.2-0.4	Sandy CLAY	KCB25-TP7008-0.2-0.4
	ES	0.3-0.4	Sandy CLAY	KCB25-TP7008-0.3-0.4
	SD	0.5-0.8	Sandy CLAY	KCB25-TP7008-0.5-0.8
	ES	0.7-0.8	Sandy CLAY	KCB25-TP7008-0.7-0.8
KCB25-TP7009	ES	0.2-0.3	CLAY	KCB25-TP7009-0.2-0.3
	SD	0.2-0.4	CLAY	KCB25-TP7009-0.2-0.4
	ES	0.5-0.6	CLAY	KCB25-TP7009-0.5-0.6
	SD	0.6-0.8	CLAY	KCB25-TP7009-0.6-0.8
KCB25-TP7010	ES	0.2-0.3	CLAY	KCB25-TP7010-0.2-0.3
	SD	0.2-0.4	CLAY	KCB25-TP7010-0.2-0.4
	ES	0.5-0.6	CLAY	KCB25-TP7010-0.5-0.6
	SD	0.5-0.8	CLAY	KCB25-TP7010-0.5-0.8
KCB25-TP7011	ES	0.3-0.4	Silty CLAY	KCB25-TP7011-0.3-0.4
	SD	0.1-0.3	Silty CLAY	KCB25-TP7011-0.1-0.3
	ES	0.6-0.7	Silty CLAY	KCB25-TP7011-0.6-0.7
	SD	0.5-0.8	Silty CLAY	KCB25-TP7011-0.5-0.8
KCB25-TP7012	ES	0.2-0.3	Silty CLAY	KCB25-TP7012- 0.2-0.3
	SD	0.1-0.3	Silty CLAY	KCB25-TP7012-0.1-0.3
	ES	0.5-0.6	Silty CLAY	KCB25-TP7012-0.5-0.6
	SD	0.5-0.8	Silty CLAY	KCB25-TP7012-0.5-0.8

1. For environmental sample testing
2. For engineering classification of the soil

4.3 Laboratory Testing

The testing performed as part of the investigation is listed in Table 4.4, along with the name of the laboratory that completed the testing. Soil samples were oven-dried at 85 °C prior to laboratory analysis.

Table 4.4 Summary of requested laboratory tests

Laboratory Test	Sample Type	Selected Laboratory
Soil Classification Tests - Engineering		
Particle Size Distribution Test	Disturbed Soil	OTML Bige Soil Laboratory
Particle Size Distribution Test + Hydrometer	Small Disturbed Soil	ALS Laboratory
Atterberg limits test	Disturbed Soil	OTML Bige Soil Laboratory
Moisture Content	Disturbed Soil	OTML Bige Soil Laboratory
Environmental Testing		
ASS Field Screening Analysis	Small Disturbed Soil (Frozen/24-Hour Dried)	ALS Laboratory
Chromium Suite for Acid Sulfate Soils	Small Disturbed Soil	ALS Laboratory

Laboratory Test	Sample Type	Selected Laboratory
	(Frozen/24-Hour Dried)	
Agricultural Soil Suite 2	Small Disturbed Soil (Chilled)	ALS Laboratory
Bicarbonate Extractable K (Colwell)	Small Disturbed Soil (Chilled)	ALS Laboratory
Organic Matter & Total Organic Carbon (Calc.) (Walkley Black)	Small Disturbed Soil (Chilled)	ALS Laboratory
8 Metals (Inc. Digestion) (As, Cd, Cr, Cu, Pb, Ni, Zn, Hg)	Small Disturbed Soil (Chilled)	ALS Laboratory

4.4 Field and Laboratory QA/QC

Field and laboratory quality assurance and quality control were implemented throughout the soil assessment. Sampling activities included decontamination between sites and the completion of detailed logs for each sample, documenting time, location, sampler initials, requested analyses, and site observations. A full chain-of-custody record was maintained, covering sample identification, collection details, preservation methods, and transport arrangements. Laboratory QA/QC measures included, but were not limited to, the use of duplicates and blanks, reporting of instrument and method detection limits, and the application of accredited analytical methods where applicable. The detailed laboratory results sheets are provided in Appendix IV and Appendix V.

5 FIELD OBSERVATIONS

Twelve (12) test pits were hand augered within the project footprint. A summary of the profile present in the test pits is provided in Table 5.1 with the detailed test pit logs included in Appendix II.

Table 5.1 Summary of the material thickness present at each test pit

Test Pit ID	TOPSOIL	ALLUVIAL		RESIDUAL
	CLAY	Clay / Silty CLAY	Gravelly/ Sandy CLAY	CLAY
KCB25-TP7001	0.0-0.1m		0.1-0.6m gravelly clay	
KCB25-TP7002	0.0-0.2m		0.2-0.4m	0.4-0.8m
KCB25-TP7003	0.0-0.1m		0.1-0.8m	
KCB25-TP7004	0.0-0.2m		0.2-0.8m	
KCB25-TP7005	0.0-0.1m			0.1-0.8m
KCB25-TP7006	0.0-0.2m			0.2-0.5m 0.5-0.8m
KCB25-TP7007	0.0-0.2m		0.2-0.8m	
KCB25-TP7008	0.0-0.1m		0.1-0.8m	
KCB25-TP7009	0.0-0.2m	0.2-0.8m		
KCB25-TP7010	0.0-0.2m			0.2-0.8m
KCB25-TP7011	0.0-0.1m	0.2-0.8m		
KCB25-TP7012	0.0-0.1m	0.1-0.8m		

In addition to the test pits, a significant portion of the proposed TSF and its surrounding infrastructure footprint was traversed. Figure 5.1 illustrates the path traversed with the location of watercourses encountered along the route indicated in yellow.



Figure 5.1 Map showing the route traversed for the soil characterisation study

5.1 Facet Group Descriptions (Revised)

Based on field observations, it was determined that the facets within the project area were more complex than anticipated in the preliminary Land Facet Map outlined in Figure 4.1. Therefore, the facets were revised based on the methodology set out by (van Schalkwyk and Price 1990). The revised Facet Groups are based on regional landforms, bedrock geology, soil profile, or engineering behaviours, linking similar individual facets for a simplified representation on the Land Facet Map.

An additional facet group was added to indicate the difference between the Braidplain and Floodplain. Furthermore, based on the observed elevation and slope angles confirmed during the site investigation, the boundaries between the Facet Groups were regrouped as interpreted across the project area using the available topography data.

Table 5.2 presents the test pit locations in relation to the updated Facet Groups with the revised Facet Group Map provided on Figure 5.2.

Table 5.2 Summary of test pit locations in relation to Facet Groups

Test Pit ID	Preliminary facet group	Final Facet Group
KCB25-TP7001	Alluvial sands derived from Ok Tedi	Floodplain
KCB25-TP7002		
KCB25-TP7003		
KCB25-TP7004		
KCB25-TP7005	Alluvial clay deposited from ephemeral streams	Seasonal tributaries
KCB25-TP7006	Residual high plasticity clay derived from Awin Formation	Ridgeline
KCB25-TP7007	Alluvial sand deposited along perennial streams	Perennial tributaries
KCB25-TP7008		
KCB25-TP7009	Alluvial clay deposited from ephemeral streams	Seasonal tributaries
KCB25-TP7010	Residual high plasticity clay derived from Awin Formation	Ridgeline
KCB25-TP7011	Alluvial clay/sand deposited in swamp areas	Marshland
KCB25-TP7012		

The Facet groups are discussed in the following sections. Where relevant, reference is made to laboratory test results which are discussed in detail in Section 6.

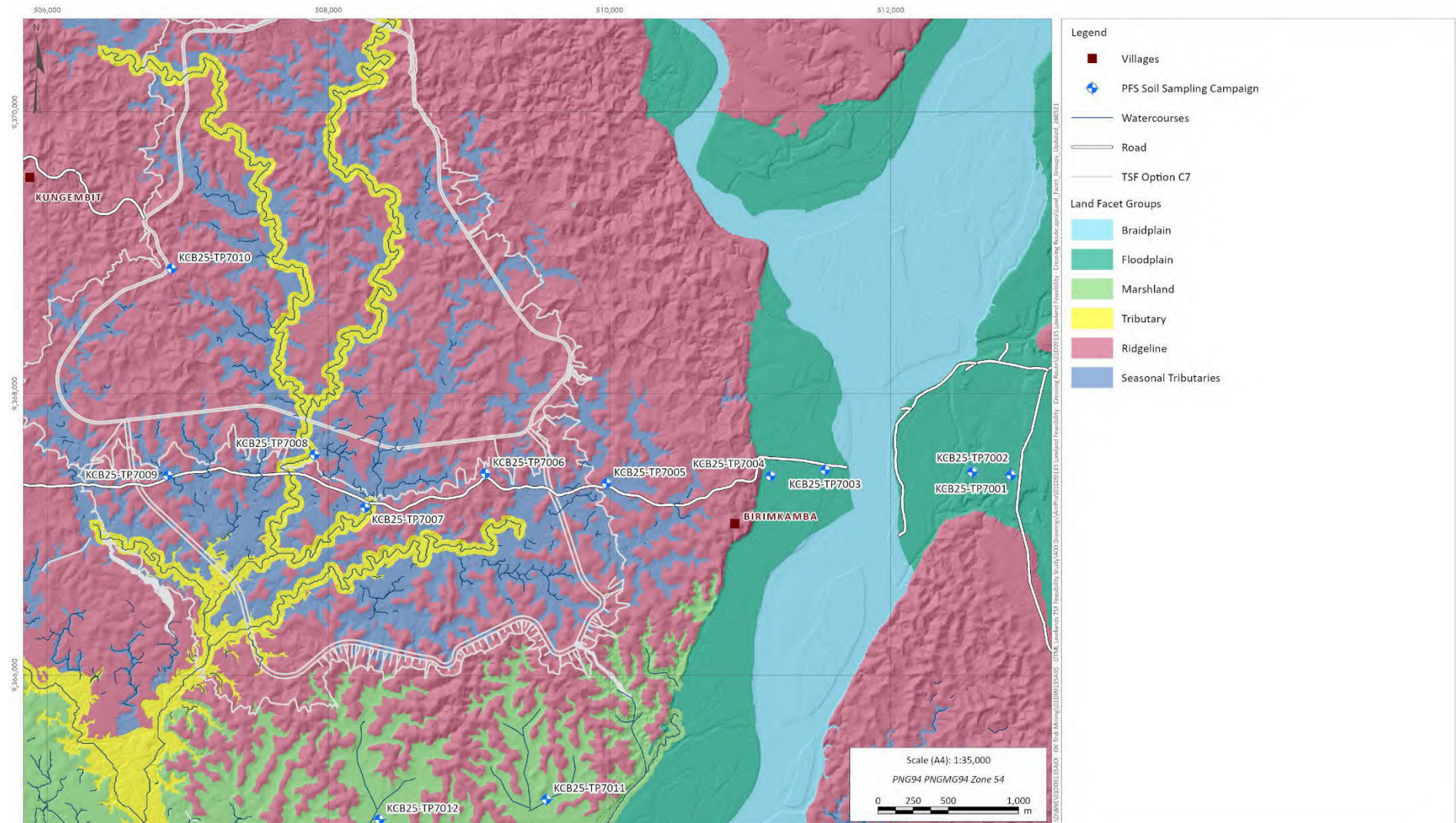


Figure 5.2 Final Land facet group Map and soil sampling locations

5.1.1 Braidplain Facet Group

The Braidplain Facet Group is coincident with the Braidplain of the Ok Tedi and Ok Birim. The facet group is characterised by short-term variation between sediment erosion and deposition cycles, resulting in continuous channel migration and a wide river Braidplain. Based on feedback from the community, as well as observations made during the investigation, the river system experiences intense seasonal flooding in the wet season (June to September). Figure 5.3 is a photograph of the Ok Tedi taken from the eastern bank within the project footprint.



Figure 5.3 The Ok Tedi river from the eastern bank within the project area.

Based on visual observations, the material composition of the Braidplain Facet Group has the most significant variation in grain size and grading of the project area. The facet group is dominated by alluvial material. The Braidplain material is distributed between the bed load and the suspended load. The proportion of each varies depending on recent flood events and the distance from the main river channels within the braided river system.

Bed Load

The river's bed load is composed of cobbles and gravel of both metamorphic and sedimentary origin from upstream rock formations and/or emanating from mine waste further upstream. The rounded to sub-rounded shape of these particles suggests prolonged fluvial transport, which has gradually smoothed their edges over time.

Suspended Load

The suspended load was concentrated along the edges of the main channels, consisting of a well-graded soil profile consisting of sands and gravels mixed with cohesive material. A gradual increase in deposited suspended load is found further away from the main river channel, where lower flow velocities are frequently experienced. This is likely the transition zone between the Braidplain Facet and the adjacent Floodplain Facet Group.

5.1.2 Floodplain Facet Group

The area surrounding the Ok Tedi and Ok Birim river systems is referred to as the Floodplain Facet Group. Characterised by mostly flat topography, the area experiences seasonal flooding after significant periods of heavy rainfall in the catchments located north of the project site. The area often experiences pooling water after periods of heavy rain, which can take days to dry out. At the surface level, the material gradually becomes more cohesive further from the rivers. Cobbles can be found throughout the soil profile of the floodplain from previous river migrations. An example of the pooling water is shown in Figure 5.4.

The Floodplain Facet Group is characterised by fine-grained, well-sorted material compared to other depositional profiles within the project area. This facet group is dominated by overbank deposits, primarily consisting of silts and clays, which settle during periods of low energy following pooling from heavy rain between flood events. Test pits KCB25-TP7003 and KCB25-TP7004 was situated on the western bank with KCB25-TP7001 and KCB25-TP7002 on the eastern bank.

Granular Material

Visually, the granular material of the flood plain appears significantly smaller than the Braidplain Facet Group. Sand was a consistent percentage of the soil profile; however, gravel was only found in a few of the testing locations. KCB25-TP7001, excavated further east of the Ok Tedi, saw a significant increase in gravel, likely due to the positioning of the test pit within a potentially historical river channel.

Cohesive Material

The ratio of silt to clay within the Floodplain Facet Group appeared more even compared to the other deposition environments. However, the field observations indicated a wider variation in the plasticity of the soil within the facet group. With all but KCB25-TP7002 seeing low to medium plasticity based on field observations. However, KCB25-TP7002 is situated at a high elevation and is likely to have a greater influence from the underlying residual soil.



Figure 5.4 Pooling water within the Floodplain Facet Group.

5.1.3 Perennial Tributaries Facet Group

The Perennial Tributaries Facet Group is characterised by fluvial processes creating a series of meandering river systems within the valleys. The size of these water courses in the flood season is significantly lower than that of the Braidplain Facet Group, as shown in Figure 5.5. In addition, the river cuts into the residual soil of the Awin Formation, further influencing the different deposition profile present in the facet group.

As these tributaries are larger in the wet season and maintain a consistent flow throughout the year, this leads to an increase in the proportion of sand and gravel.

Granular Material

The presence of sand and gravel within the permanent tributaries is the most elevated of the Facet Groups located in the TSF footprint. Both KCB25-TP7007 and KCB25-TP7008 had a constant presence of well-graded sand within the soil profile, making up at least 30% of the material. In addition, gravel had a minor presence throughout the sampled material of the facet group.

Cohesive Material

Clay appears to be the dominant material within this facet group. The clay is of high plasticity with a range of colours including grey, brown and red. The colour variation is likely due to the presence of eroded residual soil from the surrounding ridgelines. Silt percentages tend to vary between 19% and 34% based on the hydrometer laboratory results.



Figure 5.5 Roadway crossing at one of the permanent tributaries near KCB25-TP7008.

5.1.4 Seasonal Tributaries Facet Group

The Seasonal Tributaries Facet Group is evident throughout the project footprint, feeding into the permanent tributaries during the wet seasons of the year. The size of the watercourses is smaller than that of the perennial tributaries (Figure 5.6) which may be attributed to the reduced catchment area that feeds them. The decreased size and flow velocity of the seasonal tributaries alter the deposition within the facet group, limiting the sand and gravel content of the soil profile.

The soil profile of the Seasonal Tributaries Facet Group detailed the variation in the stream's flow velocity compared to that of the Permanent Tributaries Facet Group. Test pits KCB25-TP7005 and KCB25-TP7009 were located within the Seasonal Tributaries Facet Group.

Granular Material

In comparison to the Permanent Tributaries Facet Group, little granular material was found within the soil profiles of the test locations based on visual observations. However, laboratory testing confirms that 14% gravel is present in the material sampled from a depth of 0.6-0.8m in KCB25-TP7005.

Cohesive Material

Visually, clay is the dominant material within the seasonal tributaries, and this has been confirmed with laboratory testing. Similar to the permanent tributaries facet group, the clay contributes to the grey and brown colours of the stratigraphy and exhibits medium or medium to high plasticity. Laboratory testing confirmed that approximately 50% clay is present in the samples retrieved from the Seasonal Tributaries Land Facet Group.



Figure 5.6 Seasonal Tributary encountered en-route to KCB25-TP7010

5.1.5 Marshland Facet Group

The Marshland Land Facet Group is situated on the western edge of the Floodplain Facet Group, specifically in the southern sections of the project footprint. This facet group is characterised by thick vegetation and standing water following intense rainfall, as shown in Figure 5.7. The depositional profile of the area is similar to that of the seasonal tributaries; however, the watercourses within the area feed directly into the Ok Tedi and have less influence from topography compared to other areas on the map.



Figure 5.7 Marshland Facet Group conditions during the wet season.

The Marshland Facet Group of the project area exhibited a minor variation in soil profile compared to the seasonal and permanent tributaries.

Granular Material

Both test locations within the Marshland Facet Group exhibited uniform soil profiles with minimal influence from granular material. Both locations saw no more than a minor component of sand or gravel within the soil profile. The gravel was often sub-rounded, linked to the alluvial deposition in the area.

Cohesive Material

The cohesive material of this facet group saw a similar colour to the tributaries facet; however, the plasticity was consistently lower, sitting at an average medium plasticity within the facet group. The further away from the river, the greater the influence of the residual material within the soil profile becomes as shown by the red colouration exhibited at KCB25-TP7012.

5.1.6 Ridgeline Facet Group

The Ridgeline Facet Group is spread across the design footprint, concentrated on the hill crests. The facet is characterised by cohesive red residual soil of the underlying Awin Formation. The soil profile in the ridgeline facet group is visible at numerous road cuttings within the area (Figure 5.8).



Figure 5.8 Road cutting exposure of the ridgeline soil profile.

The soil profile of the Ridgeline Facet Group was observed during the sampling of KCB25-TP7006 and KCB25-TP7010. In addition, road cuttings found along the TCS road identified a similar soil profile as encountered at the test pit locations.

The main soil profile encountered in the Ridgeline Facet Group was the residual soil of the Awin Formation, consisting of a red, medium to high plasticity cohesive material. The material was clay-dominated based on field interpretation with laboratory testing confirming that 49 to 58% clay being present in the material tested.

The lithology found at the test pit locations resembled that of similar soil properties observed in the 2014 drilling operation and the 2024 drilling campaign in Bige. The density of the material is estimated between soft and stiff, increasing with depth, with a moisture content of moist, near the plastic limit.

The field interpretation of the cohesive material found within the Ridgeline Facet Group is medium-high to high plasticity. The soil profile was dominated by clay, with silt percentages varying between 28 and 30% based on the hydrometer laboratory results.

6 LABORATORY TEST RESULTS

6.1 Soil Classification Tests - Engineering

Particle size distribution, Atterberg limits and moisture content tests have been carried out on representative soil samples retrieved from each Land Facet Group. The detailed test results, as received from the Bige and ALS soil laboratory, is included in Appendix IV with a summary of results provided in Table 6.1.

6.1.1 Moisture Content

According to the laboratory test results, the measured moisture content ranges from 20.0% to 100.0% with an average moisture content of approximately 50.0% (determined by oven-drying at 105°C) in the Ok Tedi soils, indicating a very wet, often near-saturated soil feature. The highest moisture contents occur within perennial and seasonal tributary samples (up to 89.0% and 87.1% respectively).

Ridgeline samples also indicate relatively high moisture contents (up to 85.9%), suggesting that moisture conditions within the study area are influenced by local drainage conditions and clay-rich soil horizons rather than landscape position alone.

Although the samples were collected and packaged using the same method, those submitted to the Bige laboratory generally showed higher moisture contents than samples submitted to ALS. It is postulated that the longer period between sampling and laboratory testing may have allowed some samples to dry out.

6.1.2 Grading Analysis

The laboratory results show that soils across the study area are predominantly fine-grained and clay rich. Fines, comprising silt and clay, range from approximately 45% to 95%, with a median of about 78%. Sand contents vary between approximately 5% and 39%, while gravel is generally limited but can be locally significant, reaching up to 24% within the floodplain group as seen in KCB25-TP7001.

Based on selected hydrometer test results, silt contents ranged from approximately 15 to 49%, and clay contents from 23 to 61%. These elevated clay fractions align with field descriptions, which commonly characterise the materials on site as either clay or sandy clay.

6.1.3 Atterberg Limits

Liquid Limit (LL) values range from approximately 39.5% to 73.4%, Plastic Limit (PL) values range from approximately 20.9% to 35.0%, and Plasticity Index (PI) values range from approximately 15.9% to 40.7% indicating that the soils exhibit a moderate to very high plasticity. Linear Shrinkage (LS) values range from approximately 5.0 to 15.2%.

Overall, the high fines content and moderate to high plasticity characteristics suggest the presence of soils with low permeability, high water retention capacity, and potential shrink-swell behaviour under changing moisture conditions. When disturbed, these soils may also generate fine sediment that can be readily transported by surface runoff, particularly where flow becomes concentrated within drainage features or diversion channels.

Table 6.1 Summary of laboratory test results

TP ID	Depth (m)	Material Classification	Field Moisture Content %	Atterberg Limits			LS %	Soil Classification					Lab
				LL%	PL%	PI%		Gravel %	Sand %	Silt %	Clay %	Fines %	
Floodplain Land Facet Group													
KCB25-TP7001	0.2-0.4	Clayey or Silty Sand	36.2					19	39	19	23	45	ALS
KCB25-TP7001	0.2-0.4	Clayey or Silty Sand	44.7	39.5	20.9	18.6		42.8	24			33.2	Bige
KCB25-TP7001	0.4-0.6	Clayey or Silty Sand	20.0					24	31	15	30	47	ALS
KCB25-TP7001	0.4-0.6	Clayey or Silty Sand	47.1	45.9	23.9	22		29.5	24.5			46	Bige
KCB25-TP7002	0.2-0.4	Clay	38.6					0	13	35	52	88	ALS
KCB25-TP7002	0.2-0.4	Clay	54	55.6	28.9	26.7		0	10.7			89.3	Bige
KCB25-TP7002	0.4-0.8	Clay	42.7					0	6	33	61	95	ALS
KCB25-TP7002	0.4-0.8	Clay	57	61.2	32.7	28.5		0	5.1			94.9	Bige
KCB25-TP7003	0.2-0.4	Sandy Clay	35.9					0	33	36	31	69	ALS
KCB25-TP7003	0.2-0.4	Sandy Clay	58.4	50.2	33.4	16.8		0	27.2			72.8	Bige
KCB25-TP7003	0.6-0.8	Clay	38.7					0	28	42	30	74	ALS
KCB25-TP7003	0.6-0.8	Clay	65.1	52.7	32.1	20.6		0	11.4			88.6	Bige
KCB25-TP7004	0.2-0.5	Clay	49.4					0	9	44	47	92	ALS
KCB25-TP7004	0.2-0.5	Clay	100	56.8	38.5	18.3		0	11.4			88.6	Bige
KCB25-TP7004	0.5-0.8	Clay	43.8					0	14	42	44	87	ALS
KCB25-TP7004	0.5-0.8	Clay	84.4	60.1	36.2	23.9		0	16.3			83.7	Bige
Perennial Tributaries Land Facet Group													
KCB25-TP7007	0.2-0.4	Sandy Clay	47.4					1	33	34	32	67	ALS
KCB25-TP7007	0.6-0.8	Sandy Clay	48.3					0	34	33	33	68	ALS
KCB25-TP7007	0.2-0.4	Clay	63.0	49.5	33.6	15.9	5.0	0	28			72	Bige
KCB25-TP7007	0.5-0.8	Clay	49.8	48.1	29.1	19.0	5.5	0	30			70	Bige
KCB25-TP7008	0.2-0.4	Sandy Clay	36.2					0	34	19	47	67	ALS

TP ID	Depth (m)	Material Classification	Field Moisture Content %	Atterberg Limits			LS %	Soil Classification					Lab
				LL%	PL%	PI%		Gravel %	Sand %	Silt %	Clay %	Fines %	
KCB25-TP7008	0.5-0.8	Clay	37.9					1	20	24	55	80	ALS
KCB25-TP7008	0.1-0.3	Sandy Clay	60.9	51.5	27.2	24.3	6.4	0	32			68	Bige
KCB25-TP7008	0.4-0.6	Clay	89.0	66.0	28.7	37.3	9.6	3	18			79	Bige
Seasonal Tributaries Land Facet Group													
KCB25-TP7005	0.2-0.4	Clay	35.7					1	24	24	51	76	ALS
KCB25-TP7005	0.6-0.8	Clay	32.6					2	29	19	50	70	ALS
KCB25-TP7005	0.2-0.4	Clay	73.5	58.4	28.0	30.4	11.1	0	23			78	Bige
KCB25-TP7005	0.6-0.8	Clay	53.2	68.3	35.0	33.3	9.2	14	29			57	Bige
KCB25-TP7009	0.2-0.4	Clay	43.6					0	25	29	46	78	ALS
KCB25-TP7009	0.6-0.8	Clay	45.1					0	24	26	50	78	ALS
KCB25-TP7009	0.2-0.4	Clay	49.8	49.0	23.2	25.8	5.0	0	27			73	Bige
KCB25-TP7009	0.6-0.8	Clay	87.1	56.2	26.6	29.6	5.9	0	21			79	Bige
Marshland Land Facet Group													
KCB25-TP7011	0.1-0.3	Clay	43.7					2	13	49	36	86	ALS
KCB25-TP7011	0.1-0.3	Clay	96.6	58.3	36	22.3		0	22.6			77.4	Bige
KCB25-TP7011	0.5-0.8	Clay	42.8					0	9	41	50	93	ALS
KCB25-TP7011	0.5-0.8	Clay	74.3	56	38	18		0	24.4			75.6	Bige
KCB25-TP7012	0.1-0.3	Clay	32.2					0	17	35	48	84	ALS
KCB25-TP7012	0.1-0.3	Clay	49.1	51.3	29.6	21.7		0	19.8			80.2	Bige
KCB25-TP7012	0.5-0.8	Clay	35.6					0	14	27	59	86	ALS
KCB25-TP7012	0.5-0.8	Clay	54	70	36.2	33.8		0	14.7			85.3	Bige
Ridgeline Land Facet Group													
KCB25-TP7006	0.2-0.4	Clay	39.0					2	18	22	58	81	ALS
KCB25-TP7006	0.6-0.8	Clay	40.4					2	14	30	54	84	ALS
KCB25-TP7006	0.2-0.4	Clay	62.0	66.5	32.6	33.9	15.2	3	24			74	Bige
KCB25-TP7006	0.5-0.8	Clay	56.6	67.8	28.3	39.5	10.1	4	16			81	Bige
KCB25-TP7006	0.6-0.8	Clay	49.0	62.9	32.0	30.9	11.1	2	16			82	Bige

TP ID	Depth (m)	Material Classification	Field Moisture Content %	Atterberg Limits			LS %	Soil Classification					Lab
				LL%	PL%	PI%		Gravel %	Sand %	Silt %	Clay %	Fines %	
KCB25-TP7010	0.2-0.4	Clay	34.0					4	14	28	54	82	ALS
KCB25-TP7010	0.5-0.8	Clay	33.9					3	20	28	49	78	ALS
KCB25-TP7010	0.2-0.4	Clay	85.9	73.4	32.7	40.7	12.6	5	14			80	Bige

LL – Liquid Limit
PL – Plastic Limit
PI – Plasticity Index
LS – Linear Shrinkage
LAB - Laboratory

6.2 Acid Base Accounting

6.2.1.1 Soil pH

A summary of soil pH values obtained under different analytical conditions is presented below:

- Field pH results show soil samples are very acidic, with the pH range of 4.4 to 5.7 (median values of 4.7) for field pH.
- pH_{Fox} is below 5.0 for all tested soil samples and an overall ~ 0.9 pH unit lower than Field pH, which indicate the occurrence of sulfidic mineral in the samples.
- pH_{Fox} results are lower than 4.0 for most soil samples and overall median reaction.
- pH KCl results are all above 4.5 except marginally lower in soils from KCB25-TP7002.
- Differences between Field pH and pH KCl are less than 0.1 pH unit for most of soil samples, indicating low exchangeable acidity.
- Differences between Field pH and pH KCl is ~ 1.0 pH unit for KCB25-TP7003 and KCB25-TP7004, suggesting these soils store moderate exchangeable acidity that can be released when they are disturbed.
- Titratable Actual Acidity results indicate a moderate-high level of existing available acidity in Ok Tedi soils.
- Based on Australian Soil Classification and field pH results (Queensland Government 2025), Ok Tedi soils are very acidic but it is not conclusive if the low pH is due to pyrite oxidation or not.
- Based on Australian Soil Classification and field pH_{Fox} results (Sullivan et al. 2018), Ok Tedi soils may indicate an AASS indicating previous oxidation of RIS or may indicate naturally occurring, non ASS soils, such as many organic soils (for example peats) and heavily leached soils, often also show $\text{pH}_{\text{Fox}} < 4$ range.

6.2.1.2 Sulfur Species and Acidity

A summary of the measured sulfur species and acidity stored in soils are summarised below:

- Chromium Reducible Sulfur (CRS) results show trace amount of reduced inorganic sulfur in the soils, with a range of 0.01 to 0.02% (median of 0.014%).
- Measured Net acid soluble S and extractable sulfate minerals in soils samples are below LOR of 0.02%.
- Acidity generated (excluding ANC) in tested soils varies between 39 to 152 mole H^+/t , with the lowest and highest levels identified in KCB25-TP7001 and KCB25-TP7004 soils, respectively.

The soil samples exhibit acidic pH, but pH KCl values are generally above 4.5, with very low sulfide S content and negligible net acidity. Overall, the tested soil samples do not meet the criteria for acid sulfate soils (Sullivan et al. 2018).

6.3 Soil Chemistry

6.3.1 Soil Salinity

Soil salinity is a measure of the total soluble salts present. High levels of soluble salts in the root zone may affect water and nutrient uptake and adversely affect plant growth. Plants are more susceptible to salinity in their germination and seedling stage than in later stages of growth.

