



Appendix 8

SAR Open Cut Geotechnical Assessment

prepared by
WSP Australia Pty Ltd

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ALKANE RESOURCES LIMITED

TOMINGLEY GOLD EXTENSION PROJECT

SAN ANTONIO AND ROSWELL GEOTECHNICAL REPORT

APRIL 2021



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Tomingley Gold Extension Project San Antonio and Roswell Geotechnical Report

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TABLE OF CONTENTS

EXECUTIVE SUMMARY	V
1 INTRODUCTION	1
1.1 BACKGROUND AND PROPOSED DEVELOPMENT	1
1.2 PREVIOUS STUDIES	1
2 SCOPE OF WORK	2
3 GEOTECHNICAL INVESTIGATION AND DATA SOURCES.....	3
3.1 ALKANE DATA SOURCES.....	3
3.1.1 EXPLORATION DRILLHOLE DATA.....	3
3.1.2 GEOLOGICAL SURFACES.....	3
3.1.3 GROUNDWATER INFORMATION.....	4
3.2 TOMINGLEY GOLD MINE.....	4
3.3 GEOTECHNICAL INVESTIGATION PROGRAM.....	5
3.3.1 OVERVIEW	5
3.4 BOREHOLE DRILLING	5
3.5 LABORATORY TESTING.....	6
3.6 DOWNHOLE GEOPHYSICS	7
4 GEOLOGY	8
5 GEOTECHNICAL MODEL.....	9
5.1.1 GEOTECHNICAL HORIZONS	9
6 CHARACTERISATION OF ALLUVIUM AND SAPROLITE.....	10
6.1 OVERVIEW	10
6.2 MATERIAL CLASSIFICATION TESTS.....	10
6.3 CONSISTENCY/RELATIVE DENSITY	11
6.4 TRIAXIAL TESTING	12
6.5 MATERIAL STRENGTH PARAMETERS.....	12
7 ROCK MASS MODEL.....	14
7.1 BOREHOLE HISTOGRAMS.....	14
7.2 LITHOLOGY.....	14

7.3	ROCK QUALITY DESIGNATION	14
7.4	INTACT STRENGTHS	14
7.4.1	GENERAL	14
7.4.2	FIELD ESTIMATED	14
7.4.3	POINT LOAD AND UCS	15
7.5	DIRECT SHEAR STRENGTH.....	16
8	STRUCTURAL PATTERNS	17
9	GROUNDWATER.....	19
10	STABILITY ANALYSIS	20
10.1	CONTROLS ON SLOPE STABILITY	20
10.2	LIMIT EQUILIBRIUM ANALYSIS	20
10.2.1	METHODOLOGY	20
10.2.2	ADOPTED PARAMETERS AND ASSUMPTIONS	21
10.2.3	RESULTS OF ANALYSIS.....	21
10.3	KINEMATIC AND PROBABILITY OF UNDERCUTTING ANALYSIS.....	24
10.3.1	METHODOLOGY	24
10.3.2	RESULTS	24
11	RECOMMENDED PIT SLOPE DESIGN	28
11.1	PREVIOUSLY RECOMMENDED PIT SLOPE DESIGN	28
11.2	RECOMMENDED PIT SLOPE DESIGN.....	28
11.2.1	NORTH PIT	28
11.2.2	CENTRAL PIT	29
11.2.3	SOUTH PIT	30
11.2.4	DISCUSSION ON PIT SLOPE DESIGN.....	31
12	GEOTECHNICAL RISKS.....	32
13	RECOMMENDATIONS AND CONCLUSIONS.....	33
14	LIMITATIONS	34

LIST OF TABLES

TABLE 3.1	ALKANE EXPLORATION BOREHOLES BASED ON PROPOSED PIT AREA.....	3
TABLE 3.2	SUMMARY OF GEOLOGICAL SURFACES	3

TABLE 3.3	SUMMARY OF BOREHOLE DRILLING DETAILS	5
TABLE 3.4	SUMMARY OF LABORATORY TESTING	6
TABLE 3.5	SUMMARY OF DOWNHOLE GEOPHYSICS	7
TABLE 6.1	SUMMARY OF RESULTS OF AL AND PSD FOR BOREHOLES DRILLED AT SAN ANTONIO	10
TABLE 6.2	SUMMARY OF RESULTS OF AL AND PSD FOR BOREHOLES DRILLED AT ROSWELL	11
TABLE 6.3	SUMMARY OF TRIAXIAL TESTING	12
TABLE 6.4	ASSESSED MATERIAL STRENGTH PARAMETERS FOR ROSWELL (NORTH PIT)	13
TABLE 6.5	ASSESSED MATERIAL STRENGTH PARAMETERS FOR SAN ANTONIO (CENTRAL AND SOUTH PITS)	13
TABLE 7.1	RESULTS OF POINT LOAD TESTING	15
TABLE 7.2	RESULTS OF UCS AND UCS WITH YOUNGS MODULUS TESTING	15
TABLE 7.3	SUMMARY OF UCS TEST	16
TABLE 8.1	ASSESSED MAJOR STRUCTURAL PATTERNS FOR THE NORTH PIT	17
TABLE 8.2	ASSESSED STRUCTURAL PATTERNS FOR THE CENTRAL PIT	18
TABLE 8.3	ASSESSED STRUCTURAL PATTERNS FOR THE SOUTH PIT	18
TABLE 8.4	ASSESSED MAJOR STRUCTURAL PATTERNS FOR TGEP	18
TABLE 9.1	SUMMARY OF GROUNDWATER BORES AND WATER DEPTH DATA	19
TABLE 10.1	MATERIAL STRENGTH PARAMETERS ADOPTED IN SLOPE STABILITY ANALYSES	21
TABLE 10.2	SUMMARY OF THE RESULTS OF LIMIT EQUILIBRIUM	22
TABLE 10.3	RESULTS OF KINEMATIC AND PROBABILITY OF UNDERCUTTING FOR THE NORTH PIT SAR_C5C11_201203 DESIGN	25
TABLE 10.4	RESULTS OF KINEMATIC AND PROBABILITY OF UNDERCUTTING FOR THE CENTRAL PIT SAR_C5C11_201203 DESIGN	26
TABLE 10.5	RESULTS OF KINEMATIC AND PROBABILITY OF UNDERCUTTING FOR THE SOUTH PIT SAR_C5C11_201203 DESIGN	27
TABLE 11.1	RECOMMENDED CONCEPT PIT SLOPE COMPONENTS – NORTH AND SOUTH PITS	28
TABLE 11.2	RECOMMENDED CONCEPT PIT SLOPE COMPONENTS – CENTRAL PIT	28

TABLE 11.3	RECOMMENDED PIT SLOPE COMPONENTS FOR ALLUVIUM AND SAPROLITE IN THE NORTH PIT SAR_C5C11_201203 DESIGN	29
TABLE 11.4	RECOMMENDED PIT SLOPE COMPONENTS FOR THE WEATHERED AND SLIGHTLY WEATHERED AND FRESH ROCK IN THE NORTH PIT SAR_C5C11_201203 DESIGN	29
TABLE 11.5	RECOMMENDED PIT SLOPE COMPONENTS FOR ALLUVIUM AND SAPROLITE IN THE CENTRAL PIT	29
TABLE 11.6	RECOMMENDED PIT SLOPE COMPONENTS FOR THE WEATHERED AND SLIGHTLY WEATHERED AND FRESH ROCK IN THE CENTRAL PIT	30
TABLE 11.7	RECOMMENDED PIT SLOPE COMPONENTS FOR ALLUVIUM AND SAPROLITE IN THE SOUTH PIT	30
TABLE 11.8	RECOMMENDED PIT SLOPE COMPONENTS FOR THE WEATHERED AND SLIGHTLY WEATHERED AND FRESH ROCK IN THE SOUTH PIT	30

LIST OF APPENDICES

APPENDIX A	FIGURES
APPENDIX B	GEOTECHNICAL BOREHOLE LOGS
APPENDIX C	GEOTECHNICAL BOREHOLE CORE PHOTOS
APPENDIX D	LABORATORY TEST SHEETS
APPENDIX E	RESULTS OF DOWNHOLE GEOPHYSICS
APPENDIX F	BOREHOLE HISTOGRAMS
APPENDIX G	DOWNHOLE GEOPHYSICS STEREOPLOTS
APPENDIX H	BOREHOLE STEREOPLOTS
APPENDIX I	RESULTS OF SLOPES STABILITY
APPENDIX J	RESULTS OF KINEMATIC ANALYSES

EXECUTIVE SUMMARY

INTRODUCTION

This report presents the results of a geotechnical assessment done by WSP Australia Pty Ltd (WSP) for Alkane Resources Limited (Alkane) proposed Tomingley Gold Extension Project (TGEP) in central west NSW.

Results of the geotechnical assessment and the pit slope component recommendations provided in this report are based on the pit design designated *sar_c5c11_201203* provided by Alkane. This pit design indicated three pit areas, north, central and south with a proposed life of mine of four to five years for the north pit and one to two years for the central and south pit.

AVAILABLE DATA

The assessment used geotechnical borehole and laboratory data, downhole geophysics data and exploration borehole data to improve the geotechnical model previously established at the preliminary stage of the project. The performance of the operational Tomingley Gold Mine, three kilometres away, was also used in the assessment of appropriate pit slope components.

GEOLOGICAL SETTING

Basement geology at TGEP is like that at Tomingley and consists of steeply dipping striking north south Mingello Volcanics (MV) of Ordovician age, bounded in the west by the siliciclastic sediments of the Cotton Formation (CF) of Ordo-Silurian age. Volcaniclastic rich units, mainly sandstone, and minor andesitic phyrlic lavas and flow breccias are anticipated to be exposed in most of the slopes. Thin dolerite dykes which steeply dip to the north northeast and strike west northwest intrude the MV and CF. A saprolite weathering profile with a thickness of between 10 m to 15 m exists. The saprolite is unconformably overlain by alluvial sediments of Quaternary to Tertiary age. Two major faults are indicated by Alkane, both striking west/northwest to east/south east with a steep dip. One occurs at the northern end of the north pit, the other at the south pit area.

GEOTECHNICAL MODEL

The geotechnical model consists of five horizons and from the ground surface to depth these are, Quaternary Alluvium (QA), Tertiary Alluvium (TA), Saprolite, Weathered Rock (oxidised) and Slightly Weathered and Fresh Rock. Alluvium was characterised as silty clays with variable amounts of sand and gravels with a very stiff to hard consistency. Alluvium composition is likely to be consistent across the project area, except for the TA over the central and south pit area which will have an increased sand content compared to the TA over the north pit area. Alkane has indicated that the TA over the central and south area is unique to TGEP and not like that seen at Tomingley. Saprolite is likely to have variable composition from silty and sandy gravelly clays and sandy clayey silts with very low strength rock fragments. Volcaniclastic sediments within the Weathered Rock (WR) horizon will typically be of poor quality, mainly have a low strength and be highly weathered. Slightly Weathered and Fresh Rock (SW/FR) will be a good quality rock mass with high to very high strength.

A structural geological data set consisting of data from geotechnical borehole logging, downhole geophysics and exploration boreholes was used to assess the mean orientation of critical geological structural sets within the rock mass. Although within each pit area the orientation of major structural sets (faults and shears) appeared to be slightly different, overall four similar sets were identified. Orientation of major structural sets appeared to be consistent with the orientation of the main foliation/bedding, east/west striking dolerite dykes and the two west northwest east southeast striking faults.

Groundwater data is limited at this stage but based on a review of available data, a water table within the upper Weathered Rock Horizon is indicated.

SLOPE STABILITY ASSESSMENT

Based on performance of the pits at Tomingley the potential failure mechanisms at TGEP are:

- Circular failure through the alluvium, saprolite and weathered rock.
- Combination of sliding along structure and rock mass failure through the weathered rock.
- Structurally controlled failures along defects in the saprolite and rock.

Material strength of the alluvium, saprolite and weathered rock will be the main control on stability at the overall wall scale within these materials. Although failure along relict structures in the saprolite and along structure in the weathered rock will also control stability. Limit equilibrium analyses using SVSoilvision and SLOPEW software were done to assess slope stability in the alluvium, saprolite and weathered rock.

In the Weathered Rock and Slightly Weathered and Fresh Rock horizons, the orientation of the major structures such as faults and shears relative to the pit walls will be the main control on stability at the inter-ramp scale. Kinematic and statistical analyses were done using the assessed major structure sets and the pit wall orientations for the *sar_c5c11_201203* design to assist the assessment of appropriate design components of the slopes in rock.

RECOMMENDED PIT SLOPE COMPONENTS

Based on pit slope performance of the Tomingley Pits and the results of slope stability analyses the recommended pit slope components for the *sar_c5c11_201203* design is summarised in the following tables.

Table ES.1 Recommended pit slope components for alluvium and saprolite in the north pit

DESIGN SECTOR	WALL ORIENTATION	GEOTECHNICAL HORIZON	BENCH		BERM WIDTH (m)	IRA ² (°)	OVERALL SLOPE ANGLE ¹ (°)
			Height (m)	Angle (°)			
West	090°	Alluvium	15	45	12	29	29
		Saprolite	15	45	12	29	
Other sectors	-	Alluvium	15	45	12	29	-
		Saprolite	20	60	8	46	

¹ Control on slope design in the alluvium and saprolite – this angle must not be exceeded for slopes above the base of saprolite (toe to crest) ² Inter-ramp angle

Table ES.2 Recommended pit slope components for the weathered and slightly weathered and fresh rock in the north pit

DESIGN SECTOR	WALL ORIENTATION	GEOTECHNICAL HORIZON	BENCH		BERM WIDTH (m)	IRA (°)
			Height (m)	Angle (°)		
North, North West & West	170°, 115° & 090°	WR	20	60	8	46
		SW/FR	20	65	8	49
	310° & 000°	WR	20	60	8	46

DESIGN SECTOR	WALL ORIENTATION	GEOTECHNICAL HORIZON	BENCH		BERM WIDTH (m)	IRA (°)
			Height (m)	Angle (°)		
South East & South		SW/FR	20	75	8	56
East & South West	270° & 060°	WR	20	60	8	46
		SW/FR	20	70	8	53

Table ES.3 Recommended pit slope components for alluvium and saprolite in the central pit

DESIGN SECTOR	WALL ORIENTATION	GEOTECHNICAL HORIZON	BENCH		BERM WIDTH (m)	IRA (°)	OVERALL WALL ANGLE ¹ (°)
			Height (m)	Angle (°)			
West, South West & South East	090°, 065° & 240°	Alluvium	15	45	16	26	29
		Saprolite	15	45	16		
Other sectors	-	Alluvium	15	45	12	29	-
		Saprolite	20	60	8	46	

¹ Control on slope design in the alluvium and saprolite – this angle must not be exceeded for slopes above the base of Saprolite (toe to crest)

Table ES.4 Recommended pit slope components for the weathered and slightly weathered and fresh rock in the central pit

DESIGN SECTOR	WALL ORIENTATION	MATERIAL	BENCH		BERM WIDTH (m)	IRA (°)
			Height (m)	Angle (°)		
North, North East, South East, South South East, South & South West	108°, 240°, 305°, 330°, 020° & 065°	WR	20	60	8	46
		SW/FR	20	75	8	56
East, West & North West	270°, 105° & 090°	WR	20	60	8	46
		SW/FR	20	70	8	53

Table ES.5 Recommended pit slope components for alluvium and saprolite in the south pit

DESIGN SECTOR	WALL ORIENTATION	GEOTECHNICAL HORIZON	BENCH		BERM WIDTH (m)	IRA (°)	OVERALL WALL ANGLE ¹ (°)
			Height (m)	Angle (°)			
West, South & South East	090°, 010° & 300°	Alluvium	15	45	16	26	29
		Saprolite	15	45	16		
Other sectors	-	Alluvium	15	45	12	29	-
		Saprolite	20	60	8	46	

¹ Control on slope design in the alluvium and saprolite – this angle must not be exceeded for slopes above the base of Saprolite (toe to crest)

Table ES.6 Recommended pit slope components for the weathered and slightly weathered and fresh rock in the south pit

DESIGN SECTOR	WALL ORIENTATION	MATERIAL	BENCH		BERM WIDTH (m)	IRA (°)
			Height (m)	Angle (°)		
North, South East & South	210°, 300° & 010°	WR	20	60	8	46
		SW/FR	20	75	8	56
East & West	270° & 110°	WR	20	60	8	46
		SW/FR	20	70	8	53

To achieve bench angles of 70° and steeper in the Slightly Weathered to Fresh rock maybe difficult unless pre-split methods are used.

GEOTECHNICAL RISKS AND RECOMMENDATIONS

A key geotechnical risk is instability of the alluvium and saprolite in areas where slope heights are greater than about 60 m high (mainly west and south walls). This thickness of alluvium and saprolite was not exposed in the Tomingley pits and so performance of these materials at an increased slope height has a level of uncertainty. Apart from doing more geotechnical investigation, one of the main methods that Alkane could reduce this risk is by mining the central and south pits prior to mining the deeper north pit to obtain data on slope performance in the alluvium and saprolite.

Uncertainty on the groundwater regime and its impact on slope stability is another key risk, this risk can be managed by re-addressing slope stability once sufficient groundwater data is available.

At this stage the location of the Cotton Formation/Mingelo Volcanics contact and therefore the characteristics of the rock mass to be exposed in the upper west walls of the south and possible the central pit is uncertain. Similarly, the data on the major faults is poor. Alkane could consider doing more geotechnical investigations to reduce these risks.

Based on the performance of the Tomingley pits eliminating collapse or failure in the saprolite and weathered rock through design is difficult and as such an observational approach to identify early signs of instability should be used during mining. This approach requires good ongoing monitoring and the development and implementation of management plans such as a Ground Control Management Plan (GCMP). It will be important that personnel on site can quickly recognize potentially unfavourable structures and their impact on slope stability.

1 INTRODUCTION

1.1 BACKGROUND AND PROPOSED DEVELOPMENT

This report presents the results of a geotechnical assessment done by WSP for Alkane Resources Limited (Alkane) proposed Tomingley Gold Extension Project (TGEP) in central west NSW.

The work was done at the request of Mr Simon Parsons of Alkane and as per the Proposal to undertake geotechnical services for San Antonio and Roswell (SAR), referenced as PS1117942-GEO-LTR-003 Rev A, dated 21 July 2020.

TGEP is about three kilometres south of the operational Tomingley Gold Mine and it proposes to establish a new pit to mine the SAR deposits.

The results of the geotechnical assessment and the pit slope component recommendations provided in this report are based on a pit design provided by Alkane designated as *sar_c5c11_201203*. Proposed total pit dimensions are about 2 km long by 0.7 km wide and is divided into three pit areas, a north pit mining the Roswell deposit, a central pit and south pit mining the San Antonio deposit, refer to Figure 1 in Appendix A for a pit plan. The north pit is to be about 300 m deep and the central pit about 170 m deep.

The north pit life of mine (LOM) is anticipated to be four to five years whereas the central and south pits are likely to have a short mine life of about one to two years. The mining sequence is yet to be confirmed by Alkane and a total pit life of *sar_c5c11_201203* will be five to seven years. Underground operation may also occur from the north pit in the future.

It is understood that Alkane are also considering a larger pit designated *sardes_c8_201209*. Whilst the proposed depth of the south and central pits is like *sar_c5c11_201203*, the north pit is 100 m deeper (about 400 m deep). Although the recommended pit slope design advice provided in this report could be relevant for the *sardes_c8_201209* south and central pit, this is not the case for the much deeper *sardes_c8_201209* north pit. To reduce the geotechnical risk and to assess an appropriate pit slope design for the *sardes_c8_201209* deep north pit more geotechnical data is required.

1.2 PREVIOUS STUDIES

Prior to this geotechnical assessment no geotechnical site investigations had been done.

WSP has previously provided Alkane recommended concept pit slope design components in PS111842-GEO-LTR-004 Rev A in November 2019¹. The concept components provided were for a pit design called *sanantonio_190727* which comprised a north and south pit about 130 m deep and a central pit about 200 m.

WSP has previously provided Alkane the results of a review on a preliminary pit slope design called *sar_c2_200525_clip1* in PS117942-GEO-LTR-001 Rev A, dated 1 June 2020². The proposed preliminary pit slope heights were about 300 m for the north pit, 173 m for the central pit and 150 m for the south pit.

Proposed slope heights for *sar_c5c11_201203* are like those proposed in the preliminary design. Although the proposed slope heights in the north pit for the *sardes_c8_201209* design are up to 100 m higher than the preliminary design.

¹ Tomingley Gold Operations: Concept pit slope components for San Antonio and Roswell Prospects referenced as PS111842-GEO-LTR-004 Rev A, dated 22 November 2019.

² Review of preliminary pit slope design for San Antonio and Roswell Prospects referenced as PS117942-GEO-LTR-001 Rev A, dated 1 June 2020.

2 SCOPE OF WORK

The scope of work for the geotechnical assessment was as per the WSP proposal PS1117942-GEO-LTR-003 Rev A, dated 21 July 2020.

The scope of work was:

- A review of all existing data including data from Alkane's exploration drilling program, Alkane's geological model and historical geotechnical reports for the Tomingley open cut pit operations.
- Supervision of a geotechnical investigation which involved the drilling of ten geotechnical boreholes (designated SARGT001 to SARGT009 and SARGT011) and downhole geophysical surveys within the boreholes.
- Geotechnical logging of core, collection of core samples for laboratory testing and taking of core photos.
- Provision of geotechnical logging support to Alkane exploration geologists and review of logging.
- Assessment of laboratory testing requirements.
- Processing of the site investigation data, including the borehole data and results of laboratory testing.
- Interpretation of downhole geophysics data using WellCAD software.
- Development of the geotechnical model.
- Slope stability analyses.
- Assessment of recommended pit slope components and discussion on geotechnical risks.
- Provision of results of the geotechnical assessment in a technical report.

3 GEOTECHNICAL INVESTIGATION AND DATA SOURCES

3.1 ALKANE DATA SOURCES

3.1.1 EXPLORATION DRILLHOLE DATA

Alkane provided logging data from 79 diamond drill exploration boreholes drilled across the TGEP area. Table 3.1 presents the exploration boreholes used for the geotechnical assessment based on their location relative to the proposed pit areas.

Table 3.1 Alkane exploration boreholes based on proposed pit area

LOCATION	NUMBER OF EXPLORATION BOREHOLES	EXPLORATION BOREHOLE NAME
Roswell	27	RWD001, RWD003, RWD017, RWD018, RWD019, RWD020, RWD021, RWD022, RWD036, RWD037, RWD038, RWD039, RWD040, RWD041, RWD042, RWD043, RWD046, RWD048, RWRC11D, RWRC179D, RWRC191D, RWRC208D, RWRC248D, RWRC378D, RWRC379D, RWRC380D and RWRC396D
San Antonio central	13	RWD002, RWD004, RWD005, RWD006, RWD007, RWD009, RWD010, RWD011, RWD032, RWD035A, RWD049, RWRC220D and RWRC404D
San Antonio south	17	RWD012, RWD013, RWD016, RWD023, RWD024, RWD025, RWD026, RWD027, RWD028, RWD029, RWD030, RWD031, RWD033, RWD034, RWD047, RWRC414D and RWRC457D

Alkane logged the exploration boreholes using the Alkane Resources Geological & Geotechnical Logging Guide V2.0 dated 23 June 2020.

The lithological and structural data was reviewed and used in the assessment of rock mass geological structural patterns. WSP transferred terms used by Alkane to define geological structure characteristics into the terms used by WSP in their logging manual.

3.1.2 GEOLOGICAL SURFACES

Table 3.2 presents the 3D dxf surfaces Alkane has provided for this assessment.

Table 3.2 Summary of geological surfaces

NAME OF SURFACE	DEFINITION FROM ALKANE
basecover20210	Base of alluvium
baseSap202011	Base of saprolite
baseox202102	Base of oxidised rock
Ros_ANT202008	Andesite unit in the Roswell area
Ros_DLT202009	Dolerite unit in the Roswell area

NAME OF SURFACE	DEFINITION FROM ALKANE
Ros_FLT202011	Location of the Roswell Fault
Ros_MZD_B202010	Monzodiorite unit in the Roswell area
Ros_MZD202008	Monzodiorite unit in the Roswell area
San_ANT202012	Andeste unit in the San Antonio area
San_DAC_B202012	Dacite unit in the San Antonio area
San_DAC202012	Dacite unit in the San Antonio area
San_FLT202012	Location of fault in the San Antonio area
San_MZD_B202012	Monzodiorite unit in the San Antonio area

WSP understands that Alkane are still developing the geological model for SAR.

3.1.3 GROUNDWATER INFORMATION

A conceptual groundwater regime study is underway for TGEF but results of the study were not available for the geotechnical assessment.

Alkane did provide the following for the study:

- Details of four groundwater monitoring bores, designated as RWWB001, RWWB002, RWWB003 and RWWB004, drilled at the site, refer to Figure 1 in Appendix A for the location of the bores.
- Results of a set of groundwater levels recorded in the groundwater bores in November 2020.
- A letter written by Jacobs on 1 October 2020 titled Water strike data review which provided conclusions on the possible groundwater regime at TGEF.

It is recommended that WSP review the groundwater study once it is available to confirm assumptions made in slope stability analyses presented in this report. This will check the appropriateness of the recommendations provided on pit slope components.

3.2 TOMINGLEY GOLD MINE

A valuable source of data and information for TGEF is the Tomingley Mine. Mining at Tomingley consisted of four pits, called Caloma One (CL1), Caloma Two (CL2), Wyoming One (WY1) and Wyoming Two (WY2), between 2012 to 2018.

As the Tomingley Pits are in similar geology as TGEF, the pit development has provided useful information on the potential performance of the soil and rock materials to be exposed in the pits at SAR. Pit slope design information and data from the four Tomingley pits extends from pre-mining Definitive Feasibility Stage (DFS) through to pit completion. Design development was reported in numerous geotechnical studies done by PSM (all of which the author of this report was involved in).

The key geotechnical reports used in this report were:

- Mining One Consultants (MOC), Tomingley Gold Project Geotechnical Report Definitive Feasibility Study for Alkane Resources, dated May 2010.
- Tomingley Gold Project – Pit Slope Design Review – Stage 1 work referenced as PSM2029-003R, dated 1 November 2012 written by PSM.

The MOC report has results of geotechnical laboratory testing such as Triaxial testing and Atterberg Limits on the alluvial and saprolite soils and the weathered rock from the WY1 and WY3 pits. The MOC report also initially assessed the geotechnical horizons that were used at Tomingley and are used in the study for TGEP.

The PSM report provided material strength parameters based on results of triaxial testing, where relevant these parameters were adopted in slope stability analysis in this report.

3.3 GEOTECHNICAL INVESTIGATION PROGRAM

3.3.1 OVERVIEW

A geotechnical site investigation was completed between October 2020 and January 2021. The investigation involved the following:

- Drilling of nine cored, orientated and inclined boreholes, designated SARGT001 to SARGT009, to obtain data on the materials to be exposed in the pits (two boreholes SARGT001 and SARGT002 drilled for the south pit, two boreholes SARGT003 and SARGT004 drilled for the central pit and five boreholes SARGT005 to SARGT009 drilled at the north pit (Roswell)).
- Drilling of one cored borehole drilled vertically with Standard Penetrometer Testing (SPT) at regular intervals, designated SARGT011, to obtain data on the alluvial material at San Antonio (south pit).
- Geotechnical laboratory testing on samples collected during the borehole drilling.
- Downhole geophysical survey in seven boreholes to obtain geological structural data within the rock mass units.

Figure 1 in Appendix A shows the location of the geotechnical boreholes relative to the proposed pits.

3.4 BOREHOLE DRILLING

Table 3.3 presents details of the geotechnical boreholes. Appendix B presents the borehole logs and the borehole core photos.

Table 3.3 Summary of borehole drilling details

BOREHOLE NAME	PIT/LOCATION	EASTING ¹	NORTHING ¹	RELATIVE LEVEL (m AHD ²)	TOTAL DEPTH (m)	DIP/AZIMUTH ¹	METHOD
SARGT001	South/SA	61737.116	6389686.650	265.940	90.00	-60°/112°	HQ3
SARGT002	South/SA	613631.646	6389694.911	265.600	165.80	-67°/098°	HQ3
SARGT003	Central/SA	613889.218	6390263.964	266.84	84.80	-60°/087°	HQ3
SARGT004	Central/SA	613792.630	6390253.195	266.409	174.80	-65°/078°	HQ3
SARGT005	North/Roswell	614081.141	6390681.266	269.4104	177.01	-60°/102°	HQ3
SARGT006	North/Roswell	614125.660	6390862.264	269.861	101.90	-70°/049°	HQ3
SARGT007	North/Roswell	613982.870	6390774.775	269.379	194.96	-70°/357°	HQ3
SARGT008	North/Roswell	613827.845	6390815.052	268.606	111.70	-70°/289°	HQ3
SARGT009	North/Roswell	613982.436	6390561.574	268.918	186.36	-70°/171°	HQ3
SARGT011 ³	South/SA	613780	6389750	268.000	29.95	-90°/000°	PQ3

Notes: ¹ MGA94_55, ² Australian Height Datum, ³ approximate co-ordinates only not picked up by DGPS

Coordinates were recorded in the MGA94 Zone 55 coordinate system using the Differential Global Positioning System (DGPS) except for SARGT011. The co-ordinates of this borehole are approximate and were recorded using a hand-held GPS.

All the boreholes were drilled using a Sandvik DE811i track drill rig. Within SARGT011, Standard Penetration Tests (SPTs) were done at regular intervals down the borehole to obtain material consistency/density information and samples for laboratory testing. Handheld Pocket Penetrometer (PP) readings were taken at regular intervals in the cohesive soil materials.

Because drilling was done in a 24 hour shift the logging of the geotechnical boreholes was done by both a WSP senior engineering geologist and Alkane exploration geologists. The WSP engineering geologist reviewed logging by Alkane to check that the data collected was appropriate for geotechnical use. The logging of the core was done in general accordance with AS 1726-2017 Geotechnical Site Investigations and the WSP Field Manual.

3.5 LABORATORY TESTING

Core samples collected during the geotechnical drilling program were tested at the NATA accredited laboratory TriLabs in Brisbane. The following tests were carried out in accordance with relevant Australian Standards (AS):

- Atterberg Limit (AL) test of Liquid Limit, Plastic Limit, Plasticity Index and Linear Shrinkage (AS1289 3.1.1, 3.1.2, 3.2.1, 3.3.1, and 3.4.1).
- Particle Size Distribution (PSD) (AS1289 3.6.1, 2.1.1).
- Moisture Content (MC) (AS1289 2.1.1).
- Consolidated Undrained Triaxial Compression Tests (TXL).
- Point Load Test (PLT) (axial and diametrical).
- Unconfined Compressive Strength Test with Young's Modulus and Poisson's Ratio (UCS).

The laboratory test sheets are provided in Appendix C. Table 3.4 summarise the amount of testing per borehole.

Table 3.4 Summary of laboratory testing

BOREHOLE ID	AL	PSD	MC	TXL	PLT	UCS
SARGT001	1	1		1		
SARGT003	1	1		1		
SARGT005	2	2		1		
SARGT006	1	1	1		1	1
SARGT007	2	2	1			
SARGT008	1	1		1		
SARGT009					4	4
SARGT011	2	2				

In addition to the above laboratory testing on core from the geotechnical boreholes, UCS with Young's Modulus and Poisson's Ratio tests were done on three rock cores sampled from borehole RWD045 that was drilled for exploration purposes. The rock samples were taken from hole depths of 356.8 m, 451.12 m and 607.14 m and the laboratory testing sheets are provided in Appendix C.

3.6 DOWNHOLE GEOPHYSICS

Wellsearch carried out Acoustic Televiwer (ATV) and Optical Televiwer (OTV) surveys within most of the geotechnical boreholes. Due to borehole collapse and blockage the length of effective survey done was reduced. Additionally, over certain depths the quality of the surveyed data was poor, and this prevented interpretation of geological structures. This was especially true through the weathered rock (oxidised rock horizon).

Table 3.5 provides the boreholes which have geophysical survey and the depth intervals.

Table 3.5 Summary of downhole geophysics

BOREHOLE ID	PIT/LOCATION	ATV DEPTH INTERVAL (m)	OTV DEPTH INTERVAL (m)
SARGT002	South/SA	62.1 to 119.9	
SARGT003	Central/SA	60.7 to 70.4	
SARGT004	Central/SA	70.9 to 84.1	2.8 to 70.9
SARGT005	North/Roswell	13.5 to 166.1	
SARGT006	North/Roswell	1.2 to 98.05	
SARGT007	North/Roswell	40.8 to 130.8	
SARGT009	North/Roswell	131.7 to 170.8	2 to 30.75

WSP using the software program WellCAD, interpreted geological structures based on the results of the downhole geophysics surveys, the borehole log and core photos. Results of the downhole geophysics interpretation are provided in Appendix C.

4 GEOLOGY

TGEP is in the Lachlan Fold Belt of early Proterozoic age. The fold belt, which is a complex association of sedimentary, volcanic and intrusive rock of early Cambrian to Devonian age is interpreted to have formed a geological environment akin to modern southwest Pacific oceanic arc and back arc basin environments. The fold belt represents multiple periods of deformation and has structural trends mainly striking north-south with west dipping thrust faults intermixed with tightly folded bedding.

Figure 2 in Appendix A presents the proposed pit extents on a geological map provided by Alkane. The map provides a good overview of the geology at SAR, although it is understood that the presence and location of the faults may be slightly different than what is indicated on the plan. Alkane are currently developing their geological interpretation based on recent exploration drilling. Figure 3 in Appendix A is a geological cross section provided by Alkane along 6390240 mN. WSP has added the basecover, baseSap and baseox on the section as well as the proposed *sar_c5c11_201203* and *Sardes_c8_201209* designs.

The geological setting and basement geology of the Roswell and San Antonio prospects is like the Caloma and Wyoming deposits at Tomingley. It comprises a belt of Mingelo Volcanics (MV) of Ordovician age that strikes north to north north-east and dips sub-vertically, bounded in the west by the siliciclastic sediments of the Cotton Formation (CF) which are of Ordo-Silurian age. The volcanics sequence mainly comprises andesitic phyrlic lavas and flow breccias with pyroclastic and volcanoclastic rich units³.

The gold deposit is interpreted as orogenic gold system within a major structural zone. Mineralisation occurs as sheeted veins that dip steeply towards the east and strike north within the phyrlic altered feldspar porphyry andesites. Dolerite dykes which steeply dip to the north northeast and strike west northwest intrude the MV and CF.

Weathering to saprolite probably occurred during the late Palaeozoic possibly early-mid Carboniferous. The saprolite profile is unconformably overlain by alluvial sediments of Quaternary to Tertiary age. The alluvial cover sequence at Roswell (north pit) is like Wyoming One and Caloma Two at Tomingley but the sequence at SA (central and south pits) is unique with a higher silt/sand component and less clay than at Roswell.

Two major faults are indicated by Alkane, one at the northern end of Roswell (north pit) the other at the south pit. Both faults are inferred to strike west northwest to east southeast with a steep dip. The faults are likely to be dextral and like the fault that displaced the Caloma deposit from the Wyoming deposit.

³ Scott, K. M., Chalmers, D. I., Ransted, T., and Kairaitis, R. (2003). *Wyoming Gold Deposit Central Western NSW*. CRC LEME.

5 GEOTECHNICAL MODEL

5.1.1 GEOTECHNICAL HORIZONS

The geotechnical horizons, which define the ground conditions at TGEP, were initially detailed in the concept pit slope component study, and are based those used at Tomingley. The geotechnical horizons defined from the ground surface to depth are:

- 1 Quaternary Alluvium (QA) of brown sandy clays, sandy silty clays and minor sands and gravels.
- 2 Tertiary Alluvium (TA) of grey mottled red orange sandy clays and silty clays and sands.
- 3 Saprolite defined as extremely weathered rock with soil consistency and relict geological structure.
- 4 Weathered Rock (WR) oxidised and highly to moderately weathered rock.
- 5 Slightly Weathered and Fresh Rock (SW/FR).

The Geotechnical Horizons can be defined using Alkanes 3D surfaces and WSP understand the following:

- From the ground surface to the base of basecover is alluvium (#1 and #2 above).
- Between basecover to baseSap is Saprolite (#3).
- Between baseSap to baseox is Weathered Rock (#4).
- Below baseox is Slightly Weathered and Fresh Rock (#5).

Although all the horizons will be exposed in the pit slopes, the thickness of each varies across the pit area. It is anticipated that the alluvium thickness will be about 40 m in the east to increases to 60 m in the west. Saprolite thickness is likely to be between 10 m and 15 m and will be thin in some pit areas. Thickness of weathered rock is anticipated to vary between 20 m to 50 m.

WSP has created cross sections to show the Alkane 3D surfaces (and hence geotechnical horizons) in the pits and these are provided in Appendix A. Figure 4 to Figure 7 are the sections for the south, central and north pit (two sections) respectively.

6 CHARACTERISATION OF ALLUVIUM AND SAPROLITE

6.1 OVERVIEW

A review of the geotechnical borehole logs and laboratory testing indicated the following about the alluvium and saprolite:

- QA mainly occurs in the upper 10 m of the ground surface and has a consistent composition across all pits. It can be characterised as brown, pale grey clays with variable amounts of sand and gravel, mainly low to medium plasticity and a very stiff to hard consistency.
- TA which occurs beneath the QA is characterised in the north pit (Roswell area) as grey mottled red and orange silty clays with trace of sands and gravels, high plasticity and very stiff to hard consistency. Across the central and south pits (San Antonio) TA is mainly silty clays with sands and gravel, typically medium plasticity and very stiff to hard.
- Saprolite is typically pale grey white mottled orange variable mix of silty clays, sandy gravelly clays, sandy clayey silt with minor very low strength rock fragment, clays are typically very stiff to hard consistency and medium to high plasticity.

Alkane has communicated that the alluvium at northern San Antonio and Roswell are like the WY1 alluvial sequence at Tomingley which are mainly clays with low to high plasticity. However, through the central and southern portions of San Antonio the alluvium appears to have an increased fine grained sand content compared to WY1 and makes it unique to TGEF. Considering this, existing data from Tomingley may not represent the TA material to be exposed in the central and south pits.

Thickness of alluvium increases towards the west with slopes of between 50 m to 70 m anticipated in the west wall of the central pit area. Alluvium thickness of typically 40 m will be exposed on the eastern walls.

The thickness of Saprolite is typically less than 15 m.

6.2 MATERIAL CLASSIFICATION TESTS

Atterberg Limits (AL) and Particle Sized Distribution (PSD) tests were done to assess the material properties of the alluvium. Table 6.1 summarises the results of the AL and PSD testing for the samples taken at SA and Table 6.2 for samples taken at Roswell. Appendix D presents the laboratory test sheets.

Table 6.1 Summary of results of AL and PSD for boreholes drilled at San Antonio

BOREHOLE ID	MATERIAL DESCRIPTION ¹	HORIZON	SAMPLE DEPTH INTERVAL (m bgl)	ATTERBERG LIMITS				PARTICLE SIZE DISTRIBUTION GRADING		
				LL ² (%)	PL ³ (%)	PI ⁴ (%)	LS ⁵ (%)	GRAVEL FRACTION (%)	SAND FRACTION (%)	FINES FRACTION (%)
SARGT001	Silty CLAY trace sand	TA	24	51	19	32	-	-	10	90
SARGT003	Silty CLAY with sand	TA	19.9	38	19	19	-	-	15	85
SARGT011	Silty CLAY trace sand	TA	11.3	45	16	29	-	-	14	86

BOREHOLE ID	MATERIAL DESCRIPTION ¹	HORIZON	SAMPLE DEPTH INTERVAL (m bgl)	ATTERBERG LIMITS				PARTICLE SIZE DISTRIBUTION GRADING		
				LL ² (%)	PL ³ (%)	PI ⁴ (%)	LS ⁵ (%)	GRAVEL FRACTION (%)	SAND FRACTION (%)	FINES FRACTION (%)
SARGT011	Silty CLAY with sand and gravel	TA	22.3	39	18	21	-	17	17	66

Note: ¹Material description from the draft borehole logs, ²liquid limit, ³plastic limit, ⁴plasticity index, ⁵linear shrinkage

Table 6.2 Summary of results of AL and PSD for boreholes drilled at Roswell

BOREHOLE ID	MATERIAL DESCRIPTION ¹	HORIZON	SAMPLE DEPTH INTERVAL (m bgl)	ATTERBERG LIMITS				PARTICLE SIZE DISTRIBUTION GRADING		
				LL ² (%)	PL ³ (%)	PI ⁴ (%)	LS ⁵ (%)	Gravel fraction (%)	Sand fraction (%)	Fines fraction (%)
SARGT005	Silty CLAY with sand	QA	9.9	42	15	27	-	-	22	78
SARGT005	Silty CLAY trace sand and gravel	TA	20	64	28	36	-	1	8	91
SARGT006	Silty CLAY trace sand and gravel	TA	37.8	57	26	31	-	2	8	90
SARGT007	Silty CLAY trace sand and gravel	TA	18.4	51	21	30	-	1	8	91
SARGT007	Silty CLAY trace sand and gravel	Saprolite	56.3	61	27	34	-	4	9	87
SARGT008	Silty CLAY trace sand	TA	41.1	51	24	27	-	-	8	92

Note: ¹Material description from the draft borehole logs, ²liquid limit, ³plastic limit, ⁴plasticity index, ⁵linear shrinkage

WSP has put the results of the Atterberg Limits on a Casagrande plot with the results of Atterberg Limits testing from Tomingley. The plot is provided as Figure 8 in Appendix A.

The plot indicates that the TA samples from SA and the one QA sample from north pit/Roswell has a medium plasticity and the TA samples from north pit/Roswell have a high plasticity.

Results of the Atterberg Limits testing is consistent with those in the Tomingley DFS Mining One Report.

6.3 CONSISTENCY/RELATIVE DENSITY

SPT testing within SARGT011 and pocket penetrometer testing on core during logging have indicated that except for the upper 3 m of QA the consistency of both the clayey soils on site (Quaternary and Tertiary) is typically very stiff to hard (N values of greater than 29). The relative density for the sandy clay soils is dense to very dense.

6.4 TRIAXIAL TESTING

To assess the shear strength of the TA at SA and Roswell, four triaxial tests (consolidated undrained triaxial compression Cu) were done. Table 6.3 below summarises the completed triaxial testing. Appendix D presents the laboratory test sheets.

Table 6.3 Summary of triaxial testing

BOREHOLE ID	LOCATION	MATERIAL DESCRIPTION ¹	MATERIAL TYPE	SAMPLE DEPTH (m bgl)
SARGT001	South pit/San Antonio	Sandy Gravely CLAY	TA	29.1
SARGT003	Central pit/San Antonio	Sandy CLAY	TA	19.9
SARGT005	North pit/Roswell	Silty CLAY	TA	38.7
SARGT008	North pit/Roswell	Sandy CLAY	TA	49.9

Note: ¹Material description from the draft borehole logs

WSP has shown the results of the triaxial testing on a p-q plot on Figure 9 in Appendix A.

The results were also added to the triaxial testing done at Tomingley for the TA and the plot is presented in Figure 10 in Appendix A.

As the Quaternary Alluvium is anticipated to be thin (occur in the top 10 m of the slope) triaxial testing was not considered cost effective. Due to difficulties in obtaining samples of saprolite and weathered rock, no triaxial testing was done on these materials either. However, data from Tomingley is presented in Figure 11 and Figure 12 in Appendix A for the Quaternary Alluvium and the Saprolite/Weathered rock horizon respectively.

6.5 MATERIAL STRENGTH PARAMETERS

Based on the results of triaxial testing at TGEF and Tomingley, appropriate material strength parameters for the Quaternary Alluvium, Tertiary Alluvium and Saprolite were assessed and are presented in Table 6.4 for Roswell (north pit area) and Table 6.5 for San Antonio (central and south pit area).

WSP have used the following rationale to assess material strength parameters:

- Quaternary Alluvium strength is based on those assigned by PSM in PSM2029-003R and based on results of triaxial testing at Tomingley, refer to Figure 11 in Appendix A.
- Tertiary Alluvium strengths are based on the combined WSP and Tomingley triaxial data as shown on Figure 10 in Appendix A. A revised lower bound and upper bound were assessed and a lower quartile strength was assigned. For the TA at SA (central and south pit areas) a cohesion reduced by 20% was adopted to account for the increase in sand component compared the TA at Roswell.
- Saprolite strength is based on the assessed lower bound values assigned by PSM in PSM2029-003R for the saprolite and weathered rock, refer to Appendix A Figure 12.

Table 6.4 Assessed material strength parameters for Roswell (north pit)

MATERIAL TYPE	ADOPTED MOHR COULOMB STRENGTH PARAMETERS	
	Cohesion (kPa)	Friction Angle (°)
Quaternary Alluvium	31	13
Tertiary Alluvium	42	21
Saprolite	37	23

Table 6.5 Assessed material strength parameters for San Antonio (central and south pits)

MATERIAL TYPE	ADOPTED MOHR COULOMB STRENGTH PARAMETERS	
	Cohesion (kPa)	Friction Angle (°)
Quaternary Alluvium	31	13
Tertiary Alluvium	34	21
Saprolite	37	23

7 ROCK MASS MODEL

7.1 BOREHOLE HISTOGRAMS

To assist with the assessment of geotechnical characteristics for the weathered rock and slightly weathered to fresh rock, WSP has created Histograms based on the geotechnical borehole data.

Appendix F presents histograms for the nine boreholes that encountered rock. There is a histogram summarising the characteristics of the weathered rock and one for the slightly weathered rock.

7.2 LITHOLOGY

Based on the Alkane geological model and data from exploration and geotechnical boreholes, the pit slopes will mainly be developed in the volcanicalstic sequences of the Mingelo Volcanics (MV).

The main lithology type within the MV is the Volcaniclastic Sandstone (VSD) but rock types such as Volcaniclastic Siltstone (VSI), Volcaniclastic Conglomerate (VBC), Andesite (ANT) and Monzodiorite (MZD) are also anticipated to be exposed in the pit walls.

The west wall of the south and central pit could expose the Cotton Formation unit. Although data and information on the location of the Cotton Formation/Mingelo Volcanics contact is limited. None of the geotechnical boreholes intercepted the Cotton Formation. Based on the Tomingley exposure of this unit, it comprises sediments which dip steeply with a strike of north/south. The contact at Tomingley is interpreted as a fault.

7.3 ROCK QUALITY DESIGNATION

Rock Quality Designation (RQD) is typically used as a measure of rock mass quality. RQD was assessed during the geotechnical logging and is determine on a core run basis and defined as the sum of the length of retrieved core pieces greater than 100 mm expressed as a percentage of the length of the run. Highly fractured core will have an RQD of close to zero whereas an RQD for massive rock would be near 100%.

Geotechnical logging indicated a typical RQD of less than 15% was typical for the rock in the Weathered Rock Horizon. In contrast an RQD of greater than 90% was recorded in the Slightly Weathered and Fresh Horizon.

7.4 INTACT STRENGTHS

7.4.1 GENERAL

Intact strength was assessed using:

- Field estimates from geotechnical logging of the borehole core (refer to Appendix B).
- UCS and PLT done on core samples (refer to Appendix D).

7.4.2 FIELD ESTIMATED

Geotechnical logging data indicated that the rock within the Weathered Rock Horizon is low strength but field strength ranges from very low to medium.

Field strengths within the Slightly Weathered and Fresh Horizon is mainly very high but was logged as high to very high with minor very low to medium strength rock.

7.4.3 POINT LOAD AND UCS

Results of the Point Load Testing on the slightly weathered to fresh rock mass are presented in Table 7.1 and results of the UCS testing with Youngs Modulus and Poisons ratio is presented in Table 7.2.

Table 7.1 Results of point load testing

BOREHOLE ID	ROCK DESCRIPTION ¹	SAMPLE DEPTH INTERVAL (m bgl)	I _s (MPa)	I _{s50} (MPa)	LOAD DIRECTION
SARGT006	Monzodiorite – slightly weathered	93.20	1.32	1.40	Diametral
			0.75	0.78	Axial
			4.02	4.19	Axial
SARGT009	Volcaniclastic SILTSTONE – fresh	141.55	1.74	1.86	Diametral
			4.99	5.04	Axial
SARGT009	Volcaniclastic CONGLOMERATE – fresh	150.45	13.22	12.98	Diametral
			3.94	4.13	Axial
SARGT009	Volcaniclastic CONGLOMERATE – fresh	165.55	16.48	16.48	Diametral
			5.79	6.06	Axial
SARGT009	Volcaniclastic SANDSTONE – fresh	185.30	9.27	9.68	Diametral
			4.02	4.19	Axial
RWD045	Volcaniclastic SANDSTONE – fresh	356.80	6.31	6.64	Diametral
			5.98	6.14	Axial
RWD045	Volcaniclastic SANDSTONE – fresh	451.12	11.82	12.34	Diametral
			7.66	7.66	Axial
RWD045	Volcaniclastic SANDSTONE – fresh	607.14	5.61	5.95	Diametral
			4.16	4.29	Axial

Note: ¹Material description from the borehole logs

Table 7.2 Results of UCS and UCS with Youngs Modulus testing

BOREHOLE ID	ROCK DESCRIPTION ¹	SAMPLE DEPTH INTERVAL (m bgl)	UCS (MPa)	DENSITY (t/m3)	YOUNG'S MODULUS (GPa) TANGENT/SECANT	VALID TEST
SARGT006	Monzodiorite – slightly weathered	93.20	6.2	2.6	7.6/7.5	No – failure along vein
SARGT009	Volcaniclastic SILTSTONE – fresh	141.37	27	2.8	27.5/29.9	No – failure along vein
SARGT009	Volcaniclastic CONGLOMERATE – fresh	150.45	114	2.7	91.1/95.4	Yes

BOREHOLE ID	ROCK DESCRIPTION ¹	SAMPLE DEPTH INTERVAL (m bgl)	UCS (MPa)	DENSITY (t/m3)	YOUNG'S MODULUS (GPa) TANGENT/SECANT	VALID TEST
SARGT009	Volcaniclastic CONGLOMERATE – fresh	165.35	143	2.9	101.5/105.7	Yes
SARGT009	Volcaniclastic SANDSTONE – fresh	185.10	127	2.9	103.0/107.8	Yes
RWD045 ²	Volcaniclastic SANDSTONE – fresh	356.80	99	2.8	89.5/95.4	Yes
RWD045 ²	Volcaniclastic SANDSTONE – fresh	451.12	85	2.8	80.3/85.5	No – failure along vein
RWD045 ²	Volcaniclastic SANDSTONE – fresh	607.14	67	2.8	85.8/95.5	Yes

Note: ¹Material description from the borehole logs ²Testing done on core obtained from an exploration borehole to provide data on rock mass at depths greater than 300 m

There is not enough data to separate rock strength based on lithology. It is possible that VBC could have a higher UCS than the VSD and VSI. Similarly, VSD may have a higher UCS than VSI. However, Table 7.3 summarise the results of the UCS laboratory testing. The UCS tests indicate that the slightly weathered and fresh rock mass at TGEP has a very high strength.

Table 7.3 Summary of UCS test

ROCKMASS UNIT	NO OF VALID TESTS	UCS (MPa)	
		Typical Range	Mean
Slightly weathered to Fresh	5	67 to 143	110

7.5 DIRECT SHEAR STRENGTH

Direct shear laboratory testing done by MOC and data collected through pit wall mapping at Tomingley was used to assess the likely shear strengths of the rock mass at TGEP.

Joints within the slightly weathered to fresh rock mass are likely to have a defect shear strength of between 33° to 37° with a cohesion of zero. Faults and shears are assessed as having a defect shear strength of 20° and cohesion of zero.

8 STRUCTURAL PATTERNS

Geotechnical logging of the geotechnical borehole core obtained structural data, however, through the highly fractured weathered zone reliable core orientation and therefore, accurate structural orientations of the defects was difficult. Furthermore, the success of the downhole geophysics was poor due to many holes being blocked and those holes that were surveyed the image quality over the saprolite and weathered rock sections prevented interpretation of structure. It is highlighted that borehole collapse was not common during geotechnical investigations at Tomingley, this may suggest that the ground conditions at SAR could be poorer compared to Tomingley. Geological interpretation within the downhole geophysics was biased towards the fresh rock mass. WSP has produced stereographic projections (stereonet) of the geological structure interpreted in the downhole geophysics and these are provided in Appendix G.

A significant amount of structural orientation data was also available from the Alkane exploration boreholes. Although, most of the exploration boreholes intersect the ore zone and not the proposed west walls, it is likely that the structural patterns indicated by the exploration boreholes are representative of structural patterns in the TGEP rock mass. As the exploration boreholes intersect the structurally controlled ore zone the amount and frequency of the defect sets (especially faults and shears) encountered in the exploration boreholes could be more than what are in the pit wall rock mass.

Based on each pit area, WSP has produced stereographic projections (stereoplots) in DIPS⁴ using the combined geotechnical and exploration structural data and these are presented in Appendix H. Stereoplots are of the combined data from the boreholes and show all the logged structures. An additional stereoplot of the combined major structures (faults, shears, shear zones and crushed zones) was provided as it is this data set that was used to do kinematic and probability of undercutting analysis in Section 10 below.

An assessment of the structural patterns anticipated in the rockmass at TGEP was done based on a review of, the results of the interpretation of the downhole geophysics data and the data collected during the exploration and geotechnical drilling.

Structural sets for each pit are discussed below. Major structures are faults (F), shears (Sr), shear zones (Sz) and crushed zones (Cz) whereas minor structures are joints (Jt) and foliation/bedding partings (Pt). Understanding the orientation and characteristics of the major structures are critical as it will be these continuous features that will control the inter-ramp design at TGEP.

Three, possibly four major structural sets were identified for the north pit and these are presented in Table 8.1. Additional to these sets scattered and shallow dipping major structures are indicated. Minor structural sets appear to have orientations consistent with FL3 and FL4 but also have variable dip and dip directions.

Table 8.1 Assessed major structural patterns for the north pit

DEFECT SET	DIP/DIP DIRECTION	COMMENTS
NFL1	57°/184°	Only encountered in SARGT007 (downhole geophysics data) which was drilled towards the north
NFL2	82°/210°	Consistent with dolerite dykes and the northeast/southwest striking fault in Roswell
NFL3	84°/281°	Consistent with main foliation/bedding orientation
NFL4	56°/090°	Possible set consistent with main foliation orientation but with a moderate dip

⁴ Software by Rocscience that presents the orientation of geological structure data

Two major structural sets were identified for the central pit and these are presented in Table 8.2. Additional to these sets, scattered and shallow dipping major structures (mainly dipping less than 30°) are indicated. Only two minor structural sets are clear, and both are consistent with the orientations of the two major sets, but they also have variable dip and dip directions (scattered).

Table 8.2 Assessed structural patterns for the central pit

DEFECT SET	DIP/DIP DIRECTION	COMMENTS
CFL1	89°/095°	Consistent with main foliation orientation
CFL2	87°/167°	

Major structural patterns within the south pit are not clear and this could be due to limited data, however at least two major structural sets were identified and these are presented in Table 8.3. Additional to these sets, scattered and shallow dipping major structures (mainly dipping less than 30°) are indicated. Two minor structural sets were consistent with the orientations like SFL1 but scattered joints are also evident.

Table 8.3 Assessed structural patterns for the south pit

DEFECT SET	DIP/DIP DIRECTION	COMMENTS
SFL1	89°/276°	Consistent with main foliation orientation
SFL2	54°/343°	

Although each pit indicated slight variations in structural patterns and this is likely a reflection of the spatial location of major faults and dyke structures, across the pit area, patterns through the weathered rock (oxidised) and slightly weathered to fresh rock mass appear to be consistent. WSP has used the combined data set across the whole proposed pit area to identify the major structural sets likely to be present across at SAR and these are presented in Table 8.4. Figure 13 in Appendix A presents the sets on a stereonet.

Table 8.4 Assessed major structural patterns for TGEP

DEFECT SET	DIP/DIP DIRECTION	COMMENTS
FL1	89°/097°	Consistent with main foliation orientation
FL2	84°/220°	Consistent with northwest/south east striking fault in Roswell
FL3	55°/187°	Possibly consistent with dolerite dykes
FL4	79°/175°	
FL5	50°/095°	Potentially a major structural set part with same dip direction as main foliation but at moderate angle

Due to the difficulty in collecting data on relict structure within the saprolite, it is assumed that the patterns indicated in Table 8.4 above will be in the saprolite horizon at TGEP.

9 GROUNDWATER

Preliminary data and information from groundwater studies indicated that the water table is likely to be around 184 mRL to 194 mRL or about 73 m to 83 m below the ground level. At this level the groundwater is within the fractured Weathered Rock horizon. Studies have also suggested that the alluvium is unlikely to be saturated.

Four groundwater bores were installed on site, their locations are shown on Figure 1, Appendix A. Table 9.1 presents the details of the groundwater bores and recorded ground water levels.

Table 9.1 Summary of groundwater bores and water depth data

WATERBORE ID	EASTING	NORTHING	RL (m AHD)	TOP OF PVC PIPE RL (m AHD)	WATER DEPTH FROM TOP OF PIPE (m)	DATE OF MONITORING
RWWB001	614132	6391126	269	269.57	64.3	11/2/2019
RWWB002	614441	6390553	274	274.58	94.74	11/2/2019
RWWB003	613506	6389321	272	272.55	66.34	11/2/2019
RWWB004 ¹	613446	6390376	271	271.69	-	11/2/2019

¹ Blocked at 54 m (bottom of PVC)

10 STABILITY ANALYSIS

10.1 CONTROLS ON SLOPE STABILITY

Based on the geological and geotechnical conditions, the performance of the Tomingley pits and using experience with similar geological environments, the control on slope stability are likely to be the following:

- Circular failure through the alluvium and saprolite.
- Circular failure or rotational failure through the weathered rock mass.
- Combination of sliding along structure and rock mass failure through the saprolite and weathered rock mass.
- Structurally controlled failures along defects and relict structures including planar, sliding and wedge failures in the saprolite, weathered rock and slightly weathered and fresh rock.

A key control on stability is groundwater pressures, so understanding the groundwater regime of site is important to assess stability.

Rock mass failure and combination mechanisms have a degree of height dependence and can impact inter-ramp and overall slope scale whereas the structurally controlled failures are applicable to the bench and inter-ramp slope scales.

Like slope stability at Tomingley, Limit Equilibrium analysis was used to assess circular failure through the alluvium, saprolite and rock and assessment of potential structural controlled failures were done using kinematic and statistical methods.

It is highlighted that assessing the stability of saprolite is problematic due to the influence of relict structures and the difficulty in obtaining appropriate material strength parameters as inputs in analysis. To avoid unnecessarily conservative slopes, the intact strength of saprolite is adopted as the rock mass strength. However, based on the performance of the saprolite at Tomingley, the stability of this material is strongly influenced by relict structures rather than intact strength.

10.2 LIMIT EQUILIBRIUM ANALYSIS

10.2.1 METHODOLOGY

The Multiple Plane Analysis (MPA) function in SVSoilvision was used to assess slope stability. MPA analysed using limit equilibrium methods eighty-eight 2D cross-sections across a generated 3D model representing the proposed pit area with assigned ground conditions. Material strength parameters were assigned based on the 3D surfaces of basecover, baseSap and basox provided by Alkane as these represent the geotechnical horizons. A surface/horizon 10 m below the ground surface was created for the distribution of QA within the pit slope.

Analysis used the Morgenstern-Price limit equilibrium method and assumed a circular style failure to calculate a Factor of Safety (FOS) at each section location.

Based on this data, a calculated FOS plot was generated to show the nominal calculated FOS across the pit area and the location of the slip surface.

To assess the FOS at the overall wall scale in the proposed slopes in each pit area, sections were analysed using SLOPEW. Additionally, to assess design changes required to achieve a calculated FOS of 1.2 or greater, critical sections were transferred and analysed in SLOPEW.

10.2.2 ADOPTED PARAMETERS AND ASSUMPTIONS

The adopted material strength parameters for limit equilibrium analyses are presented in Table 10.1.

Table 10.1 Material strength parameters adopted in slope stability analyses

MATERIAL TYPE	STRENGTH TYPE	UNIT WEIGHT (kN/m ³)	COHESION (kPa)	FRICTION ANGLE (°)	UCS (MPa)	D	m _b	m _i	s	GSI ¹	a
Quaternary Alluvium	Mohr Coulomb	18	31	13							
Tertiary Alluvium (central and south pit)	Mohr Coulomb	20	34	21							
Tertiary Alluvium (north pit)	Mohr Coulomb	20	42	21							
Saprolite	Mohr Coulomb	20	37	23							
Weathered Rock	Hoek-Brown	22	-	-	2	0	2.35	20	1.27e ⁻³	40	0.51
Slightly Weathered and Fresh Rock	Hoek-Brown	28	-	-	110	0	6.85	20	3.56e ⁻²	70	0.50

¹ Geological Strength Index

Analysis assumed a groundwater table within the Weathered Rock horizon and circular failure through the soil and rock mass.

10.2.3 RESULTS OF ANALYSIS

Results of the SVSoilvision and SLOPEW analyses are provided in Appendix I for *sar_c5c11_201203*.

Key results of the SVSoilvision are:

- A nominal FOS of 1.1 through the alluvium and saprolite in the west wall of the north pit.
- A nominal FOS of between 0.9 and 1.1 through the alluvium and saprolite in the southern west wall of the central pit.
- A nominal FOS of between 1.1 through the weathered rock in the east wall of the central pit.
- A nominal FOS of 1.0 to 1.1 through the alluvium and upper saprolite in west and south west wall of the south pit.
- A nominal FOS of 0.9 to 1.0 through the alluvium and saprolite in south wall and part of the southeast wall of the south pit.

The FOSs which are less than 1.2 are mainly in areas where the alluvium has slope heights of up to 65 m and total slope heights of alluvium and saprolite of up to 77 m. The FOS of 1.1 in the weathered rock of east wall central pit is impacted by water pressure i.e. groundwater in the slope. Location of groundwater is still uncertain at this stage. It is highlighted that a slope with a FOS of 1.1 is considered as having marginal stability. Alkane could choose to accept limited areas of slope with a FOS of 1.1 considering the short mine life of the central and south pits provided safety documents such as a GCMP detail operational procedures to manage and reduce the associated risk and the implications of slope instability to the mine operation are understood.

Table 10.2 below provides a summary of the SLOPEW results. The location of the sections is provided in Appendix I.

Table 10.2 Summary of the results of limit equilibrium

PIT	WALL	SECTION NAME	ANALYSIS NAME	NOMINAL FOS	COMMENTS
North	West	S-1 – MODEL 683731-0	01_GWT_Existing_Design_Local	1.1	Marginal stability through the alluvium and saprolite at existing design
			02_GWT_Proposed_Design_Local	1.2	FOS of 1.2 achieved by flattening the overall slope of the alluvium and saprolite to 29°
			03_GWT_Proposed_Design_Global	3.7	
	North	S-2 – MODEL 996659-0	01_GWT_Existing_Design_Global	3.8	
	East	S-3 – MODEL 862699-0	01_GWT_Existing_Design_Global	3.9	
Central	East	S-4 – MODEL 708620-0	01_GWT_Existing_Design_Local	1.4	
			02_GWT_Existing_Design_Global	4.9	
	South East	S-5 – MODEL 912646-0	01_GWT_Existing_Design_Local	0.9	Failure in the alluvium and saprolite at existing design
			02_GWT_Proposed_Design_Local	1.2	FOS of 1.2 achieved by flattening the overall slope of the alluvium and saprolite to 29°
			03_GWT_Proposed_Design_Global	4.8	
	West	S-6-MODEL 882403-0	01_GWT_Existing_Design_ALV	1.0	Marginal stability through the alluvium at existing design
			02_GWT_Existing_Design_Local	0.9	Failure in the alluvium and saprolite at existing design
			03_GWT_Proposed_Design_ALV	1.2	

PIT	WALL	SECTION NAME	ANALYSIS NAME	NOMINAL FOS	COMMENTS
South			04_GWT_Proposed_Design_Local	1.2	FOS of 1.2 achieved by flattening the overall slope of the alluvium and saprolite to 29°
			05_GWT_Proposed_Design_Global	3.4	
	West	S-7-MODEL 905456-0	01_GWT_Existing_Design_ALV	1.2	
			02_GWT_Existing_Design_Local	1.0	Marginal stability through the alluvium and saprolite at existing design
			03_GWT_Proposed_Design_Local	1.3	FOS greater than 1.2 achieved by flattening the overall slope of the alluvium and saprolite to 29°
			04_GWT_Proposed_Design_Global_16mW_15mH	5.5	
	South	S-8-MODEL 340141-0	01_GWT_Existing_Design_ALV	1.2	
			02_GWT_Existing_Design_Local	0.9	Failure through the alluvium and saprolite at existing design
			03_GWT_Proposed_Design_Local	1.2	FOS of 1.2 achieved by flattening the overall slope of the alluvium and saprolite to 29°
			04_GWT_Proposed_Design_Global_16mW_15mH	5.5	
	East	S-9-MODEL 590360-0	01_GWT_Existing_Design_Global	2.1	

10.3 KINEMATIC AND PROBABILITY OF UNDERCUTTING ANALYSIS

10.3.1 METHODOLOGY

WSP completed kinematic analysis to determine the potential for structurally controlled failures, such as toppling, planar and wedge sliding, along dominant structural sets. As pit slope parameters in the rock mass will be based on inter-ramp angles (IRA's) only major structural sets will be used in the kinematic and probability of undercutting analysis.

The analysis is based on the pit wall orientations for the *sar_c5c11_201203* design and was done using the major structural sets assessed in Section 8, Table 8.4 and appropriate defect shear strength of 20°. The defect strength adopted was based on laboratory data and mapping in the Tomingley pits and on WSP experience with similar rock mass types and assumed typical shear strengths of faults and shears.

WSP have also carried out Probability of Undercutting (P_u) analysis for planar and wedge failure identified. P_u is a statistical technique based on potential failure mechanisms assessed for each wall geometry in the weathered (oxidised) and slightly weathered to fresh rock mass. The statistical analysis considers the scatter/variation in defect orientation and assesses the sensitivity of the probability of failure to changes in slope angle and or wall azimuth. The probability of undercutting is an assessment of probability of failure (P_f) where:

$$P_f = P_u \times P_e$$

The P_u analysis for TGEP assumes that defect persistence (i.e. $P_e = 1$) over the scale under consideration and major structures were assumed to be continuous over the inter-ramp scale.

In WSP experience a P_u of 5% to 10% is appropriate for inter-ramp angles (toe to toe). However, a P_u of 10% is considered aggressive, especially in ramp areas. A P_u value of 10% could be considered for the pit slopes in the central and south pit given their short mine life as per industry practice.

10.3.2 RESULTS

Results of the kinematic and probabilistic analysis are provided in Table 10.3 for the north pit, Table 10.4 for the central pit and

Table 10.5 for the south pit. Plots of P_u versus dip are provided in Appendix J.

Table 10.3 Results of kinematic and probability of undercutting for the north pit sar_c5c11_201203 design

PIT	WALL	WALL ORIENTATION	STRUCTURAL SET	FAILURE MODE	PLANAR		WEDGE	
					IRA (°) P _u 5%	IRA (°) P _u 10%	IRA (°) P _u 5%	IRA (°) P _u 10%
North	North	170°	FL3	Planar	47	49	-	-
			FL2 & FL5	Wedge	-	-	36	40
			FL3 & FL5	Wedge	-	-	40	40
			FL2 & FL3	Wedge	-	-	45	49
	East	270°	FL1	Planar	67	72	-	-
	South east	310°	FL1	Planar	73	75	-	-
	South	000°	-	-	-	-	-	-
	South west	060°	FL1	Planar	73	75	-	-
			FL5		42	44		
			FL4 & FL5	Wedge	-	-	44	45
	West	090°	FL1	Planar	67	70	-	-
			FL5		37	49		
			FL4 & FL5	Wedge	-	-	37	40
			FL3 & FL5				38	41
	North West	115°	FL1	Planar	73	74	-	-
			FL5		41	42		
			FL4 & FL5	Wedge	-	-	40	41
			FL3 & FL5				34	35

Table 10.4 Results of kinematic and probability of undercutting for the central pit sar_c5c11_201203 design

PIT	WALL	WALL ORIENTATION	STRUCTURAL SET	FAILURE MODE	PLANAR		WEDGE	
					IRA (°) P _u 5%	IRA (°) P _u 10%	IRA (°) P _u 5%	IRA (°) P _u 10%
Central	North	108°	FL1	Planar	67	70	-	-
			FL5		38	41		
			FL4 & FL5	Wedge	-	-	40	40
			FL3 & FL5				35	35
	North East	240°	-	-	-	-	-	-
	East	270°	FL1	Planar	68	72	-	-
	South East	305°	FL1	Planar	73	75	-	-
	South South East	330°	-	-	-	-	-	-
	South	020°	-	-	-	-	-	-
	South West	065°	FL1	Planar	70	73	-	-
			FL5		43	44		
			FL4 & FL5	Wedge	43	45	-	-
	West	105°	FL1	Planar	67	70	-	-
			FL5		39	41		
			FL4 & FL5 FL3 & FL5	Wedge	-	-	37 35	40 36
	North West	090°	FL1	Planar	67	70	-	-
			FL5		37	38		
			FL4 & FL5 FL3 & FL5	Wedge	-	-	37 38	39 41

Table 10.5 Results of kinematic and probability of undercutting for the south pit sar_c5c11_201203 design

PIT	WALL	WALL ORIENTATION	STRUCTURAL SET	FAILURE MODE	PLANAR		WEDGE	
					IRA (°) P _u 5%	IRA (°) P _u 10%	IRA (°) P _u 5%	IRA (°) P _u 10%
South	North	210°	FL3 & FL5	Wedge	-	-	64	65
	East	270°	FL1	Planar	67	72	-	-
	South east	300°	FL1	Planar	73	75	-	-
	South	010°	-	-	-	-	-	-
	West	110°	FL1	Planar	67	70	-	-
			FL5		37	41		
			FL4 & FL5 FL3 & FL5	Wedge	-	-	40 35	40 35

11 RECOMMENDED PIT SLOPE DESIGN

11.1 PREVIOUSLY RECOMMENDED PIT SLOPE DESIGN

Table 11.1 and Table 11.2 present the previously recommended pit slope components for the SAR pits. WSP provided these at the concept stage of the project in PS111842-GEO-LTR-004 Rev A dated 22 November 2019.

The pit slope design components were recommended based on a design which comprised three pit areas referred to as the north pit (Roswell) and central pit and south pit (San Antonio). Proposed slope heights were about 120 m for the north pit, 200 m for the central pit and 130 m for the south pit.

Table 11.1 Recommended concept pit slope components – north and south pits

GEOTECHNICAL HORIZON	BENCH		BERM WIDTH (m)	IRA (°)
	Height (m)	Angle (°)		
Alluvium	15	45	12	29
Saprolite/weathered rock	20	60	8	46
Slightly weathered to fresh Rock	20	75	8	56

Table 11.2 Recommended concept pit slope components – central pit

GEOTECHNICAL HORIZON	BENCH		BERM WIDTH (m)	IRA (°)
	Height (m)	Angle (°)		
Alluvium	15	45	12	29
Saprolite/weathered rock	20	60	8	46
Slightly weathered to fresh rock	20	65	8	49

WSP did a review of a preliminary stage design pit, designated as *sar_c2_200525_clip1*, provided by Alkane and the results were presented in PS117942-GEO-LTR-001 Rev A in 1 June 2020. The review identified that the preliminary north pit had proposed slopes up to 300 m high with an increase in slope height through the slightly weathered to fresh rock horizon by about 180 m compared to the concept pit design.

The review highlighted that the use of the concept pit slope components (75° bench angle and 56° IRA) through the slightly weathered to fresh horizon for the north pit was considered aggressive given its slope height and the limited amount of geological structural data available for slope stability assessment. It was recommended that collection of more geotechnical data was required to determine geological structural orientations and ground conditions.

11.2 RECOMMENDED PIT SLOPE DESIGN

WSP has revised and updated the pit slope designs recommended in Table 11.1 and Table 11.2, based on the results of the geotechnical site investigation and slope stability analyses. The following sections provide the recommended pit slope components for the TGEF pits.

11.2.1 NORTH PIT

The recommended pit slope components for the north pit, *sar_c5c11_201203* design are provided in Table 11.3 and Table 11.4.

Table 11.3 Recommended pit slope components for alluvium and saprolite in the north pit sar_c5c11_201203 design

DESIGN SECTOR	WALL ORIENTATION	GEOTECHNICAL HORIZON	BENCH		BERM WIDTH (m)	IRA (°)	OVERALL SLOPE ANGLE ¹ (°)
			Height (m)	Angle (°)			
West	090°	Alluvium	15	45	12	29	29
		Saprolite	15	45	12	29	
Other sectors	-	Alluvium	15	45	12	29	-
		Saprolite	20	60	8	46	

¹ Control on slope design in the alluvium and saprolite – this angle must not be exceeded for slopes above baseSap (toe to crest)

Table 11.4 Recommended pit slope components for the weathered and slightly weathered and fresh rock in the north pit sar_c5c11_201203 design

DESIGN SECTOR	WALL ORIENTATION	GEOTECHNICAL HORIZON	BENCH		BERM WIDTH (m)	IRA (°)
			Height (m)	Angle (°)		
North, North West & West	170°, 115° & 090°	WR	20	60	8	46
		SW/FR	20	65	8	49
South East & South	310° & 000°	WR	20	60	8	46
		SW/FR	20	75	8	56
East & South West	270° & 060°	WR	20	60	8	46
		SW/FR	20	70	8	53

11.2.2 CENTRAL PIT

The recommended pit slope components for the central pit are provided in Table 11.5 and Table 11.6.

Table 11.5 Recommended pit slope components for alluvium and saprolite in the central pit

DESIGN SECTOR	WALL ORIENTATION	GEOTECHNICAL HORIZON	BENCH		BERM WIDTH (m)	IRA (°)	OVERALL WALL ANGLE ¹ (°)
			Height (m)	Angle (°)			
West, South West & South East	090°, 065° & 240°	Alluvium	15	45	16	26	29
		Saprolite	15	45	16		
Other sectors	-	Alluvium	15	45	12	29	-
		Saprolite	20	60	8	46	

¹ Control on slope design in the alluvium and saprolite – this angle must not be exceeded for slopes above baseSap (toe to crest)

Table 11.6 Recommended pit slope components for the weathered and slightly weathered and fresh rock in the central pit

DESIGN SECTOR	WALL ORIENTATION	MATERIAL	BENCH		BERM WIDTH (m)	IRA (°)
			Height (m)	Angle (°)		
North, North East, South East, South South East, South & South West	108°, 240°, 305°, 330°, 020° & 065°	WR	20	60	8	46
		SW/FR	20	75	8	56
East, West & North West	270°, 105° & 090°	WR	20	60	8	46
		SW/FR	20	70	8	53

11.2.3 SOUTH PIT

The recommended pit slope components for the south pit are provided in Table 11.7 and Table 11.8.

Table 11.7 Recommended pit slope components for alluvium and saprolite in the south pit

DESIGN SECTOR	WALL ORIENTATION	GEOTECHNICAL HORIZON	BENCH		BERM WIDTH (m)	IRA (°)	OVERALL WALL ANGLE ¹ (°)
			Height (m)	Angle (°)			
West, South & South East	090°, 010° & 300°	Alluvium	15	45	16	26	29
		Saprolite	15	45	16		
Other sectors	-	Alluvium	15	45	12	29	-
		Saprolite	20	60	8	46	

¹ Control on slope design in the alluvium and saprolite – this angle must not be exceeded for slopes above baseSap (toe to crest)

Table 11.8 Recommended pit slope components for the weathered and slightly weathered and fresh rock in the south pit

DESIGN SECTOR	WALL ORIENTATION	MATERIAL	BENCH		BERM WIDTH (m)	IRA (°)
			Height (m)	Angle (°)		
North, South East & South	210°, 300° & 010°	WR	20	60	8	46
		SW/FR	20	75	8	56
East & West	270° & 110°	WR	20	60	8	46
		SW/FR	20	70	8	53

As a bench angle of 70° and 75° is steep, the potential for minor structures such as joints to be undercut and promote planar and wedge style failures is increased. Maintaining berm width will be critical to provide sufficient catch width for rock fall. Using an appropriate blast design with consideration of blast direction/sequencing could reduce the potential for block heave and crest loss of berms. Appropriate blast design will be a critical factor as the pit deepens.

To achieve the 70° and steeper bench angle in the slightly weathered to fresh rock may be difficult unless pre-split methods are used. Pre-split methods have been used on the walls in Tomingley with success. It is however recommended that pre-split be done in non-critical areas before adopted for final design in critical areas.

11.2.4 DISCUSSION ON PIT SLOPE DESIGN

As the LOM of the central and south pits are relatively short, the recommended pit slope design could be considered as aggressive. Adoption of an aggressive design approach requires management at the operational level of heightened geotechnical risk.

Historical performance of the Tomingley pits suggests that failure in the saprolite (due to relict structure and loss of strength on exposure to rainfall) especially in areas of dolerite dykes that have swelling clays, is likely to occur. Typically, these failures are localised and occur at a bench scale but progress to multi-bench scale impacting the overlying alluvium. It is recommended that Alkane manage this risk, as they have done at Tomingley, by using appropriate ground control management procedures.

Additionally, bench scale failures and loss of berms occurred within the weathered rock at Tomingley and with some high slopes in weathered rock it is likely to occur at TGEP. This will be particularly applicable to pit areas with slopes in weathered rock up to 45 m high, such as in the east wall of the central pit. Alkane need to manage these failures using ground control procedures.

The highest risk for TGEP will be overall scale failure of the alluvium and saprolite in the west walls and south wall of the south pit. Slopes higher than 60 m (and up to 77 m) have not been developed through these materials at Tomingley and so their performance will be somewhat uncertain. This as well as limited data on the characteristics of the alluvium over the central and south pits (especially the west walls) increases the potential for instability. Ongoing monitoring within these high slopes will be critical to identify early signs of movement.

Importantly, based on the performance at Tomingley, surface water will play a major role in stability of the slopes. Surface water management and implementation of measures such as drains to divert water away from the alluvium, saprolite and weathered rock slopes will be critical to decrease the potential for instability.

Although kinematic analyses have indicated that wedge style failures could occur between continuous major structural sets to impact slopes at a multi-bench scale, based on the performance of the Tomingley pits, the potential for this style of failure in the slightly weathered and fresh rock unit is considered low. However, it is highlighted that inter-ramp scale wedge failures in the weathered rock and saprolite cannot be eliminated. Instability in the west wall of CL1 at Tomingley could have been due to a wedge style failure in the saprolite and weathered rock zone. More data on the spatial distribution of major structures is required to assess if multi-bench scale wedge failures are a risk for TGEP. It is recommended that as the saprolite and rock is exposed that mapping be done to collect data to assist in the development of the structural patterns.

12 GEOTECHNICAL RISKS

As discussed in the previous section the highest risk for the design is instability of the alluvium and saprolite in areas where slope heights are greater than about 60 m high (mainly west and south walls). Apart from further geotechnical investigation, one of the main methods that Alkane could reduce this risk is Alkane should consider mining the central and south pits prior to mining the deeper north pit to obtain data on slope performance in the alluvium and saprolite.

Based on the performance of the Tomingley pits eliminating collapse or failure in the saprolite and weathered rock through design is difficult and as such an observational approach to identify early signs of instability should be used during mining.

Other geotechnical risks identified are as follows:

- Uncertainty on the location of the Cotton Formation/Mingelo Volcanics contact means that the ground conditions in the west wall of the south and central pits to some extent is also in doubt. Based on Tomingley weathered Cotton Formation exposed in the upper sections of the west wall slopes in the south and central pit could experience toppling due to pervasive foliation which will have a steep dip in and out of the slope.
- Design for the west wall of the south and central pits assume similar conditions to the volcanoclastic sequences to be encountered on the east wall, if conditions are different the recommended pit slope design may not be appropriate.
- Uncertainty on the groundwater regime and its impact on slope stability. Analyses have shown that groundwater in weathered rock slopes of heights greater than 60 m will increase the potential for instability.
- Groundwater within the alluvium and saprolite will increase the potential for instability and the design through these horizons will not be appropriate.
- Instability in the bullnose configuration in the central pit (*sar_c5c11_201203* design) is likely due to the reduced wall confinement and poor rock mass strength, additionally the bullnose could have a high potential for toppling style multi-bench scale failure especially if foliation is pervasive (as is typical of the sediments forming the Cotton Formation).
- A series of dolerite dykes occur immediately behind the north wall of the north pit, structural patterns associated with the dykes are poorly understood and their proximity to the north wall could increase the potential for planar and wedge failure at a bench and multi-bench scale.
- Limited data on the major faults to be exposed and their impact on slope stability.

Recommendations to address the risk detailed above are provided in Section 13.

13 RECOMMENDATIONS AND CONCLUSIONS

WSP recommend that the following be done to reduce geotechnical risk for TGEF:

- The re-addressing of the recommended design when the groundwater study report is available.
- Alkane consider mining the central and south pits prior to the deeper north pit to obtain data on slope performance in the alluvium and saprolite.
- Undertaking a program of Cone Penetrometer Testing (CPT) and vertical boreholes with SPTs along the west wall area with collection of samples for material strength and material characterisation testing.
- Delineation of the Cotton Formation/Mingelo Volcanics contact and either the drilling of geotechnical boreholes or mapping of pit walls as exposed during mining.
- Alkane consider removing the bullnose configuration proposed in the weathered rock for the *sar_c5c11_201203* design.
- Implementation of measures to reduce surface water inflow into the pit area.
- Consider drilling more geotechnical boreholes to intercept the walls at depth within the *sardes_c8_201203* and to reduce the geotechnical data gap risk.
- WSP review the final design prior to the commencement of mining.
- Ongoing geotechnical mapping of all walls as soon as exposed (at least every bench) particularly defect characteristics such as length, spacing and infill in the rock.
- Regular processing of mapping data and review of slope performance and reassessment of design.
- Periodic site visits by geotechnical consultant, typically every four months and ad-hoc site visits on an as needed basis to provide geotechnical support.
- Use an observational approach to identify early signs of instability. This approach requires good ongoing monitoring such as:
 - Frequent monitoring including visual monitoring at the crest and walls, daily prism readings and review of data.
 - Installation of crack monitoring devices across any new cracks.
 - Installation of prisms.
 - Implement Trigger Action Response Plans (TARPs) to clearly outline responses to trigger events, in-particular responses after significant rainfall events.

It is also recommended that Alkane develop a GCMP and Geotechnical Site Specific Procedures (SSPs) to manage the geotechnical risks and hazards during mining operation. It will be important that personnel on site can quickly recognize potentially unfavourable structures and their impact on slope stability.

14 LIMITATIONS

SCOPE OF SERVICES

This geotechnical site assessment report (the report) has been prepared in accordance with the scope of services set out in the contract, or as otherwise agreed, between the client and WSP (scope of services). In some circumstances, the scope of services may have been limited by a range of factors such as time, budget, access and/or site disturbance constraints.

RELIANCE ON DATA

In preparing the report, WSP has relied upon data, surveys, analyses, designs, plans and other information provided by the client and other individuals and organisations, most of which are referred to in the report (the data). Except as otherwise stated in the report, WSP has not verified the accuracy or completeness of the data. To the extent that the statements, opinions, facts, information, conclusions and/or recommendations in the report (conclusions) are based in whole or part on the data, those conclusions are contingent upon the accuracy and completeness of the data. WSP will not be liable in relation to incorrect conclusions should any data, information or condition be incorrect or have been concealed, withheld, misrepresented or otherwise not fully disclosed to WSP.

GEOTECHNICAL INVESTIGATION

Geotechnical engineering is based extensively on judgment and opinion. It is far less exact than other engineering disciplines. Geotechnical engineering reports are prepared to meet the specific needs of individuals. A report prepared for a consulting civil engineer may not be adequate for a construction contractor or even some other consulting civil engineer. This report was prepared expressly for the client and expressly for purposes indicated by the client or his representative. Use by any other persons for any purpose, or by the client for a different purpose, might result in problems. The client should not use this report for other than its intended purpose without seeking additional geotechnical advice.

THIS GEOTECHNICAL REPORT IS BASED ON PROJECT-SPECIFIC FACTORS

This geotechnical engineering report is based on a subsurface investigation which was designed for project-specification factors, including the nature of any development, its size and configuration, the location of any development on the site and its orientation, and the location of access roads and parking areas. Unless further geotechnical advice is obtained, this geotechnical engineering report cannot be used:

- When the nature of any proposed development is changed.
- When the size, configuration location or orientation of any proposed development is modified.

This geotechnical engineering report cannot be applied to an adjacent site.

THE LIMITATIONS OF SITE INVESTIGATION

In making an assessment of a site from a limited number of boreholes or test pits, there is the possibility that variations may occur between test locations. Site exploration identifies specific subsurface conditions only at those points from which samples have been taken. The risk that variations will not be detected can be reduced by increasing the frequency of test locations; however, this often does not result in any overall cost savings for the project. The investigation program undertaken is a professional estimate of the scope of investigation required to provide a general profile of the subsurface conditions. The data derived from the site investigation program and subsequent laboratory testing are extrapolated across the site to form an inferred geological model, and an engineering opinion is rendered about overall subsurface conditions and their likely behaviour with regard to the proposed development. Despite investigation the actual conditions at the site might differ from those inferred to exist, since no subsurface exploration program, no matter how comprehensive, can reveal all subsurface details and anomalies.

The borehole logs are the subjective interpretation of subsurface conditions at a particular location, made by trained personnel. The interpretation may be limited by the method of investigation and cannot always be definitive. For example, an inspection of an excavation or test pit allows a greater area of the subsurface profile to be inspected than borehole investigation. However, such methods are limited by depth and site disturbance restrictions. In borehole investigation, the actual interface between materials may be more gradual or abrupt than a report indicates.

SUBSURFACE CONDITIONS ARE TIME DEPENDENT

Subsurface conditions may be modified by changing natural forces or man-made influences. A geotechnical engineering report is based on conditions which existed at the time of subsurface exploration.

Construction operations at or adjacent to the site, and natural events such as floods, or groundwater fluctuations, may also affect subsurface conditions, and thus the continuing adequacy of a geotechnical report. The geotechnical engineer should be kept apprised of any such events and should be consulted to determine if additional tests are necessary.

AVOID MISINTERPRETATION

A geotechnical engineer should be retained to work with other appropriate design professionals explaining relevant geotechnical findings and in reviewing the adequacy of their plans and specifications relative to geotechnical issues.

BORE/PROFILE LOGS SHOULD NOT BE SEPARATED FROM THE ENGINEERING REPORT

Final bore/profile logs are developed by geotechnical engineers based upon their interpretation of field logs and laboratory evaluation of field samples. Customarily, only the final bore/profile logs are included in geotechnical engineering reports. These logs should not under any circumstances be redrawn for inclusion in architectural or other design drawings. To minimise the likelihood of bore/profile log misinterpretation, contractors should be given access to the complete geotechnical engineering report prepared or authorised for their use. Providing the best available information to contractors helps prevent costly construction problems. For further information on this matter, reference should be made to 'Guidelines for the Provision of Geotechnical Information in Construction Contracts' published by the Institution of Engineers Australia, National Headquarters, Canberra 1987.

GEOTECHNICAL INVOLVEMENT DURING CONSTRUCTION

During construction, excavation is frequently undertaken which exposes the actual subsurface conditions. For this reason, geotechnical consultants should be retained through the construction stage, to identify variations if they are exposed and to conduct additional tests which may be required and to deal quickly with geotechnical problems if they arise.

REPORT FOR BENEFIT OF CLIENT

The report has been prepared for the benefit of the client and no other party. WSP assumes no responsibility and will not be liable to any other person or organisation for or in relation to any matter dealt with or conclusions expressed in the report, or for any loss or damage suffered by any other person or organisation arising from matters dealt with or conclusions expressed in the report (including without limitation matters arising from any negligent act or omission of WSP or for any loss or damage suffered by any other party relying upon the matters dealt with or conclusions expressed in the report). Other parties should not rely upon the report or the accuracy or completeness of any conclusions and should make their own enquiries and obtain independent advice in relation to such matters.

OTHER LIMITATIONS

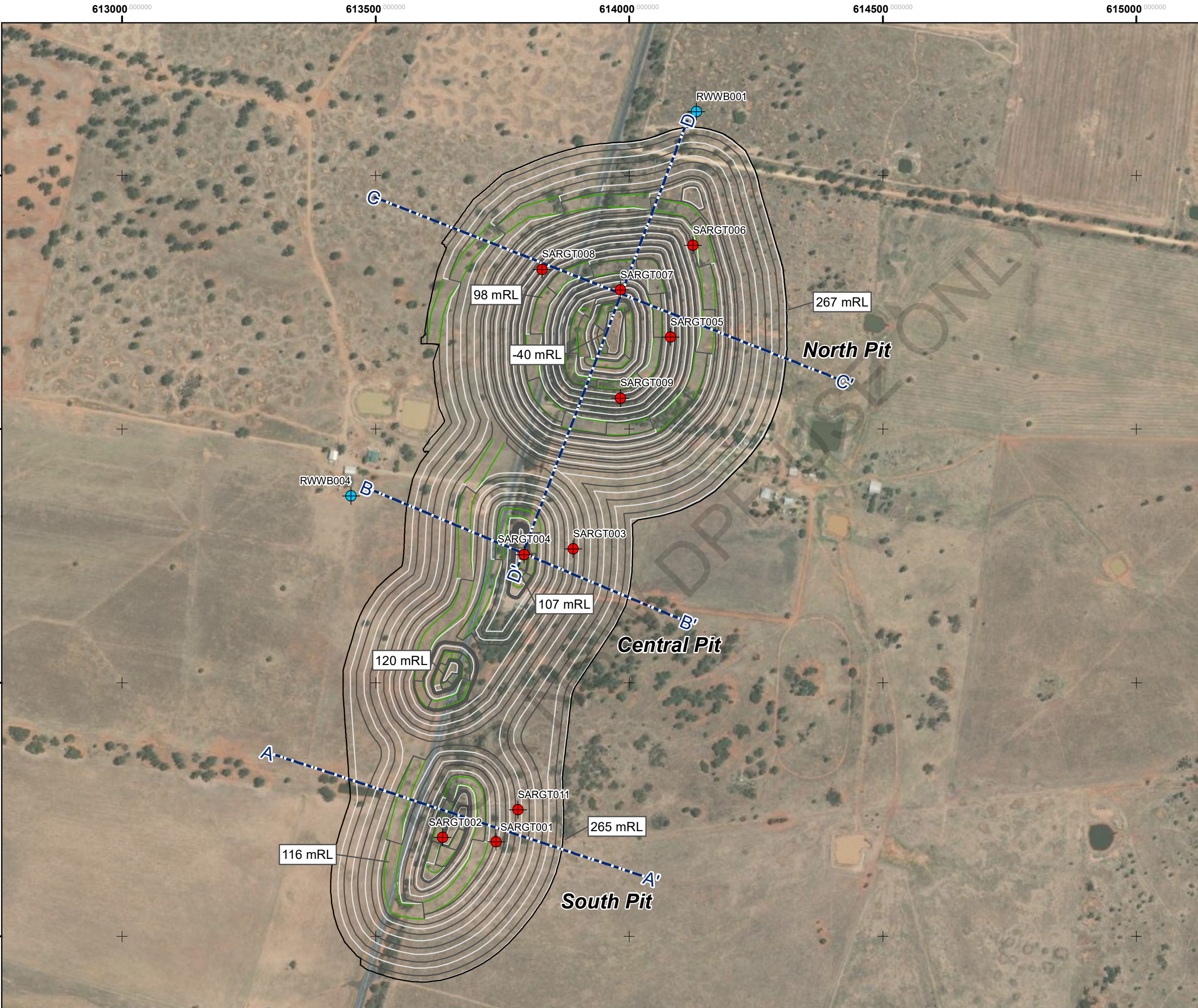
WSP will not be liable to update or revise the report to take into account any events or emergent circumstances or facts occurring or becoming apparent after the date of the report.

APPENDIX A

FIGURES



FOR NSW DPE USE ONLY



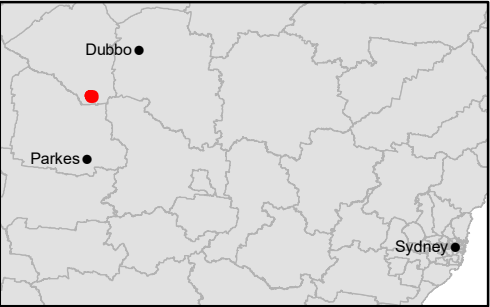
Tomingley Gold
Extension Project

Figure 1
Proposed Pit Extent sar_c5c11,
Geotechnical Borehole Locations
and Section Locations

--- Cross Section location

Type of Borehole

- Geotechnical Borehole
- Groundwater Bore



Coordinate system: GDA 1994 MGA Zone 55

Scale ratio correct when printed at A3

1:7,245

Date: 1/04/2021

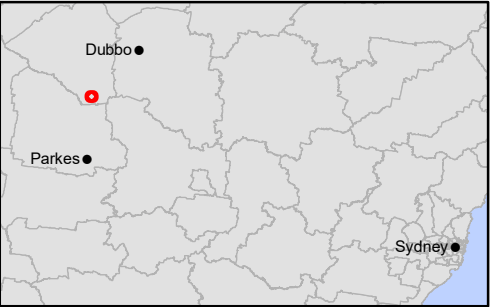
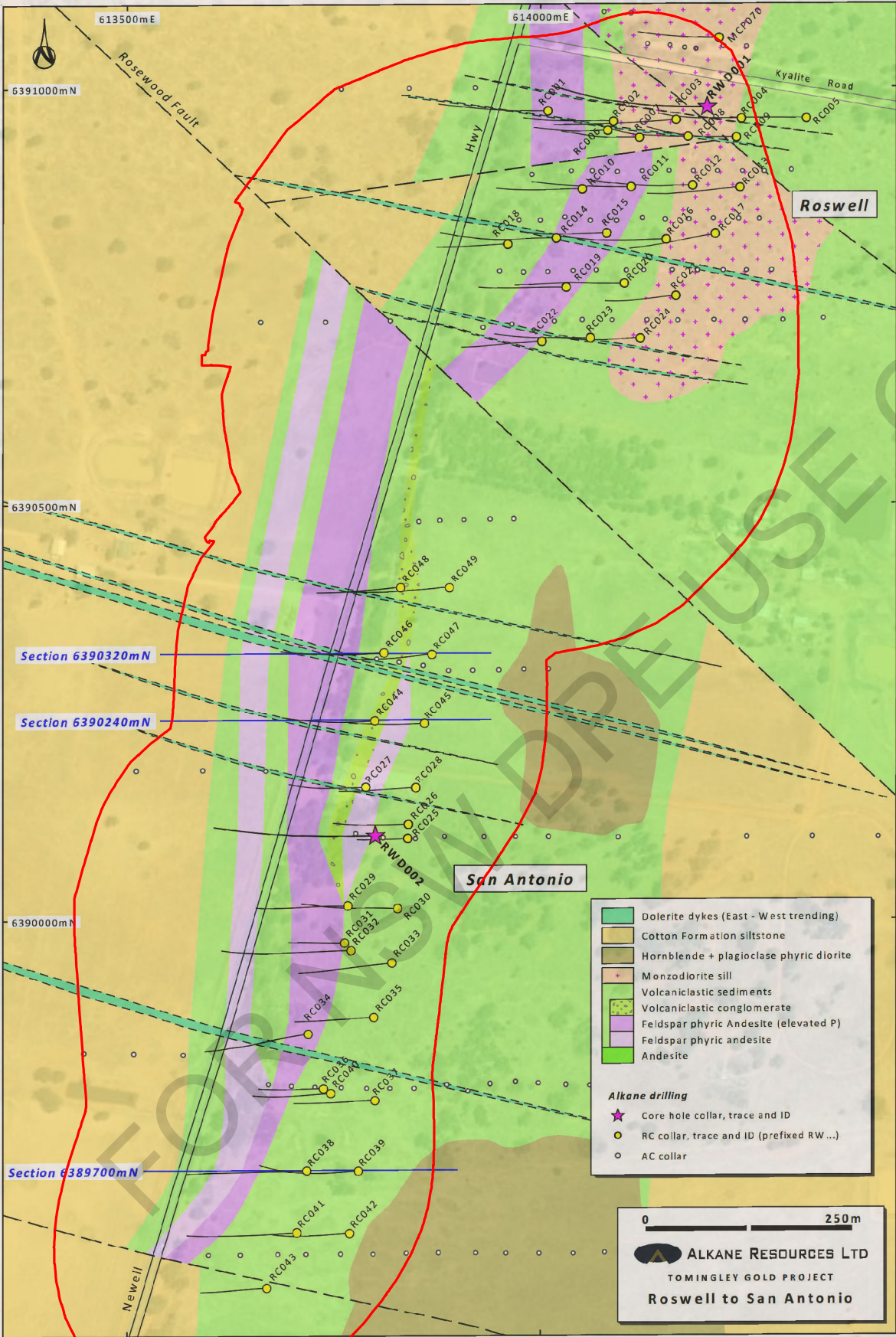
Data sources: - DNRME, TMR, Translink, Geoscience Australia

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Figure 2
Geology Plan and the
extent of sarc5c11

Legend
Pit Extent

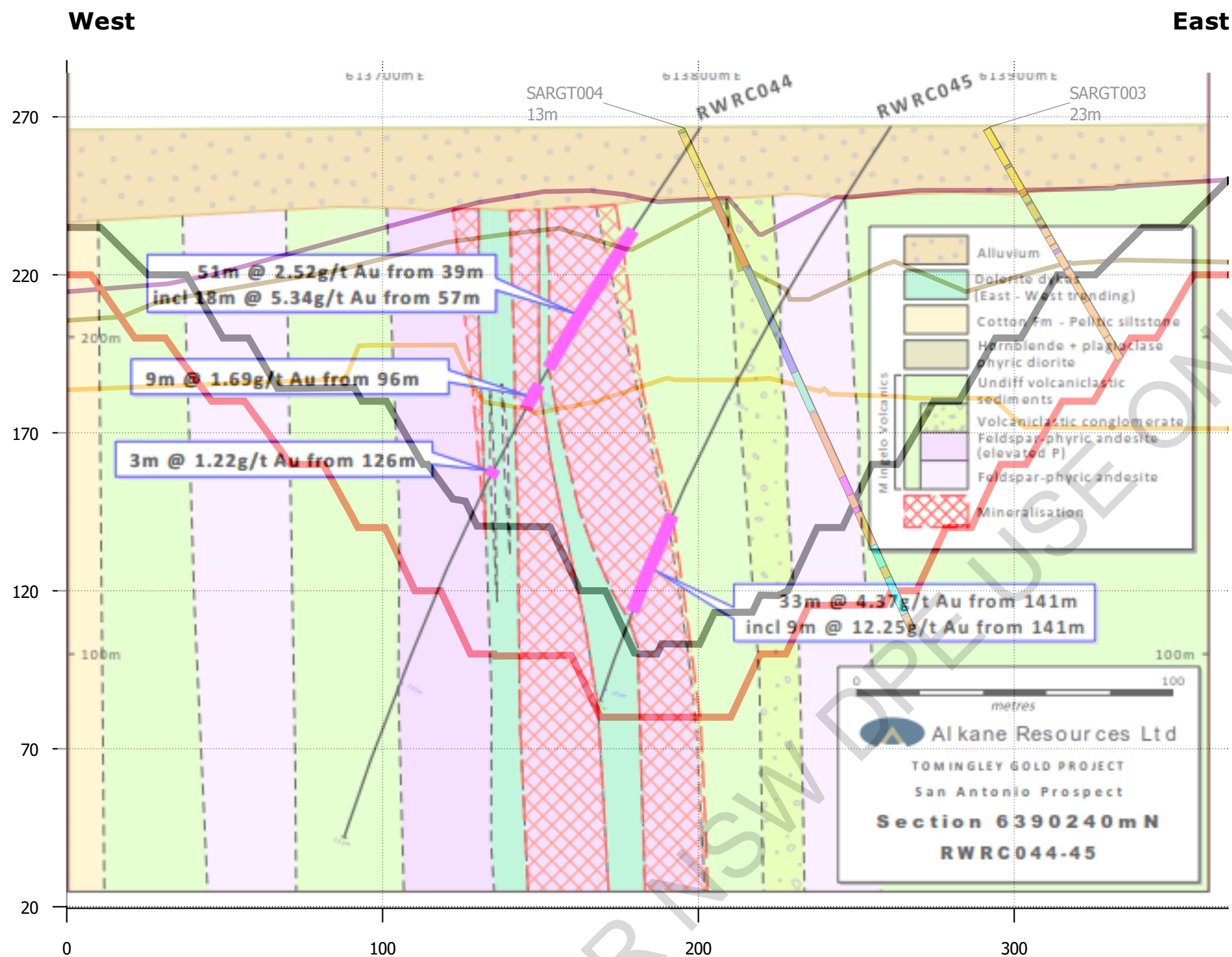
Regional Geology and Drill Hole Locations: Roswell – San Antonio



Coordinate system: GDA 1994 MGA Zone 55
Scale ratio correct when printed at A3
1:7,000 Date: 29/03/2021

Data sources: - DNRME, TMR, Translink, Geoscience Australia

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Location

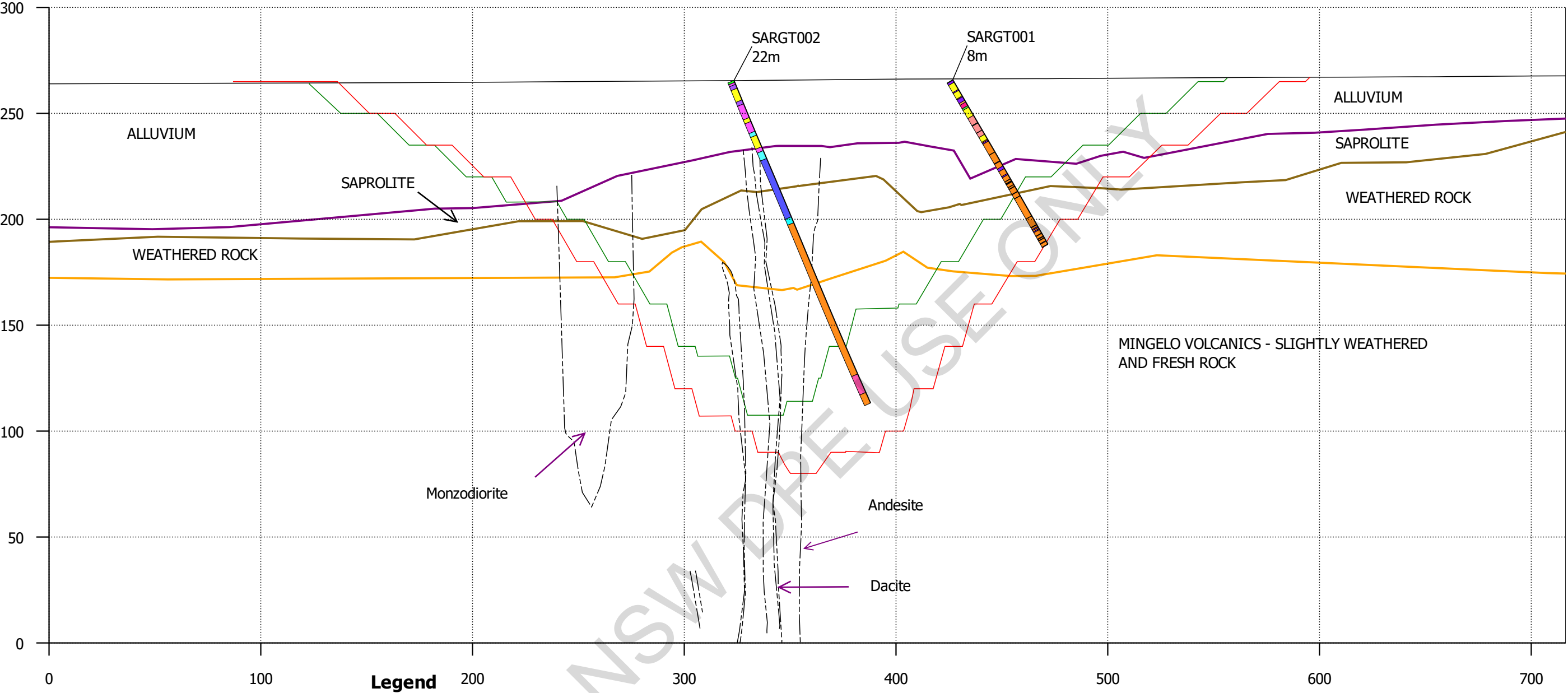
West: 613597, 6390240
East: 613965, 6390240

Responsible dept.	Technical reference	Creator NB	Approved by
Legal owner		Document type	Document status
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		Rev.	Date of issue Sheet

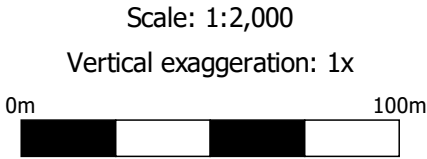
Section AA'
South Pit

West

East



- Surfaces**
- SAR_Ground_surface_DH_201905_3d_MGA
 - Basecover202101
 - BaseSap202011
 - Baseox202102
 - Sar_c5c11_201203
 - Sardes_c8_201209



Location

West: 613332, 6389821
East: 614017, 6389613

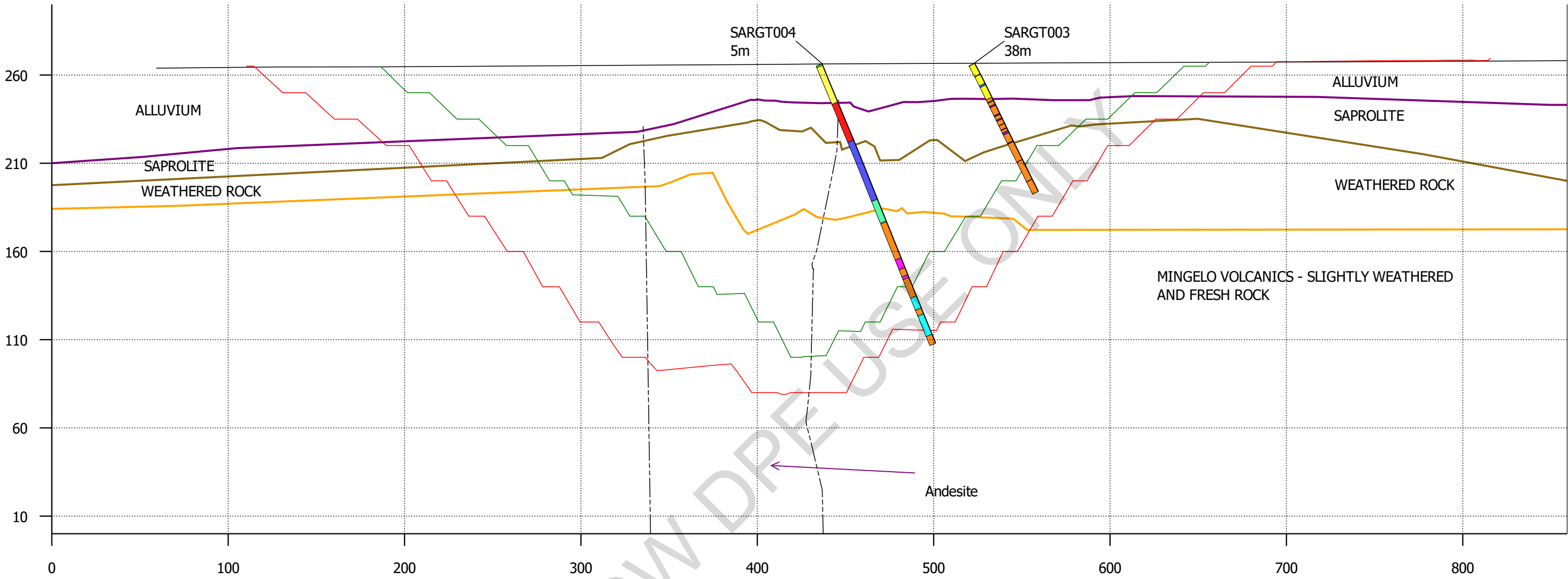
GEOLOGY				
ALLUVIUM	CLAYEY SAND	GRAVELLY CLAY	SAND	SILTY SAND
ANDESITE	CLAYEY SILT	GRAVELLY SAND	SANDY CLAY	TOPSOIL
BRECCIA	CORE LOSS	IGNEOUS	SAPROCK	Volcaniclastic CONGLOMERATE
CLAY	DOLERITE	MONZODIORITE	SAPROLITE CLAY	Volcaniclastic SANDSTONE
CLAYEY GRAVEL	GRAVEL	QUARTZITE	SILTY CLAY	Volcaniclastic SILTSTONE

Responsible dept.	Technical reference	Creator NB	Approved by	
Legal owner		Document type	Document status	
		Title Figure 4 Section AA' Geotechnical Section South Pit	Identification number	
			Rev.	Date of issue Sheet

Section BB'
Central Pit

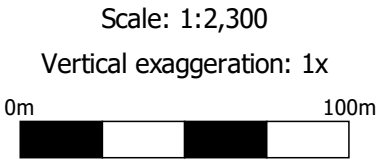
West

East



Legend

- Surfaces**
- SAR_Ground_surface_DH_201905_3d_MGA
 - Basecover202101
 - BaseSap202011
 - Baseox202102
 - Sar_c5c11_201203
 - Sardes_c8_201209

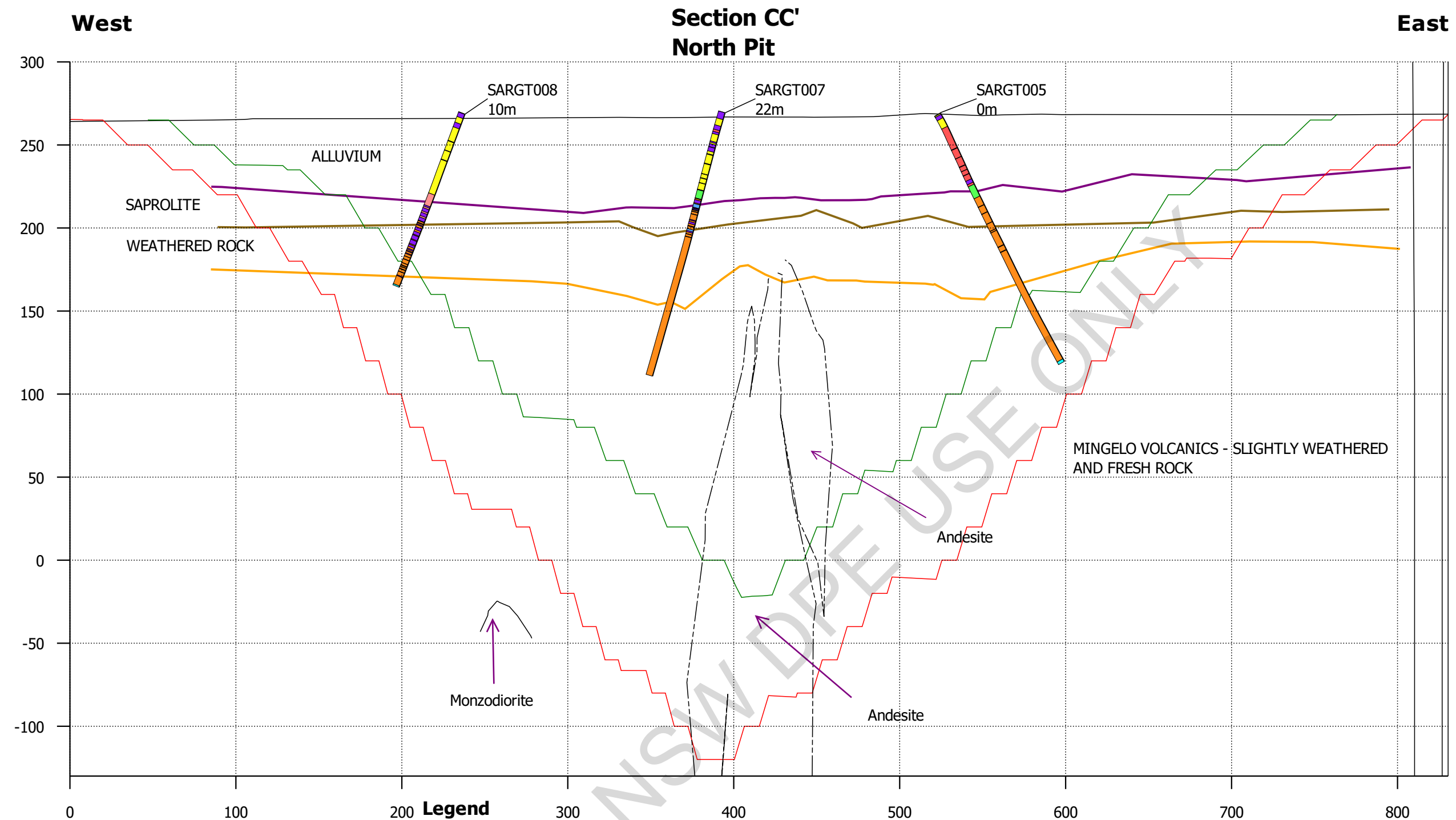


Location

West: 613387, 6390414
East: 614190, 6390109

- GEOLOGY**
- | | | | | |
|---------------|-------------|---------------|----------------|-----------------------------|
| ALLUVIUM | CLAYEY SAND | GRAVELLY CLAY | SAND | SILTY SAND |
| ANDESITE | CLAYEY SILT | GRAVELLY SAND | SANDY CLAY | TOPSOIL |
| BRECCIA | CORE LOSS | IGNEOUS | SAPROCK | Volcaniclastic CONGLOMERATE |
| CLAY | DOLERITE | MONZODIORITE | SAPROLITE CLAY | Volcaniclastic SANDSTONE |
| CLAYEY GRAVEL | GRAVEL | QUARTZITE | SILTY CLAY | Volcaniclastic SILTSTONE |

Responsible dept.	Technical reference	Creator NB	Approved by	
Legal owner		Document type	Document status	
		Title Figure 5 Section BB' Geotechnical Section Central Pit	Identification number	
			Rev.	Date of issue
				Sheet



Surfaces

— SAR_Ground_surface_DH_201905_3d_MGA
— Basecover202101
— BaseSap202011
— Baseox202102
— Sar_c5c11_201203
— Sardes_c8_201209

GEOLOGY

ALLUVIUM	CLAYEY SAND	GRAVELLY CLAY	SAND	SILTY SAND
ANDESITE	CLAYEY SILT	GRAVELLY SAND	SANDY CLAY	TOPSOIL
BRECCIA	CORE LOSS	IGNEOUS	SAPROCK	Volcaniclastic CONGLOMERATE
CLAY	DOLERITE	MONZODIORITE	SAPROLITE CLAY	Volcaniclastic SANDSTONE
CLAYEY GRAVEL	GRAVEL	QUARTZITE	SILTY CLAY	Volcaniclastic SILTSTONE

Scale: 1:2,600

Vertical exaggeration: 1x



Location

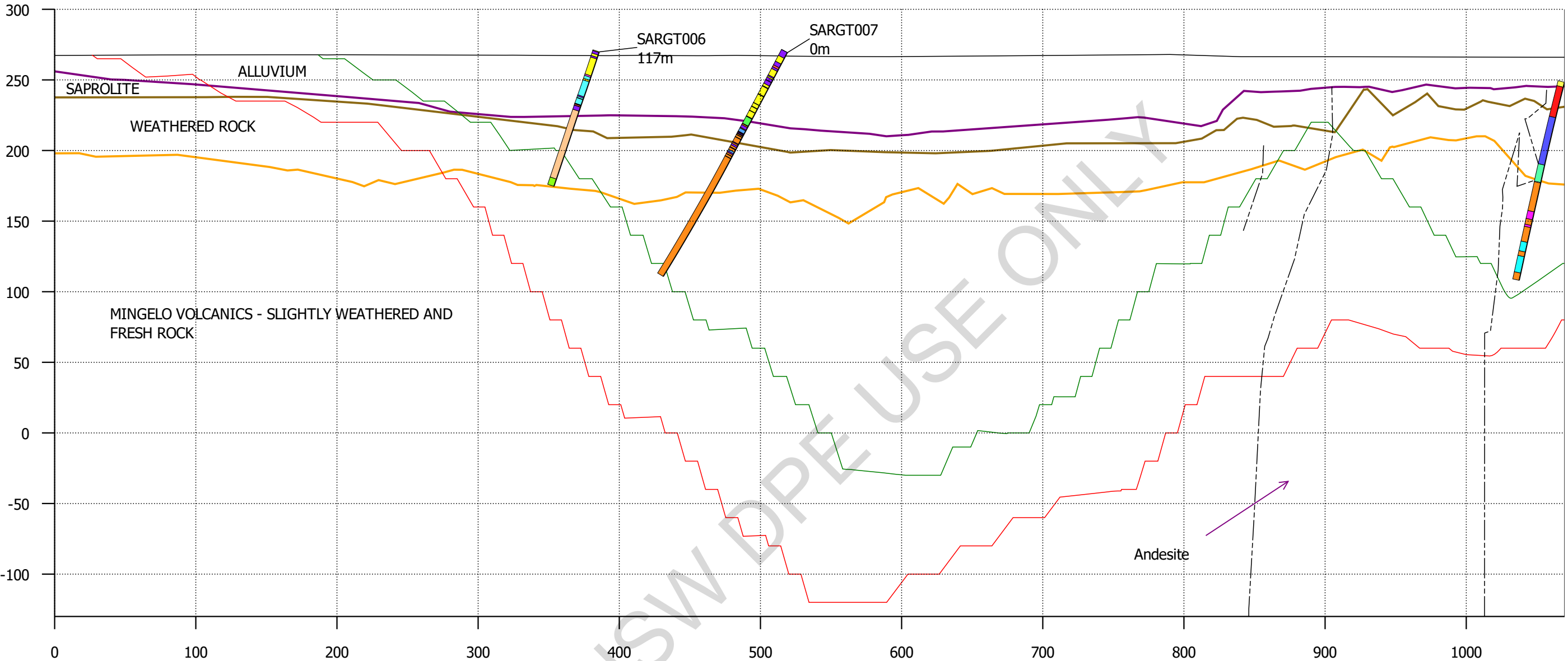
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East: 614363, 6390560

Responsible dept.	Technical reference	Creator NB	Approved by
Legal owner	Document type		Document status
	Title Figure 5 Section CC' Geotechnical Section North Pit		Identification number
	Rev.	Date of issue	Sheet

Section DD'
North Pit

North

South



Legend

Surfaces

- SAR_Ground_surface_DH_201905_3d_MGA
- Basecover202101
- BaseSap202011
- Baseox202102
- Sar_c5c11_201203
- Sardes_c8_201209

GEOLOGY

- | | | | | |
|---------------|-------------|---------------|----------------|-----------------------------|
| ALLUVIUM | CLAYEY SAND | GRAVELLY CLAY | SAND | SILTY SAND |
| ANDESITE | CLAYEY SILT | GRAVELLY SAND | SANDY CLAY | TOPSOIL |
| BRECCIA | CORE LOSS | IGNEOUS | SAPROCK | Volcaniclastic CONGLOMERATE |
| CLAY | DOLERITE | MONZODIORITE | SAPROLITE CLAY | Volcaniclastic SANDSTONE |
| CLAYEY GRAVEL | GRAVEL | QUARTZITE | SILTY CLAY | Volcaniclastic SILTSTONE |

Scale: 1:3,000

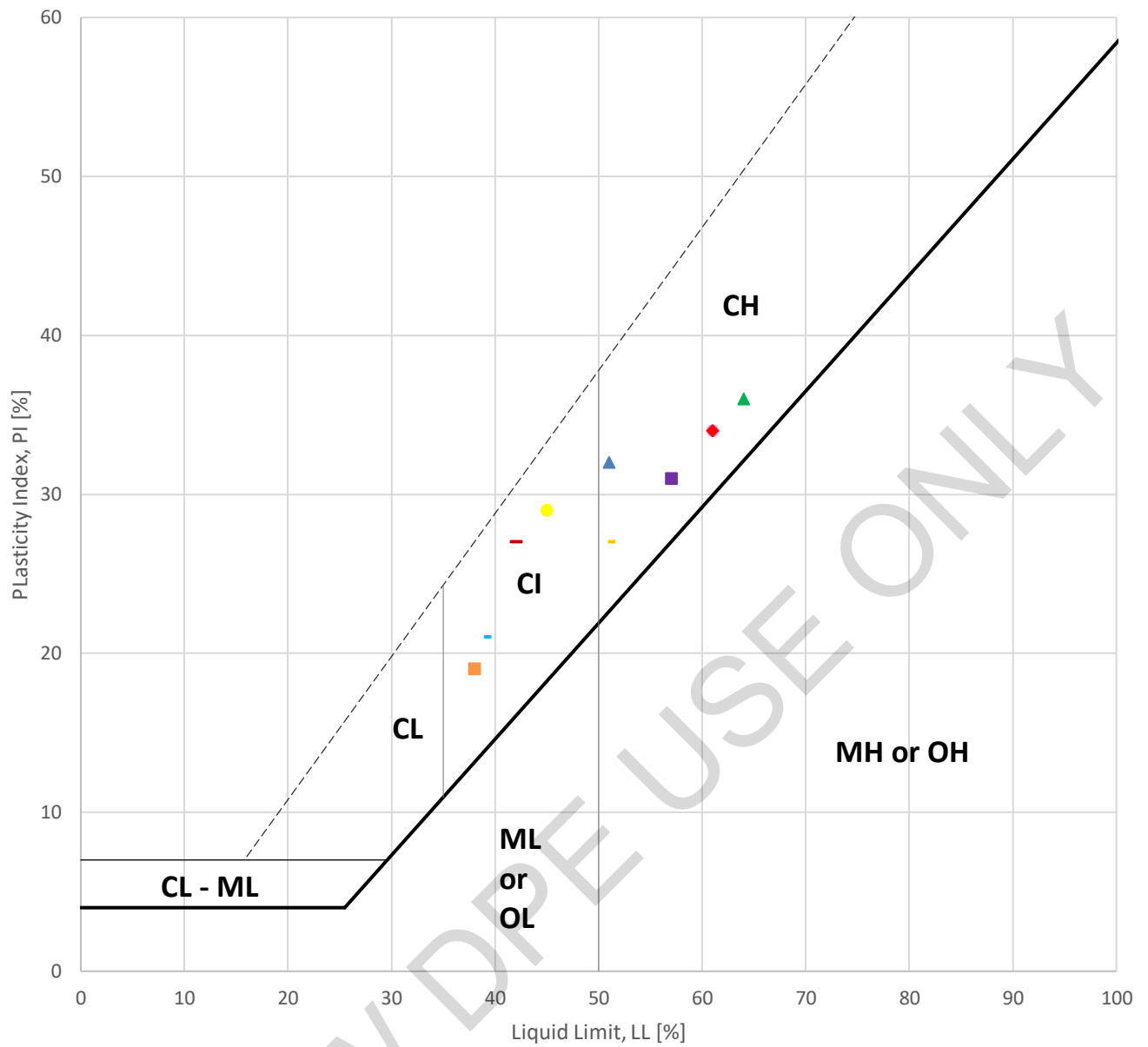
Vertical exaggeration: 1x



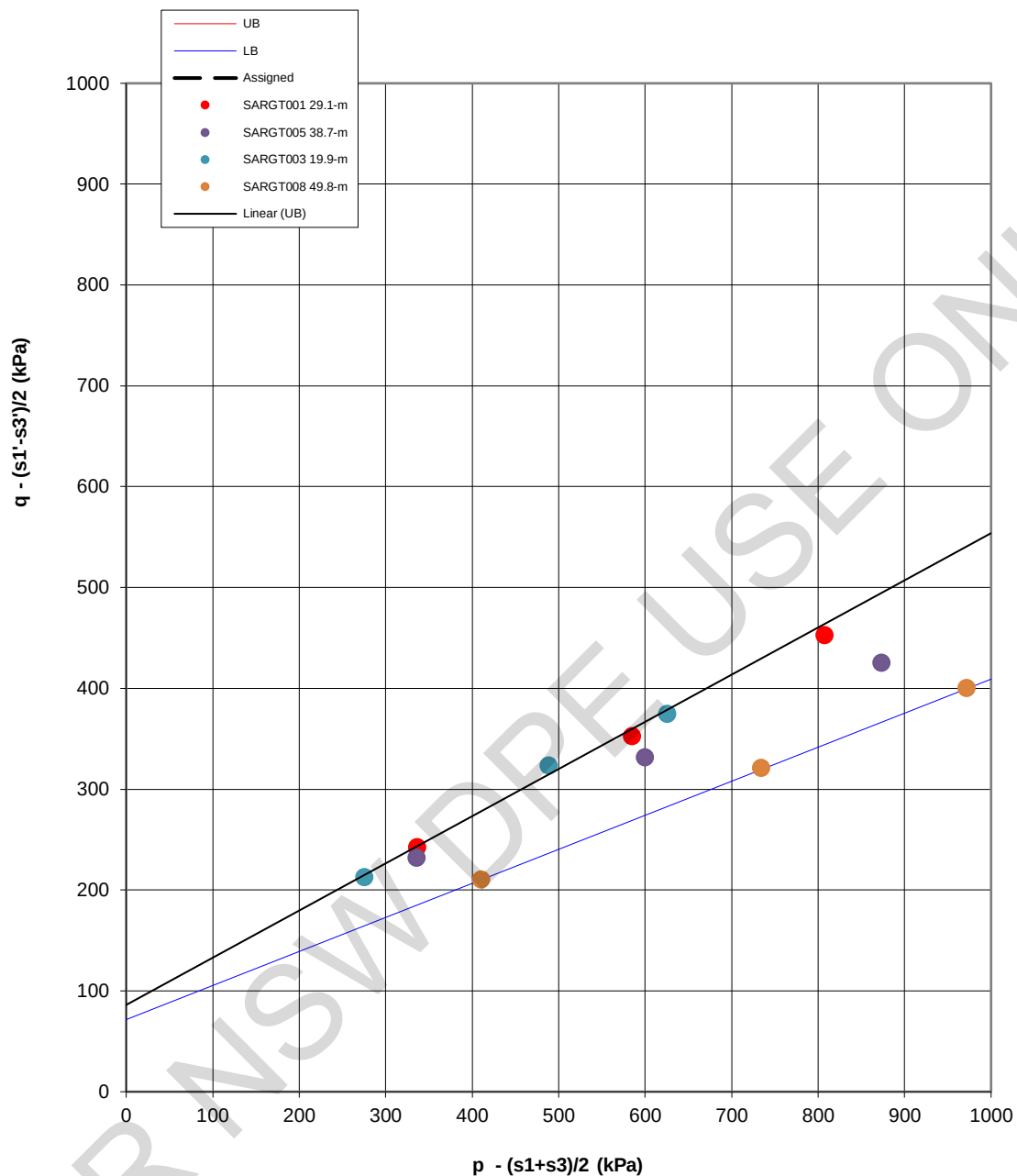
Location

North: 614156, 6391264
South: 613769, 6390267

Responsible dept.	Technical reference	Creator NB	Approved by	
Legal owner		Document type	Document status	
		Title Figure 7 Section DD' Geotechnical Section North Pit	Identification number	
			Rev.	Date of issue Sheet



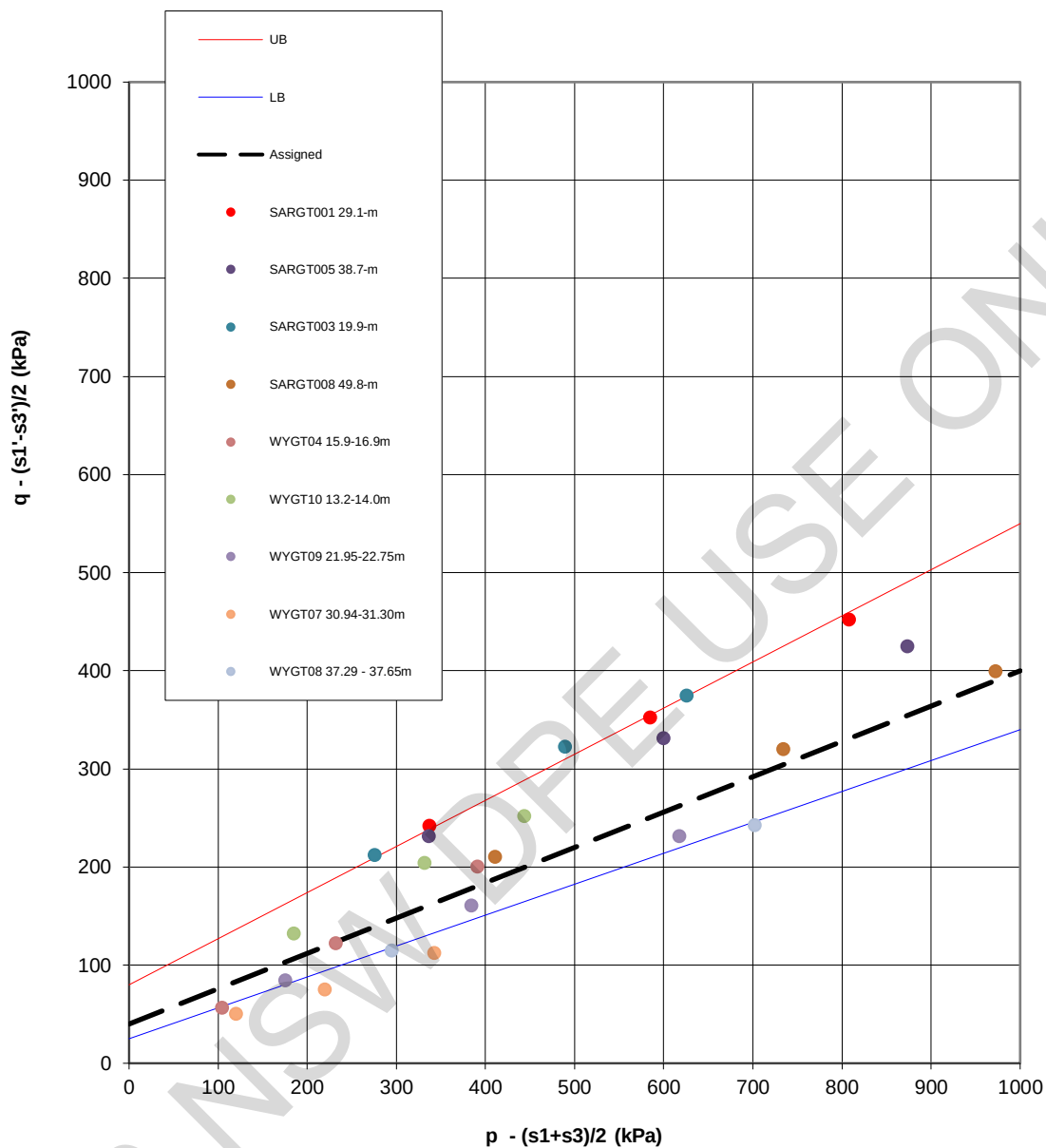
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approved	LMcK		project:	Tomingley Gold Extension Project Geotechnical Assessment	
date	3/3/21		title:	RESULTS OF WSP ATTERBERG LIMITS	
scale	NTS		project no:	PS117942	figure no: 8
size	A4				



Cohesion (kPa) Friction Angle (°)

Upper Bound	116	42
Lower Bound	82	29

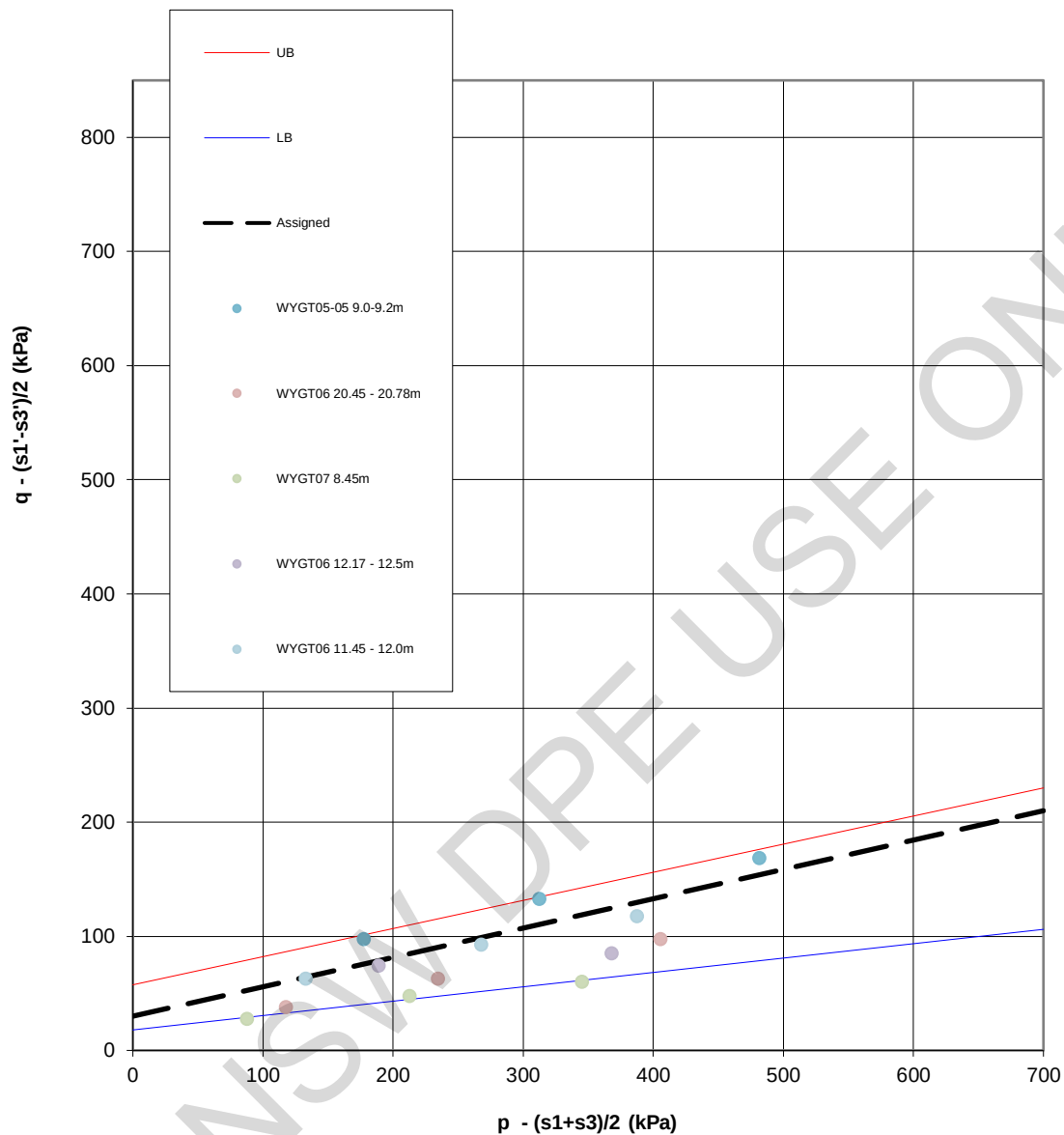
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approved	LMcK		project:	Tomingley Gold Extension Project Geotechnical Assessment	
date	3/3/21		title:	RESULTS OF WSP TRIAXIAL TESTING – TERTIARY ALLUVIUM	
scale	NTS		project no:	PS117942	figure no: 9
size	A4				



Cohesion (kPa) Friction Angle (°)

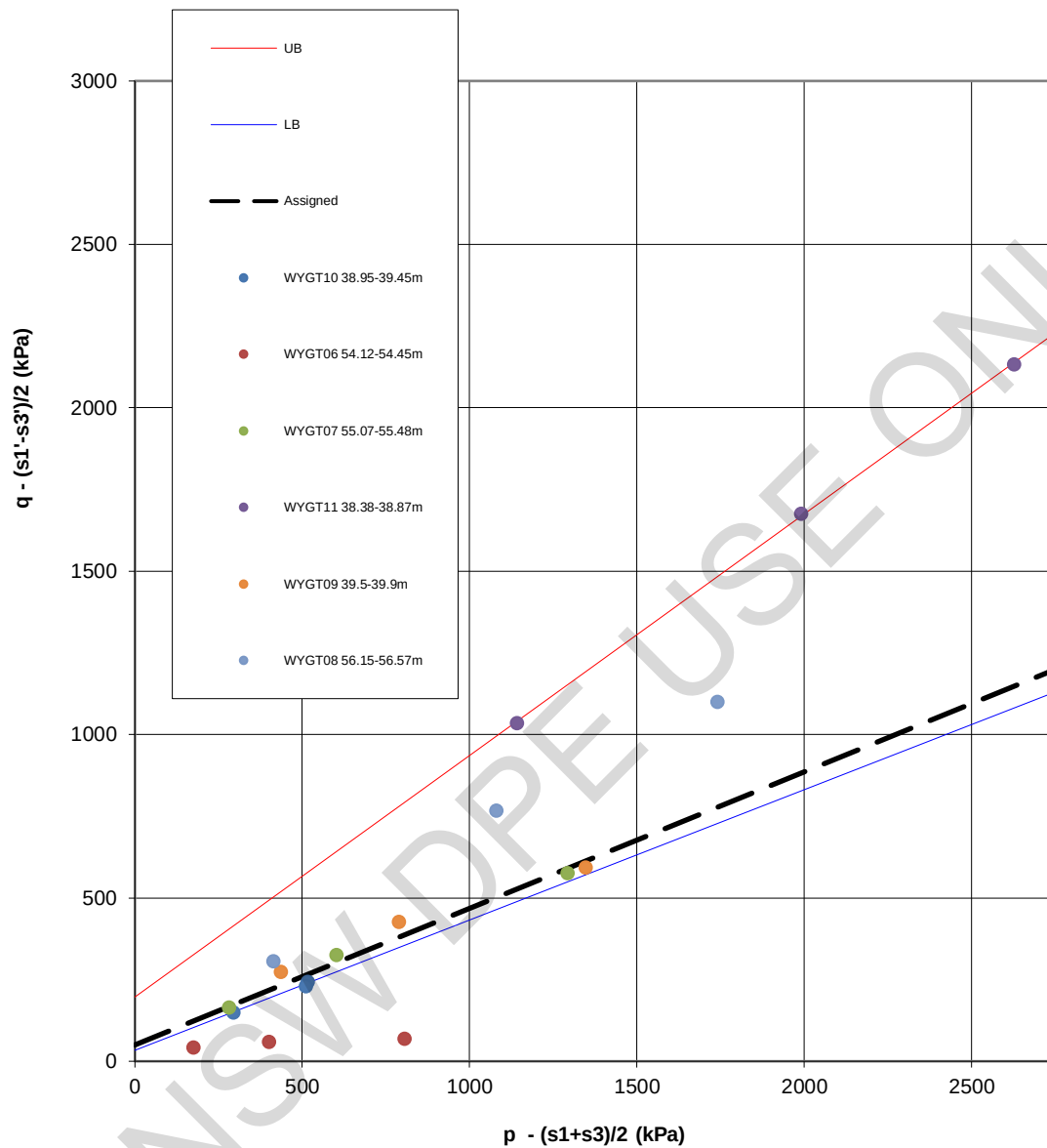
Upper Bound	91	28
Lower Bound	26	18
ASSIGNED	42	21

drawn	KM		client:	ALKANE RESOURCES LTD	
approved	LMcK		project:	Tomingley Gold Extension Project Geotechnical Assessment	
date	3/3/21		title:	WSP & TOMINGLEY TRIAXIAL TESTING – TERTIARY ALLUVIUM	
scale	NTS		project no:	PS117942	figure no: 10
size	A4				



	Cohesion (kPa)	Friction Angle (°)
Upper Bound	59	14
Lower Bound	18	7
ASSIGNED	31	13

drawn	KM		client:	ALKANE RESOURCES LTD	
approved	LMcK		project:	Tomingley Gold Extension Project Geotechnical Assessment	
date	3/3/21		title:	TOMINGLEY TRIAXIAL TESTING – QUATERNARY ALLUVIUM	
scale	NTS		project no:	PS117942	figure no: 11
size	A4				



Cohesion (kPa)

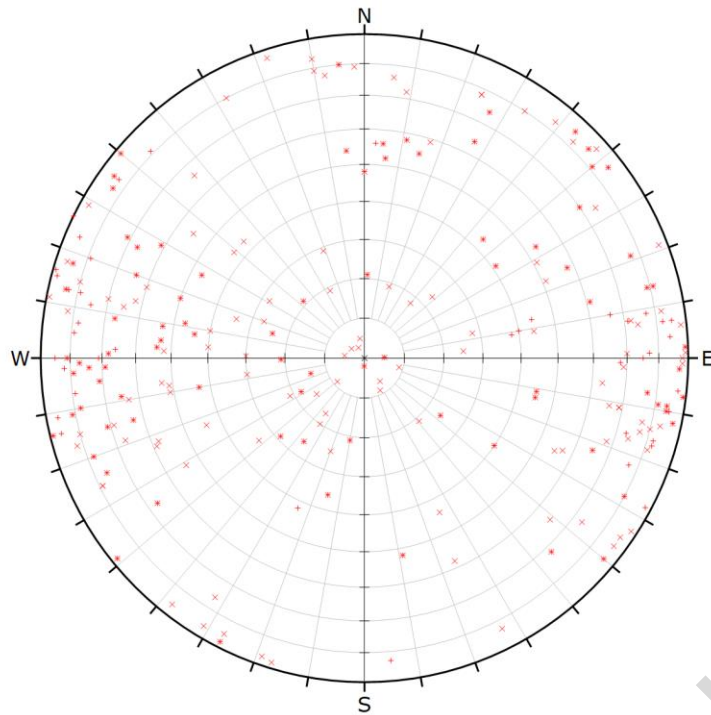
Friction Angle (°)

Upper Bound
Lower Bound
ASSIGNED

292
37
55

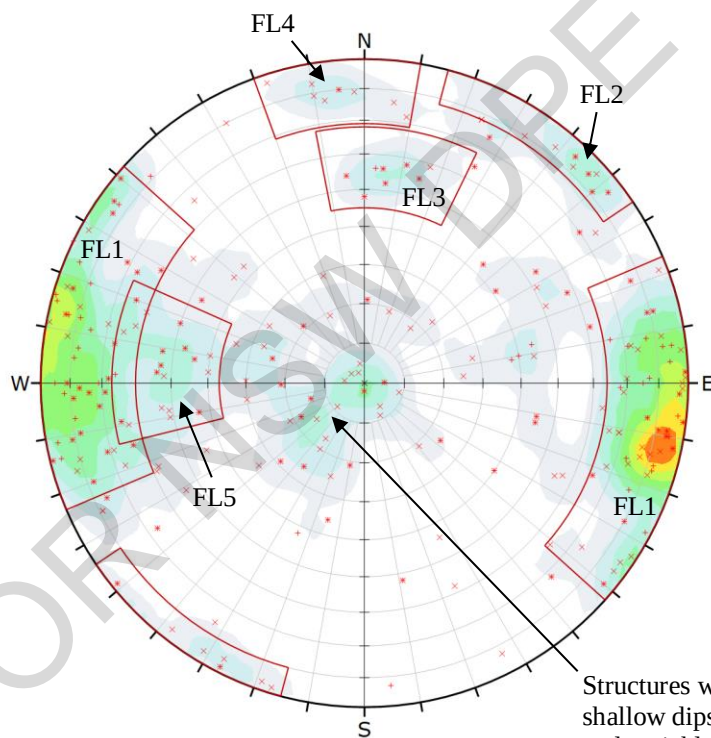
48
23
25

drawn	KM		client:	ALKANE RESOURCES LTD	
approved	LMcK		project:	Tomingley Gold Extension Project Geotechnical Assessment	
date	3/3/21		title:	TOMINGLEY TRIAXIAL TESTING – SAPROLITE/WEATHERED ROCK	
scale	NTS		project no:	PS117942	figure no: 12
size	A4				



Symbol	TYPE	Quantity
x	Cz	16
x	F	114
+	Sr	42
*	Sz	70

Plot Mode	Pole Vectors
Vector Count	242 (242 Entries)
Hemisphere	Lower
Projection	Equal Area



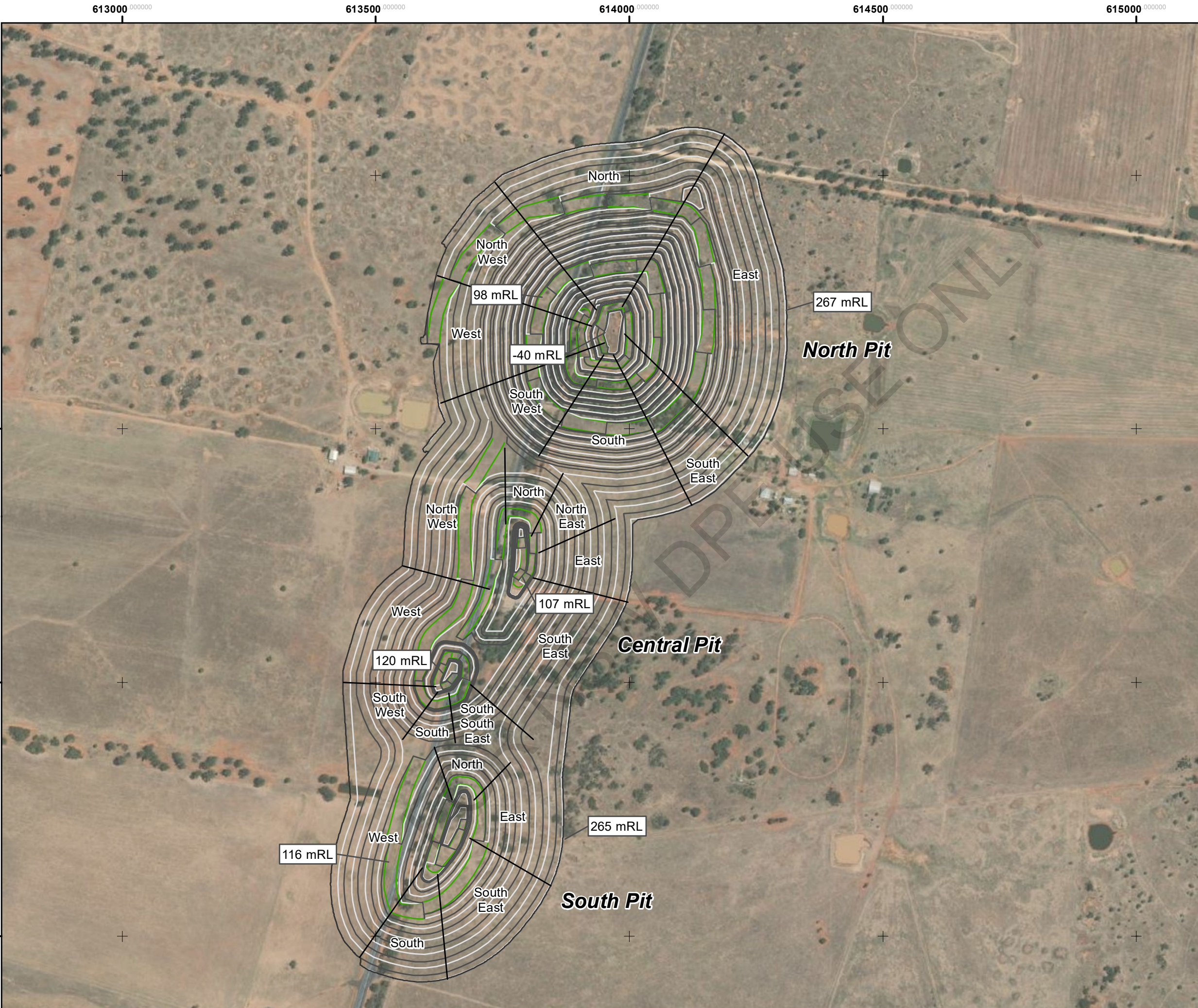
Symbol	TYPE	Quantity
x	Cz	16
x	F	114
+	Sr	42
*	Sz	70

Color	Density Concentrations
	0.00 - 0.70
	0.70 - 1.40
	1.40 - 2.10
	2.10 - 2.80
	2.80 - 3.50
	3.50 - 4.20
	4.20 - 4.90
	4.90 - 5.60
	5.60 - 6.30
	6.30 - 7.00

Contour Data	Pole Vectors
Maximum Density	6.21%
Contour Distribution	Fisher
Counting Circle Size	1.0%

Plot Mode	Pole Vectors
Vector Count	242 (242 Entries)
Hemisphere	Lower
Projection	Equal Area

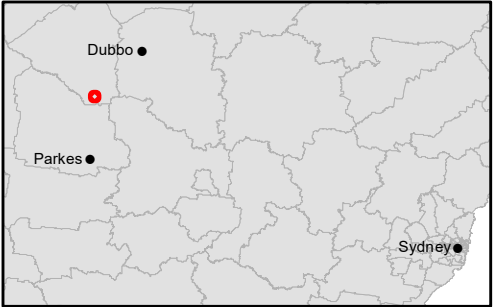
drawn	KM		client:	ALKANE RESOURCES LTD	
approved	LMcK		project:	Tomingley Gold Extension Project Geotechnical Assessment	
date	3/3/21		title:	STEREOPLOT ALL MAJOR STRUCTURES – DOWNHOLE GEOPHYSICS AND EXPLOARTION BOREHOLE DATA	
scale	NTS		project no:	PS117942	figure no: 13
size	A4				



Tomingley Gold
Extension Project

Figure 14
Design Sectors
Sar_c5c11_201203

—— Design sector delineation



Coordinate system: GDA 1994 MGA Zone 55
Scale ratio correct when printed at A3
1:7,245 Date: 26-Mar-21

Data sources: - DNRME, TMR, Translink, Geoscience Australia

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APPENDIX B

GEOTECHNICAL BOREHOLE LOGS



FOR NSW DPE USE ONLY

Explanatory Notes - Engineering Logs

Engineering logs have been prepared in accordance with AS1726:2017 "Geotechnical Site Investigations" and as defined below.

DRILLING/EXCAVATION METHODS

Symbol	Term
AS	Auger Screwing
EX	Excavation
HA	Hand Auger
NMLC/HMLC	Diamond Core
NQ/HQ/PQ	Diamond Core – wireline triple cube
PC	Percussion
PCB	Poly Carbonised Diamond Bit
PT	Push Tube
RAB	Rotary Air Blast
RC	Reverse Circulation
S	Sonic drill
VB	Vibrocoring
WB	Washbore with blade
WR	Washbore with roller (tricone)

SUPPORT

C	Casing
M	Drill mud
Nil	No support

WATER

	Partial water loss		Water inflow
	Complete water loss		
	Water level at date shown		

NFGWO No Free Groundwater Observed
The observation of groundwater, whether present or not, was not possible due to drilling water, surface seepage or cave in of the borehole/test pit.

NFGWE No Free Groundwater Encountered
The borehole/test pit was dry soon after excavation. Inflow may have been observed had the borehole/test pit been left open for a longer period.

FIELD TEST (Soil borehole and test pit logs)

DM	Dilatometer test
HB	Hammer bounce
OT	Other test (eg. plate load test)
PE	Permeability test
PM	Pressuremeter test
PP	Pocket penetrometer
SPT	Standard penetration test
SV	Shear vane test

SAMPLE (Soil borehole and test pit logs)

B	Bulk disturbed sample
D	Disturbed sample
PT	Push tube
SPT	SPT sample
U50	Undisturbed sample in 50mm diameter tube
U75	Undisturbed sample in 75mm diameter tube

GRAPHIC LOG – see later

TOTAL CORE RECOVERY (Rock logs only)

$$\text{TCR (\%)} = \frac{\text{Length of core recovered}}{\text{Length of core run}} \times 100$$

ROCK QUALITY DESIGNATION (Rock logs only)

$$\text{RQD (\%)} = \frac{\sum \text{Length of sound core pieces} > 100\text{mm}}{\text{Length of core run}} \times 100$$

GROUP SYMBOL (Soil borehole and test pit logs)

Soils are classified to reflect their primary and significant secondary component/characteristic using the classification symbols described in AS1726-2017, summarised as follows.

Symbol	Major division	Typical names
GW, GP	GRAVEL	Gravel & gravel-sand mixtures, little/no fines
GM		Gravel-silt & gravel-sand-silt mixtures
GC		Gravel-clay & gravel-sand-clay mixtures
SW, SP	SAND	Sand & gravel-sand mixtures, little/no fines
SM		Sand-silt mixtures
SC		Sand-clay mixtures
ML	SILT & CLAY (low & medium plasticity)	Inorganic silt/clayey fine sand or silt
CL, CI		Inorganic clay, gravelly clay, sandy clay
OL		Organic silt
MH	SILT & CLAY (high plasticity)	Inorganic silt
CH		Inorganic clay, high plasticity
OH		Organic clay, med-high plasticity, organic silt
Pt	Highly organic soil	Peat, highly organic soil

FIELD DESCRIPTION

Soil and rock materials described to AS1726-2017. The description of percentage of cobbles and boulders in a soil may be limited by sample size.

MOISTURE CONDITION

Coarse grained soils and rocks
Dry (D), Moist (M) or Wet (W).
Estimated based on appearance and feel.

Cohesive soils

<PL	Moist, dry of plastic limit
w≈PL	Moist, near plastic limit
w>PL	Moist, wet of plastic limit
w≈LL	Wet, near liquid limit
w>LL	Wet, wet of liquid limit

Estimated based on judgement

COHESIVE SOILS - CONSISTENCY

The consistency of a cohesive soil is assessed by tactile means or field measurement of undrained shear strength.

A Hand Penetrometer may be used in the field or the laboratory to provide approximate assessment of unconfined compressive strength of cohesive soils (kPa) as follows:

Strength	Symbol	Indicative undrained shear strength (kPa)	Hand Penetrometer Reading (kPa)	SPT N value
Very Soft	VS	≤ 12	< 25	0-2
Soft	S	>12 and ≤ 25	25 to 50	2-4
Firm	F	> 25 and ≤ 50	50 to 100	4-8
Stiff	St	>50 and ≤	100 to 200	8-16
Very Stiff	VSt	> 100 and ≤	200 to 400	16-30
Hard	H	>200	> 400	>30
Friable	Fr	-	-	

COHESIONLESS SOILS - RELATIVE DENSITY

Relative density terms are used to describe silty and sandy material, and these are usually based on resistance to drilling penetration or the Standard Penetration Test (SPT) 'N' values.

The Standard Penetration Test (SPT) is carried out in accordance with AS 1289, 6.3.1. For completed tests the number of blows required to drive the split spoon sampler 300 mm is recorded as the N value. For incomplete tests the number of blows and the penetration beyond the seating depth of 150 mm are recorded. If the 150 mm seating penetration is not achieved the number of blows to achieve the measured penetration is recorded. SPT correlations may be subject to corrections for overburden pressure and equipment type.

Term	Symbol	Density Index	N Value (blows /0.3 m)	DCP (blows /100m)
Very Loose	VL	0 to 15	0 to 4	0 to 1
Loose	L	15 to 35	4 to 10	1 to 2
Medium Dense	MD	35 to 65	10 to 30	2 to 5
Dense	D	65 to 85	30 to 50	5 to 10
Very Dense	VD	>85	>50	>10

SOIL STRUCTURE

Soil structure is described to AS 1726-2017 if visible and present.

SOIL / ROCK ORIGIN

The geological origin of the soil or rock is presented as an interpretation of the geological and geomorphological setting. Origin cannot be deduced based on material appearance and properties alone and is therefore limited by the availability of supporting geological information.

ROCK MATERIAL WEATHERING

Rock weathering is described mainly using the following abbreviations and definitions used in AS1726.

Term	Symbol	Definition
Residual soil	RS	Material is weathered to such an extent that it has soil properties. Mass structure and material texture and fabric of original rock are no longer visible.
Extremely weathered	XW	Material is weathered to such an extent that it has soil properties. Mass structure and material texture and fabric of original rock are still visible.
Highly weathered	HW	The whole of the rock material is discoloured, usually by iron staining or bleaching to the extent that the colour of the original rock is not recognizable. Rock strength is significantly changed by weathering. Some primary minerals have weathered to clay minerals. Porosity may be increased by leaching, or may be decreased due to deposition of weathering products in pores.
Moderately weathered	MW	The whole of the rock material is discoloured, usually by iron staining or bleaching to the extent that the colour of the original rock is not recognizable, but shows little or no change of strength from fresh rock.
Slightly weathered	SW	Rock is partially discoloured with staining or bleaching along joints but shows little or no change of strength from fresh rock.
Fresh	FR	Rock shows no sign of decomposition of individual minerals or colour changes.

If differentiation between highly and moderately weathered rock is not practicable, then Distinctly Weathered (DW) is used as defined in AS1726:2017.

INFERRED ROCK STRENGTH

Rock strength is inferred based on field assessment (AS1726-2017), Point Load Index (AS4133.4.1) or Uniaxial Compressive Strength (AS 4133.4.2.1) as follows:

Term	Symbol	UCS (MPa)	Point Load Index $IS_{(50)}$ (MPa)	Field assessment
Very Low	VL	0.6 to 2	0.03 to 0.1	Material crumbles under firm blows with sharp end of pick; can be peeled with a knife; too hard to cut a triaxial sample by hand. Pieces up to 30mm thick can be broken by finger pressure.
Low	L	2 to 6	0.1 to 0.3	Easily scored with a knife; indentations 1mm to 3mm show in the specimen with firm blows of the pick point; has dull sound under hammer. A piece of core 150mm long by 50mm diameter may be broken by hand. Sharp edges of core may be friable and break during handling
Medium	M	6 to 20	0.3 to 1	Readily scored with a knife; a piece of core 150mm long by 50mm diameter can be broken by hand with difficulty.
High	H	20 to 60	1 to 3	A piece of core 150mm long by 50mm diameter cannot be broken by hand but can be broken by a pick with single firm blow; rock rings under hammer.
Very High	VH	60 to 200	3 to 10	Hand specimen breaks with pick after more than one blow; rock rings under hammer.
Extremely High	EH	>200	>10	Specimen requires many blows with geological pick to break through intact material; rock rings under hammer.

DEFECT SPACING/BEDDING SPACING (Rock)

Measured at right angles to defects of same set or bedding.

Term	Defect Spacing	Bedding
Extremely closely spaced	<6 mm 6 to 20 mm	Thinly Laminated Laminated
Very closely spaced	20 to 60 mm	Very Thin
Closely spaced	0.06 to 0.2 m	Thin
Moderately widely spaced	0.2 to 0.6 m	Medium
Widely spaced	0.6 to 2 m	Thick
Very widely spaced	>2 m	Very Thick

DEFECT DESCRIPTION (Rock)

Symbol	Term	Symbol	Term
Bd	Bedding	DB	Drill Break
Pt	Parting	Se	Seam
Cn	Contact	SZ	Sheared Zone
Bg	Boundary	CZ	Crushed Zone
Jt	Joint	F	Fault
Fo	Foliation	Vn	Vein
C	Cleavage		

DEFECT ORIENTATION (Rock)

Dip measured relative to the horizontal plane in vertical boreholes and relative to core axis in inclined boreholes.

DEFECT ROUGHNESS AND SHAPE (Rock)

Roughness	Description	Roughness	Description
Sm	Smooth	Po	Polished
Ro	Rough	Sl	Slickensided
VRo	Very Rough		
Shape	Description	Shape	Description
Pl	Planar	Cu	Curved
Un	Undulating	Vu	Vuggy
Ir	Irregular	St	Stepped

COATING OR INFILLING (Rock)

Abbreviation	Description	Abbreviation	Description
Cln	Clean	Co	Coal
Cg	Coating	Cr	Crushed rock
In	Infill	Fe	Limonite/ironstone
Sn	Stain	Fl	Feldspar
Vr	Veneer	Gp	Gypsum
Ca	Calcite	Mn	Manganese
Ch	Chlorite	Py	Pyrite
Clay	Clay	Qz	Quartz



BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT001

SHEET : 1 OF 19

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **San Antonio**
Project Number: **PS117942**

Date Commenced: **19-10-20**
Date Completed: **21-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**Hole Angle: **-60°**Surface RL: **265.9 m AHD**Borehole Diameter: **96 mm**Bearing: **112°**Co-ords: **E 613737.12 N 6389686.65 MGA2020 55**

Borehole Information						Field Material Description										
METHOD	SUPPORT	WATER	RL (m AHD)	DEPTH (m)	FIELD TEST	SAMPLE	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY				POCKET PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil	NFGWE							Topsoil: Silty Sandy CLAY; high plasticity, grey, rootlets.		VS	FB	VL			TOPSOIL
			0.30						CORE LOSS 1.10m (0.30-1.40)		SL	FL	L	MD		
			265.5	0.5							ST	D	VST	H		

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT001

SHEET : 2 OF 19

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **San Antonio**
Project Number: **PS117942**

Date Commenced: **19-10-20**
Date Completed: **21-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-60°**
Bearing: **112°**

Surface RL: **265.9 m AHD**
Co-ords: **E 613737.12 N 6389686.65 MGA2020 55**

Borehole Information						Field Material Description												
METHOD	SUPPORT	WATER	RL (m AHD)	DEPTH (m)	FIELD TEST	SAMPLE	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY					POCKET PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS	
HQ	Nii	NFGWE								VS	FB	VL	LD	MD	ST	VD		
			261.5					CI-CH	Sandy CLAY; medium to high plasticity, pale grey, brown.									QUATERNARY ALLUVIUM
				5.30					CORE LOSS 0.50m (5.30-5.80)									
				5.5														
			261.0															
				5.80				CI-CH	Sandy CLAY; medium to high plasticity, pale grey, brown.									
				6.0					...becoming grey-brown, mottled orange-red									
			260.5															
				6.5														
			260.0															
				7.0														
			259.5															
				7.5														
			259.0															
				8.0														fining upwards sequence
			258.5															
				8.5														
				8.90				SW	Clayey Gravelly SAND; fine to coarse grained, red-brown-grey, medium to high plasticity clay, fine to medium grained, sub-rounded quartz/ironstone gravel, sandy gravelly clay in parts.								260	
			258.0															
				9.30					CORE LOSS 2.00m (9.30-11.30)									
				9.5														
			257.5															

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT001

SHEET : 3 OF 19

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **San Antonio**
Project Number: **PS117942**

Date Commenced: **19-10-20**
Date Completed: **21-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-60°**
Bearing: **112°**

Surface RL: **265.9 m AHD**
Co-ords: **E 613737.12 N 6389686.65 MGA2020 55**

Borehole Information							Field Material Description						
METHOD	SUPPORT	WATER	RL (m AHD)	DEPTH (m)	FIELD TEST	SAMPLE	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY	POCKET PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil	NFGWE							CORE LOSS 2.00m (9.30-11.30)				QUATERNARY ALLUVIUM
			257.0	10.5									
			256.5	11.0									
			11.30										
			256.0	11.5			SW		Clayey Gravelly SAND; fine to coarse grained, red-brown-grey, medium to high plasticity clay, fine to medium grained, sub-rounded quartz/ironstone gravel, sandy gravelly clay in parts.				
			255.5	12.0									
			12.20				SP		Clayey Silty SAND; medium to coarse grained, brown-grey, low plasticity clay, trace to with fine grained gravel.				
			255.0	12.5									
			13.0										
			254.5	13.5									
			254.0	14.0									
			14.20				ML		Clayey SILT; grey mottled brown, low plasticity clay.				TERTIARY ALLUVIUM
			253.5	14.5								270	
			253.0									190	
												150	

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT001

SHEET : 4 OF 19

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **San Antonio**
Project Number: **PS117942**

Date Commenced: **19-10-20**
Date Completed: **21-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-60°**
Bearing: **112°**

Surface RL: **265.9 m AHD**
Co-ords: **E 613737.12 N 6389686.65 MGA2020 55**

Borehole Information							Field Material Description						
METHOD	SUPPORT	WATER	RL (m AHD)	DEPTH (m)	FIELD TEST	SAMPLE	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY	POCKET PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil	NFGWE	252.5	15.5				CI-CH	Sandy CLAY; medium to high plasticity, pale grey, mottled orange-red, fine grained sand.				TERTIARY ALLUVIUM
			252.0	16.0									
			251.5	16.5									
			251.0	17.0									
			250.5	17.5					...with medium to coarse grained sandy clay layers (~200mm thick)				fining upwards sequence
			250.0	18.0									
			249.5	18.5									
			249.0	19.0									
			249.0	19.5				CI	Sandy Gravelly CLAY; medium plasticity, pale grey, mottled orange-red, fine to coarse grained sand, fine grained (~10 mm), sub-angular to sub-rounded quartz gravel.				

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT001

SHEET : 5 OF 19

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **San Antonio**
Project Number: **PS117942**

Date Commenced: **19-10-20**
Date Completed: **21-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-60°**
Bearing: **112°**

Surface RL: **265.9 m AHD**
Co-ords: **E 613737.12 N 6389686.65 MGA2020 55**

Borehole Information							Field Material Description						
METHOD	SUPPORT	WATER	RL (m AHD)	DEPTH (m)	FIELD TEST	SAMPLE	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY	POCKET PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil	NFGWE	248.5					CI	Sandy Gravelly CLAY; medium plasticity, pale grey, mottled orange-red, fine to coarse grained sand, fine grained (~10 mm), sub-angular to sub-rounded quartz gravel.	VS SL FL ST MD VD			TERTIARY ALLUVIUM
			20.5										
			248.0										
			21.0										
			247.5										
			21.5										
			247.0										
			22.0										
			246.5										
			22.5										fining upwards sequence
			246.0	23.0									
			23.40										
			245.5	23.5					BOULDER (DOLERITE?); white, porphyritic altered, feldspar crystals - 3 mm (clast), medium strength				
			23.70					CI	Sandy Gravelly CLAY; medium to high plasticity, pale grey, mottled orange-red, fine to coarse grained sand, fine grained, sub-angular to sub-rounded quartz gravel.				
			24.0										
			245.0										
			24.5										
			244.5										

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT001

SHEET : 6 OF 19

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **San Antonio**
Project Number: **PS117942**

Date Commenced: **19-10-20**
Date Completed: **21-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-60°**
Bearing: **112°**

Surface RL: **265.9 m AHD**
Co-ords: **E 613737.12 N 6389686.65 MGA2020 55**

Borehole Information							Field Material Description						
METHOD	SUPPORT	WATER	RL (m AHD)	DEPTH (m)	FIELD TEST	SAMPLE	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY	POCKET PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil	NFGWE						CI	Sandy Gravelly CLAY; medium to high plasticity, pale grey, mottled orange-red, fine to coarse grained sand, fine grained, sub-angular to sub-rounded quartz gravel.	VS FB SL VL ST MD VST DD H VD			TERTIARY ALLUVIUM
			244.0										
				25.5									
			243.5										
				26.0									
			243.0										
				26.5									
			242.5										
				27.0									
			2727.5										
			242.0						CORE LOSS 0.10m (27.50-27.60)				
				28.0				CI	Sandy Gravelly CLAY; medium to high plasticity, pale grey, mottled orange-red, fine to coarse grained sand, fine grained, sub-angular to sub-rounded quartz gravel.				
			241.5										fining upwards sequence
				28.5									
			241.0										
				29.0									
			240.5										
				29.5									
			240.0					CH					

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT001

SHEET : 7 OF 19

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **San Antonio**
Project Number: **PS117942**

Date Commenced: **19-10-20**
Date Completed: **21-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**Hole Angle: **-60°**Surface RL: **265.9 m AHD**Borehole Diameter: **96 mm**Bearing: **112°**Co-ords: **E 613737.12 N 6389686.65 MGA2020 55**

Borehole Information							Field Material Description						
METHOD	SUPPORT	WATER	RL (m AHD)	DEPTH (m)	FIELD TEST	SAMPLE	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY	POCKET PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil	NFGWE						CH	Sandy CLAY; high plasticity, grey mottled orange and red, fine to coarse grained sand, remnant of extremely weathereed rock clast gravel, mostly ironstone cemented, with rock clast, fine to coarse grained (10 - 100 mm) gravel, extremely weathered potential cobble-boulder size.	VS SL ST H	FB VL LD DD VD		TERTIARY ALLUVIUM
			239.5	30.5									
			239.0	31.0									
			238.5	31.5									
			238.0	32.0									fining upwards sequence
			237.5	32.5					REFER TO CORED BOREHOLE LOG				
			237.0	33.0									
			236.5	33.5									
			236.0	34.0									
				34.5									

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **San Antonio**
Project Number: **PS117942**

Date Commenced: **19-10-20**
Date Completed: **21-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-60°**
Bearing: **112°**

Surface RL: **265.9 m AHD**
Co-ords: **E 613737.12 N 6389686.65 MGA2020 55**

Borehole Information						Field Material Description						
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT001

SHEET : 9 OF 19

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **San Antonio**
Project Number: **PS117942**

Date Commenced: **19-10-20**
Date Completed: **21-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-60°**
Bearing: **112°**

Surface RL: **265.9 m AHD**
Co-ords: **E 613737.12 N 6389686.65 MGA2020 55**

Borehole Information					Field Material Description				
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING
HQ	Nil		100	0	235.5			Volcaniclastic SANDSTONE; fine grained, pale grey, orange and red, foliated very thinly, foliation appears parallel to primary layering-bedding	XW - HW
					35.5			...gravelly 'bed load' deposit. Fine grained quartz gravel, ironstone cemented	
					235.0			...from soil strength (XW) to very low rock strength (HW)	HW
					36.0				
					234.5				
					36.5				
					234.0			36.75-36.80m: Quartz vein	
					37.0				
					233.5				
					37.5				
					233.0				
					38.0				
					232.5				
					38.5				
					232.0			...from soil strength (XW) to very low rock strength (HW)	XW - HW
					39.0				
					39.5			CORE LOSS 0.10m (39.50-39.60)	
					39.60			Volcaniclastic SANDSTONE; fine grained, pale grey, orange and red, foliated very thinly, foliation appears parallel to primary layering-bedding	HW
					231.5				

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **San Antonio**
Project Number: **PS117942**

Date Commenced: **19-10-20**
Date Completed: **21-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-60°**
Bearing: **112°**

Surface RL: **265.9 m AHD**
Co-ords: **E 613737.12 N 6389686.65 MGA2020 55**

Borehole Information						Field Material Description						
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	ROD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	NII											

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT001

SHEET : 11 OF 19

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **San Antonio**
Project Number: **PS117942**

Date Commenced: **19-10-20**
Date Completed: **21-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-60°**
Bearing: **112°**

Surface RL: **265.9 m AHD**
Co-ords: **E 613737.12 N 6389686.65 MGA2020 55**

Borehole Information						Field Material Description				
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)
HQ	Nil		90	0				Volcaniclastic SANDSTONE; fine grained, pale grey and red, foliated very thinly, foliation appears parallel to primary layering-bedding	XW	
					226.5	45.5		...from soil strength (XW) to very low rock strength (HW)	XW - HW	
					226.0	46.0				
					225.5	46.5				
					225.0	47.0		...from soil strength (XW) to very low rock strength (HW)	XW - HW	
					225.0	47.20		CORE LOSS 1.40m (47.20-48.60)		
					224.5	48.0				
					224.0	48.5				
					223.5	49.0		Volcaniclastic SANDSTONE; fine to coarse grained, pale grey, orange and red, foliated very thinly, foliation appears parallel to primary layering-bedding	XW - HW	
					223.0	49.5		...from soil strength (XW) to very low rock strength (HW)	XW	

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT001

SHEET : 12 OF 19

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **San Antonio**
Project Number: **PS117942**

Date Commenced: **19-10-20**
Date Completed: **21-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-60°**
Bearing: **112°**

Surface RL: **265.9 m AHD**
Co-ords: **E 613737.12 N 6389686.65 MGA2020 55**

Borehole Information					Field Material Description							
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil		106	0	222.5			Volcaniclastic SANDSTONE; fine to coarse grained, pale grey, orange and red, foliated very thinly, foliation appears parallel to primary layering-bedding	HW	VL 0.0 / 0.0 L 0.1 / 2 H 1.1 / 20 VH 1 / 60 EH 0 / 200	<20 20-60 60-200 200-600 600-2000 2000	WEATHERED ROCK
			65	0	51.0							
					221.5	51.30		CORE LOSS 0.60m (51.30-51.90)				
					51.5							
					221.0	51.90		Volcaniclastic SANDSTONE; fine to coarse grained, pale grey and orange	HW			52.00: -61.2m: continued defects occurring on seams on foliations on degraded veins (quartz epidote) Multiple joint orientations ironstone and manganese stained
			96	11	52.0							
					220.5	52.5						
					220.0	53.0						
					53.5							
					219.5							
					54.0				HW - MW			
					219.0	54.20		CORE LOSS 0.10m (54.20-54.30)				
					54.30			Volcaniclastic SANDSTONE; fine to coarse grained, pale grey and orange	HW			
			73	27	54.5							
					218.5							

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT001

SHEET : 13 OF 19

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **San Antonio**
Project Number: **PS117942**

Date Commenced: **19-10-20**
Date Completed: **21-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track** Hole Angle: **-60°** Surface RL: **265.9 m AHD**
Borehole Diameter: **96 mm** Bearing: **112°** Co-ords: **E 613737.12 N 6389686.65 MGA2020 55**

Borehole Information						Field Material Description						
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil		73	27	55.20			Volcaniclastic SANDSTONE; fine to coarse grained, pale grey and orange	HW			WEATHERED ROCK
					218.0			CORE LOSS 0.20m (55.20-55.40)				
			100	0	55.40			Volcaniclastic SANDSTONE; fine to coarse grained, pale grey and orange	HW			
					55.5							
					55.70			CORE LOSS 0.10m (55.70-55.80)				
			67	0	55.80			Volcaniclastic SANDSTONE; fine to coarse grained, pale grey and orange	HW			
					217.5							
					56.0							
					217.0							
			93	36	56.5				HW - MW			
					216.5							
					57.0							
					57.30			CORE LOSS 0.10m (57.30-57.40)				
					57.40							
					57.5			Volcaniclastic SANDSTONE; fine to coarse grained, pale grey and orange	HW - MW			
			100	63	216.0							
					58.0							
			50	40	215.5			CORE LOSS 0.20m (58.20-58.40)				
					58.40							
					58.5			Volcaniclastic SANDSTONE; fine to coarse grained, pale grey and orange, foliated very thinly, foliation appears parallel to primary layering-bedding	HW - MW			
			100	50	215.0							
					59.0							
					214.5							
			100	41	59.5							
					214.0							

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT001

SHEET : 14 OF 19

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **San Antonio**
Project Number: **PS117942**

Date Commenced: **19-10-20**
Date Completed: **21-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-60°**
Bearing: **112°**

Surface RL: **265.9 m AHD**
Co-ords: **E 613737.12 N 6389686.65 MGA2020 55**

Borehole Information					Field Material Description							
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil											
			100	41				Volcaniclastic SANDSTONE; fine to coarse grained, pale grey and orange, foliated very thinly, foliation appears parallel to primary layering-bedding	HW - MW			WEATHERED ROCK
			60	0	61.0	213.0		CORE LOSS 0.20m (61.00-61.20)				
					61.20			Volcaniclastic SANDSTONE; fine to coarse grained, pale grey and orange	HW - MW			61.20: -78.80m: increased competency of rock mass mostly ironstone and manganese stepped joints along foliation and oblique. Some weathered seams
			100	46					MW			61.5m: Jt, 70°, Pl, Ro, Fe & Mn Sn
					61.5	212.5						61.6m: Jt, 30°, Pl, Ro, Fe & Mn Sn
					62.0	212.0						
					62.5							
			86	20					HW			
					63.0	211.5						
					63.40	211.0		CORE LOSS 0.10m (63.40-63.50)				
					63.5			Volcaniclastic SANDSTONE; fine to coarse grained, pale grey and orange	HW			
									MW			
			100	24								
					64.0	210.5						
					64.5	210.0			XW			

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **San Antonio**
Project Number: **PS117942**

Date Commenced: **19-10-20**
Date Completed: **21-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-60°**
Bearing: **112°**

Surface RL: **265.9 m AHD**
Co-ords: **E 613737.12 N 6389686.65 MGA2020 55**

Borehole Information						Field Material Description						
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (%)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa ($I_{S(50)}$ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nii									VL 0.03 / 0.8 L 0.1 / 2 M 0.3 / 6 H 1 / 20 VHSI 60 EHSI 200	<20 20-60 60-200 200-600 600-2000 >2000	
			100	24	209.5			Volcaniclastic SANDSTONE; fine to coarse grained, pale grey and orange	MW			WEATHERED ROCK 65.1m: Qtz epidote vein ~100mm thick oblique to foliation
						65.5			HW			
			94	36	209.0				MW			
						66.0						
						208.5						
						66.5						
						208.0						
						67.0						
			100	34	207.5							
						67.5						
						207.0						68.1m: epidote vein 10mm thick parallel to foliation
						68.0						
						68.5						
						206.5						
			100	78	69.0							68.7m: Jt x 6, 30 - 45°, Pl-Un, Ro, Fe & Sn, sub-parallel to foliation 0-20°
						206.0						
						69.5						69.5m: Se, Cl, non-intact core, rock fragment
			100	69	205.5							

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT001

SHEET : 16 OF 19

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **San Antonio**
Project Number: **PS117942**

Date Commenced: **19-10-20**
Date Completed: **21-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-60°**
Bearing: **112°**

Surface RL: **265.9 m AHD**
Co-ords: **E 613737.12 N 6389686.65 MGA2020 55**

Borehole Information					Field Material Description								
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS	
HQ	Nil							Volcaniclastic SANDSTONE; fine to coarse grained, pale grey and orange	MW	VL 0.0 / 0.6 L 0.1 / 2 N 1 / 20 VH 1 / 60 EH 10 / 200	<20 20-40 60-200 200-600 600-2000 ≥2000	WEATHERED ROCK	
			100	69		205.0							
					70.5								70.5m: CZ / Se, 20°, non-intact rock fragments in clay matrix
					204.5								
					71.0								
					204.0								
					71.5								
					203.5								
			100	41		72.0							
					203.0								
					72.5								
					203.0								
					73.0								
					202.5								
					73.5								
			94	55		202.0							
					74.0								
					201.5								
					74.40								
					74.45			CORE LOSS 0.10m (74.40-74.50)					
					74.5								
			100	73		201.0		Volcaniclastic SANDSTONE; fine to coarse grained, pale grey and orange, foliated very thinly, foliation appears parallel to primary layering-bedding	MW			66.9m: 'Stripy' epidote alteration fabric	

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **San Antonio**
Project Number: **PS117942**

Date Commenced: **19-10-20**
Date Completed: **21-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-60°**
Bearing: **112°**

Surface RL: **265.9 m AHD**
Co-ords: **E 613737.12 N 6389686.65 MGA2020 55**

Borehole Information						Field Material Description						
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nii											
			100	73	200.5	75.5		Volcaniclastic SANDSTONE; fine to coarse grained, pale grey and orange, foliated very thinly, foliation appears parallel to primary layering-bedding	MW			WEATHERED ROCK
			100	56	200.0	76.0		75.85-76.60m: epidote quartz vein/alteration zone, grey green colour				75.85m: Multiple SZ fractures and joints, Pl, Ro, Fe Sn
			100	93	199.5	76.5						
			100			77.0						
			100	90	199.0	77.5						
			80	28	197.5	79.0			HW			78.8m: non-intact core
					79.10			CORE LOSS 0.20m (79.10-79.30)				
			75	22	197.0	79.5		Volcaniclastic SANDSTONE; fine to coarse grained, pale grey and orange	HW			79.6m: SZ, brecciated / vein material, non-intact core RF, clay 300mm
								79.60-80.0m: epidote vein/alteration zone				

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **San Antonio**
Project Number: **PS117942**

Date Commenced: **19-10-20**
Date Completed: **21-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-60°**
Bearing: **112°**

Surface RL: **265.9 m AHD**
Co-ords: **E 613737.12 N 6389686.65 MGA2020 55**

Borehole Information						Field Material Description						
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	NII									VL 0.03 / 0.8 L 0.1 / 2 M 0.3 / 6 H 1 / 20 VH 3 / 60 EH 10 / 200	20 20-40 40-200 200-600 600-2000 >2000	
			75	22	196.5	80.20		Volcaniclastic SANDSTONE; fine to coarse grained, pale grey and orange	HW			WEATHERED ROCK — 78.8m: Decreased competency of rock mass, degraded epidote quartz veins, seams, low to high alpha joints iron staining and foliation parting
								CORE LOSS 0.50m (80.20-80.70)				
			50	0	196.0	81.70		Volcaniclastic SANDSTONE; fine to coarse grained, pale grey and orange	HW			
								CORE LOSS 0.50m (81.40-81.90)				
			56	14	195.5	81.40		Volcaniclastic SANDSTONE; fine to coarse grained, pale grey and orange	HW			
								CORE LOSS 0.50m (81.40-81.90)				
					195.0	81.90		Volcaniclastic SANDSTONE; fine to coarse grained, pale grey and orange	HW			
			90	50	194.5	82.5						
			83	0	194.0	83.0		Volcaniclastic SANDSTONE; fine to coarse grained, pale green grey and orange	HW			
								CORE LOSS 0.20m (83.80-84.00)				
			100	0	193.0	84.0		Volcaniclastic SANDSTONE; fine to coarse grained, pale green grey and orange	HW			— 84.2m: non-intact core
								...from soil strength (XW) to very low rock strength (HW)	XW - HW			
			73	0	192.5	84.5						

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT001

SHEET : 19 OF 19

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **San Antonio**
Project Number: **PS117942**

Date Commenced: **19-10-20**
Date Completed: **21-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-60°**
Bearing: **112°**

Surface RL: **265.9 m AHD**
Co-ords: **E 613737.12 N 6389686.65 MGA2020 55**

Borehole Information					Field Material Description							
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil		73	0	192.0			Volcaniclastic SANDSTONE; fine to coarse grained, pale green grey and orange	HW	VL 0.00 / 0.0 L 0.12 / 0.6 N 1.76 / 8.0 VH1 / 8.0 EH10 / 20.0	<20 20-40 60-200 200-400 600-2000 2000	WEATHERED ROCK
					85.40			CORE LOSS 0.30m (85.40-85.70)	XW - HW			
			86	36	191.5			Volcaniclastic SANDSTONE; fine to coarse grained, green grey and orange, foliated very thinly, foliation appears parallel to primary layering-bedding	MW			
					86.30			CORE LOSS 0.20m (86.30-86.50)				
			92	90	191.0	86.5		Volcaniclastic SANDSTONE; fine to coarse grained, green grey and orange	MW - SW			86.4m: Jt x 3, 75 - 90°, Pl, Ro, Fe & Mn Sn
					87.0							
					190.5							
					87.5							87.5m: F, 60°, Pl, Ro, Fe & Mn Sn, approximately 40 mm displacement
			50	0	190.0							85.7m: increased rock mass quantity, strength, intact joints or open as described below
					87.90			CORE LOSS 0.30m (87.90-88.20)				
					88.0							
			89	68	189.5	88.20		Volcaniclastic SANDSTONE; fine to coarse grained, pale grey, green grey and orange, foliated very thinly, foliation appears parallel to primary layering-bedding	MW - SW			88.3m: Jt, 80°, Un, Ro, Sn Fe, rock fragment infill, 1-5mm
					88.5							88.6m: Jt, 30°, Pl, Ro, Sn Fe, healed
					189.0							88.85m: Jt, 60°, Pl, Ro, Sn Fe, healed
					89.0							
					188.5				MW			88.6m: Jt x 6, 45°, Sn Fe, Un-Pl, Ro, 0.1-1 mm, open parallel fabric
					89.5							
					89.80			CORE LOSS 0.20m (89.80-90.00)				
					188.0			END OF BOREHOLE AT 90.00 m Target depth				

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **San Antonio**
Project Number: **PS117942**

Date Commenced: **17-10-20**
Date Completed: **18-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-67°**
Bearing: **98°**

Surface RL: **265.6 m AHD**
Co-ords: **E 613631.65 N 6389694.91 MGA2020 55**

Borehole Information							Field Material Description						
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS	
					178.0								
					95.5								
					177.5								
					96.0								
					177.0								
					96.5								
					176.5								
					97.0								
					176.0								
					97.5								
					175.5								
					98.0								
					175.0								
					98.5								
					174.5								
					99.0								
HQ	Nil							START CORING AT 99.00m	HW			WEATHERED ROCK	
								Volcaniclastic SANDSTONE; coarse grained, dark brown					
								...pale grey with moderate sericitic alteration	HW				
			100	99	174.0	99.5							

Page 1 to Page 20 not logged by WSP and not included in this log

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT002

SHEET : 22 OF 35

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **San Antonio**
Project Number: **PS117942**

Date Commenced: **17-10-20**
Date Completed: **18-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-67°**
Bearing: **98°**

Surface RL: **265.6 m AHD**
Co-ords: **E 613631.65 N 6389694.91 MGA2020 55**

Borehole Information					Field Material Description				
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING
HQ	Nil		100	99	173.5			Volcaniclastic SANDSTONE; coarse grained, dark brown	HW
					100.5				
					173.0				
					101.0				
					172.5				
					101.5				
					172.0				
					101.96				
					102.0			Volcaniclastic SANDSTONE; coarse grained, dark green, minor sericitic and moderate chloritic alteration	HW
					171.5				
					102.5				
					171.0				
					103.0			...moderate chloritic alteration	MW
					170.5				
					103.5				
					170.0				
					104.0				
					169.5				
					104.5				
					169.0				

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT002

SHEET : 23 OF 35

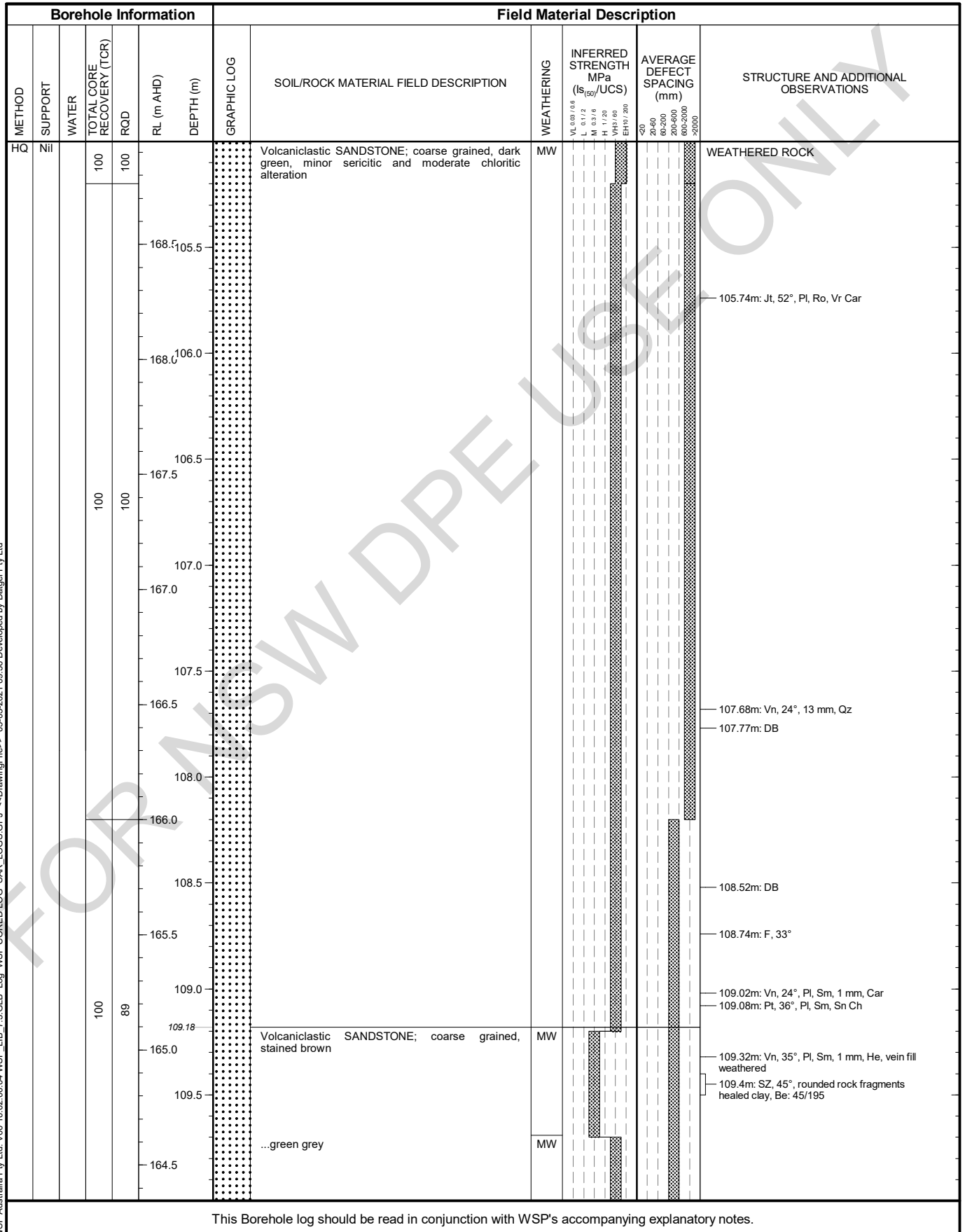
Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **San Antonio**
Project Number: **PS117942**

Date Commenced: **17-10-20**
Date Completed: **18-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-67°**
Bearing: **98°**

Surface RL: **265.6 m AHD**
Co-ords: **E 613631.65 N 6389694.91 MGA2020 55**



This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT002

SHEET : 24 OF 35

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **San Antonio**
Project Number: **PS117942**

Date Commenced: **17-10-20**
Date Completed: **18-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-67°**
Bearing: **98°**

Surface RL: **265.6 m AHD**
Co-ords: **E 613631.65 N 6389694.91 MGA2020 55**

Borehole Information					Field Material Description				
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING
HQ	Nil							Volcaniclastic SANDSTONE; coarse grained, stained brown	MW
			100	89	164.0				
					110.5				
					163.5				
					111.0				
					163.0				
					111.5				
					162.1				
					112.0				
					162.0				
					112.5				
			100	86	113.0				
					161.5				
					113.5				
					161.0				
					114.0				
					160.5				
					114.5				
			100	96	160.0				

110.25m: Pt, 36°, Pl, Ro, 2 mm, Ch
110.35m: Pt, 36°, Pl, Ro, 2 mm, Ch
111.71m: Jt, 45°, Un, Ro, Vr Car
112.78m: Jt, 18°, Un, Ro, Vr Car
113.05m: Se, non-intact, moderately weathered along foliation
113.6m: non-intact core multiple Fe stained joints and foliation partings

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT002

SHEET : 25 OF 35

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **San Antonio**
Project Number: **PS117942**

Date Commenced: **17-10-20**
Date Completed: **18-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**Hole Angle: **-67°**Surface RL: **265.6 m AHD**Borehole Diameter: **96 mm**Bearing: **98°**Co-ords: **E 613631.65 N 6389694.91 MGA2020 55**

Borehole Information						Field Material Description				
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil							Volcaniclastic SANDSTONE; coarse grained, stained brown	MW	115.05m: Jt, 50°, Pl, 0.1 mm, Ca 115.1m: Jt, 45°, Pl, Ro, Sn Fe WEATHERED ROCK
						159.5		...moderate sericitic alteration		
						115.5				
						159.0				
						116.0				115.9m: Jt, 85°, Pl, Ro, 0.1 mm, Ca
						158.5				
						116.5				116.3m: Vn, 25°, Pl, Qz/Ca In 80mm
						116.80				
						158.0		Volcaniclastic SANDSTONE; coarse grained, stained dark red brown, green grey, moderate sericitic and chloritic alteration		116.8m: core spin
						117.0				116.9m: Vn, 23°, Un, 15 mm, Qz, intact
						157.5				
						117.5				117.4m: Se, 8°, Pl, 5 mm, In Ca, along foliation
						157.0				117.7m: core spin, beta foliation change, 20degree above spin to 345degree below spin
						118.0				
						156.0			SW - FR	118.2m: Jt, 47°, Pl, Ro, 0.1 mm, Ca
						118.5				
						156.0			HW	118.65m: Jt, 17°, Pl, Ro, Ca
						119.0				
						156.0				118.75m: Se, multiple defects on foliation, possible shear zone
						119.5				
						155.5			HW - MW	

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT002

SHEET : 26 OF 35

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **San Antonio**
Project Number: **PS117942**

Date Commenced: **17-10-20**
Date Completed: **18-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-67°**
Bearing: **98°**

Surface RL: **265.6 m AHD**
Co-ords: **E 613631.65 N 6389694.91 MGA2020 55**

Borehole Information					Field Material Description				
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING
HQ	Nil		100	93	155.0			Volcaniclastic SANDSTONE; coarse grained, stained dark red brown, green grey, moderate sericitic and chloritic alteration	HW - MW
					120.5				MW
					154.5			...green grey	
					121.0				SW - FR
					154.0				
					121.5				
					153.5				
			100	99	122.0				FR
					153.0				
					122.5				
					152.5				
					123.0				
					152.0				
					123.5				
					151.5				
			100	100	124.0				
					151.1				
					124.5				

INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
VL 0.09 / 66 L 0.11 / 2 M 0.31 / 6 H 1.1 / 20 VH 3.1 / 60 EH 10.7 / 200	<20 20-40 60-200 200-400 600-2000 ≥2000	120.01m: Pt, 5°, FeMn Sn WEATHERED ROCK 120.3m: Jt, 85°, Pl, Ro, Sn Fe 120.95m: Vn, 10°, Un, Po, Vr Car 121.06m: Jt, 29°, Pl, Sm, Vr Car 121.31m: Jt, 36°, Pl, Sm, Vr Car 121.5m: Vn, 45°, Un, Ro, 1 mm, Car 121.88m: Vn, 34°, Un, Ro, 1 mm, Car 122.27m: Vn, 75°, Pl, Ro, Vr Car 123.1m: DB 123.25m: DB 124.1m: Jt, 75°, Pl, Ro, 0.5 mm, Vr Car 124.3m: Jt, 29°, Pl, Sm, Vr Car 124.7m: Jt, 39°, Pl, Sm, 1 mm, Car

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT002

SHEET : 27 OF 35

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **San Antonio**
Project Number: **PS117942**

Date Commenced: **17-10-20**
Date Completed: **18-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-67°**
Bearing: **98°**

Surface RL: **265.6 m AHD**
Co-ords: **E 613631.65 N 6389694.91 MGA2020 55**

Borehole Information					Field Material Description							
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil				150.5	150.0		Volcaniclastic SANDSTONE; coarse grained, stained green grey, moderate sericitic and chloritic alteration	FR	VL 0.0 / 0.0 L 0.1 / 2 H 1.7 / 6 H 1.7 / 6 VH1 / 0.0 EH1 / 2.0	<20 20-40 40-60 60-200 200-400 400-2000 2000	WEATHERED ROCK
			100	100		125.5						
						150.0						
						126.0		...stained pale green grey				126.01m: Vn 2m, intact
						149.5						126.27m: DB
						126.5						
						149.0						
						127.0						
						148.5						127.17m: Vn, 69°, 6 mm, Qz, intact
						127.5						127.32m: Vn, 60°, 8 mm, Qz, intact
						148.0						127.78m: DB
						128.0						
			100	100		147.5						128.45m: DB
						128.5						
						147.0						128.84m: Jt, 69°, Un, Ro, 1 mm, Car
						129.0						
						146.5						
						129.5						
			100	100		146.0						

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **San Antonio**
Project Number: **PS117942**

Date Commenced: **17-10-20**
Date Completed: **18-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-67°**
Bearing: **98°**

Surface RL: **265.6 m AHD**
Co-ords: **E 613631.65 N 6389694.91 MGA2020 55**

Borehole Information						Field Material Description						
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil											
			100	100	145.5	130.5		Volcaniclastic SANDSTONE; coarse grained, stained green grey, moderate sericitic and chloritic alteration	FR			130.41m: Jt, 70°, Un, Ro, Vr Car
					145.1	131.0						130.92m: Jt, 63°, Pl, Ro, Vr
					144.5	131.5						
					144.0	132.0						132.05m: Vn, 66°, Un, Ro, 1 mm, Car
					143.5	132.5						132.41m: Vn, 45°, 6 mm, Qz 132.42m: DB
					143.0	133.0						
					142.5	133.5						
					142.0	134.0						133.86m: Jt, 68°, Pl, Ro, Vr Car
					141.5							

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **San Antonio**
Project Number: **PS117942**

Date Commenced: **17-10-20**
Date Completed: **18-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-67°**
Bearing: **98°**

Surface RL: **265.6 m AHD**
Co-ords: **E 613631.65 N 6389694.91 MGA2020 55**

Borehole Information						Field Material Description						
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nii									VL 0.03 / 0.08 L 0.1 / 2 M 0.3 / 6 H 1 / 20 VH 3 / 60 EH 10 / 200	< 20 20-40 40-200 200-600 600-2000 > 2000	
			100	100	141.0			Volcaniclastic SANDSTONE; coarse grained, stained green grey, moderate sericitic and chloritic alteration	FR			WEATHERED ROCK
					135.5							135.14m: Vn, 55°, 7 mm, Qz 135.15m: Vn, 60°, St, Ro, 2 mm
					140.5							
					136.0							
					140.0							
					136.5							
					139.5							136.6m: Vn, 65°, 2 mm, Qz
					137.0			Volcaniclastic SANDSTONE; medium grained, dark green grey, poorly sorted, moderate chloritic alteration				136.94m: SZ, 20°, Ir, Ro, 100 mm, Qz/Ch
			100	100	139.0							
					137.5							
					139.0							
					138.0							
					138.5							
					138.0							138.43m: Jt, 18°, Ir, Ro, Sn He
					139.0							
			100	100	137.5							139.1m: Vn, 5°, Pl, 10 mm, Ca
					139.5							
					137.0							

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **San Antonio**
Project Number: **PS117942**

Date Commenced: **17-10-20**
Date Completed: **18-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-67°**
Bearing: **98°**

Surface RL: **265.6 m AHD**
Co-ords: **E 613631.65 N 6389694.91 MGA2020 55**

Borehole Information						Field Material Description						
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nii								FR	VL 0.00/0.08 L 0.1/2 M 0.3/6 H 1/20 VH3/60 EH3/200	20-60 60-200 200-600 600-2000 ≥2000	
			100	100	136.5			Volcaniclastic SANDSTONE; medium grained, dark green grey, poorly sorted, moderate chloritic alteration				
					140.46 140.5			Volcaniclastic SANDSTONE; coarse grained, dark green grey, conglomeritic, poorly sorted and strong pervasive cleavage, moderate chloritic alteration				
			100	100	136.0							
					141.0							
					135.5							
					141.5							
					135.0							
					142.0							
					134.5							
					142.5							
					134.0							142.85m: Vn, 45°, 6 mm, Qz, intact
			100	100	143.0							143.22m: Vn, 82°, St, Ro, 2 mm, Car
					133.5							143.57m: Jt, 82°, Un, Ro, Vr Car
					144.0							144.09m: Vn, 60°, 5 mm, Qz
					133.0							
					144.5							
			100	99	132.5							144.69m: Vn, 65°, 20 mm, Qz, intact

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT002

SHEET : 31 OF 35

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **San Antonio**
Project Number: **PS117942**

Date Commenced: **17-10-20**
Date Completed: **18-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-67°**
Bearing: **98°**

Surface RL: **265.6 m AHD**
Co-ords: **E 613631.65 N 6389694.91 MGA2020 55**

Borehole Information					Field Material Description							
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil											
												</

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT002

SHEET : 32 OF 35

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **San Antonio**
Project Number: **PS117942**

Date Commenced: **17-10-20**
Date Completed: **18-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track** Hole Angle: **-67°** Surface RL: **265.6 m AHD**
Borehole Diameter: **96 mm** Bearing: **98°** Co-ords: **E 613631.65 N 6389694.91 MGA2020 55**

Borehole Information					Field Material Description							
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil		100	94	127.5			Volcaniclastic SANDSTONE; coarse grained, dark green grey, conglomeritic, poorly sorted and strong prevasive cleavage, moderate chloritic alteration	FR	VL 0.0 / 0.6 L 0.1 / 2 N 1 / 20 VH 1 / 60 EH 10 / 200	<20 20-40 40-200 200-400 400-2000 ≥2000	WEATHERED ROCK 150.15m: Jt, 69°, Pl, Ro, 2 mm, Car 150.28m: Jt, 72°, Un, Ro, 1 mm, Car
					150.5							
					127.0							
					150.74			Volcaniclastic CONGLOMERATE; dark green grey, poorly sorted, moderate chloritic alteration				
					151.0							
					126.5							
					151.5							
					126.0							
					152.0							
			100	100	125.5							152.14m: Vn, 38°, St, Ro, 8 mm, Car
					152.5							
					125.0							
					153.0							153.04m: Jt, 79°, St, Ro, Vr Car
					124.5							
					153.5							153.55m: Jt, 43°, Pl, Ro, 0.1 mm, Ca, (cut off by vein)
					124.0							153.7m: Vn, 10°, 60 mm
					154.0							
			100	100	123.5							
					154.5							154.59m: Vn, 27°, Pl, Sm, 6 mm, Car
					123.0							

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **San Antonio**
Project Number: **PS117942**

Date Commenced: **17-10-20**
Date Completed: **18-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-67°**
Bearing: **98°**

Surface RL: **265.6 m AHD**
Co-ords: **E 613631.65 N 6389694.91 MGA2020 55**

Borehole Information						Field Material Description						
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	ROD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	NII											
			100	100								
					122.5	155.5						
					122.1	156.0						
					121.5	156.5						
					121.0	157.0						
					120.5	157.5						
					158.0							
			100	100	120.0							
					158.5							
					119.5							
					159.0							
					119.0							
					159.5							
			100	91	118.5							
	</											

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT002

SHEET : 35 OF 35

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **San Antonio**
Project Number: **PS117942**

Date Commenced: **17-10-20**
Date Completed: **18-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-67°**
Bearing: **98°**

Surface RL: **265.6 m AHD**
Co-ords: **E 613631.65 N 6389694.91 MGA2020 55**

Borehole Information						Field Material Description				
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)
HQ	Nil		100	93						
					113.5			Volcaniclastic SANDSTONE; medium grained, green grey, moderate chloritic alteration	FR	
					165.5					
					113.0			END OF BOREHOLE AT 165.80 m Target depth		
						112.5				
						112.0				
						111.5				
						111.0				
						110.5				
						110.0				
						109.5				

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT003

SHEET : 1 OF 18

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **San Antonio**
Project Number: **PS117942**

Date Commenced: **21-10-20**
Date Completed: **24-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-60°**
Bearing: **87°**

Surface RL: **266.8 m AHD**
Co-ords: **E 613889.22 N 6390263.96 MGA2020 55**

Borehole Information						Field Material Description						
METHOD	SUPPORT	WATER	RL (m AHD)	DEPTH (m)	FIELD TEST	SAMPLE	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil	NFGWE										
			0.20						Topsoil: Silty SAND; fine grained, dark brown, rootlets.			TOPSOIL
			266.5					CI-CH	Sandy CLAY; medium to high plasticity, brown, fine to medium grained sand.			QUATERNARY ALLUVIUM
			0.5									
			266.0									
			1.0									
			265.5									
			1.5									
			2.0									
			265.0					CI-CH	Sandy CLAY; medium to high plasticity, pale brown, fine to coarse grained sand, with fine to medium grained gravel.			
			2.5									
			264.5					C				
			3.0						...becoming trace gravel			
			264.0									
			3.5					C	...becoming grey, mottled pale brown, pale orange			
			263.5									
			4.0									
			263.0									
			4.5									
			262.5									

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT003

SHEET : 2 OF 18

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **San Antonio**
Project Number: **PS117942**

Date Commenced: **21-10-20**
Date Completed: **24-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-60°**
Bearing: **87°**

Surface RL: **266.8 m AHD**
Co-ords: **E 613889.22 N 6390263.96 MGA2020 55**

Borehole Information							Field Material Description						
METHOD	SUPPORT	WATER	RL (m AHD)	DEPTH (m)	FIELD TEST	SAMPLE	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY	POCKET PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil	NFGWE						CI-CH	Sandy CLAY; medium to high plasticity, pale brown, fine to coarse grained sand, with fine to medium grained gravel.	VS SL FL ST MD VD H			QUATERNARY ALLUVIUM
			262.0	5.5									
				6.0									
			261.5										
				6.5									
			261.0										
				7.0									
				7.10				SC	Clayey SAND; fine to coarse grained, grey, low plasticity clay.				
			260.5	30				CI-CH	Sandy CLAY; medium to high plasticity, pale grey, fine to coarse grained sand.				
				7.5									
			260.0										
				8.0					...becoming grey mottled red				
			259.5										
				8.5									
			259.0										
				9.0									
				9.5									
			258.5										

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT003

SHEET : 3 OF 18

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **San Antonio**
Project Number: **PS117942**

Date Commenced: **21-10-20**
Date Completed: **24-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**Hole Angle: **-60°**Surface RL: **266.8 m AHD**Borehole Diameter: **96 mm**Bearing: **87°**Co-ords: **E 613889.22 N 6390263.96 MGA2020 55**

Borehole Information						Field Material Description										
METHOD	SUPPORT	WATER	RL (m AHD)	DEPTH (m)	FIELD TEST	SAMPLE	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY				POCKET PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nii	NFGWE								VS FB VL SL ST MD VST DD H						
			258.0					CI-CH	Sandy CLAY; medium to high plasticity, pale grey, fine to coarse grained sand.							QUATERNARY ALLUVIUM
			10.5													
			257.5			C										
			11.0													
			257.0													
			11.5													
			256.5			C										
			12.0													
			256.0													
			12.5						...becoming Gravelly Sandy CLAY							
			13.0													
			255.5													
			13.25					GP	Clayey GRAVEL; fine grained, sub-rounded to sub-angular, medium plasticity clay, <10 mm.							
			13.5													
			255.0													
			14.0													
			254.5													
			14.30					CI-CH	Sandy CLAY; medium to high plasticity, pale orange-red, fine to coarse grained sand, trace fine grained gravel, <5 mm.							TERTIARY ALLUVIUM
			14.5													
			254.0													

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT003

SHEET : 4 OF 18

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **San Antonio**
Project Number: **PS117942**

Date Commenced: **21-10-20**
Date Completed: **24-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-60°**
Bearing: **87°**

Surface RL: **266.8 m AHD**
Co-ords: **E 613889.22 N 6390263.96 MGA2020 55**

Borehole Information							Field Material Description										
METHOD	SUPPORT	WATER	RL (m AHD)	DEPTH (m)	FIELD TEST	SAMPLE	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY					POCKET PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nii	NFGWE						CI-CH	Sandy CLAY; medium to high plasticity, pale orange-red, fine to coarse grained sand, trace fine grained gravel, <5 mm.	VS SL FL ST MD VD H						TERTIARY ALLUVIUM	
			253.5	15.5		C											
			253.0	16.0													
			252.5	16.5													
			252.0	17.0													
			251.5	17.5		C											
			251.0	18.0				CI-CH	Sandy CLAY; original clasts of weathered meta-sediment, extremely weathered to consistency of silty clay mostly indistinguishable for sandy (fine grained clay matrix. original sediment contains gravels, cobbles and boulders.								
			250.5	18.5													
			250.0	19.0													
			249.5	19.5		C											

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT003

SHEET : 5 OF 18

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **San Antonio**
Project Number: **PS117942**

Date Commenced: **21-10-20**
Date Completed: **24-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-60°**
Bearing: **87°**

Surface RL: **266.8 m AHD**
Co-ords: **E 613889.22 N 6390263.96 MGA2020 55**

Borehole Information							Field Material Description						
METHOD	SUPPORT	WATER	RL (m AHD)	DEPTH (m)	FIELD TEST	SAMPLE	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY	POCKET PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil	NFGWE				C		CI-CH	Sandy CLAY; original clasts of weathered meta-sediment, extremely weathered to consistency of silty clay mostly indistinguishable for sandy (fine grained clay matrix. original sediment contains gravels, cobbles and boulders.	VS SL ST VS H	FB VL LD MD DD VD		TERTIARY ALLUVIUM
			249.0	20.5				CI-CH	Sandy CLAY; medium to high plasticity, orange-brown, fine grained sand, fining upward from basalt gravel. ...becoming pale grey, fine to medium grained sand				
			248.5	21.0					...Gravelly 'bed load' deposit, fine grained gravel, clay matrix ...matrix and clasts weathered to a sandy gravelly clay				
			248.0	22.0									
			247.5	22.5					REFER TO CORED BOREHOLE LOG				
			247.0	23.0									
			246.5	23.5									
			246.0	24.0									
			245.5	24.5									

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT003

SHEET : 6 OF 18

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **San Antonio**
Project Number: **PS117942**

Date Commenced: **21-10-20**
Date Completed: **24-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track** Hole Angle: **-60°** Surface RL: **266.8 m AHD**
Borehole Diameter: **96 mm** Bearing: **87°** Co-ords: **E 613889.22 N 6390263.96 MGA2020 55**

Borehole Information					Field Material Description							
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
						20.5				VL 0.0 / 0.0 L 0.1 / 2 W 0.1 / 6 H 1.1 / 3 VH1 / 0.0 EH1 / 2.0	<20 20-40 60-200 200-600 600-2000 2000	
						249.0						
						21.0						
						248.5						
						21.5						
						248.0						
						22.0						
						247.5						
HQ	Nil				22.40			START CORING AT 22.40m				
					22.5			Volcaniclastic SANDSTONE; fine grained, pale yellow - pale orange-white, Rock fabric defined by pervasive very thin foliation parallel bedding planes. Extremely weathered in parts to consistency of a low plasticity/stiff to hard clayey silt	HW			WEATHERED ROCK 22.40: 22.40-29.20m: Mostly non-intact core. Rock mass has very low strength. On foliation planes, breaks apart on finger pressure. Isolated intact strength may reach low strength in parts.
					247.0				XW - HW			
					23.0							
					246.5				HW			
					23.5				XW - HW			
					246.0				HW			
					24.30				XW - HW			
					24.5			CORE LOSS 0.30m (24.30-24.60)				
					245.51.60			Volcaniclastic SANDSTONE; fine grained, pale yellow - pale orange-white, Rock fabric defined by pervasive very thin foliation parallel bedding planes. Extremely weathered in parts to consistency of a low plasticity/stiff to hard clayey silt	XW - HW			

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT003

SHEET : 7 OF 18

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **San Antonio**
Project Number: **PS117942**

Date Commenced: **21-10-20**
Date Completed: **24-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**Hole Angle: **-60°**Surface RL: **266.8 m AHD**Borehole Diameter: **96 mm**Bearing: **87°**Co-ords: **E 613889.22 N 6390263.96 MGA2020 55**

Borehole Information					Field Material Description							
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₆₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil											

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT003

SHEET : 8 OF 18

Client: ALKANE RESOURCES LIMITED
Project: TGEF
Borehole Location: San Antonio
Project Number: PS117942

Date Commenced: 21-10-20
Date Completed: 24-10-20
Recorded By: NG
Log Checked By: LMCK

Drill Model/Mounting: Sandvik DE811i/ Track

Hole Angle: -60°

Surface RL: 266.8 m AHD

Borehole Diameter: 96 mm

Bearing: 87°

Co-ords: E 613889.22 N 6390263.96 MGA2020 55

Borehole Information						Field Material Description						
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₆₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	NII		100	0				Volcaniclastic SANDSTONE; fine grained, pale yellow - pale orange-white, Rock fabric defined by pervasive very thin foliation parallel bedding planes. Extremely weathered in parts to consistency of a low plasticity/stiff to hard clayey silt	HW	VL 0.0 / 0.8 L 0.1 / 2 M 0.3 / 6 H 1 / 20 VH 1 / 60 EH 10 / 200	20 20-40 40-200 200-600 600-2000 >2000	WEATHERED ROCK
					240.5	30.5			XW - HW			
					240.0	31.0						
					239.5	31.5						
			77	0	239.0	32.0						
					238.5	32.5						
					32.90							
					33.0			CORE LOSS 0.70m (32.90-33.60)				
					238.0							
					33.5							
			77	0	237.0	34.5		Volcaniclastic SANDSTONE; fine grained, pale yellow - pale orange-white, Rock fabric defined by pervasive very thin foliation parallel bedding planes. Extremely weathered in parts to consistency of a low plasticity/stiff to hard clayey silt	XW - HW			

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT003

SHEET : 9 OF 18

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **San Antonio**
Project Number: **PS117942**

Date Commenced: **21-10-20**
Date Completed: **24-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**Hole Angle: **-60°**Surface RL: **266.8 m AHD**Borehole Diameter: **96 mm**Bearing: **87°**Co-ords: **E 613889.22 N 6390263.96 MGA2020 55**

Borehole Information						Field Material Description						
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₆₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil		77	0				Volcaniclastic SANDSTONE; fine grained, pale yellow - pale orange-white, Rock fabric defined by pervasive very thin foliation parallel bedding planes. Extremely weathered in parts to consistency of a low plasticity/stiff to hard clayey silt	XW - HW	VL 0.03 / 0.6 L 0.11 / 2 M 0.31 / 6 H 1.1 / 20 VH1 / 60 EH10 / 200	<20 20-60 60-200 200-600 600-2000 >2000	WEATHERED ROCK
						35.5 236.0						
						35.90 36.0		CORE LOSS 0.70m (35.90-36.60)				
						235.5 36.5 36.60						
			100	41		235.0		Volcaniclastic SANDSTONE; fine grained, pale yellow - pale orange-white, Rock fabric defined by pervasive very thin foliation parallel bedding planes. Extremely weathered in parts to consistency of a low plasticity/stiff to hard clayey silt	XW - HW			
						37.0						
						234.5						
						37.5						
						234.0						
						38.0						
						233.5						
						38.5						
						233.0						
						39.0						
						39.5						
						39.60		CORE LOSS 0.10m (39.50-39.60)				
			93	25		232.5		Volcaniclastic SANDSTONE; fine grained, pale yellow - pale orange-white, Rock fabric defined by pervasive very thin foliation parallel bedding planes. Extremely weathered in parts to consistency of a low plasticity/stiff to hard clayey silt	XW - HW			

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This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT003

SHEET : 10 OF 18

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **San Antonio**
Project Number: **PS117942**

Date Commenced: **21-10-20**
Date Completed: **24-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-60°**
Bearing: **87°**

Surface RL: **266.8 m AHD**
Co-ords: **E 613889.22 N 6390263.96 MGA2020 55**

Borehole Information					Field Material Description							
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	ROD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil									VL 0.0 / 0.0 C 0.1 / 2 W 1.1 / 6 H 1.1 / 3 VH1 / 0.0 EH1 / 2.0	<20 20-40 60-200 200-600 600-2000 2000	
			93	25		232.0		Volcaniclastic SANDSTONE; fine grained, pale yellow - pale orange-white, Rock fabric defined by pervasive very thin foliation parallel bedding planes. Extremely weathered in parts to consistency of a low plasticity/stiff to hard clayey silt	XW - HW			WEATHERED ROCK
					40.5							
					231.5							
					41.0							
					231.0							
					41.5				HW			
					230.5	42.0			XW - HW			
					42.40	230.0		CORE LOSS 0.20m (42.40-42.60)				
					42.60			Volcaniclastic SANDSTONE; fine grained, pale yellow - pale orange-white, Rock fabric defined by pervasive very thin foliation parallel bedding planes. Extremely weathered in parts to consistency of a low plasticity/stiff to hard clayey silt	HW			
					43.0				XW			
					229.5							
					43.5							
			60	28	229.0	44.0			HW			
					228.5	44.30		...quartz vein in extremely weathered rock	XW			
					44.5			CORE LOSS 1.30m (44.30-44.60)				
					228.0							
This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.												

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **San Antonio**
Project Number: **PS117942**

Date Commenced: **21-10-20**
Date Completed: **24-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-60°**
Bearing: **87°**

Surface RL: 266.8 m AHD
Co-ords: E 613889.22 N 6390263.96 MGA2020 55

Borehole Information						Field Material Description						
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil		60	28				CORE LOSS 1.30m (44.30-45.60)		VL 0.03/0.8 L 0.1/2 M 0.3/6 H 1/20 VH3/60 EH9/200	<20 20-60 60-200 200-600 600-2000 >2000	WEATHERED ROCK
			100	45				Volcaniclastic SANDSTONE; fine grained, yellow, orange brown, Rock fabric defined by pervasive very thin foliation parallel bedding planes	HW			
						227.5						
					45.5							
					45.60							
						227.0						
					46.0							
						226.5						
					46.5							
						47.0						
					226.0							
					47.5							
					225.5							
					48.0							
					225.0							
					48.5							
					224.5			XW				
					49.0							
			83	33		224.0		HW				
					49.5							

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT003

SHEET : 12 OF 18

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **San Antonio**
Project Number: **PS117942**

Date Commenced: **21-10-20**
Date Completed: **24-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-60°**
Bearing: **87°**

Surface RL: **266.8 m AHD**
Co-ords: **E 613889.22 N 6390263.96 MGA2020 55**

Borehole Information						Field Material Description						
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	ROD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil							Volcaniclastic SANDSTONE; fine grained, yellow, orange brown, Rock fabric defined by pervasive very thin foliation parallel bedding planes	HW	VL 0.0 / 0.0 L 0.1 / 2 W 1.0 / 6 H 1.2 / 3 Vd1 / 60 EH / 200	< 20 20-40 60-200 200-600 600-2000 2000	WEATHERED ROCK
			83	33		50.5						
						223.0						
						51.0						
						51.10						
						222.5		CORE LOSS 0.50m (51.10-51.60)				
						51.5						
						51.60		Volcaniclastic SANDSTONE; fine grained, yellow, orange brown, Rock fabric defined by pervasive very thin foliation parallel bedding planes	HW			
						222.0						
						52.0						
			100	99		221.5						
						52.5			HW - MW			52.6m: Jt, 15°, Un, Ro, 1 mm, In Fe
						221.0						
						53.0						53m: Jt, 15°, Pl, Ro, 4 mm, altered/weathered epidote infill
						220.5			HW			
						53.5						53.6m: Jt, 45°, Pl, Ro, Fe/Mn Sn, < 1 mm
						220.0						53.8m: Jt, 45°, Pl, Ro, Fe/Mn Sn, < 1 mm
			100	58		54.0			HW - MW			
						54.5						
						219.5						

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This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT003

SHEET : 13 OF 18

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **San Antonio**
Project Number: **PS117942**

Date Commenced: **21-10-20**
Date Completed: **24-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-60°**
Bearing: **87°**

Surface RL: **266.8 m AHD**
Co-ords: **E 613889.22 N 6390263.96 MGA2020 55**

Borehole Information					Field Material Description				
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING
HQ	Nil								
			100	58	219.0			Volcaniclastic SANDSTONE; fine grained, yellow, orange brown, Rock fabric defined by pervasive very thin foliation parallel bedding planes	HW
					55.5				
					218.5				
					56.0				
					218.0				
					56.5				
					217.5				
					57.0				
					217.0				
			100	48	57.5				
					58.0				
					216.5				
					58.5				
					216.0				
					59.0				
					215.5				
			100	70	59.5				
					215.0				

WEATHERED ROCK

55.4m: Se, 30°, epidote, 20-50mm

56m: Non-intact core

56.4m: Pt on Fo, x 6, 30 - 45°, Pl, Ro, Fe/Mn Sn

58.4m: Non-intact core

59m: Fo Pt, 30°, Pl, Ro, Fe/Mn Sn

59.3m: Jt, 0°, Pl-Un, Ro, Fe & Mn Sn & In, 1mm

59.5m: Jt, 35°, Pl-Un, Ro, Fe & Mn In, 1mm

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **San Antonio**
Project Number: **PS117942**

Date Commenced: **21-10-20**
Date Completed: **24-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-60°**
Bearing: **87°**

Surface RL: 266.8 m AHD
Co-ords: E 613889.22 N 6390263.96 MGA2020 55

Borehole Information						Field Material Description					
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD) DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil								VL 0.03 / 0.8 L 0.1 / 2 M 0.3 / 6 H 1.7 / 20 VH3 / 60 EH10 / 200	400-500 500-600 600-800 800-2000 >2000	
			100	70	214.5 60.5		Volcaniclastic SANDSTONE; fine grained, yellow, orange brown, Rock fabric defined by pervasive very thin foliation parallel bedding planes	HW			WEATHERED ROCK
					214.0 61.0						
					213.5 61.5						
					213.0 62.0						
			94	76	212.5 62.5						
					212.0 63.0						
					212.0 63.5						
					211.5 64.0						
					211.0 64.5						
						CORE LOSS 0.10m (63.50-63.60)		HW			61.8m: Fo Pt x 14, 30 - 45°, Pl, Ro, Sn Fe 63.5m: Se, 90°, Pl, Ro, sandy clay ln, 5-10 mm
							Volcaniclastic SANDSTONE; fine grained, yellow, orange brown, Rock fabric defined by pervasive very thin foliation parallel bedding planes	HW - MW			
			100	67				HW			

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT003

SHEET : 15 OF 18

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **San Antonio**
Project Number: **PS117942**

Date Commenced: **21-10-20**
Date Completed: **24-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-60°**
Bearing: **87°**

Surface RL: **266.8 m AHD**
Co-ords: **E 613889.22 N 6390263.96 MGA2020 55**

Borehole Information					Field Material Description							
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil							Volcaniclastic SANDSTONE; fine grained, yellow, orange brown, Rock fabric defined by pervasive very thin foliation parallel bedding planes	HW	VL 0.0 / 0.6 L 0.1 / 2 N 1 / 20 VH 1 / 60 EH 10 / 200	<20 20-40 60-200 200-600 600-2000 ≥2000	WEATHERED ROCK — 63.6m: Jt x 8, 75 - 90°, Un, Ro, Sn Fe
			100	67		210.0						
						209.5			HW - MW			
						209.0						
						208.5			HW			
			100	62		208.0						
						207.5		...epidote quartz vein appears sub parallel to foliation	HW - MW			
						207.0						
			100	32		206.5			MW			69.4m: Pt, 30°, Pl, Ro, 5 mm, Sn Fe, epidote veins 69.6m: Jt, 30°, Pl-Un, Ro, Fe & Mn Sn
			100	81								

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT003

SHEET : 16 OF 18

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **San Antonio**
Project Number: **PS117942**

Date Commenced: **21-10-20**
Date Completed: **24-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-60°**
Bearing: **87°**

Surface RL: **266.8 m AHD**
Co-ords: **E 613889.22 N 6390263.96 MGA2020 55**

Borehole Information					Field Material Description							
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil									VL 0.0 / 0.0 L 0.1 / 2 N 1.1 / 6 W 1.1 / 3 VH1 / 0.0 EH1 / 2.0	20-40 90-200 200-400 600-2000 2000	
			100	81		206.0		Volcaniclastic SANDSTONE; fine grained, yellow, orange brown, Rock fabric defined by pervasive very thin foliation parallel bedding planes	MW			70m: Jt, 80°, Pl-Un, Ro, Fe & Mn Sn WEATHERED ROCK
						70.5			HW			70.2m: Jt, 15°, Pl, Ro, Fe & Mn Sn & In, <1mm
						205.5			HW - MW			70.3m: Se x 6, 30°, 50 mm, extremely to highly weathered In
						71.0						
						205.0						
						71.5						71.4m: Jt x 3, 30 - 45°, Pl, Ro, 1 mm, Sn Fe
						204.5			XW			
						72.0			HW			
									MW			
						204.0						72.1m: Jt x 7, 45 - 60°, Pl-Un, Ro, Fe Sn
						73.0			HW - MW			73m: Se x 4, weathered, 20-40mm
						203.5						
						73.5			MW			
						203.0						
						74.0						
						202.5						
						74.5						74.5m: Jt, 45°, Pl-Un, Ro, Fe & Mn Sn
						202.0						74.7m: Se x 2, weathered, 30-60 mm

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This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT003

SHEET : 17 OF 18

Client: ALKANE RESOURCES LIMITED
Project: TGEF
Borehole Location: San Antonio
Project Number: PS117942

Date Commenced: 21-10-20
Date Completed: 24-10-20
Recorded By: NG
Log Checked By: LMCK

Drill Model/Mounting: Sandvik DE811i/ Track

Hole Angle: -60°

Surface RL: 266.8 m AHD

Borehole Diameter: 96 mm

Bearing: 87°

Co-ords: E 613889.22 N 6390263.96 MGA2020 55

Borehole Information						Field Material Description						
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	ROD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₆₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil									VL 0.03 / 0.6 L 0.1 / 2 M 0.3 / 6 H 1 / 20 VH 1 / 60 EH 10 / 200	20 20-60 60-200 200-600 600-2000 ≥2000	
			94	71		201.5		Volcaniclastic SANDSTONE; fine grained, yellow, orange brown, Rock fabric defined by pervasive very thin foliation parallel bedding planes	MW			WEATHERED ROCK
						75.5						75.2m: Fo Pt, 45°, Pl, Ro, 1 mm, Fe & Mn Sn
						201.0						75.4m: Jt, 45°, Pl-St, Ro, Fe & Mn Sn, oblique to foliation
						76.0			HW - MW			
						7676.5						
						200.5		CORE LOSS 0.10m (76.50-76.60)				
						76.60		Volcaniclastic SANDSTONE; fine grained, yellow, orange brown, Rock fabric defined by pervasive very thin foliation parallel bedding planes. Extremely weathered in parts to consistency of a low plasticity/stiff to hard clayey silt	HW - MW			
						77.0			HW			76.6m: Mostly non-intact core. Fe-Mn Sn on surface
			100	23		200.0						
						77.5						
						199.5		...brown green grey	MW - SW			77.8m: Jt, 20°, Pl, Ro, 1 mm, Fe & Mn Sn
						78.0						78m: Jt, 30°, Pl, Ro, 1 mm, Fe & Mn Sn
						199.0						78m: Jt x 3, 80 - 90°, Pl, Ro, Fe & Mn Sn
						78.5						78.6m: Jt, 45°, Pl-Un, Ro, Fe & Mn Sn
			100	72		198.5						
						79.0			MW			
						198.0						79.5m: Jt x 6, 30 - 60°, Pl, Ro, 1 mm, Fe & Mn Sn
						79.5						
			100	49								

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT003

SHEET : 18 OF 18

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **San Antonio**
Project Number: **PS117942**

Date Commenced: **21-10-20**
Date Completed: **24-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track** Hole Angle: **-60°** Surface RL: **266.8 m AHD**
Borehole Diameter: **96 mm** Bearing: **87°** Co-ords: **E 613889.22 N 6390263.96 MGA2020 55**

Borehole Information					Field Material Description								
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS	
HQ	Nil				197.5			Volcaniclastic SANDSTONE; fine grained, yellow, orange brown, Rock fabric defined by pervasive very thin foliation parallel bedding planes. Extremely weathered in parts to consistency of a low plasticity/stiff to hard clayey silt	MW			WEATHERED ROCK	
			100	49	80.5								80.4m: Jt x 4, 60 - 90°, Un, Ro, Fe & Mn Sn
					197.0								80.6m: Se, 45°, 60 mm, highly weathered sandy clay
					81.0								
					196.5								81m: Jt x 6, 45 - 60°, Pl, Ro, Fe & Mn Sn
					81.5								81.6m: Fo Pt, 30°, Pl, Ro, Fe & Mn Sn
					196.0								81.9m: Jt x 2, 25°, Pl, Ro, Fe & Mn Sn
					82.0								
			100	23	195.5				MW - SW				82m: Jt x 5, 20 - 90°, Pl, Ro, Fe & Mn Sn
					82.5								
					195.0				SW				
					83.0								
					194.5								83.5m: Se, intersecting joints
					83.5				MW - SW				
			100	42	84.0								82.9m: Fo Pt x 7, Pl, Ro, Fe & Mn Sn, open and healed
					194.0								84m: Jt, 10°, Pl, Ro, Fe & Mn Sn
					84.0								84.05m: Jt x 2, 45°, Pl, Ro, Fe & Mn Sn
					84.5								84.2m: Non intact core, multiple Fe Mn Sn joints
					193.5								
									END OF BOREHOLE AT 84.80 m Target depth				
This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.													

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.

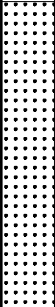
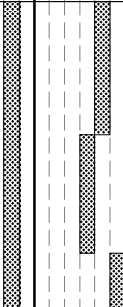
Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **San Antonio**
Project Number: **PS117942**

Date Commenced: **1-10-20**
Date Completed: **3-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-65°**
Bearing: **78°**

Surface RL: **266.4 m AHD**
Co-ords: **E 613792.63 N 6390253.2 MGA2020 55**

Borehole Information						Field Material Description					
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD) DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
					180.0 95.5 179.5 96.0 179.0 96.5 178.5 97.0 178.0 97.5 98.0 177.5 98.5 177.0				VL 0.03 / 0.8 L 0.1 / 2 M 0.3 / 6 H 1 / 20 VH3 / 60 EH9 / 200	<20 20-60 60-200 200-600 600-2000 >2000	
HQ	Nil		100	96	99.0 176.5 99.5 176.0	Page 1 to Page 20 not logged by WSP and not included in this log START CORING AT 98.97m 	Volcaniclastic SANDSTONE; coarse grained, grey green, poorly sorted with trace pervasive chloritic alteration and moderate matrix replacement epidotic alteration	FR		WEATHERED ROCK 99.71m: Jt, 60°, Pl, Ro, 1 mm, Car 99.8m: CZ, 56°, Ir, Ro, 0.5 mm, Vr Car	
This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.											

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **San Antonio**
Project Number: **PS117942**

Date Commenced: **1-10-20**
Date Completed: **3-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-65°**
Bearing: **78°**

Surface RL: **266.4 m AHD**
Co-ords: **E 613792.63 N 6390253.2 MGA2020 55**

Borehole Information						Field Material Description						
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nii									VL 0.03/0.8 L 0.1/2 M 0.3/6 H 1/20 VH3/60 EH3/200	<20 20-60 60-200 200-600 600-2000 >2000	
			100	96	175.5			Volcaniclastic SANDSTONE; coarse grained, grey green, poorly sorted with trace pervasive chloritic alteration and moderate matrix replacement epidotic alteration	FR			WEATHERED ROCK
					100.5							
					175.0							
					101.0							
			100	111	174.5							
					101.5							
					174.0							
					102.0							
					173.1							
					102.5							
					103.0							
					173.0							103.1m: Vn, 25°, Un, 1 mm, Ca, intact
					103.5							
					172.5							
			100	100	104.0							
					172.0							
					104.5							
					171.5							

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **San Antonio**
Project Number: **PS117942**

Date Commenced: **1-10-20**
Date Completed: **3-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-65°**
Bearing: **78°**

Surface RL: **266.4 m AHD**
Co-ords: **E 613792.63 N 6390253.2 MGA2020 55**

Borehole Information						Field Material Description							
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS	
HQ	Nil									VL 0.03/0.8 L 0.1/2 M 0.3/6 H 1/20 VH3/60 EH3/200	20-60 60-200 200-600 600-2000 >2000		
			100	100	171.0			Volcaniclastic SANDSTONE; coarse grained, grey green, poorly sorted with trace pervasive chloritic alteration and moderate matrix replacement epidotic alteration	FR			WEATHERED ROCK	
					105.5								
					170.5								
					106.0								
					170.0								
					106.5								
			100	100	169.5								106.52m: Jt, 70°, Pl - Un, Ro, 2 mm, Ca
					107.0								106.82m: Jt, 81°, Pl - Un, Ro, 1 mm, Ca
					169.0								107.33m: Jt, 65°, Pl, Ro, Vr Ca
					107.5								107.69m: Jt, 43°, Pl - Un, Ro, 1 mm, Ca
					168.0								108.18m: Jt, 35°, Pl, Ro, Sn Fe
					108.5								
					168.0								
			100	98	109.0								
					167.5								
					109.5								
					167.0								
This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.													