ECe is the electrical conductivity of a saturated soil-water extract. The water is removed from a just-saturated soil sample by a centrifuge or vacuum pump, and the electrical conductivity of the water extract is tested. ECe is the preferred method of estimating soil salinity, because it best reflects how salinity will affect plant growth. However, it is very time consuming and is not a routine method.

EC_{1:5} for 1:5 soil:water extract at 25°C for Ok Tedi soils show EC_{1:5} range of 5 to 30 µS/cm. After converted¹ to ECe, the measured salinity results give a range of < 1,000 µS/cm, indicating very low salinity in Ok Tedi soils (Table 6.2).

Table 6.2 Soils salinity rating for soil based on ECe (Hazelton and Murphy 2016)

Salinity Rating	ECe (µS/cm)	Effects on Plants
Non-saline	< 2,000	Salinity effects are mostly negligible.
Slightly saline	2,000 - 4,000	Yields of sensitive crops are affected.
Moderately saline	4,000 – 8,000	Yields of many crops are affected.
Highly saline	8,000 - 16,000	Only tolerant crops yield satisfactorily.
Extremely saline	> 16,000	Only very tolerant crops yield satisfactorily.

6.3.2 Exchangeable Acidity and Ions

Exchangeable acidity and ion concentrations in Ok Tedi soils are summarised in Table 6.3.

Table 6.3 Summary exchangeable ion concentrations in Ok Tedi soils

	Exchangeable Concentrations						Cation Exchange Capacity (CEC)	Exchangeable Sodium Percent (ESP)	Ca/Mg Ratio	Mg/K Ratio
	Acidity	Al	Ca	Mg	K	Na				
	(meq/100g)						(meq/100g)	%	-	-
Counts	24	24	24	24	24	24	24	24	24	24
Min	3.4	1.6	0.2	0.1	0.1	<0.1	3.5	0.3	2.0	2.4
P25	4.0	2.2	0.2	0.3	0.1	<0.1	4.7	1.6	3.1	14.3
Mean	5.5	3.0	6.0	2.3	0.2	<0.1	9.0	12.1	3.9	17.1
Median	5.0	2.5	1.0	1.9	0.2	<0.1	5.8	14.1	4.2	18.1
P75	6.1	3.3	12.8	3.6	0.2	<0.1	7.3	17.4	5.0	23.0
Max	13.7	7.9	18.7	6.4	0.2	<0.1	27.7	45.8	5.2	27.8

¹ A conservation conversion factor of 24 applied assuming clayey sand soil texture (Hazelton and Murphy 2016).

Exchange Acidity and Aluminium

Exchange acidity results show a range of 3.4–13.7 meq/100g (median of 5.0 meq/100g), indicating strong acidity stored in soils and consistent with measured low pH results.

Exchangeable aluminium results show a range of 1.6–7.9 meq/100g (median of 2.5 meq/100g) and above 6% of CEC for all soil samples. High exchangeable aluminium concentrations can be a major source of acidity in low pH soils due to hydrolysis of aluminium species and are likely limiting plant growth and root development. The high level of exchangeable aluminium in Ok Tedi soils is toxic to most sensitive plants and typically requires lime application to raise pH to 5.6–5.8 or higher.

CEC

Cation Exchange Capacity (CEC) is a useful indicator of soil fertility because it shows the soil's ability to supply three important plant nutrients: calcium, magnesium, and potassium. CEC in Ok Tedi soils vary between 3.5 and 27.7 meq/100g. Soils from KCB25-TP7003 and KCB25-TP7003 indicate higher average range of ~ 25 meq/100g, in comparison to ~5.6 meq/100g in the samples collected from the remaining sites.

Table 6.4 Ratings for cation exchange capacity (Hazelton and Murphy 2016)

Rating	CEC (meq/100g)
Very low	-
Low	< 5
Moderate	5 – 15
High	15
Very high	-

An Exchangeable Sodium Percentage (ESP) of 14% to 46% for Ok Tedi soils indicates strongly sodic to highly sodic soil, representing a severe structural and agricultural hazard. Soils with an ESP >15% are generally classified as strongly sodic, causing severe structural deterioration, clay dispersion, and poor water/air movement. Soils with higher ESP are identified from KCB25-TP7005 to KCB25-TP7012.

Exchangeable Ca/Mg ratio in soil samples vary from 2.0 to 5.2, indicating balanced to slightly Ca-dominant. Exchangeable Mg/K Ratio in soil samples vary from 2.4 to 27.8, with a median of 18.

6.3.3 Trace Metal/Metalloid Levels in Soils

Trace metals and metalloid concentrations in Ok Tedi soils are displayed in Table 6.5. A comparison was made between tested concentrations and the default guideline values (DGVs) from Australian and New Zealand Guidelines for Fresh and Marine Water quality (ANZWQG 2024) for tested parameters in soils. Results indicate that the concentrations for most parameters in Ok Tedi soils are below the DGVs except one third of collected soils are close or marginally above DGV for mercury. There is a low risk of unacceptable effects occurring regarding ecosystem protection.

Table 6.5 Summary of trace metals and metalloid concentrations in Ok Tedi soils

Parameter	Unit	ANZWQG DGVs	LOR	Count >LOR	Total Count	Min	P25	Mean	Median	P75	Max
Arsenic	mg/kg	20	5	0	24	<5	<5	<5	<5	<5	<5
Cadmium		1.5	1	0	24	<1	<1	<1	<1	<1	<1
Chromium		80	2	20	24	<2	3.0	5.7	5.5	6	14
Copper		65	5	21	24	<5	10	18	14	22	44
Lead		50	5	24	24	5	6	8	8	9	19
Nickel		21	2	15	24	<2	3	3.9	3	6	7
Zinc		200	5	24	24	13	19.5	33.1	26.5	47	62
Mercury		0.15	0.1	14	24	<0.1	0.1	0.2	0.2	0.2	0.2

6.3.4 Soil Nutrients

Summary of soil nutrients levels in Ok Tedi soils are shown in Table 6.6. More details on the soil nutrients will be discussed in the following sections.

Table 6.6 Summary of Ok Tedi soil nutrients

	Bicarbonate Extractable K	Ammonia as N	Nitrate as N (Sol.)	Nitrite + Nitrate as N (Sol.)	Total Kjeldahl Nitrogen as N	Total Nitrogen as N	Total Phosphorus as P	Organic Matter	Total Organic Carbon
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	%	%
Count >LOR	4	14	17	17	24	24	24	23	22
Total Count	24	24	24	24	24	24	24	24	24
Min	<100	<20	<0.1	<0.1	190	190	194	0.6	0.5
P25	138	30	0.1	0.1	605	605	323	1.4	0.9
Mean	147	41	0.3	0.3	838	838	424	2.1	1.2
Median	155	40	0.2	0.2	685	685	432	1.7	1.1
P75	164	50	0.4	0.4	1115	1115	501	2.5	1.5
Max	171	80	1.2	1.2	1750	1750	652	5.3	3.1

6.3.4.1 Bicarbonate Extractable K (Colwell K)

Four of 24 samples (17%) collected Ok Tedi soils samples indicate Bicarbonate Extractable Potassium of over 100 mg/kg. Those four samples are from KCB25-TP7002, KCB25-TP7003 (highest level in the soil profile), and KCB25-TP7004. A Bicarbonate Extractable Potassium (Colwell K) level of 155 mg/kg for four Ok Tedi soils is generally considered sufficient for plant growth.

6.3.4.2 Nitrogen Forms

A range of nitrogen species was analyzed, and the results indicate the following:

- The dominant form of Total Kjeldahl Nitrogen (TKN), of which more than 95% N existing as organic nitrogen.
- Trace levels of nitrate in soils, ranging from 0.1 to 1.2 mg/kg with a median of 0.2 mg/kg.

- Ammonium is present in half of the soil samples, ranging from 20 to 80 mg/kg with a median of 40 mg/kg.
- The levels of ammonium in soils are not excessive and common for waterlogged soils, or soils with high aluminium saturation.

6.3.4.3 Total Phosphorus as P

Total phosphorus concentrations in the Ok Tedi soil samples range from 194 to 652 mg/kg, with a median concentration of 432 mg/kg, indicating moderate to high total phosphorus levels in most soil samples (Weil and Brady 2017).

6.3.4.4 Organic Matter and Total Organic Carbon (TOC)

Organic Matter (OM) in the Ok Tedi soil samples show wider range, from 0.6 to 5.3% with a median of 1.7%, indicating most soils with low fertility. The soils with high OM are from top layer of KCB25-TP7004, KCB25-TP7007 and KCB25-TP7011.

TOC results also indicate low-carbon feature of Ok Tedi soils, ranging from 0.5 to 3.1% with a median of 1.1%.

6.4 Soil Background Levels

Spatial patterns in background soil conditions across all soil sampling locations are presented in Appendix V, including pH, pH_{Fox} , EC, acidity, CRS, CEC, ESP. To assess variability within each soil profile, the spatial distribution of each parameter has been plotted separately for upper (0.2 – 0.4 m) and lower soils (0.4 – 0.8m) samples² from each location. Overall, the analytical results and field inspection indicate only minor spatially and profile-scale variation in Ok Tedi soils across the project area, with most sites showing broadly consistent characteristics.

6.5 Soil Classification

The Australian Soil Classification (ASC) system (Isbell and NCST 2021) classifies soils by applying a diagnostic key to real soil profiles observed in the field. The system relies on defined diagnostic attributes, horizons, and materials to determine the appropriate class for each profile.

Classification is based primarily on the vertical arrangement of horizons exposed in a soil pit and incorporates relevant landform and landscape characteristics that influence soil development

Soil profiles were examined to a depth of 0.8 m. In two soil profiles (KCB25-TP7001 and KCB25-TP7011), the upper 0-10cm comprised an organic-rich layer with leaves and fine roots typical of natural bushland, whereas the remaining topsoil samples contained only sparse leaf or roots. Below 10cm, the soil profile to 0.8 m did not display distinct diagnostic horizons. Subsoil materials showed no noticeable transitions in colour or texture and no identifiable sulfidic, sulfuric, or other diagnostic horizon features. The overall soil profiles at each location exhibited a consistently narrow, acidic pH range. On this basis, the soils are best classified as Tenosols under the Australian Soil Classification.

² The exact depths of the upper and lower sections are based on the field sampling, as given in Table 4-3.

7 SOIL MANAGEMENT

7.1 Soil Disturbance

As per the general arrangement figure provided in Appendix I, the proposed TSF and associated infrastructure development will result in the cumulative disturbance of approximately 2,000 hectares of land, with construction spanning several years. The disturbance footprint is primarily concentrated within the ridgeline areas, seasonal and perennial tributary systems, with the proposed new river bridge impacting the Braidplain and Floodplain Facets. Construction of the TSF will also require the diversion of several drainage features around the footprint of the facility.

Diversion channels represent engineered drainage structures designed to maintain hydrological stability around the TSF. However, disturbance within drainage corridors may increase erosion risk and sediment mobilisation if appropriate erosion control measures are not implemented (ICOLD, 2011).

7.2 Topsoil Stripping and Stockpiling

Prior to construction, topsoil should be stripped separately from subsoil materials. Typical stripping depths generally range between 150 mm and 300 mm depending on site conditions.

The soil profile present on site is fairly uniform, comprising topsoil to a depth of between 0.1 m and 0.2 m below ground level, followed by alluvium soils to a depth of at least 0.8m. Residual soils were, only, evident in the upper 0.3 m of the profile in KCB25-TP7005, KCB25-TP7006 and KCB25-TP7010

The availability and volumes of topsoil (Table 7.1) and subsoil have been estimated based on the cumulative disturbance footprint and the uniform nature of each soil type within that footprint.

Table 7.1 Estimated topsoil volumes

Stripping Depth (mm)	Estimated Topsoil Volume (m ³)
150	3 000 000
200	4 000 000
300	6 000 000

7.3 Soils Performance Constraints

Soil Erosion Potential

The fine-grained soils across the study area, dominated by silts and clays, are expected to be highly prone to erosion once disturbed. When vegetation is removed or soils are exposed during earthworks, these soils are expected to lose structure easily and mobilise by rainfall and concentrated runoff.

Low Permeability

Clay soils in particular exhibit very low permeability, which, although favourable for containment, tend to soften when wet and are easily damaged by trafficking or compaction.

These risks are heightened in areas where seasonal and perennial drainage lines will be diverted for the TSF development, as disturbance within these corridors can lead to channel instability and increased sediment generation if not properly stabilised. Maintaining vegetation buffers, limiting the disturbance footprint, and implementing appropriate erosion and sediment control measures will be essential to manage these soil behaviours during construction and operations.

Soil Chemical Constraints

The tested Ok Tedi soil samples show strongly leached, acid tropical soil with a high exchangeable aluminium in controlling acidic pH. This is likely to be driven by the following processes:

- (1) Intense leaching of base cations. Rainfall leaches out cations, such as Ca^{2+} , Mg^{2+} , K^{+} , and Na^{2+} as seen in 6.3.2. These cations are replaced on the exchange complex by H^{+} and Al^{3+} . Over time, effective cation exchange capacity is dominated by acidic cations (H^{+} and Al^{3+}). This is a typical process in highly weathered tropical soils with acidic pH range.
- (2) High rainfall or strong leaching environment. Very low EC and CEC indicate soils with strong leaching and very low nutrient retention. This is consistent with high rainfall records at Ok Tedi. In such environments, rainfall removes base cations faster than they can be replenished, leaving acidic ions behind.
- (3) Aluminium hydrolysis at low pH. In acidic, low-CEC soils, aluminium becomes soluble. Soluble Al^{3+} undergoes hydrolysis, which generates more acidity and reinforces low pH.

7.4 Implications for Future Soil Management

Following both temporary and permanent construction activities on site, disturbed areas should be progressively rehabilitated. This typically involves ripping compacted surfaces, replacing stockpiled topsoil, and revegetating disturbed areas using locally appropriate species.

The chemical characteristics of Ok Tedi soils create several risks during project activities:

- **Handling and excavation** — Disturbance may expose subsoil horizons with higher aluminium concentrations, increasing acidity and reducing soil structure stability. This can lead to dispersion, erosion, and poor trafficability.
- **Soil storage and stockpiling** — Strongly leached, low-CEC soils degrade quickly when stockpiled. Nutrient depletion, acidification, and structural collapse are likely, reducing the viability of stored material for future rehabilitation.
- **Environmental impacts** — Mobilisation of acidic or aluminium-rich runoff from disturbed soils may affect downstream water quality, particularly in high-rainfall environments.

7.5 Beneficial Use of Soils for Closure and Rehabilitation

The physical and chemical constraints of Ok Tedi soils mean that targeted management is required to maintain soil quality during handling and to make the material suitable for use in closure and rehabilitation. The key opportunities for improving their beneficial use are outlined below:

Improving Soil Chemistry

- Apply lime or dolomite to raise pH and reduce aluminium toxicity.
- Incorporate organic matter to increase CEC, moisture retention, and biological activity.
- Use targeted fertilisers to replace nutrients lost through leaching.

Preserving Soil Quality During Handling

- Strip and store topsoil separately to protect biological value.
- Keep stockpiles low, shaped, and vegetated to minimise erosion and further leaching.
- Avoid long-term storage where possible to prevent structural collapse and acidification.

Supporting Landform Stability

- Use soils as cover material on reshaped landforms to support vegetation.
- Blend with more stable subsoils or weathered rock where additional structure is needed.
- Apply surface roughening and contouring to reduce runoff and erosion.

Enabling Vegetation Establishment

- Select acid-tolerant pioneer species for early cover.
- Improve soil function over time through organic matter cycling and gradual pH correction.
- Maintain vegetation cover to stabilise the soil and reduce further nutrient loss.

8 CLOSING

This report is an instrument of service of Kohn Crippen Berger (KCB). The report has been prepared for the use of Ok Tedi Mining Limited for the specific application to the OTML Lowlands TSF Feasibility Study and may be published or disclosed by the Client to the applicable regulator or governing body in Papua New Guinea.

KCB has prepared this report in a manner consistent with the level of care, skill and diligence ordinarily provided by members of the same profession for projects of a similar nature at the time and place the services were rendered; however, the use of this report will be at the user's sole risk absolutely and in all respects, and KCB makes no warranty, express or implied. This report may not be relied upon by any person other than the Client or published or disclosed by the Client to the applicable without KCB's written consent.]

Use of or reliance upon this instrument of service by the Client is subject to the following conditions:

1. The assessment provided in this report is based on the concept general arrangement Option C5 that has been developed for the facility.
2. The report is to be read in full, with sections or parts of the report relied upon in the context of the whole report.
3. The observations, findings and conclusions in this report are based on observed factual data and conditions that existed at the time of the work and should not be relied upon to precisely represent conditions at any other time.
4. The report is based on information provided to KCB by the Client or by other parties on behalf of the client (Client-supplied information). KCB has not verified the correctness or accuracy of such information and makes no representations regarding its correctness or accuracy. KCB shall not be responsible to the Client for the consequences of any error or omission contained in Client-supplied information.
5. KCB should be consulted regarding the interpretation or application of the findings and recommendations in the report.
6. This report is electronically signed and sealed and its electronic form is considered the original. A printed version of the original can be relied upon as a true copy when supplied by the author or when printed from its original electronic file.

We want to thank you for the opportunity to work on this assignment. Should you have any questions, please do not hesitate to contact the undersigned.

KCB AUSTRALIA PTY LTD.



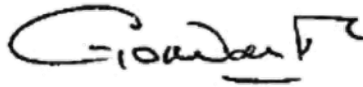
Sam Miller
Engineering Geologist



Rachael Naidoo
Senior Engineering Geologist



Jiajia Zheng
Senior Geochemist



GV Price
Senior Reviewer

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APPENDIX I

Drawing Showing Option C7 Layout

Time: 15:31
Date: 12/11/2024
Scale: 1:15000 (PS)
Drawing File: C:\245\va\BNE-2\DSM\CV-VI\1000 - TSF_10072\05 FS DESIGN\02 CAD DRAWINGS\SKETCHES\



LEGEND - EXISTING FEATURES		LEGEND - DESIGN FEATURES	
	LMP BOUNDARY		TOP OF BATTER
	PRE-WORKS FLOW PATH		BOTTOM OF BATTER / INTERFACE
	EXISTING ROAD/ TRACK		80mRL TOE LINE
			INDICATIVE BORROW SOURCE
			SURFACE WATER FLOW DIRECTION
			INDICATIVE ACCESS ROADS (BY OTHERS)
			ALICE BRIDGE
			1:5700 AEP FLOOD EXTENT
			BATTER CHUTE
			SEEPAGE OUTLET

REFERENCE DRAWINGS	
5600-CV-DDG-102	CELL2 GENERAL ARRANGEMENT
5600-CV-DDG-101	CELL1 GENERAL ARRANGEMENT
5600-CV-NOT-101	NOTES
DRG NUMBER	DRAWING TITLE

AS A MUTUAL PROTECTION TO OUR CLIENT, THE PUBLIC AND OURSELVES, ALL REPORTS AND DRAWINGS ARE SUBMITTED FOR THE CONFIDENTIAL INFORMATION OF OUR CLIENT FOR A SPECIFIC PROJECT AND AUTHORIZATION FOR USE AND/OR PUBLICATION OF DATA, STATEMENTS, CONCLUSIONS OR ABSTRACTS FROM OR REGARDING OUR REPORTS AND DRAWINGS IS RESERVED PENDING OUR WRITTEN APPROVAL.

DRAWING REVISIONS						
A	ISSUE FOR INFORMATION	DD/MM/YY	DRN	DSG	CHK	
REVISION	DESCRIPTION OF REVISION	DATE (YYYY-MM-DD)	DRAWN	DESIGNED	CHECKED	APPROVED

ORIGINAL ISSUE	
DRAWN:	DRAWN
DESIGNED:	DESIGNED
CHECKED:	CHECKED
APPROVED:	
RPEQ NAME:	
RPEQ No:	



CLIENT DWG. NO.



PROJECT OK TEDI			
TITLE OTML LOWLANDS FEASIBILITY TSF OVERALL MAP 1			
SCALE 1:15000	PROJECT NO. 01D09135A95	DWG. NO. 1000-CV-SKT-104	REV. A

CANCEL PRINTS BEARING PREVIOUS REVISION

KCB-DWG-A1-L

APPENDIX II

Test Pit Logs



LOG LEGEND SHEET

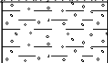
Moisture Condition		Density & Consistency		Strength		Weathering	
D	Dry	D	dense	EH	extremely high	XW	Extremely Weathered
M	Moist	F	firm	H	high	FR	Fresh
w < PL	Moist, dry of plastic limit	Fr	friable	L	low	HW	Highly Weathered
w = LL	Moist, near liquid limit	H	hard	M	medium	MW	Moderately Weathered
w = PL	Moist, near plastic limit	L	loose	VH	very high	RS	Residual Soil
w > LL	Moist, wet of liquid limit	MD	medium dense	VL	very low	SW	Slightly Weathered
W	Wet	S	soft				
		St	stiff				
Drill Method Type		Casing Type		Sample & Tests		Sample Symbol	
AD/T	Auger drilling with tc-bit	HQ	HQ Casing	B	Bulk disturbed sample		Bulk disturbed sample
AD/V	Auger drilling with v-bit	HW	HW Casing	CONCC	Concrete Core		Concrete Core
SPT	Driven SPT	HWT	HWT Casing	C	Core sample		Core sample
E	Excavator	NW	NW Casing	LB	Large bulk disturbed sample		Large bulk disturbed sample
HA	Hand auger	PVC	PVC Casing	SD	Small disturbed sample.		Small disturbed sample.
HQ3	HQ3 core barrel	PW	PW Casing	ES	Soil sample for environmental testing		Soil sample for environmental testing
PQ3	PQ3 core barrel	PWT	PWT Casing	SPT	Standard Penetration Test		Standard Penetration Test
PT	push tube			SPTLS	Standard penetration test liner sample		Standard penetration test liner sample
Defect Type		Surface Roughness		Surface Shape		Aperture Observed	
CS	crushed seam	PO	polished	CU	curved	CN	Clean
DB	drilling break	RF	rough	IR	irregular	CT	Coating (<=1 mm)
EW	extremely weathered seam	SL	slickensided	PR	planar	SN	Stained
IS	infilled seam	SM	smooth	ST	stepped	VN	Veneer
J	joint	VR	very rough	UN	undulating	Defect Termination	
MB	mechanical break					X	Extends beyond exposure
P	parting					D	Terminates against another discontinuity
SS	shear seam					R	Terminates within rock

This legend provides a description for all symbols and abbreviation utilized in the logs.

Client: **Ok Tedi Mining Ltd**

Status:

DRAFTProject: **ESIA Soil Sampling Campaign**Contractor: **Ok Tedi Local Hires**Northing: **9367421 N**Pit Depth: **0.60 m**Pit Location: **Soil Characterisation Study**Easting: **512856 E**Datum: **AHD**Dimensions: **0.15 x 0.15 m**R.L. **52.35 m**Rig Details: **Fiskars Quik Drill**Grid: **World Geodetic System Long/Lat (WGS 84)**

GROUND WATER LEVELS	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION	Moisture Condition	CONSISTENCY / RELATIVE DENSITY	Samples / Tests	Weathering	Rock Strength (Min)
	52.0	0.0		CL-CI	Silty CLAY (CL-CI): low to medium plasticity, black; Silt, low plasticity; with sand, fine to medium grained; with roots and rootlets. (TOPSOIL).	w = PL	S	ES: 0.20-0.30 m SD: 0.20-0.40 m		
		0.10		CL-CI	Gravelly CLAY (CL-CI): low to medium plasticity, brown with patchy grey; Gravel, fine to medium grained, sub-rounded, poorly graded, maximum grain size of 19mm. (ALLUVIUM).	w = LL				
		0.60			Terminated at 0.60 m.					
		1.0								
		51.0								
		2.0								

Notes

Client: **Ok Tedi Mining Ltd**

Status:

DRAFT

Project: **ESIA Soil Sampling Campaign**

Contractor: **Ok Tedi Local Hires**

Northing: **9367444 N**

Pit Depth: **0.80 m**

Pit Location: **Soil Characterisation Study**

Easting: **512582 E**

Datum: **AHD**

Dimensions: **0.15 x 0.15 m**

R.L.: **54.41 m**

Rig Details: **Fiskars Quik Drill**

Grid: **World Geodetic System Long/Lat (WGS 84)**

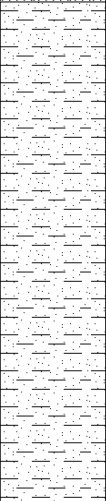
GROUND WATER LEVELS	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION	Moisture Condition	CONSISTENCY / RELATIVE DENSITY	Samples / Tests	Weathering	Rock Strength (Min)
		0.0		CL	Silty CLAY (CL): low plasticity, black to brown; Silt, low plasticity; with sand, fine to coarse grained; with roots and rootlets. (TOPSOIL).					
		0.20		CI-CH	Sandy CLAY (CI-CH): medium to high plasticity, brown; Sand, fine to coarse grained; with silt. (ALLUVIUM).	w = PL	S	SD: 0.20-0.40 m ES: 0.30-0.40 m		
		0.40		CH	CLAY (CH): high plasticity, brown with red; with sand, fine to medium grained; trace silt. (RESIDUAL SOIL).			SD: 0.40-0.80 m		
		0.80			Terminated at 0.80 m.	w = LL	F	ES: 0.60-0.70 m	RS	
		1.0								
		1.5								
		2.0								

Notes

Client: **Ok Tedi Mining Ltd**

Status:

DRAFTProject: **ESIA Soil Sampling Campaign**Contractor: **Ok Tedi Local Hires**Northing: **9367459 N**Pit Depth: **0.80 m**Pit Location: **Soil Characterisation Study**Easting: **511534 E**Datum: **AHD**Dimensions: **0.15 x 0.15 m**R.L. **46.69 m**Rig Details: **Fiskars Quik Drill**Grid: **World Geodetic System Long/Lat (WGS 84)**

GROUND WATER LEVELS	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION	Moisture Condition	CONSISTENCY / RELATIVE DENSITY	Samples / Tests	Weathering	Rock Strength (Min)
		0.0		CL	Silty CLAY (CL): low plasticity, brown; Silt, low plasticity; with sand, fine to coarse grained; with roots and rootlets. (TOPSOIL).					
		0.10		CI	Sandy CLAY (CI): medium plasticity, brown to orange brown; Sand, fine to medium grained; with silt; trace roots. (ALLUVIUM).	w = PL	S	ES: 0.20-0.30 m SD: 0.20-0.40 m		
		0.80			Terminated at 0.80 m.			ES: 0.50-0.60 m SD: 0.60-0.80 m		
		1.0								
		1.5								
		2.0								

Notes

Client: **Ok Tedi Mining Ltd** Status: **DRAFT**

Project: **ESIA Soil Sampling Campaign**

Date Started: **11/10/25**
Date Completed: **11/10/25**
Logged by: **S.Miller**
Checked by: **J.Batolbatol**

Contractor: **Ok Tedi Local Hires** Northing: **9367415 N**
Pit Location: **Soil Characterisation Study** Easting: **511145 E**
Dimensions: **0.15 x 0.15 m** R.L.: **46.71 m**
Rig Details: **Fiskars Quik Drill** Grid: **World Geodetic System Long/Lat (WGS 84)**

GROUND WATER LEVELS	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION	Moisture Condition	CONSISTENCY / RELATIVE DENSITY	Samples / Tests	Weathering	Rock Strength (Min)
		0.0		CL	Silty CLAY (CL): low plasticity, brown; Silt, low plasticity; with sand, fine to coarse grained; with roots and rootlets. (TOPSOIL).	w = PL				
		0.20		CL	Sandy CLAY (CL): low plasticity, brown with red and grey; Sand, fine to coarse grained, sub-angular; with silt; trace gravel, fine grained, sub-rounded to sub-angular. (ALLUVIUM).		S	SD: 0.20-0.50 m ES: 0.30-0.40 m		
		46.0		CL		w > LL		SD: 0.50-0.80 m ES: 0.70-0.80 m		
		0.80			Terminated at 0.80 m.					
		1.0								
		45.0								
		2.0								

Notes

Client: **Ok Tedi Mining Ltd**

Status:

DRAFTProject: **ESIA Soil Sampling Campaign**Contractor: **Ok Tedi Local Hires**Northing: **9367364 N**Pit Depth: **0.80 m**Pit Location: **Soil Characterisation Study**Easting: **509980 E**Datum: **AHD**Dimensions: **0.15 x 0.15 m**R.L. **54.70 m**Rig Details: **Fiskars Quik Drill**Grid: **World Geodetic System Long/Lat (WGS 84)**

GROUND WATER LEVELS	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION	Moisture Condition	CONSISTENCY / RELATIVE DENSITY	Samples / Tests	Weathering	Rock Strength (Min)
		0.0		CL-CI	CLAY (CL-CI): low to medium plasticity, brown; trace sand, fine grained. (TOPSOIL).					
		0.10		CH	CLAY (CH): high plasticity, brown; trace sand, fine grained. (RESIDUAL SOIL).		S	ES: 0.10-0.20 m SD: 0.20-0.40 m ES: 0.40-0.50 m	RS	
		0.60		CI	Sandy CLAY (CI): medium plasticity, grey with brown; Sand, fine to medium grained. (RESIDUAL SOIL).	w = PL	F	SD: 0.60-0.80 m		
		0.80			Terminated at 0.80 m.					
		1.0								
		1.5								
		2.0								

Notes

Client: **Ok Tedi Mining Ltd**

Status:

DRAFT

Project: **ESIA Soil Sampling Campaign**

Contractor: **Ok Tedi Local Hires**

Northing: **9367434 N**

Pit Depth: **0.80 m**

Pit Location: **Soil Characterisation Study**

Easting: **509118 E**

Datum: **AHD**

Dimensions: **0.15 x 0.15 m**

R.L. **69.20 m**

Rig Details: **Fiskars Quik Drill**

Grid: **World Geodetic System Long/Lat (WGS 84)**

GROUND WATER LEVELS	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION	Moisture Condition	CONSISTENCY / RELATIVE DENSITY	Samples / Tests	Weathering	Rock Strength (Min)
		0.0		CI	Sandy CLAY (CI): medium plasticity, brown; Sand, fine to medium grained. (TOPSOIL). 0.00 to 0.05m: Roots on the forest floor cleared before test pitting					
	69.0			CH	CLAY (CH): high plasticity, brown with mottled red brown; with sand, fine to coarse grained; trace gravel, fine grained, subangular to sub-rounded, maximum grain size of 19mm . (RESIDUAL SOIL).	w < PL	S	ES: 0.20-0.30 m SD: 0.20-0.40 m		
				CH	CLAY (CH): high plasticity, red brown; with sand, fine to coarse grained; trace gravel, fine to medium grained, sub-rounded, maximum grain size of 19mm . (RESIDUAL SOIL).	w = PL	F	ES: 0.50-0.60 m SD: 0.60-0.80 m	RS	
		0.80			Terminated at 0.80 m.					
		1.0								
	68.0									
		2.0								