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT004

SHEET : 24 OF 36

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **San Antonio**
Project Number: **PS117942**

Date Commenced: **1-10-20**
Date Completed: **3-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track** Hole Angle: **-65°** Surface RL: **266.4 m AHD**
Borehole Diameter: **96 mm** Bearing: **78°** Co-ords: **E 613792.63 N 6390253.2 MGA2020 55**

Borehole Information					Field Material Description							
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil							Volcaniclastic SANDSTONE; coarse grained, grey green, poorly sorted with trace pervasive chloritic alteration and moderate matrix replacement epidotic alteration	FR	VL 0.0 / 0.6 L 0.1 / 2 N 1 / 20 VH 1 / 60 EH 10 / 200	<20 20-40 40-200 200-400 400-2000 ≥2000	
			100	98	166.5							
					110.5							
					166.0							
					111.0							
					165.5							111.25m: Jt, 47°, Pl, Ro, 0.3 mm, Sn He 111.29m: Jt, 56°, Pl, Ro, 0.4 mm, Sn He
					111.5							
					165.0							
					112.0							112.14m: Jt, 55°, Pl, Ro, 2 mm, He
					164.5							
					112.5							112.72m: DB
					164.0							
					113.0							
					163.5							
					113.5							
					163.0							
					114.0							
					114.5							
					162.5							114.69m: Jt, 65°, Pl, Ro, 3 mm, He

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT004

SHEET : 25 OF 36

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **San Antonio**
Project Number: **PS117942**

Date Commenced: **1-10-20**
Date Completed: **3-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track** Hole Angle: **-65°** Surface RL: **266.4 m AHD**
Borehole Diameter: **96 mm** Bearing: **78°** Co-ords: **E 613792.63 N 6390253.2 MGA2020 55**

Borehole Information					Field Material Description							
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil							Volcaniclastic SANDSTONE; coarse grained, grey green, poorly sorted with trace pervasive chloritic alteration and moderate matrix replacement epidotic alteration	FR	VL 0.0 / 0.0 L 0.1 / 2 H 1.1 / 6 VH 1.0 / 60 EH 1.0 / 200	<20 20-40 40-200 200-600 600-2000 2000	WEATHERED ROCK
			100	99	162.0							115.27m: Jt, 62°, Pl, Ro, 0.5 mm, Sn Fe
					115.5							115.66m: Jt, 76°, Pl, Ro, Vr Ca
					161.5							
					116.0							
					161.0							
					116.5							116.69m: Bg, 35°
					160.5							
					117.0							
					160.0							
					117.5							
					159.5							
					118.0							
					159.118.5							
					119.0							119.87m: Jt, 76°, Cu, Ro, Sn Fe
					158.5							119.92m: Jt, 75°, Ir, Ro, Sn Fe
					119.5							
					158.0							

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT004

SHEET : 26 OF 36

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **San Antonio**
Project Number: **PS117942**

Date Commenced: **1-10-20**
Date Completed: **3-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track** Hole Angle: **-65°** Surface RL: **266.4 m AHD**
Borehole Diameter: **96 mm** Bearing: **78°** Co-ords: **E 613792.63 N 6390253.2 MGA2020 55**

Borehole Information					Field Material Description							
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil		100	99	157.5			Volcaniclastic SANDSTONE; coarse grained, grey green, poorly sorted with trace pervasive chloritic alteration and moderate matrix replacement epidotic alteration	FR	VL 0.0 / 0.6 L 0.1 / 2 N 1 / 20 VH 1 / 60 EH 10 / 200	<20 20-40 40-200 200-400 400-2000 2000	WEATHERED ROCK
						120.5						120.36m: Fo, 37°
					157.0							
						121.0						
					156.5							
					121.5			BRECCIA; dark grey, poorly sorted, interbedded with volcaniclastic sandstone, trace pervasive chloritic and carbonitic alteration	FR			121.48m: Cn, 38° 121.6m: Fo, 40°
					156.0							
						122.0						
					155.5							
					122.5							122.56m: Fo, 35°
					155.0							
					123.0							123.02m: Jt, 36°, Pl, Sm, 2 mm, Cr 123.19m: Jt, 41°, Pl, Sm, 0.5 mm, Vr Car
					154.5							
					123.5							123.73m: Fo, 31° 123.88m: Fo, 40°
					154.0							
					124.0							
					124.5							
					153.5							

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT004

SHEET : 27 OF 36

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **San Antonio**
Project Number: **PS117942**

Date Commenced: **1-10-20**
Date Completed: **3-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track** Hole Angle: **-65°** Surface RL: **266.4 m AHD**
Borehole Diameter: **96 mm** Bearing: **78°** Co-ords: **E 613792.63 N 6390253.2 MGA2020 55**

Borehole Information					Field Material Description							
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil									VL 0.0 / 0.0 L 0.1 / 2 H 1.2 / 6 VH 1.0 / 60 EH 1.0 / 200	<20 20-60 60-200 200-600 600-2000 ≥2000	
			100	98	153.0		△ △	BRECCIA; dark grey, poorly sorted, interbedded with volcanoclastic sandstone, trace pervasive chloritic and carbonitic alteration	FR			
					125.5		△ △					
					152.5		△ △					
					126.0		△ △					
					152.0		△ △					
					126.5		△ △					
					151.5		△ △					
					127.0		△ △					
					151.0		△ △					
					127.5		△ △					
					127.62		△ △					
					150.5		△ △	Volcanoclastic SANDSTONE; medium to coarse grained, dark green grey, minor pervasive chloritic alteration	FR			127.62m: Cn, 43°
					128.0		△ △					127.72m: Jt, 38°, Cu, Ro, Vr Car
			100	82	150.0		△ △					128.26m: Jt, 42°, Pl, Sm, Vr Car
					128.5		△ △					128.43m: SZ, 33°, Pl, Sm, 2 mm, Car
					149.5		△ △					128.7m: Vn, 34°, Ir, Sm, 4 mm, Cl
					129.0		△ △					128.71m: F, 6°, Pl, Sm, 1 mm, Cl
					149.0		△ △					128.77m: F, 46°, Ir, Sm, 50 mm, Cl
					129.5		△ △					128.87m: Jt, 64°, Pl, Sm, 1 mm, Car
							△ △					128.88m: F, 27°, Pl, Sm, 20 mm, Cl
							△ △					128.94m: Jt, 71°, Pl, Ro, Vr Car

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT004

SHEET : 28 OF 36

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **San Antonio**
Project Number: **PS117942**

Date Commenced: **1-10-20**
Date Completed: **3-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track** Hole Angle: **-65°** Surface RL: **266.4 m AHD**
Borehole Diameter: **96 mm** Bearing: **78°** Co-ords: **E 613792.63 N 6390253.2 MGA2020 55**

Borehole Information					Field Material Description							
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil		100	82	148.5			Volcaniclastic SANDSTONE; medium to coarse grained, dark green grey, minor pervasive chloritic alteration	FR			WEATHERED ROCK 130.07m: Jt, 54°, Pl, Ro, Vr Car
						130.5						130.31m: Jt, 22°, Pl, Ro, Vr Car
					148.0							
						131.0						
					147.5							131.17m: Jt, 25°, Pl, Ro, Vr Car
					131.46							
					131.5			Volcaniclastic SANDSTONE; fine grained, dark green grey, interbedded with volcaniclastic siltstone silica rich bands	FR			131.57m: Bg, 42°
					147.0							131.84m: CZ, 53°, U, Ro, Vr Car
					132.0			BRECCIA; dark green grey, moderate pervasive chloritic alteration	FR			132m: Cn, 38° 132.05m: F, 55° 132.07m: F, 43° 132.12m: Jt, 41°, Pl, Ro, 3 mm, Car
					146.5							132.43m: SZ, 52°, Pl, Sm, 10 mm, Cl
					132.5							132.62m: SZ, 38°, Pl, Sm, Vr Cl
					146.0							132.77m: CZ, 76°, Ir, Ro, Vr Car
					133.0							132.86m: CZ, 70°, Ir, Ro, Vr Car
					145.5							
					133.5							
					133.72			Volcaniclastic SANDSTONE; medium to coarse grained, poorly sorted, strong pervasive foliation, moderate selective alteration	FR			133.65m: Pt, 33°, Pl, Sm, Vr Cl 133.69m: Pt, 37°, Pl, Sm, Vr Cl 133.72m: Pt, 27°
					145.0							133.86m: SZ, 23°, Pl, Sm, 38 mm, Cl, along foliation
					134.0							134.18m: Pt, 30°, Pl, Sm, Vr Cl
					144.1							134.34m: Pt, 27°, Pl, Sm, Vr Cl
					134.5							134.44m: Pt, 29°, Pl, Sm, Vr Cl 134.46m: Pt, 25°, Pl, Sm, 10 mm, Cl
												134.67m: CZ, 35°, Pl, Ro, Vr Cl 134.68m: CZ, 68°, Pl, Ro, Vr Cl

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT004

SHEET : 29 OF 36

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **San Antonio**
Project Number: **PS117942**

Date Commenced: **1-10-20**
Date Completed: **3-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track** Hole Angle: **-65°** Surface RL: **266.4 m AHD**
Borehole Diameter: **96 mm** Bearing: **78°** Co-ords: **E 613792.63 N 6390253.2 MGA2020 55**

Borehole Information					Field Material Description							
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil				144.0			Volcaniclastic SANDSTONE; medium to coarse grained, poorly sorted, strong pervasive foliation, moderate selective alteration	FR	VL 0.0 / 0.0 L 0.1 / 2 H 1.1 / 6 VH1 / 60 EH1 / 200	<20 20-60 60-200 200-600 600-2000 ≥2000	WEATHERED ROCK 135.07m: Jt, 69°, Pl, Ro, Vr Car 135.09m: Jt, 81°, Pl, Ro, Vr Car 135.48m: Jt, 21°, Pl, Sm, Vr Cl 135.49m: Jt, 75°, Ir, Ro, Vr Car
			100	91		135.5						
						143.5						
						136.0						
						143.0						
						136.5						
						142.5						
						137.0						
						142.0						
						137.5						
						141.5						
						138.0						
						141.0						
						138.5						
						140.5						
						139.0						
						140.0						
			100	98		139.5						

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **San Antonio**
Project Number: **PS117942**

Date Commenced: **1-10-20**
Date Completed: **3-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting:	Sandvik DE811i/ Track	Hole Angle:	-65°	Surface RL:	266.4 m AHD
Borehole Diameter:	96 mm	Bearing:	78°	Co-ords:	E 613792.63 N 6390253.2 MGA2020 55

Borehole Information					Field Material Description							
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil									VL 0.00/0.08 L 0.1/2 M 0.3/6 H 1/20 VH3/60 EH3/200	0-20 20-60 60-200 200-600 600-2000 >2000	
								Volcaniclastic SANDSTONE; medium to coarse grained, poorly sorted, strong pervasive foliation, moderate selective alteration	FR			WEATHERED ROCK
						140.5						
						139.0						
						140.81		Volcaniclastic SANDSTONE; coarse grained, dark grey, poorly sorted, trace chloritic alteration	FR			140.2m: Fo, 45°
						141.0						
						138.5						
						141.5						141.32m: Pt, 26°, Pl, Ro, Vr Ca
						138.0						141.6m: Pt, 25°, Pl, Ro, Vr Car
						142.0						
						137.5						
						142.5						
						137.0						142.76m: Jt, 21°, Pl, Sm, 0.4 mm, Vr Cl
						143.0						142.91m: Fo, 18°
						136.5						143.15m: Fo, 21°
						143.5						
						136.0						143.88m: CZ, 23°, Ir, Sm, 0.5 mm, Vr Cl
						144.0						
						135.5						
						144.5						

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CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT004

SHEET : 31 OF 36

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **San Antonio**
Project Number: **PS117942**

Date Commenced: **1-10-20**
Date Completed: **3-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track** Hole Angle: **-65°** Surface RL: **266.4 m AHD**
Borehole Diameter: **96 mm** Bearing: **78°** Co-ords: **E 613792.63 N 6390253.2 MGA2020 55**

Borehole Information					Field Material Description							
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil							Volcaniclastic SANDSTONE; coarse grained, dark grey, poorly sorted, trace chloritic alteration	FR			WEATHERED ROCK
					145.24			Volcaniclastic SILTSTONE; green grey, laminated, trace chloritic and siliceous alteration	FR			145.31m: Jt, 18°, Pl, Sm, 0.2 mm, Vr Car
						145.5						145.6m: Pt, 43°, Pl, Sm, 0.2 mm, Vr Car
						145.5						145.72m: Pt, 42°, Pl, Sm, 0.1 mm, Vr Car
												145.8m: Pt, 40°, Pl, Sm, 0.2 mm, Vr Car
												145.81m: Pt, 40°, Pl, Sm, 0.3 mm, Vr Car
						146.0						146.08m: Jt, 35°, Pl, Sm, 1 mm, Car
						134.0						146.3m: Jt, 32°, Pl, Sm, 1 mm, Cl
												146.33m: Pt, 36°, Pl, Sm, Vr Cl
												146.35m: Pt, 36°, Pl, Sm, Vr Cl
						146.5						
						133.5						
			100	98		147.0						147.09m: Bg, 36°
						133.0						
												147.4m: Bg, 39°, Pl, Ro, Vr Car
						147.5						147.6m: Bg, 38°, Pl, Sm, Vr Cl
						132.5						
						148.0						
						132.0						
												148.44m: Pt, 21°, Pl, Ro, Vr Car
						148.5						148.55m: Pt, 35°, Pl, Ro, Vr Car
												148.56m: Pt, 48°, Pl, Ro, Vr Car
												148.64m: Pt, 43°, Pl, Ro, Vr Car
												148.65m: Pt, 33°, Pl, Ro, Vr Car
												148.72m: Jt, 32°, Pl, Po, Vr Car
						131.5						148.84m: Jt, 51°, Pl, Sm, Vr Car
						149.0						
												149.17m: Jt, 36°, Pl, Ro, Vr Car
												149.21m: Jt, 30°, Pl, Ro, Vr Car
			100	98		131.0						149.35m: Jt, 48°, Pl, Sm, Vr Car
						149.5						149.39m: Jt, 36°, Pl, Sm, Vr Car
												149.63m: Jt, 41°, Pl, Ro, Vr Car
						130.5						

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **San Antonio**
Project Number: **PS117942**

Date Commenced: **1-10-20**
Date Completed: **3-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting:	Sandvik DE811i/ Track	Hole Angle:	-65°	Surface RL:	266.4 m AHD
Borehole Diameter:	96 mm	Bearing:	78°	Co-ords:	E 613792.63 N 6390253.2 MGA2020 55

Borehole Information						Field Material Description						
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	ROD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	NII							Volcaniclastic SILTSTONE; green grey, laminated, trace chloritic and siliceous alteration	FR	VL 0.03 / 0.8 L 0.1 / 2 M 0.3 / 6 H 1 / 20 VH3 / 60 EH10 / 200	20-60 60-200 200-600 600-2000 ≥2000	WEATHERED ROCK
			100	98		130.150.5						
						151.0						150.79m: Jt, 46°, Pl, Ro, Vr Car
						129.5						
						151.5						
						129.0						
						152.0						
						128.5						152.25m: Jt, 22°, Pl, Ro, 1 mm, Car
						152.5						152.49m: Jt, 35°, Pl, Ro, Vr Car 152.52m: Bg, 35°
						128.02.73						152.69m: Jt, 32°, Pl, Ro, Vr Car
						153.0		Volcaniclastic SANDSTONE; coarse grained, dark green grey, poorly sorted, minor to trace chlorite, siliceous and epidotic alteration	FR			
						127.5						153.21m: Jt, 39°, Pl, Ro, Vr Car
						153.5						
						127.0						
						154.0						
						126.5						
						154.5						154.47m: Jt, 38°, Cu, Ro, Vr Car
			100	92		126.0						

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT004

SHEET : 33 OF 36

Client: ALKANE RESOURCES LIMITED
Project: TGEF
Borehole Location: San Antonio
Project Number: PS117942

Date Commenced: 1-10-20
Date Completed: 3-10-20
Recorded By: NG
Log Checked By: LMCK

Drill Model/Mounting: Sandvik DE811i/ Track Hole Angle: -65° Surface RL: 266.4 m AHD
Borehole Diameter: 96 mm Bearing: 78° Co-ords: E 613792.63 N 6390253.2 MGA2020 55

Borehole Information					Field Material Description							
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil							Volcaniclastic SANDSTONE; coarse grained, dark green grey, poorly sorted, minor to trace chlorite, siliceous and epidotic alteration	FR	VL 0.0 / 0.6 SL 0.1 / 0.2 M 0.3 / 0.6 H 1 / 2.0 VH 0 / 0.0 EH 0 / 2.00	<20 20-60 60-200 200-600 600-2000 >2000	
					125.5	155.5						
					125.0	156.0						
			100	92	156.44	156.5		Volcaniclastic SILTSTONE; green grey, laminated and interbedded with volcaniclastic mainly fine grained sandstone, minor to trace chloritic, siliceous and epidotic alteration	FR			
					124.5							156.61m: Fo, 39°
					157.0							156.88m: Pt, 35°, Pl, Sm, Vr Car
					124.0							157.18m: Pt, 41°, Pl, Sm, Sn Py
					157.5							157.69m: Pt, 38°, Pl, Sm, Sn Py
					123.5							157.73m: Pt, 37°, Pl, Sm, Sn Py
					158.0							157.78m: Jt, 15°, Pl, Ro, 1 mm, Car
					123.0							157.85m: Pt, 40°, Pl, Sm, Sn Py
					158.5							157.91m: Pt, 39°, Pl, Sm, Sn Py
					122.5							157.95m: Pt, 39°, Pl, Sm, Vr Car
					159.0							158.09m: Jt, 39°, Pl, Sm, Sn Py
					122.0							158.15m: Pt, 37°, Pl, Sm, Vr Car
					159.5							158.18m: Pt, 45°, Pl, Sm, Vr Car
					121.5							158.32m: Pt, 41°, Pl, Sm, Sn Py
												158.45m: Pt, 35°, Pl, Sm, Vr Car
			100	59								158.77m: Pt, 37°, Pl, Sm, Vr Car
												159.14m: Pt, 34°, Pl, Sm, Vr Car
												159.16m: Pt, 35°, Pl, Sm, Vr Car
												159.28m: Pt, 34°
												159.35m: Pt, 35°, Pl, Sm, Vr Car
												159.5m: Pt, 37°, Pl, Sm, Vr Car
												159.59m: Pt, 37°, Pl, Sm, Vr Car
												159.69m: Pt, 41°, Cu, Sm, Sn Py
												159.73m: Pt, 35°, Pl, Sm, Vr Cl
												159.75m: Pt, 36°, Pl, Sm, Vr Cl
												159.77m: Pt, 32°, Pl, Sm, Vr Cl
												159.79m: Pt, 36°, Pl, Sm, Vr Cl
												159.82m: Pt, 37°, Pl, Sm, Sn Py

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **San Antonio**
Project Number: **PS117942**

Date Commenced: **1-10-20**
Date Completed: **3-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting:	Sandvik DE811i/ Track	Hole Angle:	-65°	Surface RL:	266.4 m AHD
Borehole Diameter:	96 mm	Bearing:	78°	Co-ords:	E 613792.63 N 6390253.2 MGA2020 55

Borehole Information							Field Material Description						
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	ROD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS	
HQ	NII							Volcaniclastic SILTSTONE; gren grey, laminated and interbedded with volcaniclastic mainly fine grained sandstone, minor to trace chloritic, siliceous and epidotic alteration	FR	VL 0.0 / 0.8 L 0.1 / 2 M 0.3 / 6 H 1 / 20 VH 1 / 60 EH 10 / 200	50 50-99 100-299 300-599 600-2000 >2000	159.86m: Pt, 32°, Pl, Sm, Vr Car 159.9m: Pt, 34°, Pl, Sm, Vr Car 160.04m: Pt, 41°, Pl, Sm, Vr Car 160.13m: Pt, 50°, Ir, Ro, Vr Car WEATHERED ROCK 160.48m: Pt, 38°, Pl, Sm, Vr Car 160.55m: Jt, 50°, Pl, Sm, Sn Py 161.02m: Pt, 40°, Pl, Sm, Sn Py 161.06m: Pt, 36°, Pl, Ro, Sn Py 161.37m: Jt, 56°, Pl, Ro, Sn Py 161.4m: Jt, 54°, Pl, Sm, Sn Py 162.09m: Jt, 56°, Ir, Ro, 0.4 mm, Vr Car 163.3m: Vn, 62°, Pl, Ro, 2 mm, Car 164.12m: Pt, 32°, Pl, Ro, Vr Car	

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **San Antonio**
Project Number: **PS117942**

Date Commenced: **1-10-20**
Date Completed: **3-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting:	Sandvik DE811i/ Track	Hole Angle:	-65°	Surface RL:	266.4 m AHD
Borehole Diameter:	96 mm	Bearing:	78°	Co-ords:	E 613792.63 N 6390253.2 MGA2020 55

Borehole Information						Field Material Description						
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	NII							Volcaniclastic SILTSTONE; gren grey, laminated and interbedded with volcaniclastic mainly fine grained sandstone, minor to trace chloritic, siliceous and epidotic alteration	FR	VL 0.03 / 0.8 L 0.1 / 2 M 0.3 / 6 H 1 / 20 VH3 / 60 EH10 / 200	20-50 50-100 100-200 200-600 600-2000 2000	WEATHERED ROCK
			100	86	116.5	165.5						
					116.0	166.0						165.74m: Jt, 10°, Pl, Ro, 2 mm, Car 165.79m: Jt, 65°, Pl, Sm, Sn Py 165.81m: Jt, 29°, Pl, Sm, Sn Py, along foliation
					115.5	166.5						166.31m: Pt, 27°, Pl, Sm, Vr Car 166.39m: Pt, 42°, Pl, Sm, Vr Car 166.53m: Bg, 24°
					115.0	167.0						166.79m: Pt, 50°, Pl, Ro, Vr Car 167m: Pt, 35°, Pl, Sm, Vr Car 167.11m: Pt, 35°, Pl, Sm, Vr Car
					114.5	167.5						167.44m: Pt, 24°, Pl, Sm, Vr Car 167.68m: Jt, 56°, Pl, Ro, Vr Car
			100	101	168.0							168.37m: Bg, 35°
					114.0							
					168.5							
					113.5							
					169.0							
					169.17							169.17m: Pt, 37°, Cu, Ro, Vr Car
			100	99	113.0			Volcaniclastic SANDSTONE: medium to coarse grained, dark green grey, poorly sorted, minor to trace chloritic, carbonitic and epidotic alteration ...fine grained, interbedded and foliated	FR			169.35m: Jt, 62°, Ir, Ro, Vr Car 169.58m: Pt, 33°, Pl, Sm, Vr Car
					169.5							169.83m: Jt, 64°, Ir, Ro, Vr Car
					112.5			...coarse grained breccia				

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT004

SHEET : 36 OF 36

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **San Antonio**
Project Number: **PS117942**

Date Commenced: **1-10-20**
Date Completed: **3-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track** Hole Angle: **-65°** Surface RL: **266.4 m AHD**
Borehole Diameter: **96 mm** Bearing: **78°** Co-ords: **E 613792.63 N 6390253.2 MGA2020 55**

Borehole Information					Field Material Description							
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil							Volcaniclastic SANDSTONE; medium to coarse grained, dark green grey, poorly sorted, minor to trace chloritic, carbonitic and epidotic alteration	FR	VL 0.00 / 0.6 SL 0.12 M 0.31/6 H 1.20 VH3 / 60 EH10 / 200	<20 20-60 60-200 200-600 600-2000 2000+	
					112.0							
						170.5						
					111.5							
						171.0		...fine grained, interbedded and foliated				
					111.0							
						171.5						
					110.5							
						172.0						
			100	99				...coarse grained breccia				172.27m: Bg, 40°
					172.5							
					110.0							
					173.0							
					109.5							
					173.5							173.52m: Jt, 75°, Ro, Vr Car
					109.0							173.64m: Fo, 28°
								...fine grained, interbedded and foliated				173.85m: Vn, Pl, Ro, 2 mm, Car
					174.0							
					108.5							174.19m: Jt, 38°, Pl, Ro, Vr Car
					174.5							
					108.0			END OF BOREHOLE AT 174.80 m Target depth				

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **15-10-20**
Date Completed: **18-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-60°**
Bearing: **102°**

Surface RL: **266.0 m AHD**
Co-ords: **E 614088 N 6390691 MGA2020 55**

[illegible]

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT005

SHEET : 2 OF 37

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **15-10-20**
Date Completed: **18-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-60°** Surface RL: **266.0 m AHD**
Bearing: **102°** Co-ords: **E 614088 N 6390691 MGA2020 55**

Borehole Information						Field Material Description																
METHOD	SUPPORT	WATER	RL (m AHD)	DEPTH (m)	FIELD TEST	SAMPLE	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY				POCKET PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS						
HQ	Nii	NFGWE									VS	FB	VL	L	MD	ST	D	VST	VD	H		
			261.5			D			Sandy CLAY; medium to high plasticity, pale grey - pale brown, mottled pale orange, pale red, fine to medium grained sand, trace coarse grained sand, trace fine grained gravel.	W<PL												QUATERNARY ALLUVIUM
				5.5																		
			261.0																			
				6.0																		
			260.5																			
				6.5																		
			260.0																			
				7.0																		
			259.5																			
				7.5																		
			259.0																			
				8.0																		
			258.5																			
				8.5																		
			258.0			C																
			9.40																			
				9.5					Silty CLAY; high plasticity, grey-brown mottled brown-orange, trace fine to medium grained sand.	W=PL												TERTIARY ALLUVIUM
			257.5																			

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT005

SHEET : 3 OF 37

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **15-10-20**
Date Completed: **18-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-60°** Surface RL: **266.0 m AHD**
Bearing: **102°** Co-ords: **E 614088 N 6390691 MGA2020 55**

Borehole Information							Field Material Description						
METHOD	SUPPORT	WATER	RL (m AHD)	DEPTH (m)	FIELD TEST	SAMPLE	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY	POCKET PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil	NFGWE								VS W=PL FB VL SL ST MD VST D H			
			257.0	10.5					Silty CLAY; high plasticity, grey-brown mottled brown-orange, trace fine to medium grained sand.			250	stained surface
			256.5	11.0									
			256.0	11.5								520	fissured clay surface
				12.0									
			255.5	12.5									
				13.0									
			254.5	13.10					Silty CLAY; high plasticity, mottled orange - red, with medium grained rounded quartz and extremely weathered rock fragment gravel and cobbles, extremely weathered rock to consistency of a low to medium plasticity silty clay or clayey silt.			360	
				13.5									
			254.0	14.0									
				14.5								390	
			253.5										

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT005

SHEET : 4 OF 37

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **15-10-20**
Date Completed: **18-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-60°** Surface RL: **266.0 m AHD**
Bearing: **102°** Co-ords: **E 614088 N 6390691 MGA2020 55**

Borehole Information							Field Material Description												
METHOD	SUPPORT	WATER	RL (m AHD)	DEPTH (m)	FIELD TEST	SAMPLE	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY					POCKET PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS		
HQ	Nii	NFGWE								VS SL ST H	FB VL LD MD VD								
				15.5					Silty CLAY; high plasticity, mottled orange - red, with medium grained rounded quartz and extremely weathered rock fragment gravel and cobbles, extremely weathered rock to consistency of a low to medium plasticity silty clay or clayey silt.	W=PL							320	TERTIARY ALLUVIUM	
				252.5															
				16.0															
				252.0															
				16.5															
				251.5															
				17.0															
				251.0															
				17.5															230
				250.5															
				18.0															
				250.0						W>PL									
				18.5															
				19.0															
				249.5															
				19.5															
				249.0						W=PL							180		

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT005

SHEET : 5 OF 37

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **15-10-20**
Date Completed: **18-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**Hole Angle: **-60°**Surface RL: **266.0 m AHD**Borehole Diameter: **96 mm**Bearing: **102°**Co-ords: **E 614088 N 6390691 MGA2020 55**

Borehole Information						Field Material Description													
METHOD	SUPPORT	WATER	RL (m AHD)	DEPTH (m)	FIELD TEST	SAMPLE	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY					POCKET PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS		
HQ	Nii	NFGWE				C				W=PL	VS	FB	VL	SL	MD	VS	VD		
			248.5						Silty CLAY; high plasticity, mottled orange - red, with medium grained rounded quartz and extremely weathered rock fragment gravel and cobbles, extremely weathered rock to consistency of a low to medium plasticity silty clay or clayey silt.									300	TERTIARY ALLUVIUM
			20.5																
			20.70																
			248.0						Silty CLAY; high plasticity, grey mottled dark red, trace orange mottling, with medium grained rounded quartz and extremely weathered rock fragment gravel and cobbles, extremely weathered rock to consistency of a low to medium plasticity silty clay or clayey silt.										
			21.0																
			247.5															290	
			21.5																
			247.0																
			22.0																
			246.5																
			22.5																
			23.0																
			246.0																
			23.5																
			245.5															210	
			24.0																
			24.10																
			245.0						CORE LOSS 0.30m (24.10-24.40)										
			24.40																
			24.5						Silty CLAY; high plasticity, grey mottled dark red, trace orange mottling, with medium grained rounded quartz and extremely weathered rock fragment gravel and cobbles, extremely weathered rock to consistency of a low to medium plasticity silty clay or clayey silt.	W=PL									
			244.5																

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **15-10-20**
Date Completed: **18-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-60°**
Bearing: **102°**

Surface RL: **266.0 m AHD**
Co-ords: **E 614088 N 6390691 MGA2020 55**

[illegible]

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT005

SHEET : 7 OF 37

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **15-10-20**
Date Completed: **18-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-60°**
Bearing: **102°**

Surface RL: **266.0 m AHD**
Co-ords: **E 614088 N 6390691 MGA2020 55**

Borehole Information						Field Material Description												STRUCTURE AND ADDITIONAL OBSERVATIONS
METHOD	SUPPORT	WATER	RL (m AHD)	DEPTH (m)	FIELD TEST	SAMPLE	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY						POCKET PENETROMETER (kPa)	
HQ	Nii	NFGWE	240.0							W=PL	VS	FB	VL	ST	MD	VD		
				30.30														TERTIARY ALLUVIUM
				30.40					CORE LOSS 0.10m (30.30-30.40)									
				30.5					Silty CLAY: high plasticity, grey mottled dark red, trace orange mottling, with medium grained rounded quartz and extremely weathered rock fragment gravel and cobbles, extremely weathered rock to consistency of a low to medium plasticity silty clay or clayey silt.	W=PL								
				239.5														200
				31.0														
				239.0														
				31.5														
				238.5														600
				32.0														
				238.0		C												
				32.5						W<PL								
				237.5														
				33.0														
				237.0	33.5				33.50 - 34. 34: fine grained gravel									
				34.0					34.00 - 34.20: coarse grained, angular to sub-rounded quartz gravel									
				236.5														
				34.5														
				236.0														

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT005

SHEET : 8 OF 37

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **15-10-20**
Date Completed: **18-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-60°**
Bearing: **102°**

Surface RL: **266.0 m AHD**
Co-ords: **E 614088 N 6390691 MGA2020 55**

Borehole Information							Field Material Description						
METHOD	SUPPORT	WATER	RL (m AHD)	DEPTH (m)	FIELD TEST	SAMPLE	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY	POCKET PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil	NFGWE	235.00						Silty CLAY; high plasticity, grey mottled dark red, trace orange mottling, with.	W=PL	VS FB VL SL ST LM MD VST DD H VD	380	TERTIARY ALLUVIUM
			235.5										
			35.5										
			235.0										
			36.0						...becoming increasingly red colour only, minimal grey				
			36.10						CORE LOSS 0.30m (36.10-36.40)				
			234.5										
			36.5						Silty CLAY; high plasticity, grey mottled dark red, trace orange mottling, with medium grained rounded quartz and extremely weathered rock fragment gravel and cobbles, extremely weathered rock to consistency of a low to medium plasticity silty clay or clayey silt.	W<PL			
			234.0										
			37.0										
			233.5										
			37.5										
			38.0										
			233.0										
			38.5										
			232.5										
			39.0										
			232.0										
			39.30						CORE LOSS 0.10m (39.30-39.40)				
			39.40										
			39.5						Silty CLAY; high plasticity, grey mottled dark red, trace orange mottling, with medium grained rounded quartz and extremely weathered rock fragment gravel and cobbles, extremely weathered rock to consistency of a low to medium plasticity silty clay or clayey silt.	W=PL		480	
			231.5										
												>600	

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT005

SHEET : 9 OF 37

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **15-10-20**
Date Completed: **18-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-60°**
Bearing: **102°**

Surface RL: **266.0 m AHD**
Co-ords: **E 614088 N 6390691 MGA2020 55**

Borehole Information							Field Material Description						
METHOD	SUPPORT	WATER	RL (m AHD)	DEPTH (m)	FIELD TEST	SAMPLE	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY	POCKET PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil	NFGWE											
			231.0	40.5					Silty CLAY; high plasticity, grey mottled dark red, trace orange mottling, with medium grained rounded quartz and extremely weathered rock fragment gravel and cobbles, extremely weathered rock to consistency of a low to medium plasticity silty clay or clayey silt.	W-PL	VS FB SL VL ST LM MD VST D H VD		TERTIARY ALLUVIUM
			230.5	41.0								>600	
			41.5										
			230.0										
			42.0										
			229.5										
			42.20						CORE LOSS 0.20m (42.20-42.40)				
			42.40										
			42.5						Silty CLAY; high plasticity, grey mottled dark red, trace orange mottling, with medium grained rounded quartz and extremely weathered rock fragment gravel and cobbles, extremely weathered rock to consistency of a low to medium plasticity silty clay or clayey silt.	W-PL			
			229.0										
			43.0										
			228.5										
			43.5										
			228.0										
			44.0										
			227.5										
			44.5										

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT005

SHEET : 10 OF 37

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **15-10-20**
Date Completed: **18-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-60°**
Bearing: **102°**

Surface RL: **266.0 m AHD**
Co-ords: **E 614088 N 6390691 MGA2020 55**

Borehole Information							Field Material Description																	
METHOD	SUPPORT	WATER	RL (m AHD)	DEPTH (m)	FIELD TEST	SAMPLE	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY					POCKET PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS							
HQ	Nil	NFGWE	227.0						Silty CLAY; high plasticity, grey mottled dark red, trace orange mottling, with medium grained rounded quartz and extremely weathered rock fragment gravel and cobbles, extremely weathered rock to consistency of a low to medium plasticity silty clay or clayey silt.	W-PL	VS	FB	VL	LD	MD	VST	DD	H	VD		590	TERTIARY ALLUVIUM		
			45.5																					
			226.5																					
			46.0						CORE LOSS 2.40m (46.00-48.40)															
			226.0																					
			46.5																					
			225.5																					
			47.0																					
			225.0																					
			47.5																					
			224.5																					
			48.0																					
			48.40																					
			224.0	48.5					Silty CLAY; high plasticity, grey mottled dark red, trace orange mottling, with medium grained rounded quartz and extremely weathered rock fragment gravel and cobbles, extremely weathered rock to consistency of a low to medium plasticity silty clay or clayey silt.	W-PL													>600	
			49.0																					
			223.5																					
			49.5																					>600
			223.0																					
			49.80						Clayey SILT; low plasticity, pale grey to white, mottled orange - brown, trace angular quartz fine to medium grained sand, trace angular gravel (veins).															

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT005

SHEET : 11 OF 37

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **15-10-20**
Date Completed: **18-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-60°** Surface RL: **266.0 m AHD**
Bearing: **102°** Co-ords: **E 614088 N 6390691 MGA2020 55**

Borehole Information							Field Material Description									
METHOD	SUPPORT	WATER	RL (m AHD)	DEPTH (m)	FIELD TEST	SAMPLE	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY				POCKET PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil	NFGWE								VS SL ST H	FB VL LM MD VD					
			222.5						Clayey SILT; low plasticity, pale grey to white, mottled orange - brown, trace angular quartz fine to medium grained sand, trace angular gravel (veins).	W-PL						RESIDUAL SOIL
			50.5													
			222.0													
			51.0													
			221.5													
			51.5													
			221.0													
			52.0													
			220.5													
			52.5													
			53.0													
			220.0							W=PL						
			53.5													
			219.5													
			54.0													
			219.0													
			54.5													
			218.5													

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT005

SHEET : 12 OF 37

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **15-10-20**
Date Completed: **18-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-60°**
Bearing: **102°**

Surface RL: **266.0 m AHD**
Co-ords: **E 614088 N 6390691 MGA2020 55**

Borehole Information							Field Material Description						
METHOD	SUPPORT	WATER	RL (m AHD)	DEPTH (m)	FIELD TEST	SAMPLE	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY	POCKET PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil	NFGWE							Clayey SILT; low plasticity, pale grey to white, mottled orange - brown, trace angular quartz fine to medium grained sand, trace angular gravel (veins).	W=PL	VS SL FL ST MD VD H		RESIDUAL SOIL
			218.0	55.5									
			217.5	56.0									
			56.5										
			217.0										
			57.0										
			216.5									320	
			57.5										
			216.0									300	
			58.0									400	
			215.5						REFER TO CORED BOREHOLE LOG				
			58.5										
			215.0										
			59.0										
			214.5	59.5									

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.

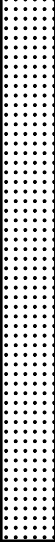
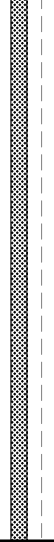
Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **15-10-20**
Date Completed: **18-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-60°**
Bearing: **102°**

Surface RL: **266.0 m AHD**
Co-ords: **E 614088 N 6390691 MGA2020 55**

Borehole Information							Field Material Description						
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS	
					218.0	55.5				VL 0.03/0.8 L 0.1/2 M 0.3/6 H 1/20 VH3/60 EH3/200	<20 20-60 60-200 200-600 600-2000 >2000		
					217.5	56.0							
					217.0	56.5							
					217.0	57.0							
					216.5	57.0							
					216.5	57.5							
					216.0	57.5							
					216.0	58.0							
					216.0	58.0							
					215.5	58.20		START CORING AT 58.20m					
HQ	Nil		100	0	215.5	58.5		Volcaniclastic SANDSTONE; fine to medium grained, pale yellow, pale brown stained pale orange ...from soil strength (XW) to very low rock strength (HW)	XW - HW			WEATHERED ROCK	
					215.0	59.0							
					214.5	59.5							

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT005

SHEET : 14 OF 37

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **15-10-20**
Date Completed: **18-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-60°**
Bearing: **102°**

Surface RL: **266.0 m AHD**
Co-ords: **E 614088 N 6390691 MGA2020 55**

Borehole Information					Field Material Description				
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING
HQ	Nil		100	0	214.0			Volcaniclastic SANDSTONE; fine to medium grained, pale yellow, pale brown stained pale orange	XW - HW
					60.5				HW
					213.5				
					61.0				
					213.0				
					61.5				
					212.5				
					62.0				
					212.0				
					62.5				
					211.5				
					63.0				
					211.0				
					63.5				
					64.0				
					210.5				
					64.20			CORE LOSS 0.20m (64.20-64.40)	
					64.40				
					64.5			Volcaniclastic SANDSTONE; fine to medium grained, pale yellow, pale brown stained pale orange	HW
					210.0			...from soil strength (XW) to very low rock strength (HW)	XW - HW

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT005

SHEET : 15 OF 37

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **15-10-20**
Date Completed: **18-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-60°**
Bearing: **102°**

Surface RL: **266.0 m AHD**
Co-ords: **E 614088 N 6390691 MGA2020 55**

Borehole Information					Field Material Description							
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil							Volcaniclastic SANDSTONE; fine to medium grained, pale yellow, pale brown stained pale orange	XW - HW	VL 0.0 / 0.6 L 0.1 / 2 N 1 / 20 VH 1 / 50 VH 1 / 60 EH 10 / 200	<20 20-40 40-200 200-600 600-2000 ≥2000	65.00: - 66.50 defects are mostly healed but open from finger pressure WEATHERED ROCK
			94	31	209.5							
					65.5							
					209.0				HW			
					66.0							
					208.5							
					66.5							66.6m: Jt, 45°, Pl, Ro, Sn Fe
								...becoming medium to coarse grained				66.8m: Jt, 90°, Un, Ro, Sn Fe
					208.0							67.1m: orthogonal slickensided surface
					67.0							67.2m: F, 30°, 10 mm, Cl, slickensided, pale green
												67.5m: Jt, 45°, Pl, Ro, Vr Cl
					207.5							67.6m: Jt, 30°, Pl, Ro, Sn, Fe, Mn
					68.0							
					207.0							
					68.5							
					206.5							68m: Jt x3, Pl, Ro, Sn, Fe, Mn
					69.0							
					69.20							69.1m: Jt, 45°, Pl, Ro, Sn Fe
					206.0			CORE LOSS 0.20m (69.20-69.40)				
					69.40			Volcaniclastic SANDSTONE; medium to coarse grained, pale yellow, pale brown stained pale orange	HW			69.6m: Jt, 30°, Pl, Ro, Vr Ch
					69.5							
					205.5							

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **15-10-20**
Date Completed: **18-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-60°**
Bearing: **102°**

Surface RL: **266.0 m AHD**
Co-ords: **E 614088 N 6390691 MGA2020 55**

Borehole Information						Field Material Description						
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nii		100	45	205.0	70.5		Volcaniclastic SANDSTONE; medium to coarse grained, pale yellow, pale brown stained pale orange	HW	VL 0.03 / 0.8 L 0.1 / 2 M 0.3 / 6 H 1 / 20 VHS / 60 EHS / 200	<20 20-40 40-200 200-600 600-2000 >2000	70m: Jt, 90°, Pl, Ro, Sn Fe WEATHERED ROCK 70.2m: Jt, 90°, Pl, Ro, Sn Fe 70.4m: Jt, 30°, Pl, Ro, Sn Fe 70.9m: Jt x3, 25°, Ro, 0.5 mm, Vr Ch, foliation 71.8m: 75°, Pl, Ro, 1 mm, Ch 71.9m: Jt, 20°, Pl, Ro, 1 mm, Ch 72.00: ~75.0 joint data similar to 66 - 72 m. As per spacing, mostly Fe Mn Sn along foliation on planar high and low angle joint sets. XW seams 72.1m: Se, 45°, Ro, 5 mm, Ch
			94	57	204.5	71.0		71.40 - 71.60: ...'leopard' texture, possible relief fiamme texture (pyroclastic)				
					204.0	71.5						
					72.0							
					203.5	72.5						
					203.0	73.0						
			100	47	202.5	73.5						
					202.0	74.0						
					201.5	74.5						

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT005

SHEET : 17 OF 37

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **15-10-20**
Date Completed: **18-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-60°**
Bearing: **102°**

Surface RL: **266.0 m AHD**
Co-ords: **E 614088 N 6390691 MGA2020 55**

Borehole Information						Field Material Description						
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil		94	57	201.0			Volcaniclastic SANDSTONE; medium to coarse grained, pale yellow, pale brown stained pale orange	HW	VL 0.0 / 0.0 L 0.1 / 2 H 1.1 / 6 VH 1.0 / 6 EH 1.0 / 200	<20 20-40 40-200 200-600 600-2000 2000	75.00' -80.00 joint data similar to 66 - 72 m. As per spacing, mostly Fe Mn Sn along foliation on planar high and low angle joint sets. XW seams WEATHERED ROCK
					75.5							
					200.5							
					76.0							
					200.0							
					76.30			CORE LOSS 0.10m (76.30-76.40)				
					76.40			Volcaniclastic SANDSTONE; medium to coarse grained, pale yellow, pale brown stained pale orange	HW			
					76.5							
					199.5							
					77.0							
			100	50	199.0							
					77.5							
					198.5							
					78.0							
					198.0				HW - MW			
					78.5							
					79.0				HW			
					197.5				HW - MW			
			97	69				...from soil strength (XW) to very low rock strength (HW)	XW - HW			
					79.5				HW			
					197.0				HW - MW			

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT005

SHEET : 18 OF 37

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **15-10-20**
Date Completed: **18-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**Hole Angle: **-60°**Surface RL: **266.0 m AHD**Borehole Diameter: **96 mm**Bearing: **102°**Co-ords: **E 614088 N 6390691 MGA2020 55**

Borehole Information					Field Material Description							
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₆₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil											

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT005

SHEET : 19 OF 37

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **15-10-20**
Date Completed: **18-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-60°**
Bearing: **102°**

Surface RL: **266.0 m AHD**
Co-ords: **E 614088 N 6390691 MGA2020 55**

Borehole Information						Field Material Description				
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)
HQ	Nil									
			100	46	192.0	85.5		Volcaniclastic SANDSTONE; fine grained, pale yellow, pale brown stained pale orange	HW	
					191.5	86.0				
			100	67	191.0	86.5				
					190.5	87.0				
					190.0	87.5				
					189.5	88.0				
			100	50	189.0	88.5				
					188.5	89.0				
					188.0	89.5				
			94	60						

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT005

SHEET : 20 OF 37

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **15-10-20**
Date Completed: **18-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-60°**
Bearing: **102°**

Surface RL: **266.0 m AHD**
Co-ords: **E 614088 N 6390691 MGA2020 55**

Borehole Information					Field Material Description				
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING
HQ	Nil				188.0			Volcaniclastic SANDSTONE; fine grained, pale yellow, pale brown stained pale orange	HW
					90.5				HW - MW
					187.5				
					91.0				
					187.0				
					91.5				
					186.5				
					92.0				
					186.0				
					92.5				
					92.60			CORE LOSS 0.30m (92.60-92.90)	
					92.90				
					185.5			Volcaniclastic SANDSTONE; fine grained, pale yellow, pale brown stained pale orange	HW - MW
					93.0				
					185.0				
					93.5				
					184.5				
					94.0				
					184.0				
					94.5				
					184.0				

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT005

SHEET : 21 OF 37

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **15-10-20**
Date Completed: **18-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-60°**
Bearing: **102°**

Surface RL: **266.0 m AHD**
Co-ords: **E 614088 N 6390691 MGA2020 55**

Borehole Information					Field Material Description				
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING
HQ	Nil		93	74	183.5			Volcaniclastic SANDSTONE; fine grained, pale yellow, pale brown stained pale orange	HW - MW
					95.5				
					183.0				
					96.0				
					96.20			CORE LOSS 0.30m (96.20-96.50)	
					182.5			Volcaniclastic SANDSTONE; fine grained, pale yellow, pale brown stained pale orange	HW - MW
					96.5				
					182.0				
					97.0				
					97.5				
					181.5				
					98.0				
					181.0				
					98.5				
					180.5				
					99.0				
					180.0				MW
					99.5				
					179.5				

99.2m: most defects are foliation partings mostly Fe Mn Sn or sandy clay Fe Sn In <1mm, XW-HW shear as noted
99.7m: Jt, 45°, Pl, Ro, Sn Mn

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT005

SHEET : 22 OF 37

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **15-10-20**
Date Completed: **18-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-60°**
Bearing: **102°**

Surface RL: **266.0 m AHD**
Co-ords: **E 614088 N 6390691 MGA2020 55**

Borehole Information					Field Material Description							
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil							Volcaniclastic SANDSTONE; fine grained, pale yellow, pale brown stained pale orange	MW	VL 0.0 / 0.0 L 0.1 / 2 H 1.7 / 6 VH 1.0 / 6 EH 1.0 / 20	<20 20-40 40-200 200-600 600-2000 2000	WEATHERED ROCK
			100	73	179.0	100.5						
					178.5	101.0						
					101.5	178.0		...becoming thinly laminated siltstone/fine volcanic sandstone	HW			
					102.0				MW			
			100	20	177.5	102.5		...laminated/weathering along foliation planes, chlorite alteration is very weak and can only be slightly seen through oxidation				100m: most defects are foliation partings mostly Fe Mn Sn or sandy clay Fe Sn In <1mm, XW-HW shear as noted
					177.0	103.0						
					176.5	103.5		...becoming less foliated	HW			103.30: -103.5 HW seam possible shear zone clay and rock fragments
					103.5				MW			103.50: -105.0 most defects as partings along weathered bedding/foliation planes
					176.0	104.0		Volcaniclastic SANDSTONE; medium to coarse grained, dark grey green, thickly bedded				
			105	81	175.1	104.5		...in and out of oxidation, bedding fabric not as apparent	MW - SW			104.00: -105.0 random joints in thickly bedded sandstone. No apparent preferred orientation. Fe Sn and Fe Mn Sn. Intact joint width < 1mm to staining

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT005

SHEET : 23 OF 37

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **15-10-20**
Date Completed: **18-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-60°**
Bearing: **102°**

Surface RL: **266.0 m AHD**
Co-ords: **E 614088 N 6390691 MGA2020 55**

Borehole Information					Field Material Description				
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING
HQ	Nil		105	81	175.0			Volcaniclastic SANDSTONE; medium to coarse grained, dark grey green, thickly bedded	MW - SW
					105.5				
					174.5				
					106.0				SW
					174.0				
					106.5				MW - SW
					173.5				SW
					107.0				
					173.0				
					107.5				
					172.5				MW - SW
					108.0				
					172.0				
					108.5				
					109.0				
					171.5				SW - FR
					109.5				
					171.0				MW - SW

105.00: ~109.9 random joints in thickly bedded sandstone. No apparent preferred orientation. Fe Sn and Fe Mn Sn. Intact joint width < 1mm to staining
105.08m: Jt, 25°, Pl, Sm, Sn Fe
WEATHERED ROCK

105.53m: Jt, 61°, Un, Ro, Sn Mn
105.6m: Jt, 33°, Pl, Ro, Sn Fe
105.7m: Jt, 32°, Pl, Ro, Sn Fe

106.08m: Jt, 30°, Un, Ro, Vr Car

106.39m: Jt, 48°, Pl, Ro, Sn Mn
106.58m: Jt, 40°, Pl, Ro, Sn Mn
106.67m: Jt, 34°, Pl, Ro, Sn Fe

107.27m: Jt, 45°, Un, Ro, Vr Car
107.55m: Jt, 25°, Pl, Ro, Vr Car
107.73m: Jt, 36°, Pl, Ro, Sn Mn

108.29m: Jt, 21°, Pl, Ro, Sn Fe
108.4m: Jt, 34°, Pl, Ro, Sn Fe
108.66m: Jt, 40°, Pl, Ro, Sn Fe

109.07m: Jt, 64°, Pl, Ro, Sn Fe

109.90: 109 - EOH: defects clean related to break along veins/veinlets, no Fe Sn

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT005

SHEET : 24 OF 37

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **15-10-20**
Date Completed: **18-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-60°**
Bearing: **102°**

Surface RL: **266.0 m AHD**
Co-ords: **E 614088 N 6390691 MGA2020 55**

Borehole Information					Field Material Description				
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING
HQ	Nil		100	91	110.17	170.5		Volcaniclastic SANDSTONE; medium to coarse grained, dark grey green, thickly bedded	FR
					110.5	170.0		Volcaniclastic SANDSTONE; medium grained, dark grey green, minor pervasive chloritic and carbonitic alteration	
					111.0	169.5			
					111.5	169.0			
					112.0	168.5			
					112.5	168.0			
					113.0	167.5		...black grey	MW - SW
					113.5	167.0		Volcaniclastic SANDSTONE; fine grained, pale grey, moderate pervasive chloritic and silica alteration	MW
					114.0	166.5			
					114.5	166.0		Volcaniclastic SANDSTONE; coarse grained, grey, minor patchy silica alteration	MW - SW
					115.0	165.5			
					115.5	165.0			
					116.0	164.5			
					116.5	164.0			
					117.0	163.5			
					117.5	163.0			
					118.0	162.5			
					118.5	162.0			
					119.0	161.5			
					119.5	161.0			
					120.0	160.5			
					120.5	160.0			
					121.0	159.5			
					121.5	159.0			
					122.0	158.5			
					122.5	158.0			
					123.0	157.5			
					123.5	157.0			
					124.0	156.5			
					124.5	156.0			
					125.0	155.5			
					125.5	155.0			
					126.0	154.5			
					126.5	154.0			
					127.0	153.5			
					127.5	153.0			
					128.0	152.5			
					128.5	152.0			
					129.0	151.5			
					129.5	151.0			
					130.0	150.5			
					130.5	150.0			
					131.0	149.5			
					131.5	149.0			
					132.0	148.5			
					132.5	148.0			
					133.0	147.5			
					133.5	147.0			
					134.0	146.5			
					134.5	146.0			
					135.0	145.5			
					135.5	145.0			
					136.0	144.5			
					136.5	144.0			
					137.0	143.5			
					137.5	143.0			
					138.0	142.5			
					138.5	142.0			
					139.0	141.5			
					139.5	141.0			
					140.0	140.5			
					140.5	140.0			
					141.0	139.5			
					141.5	139.0			
					142.0	138.5			
					142.5	138.0			
					143.0	137.5			
					143.5	137.0			
					144.0	136.5			
					144.5	136.0			
					145.0	135.5			
					145.5	135.0			
					146.0	134.5			
					146.5	134.0			
					147.0	133.5			
					147.5	133.0			
					148.0	132.5			
					148.5	132.0			
					149.0	131.5			
					149.5	131.0			
					150.0	130.5			
					150.5	130.0			
					151.0	129.5			
					151.5	129.0			
					152.0	128.5			
					152.5	128.0			
					153.0	127.5			
					153.5	127.0			
					154.0	126.5			
					154.5	126.0			
					155.0	125.5			
					155.5	125.0			
					156.0	124.5			
					156.5	124.0			
					157.0	123.5			
					157.5	123.0			
					158.0	122.5			
					158.5	122.0			
					159.0	121.5			
					159.5	121.0			
					160.0	120.5			
					160.5	120.0			
					161.0	119.5			
					161.5	119.0			
					162.0	118.5			
					162.5	118.0			
					163.0	117.5			
					163.5	117.0			
					164.0	116.5			
					164.5	116.0			
					165.0	115.5			
					165.5	115.0			
					166.0	114.5			
					166.5	114.0			
					167.0	113.5			
					167.5	113.0			
					168.0	112.5			
					168.5	112.0			
					169.0	111.5			
					169.5	111.0			
					170.0	110.5			
					170.5	110.0			
					171.0	109.5			
					171.5	109.0			
					172.0	108.5			
					172.5	108.0			
					173.0	107.5			
					173.5	107.0			
					174.0	106.5			
					174.5	106.0			
					175.0	105.5			
					175.5	105.0			
					176.0	104.5			
					176.5	104.0			
					177.0	103.5			
					177.5	103.0			
					178.0	102.5			
					178.5	102.0			
					179.0	101.5			
					179.5	101.0			
					180.0	100.5			
					180.5	100.0			
					181.0	99.5			
					181.5	99.0			
					182.0	98.5			
					182.5	98.0			
					183.0	97.5			
					183.5	97.0			
					184.0	96.5			
					184.5	96.0			
					185.0	95.5			
					185.5	95.0			
					186.0	94.5			
					186.5	94.0			
					187.0	93.5			
					187.5	93.0			
					188.0	92.5			
					188.5	92.0			
					189.0	91.5			
					189.5	91.0			
					190.0	90.5			
					190.5	90.0			
					191.0	89.5			
					191.5	89.0			
					192.0	88.5			
					192.5	88.0			
					193.0	87.5			
					193.5	87.0			
					194.0	86.5			
					194.5	86.0			
					195.0	85.5			
					195.5	85.0			
					196.0	84.5			
					196.5	84.0			
					197.0	83.5			
					197.5	83.0			
					198.0	82.5			
					198.5	82.0			
					199.0	81.5			
					199.5	81.0			
					200.0	80.5			
					200.5	80.0			
					201.0	79.5			
					201.5	79.0			
					202.0	78.5			
					202.5	78.0			
					203.0	77.5			
					203.5	77.0			
					204.0	76.5			
					204.5	76.0			
					205.0	75.5			
					205.5	75.0			
					206.0	74.5			
					206.5	74.0			
					207.0	73.5			
					207.5	73.0			
					208.0	72.5			
					208.5	72.0			
					209.0	71.5			
					209.5	71.0			
					210.0	70.5			
					210.5	70.0			
					211.0	69.5			
					211.5	69.0			
					212.0	68.5			
					212.5	68.0			



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT005

SHEET : 25 OF 37

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **15-10-20**
Date Completed: **18-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-60°**
Bearing: **102°**

Surface RL: **266.0 m AHD**
Co-ords: **E 614088 N 6390691 MGA2020 55**

Borehole Information						Field Material Description						
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil									VL 0.0 / 0.0 L 0.1 / 2 N 1.1 / 6 W 1.1 / 3 EH 0.1 / 0.0		
			100	94	166.0	115.5		Volcaniclastic SANDSTONE; coarse grained, grey, minor patchy silica alteration	MW - SW			WEATHERED ROCK
									SW			115.22m: Jt, 45°, St, Ro, Vr Car
					165.5	116.0						
					165.0	116.5						
					164.5	117.0			MW - SW			116.8m: Jt, 46°, St, Ro, Vr Car
												116.97m: Jt, 50°, Un, Ro, Sn Mn
					164.0	117.5			SW			
					118.0							118.11m: Vn, 20°, Pl, Sm, Vr Car
			100	100	163.5	118.40		Volcaniclastic SANDSTONE; coarse grained, dark green grey, moderate pervasive chloritic and minor patchy silica and sericitic alteration	FR			
					118.5							
					163.0	119.0						119.02m: Jt, 34°, Pl, Ro, Vr Car
					162.5	119.5						

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT005

SHEET : 26 OF 37

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **15-10-20**
Date Completed: **18-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-60°**
Bearing: **102°**

Surface RL: **266.0 m AHD**
Co-ords: **E 614088 N 6390691 MGA2020 55**

Borehole Information						Field Material Description				
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)
HQ	Nil		100	100	162.0			Volcaniclastic SANDSTONE; coarse grained, dark green grey, moderate pervasive chloritic and minor patchy silica and sericitic alteration	FR	
					120.5					
					161.5	120.69		Volcaniclastic SANDSTONE; coarse grained, dark green grey, major pervasive carbonitic and moderate chloritic alteration	FR	
					121.0					
					161.0					
					121.5					
					160.5					
					122.0					
					160.0					
					122.5					
					122.58			Volcaniclastic SANDSTONE; coarse grained, dark green grey, moderate pervasive chloritic and carbonitic alteration	FR	
					159.5	123.0				
					123.5					
					159.0					
					124.0					
					158.5					
					124.5					
					158.0					

120.69m: Fo, 46°

122.26m: Vn, 36°, Pl, Ro, 2 mm, Car, intact

123.97m: Vn, 40°, St, Sm, 3 mm, Car

WEATHERED ROCK

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT005

SHEET : 27 OF 37

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **15-10-20**
Date Completed: **18-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-60°**
Bearing: **102°**

Surface RL: **266.0 m AHD**
Co-ords: **E 614088 N 6390691 MGA2020 55**

Borehole Information						Field Material Description				
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)
HQ	Nil									
			100	100	157.5			Volcaniclastic SANDSTONE; coarse grained, dark green grey, moderate pervasive chloritic and carbonitic alteration	FR	
					125.5					
					157.0					
					126.0					
					156.5					
					126.5					
					156.1					
					127.0					
					127.5					
					155.5					
			100	100	128.0					
					155.0					
					128.5					
					154.5					
					129.0					
					154.0					
					129.5					
			100	99	129.70			Volcaniclastic SANDSTONE; medium to coarse grained, dark green grey, moderate pervasive chloritic and pervasive silica alteration	FR	
					153.5					

125.74m: Jt, 31°, Pl, Sm, Vr Car

126.88m: Jt, 47°, Pl, Ro, Cln Cl

128.34m: Fo, 36°

128.49m: Jt, 19°, Pl, Sm, Vr Car

129.5m: Vn, 21°, 2 mm, Qz

129.69m: Jt, 19°, Pl, Sm, 2 mm, Car

WEATHERED ROCK

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **15-10-20**
Date Completed: **18-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-60°**
Bearing: **102°**

Surface RL: **266.0 m AHD**
Co-ords: **E 614088 N 6390691 MGA2020 55**

Borehole Information						Field Material Description						
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nii											
			100	99	153.9	130.5		Volcaniclastic SANDSTONE; medium to coarse grained, dark green grey, moderate pervasive chloritic and pervasive silica alteration	FR	VL 0.00/10.8 L 0.1/2 M 0.3/6 H 1/20 VH3/60 EH9/200	<20 20-60 60-200 200-600 600-2000 >2000	WEATHERED ROCK
				152.5	131.0	131.17m: Fo, 44°						
				152.0	131.5	131.95m: Jt, 33°, Pl, Ro, Vr Car 131.97m: Jt, 48°, Pl, Ro, Vr Car 131.95m: Jt, 57°, Un, Sm, Vr Car						
				151.5	132.0	132.21m: Jt, 57°, Un, 0.3 mm, Car						
				151.0	132.5							
				150.5	133.0							
				150.0	133.5							
				149.5	134.0	133.96m: Jt, 20°, Un, Ro, Vr Car						
				149.0	134.5							

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT005

SHEET : 29 OF 37

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **15-10-20**
Date Completed: **18-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-60°**
Bearing: **102°**

Surface RL: **266.0 m AHD**
Co-ords: **E 614088 N 6390691 MGA2020 55**

Borehole Information						Field Material Description						
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)		RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil		100	99	149.0			Volcaniclastic SANDSTONE; medium to coarse grained, dark green grey, moderate pervasive chloritic and pervasive silica alteration	FR	VL 0.00 / 0.0 L 0.12 N 1.26 H 1.26 VH1 / 60 EH1 / 20	<20 20-60 60-200 200-600 600-2000 2000	WEATHERED ROCK
					135.5							
					148.5		135.74m: Vn, 28°					
					136.0							
					148.0							
					136.5							
			100	95	147.5							
					137.0		137.03m: Vn, 45°, Un, Ro, 2 mm, Car					
					147.0							
					137.5							
					146.5							
					138.0							
					138.5							
					146.0							
					139.0		139.07m: Jt, 29°, Pl, Sm, Vr Car					
			100	100	145.5							
					139.5							
					145.0							

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **15-10-20**
Date Completed: **18-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-60°**
Bearing: **102°**

Surface RL: **266.0 m AHD**
Co-ords: **E 614088 N 6390691 MGA2020 55**

Borehole Information						Field Material Description						
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nii									VL 0.00/10.8 L 0.1/2 M 0.3/6 H 1/20 VH3/60 EH3/200	20-60 60-200 200-600 600-2000 >2000	
			100	100	144.5			Volcaniclastic SANDSTONE; medium to coarse grained, dark green grey, moderate pervasive chloritic and pervasive silica alteration	FR			WEATHERED ROCK
					140.5							
			100	100	144.0 ^{0.90}			Volcaniclastic SANDSTONE; coarse grained, dark green grey, moderate pervasive chloritic, silica and carbonic alteration	FR			
					141.0							
					143.5							
					141.5							
					143.0							
					142.0							
					142.5							
					142.5							
			100	95	143.0							
					142.0							
					143.5							
					141.5 ^{3.75}							
					144.0			Volcaniclastic SANDSTONE; medium to coarse grained, grey, moderate pervasive chloritic and pervasive silica alteration	FR			
					141.0							
			100	100	144.5							
					140.5							

142.53m: Jt, 24°, Un, Sm, 4 mm, Car

142.6m: Jt, 32°, Un, Ro, Vr Car

142.67m: Jt, 60°, St, Ro, Vr Car

143.49m: Jt, 28°, Pl, Ro, 1 mm, Car

144.64m: Bg, 40°, 2 mm, crenulated bedding plane.

144.88m: Bg, 40°

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **15-10-20**
Date Completed: **18-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-60°**
Bearing: **102°**

Surface RL: **266.0 m AHD**
Co-ords: **E 614088 N 6390691 MGA2020 55**

Borehole Information						Field Material Description					
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD) DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa ($I_{s(50)}$ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nii						Volcaniclastic SANDSTONE; medium to coarse grained, grey, moderate pervasive chloritic and pervasive silica alteration	FR	VL 0.00 / 0.08 L 0.1 / 2 M 0.3 / 6 H 1 / 20 VH3 / 60 EH9 / 200	<20 20-60 60-200 200-600 600-2000 >2000	WEATHERED ROCK
			100	100	140.0-145.5						145.25m: Jt, 40°, Pl, Sm, 0.5 mm, Vr Car
					146.0						
					139.5						146.12m: DB
					146.5						
					139.0						
					147.0						
					138.5						147.3m: Vn, 20°, Pl, Ro, 5 mm, Qz
					147.5						
					138.0						
					148.0						148.13m: Vn, 16°, Un, Ro, 1 mm, Car
											148.2m: Vn, 16°, Pl, Car, intact
			100	95	137.5						
					148.5						
					137.0						148.89m: Vn, 43°, Pl, Ro, 1 mm, Car
					149.0						148.99m: DB
					136.5						
					149.5						

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT005

SHEET : 32 OF 37

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **15-10-20**
Date Completed: **18-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-60°**
Bearing: **102°**

Surface RL: **266.0 m AHD**
Co-ords: **E 614088 N 6390691 MGA2020 55**

Borehole Information					Field Material Description				
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING
HQ	Nil		100	95	136.0			Volcaniclastic SANDSTONE; medium to coarse grained, grey, moderate pervasive chloritic and pervasive silica alteration	FR
					150.5				
					135.5				
					151.0				
					135.0				
					151.5				
			100	97	134.5				
					152.0				
					134.0				
					152.5				
					133.1				
					153.0				
					153.5				
					133.0				
					154.0				
			100	95	132.5				
					154.5				
					132.0				

150.3m: Jt, 22°, Un, Ro, Vr Car

150.38m: Se, 40°, Pl, Sm, 50 mm, Vr Car

150.40: breccia zone about 50 mm thick

150.56m: Vn, 34°, Ir, Ro, 1 mm, Car

150.74m: Vn, 26°, Pl, Sm, Vr Car, intact

151.09m: Vn, 32°, Pl, 0.5 mm, Car

151.99m: Fo, 37°

152.19m: Vn, 15°, Pl, Sm, 0.5 mm, Vr Car

153.01m: Jt, 31°, Pl, Sm, Sn Py

153.02m: Jt, 36°, Pl, Sm, Vr Car

153.09m: Jt, 37°, Pl, Sm, Vr Car

153.45m: Jt, 54°, Un, Sm, Vr Car

153.5m: Jt, 40°, Pl, Ro, Vr Car

153.56m: Jt, 41°, Un, Sm, Vr Car

153.97m: Vn, 49°, 400 mm, Qz

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT005

SHEET : 33 OF 37

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **15-10-20**
Date Completed: **18-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-60°**
Bearing: **102°**

Surface RL: **266.0 m AHD**
Co-ords: **E 614088 N 6390691 MGA2020 55**

Borehole Information					Field Material Description							
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil									VL 0.0 / 0.0 L 0.1 / 2 W 1.0 / 6 H 1.0 / 6 VH 1.0 / 6 EH 0.0 / 200	<20 20-40 40-60 60-80 80-100 100-200 200-400 400-600 600-800 800-1000 1000-2000 2000	
			100	95	131.5			Volcaniclastic SANDSTONE; medium to coarse grained, grey, moderate pervasive chloritic and pervasive silica alteration	FR			WEATHERED ROCK
					155.5							
			100	95	155.60			Volcaniclastic SANDSTONE; coarse grained, dark green grey, moderate pervasive chloritic alteration	FR			
					131.0							
					156.0							
					130.5							
					156.5							
					130.0							
					157.0							
					157.5							157.36m: Vn, 55°, 100 mm, Qz
					129.5							157.63m: Jt, 70°, Un, Ro, Vr Car
			100	100	158.0							
					129.08.20			Volcaniclastic SANDSTONE; coarse grained, dark grey black, moderate semi-pervasive chloritic and epidotic alteration	FR			
					158.5							
					128.5							158.72m: Fo, 33°
					159.0							
					128.0							
					159.5							159.21m: Jt, 76°, Un, Ro, Vr Car
			100	100	127.5							

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **15-10-20**
Date Completed: **18-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-60°**
Bearing: **102°**

Surface RL: **266.0 m AHD**
Co-ords: **E 614088 N 6390691 MGA2020 55**

Borehole Information						Field Material Description						
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nii									VL 0.03/0.8 L 0.1/2 M 0.3/6 H 1/20 VH3/60 EH3/200	<20 20-60 60-200 200-600 600-2000 >2000	
			100	100	160.16			Volcaniclastic SANDSTONE; fine to coarse grained, dark green grey, moderate pervasive chloritic alteration	FR			WEATHERED ROCK
					127.160.5							
					161.0							
					126.5							161.10: -163.3 several joints and brecciated zones
					161.5							161.42m: Jt, 14°, Un, Ro, 2 mm, Car
					126.0							
					162.0			Volcaniclastic SANDSTONE; fine to coarse grained, pale green cream, moderate pervasive chloritic, silica and epidotic alteration	FR			
					162.05							
					125.5							
					162.5							
					125.0							
					163.0							163.05m: Jt, 17°, Pl, Ro, 0.1 mm, Vr Ca
					124.5							163.3m: Fo, 17°, Pl
					163.5							163.61m: Bg, 26°, 3 mm
					124.0							
					164.0							
					164.5							
					123.5				FR			

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT005

SHEET : 35 OF 37

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **15-10-20**
Date Completed: **18-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-60°**
Bearing: **102°**

Surface RL: **266.0 m AHD**
Co-ords: **E 614088 N 6390691 MGA2020 55**

Borehole Information						Field Material Description				
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)
HQ	Nil		100	100	123.0			Volcaniclastic SANDSTONE; fine to coarse grained, pale green cream, moderate pervasive chloritic, silica and epidotic alteration	FR	
					165.5					
					122.5					
					166.0					
					166.20					
					122.0			Volcaniclastic SANDSTONE; coarse grained, dark green grey, moderate pervasive chloritic and epidotic alteration	FR	
					166.5					
					121.5					
					167.0					
					121.0					
					167.5					
					120.5					
					168.0					
					168.5					
					120.0					
					169.0					
					119.5				FR	
					169.5					
					119.0					

167.58m: Jt, 32°, St, Ro, Vr Car
167.7m: Jt, 10°, Pl, Cln
168.73m: Vn, 67°, 35 mm, Qz

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT005

SHEET : 36 OF 37

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **15-10-20**
Date Completed: **18-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-60°**
Bearing: **102°**

Surface RL: **266.0 m AHD**
Co-ords: **E 614088 N 6390691 MGA2020 55**

Borehole Information					Field Material Description							
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil							Volcaniclastic SANDSTONE; coarse grained, dark green grey, moderate pervasive chloritic and epidotic alteration	FR	VL 0.0 / 0.6 L 0.1 / 2 N 1 / 2.5 VH 1 / 60 EH 10 / 200	<20 20-40 40-200 200-400 400-2000 ≥2000	WEATHERED ROCK
			100	99	118.5	170.5						170.3m: Fo, 30°
					170.60			Volcaniclastic SANDSTONE; coarse grained, dark green grey, pervasive strong cleavage, moderate pervasive chloritic and epidotic alteration and minor silica alteration	FR			
					118.0	171.0						
					117.5	171.5						171.69m: Fo, 29°
					117.0	172.0						
					116.5	172.5						
			100	97	173.0							172.98m: Jt, 44°, Pl, Ro, Vr Car
					116.0							173.09m: Jt, 30°, Pl, Ro, Vr Car
					173.5							
					115.5							173.87m: Jt, 25°, St, Ro, Vr Car, along foliation
					174.0							174.11m: Fo, 36°
					115.0	174.5						
			100	104	114.5							

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT005

SHEET : 37 OF 37

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **15-10-20**
Date Completed: **18-10-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-60°**
Bearing: **102°**

Surface RL: **266.0 m AHD**
Co-ords: **E 614088 N 6390691 MGA2020 55**

Borehole Information						Field Material Description				
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)
HQ	Nil		100	104	175.09			Volcaniclastic SILTSTONE; fine to coarse grained, green grey, moderate pervasive chloritic and silica alteration	FR	
					114.1	175.5				
					176.0					
					113.5					
					176.5					
					113.0					
					177.0					
								END OF BOREHOLE AT 177.01 m Target depth		
					112.5					
					112.0					
					111.5					
					111.0					
					110.5					

176.84m: Jt, Ir, Ro, Vr Car
176.85m: Jt, 22°, St, Sm, Vr Car

FOR NSW DPE USE ONLY

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT006

SHEET : 1 OF 22

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **13-12-20**
Date Completed: **15-12-21**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **49°**

Surface RL: **266.0 m AHD**
Co-ords: **E 614125 N 6390859 MGA2020 55**

Borehole Information							Field Material Description						
METHOD	SUPPORT	WATER	RL (m AHD)	DEPTH (m)	FIELD TEST	SAMPLE	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY	POCKET PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ		NFGWE							Sandy CLAY; medium to high plasticity, grey - dark grey, fine to medium grained sand, with fine to medium grained, sub-rounded gravel, becoming grey brown with depth.	VS FB SL ST MD VD H		350 500	QUATERNARY ALLUVIUM
			265.5	0.5					CORE LOSS 1.90m (0.60-2.50)				
			265.0	1.0									
			264.5	1.5									
			264.0	2.0									
			263.5	2.5					Sandy CLAY; medium to high plasticity, grey - dark grey, fine to medium grained sand, with fine to medium grained, sub-rounded gravel, becoming grey brown with depth.			200 200	
			263.0	3.0									
			262.5	3.5								600	
			262.0	4.0					Sandy CLAY; medium plasticity, pale grey mottled orange - pale brown, fine to medium grained sand.			600	
			261.5	4.5					CORE LOSS 1.20m (4.30-5.50)			>600	

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT006

SHEET : 2 OF 22

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **13-12-20**
Date Completed: **15-12-21**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **49°**

Surface RL: **266.0 m AHD**
Co-ords: **E 614125 N 6390859 MGA2020 55**

Borehole Information							Field Material Description												
METHOD	SUPPORT	WATER	RL (m AHD)	DEPTH (m)	FIELD TEST	SAMPLE	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY					POCKET PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS		
HQ		NFGWE								VS	FB	VL	L	MD	VST	D	VD		
									CORE LOSS 1.20m (4.30-5.50)										QUATERNARY ALLUVIUM
			261.0																
			5.55						Sandy CLAY; medium plasticity, pale grey mottled orange - pale brown, fine to medium grained sand.										
			260.5																
			6.0																
			260.0																
			6.5																
			259.5																
			7.0																
			259.0																
			7.5																
			258.5																
			8.0																
			258.0			D													
			8.5																
			257.5																
			9.0																
			257.0																
			9.5																

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT006

SHEET : 3 OF 22

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **13-12-20**
Date Completed: **15-12-21**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**Hole Angle: **-70°**Surface RL: **266.0 m AHD**Borehole Diameter: **96 mm**Bearing: **49°**Co-ords: **E 614125 N 6390859 MGA2020 55**

Borehole Information							Field Material Description						
METHOD	SUPPORT	WATER	RL (m AHD)	DEPTH (m)	FIELD TEST	SAMPLE	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY	POCKET PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ		NFGWE	256.5						Sandy CLAY; medium plasticity, pale grey mottled orange - pale brown, fine to medium grained sand.	VS SL FL	FB VL LT ST MD VD H		QUATERNARY ALLUVIUM
			10.5										
			256.0										
			11.0										
			255.5						Sandy CLAY; medium plasticity, pale grey mottled orange - red - brown, fine to medium grained sand.			>600	TERTIARY ALLUVIUM
			11.20										
			11.5										
			255.0										
			12.0									>600	
			254.5										
			12.5										
			254.0										
			13.0										
			253.5										
			13.5									>600	
			253.0										
			14.0						... sand becoming medium to coarse grained, trace fine grained, rounded to sub-rounded gravel				
			252.5			C						>600	
			14.5										
			252.0										

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT006

SHEET : 4 OF 22

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **13-12-20**
Date Completed: **15-12-21**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**Hole Angle: **-70°**Surface RL: **266.0 m AHD**Borehole Diameter: **96 mm**Bearing: **49°**Co-ords: **E 614125 N 6390859 MGA2020 55**

Borehole Information							Field Material Description						
METHOD	SUPPORT	WATER	RL (m AHD)	DEPTH (m)	FIELD TEST	SAMPLE	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY	POCKET PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ		NFGWE							Sandy CLAY; medium plasticity, pale grey mottled orange - red - brown, fine to medium grained sand.				TERTIARY ALLUVIUM
			251.5	15.5					...sand becoming fine to coarse, trace fine gravel			>600	
			251.0	16.0									
			250.5	16.5									
			250.0	17.0									
			249.5	17.5									
			249.0	18.0		C							
			248.5	18.5					Clayey SAND; medium to coarse grained, red brown, medium to high plasticity clay, trace sub-rounded to sub-angular gravel.				
			248.0	19.0									
			247.5	19.5					CLAY; medium to high plasticity, pale grey mottled dark red-brown, with fine to coarse sand, trace fine grained, sub-angular to sub-rounded gravel.				

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **13-12-20**
Date Completed: **15-12-21**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **49°**

Surface RL: **266.0 m AHD**
Co-ords: **E 614125 N 6390859 MGA2020 55**

[illegible]

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **13-12-20**
Date Completed: **15-12-21**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **49°**

Surface RL: **266.0 m AHD**
Co-ords: **E 614125 N 6390859 MGA2020 55**

Borehole Information						Field Material Description													
METHOD	SUPPORT	WATER	RL (m AHD)	DEPTH (m)	FIELD TEST	SAMPLE	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY					POCKET PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS		
										VS	FB	VL	SL	LL	MD	ST	VD		
HQ		NFGWE							CLAY; high plasticity, grey mottled dark red-brown (90%), with fine sand, trace angular to sub-rounded (highly weathered) gravel, grey colour maybe clasts (gravel, cobbles or boulders) and extremely weathered to clay.										
			242.0	25.5															
			241.5	26.0															
			241.0	26.5															
			240.5	27.0															
			240.0	27.5															
			239.5	28.0															
			239.0	28.5		C													
			239.0	29.0															
			238.5																
			238.5																
			238.0																
			238.0						CLAY; high plasticity, dark red, with fine sand, trace angular to sub-rounded (highly weathered) gravel, grey colour maybe clasts (gravel, cobbles or boulders) and extremely weathered to clay.										

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **13-12-20**
Date Completed: **15-12-21**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **49°**

Surface RL: **266.0 m AHD**
Co-ords: **E 614125 N 6390859 MGA2020 55**

[illegible]

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT006

SHEET : 8 OF 22

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **13-12-20**
Date Completed: **15-12-21**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **49°**

Surface RL: **266.0 m AHD**
Co-ords: **E 614125 N 6390859 MGA2020 55**

Borehole Information							Field Material Description						
METHOD	SUPPORT	WATER	RL (m AHD)	DEPTH (m)	FIELD TEST	SAMPLE	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY	POCKET PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ		NFGWE	233.0 ^{5.10}						CORE LOSS 0.90m (34.20-35.10)				TERTIARY ALLUVIUM
			35.5						CLAY; high plasticity, dark red, with fine sand, trace angular to sub-rounded (highly weathered) gravel, grey colour maybe clasts (gravel, cobbles or boulders) and extremely weathered to clay.				
			232.5										
			36.0										
			232.0 ^{3.20}						CORE LOSS 0.20m (36.20-36.40)				
			36.40										
			36.5						CLAY; high plasticity, dark red, with fine sand, trace angular to sub-rounded (highly weathered) gravel, grey colour maybe clasts (gravel, cobbles or boulders) and extremely weathered to clay.				
			231.5										
			37.0									>600	
			231.0										
			37.5										
			230.5										
			38.0			C							
			230.0										significant desiccation cracking
			38.5										
			229.5										
			39.0										
			229.0										
			39.5										
			228.5										

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT006

SHEET : 9 OF 22

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **13-12-20**
Date Completed: **15-12-21**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **49°**

Surface RL: **266.0 m AHD**
Co-ords: **E 614125 N 6390859 MGA2020 55**

Borehole Information							Field Material Description										
METHOD	SUPPORT	WATER	RL (m AHD)	DEPTH (m)	FIELD TEST	SAMPLE	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY					POCKET PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ		NFGWE							CLAY; high plasticity, dark red, with fine sand, trace angular to sub-rounded (highly weathered) gravel, grey colour maybe clasts (gravel, cobbles or boulders) and extremely weathered to clay.	VS	FB	VL	MD	VD		TERTIARY ALLUVIUM significant desiccation cracking	
			228.0	4040.5		C			Silty CLAY; medium to high plasticity, pale brown.	SL	FL	ST	LD	SD		RESIDUAL SOIL	
			40.80						Clayey GRAVEL; fine to coarse grained, angular, medium to high plasticity clay.							appears in-situ (residual vein)	
			227.5	41.0					Silty CLAY; medium to high plasticity, pale brown.							4 x fissured/residual joint surfaces: PI - Un, Sm, Clay veneer	
			227.0	41.5													
			226.5	42.0					REFER TO CORED BOREHOLE LOG								
			42.5														
			226.0														
			43.0														
			225.5														
			43.5														
			225.0														
			44.0														
			224.5														
			44.5														
			224.0														

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **13-12-20**
Date Completed: **15-12-21**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **49°**

Surface RL: **266.0 m AHD**
Co-ords: **E 614125 N 6390859 MGA2020 55**

Borehole Information						Field Material Description						
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
										VL 0.0/10.8 L 0.1/2 M 0.3/6 H 1/20 VH3/60 EH3/200	<20 20-60 60-200 200-600 600-2000 >2000	
					228.0	40.5						
					227.5	41.0						
					227.0	41.5						
HQ			129	100	41.90	42.0		START CORING AT 41.90m Volcaniclastic SANDSTONE; fine grained, pale grey stained, yellow brown, foliated CORE LOSS 3.10m (42.00-45.10)	XW - HW			WEATHERED ROCK
					226.5							
					226.0							
					225.5							
					225.0							
					224.5							
					224.0							

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT006

SHEET : 11 OF 22

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **13-12-20**
Date Completed: **15-12-21**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **49°**

Surface RL: **266.0 m AHD**
Co-ords: **E 614125 N 6390859 MGA2020 55**

Borehole Information					Field Material Description				
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING
HQ			3	0	45.10			CORE LOSS 3.10m (42.00-45.10)	
			100	0	223.5			MONZODIORITE; medium to coarse grained, brown (weathered), grey-green (fresh), sheared mylonitic fabric, carbonate chlorite alteration apparent in moderately weathered to fresh rock	XW - HW
					45.5				
					223.0				
					46.0				
					222.5				
					46.5				
					222.0				
			100	10	47.0				
					221.5				
					47.5				HW
					221.0				
					48.0				
					220.5				
					48.5				
			100	30	220.0				
					49.0				
					219.5				
					49.5				

47.50: mostly non-intact core on numerous 'cracks' along foliation related defects that fail with minimal pressure

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT006

SHEET : 12 OF 22

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **13-12-20**
Date Completed: **15-12-21**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **49°**

Surface RL: **266.0 m AHD**
Co-ords: **E 614125 N 6390859 MGA2020 55**

Borehole Information					Field Material Description				
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING
HQ								MONZODIORITE; medium to coarse grained, brown (weathered), grey-green (fresh), sheared mylonitic fabric, carbonate chlorite alteration apparent in moderately weathered to fresh rock	HW
			100	30	218.5	50.5			
					218.0	51.0			
					217.5	51.5			XW - HW
					217.0	52.0			HW
					216.5	52.5			XW
					216.0	53.0			HW
			100	44	215.5	53.5			
					215.0	54.0			
					214.5	54.5			
			100	50					

50.00: mostly non-intact core on numerous 'cracks' along foliation related defects that fail with minimal pressure
WEATHERED ROCK

51.70: defect dominated by parting along foliation, Un Ro-Sm and Fe Mn St (orange and black) as per defect spacing. Additional orthogonal joint sets spacing 200 - 600 mm, Pl Ro Fe-Mn stained possibly resulting in zones of nonintact core in more weathered rock

52.4m: Se weathered

52.8m: Se weathered

53.2m: Se weathered

53.5m: Se weathered

54.5m: clayey weathered zone

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **13-12-20**
Date Completed: **15-12-21**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **49°**

Surface RL: **266.0 m AHD**
Co-ords: **E 614125 N 6390859 MGA2020 55**

Borehole Information							Field Material Description					
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ								MONZODIORITE; medium to coarse grained, brown (weathered), grey-green (fresh), sheared mylonitic fabric, carbonate chlorite alteration apparent in moderately weathered to fresh rock	HW			
			100	50	214.0							~55.00: defect dominated by parting along foliation, Un Ro-Sm and Fe Mn St (orange and black) as per defect spacing. Additional orthogonal joint sets spacing 200 - 600 mm, Pl Ro Fe-Mn stained possibly resulting in zones of nonintact core in more weathered rock WEATHERED ROCK
					55.5							
					213.5							
					56.0							
					213.0							
					56.5							
					212.5							
					57.0							
					212.0							
					57.5							
					211.5							
					58.0							
					211.0							
					58.5							
					59.0							
					210.5							
					59.5							
					210.0							

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT006

SHEET : 14 OF 22

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **13-12-20**
Date Completed: **15-12-21**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **49°**

Surface RL: **266.0 m AHD**
Co-ords: **E 614125 N 6390859 MGA2020 55**

Borehole Information					Field Material Description				
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING
HQ			82	0	209.5			MONZODIORITE; medium to coarse grained, brown (weathered), grey-green (fresh), sheared mylonitic fabric, carbonate chlorite alteration apparent in moderately weathered to fresh rock	HW
					60.5				
					209.0				
					61.0				
					208.5				
					61.5				
					208.0				
			100	21	62.0				
					207.5				
					62.5				
					207.0				
					63.0				
					206.5				
					63.5				
					206.0				
					64.0				
			88	14	205.5				HW - MW
					64.5				HW
					205.0				

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT006

SHEET : 15 OF 22

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **13-12-20**
Date Completed: **15-12-21**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **49°**

Surface RL: **266.0 m AHD**
Co-ords: **E 614125 N 6390859 MGA2020 55**

Borehole Information					Field Material Description				
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING
HQ			88	14				MONZODIORITE; medium to coarse grained, brown (weathered), grey-green (fresh), sheared mylonitic fabric, carbonate chlorite alteration apparent in moderately weathered to fresh rock ...65.2 - 65.8 quartz vein	HW
					204.5	65.5			
					204.0	66.0			
			300	0					XW - HW
					203.5	66.5			HW
								...66.9 - 67.0 quartz vein	
					203.0	67.0			
			50	16					
					202.5	67.5			
					202.0	68.0			XW - HW
									HW
					201.5	68.5			HW - MW
			100	50					
					201.0	69.0			HW
					200.5	69.5			

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **13-12-20**
Date Completed: **15-12-21**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **49°**

Surface RL: **266.0 m AHD**
Co-ords: **E 614125 N 6390859 MGA2020 55**

Borehole Information							Field Material Description						
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS	
HQ										VL 0.03 / 0.8 L 0.1 / 2 M 0.3 / 6 H 1 / 20 VH3 / 60 EH3 / 200	20-60 60-200 200-600 600-2000 >2000		
			100	35	200.0			MONZODIORITE; medium to coarse grained, brown (weathered), grey-green (fresh), sheared mylonitic fabric, carbonate chlorite alteration apparent in moderately weathered to fresh rock	HW				
					70.5				HW - MW				
					199.5				HW				
					71.0								
					199.0								
					71.5								
					198.5				HW - MW				
					72.0				HW				
			100	36	198.0								
					72.5								
					197.5								
					73.0								
					197.0				HW - MW				
					73.5								
					196.5								
			100	60	74.0								
					196.0								
					74.5								

70.70: mostly non-intact core

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT006

SHEET : 17 OF 22

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **13-12-20**
Date Completed: **15-12-21**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **49°**

Surface RL: **266.0 m AHD**
Co-ords: **E 614125 N 6390859 MGA2020 55**

Borehole Information					Field Material Description				
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING
HQ			100	60	195.5			MONZODIORITE; medium to coarse grained, brown (weathered), grey-green (fresh), sheared mylonitic fabric, carbonate chlorite alteration apparent in moderately weathered to fresh rock	HW
					75.5				
					195.0				
					76.0				
					194.5				
			100	30	76.5				
					194.0				
					77.0				
					193.5				
					77.5				HW - MW
					193.0				
					78.0				
					192.5				HW
			100	29	78.5				
					192.0				HW - MW
					79.0				
					191.5				HW
					79.5				
			100	70	191.0				HW - MW

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT006

SHEET : 18 OF 22

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **13-12-20**
Date Completed: **15-12-21**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **49°**

Surface RL: **266.0 m AHD**
Co-ords: **E 614125 N 6390859 MGA2020 55**

Borehole Information					Field Material Description							
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	ROD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ										VL 0.0 / 0.0 L 0.1 / 2 W 1.1 / 6 M 1.1 / 3 VH1 / 60 EH1 / 200	<20 20-40 40-60 60-80 80-100 100-120 120-140 140-160 160-180 180-200 200-220 220-240 240-260 260-280 280-300 300-320 320-340 340-360 360-380 380-400 400-420 420-440 440-460 460-480 480-500 500-520 520-540 540-560 560-580 580-600 600-620 620-640 640-660 660-680 680-700 700-720 720-740 740-760 760-780 780-800 800-820 820-840 840-860 860-880 880-900 900-920 920-940 940-960 960-980 980-1000 1000-1020 1020-1040 1040-1060 1060-1080 1080-1100 1100-1120 1120-1140 1140-1160 1160-1180 1180-1200 1200-1220 1220-1240 1240-1260 1260-1280 1280-1300 1300-1320 1320-1340 1340-1360 1360-1380 1380-1400 1400-1420 1420-1440 1440-1460 1460-1480 1480-1500 1500-1520 1520-1540 1540-1560 1560-1580 1580-1600 1600-1620 1620-1640 1640-1660 1660-1680 1680-1700 1700-1720 1720-1740 1740-1760 1760-1780 1780-1800 1800-1820 1820-1840 1840-1860 1860-1880 1880-1900 1900-1920 1920-1940 1940-1960 1960-1980 1980-2000 2000-2020 2020-2040 2040-2060 2060-2080 2080-2100 2100-2120 2120-2140 2140-2160 2160-2180 2180-2200 2200-2220 2220-2240 2240-2260 2260-2280 2280-2300 2300-2320 2320-2340 2340-2360 2360-2380 2380-2400 2400-2420 2420-2440 2440-2460 2460-2480 2480-2500 2500-2520 2520-2540 2540-2560 2560-2580 2580-2600 2600-2620 2620-2640 2640-2660 2660-2680 2680-2700 2700-2720 2720-2740 2740-2760 2760-2780 2780-2800 2800-2820 2820-2840 2840-2860 2860-2880 2880-2900 2900-2920 2920-2940 2940-2960 2960-2980 2980-3000 3000-3020 3020-3040 3040-3060 3060-3080 3080-3100 3100-3120 3120-3140 3140-3160 3160-3180 3180-3200 3200-3220 3220-3240 3240-3260 3260-3280 3280-3300 3300-3320 3320-3340 3340-3360 3360-3380 3380-3400 3400-3420 3420-3440 3440-3460 3460-3480 3480-3500 3500-3520 3520-3540 3540-3560 3560-3580 3580-3600 3600-3620 3620-3640 3640-3660 3660-3680 3680-3700 3700-3720 3720-3740 3740-3760 3760-3780 3780-3800 3800-3820 3820-3840 3840-3860 3860-3880 3880-3900 3900-3920 3920-3940 3940-3960 3960-3980 3980-4000 4000-4020 4020-4040 4040-4060 4060-4080 4080-4100 4100-4120 4120-4140 4140-4160 4160-4180 4180-4200 4200-4220 4220-4240 4240-4260 4260-4280 4280-4300 4300-4320 4320-4340 4340-4360 4360-4380 4380-4400 4400-4420 4420-4440 4440-4460 4460-4480 4480-4500 4500-4520 4520-4540 4540-4560 4560-4580 4580-4600 4600-4620 4620-4640 4640-4660 4660-4680 4680-4700 4700-4720 4720-4740 4740-4760 4760-4780 4780-4800 4800-4820 4820-4840 4840-4860 4860-4880 4880-4900 4900-4920 4920-4940 4940-4960 4960-4980 4980-5000 5000-5020 5020-5040 5040-5060 5060-5080 5080-5100 5100-5120 5120-5140 5140-5160 5160-5180 5180-5200 5200-5220 5220-5240 5240-5260 5260-5280 5280-5300 5300-5320 5320-5340 5340-5360 5360-5380 5380-5400 5400-5420 5420-5440 5440-5460 5460-5480 5480-5500 5500-5520 5520-5540 5540-5560 5560-5580 5580-5600 5600-5620 5620-5640 5640-5660 5660-5680 5680-5700 5700-5720 5720-5740 5740-5760 5760-5780 5780-5800 5800-5820 5820-5840 5840-5860 5860-5880 5880-5900 5900-5920 5920-5940 5940-5960 5960-5980 5980-6000 6000-6020 6020-6040 6040-6060 6060-6080 6080-6100 6100-6120 6120-6140 6140-6160 6160-6180 6180-6200 6200-6220 6220-6240 6240-6260 6260-6280 6280-6300 6300-6320 6320-6340 6340-6360 6360-6380 6380-6400 6400-6420 6420-6440 6440-6460 6460-6480 6480-6500 6500-6520 6520-6540 6540-6560 6560-6580 6580-6600 6600-6620 6620-6640 6640-6660 6660-6680 6680-6700 6700-6720 6720-6740 6740-6760 6760-6780 6780-6800 6800-6820 6820-6840 6840-6860 6860-6880 6880-6900 6900-6920 6920-6940 6940-6960 6960-6980 6980-7000 7000-7020 7020-7040 7040-7060 7060-7080 7080-7100 7100-7120 7120-7140 7140-7160 7160-7180 7180-7200 7200-7220 7220-7240 7240-7260 7260-7280 7280-7300 7300-7320 7320-7340 7340-7360 7360-7380 7380-7400 7400-7420 7420-7440 7440-7460 7460-7480 7480-7500 7500-7520 7520-7540 7540-7560 7560-7580 7580-7600 7600-7620 7620-7640 7640-7660 7660-7680 7680-7700 7700-7720 7720-7740 7740-7760 7760-7780 7780-7800 7800-7820 7820-7840 7840-7860 7860-7880 7880-7900 7900-7920 7920-7940 7940-7960 7960-7980 7980-8000 8000-8020 8020-8040 8040-8060 8060-8080 8080-8100 8100-8120 8120-8140 8140-8160 8160-8180 8180-8200 8200-8220 8220-8240 8240-8260 8260-8280 8280-8300 8300-8320 8320-8340 8340-8360 8360-8380 8380-8400 8400-8420 8420-8440 8440-8460 8460-8480 8480-8500 8500-8520 8520-8540 8540-8560 8560-8580 8580-8600 8600-8620 8620-8640 8640-8660 8660-8680 8680-8700 8700-8720 8720-8740 8740-8760 8760-8780 8780-8800 8800-8820 8820-8840 8840-8860 8860-8880 8880-8900 8900-8920 8920-8940 8940-8960 8960-8980 8980-9000 9000-9020 9020-9040 9040-9060 9060-9080 9080-9100 9100-9120 9120-9140 9140-9160 9160-9180 9180-9200 9200-9220 9220-9240 9240-9260 9260-9280 9280-9300 9300-9320 9320-9340 9340-9360 9360-9380 9380-9400 9400-9420 9420-9440 9440-9460 9460-9480 9480-9500 9500-9520 9520-9540 9540-9560 9560-9580 9580-9600 9600-9620 9620-9640 9640-9660 9660-9680 9680-9700 9700-9720 9720-9740 9740-9760 9760-9780 9780-9800 9800-9820 9820-9840 9840-9860 9860-9880 9880-9900 9900-9920 9920-9940 9940-9960 9960-9980 9980-10000 10000-10020 10020-10040 10040-10060 10060-10080 10080-10100 10100-10120 10120-10140 10140-10160 10160-10180 10180-10200 10200-10220 10220-10240 10240-10260 10260-10280 10280-10300 10300-10320 10320-10340 10340-10360 10360-10380 10380-10400 10400-10420 10420-10440 10440-10460 10460-10480 10480-10500 10500-10520 10520-10540 10540-10560 10560-10580 10580-10600 10600-10620 10620-10640 10640-10660 10660-10680 10680-10700 10700-10720 10720-10740 10740-10760 10760-10780 10780-10800 10800-10820 10820-10840 10840-10860 10860-10880 10880-10900 10900-10920 10920-10940 10940-10960 10960-10980 10980-11000 11000-11020 11020-11040 11040-11060 11060-11080 11080-11100 11100-11120 11120-11140 11140-11160 11160-11180 11180-11200 11200-11220 11220-11240 11240-11260 11260-11280 11280-11300 11300-11320 11320-11340 11340-11360 11360-11380 11380-11400 11400-11420 11420-11440 11440-11460 11460-11480 11480-11500 11500-11520 11520-11540 11540-11560 11560-11580 11580-11600 11600-11620 11620-11640 11640-11660 11660-11680 11680-11700 11700-11720 11720-11740 11740-11760 11760-11780 11780-11800 11800-11820 11820-11840 11840-11860 11860-11880 11880-11900 11900-11920 11920-11940 11940-11960 11960-11980 11980-12000 12000-12020 12020-12040 12040-12060 12060-12080 12080-12100 12100-12120 12120-12140 12140-12160 12160-12180 12180-12200 12200-12220 12220-12240 12240-12260 12260-12280 12280-12300 12300-12320 12320-12340 12340-12360 12360-12380 12380-12400 12400-12420 12420-12440 12440-12460 12460-12480 12480-12500 12500-12520 12520-12540 12540-12560 12560-12580 12580-12600 12600-12620 12620-12640 12640-12660 12660-12680 12680-12700 12700-12720 12720-12740 12740-12760 12760-12780 12780-12800 12800-12820 12820-12840 12840-12860 12860-12880 12880-12900 12900-12920 12920-12940 12940-12960 12960-12980 12980-13000 13000-13020 13020-13040 13040-13060 13060-13080 13080-13100 13100-13120 13120-13140 13140-13160 13160-13180 13180-13200 13200-13220 13220-13240 13240-13260 13260-13280 13280-13300 13300-13320 13320-13340 13340-13360 13360-13380 13380-13400 13400-13420 13420-13440 13440-13460 13460-13480 13480-13500 13500-13520 13520-13540 13540-13560 13560-13580 13580-13600 13600-13620 13620-13640 13640-13660 13660-13680 13680-13700 13700-13720 13720-13740 13740-13760 13760-13780 13780-13800 13800-13820 13820-13840 13840-13860 13860-13880 13880-13900 13900-13920 13920-13940 13940-13960 13960-13980 13980-14000 14000-14020 14020-14040 14040-14060 14060-14080 14080-14100 14100-14120 14120-14140 14140-14160 14160-14180 14180-14200 14200-14220 14220-14240 14240-14260 14260-14280 14280-14300 14300-14320 14320-14340 14340-14360 14360-14380 14380-14400 14400-14420 14420-14440 14440-14460 14460-14480 14480-14500 14500-14520 14520-14540 14540-14560 14560-14580 14580-14600 14600-14620 14620-14640 14640-14660 14660-14680 14680-14700 14700-14720 14720-14740 14740-14760 14760-14780 14780-14800 14800-14820 14820-14840 14840-14860 14860-14880 14880-14900 14900-14920 14920-14940 14940-14960 14960-14980 14980-15000 15000-15020 15020-15040 15040-15060 15060-15080 15080-15100 15100-15120 15120-15140 15140-15160 15160-15180 15180-15200 15200-15220 15220-15240 15240-15260 15260-15280 15280-15300 15300-15320 15320-15340 15340-15360 15360-15380 15380-15400 15400-15420 15420-15440 15440-15460 15460-15480 15480-15500 15500-15520 15520-15540 15540-15560 15560-15580 15580-15600 15600-15620 15620-15640 15640-15660 15660-15680 15680-15700 15700-15720 15720-15740 15740-15760 15760-15780 15780-15800 15800-15820 15820-15840 15840-15860 15860-15880 15880-15900 15900-15920 15920-15940 15940-15960 15960-15980 15980-16000 16000-16020 16020-16040 16040-16060 16060-16080 16080-16100 16100-16120 16120-16140 16140-16160 16160-16180 16180-16200 16200-16220 16220-16240 16240-16260 16260-16280 16280-16300 16300-16320 16320-16340 16340-16360 16360-16380 16380-16400 16400-16420 16420-16440 16440-16460 16460-16480 16480-16500 16500-16520 16520-16540 16540-16560 16560-16580 16580-16600 16600-16620 16620-16640 16640-16660 16660-16680 16680-16700 16700-16720 16720-16740 16740-16760 16760-16780 16780-16800 16800-16820 16820-16840 16840-16860 16860-16880 16880-16900 16900-16920 16920-16940 16940-16960 16960-16980 16980-17000 17000-17020 17020-17040 17040-17060 17060-17080 17080-17100 17100-17120 17120-17140 17140-17160 17160-17180 17180-17200 17200-17220 17220-17240 17240-17260 17260-17280 17280-17300 17	



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT006

SHEET : 19 OF 22

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **13-12-20**
Date Completed: **15-12-21**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **49°**

Surface RL: **266.0 m AHD**
Co-ords: **E 614125 N 6390859 MGA2020 55**

Borehole Information					Field Material Description				
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING
HQ			120	61	186.0			MONZODIORITE; medium to coarse grained, brown (weathered), grey-green (fresh), sheared mylonitic fabric, carbonate chlorite alteration apparent in moderately weathered to fresh rock	HW - MW
					85.5			...green grey	
					185.5				
					86.0				
					185.0				MW
					86.5				
					184.5				SW
					87.0				
			100	74	184.0			...quartzite - carbonite veining with green chlorite selvage	
					87.5				
					183.5				MW
					88.0				
					183.0				SW
					88.5				
					182.5				
			100	76	89.0				MW
					182.0				
					89.5				SW
					181.5				

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT006

SHEET : 20 OF 22

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **13-12-20**
Date Completed: **15-12-21**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **49°**

Surface RL: **266.0 m AHD**
Co-ords: **E 614125 N 6390859 MGA2020 55**

Borehole Information						Field Material Description				
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)
HQ										
			100	76	181.0	90.5		MONZODIORITE; medium to coarse grained, brown (weathered), grey-green (fresh), sheared mylonitic fabric, carbonate chlorite alteration apparent in moderately weathered to fresh rock	SW	
					180.5	91.0			HW	
					180.0	91.5			SW	
			100	100	179.5	92.0				
					179.0	92.5				
					178.5	93.0				
					178.0	93.5				
					177.5	94.0			MW - SW	
			100	51	177.0	94.5			SW - FR	

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT006

SHEET : 21 OF 22

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **13-12-20**
Date Completed: **15-12-21**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **49°**

Surface RL: **266.0 m AHD**
Co-ords: **E 614125 N 6390859 MGA2020 55**

Borehole Information					Field Material Description				
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING
HQ			100	51	176.5			MONZODIORITE; medium to coarse grained, brown (weathered), grey-green (fresh), sheared mylonitic fabric, carbonate chlorite alteration apparent in moderately weathered to fresh rock	SW - FR
					959.5			DOLERITE; fine grained, grey, porphyritic/amygdaloidal 2 - 3 m equal carbonite filled/replaced	FR
			100	70	176.0				
					96.0				
					175.5				
					96.40			MONZODIORITE; medium to coarse grained, brown (weathered), grey-green (fresh), sheared mylonite fabric, carbonate chlorite alteration apparent in fresh rock	HW
					96.5				
					175.0				MW - SW
					97.0				
					174.5				
					97.5				
			100	84	174.0				SW - FR
					98.0				
					173.5				
					98.5				
					173.0				
			100	95	172.5				
					99.0				

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT006

SHEET : 22 OF 22

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **13-12-20**
Date Completed: **15-12-21**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **49°**

Surface RL: **266.0 m AHD**
Co-ords: **E 614125 N 6390859 MGA2020 55**

Borehole Information						Field Material Description						
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	ROD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ			100	95	172.0			MONZODIORITE; medium to coarse grained, brown (weathered), grey-green (fresh), sheared mylonite fabric, carbonate chlorite alteration apparent in fresh rock	SW - FR	VL 0.0 / 0.0 L 0.1 / 2 W 1.0 / 6 H 1.0 / 2 EH 0.1 / 0.0	<20 20-40 40-60 60-80 80-100 100-120 120-140 140-160 160-180 180-200 200-220 220-240 240-260 260-280 280-300 300-320 320-340 340-360 360-380 380-400 400-420 420-440 440-460 460-480 480-500 500-520 520-540 540-560 560-580 580-600 600-620 620-640 640-660 660-680 680-700 700-720 720-740 740-760 760-780 780-800 800-820 820-840 840-860 860-880 880-900 900-920 920-940 940-960 960-980 980-1000 1000-1020 1020-1040 1040-1060 1060-1080 1080-1100 1100-1120 1120-1140 1140-1160 1160-1180 1180-1200 1200-1220 1220-1240 1240-1260 1260-1280 1280-1300 1300-1320 1320-1340 1340-1360 1360-1380 1380-1400 1400-1420 1420-1440 1440-1460 1460-1480 1480-1500 1500-1520 1520-1540 1540-1560 1560-1580 1580-1600 1600-1620 1620-1640 1640-1660 1660-1680 1680-1700 1700-1720 1720-1740 1740-1760 1760-1780 1780-1800 1800-1820 1820-1840 1840-1860 1860-1880 1880-1900 1900-1920 1920-1940 1940-1960 1960-1980 1980-2000 2000-2020 2020-2040 2040-2060 2060-2080 2080-2100 2100-2120 2120-2140 2140-2160 2160-2180 2180-2200 2200-2220 2220-2240 2240-2260 2260-2280 2280-2300 2300-2320 2320-2340 2340-2360 2360-2380 2380-2400 2400-2420 2420-2440 2440-2460 2460-2480 2480-2500 2500-2520 2520-2540 2540-2560 2560-2580 2580-2600 2600-2620 2620-2640 2640-2660 2660-2680 2680-2700 2700-2720 2720-2740 2740-2760 2760-2780 2780-2800 2800-2820 2820-2840 2840-2860 2860-2880 2880-2900 2900-2920 2920-2940 2940-2960 2960-2980 2980-3000 3000-3020 3020-3040 3040-3060 3060-3080 3080-3100 3100-3120 3120-3140 3140-3160 3160-3180 3180-3200 3200-3220 3220-3240 3240-3260 3260-3280 3280-3300 3300-3320 3320-3340 3340-3360 3360-3380 3380-3400 3400-3420 3420-3440 3440-3460 3460-3480 3480-3500 3500-3520 3520-3540 3540-3560 3560-3580 3580-3600 3600-3620 3620-3640 3640-3660 3660-3680 3680-3700 3700-3720 3720-3740 3740-3760 3760-3780 3780-3800 3800-3820 3820-3840 3840-3860 3860-3880 3880-3900 3900-3920 3920-3940 3940-3960 3960-3980 3980-4000 4000-4020 4020-4040 4040-4060 4060-4080 4080-4100 4100-4120 4120-4140 4140-4160 4160-4180 4180-4200 4200-4220 4220-4240 4240-4260 4260-4280 4280-4300 4300-4320 4320-4340 4340-4360 4360-4380 4380-4400 4400-4420 4420-4440 4440-4460 4460-4480 4480-4500 4500-4520 4520-4540 4540-4560 4560-4580 4580-4600 4600-4620 4620-4640 4640-4660 4660-4680 4680-4700 4700-4720 4720-4740 4740-4760 4760-4780 4780-4800 4800-4820 4820-4840 4840-4860 4860-4880 4880-4900 4900-4920 4920-4940 4940-4960 4960-4980 4980-5000 5000-5020 5020-5040 5040-5060 5060-5080 5080-5100 5100-5120 5120-5140 5140-5160 5160-5180 5180-5200 5200-5220 5220-5240 5240-5260 5260-5280 5280-5300 5300-5320 5320-5340 5340-5360 5360-5380 5380-5400 5400-5420 5420-5440 5440-5460 5460-5480 5480-5500 5500-5520 5520-5540 5540-5560 5560-5580 5580-5600 5600-5620 5620-5640 5640-5660 5660-5680 5680-5700 5700-5720 5720-5740 5740-5760 5760-5780 5780-5800 5800-5820 5820-5840 5840-5860 5860-5880 5880-5900 5900-5920 5920-5940 5940-5960 5960-5980 5980-6000 6000-6020 6020-6040 6040-6060 6060-6080 6080-6100 6100-6120 6120-6140 6140-6160 6160-6180 6180-6200 6200-6220 6220-6240 6240-6260 6260-6280 6280-6300 6300-6320 6320-6340 6340-6360 6360-6380 6380-6400 6400-6420 6420-6440 6440-6460 6460-6480 6480-6500 6500-6520 6520-6540 6540-6560 6560-6580 6580-6600 6600-6620 6620-6640 6640-6660 6660-6680 6680-6700 6700-6720 6720-6740 6740-6760 6760-6780 6780-6800 6800-6820 6820-6840 6840-6860 6860-6880 6880-6900 6900-6920 6920-6940 6940-6960 6960-6980 6980-7000 7000-7020 7020-7040 7040-7060 7060-7080 7080-7100 7100-7120 7120-7140 7140-7160 7160-7180 7180-7200 7200-7220 7220-7240 7240-7260 7260-7280 7280-7300 7300-7320 7320-7340 7340-7360 7360-7380 7380-7400 7400-7420 7420-7440 7440-7460 7460-7480 7480-7500 7500-7520 7520-7540 7540-7560 7560-7580 7580-7600 7600-7620 7620-7640 7640-7660 7660-7680 7680-7700 7700-7720 7720-7740 7740-7760 7760-7780 7780-7800 7800-7820 7820-7840 7840-7860 7860-7880 7880-7900 7900-7920 7920-7940 7940-7960 7960-7980 7980-8000 8000-8020 8020-8040 8040-8060 8060-8080 8080-8100 8100-8120 8120-8140 8140-8160 8160-8180 8180-8200 8200-8220 8220-8240 8240-8260 8260-8280 8280-8300 8300-8320 8320-8340 8340-8360 8360-8380 8380-8400 8400-8420 8420-8440 8440-8460 8460-8480 8480-8500 8500-8520 8520-8540 8540-8560 8560-8580 8580-8600 8600-8620 8620-8640 8640-8660 8660-8680 8680-8700 8700-8720 8720-8740 8740-8760 8760-8780 8780-8800 8800-8820 8820-8840 8840-8860 8860-8880 8880-8900 8900-8920 8920-8940 8940-8960 8960-8980 8980-9000 9000-9020 9020-9040 9040-9060 9060-9080 9080-9100 9100-9120 9120-9140 9140-9160 9160-9180 9180-9200 9200-9220 9220-9240 9240-9260 9260-9280 9280-9300 9300-9320 9320-9340 9340-9360 9360-9380 9380-9400 9400-9420 9420-9440 9440-9460 9460-9480 9480-9500 9500-9520 9520-9540 9540-9560 9560-9580 9580-9600 9600-9620 9620-9640 9640-9660 9660-9680 9680-9700 9700-9720 9720-9740 9740-9760 9760-9780 9780-9800 9800-9820 9820-9840 9840-9860 9860-9880 9880-9900 9900-9920 9920-9940 9940-9960 9960-9980 9980-10000 10000-10020 10020-10040 10040-10060 10060-10080 10080-10100 10100-10120 10120-10140 10140-10160 10160-10180 10180-10200 10200-10220 10220-10240 10240-10260 10260-10280 10280-10300 10300-10320 10320-10340 10340-10360 10360-10380 10380-10400 10400-10420 10420-10440 10440-10460 10460-10480 10480-10500 10500-10520 10520-10540 10540-10560 10560-10580 10580-10600 10600-10620 10620-10640 10640-10660 10660-10680 10680-10700 10700-10720 10720-10740 10740-10760 10760-10780 10780-10800 10800-10820 10820-10840 10840-10860 10860-10880 10880-10900 10900-10920 10920-10940 10940-10960 10960-10980 10980-11000 11000-11020 11020-11040 11040-11060 11060-11080 11080-11100 11100-11120 11120-11140 11140-11160 11160-11180 11180-11200 11200-11220 11220-11240 11240-11260 11260-11280 11280-11300 11300-11320 11320-11340 11340-11360 11360-11380 11380-11400 11400-11420 11420-11440 11440-11460 11460-11480 11480-11500 11500-11520 11520-11540 11540-11560 11560-11580 11580-11600 11600-11620 11620-11640 11640-11660 11660-11680 11680-11700 11700-11720 11720-11740 11740-11760 11760-11780 11780-11800 11800-11820 11820-11840 11840-11860 11860-11880 11880-11900 11900-11920 11920-11940 11940-11960 11960-11980 11980-12000 12000-12020 12020-12040 12040-12060 12060-12080 12080-12100 12100-12120 12120-12140 12140-12160 12160-12180 12180-12200 12200-12220 12220-12240 12240-12260 12260-12280 12280-12300 12300-12320 12320-12340 12340-12360 12360-12380 12380-12400 12400-12420 12420-12440 12440-12460 12460-12480 12480-12500 12500-12520 12520-12540 12540-12560 12560-12580 12580-12600 12600-12620 12620-12640 12640-12660 12660-12680 12680-12700 12700-12720 12720-12740 12740-12760 12760-12780 12780-12800 12800-12820 12820-12840 12840-12860 12860-12880 12880-12900 12900-12920 12920-12940 12940-12960 12960-12980 12980-13000 13000-13020 13020-13040 13040-13060 13060-13080 13080-13100 13100-13120 13120-13140 13140-13160 13160-13180 13180-13200 13200-13220 13220-13240 13240-13260 13260-13280 13280-13300 13300-13320 13320-13340 13340-13360 13360-13380 13380-13400 13400-13420 13420-13440 13440-13460 13460-13480 13480-13500 13500-13520 13520-13540 13540-13560 13560-13580 13580-13600 13600-13620 13620-13640 13640-13660 13660-13680 13680-13700 13700-13720 13720-13740 13740-13760 13760-13780 13780-13800 13800-13820 13820-13840 13840-13860 13860-13880 13880-13900 13900-13920 13920-13940 13940-13960 13960-13980 13980-14000 14000-14020 14020-14040 14040-14060 14060-14080 14080-14100 14100-14120 14120-14140 14140-14160 14160-14180 14180-14200 14200-14220 14220-14240 14240-14260 14260-14280 14280-14300 14300-14320 14320-14340 14340-14360 14360-14380 14380-14400 14400-14420 14420-14440 14440-14460 14460-14480 14480-14500 14500-14520 14520-14540 14540-14560 14560-14580 14580-14600 14600-14620 14620-14640 14640-14660 14660-14680 14680-14700 14700-14720 14720-14740 14740-14760 14760-14780 14780-14800 14800-14820 14820-14840 14840-14860 14860-14880 14880-14900 14900-14920 14920-14940 14940-14960 14960-14980 14980-15000 15000-15020 15020-15040 15040-15060 15060-15080 15080-15100 15100-15120 15120-15140 15140-15160 15160-15180 15180-15200 15200-15220 15220-15240 15240-15260 15260-15280 15280-15300 15300-15320 15320-15340 15340-15360 15360-15380 15380-15400 15400-15420 15420-15440 15440-15460 15460-15480 15480-15500 15500-15520 15520-15540 15540-15560 15560-15580 15580-15600 15600-15620 15620-15640 15640-15660 15660-15680 15680-15700 15700-15720 15720-15740 15740-15760 15760-15780 15780-15800 15800-15820 15820-15840 15840-15860 15860-15880 15880-15900 15900-15920 15920-15940 15940-15960 15960-15980 15980-16000 16000-16020 16020-16040 16040-16060 16060-16080 16080-16100 16100-16120 16120-16140 16140-16160 16160-16180 16180-16200 16200-16220 16220-16240 16240-16260 16260-16280 16280-16300 16300-16320 16320-16340 16340-16360 16360-16380 16380-16400 16400-16420 16420-16440 16440-16460 16460-16480 16480-16500 16500-16520 16520-16540 16540-16560 16560-16580 16580-16600 16600-16620 16620-16640 16640-16660 16660-16680 16680-16700 16700-16720 16720-16740 16740-16760 16760-16780 16780-16800 16800-16820 16820-16840 16840-16860 16860-16880 16880-16900 16900-16920 16920-16940 16940-16960 16960-16980 16980-17000 17000-17020 17020-17040 17040-17060 17060-17080 17080-17100 17100-17120 17120-17140 17140-17160 17160-17180 17180-17200 17200-17220 17220-17240 17240-17260 17260-17280 17280-17300 17300-17320 17320-17340 17340-17360 17360-17380 17380-17400 17400-17420 17420-17440 17440-17460 17460-17480 17480-17500 17500-17520 17520-17540 17540-17560 17560-17580 17580-17600 17600-17620 17620-17640 17640-17660 17660-17680 17680-17700 17700-17720 17720-17740 17740-17760 17760-17780 17780-17800 17800-17820 17820-17840 17840-17860 17860-17880 17880-17900 17900-17920 17920-17940 17940-17960 17960-17980 17980-18000 18000-18020 18020-18040 18040-18060 18060-18080 18080-18100 18100-18120 18120-18140 18140-18160 18160-18180 18180-18200 18200-18220 18220-18240 18240-18260 18260-18280 18280-18300 18300-18320 18320-18340 18340-18360 18360-18380 18380-18400 18400-18420 18420-18440 18440-18460 18460-18480 18480-18500 18500-18520 18520-18540 18540-18560 18560-18580 18580-18600 18600-18620 18620-18640 18640-18660 18660-18680 18680-18700 18700-18720 18720-18740 18740-18760 18760-18780 18780-18800 18800-18820 18820-18840 18840-18860 18860-18880 18880-18900 18900-18920 18920-18940 18940-18960 18960-18980 18980-19000 19000-19020 19020-19040 19040-19060 19060-19080 19080-19100 19100-19120 19120-19140 19140-19160 19160-19180 19180-19200 19200-19220 19220-19240 19240-19260 19260-19280 19280-19300 19300-19320 19320-19340 19340-19360 19360-19380 19380-19400 19400-19420 19420-19440 19440-19460 19460-19480 19480-19500 19500-19520 19520-19540 19540-19560 19560-19580 19580-19600 19600-19620 19620-19640 19640-19660 19660-19680 19680-19700 19700-19720 19720-19740 19740-19760 19760-19780 19780-19800 19800-19820 19820-19840 19840-19860 19860-19880 19880-19900 19900-19920 19920-19940 19940-19960 19960-19980 19980-20000 20000-20020 20020-20040 20040-20060 20060-20080 20080-20100 20100-20120 20120-20140 20140-20160 20160-20180 20180-20200 20200-20220 2022	

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT007

SHEET : 1 OF 38

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **10-11-20**
Date Completed: **13-11-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **357°**

Surface RL: **266.0 m AHD**
Co-ords: **E 613980 N 6390780 MGA2020 55**

Borehole Information							Field Material Description						
METHOD	SUPPORT	WATER	RL (m AHD)	DEPTH (m)	FIELD TEST	SAMPLE	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY	POCKET PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil	NFGWE		0.10					GRAVEL; medium to coarse grained, grey mottled white.				QUATERNARY ALLUVIUM
				0.5					CORE LOSS 4.80m (0.10-4.90) 30mm of medium to coarse grained gravel recovered.				
				265.5									
				1.0									
				265.0									
				1.5									
				264.5									
				2.0									
				264.0									
				2.5									
				263.5									
				3.0									
				263.0									
				3.5									
				262.5									
				4.0									
				262.0									
				4.5									
				261.5									
				4.90									

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT007

SHEET : 2 OF 38

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **10-11-20**
Date Completed: **13-11-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **357°**

Surface RL: **266.0 m AHD**
Co-ords: **E 613980 N 6390780 MGA2020 55**

Borehole Information							Field Material Description						
METHOD	SUPPORT	WATER	RL (m AHD)	DEPTH (m)	FIELD TEST	SAMPLE	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY	POCKET PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil	NFGWE								VS FB SL ST MD VST D H			
			261.0	5.5					Sandy CLAY; high plasticity, pale grey to pale brown, mottled pale orange-red, fine to medium grained sand.	W-PL		>600	QUATERNARY ALLUVIUM
			260.5	6.0								>600	
			260.0	6.5									
			259.5	7.0					Sandy CLAY; high plasticity, pale grey to pale brown, mottled pale orange-red, fine to medium grained sand.			>600	
			259.0	7.5								>600	
			258.5	8.0								>600	
			258.0	8.5								>600	
			257.5	9.0								>600	
			257.0	9.5									
									CORE LOSS 3.00m (9.60-12.60)				

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT007

SHEET : 3 OF 38

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **10-11-20**
Date Completed: **13-11-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **357°**

Surface RL: **266.0 m AHD**
Co-ords: **E 613980 N 6390780 MGA2020 55**

Borehole Information							Field Material Description										
METHOD	SUPPORT	WATER	RL (m AHD)	DEPTH (m)	FIELD TEST	SAMPLE	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY					POCKET PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nii	NFGWE								VS SL FL VL ST MD VST DD H							
			256.5						CORE LOSS 3.00m (9.60-12.60)							QUATERNARY ALLUVIUM	
				10.5													
			256.0														
				11.0													
			255.5														
				11.5													
			255.0														
				12.0													
			254.5														
				12.5													
			12.60														
			254.0						Silty CLAY; high plasticity, grey-brown mottled pale orange, with fine grained sand.	W-PL						TERTIARY ALLUVIUM	
				13.0										220			
			253.5											300			
				13.5										600			
			253.0			C								250			
				14.0													
			14.10						CORE LOSS 1.50m (14.10-15.60)								
			252.5														
				14.5													
			252.0														

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT007

SHEET : 4 OF 38

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **10-11-20**
Date Completed: **13-11-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **357°**

Surface RL: **266.0 m AHD**
Co-ords: **E 613980 N 6390780 MGA2020 55**

Borehole Information							Field Material Description														STRUCTURE AND ADDITIONAL OBSERVATIONS
METHOD	SUPPORT	WATER	RL (m AHD)	DEPTH (m)	FIELD TEST	SAMPLE	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY								POCKET PENETROMETER (kPa)		
HQ	Nii	NFGWE									VS	FB	VL	ST	MD	VST	D	VD			
									CORE LOSS 1.50m (14.10-15.60)												TERTIARY ALLUVIUM
			251.5	15.5																	
				15.60																	
			251.0	16.0					Sandy CLAY; high plasticity, grey mottled brown-orange and red, fine to coarse grained sand, with highly weathered gravel and relict rock gravel, with cobbles and boulders.	W<PL										520	
																				>600	
																				340	
			250.5	16.5																510	
																				530	
			250.0	17.0																	
			249.5	17.5																	
			249.0	18.0																>600	
			248.5	18.5																	
			248.0	19.0																>600	
			247.5	19.5		C														>600	

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT007

SHEET : 5 OF 38

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **10-11-20**
Date Completed: **13-11-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°** Surface RL: **266.0 m AHD**
Bearing: **357°** Co-ords: **E 613980 N 6390780 MGA2020 55**

Borehole Information						Field Material Description													
METHOD	SUPPORT	WATER	RL (m AHD)	DEPTH (m)	FIELD TEST	SAMPLE	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY					POCKET PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS		
HQ	Nii	NFGWE									VS	FB	VL	ST	MD	VS	VD		
			247.0						Sandy CLAY; high plasticity, grey mottled brown-orange and red, fine to coarse grained sand, with highly weathered gravel and relict rock gravel, with cobbles and boulders.	W<PL									TERTIARY ALLUVIUM
			20.5																
			20.70																
			246.5						CORE LOSS 0.90m (20.70-21.60)										
			21.0																
			246.0																
			21.5																
			21.60																
			245.5						Sandy CLAY; high plasticity, grey mottled brown-orange and red, fine to coarse grained sand, with highly weathered gravel and relict rock gravel, with cobbles and boulders.	W<PL								280	
			22.0															>600	
			245.0																
			22.5																
			22.60						CORE LOSS 2.00m (22.60-24.60)										
			244.5																
			23.0																
			244.0																
			23.5																
			243.5																
			24.0																
			243.0																
			24.5																
			24.60																
			24.80						Sandy CLAY; high plasticity, dark red, yellow-brown and grey, fine to coarse grained sand, with dark red matrix rock clasts consisting of gravel, cobbles and boulders; relict rock in parts.	W<PL								>600	
									CORE LOSS 2.80m (24.80-27.60) Quartz cobble at base of run.										

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **10-11-20**
Date Completed: **13-11-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **357°**

Surface RL: **266.0 m AHD**
Co-ords: **E 613980 N 6390780 MGA2020 55**

Borehole Information						Field Material Description																
METHOD	SUPPORT	WATER	RL (m AHD)	DEPTH (m)	FIELD TEST	SAMPLE	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY				POCKET PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS						
HQ	NI	NFGWE								VS	FB	VL	SL	LD	ST	MD	VST	DH				
				25.5					CORE LOSS 2.80m (24.80-27.60) Quartz cobble at base of run.													
				242.0																		
				26.0																		
				241.5																		
				26.5																		
				241.0																		
				27.0																		
				240.5																		
				27.5																		
				27.60																		
				240.0					Sandy CLAY; high plasticity, dark red, yellow-brown and grey, fine to coarse grained sand, with dark red matrix rock clasts consisting of gravel, cobbles and boulders; relict rock in parts, carbonate material from 27.6-27.9m.	W<PL												
				28.0																		
				239.5																		
				28.5																		
				239.0																		
				29.0																		
				238.5						W=PL												
				2929.5																		
				238.0					CORE LOSS 0.40m (29.50-29.90)													
				29.90																		

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT007

SHEET : 7 OF 38

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **10-11-20**
Date Completed: **13-11-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **357°**

Surface RL: **266.0 m AHD**
Co-ords: **E 613980 N 6390780 MGA2020 55**

Borehole Information							Field Material Description						
METHOD	SUPPORT	WATER	RL (m AHD)	DEPTH (m)	FIELD TEST	SAMPLE	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY	POCKET PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil	NFGWE							Sandy CLAY; high plasticity, dark red, yellow-brown and grey, fine to coarse grained sand, with dark red matrix rock clasts consisting of gravel, cobbles and boulders; relict rock in parts.	W-PL	VS FB SL VL ST MD VST DD H VD		TERTIARY ALLUVIUM
			237.5	30.5									
			237.0	31.0									
			236.5	31.5									
			236.0	32.0									
			235.5	32.5									
			235.0	33.0									
			234.5	33.5								>600	
			234.0	34.0									
			233.5	34.5									

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT007

SHEET : 8 OF 38

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **10-11-20**
Date Completed: **13-11-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **357°**

Surface RL: **266.0 m AHD**
Co-ords: **E 613980 N 6390780 MGA2020 55**

Borehole Information						Field Material Description											
METHOD	SUPPORT	WATER	RL (m AHD)	DEPTH (m)	FIELD TEST	SAMPLE	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY					POCKET PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nii	NFGWE								VS SL FL ST MD VST D H VD	FB VL L MD VST D H VD						
			233.0						Sandy CLAY; high plasticity, dark red, yellow-brown and grey, fine to coarse grained sand, with dark red matrix rock clasts consisting of gravel, cobbles and boulders; relic rock in parts.	W<PL							TERTIARY ALLUVIUM
			35.5														
			232.5														
			36.0														
			36.10														
			232.0						CORE LOSS 0.40m (36.10-36.50)							>600	
			36.5														
			231.5						Sandy CLAY; high plasticity, dark red, yellow-brown and grey, fine to coarse grained sand, with dark red matrix rock clasts consisting of gravel, cobbles and boulders; relic rock in parts.	W<PL							
			37.0														
			231.0														
			37.5														
			230.5														
			38.0														
			230.0													600	
			38.5														
			229.5														
			39.0														
			229.0													>600	
			39.5														
			228.5													>600	

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT007

SHEET : 9 OF 38

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **10-11-20**
Date Completed: **13-11-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**Hole Angle: **-70°**Surface RL: **266.0 m AHD**Borehole Diameter: **96 mm**Bearing: **357°**Co-ords: **E 613980 N 6390780 MGA2020 55**

Borehole Information						Field Material Description											
METHOD	SUPPORT	WATER	RL (m AHD)	DEPTH (m)	FIELD TEST	SAMPLE	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY					POCKET PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nii	NFGWE								VS SL ST H	FB VL L MD D						
			228.0	40.5					Sandy CLAY; high plasticity, dark red, yellow-brown and grey, fine to coarse grained sand, with dark red matrix rock clasts consisting of gravel, cobbles and boulders; relict rock in parts.	W<PL						TERTIARY ALLUVIUM	
			227.5	41.0													
			227.0	41.5													
			226.5	42.0													
			226.0	42.5		C									>600		
			225.5	43.0											>600		
			225.0	43.30											>600		
			4343.5						CORE LOSS 0.20m (43.30-43.50)								
			225.0						Sandy CLAY; high plasticity, dark red, yellow-brown and grey, fine to coarse grained sand, with dark red matrix rock clasts consisting of gravel, cobbles and boulders; relict rock in parts.	W<PL							
			44.0														
			224.5														
			44.5														
			224.0														



BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT007

SHEET : 10 OF 38

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **10-11-20**
Date Completed: **13-11-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **357°**

Surface RL: **266.0 m AHD**
Co-ords: **E 613980 N 6390780 MGA2020 55**

Borehole Information							Field Material Description						
METHOD	SUPPORT	WATER	RL (m AHD)	DEPTH (m)	FIELD TEST	SAMPLE	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY	POCKET PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil	NFGWE											
			223.5						Sandy CLAY; high plasticity, dark red, yellow-brown and grey, fine to coarse grained sand, with dark red matrix rock clasts consisting of gravel, cobbles and boulders; relic rock in parts.	W<PL	VS FB SL ST MD VST D H VD	>600	TERTIARY ALLUVIUM
			45.5										
			223.0										
			46.0			C							
			46.20										
			222.5						CORE LOSS 0.30m (46.20-46.50)				
			46.6.5										
			222.0						Sandy CLAY; high plasticity, dark red, yellow-brown and grey, fine to coarse grained sand, with dark red matrix rock clasts consisting of gravel, cobbles and boulders; relic rock in parts.	W<PL			
			47.0										
			221.5										
			47.5										
			221.0										
			48.0										
			220.5										
			48.5										
			220.0										
			49.0										
			219.5										
			49.60										
			49.80						CORE LOSS 0.20m (49.60-49.80)				
										W<PL			

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT007

SHEET : 11 OF 38

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **10-11-20**
Date Completed: **13-11-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **357°**

Surface RL: **266.0 m AHD**
Co-ords: **E 613980 N 6390780 MGA2020 55**

Borehole Information							Field Material Description						
METHOD	SUPPORT	WATER	RL (m AHD)	DEPTH (m)	FIELD TEST	SAMPLE	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY	POCKET PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil	NFGWE											
				50.5					Sandy CLAY; high plasticity, dark red, yellow-brown and grey, fine to coarse grained sand, with dark red matrix rock clasts consisting of gravel, cobbles and boulders; relict rock in parts.	W-PL			TERTIARY ALLUVIUM
				218.5									
				51.0									
				218.0									
				51.5									
				217.5									
				52.0									
				217.0									
				52.5									
				216.5									
				53.0									
				216.0									
				53.5									
				215.5									
				54.0									
				54.20									
				215.0					CORE LOSS 0.40m (54.20-54.60)				
				54.5									
				54.60					Clayey SILT; low plasticity, pale grey to grey orange, very dispersive, green fuchsite (chromium mica) present at 56.55m.	W<PL			RESIDUAL SOIL
				214.5									

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT007

SHEET : 12 OF 38

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **10-11-20**
Date Completed: **13-11-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°** Surface RL: **266.0 m AHD**
Bearing: **357°** Co-ords: **E 613980 N 6390780 MGA2020 55**

Borehole Information						Field Material Description										
METHOD	SUPPORT	WATER	RL (m AHD)	DEPTH (m)	FIELD TEST	SAMPLE	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY				POCKET PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil	NFGWE								VS SL ST VL MD VD H	VS SL ST VL MD VD H	VS SL ST VL MD VD H	VS SL ST VL MD VD H			
			214.0	55.5					Clayey SILT; low plasticity, pale grey to grey orange, very dispersive, green fuchsite (chromium mica) present at 56.55m.	W<PL					RESIDUAL SOIL	
			213.5	56.0												
			213.0	56.5	C											
			212.5	57.0												
			212.0	57.5												
			211.5	58.0												
			211.0	58.5												
			210.5	59.0												
			210.0	59.5												

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT007

SHEET : 13 OF 38

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **10-11-20**
Date Completed: **13-11-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°** Surface RL: **266.0 m AHD**
Bearing: **357°** Co-ords: **E 613980 N 6390780 MGA2020 55**

Borehole Information							Field Material Description													
METHOD	SUPPORT	WATER	RL (m AHD)	DEPTH (m)	FIELD TEST	SAMPLE	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY				POCKET PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS				
HQ	Nii	NFGWE								VS	FB	VL	SL	LD	MD	DD	H	VD		
			209.5						Clayey SILT; low plasticity, pale grey to grey orange, very dispersive, green fuchsite (chromium mica) present at 56.55m.	W<PL	-	-	-	-	-	-	-	-		RESIDUAL SOIL
			60.30						CORE LOSS 0.30m (60.30-60.60)		-	-	-	-	-	-	-	-		
			60.5								-	-	-	-	-	-	-	-		
			209.0						REFER TO CORED BOREHOLE LOG		-	-	-	-	-	-	-	-		
			61.0								-	-	-	-	-	-	-	-		
			208.5								-	-	-	-	-	-	-	-		
			61.5								-	-	-	-	-	-	-	-		
			208.0								-	-	-	-	-	-	-	-		
			62.0								-	-	-	-	-	-	-	-		
			207.5								-	-	-	-	-	-	-	-		
			62.5								-	-	-	-	-	-	-	-		
			207.0								-	-	-	-	-	-	-	-		
			63.0								-	-	-	-	-	-	-	-		
			206.5								-	-	-	-	-	-	-	-		
			63.5								-	-	-	-	-	-	-	-		
			206.0								-	-	-	-	-	-	-	-		
			64.0								-	-	-	-	-	-	-	-		
			205.5								-	-	-	-	-	-	-	-		
			64.5								-	-	-	-	-	-	-	-		
			205.0								-	-	-	-	-	-	-	-		

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.