Notes

Client: **Ok Tedi Mining Ltd**

Status:

DRAFT

Project: **ESIA Soil Sampling Campaign**

Date Started: 19/08/25

Date Completed: 19/08/25

Logged by: **S.Miller**

Checked by: **J.Batolbatol**

Contractor: **Ok Tedi Local Hires**

Northing: **9367191 N**

Pit Depth: 0.80 m

Pit Location: **Soil Characterisation Study**

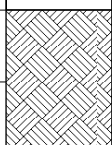
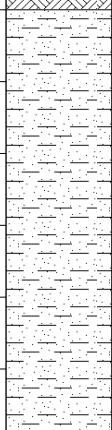
Easting: **508260 E**Datum: **AHD**

Dimensions: **0.15 x 0.15 m**

R.L. **49.02 m**

Rig Details: **Fiskars Quik Drill**

Grid: **World Geodetic System Long/Lat (WGS 84)**

GROUND WATER LEVELS	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION	Moisture Condition	CONSISTENCY / RELATIVE DENSITY	Samples / Tests	Weathering	Rock Strength (Min)
	49.0	0.0		CI	Sandy CLAY (CI): medium plasticity, brown; Sand, fine to medium grained. (TOPSOIL).	w = PL	S	ES: 0.20-0.30 m SD: 0.20-0.40 m ES: 0.40-0.50 m SD: 0.50-0.80 m		
		0.20		CH	Sandy CLAY (CH): high plasticity, brown with patchy grey; Sand, fine to medium grained, subangular. (ALLUVIUM).					
		0.80				Terminated at 0.80 m.	w = LL			
	48.0	1.0								

Notes

Client: **Ok Tedi Mining Ltd**

Status:

DRAFT

Project: **ESIA Soil Sampling Campaign**

Date Started: 25/08/25

Date Completed: 25/08/25

Logged by: **S.Miller**

Checked by: **J.Batolbatol**

Contractor: **Ok Tedi Local Hires**

Northing: **9367566 N**

Pit Depth: 0.80 m

Pit Location: **Soil Characterisation Study**

Easting: **507903 E**Datum: **AHD**

Dimensions: **0.15 x 0.15 m**

R.L. **49.09 m**

Rig Details: **Fiskars Quik Drill**

Grid: **World Geodetic System Long/Lat (WGS 84)**

[illegible]

Notes

Client: **Ok Tedi Mining Ltd**

Status:

DRAFTProject: **ESIA Soil Sampling Campaign**Contractor: **Ok Tedi Local Hires**Northing: **9367419 N**Pit Depth: **0.80 m**Pit Location: **Soil Characterisation Study**Easting: **506858 E**Datum: **AHD**Dimensions: **0.15 x 0.15 m**R.L. **46.57 m**Rig Details: **Fiskars Quik Drill**Grid: **World Geodetic System Long/Lat (WGS 84)**

GROUND WATER LEVELS	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION	Moisture Condition	CONSISTENCY / RELATIVE DENSITY	Samples / Tests	Weathering	Rock Strength (Min)
		0.0		CH	CLAY (CH): high plasticity, brown; with sand, fine grained; with roots and rootlets. (TOPSOIL).		S			
		0.20		CH	CLAY (CH): high plasticity, brown with mottled grey; with sand, fine to medium grained; trace gravel, fine grained, sub-rounded, maximum grain size of 6mm. (ALLUVIUM).	w = PL	S to F	ES: 0.20-0.30 m SD: 0.20-0.40 m		
		46.0		CH		w = LL		ES: 0.50-0.60 m SD: 0.60-0.80 m		
		0.80			Terminated at 0.80 m.					
		1.0								
		45.0								
		2.0								

Notes

Client: **Ok Tedi Mining Ltd**

Status:

DRAFT

Project: **ESIA Soil Sampling Campaign**

Contractor: **Ok Tedi Local Hires**

Northing: **9368889 N**

Pit Depth: **0.80 m**

Pit Location: **Soil Characterisation Study**

Easting: **506884 E**

Datum: **AHD**

Dimensions: **0.15 x 0.15 m**

R.L. **72.51 m**

Rig Details: **Fiskars Quik Drill**

Grid: **World Geodetic System Long/Lat (WGS 84)**

GROUND WATER LEVELS	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION	Moisture Condition	CONSISTENCY / RELATIVE DENSITY	Samples / Tests	Weathering	Rock Strength (Min)
		0.0		CI	CLAY (CI): medium plasticity, red brown with pale brown and mottled grey; trace sand, fine to medium grained; with roots and rootlets. (TOPSOIL).	w = PL				
		0.20		CI	CLAY (CI): medium plasticity, red brown; trace sand, fine to medium grained. (RESIDUAL SOIL).		F	ES: 0.20-0.30 m SD: 0.20-0.40 m		
		72.0		CI		w < PL		ES: 0.50-0.60 m SD: 0.50-0.80 m		
		0.80			Terminated at 0.80 m.					
		1.0								
		71.0								
		2.0								

Notes

Client: **Ok Tedi Mining Ltd**

Status:

DRAFT

Project: **ESIA Soil Sampling Campaign**

Contractor: **Ok Tedi Local Hires**

Northing: **9365119 N**

Pit Depth: **0.80 m**

Pit Location: **Soil Characterisation Study**

Easting: **509551 E**

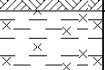
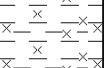
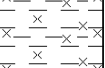
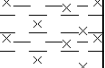
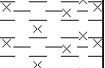
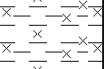
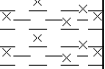
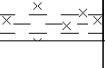
Datum: **AHD**

Dimensions: **0.15 x 0.15 m**

R.L. **47.63 m**

Rig Details: **Fiskars Quik Drill**

Grid: **World Geodetic System Long/Lat (WGS 84)**

GROUND WATER LEVELS	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION	Moisture Condition	CONSISTENCY / RELATIVE DENSITY	Samples / Tests	Weathering	Rock Strength (Min)
		0.0		CL	Silty CLAY (CL): low plasticity, grey with patchy brown; Silt, low plasticity; with gravel, fine grained, sub-rounded, maximum grain size of 19mm; with roots and rootlets. (TOPSOIL).					
		0.10			Silty CLAY (CI): medium plasticity, brown; Silt, low plasticity; with sand, fine to medium grained. (ALLUVIUM).					
										
										
										
										
										
										
										
										
										
										
										
										
										
										
										
										
										
										
										
										

Client: **Ok Tedi Mining Ltd**

Status:

DRAFT

Project: **ESIA Soil Sampling Campaign**

Contractor: **Ok Tedi Local Hires**

Northing: **9364976 N**

Pit Depth: **0.80 m**

Pit Location: **Soil Characterisation Study**

Easting: **508364 E**

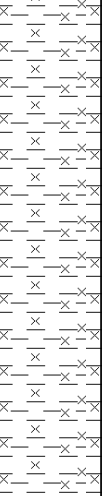
Datum: **AHD**

Dimensions: **0.15 x 0.15 m**

R.L. **47.15 m**

Rig Details: **Fiskars Quik Drill**

Grid: **World Geodetic System Long/Lat (WGS 84)**

GROUND WATER LEVELS	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION	Moisture Condition	CONSISTENCY / RELATIVE DENSITY	Samples / Tests	Weathering	Rock Strength (Min)
		0.0		CI	Silty CLAY (CI): medium plasticity, grey; Silt, low plasticity; with gravel, fine grained, sub-rounded, maximum grain size of 6mm; with roots and rootlets. (TOPSOIL).			SD: 0.10-0.30 m		
	47.0			CI-CH	Silty CLAY (CI-CH): medium to high plasticity, brown with spotted red; Silt, low plasticity; with gravel, fine grained, sub-rounded, maximum grain size of 6mm. (ALLUVIUM).	w < PL	F	ES: 0.20-0.30 m		
							F to St	ES: 0.50-0.60 m SD: 0.50-0.80 m		
					Terminated at 0.80 m.					
		1.0								
	46.0									
		2.0								

Notes

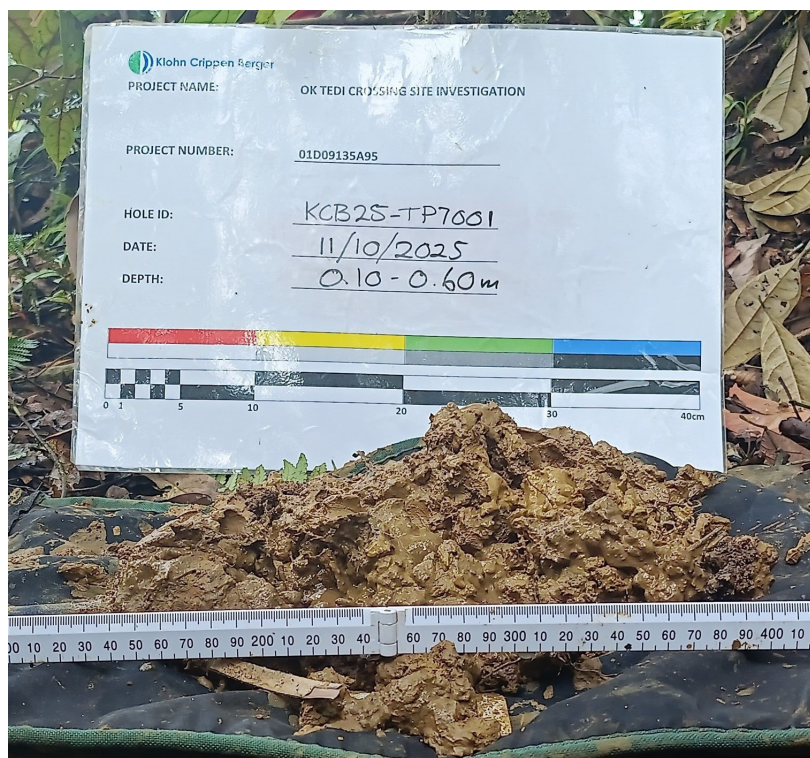
APPENDIX III

Test Pit Photographs

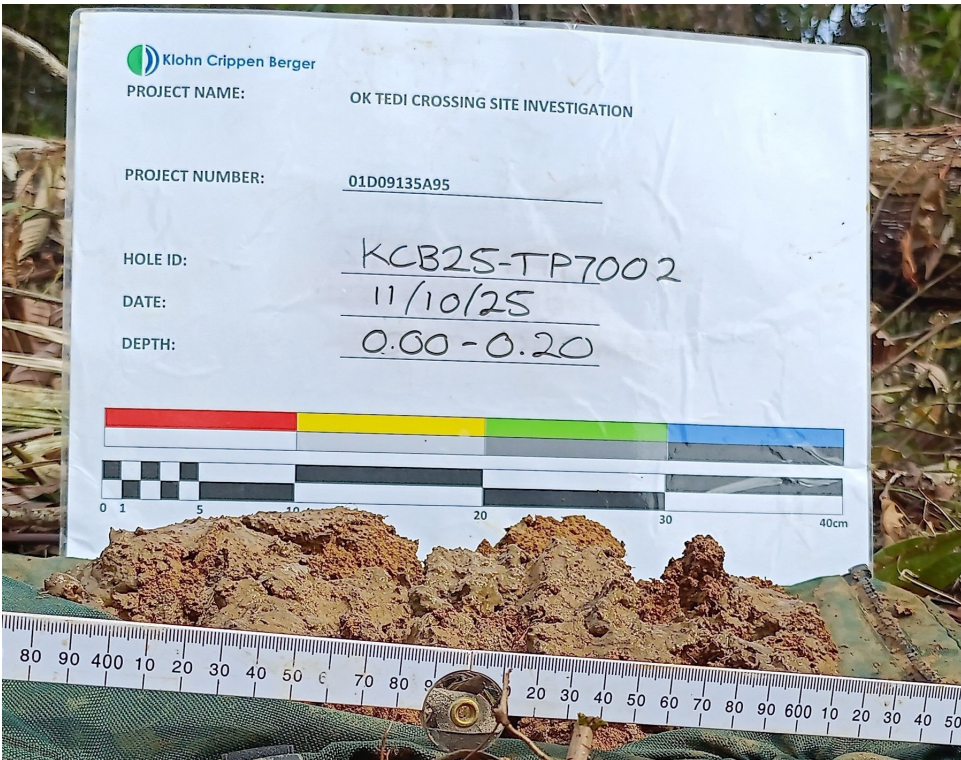
PROJECT : ESIA Soil Sampling Campaign

01D09135A95
LOCATION : Proposed Alice Bridge

Sheet 1 of 1

0.00 to 0.10 m

0.10 to 0.60 m
Remarks:

 Klohn Crippen Berger	CORE PHOTO REPORT	HOLE NO : KCB25-TP7002
PROJECT :	ESIA Soil Sampling Campaign	01D09135A95
LOCATION :	Proposed Alice Bridge	Sheet 1 of 2



0.00 to 0.20 m



0.20 to 0.40 m

Remarks:

PROJECT :	ESIA Soil Sampling Campaign	01D09135A95
LOCATION :	Proposed Alice Bridge	Sheet 2 of 2



0.40 to 0.80 m

Remarks:

PROJECT :	ESIA Soil Sampling Campaign	01D09135A95
LOCATION :	Proposed Alice Bridge	Sheet 1 of 1



0.00 to 0.10 m



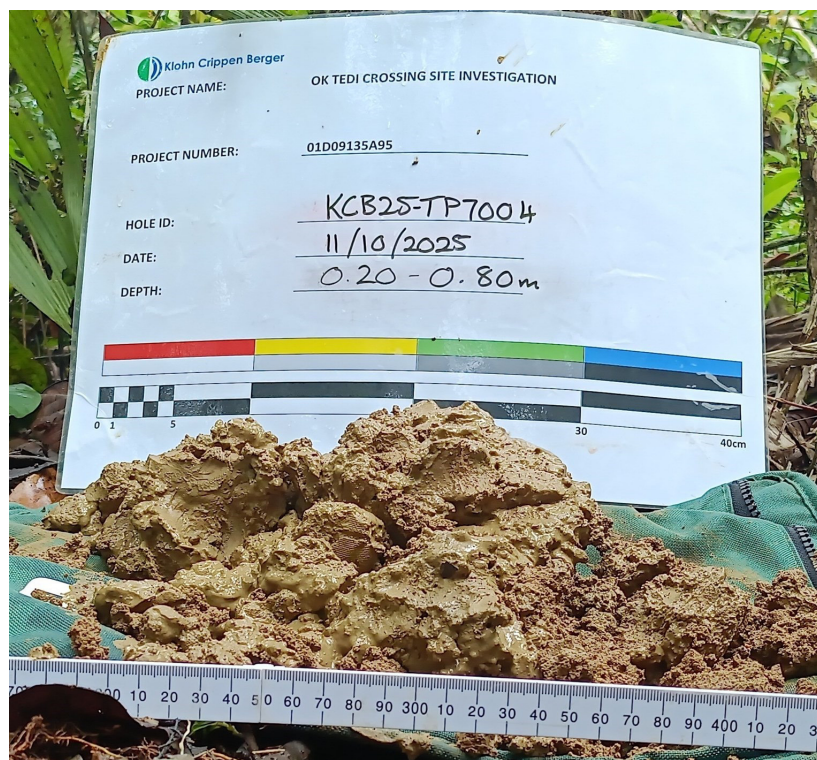
0.10 to 0.80 m

Remarks:

PROJECT : ESIA Soil Sampling Campaign

01D09135A95
LOCATION : Proposed Alice Bridge

Sheet 1 of 1

0.00 to 0.20 m

0.20 to 0.80 m
Remarks:

PROJECT :	ESIA Soil Sampling Campaign	01D09135A95
LOCATION :	Proposed C5 TSF	Sheet 1 of 2



Remarks:

 Klohn Crippen Berger		CORE PHOTO REPORT	HOLE NO : KCB25-TP7005
PROJECT :	ESIA Soil Sampling Campaign	01D09135A95	
LOCATION :	Proposed C5 TSF	Sheet 2 of 2	



0.60 to 0.80 m

Remarks:

		CORE PHOTO REPORT	HOLE NO : KCB25-TP7006
PROJECT :	ESIA Soil Sampling Campaign	01D09135A95	
LOCATION :	Proposed C5 TSF	Sheet 1 of 2	



0.00 to 0.20 m



0.20 to 0.50 m

Remarks:

PROJECT :	ESIA Soil Sampling Campaign	01D09135A95
LOCATION :	Proposed C5 TSF	Sheet 2 of 2



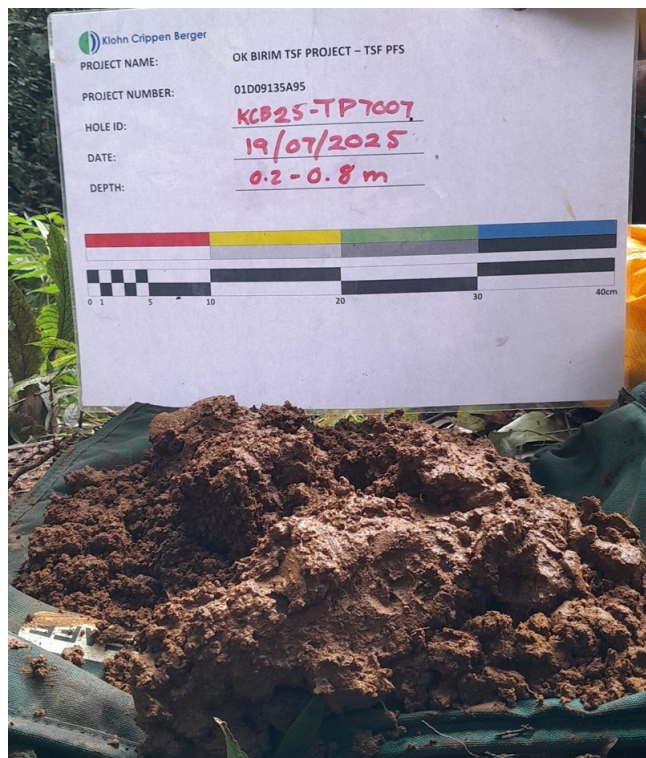
0.50 to 0.80 m

Remarks:

 Klohn Crippen Berger		CORE PHOTO REPORT	HOLE NO : KCB25-TP7007
PROJECT :	ESIA Soil Sampling Campaign	01D09135A95	
LOCATION :	Proposed C5 TSF	Sheet 1 of 1	



0.00 to 0.20 m



0.20 to 0.80 m

Remarks:

PROJECT :	ESIA Soil Sampling Campaign	01D09135A95
LOCATION :	Proposed C5 TSF	Sheet 1 of 1



0.00 to 0.10 m



0.10 to 0.80 m

Remarks:

		CORE PHOTO REPORT	HOLE NO : KCB25-TP7009
PROJECT :	ESIA Soil Sampling Campaign	01D09135A95	
LOCATION :	Proposed C5 TSF	Sheet 1 of 1	



0.00 to 0.20 m



0.20 to 0.80 m

Remarks:

 Klohn Crippen Berger		CORE PHOTO REPORT	HOLE NO : KCB25-TP7010
PROJECT :	ESIA Soil Sampling Campaign	01D09135A95	
LOCATION :	Proposed C5 TSF	Sheet 1 of 1	



0.00 to 0.20 m



0.20 to 0.80 m

Remarks:

 Klohn Crippen Berger		CORE PHOTO REPORT	HOLE NO : KCB25-TP7011
PROJECT :	ESIA Soil Sampling Campaign	01D09135A95	
LOCATION :	Proposed C5 TSF	Sheet 1 of 1	



0.00 to 0.10 m



0.10 to 0.80 m

Remarks:

 Klohn Crippen Berger		CORE PHOTO REPORT	HOLE NO : KCB25-TP7012
PROJECT :	ESIA Soil Sampling Campaign	01D09135A95	
LOCATION :	Proposed C5 TSF	Sheet 1 of 1	



0.00 to 0.10 m



2 - 0.10 to 0.80 m

Remarks:

APPENDIX IV

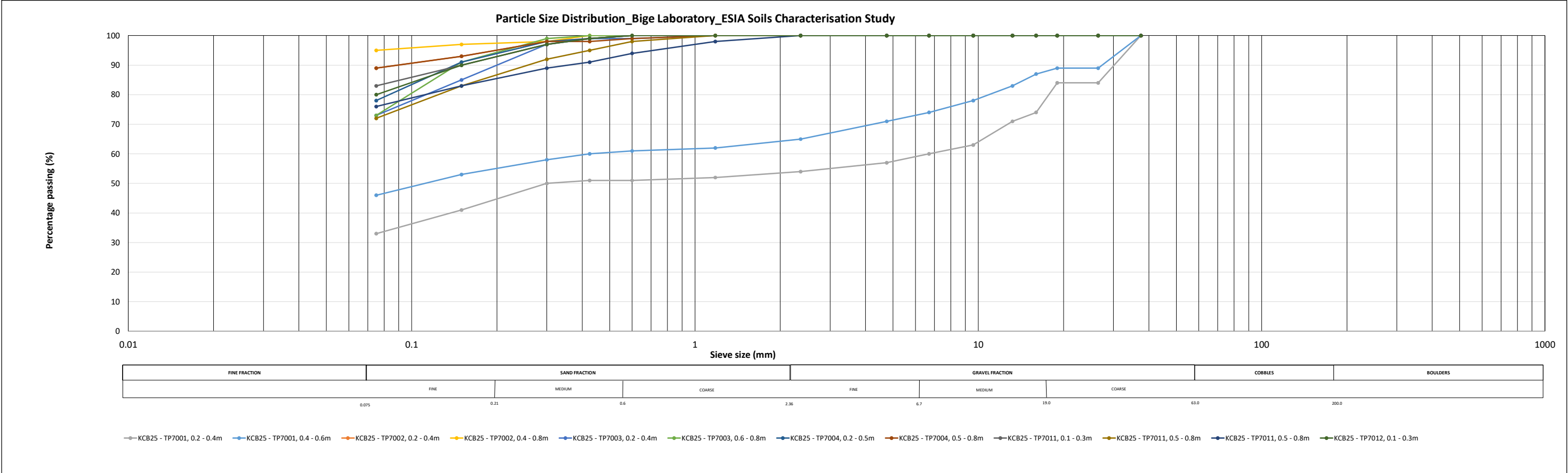
Laboratory Test Results - Engineering

OK BIRIM TSF SAMPLES - KCB25 - TEST RESULTS

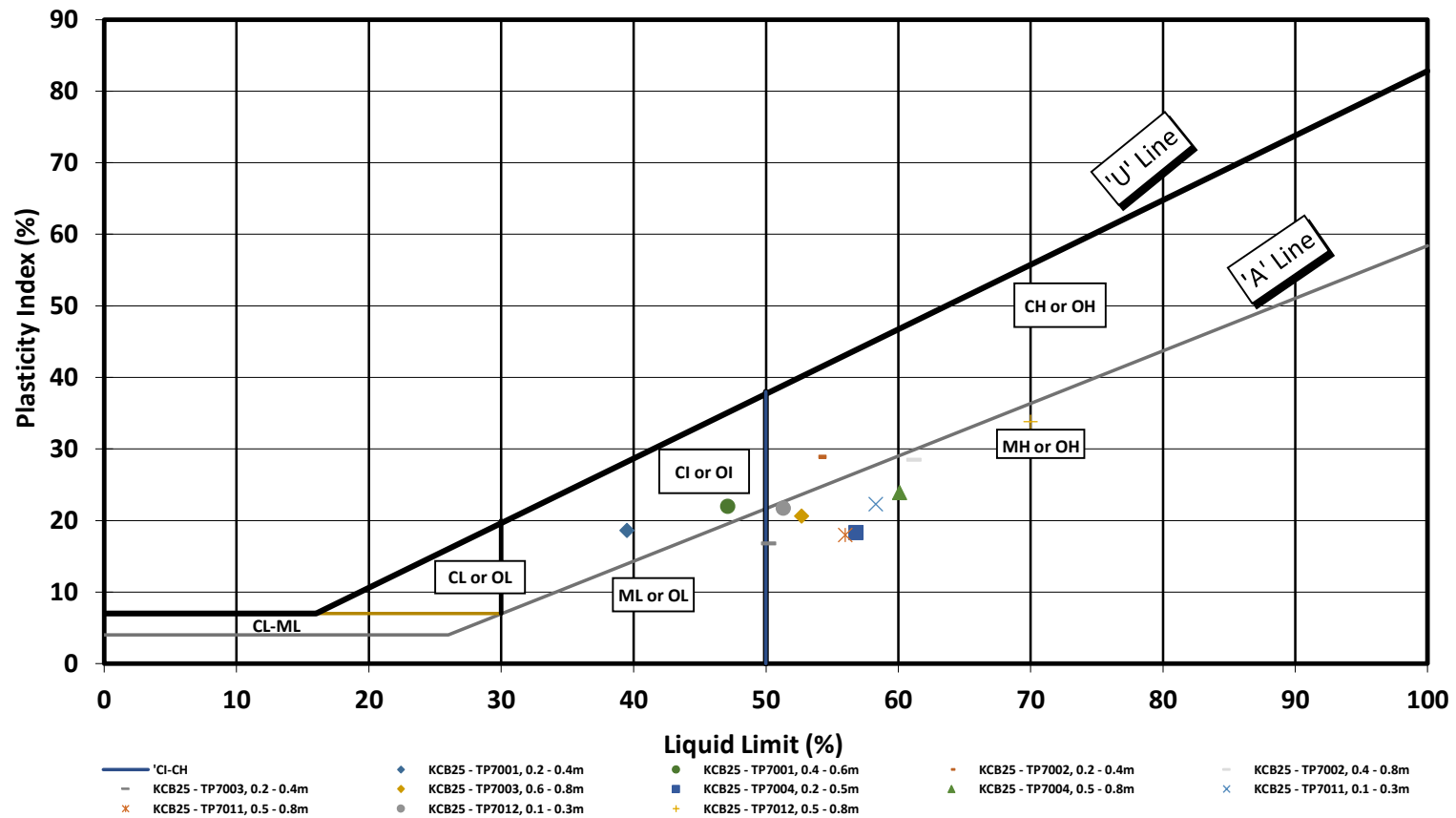
Register No.	Sample ID	Sample Date	Descriptions	Atterberg Limits				Compaction		Particle Size Analysis PSD																				
				Moisture Content	Liquid Limit (LL)	Plastic Limit (PL)	Plastic Index (PI)	Maximum Dry Density (MDD)	Optimum Moisture Content (OMC)	126mm	75mm	63mm	53mm	37.5mm	26.5mm	19mm	13.2mm	9.6mm	6.7mm	4.75mm	2.36mm	1.18mm	0.6mic	0.425mic	0.3mic	0.15mic	0.075mic	% Gravel	%Sand	% Fines
B165	KCB25 - TP7001, 0.2 - 0.4m	11/10/2025	Soil Sample	44.7	39.5	20.9	18.6	N/A	N/A	100	100	100	100	100	84	74	71	63	60	57	54	52	51	50	41	33	42.8	24	33.2	
B166	KCB25 - TP7001, 0.4 - 0.6m	11/10/2025	Soil Sample	47.1	45.9	23.9	22	N/A	N/A	100	100	100	100	100	89	87	83	78	74	71	65	62	61	60	58	53	46	29.5	24.5	46
B167	KCB25 - TP7002, 0.2 - 0.4m	11/10/2025	Soil Sample	54	55.6	28.9	26.7	N/A	N/A	100	100	100	100	100	100	100	100	100	100	100	100	100	99	98	93	89	0	10.7	89.3	
B168	KCB25 - TP7002, 0.4 - 0.8m	11/10/2025	Soil Sample	57	61.2	32.7	28.5	N/A	N/A	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	98	97	95	0	5.1	94.9
B169	KCB25 - TP7003, 0.2 - 0.4m	13/10/2025	Soil Sample	58.4	50.2	33.4	16.8	N/A	N/A	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	99	91	73	0	27.2	72.8
B170	KCB25 - TP7003, 0.6 - 0.8m	13/10/2025	Soil Sample	65.1	52.7	32.1	20.6	N/A	N/A	100	100	100	100	100	100	100	100	100	100	100	100	100	99	98	91	78	0	22.3	77.7	
B171	KCB25 - TP7004, 0.2 - 0.5m	11/10/2025	Soil Sample	100	56.8	38.5	18.3	N/A	N/A	100	100	100	100	100	100	100	100	100	100	100	100	99	98	98	93	89	0	11.4	88.6	
B172	KCB25 - TP7004, 0.5 - 0.8m	11/10/2025	Soil Sample	84.4	60.1	36.2	23.9	N/A	N/A	100	100	100	100	100	100	100	100	100	100	100	100	100	99	97	90	83	0	16.3	83.7	
B173	KCB25 - TP7011, 0.1 - 0.3m	12/10/2025	Soil Sample	96.6	58.3	36	22.3	N/A	N/A	100	100	100	100	100	100	100	100	100	100	100	100	98	95	92	83	72	0	22.6	77.4	
B174	KCB25 - TP7011, 0.5 - 0.8m	12/10/2025	Soil Sample	74.3	56	38	18	N/A	N/A	100	100	100	100	100	100	100	100	100	100	100	98	94	91	89	83	76	0	24.4	75.6	
B175	KCB25 - TP7012, 0.1 - 0.3m	12/10/2025	Soil Sample	49.1	51.3	29.6	21.7	N/A	N/A	100	100	100	100	100	100	100	100	100	100	100	100	100	99	97	90	80	0	19.8	80.2	
B176	KCB25 - TP7012, 0.5 - 0.8m	12/10/2025	Soil Sample	54	70	36.2	33.8	N/A	N/A	100	100	100	100	100	100	100	100	100	100	100	100	100	99	97	91	85	0	14.7	85.3	

Project: OTML Lowlands TSF Feasibility Study - Soil Characterisation
Title: Soil Grading Analysis
Lab: OTML Bige Soils Laboratory

AS sieve size (mm)	KCB25 - TP7001, 0.2 - 0.4m	KCB25 - TP7001, 0.4 - 0.6m	KCB25 - TP7002, 0.2 - 0.4m	KCB25 - TP7002, 0.4 - 0.8m	KCB25 - TP7003, 0.2 - 0.4m	KCB25 - TP7003, 0.6 - 0.8m	KCB25 - TP7004, 0.2 - 0.5m	KCB25 - TP7004, 0.5 - 0.8m	KCB25 - TP7011, 0.1 - 0.3m	KCB25 - TP7011, 0.5 - 0.8m	KCB25 - TP7011, 0.5 - 0.8m	KCB25 - TP7012, 0.1 - 0.3m	KCB25 - TP7012, 0.5 - 0.8m
37.5	100	100	100	100	100	100	100	100	100	100	100	100	100
26.5	84	89	100	100	100	100	100	100	100	100	100	100	100
19	84	89	100	100	100	100	100	100	100	100	100	100	100
16	74	87	100	100	100	100	100	100	100	100	100	100	100
13.2	71	83	100	100	100	100	100	100	100	100	100	100	100
9.6	63	78	100	100	100	100	100	100	100	100	100	100	100
6.7	60	74	100	100	100	100	100	100	100	100	100	100	100
4.75	57	71	100	100	100	100	100	100	100	100	100	100	100
2.36	54	65	100	100	100	100	100	100	100	100	100	100	100
1.18	52	62	100	100	100	100	100	100	100	100	100	100	100
0.6	51	61	100	100	99	100	100	99	100	98	94	100	100
0.425	51	60	99	100	99	100	99	98	99	95	91	99	99
0.3	50	58	98	98	97	99	98	98	97	92	89	97	97
0.15	41	53	93	97	85	91	91	93	90	83	83	90	91
0.075	33	46	89	95	73	73	78	89	83	72	76	80	85



Modified Casagrande Chart for Classifying Silts and Clays (AS1726:2017) OTML Lowlands TSF Feasibility Study - Soil Characterisation

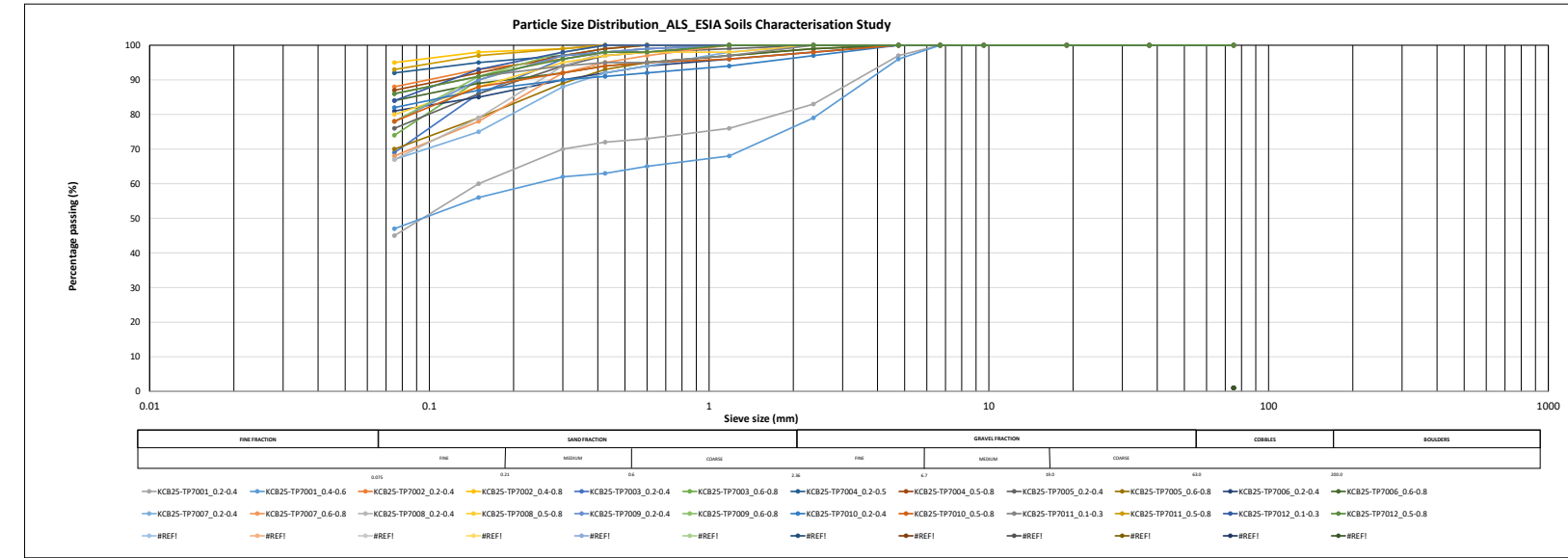




OTML LOWLANDS FS_OK BIRIM_KCB25 ESIA SOIL SAMPLING

					LABORATORY TESTING																						
No	Lab Number	Sample Type	Sampling date (dd/mm/yyyy)	Project and Sample Location	Material Classification	Field Moisture Content (%)	Atterberg Limits				Particle Size Distribution														Percent Passing %		
							Liquid Limit%	Plastic Limit%	Plasticity Index%	Linear Shrinkage %	26.5	19	16	13.2	9.5	6.7	4.75	2.36	1.18	0.6	0.425	0.3	0.15	0.075	Gravel%	Sand%	Fines%
1	B1041	Source area	19-Aug-25	OTML LOWLANDS FS_KCB25_TP7006_0.2 - 0.4	CLAY	62	66.5	32.6	33.9	15.2						100	99	98	97	94	89	81	76	74	2.5	23.7	73.8
2	B1042	Source area	19-Aug-25	OTML LOWLANDS FS_KCB25_TP7006_0.6 - 0.8	CLAY	49	62.9	32	30.9	11.1				100	99	98	98	96	94	92	91	90	86	82	2.3	16.1	81.6
3	B1043	Source area	19-Aug-25	OTML LOWLANDS FS_KCB25_TP7007_0.2 - 0.4	CLAY	63	49.5	33.6	15.9	5									100	99	96	82	72	0	28.3	71.7	
4	B1044	Source area	19-Aug-25	OTML LOWLANDS FS_KCB25_TP7007_0.5 - 0.8	CLAY	49.8	48.1	29.1	19	5.5									100	99	95	80	70	0	29.9	70.1	
5	B1045	Source area	22-Aug-25	OTML LOWLANDS FS_KCB25_TP7009_0.2 - 0.4	CLAY	49.8	49	23.2	25.8	5								100	99	99	97	85	73	0	26.8	73.2	
6	B1046	Source area	22-Aug-25	OTML LOWLANDS FS_KCB25_TP7009_0.6 - 0.8	CLAY	87.1	56.2	26.6	29.6	5.9										100	99	90	79	0	20.7	79.3	
7	B1047	Source area	25-Aug-25	OTML LOWLANDS FS_KCB25_TP7005_0.2 - 0.4	CLAY	73.5	58.4	28	30.4	11.1								100	99	98	95	86	78	0	22.5	77.5	
8	B1048	Source area	25-Aug-25	OTML LOWLANDS FS_KCB25_TP7005_0.6 - 0.8	CLAY	53.2	68.3	35	33.3	9.2		100	92	88	87	87	86	85	83	79	75	71	63	57	14.1	28.5	57.4
9	B1049	Source area	25-Aug-25	OTML LOWLANDS FS_KCB25_TP7008_0.1 - 0.3	Sandy CLAY	60.9	51.5	27.2	24.3	6.4								100	99	98	96	91	77	68	0	32.3	67.7
10	B1050	Source area	25-Aug-25	OTML LOWLANDS FS_KCB25_TP7008_0.4 - 0.6	CLAY	89	66	28.7	37.3	9.6			100	99	99	97	97	97	96	95	94	92	85	79	3.2	17.9	78.9
11	B1051	Source area	28-Aug-25	OTML LOWLANDS FS_KCB25_TP7010_0.2 - 0.4	CLAY	85.9	73.4	32.7	40.7	12.6			100	98	97	96	95	93	91	90	89	88	85	80	5.4	14.3	80.3
12	B1052	Source area	28-Aug-25	OTML LOWLANDS FS_KCB25_TP7006_0.5 - 0.8	CLAY	56.6	67.8	28.3	39.5	10.1			100	99	98	97	97	95	94	93	92	91	87	81	3.5	15.8	80.7

AS sieve size (mm)	KCB25-TP7001_0.2-0.4	KCB25-TP7001_0.4-0.6	KCB25-TP7002_0.2-0.4	KCB25-TP7002_0.4-0.8	KCB25-TP7003_0.2-0.4	KCB25-TP7003_0.6-0.8	KCB25-TP7004_0.2-0.5	KCB25-TP7004_0.5-0.8	KCB25-TP7005_0.2-0.4	KCB25-TP7005_0.6-0.8	KCB25-TP7006_0.2-0.4	KCB25-TP7006_0.6-0.8	KCB25-TP7007_0.2-0.4	KCB25-TP7007_0.6-0.8	KCB25-TP7008_0.2-0.4	KCB25-TP7008_0.5-0.8	KCB25-TP7009_0.2-0.4	KCB25-TP7009_0.6-0.8	KCB25-TP7010_0.2-0.4	KCB25-TP7010_0.5-0.8	KCB25-TP7011_0.1-0.3	KCB25-TP7011_0.5-0.8	KCB25-TP7012_0.1-0.3	KCB25-TP7012_0.5-0.8
75	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	
37.5	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	
38	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	
9.6	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	
6.7	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	
4.75	97	96	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	
2.36	83	79	100	100	100	100	100	99	100	98	99	100	100	100	100	100	97	98	100	98	100	100	100	
1.18	76	68	100	98	100	100	100	99	97	98	96	97	98	98	96	98	94	95	100	96	97	100	100	
0.6	73	65	99	100	99	98	100	88	95	88	94	95	94	95	98	99	100	95	95	100	100	100	98	
0.425	73	63	98	100	98	98	99	87	93	92	94	92	93	95	98	97	98	100	93	94	100	100	98	
0.3	70	62	96	99	97	96	97	84	88	88	90	92	88	92	94	95	97	98	90	92	99	98	96	
0.15	60	56	93	98	86	90	95	86	79	85	85	89	78	79	88	90	91	87	88	91	97	93	91	
0.075	45	47	88	95	69	74	92	87	76	70	81	84	67	68	67	80	78	78	82	78	86	93	84	



Fraction	Components	Subdivision	Size* mm
Oversize	BOULDERS		>200
	COBBLES		63–200
Coarse grained soil	GRAVEL	Coarse	19–63
		Medium	6.7–19
		Fine	2.36–6.7
	SAND	Coarse	0.6–2.36
		Medium	0.21–0.6
		Fine	0.075–0.21
Fine grained soil	SILT		0.002–0.075
	CLAY		<0.002

* These sizes correspond approximately to standard sieve sizes.

AS sieve size (mm)	KCB25_TP7006_0.2 - 0.4	KCB25_TP7006_0.6 - 0.8	KCB25_TP7007_0.2 - 0.4	KCB25_TP7007_0.5 - 0.8	KCB25_TP7009_0.2 - 0.4	KCB25_TP7009_0.6 - 0.8	KCB25_TP7009_0.2 - 0.4	KCB25_TP7009_0.6 - 0.8	KCB25_TP7005_0.2 - 0.4	KCB25_TP7005_0.6 - 0.8	KCB25_TP7008_0.1 - 0.3	KCB25_TP7008_0.4 - 0.6	KCB25_TP7008_0.4 - 0.6	KCB25_TP7010_0.2 - 0.4
19	100	100	100	100	100	100	100	100	100	100	100	100	100	100
16	100	100	100	100	100	100	100	100	100	92	100	100	100	100
13.2	100	100	100	100	100	100	100	100	100	88	100	99	98	99
9.6	100	99	100	100	100	100	100	100	100	87	100	99	97	98
6.7	100	98	100	100	100	100	100	100	100	87	100	97	96	97
4.75	99	98	100	100	100	100	100	100	86	86	100	97	95	97
2.36	98	96	100	100	100	100	100	100	85	85	100	97	93	95
1.18	97	94	100	100	100	100	100	100	83	83	99	96	91	94
0.6	94	92	100	100	99	100	99	99	79	79	98	95	90	93
0.425	89	91	89	99	99	99	98	98	75	75	96	94	89	92
0.3	81	90	96	95	97	99	95	95	71	71	91	92	88	91
0.15	76	86	82	80	85	90	86	86	63	63	77	85	85	87
0.075	74	82	72	70	73	79	78	78	57	57	68	79	80	81

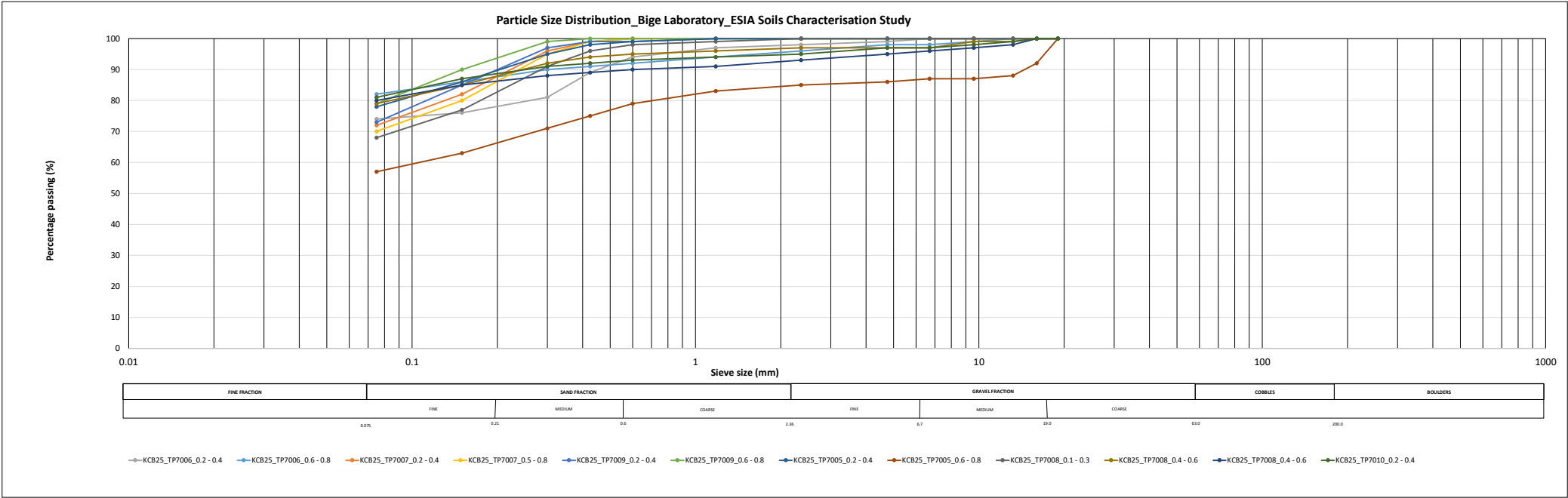


TABLE 1 PARTICLE SIZE DEFINITIONS			
Fraction	Components	Subdivision	Size* mm
Oversize	BOULDERS		>200
	COBBLES		63–200
Coarse grained soil	GRAVEL	Coarse	19–63
		Medium	6.7–19
		Fine	2.36–6.7
	SAND	Coarse	0.6–2.36
		Medium	0.21–0.6
		Fine	0.075–0.21
Fine grained soil	SILT		0.002–0.075
	CLAY		<0.002

* These sizes correspond approximately to standard sieve sizes.



Bige Operations
Lower Ok Tedi Dredge Project
Soils Laboratory
P.O.Box 93, Kiunga, WP

Project: OTML LOWLANDS FS
Location: OK BIRIM SOIL SAMPLING

Sample ID	Sample	Sample Date	Natural MC (%)	Atterberg Limits			
				Liquid Limit (LL)%	Plastic Limit (PL)%	Plasticity Index (PI)%	Linear Shrinkage (LS) %
KCB25-TP7006_0.2 - 0.4	B1041	19-Aug-25	62	66.5	32.6	33.9	15.2
KCB25-TP7006_0.6 - 0.8	B1042	19-Aug-25	49	62.9	32	30.9	11.1
KCB25-TP7007_0.2 - 0.4	B1043	19-Aug-25	63	49.5	33.6	15.9	5
KCB25-TP7007_0.5 - 0.8	B1044	19-Aug-25	49.8	48.1	29.1	19	2.9
KCB25-TP7009_0.2 - 0.4	B1045	22-Aug-25	49.8	49	23.2	25.8	5
KCB25-TP7009_0.6 - 0.8	B1046	22-Aug-25	87.1	56.2	26.6	29.6	5.9
KCB25-TP7005_0.2 - 0.4	B1047	25-Aug-25	73.5	58.4	28	30.4	11.1
KCB25-TP7005_0.6 - 0.8	B1048	25-Aug-25	53.2	68.3	35	33.3	9.2
KCB25-TP7008_0.1 - 0.3	B1049	25-Aug-25	60.9	51.5	27.2	24.3	6.4
KCB25-TP7008_0.4 - 0.6	B1050	25-Aug-25	89	66.6	28.7	37.3	9.6
KCB25-TP7010_0.2 - 0.4	B1051	28-Aug-25	85.9	73.4	32.7	40.7	12.6
KCB25-TP7010_0.5 - 0.8	B1052	28-Aug-25	56.6	67.8	28.3	39.5	10.1

Date: 30/08/2025

Tested by: Francis Lea

Checked by: _____

ATTERBURG LIMITS AS1289 C1.1, C2.1, C3.1, C4.1

LIQUID LIMIT

Sample No.	1	2	3	4	5			
Moisture Can No.	L43	L18	L41	L8	L44			
1. Mass of can (g)	26.21	24.94	25.9	26.01	25.97			
2. Mass of can & wet soil (g)	40.78	37.95	41.34	42.12	41.46			
3. Mass of can & dry soil (g)	35.17	32.87	35.26	35.63	35.09			
4. Mass of water [2-3] (g)	5.61	5.08	6.08	6.49	6.37			
5. Mass of dry soil [3-1] (g)	8.96	7.93	9.36	9.62	9.12			
6. Moisture Content [(4/5)x100] (g)	62.61%	64.06%	64.96%	67.46%	69.85%			
7. Number of drops (N)	44	35	26	19	12			

Plastic Limit

Sample No.	1	2	3					
Moisture Can No.	L5	L15	L3					
1. Mass of can (g)	25.99	25.4	26.05					
2. Mass of can & wet soil (g)	32.67	33.43	33.29					
3. Mass of can & dry soil (g)	31.05	31.45	31.49					
4. Mass of water [2-3] (g)	1.62	1.98	1.8					
5. Mass of dry soil [3-1] (g)	5.06	6.05	5.44					
6. Moisture Content [(4/5)x100] (g)	32.02%	32.73%	33.09%					
7. Plastic Limit (PL) = Average M.C (%)	32.61%							

Shrinkage Limit

1. Shrinkage Mould No.	B9							
2. Length of Wet Soil (mm)	250							
3. Length of Dry Soil (mm)	217							
4. Shrinkage [2-3] (mm)	33							
5. Linear Shrinkage [(4/3)x100] (%)	15.21%							
Material Classification								

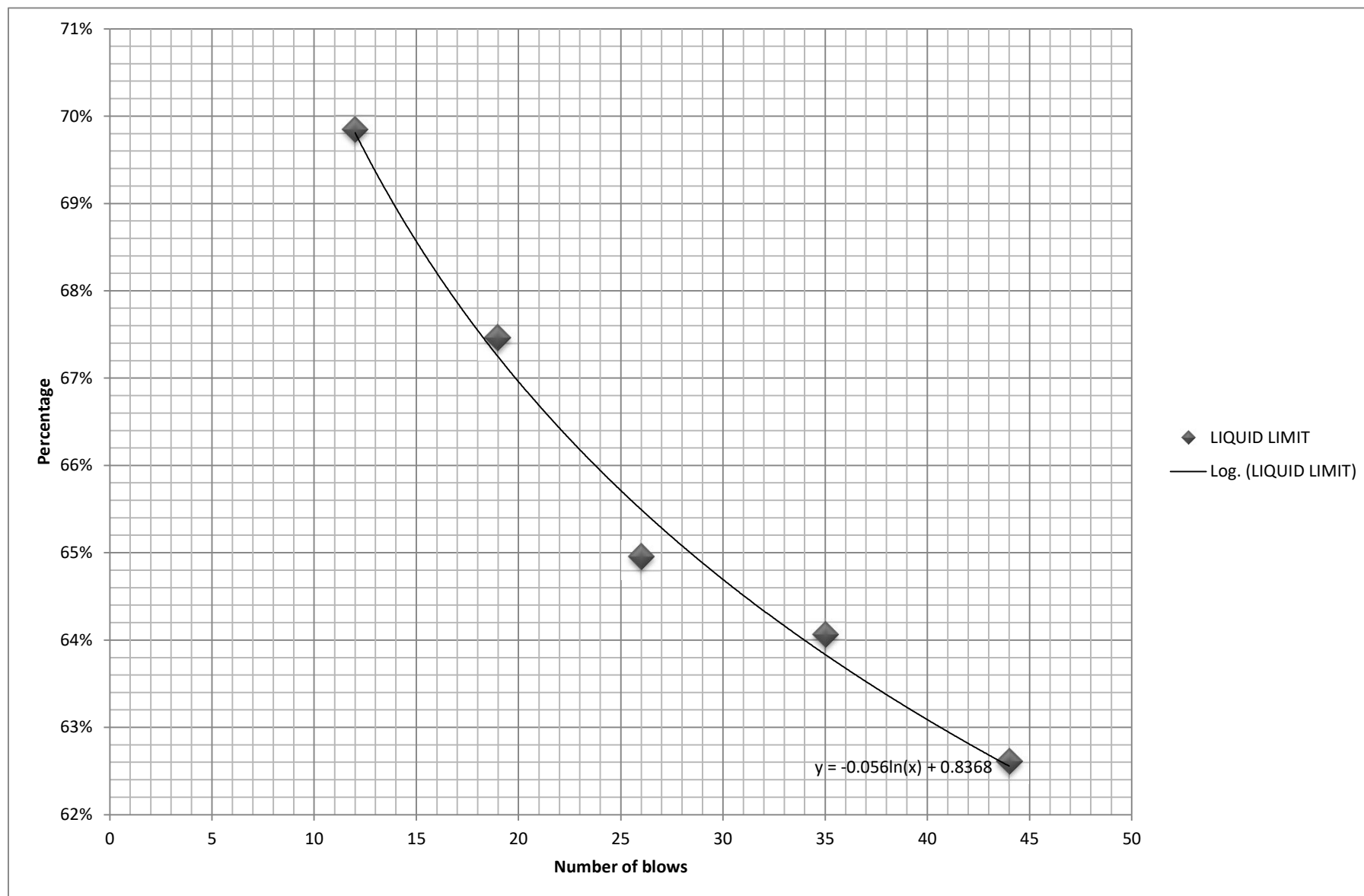
Major divisions			Group symbol	Group name
Coarse grained soils more than 50% retained on or above No.200 (0.074 mm) sieve	gravel > 50% of coarse fraction retained on No.4 (4.75 mm) sieve	clean gravel <5% smaller than No.200 Sieve	GW	well-graded gravel, fine to coarse gravel
			GP	poorly graded gravel
		gravel with >12% fines	GM	silty gravel
	sand ≥ 50% of coarse fraction passes No.4 (4.75 mm) sieve	clean sand	GC	clayey gravel
			SW	well-graded sand, fine to coarse sand
			SP	poorly graded sand
		sand with >12% fines	SM	silty sand
Fine grained soils 50% or more passing the No.200 (0.074 mm) sieve	silt and clay liquid limit < 50		SC	clayey sand
			ML	silt
			CL	clay of low plasticity, lean clay
	silt and clay liquid limit ≥ 50	organic	OL	organic silt, organic clay
		inorganic	MH	silt of high plasticity, elastic silt
			CH	clay of high plasticity, fat clay
		organic	OH	organic clay, organic silt
Highly organic soils			Pt	peat

Atterberg (Consistency) Limits:

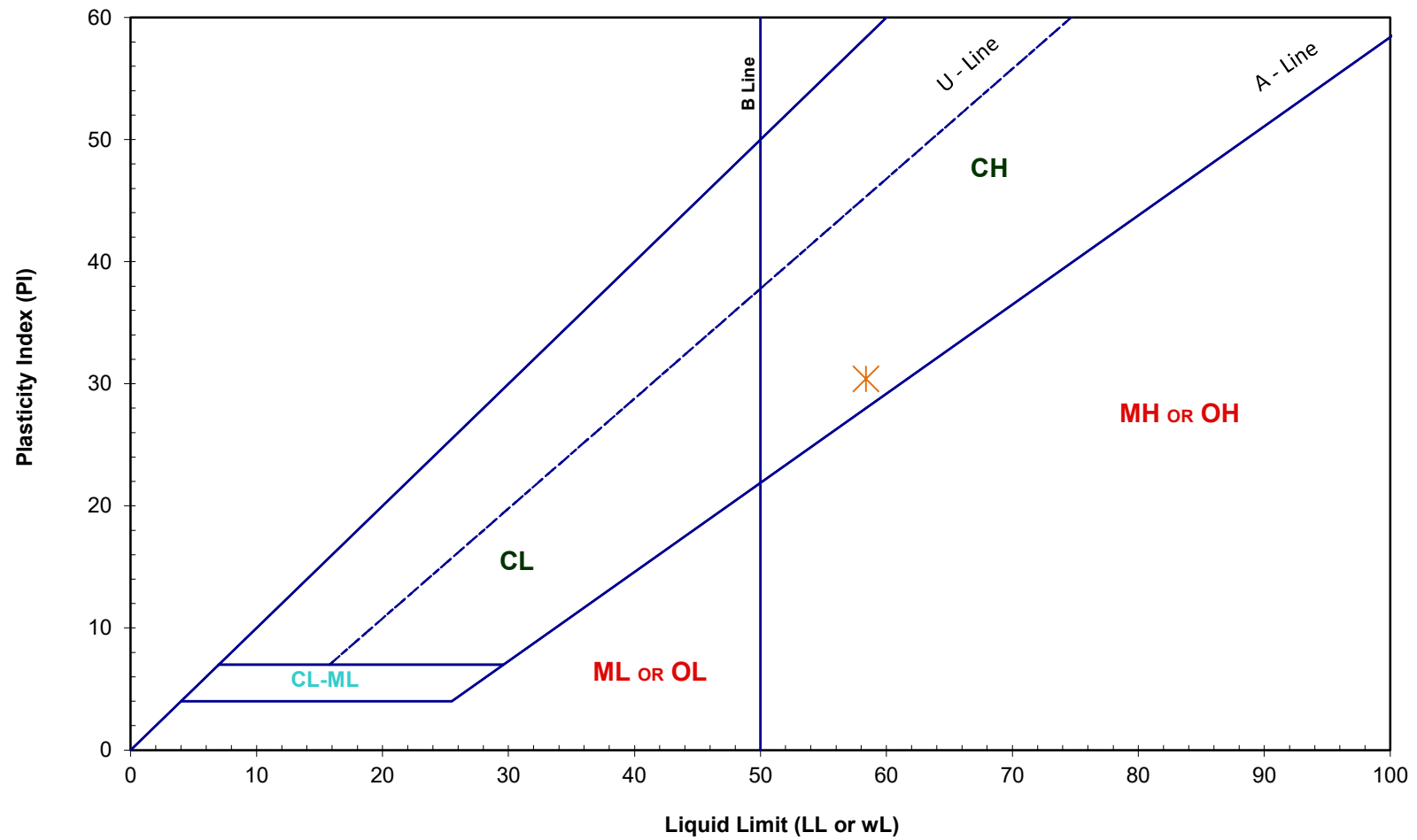
Liquid Limit (LL)	58
Plastic Limit (PL)	28
Plasticity Index (PI) = LL-PL	30

Unified Soil Classification System (UCS)

inorganic = CH - clay of high plasticity, fat clay



PLASTICITY CHART



Date: 3/09/2025

Tested by: Francis Lea

Checked by: _____

ATTERBURG LIMITS AS1289 C1.1, C2.1, C3.1, C4.1

LIQUID LIMIT

Sample No.	1	2	3	4	5			
Moisture Can No.	L16	L22	L11	L45	L21			
1. Mass of can (g)	25.55	25.64	25.23	25.43	25.91			
2. Mass of can & wet soil (g)	40.88	40.35	40.19	41.11	42.3			
3. Mass of can & dry soil (g)	35.34	34.99	34.43	35.05	35.75			
4. Mass of water [2-3] (g)	5.54	5.36	5.76	6.06	6.55			
5. Mass of dry soil [3-1] (g)	9.79	9.35	9.2	9.62	9.84			
6. Moisture Content [(4/5)x100] (g)	56.59%	57.33%	62.61%	62.99%	66.57%			
7. Number of drops (N)	40	37	30	24	16			

Plastic Limit

Sample No.	1	2	3					
Moisture Can No.	L29	L9	L20					
1. Mass of can (g)	25.65	25.08	25.84					
2. Mass of can & wet soil (g)	32.72	31.3	31.46					
3. Mass of can & dry soil (g)	30.99	29.8	30.1					
4. Mass of water [2-3] (g)	1.73	1.5	1.36					
5. Mass of dry soil [3-1] (g)	5.34	4.72	4.26					
6. Moisture Content [(4/5)x100] (g)	32.40%	31.78%	31.92%					
7. Plastic Limit (PL) = Average M.C (%)	32.03%							

Shrinkage Limit

1. Shrinkage Mould No.	B3							
2. Length of Wet Soil (mm)	250							
3. Length of Dry Soil (mm)	225							
4. Shrinkage [2-3] (mm)	25							
5. Linear Shrinkage [(4/3)x100] (%)	11.11%							
Material Classification								