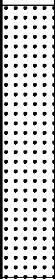
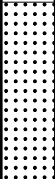
Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **10-11-20**
Date Completed: **13-11-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **357°**

Surface RL: **266.0 m AHD**
Co-ords: **E 613980 N 6390780 MGA2020 55**

Borehole Information						Field Material Description						
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
						209.5						
						60.5						
HQ	Nil				209.0	60.60		Volcaniclastic SANDSTONE; medium to coarse grained, pale grey stained orange	HW			WEATHERED ROCK
						61.0						
					208.5							
					61.5			CORE LOSS 2.10m (61.50-63.60)				
					208.0							
					62.0							
					207.5							
					62.5							60.6m: multiple extremely weathered seams 10 to 20 mm thick along foliation with silty clay infill
					207.0							
					63.0							
					206.5							
					63.5							
					63.60			Volcaniclastic SANDSTONE; medium to coarse grained, pale grey stained orange, extremely weathered (XW) to the consistency of Clayey SILT/SAND	XW			63.60: -65.00m: possible fault breccia
					206.0							
					64.0							
					64.20							
					205.5			Quartz Vein/ Breccia; white and dark grey, quartz fragments within very high strength clay sand matrix	HW			
					64.5							
					205.0							

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **10-11-20**
Date Completed: **13-11-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **357°**

Surface RL: **266.0 m AHD**
Co-ords: **E 613980 N 6390780 MGA2020 55**

[illegible]

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT007

SHEET : 16 OF 38

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **10-11-20**
Date Completed: **13-11-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **357°**

Surface RL: **266.0 m AHD**
Co-ords: **E 613980 N 6390780 MGA2020 55**

Borehole Information						Field Material Description						
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	ROD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil		90	0		200.0		Volcaniclastic SANDSTONE; medium to coarse grained, orange brown mottled pale white, minor patchy sericitic alteration	HW			70.00: -75.00m: extremely weathered seams parallel to foliation, silty clay infill 50 to 200 mm thick WEATHERED ROCK 70.3m: numerous joints >30 degrees, Pl, Ro, Sn Fe Mn, 50% healed
					199.5	71.0						
					71.20	199.0		CORE LOSS 0.20m (71.20-71.40)				
					71.40	71.5		Volcaniclastic SANDSTONE; medium to coarse grained, orange brown mottled pale white, minor patchy sericitic alteration	HW			
			100	0		198.5						
					72.0	198.0						
					72.5	197.5						
					73.0	197.0						
					73.5	196.5						
			76	0	196.0	74.5						

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT007

SHEET : 17 OF 38

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **10-11-20**
Date Completed: **13-11-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **357°**

Surface RL: **266.0 m AHD**
Co-ords: **E 613980 N 6390780 MGA2020 55**

Borehole Information					Field Material Description							
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	ROD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil		76	0	195.5				HW			75.00: ~80.00m: extremely weathered seams parallel to foliation, silty clay infill 50 to 200 mm thick WEATHERED ROCK
					75.10			CORE LOSS 0.60m (75.10-75.70)				
					195.0							
					75.70			Volcaniclastic SANDSTONE; medium to coarse grained, orange brown mottled pale white, minor patchy sericitic alteration	HW			
					76.0							
					194.5							
					76.5							
					194.0							
					76.70			CORE LOSS 1.30m (76.70-78.00)				
					77.0							
					193.5							
					77.5							
					193.0							
					78.0			Volcaniclastic SANDSTONE; medium to coarse grained, orange brown mottled pale white, minor patchy sericitic alteration	HW			
					192.5							
					78.5							
					192.0							
					79.0							
					191.5							
					79.40			CORE LOSS 0.40m (79.40-79.80)				
					79.5							
					191.0			Volcaniclastic SANDSTONE; medium to coarse grained, orange brown mottled pale white, minor patchy sericitic alteration	HW			
					79.80							
					50							

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT007

SHEET : 18 OF 38

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **10-11-20**
Date Completed: **13-11-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **357°**

Surface RL: **266.0 m AHD**
Co-ords: **E 613980 N 6390780 MGA2020 55**

Borehole Information						Field Material Description						
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	ROD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil		50	0				Volcaniclastic SANDSTONE; medium to coarse grained, orange brown mottled pale white, minor patchy sericitic alteration	HW	VL 0.0 / 0.0 C 0.1 / 2 W 1.1 / 6 H 1.1 / 3 VH1 / 0.0 EH1 / 2.0	<20 20-40 60-200 200-600 600-2000 2000	80.00: -81.80m: extremely weathered seams parallel to foliation, silty clay infill 50 to 200 mm thick WEATHERED ROCK
			67	0				Quartz Vein; white, very high strength, fractured	XW			
								CORE LOSS 0.90m (82.90-83.80)				
			88	0				Volcaniclastic SANDSTONE; medium to coarse grained, orange brown, with minor pervasive sericitic alteration	MW			83.80: -86.9: dominated by joints Pl, Ro, St Fe, Mn

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT007

SHEET : 19 OF 38

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **10-11-20**
Date Completed: **13-11-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **357°**

Surface RL: **266.0 m AHD**
Co-ords: **E 613980 N 6390780 MGA2020 55**

Borehole Information					Field Material Description							
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil		88	0	85.00			CORE LOSS 0.20m (85.00-85.20)				WEATHERED ROCK
					186.0	85.20		Volcaniclastic SANDSTONE; medium to coarse grained, orange brown, with minor pervasive sericitic alteration	MW			
						85.5			HW			
					185.5							
						86.0			MW - SW			
			89	0	185.0							
						86.5		HW				
					184.5							
					86.80			CORE LOSS 0.20m (86.80-87.00)				
					87.00			Volcaniclastic SANDSTONE; medium to coarse grained, orange brown, with minor pervasive sericitic alteration	MW			
			100	0	184.0							
						87.5						
					183.5							
						88.0						
					183.0							
						88.5						
			100	15	182.5							
						89.0						
					182.0							
						89.5						
					181.5							

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **10-11-20**
Date Completed: **13-11-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **357°**

Surface RL: **266.0 m AHD**
Co-ords: **E 613980 N 6390780 MGA2020 55**

Borehole Information						Field Material Description						
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD) DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa ($I_{s(50)}$ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS	
HQ	Nil		100	15	90.00		Volcaniclastic SANDSTONE; medium to coarse grained, pale grey stained orange, with moderate pervasive sericitic alteration	MW	VL 0.03/0.08 L 0.1/2 M 0.3/6 H 1/20 VH3/60 EH3/200	<20 20-60 60-200 200-600 600-2000 >2000	WEATHERED ROCK	
					181.0 90.5							
					180.5 91.0							
					180.0 91.5							91.5m: Vn, 45°, Pl-Un, Ro, 20 mm, Qz/Cr
			100	18	179.5 92.0							92m: Vn, 45°, Pl-Un, Ro, 20 mm, Qz/Cr
					179.0 92.5							92.40: -102.2: Jt x 19, 30 degrees to 60 degrees, Pl, Ro, St Fe; Jt x 16, 30 degrees to 60 degrees healed St Fe, 2 mm
					178.5 93.0							
					178.0 93.5							
					177.5 94.0							
			100	56	177.0 94.5			...pale green grey with moderate pervasive sericitic alteration	SW			SLIGHTLY WEATHERED TO FRESH ROCK
This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.												



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT007

SHEET : 21 OF 38

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **10-11-20**
Date Completed: **13-11-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **357°**

Surface RL: **266.0 m AHD**
Co-ords: **E 613980 N 6390780 MGA2020 55**

Borehole Information					Field Material Description							
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil				95.00			Volcaniclastic SANDSTONE; medium to coarse grained, pale grey	SW	VL 0.0 / 0.0 L 0.1 / 2 H 1.1 / 6 VH 1.0 / 60 EH 1.0 / 200	<20 20-40 40-200 200-600 600-2000 2000	SLIGHTLY WEATHERED TO FRESH ROCK
			100	56	176.5							
					95.5							
					176.0							
					96.0							
					175.5							
					96.5							— 94.2m: Jt x12, 53°, Pl, Ro, Sn Fe
					175.0							
					97.0							
					174.5							— 92.4m: Jt x19, 30 - 60°, Pl, Ro, Sn Fe
					97.5			...trace of pervasive sericitic alteration				
					174.0							
			100	95	98.0							
					173.5							
					98.5							
					173.0							
					99.0							— 99.1m: Fo, 27°, Pl, Ro, Sn Fe
					172.5							— 99.2m: Jt, 80°, Un, Ro, Sn Fe
					99.5							
			100	88	99.70			Volcaniclastic SANDSTONE; coarse grained, dark grey green, trace pervasive sericitic alteration				

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **10-11-20**
Date Completed: **13-11-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **357°**

Surface RL: **266.0 m AHD**
Co-ords: **E 613980 N 6390780 MGA2020 55**

Borehole Information						Field Material Description					
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD) DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa ($I_{s(50)}$ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil				172.0		Volcaniclastic SANDSTONE; coarse grained, dark grey green, trace pervasive sericitic alteration	SW	VL 0.03/0.08 L 0.1/2 M 0.3/6 H 1/20 VH 1/60 EH 1/200	<20 20-60 60-200 200-600 600-2000 >2000	SLIGHTLY WEATHERED TO FRESH ROCK
			100	88	100.5		100.45m: Jt, 45°, Ir, Ro, Sn Fe 100.5m: Jt, 60°, Pl, Ro, Sn Fe				
					171.5						
					101.0						
					171.0		...becoming grey green				
					101.5						
					170.5		101.55m: Jt, 39°, Pl, Ro, Cln				
					102.0		101.9m: Jt, 5°, Un, Ro, Sn Fe, 2 x parallel joints				
					170.0						
					102.5						
					169.5	102.8m: Jt, 50°, Pl, Ro, Sn Fe 102.84m: Jt, 55°, Ir, Ro, 1 mm, Car					
					103.0		FR				
					169.0						
					103.5						
			100	91	168.5						
					104.0						
					168.0						
					104.5						
					167.5						

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **10-11-20**
Date Completed: **13-11-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **357°**

Surface RL: **266.0 m AHD**
Co-ords: **E 613980 N 6390780 MGA2020 55**

Borehole Information						Field Material Description						
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil		100	91	105.00			Volcaniclastic SANDSTONE; coarse grained, grey green, minor pervasive chloritic alteration	FR	VL 0.03/0.8 L 0.1/2 M 0.3/6 H 1/20 VH3/60 EH3/200	<20 20-60 60-200 200-600 600-2000 >2000	SLIGHTLY WEATHERED TO FRESH ROCK
				167.0								
				105.5								
				166.5								
				106.0								
				166.0								
				106.5								
				165.5								
			100	100	107.0							
					165.0							
					107.5							
					164.5							
					108.0							
					108.5							
					164.0							
					109.0							
					163.5							
			100	100	109.5							
					163.0							
											108.99m: Vn, 26°, Un, Ro, Vr, Qz/Car	
											109.79m: Jt, 11°, St, Ro, Vr Car	

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT007

SHEET : 24 OF 38

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **10-11-20**
Date Completed: **13-11-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **357°**

Surface RL: **266.0 m AHD**
Co-ords: **E 613980 N 6390780 MGA2020 55**

Borehole Information					Field Material Description							
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil							Volcaniclastic SANDSTONE; coarse grained, grey green, minor pervasive chloritic alteration	FR	VL 0.0 / 0.0 L 0.1 / 2 H 1.1 / 6 UH1 / 0.0 EH1 / 2.0	<20 20-40 40-200 200-400 400-2000 2000	SLIGHTLY WEATHERED TO FRESH ROCK
			100	100	162.5							
					110.5							110.38m: Vn, 57°, Pl, Ro, Vr Car
					162.0							
					111.0							111.03m: Jt, 32°, Pl, Ro, Vr Car
					161.5							111.29m: Jt, 27°, Pl, Ro, Sn Fe
					111.5							
					161.0							
					112.0							
					160.5			...moderate carbonitic alteration and minor pervasive chloritic alteration				
					112.5							
					160.0							
					113.0							
			100	100	159.5							
					113.5							
					159.0							
					114.0							114.12m: Vn, 50°, Pl, Ro, 3 mm, Car
					158.5							
					114.5							114.61m: Vn, 40°, Pl, Ro, 3 mm, Car
			100	100	158.0							

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **10-11-20**
Date Completed: **13-11-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **357°**

Surface RL: **266.0 m AHD**
Co-ords: **E 613980 N 6390780 MGA2020 55**

Borehole Information						Field Material Description						
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	ROD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	NII							Volcaniclastic SANDSTONE; coarse grained, grey green, minor pervasive chloritic alteration	FR	VL 0.00 / 0.0 L 0.1 / 2 M 0.3 / 6 H 1 / 20 VH3 / 60 EH10 / 200	20-60 60-200 200-600 600-2000 2000	SLIGHTLY WEATHERED TO FRESH ROCK
			100	100	157.5	115.5		...moderate pervasive chloritic alteration				
					157.1	116.0						
					156.5	116.5						
					156.0	117.0						
					155.5	117.5						
					155.0	118.0						
					154.5	118.5						
			100	100	154.0	119.0						
					153.5	119.5						

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT007

SHEET : 26 OF 38

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **10-11-20**
Date Completed: **13-11-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **357°**

Surface RL: **266.0 m AHD**
Co-ords: **E 613980 N 6390780 MGA2020 55**

Borehole Information						Field Material Description				
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)
HQ	Nil		100	100	153.0			Volcaniclastic SANDSTONE; coarse grained, grey green, minor pervasive chloritic alteration	FR	
					120.5					
					152.5			...moderate carbonitic alteration and minor pervasive alteration		
					121.0					
					152.0					
					121.5					
					151.5					
			100	97	122.0					
					151.0					
					122.5					
					150.5					
					123.0					
					150.0					
					123.5					
			100	100	149.5					
					124.0					
					149.1					
					124.5					

SLIGHTLY WEATHERED TO FRESH ROCK
120.13m: Vn, 45°, Pl, Ro, 1 mm, Car
121.83m: Jt, 57°, St, Ro, Vr, Car/FeOx
121.95m: Jt, 53°, Un, Ro, Vr Car
123.18m: Vn, 64°, Pl, Ro, 4 mm, Qz

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT007

SHEET : 27 OF 38

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **10-11-20**
Date Completed: **13-11-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**Hole Angle: **-70°**Surface RL: **266.0 m AHD**Borehole Diameter: **96 mm**Bearing: **357°**Co-ords: **E 613980 N 6390780 MGA2020 55**

Borehole Information					Field Material Description							
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	ROD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₆₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil				148.5	148.500		Volcaniclastic SANDSTONE; coarse grained, grey green, moderate carbonitic alteration and minor pervasive chloritic alteration	FR			SLIGHTLY WEATHERED TO FRESH ROCK
			100	100								

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **10-11-20**
Date Completed: **13-11-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **357°**

Surface RL: **266.0 m AHD**
Co-ords: **E 613980 N 6390780 MGA2020 55**

Borehole Information						Field Material Description						
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil									VL 0.03/0.8 L 0.1/2 M 0.3/6 H 1/20 VH3/60 EH3/200	20-60 60-200 200-600 600-2000 ≥2000	
			100	100	143.5			Volcaniclastic SANDSTONE; coarse grained, grey green, interbedded with fine grained sandstone. moderate epidote alteration	FR			SLIGHTLY WEATHERED TO FRESH ROCK 130.09m: Jt, 39°, Un, Ro, Vr Car
					130.5							
					143.0							
					131.0							
			100	100	142.5							
					131.5							
					142.0							
					132.0							
					141.5							
					132.5							
					132.95							
					141.0			Volcaniclastic SANDSTONE; coarse grained, grey green, poorly sorted, pebbly, moderate pervasive chloritic alteration				130.31m: F, 27°, Pl, Ro, 40 mm, Car, oxidised break along a 4cm carbonate-quartz vein. fault gouge?
					133.0							
			100	100	133.5							
					140.5							
					134.0							
					140.0							
					134.5							
					139.5							
												134.94m: DB, 53°, St, Ro, Vr Car

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT007

SHEET : 29 OF 38

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **10-11-20**
Date Completed: **13-11-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **357°**

Surface RL: **266.0 m AHD**
Co-ords: **E 613980 N 6390780 MGA2020 55**

Borehole Information						Field Material Description				
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)
HQ	Nil		100	100	139.0			Volcaniclastic SANDSTONE; coarse grained, grey green, poorly sorted, pebbly, moderate pervasive chloritic alteration	FR	
					135.5					
					138.5					
					136.0					
					138.0					
					136.5					
					137.5					
					137.0					
					137.0					
					137.5			...moderate pervasive epidote alteration		
					136.5					
					138.0					
					136.0					
					138.5					
					135.5					
					139.0					
					135.0					
					139.5					
					134.5					

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **10-11-20**
Date Completed: **13-11-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **357°**

Surface RL: **266.0 m AHD**
Co-ords: **E 613980 N 6390780 MGA2020 55**

Borehole Information						Field Material Description					
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD) DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	NII		100	100			Volcaniclastic SANDSTONE; coarse grained, grey green, poorly sorted, pebbly, moderate pervasive chloritic alteration	FR	V _L 0.0 / 0.8 L 0.1 / 2 M 0.3 / 6 H 1 / 20 VH 1 / 60 EH 10 / 200	20-40 40-200 200-600 600-2000 ≥2000	SLIGHTLY WEATHERED TO FRESH ROCK
					134.0						140.3m: Vn, 30°, Un, 5 mm, Car
					140.5						
					133.5						
					141.0						
					141.5						
					133.0						
					142.0						141.63m: Vn, 53°, Pl, Ro, 1 mm, Car
					132.5						
					142.0						142.17m: Vn, 51°, Pl, Ro, 2 mm, Car
					142.5						
					132.0						
					143.0						
					131.5						
					143.5						
					131.0						
					144.0		...moderate pervasive epidote alteration				
					130.5						144.17m: Jt, 24°, Un, Ro, Vr Car
					144.5						
					130.0						144.97m: Jt, 58°, Pl, Ro, Vr Car

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **10-11-20**
Date Completed: **13-11-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **357°**

Surface RL: **266.0 m AHD**
Co-ords: **E 613980 N 6390780 MGA2020 55**

Borehole Information						Field Material Description						
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nii									VL 0.00/10.8 L 0.1/2 M 0.3/6 H 1/20 VH3/60 EH3/200	<20 20-60 60-200 200-600 600-2000 >2000	
			100	98	129.5			Volcaniclastic SANDSTONE; coarse grained, grey green, poorly sorted, pebbly, moderate pervasive chloritic alteration	FR			145.05m: Jt, 41°, Ir, Ro, Vr Car SLIGHTLY WEATHERED TO FRESH ROCK
					145.5							
					129.0							145.71m: Jt, 32°, St, Ro, Vr Car
					146.0			...moderate pervasive epidote alteration				
			100		128.5							
					146.5							
					128.0							
					147.0							
					127.5							
					147.5							
					127.0							
					148.0							
					126.5							148.36m: Vn, 40°, Un, Ro, 1 mm, Car
			100	100	148.5							
					126.0							
					149.0							
					125.0							149.41m: Vn, 30°, Pl, Ro, 5 mm, Qz
					149.5							

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT007

SHEET : 32 OF 38

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **10-11-20**
Date Completed: **13-11-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **357°**

Surface RL: **266.0 m AHD**
Co-ords: **E 613980 N 6390780 MGA2020 55**

Borehole Information					Field Material Description												
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS					
HQ	Nil		100	100	125.0			Volcaniclastic SANDSTONE; coarse grained, grey green, poorly sorted, pebbly, moderate pervasive chloritic alteration	FR	VL 0.0 / 0.0 L 0.1 / 2 W 1.0 / 6 H 1.2 / 6 VH 1 / 60 EH 0 / 200	<20 20-40 60-200 200-600 600-2000 >2000	SLIGHTLY WEATHERED TO FRESH ROCK					
				150.5			150.16m: Jt, 41°, Un, Ro, Vr Car										
				124.5													
				151.0													
				124.0												151.12m: Vn, 56°, Pl, Ro, 1 mm, Car	
				151.5													
				123.5													
				152.0													
			100	98	123.0												
					152.5												152.41m: Jt, 38°, Pl, Ro, Vr Car
					122.5												
					153.0												
					122.0												153.34m: Jt, 45°, Pl, Ro, Vr Car
					153.5												
					121.5												153.67m: Jt, 26°, Pl, Ro, Vr Car
					154.0												
			100	100	121.0												154.14m: Jt, 22°, Pl, Ro, Vr Car, with chlorite infill
					154.5												
					120.5												

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This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT007

SHEET : 33 OF 38

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **10-11-20**
Date Completed: **13-11-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **357°**

Surface RL: **266.0 m AHD**
Co-ords: **E 613980 N 6390780 MGA2020 55**

Borehole Information					Field Material Description							
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil							Volcaniclastic SANDSTONE; coarse grained, grey green, poorly sorted, pebbly, moderate pervasive chloritic alteration	FR			SLIGHTLY WEATHERED TO FRESH ROCK
			100	100		120.0						155.18m: DB, 51°, Un, Ro, Vr Car
						155.5						
			100	100		119.5						156.26m: Jt, 64°, Pl, Ro, Vr Car
						156.0						
						119.0						
						156.5						
						118.5						
						157.0						
						118.5						157.58m: Vn, 61°, Pl, Ro, 3 mm, Car
			100	100		117.5						158.19m: Vn, 53°, Pl, Ro, 5 mm, Car
						158.0						
						158.5						
						117.0						
						159.0						
						116.5						
						159.5						
			100	100		116.0						

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT007

SHEET : 34 OF 38

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **10-11-20**
Date Completed: **13-11-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **357°**

Surface RL: **266.0 m AHD**
Co-ords: **E 613980 N 6390780 MGA2020 55**

Borehole Information					Field Material Description							
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil							Volcaniclastic SANDSTONE; coarse grained, grey green, poorly sorted, pebbly, moderate pervasive chloritic alteration	FR	VL 0.0 / 0.0 L 0.1 / 2 W 1.0 / 6 H 1.0 / 3 VH 0.0 / 0.0 EH 0.0 / 200	<20 20-40 40-60 60-80 80-100 100-120 120-140 140-160 160-180 180-200 200-220 220-240 240-260 260-280 280-300 300-320 320-340 340-360 360-380 380-400 400-420 420-440 440-460 460-480 480-500 500-520 520-540 540-560 560-580 580-600 600-620 620-640 640-660 660-680 680-700 700-720 720-740 740-760 760-780 780-800 800-820 820-840 840-860 860-880 880-900 900-920 920-940 940-960 960-980 980-1000 1000-1020 1020-1040 1040-1060 1060-1080 1080-1100 1100-1120 1120-1140 1140-1160 1160-1180 1180-1200 1200-1220 1220-1240 1240-1260 1260-1280 1280-1300 1300-1320 1320-1340 1340-1360 1360-1380 1380-1400 1400-1420 1420-1440 1440-1460 1460-1480 1480-1500 1500-1520 1520-1540 1540-1560 1560-1580 1580-1600 1600-1620 1620-1640 1640-1660 1660-1680 1680-1700 1700-1720 1720-1740 1740-1760 1760-1780 1780-1800 1800-1820 1820-1840 1840-1860 1860-1880 1880-1900 1900-1920 1920-1940 1940-1960 1960-1980 1980-2000 2000-2020 2020-2040 2040-2060 2060-2080 2080-2100 2100-2120 2120-2140 2140-2160 2160-2180 2180-2200 2200-2220 2220-2240 2240-2260 2260-2280 2280-2300 2300-2320 2320-2340 2340-2360 2360-2380 2380-2400 2400-2420 2420-2440 2440-2460 2460-2480 2480-2500 2500-2520 2520-2540 2540-2560 2560-2580 2580-2600 2600-2620 2620-2640 2640-2660 2660-2680 2680-2700 2700-2720 2720-2740 2740-2760 2760-2780 2780-2800 2800-2820 2820-2840 2840-2860 2860-2880 2880-2900 2900-2920 2920-2940 2940-2960 2960-2980 2980-3000 3000-3020 3020-3040 3040-3060 3060-3080 3080-3100 3100-3120 3120-3140 3140-3160 3160-3180 3180-3200 3200-3220 3220-3240 3240-3260 3260-3280 3280-3300 3300-3320 3320-3340 3340-3360 3360-3380 3380-3400 3400-3420 3420-3440 3440-3460 3460-3480 3480-3500 3500-3520 3520-3540 3540-3560 3560-3580 3580-3600 3600-3620 3620-3640 3640-3660 3660-3680 3680-3700 3700-3720 3720-3740 3740-3760 3760-3780 3780-3800 3800-3820 3820-3840 3840-3860 3860-3880 3880-3900 3900-3920 3920-3940 3940-3960 3960-3980 3980-4000 4000-4020 4020-4040 4040-4060 4060-4080 4080-4100 4100-4120 4120-4140 4140-4160 4160-4180 4180-4200 4200-4220 4220-4240 4240-4260 4260-4280 4280-4300 4300-4320 4320-4340 4340-4360 4360-4380 4380-4400 4400-4420 4420-4440 4440-4460 4460-4480 4480-4500 4500-4520 4520-4540 4540-4560 4560-4580 4580-4600 4600-4620 4620-4640 4640-4660 4660-4680 4680-4700 4700-4720 4720-4740 4740-4760 4760-4780 4780-4800 4800-4820 4820-4840 4840-4860 4860-4880 4880-4900 4900-4920 4920-4940 4940-4960 4960-4980 4980-5000 5000-5020 5020-5040 5040-5060 5060-5080 5080-5100 5100-5120 5120-5140 5140-5160 5160-5180 5180-5200 5200-5220 5220-5240 5240-5260 5260-5280 5280-5300 5300-5320 5320-5340 5340-5360 5360-5380 5380-5400 5400-5420 5420-5440 5440-5460 5460-5480 5480-5500 5500-5520 5520-5540 5540-5560 5560-5580 5580-5600 5600-5620 5620-5640 5640-5660 5660-5680 5680-5700 5700-5720 5720-5740 5740-5760 5760-5780 5780-5800 5800-5820 5820-5840 5840-5860 5860-5880 5880-5900 5900-5920 5920-5940 5940-5960 5960-5980 5980-6000 6000-6020 6020-6040 6040-6060 6060-6080 6080-6100 6100-6120 6120-6140 6140-6160 6160-6180 6180-6200 6200-6220 6220-6240 6240-6260 6260-6280 6280-6300 6300-6320 6320-6340 6340-6360 6360-6380 6380-6400 6400-6420 6420-6440 6440-6460 6460-6480 6480-6500 6500-6520 6520-6540 6540-6560 6560-6580 6580-6600 6600-6620 6620-6640 6640-6660 6660-6680 6680-6700 6700-6720 6720-6740 6740-6760 6760-6780 6780-6800 6800-6820 6820-6840 6840-6860 6860-6880 6880-6900 6900-6920 6920-6940 6940-6960 6960-6980 6980-7000 7000-7020 7020-7040 7040-7060 7060-7080 7080-7100 7100-7120 7120-7140 7140-7160 7160-7180 7180-7200 7200-7220 7220-7240 7240-7260 7260-7280 7280-7300 7300-7320 7320-7340 7340-7360 7360-7380 7380-7400 7400-7420 7420-7440 7440-7460 7460-7480 7480-7500 7500-7520 7520-7540 7540-7560 7560-7580 7580-7600 7600-7620 7620-7640 7640-7660 7660-7680 7680-7700 7700-7720 7720-7740 7740-7760 7760-7780 7780-7800 7800-7820 7820-7840 7840-7860 7860-7880 7880-7900 7900-7920 7920-7940 7940-7960 7960-7980 7980-8000 8000-8020 8020-8040 8040-8060 8060-8080 8080-8100 8100-8120 8120-8140 8140-8160 8160-8180 8180-8200 8200-8220 8220-8240 8240-8260 8260-8280 8280-8300 8300-8320 8320-8340 8340-8360 8360-8380 8380-8400 8400-8420 8420-8440 8440-8460 8460-8480 8480-8500 8500-8520 8520-8540 8540-8560 8560-8580 8580-8600 8600-8620 8620-8640 8640-8660 8660-8680 8680-8700 8700-8720 8720-8740 8740-8760 8760-8780 8780-8800 8800-8820 8820-8840 8840-8860 8860-8880 8880-8900 8900-8920 8920-8940 8940-8960 8960-8980 8980-9000 9000-9020 9020-9040 9040-9060 9060-9080 9080-9100 9100-9120 9120-9140 9140-9160 9160-9180 9180-9200 9200-9220 9220-9240 9240-9260 9260-9280 9280-9300 9300-9320 9320-9340 9340-9360 9360-9380 9380-9400 9400-9420 9420-9440 9440-9460 9460-9480 9480-9500 9500-9520 9520-9540 9540-9560 9560-9580 9580-9600 9600-9620 9620-9640 9640-9660 9660-9680 9680-9700 9700-9720 9720-9740 9740-9760 9760-9780 9780-9800 9800-9820 9820-9840 9840-9860 9860-9880 9880-9900 9900-9920 9920-9940 9940-9960 9960-9980 9980-10000 10000-10020 10020-10040 10040-10060 10060-10080 10080-10100 10100-10120 10120-10140 10140-10160 10160-10180 10180-10200 10200-10220 10220-10240 10240-10260 10260-10280 10280-10300 10300-10320 10320-10340 10340-10360 10360-10380 10380-10400 10400-10420 10420-10440 10440-10460 10460-10480 10480-10500 10500-10520 10520-10540 10540-10560 10560-10580 10580-10600 10600-10620 10620-10640 10640-10660 10660-10680 10680-10700 10700-10720 10720-10740 10740-10760 10760-10780 10780-10800 10800-10820 10820-10840 10840-10860 10860-10880 10880-10900 10900-10920 10920-10940 10940-10960 10960-10980 10980-11000 11000-11020 11020-11040 11040-11060 11060-11080 11080-11100 11100-11120 11120-11140 11140-11160 11160-11180 11180-11200 11200-11220 11220-11240 11240-11260 11260-11280 11280-11300 11300-11320 11320-11340 11340-11360 11360-11380 11380-11400 11400-11420 11420-11440 11440-11460 11460-11480 11480-11500 11500-11520 11520-11540 11540-11560 11560-11580 11580-11600 11600-11620 11620-11640 11640-11660 11660-11680 11680-11700 11700-11720 11720-11740 11740-11760 11760-11780 11780-11800 11800-11820 11820-11840 11840-11860 11860-11880 11880-11900 11900-11920 11920-11940 11940-11960 11960-11980 11980-12000 12000-12020 12020-12040 12040-12060 12060-12080 12080-12100 12100-12120 12120-12140 12140-12160 12160-12180 12180-12200 12200-12220 12220-12240 12240-12260 12260-12280 12280-12300 12300-12320 12320-12340 12340-12360 12360-12380 12380-12400 12400-12420 12420-12440 12440-12460 12460-12480 12480-12500 12500-12520 12520-12540 12540-12560 12560-12580 12580-12600 12600-12620 12620-12640 12640-12660 12660-12680 12680-12700 12700-12720 12720-12740 12740-12760 12760-12780 12780-12800 12800-12820 12820-12840 12840-12860 12860-12880 12880-12900 12900-12920 12920-12940 12940-12960 12960-12980 12980-13000 13000-13020 13020-13040 13040-13060 13060-13080 13080-13100 13100-13120 13120-13140 13140-13160 13160-13180 13180-13200 13200-13220 13220-13240 13240-13260 13260-13280 13280-13300 13300-13320 13320-13340 13340-13360 13360-13380 13380-13400 13400-13420 13420-13440 13440-13460 13460-13480 13480-13500 13500-13520 13520-13540 13540-13560 13560-13580 13580-13600 13600-13620 13620-13640 13640-13660 13660-13680 13680-13700 13700-13720 13720-13740 13740-13760 13760-13780 13780-13800 13800-13820 13820-13840 13840-13860 13860-13880 13880-13900 13900-13920 13920-13940 13940-13960 13960-13980 13980-14000 14000-14020 14020-14040 14040-14060 14060-14080 14080-14100 14100-14120 14120-14140 14140-14160 14160-14180 14180-14200 14200-14220 14220-14240 14240-14260 14260-14280 14280-14300 14300-14320 14320-14340 14340-14360 14360-14380 14380-14400 14400-14420 14420-14440 14440-14460 14460-14480 14480-14500 14500-14520 14520-14540 14540-14560 14560-14580 14580-14600 14600-14620 14620-14640 14640-14660 14660-14680 14680-14700 14700-14720 14720-14740 14740-14760 14760-14780 14780-14800 14800-14820 14820-14840 14840-14860 14860-14880 14880-14900 14900-14920 14920-14940 14940-14960 14960-14980 14980-15000 15000-15020 15020-15040 15040-15060 15060-15080 15080-15100 15100-15120 15120-15140 15140-15160 15160-15180 15180-15200 15200-15220 15220-15240 15240-15260 15260-15280 15280-15300 15300-15320 15320-15340 15340-15360 15360-15380 15380-15400 15400-15420 15420-15440 15440-15460 15460-15480 15480-15500 15500-15520 15520-15540 15540-15560 15560-15580 15580-15600 15600-15620 15620-15640 15640-15660 15660-15680 15680-15700 15700-15720 15720-15740 15740-15760 15760-15780 15780-15800 15800-15820 15820-15840 15840-15860 15860-15880 15880-15900 15900-15920 15920-15940 15940-15960 15960-15980 15980-16000 16000-16020 16020-16040 16040-16060 16060-16080 16080-16100 16100-16120 16120-16140 16140-16160 16160-16180 16180-16200 16200-16220 16220-16240 16240-16260 16260-16280 16280-16300 16300-16320 16320-16340 16340-16360 16360-16380 16380-16400 16400-16420 16420-16440 16440-16460 16460-16480 16480-16500 16500-16520 16520-16540 16540-16560 16560-16580 16580-16600 16600-16620 16620-16640 16640-16660 16660-16680 16680-16700 16700-16720 16720-16740 16740-16760 16760-16780 16780-16800 16800-16820 16820-16840 16840-16860 16860-16880 16880-16900 16900-16920 16920-16940 16940-16960 16960-16980 16980-17000 17000-17020 17020-17040 17040-17060 17060-17080 17080-17100 17100-17120 17120-17140 17140-17160 17160-17180 17180-17200 17200-17220 17220-17240 17240-17260 17260-17280 17280-17300 17300-17320 17320-17340 17340-17360 17360-17380 17380-17400 17400-17420 17420-17440 17440-17460 17460-17480 17480-17500 17500-17520 17520-17540 17540-17560 17560-17580 17580-17600 17600-17620 17620-17640 17640-17660 17660-17680 17680-17700 17700-17720 17720-17740 17740-17760 17760-17780 17780-17800 17800-17820 17820-17840 17840-17860 17860-17880 17880-17900 17900-17920 17920-17940 17940-17960 17960-17980 17980-18000 18000-18020 18020-18040 18040-18060 18060-18080 18080-18100 18100-18120 18120-18140 18140-18160 18160-18180 18180-18200 18200-18220 18220-18240 18240-18260 18260-18280 18280-18300 18300-18320 18320-18340 18340-18360 18360-18380 18380-18400 18400-18420 18420-18440 18440-18460 18460-18480 18480-18500 18500-18520 18520-18540 18540-18560 18560-18580 18580-18600 18600-18620 18620-18640 18640-18660 18660-18680 18680-18700 18700-18720 18720-18740 18740-18760 18760-18780 18780-18800 18800-18820 18820-18840 18840-18860 18860-18880 18880-18900 18900-18920 18920-18940 18940-18960 18960-18980 18980-19000 19000-19020 19020-19040 19040-19060 19060-19080 19080-19100 19100-19120 19120-19140 19140-19160 19160-19180 19180-19200 19200-19220 19220-19240 19240-19260 19260-19280 19280-19300 19300-19320 19320-19340 19340-19360 19360-19380 19380-19400 19400-19420 19420-19440 19440-19460 19460-19480 19480-19500 19500-19520 19520-19540 19540-19560 19560-19580 19580-19600 19600-19620 19620-19640 19640-19660 19660-19680 19680-19700 19700-19720 19720-19740 19740-19760 19760-19780 19780-19800 19800-19820 19820-19840 19840-19860 19860-19880 19880-19900 19900-19920 19920-19940 19940-19960 19960-19980 19980-20000 20000-20020 20020-20040 20040-20060 20060-20080 20080-20100 20100-20120 20120-20140 20140-20160 20160-20180 20180-20200 20200-20220 20220-20240 20240-20260 20260-20	

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **10-11-20**
Date Completed: **13-11-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **357°**

Surface RL: **266.0 m AHD**
Co-ords: **E 613980 N 6390780 MGA2020 55**

Borehole Information						Field Material Description						
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil		100	100	110.5	165.5		Volcaniclastic SANDSTONE; coarse grained, grey green, poorly sorted, pebbly, moderate pervasive chloritic alteration	FR	VL 0.00 / 0.8 L 0.1 / 2 M 0.3 / 6 H 1 / 20 VH3 / 60 EH9 / 200	<20 20-60 60-200 200-600 600-2000 >2000	SLIGHTLY WEATHERED TO FRESH ROCK
				110.1	166.0	166.11m: Jt, 45°, Pl, Ro, Vr Car						
				109.5	166.5							
				167.0	109.0							
		100	94	167.5	108.5	167.46m: Jt, 60 mm, Car, broken zone, multiple orientations of breaks						
				168.0	108.0							
				168.5	107.5							
				169.0	107.0							
		100	99	169.5	106.5	169.77m: Vn, 40°, Pl, Ro, 13 mm, Car						
						169.98m: lt 20 mm small broken section						

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT007

SHEET : 36 OF 38

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **10-11-20**
Date Completed: **13-11-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **357°**

Surface RL: **266.0 m AHD**
Co-ords: **E 613980 N 6390780 MGA2020 55**

Borehole Information					Field Material Description							
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	ROD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil				170.00			Volcaniclastic SANDSTONE; coarse grained, grey green, poorly sorted, pebbly, minor pervasive chloritic alteration	FR	VL 0.0 / 0.0 L 0.1 / 2 W 1.0 / 6 H 1.2 / 6 VH 1.0 / 6 EH 0.1 / 200	<20 20-40 40-60 60-80 80-100 100-120 120-140 140-160 160-180 180-200 200-220 220-240 240-260 260-280 280-300 300-320 320-340 340-360 360-380 380-400 400-420 420-440 440-460 460-480 480-500 500-520 520-540 540-560 560-580 580-600 600-620 620-640 640-660 660-680 680-700 700-720 720-740 740-760 760-780 780-800 800-820 820-840 840-860 860-880 880-900 900-920 920-940 940-960 960-980 980-1000 1000-1020 1020-1040 1040-1060 1060-1080 1080-1100 1100-1120 1120-1140 1140-1160 1160-1180 1180-1200 1200-1220 1220-1240 1240-1260 1260-1280 1280-1300 1300-1320 1320-1340 1340-1360 1360-1380 1380-1400 1400-1420 1420-1440 1440-1460 1460-1480 1480-1500 1500-1520 1520-1540 1540-1560 1560-1580 1580-1600 1600-1620 1620-1640 1640-1660 1660-1680 1680-1700 1700-1720 1720-1740 1740-1760 1760-1780 1780-1800 1800-1820 1820-1840 1840-1860 1860-1880 1880-1900 1900-1920 1920-1940 1940-1960 1960-1980 1980-2000 2000-2020 2020-2040 2040-2060 2060-2080 2080-2100 2100-2120 2120-2140 2140-2160 2160-2180 2180-2200 2200-2220 2220-2240 2240-2260 2260-2280 2280-2300 2300-2320 2320-2340 2340-2360 2360-2380 2380-2400 2400-2420 2420-2440 2440-2460 2460-2480 2480-2500 2500-2520 2520-2540 2540-2560 2560-2580 2580-2600 2600-2620 2620-2640 2640-2660 2660-2680 2680-2700 2700-2720 2720-2740 2740-2760 2760-2780 2780-2800 2800-2820 2820-2840 2840-2860 2860-2880 2880-2900 2900-2920 2920-2940 2940-2960 2960-2980 2980-3000 3000-3020 3020-3040 3040-3060 3060-3080 3080-3100 3100-3120 3120-3140 3140-3160 3160-3180 3180-3200 3200-3220 3220-3240 3240-3260 3260-3280 3280-3300 3300-3320 3320-3340 3340-3360 3360-3380 3380-3400 3400-3420 3420-3440 3440-3460 3460-3480 3480-3500 3500-3520 3520-3540 3540-3560 3560-3580 3580-3600 3600-3620 3620-3640 3640-3660 3660-3680 3680-3700 3700-3720 3720-3740 3740-3760 3760-3780 3780-3800 3800-3820 3820-3840 3840-3860 3860-3880 3880-3900 3900-3920 3920-3940 3940-3960 3960-3980 3980-4000 4000-4020 4020-4040 4040-4060 4060-4080 4080-4100 4100-4120 4120-4140 4140-4160 4160-4180 4180-4200 4200-4220 4220-4240 4240-4260 4260-4280 4280-4300 4300-4320 4320-4340 4340-4360 4360-4380 4380-4400 4400-4420 4420-4440 4440-4460 4460-4480 4480-4500 4500-4520 4520-4540 4540-4560 4560-4580 4580-4600 4600-4620 4620-4640 4640-4660 4660-4680 4680-4700 4700-4720 4720-4740 4740-4760 4760-4780 4780-4800 4800-4820 4820-4840 4840-4860 4860-4880 4880-4900 4900-4920 4920-4940 4940-4960 4960-4980 4980-5000 5000-5020 5020-5040 5040-5060 5060-5080 5080-5100 5100-5120 5120-5140 5140-5160 5160-5180 5180-5200 5200-5220 5220-5240 5240-5260 5260-5280 5280-5300 5300-5320 5320-5340 5340-5360 5360-5380 5380-5400 5400-5420 5420-5440 5440-5460 5460-5480 5480-5500 5500-5520 5520-5540 5540-5560 5560-5580 5580-5600 5600-5620 5620-5640 5640-5660 5660-5680 5680-5700 5700-5720 5720-5740 5740-5760 5760-5780 5780-5800 5800-5820 5820-5840 5840-5860 5860-5880 5880-5900 5900-5920 5920-5940 5940-5960 5960-5980 5980-6000 6000-6020 6020-6040 6040-6060 6060-6080 6080-6100 6100-6120 6120-6140 6140-6160 6160-6180 6180-6200 6200-6220 6220-6240 6240-6260 6260-6280 6280-6300 6300-6320 6320-6340 6340-6360 6360-6380 6380-6400 6400-6420 6420-6440 6440-6460 6460-6480 6480-6500 6500-6520 6520-6540 6540-6560 6560-6580 6580-6600 6600-6620 6620-6640 6640-6660 6660-6680 6680-6700 6700-6720 6720-6740 6740-6760 6760-6780 6780-6800 6800-6820 6820-6840 6840-6860 6860-6880 6880-6900 6900-6920 6920-6940 6940-6960 6960-6980 6980-7000 7000-7020 7020-7040 7040-7060 7060-7080 7080-7100 7100-7120 7120-7140 7140-7160 7160-7180 7180-7200 7200-7220 7220-7240 7240-7260 7260-7280 7280-7300 7300-7320 7320-7340 7340-7360 7360-7380 7380-7400 7400-7420 7420-7440 7440-7460 7460-7480 7480-7500 7500-7520 7520-7540 7540-7560 7560-7580 7580-7600 7600-7620 7620-7640 7640-7660 7660-7680 7680-7700 7700-7720 7720-7740 7740-7760 7760-7780 7780-7800 7800-7820 7820-7840 7840-7860 7860-7880 7880-7900 7900-7920 7920-7940 7940-7960 7960-7980 7980-8000 8000-8020 8020-8040 8040-8060 8060-8080 8080-8100 8100-8120 8120-8140 8140-8160 8160-8180 8180-8200 8200-8220 8220-8240 8240-8260 8260-8280 8280-8300 8300-8320 8320-8340 8340-8360 8360-8380 8380-8400 8400-8420 8420-8440 8440-8460 8460-8480 8480-8500 8500-8520 8520-8540 8540-8560 8560-8580 8580-8600 8600-8620 8620-8640 8640-8660 8660-8680 8680-8700 8700-8720 8720-8740 8740-8760 8760-8780 8780-8800 8800-8820 8820-8840 8840-8860 8860-8880 8880-8900 8900-8920 8920-8940 8940-8960 8960-8980 8980-9000 9000-9020 9020-9040 9040-9060 9060-9080 9080-9100 9100-9120 9120-9140 9140-9160 9160-9180 9180-9200 9200-9220 9220-9240 9240-9260 9260-9280 9280-9300 9300-9320 9320-9340 9340-9360 9360-9380 9380-9400 9400-9420 9420-9440 9440-9460 9460-9480 9480-9500 9500-9520 9520-9540 9540-9560 9560-9580 9580-9600 9600-9620 9620-9640 9640-9660 9660-9680 9680-9700 9700-9720 9720-9740 9740-9760 9760-9780 9780-9800 9800-9820 9820-9840 9840-9860 9860-9880 9880-9900 9900-9920 9920-9940 9940-9960 9960-9980 9980-10000 10000-10020 10020-10040 10040-10060 10060-10080 10080-10100 10100-10120 10120-10140 10140-10160 10160-10180 10180-10200 10200-10220 10220-10240 10240-10260 10260-10280 10280-10300 10300-10320 10320-10340 10340-10360 10360-10380 10380-10400 10400-10420 10420-10440 10440-10460 10460-10480 10480-10500 10500-10520 10520-10540 10540-10560 10560-10580 10580-10600 10600-10620 10620-10640 10640-10660 10660-10680 10680-10700 10700-10720 10720-10740 10740-10760 10760-10780 10780-10800 10800-10820 10820-10840 10840-10860 10860-10880 10880-10900 10900-10920 10920-10940 10940-10960 10960-10980 10980-11000 11000-11020 11020-11040 11040-11060 11060-11080 11080-11100 11100-11120 11120-11140 11140-11160 11160-11180 11180-11200 11200-11220 11220-11240 11240-11260 11260-11280 11280-11300 11300-11320 11320-11340 11340-11360 11360-11380 11380-11400 11400-11420 11420-11440 11440-11460 11460-11480 11480-11500 11500-11520 11520-11540 11540-11560 11560-11580 11580-11600 11600-11620 11620-11640 11640-11660 11660-11680 11680-11700 11700-11720 11720-11740 11740-11760 11760-11780 11780-11800 11800-11820 11820-11840 11840-11860 11860-11880 11880-11900 11900-11920 11920-11940 11940-11960 11960-11980 11980-12000 12000-12020 12020-12040 12040-12060 12060-12080 12080-12100 12100-12120 12120-12140 12140-12160 12160-12180 12180-12200 12200-12220 12220-12240 12240-12260 12260-12280 12280-12300 12300-12320 12320-12340 12340-12360 12360-12380 12380-12400 12400-12420 12420-12440 12440-12460 12460-12480 12480-12500 12500-12520 12520-12540 12540-12560 12560-12580 12580-12600 12600-12620 12620-12640 12640-12660 12660-12680 12680-12700 12700-12720 12720-12740 12740-12760 12760-12780 12780-12800 12800-12820 12820-12840 12840-12860 12860-12880 12880-12900 12900-12920 12920-12940 12940-12960 12960-12980 12980-13000 13000-13020 13020-13040 13040-13060 13060-13080 13080-13100 13100-13120 13120-13140 13140-13160 13160-13180 13180-13200 13200-13220 13220-13240 13240-13260 13260-13280 13280-13300 13300-13320 13320-13340 13340-13360 13360-13380 13380-13400 13400-13420 13420-13440 13440-13460 13460-13480 13480-13500 13500-13520 13520-13540 13540-13560 13560-13580 13580-13600 13600-13620 13620-13640 13640-13660 13660-13680 13680-13700 13700-13720 13720-13740 13740-13760 13760-13780 13780-13800 13800-13820 13820-13840 13840-13860 13860-13880 13880-13900 13900-13920 13920-13940 13940-13960 13960-13980 13980-14000 14000-14020 14020-14040 14040-14060 14060-14080 14080-14100 14100-14120 14120-14140 14140-14160 14160-14180 14180-14200 14200-14220 14220-14240 14240-14260 14260-14280 14280-14300 14300-14320 14320-14340 14340-14360 14360-14380 14380-14400 14400-14420 14420-14440 14440-14460 14460-14480 14480-14500 14500-14520 14520-14540 14540-14560 14560-14580 14580-14600 14600-14620 14620-14640 14640-14660 14660-14680 14680-14700 14700-14720 14720-14740 14740-14760 14760-14780 14780-14800 14800-14820 14820-14840 14840-14860 14860-14880 14880-14900 14900-14920 14920-14940 14940-14960 14960-14980 14980-15000 15000-15020 15020-15040 15040-15060 15060-15080 15080-15100 15100-15120 15120-15140 15140-15160 15160-15180 15180-15200 15200-15220 15220-15240 15240-15260 15260-15280 15280-15300 15300-15320 15320-15340 15340-15360 15360-15380 15380-15400 15400-15420 15420-15440 15440-15460 15460-15480 15480-15500 15500-15520 15520-15540 15540-15560 15560-15580 15580-15600 15600-15620 15620-15640 15640-15660 15660-15680 15680-15700 15700-15720 15720-15740 15740-15760 15760-15780 15780-15800 15800-15820 15820-15840 15840-15860 15860-15880 15880-15900 15900-15920 15920-15940 15940-15960 15960-15980 15980-16000 16000-16020 16020-16040 16040-16060 16060-16080 16080-16100 16100-16120 16120-16140 16140-16160 16160-16180 16180-16200 16200-16220 16220-16240 16240-16260 16260-16280 16280-16300 16300-16320 16320-16340 16340-16360 16360-16380 16380-16400 16400-16420 16420-16440 16440-16460 16460-16480 16480-16500 16500-16520 16520-16540 16540-16560 16560-16580 16580-16600 16600-16620 16620-16640 16640-16660 16660-16680 16680-16700 16700-16720 16720-16740 16740-16760 16760-16780 16780-16800 16800-16820 16820-16840 16840-16860 16860-16880 16880-16900 16900-16920 16920-16940 16940-16960 16960-16980 16980-17000 17000-17020 17020-17040 17040-17060 17060-17080 17080-17100 17100-17120 17120-17140 17140-17160 17160-17180 17180-17200 17200-17220 17220-17240 17240-17260 17260-17280 17280-17300 17300-17320 17320-17340 17340-17360 17360-17380 17380-17400 17400-17420 17420-17440 17440-17460 17460-17480 17480-17500 17500-17520 17520-17540 17540-17560 17560-17580 17580-17600 17600-17620 17620-17640 17640-17660 17660-17680 17680-17700 17700-17720 17720-17740 17740-17760 17760-17780 17780-17800 17800-17820 17820-17840 17840-17860 17860-17880 17880-17900 17900-17920 17920-17940 17940-17960 17960-17980 17980-18000 18000-18020 18020-18040 18040-18060 18060-18080 18080-18100 18100-18120 18120-18140 18140-18160 18160-18180 18180-18200 18200-18220 18220-18240 18240-18260 18260-18280 18280-18300 18300-18320 18320-18340 18340-18360 18360-18380 18380-18400 18400-18420 18420-18440 18440-18460 18460-18480 18480-18500 18500-18520 18520-18540 18540-18560 18560-18580 18580-18600 18600-18620 18620-18640 18640-18660 18660-18680 18680-18700 18700-18720 18720-18740 18740-18760 18760-18780 18780-18800 18800-18820 18820-18840 18840-18860 18860-18880 18880-18900 18900-18920 18920-18940 18940-18960 18960-18980 18980-19000 19000-19020 19020-19040 19040-19060 19060-19080 19080-19100 19100-19120 19120-19140 19140-19160 19160-19180 19180-19200 19200-19220 19220-19240 19240-19260 19260-19280 19280-19300 19300-19320 19320-19340 19340-19360 19360-19380 19380-19400 19400-19420 19420-19440 19440-19460 19460-19480 19480-19500 19500-19520 19520-19540 19540-19560 19560-19580 19580-19600 19600-19620 19620-19640 19640-19660 19660-19680 19680-19700 19700-19720 19720-19740 19740-19760 19760-19780 19780-19800 19800-19820 19820-19840 19840-19860 19860-19880 19880-19900 19900-19920 19920-19940 19940-19960 19960-19980 19980-20000 20000-20020 20020-20040 20040-20060 20060-20080 20080-20100 20100-20120 20120-20140 20140-20160 20160-20180 20180-20200 20200-20220 20220-20240 20240-20260 202	

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT007

SHEET : 37 OF 38

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **10-11-20**
Date Completed: **13-11-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **357°**

Surface RL: **266.0 m AHD**
Co-ords: **E 613980 N 6390780 MGA2020 55**

Borehole Information					Field Material Description							
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil				101.5			Volcaniclastic SANDSTONE; coarse grained, grey green, poorly sorted, pebbly, minor pervasive chloritic alteration	FR			SLIGHTLY WEATHERED TO FRESH ROCK
						175.5						175.47m: DB
					101.0							175.6m: Jt, 60°, Un, Ro, Sn Fe
						176.0						
			100	82	100.5							176.26m: Jt, 58°, Pl, Ro, Vr Car, core spin
					176.5							176.46m: Jt, 50°, Pl, Ro, Vr Car
					100.0							176.48m: Jt, 52°, Pl, Ro, Vr Car
												176.57m: Jt, 32°, Pl, Ro, Vr Car
					177.0							176.76m: Jt, 80°, Pl, Ro, Vr Car
												176.81m: Jt, 38°, Pl, Ro, 10 mm, Car
					177.0							176.87m: Jt, 36°, Pl, Ro, Vr Car
					99.5							177.15m: Jt, 40°, Pl, Ro, Vr Car
												177.16m: Jt, 37°, Pl, Ro, Vr Car
					177.5							177.27m: Jt, 35°, Pl, Ro, Vr Car
					99.0							
					178.0							178.02m: Jt, 45°, Pl, Ro, Vr Car
					98.5							178.29m: Vn, 35°, Pl, Ro, Vr Car
					178.5							
			100	100	98.0							
					179.0							179m: Vn, 30°, Pl, Ro, 2 mm, Car
					97.5							
					179.5							
					97.0							

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT007

SHEET : 38 OF 38

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **10-11-20**
Date Completed: **13-11-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **357°**

Surface RL: **266.0 m AHD**
Co-ords: **E 613980 N 6390780 MGA2020 55**

Borehole Information					Field Material Description							
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil		100	100				Volcaniclastic SANDSTONE; coarse grained, grey green, poorly sorted, pebbly, minor pervasive chloritic alteration	FR	VL 0.03 / 0.03 L 0.172 N 1.76 H 1.76 VH1 / 0.0 EH10 / 200	<20 20-40 60-200 200-400 600-2000 2000	SLIGHTLY WEATHERED TO FRESH ROCK
					96.5							
					180.5							
					96.0							
					181.0							
					95.5							
					181.5							181.4m: Jt, 61°, Cu, Ro, 2 mm, Car 181.45m: Jt, 80°, Ir, Ro, Vr Car
					95.0							
			100	88	182.0			...moderate chloritic and carbonitic alteration				
					94.5							
					182.5							182.7m: Jt, 52°, Pl, Ro, 1 mm, Car
					94.0							
					183.0							
					93.5							183.05m: drill induced fractures
					183.5							
					93.0							
			100	76	184.0							
					92.5							
					184.5							
					92.0							
					185.0							
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					225.5							
					51.0							
					226.0							
					50.5							
					226.5							
					50.0							
					227.0							
					49.5							
					227.5							
					49.0							
					228.0							
					48.5							
					228.5							

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT008

SHEET : 1 OF 23

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **15-1-21**
Date Completed: **18-1-21**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**Hole Angle: **-70°**Surface RL: **266.0 m AHD**Borehole Diameter: **96 mm**Bearing: **289°**Co-ords: **E 613829 N 6390816 MGA2020 55**

Borehole Information						Field Material Description														
METHOD	SUPPORT	WATER	RL (m AHD)	DEPTH (m)	FIELD TEST	SAMPLE	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY					POCKET PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS			
HQ	Nii	NFGWE									VS	FB	VL	L	MD	VST	D	H		
				0.30					Sandy CLAY; high plasticity, pale brown, fine - medium grained sand.	W<PL										QUATERNARY ALLUVIUM
				265.5	0.5				CORE LOSS 2.80m (0.30-3.10)											
				265.0	1.0															
				264.5	1.5															
				264.0	2.0															
				263.5	2.5															
				263.0	3.0				Sandy CLAY; medium - high plasticity, pale grey brown mottled pale red-orange, fine - medium grained sand.	W<PL										
				262.5	3.5															
				262.0	4.0														>600	
				261.5	4.5															

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT008

SHEET : 2 OF 23

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **15-1-21**
Date Completed: **18-1-21**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°** Surface RL: **266.0 m AHD**
Bearing: **289°** Co-ords: **E 613829 N 6390816 MGA2020 55**

Borehole Information							Field Material Description										
METHOD	SUPPORT	WATER	RL (m AHD)	DEPTH (m)	FIELD TEST	SAMPLE	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY					POCKET PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nii	NFGWE								VS	FB	VL	MD	ST	VD		
			261.0	5.5					Sandy CLAY; medium - high plasticity, pale grey brown mottled pale red-orange, fine - medium grained sand.	W<PL							QUATERNARY ALLUVIUM
						C											
			260.5	6.0													
			260.0	6.5					...medium to coarse (10 - 30 mm) grained rounded gravel								
			6.70														
									CORE LOSS 3.00m (6.70-9.70)								
			259.5	7.0													
			259.0	7.5													
			258.5	8.0													
			258.0	8.5													
			257.5	9.0													
			257.0	9.5													
			9.70														
									Sandy CLAY; medium - high plasticity, pale grey mottled pale orange - pale yellow, fine - medium grained sand.	W<PL							TERTIARY ALLUVIUM

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT008

SHEET : 3 OF 23

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **15-1-21**
Date Completed: **18-1-21**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **289°**

Surface RL: **266.0 m AHD**
Co-ords: **E 613829 N 6390816 MGA2020 55**

Borehole Information							Field Material Description						
METHOD	SUPPORT	WATER	RL (m AHD)	DEPTH (m)	FIELD TEST	SAMPLE	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY	POCKET PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil	NFGWE	256.5						Sandy CLAY; medium - high plasticity, pale grey mottled pale orange - pale yellow, fine - medium grained sand.	W-PL	VS FB SL VL ST LM MD VS TD H VD		TERTIARY ALLUVIUM
			10.5										
			256.0										
			11.0										
			255.5						...with coarse grained sand				
			11.5										
			255.0										
			12.0										
			254.5										
			12.5										
			254.0										
			13.0										
			253.5										
			13.5										
			253.0										
			14.0										
			252.5										
			14.5										
			252.0			C							

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT008

SHEET : 4 OF 23

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **15-1-21**
Date Completed: **18-1-21**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**Hole Angle: **-70°**Surface RL: **266.0 m AHD**Borehole Diameter: **96 mm**Bearing: **289°**Co-ords: **E 613829 N 6390816 MGA2020 55**

Borehole Information						Field Material Description											
METHOD	SUPPORT	WATER	RL (m AHD)	DEPTH (m)	FIELD TEST	SAMPLE	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY					POCKET PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil	NFGWE				C				VS W-PL	FB VL	SL L MD	ST MD	VS D	H VD		
			251.5	15.5					Sandy CLAY; medium - high plasticity, pale grey mottled pale orange - pale yellow, fine - medium grained sand.								
			251.0	16.0					...Sandy CLAY/Clayey SAND							150	
			250.5	16.5													
			250.0	17.0													
			249.5	17.5													
			249.0	18.0					...with coarse grained sand								
			18.40						CORE LOSS 0.30m (18.40-18.70)								
			248.5	18.5													
			18.70						Sandy CLAY; medium - high plasticity, pale grey mottled pale orange and pale red, medium - coarse grained sand.								
			19.0														
			248.0	19.5													
			247.5														

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT008

SHEET : 5 OF 23

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **15-1-21**
Date Completed: **18-1-21**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**Hole Angle: **-70°**Surface RL: **266.0 m AHD**Borehole Diameter: **96 mm**Bearing: **289°**Co-ords: **E 613829 N 6390816 MGA2020 55**

Borehole Information							Field Material Description						
METHOD	SUPPORT	WATER	RL (m AHD)	DEPTH (m)	FIELD TEST	SAMPLE	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY	POCKET PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil	NFGWE											
			247.0						Sandy CLAY; medium - high plasticity, pale grey mottled pale orange and pale red, medium - coarse grained sand.	W-PL			TERTIARY ALLUVIUM
				20.5					...with fine grained rounded gravel				
			246.5										
				21.0									
			246.0										
				21.5									
				21.70									
			245.5						Sandy CLAY; medium - high plasticity, pale grey mottled orange, fine - medium grained sand.				
				22.0									22.0 - 23.4 mottled orange - significant dessication cracking and curling
			245.0			C							
				22.5									
			244.5									>600	
				23.0									
			244.0						Sandy CLAY; medium - high plasticity, red - orange or pale grey - white mottled dark red and orange, fine - coarse grained sand, trace fine (<10 mm) sub-rounded to sub-angular gravel.				
				23.5									
			243.5										
				24.0									
			243.0										
				24.5									
			24.70						CORE LOSS 0.20m (24.50-24.70)				
									Sandy CLAY; medium - high plasticity, red - orange or pale grey - white mottled dark red and orange, fine - coarse grained sand, trace fine (<10 mm) sub-rounded to sub-angular gravel.	W<PL			>600

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT008

SHEET : 6 OF 23

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **15-1-21**
Date Completed: **18-1-21**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **289°**

Surface RL: **266.0 m AHD**
Co-ords: **E 613829 N 6390816 MGA2020 55**

Borehole Information							Field Material Description						
METHOD	SUPPORT	WATER	RL (m AHD)	DEPTH (m)	FIELD TEST	SAMPLE	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY	POCKET PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil	NFGWE							Sandy CLAY; medium - high plasticity, red - orange or pale grey - white mottled dark red and orange, fine - coarse grained sand, trace fine (<10 mm) sub-rounded to sub-angular gravel.	W-PL	VS SL ST MD VD H	>600	TERTIARY ALLUVIUM

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT008

SHEET : 7 OF 23

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **15-1-21**
Date Completed: **18-1-21**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**Hole Angle: **-70°**Surface RL: **266.0 m AHD**Borehole Diameter: **96 mm**Bearing: **289°**Co-ords: **E 613829 N 6390816 MGA2020 55**

Borehole Information						Field Material Description															
METHOD	SUPPORT	WATER	RL (m AHD)	DEPTH (m)	FIELD TEST	SAMPLE	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY						POCKET PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS			
HQ	Nii	NFGWE									VS	FB	VL	L	MD	ST	D	VD			
				237.5					Sandy CLAY; medium - high plasticity, red - orange or pale grey - white mottled dark red and orange, fine - coarse grained sand, trace fine (<10 mm) sub-rounded to sub-angular gravel.	W<PL											TERTIARY ALLUVIUM
				30.40																	
				30.5					CORE LOSS 0.30m (30.40-30.70)												
				30.70																	
				237.0					Sandy CLAY; medium - high plasticity, red - orange or pale grey - white mottled dark red and orange, fine - coarse grained sand, trace fine (<10 mm) sub-rounded to sub-angular gravel.	W<PL											
				31.0																	
				236.5																	
				31.5																	
				236.0		C															
				32.0																	
				235.5																	
				32.5																	
				235.0																	
				33.0																	
				234.5																	
				33.5																	
				234.0																	
				34.0																	
				233.5																	
				34.5																	

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT008

SHEET : 8 OF 23

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **15-1-21**
Date Completed: **18-1-21**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **289°**

Surface RL: **266.0 m AHD**
Co-ords: **E 613829 N 6390816 MGA2020 55**

Borehole Information							Field Material Description						
METHOD	SUPPORT	WATER	RL (m AHD)	DEPTH (m)	FIELD TEST	SAMPLE	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY	POCKET PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil	NFGWE	233.0						Sandy CLAY; medium - high plasticity, red - orange or pale grey - white mottled dark red and orange, fine - coarse grained sand, trace fine (<10 mm) sub-rounded to sub-angular gravel.	W-PL	VS FB SL VL ST MD VST D H VD		TERTIARY ALLUVIUM
			35.5										
			232.5										
			36.0										
			232.0										
			36.5										
			231.5										
			37.0										
			231.0										
			37.5										
			230.5										
			38.0										
			230.0										
			38.5										
			229.5										
			39.0										
			229.0										
			39.5										
			228.5										

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT008

SHEET : 9 OF 23

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **15-1-21**
Date Completed: **18-1-21**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **289°**

Surface RL: **266.0 m AHD**
Co-ords: **E 613829 N 6390816 MGA2020 55**

Borehole Information							Field Material Description						
METHOD	SUPPORT	WATER	RL (m AHD)	DEPTH (m)	FIELD TEST	SAMPLE	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY	POCKET PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil	NFGWE											
			228.0	40.5									
			227.5	41.0									
			227.0	41.5									
			226.5	42.0									
			226.0	42.5									
			225.5	43.0									
			225.0	43.5									
			224.5	44.0									
			224.0	44.5									

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT008

SHEET : 10 OF 23

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **15-1-21**
Date Completed: **18-1-21**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **289°**

Surface RL: **266.0 m AHD**
Co-ords: **E 613829 N 6390816 MGA2020 55**

Borehole Information							Field Material Description						
METHOD	SUPPORT	WATER	RL (m AHD)	DEPTH (m)	FIELD TEST	SAMPLE	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY	POCKET PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil	NFGWE											
			223.5						Sandy CLAY; medium - high plasticity, red - orange or pale grey - white mottled dark red and orange, fine - coarse grained sand, trace fine (<10 mm) sub-rounded to sub-angular gravel.	W-PL			
			45.5						...remnant coarse sand, fine gravel texture, completely weathered to a hard Sandy CLAY (except for layer of quartz gravel)				
			223.0										
			46.0										
			222.5										
			46.5										
			222.0										
			47.0										
			221.5										
			47.5										
			221.0										
			48.0										
			220.5										
			48.5										
			220.0										
			49.0										
			219.5										
			49.5										

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT008

SHEET : 11 OF 23

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **15-1-21**
Date Completed: **18-1-21**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **289°**

Surface RL: **266.0 m AHD**
Co-ords: **E 613829 N 6390816 MGA2020 55**

Borehole Information							Field Material Description						
METHOD	SUPPORT	WATER	RL (m AHD)	DEPTH (m)	FIELD TEST	SAMPLE	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY	POCKET PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil	NFGWE											
				50.5					Sandy CLAY; medium - high plasticity, red - orange or pale grey - white mottled dark red and orange, fine - coarse grained sand, trace fine (<10 mm) sub-rounded to sub-angular gravel.	W-PL	VS FB SL VL ST MD VST D H VD	>600	TERTIARY ALLUVIUM
			218.5										
				51.0					Sandy Gravelly CLAY; medium - high plasticity, pale grey, dark red and orange, coarse grained sand, fine - medium, sub-rounded - sub-angular, rock fragments and quartz grained gravel.				
			218.0										
				51.5									
			217.5										
				52.0									
			217.0										
			52.20										
				52.5									
			216.5										
				53.0									
			216.0										
				53.5									
			215.5										
				54.0									
			215.0										
				54.5									
			214.5										

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT008

SHEET : 12 OF 23

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **15-1-21**
Date Completed: **18-1-21**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **289°**

Surface RL: **266.0 m AHD**
Co-ords: **E 613829 N 6390816 MGA2020 55**

Borehole Information							Field Material Description									
METHOD	SUPPORT	WATER	RL (m AHD)	DEPTH (m)	FIELD TEST	SAMPLE	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY				POCKET PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nii	NFGWE								VS SL FL W-PL	FB VL L MD VST D H					
			214.0						Sandy Gravelly CLAY; medium - high plasticity, pale grey, dark red and orange, coarse grained sand, fine - medium, sub-rounded - sub-angular, rock fragments and quartz grained gravel.							TERTIARY ALLUVIUM
			55.5													
			213.5													
			56.0													
			213.0													
			56.5													
			212.5													
			57.0													
			212.0													
			57.5													
			211.5													
			58.0													
			211.0													
			58.5													
			59.0													
			210.5													
			59.5													
			210.0													
			59.80													
									CORE LOSS 0.90m (59.80-60.70)							

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT008

SHEET : 13 OF 23

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **15-1-21**
Date Completed: **18-1-21**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **289°**

Surface RL: **266.0 m AHD**
Co-ords: **E 613829 N 6390816 MGA2020 55**

Borehole Information							Field Material Description											
METHOD	SUPPORT	WATER	RL (m AHD)	DEPTH (m)	FIELD TEST	SAMPLE	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY						POCKET PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nii	NFGWE								VS	FB	VL	ST	MD	VST	VD		
			209.5						CORE LOSS 0.90m (59.80-60.70)									TERTIARY ALLUVIUM
			60.5															
			209.0	60.70														
			61.0						Sandy Gravelly CLAY; medium high plasticity, pale grey and orange, coarse grained sand, sub-rounded - sub-angular, fine - medium grained gravel.	W<PL							520	RESIDUAL SOIL
			208.5															
			61.5														430	
			208.0	61.70														
			62.0						CORE LOSS 2.00m (61.70-63.70)									
			207.5															
			62.5															
			207.0															
			63.0															
			206.5															
			63.5															
			63.70															
			206.0						Sandy Gravelly CLAY; medium high plasticity, pale grey and orange, coarse grained sand, sub-rounded - sub-angular, fine - medium grained gravel.	W<PL							350	
			64.0														320	
			205.5															
			64.5															
			64.70															
			205.0						CORE LOSS 2.00m (64.70-66.70)									

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT008

SHEET : 14 OF 23

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **15-1-21**
Date Completed: **18-1-21**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **289°**

Surface RL: **266.0 m AHD**
Co-ords: **E 613829 N 6390816 MGA2020 55**

Borehole Information						Field Material Description												
METHOD	SUPPORT	WATER	RL (m AHD)	DEPTH (m)	FIELD TEST	SAMPLE	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY					POCKET PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS	
HQ	Nii	NFGWE									VS	FB	VL	LM	ST	VD		
									CORE LOSS 2.00m (64.70-66.70)									RESIDUAL SOIL
			204.5	65.5														
			204.0	66.0														
			203.5	66.5														
			66.70															
			203.0	67.0		D			Sandy Gravelly CLAY; medium high plasticity, pale grey and orange, coarse grained sand, sub-rounded - sub-angular, fine - medium grained gravel.	W=PL							350	
			67.5															
			202.5															
			67.70						CORE LOSS 2.00m (67.70-69.70)									
			68.0															
			202.0															
			68.5															
			201.5															
			69.0															
			201.0															
			69.5															
			200.5	70					Sandy Gravelly CLAY; medium high plasticity, pale grey, dark red and orange, coarse grained sand, sub-rounded - sub-angular, fine - medium grained gravel.	W<PL							450	

REFER TO CORED BOREHOLE LOG
This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT008

SHEET : 15 OF 23

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **15-1-21**
Date Completed: **18-1-21**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **289°**

Surface RL: **266.0 m AHD**
Co-ords: **E 613829 N 6390816 MGA2020 55**

Borehole Information					Field Material Description							
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil							START CORING AT 70.00m		VL 0.00 / 0.0 L 0.12 / 0.6 W 1.76 / 7.6 VH 1.76 / 7.6 EH 0.12 / 0.6	<20 20-40 60-200 200-400 600-2000 2000	
			76	0	70.00			Volcaniclastic SANDSTONE; fine grained, pale orange - yellow, foliated, XW to consistency of very stiff to hard Clayey SILT/Silty CLAY (W<PL) or HW as indicated	XW			WEATHERED ROCK
					200.0							
					70.5							
					199.5				HW			
					7171.0			CORE LOSS 0.40m (71.00-71.40)				
					199.0							
					71.40			Volcaniclastic SANDSTONE; fine grained, pale orange - yellow, foliated, XW to consistency of hard Clayey SILT/Silty CLAY (W<PL) or HW as indicated	XW			— 71.50: HP In-situ =600 kPa
					71.5							
					198.5							
			54	0	72.0				HW			— 72.00: HP In-situ >600 kPa
					72.10			CORE LOSS 0.60m (72.10-72.70)				
					198.0							
					72.5							
					72.70			Volcaniclastic SANDSTONE; fine grained, pale orange - yellow, foliated, XW to consistency of very stiff to hard Clayey SILT/Silty CLAY (W<PL) or HW as indicated	XW			— 73.00: HP In-situ =170 - 180 kPa
					197.5							
					73.0							
					197.0							
					73.5							
			43	0	196.5				HW			— 73.80: HP In-situ =570 kPa
					7474.0			CORE LOSS 1.70m (74.00-75.70)				
					196.0							
					74.5							

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT008

SHEET : 16 OF 23

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **15-1-21**
Date Completed: **18-1-21**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **289°**

Surface RL: **266.0 m AHD**
Co-ords: **E 613829 N 6390816 MGA2020 55**

Borehole Information					Field Material Description							
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil		43	0	195.5			CORE LOSS 1.70m (74.00-75.70)		VL 0.00 / 0.0 L 0.12 H 1.26 VH 1.00 EH 0.20	<20 20-40 40-200 200-400 400-2000 ≥2000	WEATHERED ROCK
					75.5							
					195.0							
					75.70			Volcaniclastic SANDSTONE; fine grained, pale orange - yellow, foliated, XW to consistency of very stiff to hard Clayey SILT/Silty CLAY (W<PL) or HW as indicated	XW			— 75.90: HP In-situ =380 kPa — 76.00: HP In-situ =420 kPa
					76.0							
					194.5							
					76.5							— 76.60: HP In-situ =560 kPa
					194.0							
					76.80			CORE LOSS 1.90m (76.80-78.70)				
					77.0							
					193.5							
					77.5							
					193.0							
					78.0							
					192.5							
					78.5							
					78.70			Volcaniclastic SANDSTONE; fine grained, pale orange - yellow, foliated, XW to consistency of very stiff Clayey SILT/Silty CLAY (W<PL) or HW as indicated	XW			— 78.80: HP In-situ =180 - 220 kPa — 78.90: HP In-situ =190 kPa
					192.0							
					79.0							
					79.20			CORE LOSS 2.50m (79.20-81.70)				
					191.5							
					79.5							
					191.0							

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **15-1-21**
Date Completed: **18-1-21**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **289°**

Surface RL: **266.0 m AHD**
Co-ords: **E 613829 N 6390816 MGA2020 55**

Borehole Information						Field Material Description						
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil		17	0				CORE LOSS 2.50m (79.20-81.70)		VL 0.0/ 10.8 L 0.1/ 2 M 0.3/ 6 H 1/ 20 VH3/ 60 EH5/ 200	<20 20-60 60-200 200-500 500-2000 >2000	WEATHERED ROCK
					190.5	80.5						
					190.0	81.0						
					189.5	81.5						
					81.70							
					189.0	82.0		Volcaniclastic SANDSTONE; fine grained, pale orange - yellow, foliated, XW to consistency of hard Clayey SILT/Silty CLAY (W<PL) or HW as indicated	XW			— 82.00: HP In-situ >600 kPa
					82.20			CORE LOSS 2.50m (82.20-84.70)				
					188.5	82.5						
					188.0	83.0						
					187.5	83.5						
					84.0							
					187.0							
					84.5							
					186.5							
					84.70			Volcaniclastic SANDSTONE; fine grained, pale orange - yellow, foliated, XW to consistency of hard Clayey SILT/Silty CLAY (W<PL) or HW as indicated	XW			
			60	0								

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT008

SHEET : 18 OF 23

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **15-1-21**
Date Completed: **18-1-21**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **289°**

Surface RL: **266.0 m AHD**
Co-ords: **E 613829 N 6390816 MGA2020 55**

Borehole Information						Field Material Description						
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil											
			60	0	186.0			Volcaniclastic SANDSTONE; fine grained, pale orange - yellow, foliated, XW to consistency of hard Clayey SILT/Silty CLAY (W<PL) or HW as indicated	XW			WEATHERED ROCK — 85.10: HP In-situ =590 kPa
					85.30			CORE LOSS 1.30m (85.30-86.60)				
					185.5							
					185.0							
			0	0	185.0							
					186.0							
					186.5							
					186.60			Volcaniclastic SANDSTONE; fine grained, pale orange - yellow, foliated, XW to consistency of hard Clayey SILT/Silty CLAY (W<PL) or HW as indicated	HW			
					184.5							
					184.0							
			63	13	183.5			CORE LOSS 0.70m (87.80-88.50)				— 87.50: HP In-situ >600 kPa
					183.0							
					182.5			Volcaniclastic SANDSTONE; fine grained, pale orange - yellow, foliated, consistent rock fabric distinguishable	XW			
					182.0							
					181.5			Volcaniclastic SANDSTONE; fine grained, pale orange - yellow, foliated	HW			
			58	10	182.0			CORE LOSS 0.50m (89.20-89.70)				
					182.5							
					183.0							
					183.5							
					184.0							
					184.5							
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					275.0							
					275.5							
					276.0							
					276.5							

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT008

SHEET : 19 OF 23

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **15-1-21**
Date Completed: **18-1-21**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **289°**

Surface RL: **266.0 m AHD**
Co-ords: **E 613829 N 6390816 MGA2020 55**

Borehole Information					Field Material Description							
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₆₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil											
			69	31	181.0	90.5		Volcaniclastic SANDSTONE; fine grained, pale orange - yellow, foliated	HW			WEATHERED ROCK
					90.80			CORE LOSS 0.50m (90.80-91.30)				
					180.5	91.0						
					91.30			Volcaniclastic SANDSTONE; fine grained, pale orange - yellow, foliated	HW			
					180.0	91.5						
			94	43	179.5	92.0						
					92.5	179.0						
					92.80			CORE LOSS 0.10m (92.80-92.90)				
					92.90			Volcaniclastic SANDSTONE; fine grained, pale orange - yellow, foliated	HW			
					178.5	93.0						
					93.5	178.0						
			89	35	177.5	94.0						
					94.5	177.0		CORE LOSS 0.20m (94.60-94.80)				
					94.60							
			96	65	177.0	94.80		Volcaniclastic SANDSTONE; fine grained, pale orange - yellow, foliated	HW - MW			

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **15-1-21**
Date Completed: **18-1-21**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **289°**

Surface RL: **266.0 m AHD**
Co-ords: **E 613829 N 6390816 MGA2020 55**

Borehole Information						Field Material Description						
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa ($I_{s(50)}$ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	NII									WL 0.03 / 0.8 L 0.1 / 2 A 0.3 / 6 H 1 / 20 VH3 / 60 EH10 / 200	<20 20-60 60-300 300-600 600-2000 >2000	
			96	65		176.5		Volcaniclastic SANDSTONE; fine grained, pale orange - yellow, foliated	HW - MW			WEATHERED ROCK
					95.5							
					176.0							
					96.0							
					175.5							
					96.5				HW			
						175.0			XW			
						97.0			HW			
						97.10	X	CORE LOSS 0.10m (97.10-97.20)				
						97.20	X	Volcaniclastic SANDSTONE; fine grained, pale orange - yellow, foliated	MW			
						174.5						
						97.5						
						174.0						
			81	48		98.0						
						173.5						
						988.5	X	CORE LOSS 0.30m (98.50-98.80)				
						98.80	X	Volcaniclastic SANDSTONE; fine grained, pale orange - yellow, foliated	MW			
						173.0						
						99.0						
			78	59		172.5						
						99.5	X	CORE LOSS 0.20m (99.50-99.70)				
						99.70	X	Volcaniclastic SANDSTONE; fine - medium grained, pale orange - yellow, weakly foliated	MW			

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT008

SHEET : 21 OF 23

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **15-1-21**
Date Completed: **18-1-21**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **289°**

Surface RL: **266.0 m AHD**
Co-ords: **E 613829 N 6390816 MGA2020 55**

Borehole Information					Field Material Description				
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING
HQ	Nil		79	54	172.0			Volcaniclastic SANDSTONE; fine - medium grained, pale orange - yellow, weakly foliated	MW
					100.5				
					171.5				
					100.80			CORE LOSS 0.30m (100.80-101.10)	XW
					101.0				
					171.01.10			Volcaniclastic SANDSTONE; fine - medium grained, pale orange - yellow, weakly foliated	MW
					101.5				HW
					170.5				XW
					102.0				
					170.0				HW
					102.5				
					102.60			CORE LOSS 0.20m (102.60-102.80)	
					169.5				
					102.80			Volcaniclastic SANDSTONE; fine grained, pale orange - yellow, foliated	MW
					103.0				
					169.0				
					103.5				
					168.5				XW
					104.0				
					168.0				MW - SW
					104.5				
					167.5				

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT008

SHEET : 22 OF 23

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **15-1-21**
Date Completed: **18-1-21**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **289°**

Surface RL: **266.0 m AHD**
Co-ords: **E 613829 N 6390816 MGA2020 55**

Borehole Information					Field Material Description				
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING
HQ	Nil		100	51	105.10			CORE LOSS 0.50m (105.10-105.60)	
			78	53	167.0				
					105.5				
					105.60			Volcaniclastic SANDSTONE; fine grained, pale orange - yellow, foliated	MW - SW
					166.5				
					106.0				
					166.0				
					106.5				
					165.5				
					107.0				
					165.5				
					107.5				
					165.0				
					108.0				
					164.0				
					108.5				
					164.0				
					109.0				
					163.5				
					109.5				
					163.0				

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT008

SHEET : 23 OF 23

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **15-1-21**
Date Completed: **18-1-21**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **289°**

Surface RL: **266.0 m AHD**
Co-ords: **E 613829 N 6390816 MGA2020 55**

Borehole Information						Field Material Description				
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)
HQ	Nil		100	73	162.5			Volcaniclastic SANDSTONE; fine grained, pale orange - yellow, foliated	SW	
					110.5					
					162.0					
					110.90					
					111.0			Volcaniclastic SILTSTONE /sandstone; medium grained, pale orange - yellow, weakly foliated		
					161.5					
					111.5					
					161.0			END OF BOREHOLE AT 111.70 m Target depth		
					160.5					
					160.0					
					159.5					
					159.0					
					158.5					
					158.0					

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT009

SHEET : 1 OF 39

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **12-1-21**
Date Completed: **15-1-21**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **171°**

Surface RL: **266.0 m AHD**
Co-ords: **E 613929 N 6390589 MGA2020 55**

Borehole Information							Field Material Description						
METHOD	SUPPORT	WATER	RL (m AHD)	DEPTH (m)	FIELD TEST	SAMPLE	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY	POCKET PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil	NFGWE							Sandy CLAY; high plasticity, brown.				QUATERNARY ALLUVIUM
			265.5	0.5					CORE LOSS 9.10m (0.50-9.60)				
			265.0	1.0									
			264.5	1.5									
			264.0	2.0									
			263.5	2.5									
			263.0	3.0									
			262.5	3.5									
			262.0	4.0									
			261.5	4.5									

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT009

SHEET : 2 OF 39

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **12-1-21**
Date Completed: **15-1-21**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **171°**

Surface RL: **266.0 m AHD**
Co-ords: **E 613929 N 6390589 MGA2020 55**

Borehole Information							Field Material Description						
METHOD	SUPPORT	WATER	RL (m AHD)	DEPTH (m)	FIELD TEST	SAMPLE	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY	POCKET PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil	NFGWE							CORE LOSS 9.10m (0.50-9.60)				QUATERNARY ALLUVIUM
			261.0	5.5									
			260.5	6.0									
			260.0	6.5									
			259.5	7.0									
			259.0	7.5									
			258.5	8.0									
			258.0	8.5									
			257.5	9.0									
			257.0	9.5									
			257.0	9.60					Silty CLAY; high plasticity, pale grey mottled brown, with fine sand.	W<PL		>600	

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT009

SHEET : 3 OF 39

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **12-1-21**
Date Completed: **15-1-21**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**Hole Angle: **-70°**Surface RL: **266.0 m AHD**Borehole Diameter: **96 mm**Bearing: **171°**Co-ords: **E 613929 N 6390589 MGA2020 55**

Borehole Information						Field Material Description															
METHOD	SUPPORT	WATER	RL (m AHD)	DEPTH (m)	FIELD TEST	SAMPLE	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY					POCKET PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS				
HQ	Nii	NFGWE									VS	FB	VL	L	MD	VST	D	H			
			256.5						Silty CLAY; high plasticity, pale grey mottled brown, with fine sand.	W<PL										>600	QUATERNARY ALLUVIUM
				10.5																	
			256.0																		
				11.0																	
			255.5																		
			11.30						CORE LOSS 1.30m (11.30-12.60)												
				11.5																	
			255.0																		
				12.0																	
			254.5																		
				12.5																	
			12.60						Sandy CLAY; high plasticity, pale grey mottled pale orange - red, coarse grained sand, trace fine grained rounded gravel.	W<PL										450	TERTIARY ALLUVIUM
			254.0																	550	
				13.0																	
			253.5																		
			13.5						Silty CLAY; high plasticity, grey mottled orange red.												
			253.0			C															
				14.0																	
			252.5																	480	
				14.5																	
			252.0																	>600	

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT009

SHEET : 4 OF 39

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **12-1-21**
Date Completed: **15-1-21**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**Hole Angle: **-70°**Surface RL: **266.0 m AHD**Borehole Diameter: **96 mm**Bearing: **171°**Co-ords: **E 613929 N 6390589 MGA2020 55**

Borehole Information						Field Material Description													
METHOD	SUPPORT	WATER	RL (m AHD)	DEPTH (m)	FIELD TEST	SAMPLE	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY					POCKET PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS		
HQ	Nii	NFGWE									VS	FB	VL	L	ST	MD	VD		
			251.5	15.5					Sandy CLAY; high plasticity, grey mottled orange - red, fine to medium grained sand.	W<PL									
			251.0	16.0														350	
			250.5	16.5					Sandy CLAY /Clayey SAND; medium to high plasticity, grey mottled dark red and orange, fine to medium grained sand, estimated stiff/medium dense.	W<PL / M								175	
			250.0	17.0														100	
			17.20						CORE LOSS 1.40m (17.20-18.60)										
			249.5																
			249.0																
			248.5						Sandy CLAY; medium to high plasticity, grey mottled dark red and orange, fine to medium grained sand.	W<PL									
			248.0						...becoming with coarse grained sand and fine grained rounded gravel										
			247.5																

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT009

SHEET : 5 OF 39

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **12-1-21**
Date Completed: **15-1-21**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**Hole Angle: **-70°**Surface RL: **266.0 m AHD**Borehole Diameter: **96 mm**Bearing: **171°**Co-ords: **E 613929 N 6390589 MGA2020 55**

Borehole Information						Field Material Description														
METHOD	SUPPORT	WATER	RL (m AHD)	DEPTH (m)	FIELD TEST	SAMPLE	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY					POCKET PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS			
HQ	Nii	NFGWE									VS	FB	VL	L	MD	ST	D	VD		
			247.0						Sandy CLAY; medium to high plasticity, grey mottled dark red and orange, fine to medium grained sand.	W<PL										
				20.5																
			246.5																	
				21.0																
				21.20																
			246.0						CORE LOSS 0.40m (21.20-21.60)											
				21.5																
				21.60																
			245.5						Sandy CLAY; medium to high plasticity, grey mottled dark red and orange, fine to medium grained sand.	W<PL										
				22.0																
			245.0																	
				22.5					...100 mm fine sub-rounded to sub-angular gravel layer (quartz and rock fragments)											
			244.5																	
				23.0																
			244.0																	
				23.5																
			243.5																	
				24.0																
			24.40																	
			243.0						CORE LOSS 0.20m (24.40-24.60)											
				24.5																
			24.60						Sandy CLAY; medium to high plasticity, grey mottled dark red and orange, fine to medium grained sand.	W<PL										

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT009

SHEET : 6 OF 39

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **12-1-21**
Date Completed: **15-1-21**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**Hole Angle: **-70°**Surface RL: **266.0 m AHD**Borehole Diameter: **96 mm**Bearing: **171°**Co-ords: **E 613929 N 6390589 MGA2020 55**

Borehole Information						Field Material Description													
METHOD	SUPPORT	WATER	RL (m AHD)	DEPTH (m)	FIELD TEST	SAMPLE	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY					POCKET PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS		
HQ	Nii	NFGWE									VS	FB	VL	L	MD	ST	VD		
				242.0	25.5				Sandy CLAY; medium to high plasticity, grey mottled dark red and orange, fine to medium grained sand.	W<PL									TERTIARY ALLUVIUM
				25.90					CORE LOSS 0.30m (25.90-26.20)										
				241.5	26.0														
				26.20					Sandy CLAY; medium to high plasticity, grey mottled dark red and orange, fine to medium grained sand.	W<PL									
				26.5															
				241.0															
				27.0															
				240.5														>600	
				2727.5					CORE LOSS 1.70m (27.50-29.20)										
				240.0															
				28.0															
				239.5															
				28.5															
				239.0															
				29.0															
				29.20															
				238.5					Sandy CLAY; medium to high plasticity, grey mottled dark red and orange, fine to medium grained sand.	W<PL									
				29.5															
				238.0															

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT009

SHEET : 7 OF 39

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **12-1-21**
Date Completed: **15-1-21**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **171°**

Surface RL: **266.0 m AHD**
Co-ords: **E 613929 N 6390589 MGA2020 55**

Borehole Information						Field Material Description											
METHOD	SUPPORT	WATER	RL (m AHD)	DEPTH (m)	FIELD TEST	SAMPLE	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY					POCKET PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nii	NFGWE								VS FB SL ST MD VST D H VD							
			237.5	30.5					Sandy CLAY; medium to high plasticity, grey mottled dark red and orange, fine to medium grained sand.	W<PL						TERTIARY ALLUVIUM	
			237.0	31.0													
			236.5	31.5													
			31.60						CORE LOSS 2.00m (31.60-33.60)								
			236.0	32.0													
			235.5	32.5													
			235.0	33.0													
			234.5	33.5													
			33.60						Gravelly CLAY; high plasticity, pale grey, rounded, fine to coarse grained gravel.	W<PL					350		
			34.0												300		
			234.0						Silty CLAY; low to medium plasticity, pale grey - white mottled orange - yellow.						350		
			34.5														
			233.5						CORE LOSS 2.10m (34.50-36.60)								

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT009

SHEET : 8 OF 39

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **12-1-21**
Date Completed: **15-1-21**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **171°**

Surface RL: **266.0 m AHD**
Co-ords: **E 613929 N 6390589 MGA2020 55**

Borehole Information							Field Material Description						
METHOD	SUPPORT	WATER	RL (m AHD)	DEPTH (m)	FIELD TEST	SAMPLE	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY	POCKET PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil	NFGWE	233.0						CORE LOSS 2.10m (34.50-36.60)				TERTIARY ALLUVIUM
			35.5										
			232.5										
			36.0										
			232.0										
			36.5										
			36.60										
			231.5						Silty CLAY; low to medium plasticity, pale grey - white mottled orange - yellow.	W<PL			RESIDUAL SOIL
			37.0										
			231.0									320	
			37.5										
			37.70										
			230.5						CORE LOSS 1.20m (37.70-38.90)				
			38.0										
			230.0										
			38.5										
			229.5										
			38.90										
			39.0						Silty CLAY; low to medium plasticity, pale grey - white mottled orange - yellow.	W<PL			
			229.0										
			39.5						REFER TO CORED BOREHOLE LOG				
			228.5										

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **12-1-21**
Date Completed: **15-1-21**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **171°**

Surface RL: **266.0 m AHD**
Co-ords: **E 613929 N 6390589 MGA2020 55**

Borehole Information						Field Material Description						
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
					233.0					VL 0.00/0.08 L 0.1/2 M 0.3/6 H 1/20 VH3/60 EH5/200	<20 20-60 60-200 200-600 600-2000 >2000	
					35.5							
					232.5							
					36.0							
					232.0							
					36.5							
					231.5							
					37.0							
					231.0							
					37.5							
					230.5							
					38.0							
					230.0							
					38.5							
					229.5							
					39.0							
					229.0							
HQ	Nil		100	15	3939.5			START CORING AT 39.50m Volcaniclastic CONGLOMERATE; fine grained, orange and red, foliated, medium to coarse grained clasts, extremely weathered (XW) to consistency of a very stiff to hard Silty CLAY	XW			WEATHERED ROCK
					228.5							

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **12-1-21**
Date Completed: **15-1-21**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **171°**

Surface RL: **266.0 m AHD**
Co-ords: **E 613929 N 6390589 MGA2020 55**

Borehole Information						Field Material Description						
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nii									VL 0.03/0.8 L 0.1/2 M 0.3/6 H 1/20 VH3/60 EH3/200	20-60 60-200 200-600 600-2000 >2000	
			100	15	228.0	40.5		Volcaniclastic CONGLOMERATE; fine grained, orange and red, foliated, medium to coarse grained clasts, extremely weathered (XW) to consistency of a very stiff to hard Silty CLAY	XW			WEATHERED ROCK — 40.60: HP In-situ =300 kPa; (before rock fracture)
					227.5	41.0						
					227.0	41.5						
					226.5	42.0						
					226.0	42.5						
			100	38	43.0	225.5		Volcaniclastic CONGLOMERATE; fine grained, orange brown stained red	HW			— 42.30: HP In-situ =500 kPa; (before rock fracture) — 43.00: HP In-situ =500 kPa; (before rock fracture) — 43.7m: mostly non-intact core, handling break (stuck in tube) and numerous random defect and failure with minimal pressure along foliation surfaces
					43.5	225.0						
					43.80							
					44.0							
					224.5	44.5						
					224.0							
This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.												



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT009

SHEET : 11 OF 39

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **12-1-21**
Date Completed: **15-1-21**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **171°**

Surface RL: **266.0 m AHD**
Co-ords: **E 613929 N 6390589 MGA2020 55**

Borehole Information						Field Material Description				
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)
HQ	Nil		100	38		223.5		Volcaniclastic CONGLOMERATE; fine grained, orange brown stained red	HW	
						45.5				
						223.0				
						46.0				
						222.5		...brown orange, foliated		
						46.5				
			100	36		222.0				
						47.0				
						221.5				
						47.5				
						221.0				
						48.0				
						220.5				
						48.5				
			100	64		220.0				
						49.0				
						219.5				
						49.5				

45m: mostly non-intact core, handling break (stuck in tube) and numerous random defect and failure with minimal pressure along foliation surfaces

46m: -49.86: defects dominated by partings along foliation, Pl Sm, clay coating. Orthogonal joints Pl, Ro - Sm clay coating and Fe Mn staining. Decomposed seams

48.2m: -48.40: Se, XW-HW seams 100 mm x 3, very low strength rock with clay matrix

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.

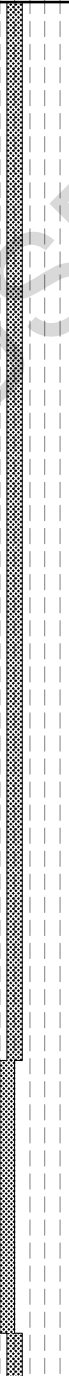
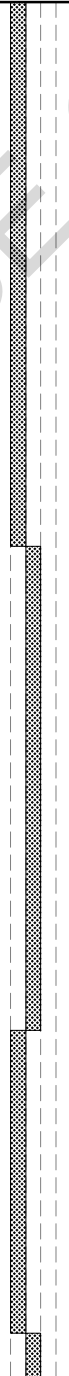
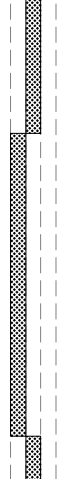
Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **12-1-21**
Date Completed: **15-1-21**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **171°**

Surface RL: **266.0 m AHD**
Co-ords: **E 613929 N 6390589 MGA2020 55**

Borehole Information						Field Material Description											
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	ROD	RL (m AHD) DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa ($I_{s(50)}$ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS						
HQ	NII								WL 0.00 / 0.0 L 0.1 / 2 A 0.3 / 6 H 1 / 20 VHS / 60 EH10 / 200	20-60 60-200 200-600 600-2000 >2000							
			100	64	50.00		Volcaniclastic CONGLOMERATE; fine grained, brown orange, foliated, medium to coarse grained clasts flattened	HW - MW			WEATHERED ROCK						
				218.5													
				51.0													
				218.0													
				51.5													
				217.5													
				52.0													
				217.0													
				52.5													
				216.5													
			100	75	53.0			HW									
				216.0													
				53.5													
				215.5													
				54.0													
				215.0													
				54.5													
				214.5													
			100	80										HW - MW			

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **12-1-21**
Date Completed: **15-1-21**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **171°**

Surface RL: **266.0 m AHD**
Co-ords: **E 613929 N 6390589 MGA2020 55**

Borehole Information						Field Material Description						
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	ROD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	NII									WL 0.03 / 0.8 L 0.1 / 2 A 0.3 / 6 H 1 / 20 VH3 / 60 EH10 / 200	20-60 60-300 300-600 600-2000 >2000	
			100	80	214.0	55.5		Volcaniclastic CONGLOMERATE; fine grained, brown orange, foliated, medium to coarse grained clasts flattened	HW - MW			WEATHERED ROCK
					213.5	56.0						
					213.0	56.5						
					212.5	57.0						
					212.0	57.5						
					211.5	58.0		CORE LOSS 0.30m (58.07-58.37)	HW			
						58.07						
					58.37							
			100	74	211.0	58.5		Volcaniclastic CONGLOMERATE; fine grained, brown orange, foliated, medium to coarse grained clasts flattened	HW			
									HW - MW			
					59.0	210.5						
					59.5	210.0						

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT009

SHEET : 14 OF 39

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **12-1-21**
Date Completed: **15-1-21**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **171°**

Surface RL: **266.0 m AHD**
Co-ords: **E 613929 N 6390589 MGA2020 55**

Borehole Information					Field Material Description				
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING
HQ	Nil		100	74	209.5			Volcaniclastic CONGLOMERATE; fine grained, brown orange, foliated, medium to coarse grained clasts flattened	HW - MW
					60.5				MW
					209.0				
					61.0				
					208.5				
					61.5				
					208.0				
			100	75	62.0				HW
					207.5				MW
					62.5				
					207.0				HW
					63.0				HW - MW
					206.5				
					63.5				
					206.0				
			100	53	64.0				
					205.5				
					64.5				
					205.0				

— 48.86m: -77.40: frequent Pl, Ro, Fe, Mn stained on foliation partings and orthogonal joints. Decomposed HW-VLS: decomposed clay coated seams

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT009

SHEET : 15 OF 39

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **12-1-21**
Date Completed: **15-1-21**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**Hole Angle: **-70°**Surface RL: **266.0 m AHD**Borehole Diameter: **96 mm**Bearing: **171°**Co-ords: **E 613929 N 6390589 MGA2020 55**

Borehole Information						Field Material Description				
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)
HQ	Nil									
			100	53		204.5		Volcaniclastic CONGLOMERATE; fine grained, brown orange, foliated, medium to coarse grained clasts flattened	HW	
						65.5				
						204.0			MW	
						66.0				
						203.5				
						66.5				
						203.0				
						67.0				
						67.5				
						202.5				
			100	92		68.0				
						202.0				
						68.5				
						201.5				
						69.0				
						201.0				
						69.5				
			85	47		200.5				

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT009

SHEET : 16 OF 39

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **12-1-21**
Date Completed: **15-1-21**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **171°**

Surface RL: **266.0 m AHD**
Co-ords: **E 613929 N 6390589 MGA2020 55**

Borehole Information						Field Material Description				
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)
HQ	Nil		85	47						
						200.0		Volcaniclastic CONGLOMERATE; fine grained, brown orange, foliated, medium to coarse grained clasts flattened	HW - MW	
						70.5				
						199.5				
						71.0				
						71.20		CORE LOSS 0.30m (71.20-71.50)	HW	
						199.0				
						717.5		Volcaniclastic CONGLOMERATE; fine grained, orange brown, foliated, medium to coarse grained clasts, flattened	HW	
						198.5				
						72.0			HW - MW	
						198.0				
						72.5				
						197.5				
						73.0				
						197.0				
						73.5			HW	
						73.90		CORE LOSS 0.40m (73.90-74.30)		
						196.5				
						74.0				
						74.30		Volcaniclastic CONGLOMERATE; fine grained, orange brown, foliated, medium to coarse grained clasts, flattened	MW	
						196.0				
						74.5				

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT009

SHEET : 17 OF 39

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **12-1-21**
Date Completed: **15-1-21**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**Hole Angle: **-70°**Surface RL: **266.0 m AHD**Borehole Diameter: **96 mm**Bearing: **171°**Co-ords: **E 613929 N 6390589 MGA2020 55**

Borehole Information					Field Material Description				
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING
HQ	Nil		94	48	195.5			Volcaniclastic CONGLOMERATE; fine grained, orange brown, foliated, medium to coarse grained clasts, flattened	MW
					75.5				HW - MW
					195.0				
					75.80				
					75.90			CORE LOSS 0.10m (75.80-75.90)	
					7676.0			Volcaniclastic CONGLOMERATE; fine grained, orange brown, foliated, medium to coarse grained clasts, flattened	HW - MW
					194.5			Volcaniclastic CONGLOMERATE; fine grained, pale grey green, foliated, medium to coarse grained clasts, flattened	MW - SW
					76.5				
					194.0				
					77.0				
					193.5				
					77.5				SW
					193.0				
					78.0				
					192.5				
					78.5				
					192.0				HW
					79.0				SW
					191.5				
					79.5				
					191.0				

77.4m: 9 x Fe Mn St foliation partings. Pl - Un
Ro 8x Fe Mn St orthogonal joints Pl-Un, Ro

78.85m: possible FAULT, sheared rock fragments coated in brown (organic?) material

79.30: non-intact core (intensely jointed)

79.74m: Jt, 20°, Pl, Ro, Sn He

79.84m: Jt, 17°, Un, Ro, Sn He

79.91m: Fo, 29°

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **12-1-21**
Date Completed: **15-1-21**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **171°**

Surface RL: **266.0 m AHD**
Co-ords: **E 613929 N 6390589 MGA2020 55**

Borehole Information						Field Material Description							
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	ROD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS	
HQ	NII							Volcaniclastic CONGLOMERATE; fine grained, pale grey green, foliated, medium to coarse grained clasts, flattened	SW	VL 0.00 / 0.0 L 0.1 / 2 M 0.3 / 6 H 1.7 / 20 VH 3 / 60 EH 10 / 200	20-60 60-200 200-600 600-2000 >2000	SLIGHTLY WEATHERED ROCK	
			100	100		190.5						80.62m: Jt, 54°, Pl, Ro, Sn He	
						80.5							
						190.0							81.01m: Jt, 74°, Un, Ro, Vr Ca
						81.0							81.23m: Jt, 18°, Pl, Ro, Vr Ca, along foliation
						189.5							
						81.5						81.72m: Fo, 26°	
						189.0						82.18m: Jt, Ir, Ro, Sn He	
						82.0							
						82.40							
						188.5		CORE LOSS 0.20m (82.40-82.60)					
						82.5							
						82.60		Volcaniclastic CONGLOMERATE; fine grained, pale green grey, foliated, medium to coarse grained clasts, flattened	SW				
									SW - FR				
			93	100		188.0						83.64m: Jt, 40°, Un, Ro, Vr Ca	
						83.0							
						187.5							
						83.5							
						84.0							
						187.0							
						84.5							
			100	100		186.5							

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT009

SHEET : 19 OF 39

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **12-1-21**
Date Completed: **15-1-21**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**Hole Angle: **-70°**Surface RL: **266.0 m AHD**Borehole Diameter: **96 mm**Bearing: **171°**Co-ords: **E 613929 N 6390589 MGA2020 55**

Borehole Information						Field Material Description						
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	NII									VL 0.0 / 0.8 L 0.1 / 2 M 0.3 / 6 H 1 / 20 EH10 / 200	20-40 40-200 200-600 600-2000 ≥2000	
			100	100	186.0			Volcaniclastic CONGLOMERATE; fine grained, pale green grey, foliated, medium to coarse grained clasts, flattened	SW - FR			SLIGHTLY WEATHERED ROCK
					85.5							
					185.5							
					86.0							
			100	100	185.0							
					86.5							
					184.5							
					87.0							
					184.0							
					87.5							
					183.5							
			100	100	88.0							
					183.0							
					88.5							88.36m: Fo, 22°
					182.5							
					89.0							
			100	100	182.0							89.2m: Jt, 14°, Pl, Ro, Vr Ca, along foliation
					89.5							
					181.5							

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **12-1-21**
Date Completed: **15-1-21**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **171°**

Surface RL: **266.0 m AHD**
Co-ords: **E 613929 N 6390589 MGA2020 55**

Borehole Information							Field Material Description						
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS	
HQ	Nil									VL 0.03/0.8 L 0.1/2 M 0.3/6 H 1/20 VH3/60 EH3/ 200	<20 20-60 60-200 200-600 600-2000 >2000		
			100	100	181.0	90.5		Volcaniclastic CONGLOMERATE; fine grained, pale green grey, foliated, medium to coarse grained clasts, flattened	SW - FR			SLIGHTLY WEATHERED ROCK	
					180.5	91.0							91.05m: Jt, 22°, St, Ro, Vr He
													91.18m: Jt, 24°, Pl, Ro, Vr He
					180.0	91.5							91.6m: Pt x2, 22°, Pl, Ro, Fe
					179.5	92.0							
			100	92	179.0	92.5							92.75m: Jt, 23°, Pl, Ro, Sn He, minor core spin
													92.82m: Jt, 41°, Ir, Ro, Sn He, very weathered joint
					93.0								92.84m: Jt, 28°, Pl, Ro, Sn He
					178.5	93.5							
					178.0	94.0					FR		
			100	100		177.5							
					94.5								
					177.0								

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **12-1-21**
Date Completed: **15-1-21**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **171°**

Surface RL: **266.0 m AHD**
Co-ords: **E 613929 N 6390589 MGA2020 55**

Borehole Information							Field Material Description										
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS					
HQ	Nil				95.00			Volcaniclastic CONGLOMERATE; fine grained, green grey, major pervasive chloritic alteration	FR	VL 0.03/0.8 L 0.1/2 M 0.3/6 H 1/20 VH3/60 EH3/200	<20 20-60 60-200 200-600 600-2000 >2000	SLIGHTLY WEATHERED ROCK					
			100	100	176.5												
					95.5												
			100	100	176.0												95.77m: Jt, 49°, Un, Ro, Vr Ca
					96.0												96.02m: Fo, 24°
					175.5												
					96.5												
					175.0												
					97.0												
					174.5												
					97.5												
			100	100	174.0												97.84m: Pt, 21°, Pl, Ro, Vr Ca, along foliation
					98.0												98.08m: Pt, 24°, Un, Ro, Vr Ca, along foliation
					173.5												
					98.5												
					173.0						98.87m: Jt, 76°, Ir, Ro, Vr Ca						
					99.0												
					172.5						99.33m: Jt, 41°, Ir, Ro, Vr Ca						
			67	100	99.5												

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **12-1-21**
Date Completed: **15-1-21**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **171°**

Surface RL: **266.0 m AHD**
Co-ords: **E 613929 N 6390589 MGA2020 55**

Borehole Information						Field Material Description					
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD) DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nii				172.0		Volcaniclastic CONGLOMERATE; fine grained, green grey, major pervasive chloritic alteration	FR	VL 0.03 / 0.8 L 0.1 / 2 M 0.3 / 6 H 1 / 20 VH3 / 60 EH9 / 200	<20 20-60 60-200 200-600 600-2000 >2000	SLIGHTLY WEATHERED ROCK
			67	100							100.22m: Jt, 19°, Un, Ro, Vr Ca
					100.5						100.44m: Fo, 18°
					171.5						100.6m: Jt, 16°, Un, Ro, Vr Ca
					101.0						
					171.0						101.16m: Vn, 49°, 1 mm, Qz
					101.5						
					170.5						
					102.0						102.01m: Jt, 17°, Pl, Ro, Vr Ca
					102.10						
					170.0		CORE LOSS 0.50m (102.10-102.60)				
					102.5						
					102.60						
			100	100	169.5		Volcaniclastic CONGLOMERATE; fine grained, grey green, clastic, feldspathic, rounded	FR			103.85m: Jt, 80°, Pl, Ro, Fe, core spin
					103.0						
					169.0						
					103.5						
					168.5						
					104.0						
					168.0						
					104.5						
					167.5						

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT009

SHEET : 23 OF 39

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **12-1-21**
Date Completed: **15-1-21**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **171°**

Surface RL: **266.0 m AHD**
Co-ords: **E 613929 N 6390589 MGA2020 55**

Borehole Information						Field Material Description				
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)
HQ	Nil		100	100	167.0			Volcaniclastic CONGLOMERATE; fine grained, grey green, clastic, feldspathic, rounded	FR	
					105.5					
					166.5					
					106.0					
					166.0					
					106.5					
					165.5					
					107.0					
					107.09			Volcaniclastic CONGLOMERATE; fine grained, grey green, brecciated, moderate, semi-pervasive chloritic alteration		
					165.5					
					107.5					
					164.5					
					108.0					
					108.5					
					164.0					
					109.0					
					163.5					
					109.5					
					163.0					

106.81m: Jt, 38°, Pl, Ro, Sn, Fe Mn

107.1m: Pt, Un, Ro, Sn Fe, foliation parting

107.88m: SZ, 800 mm, Qz, maybe fault breccia, shows healing and vuggy quartz

108.65m: Jt, 48°, St, Ro, Sn Fe

109.04m: Jt, 27°, Un, Ro, Sn Fe

109.1m: Jt, 60°, Un, Ro, 3 mm, Car

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT009

SHEET : 24 OF 39

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **12-1-21**
Date Completed: **15-1-21**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**Hole Angle: **-70°**Surface RL: **266.0 m AHD**Borehole Diameter: **96 mm**Bearing: **171°**Co-ords: **E 613929 N 6390589 MGA2020 55**

Borehole Information						Field Material Description						
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	ROD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₆₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil									VL 0.03 / 0.6 L 0.1 / 2 M 0.3 / 6 H 1 / 20 EH10 / 60 EH10 / 200	20 20-60 60-200 200-600 600-2000 ≥2000	
			100	89	162.5			Volcaniclastic CONGLOMERATE; fine grained, grey green, brecciated, moderate, semi-pervasive chloritic alteration	FR			SLIGHTLY WEATHERED ROCK
					110.5							110.46m: Jt, 40°, Pl, Ro, 5 mm, Fe, sub-parallel to foliation
					162.0							110.5m: Pt, Pl, Ro, Sn Fe, foliation parting
					111.0							
					161.5							
					111.5							
					161.0							
					112.0							
					160.5							
					112.5							
					160.0							
					113.0							
			47	47	113.09			Volcaniclastic CONGLOMERATE; fine grained, pale grey green, strong pervasive cleavage, feldspathic, moderate selective chloritic alteration				113.10: dropped core and core whittling
					159.5							
					113.5							
					159.0							
					114.0			Volcaniclastic CONGLOMERATE; dark green grey, strong pervasive cleavage, feldspathic, moderate selective chloritic alteration				113.1m: Pt x5, Pl, Ro, Sn Fe
					158.5							
					114.5							
			100	100	158.0							114.85m: Jt, 36°, Pl, Ro, Sn He
												114.97m: Vn, 30°, Pl, Ro, Vr Ca

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **12-1-21**
Date Completed: **15-1-21**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **171°**

Surface RL: **266.0 m AHD**
Co-ords: **E 613929 N 6390589 MGA2020 55**

Borehole Information							Field Material Description						
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS	
HQ	Nil		100	100	157.5	115.5		Volcaniclastic CONGLOMERATE; dark green grey, strong pervasive cleavage, feldspathic, moderate selective chloritic alteration	FR	VL 0.03/0.08 L 0.1/2 M 0.3/6 H 1/20 VH3/60 EH3/200	<30 30-60 60-200 200-600 600-2000 >2000	SLIGHTLY WEATHERED ROCK	
					115.58	Volcaniclastic CONGLOMERATE; fine grained, green grey, clastic, feldspathic, moderate, semi-pervasive chloritic alteration						115.23m: Jt, 68°, Ir, Ro, Vr Ca	
			100	93	157.1	116.0						116.1m: Jt, 45°, Pl, Ro, Vr Ca 116.18m: Pt, 11°, Un, Ro, Vr Ca 116.21m: Jt, 52°, Ir, Ro, Vr Ca	
					156.5	116.5						116.42m: Pt, 14°, Pl, Ro, Vr Ca	
					117.0	156.0						116.97m: Pt, 21°	
					117.5	155.5						117.26m: Pt, 27°, Pl, Ro, Vr Ca	
					118.0	155.0						117.53m: Pt, 25°, Un, Ro, Vr Ca	
					118.5	154.5						118.41m: Vn, 24°, Pl, Ro, Vr Ca 118.53m: Pt, 52°, Ir, Ro, 3 mm, Ca	
					119.0	154.0						118.72m: Jt, 34°, St, Ro, Sn He 118.93m: Pt, 24°, Pl, Ro, Vr Ca	
					119.5	153.5						119.17m: Pt, 17°, Pl, Ro, Vr Ca 119.57m: Pt, 21°, Pl, Ro, Vr Ca	

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT009

SHEET : 26 OF 39

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **12-1-21**
Date Completed: **15-1-21**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **171°**

Surface RL: **266.0 m AHD**
Co-ords: **E 613929 N 6390589 MGA2020 55**

Borehole Information						Field Material Description				
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)
HQ	Nil		100	98	153.0			Volcaniclastic CONGLOMERATE; fine grained, green grey, clastic, feldspathic, moderate, semi-pervasive chloritic alteration	FR	
					120.5					
					152.5					
					121.0					
					152.0					
					121.5					
					151.5					
					121.94			Volcaniclastic CONGLOMERATE; fine grained, grey, feldspathic		
					122.0					
					151.0					
					122.5					
					122.64			Volcaniclastic CONGLOMERATE; fine grained, pale green grey, feldspathic		
					150.5					
					123.0					
					150.0					
					123.5					
					149.5					
					124.0					
					149.1					
					124.5					

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **12-1-21**
Date Completed: **15-1-21**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **171°**

Surface RL: **266.0 m AHD**
Co-ords: **E 613929 N 6390589 MGA2020 55**

Borehole Information						Field Material Description						
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD) DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa ($I_{s(50)}$ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS	
HQ	Nii				148.5		Volcaniclastic CONGLOMERATE; fine grained, pale green grey, feldspathic	FR	VL 0.03/0.08 L 0.1/2 M 0.3/6 H 1/20 VH3/60 EH3/200	<20 20-60 60-200 200-600 600-2000 >2000	SLIGHTLY WEATHERED ROCK	
		100	88	125.5	125.40: no core orientation							
				148.0								
				126.0								
				147.5								
				126.5								
				147.0								
				127.0								
				146.5								
				127.5								
		100	93	146.0	125.2m: Pt x20, Pl, Ro, 1 mm, Ca							
				128.0								
				145.5								
				128.5								
				145.0								
				129.0								
				144.5								
		100	63	129.5								
				144.0								

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **12-1-21**
Date Completed: **15-1-21**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **171°**

Surface RL: **266.0 m AHD**
Co-ords: **E 613929 N 6390589 MGA2020 55**

Borehole Information						Field Material Description						
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nii											

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **12-1-21**
Date Completed: **15-1-21**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **171°**

Surface RL: **266.0 m AHD**
Co-ords: **E 613929 N 6390589 MGA2020 55**

Borehole Information						Field Material Description						
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nii									VL 0.03/0.08 L 0.1/2 M 0.3/6 H 1/20 VH3/60 EH3/200	<20 20-60 60-200 200-600 600-2000 >2000	
			100	97	139.0			Volcaniclastic CONGLOMERATE; fine grained, green grey, interbedded, moderate, semi-pervasive chloritic alteration	FR			SLIGHTLY WEATHERED ROCK
					135.5							135.81m: Pt, 34°, Pl, Ro, Vr Ca, foliation parting
					138.5							
					136.0							136.33m: Jt, 27°, Pl, Ro, Vr Ca, sub-parallel to foliation
					138.0							136.45m: Jt, 34°, Pl, Ro, Vr Ca, sub-parallel to foliation
					136.5							136.47m: Jt, 52°, St, Ro, Vr Ca, sub-parallel to foliation
					137.5							136.65m: Fo, 29°
					137.0							
					137.0							
					137.5							137.48m: Fo, 38°
												137.63m: Jt, 38°, Pl, Ro, Vr Ca, along foliation
					136.5							
					138.0							138.15m: Pt, 28°, Pl, Ro, Vr Ca, foliation parting
					136.0							
			100	100	138.5							
					135.5							
					139.0							139.01m: Jt, 32°, Pl, Ro, Vr Ca, foliation parting
												139.2m: Jt, 47°, Pl, Ro, Vr Ca
							139.26m: Pt, 28°, Un, Ro, Vr Ca, along foliation					
							139.38m: Jt, 48°, Un, Ro, Vr Ca					
					135.0							
					139.5							
					134.5							

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Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **12-1-21**
Date Completed: **15-1-21**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **171°**

Surface RL: **266.0 m AHD**
Co-ords: **E 613929 N 6390589 MGA2020 55**

Borehole Information						Field Material Description						
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil								FR	VL 0.00/0.08 L 0.1/2 M 0.3/6 H 1/20 VH3/60 EH3/200	20-60 60-200 200-600 600-2000 >2000	
			100	90	140.12			Volcaniclastic SILTSTONE; green grey, minor banded sericitic alteration				SLIGHTLY WEATHERED ROCK
					140.5							140.15m: Jt, 38°, Un, Ro, Vr Ca
					141.0							140.42m: Jt, 42°, Pl, Ro, Vr Ca
					141.5							141.15m: Jt, 32°, Pl, Ro, Vr Ca
					142.0							141.55m: Bg, 37°
					142.5							142.09m: Jt, 43°, Pl, Ro, Vr Ca
					143.0							142.43m: Jt, 49°, Pl, Ro, Vr Ca 142.44m: Jt, 12°, Pl, Ro, Vr Ca
					143.5							142.57m: Jt, 56°, St, Ro, Vr Ca 142.66m: Jt, 57°, Pl, Ro, Vr Ca
					144.0							142.97m: Jt, 17°, Pl, Ro, Vr Ca
			100	57	144.46							143.3m: non-intact core, possible fault gauge 10x parting along foliation
					144.5							
			100	90	144.5			Volcaniclastic SANDSTONE; fine grained, grey green, feldspathic				144.27m: Jt, 45°, Pl, Ro, Vr Ca
					145.0							

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Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **12-1-21**
Date Completed: **15-1-21**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **171°**

Surface RL: **266.0 m AHD**
Co-ords: **E 613929 N 6390589 MGA2020 55**

Borehole Information						Field Material Description						
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nii									VL 0.00/0.08 L 0.1/2 M 0.3/6 H 1/20 VH3/60 EH9/200	0-20 20-60 60-200 200-600 600-2000 >2000	
			100	90		129.5		Volcaniclastic SANDSTONE; fine grained, grey green, feldspathic	FR			SLIGHTLY WEATHERED ROCK
						145.5						145.3m: Jt, 45°, Pl, Ro, Vr Ca
						129.0						145.78m: Jt, 30°, Pl, Ro, Vr Ca
						146.0						
			100			128.5						
						146.5						
						128.0						146.8m: Jt, 23°, Pl, Ro, Vr Ca
					146.07	147.0		Volcaniclastic CONGLOMERATE; dark green grey, feldspathic, brecciated				146.95m: Jt, 25°, Pl, Ro, Vr Ca
						127.5						147.1m: significant decrease to EoH of foliation partings: most defects on joints/veins
						147.5						
						127.0						
						148.0						
						126.5						
			100	115		148.5						
						126.0						
						149.0						
						125.5						149.45m: Fo, 30°
						149.5						
					149.83			Volcaniclastic CONGLOMERATE; dark green grey, porphyritic, feldspathic				149.93m: Jt, 47°, Un, Ro, Vr Ca

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT009

SHEET : 32 OF 39

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **12-1-21**
Date Completed: **15-1-21**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **171°**

Surface RL: **266.0 m AHD**
Co-ords: **E 613929 N 6390589 MGA2020 55**

Borehole Information					Field Material Description							
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	ROD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil		100	115	125.0			Volcaniclastic CONGLOMERATE; dark green grey, porphyritic, feldspathic	FR	VL 0.0 / 0.0 L 0.1 / 2 W 1.0 / 6 H 1.0 / 3 VH 1.0 / 6 EH 0.1 / 20	<20 20-40 60-100 100-200 200-400 400-600 600-1000 1000-2000 2000	SLIGHTLY WEATHERED ROCK
					150.5	150.35m: Jt, 35°, Un, Ro, Vr Ca						
					124.5							
					151.0							
					124.0							
					151.5							
		100	103		123.5	151.64m: Jt, 56°, Un, Ro, Vr Ca, core spin						
					152.0							
					123.0							
					152.5							
					122.5	152.63m: Vn, 62°, 50 mm, Qz						
					153.0							
					122.0							
					153.5							
					121.5							
		100	94		154.0							
					121.0							
					154.5							
					120.5	154.93m: F, 30°, Pl, Ro, 50 mm, Ca						

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This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT009

SHEET : 33 OF 39

Client: ALKANE RESOURCES LIMITED
Project: TGEF
Borehole Location: Roswell
Project Number: PS117942

Date Commenced: 12-1-21
Date Completed: 15-1-21
Recorded By: NG
Log Checked By: LMCK

Drill Model/Mounting: Sandvik DE811i/ Track

Hole Angle: -70°

Surface RL: 266.0 m AHD

Borehole Diameter: 96 mm

Bearing: 171°

Co-ords: E 613929 N 6390589 MGA2020 55

Borehole Information						Field Material Description				
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)
HQ	Nil									
			100	94	120.0			Volcaniclastic CONGLOMERATE; dark green grey, porphyritic, feldspathic	FR	
					155.5					
					119.5					
					156.0					
					119.0					
					156.5					
					118.5					
					157.0					
					118.5			...fine grained, green grey, feldspathic		
					118.1					
					157.5					
			100	92	117.5					
					158.0					
					158.24			Volcaniclastic SANDSTONE; medium grained, grey green, feldspathic		
					158.5					
					117.0					
					159.0					
					116.5					
					159.5					
			100	99	116.0					

156.89m: Jt, 52°, Pl, Ro, Vr Ca

157.13m: Jt, 33°, Un, Ro, Vr Ca

157.26m: Jt, 69°, Pl, Ro, Vr Ca

157.44: non-intact core

157.5m: Jt x3, 70°, Pl, Ro, Cln

158.33m: Jt, 65°, Pl, Ro, 3 mm, Vr Ca

158.65m: Jt, 67°, Pl, Ro, 3 mm, Vr Ca

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT009

SHEET : 34 OF 39

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **12-1-21**
Date Completed: **15-1-21**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**Hole Angle: **-70°**Surface RL: **266.0 m AHD**Borehole Diameter: **96 mm**Bearing: **171°**Co-ords: **E 613929 N 6390589 MGA2020 55**

Borehole Information						Field Material Description						
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₆₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil									VL 0.0 / 0.8 L 0.1 / 2 M 0.3 / 6 H 1 / 20 VH 1 / 60 EH 1 / 200		
			100	99		115.5		Volcaniclastic SANDSTONE; medium grained, grey green, feldspathic	FR			SLIGHTLY WEATHERED ROCK
					160.5							160.12m: Jt, 79°, Pl, Ro, Vr Ca
					115.0							160.38m: Jt, 82°, Pl, Ro, 3 mm, Vr Ca
					161.0							160.75m: Jt, 73°, Pl, Ro, Vr Ca, core spin
					114.5							
					161.5							161.4m: Vn, 80°, Pl, Ro, 2 mm, Ca, core spin
					114.0							161.54m: Fo, 33°
					162.0							161.7m: Vn, 63°, Pl, Ro, Vr Ca
					113.5							161.89m: Jt, 46°, Pl, Ro, Vr Ca
					162.5							162.08m: Jt, 85°, Pl, Ro, Vr Ca, major core spin
					113.0							162.33m: Jt, 55°, Un, Ro, Vr Ca
					162.5							162.37m: Vn, 24°, Pl, Ro, Vr Ca
					113.0							
					163.0						162.94m: Jt, 78°, Pl, Ro, Vr Ca, core spin	
					112.5						163.12m: Fo, 25°	
					163.5							
					163.78							
			100	100		112.0		Volcaniclastic CONGLOMERATE; fine grained, dark grey green, brecciated, feldspathic				163.92m: Jt, 72°, Pl, Ro, Vr Ca, core spin
					164.0							
					111.5							
					164.5							
					111.0							

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Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **12-1-21**
Date Completed: **15-1-21**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **171°**

Surface RL: **266.0 m AHD**
Co-ords: **E 613929 N 6390589 MGA2020 55**

Borehole Information							Field Material Description						
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS	
HQ	Nil		100	100				Volcaniclastic CONGLOMERATE; fine grained, dark grey green, brecciated, feldspathic	FR	VL 0.03/0.8 L 0.1/2 M 0.3/6 H 1/20 VH3/60 EH1/200	20-60 60-200 200-600 600-2000 >2000	SLIGHTLY WEATHERED ROCK	
					110.5	165.5							
					110.1	166.0							
					109.5	166.5							
			100	90	167.0	109.0						166.71m: Jt, 13°, Pl, Ro, Vr Py 166.72m: Jt, 64°, Un, Sm, Vr Ca, core spin 166.8m: Jt, 72°, Un, Ro, Vr Ca, core spin	
					167.5	108.5						167.48m: Jt, 63°, Un, Ro, Vr Ca	
					168.0	108.0							
					168.5	107.5							
			100	94	169.0	107.0						169.06m: Jt, 32°, Pl, Ro, Vr Ca 169.08m: Jt, 50°, Pl, Ro, Vr Ca	
					169.5	106.5							

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **12-1-21**
Date Completed: **15-1-21**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **171°**

Surface RL: **266.0 m AHD**
Co-ords: **E 613929 N 6390589 MGA2020 55**

Borehole Information						Field Material Description						
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	Nil									VL 0.03/0.8 L 0.1/2 M 0.3/6 H 1/20 VH3/60 EH3/200	20-60 60-200 200-600 600-2000 >2000	
			100	94		106.0		Volcaniclastic CONGLOMERATE; fine grained, dark grey green, brecciated, feldspathic	FR			SLIGHTLY WEATHERED ROCK 170.1m: Jt, 76°, Pl, Ro, Vr Ca, core spin
					170.5	170.25m: Jt, 75°, Pl, Ro, Vr Ca						
					105.5							
					171.0	170.91m: Jt, 46°, Pl, Ro, Vr Ca						
					105.0	171.01m: Vn, 46°, Pl, Ro, Vr Ca						
					171.5							
					104.5							
					172.0							
					172.33							
					104.0							
					172.5							
					103.5							
					173.0							
					103.0							
					173.5							
					102.1							
					174.0							
					102.0							
					174.5							
			100	97								174.87m: Fo, 17°

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **12-1-21**
Date Completed: **15-1-21**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **171°**

Surface RL: **266.0 m AHD**
Co-ords: **E 613929 N 6390589 MGA2020 55**

Borehole Information						Field Material Description					
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD) DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)	AVERAGE DEFECT SPACING (mm)	STRUCTURE AND ADDITIONAL OBSERVATIONS
HQ	NII										
					101.5		Volcaniclastic SANDSTONE; fine grained, dark grey green, banded	FR			SLIGHTLY WEATHERED ROCK
					175.5						
					101.0						
					176.0						
					100.5						
			100	97	176.5						
					100.0						
					176.91						
					177.0		ANDESITE; fine grained, dark grey green				
					99.5						
					177.5						
					99.0						
					178.0						177.87m: Jt, 59°, Ir, Ro, Vr Ca
					98.5						178.18m: Jt, 62°, Un, Ro, Vr Ca 178.25m: Jt, 58°, Un, Ro, Vr Ca
					178.5						178.49m: Jt, 57°, Un, Ro, Vr Ca, core spin
			100	96	98.0						
					179.0						
					97.5						
					179.5						179.15m: Jt, 65°, Un, Ro, Vr Ca, core spin
			100	100	97.0						

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT009

SHEET : 38 OF 39

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **12-1-21**
Date Completed: **15-1-21**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **171°**

Surface RL: **266.0 m AHD**
Co-ords: **E 613929 N 6390589 MGA2020 55**

Borehole Information						Field Material Description				
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)
HQ	Nil		100	100	180.17			ANDESITE; fine grained, dark grey green	FR	
					96.5			ANDESITE; fine grained, dark grey green, banded, faulted		
					180.5					
					96.0					
					181.0					
					95.5					
					181.5					
					95.0					
					182.0					
					94.5					
					182.5					
					94.0					
					183.0					
					93.5					
					183.5					
					183.68			Volcaniclastic SANDSTONE; fine grained, dark grey green, strong pervasive cleavage, feldspathic		
					184.0					
					93.0					
					184.5					
					92.5					

181.43m: Fo, 24°
181.77m: Jt, 61°, Pl, Ro, Vr Ca

FOR NOW DPE USE ONLY

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT009

SHEET : 39 OF 39

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **Roswell**
Project Number: **PS117942**

Date Commenced: **12-1-21**
Date Completed: **15-1-21**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **96 mm**

Hole Angle: **-70°**
Bearing: **171°**

Surface RL: **266.0 m AHD**
Co-ords: **E 613929 N 6390589 MGA2020 55**

Borehole Information						Field Material Description				
METHOD	SUPPORT	WATER	TOTAL CORE RECOVERY (TCR)	RQD	RL (m AHD)	DEPTH (m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH MPa (Is ₅₀ /UCS)
HQ	Nil		100	100	92.0			Volcaniclastic SANDSTONE; fine grained, dark grey green, strong pervasive cleavage, feldspathic	FR	
					185.5					
					91.5					
					186.0					
					91.0					
								END OF BOREHOLE AT 186.36 m Target depth		
					90.5					
					90.0					
					89.5					
					89.0					
					88.5					
					88.0					
					87.5					

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT011

SHEET : 1 OF 6

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **San Antonio**
Project Number: **PS117942**

Date Commenced: **11-11-20**
Date Completed: **12-11-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **85 mm**

Hole Angle: **-90°**
Bearing: **---**

Surface RL: **E 613780 N 6389750 MGA2020 55**
Co-ords: **E 613780 N 6389750 MGA2020 55**

Borehole Information						Field Material Description					
METHOD	SUPPORT	WATER	RL (m AHD)	DEPTH (m)	FIELD TEST	SAMPLE	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	STRUCTURE AND ADDITIONAL OBSERVATIONS
PQ	Nil	NFGWE									
				0.5					Sandy CLAY; medium plasticity, brown, fine to medium grained sand.	W=PL	QUATERNARY ALLUVIUM
				1.0							
				1.5	SPT 4, 5, 6 N=11	SPT					
				1.5					CORE LOSS 1.00m (1.50-2.50)		
				2.0							
				2.5							
				2.5	SPT 0, 0, 0 N=0				Sandy CLAY; medium plasticity, brown, fine to medium grained sand.	W>P	SPT sank 450mm under own weight
				3.0						W<PL	
				3.5							
				4.0	SPT 7, 12, 17 N=29	SPT			...becoming pale grey		
				4.5					...becoming pale grey mottled orange-red		

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT011

SHEET : 2 OF 6

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **San Antonio**
Project Number: **PS117942**

Date Commenced: **11-11-20**
Date Completed: **12-11-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **85 mm**

Hole Angle: **-90°**
Bearing: **---**

Surface RL:
Co-ords: **E 613780 N 6389750 MGA2020 55**

Borehole Information							Field Material Description						
METHOD	SUPPORT	WATER	RL (m AHD)	DEPTH (m)	FIELD TEST	SAMPLE	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY	POCKET PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
PQ	Nil	NFGWE							Sandy CLAY; medium plasticity, brown, fine to medium grained sand.	W<PL	VS FB SL VL ST LM VST MD H VD	>600 >600 >600	QUATERNARY ALLUVIUM
				5.5		U63							
				6.0									
				6.5									
				6.90									
				7.0					CEMENTED IRONSTONE CLAY; fine grained, red and dark grey black irons oxide on break surfaces				TERTIARY ALLUVIUM
				7.15	SPT 6, 14, 24 N=38	SPT			Sandy CLAY; medium plasticity, brown, fine to medium grained sand.	W<PL		>600	
				7.5								600	
				8.0					...trace fine to medium grained gravel	W=PL		360 370	
				8.5									
				8.90					Sandy Clayey GRAVEL; fine to medium grained, rounded to sub-angular, fine to coarse grained sand, medium to high plasticity clay, mostly rock fragment gravel, minor quartz, 10-50mm sandy clay layers.	W<PL			
				9.0									
				9.30									
				9.5	SPT 14, 17, 20 N=37	SPT			Sandy CLAY/Clayey SAND; medium plasticity, fine to medium grained sand, pale grey, mottled pale orange			600	SPT moved to 9.3m to pick up dropped core

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT011

SHEET : 3 OF 6

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **San Antonio**
Project Number: **PS117942**

Date Commenced: **11-11-20**
Date Completed: **12-11-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **85 mm**

Hole Angle: **-90°**
Bearing: **---**

Surface RL: **E 613780 N 6389750 MGA2020 55**
Co-ords: **E 613780 N 6389750 MGA2020 55**

Borehole Information							Field Material Description															
METHOD	SUPPORT	WATER	RL (m AHD)	DEPTH (m)	FIELD TEST	SAMPLE	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY								POCKET PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS		
PQ	Nii	NFGWE								W<PL	VS	FB	VL	SL	VL	ST	MD	VST	DD	VD		
									Sandy CLAY/Clayey SAND; medium plasticity, fine to medium grained sand, pale grey, mottled pale orange													
				10.5																	560	
																					540	
																					>600	
				11.0	SPT 11, 23, 30/130mm N=R	SPT															>600	
				11.5		C															>600	
				12.0																		
				12.5	SPT 0, 9, 24 N=33	SPT															>600	
				13.0																	>600	
				13.5																	>600	
																					>600	
				14.0	SPT 10, 19, 30/145mm N=R	SPT															530	
																					600	
				14.5																	390	
																					>600	

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT011

SHEET : 4 OF 6

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **San Antonio**
Project Number: **PS117942**

Date Commenced: **11-11-20**
Date Completed: **12-11-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **85 mm**

Hole Angle: **-90°**
Bearing: **---**

Surface RL: **E 613780 N 6389750 MGA2020 55**
Co-ords: **E 613780 N 6389750 MGA2020 55**

Borehole Information							Field Material Description														
METHOD	SUPPORT	WATER	RL (m AHD)	DEPTH (m)	FIELD TEST	SAMPLE	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY				POCKET PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS					
PQ	Niii	NFGWE								W<PL	VS	FB	VL	SL	MD	ST	MD	VS	VD	H	
									Sandy CLAY/Clayey SAND; medium plasticity, fine to medium grained sand, pale grey, mottled pale orange												TERTIARY ALLUVIUM
				15.5	SPT 0, 3, 20 N=23	SPT			...becoming grey mottled orange and red												570 550
				16.0																	
				16.5					...ppears to be completely weathered gravel												395 540
				17.0	SPT 12, 29, 30/95mm N=R	SPT			...coarse grained sandy clay layer, horizontal bedding												>600
				17.5																	>600
				18.0																	200
				18.5	SPT 0, 15, 30/149mm N=R	SPT															480 >600
				19.0																	260 550
				19.5					...becoming grey mottled orange-brown												>600
					SPT 1, 1, 12 N=13	SPT															140 400
																					>600
																					SPT appears to have been undertaken through dropped core

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT011

SHEET : 5 OF 6

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **San Antonio**
Project Number: **PS117942**

Date Commenced: **11-11-20**
Date Completed: **12-11-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **85 mm**

Hole Angle: **-90°**
Bearing: **---**

Surface RL: **E 613780 N 6389750 MGA2020 55**
Co-ords: **E 613780 N 6389750 MGA2020 55**

Borehole Information							Field Material Description						
METHOD	SUPPORT	WATER	RL (m AHD)	DEPTH (m)	FIELD TEST	SAMPLE	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY	POCKET PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
PQ	Nil	NFGWE			SPT 1, 1, 12 N=13	SPT			Sandy CLAY/Clayey SAND; medium plasticity, fine to medium grained sand, pale grey, mottled pale orange	W-PL	VS FB VL ST MD VST D H VD	600	TERTIARY ALLUVIUM
				20.5								>600	
				21.0								>600	
				21.5	SPT 18, 30/130mm N=R	SPT						400	
				22.0									
				22.5		C							
				22.80									
				23.0	SPT 2, 15, 29 N=44	SPT			Silty CLAY; grey mottled red-orange.			550	
				23.5								600	
				24.0								>600	
				24.30					Sandy CLAY/Clayey SAND; low plasticity, possibly indurated iron oxide			>600	
				24.5	SPT 27, 30/60mm N=R	SPT						350	
													Reported 'soft patch' for 0.5m
									Clayey SAND; grey mottled pale orange.				Pocket pentrometer reading attempted, collapsed due to high sand content

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.