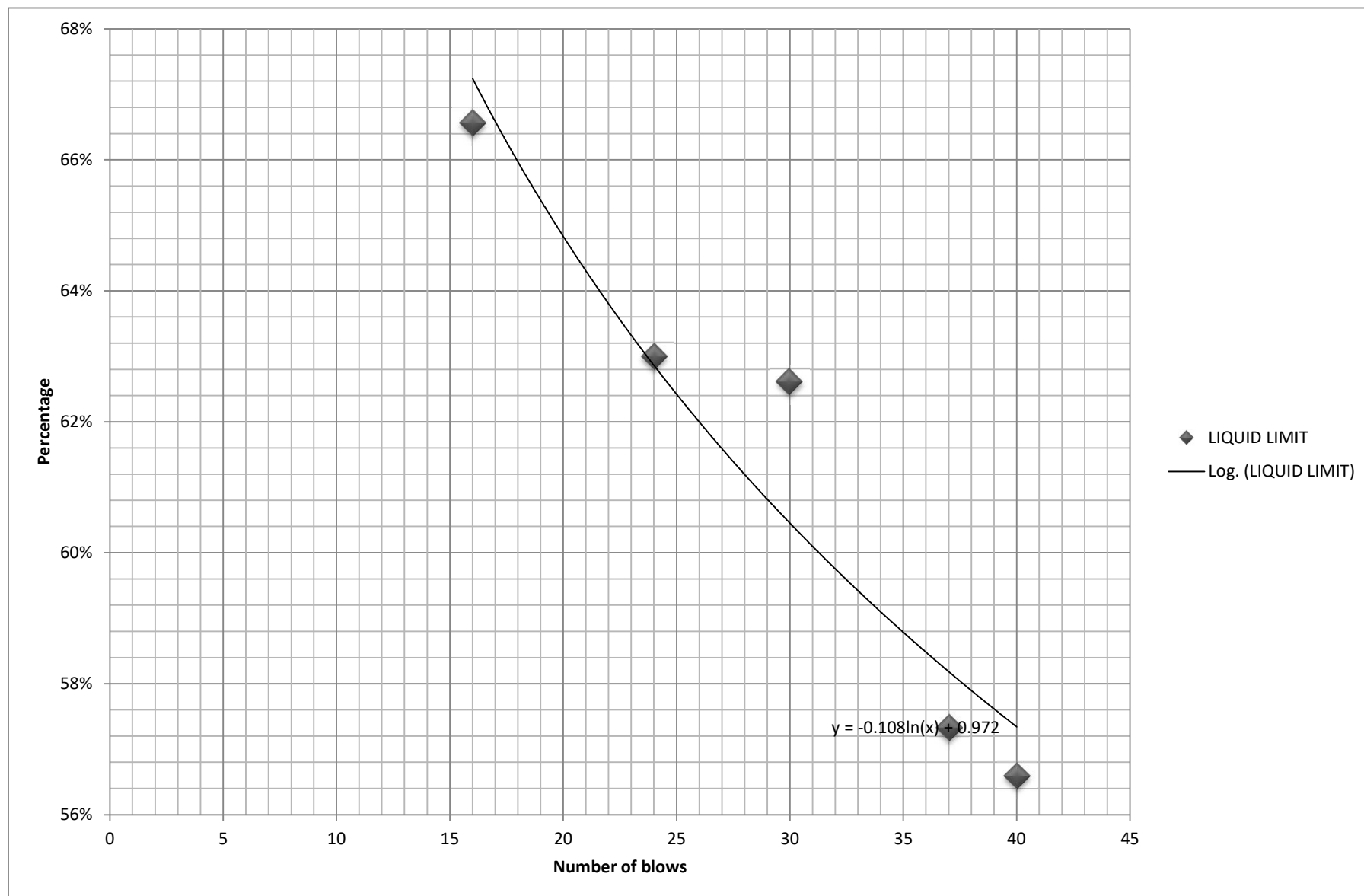
Major divisions			Group symbol	Group name
Coarse grained soils more than 50% retained on or above No.200 (0.074 mm) sieve	gravel > 50% of coarse fraction retained on No.4 (4.75 mm) sieve	clean gravel <5% smaller than No.200 Sieve	GW	well-graded gravel, fine to coarse gravel
			GP	poorly graded gravel
	sand ≥ 50% of coarse fraction passes No.4 (4.75 mm) sieve	gravel with >12% fines	GM	silty gravel
			GC	clayey gravel
		clean sand	SW	well-graded sand, fine to coarse sand
			SP	poorly graded sand
		sand with >12% fines	SM	silty sand
SC	clayey sand			
Fine grained soils 50% or more passing the No.200 (0.074 mm) sieve	silt and clay liquid limit < 50	inorganic	ML	silt
			CL	clay of low plasticity, lean clay
		organic	OL	organic silt, organic clay
	silt and clay liquid limit ≥ 50	inorganic	MH	silt of high plasticity, elastic silt
			CH	clay of high plasticity, fat clay
		organic	OH	organic clay, organic silt
	Highly organic soils			Pt

Atterberg (Consistency) Limits:

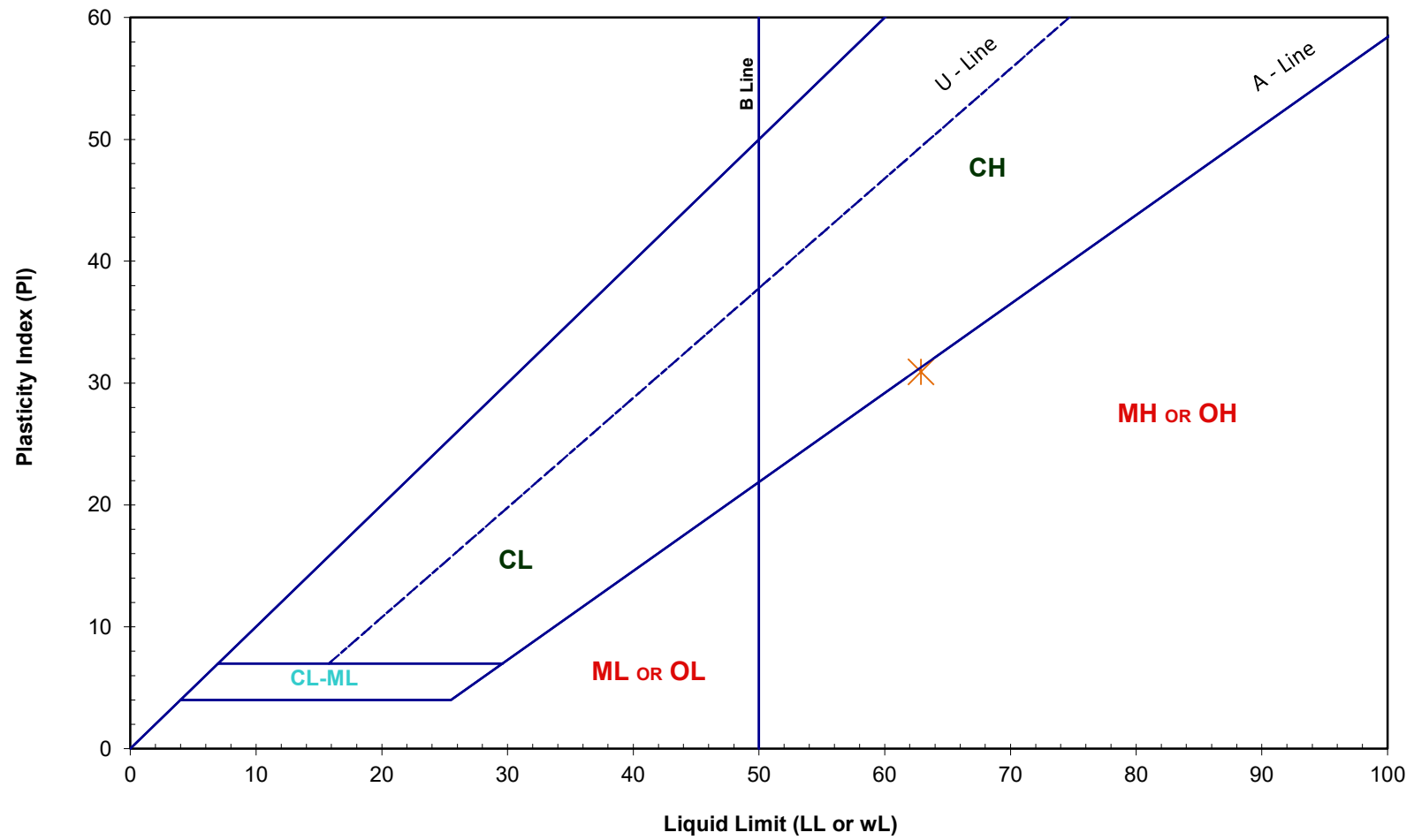
Liquid Limit (LL)	63
Plastic Limit (PL)	32
Plasticity Index (PI) = LL-PL	31

Unified Soil Classification System (UCS)

inorganic = MH - silt of high plasticity, elastic silt



PLASTICITY CHART



Date: 5/09/2025

Tested by: Francis Lea

Checked by: _____

ATTERBURG LIMITS AS1289 C1.1, C2.1, C3.1, C4.1

LIQUID LIMIT

Sample No.	1	2	3	4	5			
Moisture Can No.	L42	L40	L16	L29	L7			
1. Mass of can (g)	25.63	25.45	25.55	25.65	25.8			
2. Mass of can & wet soil (g)	41.92	41.98	40.01	42.26	43.74			
3. Mass of can & dry soil (g)	36.65	36.57	35.21	36.74	37.66			
4. Mass of water [2-3] (g)	5.27	5.41	4.8	5.52	6.08			
5. Mass of dry soil [3-1] (g)	11.02	11.12	9.66	11.09	11.86			
6. Moisture Content [(4/5)x100] (g)	47.82%	48.65%	49.69%	49.77%	51.26%			
7. Number of drops (N)	40	30	24	20	14			

Plastic Limit

Sample No.	1	2	3					
Moisture Can No.	L48	L17	L34					
1. Mass of can (g)	25.46	25.86	25.09					
2. Mass of can & wet soil (g)	32.79	32.19	32.83					
3. Mass of can & dry soil (g)	30.91	30.61	30.91					
4. Mass of water [2-3] (g)	1.88	1.58	1.92					
5. Mass of dry soil [3-1] (g)	5.45	4.75	5.82					
6. Moisture Content [(4/5)x100] (g)	34.50%	33.26%	32.99%					
7. Plastic Limit (PL) = Average M.C (%)	33.58%							

Shrinkage Limit

1. Shrinkage Mould No.	B2							
2. Length of Wet Soil (mm)	250							
3. Length of Dry Soil (mm)	237							
4. Shrinkage [2-3] (mm)	13							
5. Linear Shrinkage [(4/3)x100] (%)	5.49%							
Material Classification								

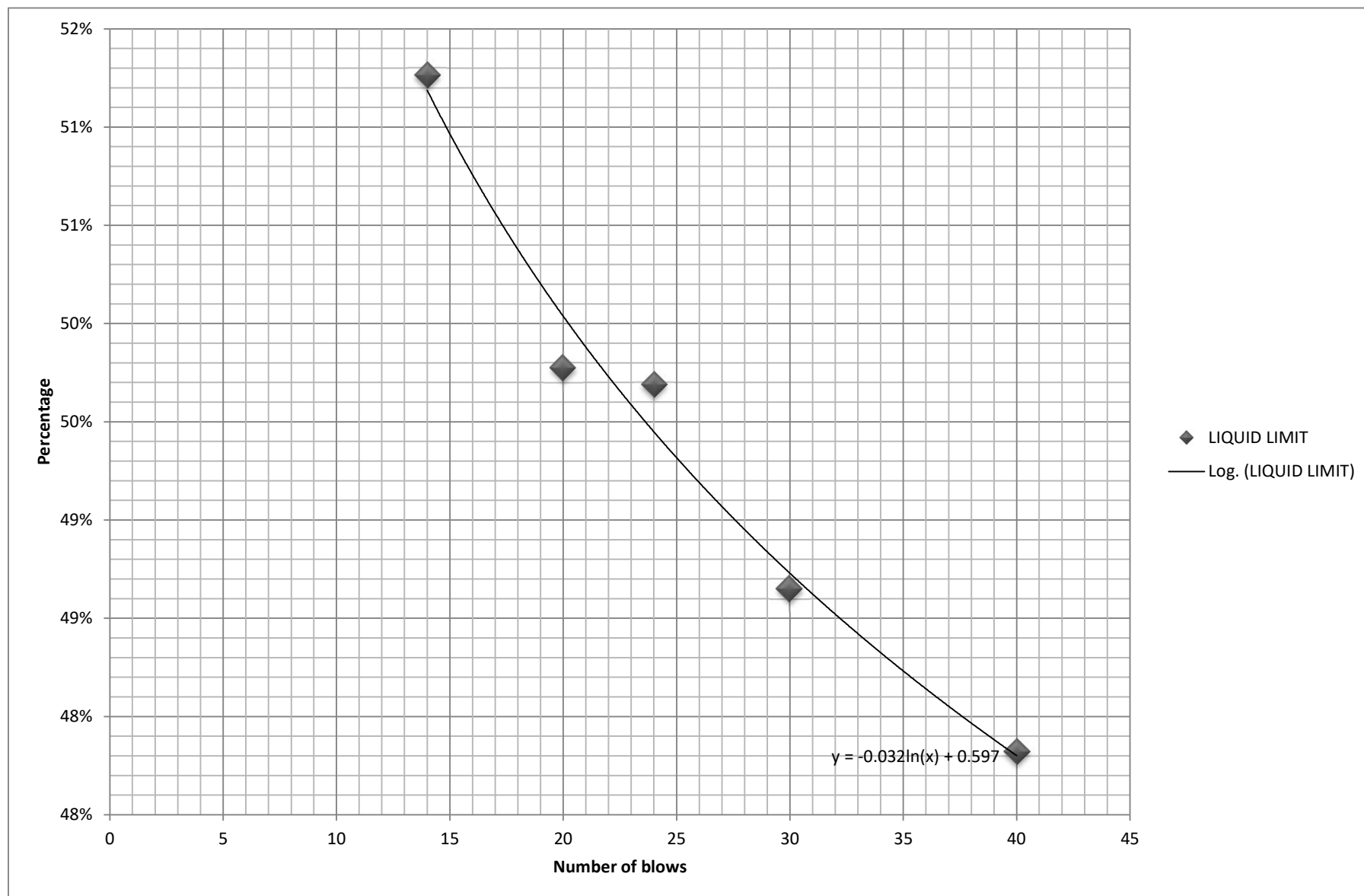
Major divisions			Group symbol	Group name
Coarse grained soils more than 50% retained on or above No.200 (0.074 mm) sieve	gravel > 50% of coarse fraction retained on No.4 (4.75 mm) sieve	clean gravel <5% smaller than No.200 Sieve	GW	well-graded gravel, fine to coarse gravel
			GP	poorly graded gravel
		gravel with >12% fines	GM GC	silty gravel clayey gravel
	sand ≥ 50% of coarse fraction passes No.4 (4.75 mm) sieve	clean sand	SW	well-graded sand, fine to coarse sand
			SP	poorly graded sand
		sand with >12% fines	SM SC	silty sand clayey sand
			ML	silt
Fine grained soils 50% or more passing the No.200 (0.074 mm) sieve	silt and clay liquid limit < 50	inorganic	CL	clay of low plasticity, lean clay
		organic	OL	organic silt, organic clay
	silt and clay liquid limit ≥ 50	inorganic	MH	silt of high plasticity, elastic silt
			CH	clay of high plasticity, fat clay
		organic	OH	organic clay, organic silt
Highly organic soils			Pt	peat

Atterberg (Consistency) Limits:

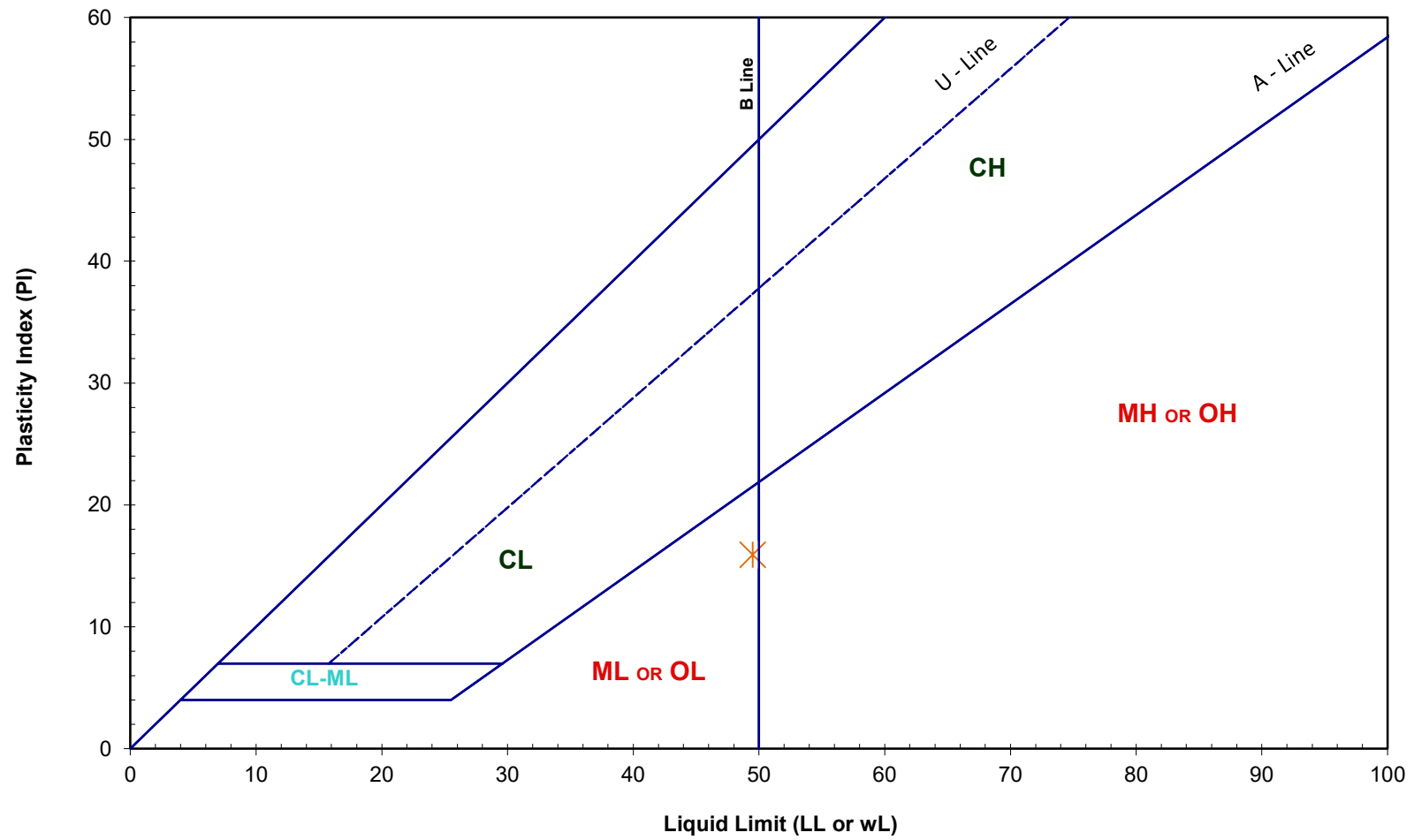
Liquid Limit (LL)	50
Plastic Limit (PL)	34
Plasticity Index (PI) = LL-PL	16

Unified Soil Classification System (UCS)

organic = OL - organic silt, organic clay



PLASTICITY CHART



Date: 5/09/2025

Tested by: Francis Lea

Checked by: _____

ATTERBURG LIMITS AS1289 C1.1, C2.1, C3.1, C4.1

LIQUID LIMIT

Sample No.	1	2	3	4	5			
Moisture Can No.	L38	L32	L37	L27	L13			
1. Mass of can (g)	25.89	26.25	25.81	25.21	25.8			
2. Mass of can & wet soil (g)	40.26	42	44.42	42.43	46.51			
3. Mass of can & dry soil (g)	35.71	36.96	38.51	36.79	39.64			
4. Mass of water [2-3] (g)	4.55	5.04	5.91	5.64	6.87			
5. Mass of dry soil [3-1] (g)	9.82	10.71	12.7	11.58	13.84			
6. Moisture Content [(4/5)x100] (g)	46.33%	47.06%	46.54%	48.70%	49.64%			
7. Number of drops (N)	40	32	26	18	12			

Plastic Limit

Sample No.	1	2	3					
Moisture Can No.	L25	L49	L28					
1. Mass of can (g)	25.74	25.56	24.91					
2. Mass of can & wet soil (g)	30.75	29.5	30.6					
3. Mass of can & dry soil (g)	29.63	28.62	29.3					
4. Mass of water [2-3] (g)	1.12	0.88	1.3					
5. Mass of dry soil [3-1] (g)	3.89	3.06	4.39					
6. Moisture Content [(4/5)x100] (g)	28.79%	28.76%	29.61%					
7. Plastic Limit (PL) = Average M.C (%)	29.05%							

Shrinkage Limit

1. Shrinkage Mould No.	B6							
2. Length of Wet Soil (mm)	250							
3. Length of Dry Soil (mm)	237							
4. Shrinkage [2-3] (mm)	13							
5. Linear Shrinkage [(4/3)x100] (%)	5.49%							
Material Classification								

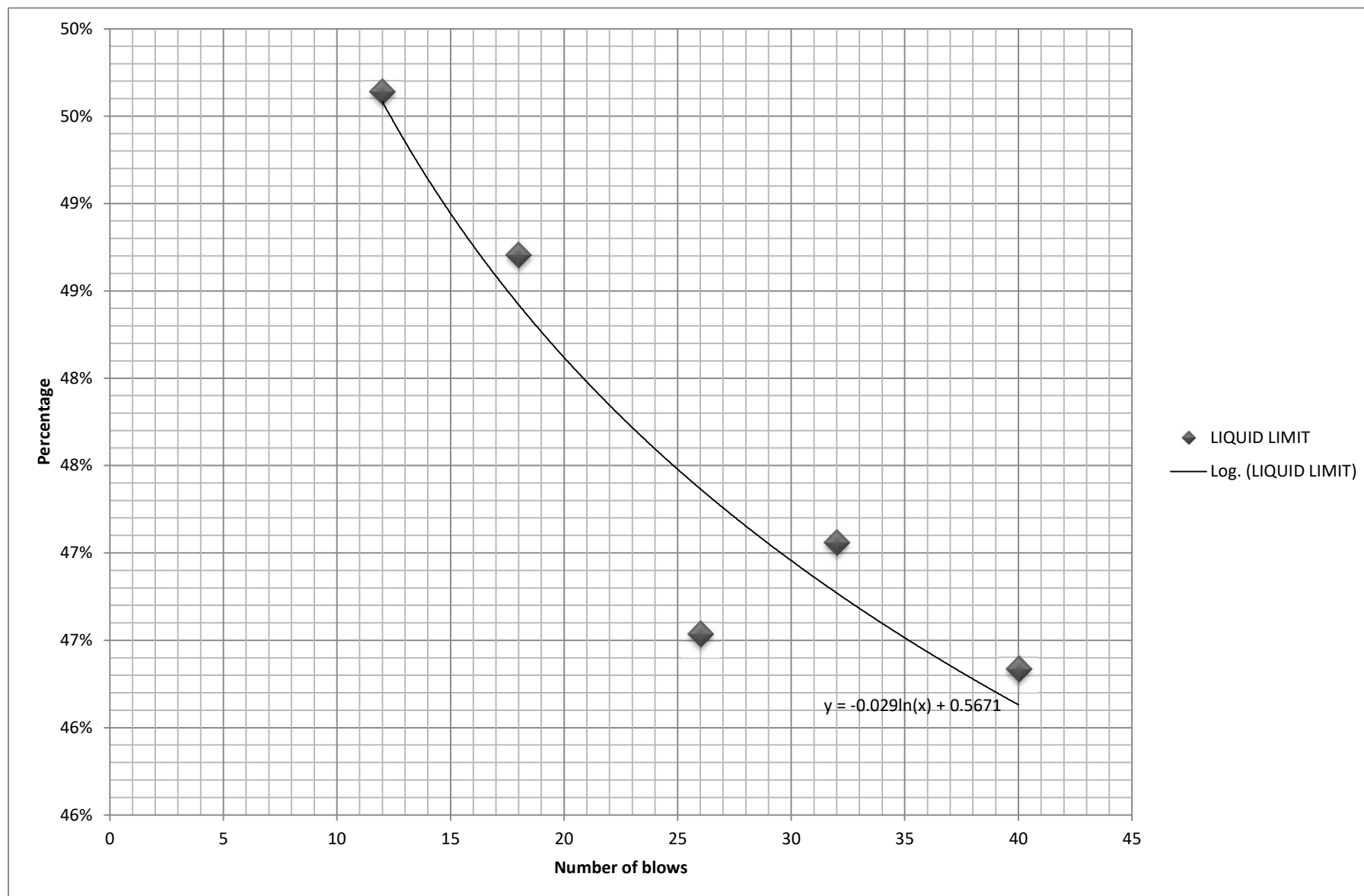
Major divisions			Group symbol	Group name
Coarse grained soils more than 50% retained on or above No.200 (0.074 mm) sieve	gravel > 50% of coarse fraction retained on No.4 (4.75 mm) sieve	clean gravel <5% smaller than No.200 Sieve	GW	well-graded gravel, fine to coarse gravel
			GP	poorly graded gravel
		gravel with >12% fines	GM	silty gravel
	sand ≥ 50% of coarse fraction passes No.4 (4.75 mm) sieve	clean sand	GC	clayey gravel
			SW	well-graded sand, fine to coarse sand
		sand with >12% fines	SP	poorly graded sand
			SM	silty sand
Fine grained soils 50% or more passing the No.200 (0.074 mm) sieve	silt and clay liquid limit < 50	inorganic	SC	clayey sand
			ML	silt
	silt and clay liquid limit ≥ 50	organic	CL	clay of low plasticity, lean clay
			OL	organic silt, organic clay
		inorganic	MH	silt of high plasticity, elastic silt
			CH	clay of high plasticity, fat clay
		organic	OH	organic clay, organic silt
Highly organic soils			Pt	peat

Atterberg (Consistency) Limits:

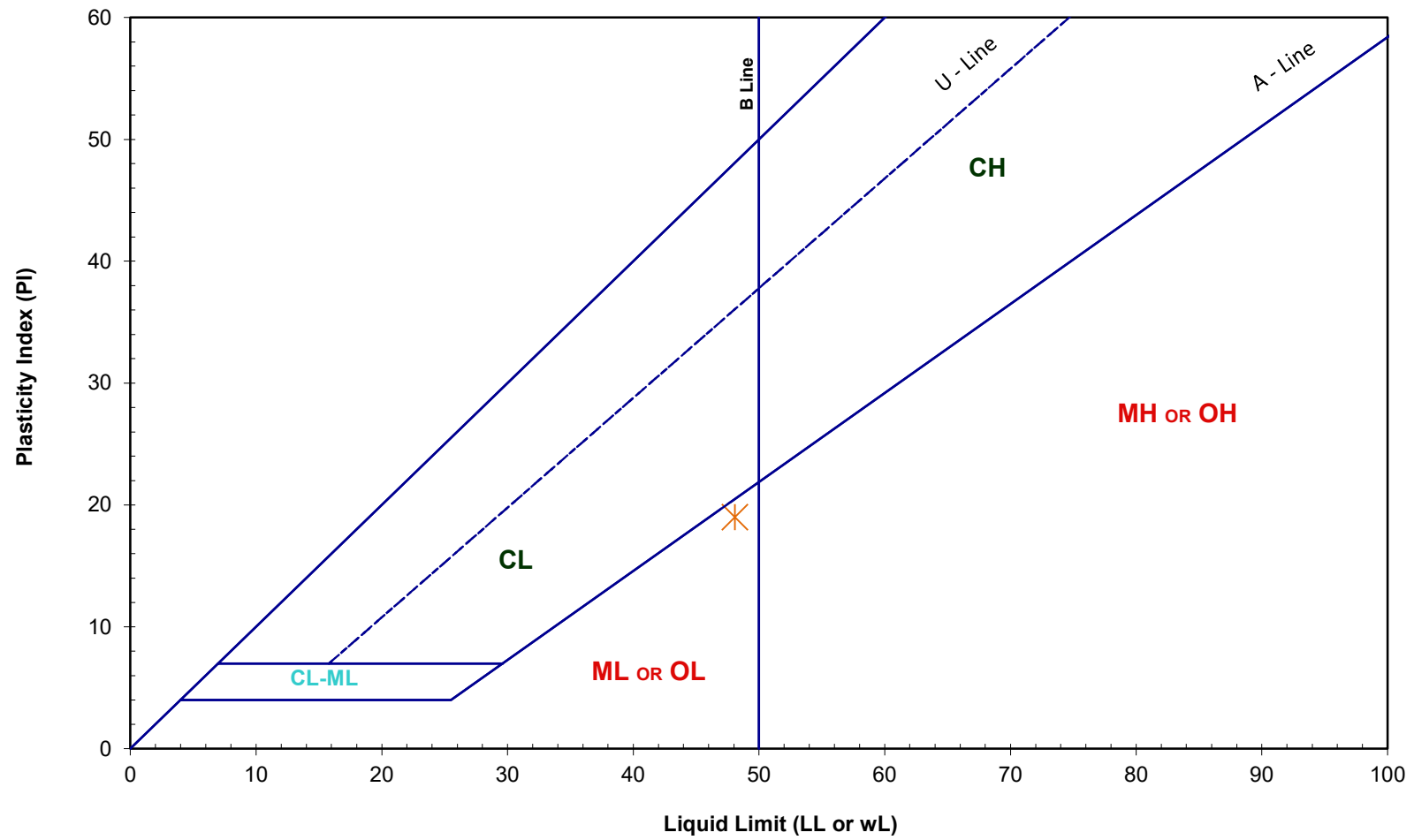
Liquid Limit (LL)	48
Plastic Limit (PL)	29
Plasticity Index (PI) = LL-PL	19

Unified Soil Classification System (UCS)

organic = OL- organic silt, organic clay



PLASTICITY CHART



Date: 4/09/2025

Tested by: Francis Lea

Checked by: _____

ATTERBURG LIMITS AS1289 C1.1, C2.1, C3.1, C4.1

LIQUID LIMIT

Sample No.	1	2	3	4	5			
Moisture Can No.	L46	L21	L26	L9	L6			
1. Mass of can (g)	25.86	25.91	25.53	25.09	25.77			
2. Mass of can & wet soil (g)	39.99	40.85	43.55	39.31	41.24			
3. Mass of can & dry soil (g)	35.53	36.05	37.69	34.6	35.97			
4. Mass of water [2-3] (g)	4.46	4.8	5.86	4.71	5.27			
5. Mass of dry soil [3-1] (g)	9.67	10.14	12.16	9.51	10.2			
6. Moisture Content [(4/5)x100] (g)	46.12%	47.34%	48.19%	49.53%	51.67%			
7. Number of drops (N)	46	38	24	17	14			

Plastic Limit

Sample No.	1	2	3					
Moisture Can No.	L38	L48	L25					
1. Mass of can (g)	25.9	25.46	25.73					
2. Mass of can & wet soil (g)	32.61	31.68	31.98					
3. Mass of can & dry soil (g)	31.34	30.5	30.81					
4. Mass of water [2-3] (g)	1.27	1.18	1.17					
5. Mass of dry soil [3-1] (g)	5.44	5.04	5.08					
6. Moisture Content [(4/5)x100] (g)	23.35%	23.41%	23.03%					
7. Plastic Limit (PL) = Average M.C (%)	23.26%							

Shrinkage Limit

1. Shrinkage Mould No.	B11							
2. Length of Wet Soil (mm)	250							
3. Length of Dry Soil (mm)	238							
4. Shrinkage [2-3] (mm)	12							
5. Linear Shrinkage [(4/3)x100] (%)	5.04%							
Material Classification								