BOREHOLE ENGINEERING LOG

BOREHOLE NO.

SARGT011

SHEET : 6 OF 6

Client: **ALKANE RESOURCES LIMITED**
Project: **TGEP**
Borehole Location: **San Antonio**
Project Number: **PS117942**

Date Commenced: **11-11-20**
Date Completed: **12-11-20**
Recorded By: **NG**
Log Checked By: **LMcK**

Drill Model/Mounting: **Sandvik DE811i/ Track**
Borehole Diameter: **85 mm**

Hole Angle: **-90°**
Bearing: **---**

Surface RL: **E 613780 N 6389750 MGA2020 55**
Co-ords: **E 613780 N 6389750 MGA2020 55**

Borehole Information							Field Material Description										
METHOD	SUPPORT	WATER	RL (m AHD)	DEPTH (m)	FIELD TEST	SAMPLE	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY					POCKET PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
PO	Niii	NFGWE								VS S F	FB VL L MD VST D H						
				25.5					Clayey SAND; grey mottled pale orange.	W<PL						TERTIARY ALLUVIUM	
				25.90													
				26.0	SPT 9, 26, 30/130mm N=R	SPT			Silty CLAY; high plasticity, pale grey.						450 500 590		
				26.5					...becoming mottled red, sandy CLAY/clayey SAND cemented in parts (laterite or duricrust)	M / W<PL						Drilled to 26.5m to push tube. Material is hard and crumbly, not clay	
				27.0													
				27.5	SPT 11, 25, 30/130mm N=R	SPT											
				28.0													
				28.5													
				29.0	SPT 15, 25, 30/110mm N=R	SPT											
				29.5													
						U63			END OF BOREHOLE AT 29.95 m Target depth						>600		

This Borehole log should be read in conjunction with WSP's accompanying explanatory notes.

APPENDIX C

GEOTECHNICAL BOREHOLE CORE PHOTOS



FOR NSW DPE USE ONLY



Depth: 0.0 m - 5.00 m



Depth: 5.00 m - 8.70 m



Depth: 8.70 m - 14.30 m

CL: Core Loss

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT001
Size	A4		Project No:	PS117942



Depth: 14.30 m - 17.80 m



Depth: 17.80 m - 21.10 m



Depth: 21.10 m - 24.00 m

CL: Core Loss

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT001
Size	A4		Project No:	PS117942



CL: 27.5 - 27.6 m

Depth: 24.00 m - 28.00 m



Depth: 28.00 m - 31.50 m



CL: 33.0 - 33.6 m

Depth: 31.50 m - 35.00 m

CL: Core Loss

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT001
Size	A4		Project No:	PS117942



Depth: 35.00 m - 38.10 m

CL: 39.5 - 39.6 m



Depth: 38.10 m - 40.50 m



Depth: 40.50 m - 44.50 m

CL: 44.3 - 44.6 m

CL: Core Loss

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT001
Size	A4		Project No:	PS117942



CL: 47.2 - 48.6 m

Depth: 44.50 m - 49.00 m



CL: 51.3 - 51.9 m

Depth: 49.00 m - 52.00 m

CL: 54.2 - 54.3 m

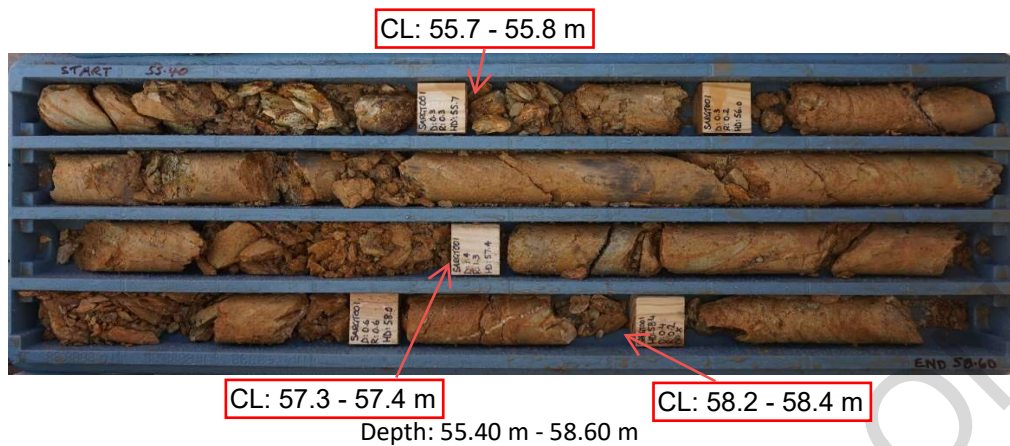


CL: 55.2 - 55.4 m

Depth: 52.00 m - 55.40 m

CL: Core Loss

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT001
Size	A4		Project No:	PS117942



CL: Core Loss

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021		Title	SARGT001
Scale	NTS		Project No:	PS117942
Size	A4			



Depth: 65.40 m - 68.70 m



Depth: 68.70 m - 72.00 m



CL: 74.4 -74.5 m

Depth: 72.00 m - 75.10 m

CL: Core Loss

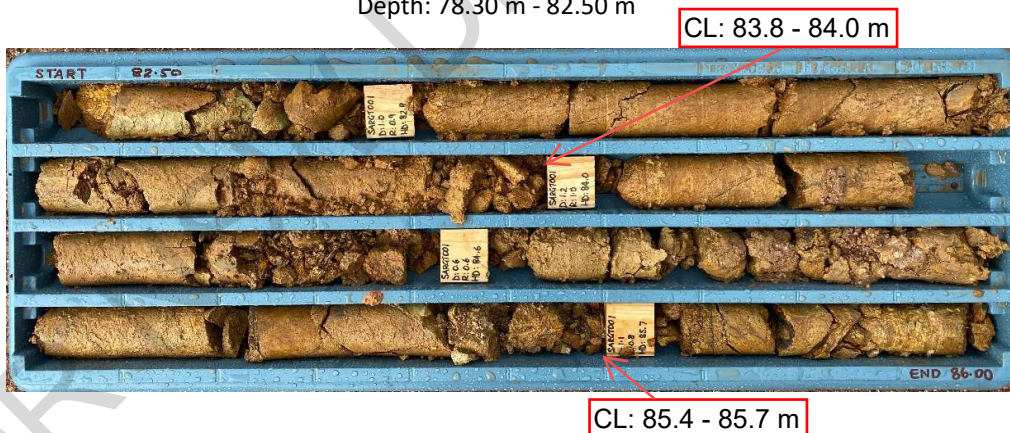
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Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT001
Size	A4		Project No:	PS117942



Depth: 75.10 m - 78.30 m



Depth: 78.30 m - 82.50 m



Depth: 82.50 m - 86.00 m

CL: Core Loss

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT001
Size	A4		Project No:	PS117942



Depth: 86.00 m - 90.00 m

CL: Core Loss

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT001
Size	A4		Project No:	PS117942



Depth: 99.07 m - 102.64 m



Depth: 102.64 m - 106.18 m



Depth: 106.18 m - 109.67 m

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT002
Size	A4		Project No:	PS117942



Depth: 109.67 m - 113.10 m



Depth: 113.10 m - 116.52 m



Depth: 116.52 m - 119.98 m

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT002
Size	A4		Project No:	PS117942



Depth: 119.98 m - 123.35 m



Depth: 123.35 m - 126.75 m



Depth: 126.75 m - 130.26 m

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT002
Size	A4		Project No:	PS117942



Depth: 130.26 m - 133.70 m



Depth: 133.70 m - 137.14 m



Depth: 137.14 m - 140.75 m

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT002
Size	A4		Project No:	PS117942



Depth: 140.75 m - 144.10 m



Depth: 144.10 m - 147.42 m



Depth: 147.42 m - 150.74 m

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT002
Size	A4		Project No:	PS117942



Depth: 150.74 m - 154.07 m



Depth: 154.07 m - 157.60 m



Depth: 157.60 m - 161.18 m

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT002
Size	A4		Project No:	PS117942



Depth: 161.18 m - 164.41 m



Depth: 164.41 m - 165.80 m

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT002
Size	A4		Project No:	PS117942



Depth: 0.0 m - 3.50 m



Depth: 3.50 m - 7.00 m



Depth: 7.00 m - 11.00 m

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT003
Size	A4		Project No:	PS117942



Depth: 11.00 m - 13.80 m



Depth: 13.80 m -17.20 m

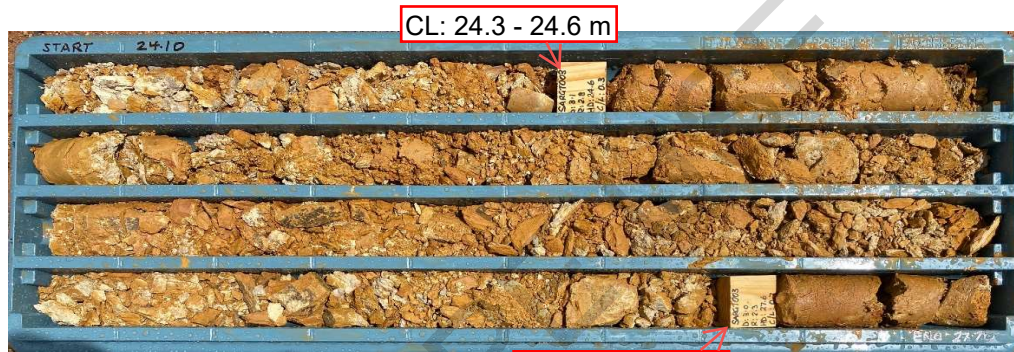


Depth: 17.20 m - 20.20 m

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021		Title	SARGT003
Scale	NTS		Project No:	PS117942
Size	A4			



Depth: 20.20 m - 24.10 m



Depth: 24.10 m - 27.70 m



Depth: 27.70 m - 30.80 m

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT003
Size	A4		Project No:	PS117942



CL: 32.9 - 33.6 m

Depth: 30.80 m - 34.50 m



CL: 35.9 - 36.6 m

Depth: 34.50 m - 38.40 m



CL: 39.5 - 39.6 m

Depth: 38.40 m - 41.80 m

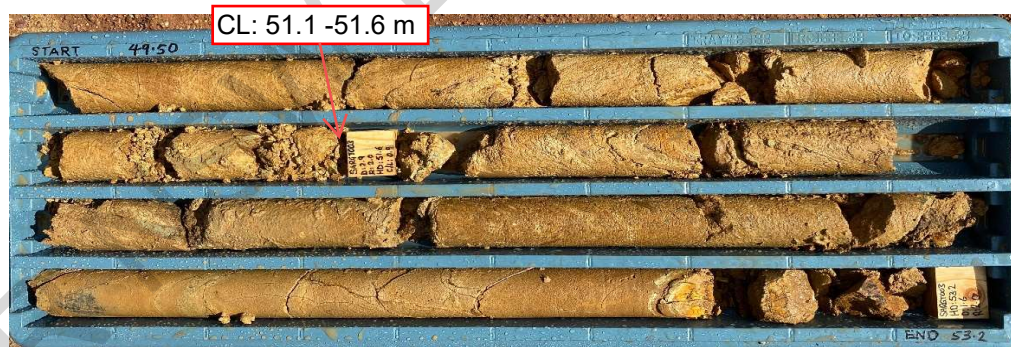
Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT003
Size	A4		Project No:	PS117942



Depth: 41.80 m - 46.00 m



Depth: 46.00 m - 49.50 m



Depth: 49.50 m - 53.20 m

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT003
Size	A4		Project No:	PS117942



Depth: 53.20 m - 56.40 m



Depth: 56.40 m - 59.40 m



Depth: 59.40 m - 62.70 m

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT003
Size	A4		Project No:	PS117942



Depth: 62.70 m - 66.30 m



Depth: 66.30 m - 69.60 m



Depth: 69.60 m - 72.80 m

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT003
Size	A4		Project No:	PS117942



Depth: 72.80 m - 76.10 m

CL: 76.5 - 76.6 m



Depth: 76.10 m - 79.30 m



Depth: 79.30 m - 83.00 m



Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT003
Size	A4		Project No:	PS117942



Depth: 83.00 m - 84.80 m

	Drawn	WH		Client:	ALKANE RESOURCES
	Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
	Date	22/02/2021			
	Scale	NTS		Title	SARGT003
	Size	A4		Project No:	PS117942



Depth: 98.97 m - 102.63 m



Depth: 102.63 m - 106.16 m



Depth: 106.16 m - 109.77 m

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT004
Size	A4		Project No:	PS117942



Depth: 109.77 m - 113.40 m

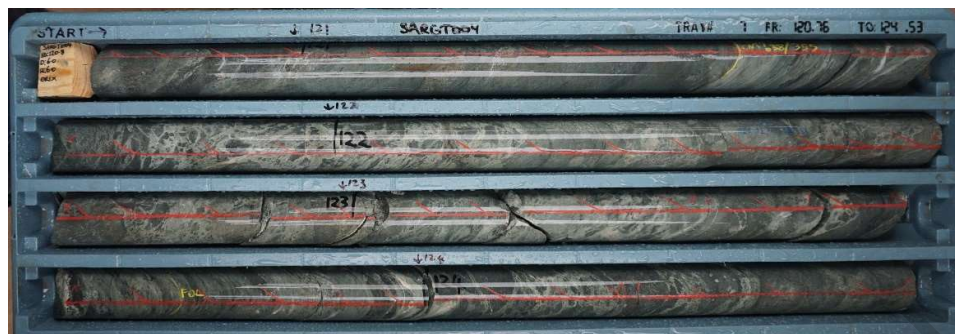


Depth: 113.40 m - 117.98 m



Depth: 117.98 m - 120.76 m

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT004
Size	A4		Project No:	PS117942



Depth: 120.76 m - 124.53 m



Depth: 124.53 m - 128.00 m



Depth: 128.00 m - 131.44 m

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021		Title	SARGT004
Scale	NTS		Project No:	PS117942
Size	A4			



Depth: 131.44 m - 135.88 m



Depth: 135.88 m - 138.30 m



Depth: 138.30 m - 141.63 m

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021		Title	SARGT004
Scale	NTS		Project No:	PS117942
Size	A4			



Depth: 141.63 m - 145.07 m



Depth: 145.07 m - 148.67 m



Depth: 148.67 m - 152.14 m

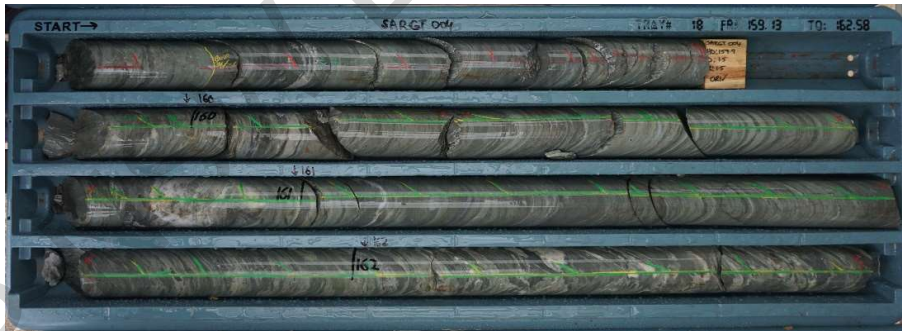
Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021		Title	SARGT004
Scale	NTS		Project No:	PS117942
Size	A4			



Depth: 152.14 m - 155.72 m



Depth: 155.72 m - 159.13 m



Depth: 159.13 m - 162.58 m

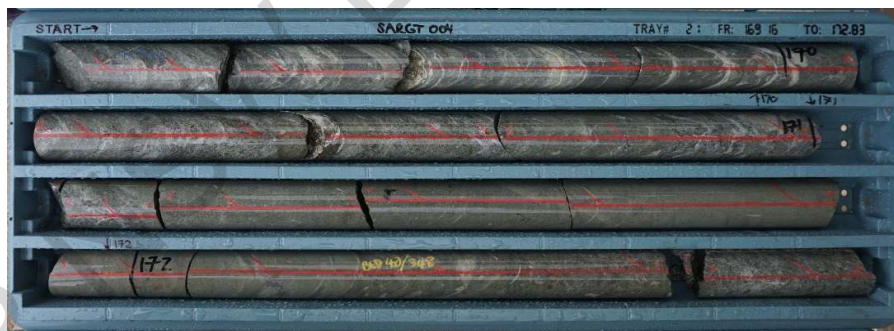
Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021		Title	SARGT004
Scale	NTS		Project No:	PS117942
Size	A4			



Depth: 162.58 m - 165.98 m



Depth: 165.98 m - 169.16 m



Depth: 169.16 m - 172.83 m

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT004
Size	A4		Project No:	PS117942



Depth: 172.83 m - 174.80 m

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT004
Size	A4		Project No:	PS117942



Depth: 0.0 m - 5.80 m



Depth: 5.80 m - 9.40 m



Depth: 9.40 m - 13.00 m

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT005
Size	A4		Project No:	PS117942



Depth: 13.00 m - 16.60 m



Depth: 16.60 m - 20.00 m



Depth: 20.00 m - 23.70 m

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT005
Size	A4		Project No:	PS117942



Depth: 23.70 m - 26.90 m



Depth: 26.90 m - 30.00 m



Depth: 30.00 m - 33.50 m

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT005
Size	A4		Project No:	PS117942



Depth: 33.50 m - 37.30 m



Depth: 37.30 m - 40.80 m



Depth: 40.80 m - 44.60 m

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT005
Size	A4		Project No:	PS117942



Depth: 44.60 m - 50.20 m



Depth: 50.20 m - 53.60 m



Depth: 53.60 m - 57.00 m

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT005
Size	A4		Project No:	PS117942



Depth: 57.00 m - 60.40 m



Depth: 60.40 m - 64.40 m



Depth: 64.40 m - 68.00 m

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT005
Size	A4		Project No:	PS117942



Depth: 68.00 m - 71.60 m



Depth: 71.60 m - 75.10 m



Depth: 75.10 m - 78.50 m

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT005
Size	A4		Project No:	PS117942



Depth: 78.50 m - 82.00 m



Depth: 82.00 m - 85.30 m



Depth: 85.30 m - 88.90 m

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021		Title	SARGT005
Scale	NTS		Project No:	PS117942
Size	A4			



Depth: 88.90 m - 91.90 m



Depth: 91.90 m - 95.30 m



Depth: 95.30 m - 99.10 m

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT005
Size	A4		Project No:	PS117942



Depth: 99.10 m - 102.60 m



Depth: 102.60 m - 106.10 m



Depth: 106.10 m - 109.60 m

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT005
Size	A4		Project No:	PS117942



Depth: 109.60 m - 113.10 m



Depth: 113.10 m - 116.66 m



Depth: 116.66 m - 120.19 m

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT005
Size	A4		Project No:	PS117942



Depth: 120.19 m - 123.71 m



Depth: 123.71 m - 127.35 m



Depth: 127.35 m - 130.87 m

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021		Title	SARGT005
Scale	NTS		Project No:	PS117942
Size	A4			



Depth: 130.87 m - 134.41 m



Depth: 134.41 m - 137.99 m



Depth: 137.99 m - 141.45 m

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021		Title	SARGT005
Scale	NTS		Project No:	PS117942
Size	A4			



Depth: 141.45 m - 145.03 m



Depth: 145.03 m - 148.37 m



Depth: 148.37 m - 151.86 m

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT005
Size	A4		Project No:	PS117942



Depth: 151.86 m - 155.22 m



Depth: 155.22 m - 158.78 m



Depth: 158.78 m - 162.33 m

Drawn	HP		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT005
Size	A4		Project No:	PS117942



Depth: 162.33 m - 165.65 m



Depth: 165.65 m - 169.20 m



Depth: 169.20 m - 172.61 m

Drawn	HP		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT005
Size	A4		Project No:	PS117942



Depth: 172.61 m - 176.19 m



Depth: 176.19 m - 177.01 m

Drawn	HP		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT005
Size	A4		Project No:	PS117942



Depth: 0.00 m - 4.50 m



Depth: 4.50 m - 8.10 m



Depth: 8.10 m - 11.70 m

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT006
Size	A4		Project No:	PS117942



Depth: 11.70 m - 15.20 m



Depth: 15.20 m - 18.80 m



Depth: 18.80 m - 22.80 m

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT006
Size	A4		Project No:	PS117942



Depth: 22.80 m - 26.30 m



Depth: 26.30 m - 29.50 m



Depth: 29.50 m - 34.10 m

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT006
Size	A4		Project No:	PS117942



Depth: 34.10 m - 38.30 m



Depth: 38.30 m - 41.60 m



Depth: 41.60 m - 47.60 m

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT006
Size	A4		Project No:	PS117942



Depth: 47.60 m - 50.50 m



Depth: 50.50 m - 54.40 m



Depth: 54.40 m - 57.80 m

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT006
Size	A4		Project No:	PS117942



Depth: 57.80 m - 61.00 m



Depth: 61.00 m - 64.40 m



Depth: 64.40 m - 68.20 m

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT006
Size	A4		Project No:	PS117942



Depth: 68.20 m - 71.60 m



Depth: 71.60 m - 75.10 m



Depth: 75.10 m - 78.10 m

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT006
Size	A4		Project No:	PS117942



Depth: 78.10 m - 81.50 m



Depth: 81.50 m - 84.70 m



Depth: 84.70 m - 88.00 m

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT006
Size	A4		Project No:	PS117942



Depth: 88.00 m - 91.20 m



Depth: 91.20 m - 94.50 m



Depth: 94.50 m - 97.90 m

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT006
Size	A4		Project No:	PS117942



Depth: 97.90 m - 101.40 m



Depth: 101.40 m - 101.90 m

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT006
Size	A4		Project No:	PS117942



Depth: 0.00 m - 8.40 m



Depth: 8.40 m - 14.80 m
0.9m

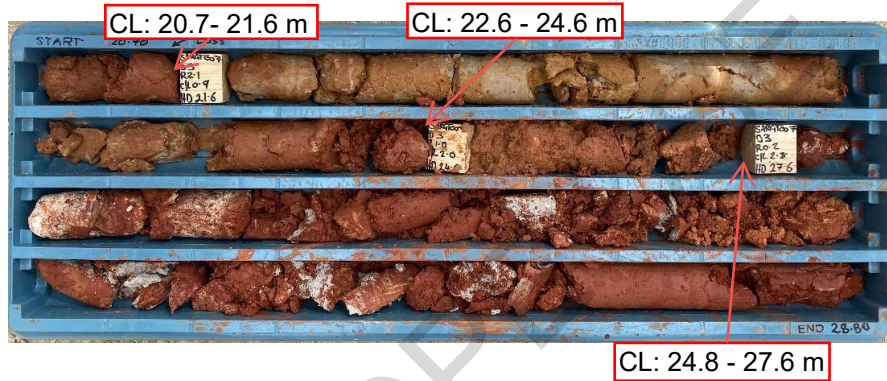


Depth: 14.80 m - 16.80 m

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT007
Size	A4		Project No:	PS117942



Depth: 16.80 m - 20.40 m



Depth: 20.40 m - 28.80 m



Depth: 28.80 m - 33.50 m

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT007
Size	A4		Project No:	PS117942



CL: 36.1 - 37.9 m

Depth: 33.50 m - 37.90 m



Depth: 37.90 m - 42.60 m



CL: 43.3 - 44.5 m

Depth: 42.60 m - 44.90 m

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT007
Size	A4		Project No:	PS117942



Depth: 44.90 m - 47.60 m



Depth: 47.60 m - 52.20 m



Depth: 52.20 m - 55.20 m

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT007
Size	A4		Project No:	PS117942



Depth: 55.20 m - 60.60 m



Depth: 60.60 m - 65.80 m



Depth: 65.80 m - 70.20 m

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT007
Size	A4		Project No:	PS117942



Depth: 70.20 m - 73.80 m



Depth: 73.80 m - 78.80 m



Depth: 78.80 m - 83.90 m

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT007
Size	A4		Project No:	PS117942



Depth: 83.90 m - 87.30 m



Depth: 87.30 m - 90.60 m



Depth: 90.60 m - 94.10 m

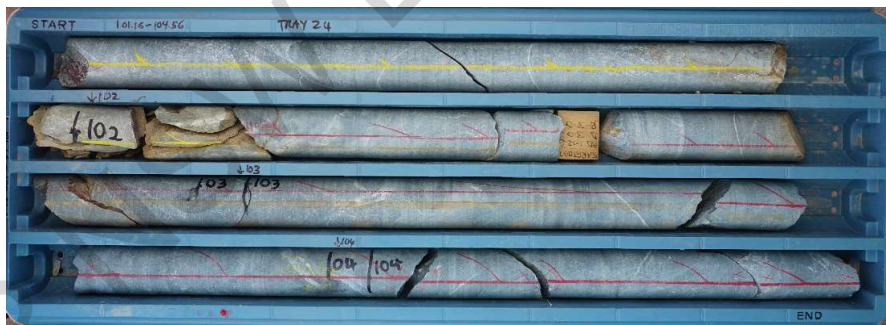
Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT007
Size	A4		Project No:	PS117942



Depth: 94.10 m - 97.55 m



Depth: 97.55 m - 101.15 m



Depth: 101.15 m - 104.56 m

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT007
Size	A4		Project No:	PS117942



Depth: 104.56 m - 107.99 m



Depth: 107.99 m - 111.39 m



Depth: 111.39 m - 114.79 m

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT007
Size	A4		Project No:	PS117942



Depth: 114.79 m - 118.16 m



Depth: 118.16 m - 121.70 m



Depth: 121.70 m - 125.22 m

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021		Title	SARGT007
Scale	NTS		Project No:	PS117942
Size	A4			



Depth: 125.22 m - 128.74 m



Depth: 128.74 m - 132.28 m



Depth: 132.28 m - 135.81 m

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021		Title	SARGT007
Scale	NTS		Project No:	PS117942
Size	A4			



Depth: 135.81 m - 139.41 m



Depth: 139.41 m - 142.79 m



Depth: 142.79 m - 146.36 m

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021		Title	SARGT007
Scale	NTS		Project No:	PS117942
Size	A4			



Depth: 146.36 m - 150.03 m



Depth: 150.03 m - 153.51 m

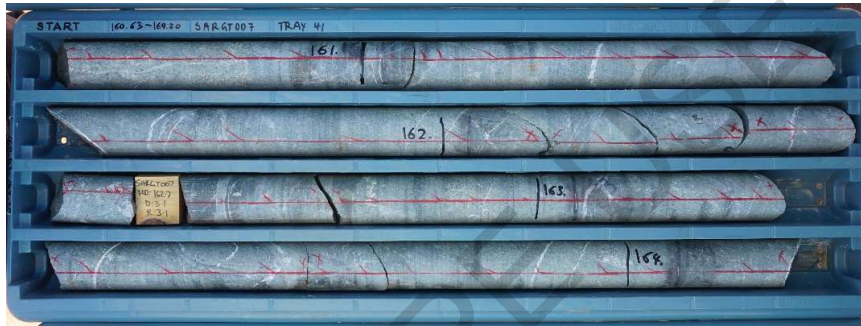


Depth: 153.51 m - 156.95 m

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT007
Size	A4		Project No:	PS117942



Depth: 156.95 m - 160.63 m



Depth: 160.63 m - 164.20 m

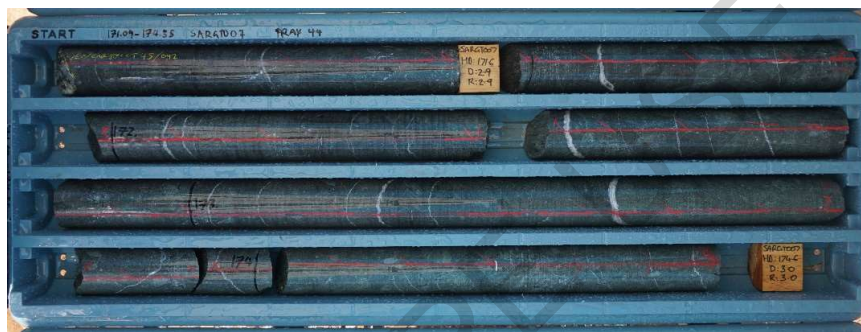


Depth: 164.20 m - 167.69 m

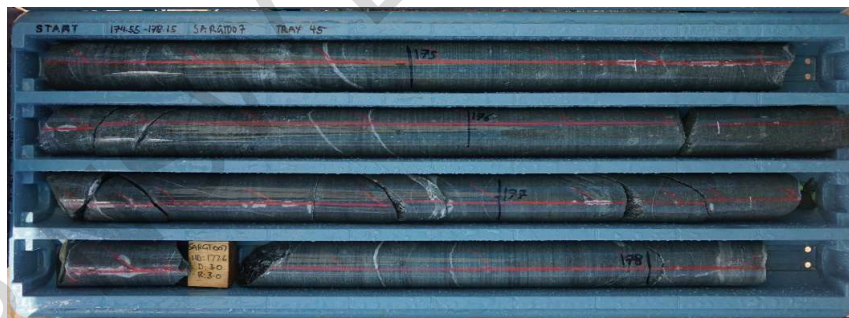
Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT007
Size	A4		Project No:	PS117942



Depth: 167.69 m - 171.09 m



Depth: 171.09 m - 174.55 m

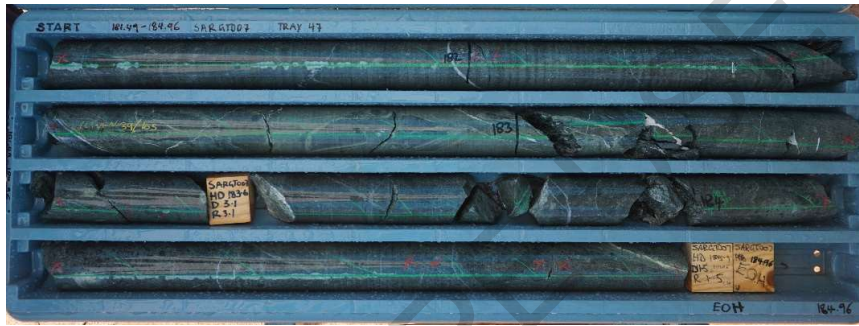


Depth: 174.55 m - 178.15 m

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT007
Size	A4		Project No:	PS117942



Depth: 178.15 m - 181.49 m



Depth: 181.49 m - 184.96 m

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT007
Size	A4		Project No:	PS117942



Depth: 0.00 m - 5.93 m



Depth: 5.93 m - 12.07 m



Depth: 12.07 m - 15.84 m

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT008
Size	A4		Project No:	PS117942



Depth: 15.84 m - 19.76 m



Depth: 19.76 m - 22.70 m



Depth: 22.70 m - 26.24 m

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT008
Size	A4		Project No:	PS117942



Depth: 26.24 m - 29.71 m

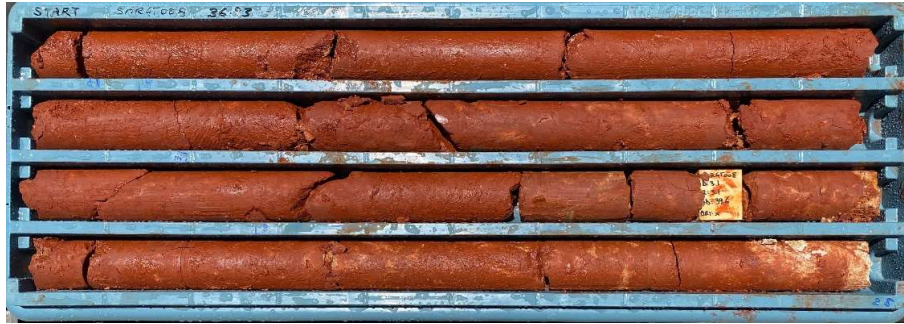


Depth: 29.71 m - 33.42 m



Depth: 33.42 m - 36.93 m

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT008
Size	A4		Project No:	PS117942



Depth: 36.93 m - 40.69 m



Depth: 40.69 m - 44.53 m



Depth: 44.53 m - 48.30 m

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT008
Size	A4		Project No:	PS117942



Depth: 48.30 m - 52.15 m



Depth: 52.15 m - 56.05 m



Depth: 56.05 m - 59.53 m

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT008
Size	A4		Project No:	PS117942



Depth: 59.53 m - 67.28 m



Depth: 67.28 m - 72.72 m



Depth: 72.72 m - 79.13 m

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT008
Size	A4		Project No:	PS117942



Depth: 79.13 m - 85.98 m



Depth: 85.98 m - 93.36 m



Depth: 93.36 m - 96.70 m

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT008
Size	A4		Project No:	PS117942



Depth: 96.70 m - 100.35 m



Depth: 100.35 m - 104.26 m



Depth: 104.26 m - 108.27 m

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT008
Size	A4		Project No:	PS117942



Depth: 108.27 m - 111.70 m

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT008
Size	A4		Project No:	PS117942



Depth: 0.00 m - 13.70 m



Depth: 13.70 m - 17.20 m



Depth: 17.20 m - 22.00 m

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT009
Size	A4		Project No:	PS117942



Depth: 22.00 m - 25.90 m



Depth: 25.90 m - 27.60 m



CL: 31.6 - 33.6 m

Depth: 27.60 m - 34.08 m

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT009
Size	A4		Project No:	PS117942

CL: 34.5 - 36.6 m



CL: 37.7 - 38.9 m

Depth: 34.08 m - 40.55 m



Depth: 40.55 m - 44.14 m



Depth: 44.14 m - 46.34 m

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT009
Size	A4		Project No:	PS117942



Depth: 46.34 m - 49.86 m



Depth: 49.86 m - 53.31 m



Depth: 53.31 m - 56.76 m

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT009
Size	A4		Project No:	PS117942



Depth: 56.76 m - 60.23 m



Depth: 60.23 m - 63.38 m



Depth: 63.38 m - 66.42 m

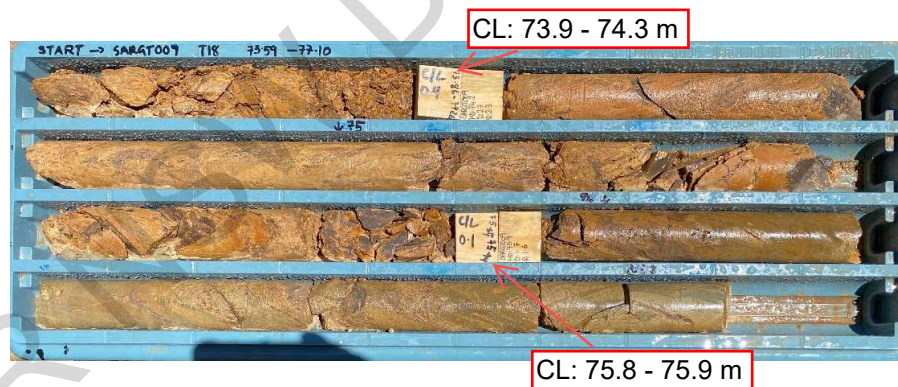
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Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT009
Size	A4		Project No:	PS117942



Depth: 66.42 m - 69.98 m



Depth: 69.98 m - 73.59 m

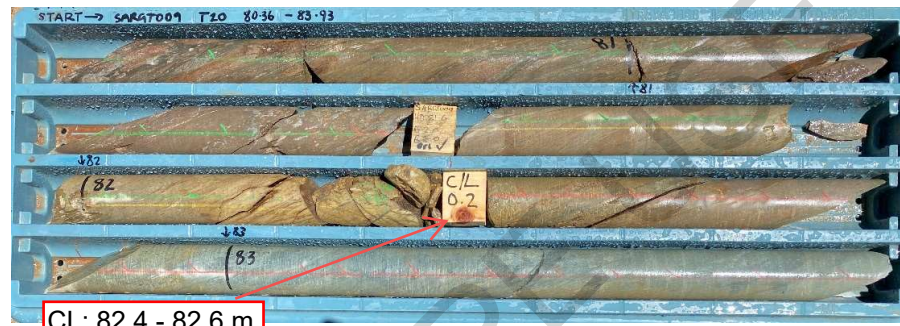


Depth: 73.59 m - 77.10 m

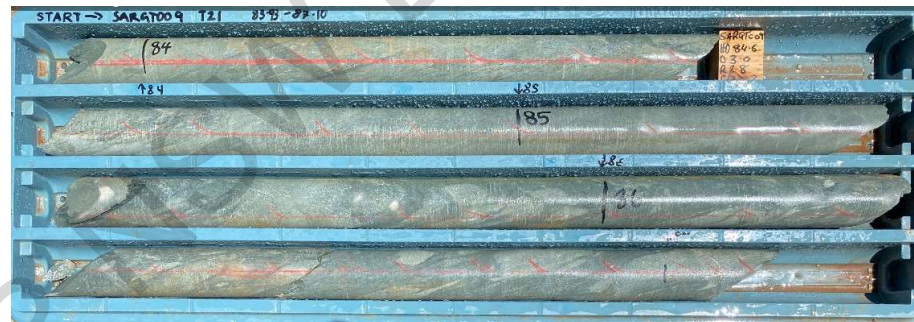
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Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT009
Size	A4		Project No:	PS117942



Depth: 77.10 m - 80.36 m



Depth: 80.36 m - 83.93 m



Depth: 83.93 m - 87.10 m

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT009
Size	A4		Project No:	PS117942



Depth: 87.10 m - 90.50 m



Depth: 90.50 m - 93.55 m

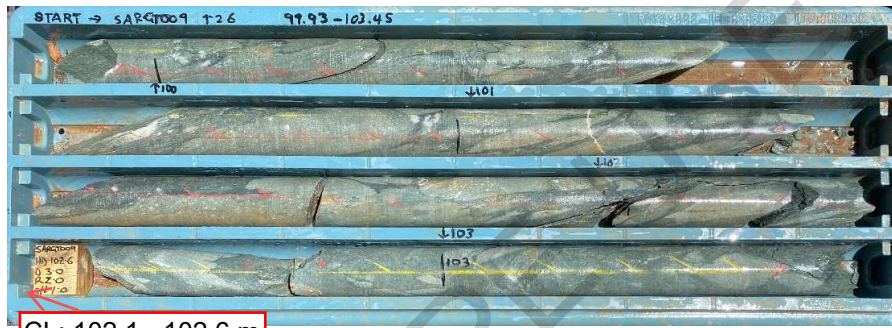


Depth: 93.55 m - 96.87 m

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021		Title	SARGT009
Scale	NTS		Project No:	PS117942
Size	A4			



Depth: 96.87 m - 99.93 m



CL: 102.1 - 102.6 m

Depth: 99.93 m - 102.45 m



Depth: 103.45 m - 106.81 m

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT009
Size	A4		Project No:	PS117942



Depth: 106.81 m - 110.16 m

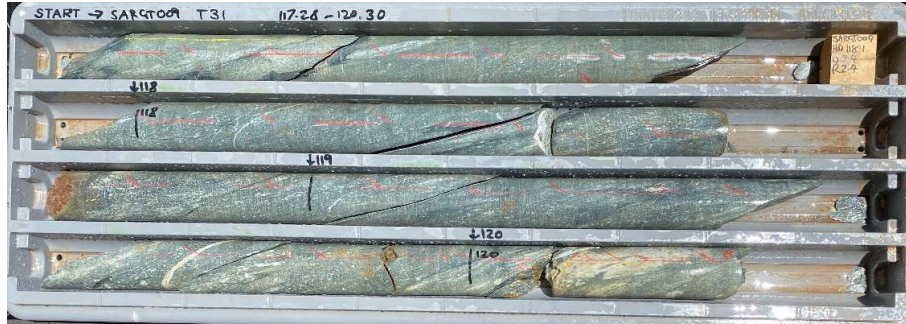


Depth: 110.16 m - 113.31 m

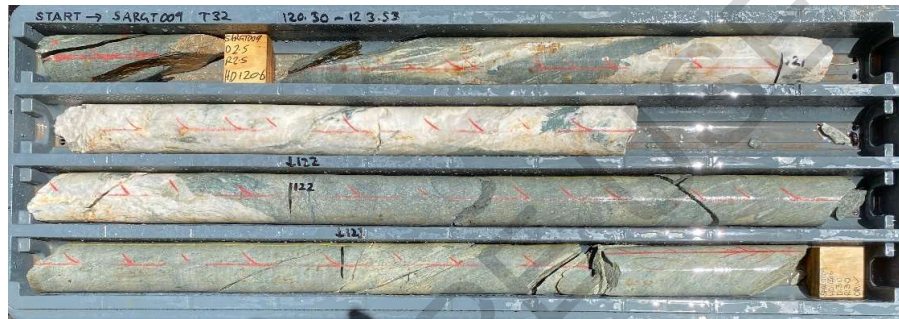


Depth: 113.31 m - 117.28 m

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021		Title	SARGT009
Scale	NTS		Project No:	PS117942
Size	A4			



Depth: 117.28 m - 120.30 m



Depth: 120.30 m - 123.53 m

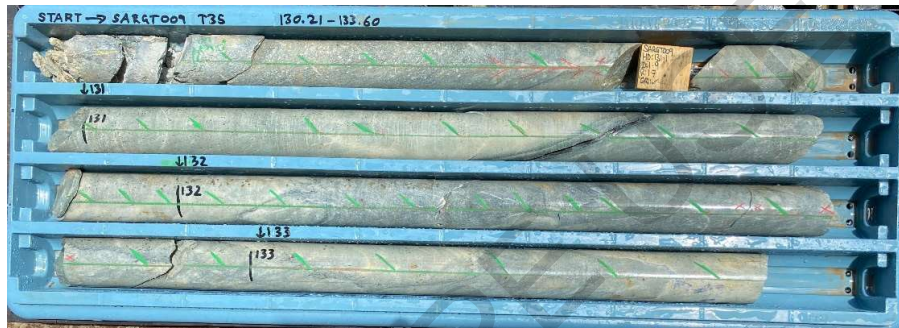


Depth: 123.53 m - 126.91 m

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT009
Size	A4		Project No:	PS117942



Depth: 126.91 m - 130.21 m



Depth: 130.21 m - 133.60 m

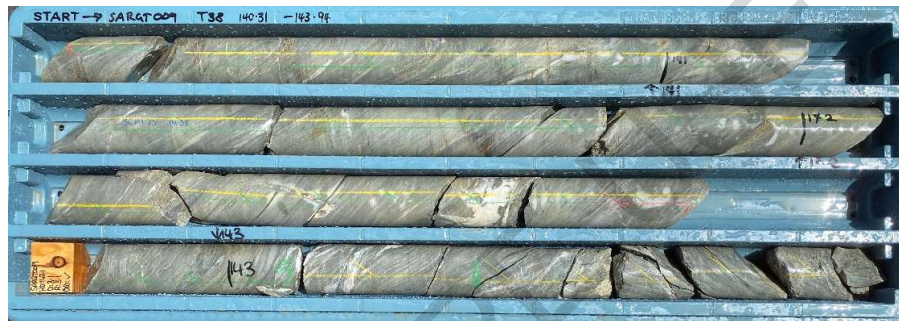


Depth: 133.60 m - 137.00 m

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT009
Size	A4		Project No:	PS117942



Depth: 137.00 m - 140.31 m



Depth: 140.31 m - 143.94 m

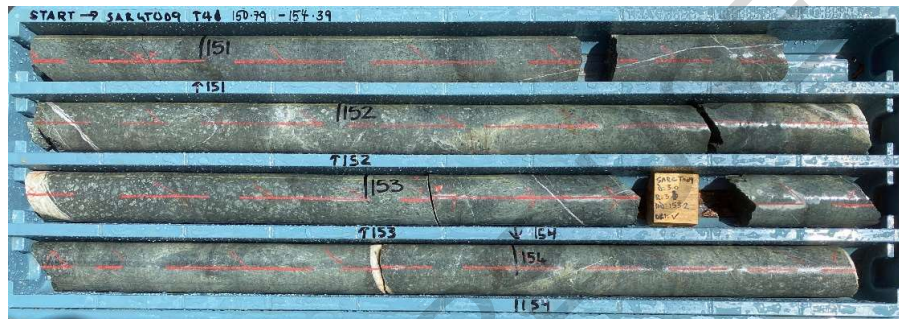


Depth: 143.94 m - 147.15 m

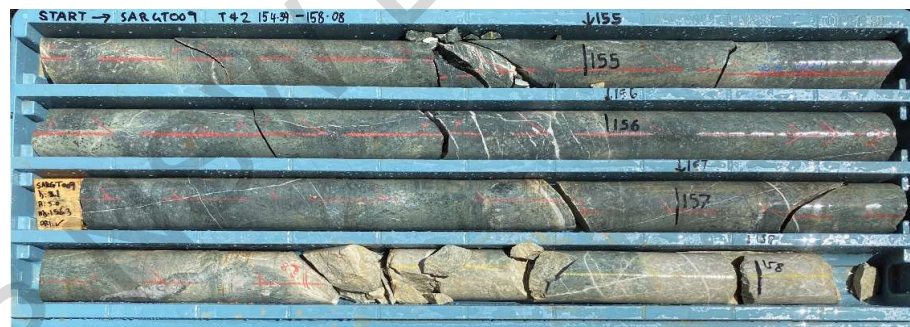
Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT009
Size	A4		Project No:	PS117942



Depth: 147.15 m - 150.79 m



Depth: 150.79 m - 154.39 m

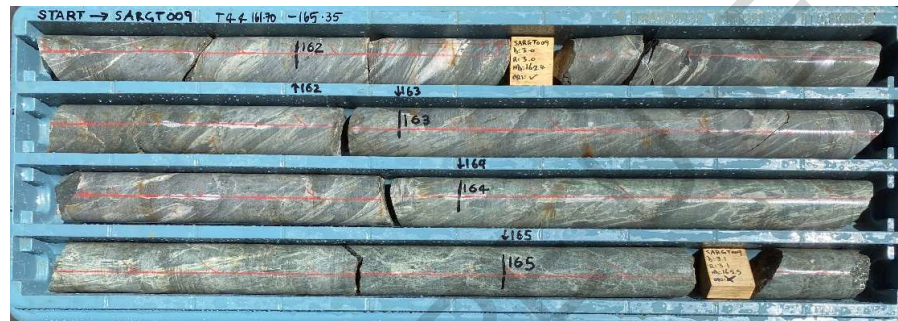


Depth: 154.39 m - 158.08 m

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT009
Size	A4		Project No:	PS117942



Depth: 158.08 m - 161.70 m

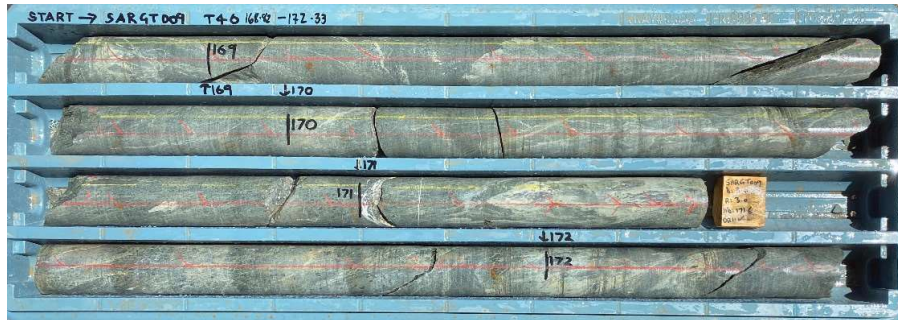


Depth: 161.70 m - 165.35 m



Depth: 165.35 m - 168.82 m

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT009
Size	A4		Project No:	PS117942



Depth: 168.82 m - 172.33 m

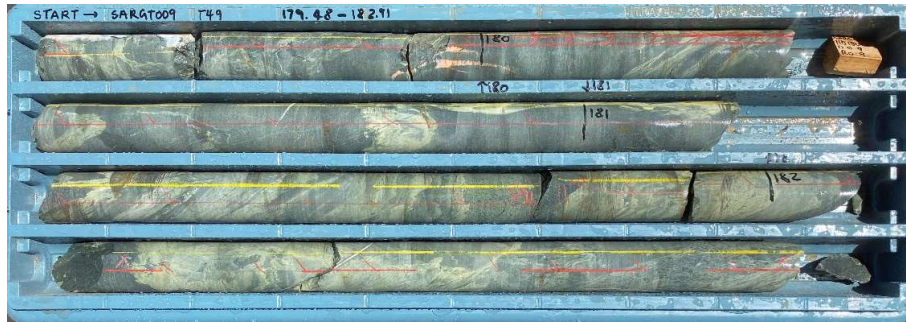


Depth: 172.33 m - 175.91 m

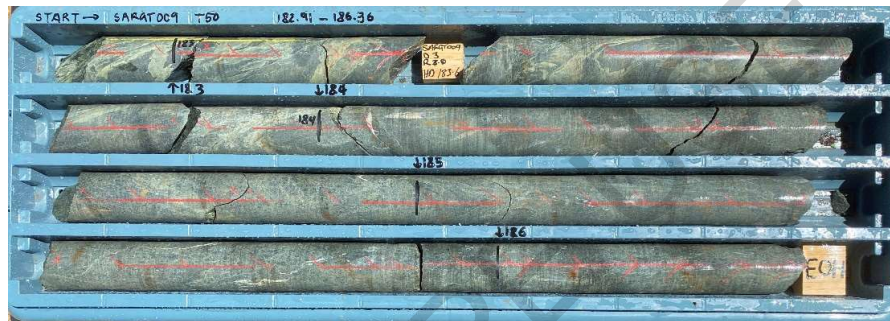


Depth: 175.91 m - 179.48 m

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021		Title	SARGT009
Scale	NTS		Project No:	PS117942
Size	A4			



Depth: 179.48 m - 182.91 m



Depth: 182.91 m - 186.36 m

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT009
Size	A4		Project No:	PS117942



Depth: 0.00 m - 3.70 m



Depth: 3.70 m - 6.40 m



Depth: 6.40 m - 9.30 m

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT011
Size	A4		Project No:	PS117942



Depth: 9.30 m - 12.20 m



Depth: 12.20 m - 15.25 m



Depth: 15.25 m - 17.30 m

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT011
Size	A4		Project No:	PS117942



Depth: 17.30 m - 19.80 m



Depth: 19.80 m - 22.70 m



Depth: 22.70 m - 25.10 m

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT011
Size	A4		Project No:	PS117942



Depth: 25.10 m - 27.70 m



Depth: 27.70 m - 29.95 m

Drawn	WH		Client:	ALKANE RESOURCES
Approved	LMcK		Project:	SAR PIT SLOPE DESIGN
Date	22/02/2021			
Scale	NTS		Title	SARGT011
Size	A4		Project No:	PS117942

APPENDIX D

LABORATORY TEST SHEETS



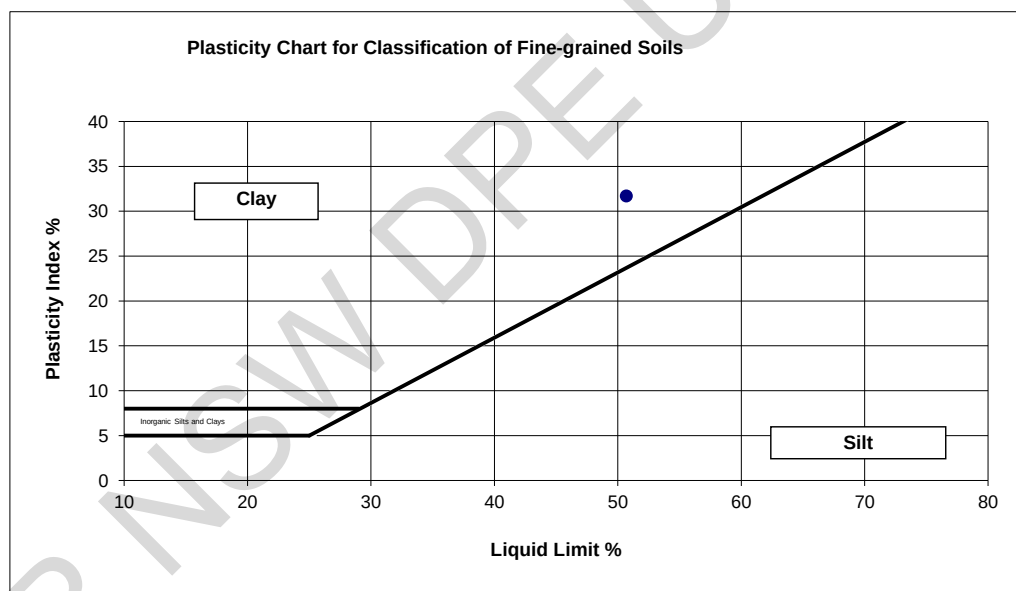
FOR NSW DPE USE ONLY

SOIL CLASSIFICATION REPORT

Client	WSP	Source	SARGT001 24-m
Address	Level 27, 680 George St, Sydney NSW 2000	Sample Description	Silty CLAY with sand
Project	SAR (PS117942)	Report No	S64661-PI
Job No	S20514-1	Lab No	S64661

Test Procedure	☐ AS1289 2.1.1 Soil moisture content tests (Oven drying method) ☒ AS1289 3.1.1 Soil classification tests - Determination of the liquid limit of a soil - Four point casagrande method ☐ AS1289 3.1.2 Soil classification tests - Determination of the liquid limit if a soil - One point Casagrande method (subsidiary method) ☒ AS1289 3.2.1 Soil classification tests - Determination of the plastic limit of a soil - Standard method ☒ AS1289 3.3.1 Soil classification tests - Calculation of the plasticity Index of a soil ☐ AS1289 3.4.1 Soil classification tests - Determination of the linear shrinkage of a soil - Standard method		
Sampling	Sampled by Client - results apply to the sample as received	Date Sampled	1/11/2020
Preparation	Prepared in accordance with the test method	Date Tested	8/12/2020

Liquid Limit (%)	51	Linear Shrinkage (%)	-
Plastic Limit (%)	19	Plasticity Index	32



Notes	
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Authorised Signatory:

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Date:

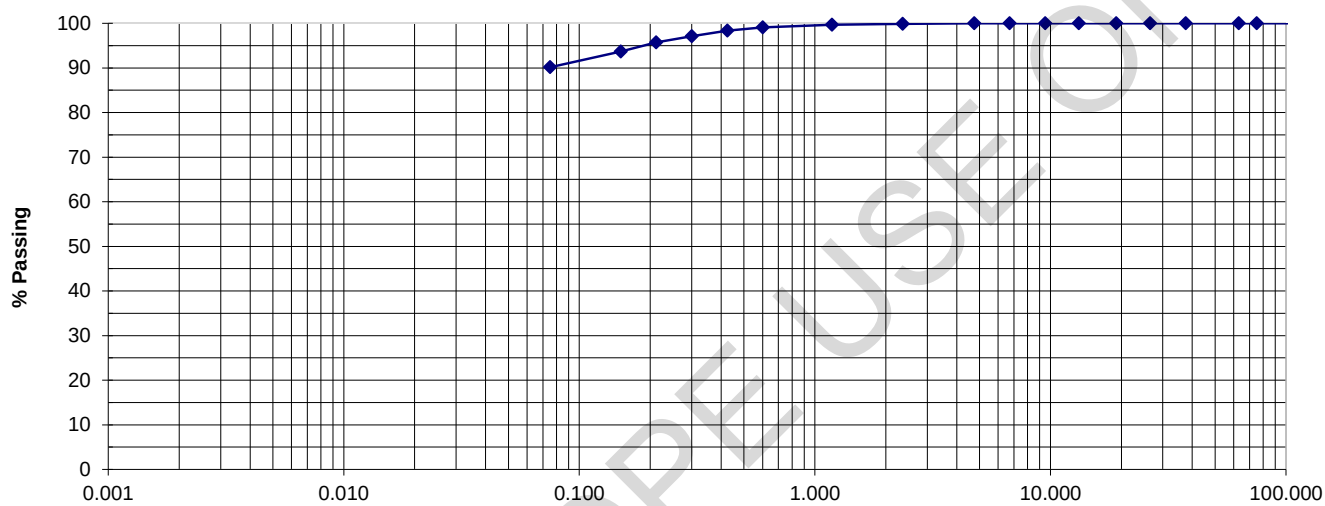


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Alexandria NSW 2015

Particle Size Distribution Report

Client	WSP	Source	SARGT001 24-m
Address	Level 27, 680 George St, Sydney NSW 2000	Sample Description	Silty CLAY with sand
Project	SAR (PS117942)	Report No	S64661-PSD
Job No	S20514-1	Lab No	S64661

Test Procedure	AS 1289.3.6.1 Determination of the particle size distribution of a soil - Standard method of analysis by sieving		
Sampling	Sampled by Client - results apply to the sample as received	Date Sampled	1/11/2020
Preparation	Prepared in accordance with the test method	Date Tested	3/12/2020



Clay	Silt	Sand	Gravel	Cobbles
------	------	------	--------	---------

Sieve Aperture: (mm)	% Passing	Specification (..) Envelope
200	100	
75	100	
63	100	
37.5	100	
26.5	100	
19	100	
13.2	100	
9.5	100	
6.7	100	

Sieve Aperture: (mm)	% Passing	Specification (..) Envelope
4.75	100	
2.36	100	
1.18	100	
0.600	99	
0.425	98	
0.300	97	
0.212	96	
0.150	94	
0.075	90	

Notes



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NATA Accredited Laboratory Number: 14874

Authorised Signatory:

Date:

8/12/2020

Chris Lloyd

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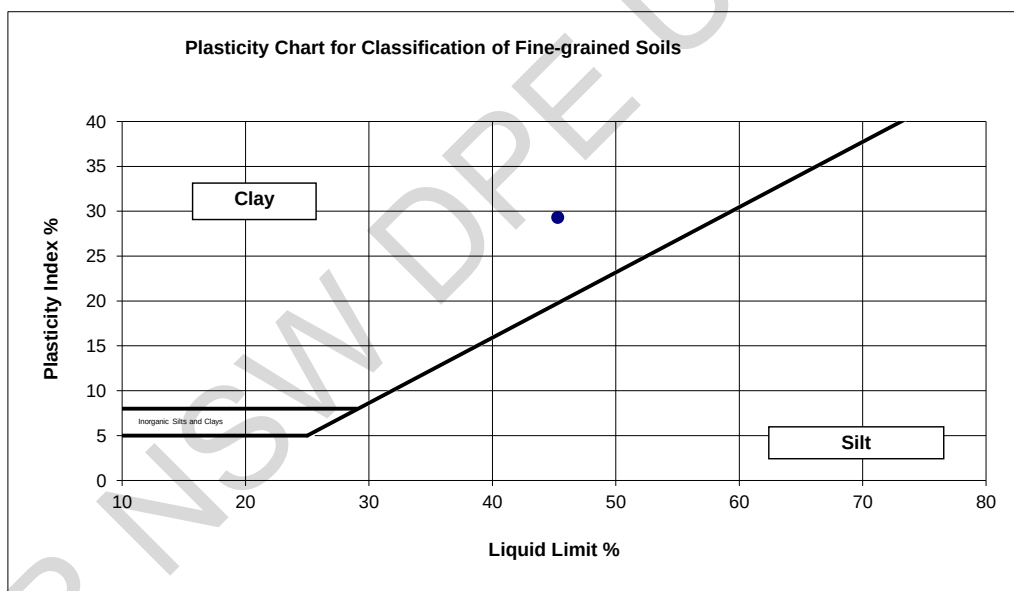
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U7/8 10 Bradford Street
Alexandria NSW 2015

SOIL CLASSIFICATION REPORT

Client	WSP	Source	SARGT011 11.3-m
Address	Level 27, 680 George St, Sydney NSW 2000	Sample Description	Silty CLAY with sand
Project	SAR (PS117942)	Report No	S64662-PI
Job No	S20514-1	Lab No	S64662

Test Procedure	☐ AS1289 2.1.1 Soil moisture content tests (Oven drying method) ☒ AS1289 3.1.1 Soil classification tests - Determination of the liquid limit of a soil - Four point casagrande method ☐ AS1289 3.1.2 Soil classification tests - Determination of the liquid limit if a soil - One point Casagrande method (subsidiary method) ☒ AS1289 3.2.1 Soil classification tests - Determination of the plastic limit of a soil - Standard method ☒ AS1289 3.3.1 Soil classification tests - Calculation of the plasticity Index of a soil ☐ AS1289 3.4.1 Soil classification tests - Determination of the linear shrinkage of a soil - Standard method		
Sampling	Sampled by Client - results apply to the sample as received	Date Sampled	1/11/2020
Preparation	Prepared in accordance with the test method	Date Tested	8/12/2020

Liquid Limit (%) 45
Linear Shrinkage (%) -
Plastic Limit (%) 16
Plasticity Index 29



Soil Preparation Method: Dry Sieved
Soil History: Oven Dried
Soil Condition: N/A

Notes



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Authorised Signatory:

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Chris Lloyd

8/01/2021

Date:

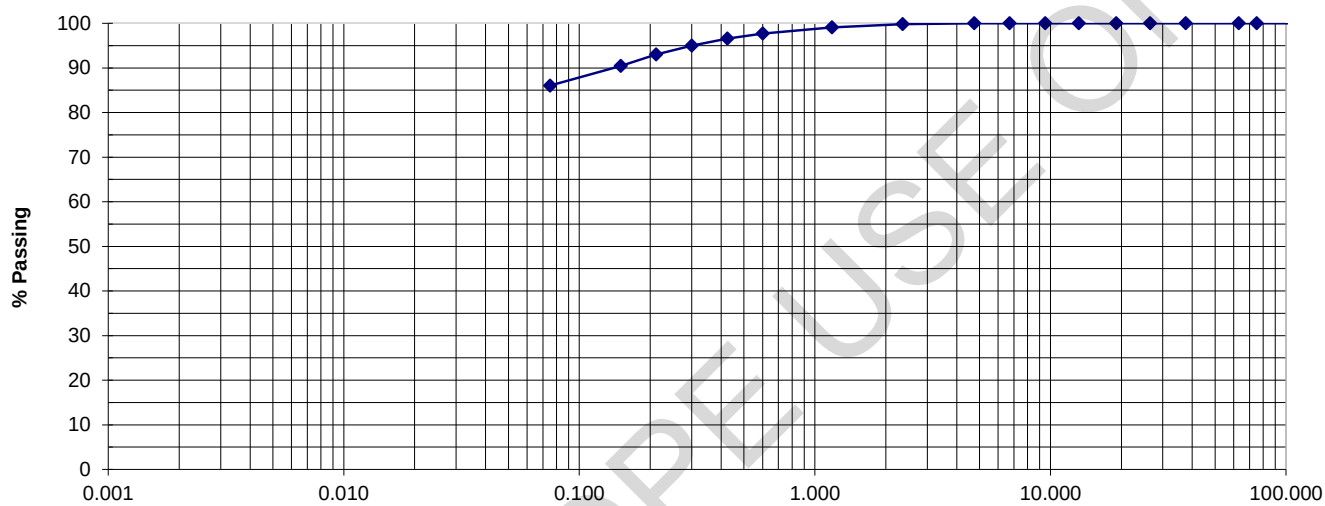


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Alexandria NSW 2015

Particle Size Distribution Report

Client	WSP	Source	SARGT011 11.3-m
Address	Level 27, 680 George St, Sydney NSW 2000	Sample Description	Silty CLAY with sand
Project	SAR (PS117942)	Report No	S64662-PSD
Job No	S20514-1	Lab No	S64662

Test Procedure	AS 1289.3.6.1 Determination of the particle size distribution of a soil - Standard method of analysis by sieving		
Sampling	Sampled by Client - results apply to the sample as received	Date Sampled	1/11/2020
Preparation	Prepared in accordance with the test method	Date Tested	3/12/2020



Clay	Silt	Sand	Gravel	Cobbles
------	------	------	--------	---------

Sieve Aperture: (mm)	% Passing	Specification (..) Envelope
200	100	
75	100	
63	100	
37.5	100	
26.5	100	
19	100	
13.2	100	
9.5	100	
6.7	100	

Sieve Aperture: (mm)	% Passing	Specification (..) Envelope
4.75	100	
2.36	100	
1.18	99	
0.600	98	
0.425	97	
0.300	95	
0.212	93	
0.150	90	
0.075	86	

Notes



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Date:

8/01/2021

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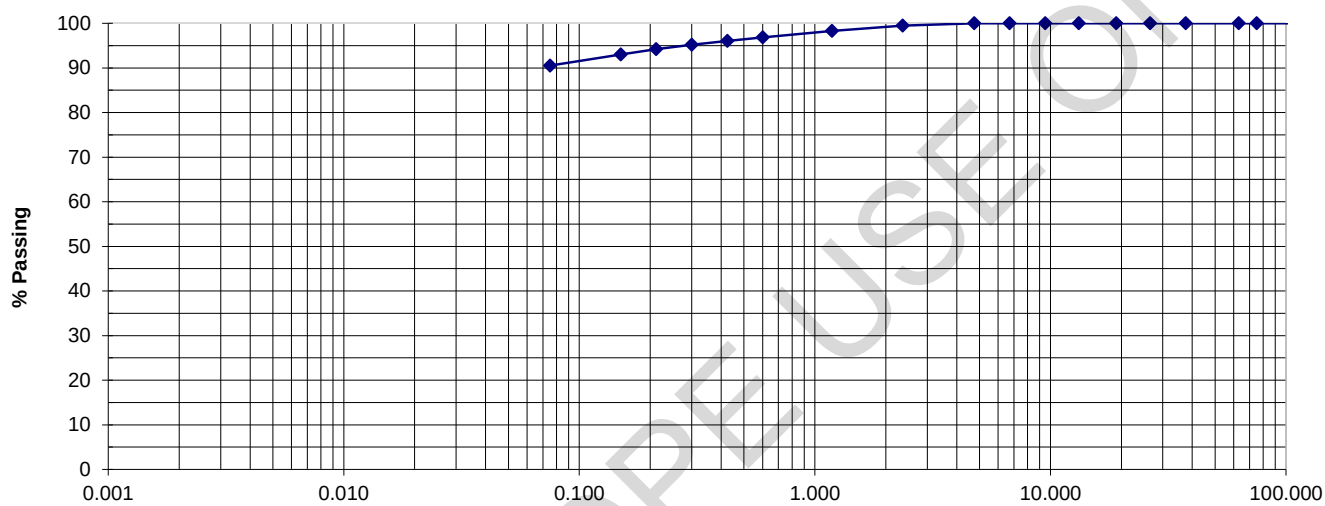
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U7/8 10 Bradford Street
Alexandria NSW 2015

Particle Size Distribution Report

Client	WSP	Source	SARGT005 20-m
Address	Level 27, 680 George St, Sydney NSW 2000	Sample Description	Silty CLAY trace of sand and gravel
Project	SAR (PS117942)	Report No	S64665-PSD
Job No	S20514-1	Lab No	S64665

Test Procedure	AS 1289.3.6.1 Determination of the particle size distribution of a soil - Standard method of analysis by sieving		
Sampling	Sampled by Client - results apply to the sample as received	Date Sampled	1/11/2020
Preparation	Prepared in accordance with the test method	Date Tested	3/12/2020



Clay	Silt	Sand	Gravel	Cobbles
------	------	------	--------	---------

Sieve Aperture: (mm)	% Passing	Specification (..) Envelope
200	100	
75	100	
63	100	
37.5	100	
26.5	100	
19	100	
13.2	100	
9.5	100	
6.7	100	

Sieve Aperture: (mm)	% Passing	Specification (..) Envelope
4.75	100	
2.36	99	
1.18	98	
0.600	97	
0.425	96	
0.300	95	
0.212	94	
0.150	93	
0.075	91	

Notes



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Authorised Signatory:

Date:

8/12/2020

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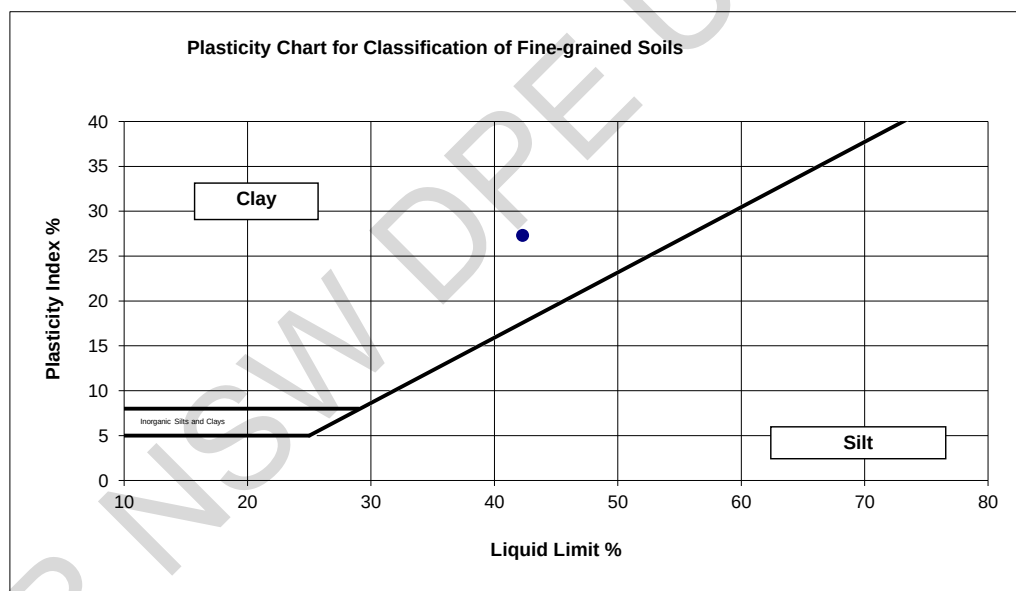
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U7/8 10 Bradford Street
Alexandria NSW 2015

SOIL CLASSIFICATION REPORT

Client	WSP	Source	SARGT005 9.9-m
Address	Level 27, 680 George St, Sydney NSW 2000	Sample Description	Silty CLAY with sand
Project	SAR (PS117942)	Report No	S64666-PI
Job No	S20514-1	Lab No	S64666

Test Procedure	☐ AS1289 2.1.1 Soil moisture content tests (Oven drying method) ☒ AS1289 3.1.1 Soil classification tests - Determination of the liquid limit of a soil - Four point casagrande method ☐ AS1289 3.1.2 Soil classification tests - Determination of the liquid limit if a soil - One point Casagrande method (subsidiary method) ☒ AS1289 3.2.1 Soil classification tests - Determination of the plastic limit of a soil - Standard method ☒ AS1289 3.3.1 Soil classification tests - Calculation of the plasticity Index of a soil ☐ AS1289 3.4.1 Soil classification tests - Determination of the linear shrinkage of a soil - Standard method		
Sampling	Sampled by Client - results apply to the sample as received	Date Sampled	1/11/2020
Preparation	Prepared in accordance with the test method	Date Tested	8/12/2020

Liquid Limit (%)	42	Linear Shrinkage (%)	-
Plastic Limit (%)	15	Plasticity Index	27



Soil Preparation Method: Dry Sieved
Soil History: Oven Dried
Soil Condition: N/A

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Chris Lloyd

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Date:

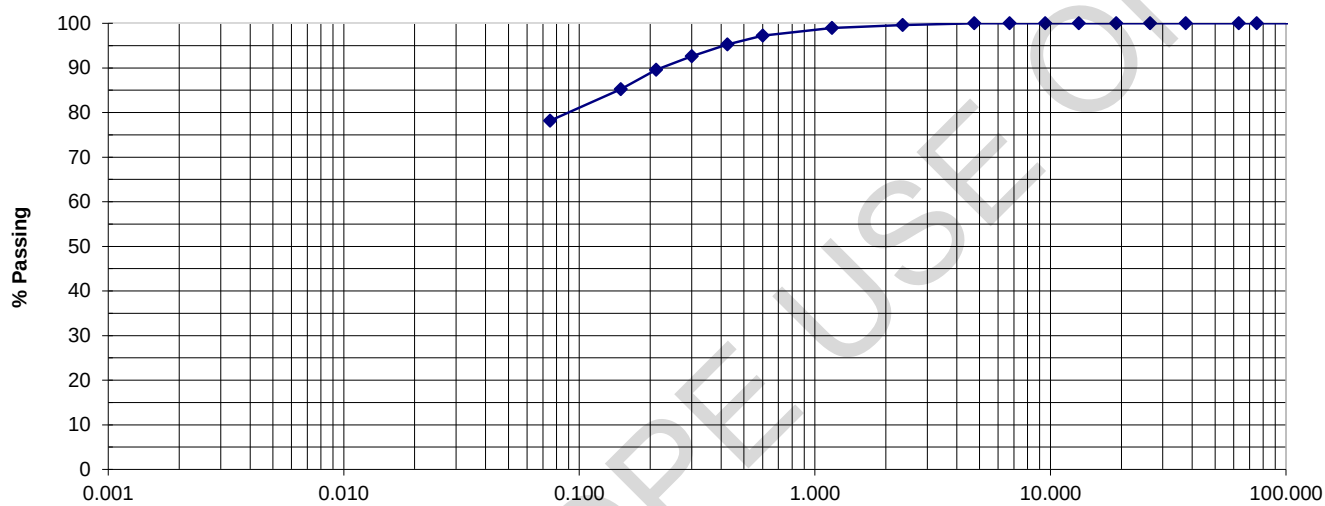


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Particle Size Distribution Report

Client	WSP	Source	SARGT005 9.9-m
Address	Level 27, 680 George St, Sydney NSW 2000	Sample Description	Silty CLAY with sand
Project	SAR (PS117942)	Report No	S64666-PSD
Job No	S20514-1	Lab No	S64666

Test Procedure	AS 1289.3.6.1 Determination of the particle size distribution of a soil - Standard method of analysis by sieving		
Sampling	Sampled by Client - results apply to the sample as received	Date Sampled	1/11/2020
Preparation	Prepared in accordance with the test method	Date Tested	3/12/2020



Clay	Silt	Sand	Gravel	Cobbles
------	------	------	--------	---------

Sieve Aperture: (mm)	% Passing	Specification (..) Envelope
200	100	
75	100	
63	100	
37.5	100	
26.5	100	
19	100	
13.2	100	
9.5	100	
6.7	100	

Sieve Aperture: (mm)	% Passing	Specification (..) Envelope
4.75	100	
2.36	100	
1.18	99	
0.600	97	
0.425	95	
0.300	93	
0.212	90	
0.150	85	
0.075	78	

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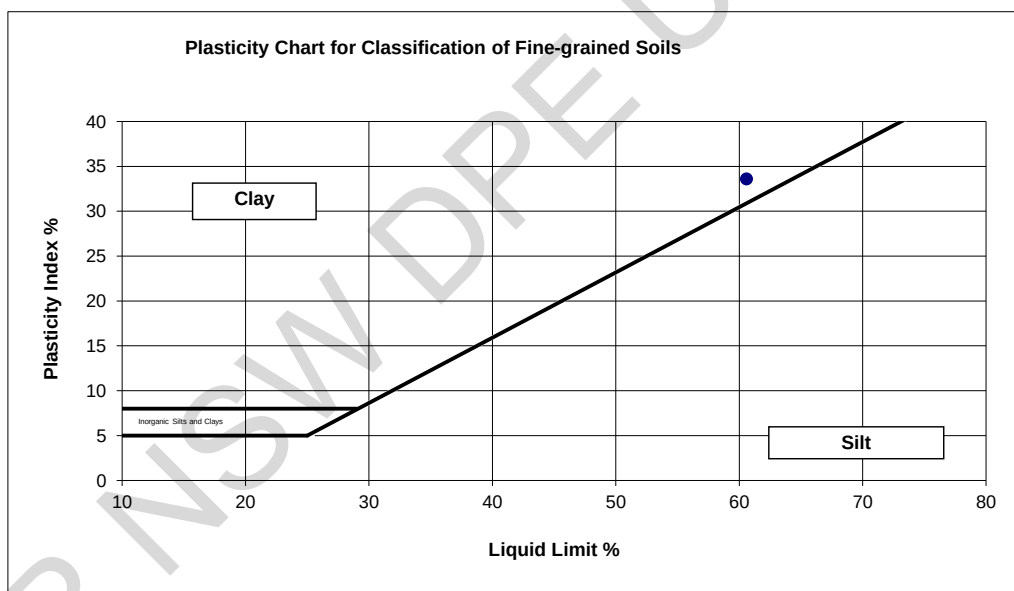
Macquarie Geotechnical
U7/8 10 Bradford Street
Alexandria NSW 2015

SOIL CLASSIFICATION REPORT

Client	WSP	Source	SARGT007 56.3-m
Address	Level 27, 680 George St, Sydney NSW 2000	Sample Description	Silty CLAY trace of sand and gravel
Project	SAR (PS117942)	Report No	S64667-PI
Job No	S20514-1	Lab No	S64667

Test Procedure	☐ AS1289 2.1.1 Soil moisture content tests (Oven drying method) ☒ AS1289 3.1.1 Soil classification tests - Determination of the liquid limit of a soil - Four point casagrande method ☐ AS1289 3.1.2 Soil classification tests - Determination of the liquid limit if a soil - One point Casagrande method (subsidiary method) ☒ AS1289 3.2.1 Soil classification tests - Determination of the plastic limit of a soil - Standard method ☒ AS1289 3.3.1 Soil classification tests - Calculation of the plasticity Index of a soil ☐ AS1289 3.4.1 Soil classification tests - Determination of the linear shrinkage of a soil - Standard method		
Sampling	Sampled by Client - results apply to the sample as received	Date Sampled	1/11/2020
Preparation	Prepared in accordance with the test method	Date Tested	8/12/2020

Liquid Limit (%)	61	Linear Shrinkage (%)	-
Plastic Limit (%)	27	Plasticity Index	34



Soil Preparation Method: Dry Sieved
Soil History: Oven Dried
Soil Condition: N/A

Notes



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Authorised Signatory:

Chris Lloyd

Chris Lloyd

9/12/2020

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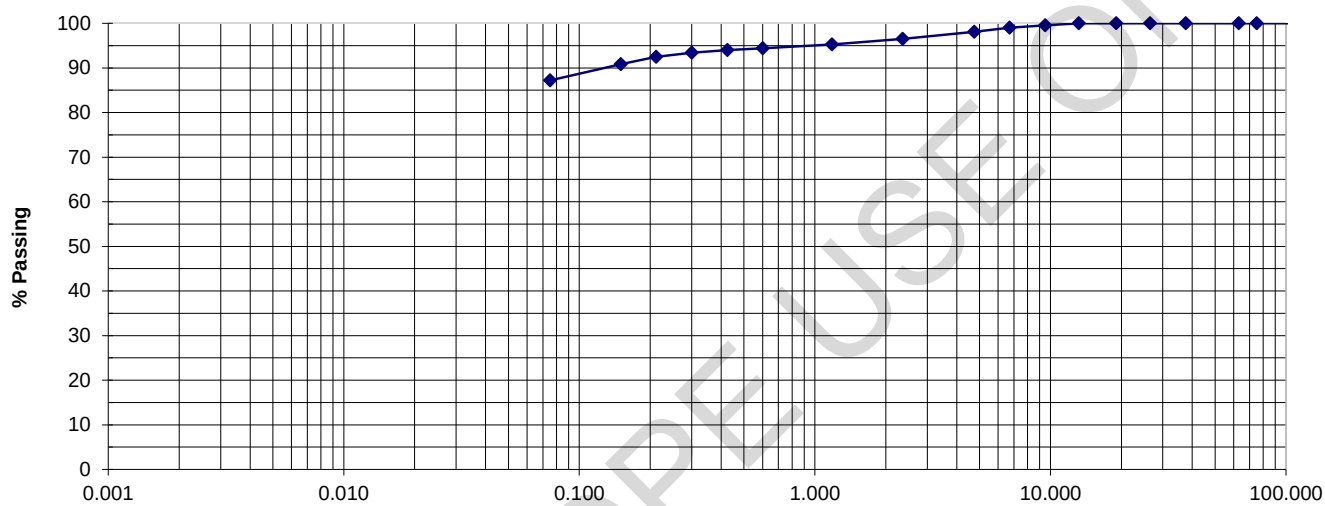


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Particle Size Distribution Report

Client	WSP	Source	SARGT007 56.3-m
Address	Level 27, 680 George St, Sydney NSW 2000	Sample Description	Silty CLAY trace of sand and gravel
Project	SAR (PS117942)	Report No	S64667-PSD
Job No	S20514-1	Lab No	S64667

Test Procedure	AS 1289.3.6.1 Determination of the particle size distribution of a soil - Standard method of analysis by sieving		
Sampling	Sampled by Client - results apply to the sample as received	Date Sampled	1/11/2020
Preparation	Prepared in accordance with the test method	Date Tested	3/12/2020



Clay	Silt	Sand	Gravel	Cobbles
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Sieve Aperture: (mm)	% Passing	Specification (..) Envelope	Sieve Aperture: (mm)	% Passing	Specification (..) Envelope
200	100		4.75	98	
75	100		2.36	96	
63	100		1.18	95	
37.5	100		0.600	94	
26.5	100		0.425	94	
19	100		0.300	93	
13.2	100		0.212	92	
9.5	100		0.150	91	
6.7	99		0.075	87	

Notes



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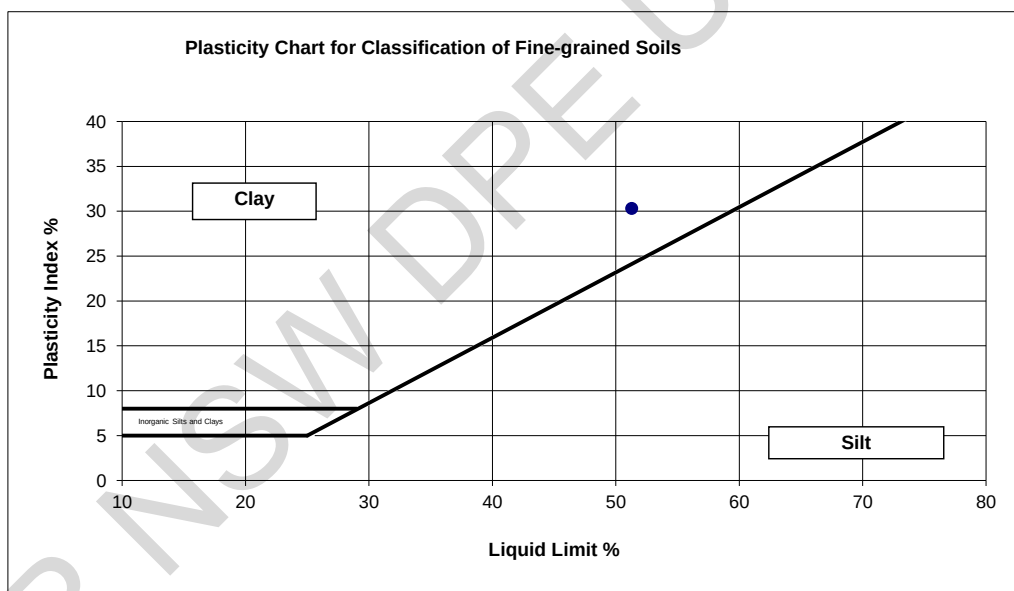
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Alexandria NSW 2015

SOIL CLASSIFICATION REPORT

Client	WSP	Source	SARGT007 18.4-m
Address	Level 27, 680 George St, Sydney NSW 2000	Sample Description	Silty CLAY trace of sand and gravel
Project	SAR (PS117942)	Report No	S64668-PI
Job No	S20514-1	Lab No	S64668

Test Procedure	☐ AS1289 2.1.1 Soil moisture content tests (Oven drying method) ☒ AS1289 3.1.1 Soil classification tests - Determination of the liquid limit of a soil - Four point casagrande method ☐ AS1289 3.1.2 Soil classification tests - Determination of the liquid limit of a soil - One point Casagrande method (subsidiary method) ☒ AS1289 3.2.1 Soil classification tests - Determination of the plastic limit of a soil - Standard method ☒ AS1289 3.3.1 Soil classification tests - Calculation of the plasticity Index of a soil ☐ AS1289 3.4.1 Soil classification tests - Determination of the linear shrinkage of a soil - Standard method		
Sampling	Sampled by Client - results apply to the sample as received	Date Sampled	1/11/2020
Preparation	Prepared in accordance with the test method	Date Tested	8/12/2020

Liquid Limit (%)	51	Linear Shrinkage (%)	-
Plastic Limit (%)	21	Plasticity Index	30



Notes	
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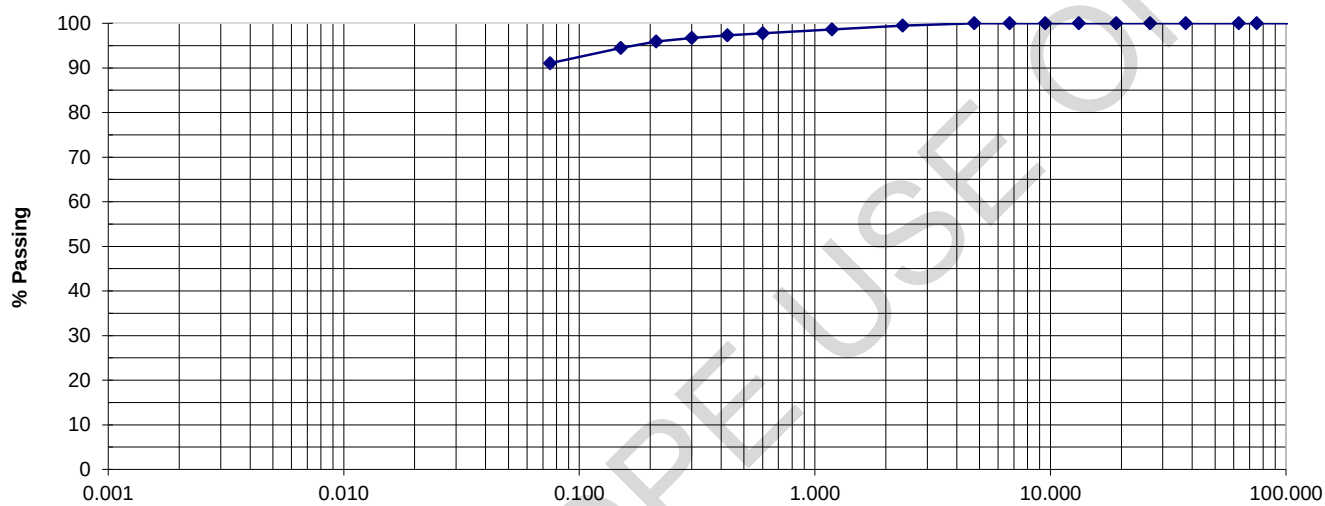


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U7/8 10 Bradford Street
Alexandria NSW 2015

Particle Size Distribution Report

Client	WSP	Source	SARGT007 18.4-m
Address	Level 27, 680 George St, Sydney NSW 2000	Sample Description	Silty CLAY trace of sand and gravel
Project	SAR (PS117942)	Report No	S64668-PSD
Job No	S20514-1	Lab No	S64668

Test Procedure	AS 1289.3.6.1 Determination of the particle size distribution of a soil - Standard method of analysis by sieving		
Sampling	Sampled by Client - results apply to the sample as received	Date Sampled	1/11/2020
Preparation	Prepared in accordance with the test method	Date Tested	7/12/2020



Clay	Silt	Sand	Gravel	Cobbles
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Sieve Aperture: (mm)	% Passing	Specification (..) Envelope	Sieve Aperture: (mm)	% Passing	Specification (..) Envelope
200	100		4.75	100	
75	100		2.36	99	
63	100		1.18	99	
37.5	100		0.600	98	
26.5	100		0.425	97	
19	100		0.300	97	
13.2	100		0.212	96	
9.5	100		0.150	94	
6.7	100		0.075	91	

Notes



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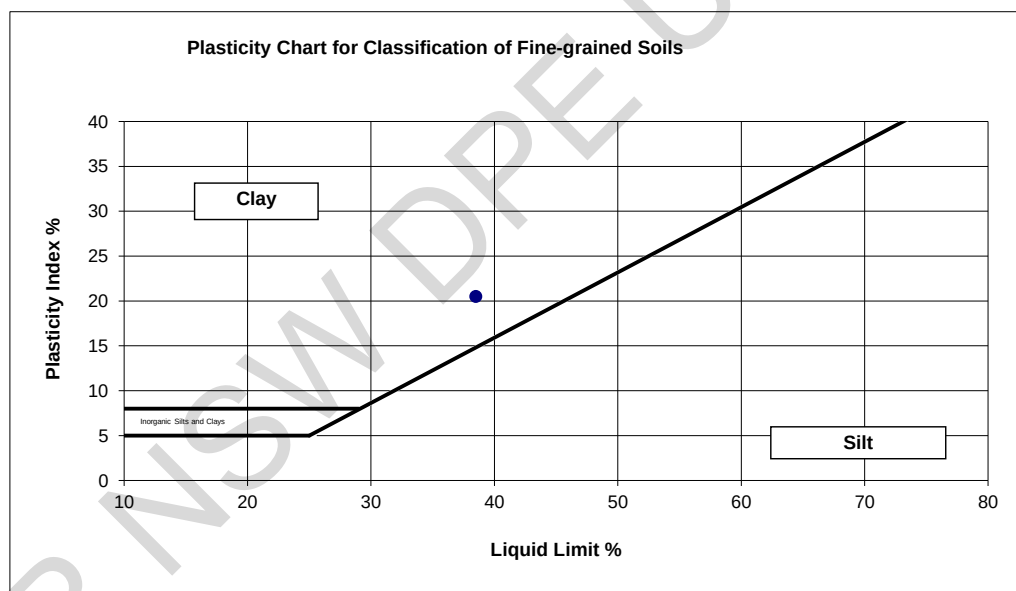
Macquarie Geotechnical
U7/8 10 Bradford Street
Alexandria NSW 2015

SOIL CLASSIFICATION REPORT

Client	WSP	Source	SARGT011 22.3-m
Address	Level 27, 680 George St, Sydney NSW 2000	Sample Description	Silty CLAY with sand and gravel
Project	SAR (PS117942)	Report No	S64663-PI
Job No	S20514-1	Lab No	S64663

Test Procedure	☐ AS1289 2.1.1 Soil moisture content tests (Oven drying method) ☒ AS1289 3.1.1 Soil classification tests - Determination of the liquid limit of a soil - Four point casagrande method ☐ AS1289 3.1.2 Soil classification tests - Determination of the liquid limit if a soil - One point Casagrande method (subsidiary method) ☒ AS1289 3.2.1 Soil classification tests - Determination of the plastic limit of a soil - Standard method ☒ AS1289 3.3.1 Soil classification tests - Calculation of the plasticity Index of a soil ☐ AS1289 3.4.1 Soil classification tests - Determination of the linear shrinkage of a soil - Standard method		
Sampling	Sampled by Client - results apply to the sample as received	Date Sampled	1/11/2020
Preparation	Prepared in accordance with the test method	Date Tested	8/12/2020

Liquid Limit (%)	39	Linear Shrinkage (%)	-
Plastic Limit (%)	18	Plasticity Index	21



Soil Preparation Method: Dry Sieved
Soil History: Oven Dried
Soil Condition: N/A

Notes



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Date:



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 Alexandria NSW 2015

Particle Size Distribution Report

Client	WSP	Source	SARGT011 22.3-m
Address	Level 27, 680 George St, Sydney NSW 2000	Sample Description	Silty CLAY with sand and gravel
Project	SAR (PS117942)	Report No	S64663-PSD
Job No	S20514-1	Lab No	S64663

Test Procedure	AS 1289.3.6.1 Determination of the particle size distribution of a soil - Standard method of analysis by sieving		
Sampling	Sampled by Client - results apply to the sample as received	Date Sampled	1/11/2020
Preparation	Prepared in accordance with the test method	Date Tested	7/12/2020



Clay	Silt	Sand	Gravel	Cobbles
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Sieve Aperture: (mm)	% Passing	Specification (..) Envelope	Sieve Aperture: (mm)	% Passing	Specification (..) Envelope
200	100		4.75	84	
75	100		2.36	83	
63	100		1.18	83	
37.5	86		0.600	83	
26.5	84		0.425	82	
19	84		0.300	81	
13.2	84		0.212	78	
9.5	84		0.150	72	
6.7	84		0.075	66	

Notes



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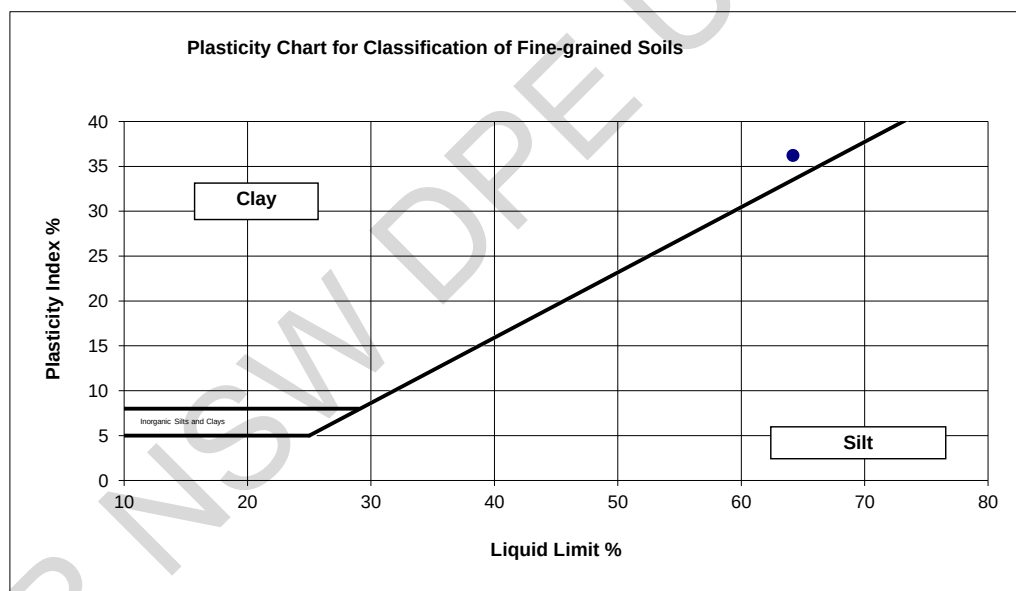
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SOIL CLASSIFICATION REPORT

Client	WSP	Source	SARGT005 20-m
Address	Level 27, 680 George St, Sydney NSW 2000	Sample Description	Silty CLAY trace of sand and gravel
Project	SAR (PS117942)	Report No	S64665-PI
Job No	S20514-1	Lab No	S64665

Test Procedure	☐ AS1289 2.1.1 Soil moisture content tests (Oven drying method) ☒ AS1289 3.1.1 Soil classification tests - Determination of the liquid limit of a soil - Four point casagrande method ☐ AS1289 3.1.2 Soil classification tests - Determination of the liquid limit if a soil - One point Casagrande method (subsidiary method) ☒ AS1289 3.2.1 Soil classification tests - Determination of the plastic limit of a soil - Standard method ☒ AS1289 3.3.1 Soil classification tests - Calculation of the plasticity Index of a soil ☐ AS1289 3.4.1 Soil classification tests - Determination of the linear shrinkage of a soil - Standard method		
Sampling	Sampled by Client - results apply to the sample as received	Date Sampled	1/11/2020
Preparation	Prepared in accordance with the test method	Date Tested	4/12/2020

Liquid Limit (%)	64	Linear Shrinkage (%)	-
Plastic Limit (%)	28	Plasticity Index	36



Notes	
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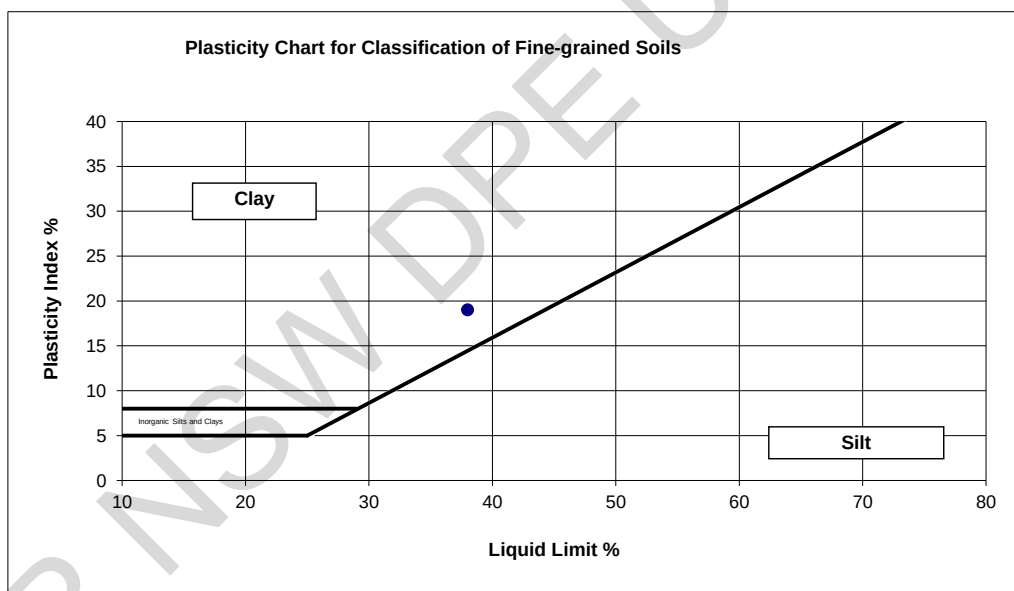
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 Alexandria NSW 2015

SOIL CLASSIFICATION REPORT

Client	WSP	Source	SARGT003 19.9-m
Address	Level 27, 680 George St, Sydney NSW 2000	Sample Description	Silty CLAY trace of Sand.
Project	SAR (PS117942)	Report No	S65256-PI
Job No	S21012-1	Lab No	S65256

Test Procedure	☐ AS1289 2.1.1 Soil moisture content tests (Oven drying method) ☒ AS1289 3.1.1 Soil classification tests - Determination of the liquid limit of a soil - Four point casagrande method ☐ AS1289 3.1.2 Soil classification tests - Determination of the liquid limit if a soil - One point Casagrande method (subsidiary method) ☒ AS1289 3.2.1 Soil classification tests - Determination of the plastic limit of a soil - Standard method ☒ AS1289 3.3.1 Soil classification tests - Calculation of the plasticity Index of a soil ☐ AS1289 3.4.1 Soil classification tests - Determination of the linear shrinkage of a soil - Standard method		
Sampling	Sampled by Client - results apply to the sample as received	Date Sampled	1/12/2020
Preparation	Prepared in accordance with the test method	Date Tested	1/02/2021

Liquid Limit (%)	38	Linear Shrinkage (%)	-
Plastic Limit (%)	19	Plasticity Index	19



Soil Preparation Method: Dry Sieved
Soil History: Oven Dried
Soil Condition: N/A

Notes



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Date:

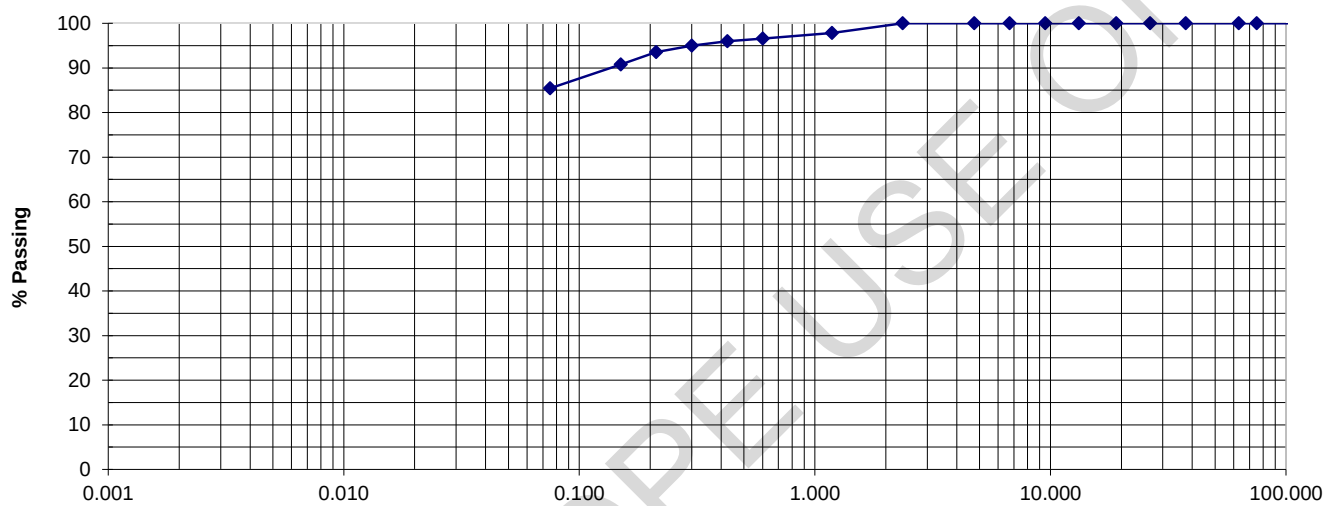


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U7/8 10 Bradford Street
Alexandria NSW 2015

Particle Size Distribution Report

Client	WSP	Source	SARGT003 19.9-m
Address	Level 27, 680 George St, Sydney NSW 2000	Sample Description	Silty CLAY trace of Sand.
Project	SAR (PS117942)	Report No	S65256-PSD
Job No	S21012-1	Lab No	S65256

Test Procedure	AS 1289.3.6.1 Determination of the particle size distribution of a soil - Standard method of analysis by sieving		
Sampling	Sampled by Client - results apply to the sample as received	Date Sampled	1/12/2020
Preparation	Prepared in accordance with the test method	Date Tested	1/02/2021



Clay	Silt	Sand	Gravel	Cobbles
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Sieve Aperture: (mm)	% Passing	Specification (..) Envelope	Sieve Aperture: (mm)	% Passing	Specification (..) Envelope
200	100		4.75	100	
75	100		2.36	100	
63	100		1.18	98	
37.5	100		0.600	97	
26.5	100		0.425	96	
19	100		0.300	95	
13.2	100		0.212	94	
9.5	100		0.150	91	
6.7	100		0.075	85	

Notes



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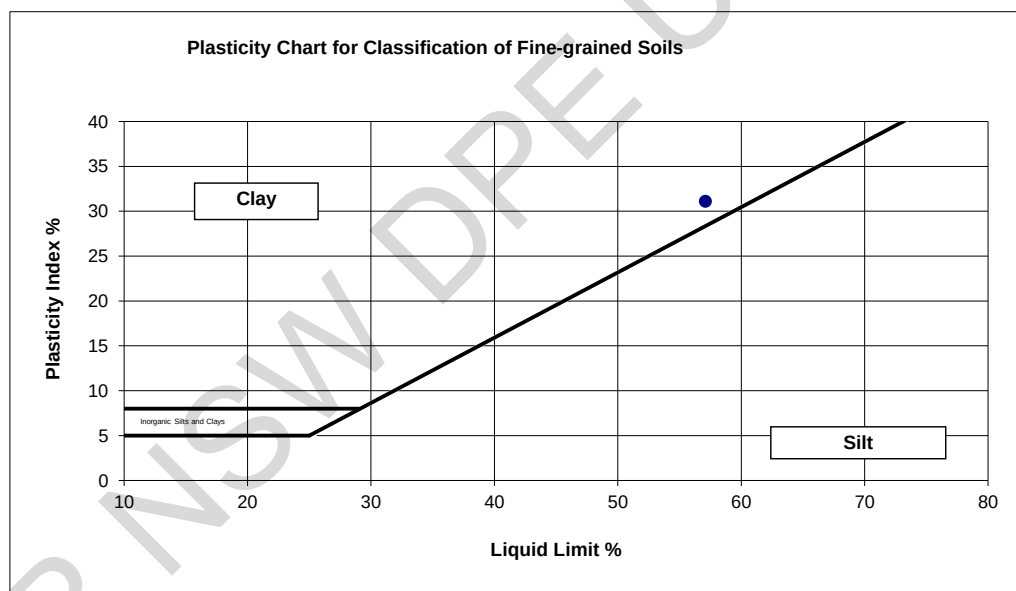
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SOIL CLASSIFICATION REPORT

Client	WSP	Source	SARGT006 37.8-m
Address	Level 27, 680 George St, Sydney NSW 2000	Sample Description	Silty CLAY trace of Sand and Gravel.
Project	SAR (PS117942)	Report No	S65257-PI
Job No	S21012-1	Lab No	S65257

Test Procedure	☐ AS1289 2.1.1 Soil moisture content tests (Oven drying method) ☒ AS1289 3.1.1 Soil classification tests - Determination of the liquid limit of a soil - Four point casagrande method ☐ AS1289 3.1.2 Soil classification tests - Determination of the liquid limit if a soil - One point Casagrande method (subsidiary method) ☒ AS1289 3.2.1 Soil classification tests - Determination of the plastic limit of a soil - Standard method ☒ AS1289 3.3.1 Soil classification tests - Calculation of the plasticity Index of a soil ☐ AS1289 3.4.1 Soil classification tests - Determination of the linear shrinkage of a soil - Standard method		
Sampling	Sampled by Client - results apply to the sample as received	Date Sampled	1/12/2020
Preparation	Prepared in accordance with the test method	Date Tested	19/01/2021

Liquid Limit (%)	57	Linear Shrinkage (%)	-
Plastic Limit (%)	26	Plasticity Index	31



Notes	
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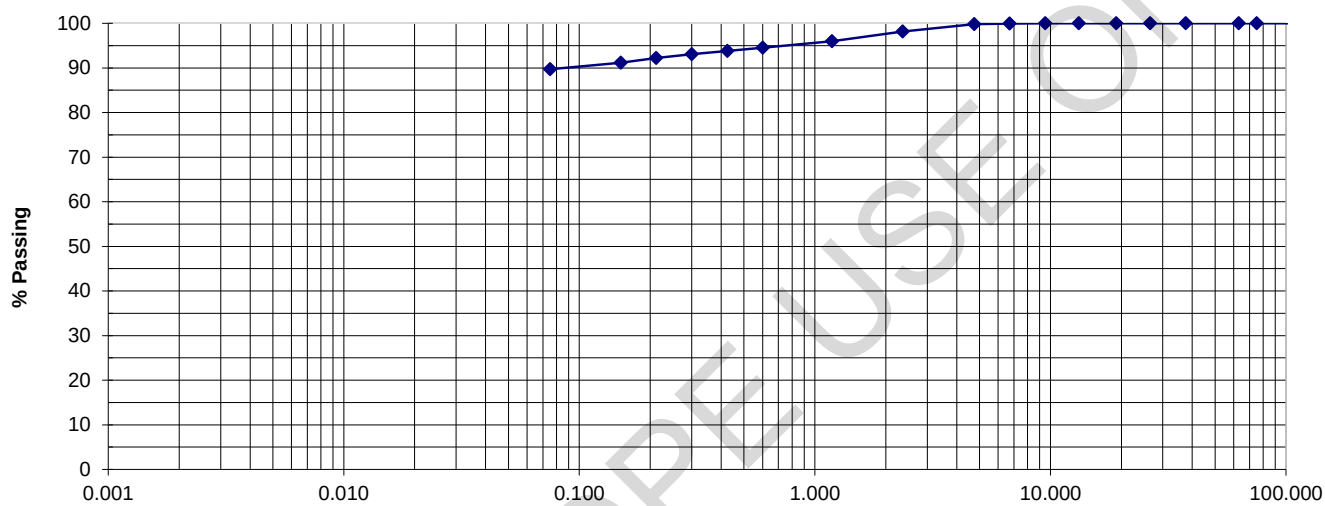


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Particle Size Distribution Report

Client	WSP	Source	SARGT006 37.8-m
Address	Level 27, 680 George St, Sydney NSW 2000	Sample Description	Silty CLAY trace of Sand and Gravel.
Project	SAR (PS117942)	Report No	S65257-PSD
Job No	S21012-1	Lab No	S65257

Test Procedure	AS 1289.3.6.1 Determination of the particle size distribution of a soil - Standard method of analysis by sieving		
Sampling	Sampled by Client - results apply to the sample as received	Date Sampled	1/12/2020
Preparation	Prepared in accordance with the test method	Date Tested	22/01/2021



Clay	Silt	Sand	Gravel	Cobbles
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Sieve Aperture: (mm)	% Passing	Specification (..) Envelope	Sieve Aperture: (mm)	% Passing	Specification (..) Envelope
200	100		4.75	100	
75	100		2.36	98	
63	100		1.18	96	
37.5	100		0.600	95	
26.5	100		0.425	94	
19	100		0.300	93	
13.2	100		0.212	92	
9.5	100		0.150	91	
6.7	100		0.075	90	

Notes



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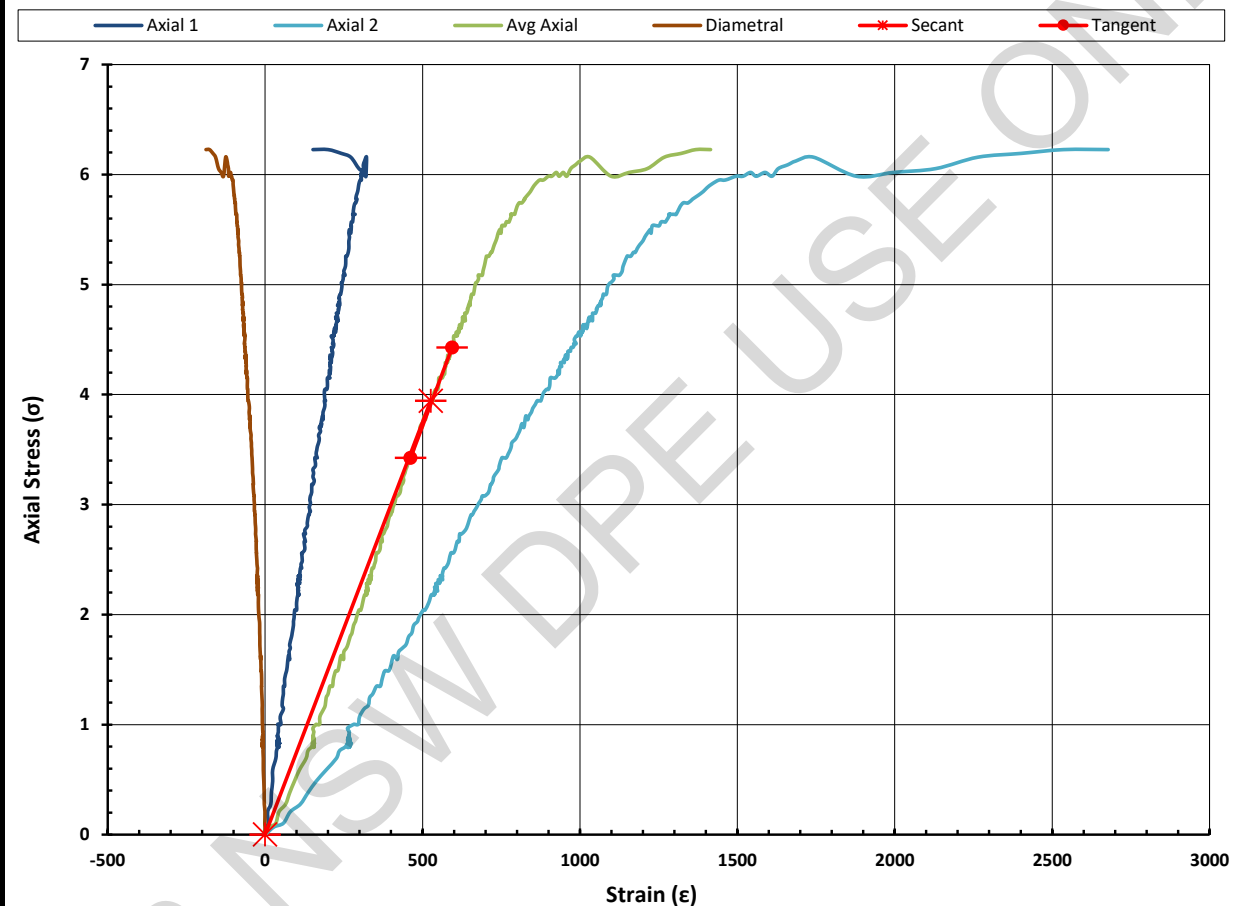
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U7/8 10 Bradford Street
Alexandria NSW 2015

Deformability of Rock Materials in Uniaxial Compression

Client	WSP	Sample Source	SARGT006 93.2m
Address	Level 27, 680 George St, Sydney NSW 2000	Sample Description	Rock Core
Project	SAR (PS117942)	Report #	S65258-MOD
Job #	S21012-1	Sample #	S65258

Test Procedure	AS 4133.4.3.2 Deformability of rock materials in uniaxial compression-Rock strength less than 50 MPa		
Sampling	Sampled by Client - results apply to the sample as received	Date Sampled	1/12/2020
Storage History	Sealed	Storage Environment	Sealed at as received moisture condition

Axial Stress vs Strain Plots



Uniaxial Compressive Strength

6.2 MPa

Young's Modulus

Poisson's Ratio

Tangent	7.6 GPa	0.11	from 55 % to 71 % of Max UCS
Secant	7.5 GPa	0.10	from 0 % to 63 % of Max UCS

Notes

Failure influenced by folds in sample



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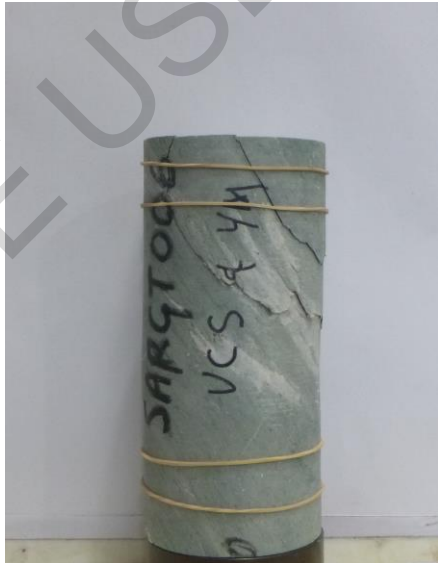
Chris Lloyd

Chris Lloyd

Date: 1/02/2021

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Unit 7 & 8, 10 Bradford Street
Alexandria NSW 2015

Deformability of Rock Materials in Uniaxial Compression			
Client	WSP	Sample Source	SARGT006 93.2m
Address	Level 27, 680 George St, Sydney NSW 2000	Sample Description	Rock Core
Project	SAR (PS117942)	Report #	S65258-MOD
Job #	S21012-1	Sample #	S65258
Test Procedure	AS 4133.4.3.2 Deformability of rock materials in uniaxial compression-Rock strength less than 50 MPa		
Sampling	Sampled by Client - results apply to the sample as received	Date Sampled	1/12/2020
Storage History	Sealed	Storage Environment	Sealed at as received moisture condition
Average Specimen Diameter (mm)	60.7	Moisture Content (%)	0.4
Average Specimen Height (mm)	165.2	Wet Density (t/m ³)	2.62
Length to Diameter Ratio	2.7	Dry Density (t/m ³)	2.61
Duration of Test (min)	10.16	Rate of Displacement (mm/min):	< 0.1
Date of Test:	18/1/21	Specimen Curing	-
Mode of Failure	Other - see photo	Test Apparatus	Matest Compression Machine with Axial and Circumferential Extensometers.
  Before Test After Test			
Uniaxial Compressive Strength		6.2	MPa
<u>Young's Modulus</u> Tangent 7.6 GPa Secant 7.5 GPa		<u>Poisson's Ratio</u> 0.11 from 55 % to 71 % of Max UCS 0.10 from 0 % to 63 % of Max UCS	
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		Unit 7 & 8, 10 Bradford Street Alexandria NSW 2015	

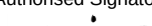
POINT LOAD STRENGTH INDEX REPORT

Client	WSP	Moisture Content Condition	As received
Address	Level 27, 680 George St, Sydney NSW 2000	Storage History	Core boxes
Project	SAR (PS117942)	Report #	S65258-PL
Job #	S21012-1	Test Date	18/01/2021

Test Procedure	☒ AS4133 4.1	Rock strength tests - Determination of point load strength index	
Sampling	Sampled by Client - results apply to the sample as received	Date Sampled	1/12/2020
Preparation	Prepared in accordance with the test method		

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<u>Failure Modes</u> 1 - Fracture through fabric of specimen oblique to bedding, not influenced by weak planes. 2 - Fracture along bedding. 3 - Fracture influenced by pre-existing plane, microfracture, vein or chemical alteration. 4 - Chip or partial fracture.	<u>Notes</u>
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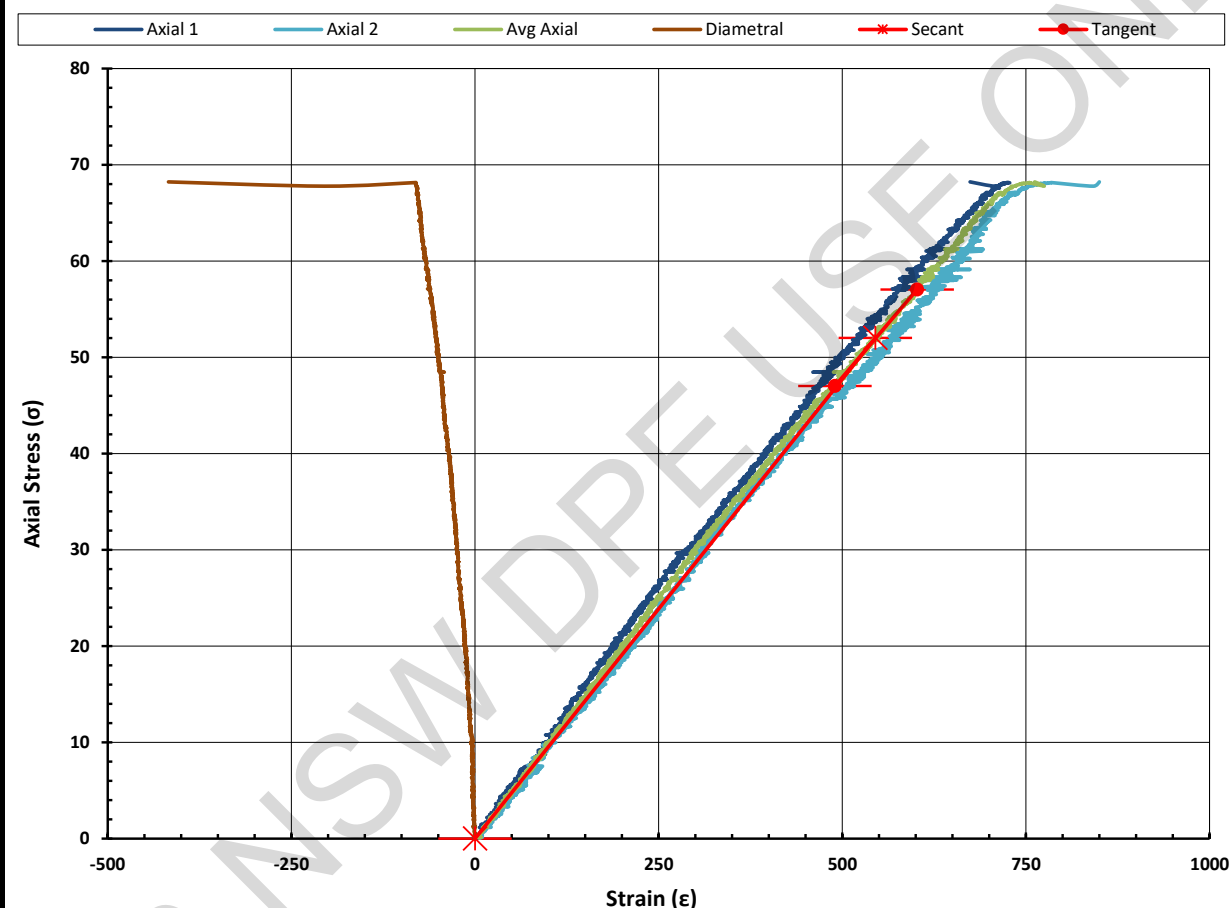
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	NATA Accredited Laboratory Number: 14874	Chris Lloyd	Date
MACQUARIE GEOTECH	Macquarie Geotech U7/8 10 Bradford Street Alexandria NSW		

Deformability of Rock Materials in Uniaxial Compression

Client	WSP	Sample Source	RWD045 356.8m
Address	Level 27, 680 George St, Sydney NSW 2000	Sample Description	Rock Core
Project	SAR (PS117942)	Report #	S65259-MOD
Job #	S21012-1	Sample #	S65259

Test Procedure	AS 4133.4.3.1 Deformability of rock materials in uniaxial compression-Strengths of 50 MPa and greater		
Sampling	Sampled by Client - results apply to the sample as received	Date Sampled	1/12/2020
Storage History	Sealed	Storage Environment	Sealed at as received moisture condition

Axial Stress vs Strain Plots



Uniaxial Compressive Strength

99 MPa

Young's Modulus

Poisson's Ratio

Tangent	89.5 GPa	0.10	from 69 % to 84 % of Max UCS
Secant	95.4 GPa	0.10	from 0 % to 76 % of Max UCS

Notes

Graphical representation of stress/ strain data by extensometer measurement is limited due to fracturing within the specimen.



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NATA Accredited Laboratory Number: 14874

Authorised Signatory:

Chris Lloyd

2/02/2021

Date:

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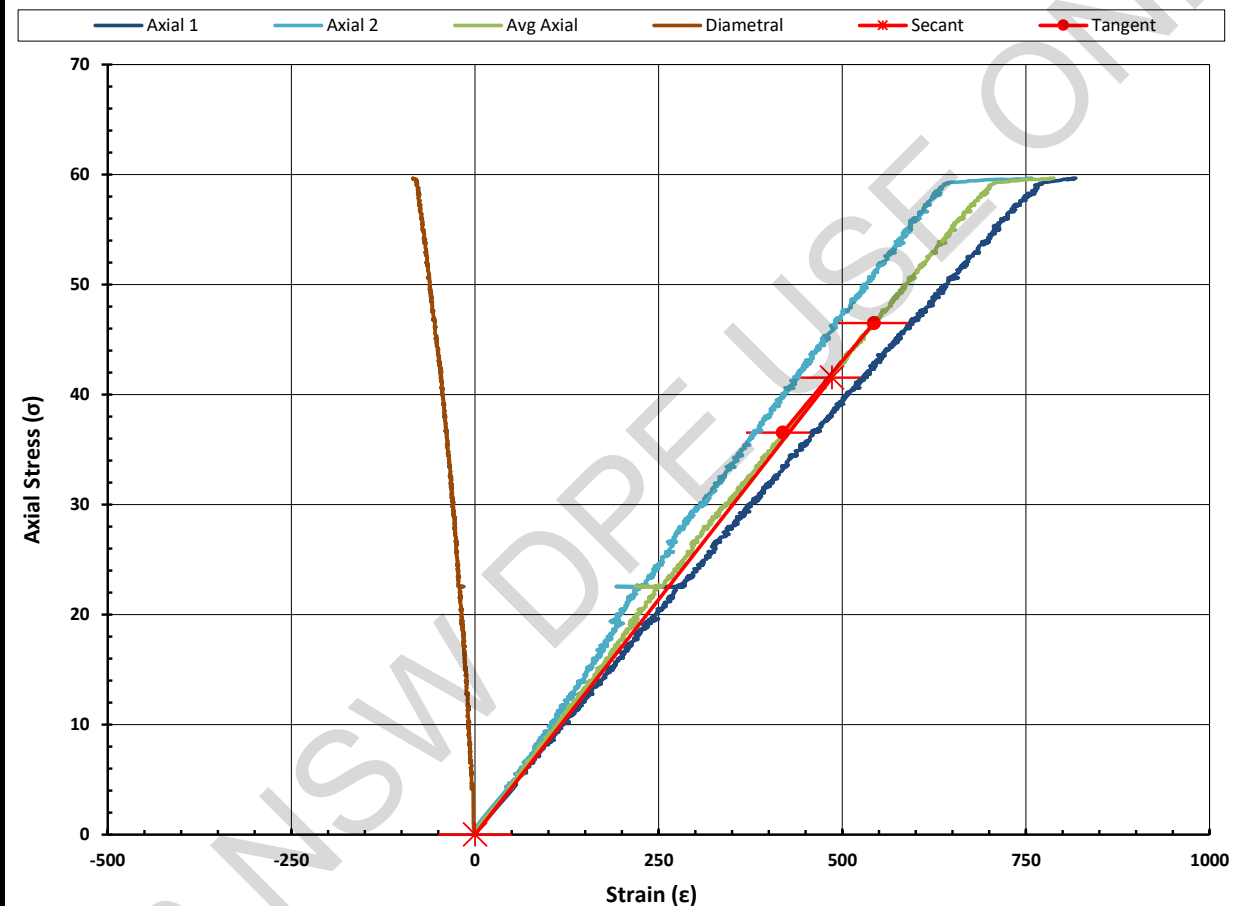
Deformability of Rock Materials in Uniaxial Compression			
Client	WSP	Sample Source	RWD045 356.8m
Address	Level 27, 680 George St, Sydney NSW 2000	Sample Description	Rock Core
Project	SAR (PS117942)	Report #	S65259-MOD
Job #	S21012-1	Sample #	S65259
Test Procedure	AS 4133.4.3.1 Deformability of rock materials in uniaxial compression-Strengths of 50 MPa and greater		
Sampling	Sampled by Client - results apply to the sample as received	Date Sampled	1/12/2020
Storage History	Sealed	Storage Environment	Sealed at as received moisture condition
Average Specimen Diameter (mm)	61.0	Moisture Content (%)	0
Average Specimen Height (mm)	179	Wet Density (t/m ³)	2.77
Length to Diameter Ratio	2.9	Dry Density (t/m ³)	2.77
Duration of Test (min)	23.75	Rate of Loading (MPa/min):	2.8727144
Date of Test:	18/1/21	Specimen Curing	-
Mode of Failure	Tensile dominated	Test Apparatus	Matest Compression Machine with Axial and Circumferential Extensometers.
  Before Test After Test			
Uniaxial Compressive Strength		99	MPa
	<u>Young's Modulus</u>	<u>Poisson's Ratio</u>	
Tangent	89.5 GPa	0.10	from 69 % to 84 % of Max UCS
Secant	95.4 GPa	0.10	from 0 % to 76 % of Max UCS
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Deformability of Rock Materials in Uniaxial Compression

Client	WSP	Sample Source	RWD045 451.12m
Address	Level 27, 680 George St, Sydney NSW 2000	Sample Description	Rock Core
Project	SAR (PS117942)	Report #	S65260-MOD
Job #	S21012-1	Sample #	S65260

Test Procedure	AS 4133.4.3.2 Deformability of rock materials in uniaxial compression-Rock strength less than 50 MPa		
Sampling	Sampled by Client - results apply to the sample as received	Date Sampled	1/12/2020
Storage History	Sealed	Storage Environment	Sealed at as received moisture condition

Axial Stress vs Strain Plots



Uniaxial Compressive Strength **85 MPa**

Young's Modulus **Poisson's Ratio**

Tangent	80.3 GPa	0.10	from 61 % to 78 % of Max UCS
Secant	85.5 GPa	0.10	from 0 % to 70 % of Max UCS

Notes



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Deformability of Rock Materials in Uniaxial Compression

Client	WSP	Sample Source	RWD045 451.12m
Address	Level 27, 680 George St, Sydney NSW 2000	Sample Description	Rock Core
Project	SAR (PS117942)	Report #	S65260-MOD
Job #	S21012-1	Sample #	S65260

Test Procedure	AS 4133.4.3.2 Deformability of rock materials in uniaxial compression-Rock strength less than 50 MPa		
Sampling	Sampled by Client - results apply to the sample as received	Date Sampled	1/12/2020
Storage History	Sealed	Storage Environment	Sealed at as received moisture condition

Average Specimen Diameter (mm)	61.0	Moisture Content (%)	0
Average Specimen Height (mm)	173	Wet Density (t/m³)	2.84
Length to Diameter Ratio	2.8	Dry Density (t/m³)	2.84
Duration of Test (min)	16.70	Rate of Loading (MPa/min):	3.5733907
Date of Test:	27/1/21	Specimen Curing	-
Mode of Failure	Tensile dominated	Test Apparatus	Matest Compression Machine with Axial and Circumferential Extensometers.



Before Test



After Test

Uniaxial Compressive Strength

85 MPa

Young's Modulus

Poisson's Ratio

Tangent	80.3 GPa	0.10	from 61 % to 78 % of Max UCS
Secant	85.5 GPa	0.10	from 0 % to 70 % of Max UCS



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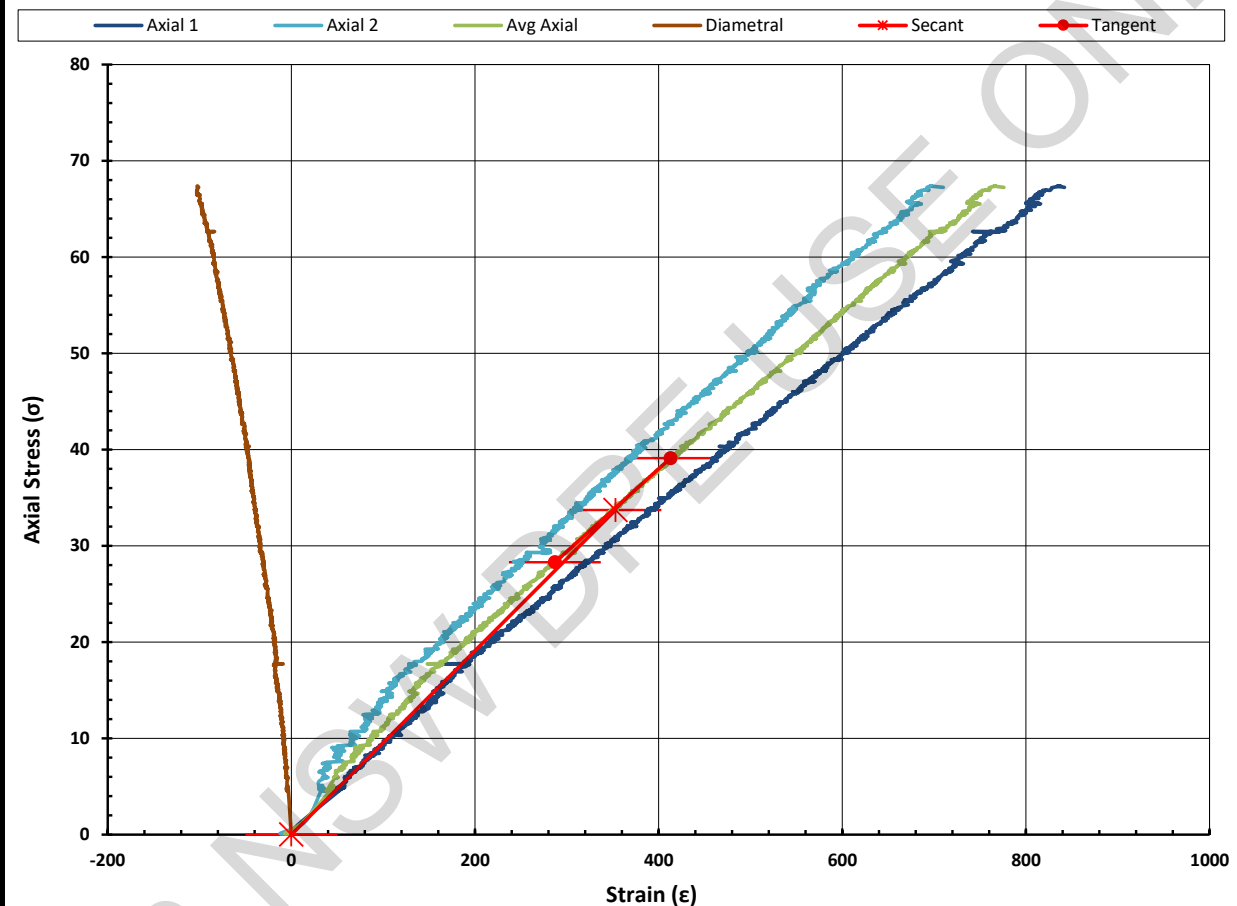
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Deformability of Rock Materials in Uniaxial Compression

Client	WSP	Sample Source	RWD045 607.14m
Address	Level 27, 680 George St, Sydney NSW 2000	Sample Description	Rock Core
Project	SAR (PS117942)	Report #	S65261-MOD
Job #	S21012-1	Sample #	S65261

Test Procedure	AS 4133.4.3.1 Deformability of rock materials in uniaxial compression-Strengths of 50 MPa and greater		
Sampling	Sampled by Client - results apply to the sample as received	Date Sampled	1/12/2020
Storage History	Sealed	Storage Environment	Sealed at as received moisture condition

Axial Stress vs Strain Plots



Uniaxial Compressive Strength

67

MPa

Young's Modulus

Poisson's Ratio

Tangent	85.8 GPa	0.11	from 42 % to 58 % of Max UCS
Secant	95.5 GPa	0.11	from 0 % to 50 % of Max UCS

Notes



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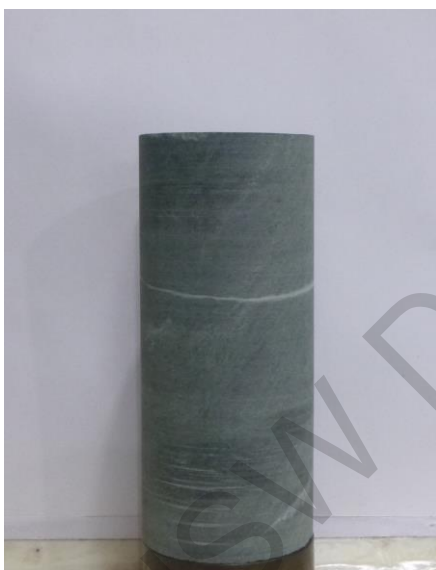
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Deformability of Rock Materials in Uniaxial Compression

Client	WSP	Sample Source	RWD045 607.14m
Address	Level 27, 680 George St, Sydney NSW 2000	Sample Description	Rock Core
Project	SAR (PS117942)	Report #	S65261-MOD
Job #	S21012-1	Sample #	S65261

Test Procedure	AS 4133.4.3.1 Deformability of rock materials in uniaxial compression-Strengths of 50 MPa and greater		
Sampling	Sampled by Client - results apply to the sample as received	Date Sampled	1/12/2020
Storage History	Sealed	Storage Environment	Sealed at as received moisture condition
Average Specimen Diameter (mm)	60.5	Moisture Content (%)	0
Average Specimen Height (mm)	178	Wet Density (t/m³)	2.78
Length to Diameter Ratio	2.9	Dry Density (t/m³)	2.77
Duration of Test (min)	21.28	Rate of Loading (MPa/min):	3.1657823
Date of Test:	28/1/21	Specimen Curing	-
Mode of Failure	Tensile dominated	Test Apparatus	Matest Compression Machine with Axial and Circumferential Extensometers.



Before Test



After Test

Uniaxial Compressive Strength		67	MPa
	Young's Modulus	Poisson's Ratio	
Tangent	85.8 GPa	0.11	from 42 % to 58 % of Max UCS
Secant	95.5 GPa	0.11	from 0 % to 50 % of Max UCS



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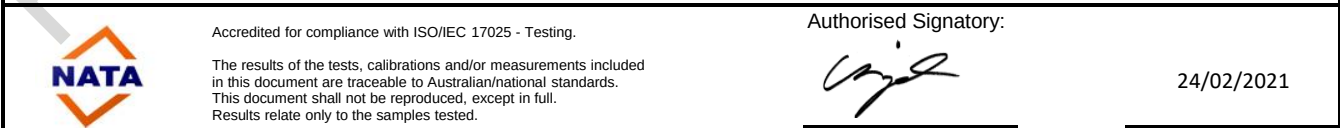
MOISTURE CONTENT TEST REPORT

Client	WSP	Job #	S21012-2
Address	Level 27, 680 George St, Sydney NSW 2000	Report #	S65427-MC
Project	SAR (PS117942)		

Test Procedure	☒ AS 1289 2.1.1 Determination of the moisture content of a soil - Oven drying method (Standard method).	Date Sampled	1/01/2021
	☐ AS4133 1.1.1 Determination of the moisture content of rock - Oven drying method (standard method)		
	☐ RMS T120 Moisture content of road construction materials (Standard method)		
	☐ RMS T262 Determination of moisture content of aggregates (Standard method)		
Sampling	Sampled by Client - results apply to the sample as received	Date Sampled	1/01/2021
Preparation	Prepared in accordance with the test method	Date Tested	30/01/2021

[illegible]

Notes



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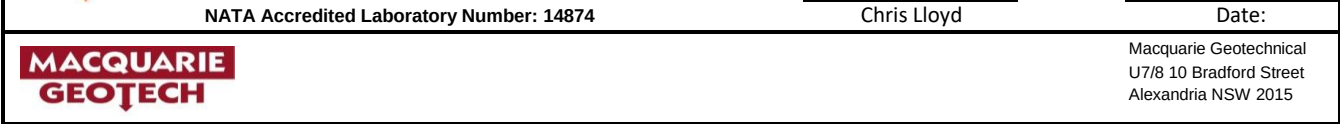
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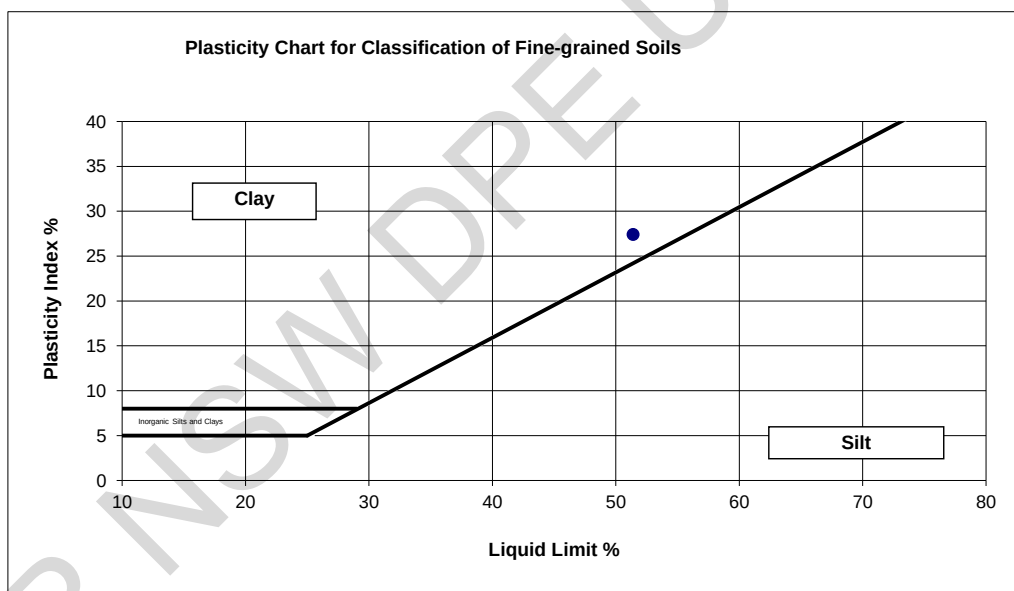
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SOIL CLASSIFICATION REPORT

Client	WSP	Source	SARGT008 41.1-m
Address	Level 27, 680 George St, Sydney NSW 2000	Sample Description	Silty CLAY trace of Sand.
Project	SAR (PS117942)	Report No	S65427-PI
Job No	S21012-2	Lab No	S65427

Test Procedure	☐ AS1289 2.1.1 Soil moisture content tests (Oven drying method) ☒ AS1289 3.1.1 Soil classification tests - Determination of the liquid limit of a soil - Four point casagrande method ☐ AS1289 3.1.2 Soil classification tests - Determination of the liquid limit if a soil - One point Casagrande method (subsidiary method) ☒ AS1289 3.2.1 Soil classification tests - Determination of the plastic limit of a soil - Standard method ☒ AS1289 3.3.1 Soil classification tests - Calculation of the plasticity Index of a soil ☐ AS1289 3.4.1 Soil classification tests - Determination of the linear shrinkage of a soil - Standard method		
Sampling	Sampled by Client - results apply to the sample as received	Date Sampled	1/01/2021
Preparation	Prepared in accordance with the test method	Date Tested	12/02/2021

Liquid Limit (%) 51
Linear Shrinkage (%) -
Plastic Limit (%) 24
Plasticity Index 27



Soil Preparation Method: Wet Sieved
Soil History: Natural State
Soil Condition: N/A

Notes



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Date:

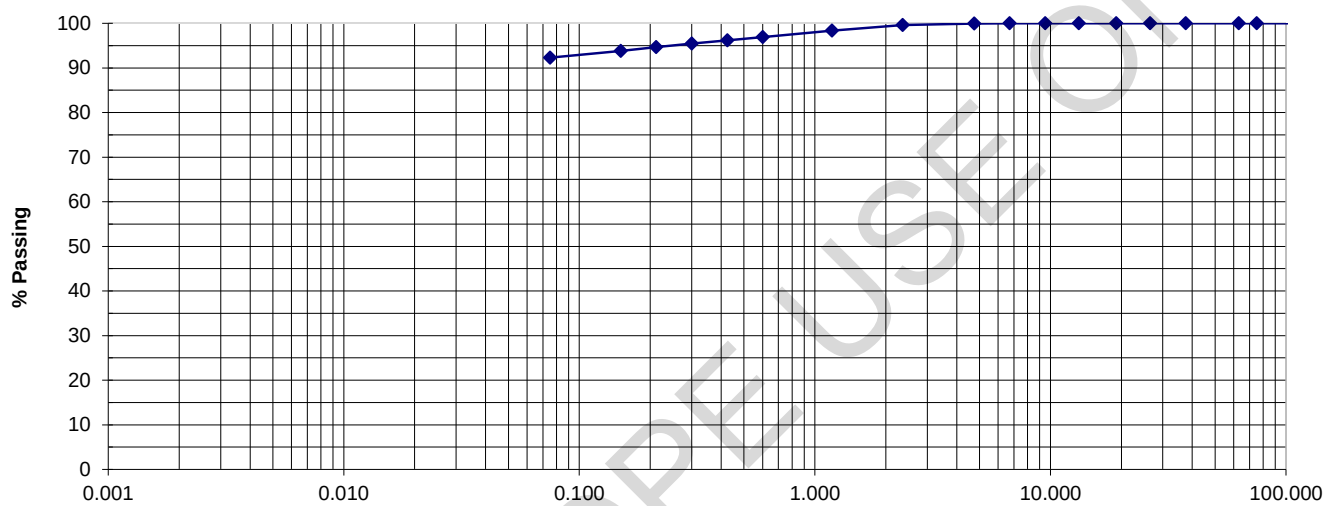


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Particle Size Distribution Report

Client	WSP	Source	SARGT008 41.1-m
Address	Level 27, 680 George St, Sydney NSW 2000	Sample Description	Silty CLAY trace of Sand.
Project	SAR (PS117942)	Report No	S65427-PSD
Job No	S21012-2	Lab No	S65427

Test Procedure	AS 1289.3.6.1 Determination of the particle size distribution of a soil - Standard method of analysis by sieving		
Sampling	Sampled by Client - results apply to the sample as received	Date Sampled	1/01/2021
Preparation	Prepared in accordance with the test method	Date Tested	10/02/2021



Clay	Silt	Sand	Gravel	Cobbles
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Sieve Aperture: (mm)	% Passing	Specification (..) Envelope
200	100	
75	100	
63	100	
37.5	100	
26.5	100	
19	100	
13.2	100	
9.5	100	
6.7	100	

Sieve Aperture: (mm)	% Passing	Specification (..) Envelope
4.75	100	
2.36	100	
1.18	98	
0.600	97	
0.425	96	
0.300	95	
0.212	95	
0.150	94	
0.075	92	

Notes



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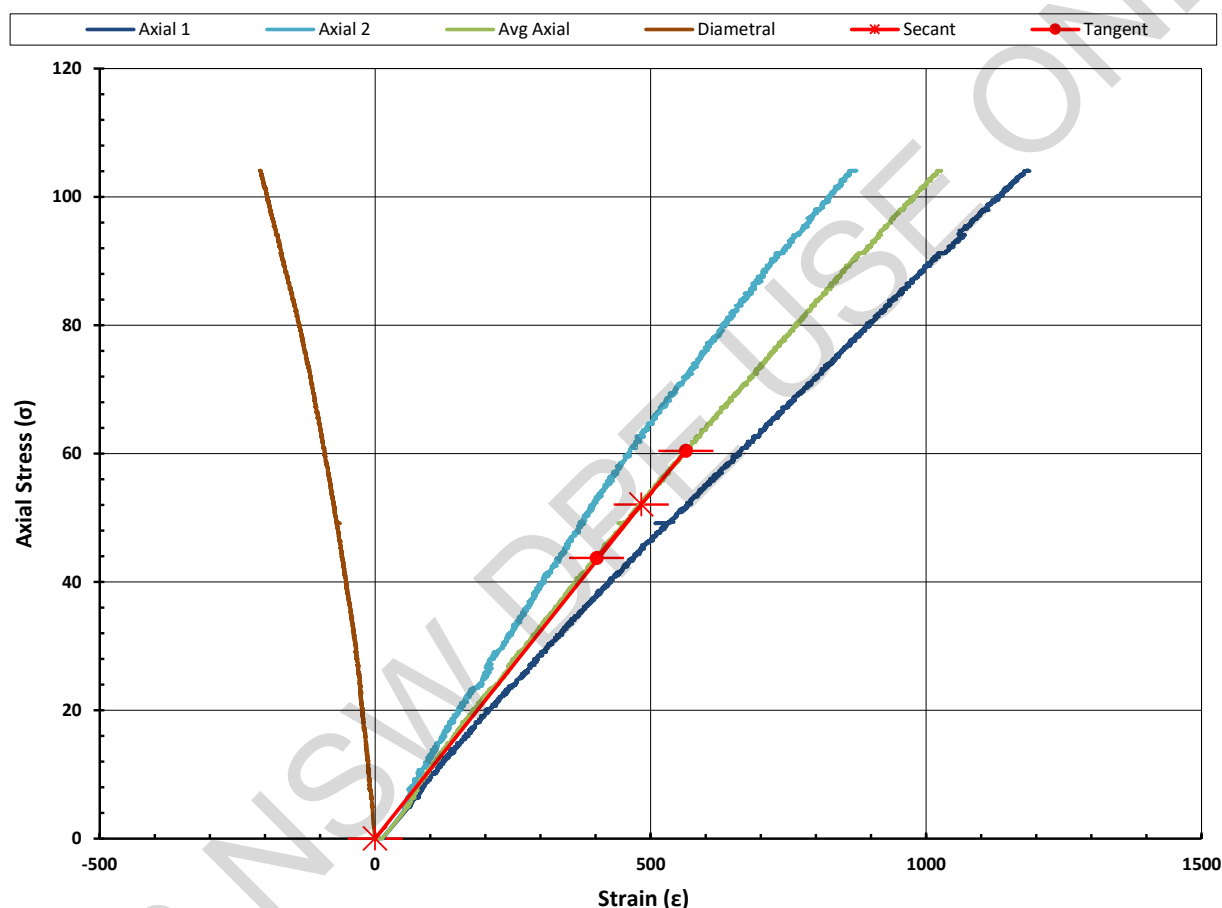
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Deformability of Rock Materials in Uniaxial Compression

Client	WSP	Sample Source	SARGT009 185.1m
Address	Level 27, 680 George St, Sydney NSW 2000	Sample Description	Rock Core
Project	SAR (PS117942)	Report #	S65429-MOD
Job #	S21012-2	Sample #	S65429

Test Procedure	AS 4133.4.3.1 Deformability of rock materials in uniaxial compression-Strengths of 50 MPa and greater		
Sampling	Sampled by Client - results apply to the sample as received	Date Sampled	1/01/2021
Storage History	Sealed	Storage Environment	Sealed at as received moisture condition

Axial Stress vs Strain Plots



Uniaxial Compressive Strength

127 MPa

Young's Modulus

Poisson's Ratio

Tangent	103.0 GPa	0.16	from 42 % to 58 % of Max UCS
Secant	107.8 GPa	0.16	from 0 % to 50 % of Max UCS

Notes

Graphical representation of stress/ strain data by extensometer measurement is limited due to fracturing within the specimen



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5/02/2021

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Deformability of Rock Materials in Uniaxial Compression

Client	WSP	Sample Source	SARGT009 185.1m
Address	Level 27, 680 George St, Sydney NSW 2000	Sample Description	Rock Core
Project	SAR (PS117942)	Report #	S65429-MOD
Job #	S21012-2	Sample #	S65429

Test Procedure	AS 4133.4.3.1 Deformability of rock materials in uniaxial compression-Strengths of 50 MPa and greater		
Sampling	Sampled by Client - results apply to the sample as received	Date Sampled	1/01/2021
Storage History	Sealed	Storage Environment	Sealed at as received moisture condition
Average Specimen Diameter (mm)	60.5	Moisture Content (%)	0
Average Specimen Height (mm)	177	Wet Density (t/m³)	2.88
Length to Diameter Ratio	2.9	Dry Density (t/m³)	2.88
Duration of Test (min)	33.75	Rate of Loading (MPa/min):	3.0841121
Date of Test:	1/2/21	Specimen Curing	-
Mode of Failure	Tensile dominated	Test Apparatus	Matest Compression Machine with Axial and Circumferential Extensometers.



Before Test



After Test

Uniaxial Compressive Strength		127	MPa
	Young's Modulus	Poisson's Ratio	
Tangent	103.0 GPa	0.16	from 42 % to 58 % of Max UCS
Secant	107.8 GPa	0.16	from 0 % to 50 % of Max UCS



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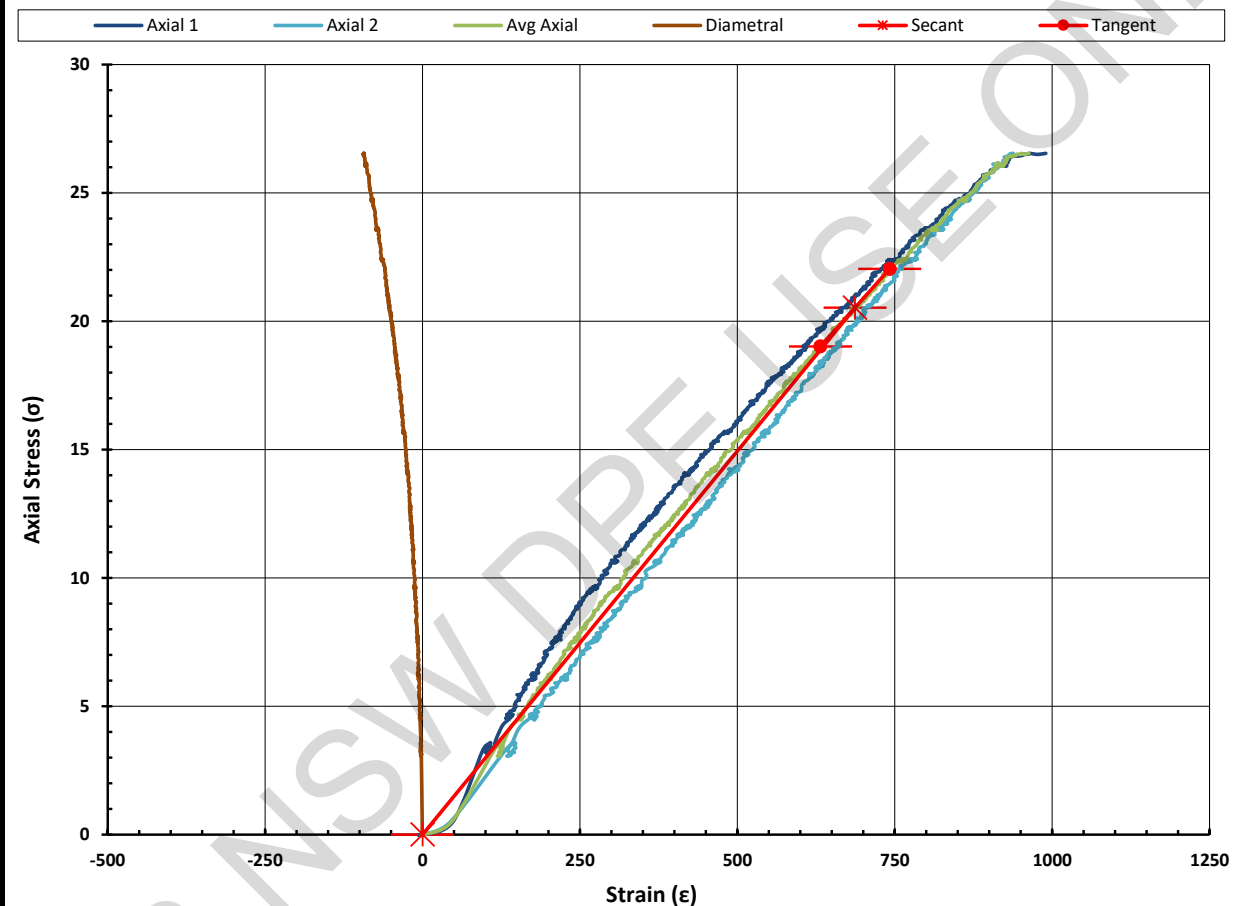
POINT LOAD STRENGTH INDEX REPORT													
Client	WSP				Moisture Content Condition	As received							
	Address	Level 27, 680 George St, Sydney NSW 2000				Storage History	Core boxes						
		Project	SAR (PS117942)				Report #	S65429-PL					
			Job #	S21012-2				Test Date	29/01/2021				
Test Procedure ☒ AS4133 4.1 Rock strength tests - Determination of point load strength index Sampling Sampled by Client - results apply to the sample as received Date Sampled 1/01/2021 Preparation Prepared in accordance with the test method													
Sample Number	Sample Source	Sample Description	Test Type	Average Width (mm)	Platen Separation (mm)	Failure Load (kN)	Point Load Index Is (MPa)	Point Load Index Is(50) (MPa)	Failure Mode				
S65429	SARGT009 185.30 - 185.40m	Rock Core	Diametral	-	55.0	28.04	9.27	9.68	1				
			Axial	60.6	39.0	12.10	4.02	4.19	1				
S65430	SARGT009 141.55 - 141.67m	Rock Core	Diametral	-	58.0	5.86	1.74	1.86	2				
			Axial	60.4	34.0	13.05	4.99	5.04	1				
S65431	SARGT009 150.45 - 150.55m	Rock Core	Diametral	-	48.0	30.47	13.22	12.98	1				
			Axial	60.1	40.0	12.07	3.94	4.13	1				
S65432	SARGT009 165.55 - 165.65m	Rock Core	Diametral	-	50.0	41.20	16.48	16.48	1				
			Axial	60.3	40.0	17.78	5.79	6.06	1				
Failure Modes				1 - Fracture through fabric of specimen oblique to bedding, not influenced by weak planes. 2 - Fracture along bedding. 3 - Fracture influenced by pre-existing plane, microfracture, vein or chemical alteration. 4 - Chip or partial fracture.									
				Notes 									
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Deformability of Rock Materials in Uniaxial Compression

Client	WSP	Sample Source	SARGT009 141.37m
Address	Level 27, 680 George St, Sydney NSW 2000	Sample Description	Rock Core
Project	SAR (PS117942)	Report #	S65430-MOD
Job #	S21012-2	Sample #	S65430

Test Procedure	AS 4133.4.3.2 Deformability of rock materials in uniaxial compression-Rock strength less than 50 MPa		
Sampling	Sampled by Client - results apply to the sample as received	Date Sampled	1/01/2021
Storage History	Sealed	Storage Environment	Sealed at as received moisture condition

Axial Stress vs Strain Plots



Uniaxial Compressive Strength **27 MPa**

Young's Modulus **Poisson's Ratio**

Tangent	27.5 GPa	0.08	from 72 % to 83 % of Max UCS
Secant	29.9 GPa	0.08	from 0 % to 77 % of Max UCS

Notes

Failed along fold plane



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Date: 10/02/2021

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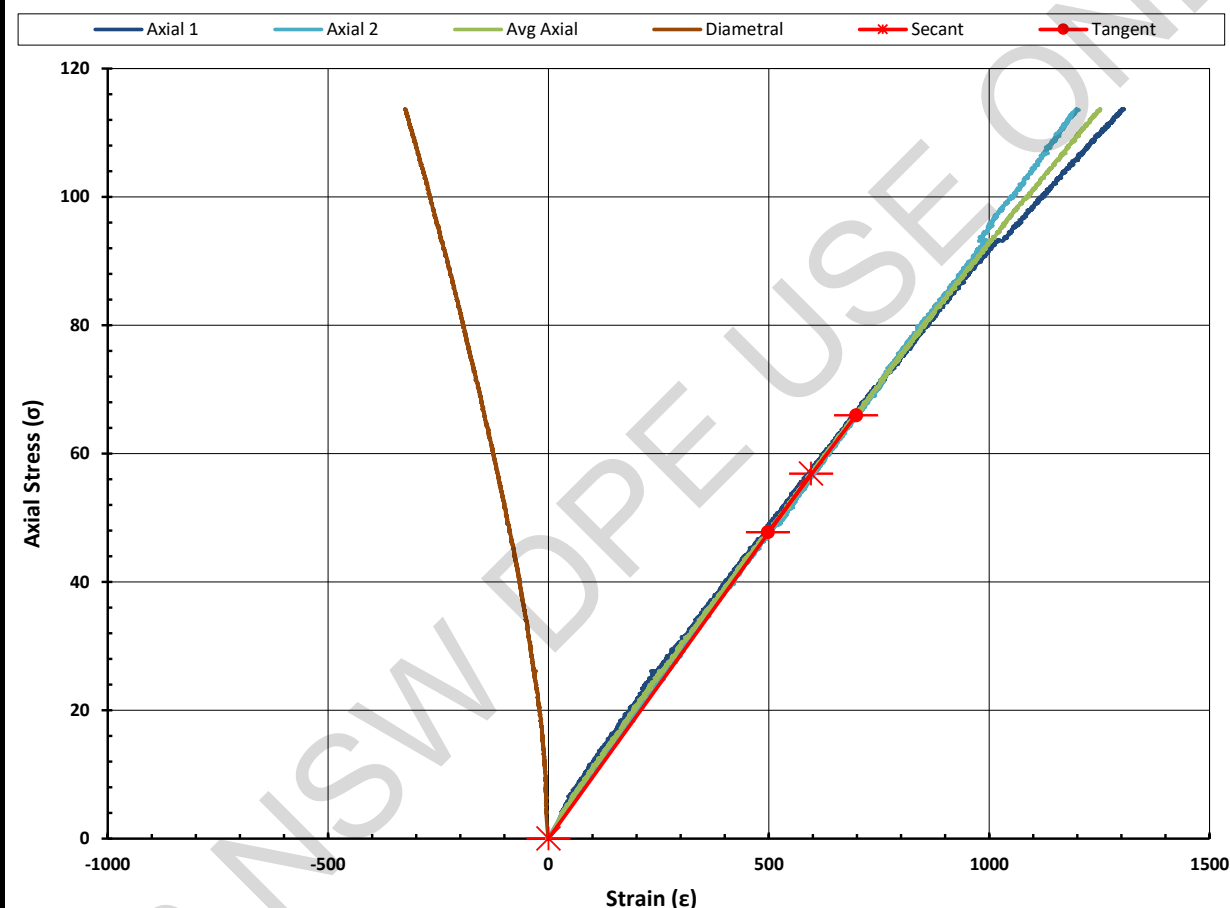
Deformability of Rock Materials in Uniaxial Compression			
Client	WSP	Sample Source	SARGT009 141.37m
Address	Level 27, 680 George St, Sydney NSW 2000	Sample Description	Rock Core
Project	SAR (PS117942)	Report #	S65430-MOD
Job #	S21012-2	Sample #	S65430
Test Procedure	AS 4133.4.3.2 Deformability of rock materials in uniaxial compression-Rock strength less than 50 MPa		
Sampling	Sampled by Client - results apply to the sample as received	Date Sampled	1/01/2021
Storage History	Sealed	Storage Environment	Sealed at as received moisture condition
Average Specimen Diameter (mm)	60.2	Moisture Content (%)	0.2
Average Specimen Height (mm)	179.2	Wet Density (t/m ³)	2.75
Length to Diameter Ratio	3.0	Dry Density (t/m ³)	2.74
Duration of Test (min)	10.18	Rate of Displacement (mm/min):	< 0.1
Date of Test:	1/2/21	Specimen Curing	-
Mode of Failure	Single shear plane	Test Apparatus	Matest Compression Machine with Axial and Circumferential Extensometers.
  Before Test After Test			
Uniaxial Compressive Strength		27 MPa	
	Young's Modulus	Poisson's Ratio	
Tangent	27.5 GPa	0.08	from 72 % to 83 % of Max UCS
Secant	29.9 GPa	0.08	from 0 % to 77 % of Max UCS
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Deformability of Rock Materials in Uniaxial Compression

Client	WSP	Sample Source	SARGT009 150.45m
Address	Level 27, 680 George St, Sydney NSW 2000	Sample Description	Rock Core
Project	SAR (PS117942)	Report #	S65431-MOD
Job #	S21012-2	Sample #	S65431

Test Procedure	AS 4133.4.3.1 Deformability of rock materials in uniaxial compression-Strengths of 50 MPa and greater		
Sampling	Sampled by Client - results apply to the sample as received	Date Sampled	1/01/2021
Storage History	Sealed	Storage Environment	Sealed at as received moisture condition

Axial Stress vs Strain Plots



Uniaxial Compressive Strength

114 MPa

Young's Modulus

Poisson's Ratio

Tangent	91.1 GPa	0.21	from 42 % to 58 % of Max UCS
Secant	95.4 GPa	0.19	from 0 % to 50 % of Max UCS

Notes



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Authorised Signatory:

Chris Lloyd

Chris Lloyd

Date: 5/02/2021

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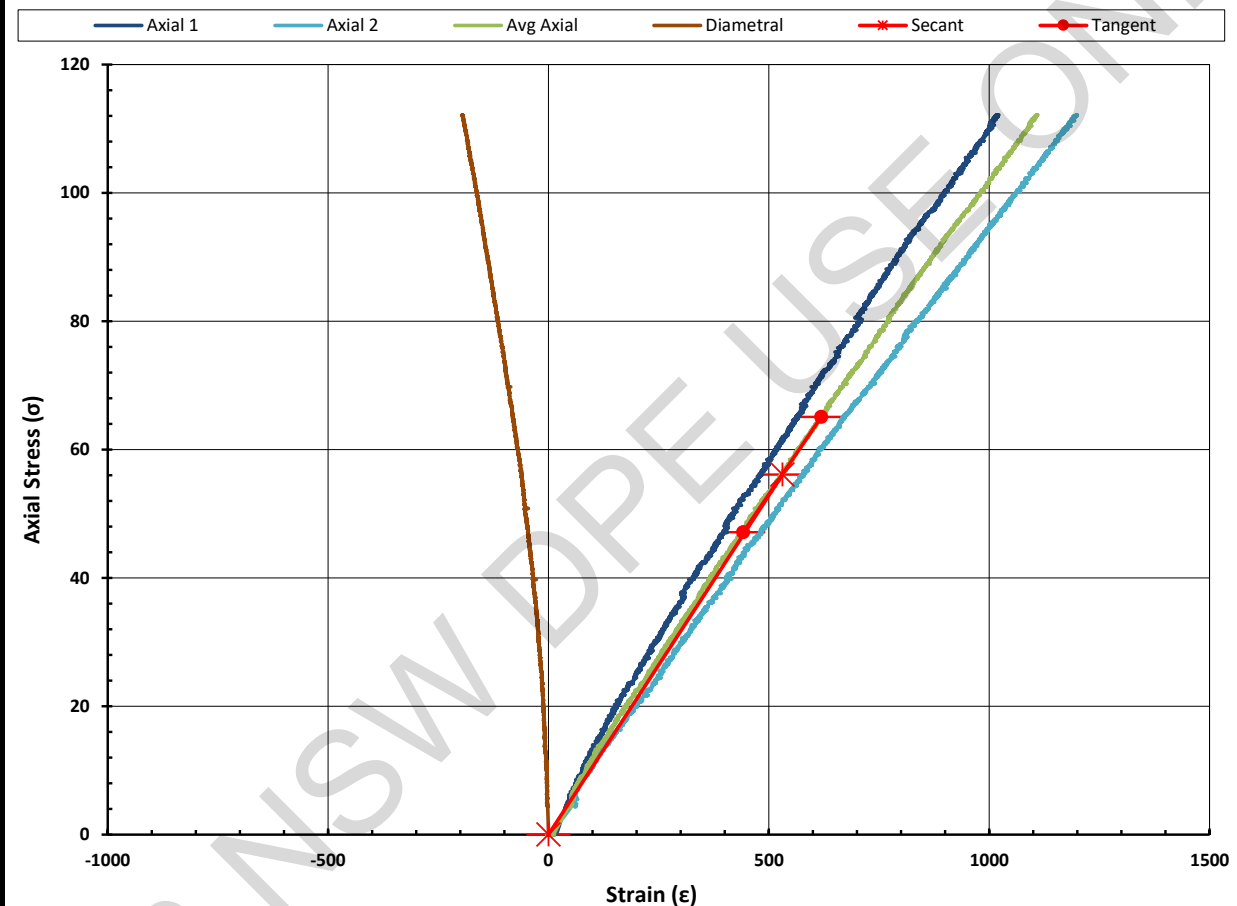
Deformability of Rock Materials in Uniaxial Compression			
Client	WSP	Sample Source	SARGT009 150.45m
Address	Level 27, 680 George St, Sydney NSW 2000	Sample Description	Rock Core
Project	SAR (PS117942)	Report #	S65431-MOD
Job #	S21012-2	Sample #	S65431
Test Procedure		AS 4133.4.3.1 Deformability of rock materials in uniaxial compression-Strengths of 50 MPa and greater	
Sampling		Sampled by Client - results apply to the sample as received	
Storage History		Sealed	
Date Sampled		1/01/2021	
Storage Environment		Sealed at as received moisture condition	
Average Specimen Diameter (mm)	60.3	Moisture Content (%)	0
Average Specimen Height (mm)	177	Wet Density (t/m ³)	2.70
Length to Diameter Ratio	2.9	Dry Density (t/m ³)	2.70
Duration of Test (min)	37.27	Rate of Loading (MPa/min):	3.0503829
Date of Test:	1/2/21	Specimen Curing	-
Mode of Failure	Mixed mode	Test Apparatus	Matest Compression Machine with Axial and Circumferential Extensometers.
  Before Test After Test			
Uniaxial Compressive Strength		114	MPa
Young's Modulus		Poisson's Ratio	
Tangent	91.1 GPa	0.21	from 42 % to 58 % of Max UCS
Secant	95.4 GPa	0.19	from 0 % to 50 % of Max UCS
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Deformability of Rock Materials in Uniaxial Compression

Client	WSP	Sample Source	SARGT009 165.35m
Address	Level 27, 680 George St, Sydney NSW 2000	Sample Description	Rock Core
Project	SAR (PS117942)	Report #	S65432-MOD
Job #	S21012-2	Sample #	S65432

Test Procedure	AS 4133.4.3.1 Deformability of rock materials in uniaxial compression-Strengths of 50 MPa and greater		
Sampling	Sampled by Client - results apply to the sample as received	Date Sampled	1/01/2021
Storage History	Sealed	Storage Environment	Sealed at as received moisture condition

Axial Stress vs Strain Plots



Uniaxial Compressive Strength

143 MPa

Young's Modulus

Poisson's Ratio

Tangent	101.5 GPa	0.13	from 42 % to 58 % of Max UCS
Secant	105.7 GPa	0.12	from 0 % to 50 % of Max UCS

Notes

Graphical representation of stress/ strain data by extensometer measurement is limited due to fracturing within the specimen



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Deformability of Rock Materials in Uniaxial Compression

Client	WSP	Sample Source	SARGT009 165.35m
Address	Level 27, 680 George St, Sydney NSW 2000	Sample Description	Rock Core
Project	SAR (PS117942)	Report #	S65432-MOD
Job #	S21012-2	Sample #	S65432

Test Procedure	AS 4133.4.3.1 Deformability of rock materials in uniaxial compression-Strengths of 50 MPa and greater		
Sampling	Sampled by Client - results apply to the sample as received	Date Sampled	1/01/2021
Storage History	Sealed	Storage Environment	Sealed at as received moisture condition

Average Specimen Diameter (mm)	60.4	Moisture Content (%)	0
Average Specimen Height (mm)	179	Wet Density (t/m³)	2.89
Length to Diameter Ratio	3.0	Dry Density (t/m³)	2.88
Duration of Test (min)	42.63	Rate of Loading (MPa/min):	2.6313544
Date of Test:	1/2/21	Specimen Curing	-
Mode of Failure	Tensile dominated	Test Apparatus	Matest Compression Machine with Axial and Circumferential Extensometers.



Before Test



After Test

Uniaxial Compressive Strength

143 MPa

Young's Modulus

Poisson's Ratio

Tangent	101.5 GPa	0.13	from 42 % to 58 % of Max UCS
Secant	105.7 GPa	0.12	from 0 % to 50 % of Max UCS



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CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST REPORT (CIU)

AS1289 6.4.2

Client:	WSP	Source:	SARGT001 29.1-m
Project:	SAR (PS117942)	Report No.:	S64660-CU
Address:	Level 27, 680 George St, Sydney NSW 2000	Sample Description:	Silty CLAY
Job No:	S20514-1	Lab No.:	S64660

Test Procedure: AS 1289 6.4.2: Soil strength and consolidation tests - Determination of compressive strength of a soil - Compressive strength of a specimen tested in undrained triaxial compression with measurement of pore water pressure
AS 1289 2.1.1: Soil moisture content tests - Determination of the moisture content of a soil - Oven drying method

Sampling:	By Client	Date Sampled:	1/11/2020
Preparation:	Prepared in accordance with the test method		

Specimen Details

	Specimen 1	Specimen 2	Specimen 3	Specimen 4	Specimen 5
Specimen Condition	Undisturbed	-	-	-	-
Initial Height (mm)	120.6	-	-	-	-
Initial Diameter (mm)	60.3	-	-	-	-
Initial Moisture Content (%)	10.8	-	-	-	-
Initial Dry Density (t/m^3)	1.85	-	-	-	-

Test Details

	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5
Date Tested	15/12/2020	17/12/2020	18/12/2020	-	-
Axial Strain Rate (mm/min)	0.008	0.008	0.008	-	-
Initial Cell Pressure (kPa)	577	754	929	-	-
Initial Back Pressure (kPa)	399	399	401	-	-
Initial Pore Water Pressure (kPa)	401	401	401	-	-

			
After Test Photo		After Test Photo of Specimen Broken in Half	

Comments : Final test moisture content (%) = 16.7
After saturation specimen height (mm) 120.7
Test performed as a multi staged test.
Filter strips used during consolidation allowing drainage from both ends and radial boundary
Failure Mode Compound

Description as broken after test : As per description



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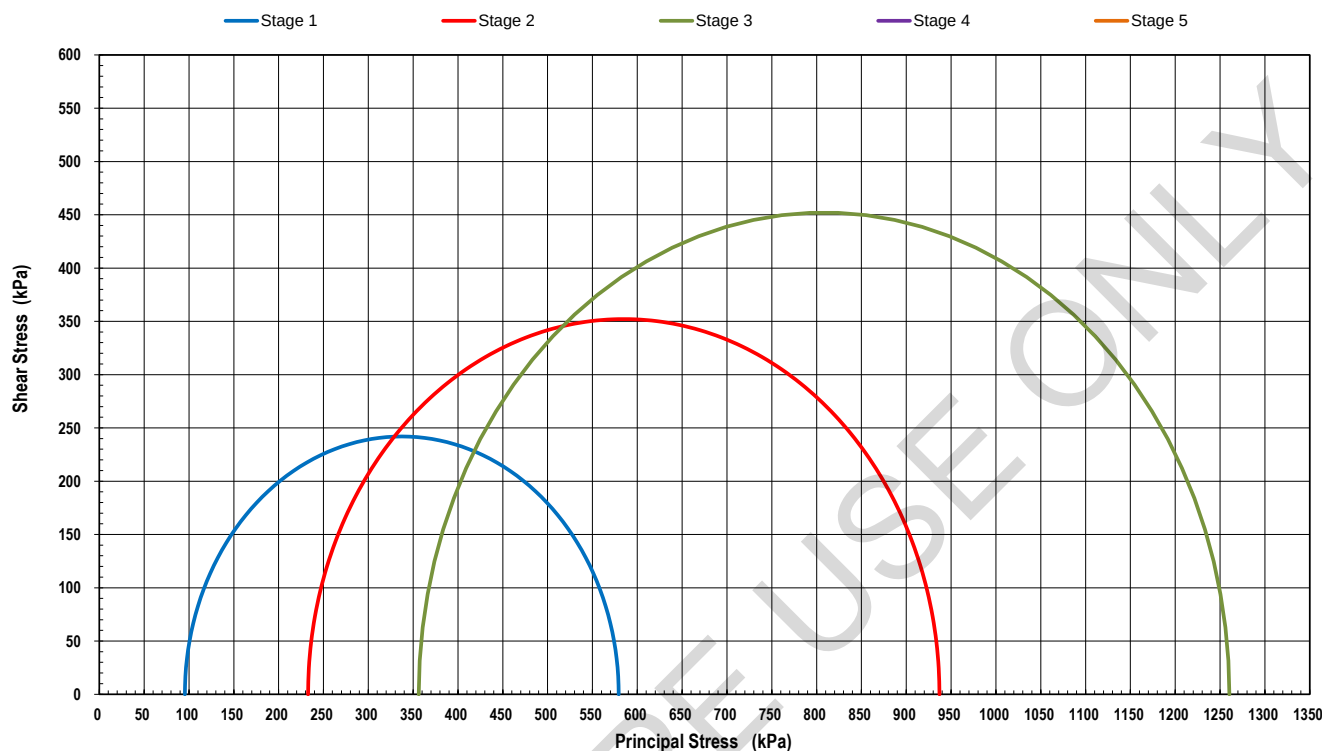
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CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST REPORT (CIU)

AS1289 6.4.2

Client:	WSP	Source:	SARGT001 29.1-m
Project:	SAR (PS117942)	Report No.:	S64660-CU

#1 Failure Criteria - Mohr Circle Diagram



1 Failure Criteria : Peak Principal Stress Ratio

	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5
Pore Pressure at Failure (kPa)	483	522	572	-	-
Strain at Failure (%)	0.75	1.50	2.56	-	-
Max Deviator Stress at Failure (kPa)	484	704	904	-	-
Principal Effective Stresses	s'_1	579	937	1260	-
	s'_3	95	233	356	-
	s'_1 / s'_3	6.072	4.025	3.538	-

Mohr Circle Interpretation

Interpretation between stages :	1 to 2	2 to 3	1 to 3
Cohesion C' (kPa) :	102.5	101.0	102.0
Angle of Shear Resistance Φ' (Degrees) :	26.4	26.6	26.5
Correlation Coefficient:	1.0000	1.0000	1.0000



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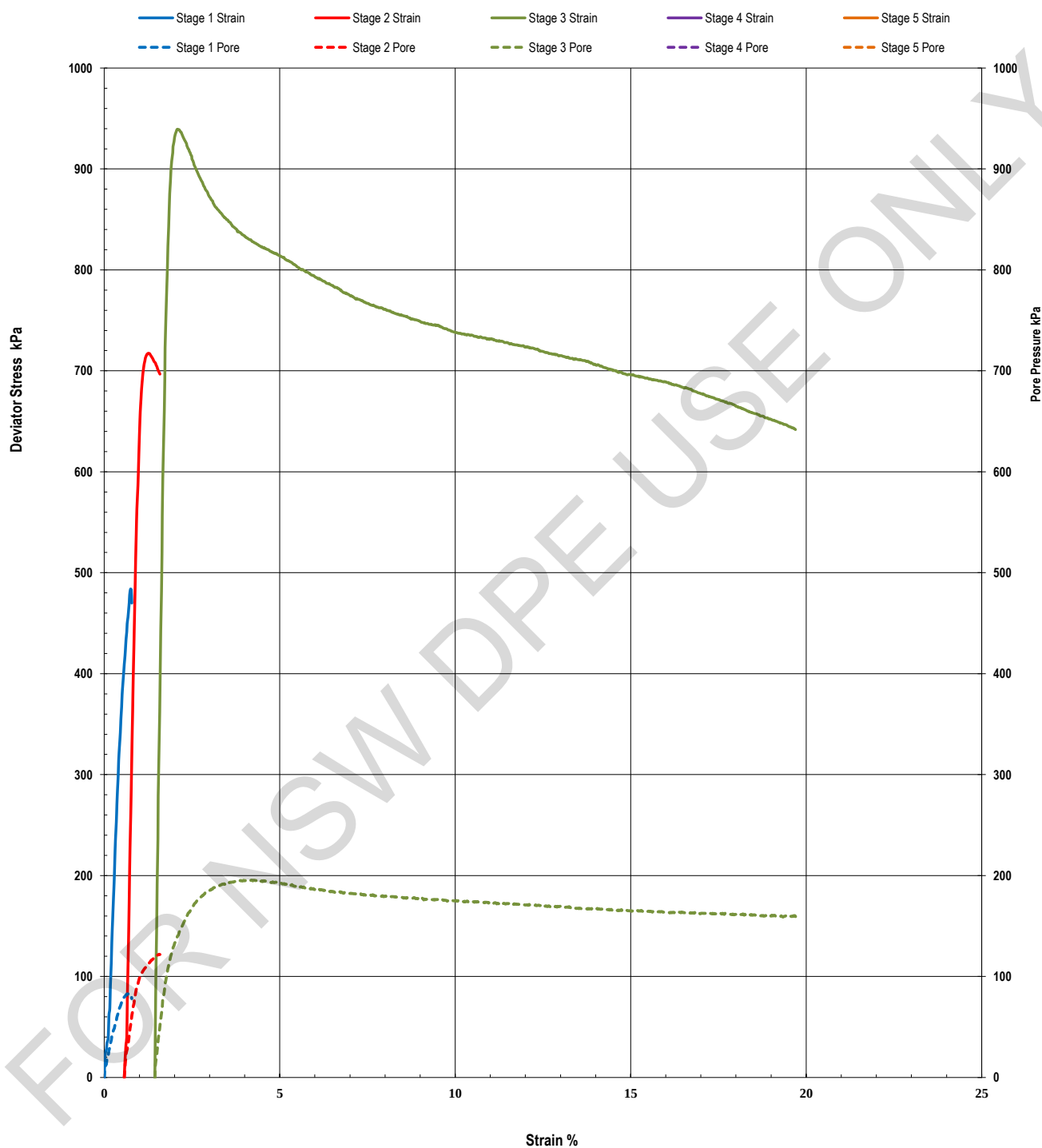
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CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST REPORT (CIU)

AS1289 6.4.2

Client:	WSP	Source:	SARGT001 29.1-m
Project:	SAR (PS117942)	Report No.:	S64660-CU

Stress/Strain & Pore Pressure/Strain Diagram



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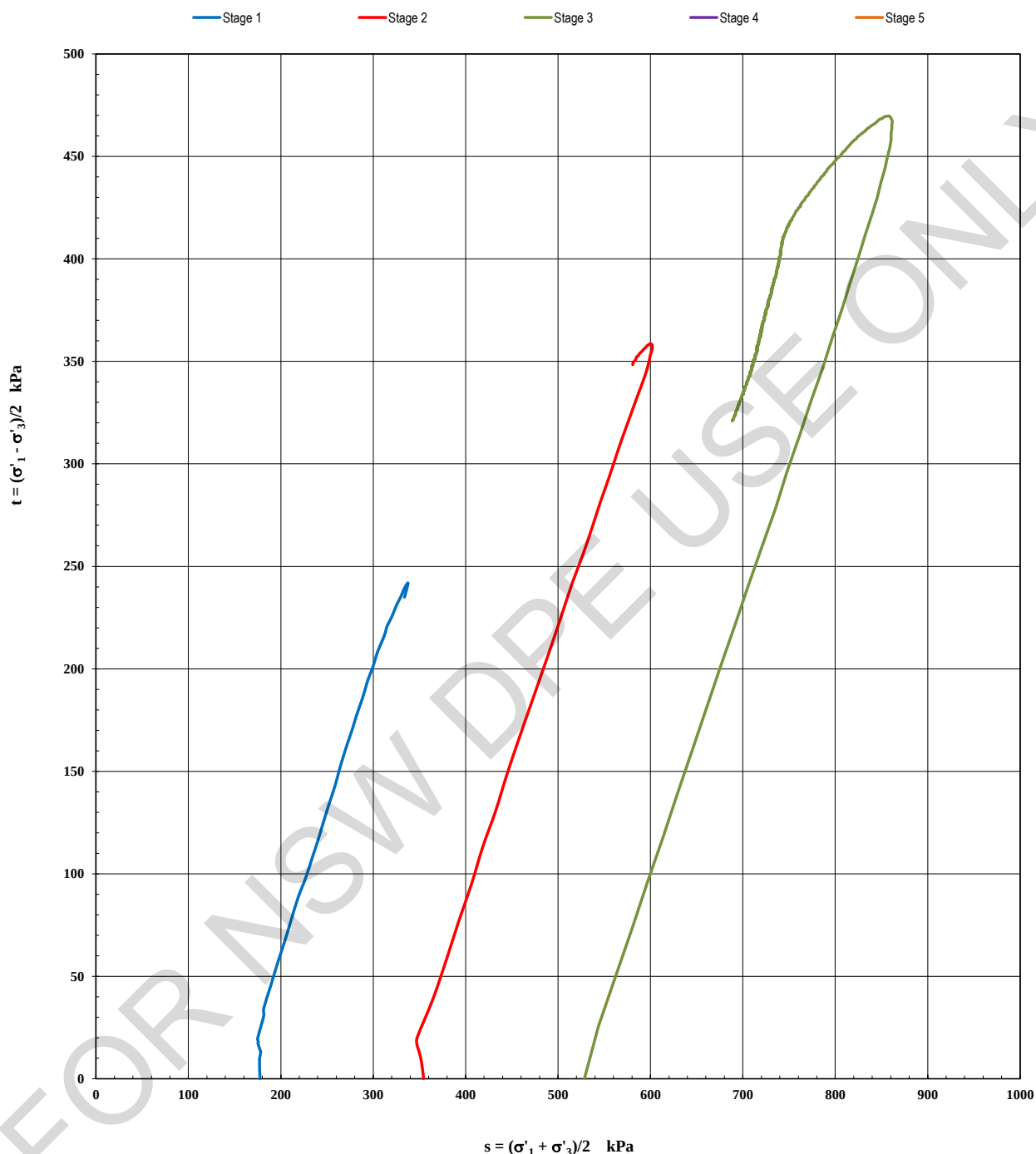
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CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST REPORT (CIU)

AS1289 6.4.2

Client:	WSP	Source:	SARGT001 29.1-m
Project:	SAR (PS117942)	Report No.:	S64660-CU

MIT Method - Effective Stress Path



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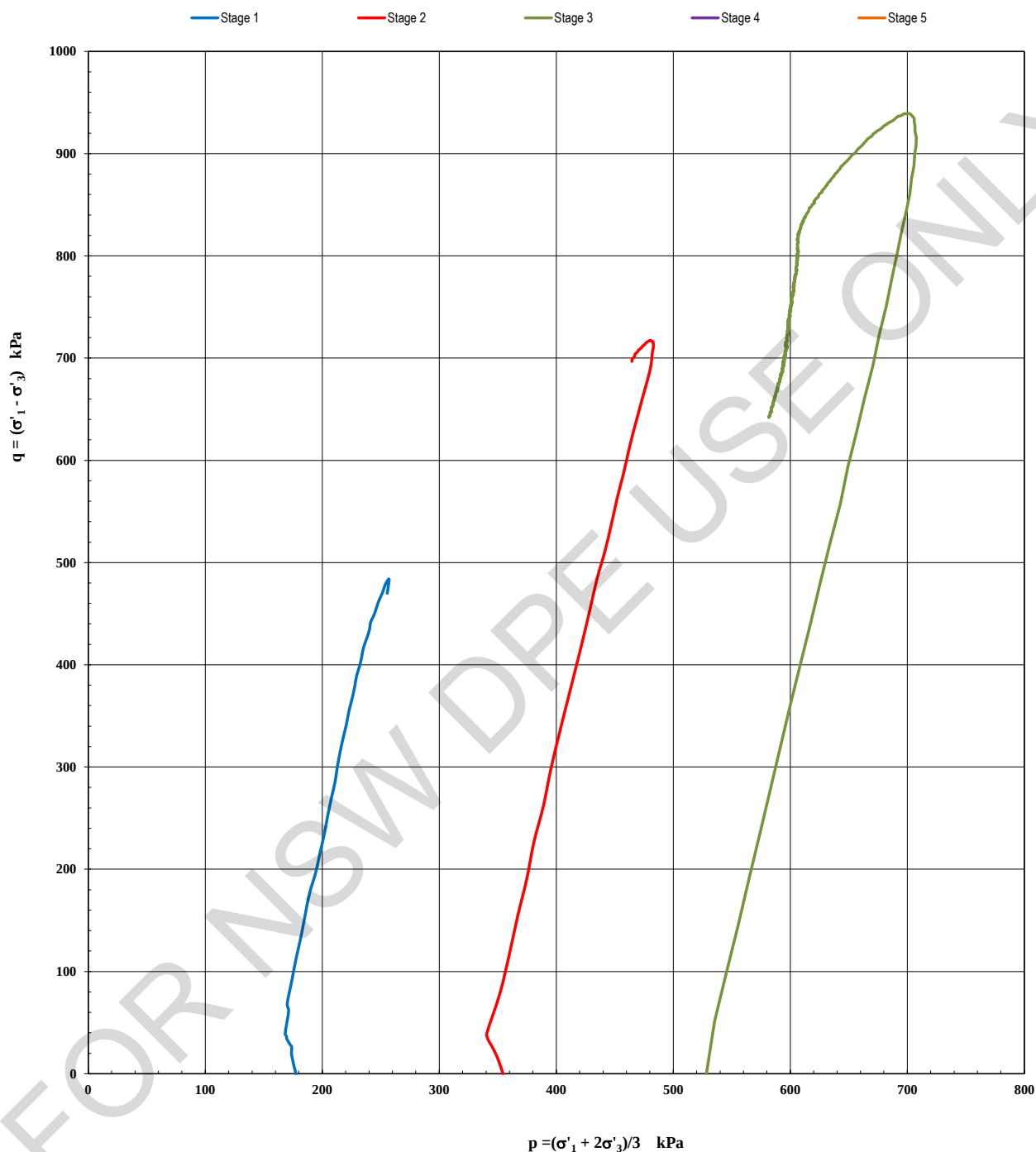
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CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST REPORT (CIU)

AS1289 6.4.2

Client:	WSP	Source:	SARGT001 29.1-m
Project:	SAR (PS117942)	Report No.:	S64660-CU

Cambridge Method - Effective Stress Path



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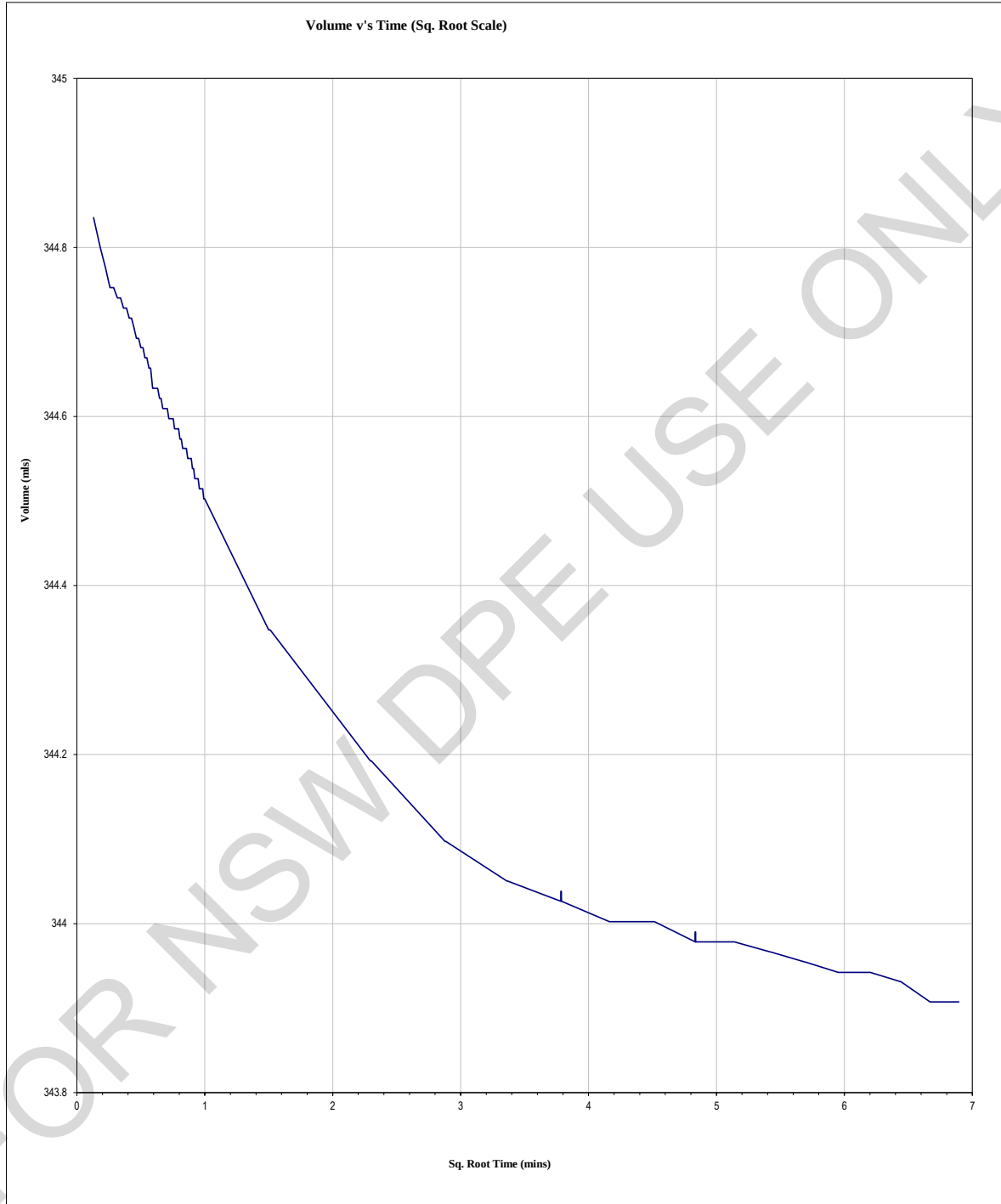
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CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST REPORT (CIU)

AS1289 6.4.2

Client:	WSP	Source:	SARGT001 29.1-m
Project:	SAR (PS117942)	Report No.:	S64660-CU

Stage 1: 77 kPa



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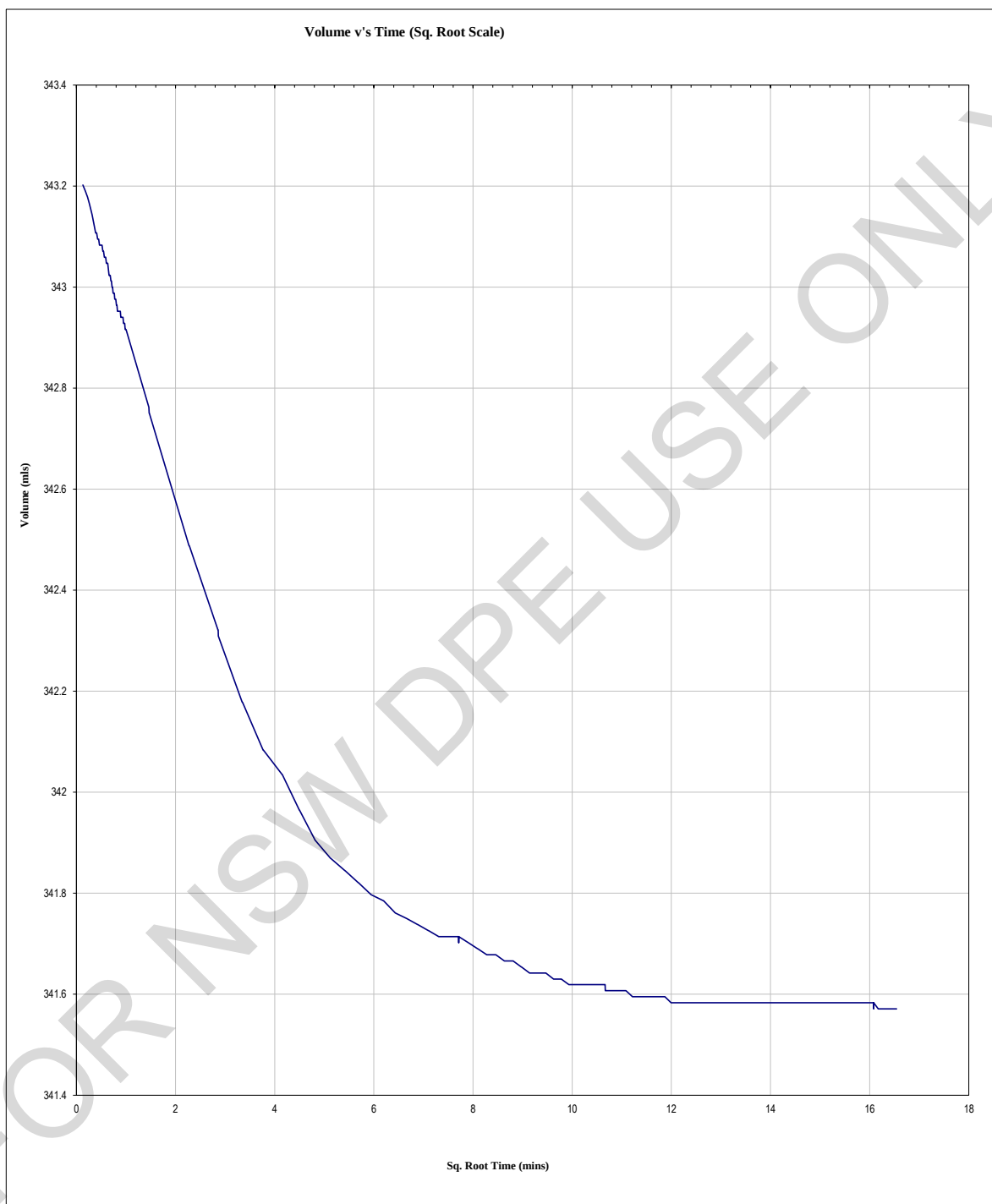
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CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST REPORT (CU)

AS1289 6.4.2

Client:	WSP	Source:	SARGT001 29.1-m
Project:	SAR (PS117942)	Report No.:	S64660-CU

Stage 2: 354 kPa



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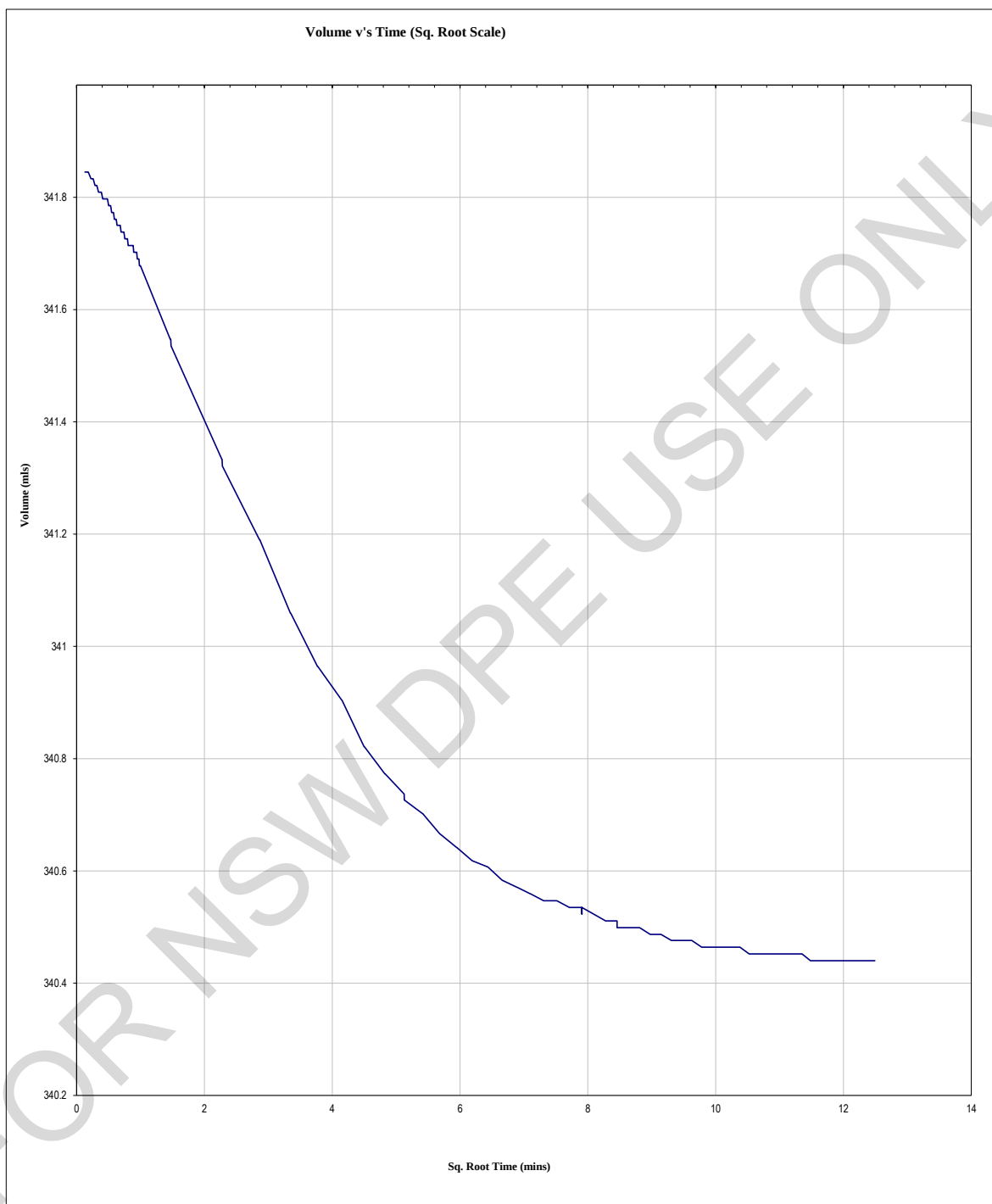
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CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST REPORT (CU)

AS1289 6.4.2

Client:	WSP	Source:	SARGT001 29.1-m
Project:	SAR (PS117942)	Report No.:	S64660-CU

Stage 3: 530 kPa



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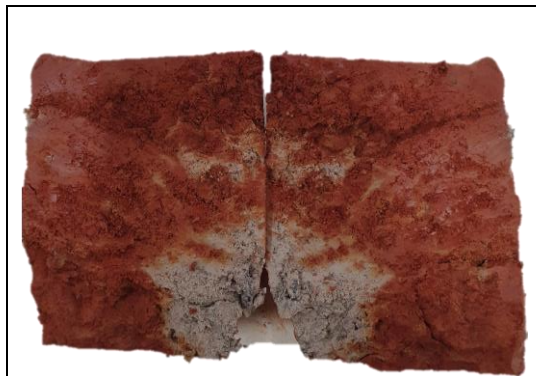
AS1289 6.4.2

Client	WSP	Source	SARGT003 19.9-m
Project	SAR (PS117942)	Report #	S65256-CU
Address	Level 27, 680 George St, Sydney NSW 2000	Sample Description	Silty CLAY trace of sand
Job No	S21012-1	Sample #	S65256

Test Procedure	AS 1289 6.4.2 Determination of compressive strength of a soil - Compressive strength of a specimen tested in undrained triaxial compression with measurement of pore water pressure		
	AS 1289 2.1.1 Determination of the moisture content of a soil - Oven drying method		
Sampling	Sampled by Client - results apply to the sample as received	Date Sampled	1/12/2020
Preparation	Prepared in accordance with the test method		

Specimen Details					
	Specimen 1	Specimen 2	Specimen 3	Specimen 4	Specimen 5
Specimen Condition	Undisturbed	-	-	-	-
Initial Height (mm)	121.1	-	-	-	-
Initial Diameter (mm)	60.6	-	-	-	-
Initial Moisture Content (%)	15.1	-	-	-	-
Initial Dry Density (t/m^3)	1.71	-	-	-	-

Test Details					
	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5
Date Tested	9/02/2021	10/02/2021	11/02/2021	-	-
Axial Strain Rate (% per hour)	0.005	0.005	0.005	-	-
Cell Pressure (kPa)	620	740	853	-	-
Back Pressure (kPa)	500	500	500	-	-
Failure Mode	Compound			-	-

	
After Test Photo	After Test Photo of Specimen Broken in Half

Comments :	Final test moisture content = 22.7% After saturation specimen height=121.15mm Test performed as a multi staged test. Filter strips used during consolidation allowing drainage from both ends and radial boundary After test description: As per sample description	Notes:	
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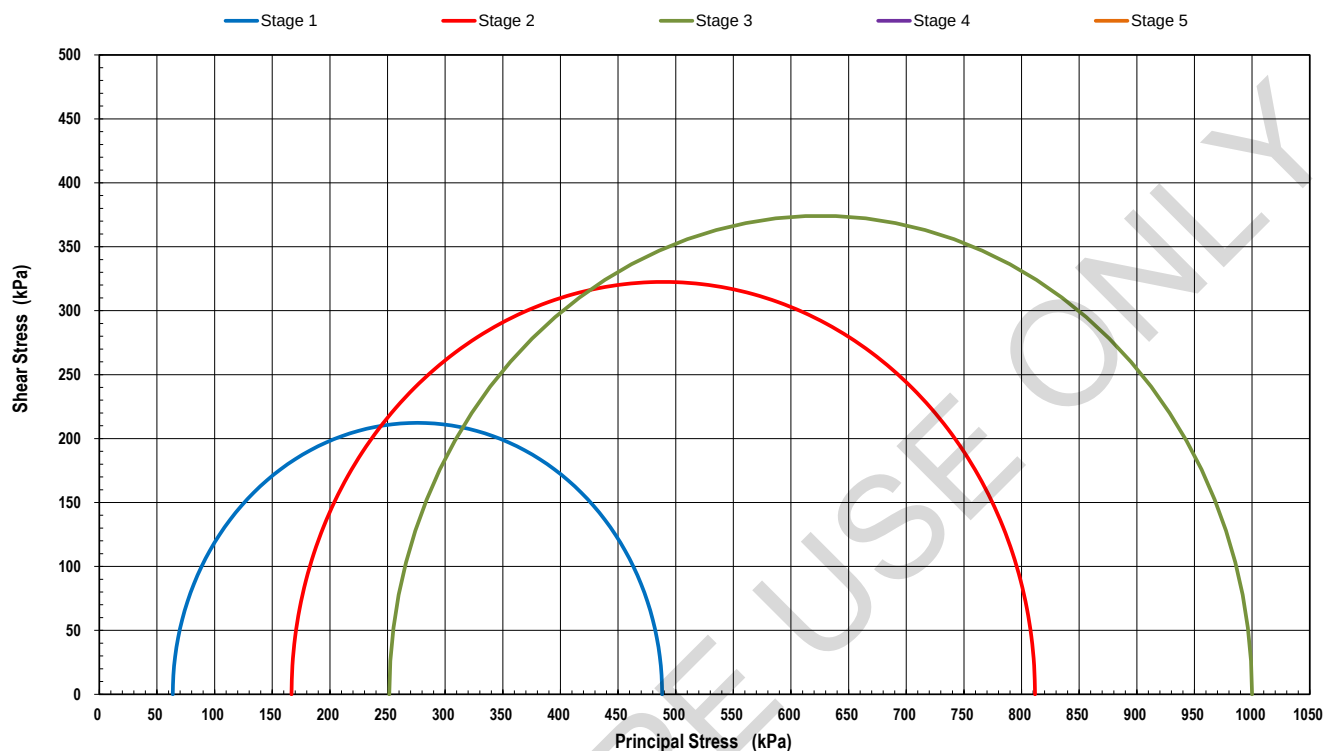
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CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST REPORT (CIU)

AS1289 6.4.2

Client	WSP	Source	SARGT003 19.9-m
Project	SAR (PS117942)	Report #	S65256-CU

#1 Failure Criteria - Mohr Circle Diagram



1 Failure Criteria : Peak Principal Stress Ratio

	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5
Pore Pressure at Failure (kPa)	560.1	578.4	603.5	-	-
Strain at Failure (%)	0.97	1.70	3.34	-	-
Max Deviator Stress at Failure (kPa)	424.5	645.0	748.5	-	-
Principal Effective Stresses	s'_1	488.2	811.7	1000.0	-
	s'_3	63.7	166.7	251.5	-
	s'_1 / s'_3	7.665	4.869	3.976	-

Mohr Circle Interpretation

Interpretation between stages :	1 to 2	2 to 3	1 to 3
Cohesion C' (kPa) :	81.3	148.2	97.4
Angle of Shear Resistance Φ' (Degrees) :	31.1	22.3	27.9
Correlation Coefficient:	1.0000	1.0000	0.9968



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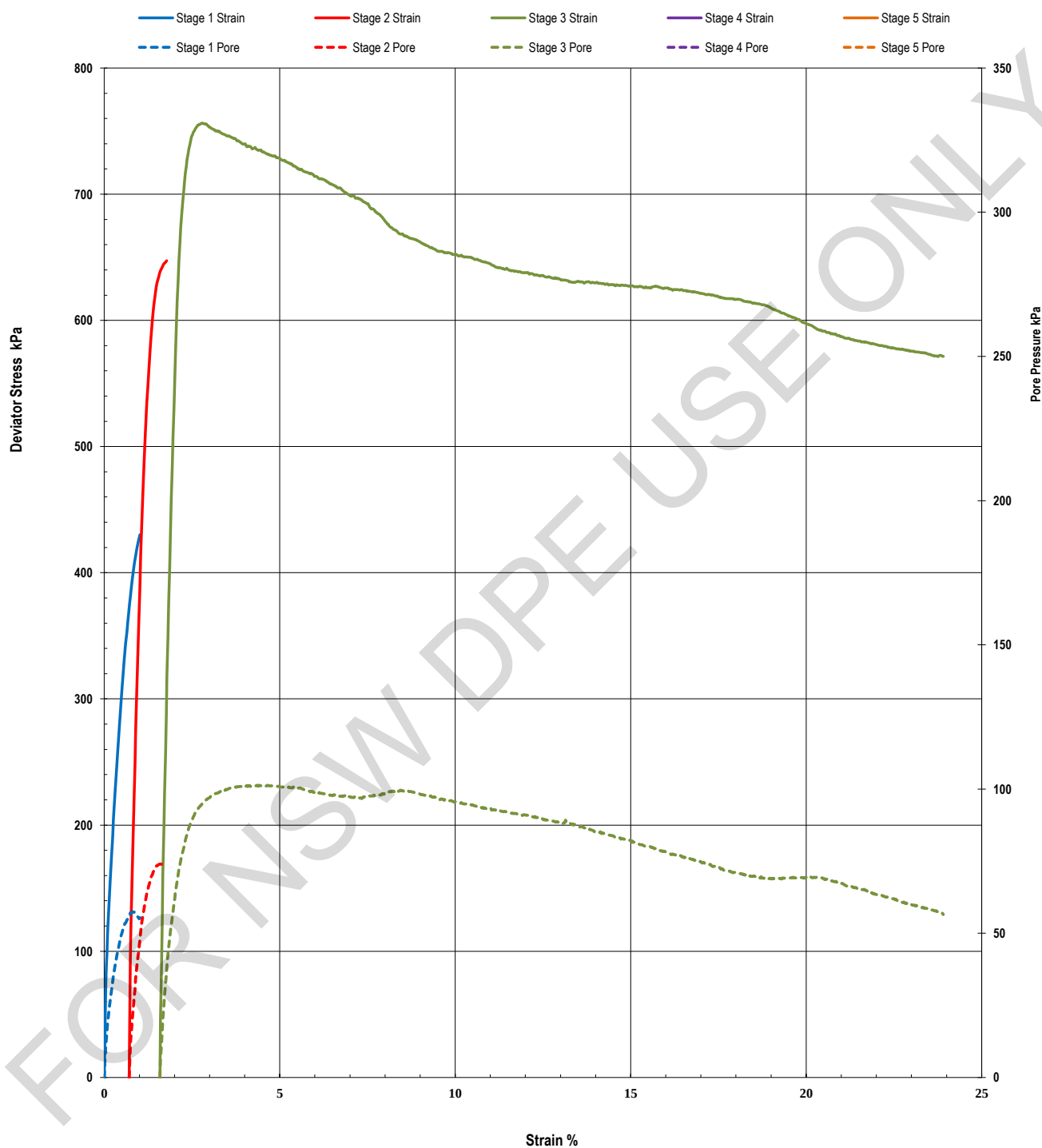
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CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST REPORT (CIU)

AS1289 6.4.2

Client	WSP	Source	SARGT003 19.9-m
Project	SAR (PS117942)	Report #	S65256-CU

Stress/Strain & Pore Pressure/Strain Diagram



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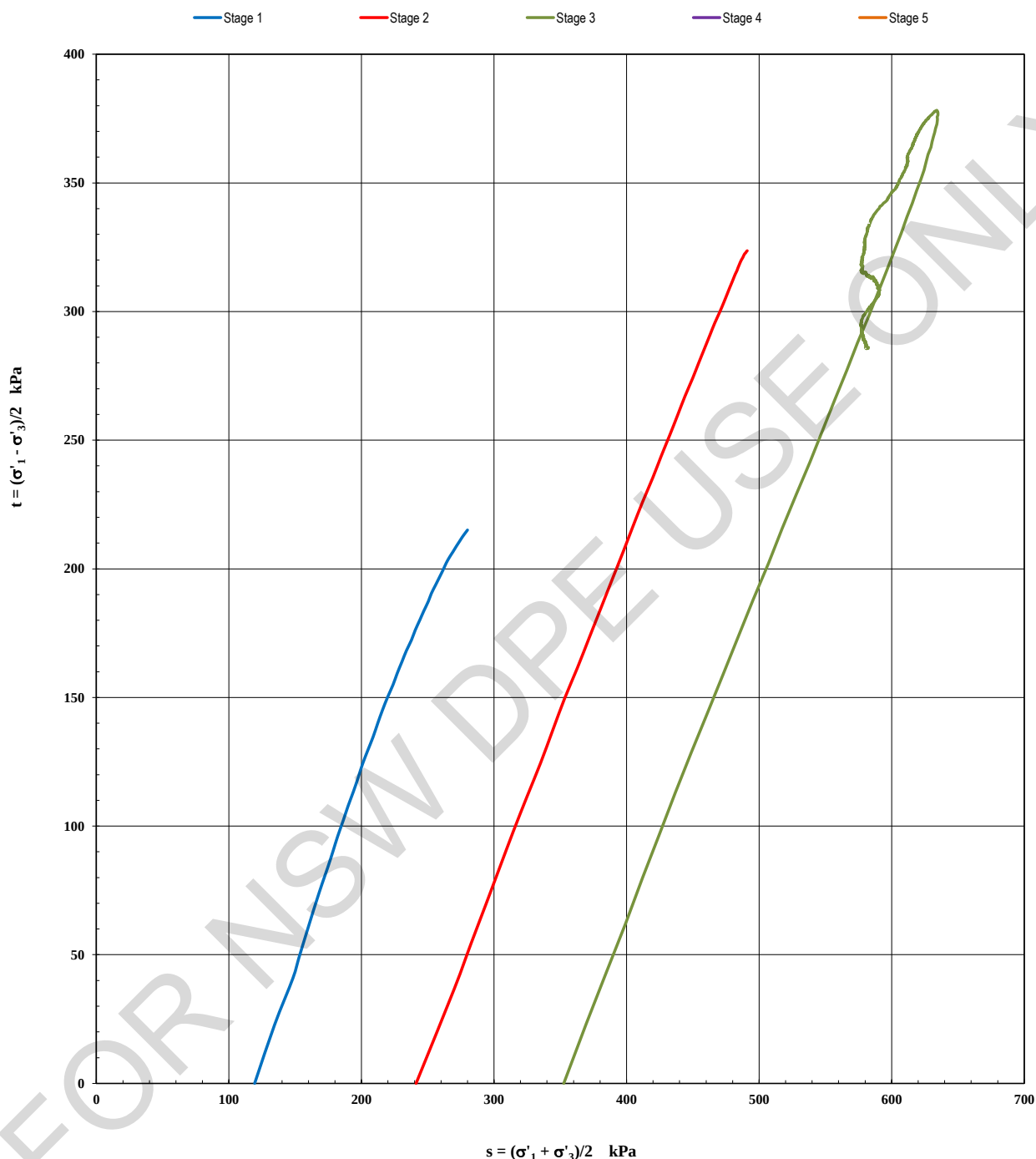
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CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST REPORT (CIU)

AS1289 6.4.2

Client	WSP	Source	SARGT003 19.9-m
Project	SAR (PS117942)	Report #	S65256-CU

MIT Method - Effective Stress Path



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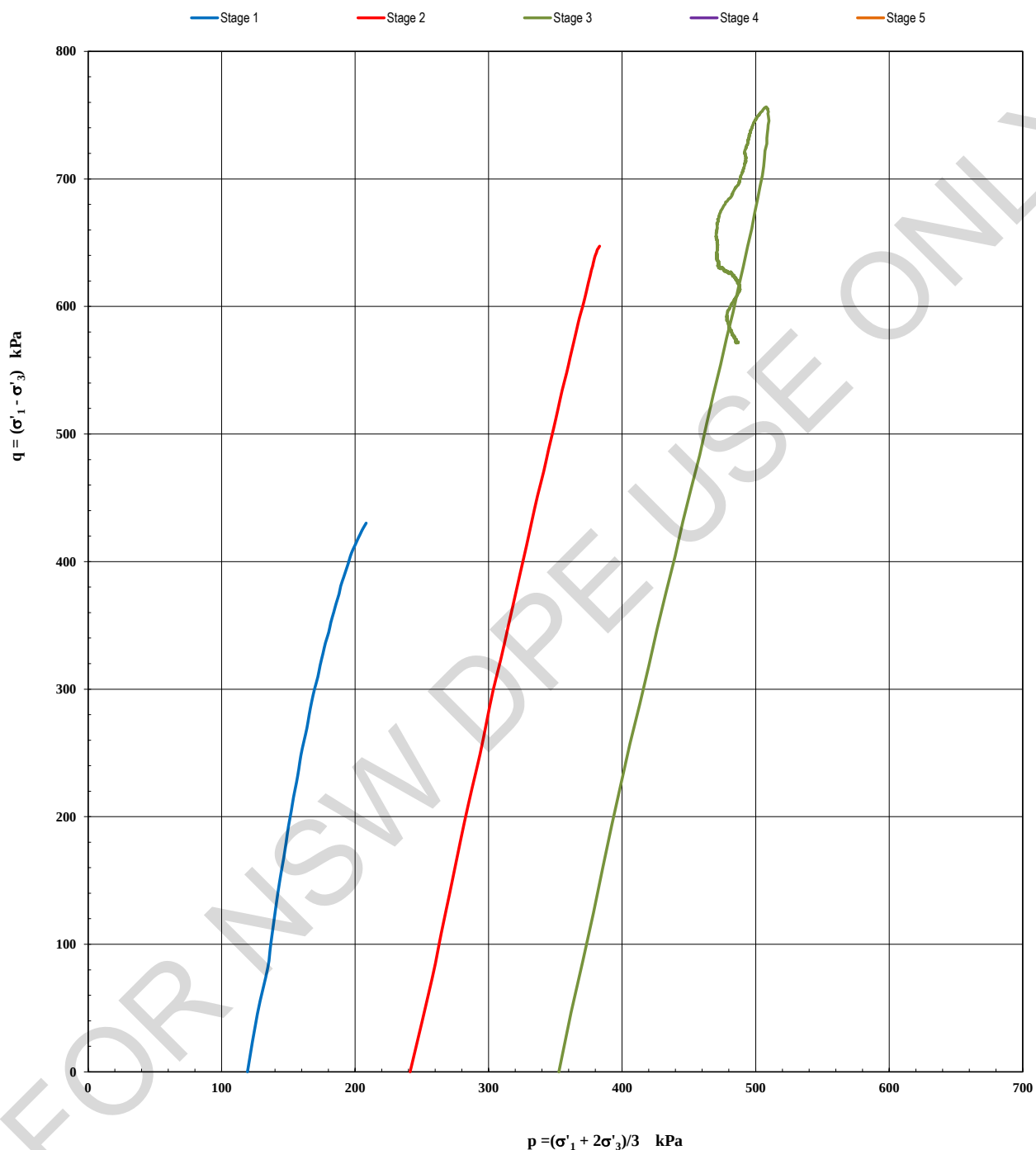
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CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST REPORT (CIU)

AS1289 6.4.2

Client	WSP	Source	SARGT003 19.9-m
Project	SAR (PS117942)	Report #	S65256-CU

Cambridge Method - Effective Stress Path



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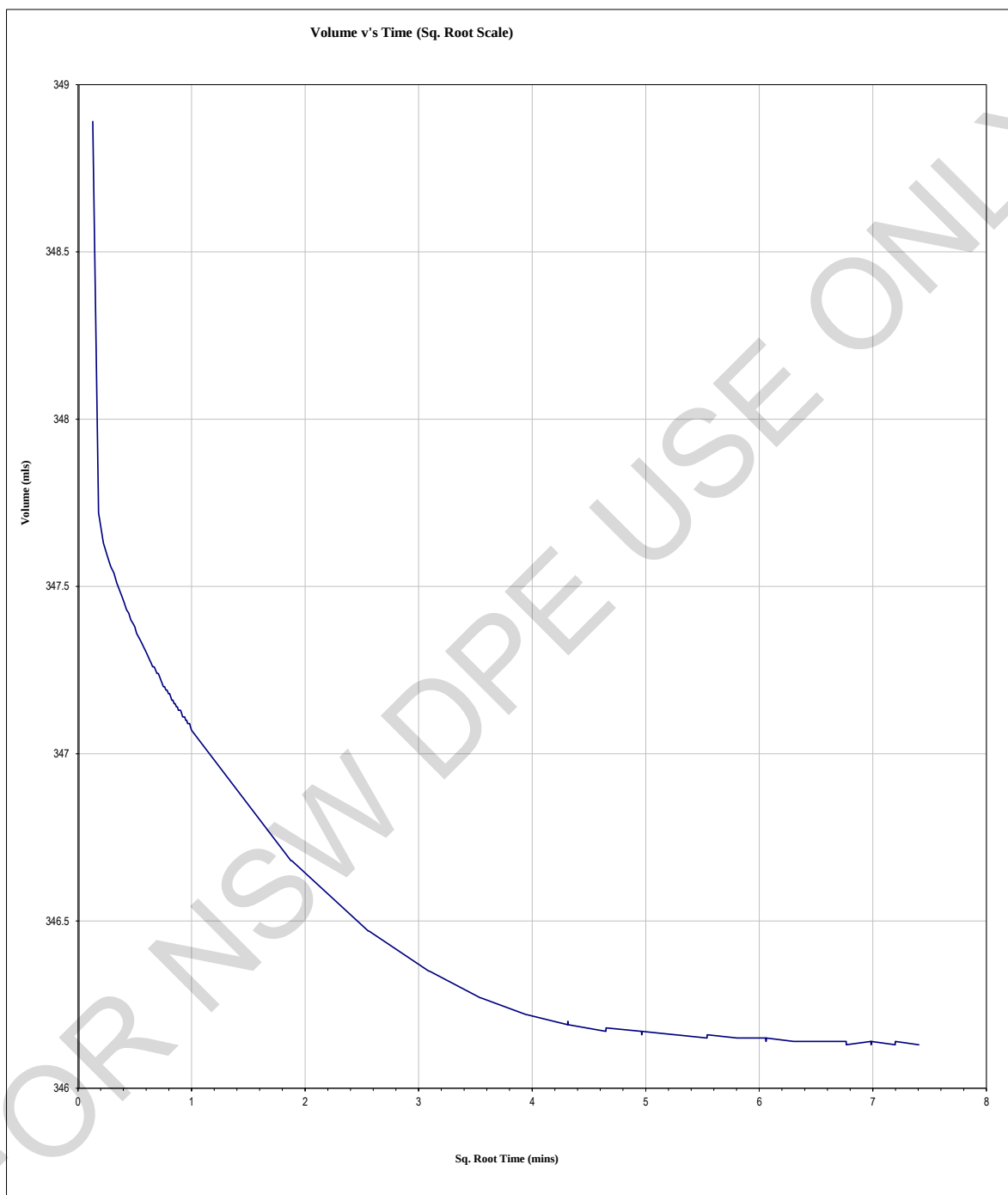
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CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST REPORT (CIU)

AS1289 6.4.2

Client	WSP	Source	SARGT003 19.9-m
Project	SAR (PS117942)	Report #	S65256-CU

Stage 1: 120 kPa



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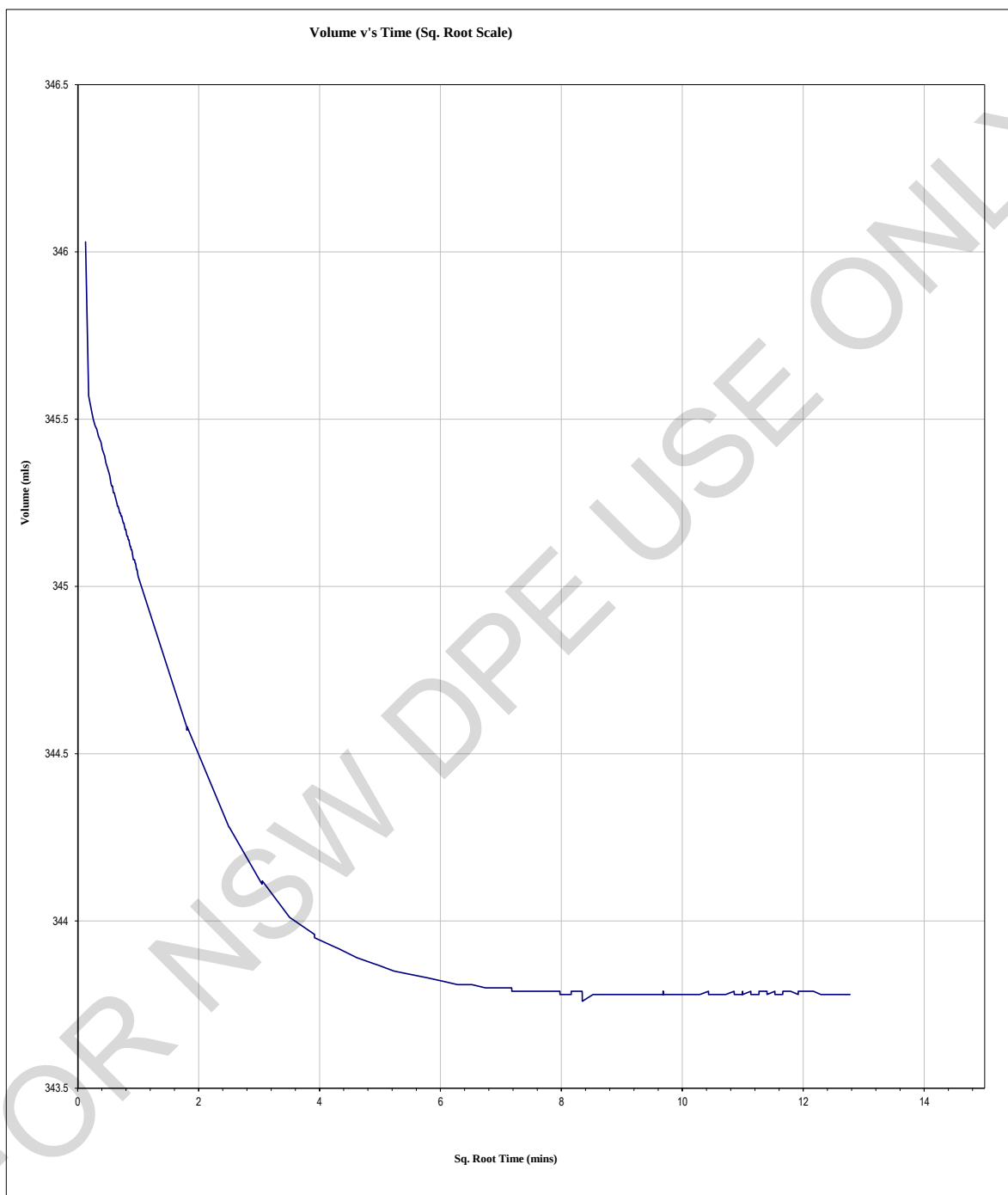
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CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST REPORT (CU)

AS1289 6.4.2

Client	WSP	Source	SARGT003 19.9-m
Project	SAR (PS117942)	Report #	S65256-CU

Stage 2: 240 kPa



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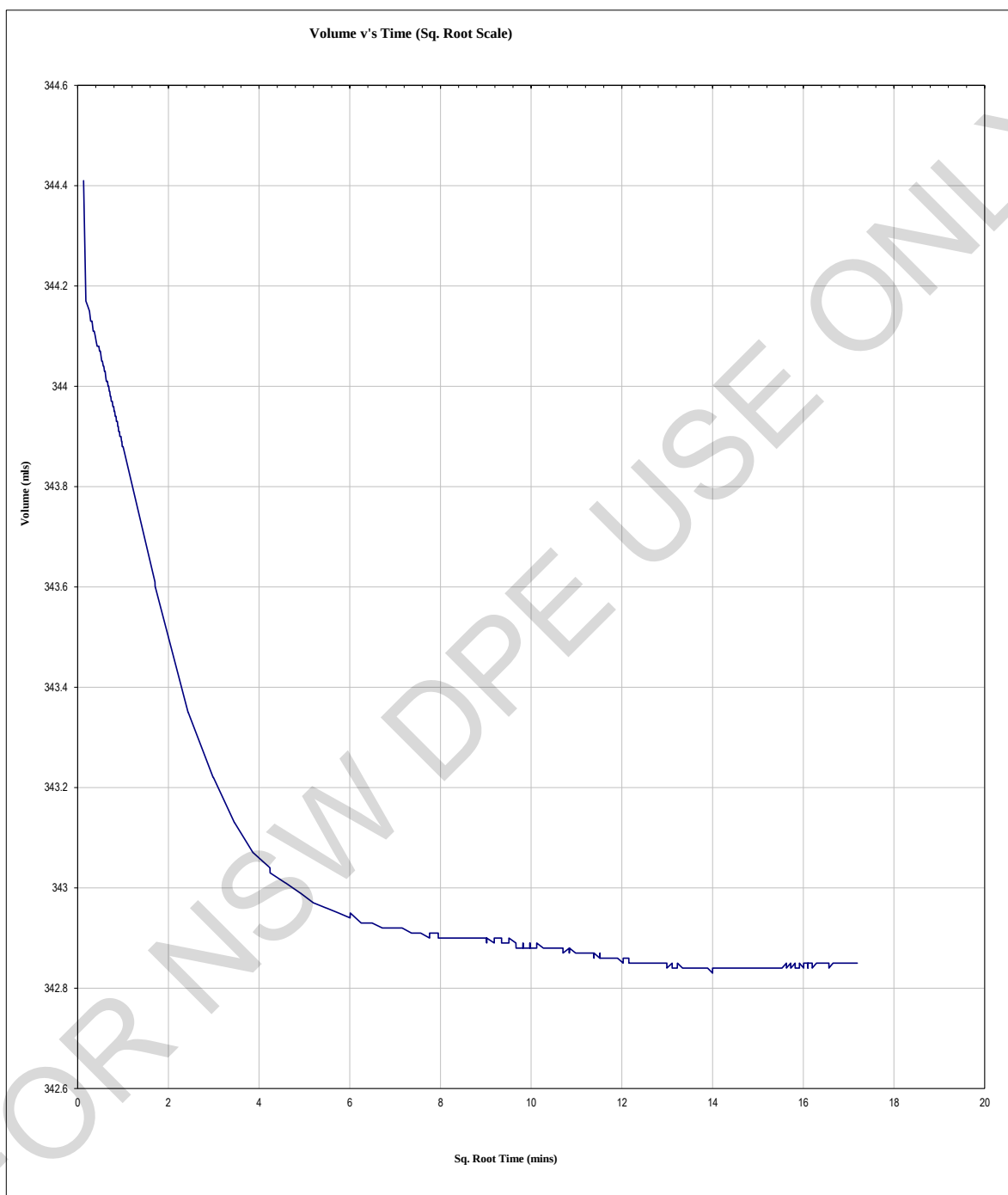
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CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST REPORT (CU)

AS1289 6.4.2

Client	WSP	Source	SARGT003 19.9-m
Project	SAR (PS117942)	Report #	S65256-CU

Stage 3: 353 kPa



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CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST REPORT (CIU)

AS1289 6.4.2

Client	WSP	Source	SARGT008 49.8-m
Project	SAR (PS117942)	Report #	S65428-CU
Address	Level 27, 680 George St, Sydney NSW 2000	Sample Description	Silty CLAY
Job No	S21012-2	Sample #	S65428

Test Procedure	AS 1289 6.4.2 Determination of compressive strength of a soil - Compressive strength of a specimen tested in undrained triaxial compression with measurement of pore water pressure	Date Sampled	1/01/2021
Sampling	AS 1289 2.1.1 Determination of the moisture content of a soil - Oven drying method		
Preparation	Sampled by Client - results apply to the sample as received		
	Prepared in accordance with the test method		

Specimen Details

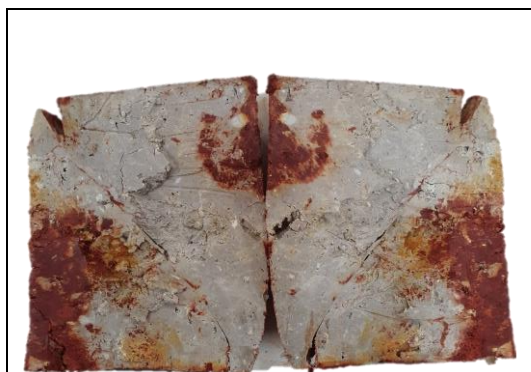
	Specimen 1	Specimen 2	Specimen 3	Specimen 4	Specimen 5
Specimen Condition	Undisturbed	-	-	-	-
Initial Height (mm)	121.0	-	-	-	-
Initial Diameter (mm)	60.5	-	-	-	-
Initial Moisture Content (%)	21.6	-	-	-	-
Initial Dry Density (t/m^3)	1.71	-	-	-	-

Test Details

	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5
Date Tested	15/02/2021	16/02/2021	17/02/2021	-	-
Axial Strain Rate (% per hour)	0.005	0.005	0.005	-	-
Cell Pressure (kPa)	466	733	1000	-	-
Back Pressure (kPa)	200	200	200	-	-
Failure Mode	Compound			-	-



After Test Photo



After Test Photo of Specimen Broken in Half

Comments :

Final test moisture content = 21.4 %

After saturation specimen height = 121.11mm

Test performed as a multi staged test.