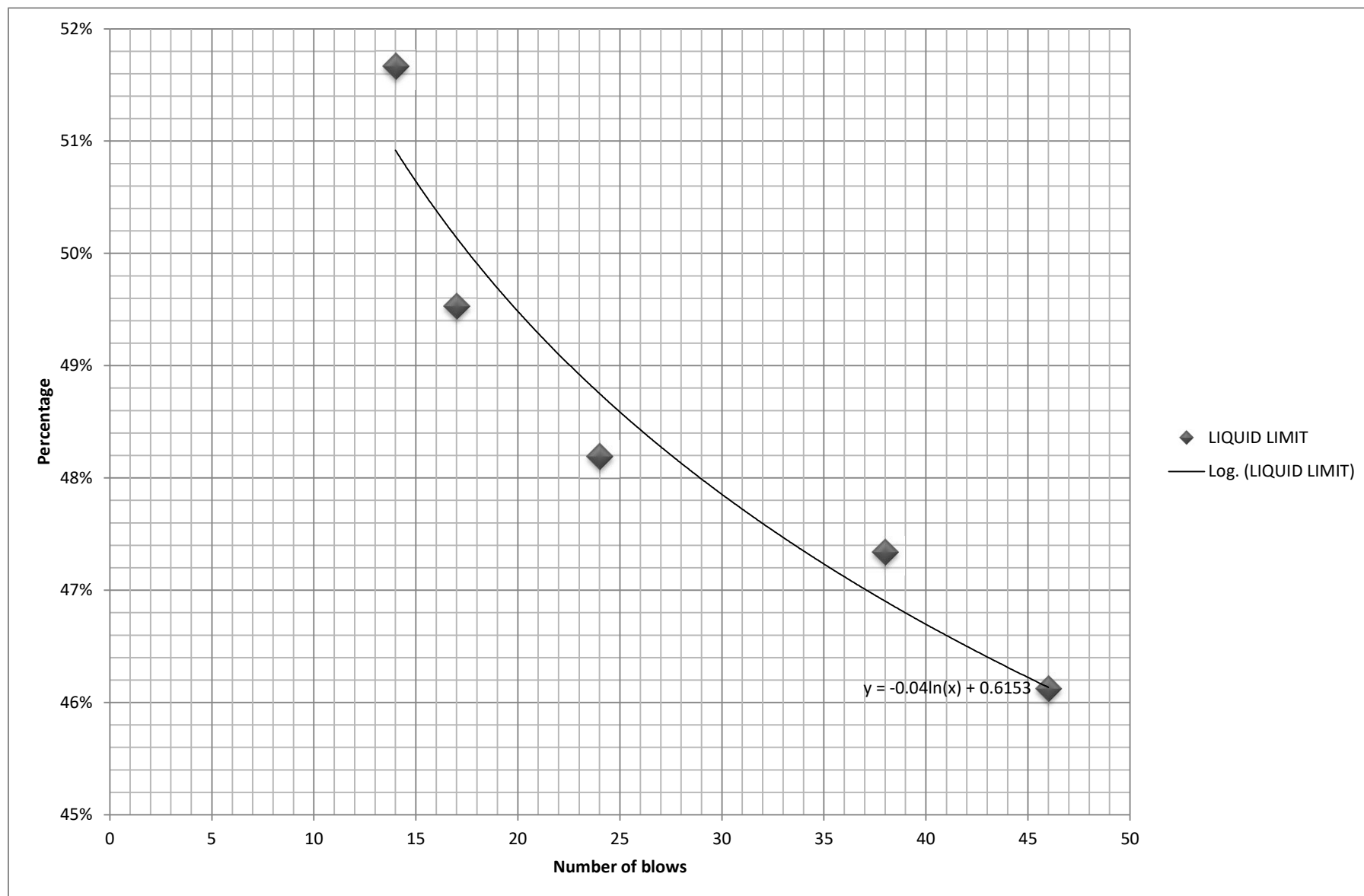
Major divisions			Group symbol	Group name
Coarse grained soils more than 50% retained on or above No.200 (0.074 mm) sieve	gravel > 50% of coarse fraction retained on No.4 (4.75 mm) sieve	clean gravel <5% smaller than No.200 Sieve	GW	well-graded gravel, fine to coarse gravel
		gravel with >12% fines	GP	poorly graded gravel
			GM	silty gravel
			GC	clayey gravel
	sand ≥ 50% of coarse fraction passes No.4 (4.75 mm) sieve	clean sand	SW	well-graded sand, fine to coarse sand
		sand with >12% fines	SP	poorly graded sand
			SM	silty sand
			SC	clayey sand
Fine grained soils 50% or more passing the No.200 (0.074 mm) sieve	silt and clay liquid limit < 50	inorganic	ML	silt
		organic	CL	clay of low plasticity, lean clay
	silt and clay liquid limit ≥ 50		inorganic	OL
		inorganic	MH	silt of high plasticity, elastic silt
			CH	clay of high plasticity, fat clay
		organic	OH	organic clay, organic silt
Highly organic soils			Pt	peat

Atterberg (Consistency) Limits:

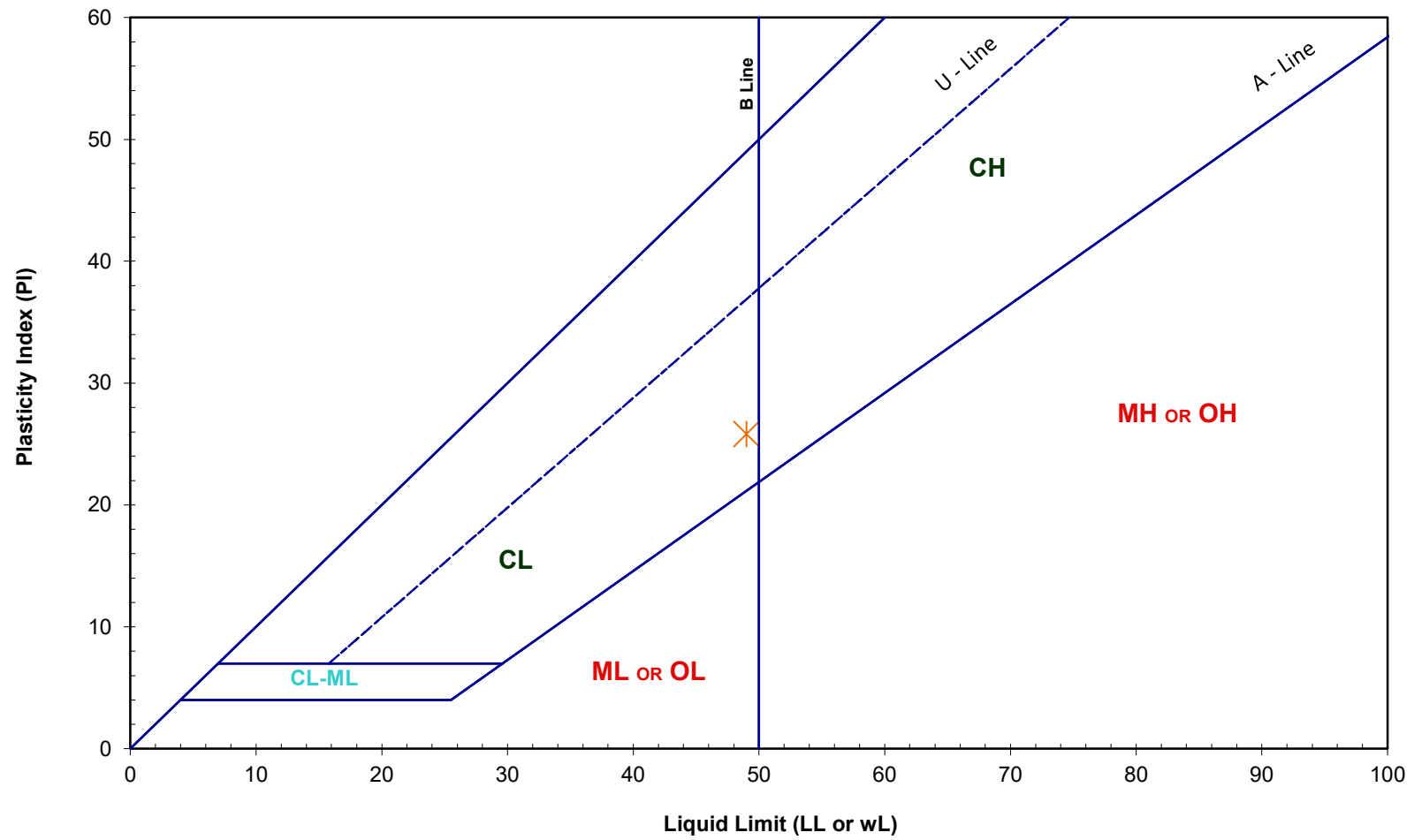
Liquid Limit (LL)	49
Plastic Limit (PL)	23
Plasticity Index (PI) = LL-PL	26

Unified Soil Classification System (UCS)

inorganic = CL - clay of low plasticity,lean clay



PLASTICITY CHART



Date: 2/09/2025

Bige Operations
Lower Ok Tedi Dredge Project
Soil Testing Laboratory
P.O Box 93, Bige, Western Province

Project: OTML LOWLANDS FS
Location: OK BIRIM_KCB25_TP7009
Bore Number: B1046
Sample Date: 22/08/2025
Sample Depth: 0.6 - 0.8

Tested by: Francis Lea

Checked by:

ATTERBURG LIMITS AS1289 C1.1, C2.1, C3.1, C4.1

LIQUID LIMIT

Sample No.	1	2	3	4	5			
Moisture Can No.	L5	L44	L43	L12	L18			
1. Mass of can (g)	25.99	25.97	26.21	25.83	24.94			
2. Mass of can & wet soil (g)	39.02	40.2	39.23	41.99	41.25			
3. Mass of can & dry soil (g)	34.51	35.23	34.6	36.16	35.21			
4. Mass of water [2-3] (g)	4.51	4.97	4.63	5.83	6.04			
5. Mass of dry soil [3-1] (g)	8.52	9.26	8.39	10.33	10.27			
6. Moisture Content [(4/5)x100] (g)	52.93%	53.67%	55.18%	56.44%	58.81%			
7. Number of drops (N)	48	38	32	24	15			

Plastic Limit

Sample No.	1	2	3					
Moisture Can No.	L36	L2	L31					
1. Mass of can (g)	25.94	25.59	25.37					
2. Mass of can & wet soil (g)	33.37	33.02	33.31					
3. Mass of can & dry soil (g)	31.82	31.48	31.61					
4. Mass of water [2-3] (g)	1.55	1.54	1.7					
5. Mass of dry soil [3-1] (g)	5.88	5.89	6.24					
6. Moisture Content [(4/5)x100] (g)	26.36%	26.15%	27.24%					
7. Plastic Limit (PL) = Average M.C (%)	26.58%							

Shrinkage Limit

1. Shrinkage Mould No.	B5							
2. Length of Wet Soil (mm)	250							
3. Length of Dry Soil (mm)	236							
4. Shrinkage [2-3] (mm)	14							
5. Linear Shrinkage [(4/3)x100] (%)	5.93%							
Material Classification								

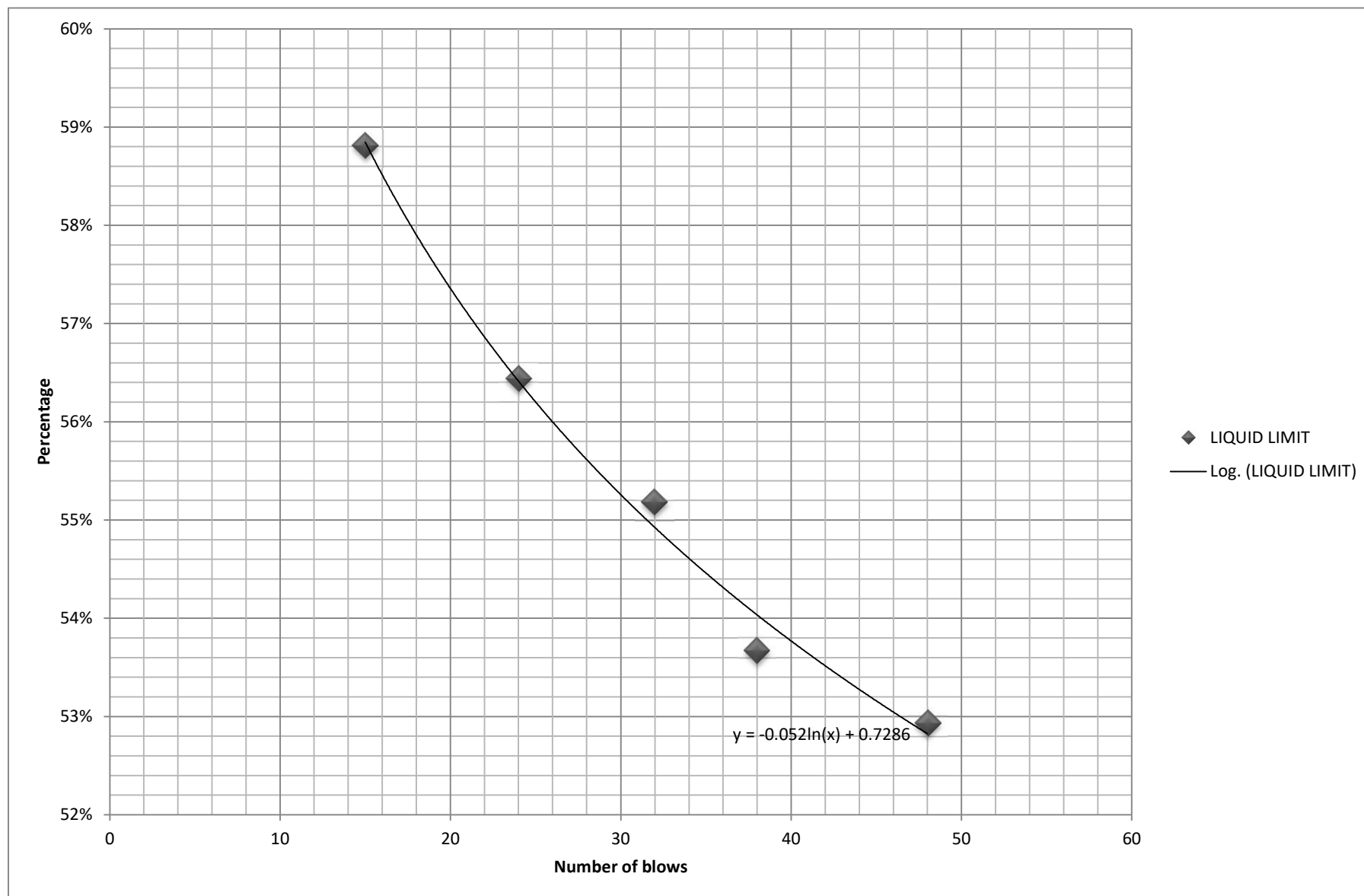
Major divisions			Group symbol	Group name
Coarse grained soils more than 50% retained on or above No.200 (0.074 mm) sieve	gravel > 50% of coarse fraction retained on No.4 (4.75 mm) sieve	clean gravel <5% smaller than No.200 Sieve	GW	well-graded gravel, fine to coarse gravel
			GP	poorly graded gravel
		gravel with >12% fines	GM	silty gravel
			GC	clayey gravel
	sand ≥ 50% of coarse fraction passes No.4 (4.75 mm) sieve	clean sand	SW	well-graded sand, fine to coarse sand
			SP	poorly graded sand
		sand with >12% fines	SM	silty sand
			SC	clayey sand
Fine grained soils 50% or more passing the No.200 (0.074 mm) sieve	silt and clay liquid limit < 50	inorganic	ML	silt
			CL	clay of low plasticity, lean clay
		organic	OL	organic silt, organic clay
			MH	silt of high plasticity, elastic silt
	silt and clay liquid limit ≥ 50	inorganic	CH	clay of high plasticity, fat clay
			OH	organic clay, organic silt
Highly organic soils			Pt	peat

Atterberg (Consistency) Limits:

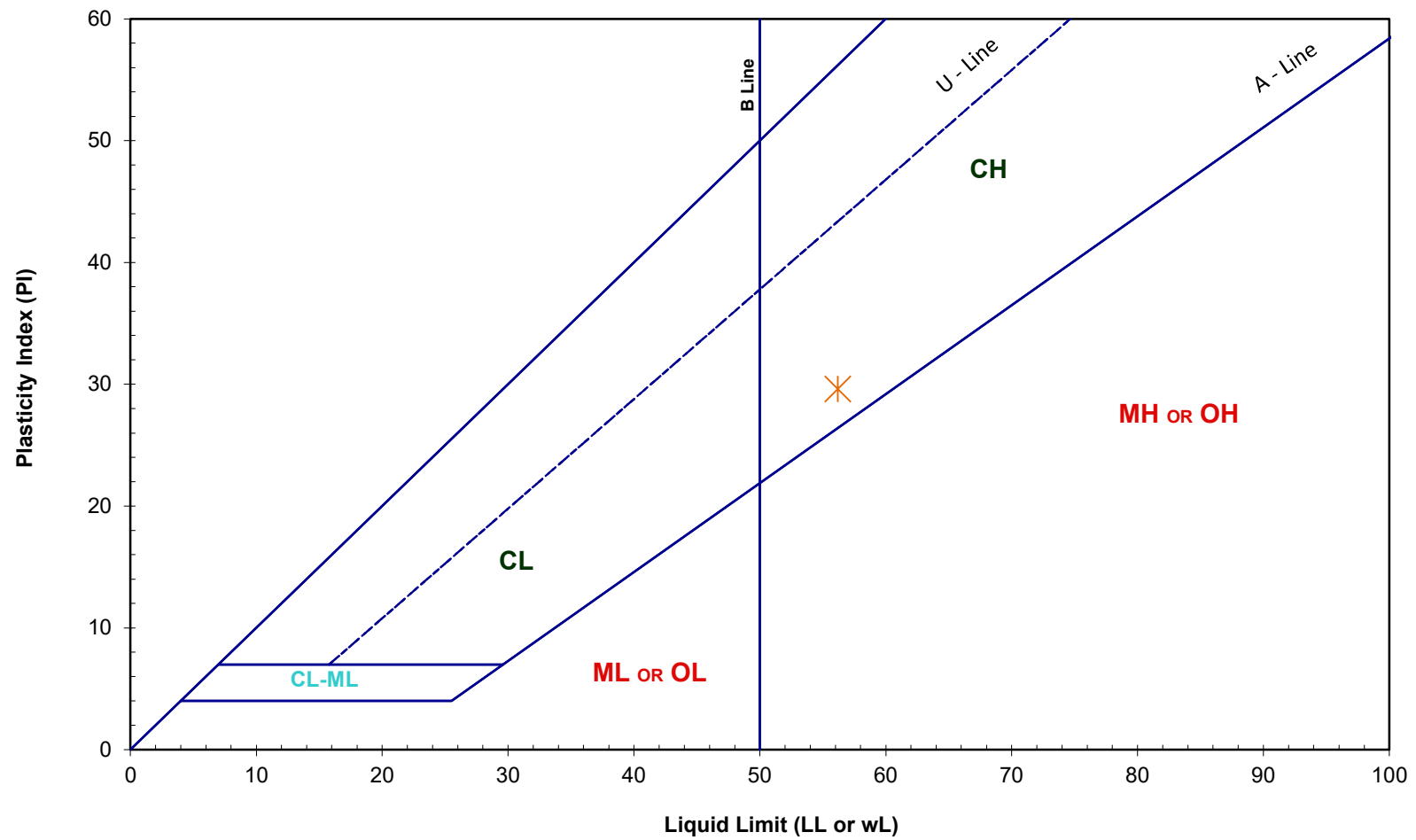
Liquid Limit (LL)	56
Plastic Limit (PL)	27
Plasticity Index (PI) = LL-PL	30

Unified Soil Classification System (UCS)

inorganic = CH - Clay of high plasticity, fat clay



PLASTICITY CHART



Date: 31/08/2025

Bige Operations
Lower Ok Tedi Dredge Project
Soil Testing Laboratory
P.O Box 93, Bige, Western Province

Project: OTML LOWLANDS FS
Location: OK BIRIM KCB25_TP7005
Bore Number: B1047
Sample Date: 25/08/2025
Sample Depth: 0.2 - 0.4

Tested by: Francis Lea

Checked by:

ATTERBURG LIMITS AS1289 C1.1, C2.1, C3.1, C4.1

LIQUID LIMIT

Sample No.	1	2	3	4	5			
Moisture Can No.	L1	L3	L15	L22	L41			
1. Mass of can (g)	25.56	26.04	25.4	25.64	25.89			
2. Mass of can & wet soil (g)	39.55	41.56	43.7	43.39	43.99			
3. Mass of can & dry soil (g)	34.56	35.98	37.06	36.85	37.19			
4. Mass of water [2-3] (g)	4.99	5.58	6.64	6.54	6.8			
5. Mass of dry soil [3-1] (g)	9	9.94	11.66	11.21	11.3			
6. Moisture Content [(4/5)x100] (g)	55.44%	56.14%	56.95%	58.34%	60.18%			
7. Number of drops (N)	40	35	30	25	16			

Plastic Limit

Sample No.	1	2	3					
Moisture Can No.	L33	L14	L15					
1. Mass of can (g)	25.67	26.22	25.56					
2. Mass of can & wet soil (g)	31.29	31.44	30.04					
3. Mass of can & dry soil (g)	30.06	30.3	29.06					
4. Mass of water [2-3] (g)	1.23	1.14	0.98					
5. Mass of dry soil [3-1] (g)	4.39	4.08	3.5					
6. Moisture Content [(4/5)x100] (g)	28.02%	27.94%	28.00%					
7. Plastic Limit (PL) = Average M.C (%)	27.99%							

Shrinkage Limit

1. Shrinkage Mould No.	B4							
2. Length of Wet Soil (mm)	250							
3. Length of Dry Soil (mm)	225							
4. Shrinkage [2-3] (mm)	25							
5. Linear Shrinkage [(4/3)x100] (%)	11.11%							
Material Classification								

Major divisions			Group symbol	Group name
Coarse grained soils more than 50% retained on or above No.200 (0.074 mm) sieve	gravel > 50% of coarse fraction retained on No.4 (4.75 mm) sieve	clean gravel <5% smaller than No.200 Sieve	GW	well-graded gravel, fine to coarse gravel
			GP	poorly graded gravel
		gravel with >12% fines	GM	silty gravel
			GC	clayey gravel
	sand ≥ 50% of coarse fraction passes No.4 (4.75 mm) sieve	clean sand	SW	well-graded sand, fine to coarse sand
			SP	poorly graded sand
		sand with >12% fines	SM	silty sand
			SC	clayey sand
Fine grained soils 50% or more passing the No.200 (0.074 mm) sieve	silt and clay liquid limit < 50	inorganic	ML	silt
			CL	clay of low plasticity, lean clay
	silt and clay liquid limit ≥ 50	organic	OL	organic silt, organic clay
		inorganic	MH	silt of high plasticity, elastic silt
			CH	clay of high plasticity, fat clay
		organic	OH	organic clay, organic silt
Highly organic soils			Pt	peat

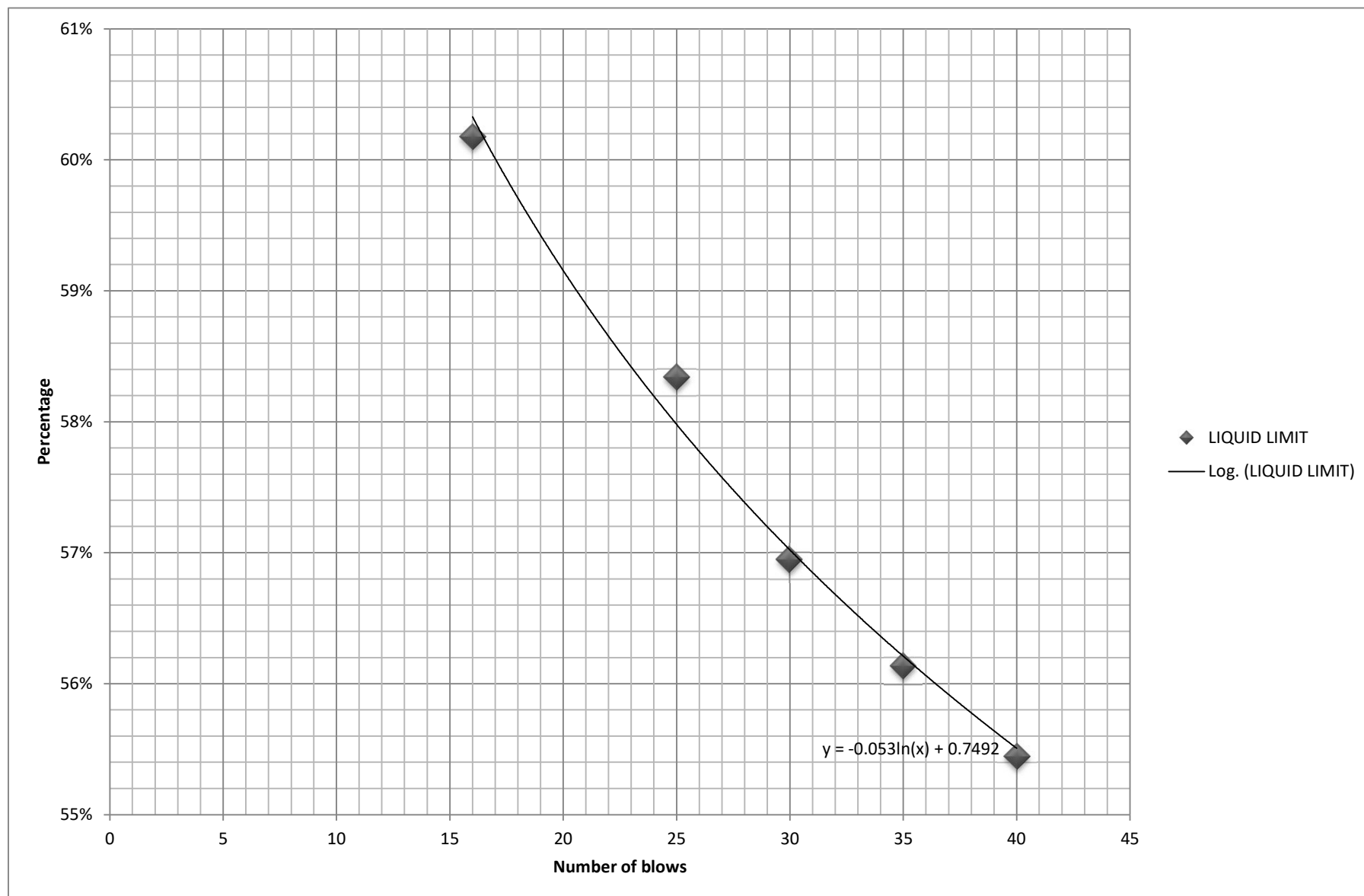
Atterberg (Consistency) Limits:

Liquid Limit (LL)
Plastic Limit (PL)
Plasticity Index (PI) = LL-PL

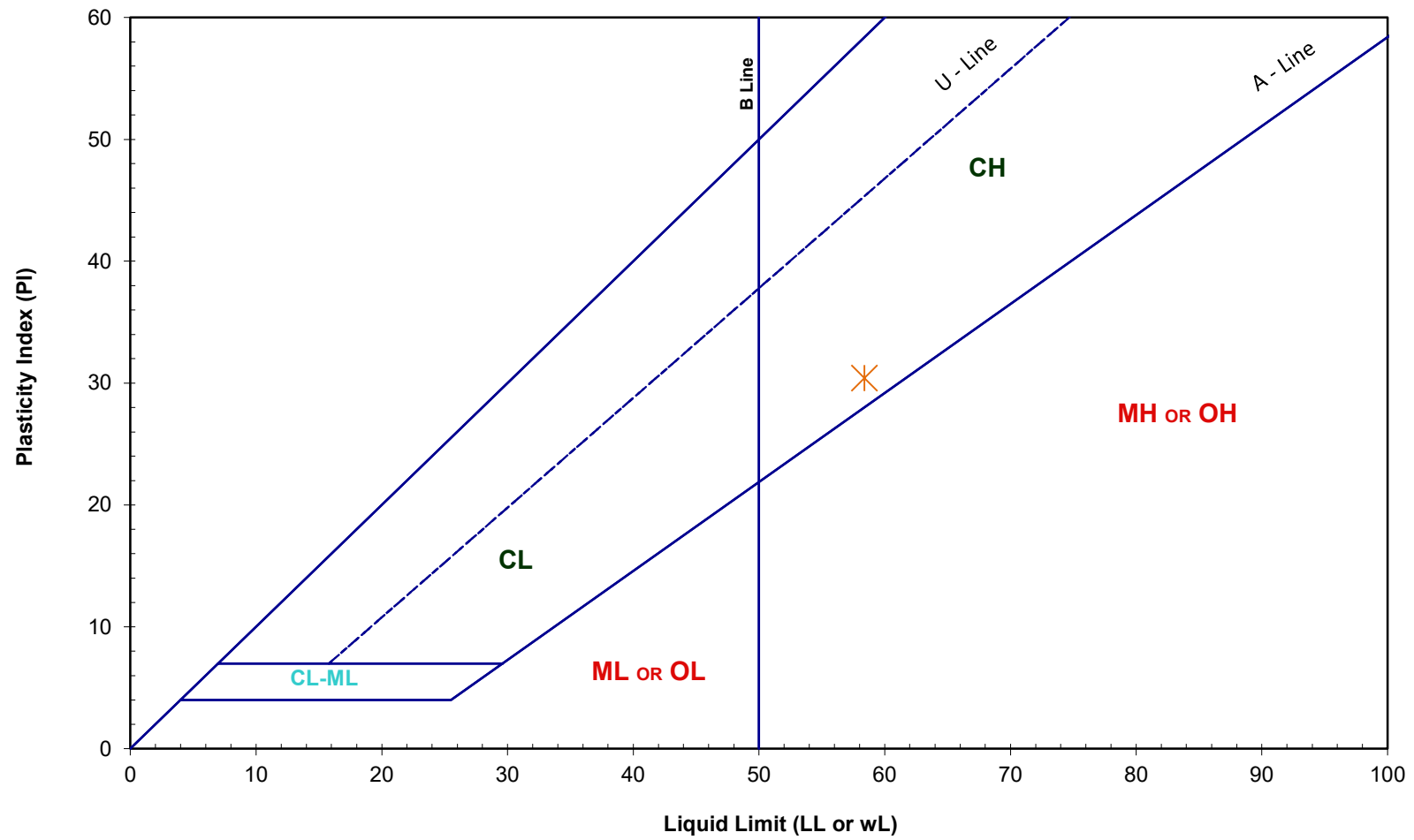
58
28
30

Unified Soil Classification System (UCS)

inorganic = CH - clay of high plasticity, fat clay



PLASTICITY CHART



Date: 4/09/2025

Bige Operations
Lower Ok Tedi Dredge Project
Soil Testing Laboratory
P.O Box 93, Bige, Western Province

Project: OTML LOWLANDS FS
Location: OK BIRIM_KCB25_TP7005
Bore Number: B1048
Sample Date: 25/08/2025
Sample Depth: 0.6 - 0.8

Tested by: Francis Lea

Checked by:

ATTERBURG LIMITS AS1289 C1.1, C2.1, C3.1, C4.1

LIQUID LIMIT

Sample No.	1	2	3	4	5			
Moisture Can No.	L35	L11	L20	L39	L24			
1. Mass of can (g)	26.27	25.23	25.85	25.89	25.98			
2. Mass of can & wet soil (g)	37.38	39.85	41.59	41.32	43.09			
3. Mass of can & dry soil (g)	33.05	34.05	35.25	34.96	35.88			
4. Mass of water [2-3] (g)	4.33	5.8	6.34	6.36	7.21			
5. Mass of dry soil [3-1] (g)	6.78	8.82	9.4	9.07	9.9			
6. Moisture Content [(4/5)x100] (g)	63.86%	65.76%	67.45%	70.12%	72.83%			
7. Number of drops (N)	38	35	26	18	12			

Plastic Limit

Sample No.	1	2	3					
Moisture Can No.	L36	L12	L20					
1. Mass of can (g)	25.94	25.83	25.59					
2. Mass of can & wet soil (g)	32.21	30.01	31.43					
3. Mass of can & dry soil (g)	30.58	28.94	29.9					
4. Mass of water [2-3] (g)	1.63	1.07	1.53					
5. Mass of dry soil [3-1] (g)	4.64	3.11	4.31					
6. Moisture Content [(4/5)x100] (g)	35.13%	34.41%	35.50%					
7. Plastic Limit (PL) = Average M.C (%)	35.01%							

Shrinkage Limit

1. Shrinkage Mould No.	B10							
2. Length of Wet Soil (mm)	250							
3. Length of Dry Soil (mm)	229							
4. Shrinkage [2-3] (mm)	21							
5. Linear Shrinkage [(4/3)x100] (%)	9.17%							
Material Classification								

Major divisions			Group symbol	Group name
Coarse grained soils more than 50% retained on or above No.200 (0.074 mm) sieve	gravel > 50% of coarse fraction retained on No.4 (4.75 mm) sieve	clean gravel <5% smaller than No.200 Sieve	GW	well-graded gravel, fine to coarse gravel
			GP	poorly graded gravel
		gravel with >12% fines	GM	silty gravel
			GC	clayey gravel
	sand ≥ 50% of coarse fraction passes No.4 (4.75 mm) sieve	clean sand	SW	well-graded sand, fine to coarse sand
			SP	poorly graded sand
		sand with >12% fines	SM	silty sand
			SC	clayey sand
Fine grained soils 50% or more passing the No.200 (0.074 mm) sieve	silt and clay liquid limit < 50	inorganic	ML	silt
			CL	clay of low plasticity, lean clay
	silt and clay liquid limit ≥ 50	organic	OL	organic silt, organic clay
		inorganic	MH	silt of high plasticity, elastic silt
			CH	clay of high plasticity, fat clay
		organic	OH	organic clay, organic silt
Highly organic soils			Pt	peat

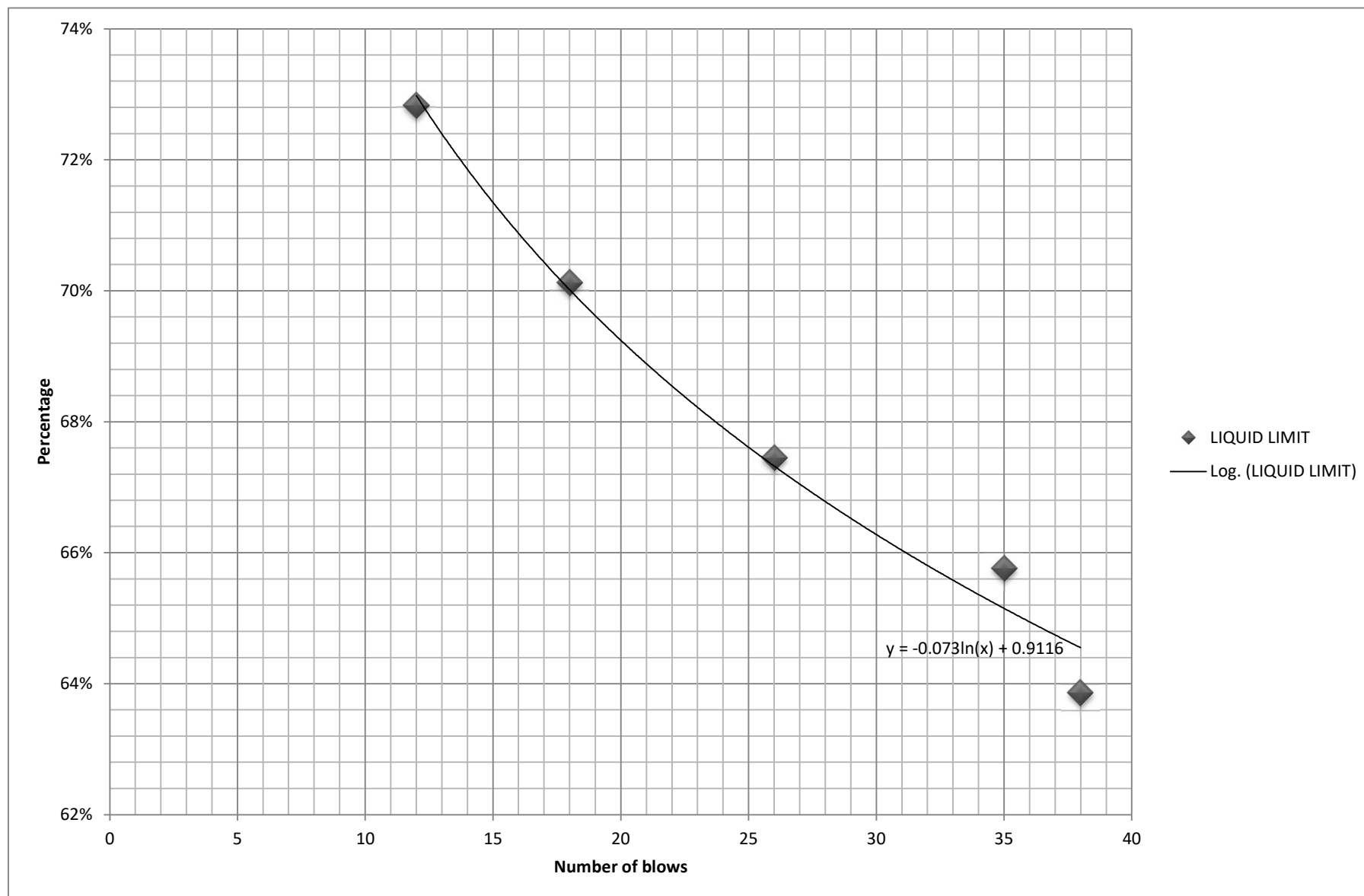
Atterberg (Consistency) Limits:

Liquid Limit (LL)
Plastic Limit (PL)
Plasticity Index (PI) = LL-PL

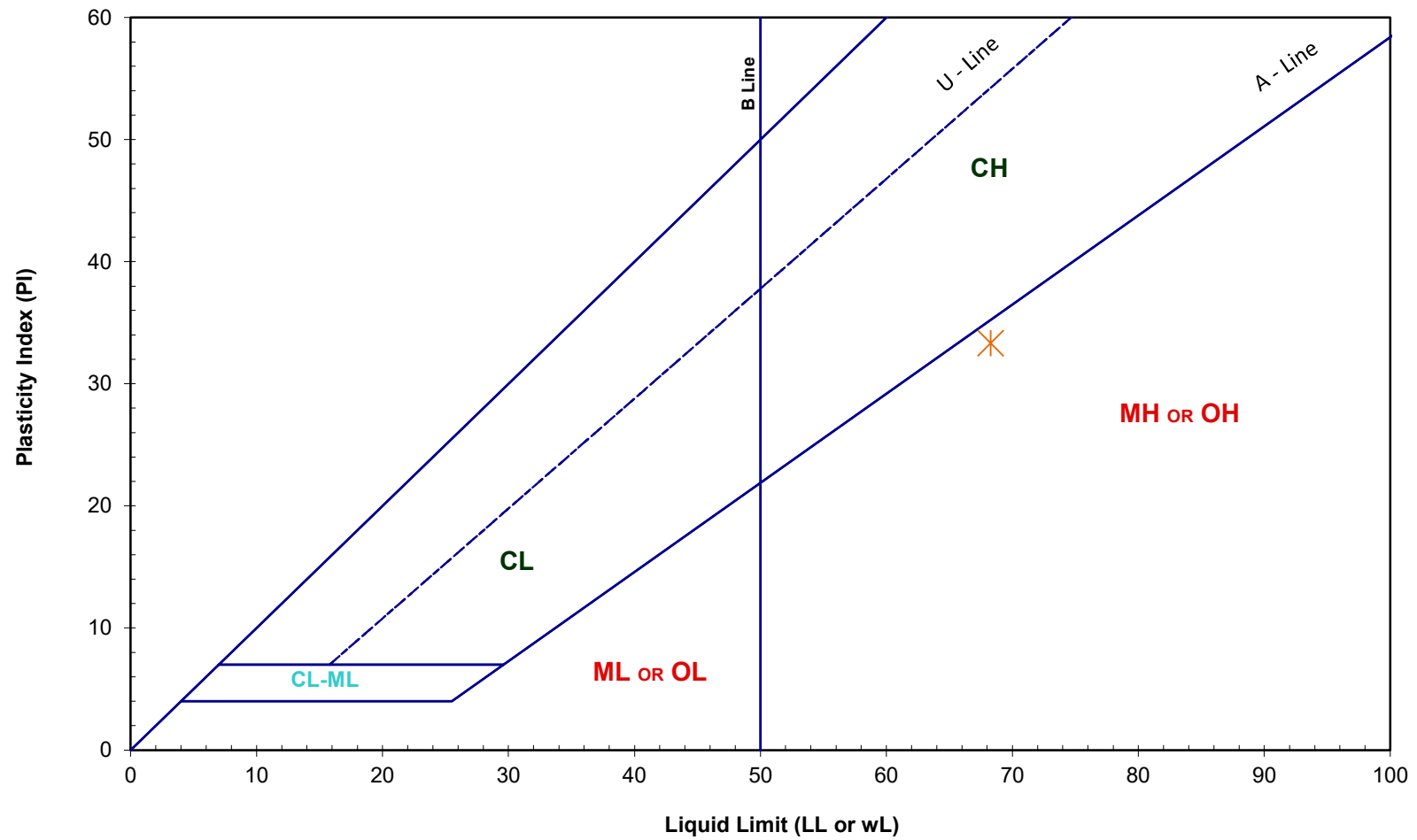
68
35
33

Unified Soil Classification System (UCS)

inorganic = MH - silt of high plasticity, elastic silt



PLASTICITY CHART



Date: 5/09/2025

Bige Operations
Lower Ok Tedi Dredge Project
Soil Testing Laboratory
P.O Box 93, Bige, Western Province

Project: OTML LOWLANDS FS
Location: OK BIRIM_KCB25_TP7008
Bore Number: B1049
Sample Date: 25/08/2025
Sample Depth: 0.1 - 0.3

Tested by: Francis Lea

Checked by: _____

ATTERBURG LIMITS AS1289 C1.1, C2.1, C3.1, C4.1

LIQUID LIMIT

Sample No.	1	2	3	4	5			
Moisture Can No.	L3	L23	L14	L30	L19			
1. Mass of can (g)	26.04	25.52	26.21	25.82	25.61			
2. Mass of can & wet soil (g)	41.41	41.36	43.75	40.97	43.01			
3. Mass of can & dry soil (g)	36.31	36.14	37.83	35.78	36.94			
4. Mass of water [2-3] (g)	5.1	5.22	5.92	5.19	6.07			
5. Mass of dry soil [3-1] (g)	10.27	10.62	11.62	9.96	11.33			
6. Moisture Content [(4/5)x100] (g)	49.66%	49.15%	50.95%	52.11%	53.57%			
7. Number of drops (N)	37	29	24	19	14			

Plastic Limit

Sample No.	1	2	3					
Moisture Can No.	L2	L44	L18					
1. Mass of can (g)	25.78	26.22	25.9					
2. Mass of can & wet soil (g)	33.22	33.71	33.88					
3. Mass of can & dry soil (g)	31.15	31.6	31.66					
4. Mass of water [2-3] (g)	2.07	2.11	2.22					
5. Mass of dry soil [3-1] (g)	5.37	5.38	5.76					
6. Moisture Content [(4/5)x100] (g)	38.55%	39.22%	38.54%					
7. Plastic Limit (PL) = Average M.C (%)	38.77%							

Shrinkage Limit

1. Shrinkage Mould No.	B12							
2. Length of Wet Soil (mm)	250							
3. Length of Dry Soil (mm)	235							
4. Shrinkage [2-3] (mm)	15							
5. Linear Shrinkage [(4/3)x100] (%)	6.38%							
Material Classification								

Major divisions			Group symbol	Group name
Coarse grained soils more than 50% retained on or above No.200 (0.074 mm) sieve	gravel > 50% of coarse fraction retained on No.4 (4.75 mm) sieve	clean gravel <5% smaller than No.200 Sieve	GW	well-graded gravel, fine to coarse gravel
			GP	poorly graded gravel
		gravel with >12% fines	GM	silty gravel
			GC	clayey gravel
	sand ≥ 50% of coarse fraction passes No.4 (4.75 mm) sieve	clean sand	SW	well-graded sand, fine to coarse sand
			SP	poorly graded sand
		sand with >12% fines	SM	silty sand
			SC	clayey sand
Fine grained soils 50% or more passing the No.200 (0.074 mm) sieve	silt and clay liquid limit < 50	inorganic	ML	silt
			CL	clay of low plasticity, lean clay
	silt and clay liquid limit ≥ 50	organic	OL	organic silt, organic clay
		inorganic	MH	silt of high plasticity, elastic silt
			CH	clay of high plasticity, fat clay
		organic	OH	organic clay, organic silt
Highly organic soils			Pt	peat

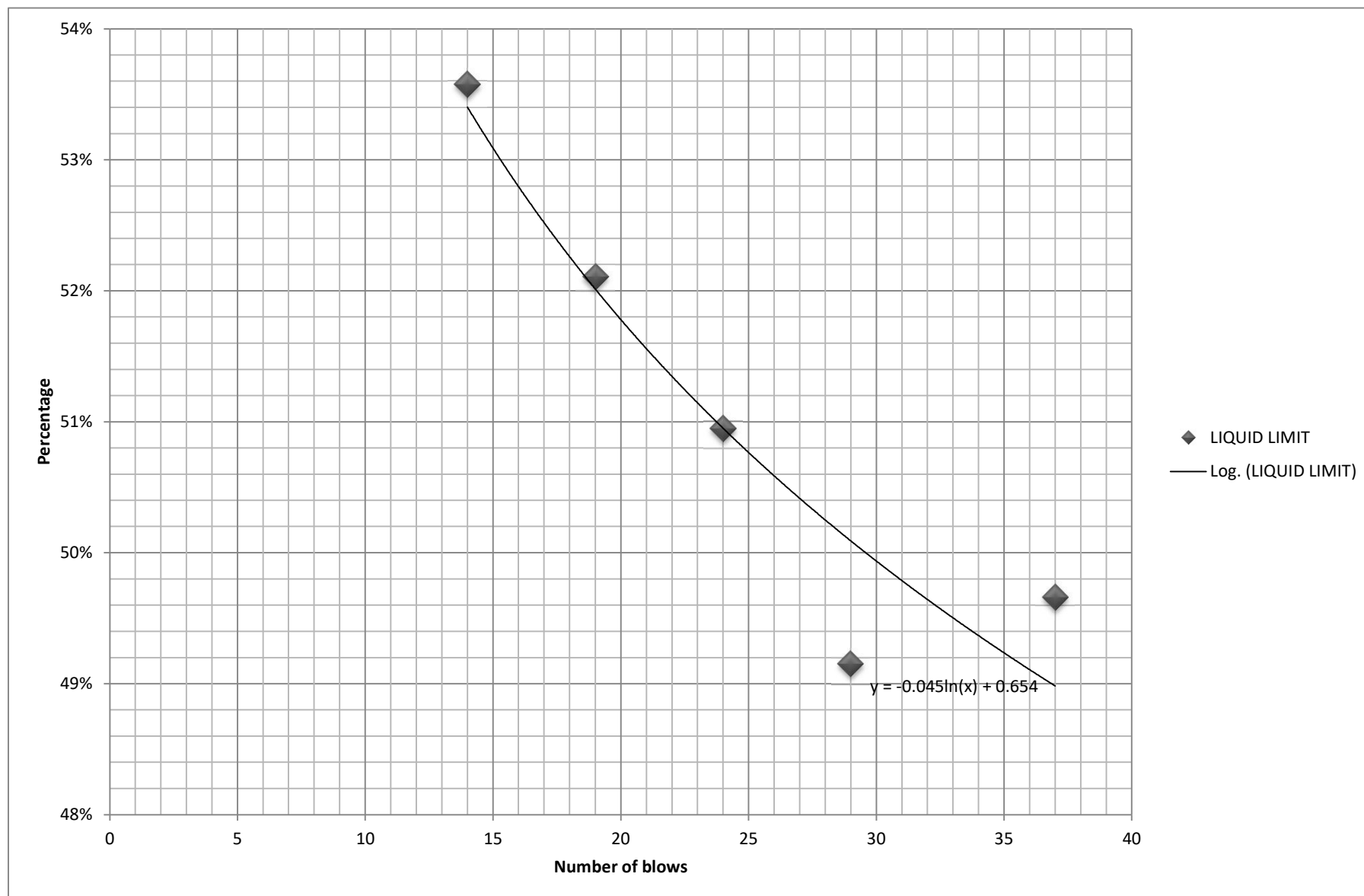
Atterberg (Consistency) Limits:

Liquid Limit (LL)
Plastic Limit (PL)
Plasticity Index (PI) = LL-PL

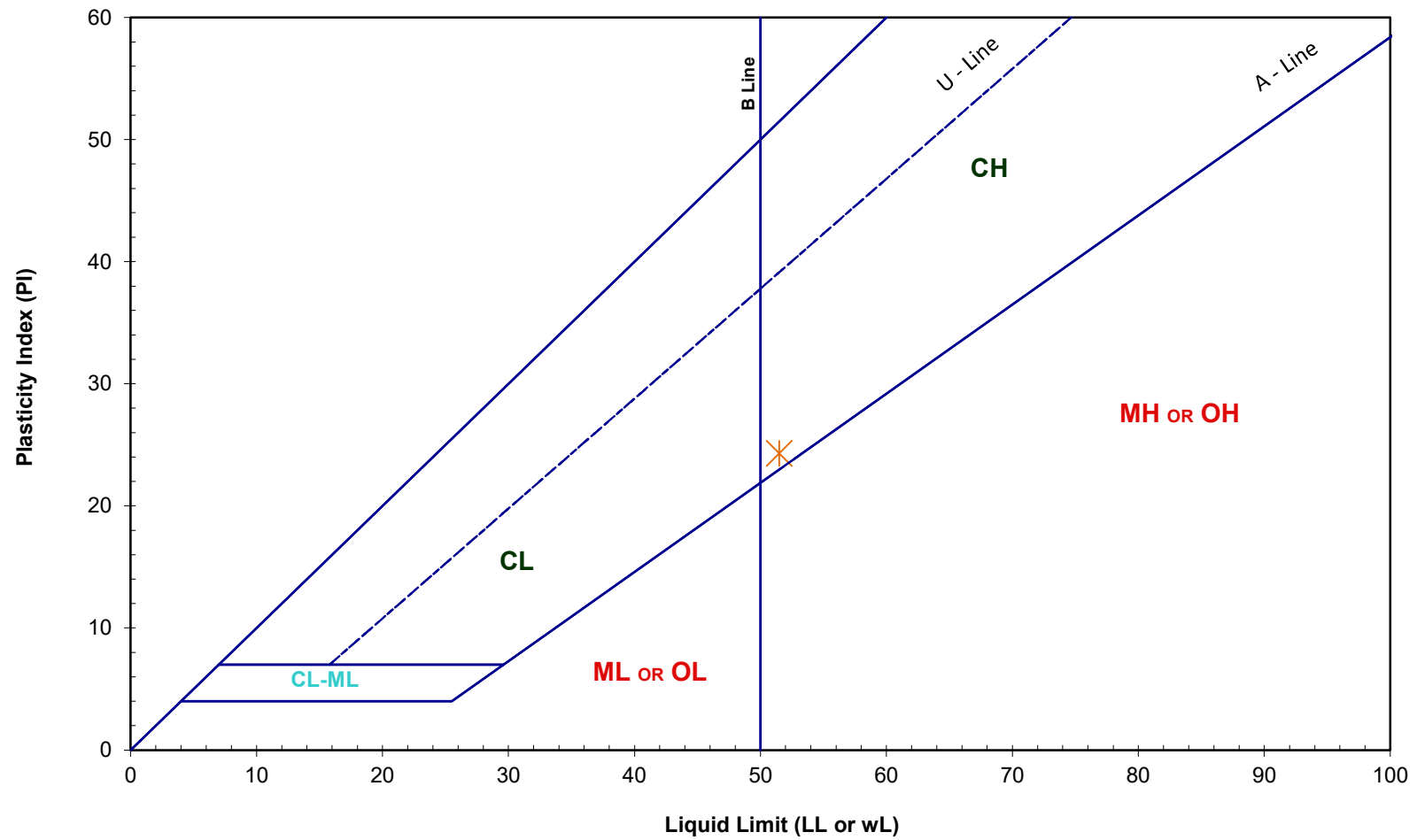
52
27
24

Unified Soil Classification System (UCS)

inorganic = CH - clay of high plasticity, fat clay



PLASTICITY CHART



Date: 31/08/2025

Bige Operations
Lower Ok Tedi Dredge Project
Soil Testing Laboratory
P.O Box 93, Bige, Western Province

Project: OTML LOWLANDS FS
Location: OK BIRIM_KCB25_TP7008
Bore Number: B1050
Sample Date: 25/08/2025
Sample Depth: 0.4 - 0.6

Tested by: Francis Lea

Checked by:

ATTERBURG LIMITS AS1289 C1.1, C2.1, C3.1, C4.1

LIQUID LIMIT

Sample No.	1	2	3	4	5			
Moisture Can No.	L33	L14	L45	L10	L47			
1. Mass of can (g)	25.67	26.21	25.43	25.73	25.98			
2. Mass of can & wet soil (g)	40.19	41.29	38.37	42.84	42.12			
3. Mass of can & dry soil (g)	34.55	35.36	33.26	36	35.57			
4. Mass of water [2-3] (g)	5.64	5.93	5.11	6.84	6.55			
5. Mass of dry soil [3-1] (g)	8.88	9.15	7.83	10.27	9.59			
6. Moisture Content [(4/5)x100] (g)	63.51%	64.81%	65.26%	66.60%	68.30%			
7. Number of drops (N)	45	32	26	20	14			

Plastic Limit

Sample No.	1	2	3					
Moisture Can No.	L28	L19	L34					
1. Mass of can (g)	24.91	25.62	25.09					
2. Mass of can & wet soil (g)	34.03	34	34.43					
3. Mass of can & dry soil (g)	32	32.12	32.34					
4. Mass of water [2-3] (g)	2.03	1.88	2.09					
5. Mass of dry soil [3-1] (g)	7.09	6.5	7.25					
6. Moisture Content [(4/5)x100] (g)	28.63%	28.92%	28.83%					
7. Plastic Limit (PL) = Average M.C (%)	28.79%							

Shrinkage Limit

1. Shrinkage Mould No.	B1							
2. Length of Wet Soil (mm)	250							
3. Length of Dry Soil (mm)	228							
4. Shrinkage [2-3] (mm)	22							
5. Linear Shrinkage [(4/3)x100] (%)	9.65%							
Material Classification								

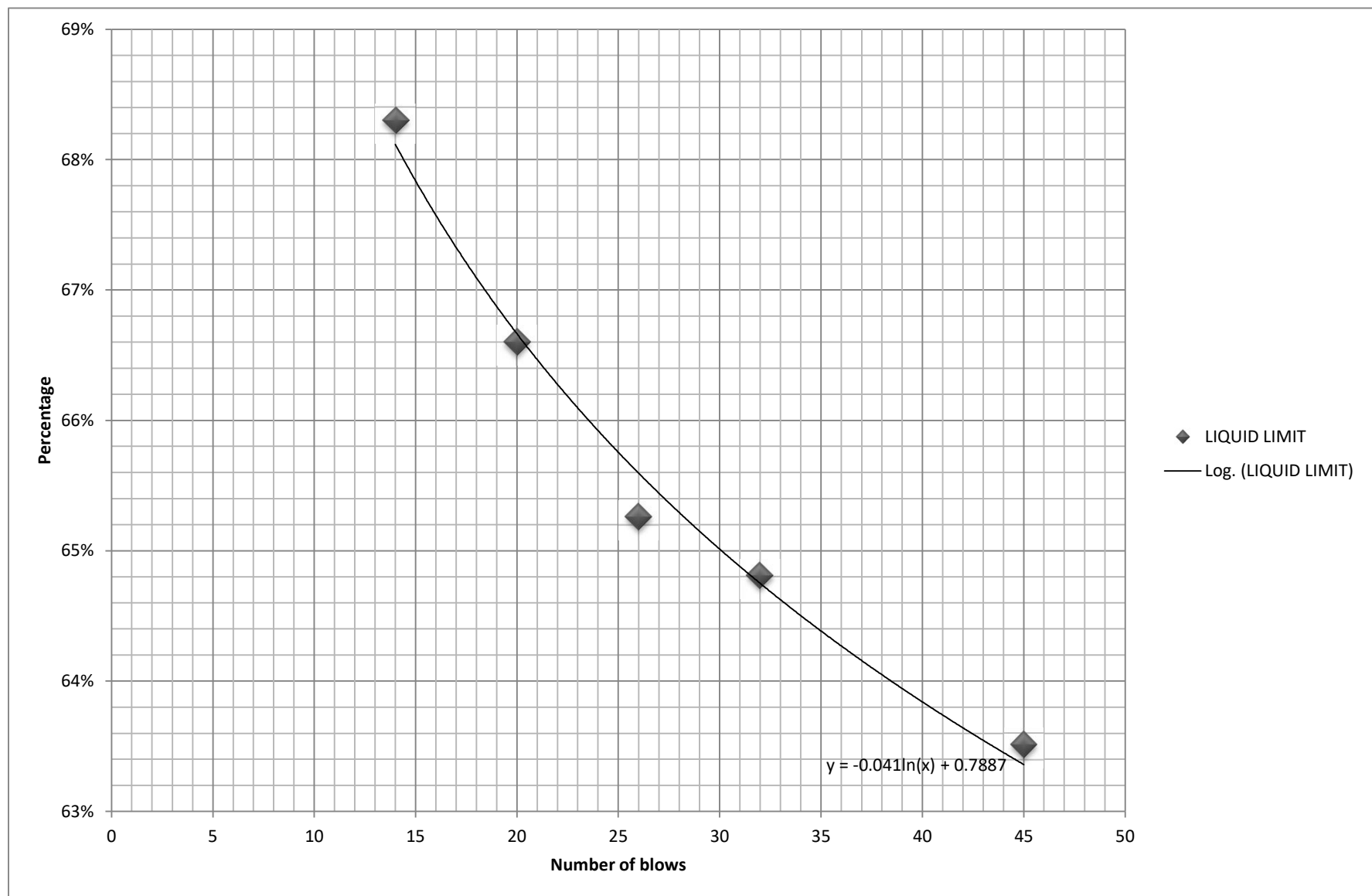
Major divisions			Group symbol	Group name
Coarse grained soils more than 50% retained on or above No.200 (0.074 mm) sieve	gravel > 50% of coarse fraction retained on No.4 (4.75 mm) sieve	clean gravel <5% smaller than No.200 Sieve	GW	well-graded gravel, fine to coarse gravel
			GP	poorly graded gravel
		gravel with >12% fines	GM	silty gravel
			GC	clayey gravel
	sand ≥ 50% of coarse fraction passes No.4 (4.75 mm) sieve	clean sand	SW	well-graded sand, fine to coarse sand
			SP	poorly graded sand
		sand with >12% fines	SM	silty sand
			SC	clayey sand
Fine grained soils 50% or more passing the No.200 (0.074 mm) sieve	silt and clay liquid limit < 50	inorganic	ML	silt
			CL	clay of low plasticity, lean clay
		organic	OL	organic silt, organic clay
	silt and clay liquid limit ≥ 50	inorganic	MH	silt of high plasticity, elastic silt
			CH	clay of high plasticity, fat clay
		organic	OH	organic clay, organic silt
Highly organic soils			Pt	peat

Atterberg (Consistency) Limits:

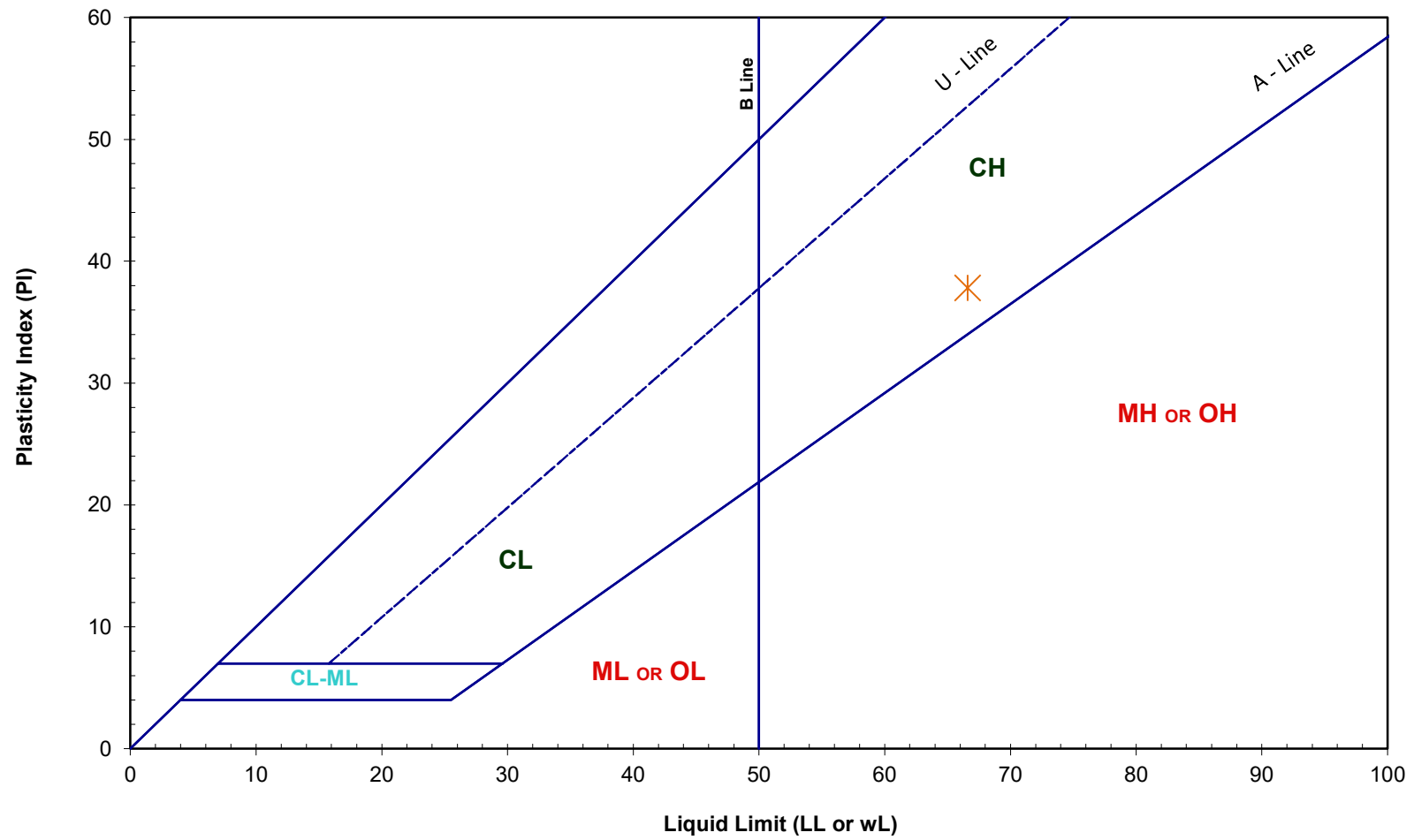
Liquid Limit (LL)	67
Plastic Limit (PL)	29
Plasticity Index (PI) = LL-PL	38