Filter strips used during consolidation allowing drainage from both ends and radial boundary

After test description: As per sample description

Notes:



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NATA Accredited Laboratory Number: 14874

Authorised Signatory:

Chris Lloyd

24/02/2021

Chris Lloyd

Date:

**MACQUARIE
GEOTECH**

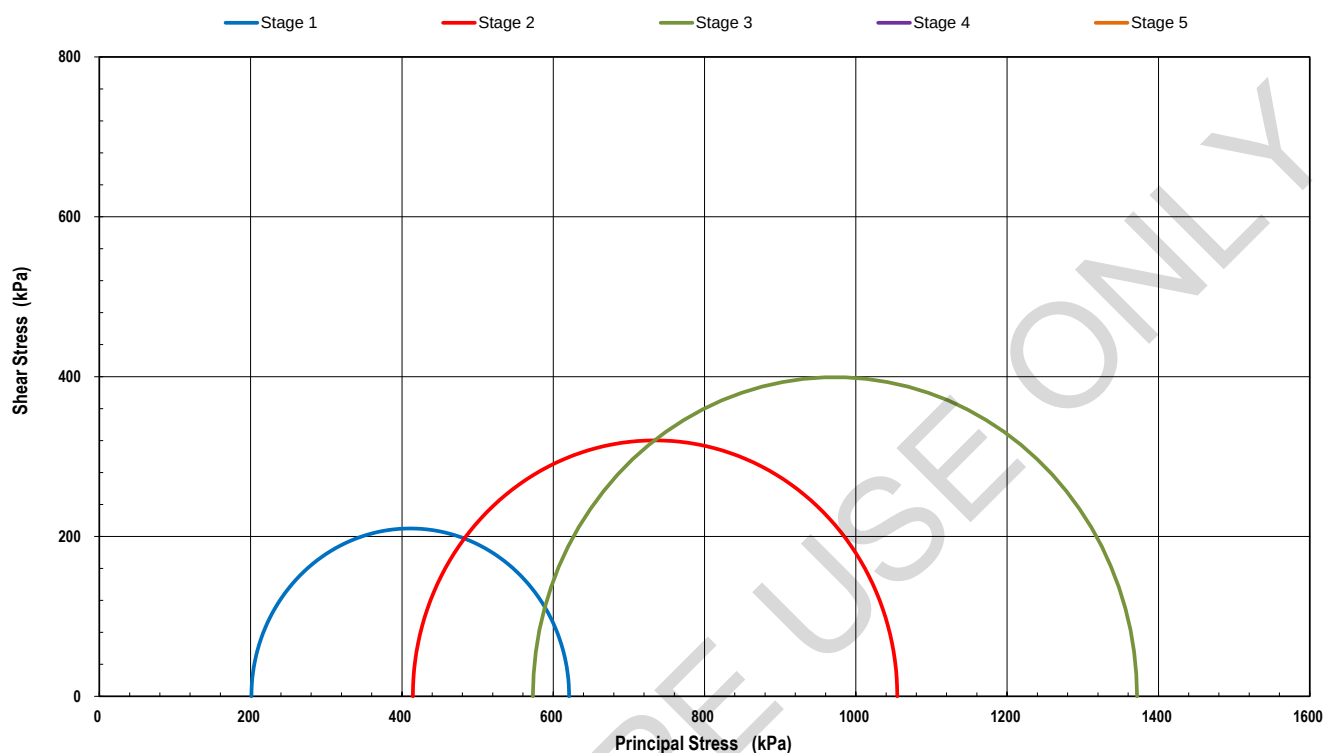
U7 & 8/10 Bradford Street
Alexandria NSW 2015

CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST REPORT (CIU)

AS1289 6.4.2

Client	WSP	Source	SARGT008 49.8-m
Project	SAR (PS117942)	Report #	S65428-CU

#1 Failure Criteria - Mohr Circle Diagram



1 Failure Criteria : Peak Principal Stress Ratio

	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5
Pore Pressure at Failure (kPa)	261.7	318.6	422.9	-	-
Strain at Failure (%)	1.46	2.60	4.38	-	-
Max Deviator Stress at Failure (kPa)	420.0	640.4	798.8	-	-
Principal Effective Stresses	s'_1	621.0	1054.8	1371.8	-
	s'_3	201.0	414.4	573.0	-
	s'_1 / s'_3	3.090	2.545	2.394	-

Mohr Circle Interpretation

Interpretation between stages :	1 to 2	2 to 3	1 to 3
Cohesion C' (kPa) :	74.5	80.2	76.0
Angle of Shear Resistance Φ' (Degrees) :	19.9	19.5	19.7
Correlation Coefficient:	1.0000	1.0000	1.0000



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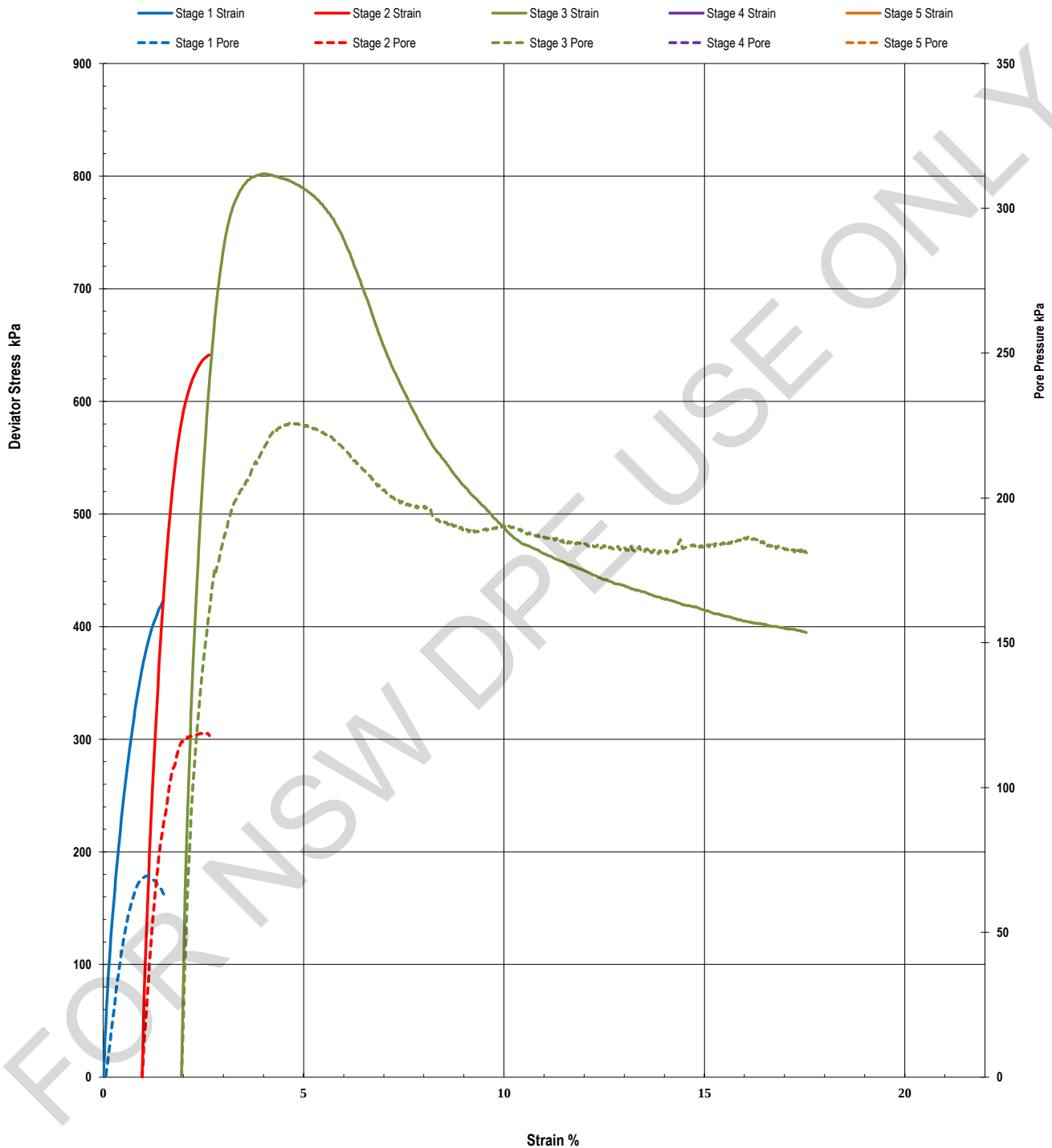
8/10 Bradford Street
Alexandria NSW 2015

CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST REPORT (CIU)

AS1289 6.4.2

Client	WSP	Source	SARGT008 49.8-m
Project	SAR (PS117942)	Report #	S65428-CU

Stress/Strain & Pore Pressure/Strain Diagram



Accredited for compliance with ISO/IEC 17025 - Testing.

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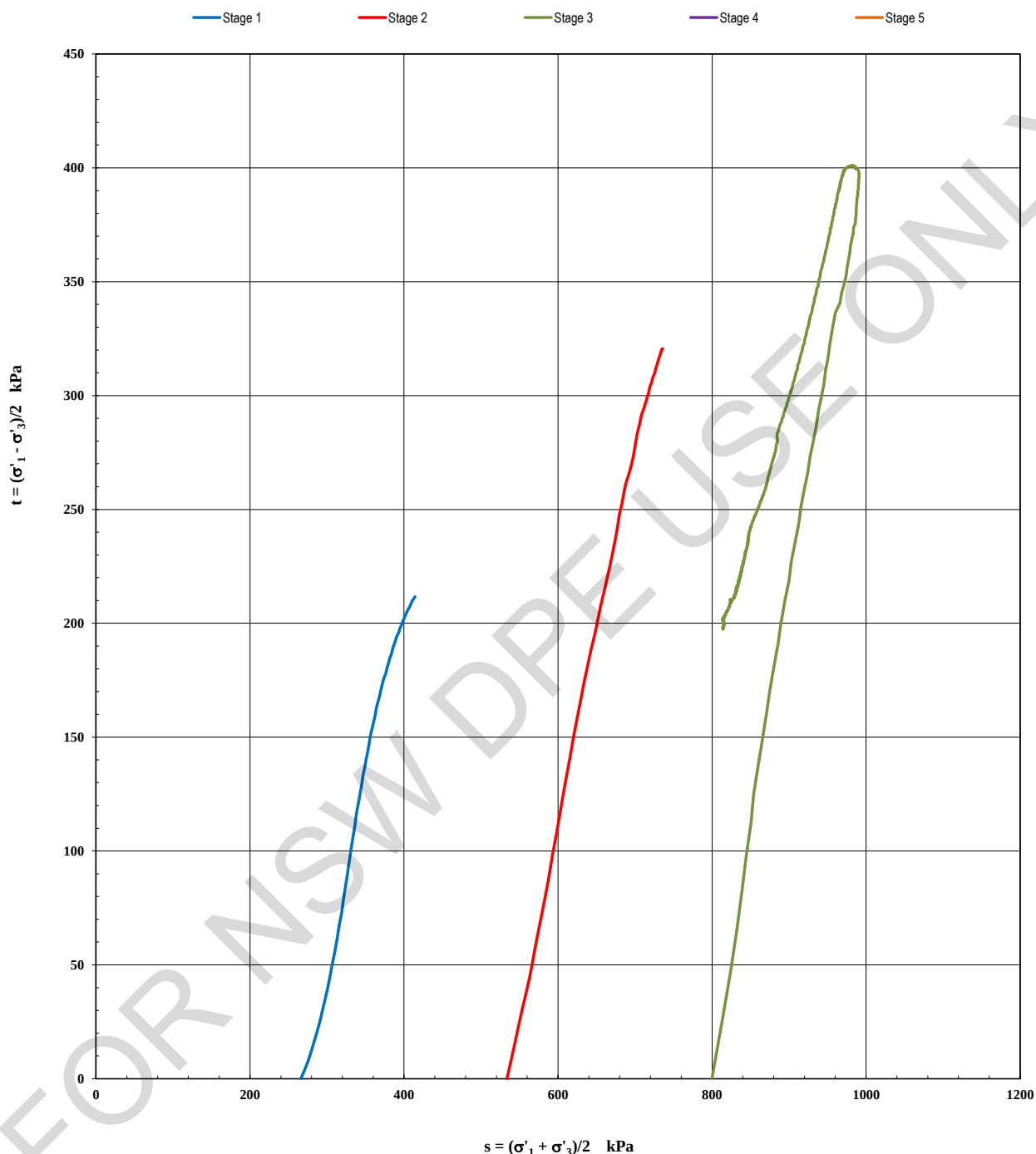
8/10 Bradford Street
Alexandria NSW 2015

CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST REPORT (CIU)

AS1289 6.4.2

Client	WSP	Source	SARGT008 49.8-m
Project	SAR (PS117942)	Report #	S65428-CU

MIT Method - Effective Stress Path



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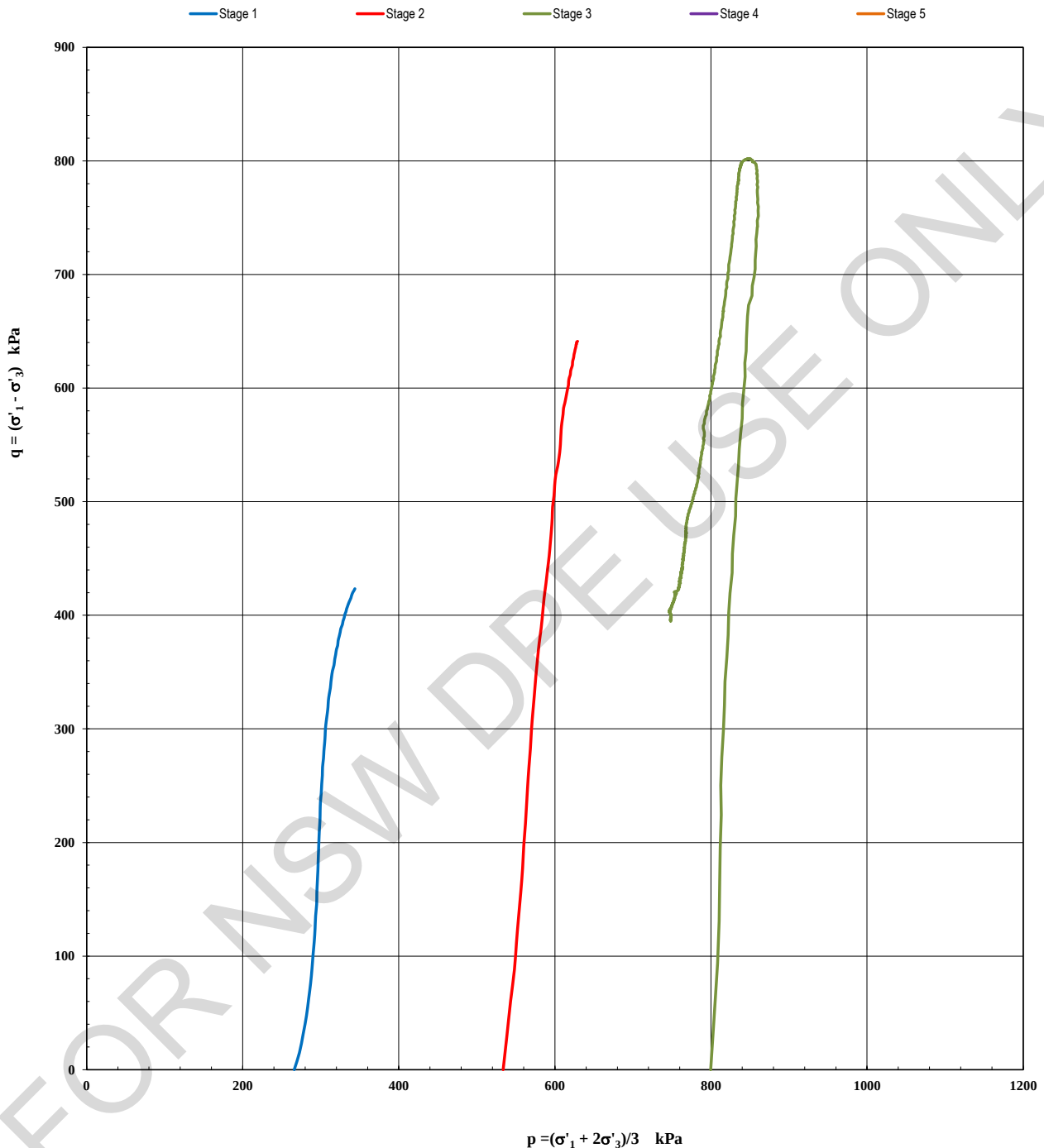
8/10 Bradford Street
Alexandria NSW 2015

CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST REPORT (CIU)

AS1289 6.4.2

Client	WSP	Source	SARGT008 49.8-m
Project	SAR (PS117942)	Report #	S65428-CU

Cambridge Method - Effective Stress Path



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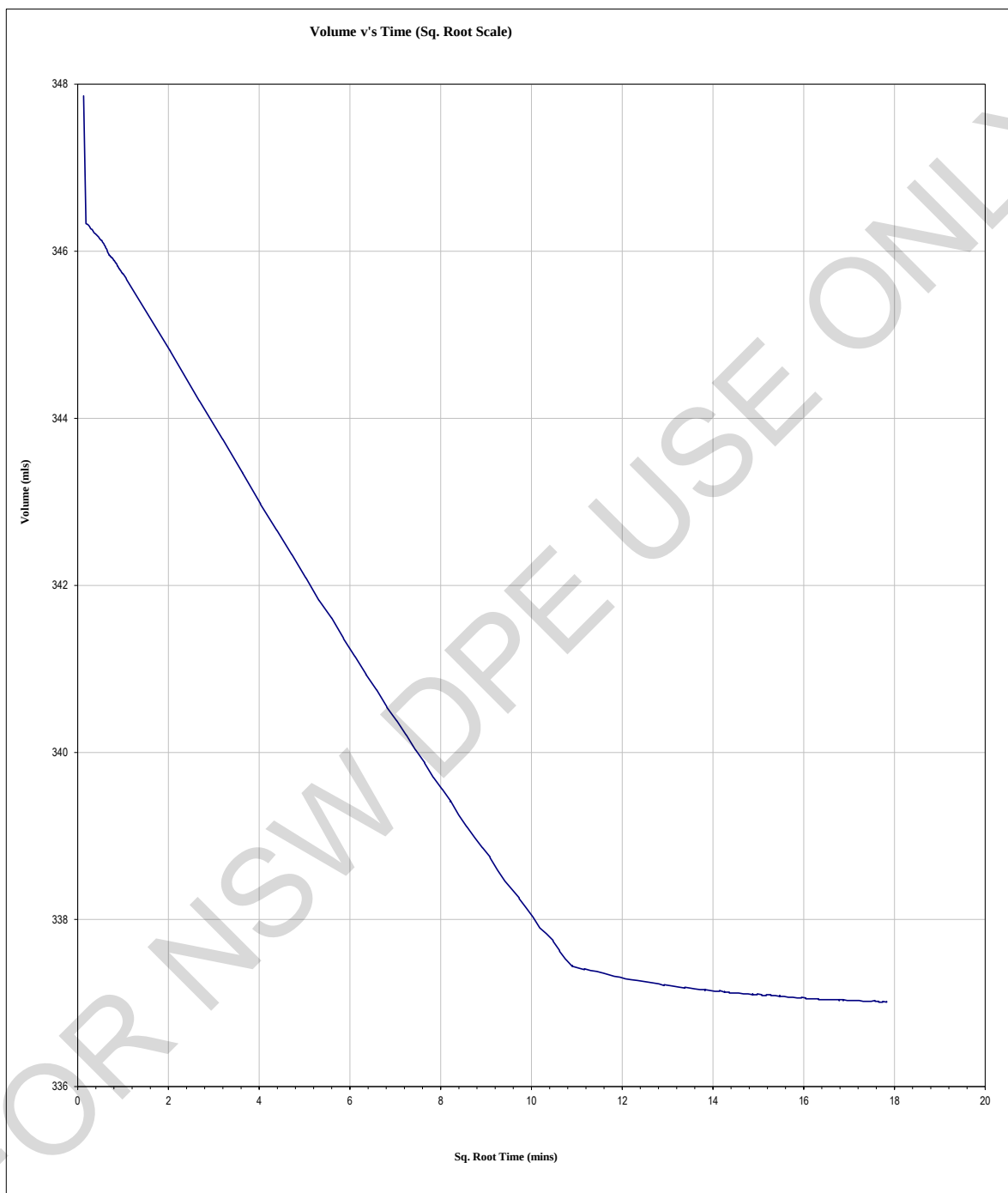
8/10 Bradford Street
Alexandria NSW 2015

CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST REPORT (CIU)

AS1289 6.4.2

Client	WSP	Source	SARGT008 49.8-m
Project	SAR (PS117942)	Report #	S65428-CU

Stage 1: 266 kPa



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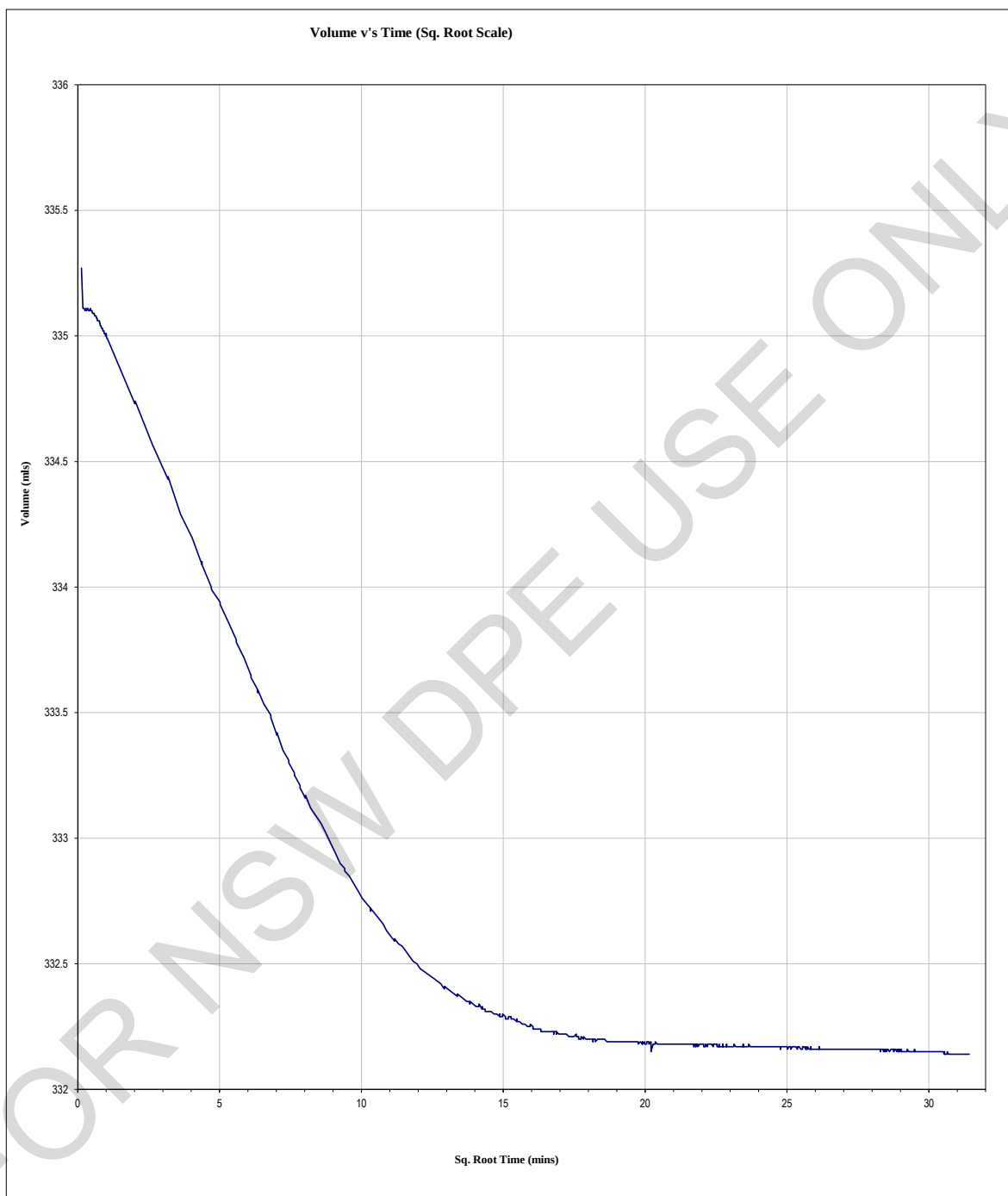
8/10 Bradford Street
Alexandria NSW 2015

CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST REPORT (CU)

AS1289 6.4.2

Client	WSP	Source	SARGT008 49.8-m
Project	SAR (PS117942)	Report #	S65428-CU

Stage 2: 533 kPa



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Authorised Signatory:

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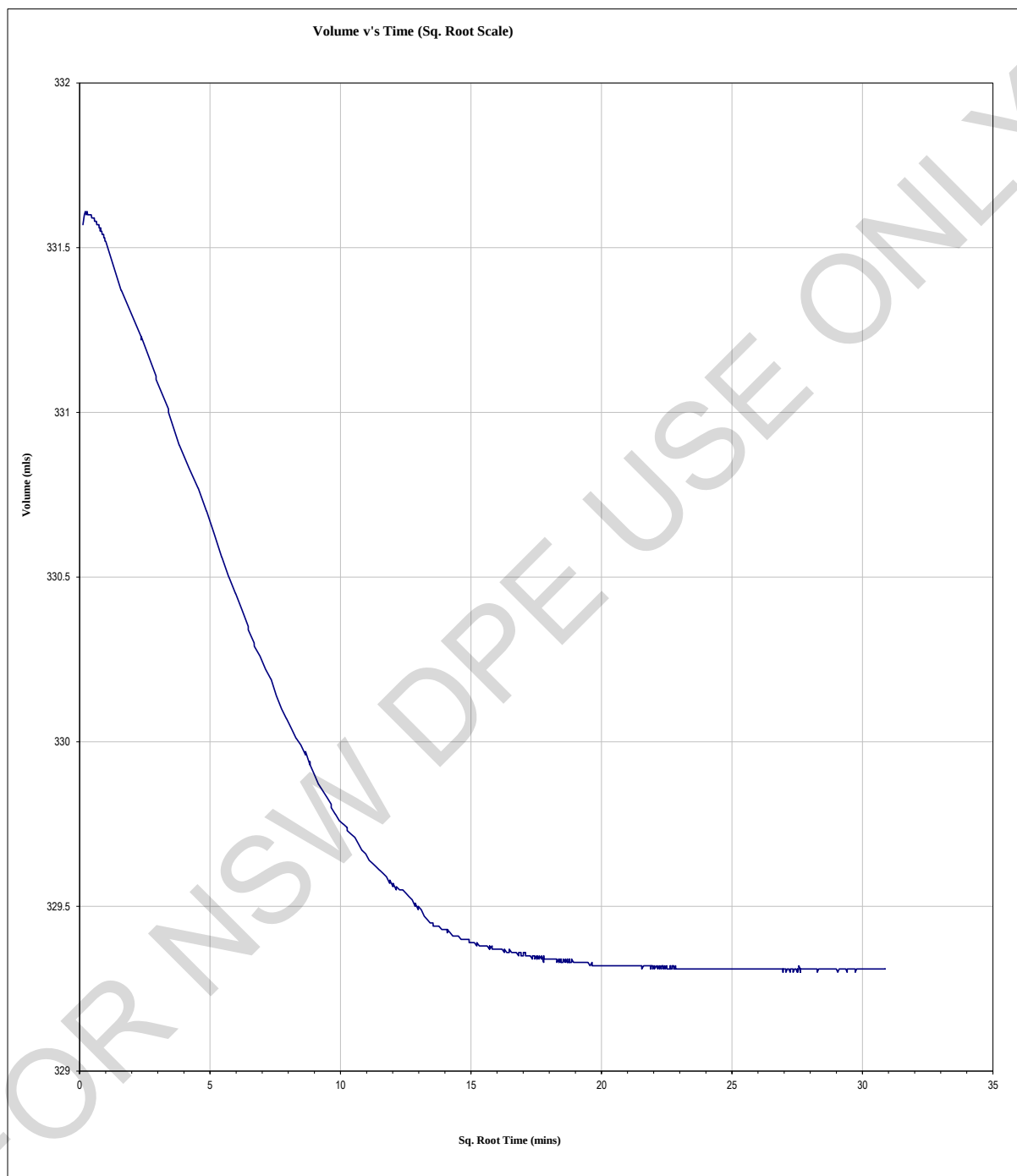
8/10 Bradford Street
Alexandria NSW 2015

CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST REPORT (CU)

AS1289 6.4.2

Client	WSP	Source	SARGT008 49.8-m
Project	SAR (PS117942)	Report #	S65428-CU

Stage 2: 0 kPa



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NATA Accredited Laboratory Number: 14874

Authorised Signatory:

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CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST REPORT (CIU)

AS1289 6.4.2

Client:	WSP	Source:	SARGT005 38.7-m
Project:	SAR (PS117942)	Report No.:	S64664-CU
Address:	Level 27, 680 George St, Sydney NSW 2000	Sample Description:	Silty CLAY
Job No:	S20514-1	Lab No.:	S64664

Test Procedure: AS 1289 6.4.2: Soil strength and consolidation tests - Determination of compressive strength of a soil - Compressive strength of a specimen tested in undrained triaxial compression with measurement of pore water pressure
AS 1289 2.1.1: Soil moisture content tests - Determination of the moisture content of a soil - Oven drying method

Sampling:	By Client	Date Sampled:	1/11/2020
Preparation:	Prepared in accordance with the test method		

Specimen Details

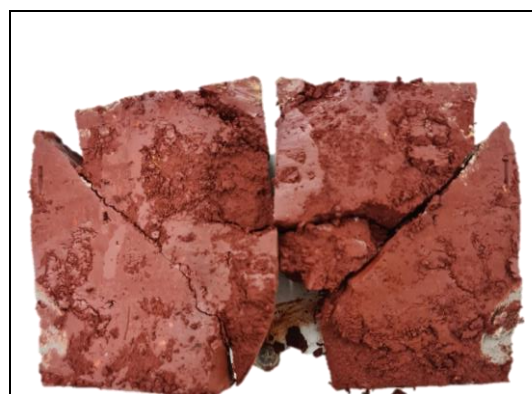
	Specimen 1	Specimen 2	Specimen 3	Specimen 4	Specimen 5
Specimen Condition	Undisturbed	-	-	-	-
Initial Height (mm)	122.3	-	-	-	-
Initial Diameter (mm)	61.2	-	-	-	-
Initial Moisture Content (%)	30.4	-	-	-	-
Initial Dry Density (t/m^3)	1.50	-	-	-	-

Test Details

	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5
Date Tested	15/12/2020	17/12/2020	18/12/2020	-	-
Axial Strain Rate (mm/min)	0.008	0.008	0.008	-	-
Initial Cell Pressure (kPa)	450	701	1000	-	-
Initial Back Pressure (kPa)	202	201	201	-	-
Initial Pore Water Pressure (kPa)	202	202	202	-	-



After Test Photo



After Test Photo of Specimen Broken in Half

Comments : Final test moisture content (%) = 32.3
After saturation specimen height (mm) 122.35
Test performed as a multi staged test.
Filter strips used during consolidation allowing drainage from both ends and radial boundary
Failure Mode Compound

Description as broken after test : As per description



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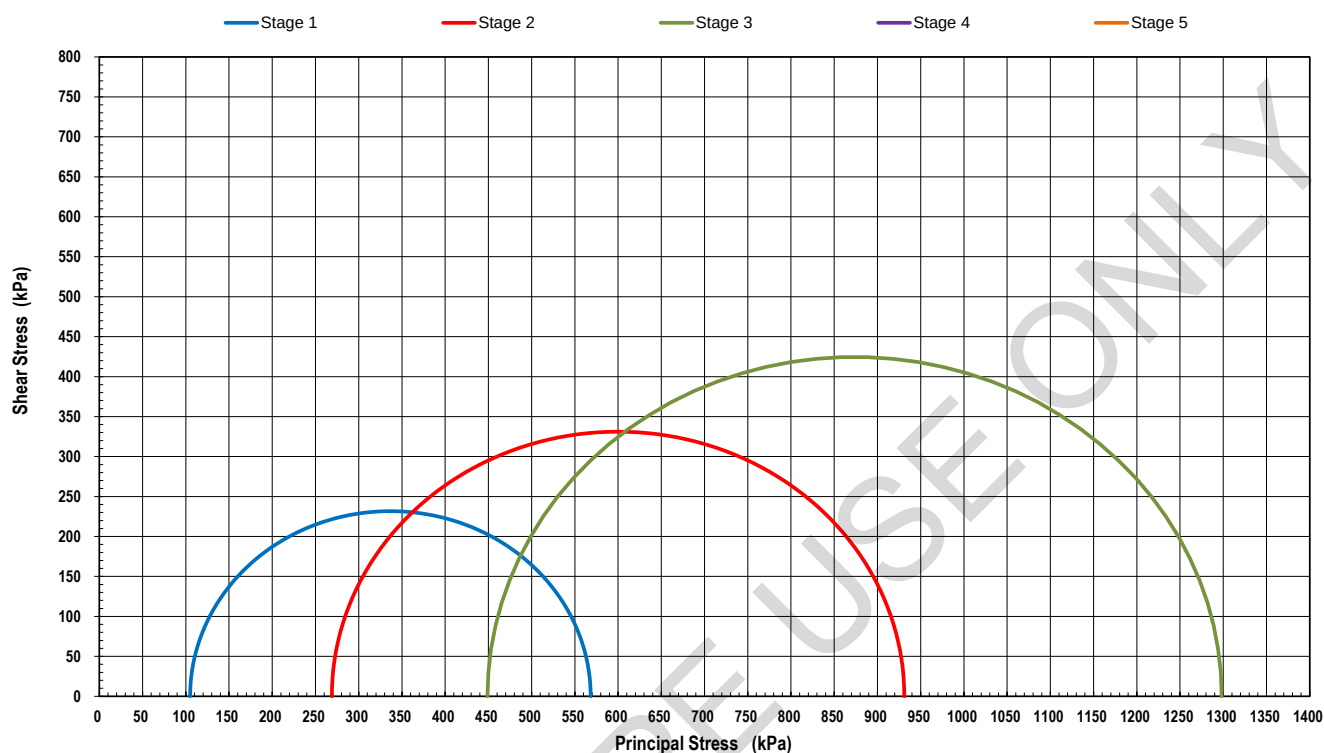
8/10 Bradford Street
Alexandria NSW 2015

CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST REPORT (CIU)

AS1289 6.4.2

Client:	WSP	Source:	SARGT005 38.7-m
Project:	SAR (PS117942)	Report No.:	S64664-CU

#1 Failure Criteria - Mohr Circle Diagram



1 Failure Criteria : Peak Principal Stress Ratio

	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5
Pore Pressure at Failure (kPa)	346	432	551	-	-
Strain at Failure (%)	1.03	2.05	3.45	-	-
Max Deviator Stress at Failure (kPa)	463	662	849	-	-
Principal Effective Stresses	s'_1	568	931	1298	-
	s'_3	105	269	449	-
	s'_1 / s'_3	5.413	3.463	2.892	-

Mohr Circle Interpretation

Interpretation between stages :	1 to 2	2 to 3	1 to 3
Cohesion C' (kPa) :	112.9	134.0	120.3
Angle of Shear Resistance Φ' (Degrees) :	22.2	20.0	21.1
Correlation Coefficient:	1.0000	1.0000	0.9996



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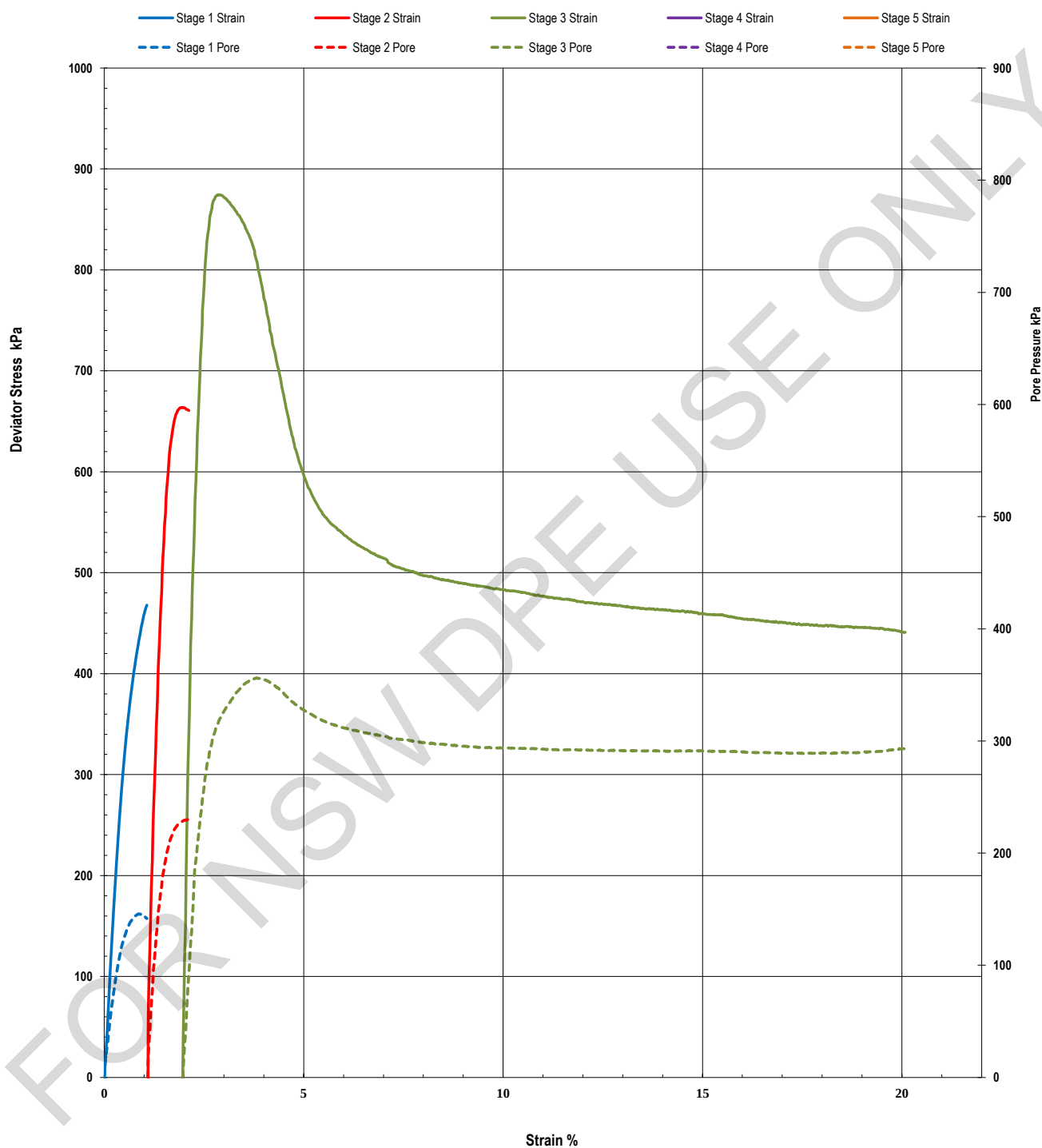
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Alexandria NSW 2015

CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST REPORT (CIU)

AS1289 6.4.2

Client:	WSP	Source:	SARGT005 38.7-m
Project:	SAR (PS117942)	Report No.:	S64664-CU

Stress/Strain & Pore Pressure/Strain Diagram



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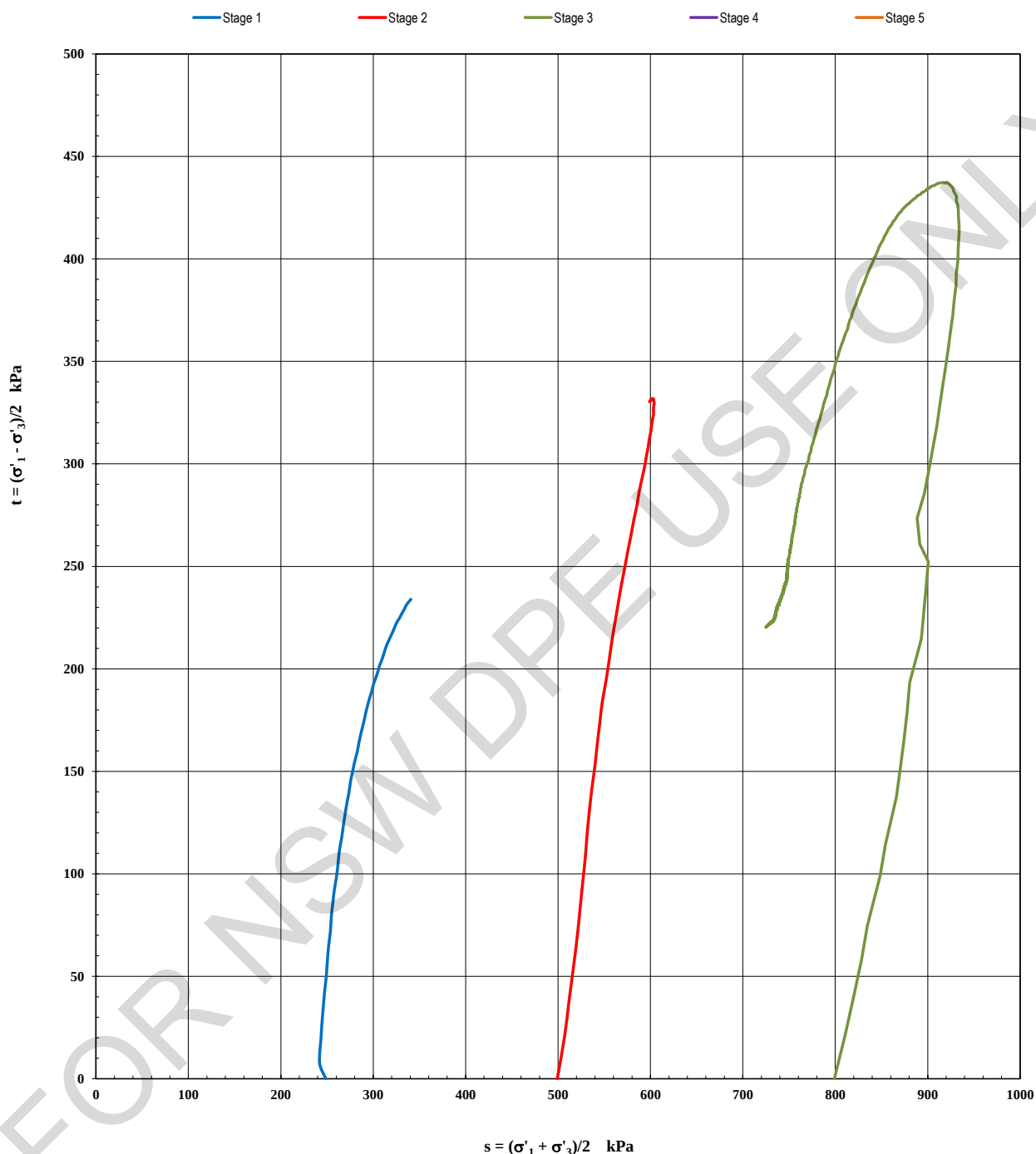
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Alexandria NSW 2015

CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST REPORT (CIU)

AS1289 6.4.2

Client:	WSP	Source:	SARGT005 38.7-m
Project:	SAR (PS117942)	Report No.:	S64664-CU

MIT Method - Effective Stress Path



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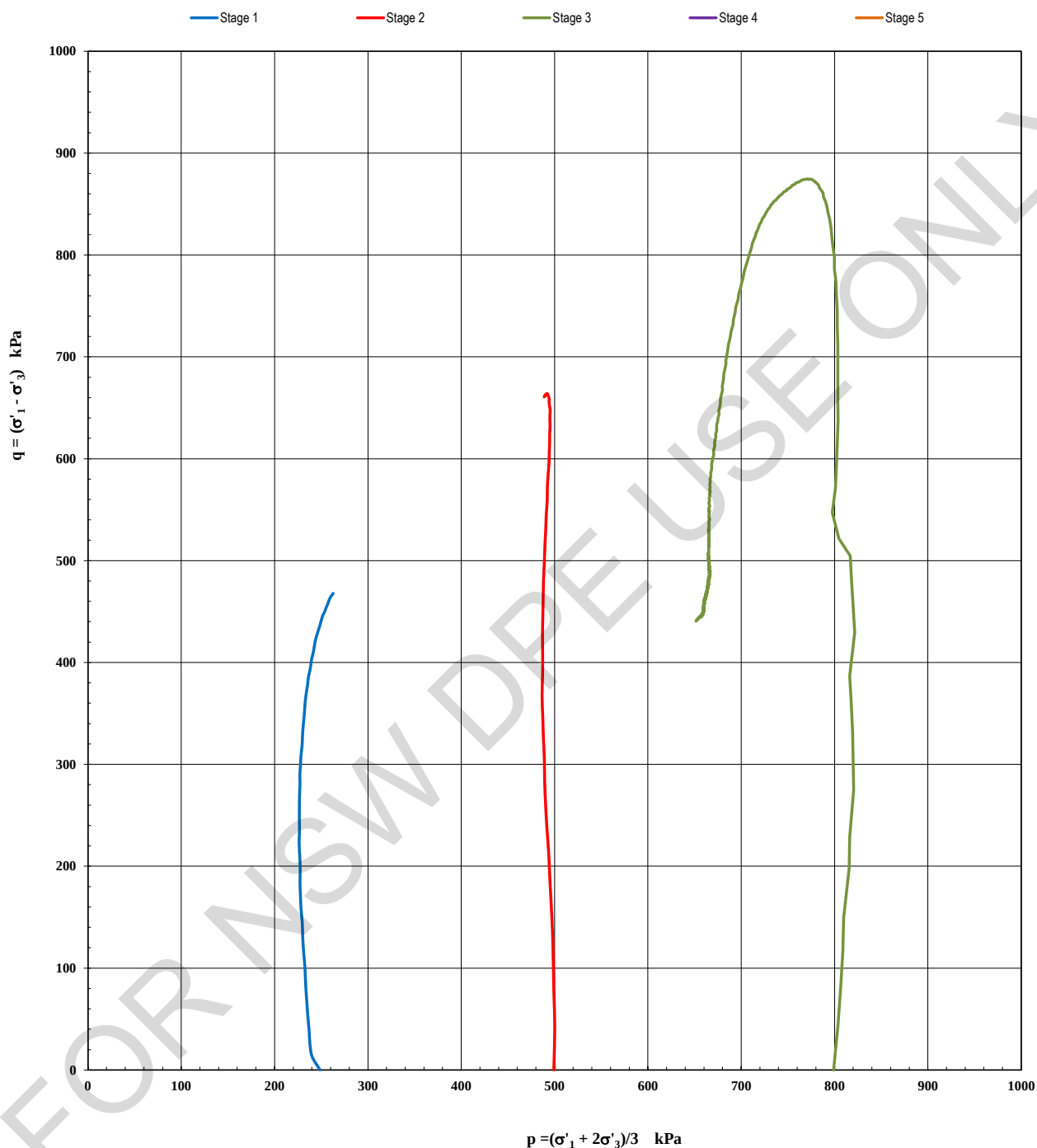
8/10 Bradford Street
Alexandria NSW 2015

CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST REPORT (CIU)

AS1289 6.4.2

Client:	WSP	Source:	SARGT005 38.7-m
Project:	SAR (PS117942)	Report No.:	S64664-CU

Cambridge Method - Effective Stress Path



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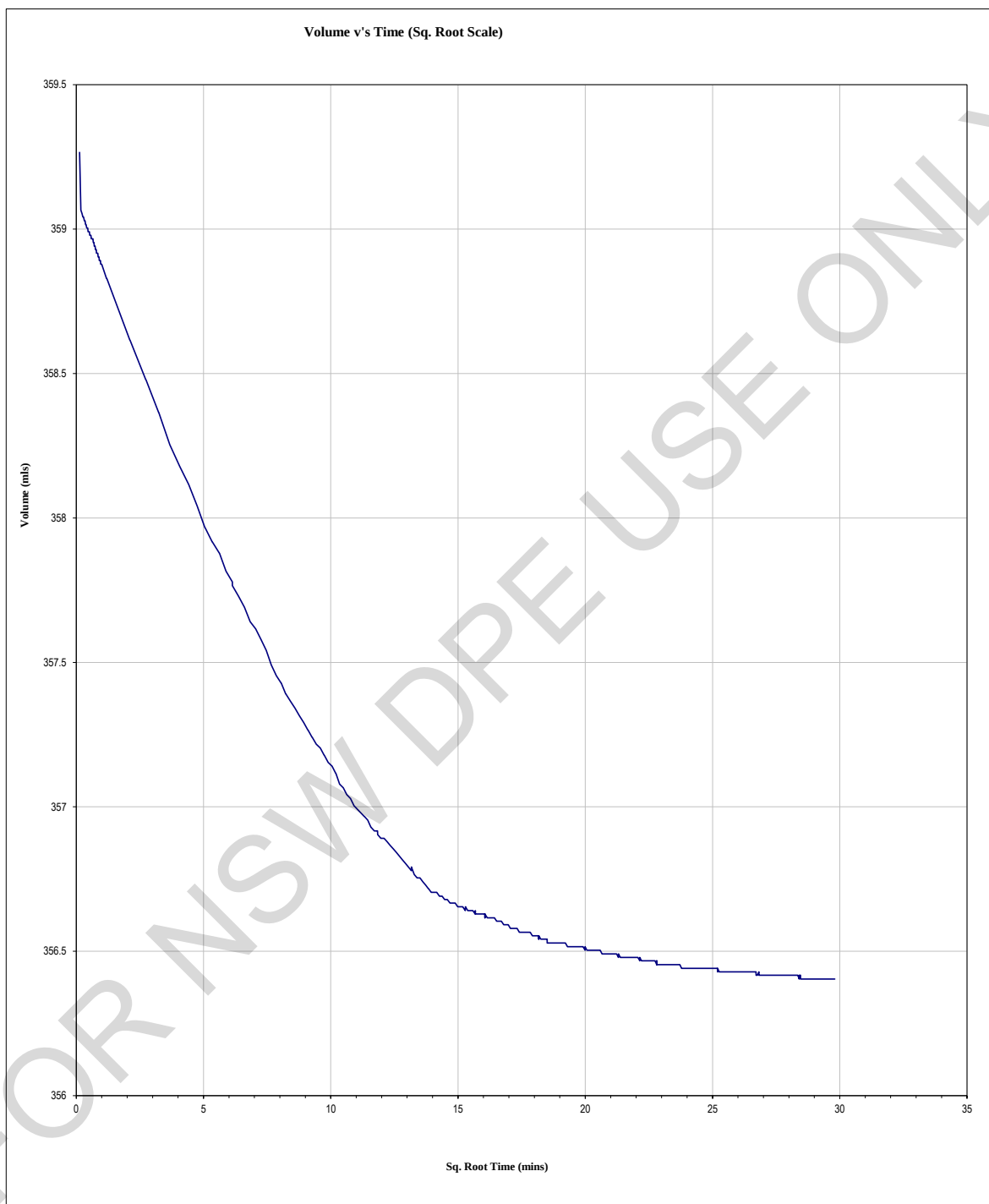
8/10 Bradford Street
Alexandria NSW 2015

CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST REPORT (CIU)

AS1289 6.4.2

Client:	WSP	Source:	SARGT005 38.7-m
Project:	SAR (PS117942)	Report No.:	S64664-CU

Stage 1: 250 kPa



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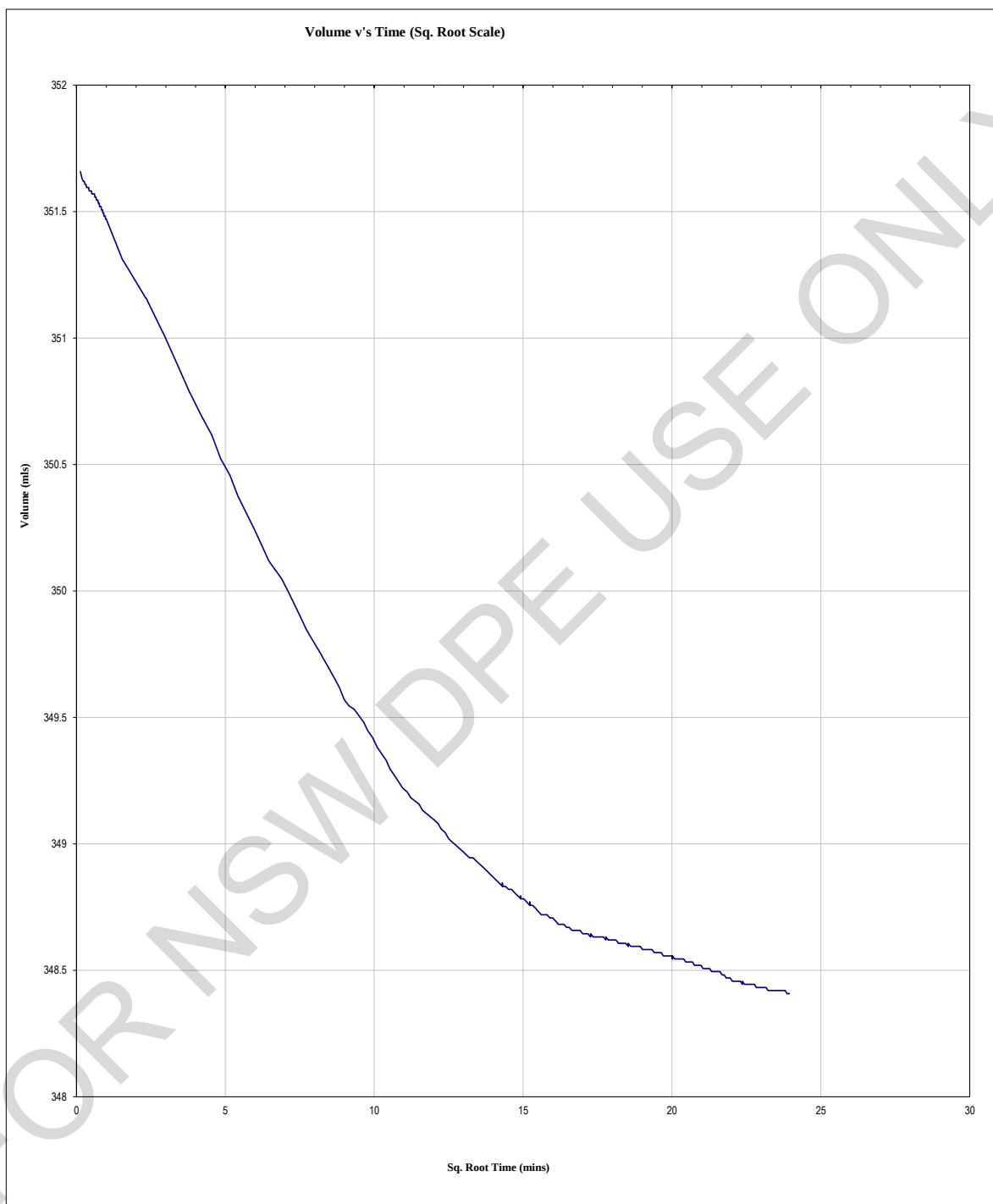
8/10 Bradford Street
Alexandria NSW 2015

CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST REPORT (CU)

AS1289 6.4.2

Client:	WSP	Source:	SARGT005 38.7-m
Project:	SAR (PS117942)	Report No.:	S64664-CU

Stage 2: 500 kPa



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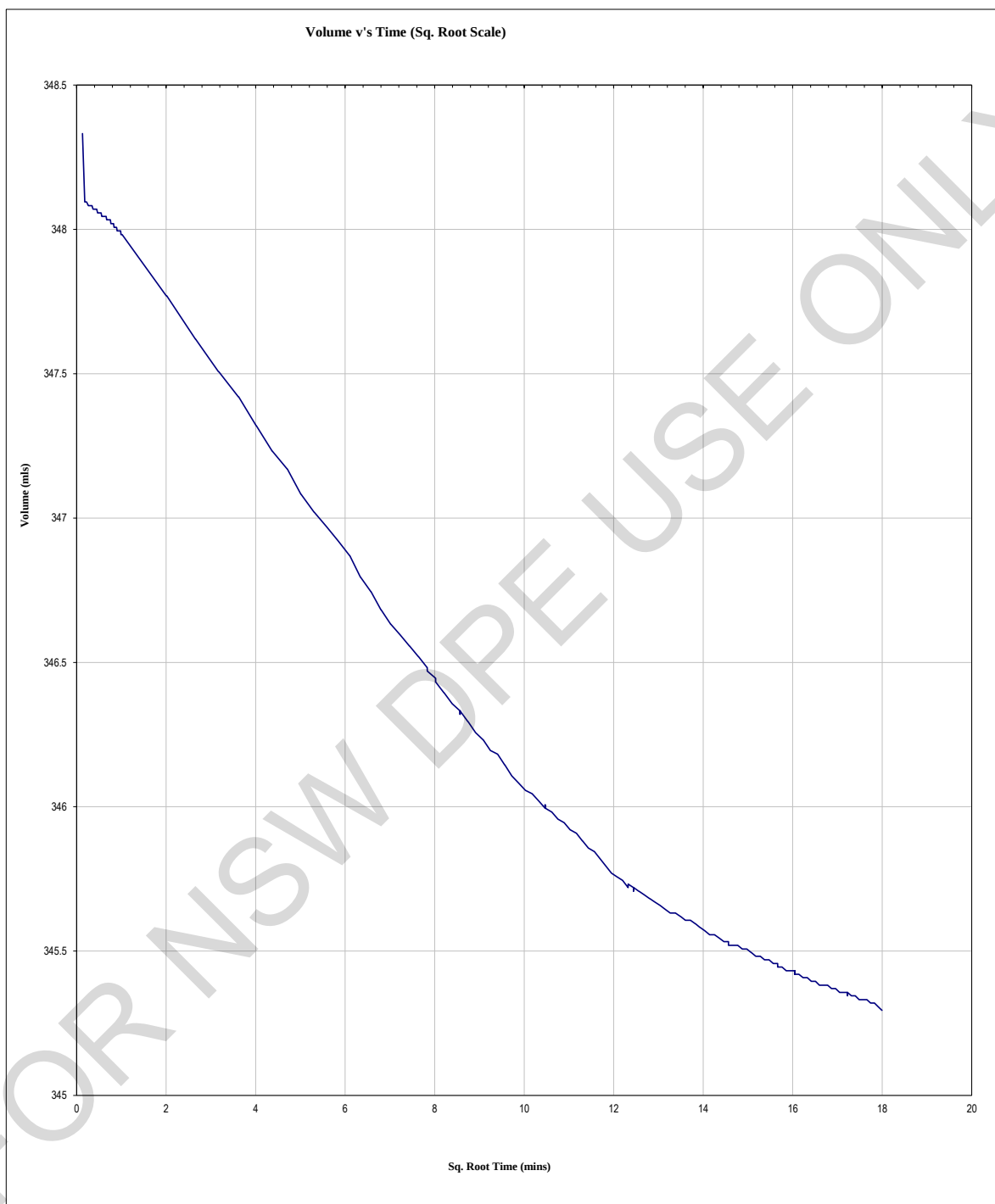
8/10 Bradford Street
Alexandria NSW 2015

CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST REPORT (CU)

AS1289 6.4.2

Client:	WSP	Source:	SARGT005 38.7-m
Project:	SAR (PS117942)	Report No.:	S64664-CU

Stage 3: 800 kPa



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Authorised Signatory:

22/12/2020

Chris Lloyd

Date:

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Alexandria NSW 2015

APPENDIX E

RESULTS OF DOWNHOLE GEOPHYSICS



FOR NSW DPE USE ONLY



BOREHOLE ATV REPORT

BOREHOLE NO. **SARGT002**

CONSULTANT: **WSP**
CLIENT: **ALKANE RESOURCES**
PROJECT: **TGEP**
LOCATION: **San Antonio**
PROJECT NUMBER: **PS117942**

DATE COMMENCED: **17/10/20**
DATE COMPLETED: **18/10/20**
RECORDED BY: **NG**
LOG CHECKED BY: **LMcK**

COORDINATES: **E 613635 N 6389700**
REDUCED LEVEL (mAHD): **265.6**
INCLINATION: **-67**

DEPTH OF TEST (m): **92.1 - 119.9**
DEPTH OF BOREHOLE (m): **165.7**
DIAMETER OF BOREHOLE (mm): **96**
TYPE OF CASING (mm): **Nil**
GROUNDWATER LEVEL (m): **NFGWE**

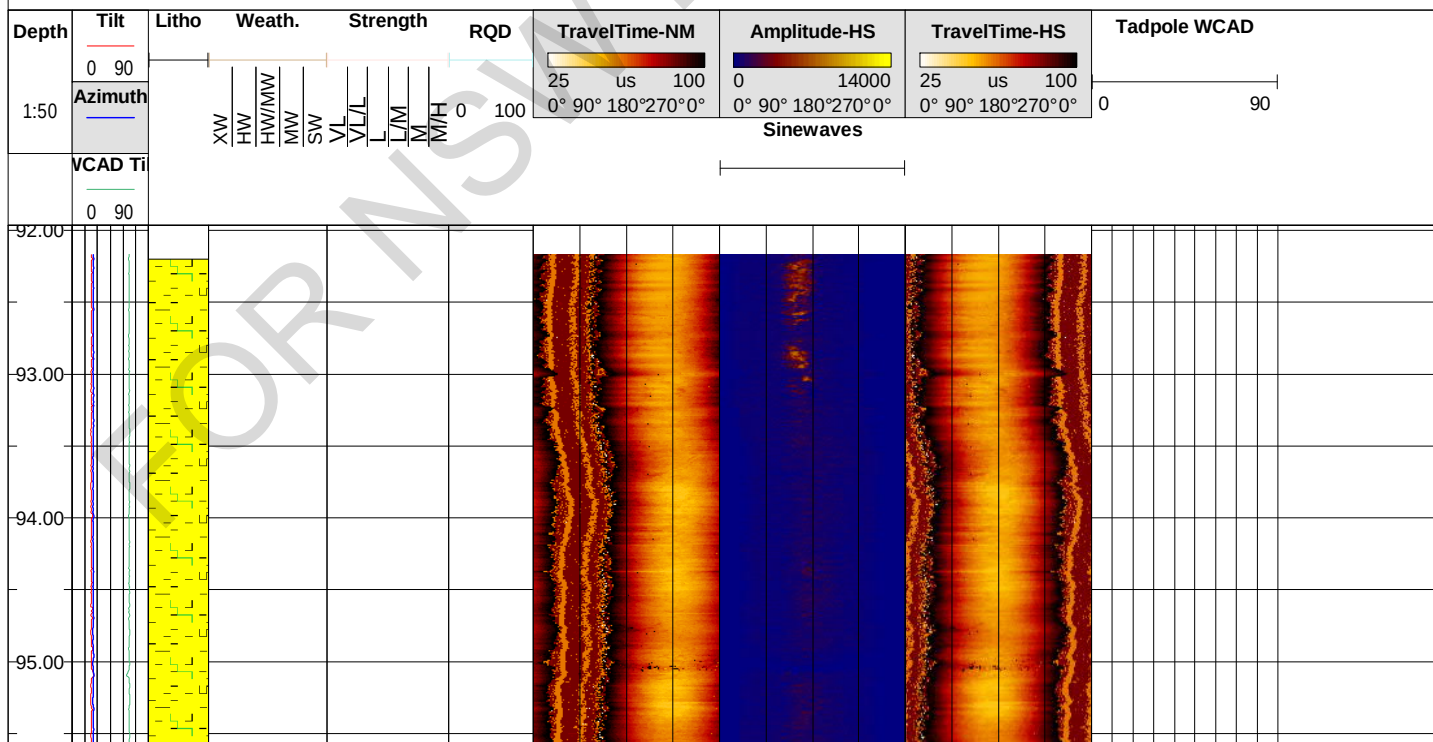
LITHOLOGY

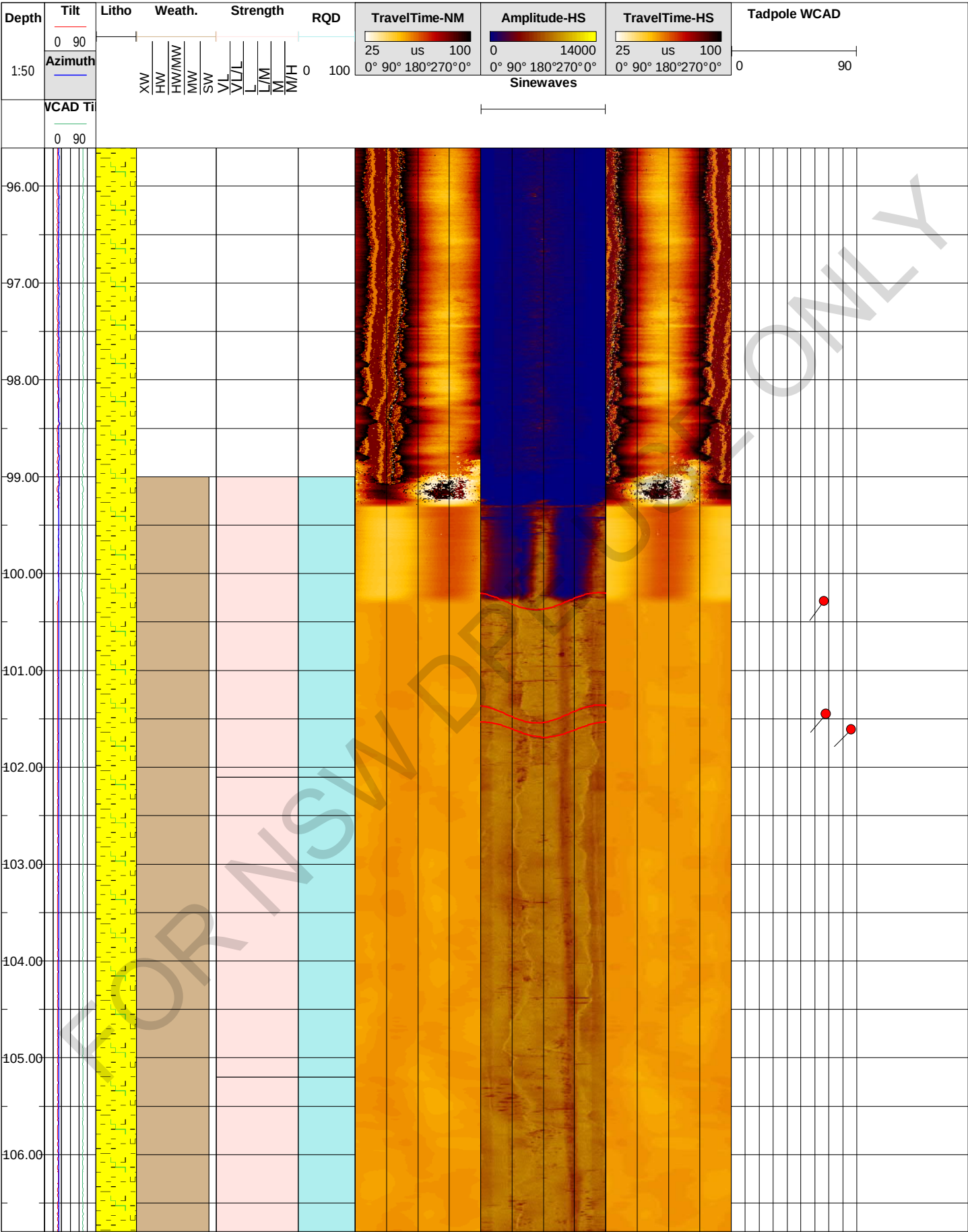


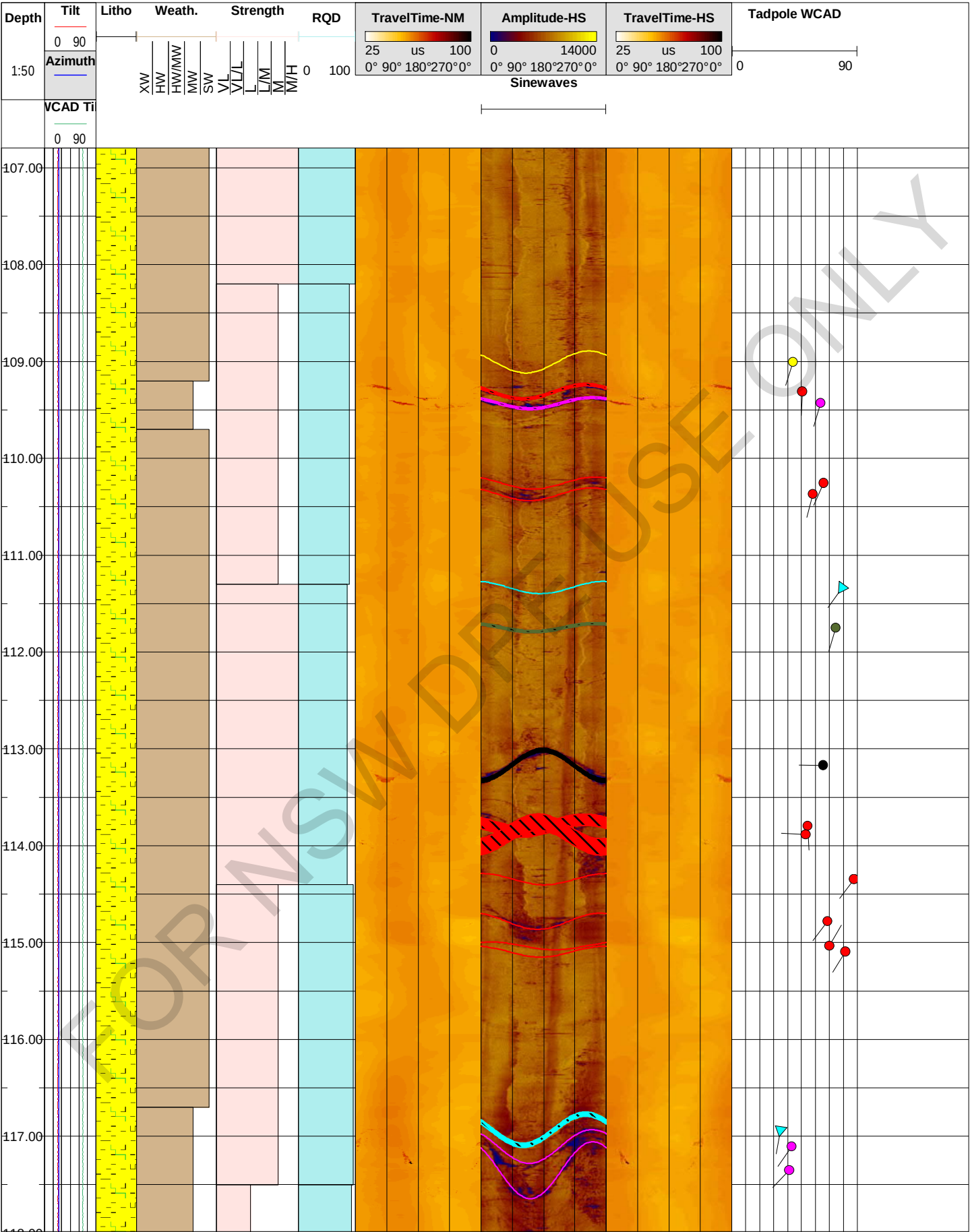
VOLCANICLASTIC SANDSTONE

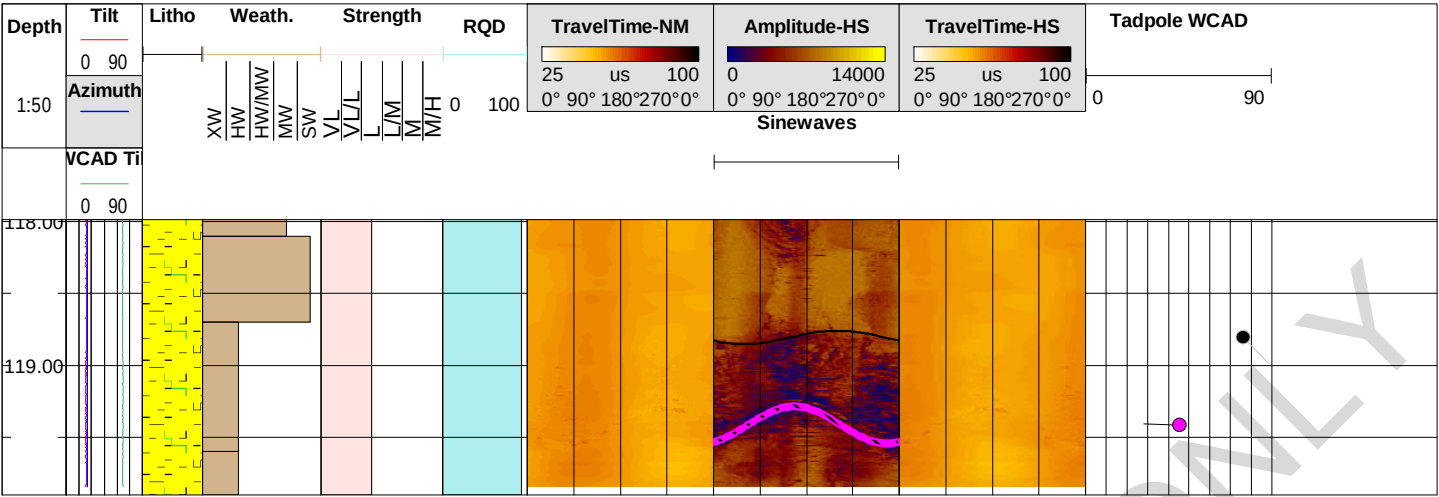
STRUCTURES

Joint Vlen Parting Seam Crash Zone Shear Zone Contact











BOREHOLE ATV REPORT

BOREHOLE NO. **SARGT003**

CONSULTANT: **WSP**
CLIENT: **ALKANE RESOURCES**
PROJECT: **TGEP**
LOCATION: **San Antonio**
PROJECT NUMBER: **PS117942**

DATE COMMENCED: **21/10/20**
DATE COMPLETED: **24/10/20**
RECORDED BY: **NG**
LOG CHECKED BY: **LMcK**

COORDINATES: **E 613899 N 6390266**
REDUCED LEVEL (mAHD): **266.8**
INCLINATION: **-60**

DEPTH OF TEST (m): **60.7 - 70.3**
DEPTH OF BOREHOLE (m): **84.8**
DIAMETER OF BOREHOLE (mm): **96**
TYPE OF CASING (mm): **Nil**
GROUNDWATER LEVEL (m): **NFGWE**

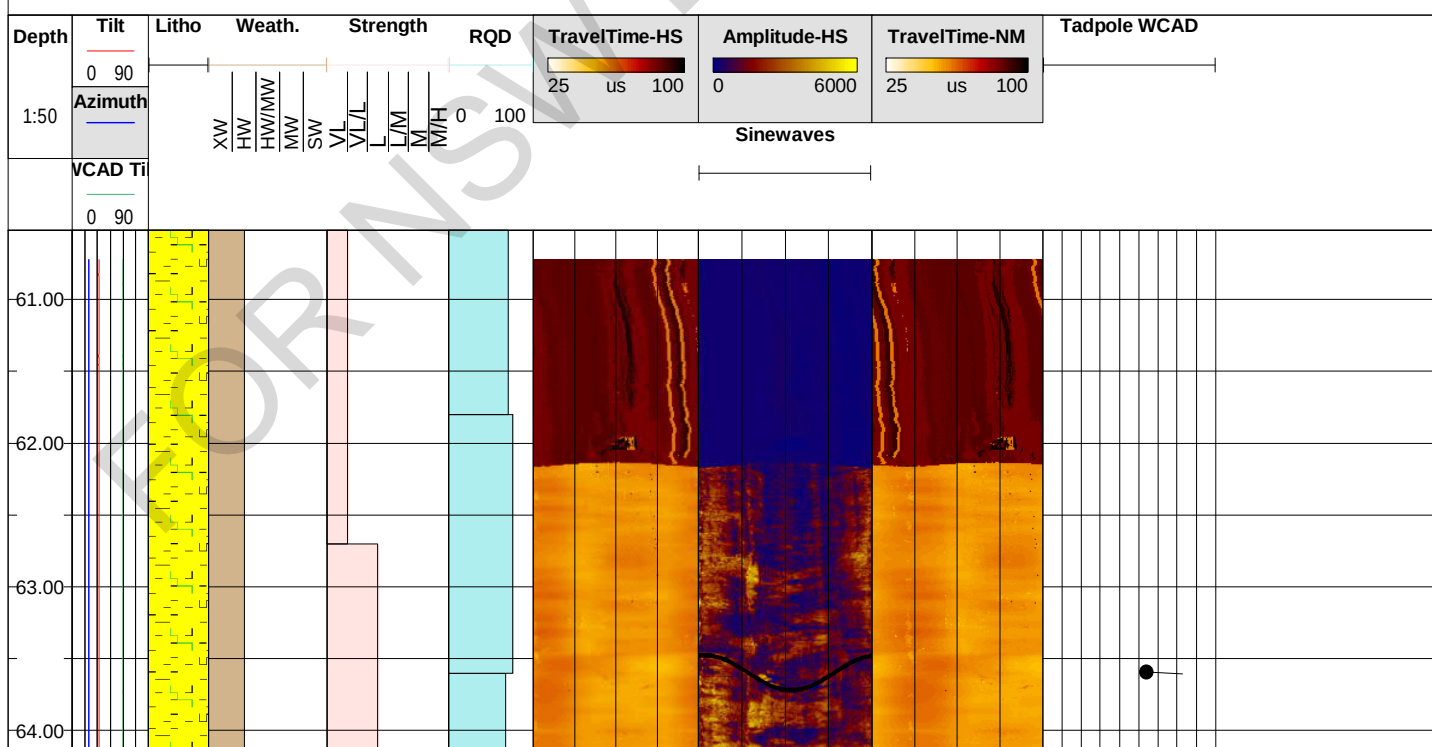
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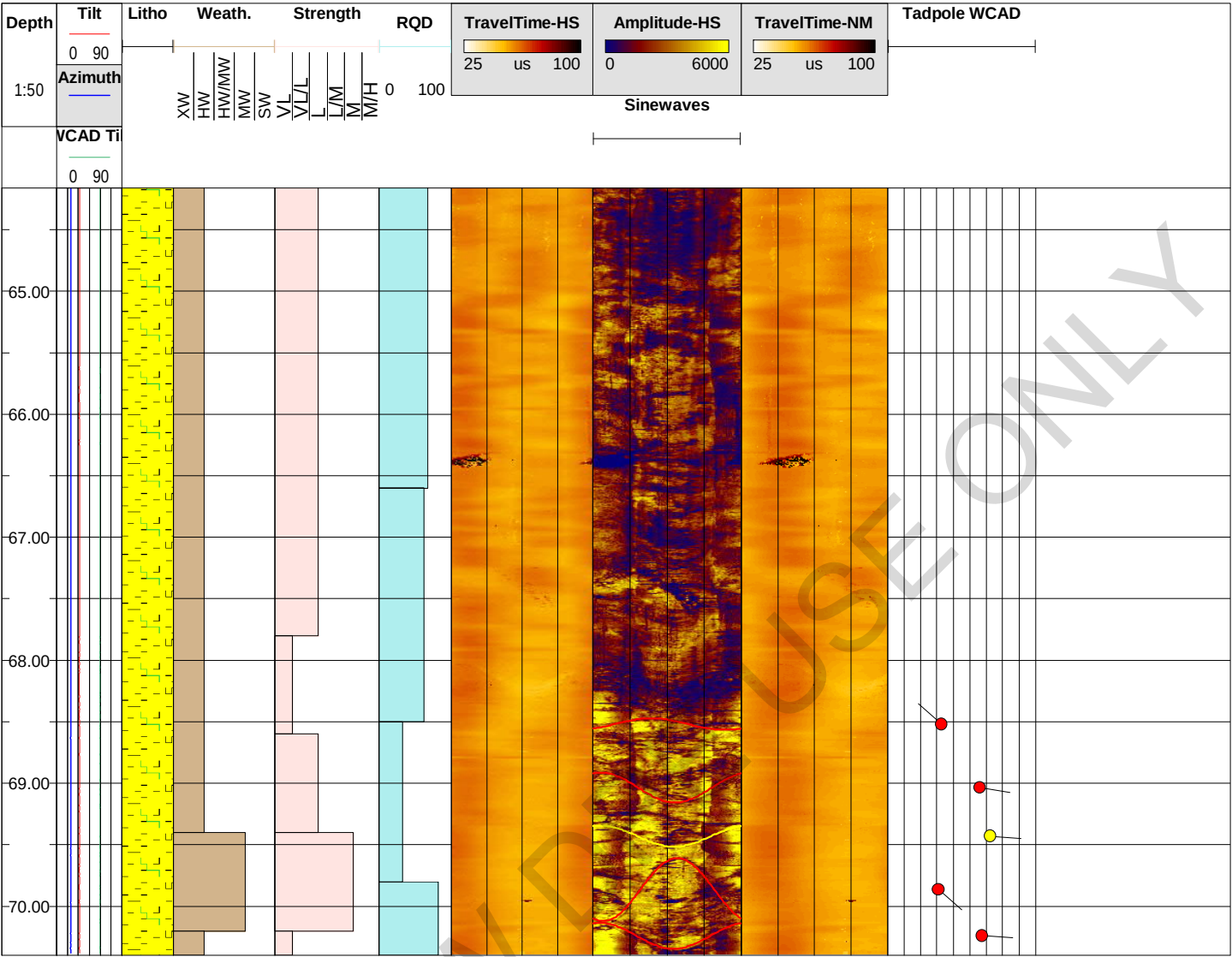


VOLCANICLASTIC SANDSTONE

STRUCTURES

● Joint ● Parting ● Seam







BOREHOLE ATV REPORT

BOREHOLE NO. **SARGT005**

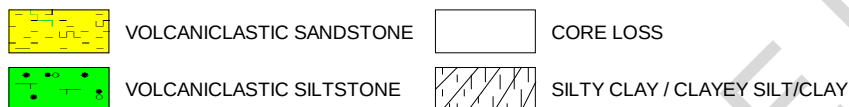
CONSULTANT: **WSP**
CLIENT: **ALKANE RESOURCES**
PROJECT: **TGEP**
LOCATION: **Roswell**
PROJECT NUMBER: **PS117942**

DATE COMMENCED: **13/12/20**
DATE COMPLETED: **15/12/20**
RECORDED BY: **NG**
LOG CHECKED BY: **LMcK**

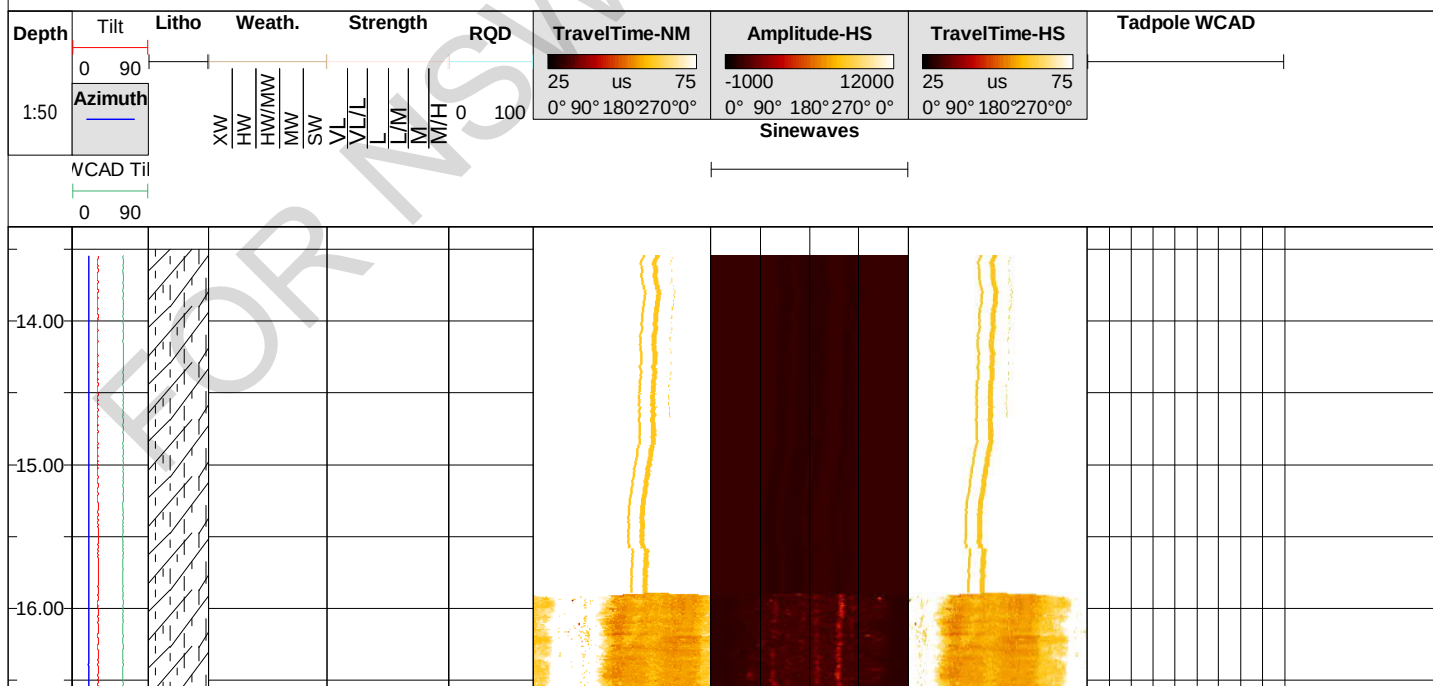
COORDINATES: **E 614088 N 6390691**
REDUCED LEVEL (mAHD): **266**
INCLINATION: **-70**

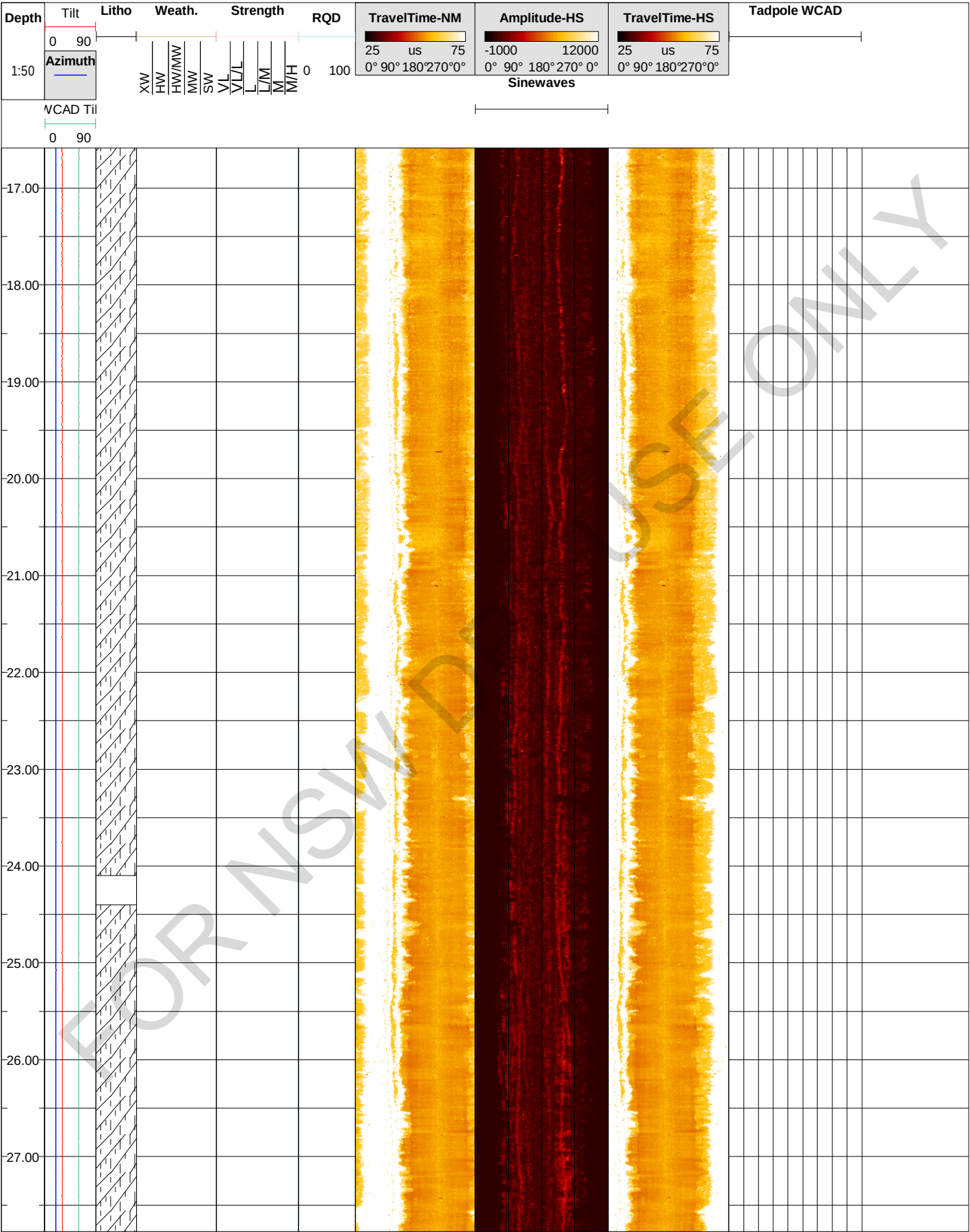
DEPTH OF TEST (m): **13.5 to 166.1**
DEPTH OF BOREHOLE (m): **177**
DIAMETER OF BOREHOLE (mm): **96**
TYPE OF CASING (mm): **Nil**
GROUNDWATER LEVEL (m): **NFGWE**

LITHOLOGY



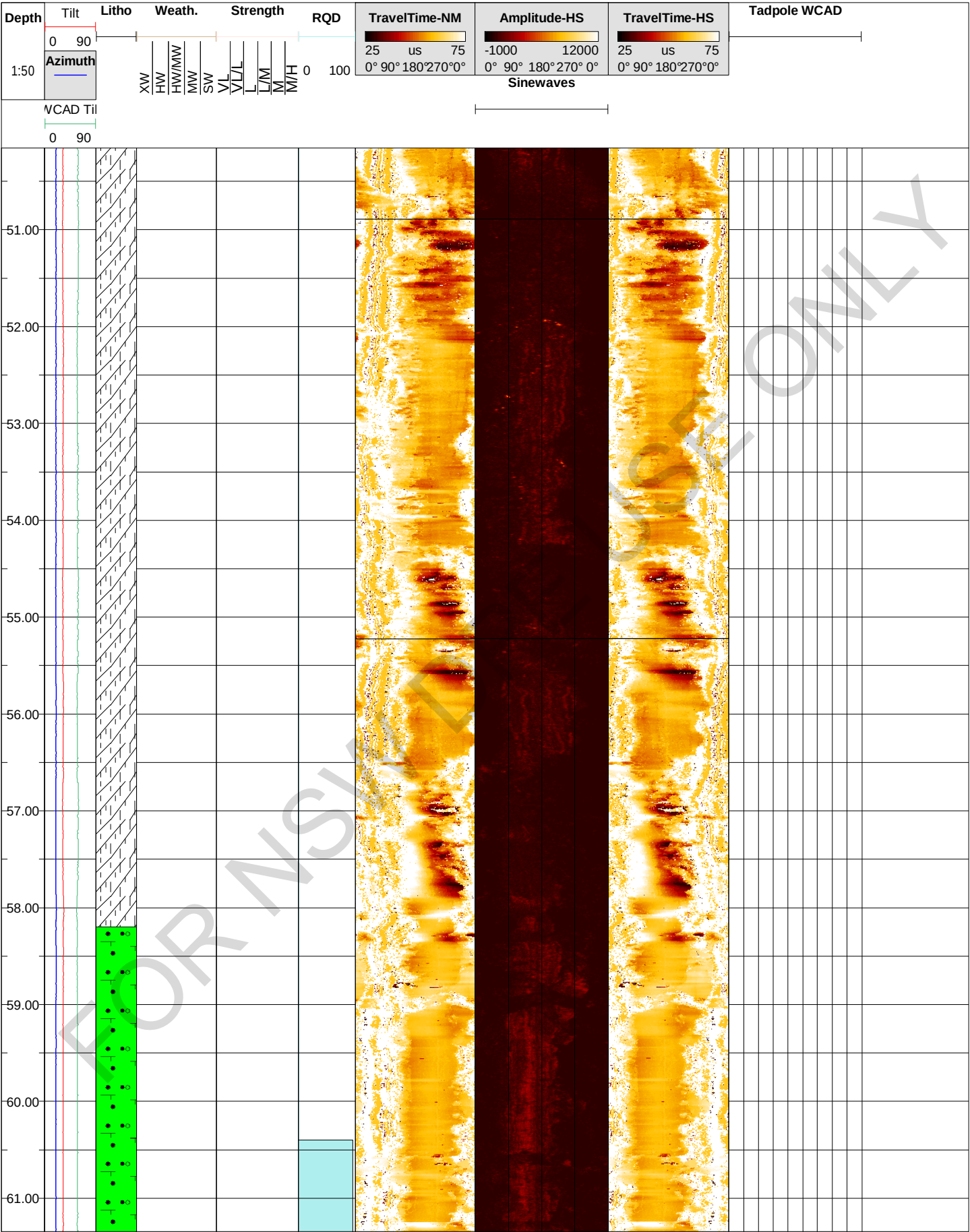
STRUCTURES

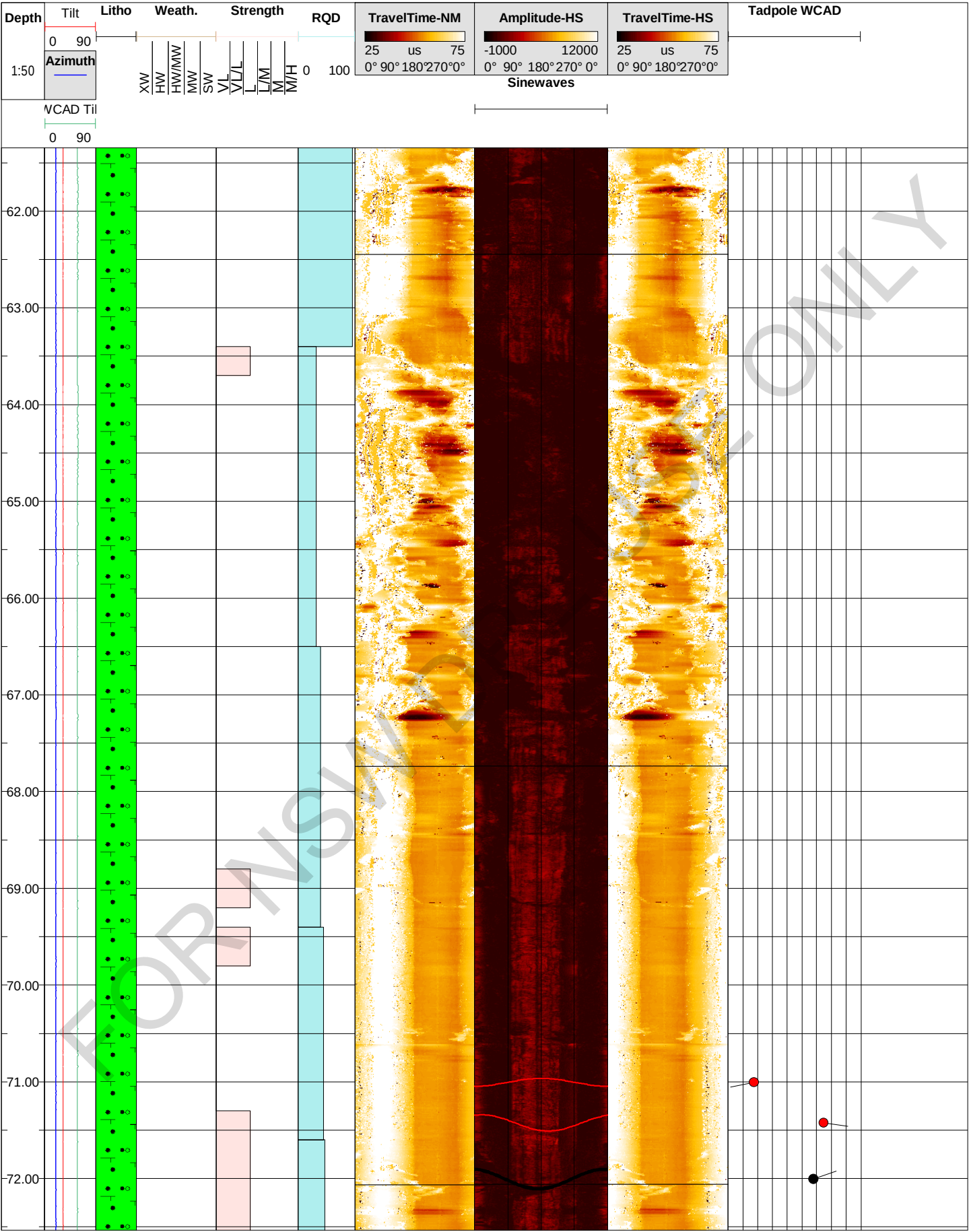


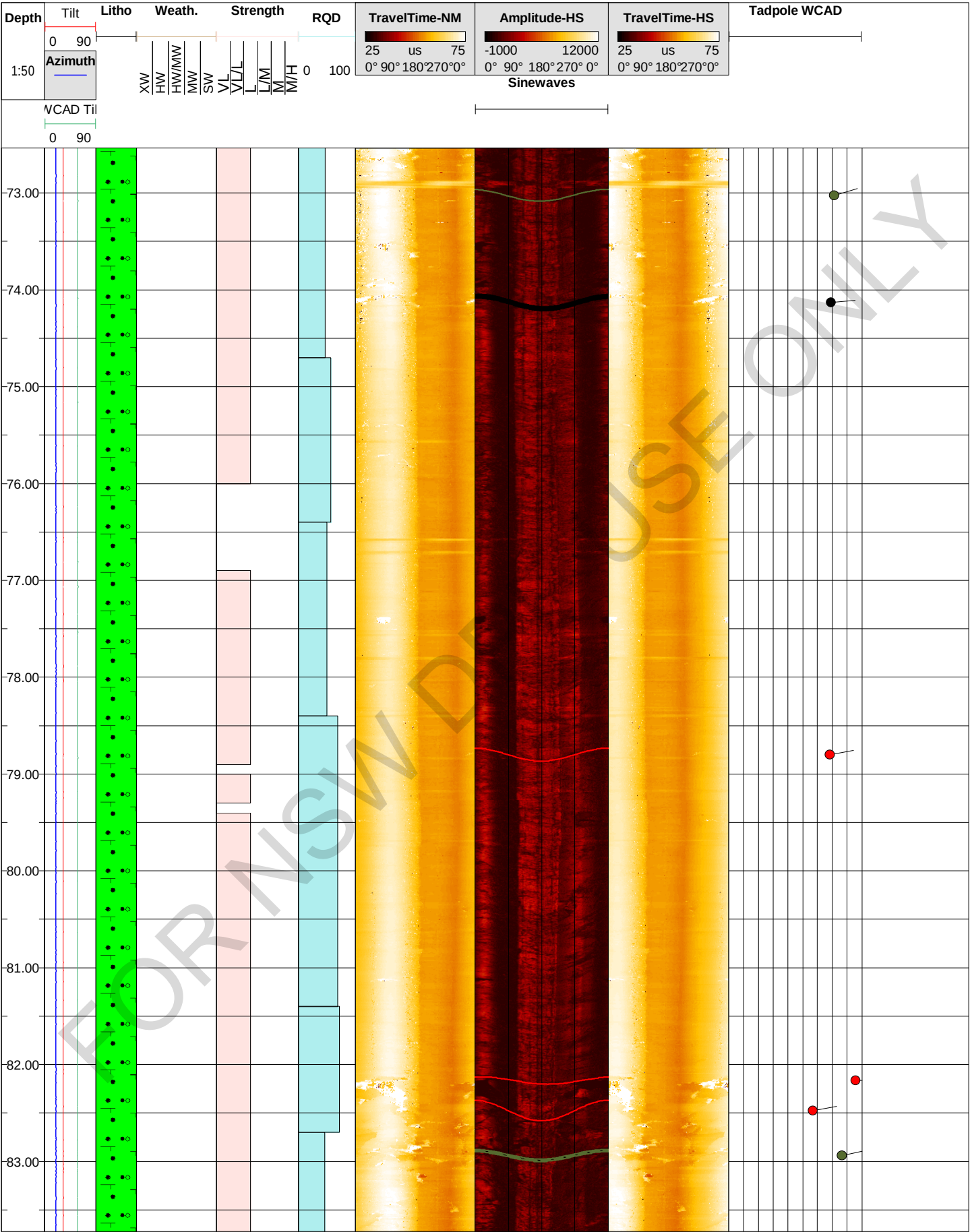


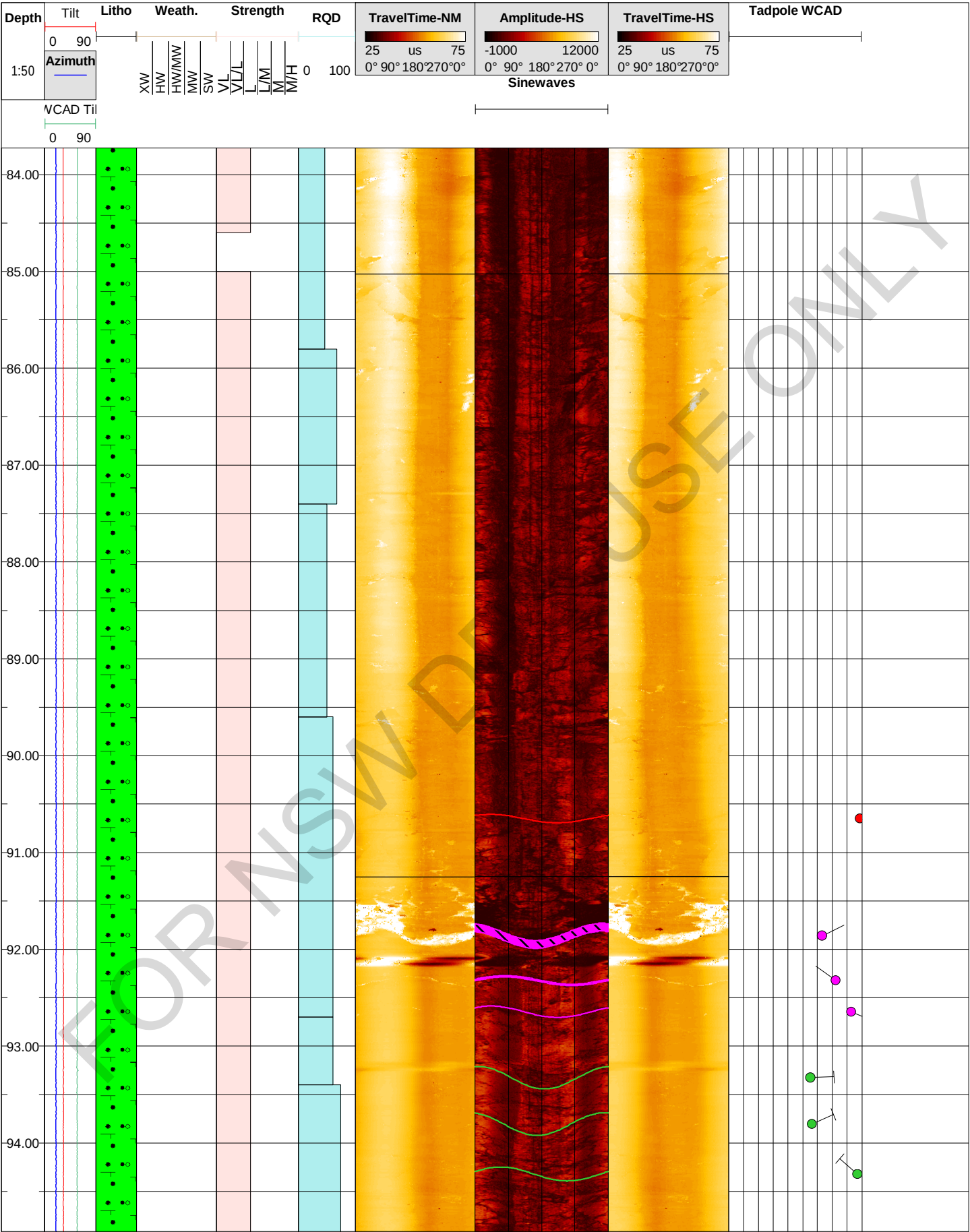


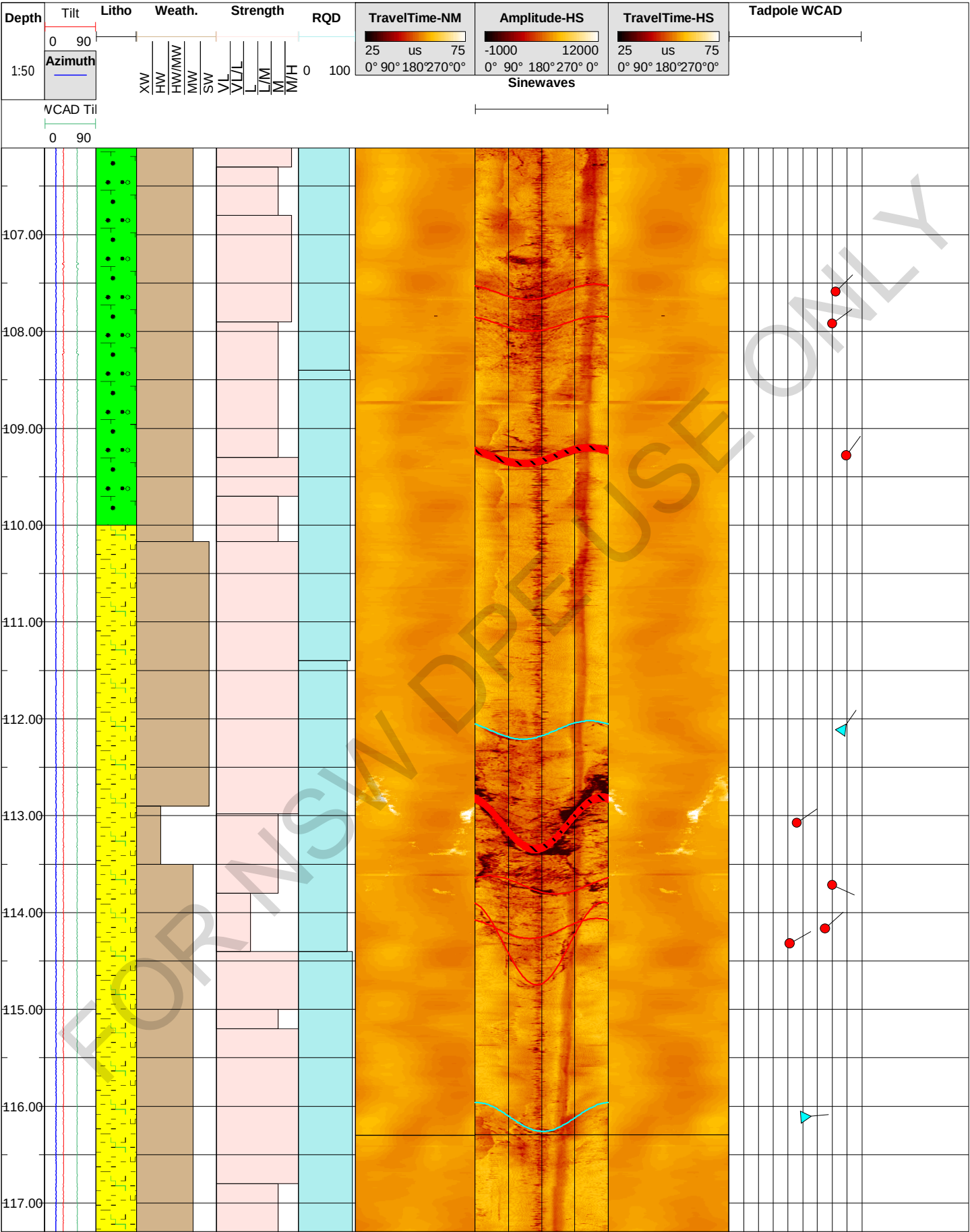


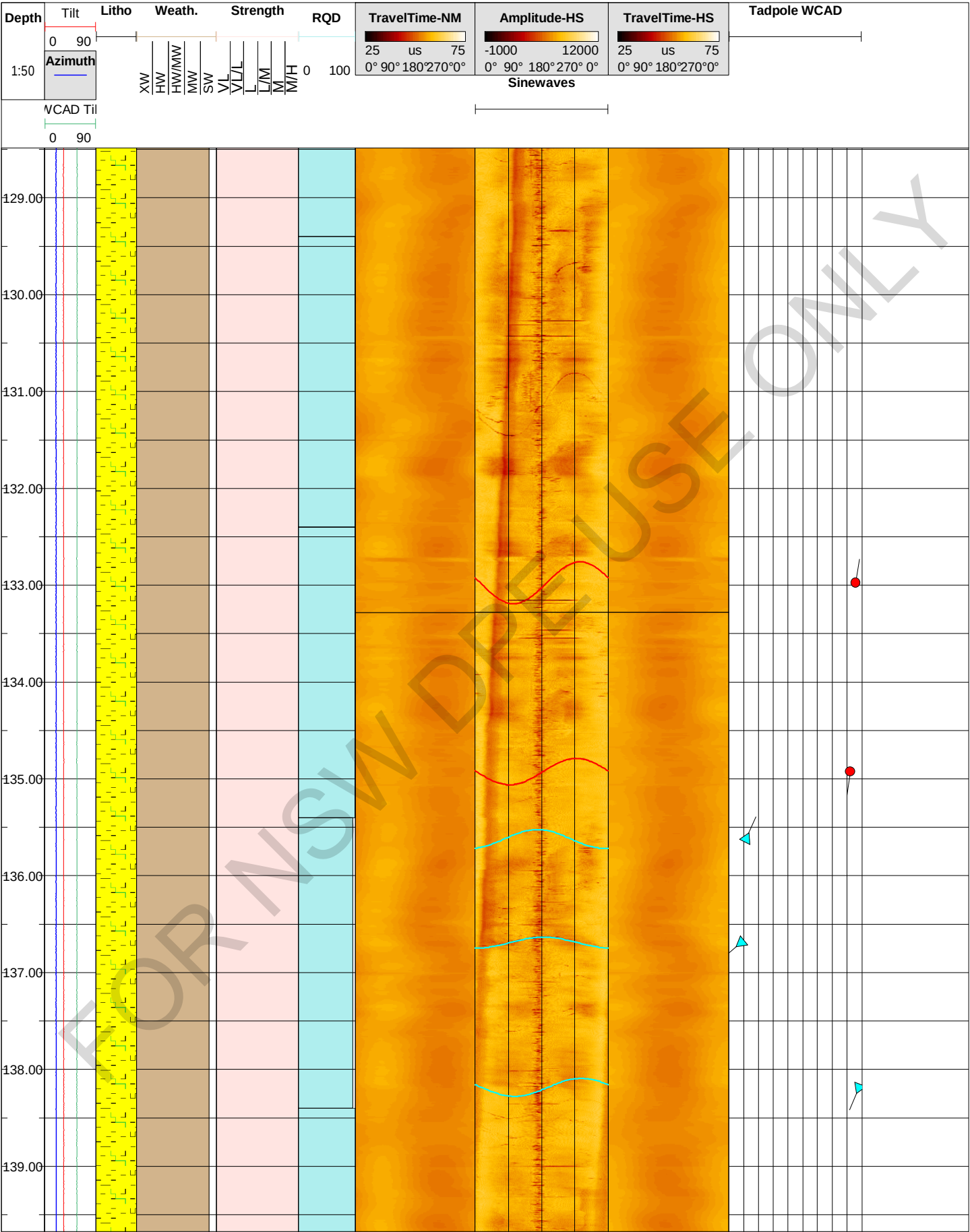


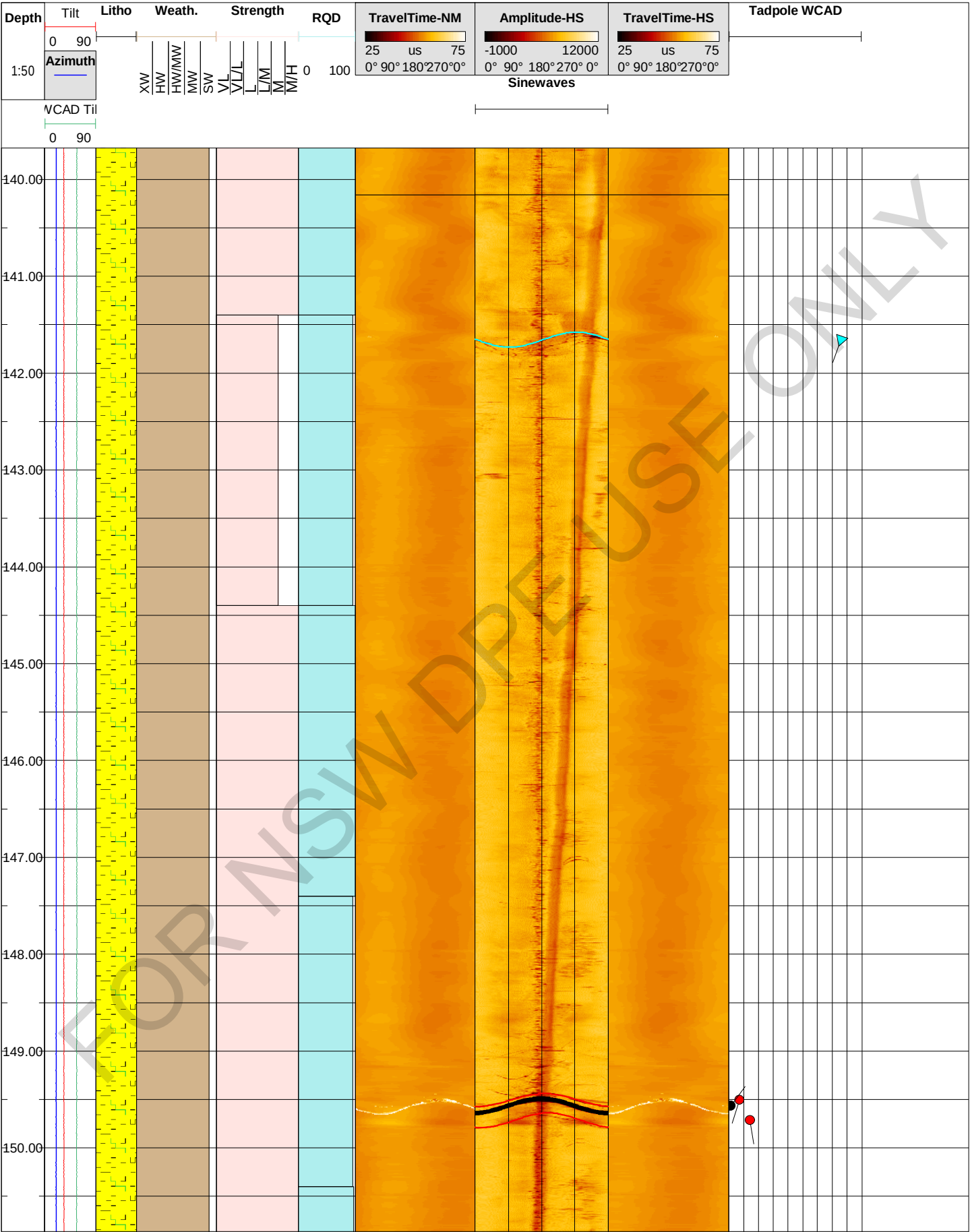


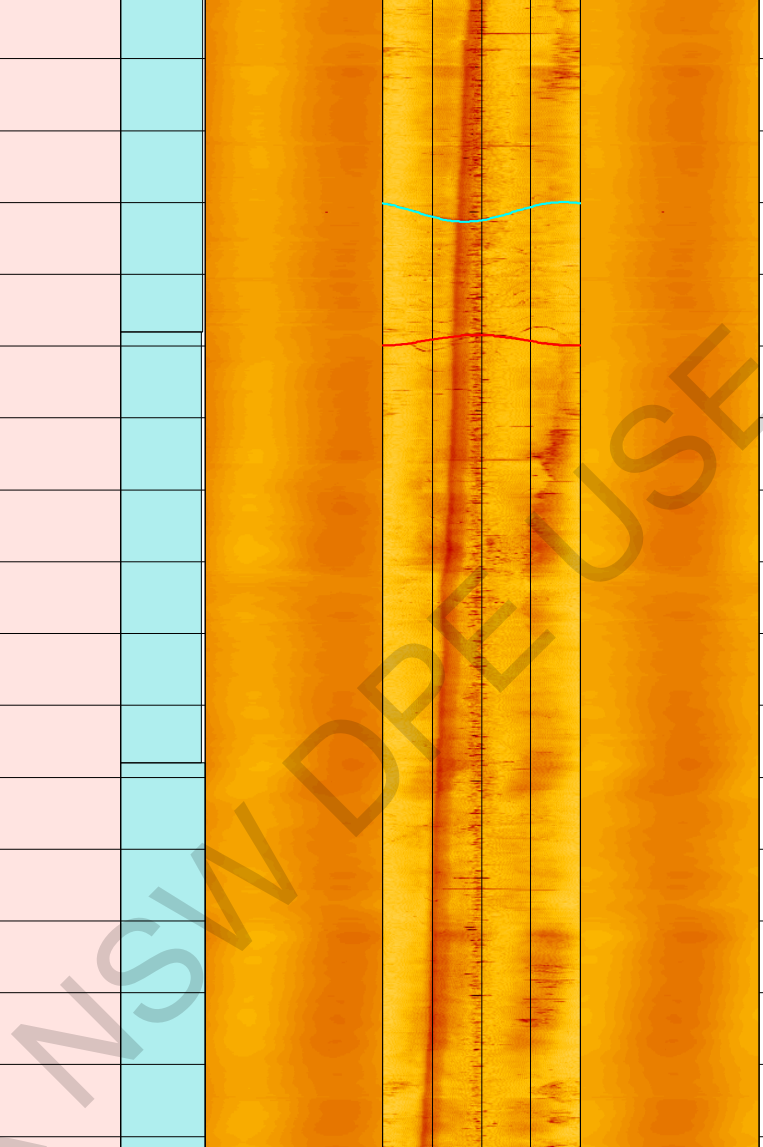


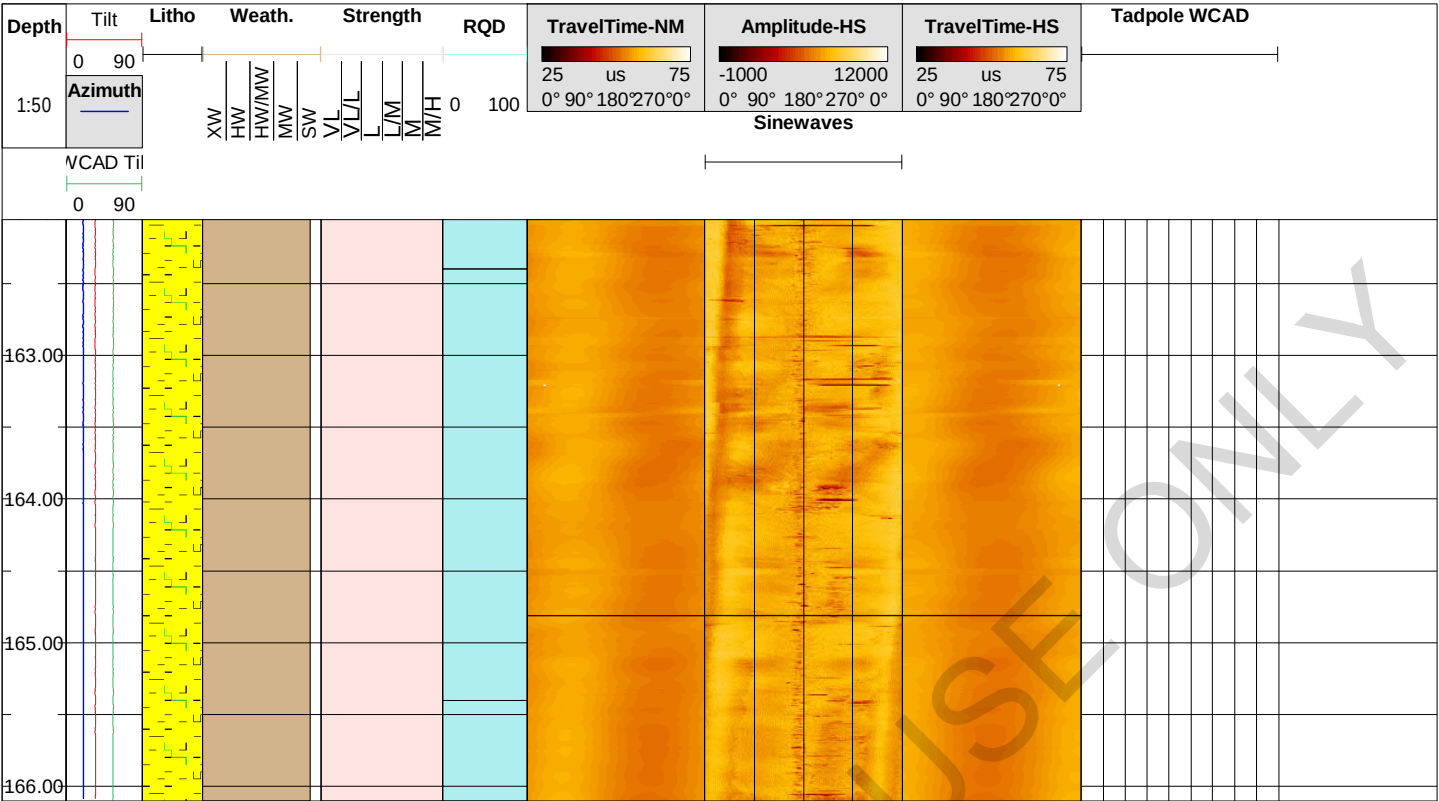














BOREHOLE ATV REPORT

BOREHOLE NO. **SARGT006**

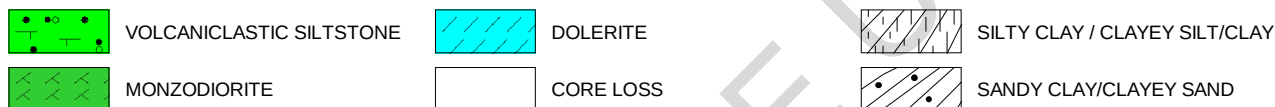
CONSULTANT: **WSP**
CLIENT: **ALKANE RESOURCES**
PROJECT: **TGEP**
LOCATION: **Roswell**
PROJECT NUMBER: **PS117942**

DATE COMMENCED: **13/12/20**
DATE COMPLETED: **15/12/20**
RECORDED BY: **NG**
LOG CHECKED BY: **LMcK**

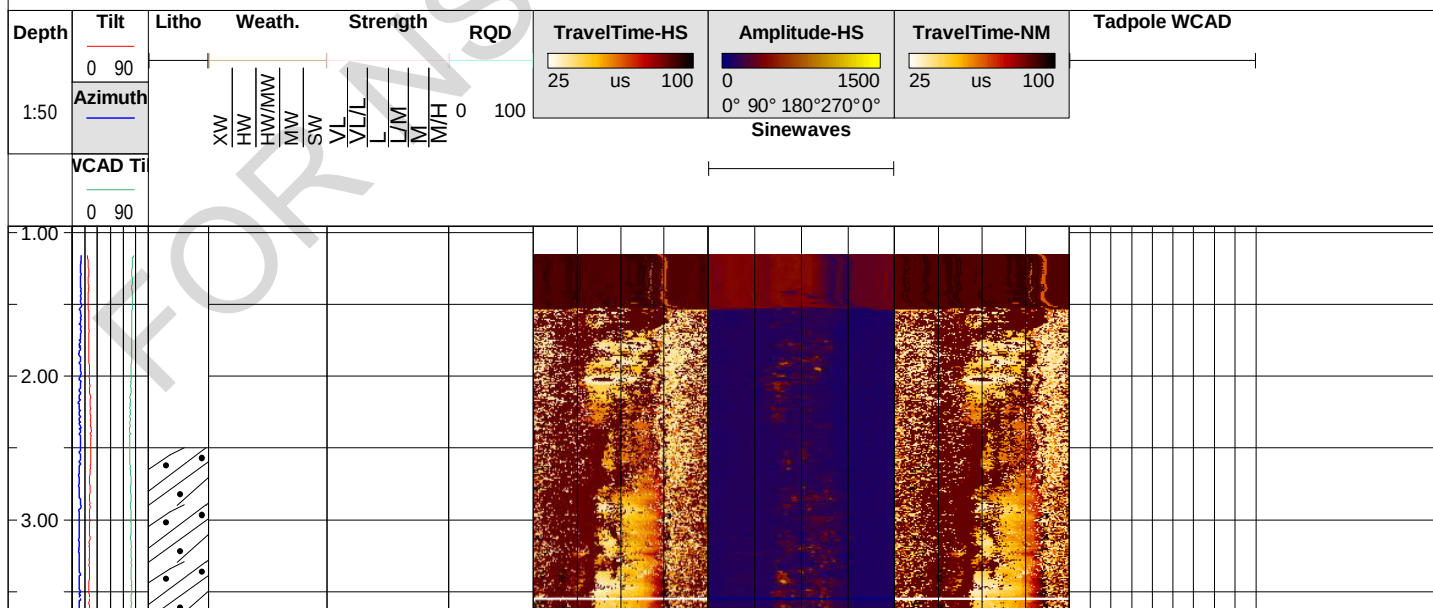
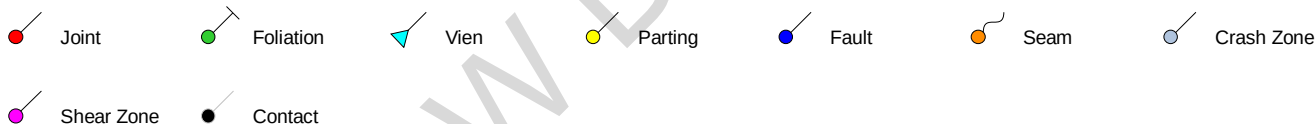
COORDINATES: **E 614125 N 6390859**
REDUCED LEVEL (mAHD): **266**
INCLINATION: **-70**