Unified Soil Classification System (UCS)

inorganic = CH - clay of high plasticity, fat clay



PLASTICITY CHART



Date: 29/08/2025

Bige Operations
Lower Ok Tedi Dredge Project
Soil Testing Laboratory
P.O Box 93, Bige, Western Province

Project: OTML LOWLANDS FS
Location: OK BIRIM_KCB25_TP7010
Bore Number: B1051
Sample Date: 25/08/2025
Sample Depth: 0.2 - 0.4

Tested by: Francis Lea

Checked by: _____

ATTERBURG LIMITS AS1289 C1.1, C2.1, C3.1, C4.1

LIQUID LIMIT

Sample No.	1	2	3	4	5			
Moisture Can No.	L6	L35	L24	L47	L7			
1. Mass of can (g)	25.77	26.27	25.98	25.99	25.82			
2. Mass of can & wet soil (g)	39.37	45.3	38.91	38.67	38.8			
3. Mass of can & dry soil (g)	33.92	37.53	33.35	33.15	33.06			
4. Mass of water [2-3] (g)	5.45	7.77	5.56	5.52	5.74			
5. Mass of dry soil [3-1] (g)	8.15	11.26	7.37	7.16	7.24			
6. Moisture Content [(4/5)x100] (g)	66.87%	69.01%	75.44%	77.09%	79.28%			
7. Number of drops (N)	39	35	25	20	15			

Plastic Limit

Sample No.	1	2	3					
Moisture Can No.	L4	L31	L10					
1. Mass of can (g)	25.09	25.37	25.73					
2. Mass of can & wet soil (g)	30.57	30.68	31.28					
3. Mass of can & dry soil (g)	29.3	29.28	29.93					
4. Mass of water [2-3] (g)	1.27	1.4	1.35					
5. Mass of dry soil [3-1] (g)	4.21	3.91	4.2					
6. Moisture Content [(4/5)x100] (g)	30.17%	35.81%	32.14%					
7. Plastic Limit (PL) = Average M.C (%)	32.70%							

Shrinkage Limit

1. Shrinkage Mould No.	B8							
2. Length of Wet Soil (mm)	250							
3. Length of Dry Soil (mm)	222							
4. Shrinkage [2-3] (mm)	28							
5. Linear Shrinkage [(4/3)x100] (%)	12.61%							
Material Classification								

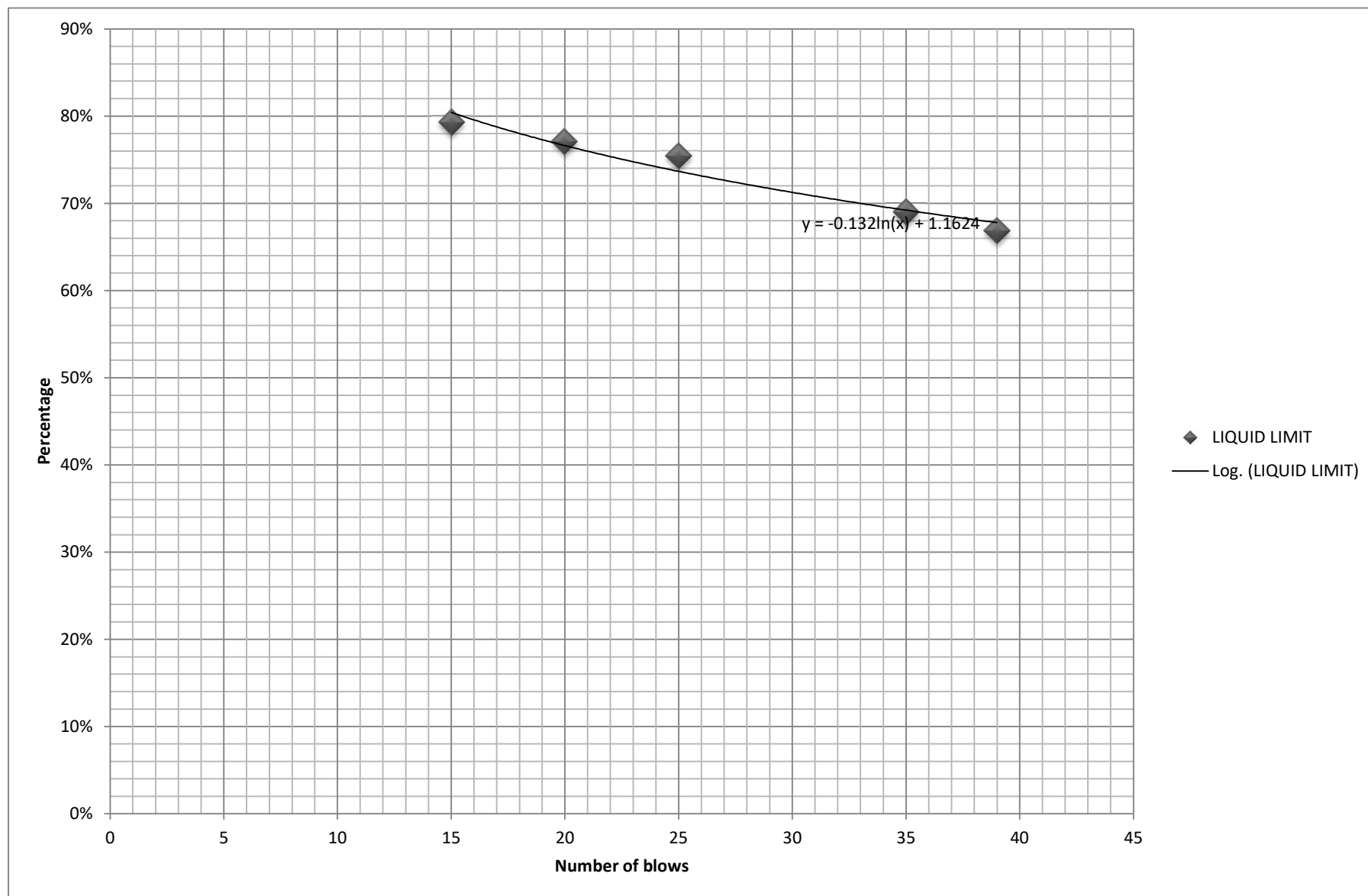
Major divisions			Group symbol	Group name
Coarse grained soils more than 50% retained on or above No.200 (0.074 mm) sieve	gravel > 50% of coarse fraction retained on No.4 (4.75 mm) sieve	clean gravel <5% smaller than No.200 Sieve	GW	well-graded gravel, fine to coarse gravel
			GP	poorly graded gravel
		gravel with >12% fines	GM	silty gravel
			GC	clayey gravel
	sand ≥ 50% of coarse fraction passes No.4 (4.75 mm) sieve	clean sand	SW	well-graded sand, fine to coarse sand
			SP	poorly graded sand
		sand with >12% fines	SM	silty sand
			SC	clayey sand
Fine grained soils 50% or more passing the No.200 (0.074 mm) sieve	silt and clay liquid limit < 50	inorganic	ML	silt
			CL	clay of low plasticity, lean clay
	silt and clay liquid limit ≥ 50	organic	OL	organic silt, organic clay
		inorganic	MH	silt of high plasticity, elastic silt
			CH	clay of high plasticity, fat clay
		organic	OH	organic clay, organic silt
Highly organic soils			Pt	peat

Atterberg (Consistency) Limits:

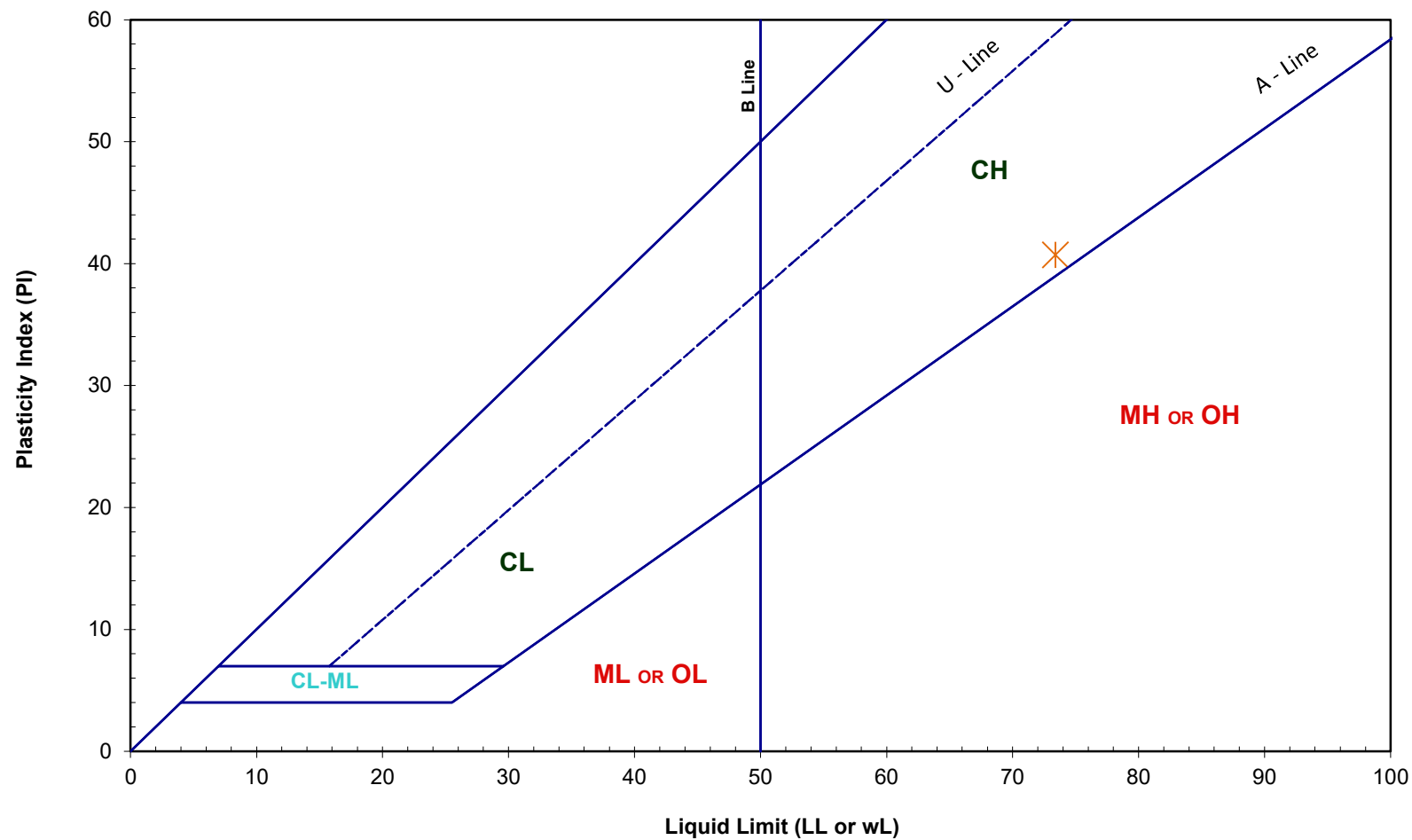
Liquid Limit (LL)	73
Plastic Limit (PL)	33
Plasticity Index (PI) = LL-PL	41

Unified Soil Classification System (UCS)

inorganic = CH - clay of high plasticity, fat clay



PLASTICITY CHART



Date: 1/09/2025

Bige Operations
Lower Ok Tedi Dredge Project
Soil Testing Laboratory
P.O Box 93, Bige, Western Province

Project: OTML LOWLANDS FS
Location: OK BIRIM_KCB25_TP7010
Bore Number: B1052
Sample Date: 25/08/2025
Sample Depth: 0.5 - 0.8

Tested by: Francis Lea

Checked by: _____

ATTERBURG LIMITS AS1289 C1.1, C2.1, C3.1, C4.1

LIQUID LIMIT

Sample No.	1	2	3	4	5			
Moisture Can No.	L49	L30	L42	L37	L32			
1. Mass of can (g)	25.56	25.83	25.64	25.82	26.25			
2. Mass of can & wet soil (g)	42.08	45	38.75	38.93	38.76			
3. Mass of can & dry soil (g)	36.06	37.8	33.54	33.54	33.42			
4. Mass of water [2-3] (g)	6.02	7.2	5.21	5.39	5.34			
5. Mass of dry soil [3-1] (g)	10.5	11.97	7.9	7.72	7.17			
6. Moisture Content [(4/5)x100] (g)	57.33%	60.15%	65.95%	69.82%	74.48%			
7. Number of drops (N)	45	40	30	20	12			

Plastic Limit

Sample No.	1	2	3					
Moisture Can No.	L23	L17	L13					
1. Mass of can (g)	25.52	25.86	25.81					
2. Mass of can & wet soil (g)	34.96	35.6	34.86					
3. Mass of can & dry soil (g)	32.9	33.44	32.86					
4. Mass of water [2-3] (g)	2.06	2.16	2					
5. Mass of dry soil [3-1] (g)	7.38	7.58	7.05					
6. Moisture Content [(4/5)x100] (g)	27.91%	28.50%	28.37%					
7. Plastic Limit (PL) = Average M.C (%)	28.26%							

Shrinkage Limit

1. Shrinkage Mould No.	B6							
2. Length of Wet Soil (mm)	250							
3. Length of Dry Soil (mm)	227							
4. Shrinkage [2-3] (mm)	23							
5. Linear Shrinkage [(4/3)x100] (%)	10.13%							
Material Classification								

Major divisions			Group symbol	Group name
Coarse grained soils more than 50% retained on or above No.200 (0.074 mm) sieve	gravel > 50% of coarse fraction retained on No.4 (4.75 mm) sieve	clean gravel <5% smaller than No.200 Sieve	GW	well-graded gravel, fine to coarse gravel
			GP	poorly graded gravel
		gravel with >12% fines	GM	silty gravel
	sand ≥ 50% of coarse fraction passes No.4 (4.75 mm) sieve	clean sand	GC	clayey gravel
			SW	well-graded sand, fine to coarse sand
		sand with >12% fines	SP	poorly graded sand
			SM	silty sand
Fine grained soils 50% or more passing the No.200 (0.074 mm) sieve	silt and clay liquid limit < 50	inorganic	SC	clayey sand
			ML	silt
	silt and clay liquid limit ≥ 50	organic	CL	clay of low plasticity, lean clay
			OL	organic silt, organic clay
		inorganic	MH	silt of high plasticity, elastic silt
		organic	CH	clay of high plasticity, fat clay
Highly organic soils			OH	organic clay, organic silt
			Pt	peat

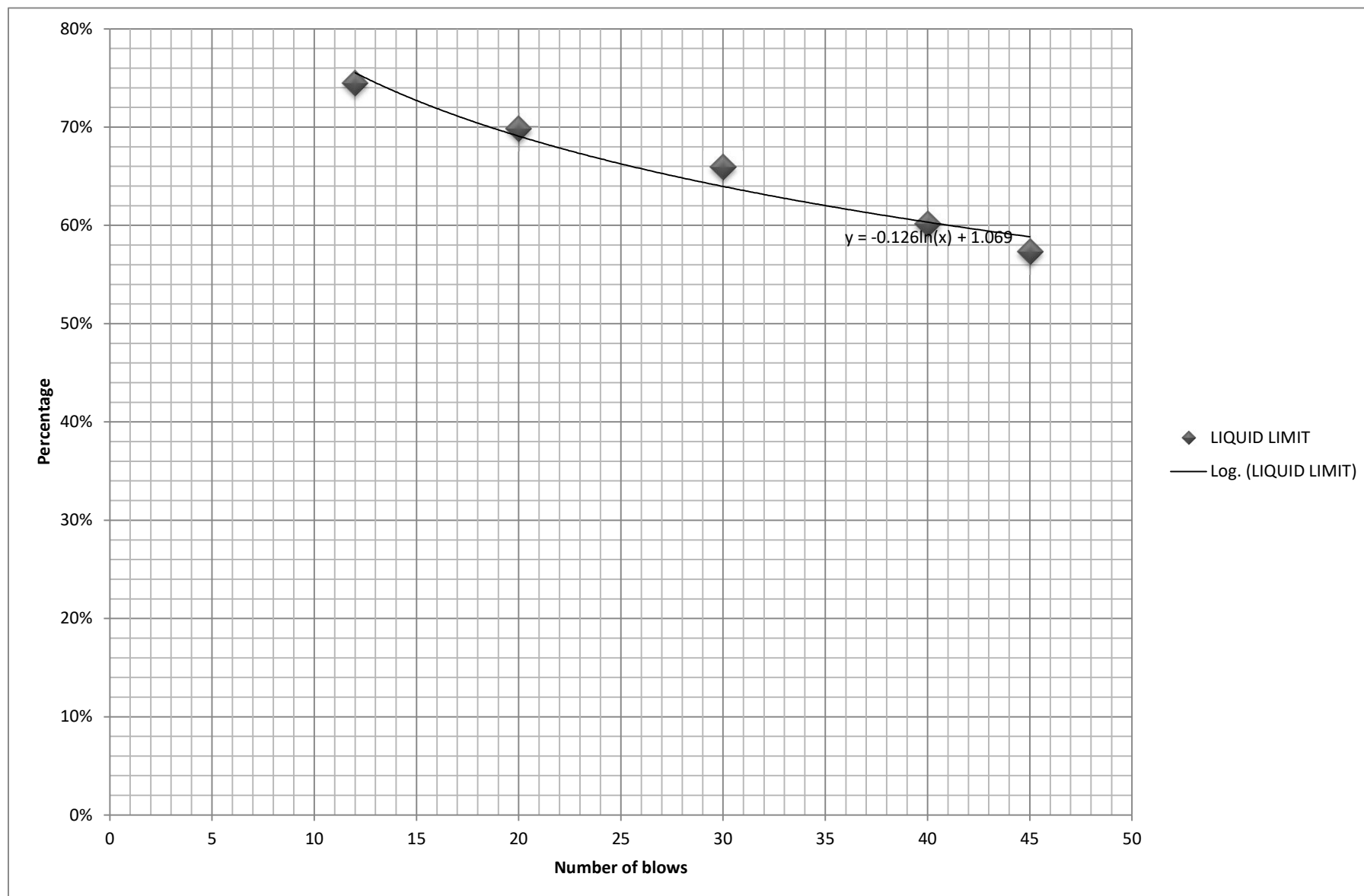
Atterberg (Consistency) Limits:

Liquid Limit (LL)
Plastic Limit (PL)
Plasticity Index (PI) = LL-PL

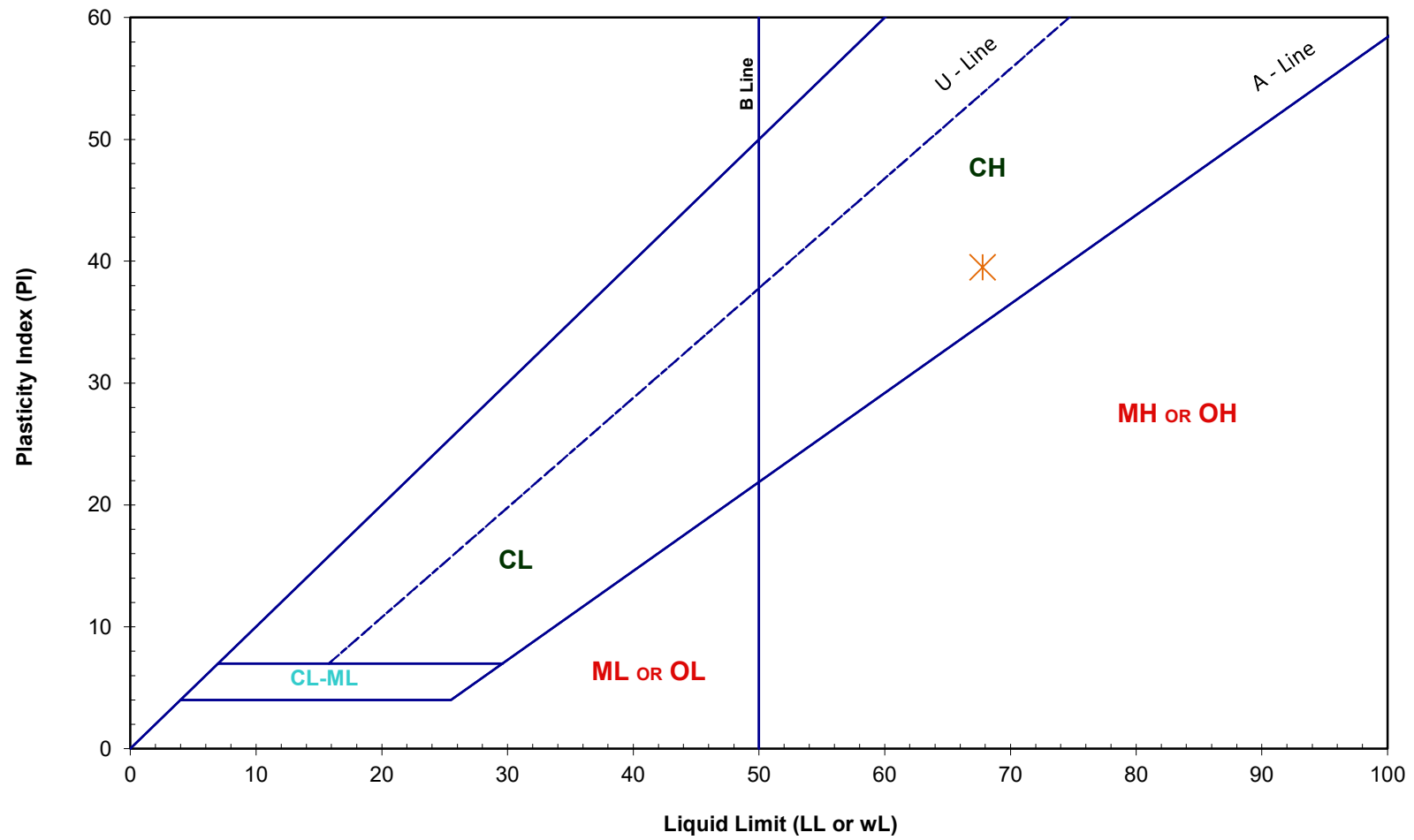
68
28
40

Unified Soil Classification System (UCS)

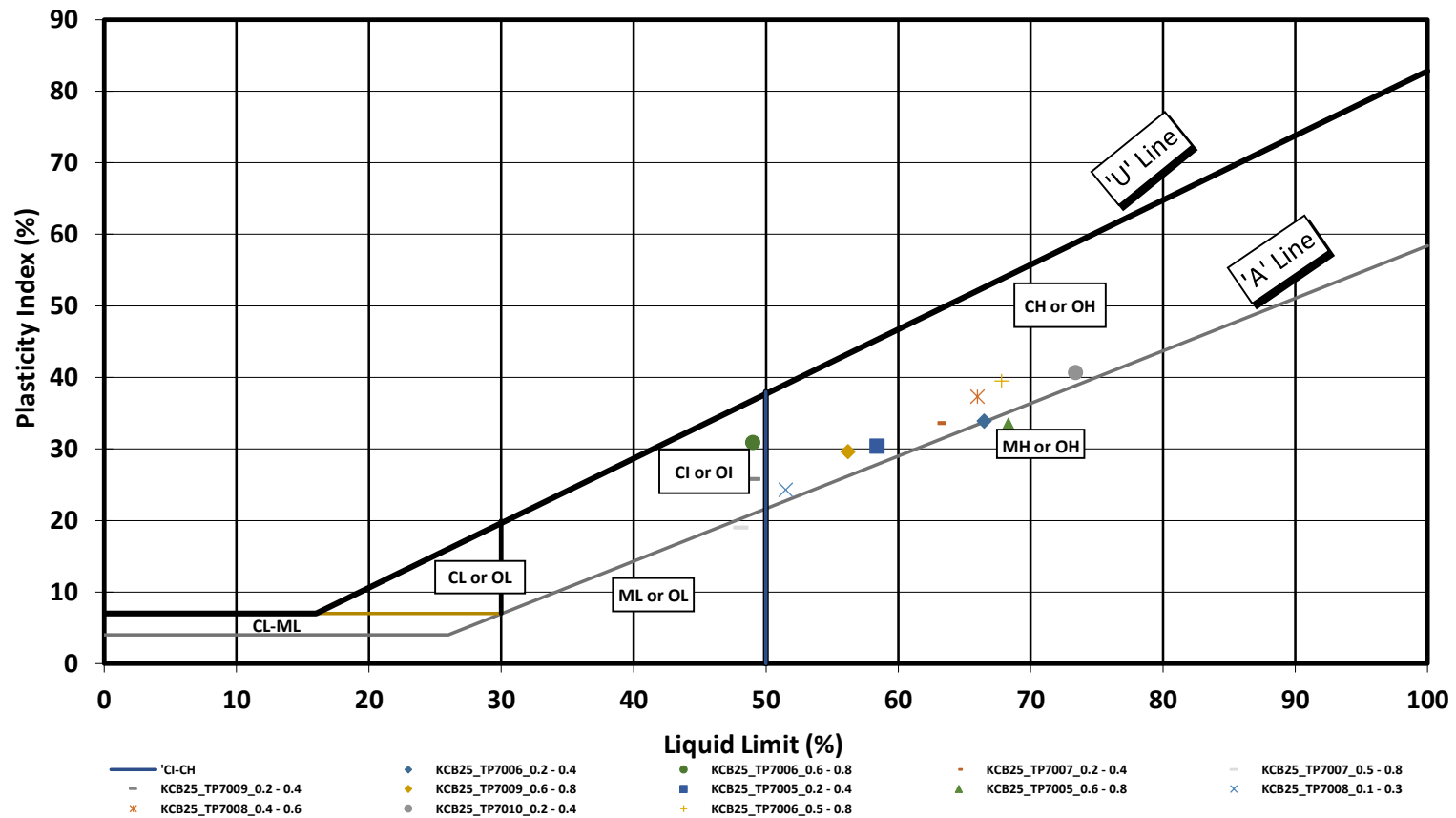
inorganic = CH - clay of high plasticity, fat clay



PLASTICITY CHART



Modified Casagrande Chart for Classifying Silts and Clays (AS1726:2017) OTML Lowlands TSF Feasibility Study - Soil Characterisation





Bigge Operations
Lower Ok Tedi Dredge Project
Soil Testing laboratory
P.O.Box 93, Bigge, Western Province

Project: OTML LOWLANDS_FS
Location: OK BIRIM_ESIA SOILS
SAMPLES

Test Date: 29/8/2025
Sample No: B1041 - 1047

Tested by: Francis Lea
Checked by:

Sample ID: Clay

Moisture Content

ADDITIONAL INFORMATION

Sample Location.	KCB25-TP7006_0.2-0.4	KCB25-TP7006_0.6-0.8	KCB25-TP7007_0.2-0.4	KCB25-TP7007_0.5-0.8	KCB25-TP7009_0.2-0.4	KCB25-TP7009_0.6-0.8	KCB25-TP7005_0.2-0.4
Sample Date.	19-Aug-25	19-Aug-25	19-Aug-25	19-Aug-25	22-Aug-25	22-Aug-25	25-Aug-25
Sample No.	B1041	B1042	B1043	B1044	B1045	B1046	B1047

MOISTURE CONTENT

Pan No.	L50	L39	L09	L43	L74	L19	L20
1. Mass of Container + Wet Soil (g)	243.5	254.5	253.0	264.5	249.5	259.5	273.0
2. Mass of Container + Dry Soil (g)	188.0	204.0	193.5	211.5	199.0	185.5	201.0
3. Mass of Container (g)	98.5	101.0	99.0	105.0	97.5	100.5	103.0
4. Mass of Water [1-2] (g)	55.5	50.5	59.5	53.0	50.5	74.0	72.0
5. Mass of Dry Soil [2-3] (g)	89.5	103.0	94.5	106.5	101.5	85.0	98.0
6. Moisture content [(4/5)x100] (%)	62.0	49.0	63.0	49.8	49.8	87.1	73.5

Material Classification

Clay

 <div> <div> Bige Operations Lower Ok Tedi Dredge Project Soil Testing laboratory P.O.Box 93, Bige, Western Province </div> <div> Project: OTML LOWLANDS FS Location: OK BIRIM_ESIA SOIL SAMPLING </div> </div>						
Test Date: 29/08/2025 Sample No: B1048 - B1052		Tested by: Francis Lea Checked by:				
Sample ID: Clay		Moisture Content				
ADDITIONAL INFORMAION						
Client	KCB25 - TP7005	KCB25-TP7008	KCB25-TP7008	KCB25-TP7010	KCB25-TP7010	
Sample Date	25-Aug-25	25-Aug-25	25-Aug-25	28-Aug-25	28-Aug-25	
Sample Depth	0.6 - 0.8	0.1 - 0.3	0.4 - 0.6	0.2 - 0.4	0.5 - 0.8	
Sample No.	B1048	B1049	B1050	B1051	B1052	
MOITURE CONTENT						
Pan No.	L21	L22	L52	L27	L05	
1. Mass of Container + Wet Soil (g)	255.5	313.0	193.5	279.0	284.5	
2. Mass of Container + Dry Soil (g)	202.0	234.5	128.5	197.0	218.0	
3. Mass of Container (g)	101.5	105.5	55.5	101.5	100.5	
4. Mass of Water [1-2] (g)	53.5	78.5	65.0	82.0	66.5	
5. Mass of Dry Soil [2-3] (g)	100.5	129.0	73.0	95.5	117.5	
6. Moisture content [(4/5)x100] (%)	53.2	60.9	89.0	85.9	56.6	
Material Classification	Clay					