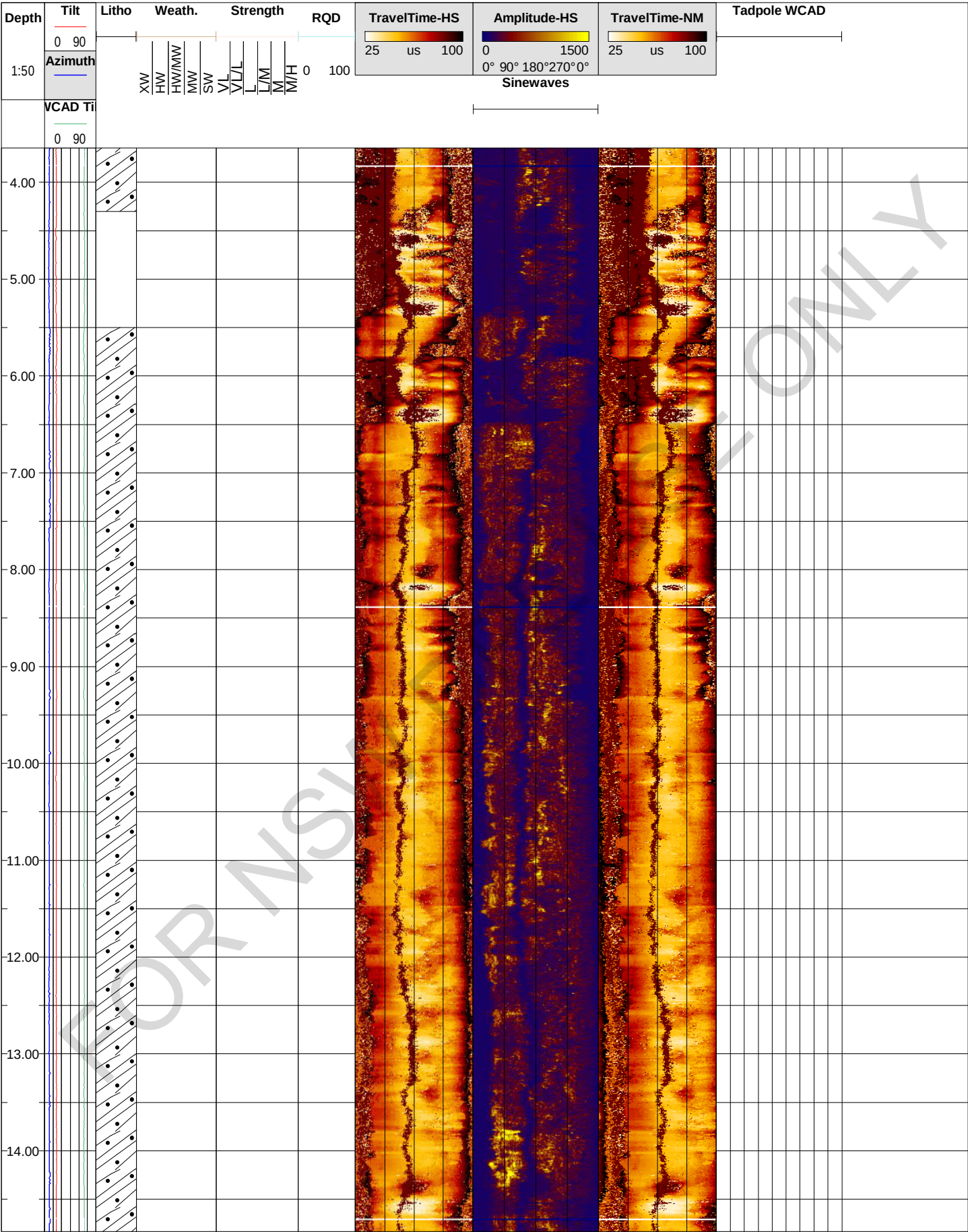
DEPTH OF TEST (m): **1.2 to 98.5**
DEPTH OF BOREHOLE (m): **101.9**
DIAMETER OF BOREHOLE (mm): **96**
TYPE OF CASING (mm): **Nil**
GROUNDWATER LEVEL (m): **NFGWE**

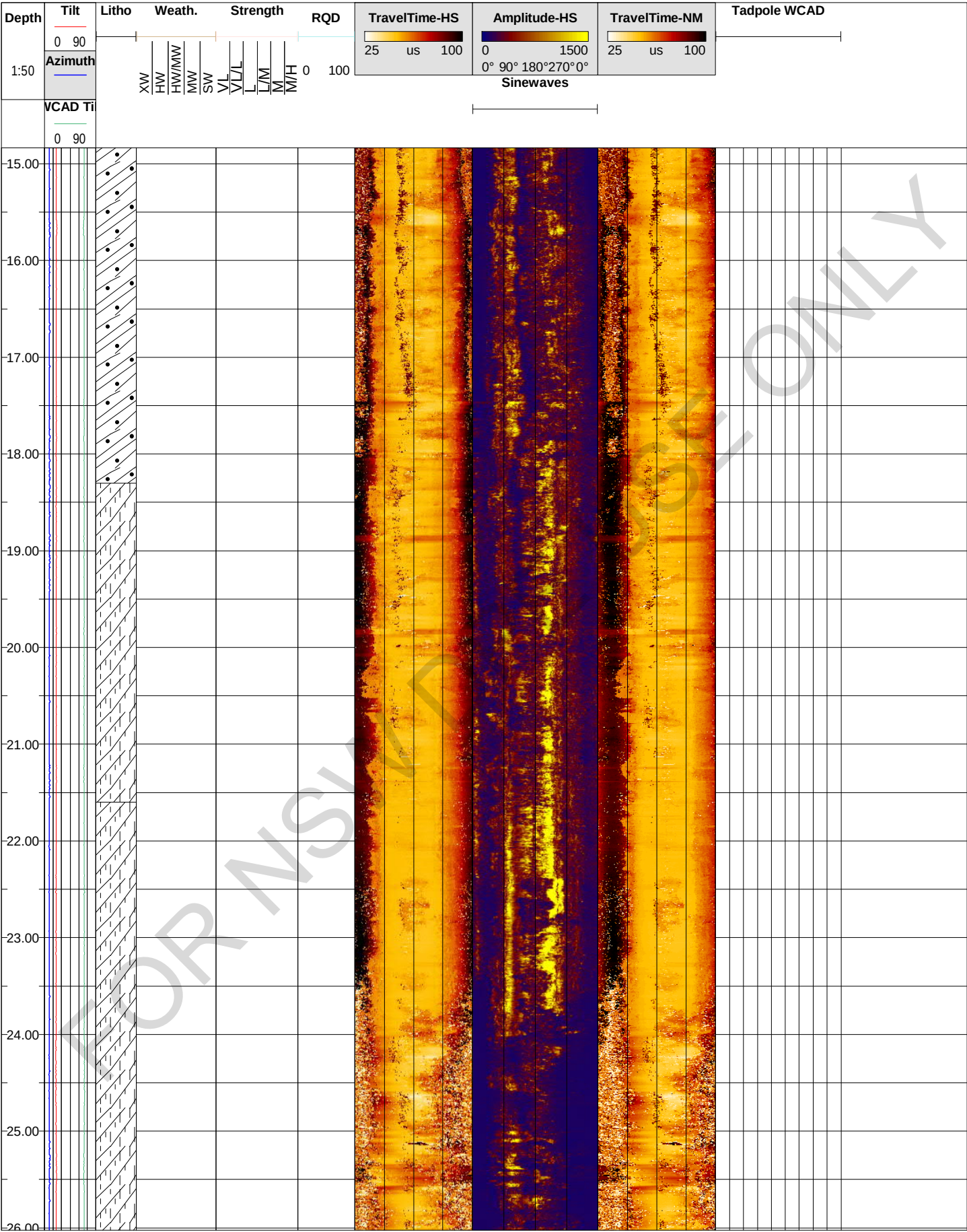
LITHOLOGY

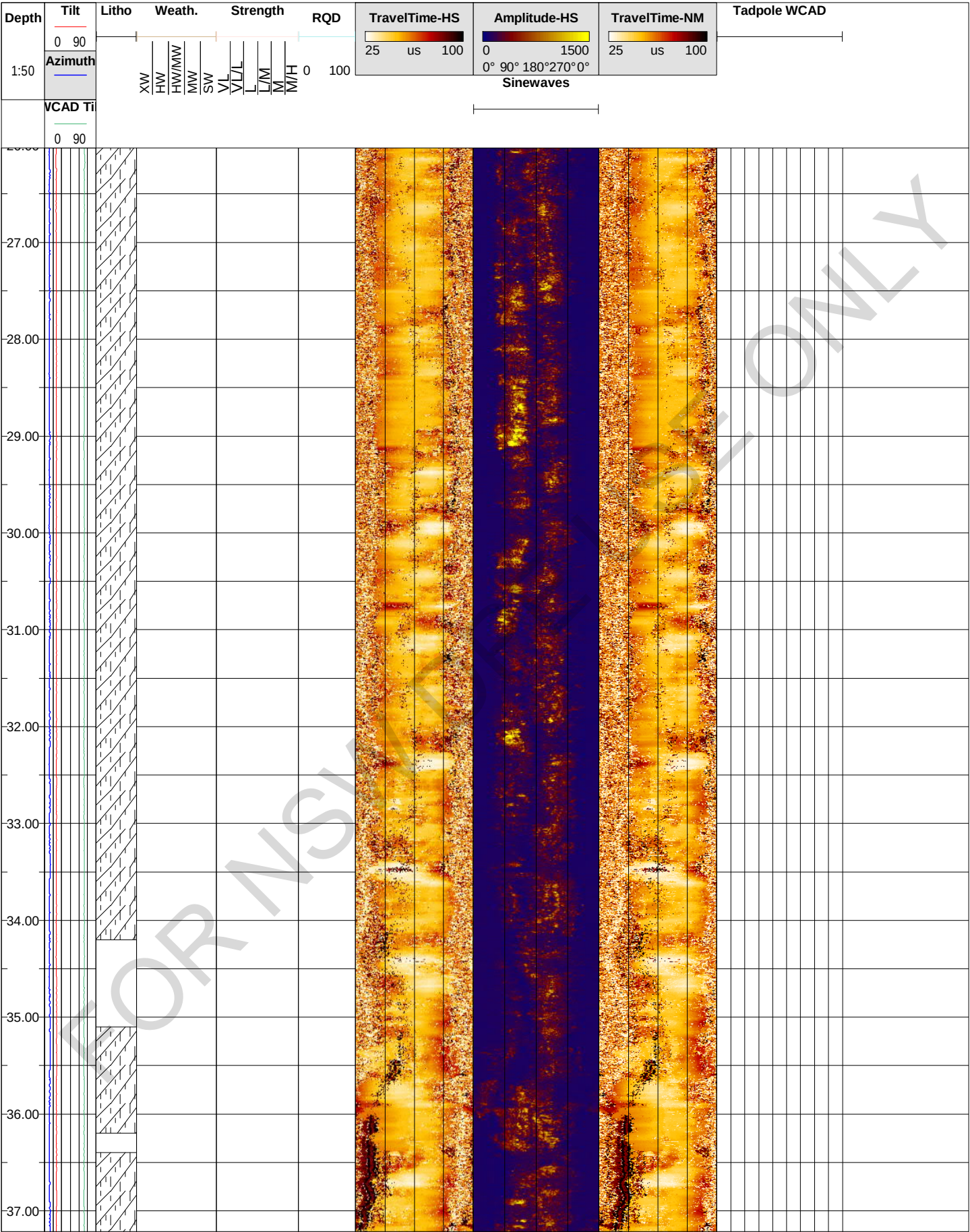


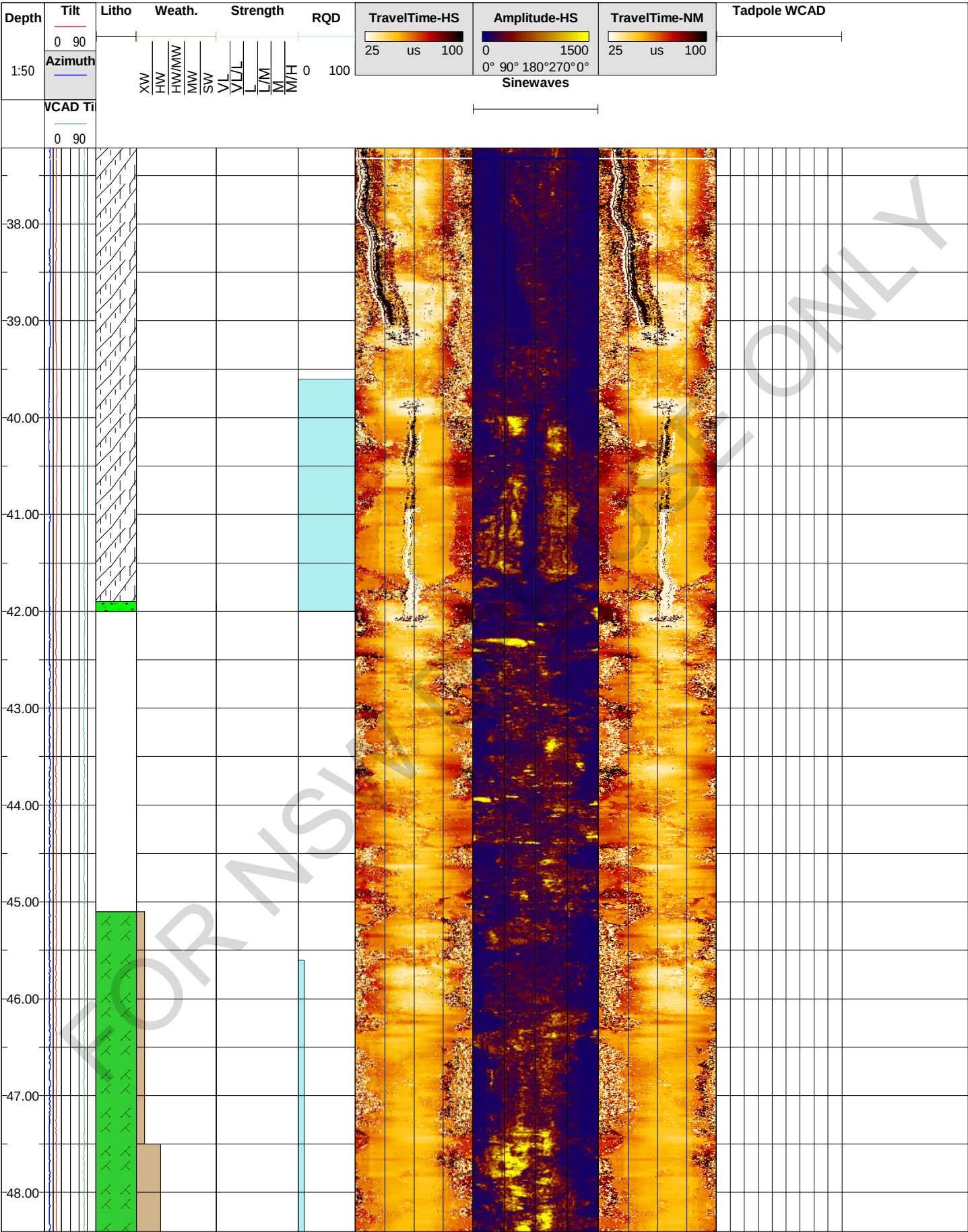
STRUCTURES

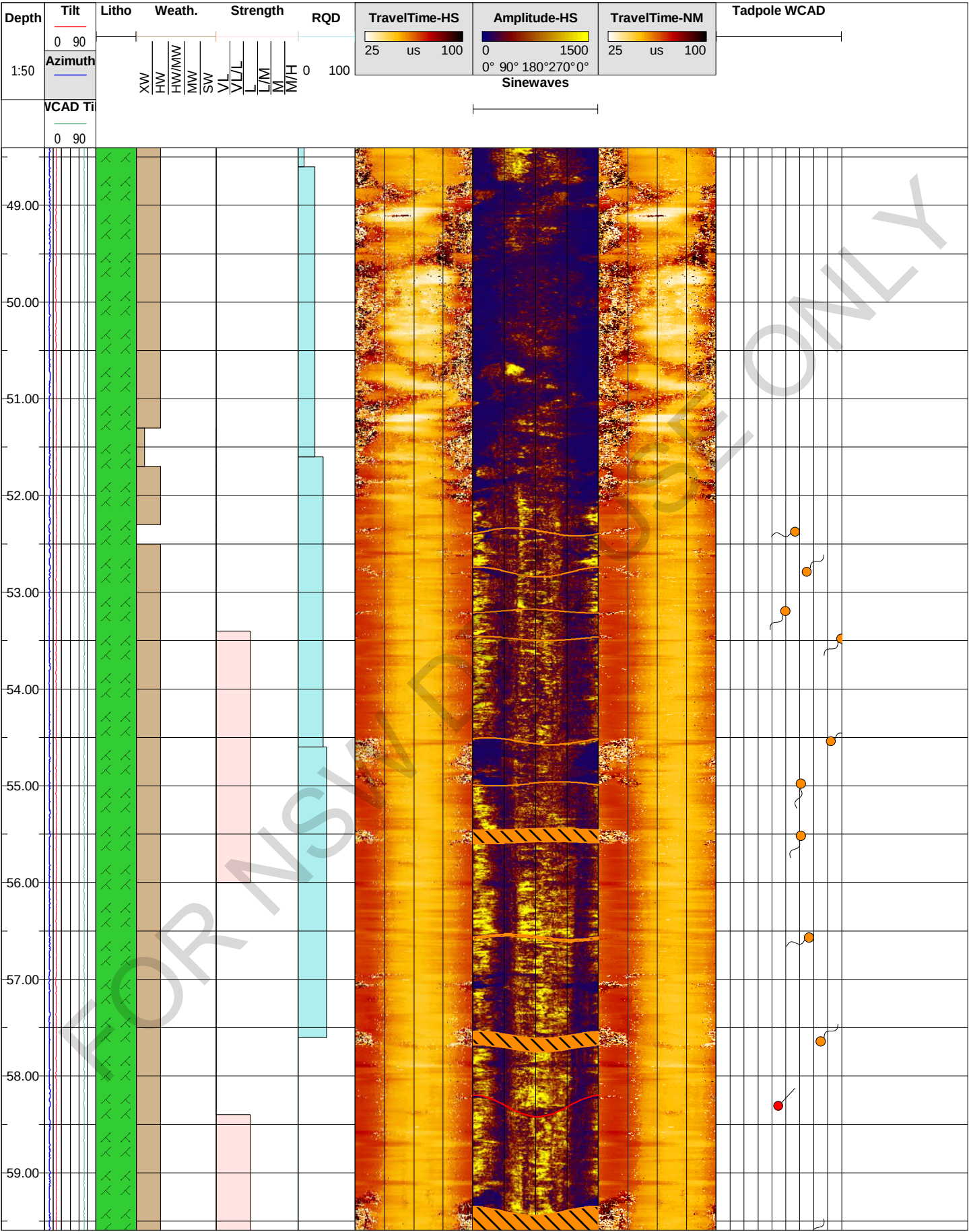


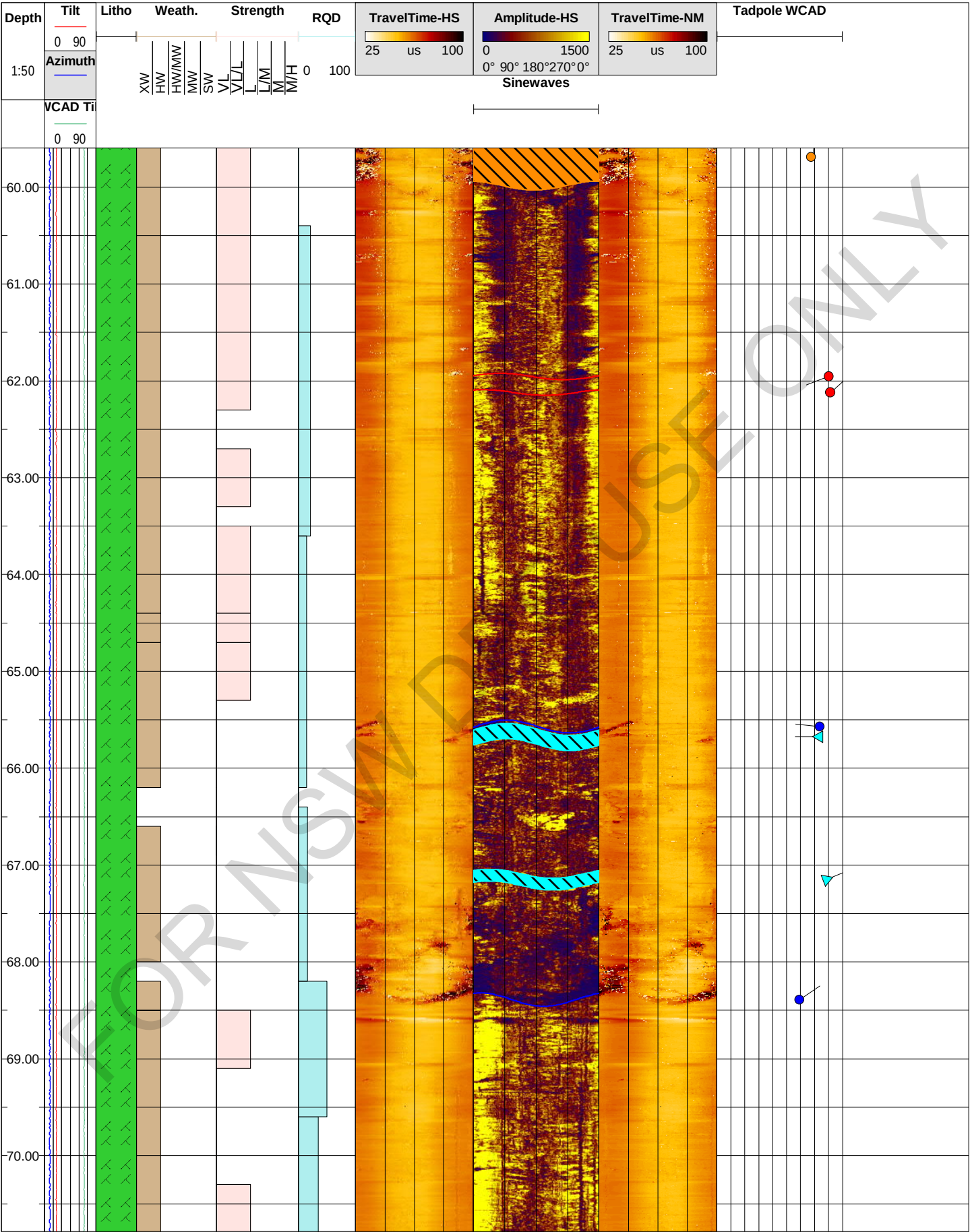


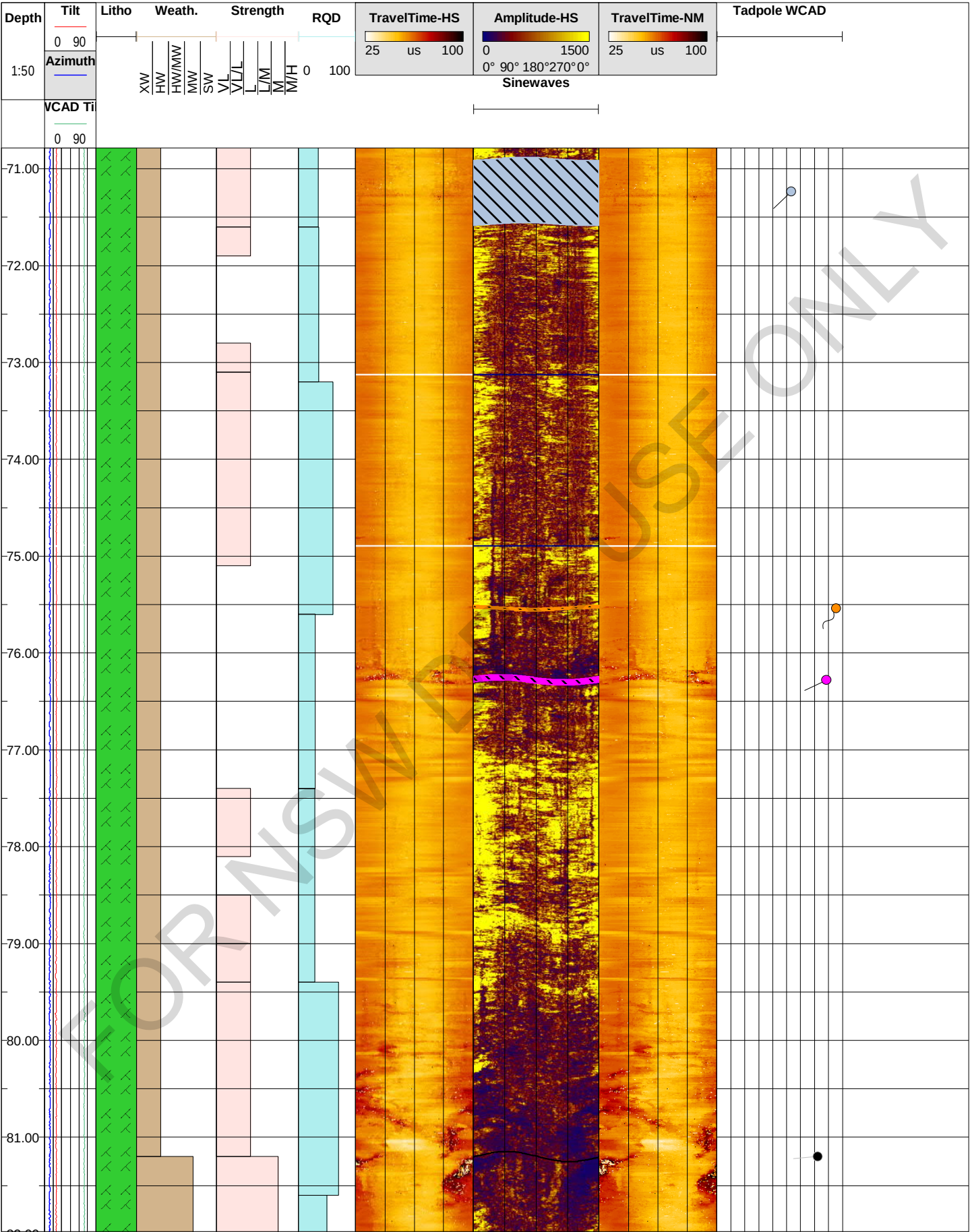


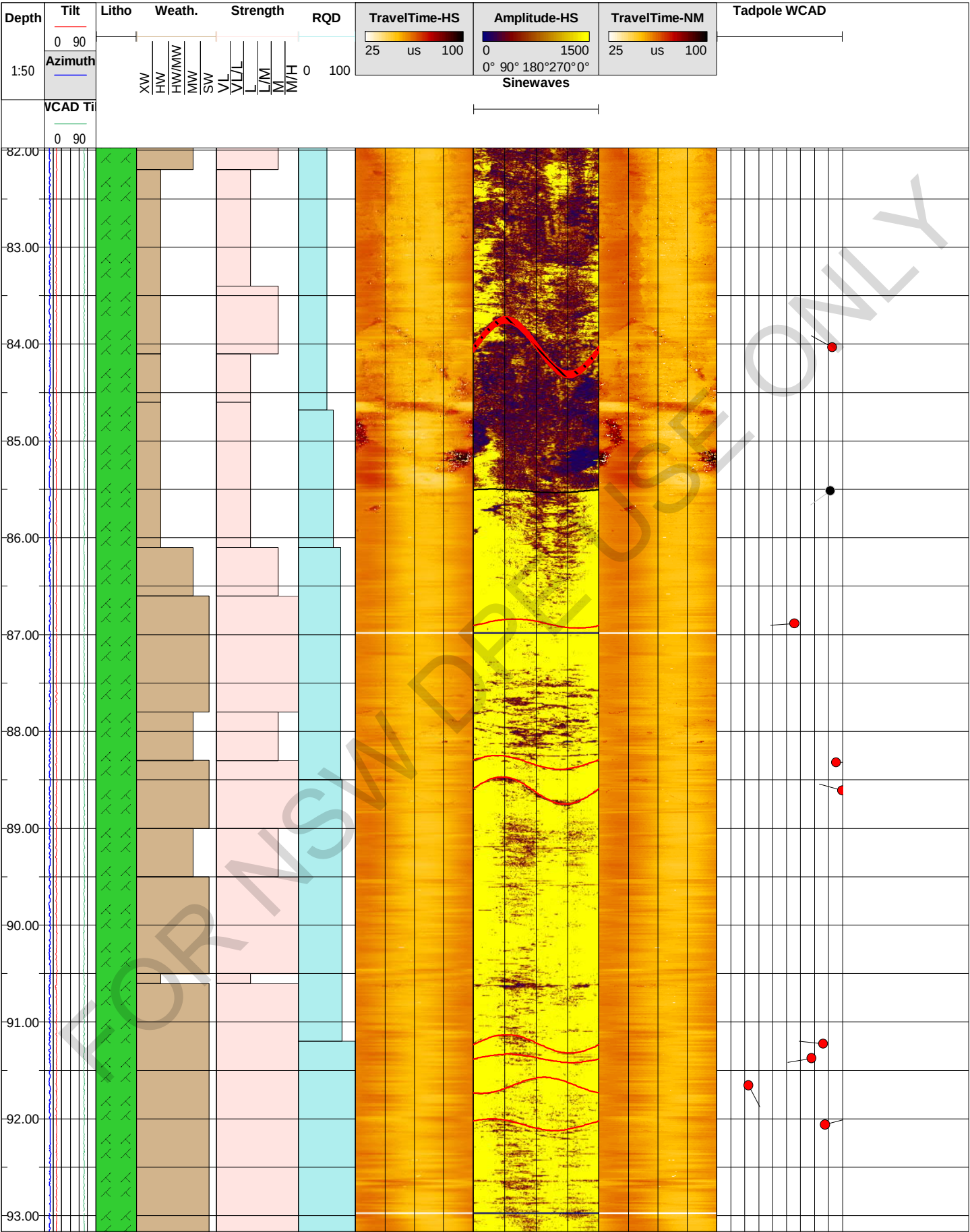


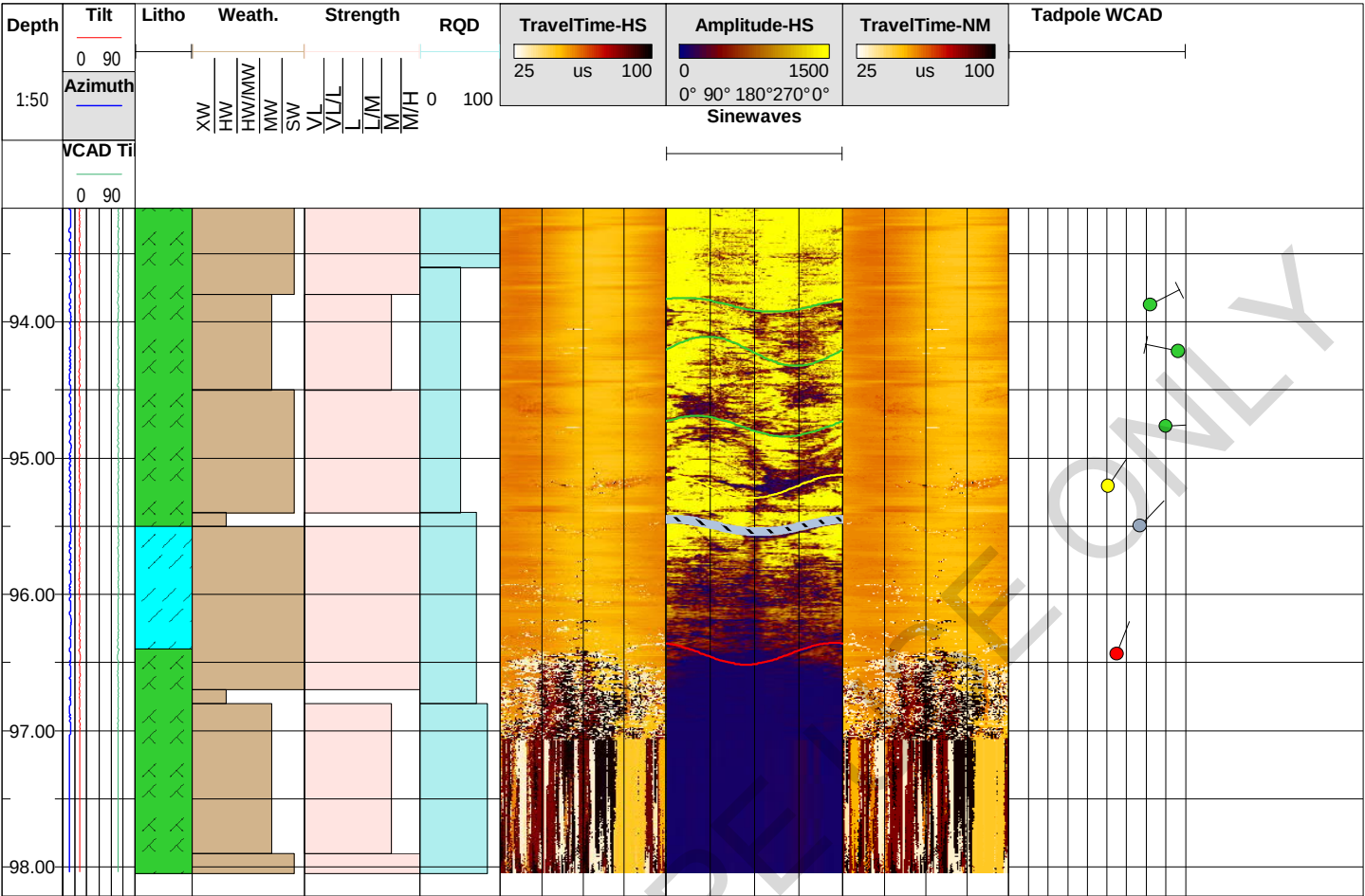














BOREHOLE ATV REPORT

BOREHOLE NO. **SARGT007**

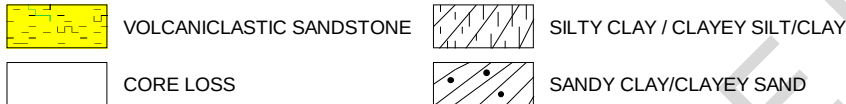
CONSULTANT: **WSP**
CLIENT: **ALKANE RESOURCES**
PROJECT: **TGEP**
LOCATION: **Roswell**
PROJECT NUMBER: **PS117942**

DATE COMMENCED: **10/11/20**
DATE COMPLETED: **13/11/20**
RECORDED BY: **NG**
LOG CHECKED BY: **LMcK**

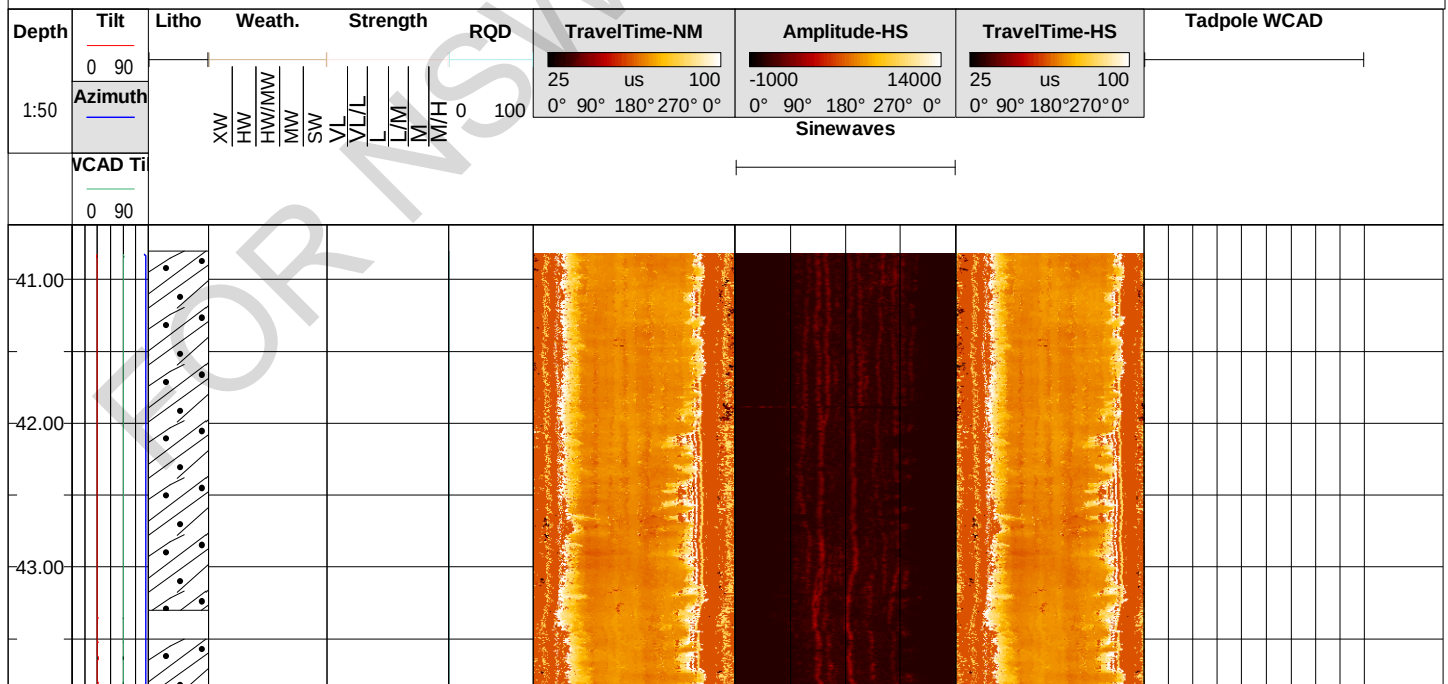
COORDINATES: **E 613980 N 6390780**
REDUCED LEVEL (mAHD): **266**
INCLINATION: **-70**

DEPTH OF TEST (m): **40.8 to 130.8**
DEPTH OF BOREHOLE (m): **184.96**
DIAMETER OF BOREHOLE (mm): **96**
TYPE OF CASING (mm): **Nil**
GROUNDWATER LEVEL (m): **NFGWE**

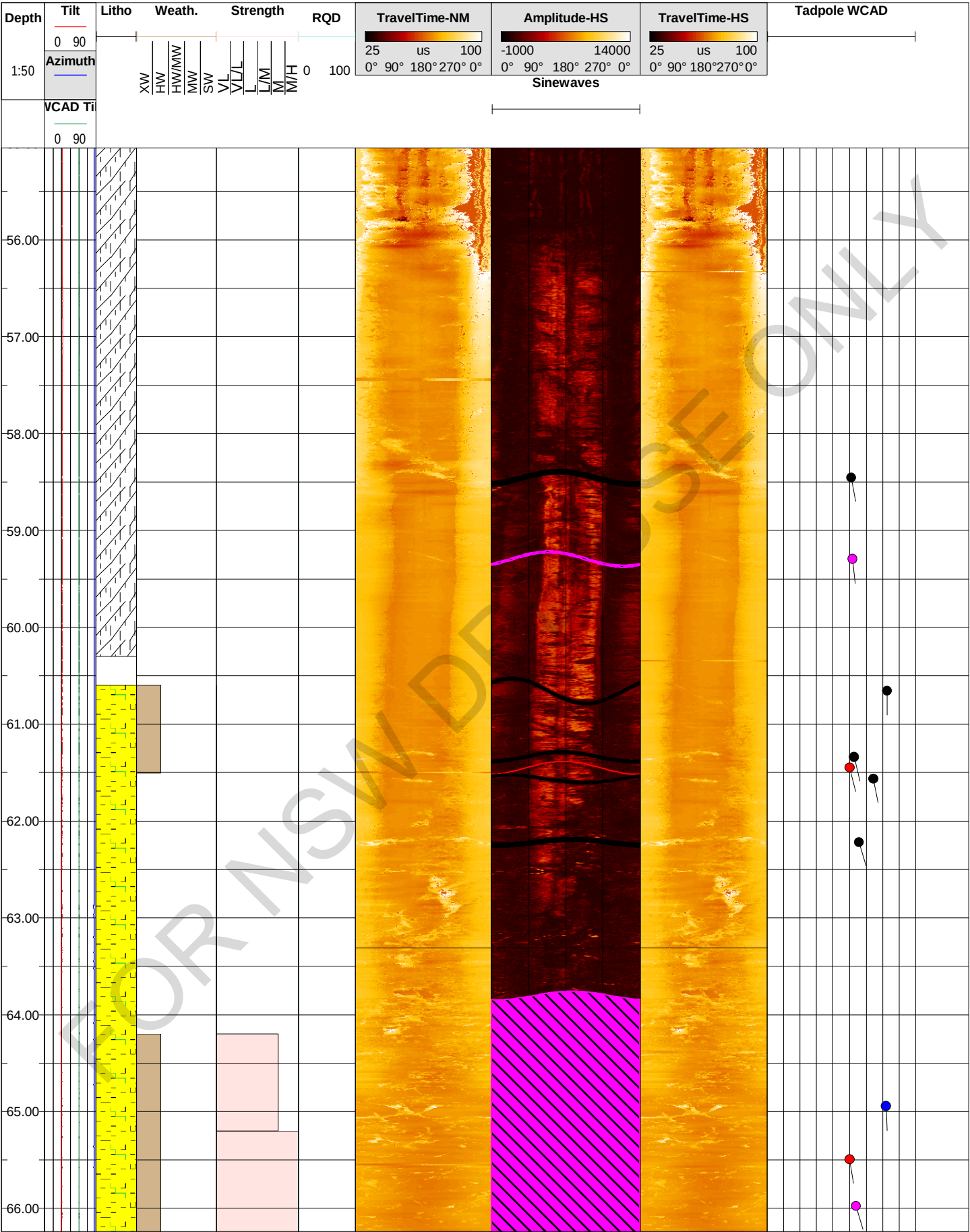
LITHOLOGY

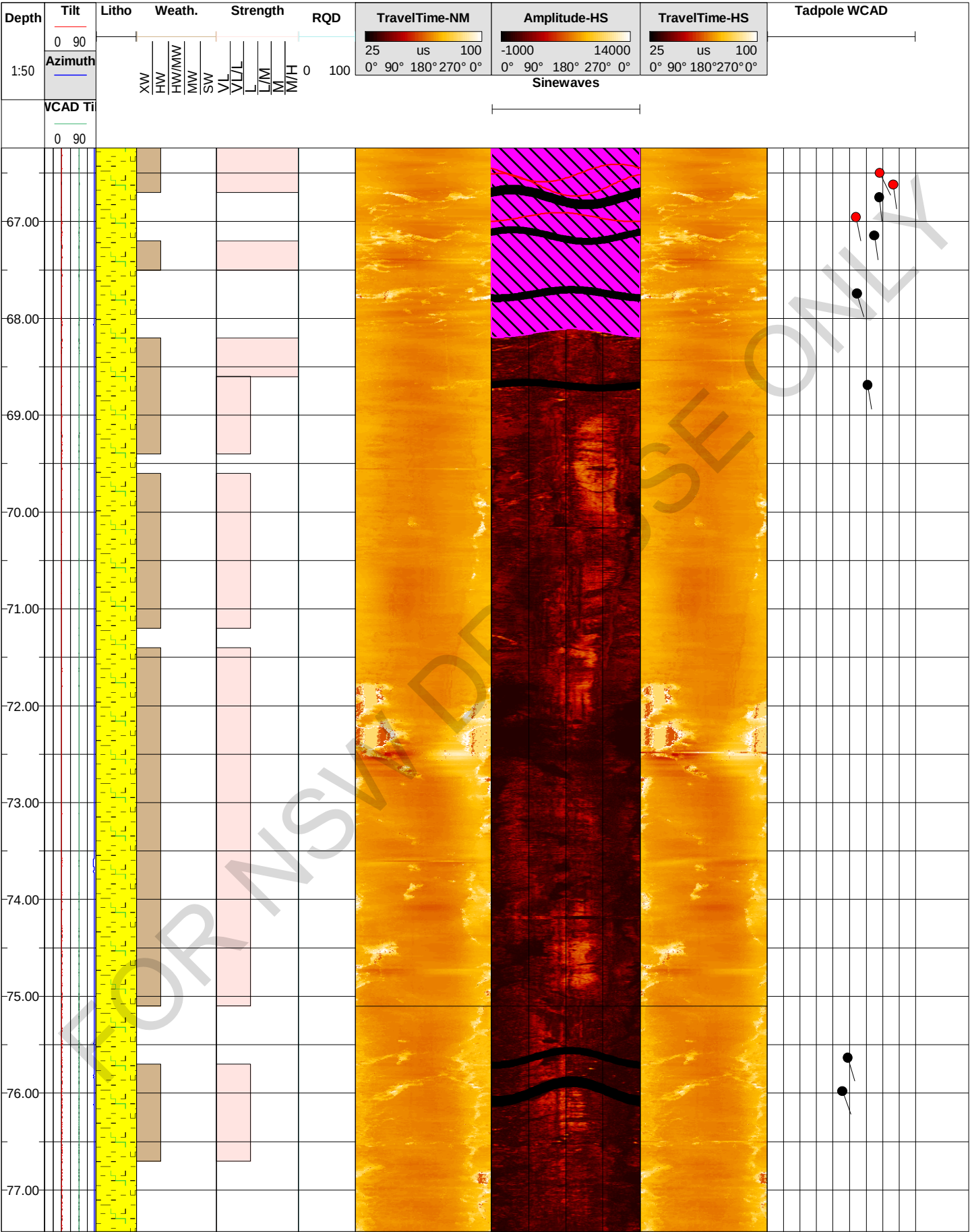


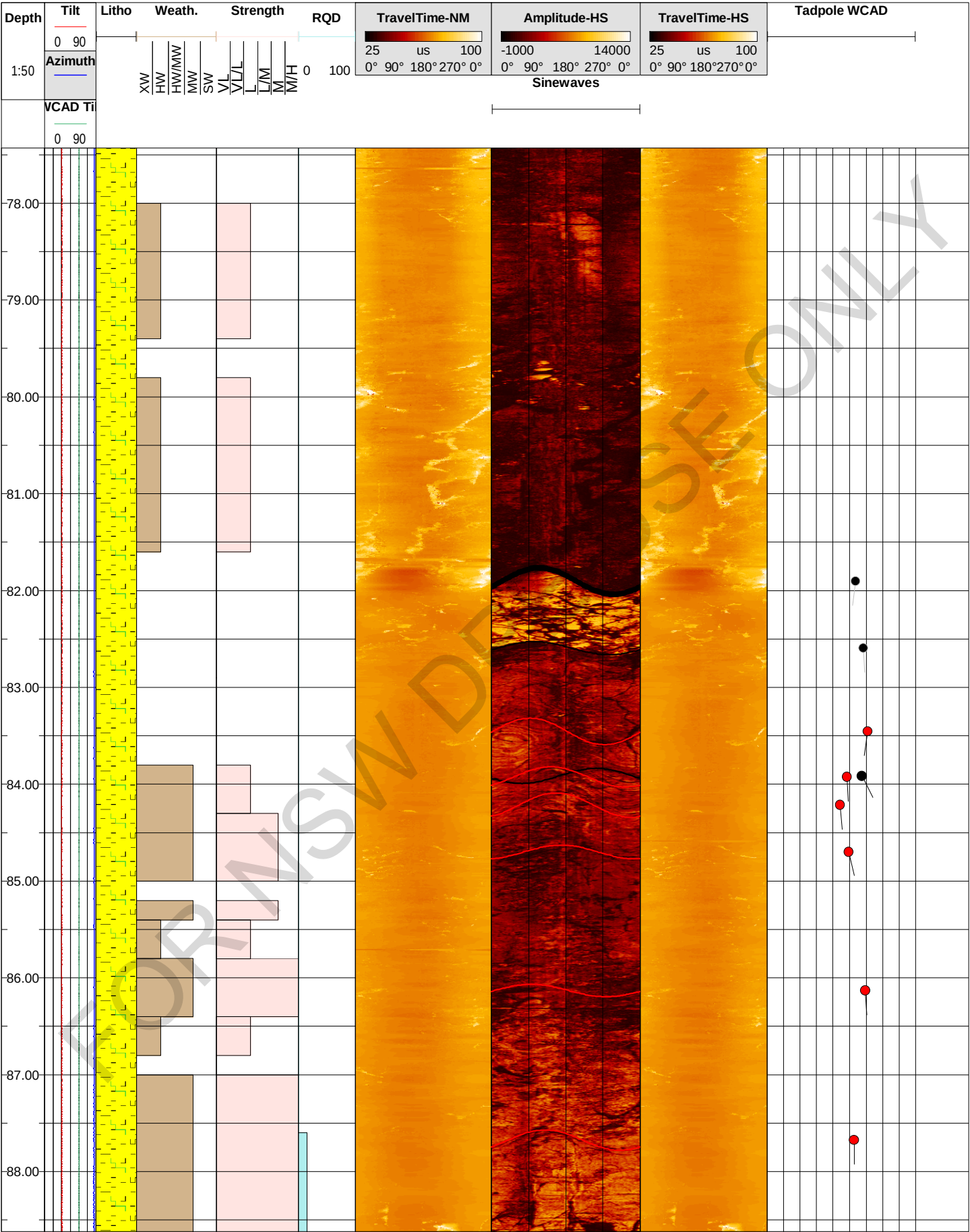
STRUCTURES

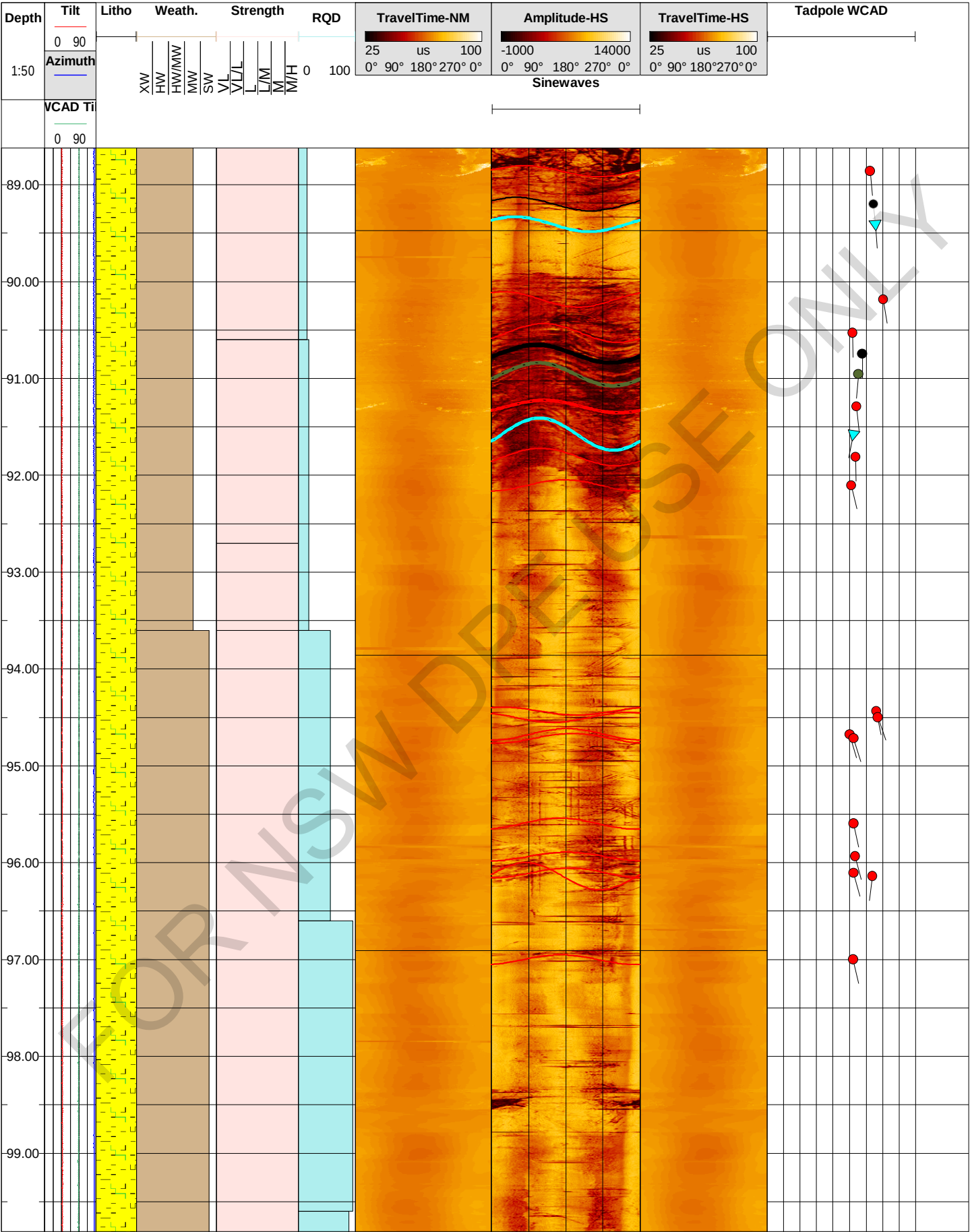


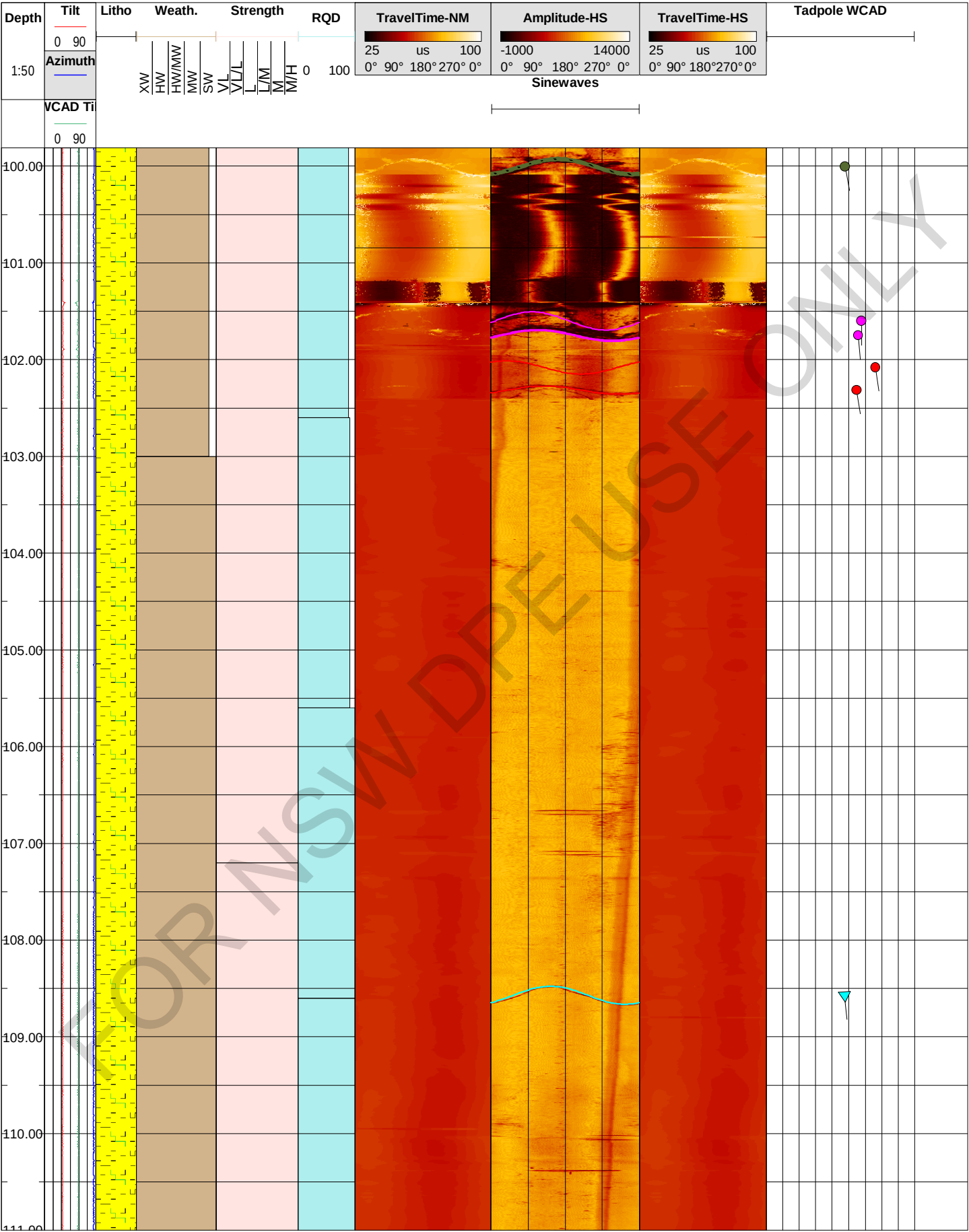


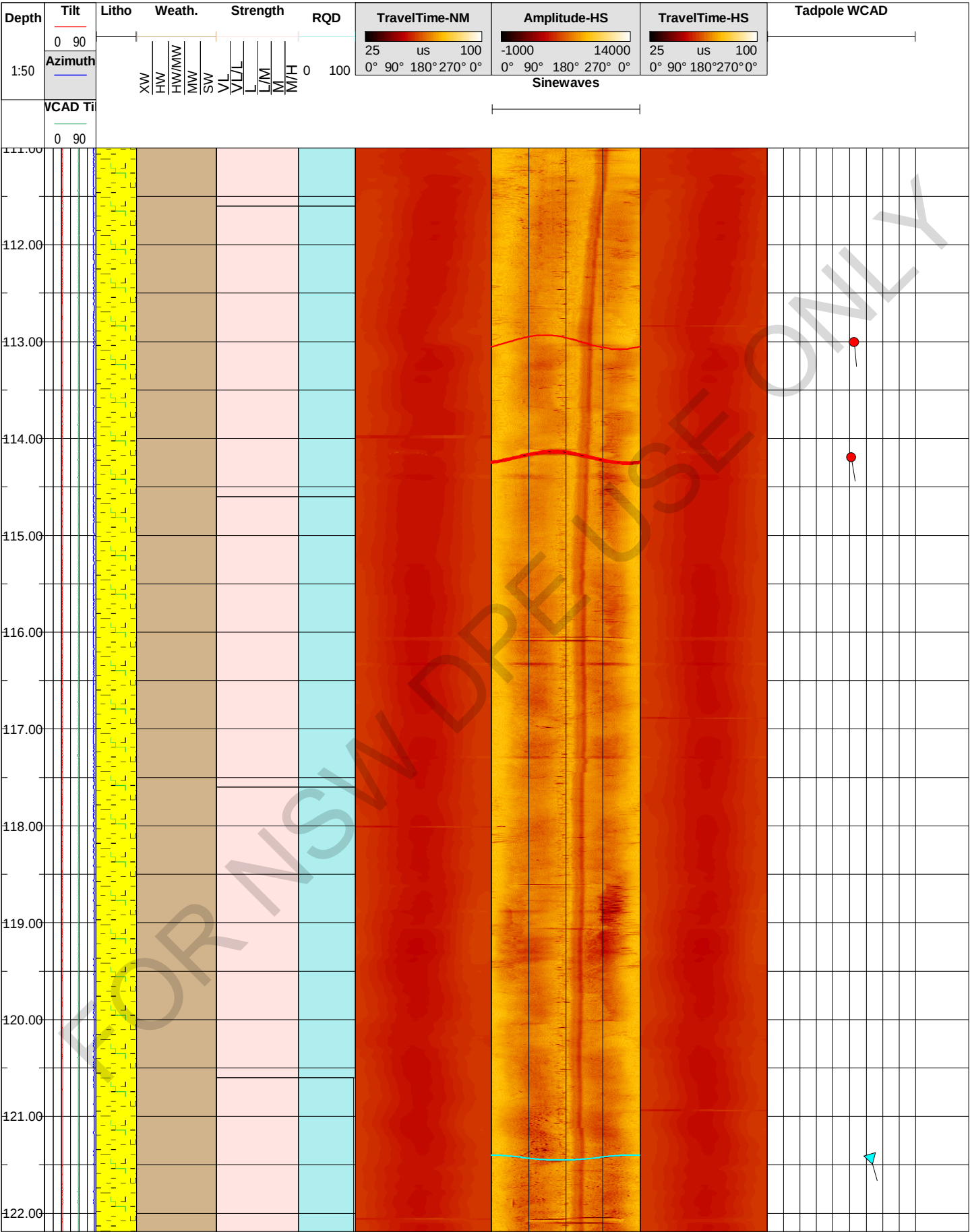


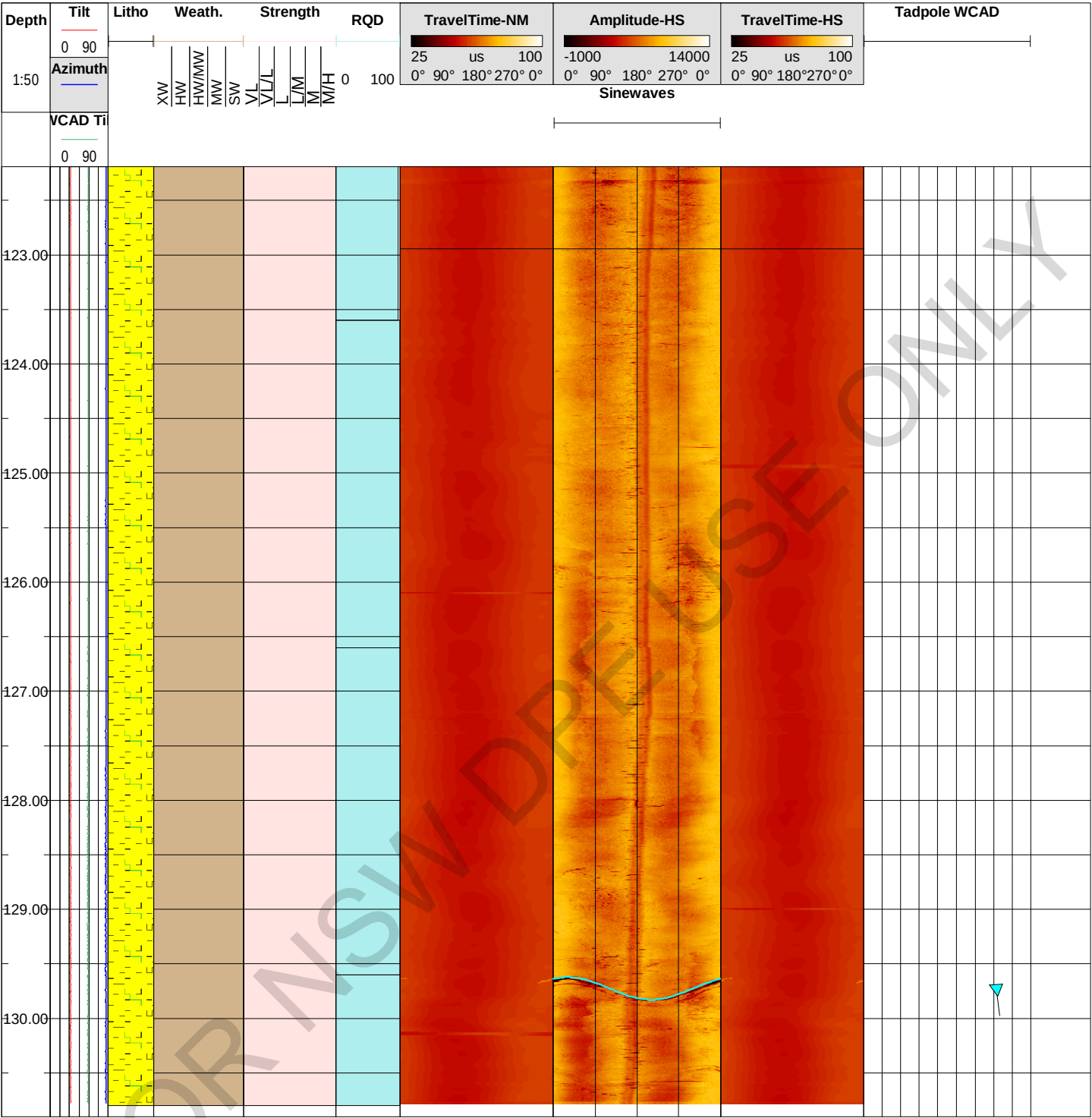














BOREHOLE ATV REPORT

BOREHOLE NO. **SARGT009**

CONSULTANT: **WSP**
CLIENT: **ALKANE RESOURCES**
PROJECT: **TGEP**
LOCATION: **Rosewell**
PROJECT NUMBER: **PS117942**

DATE COMMENCED: **12/01/21**
DATE COMPLETED: **15/01/21**
RECORDED BY: **NG**
LOG CHECKED BY: **LMcK**

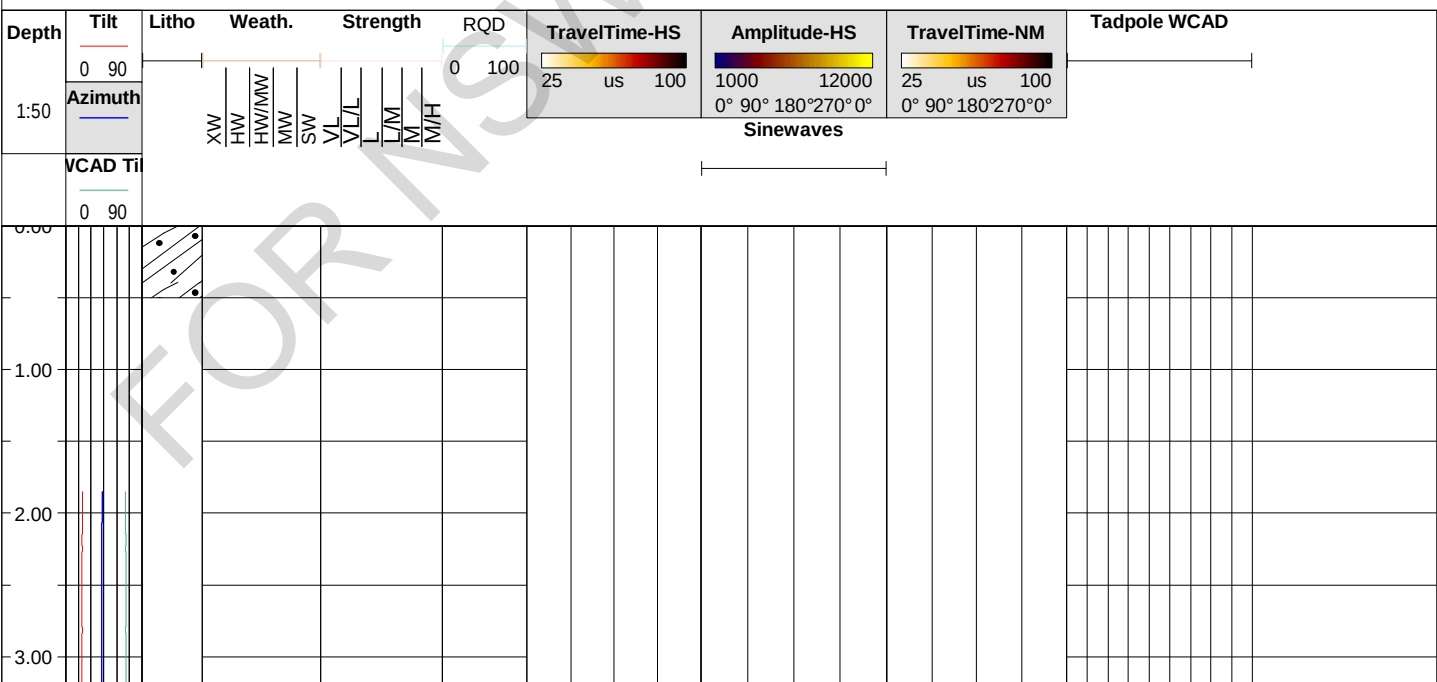
COORDINATES: **E 613986 N 6390574**
REDUCED LEVEL (mAHD): **266**
INCLINATION: **-70**

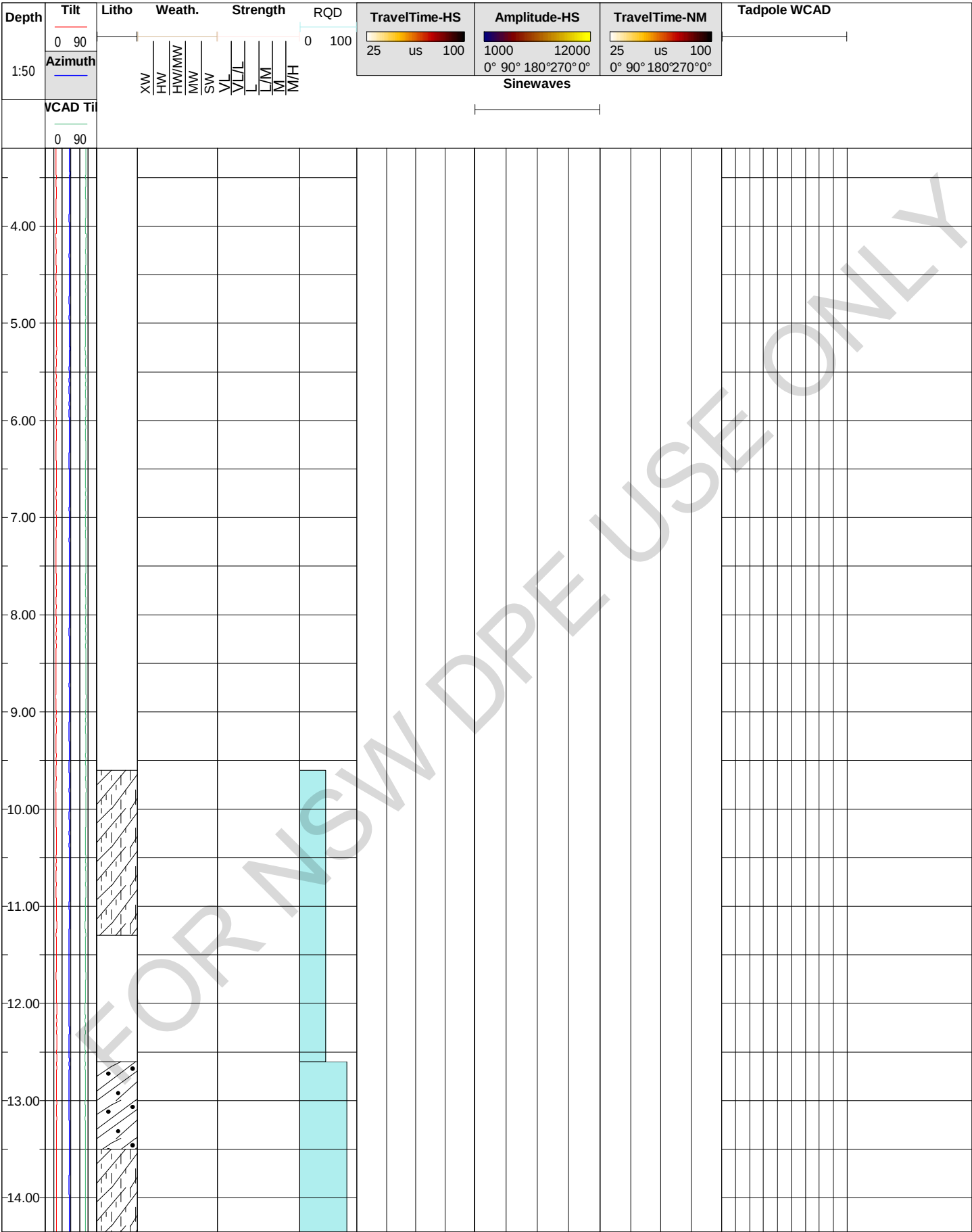
DEPTH OF TEST (m): **131.7 to 170.8**
DEPTH OF BOREHOLE (m): **186.36**
DIAMETER OF BOREHOLE (mm): **96**
TYPE OF CASING (mm): **Nil**
GROUNDWATER LEVEL (m): **NFGWE**

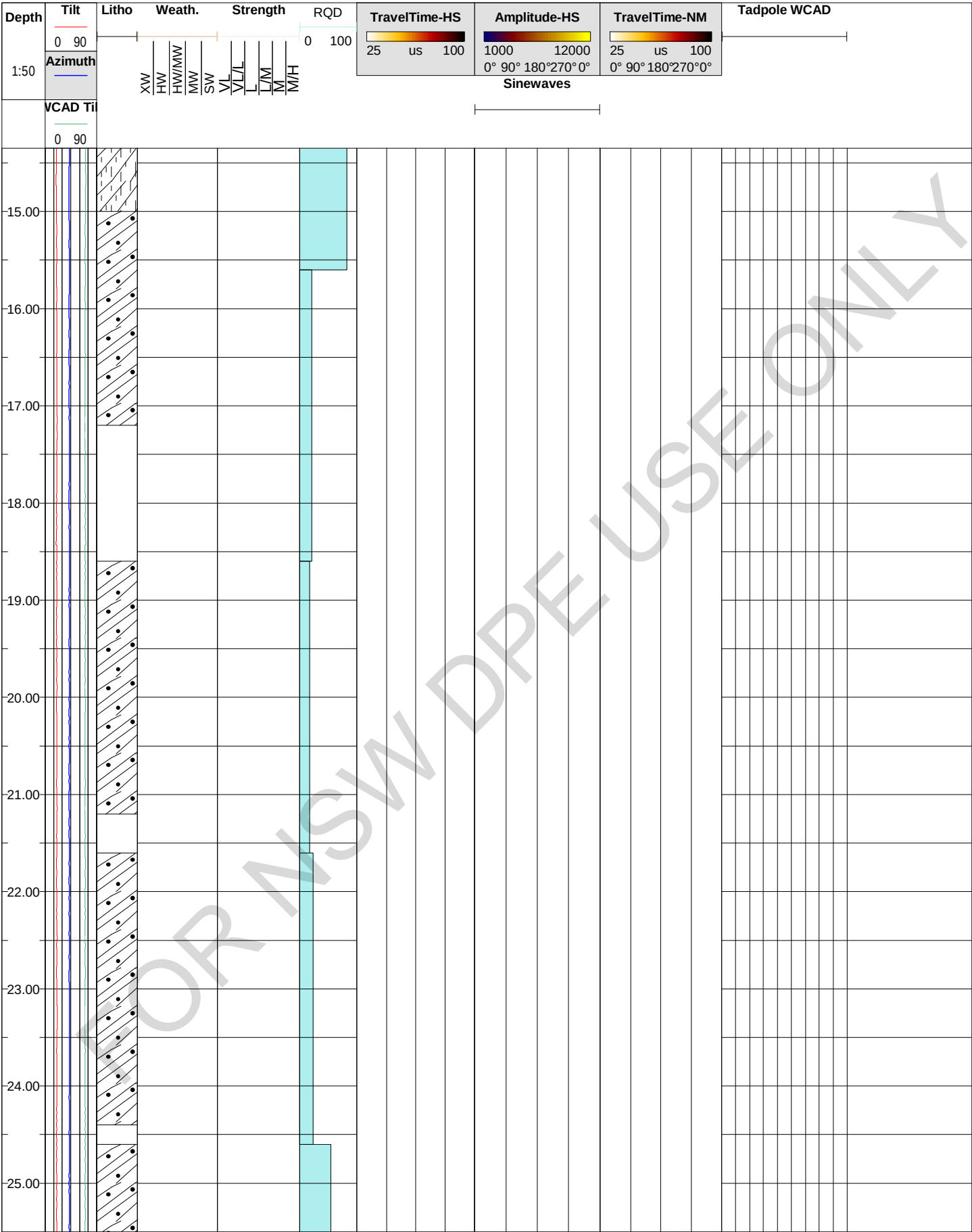
LITHOLOGY

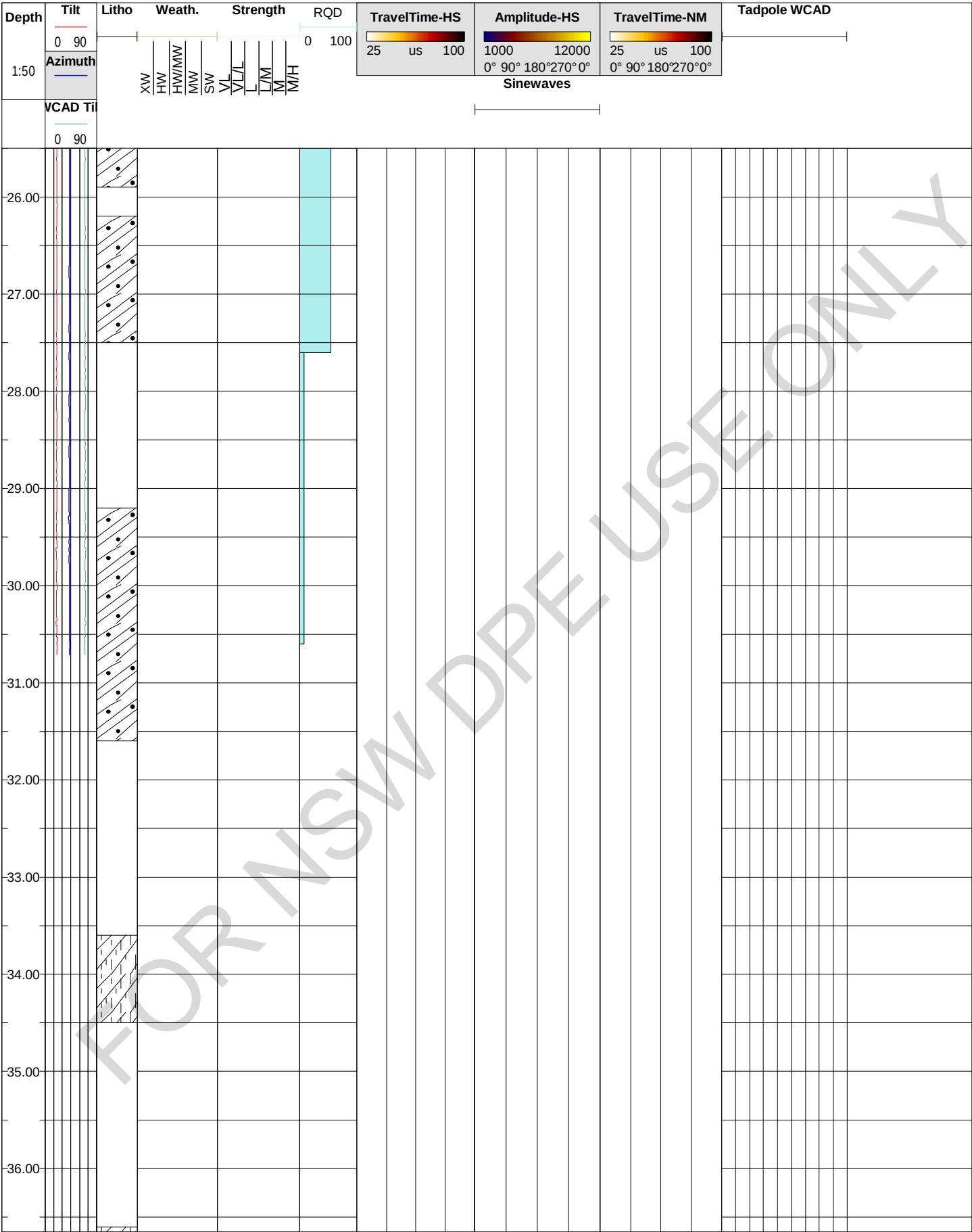


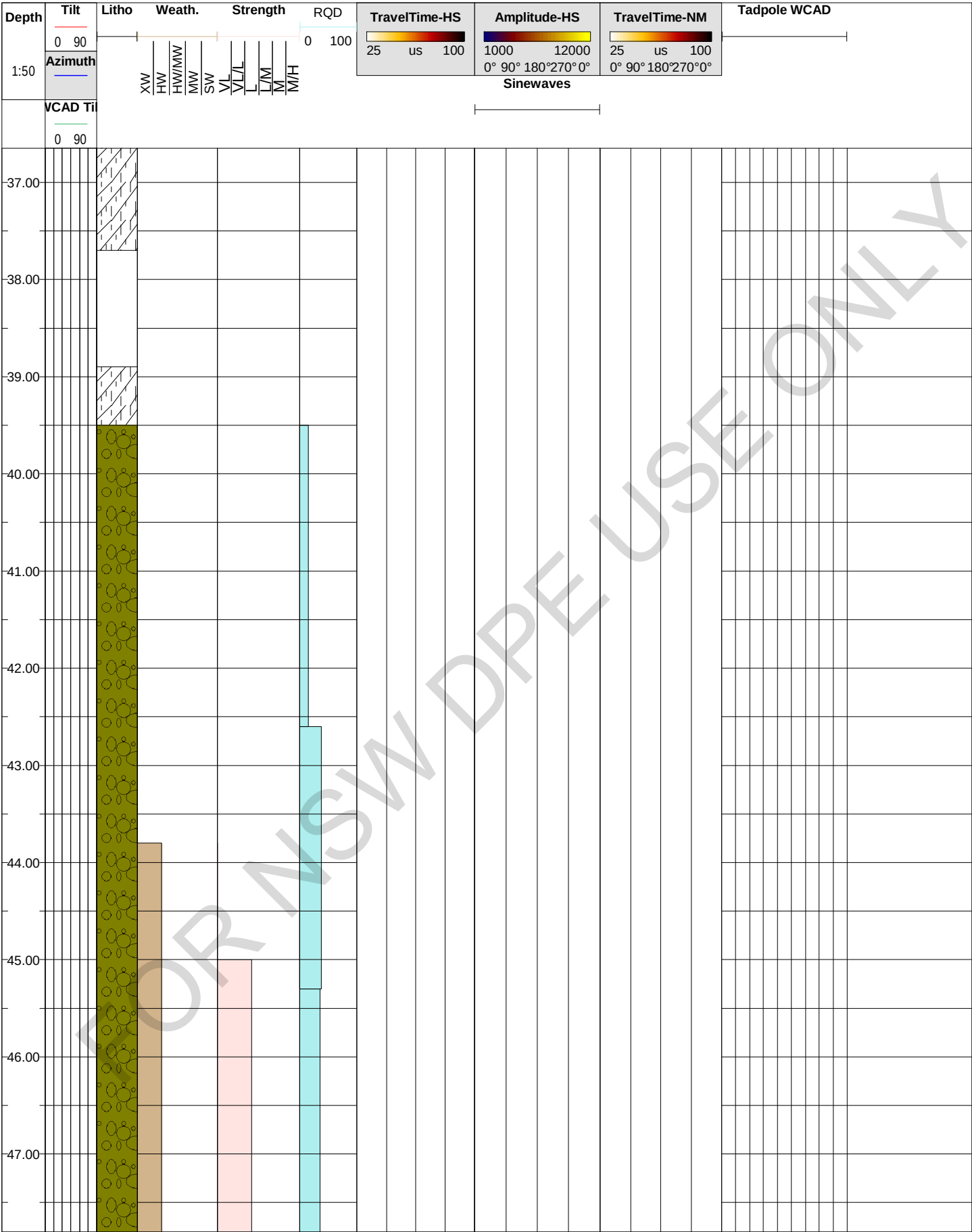
STRUCTURES

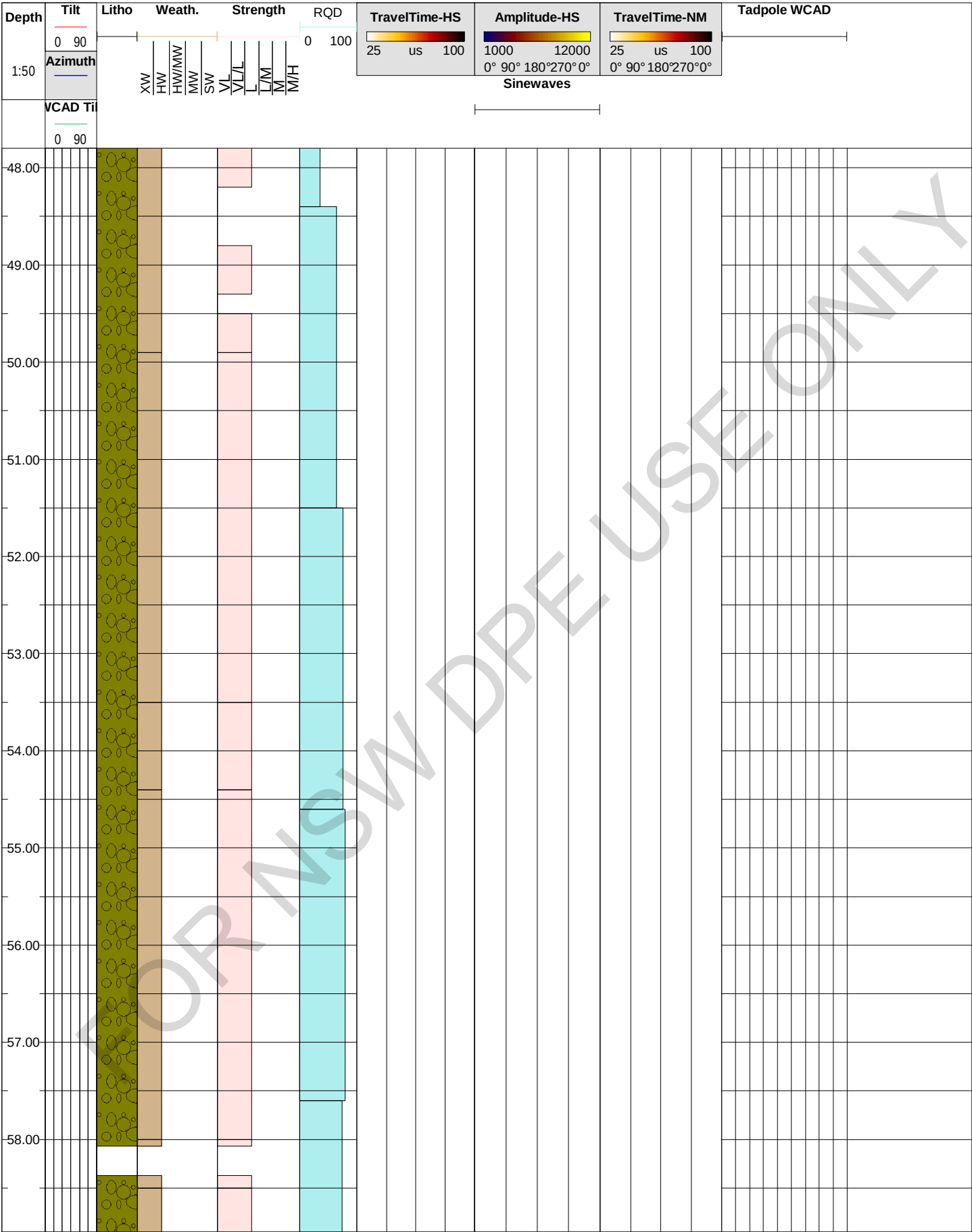


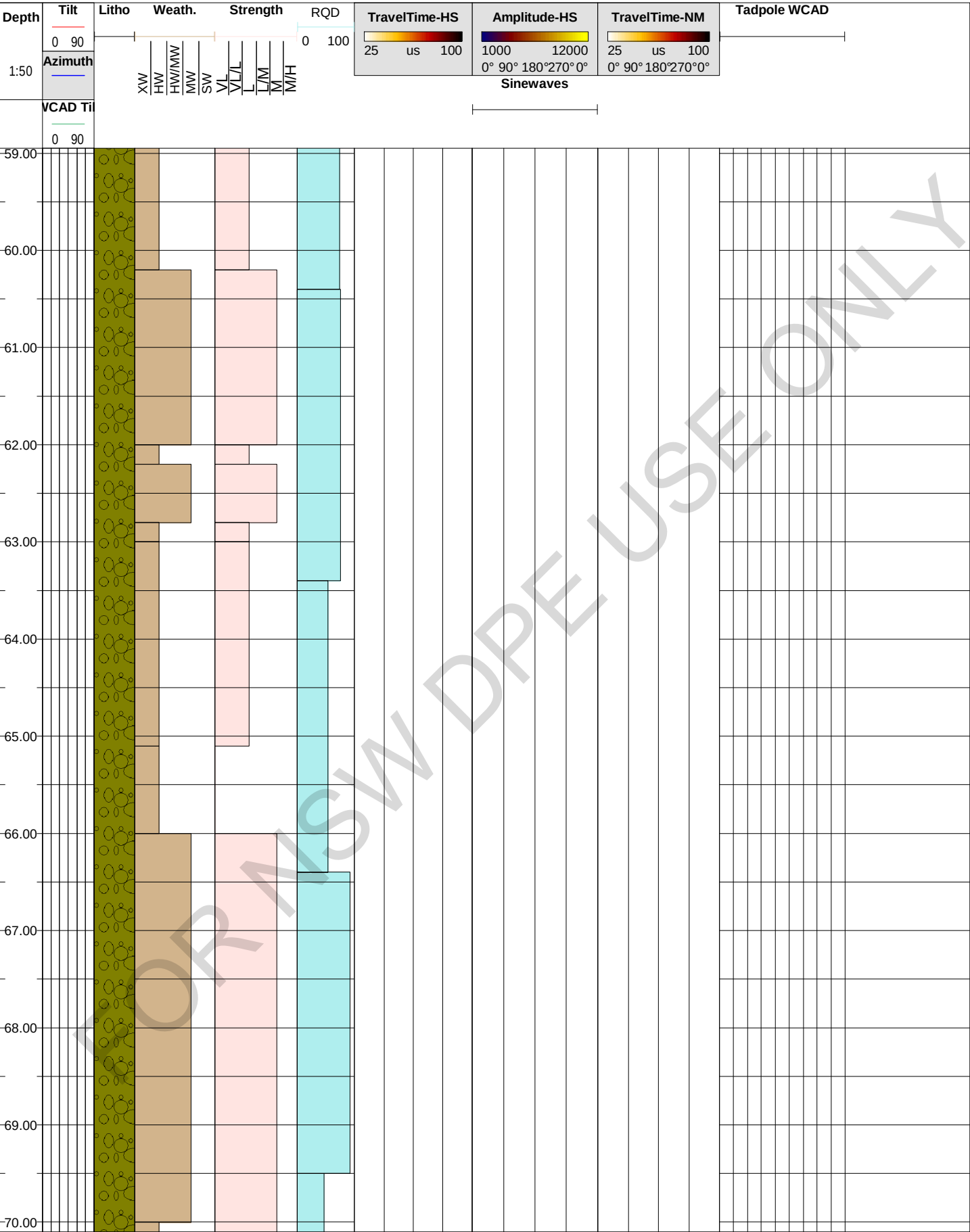


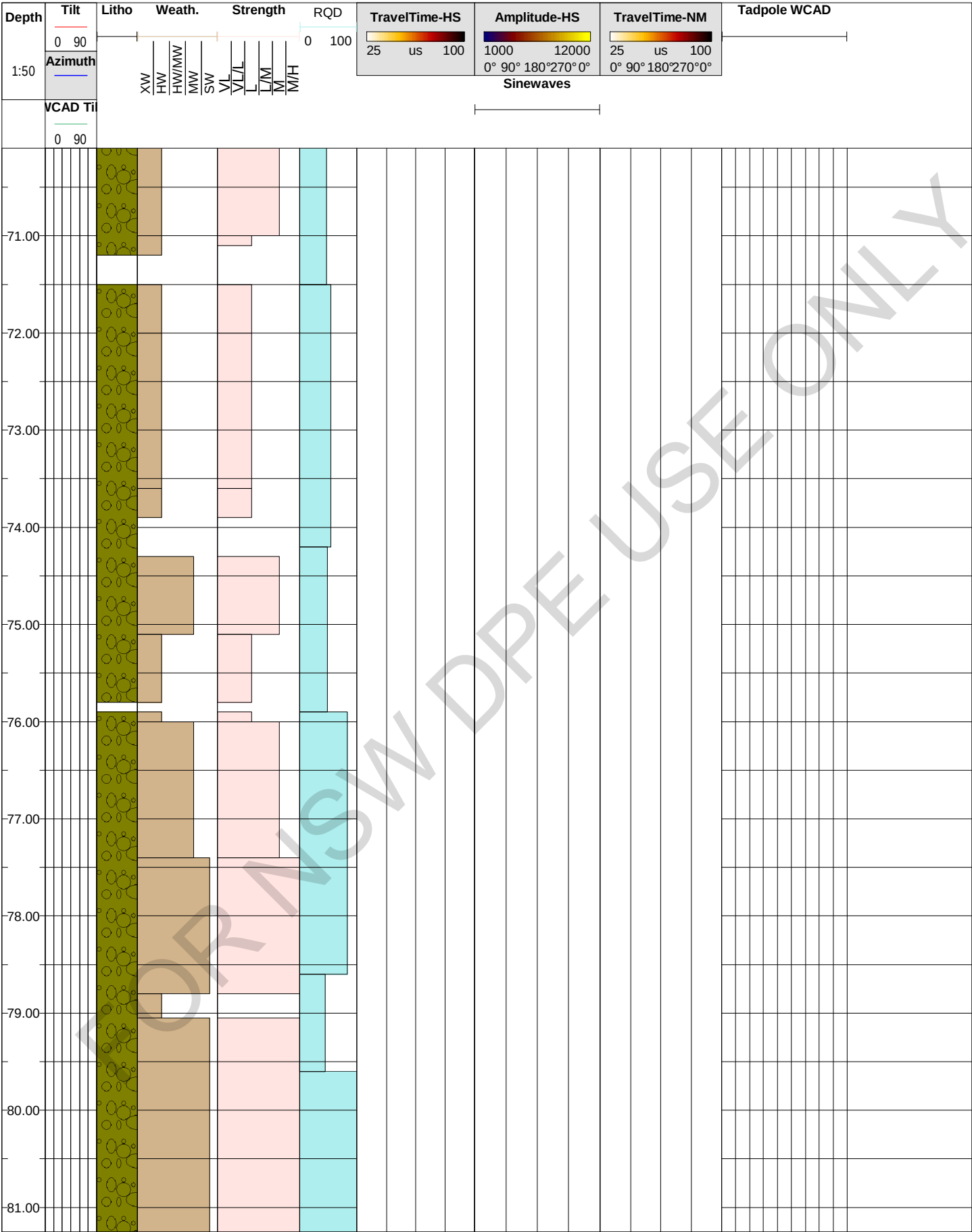


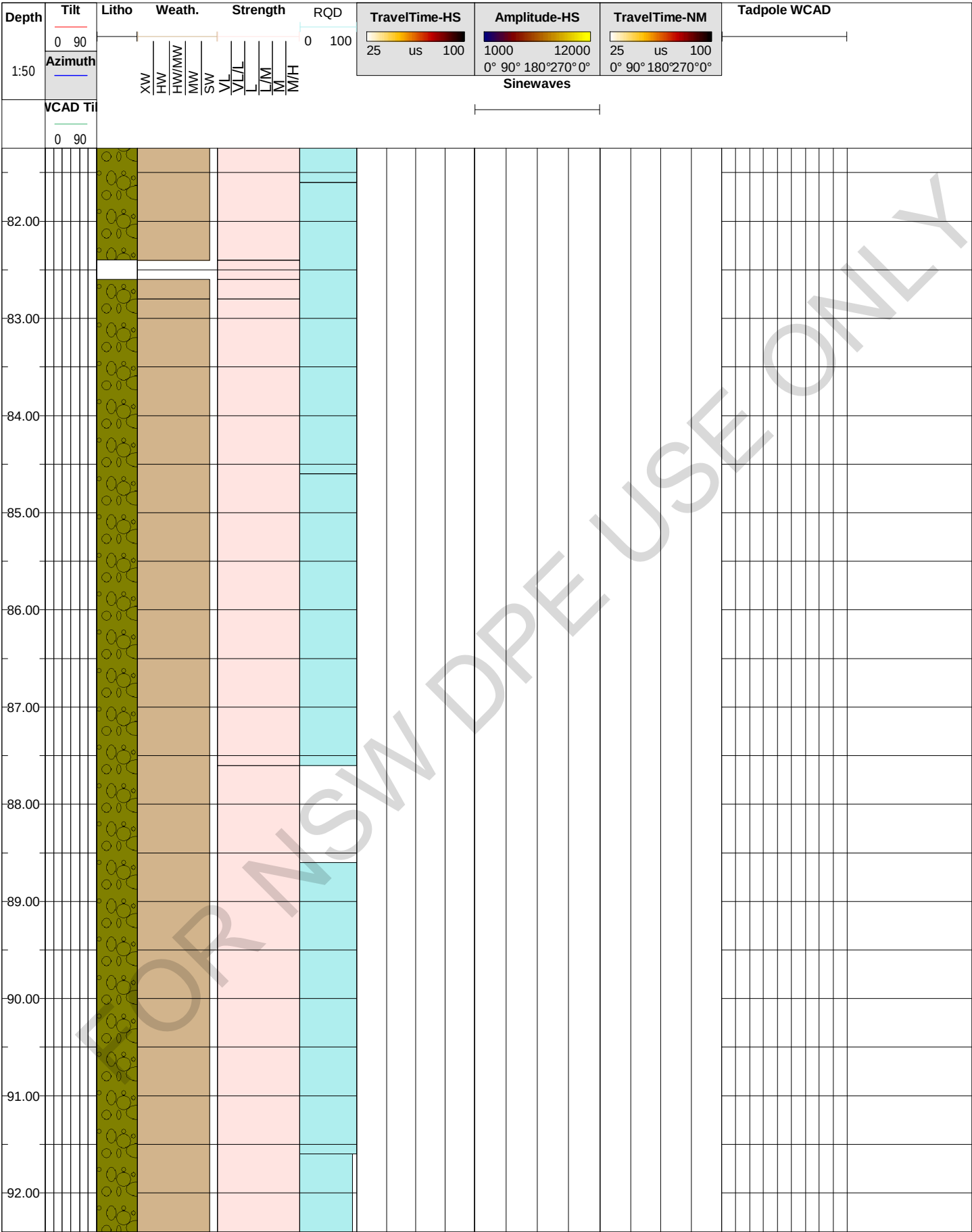


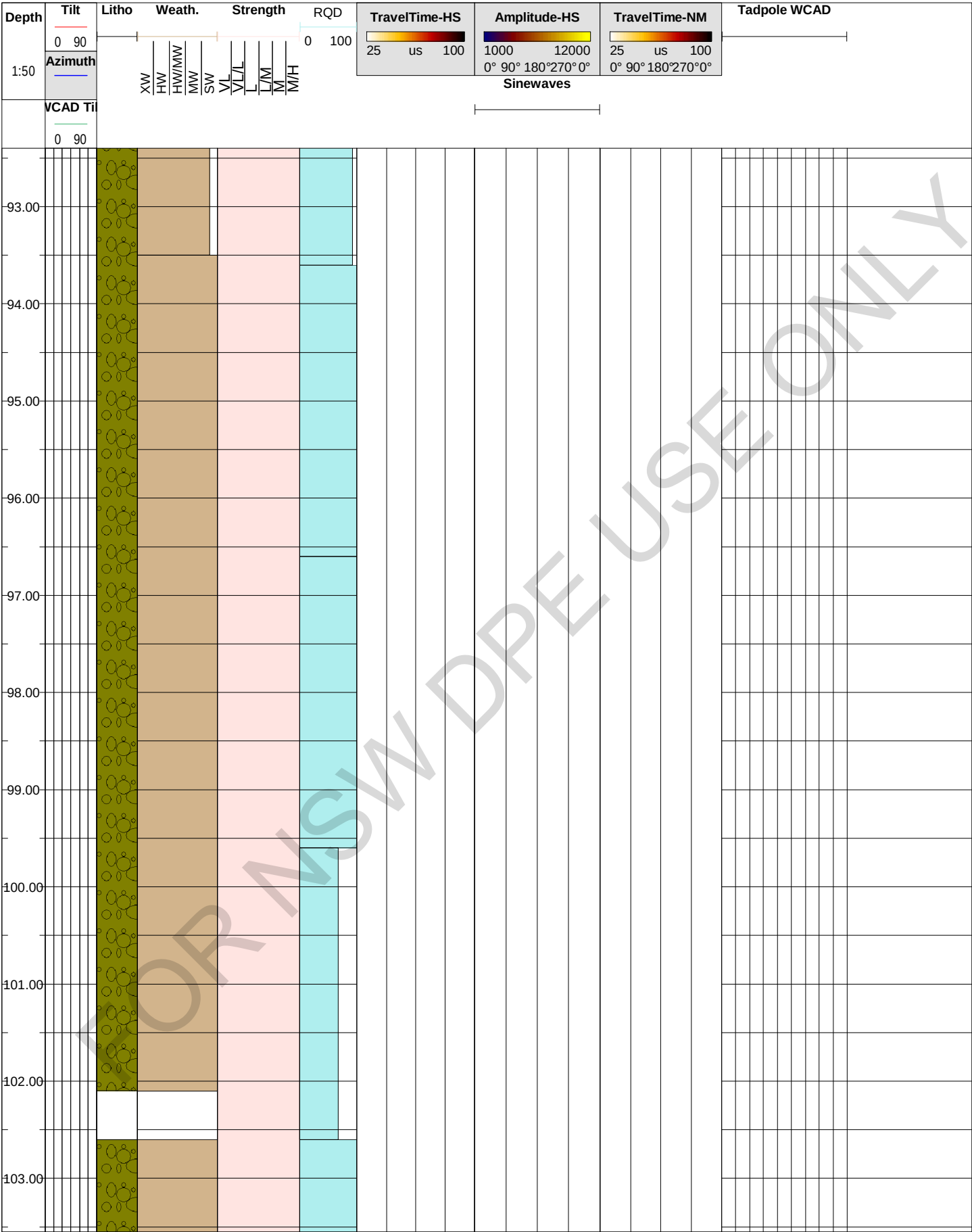


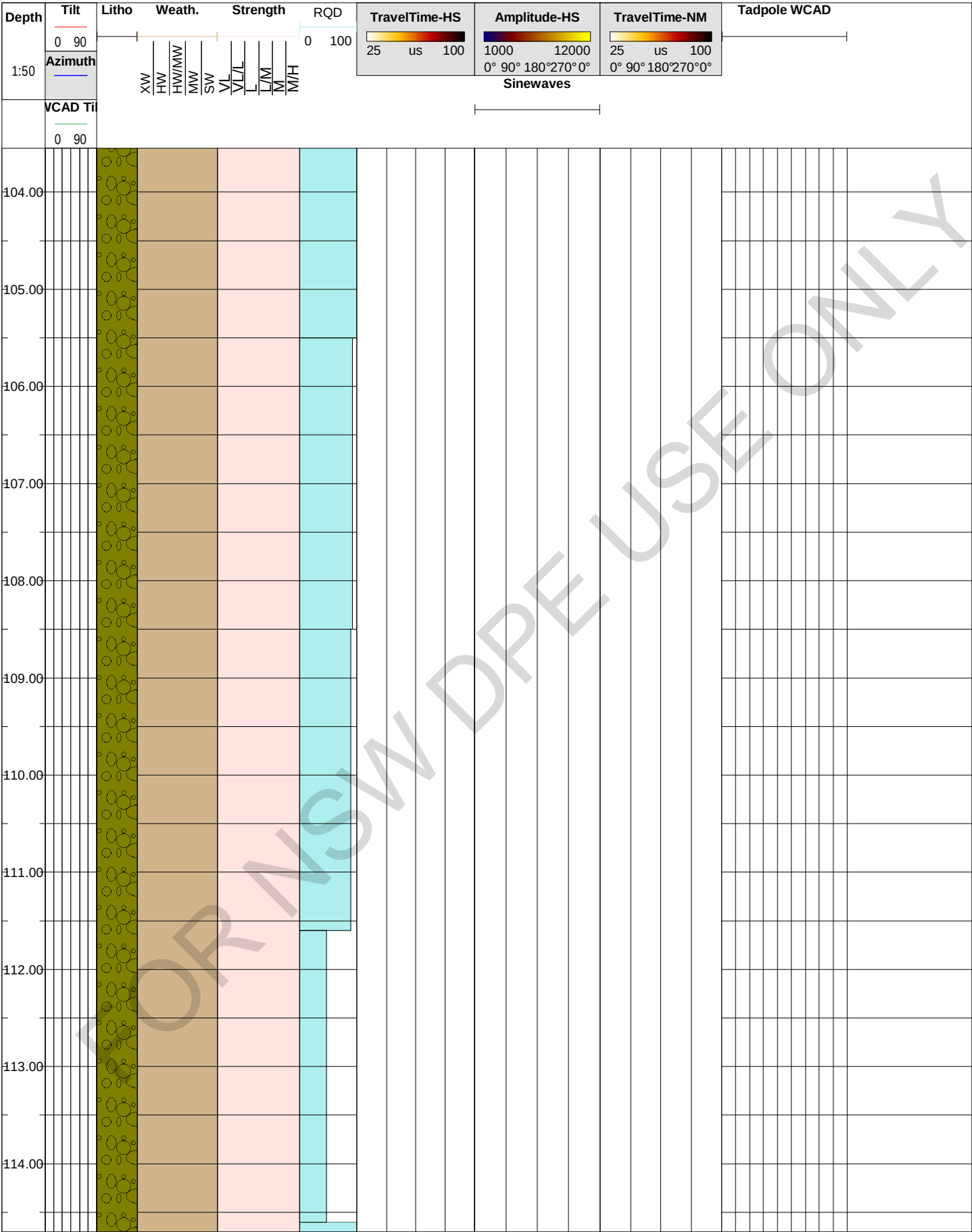


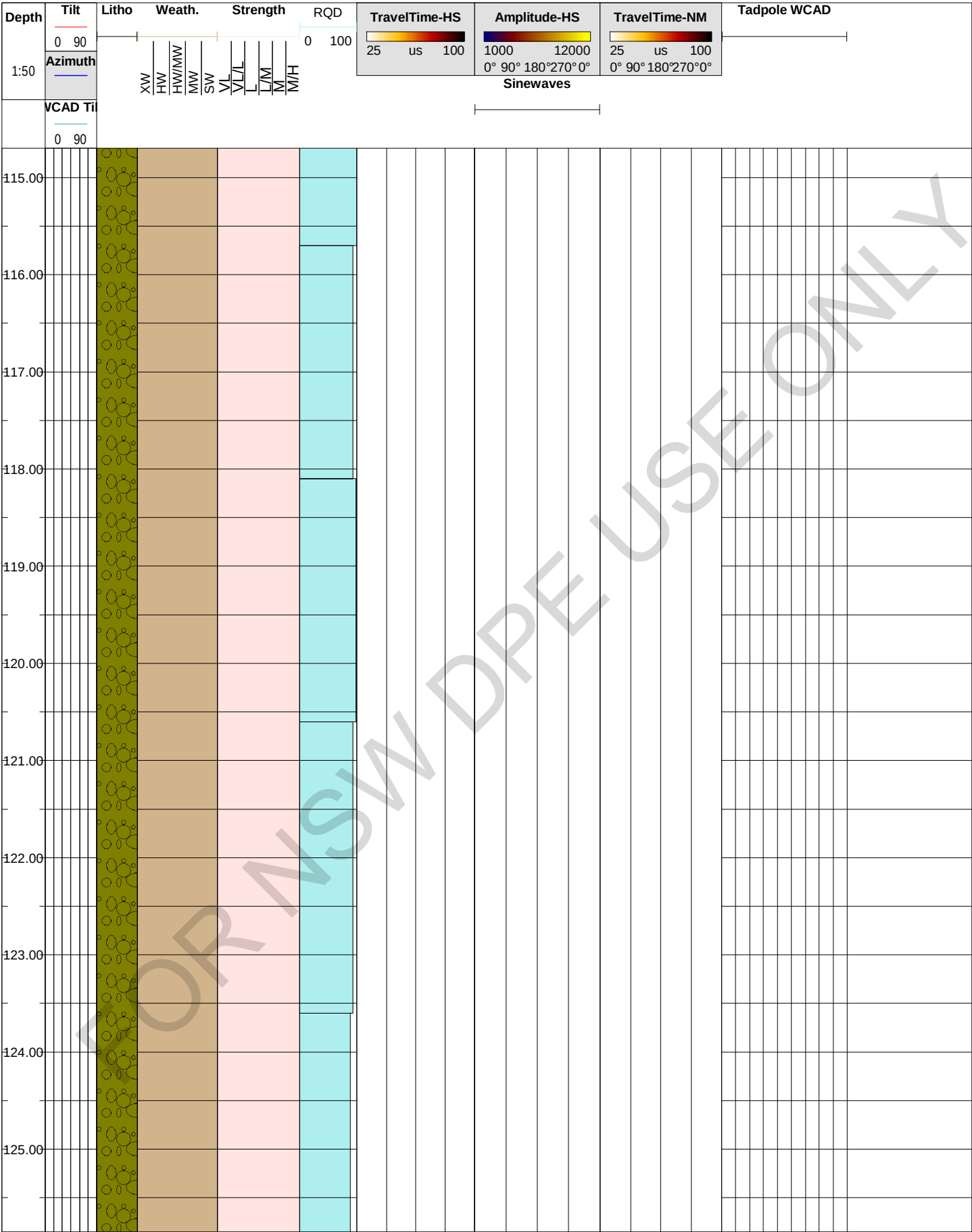


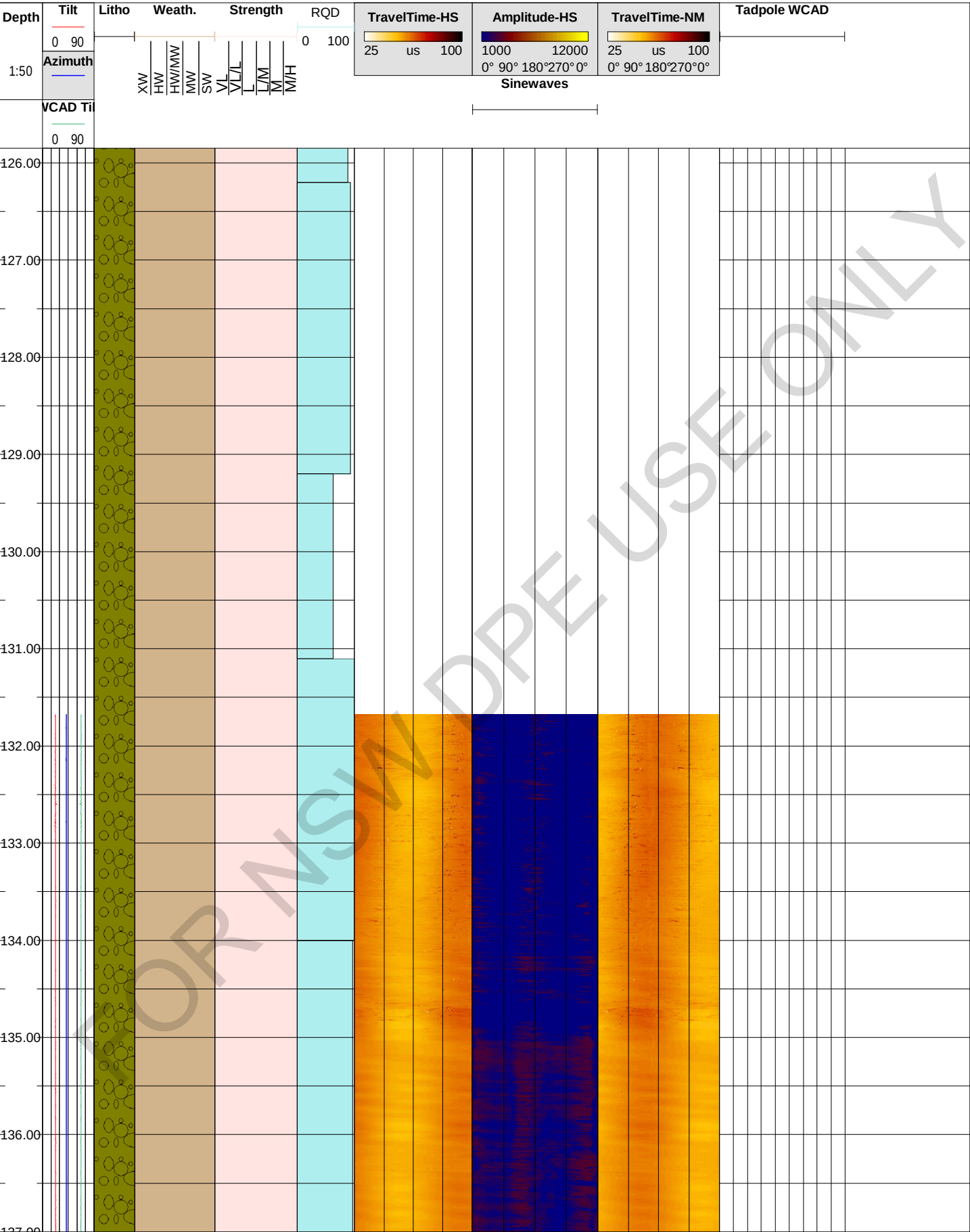


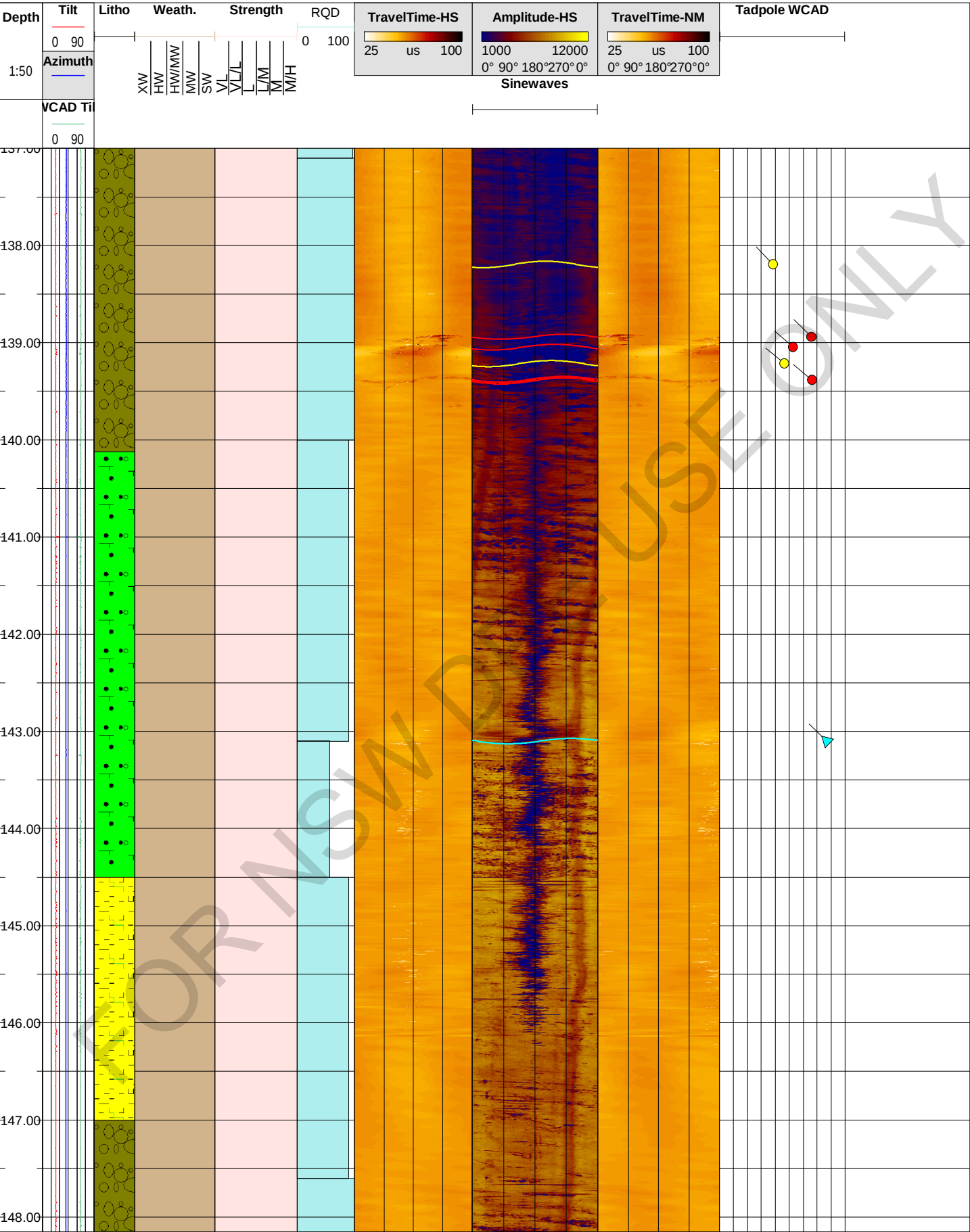


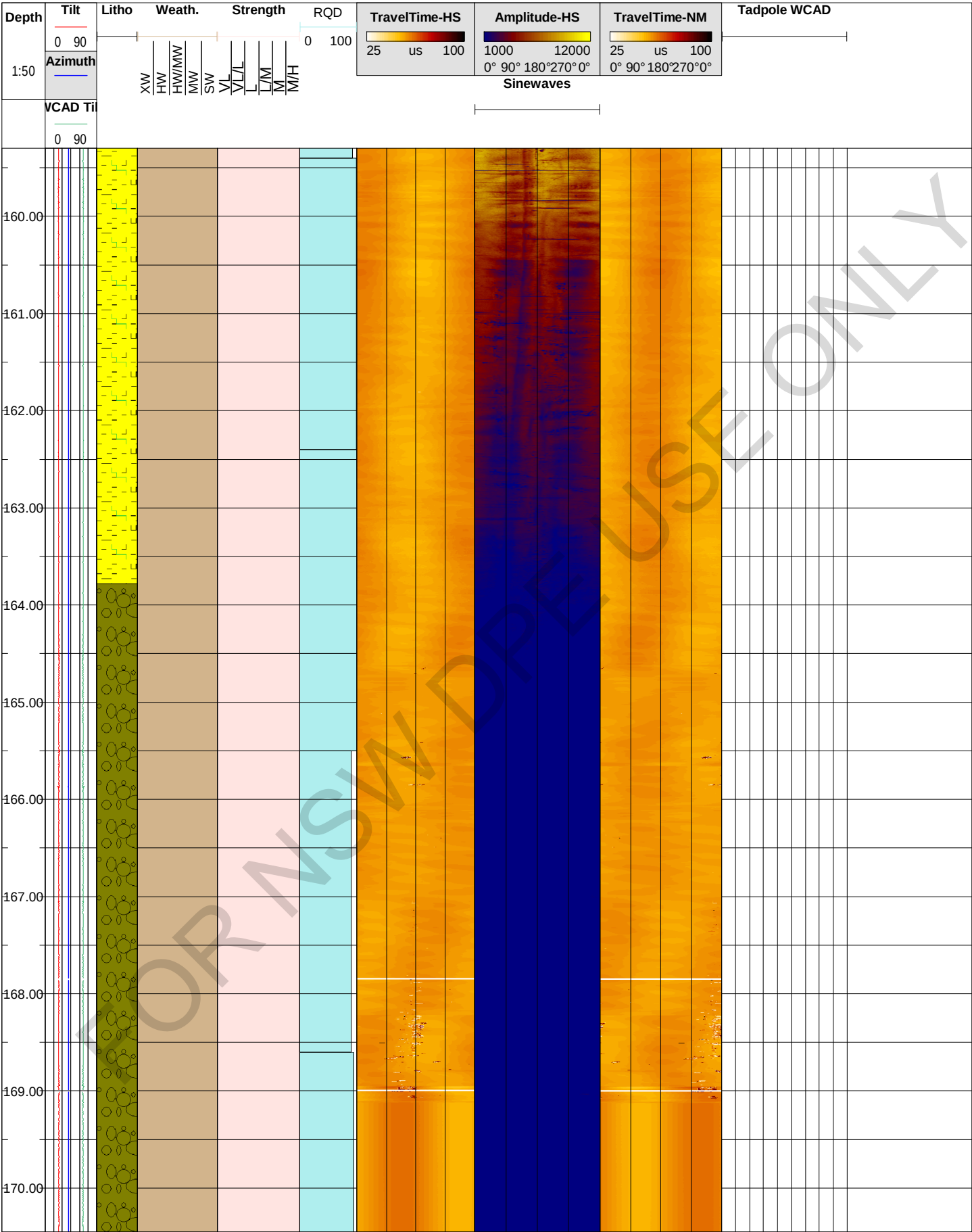


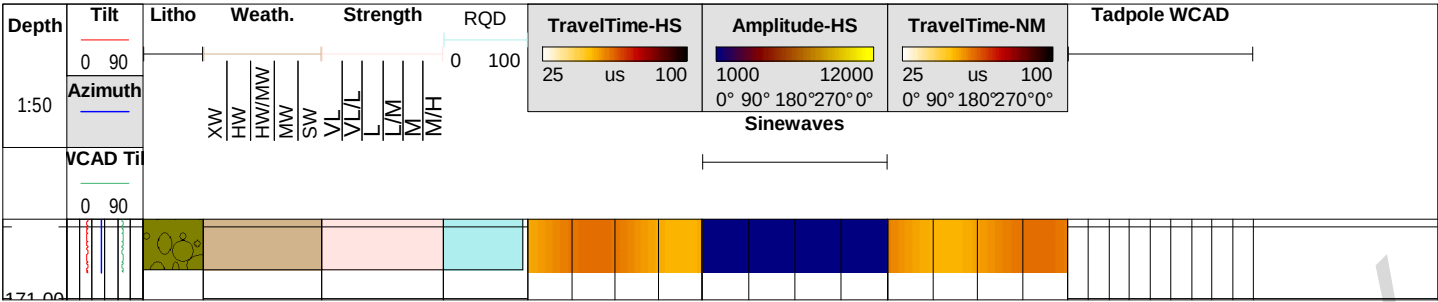












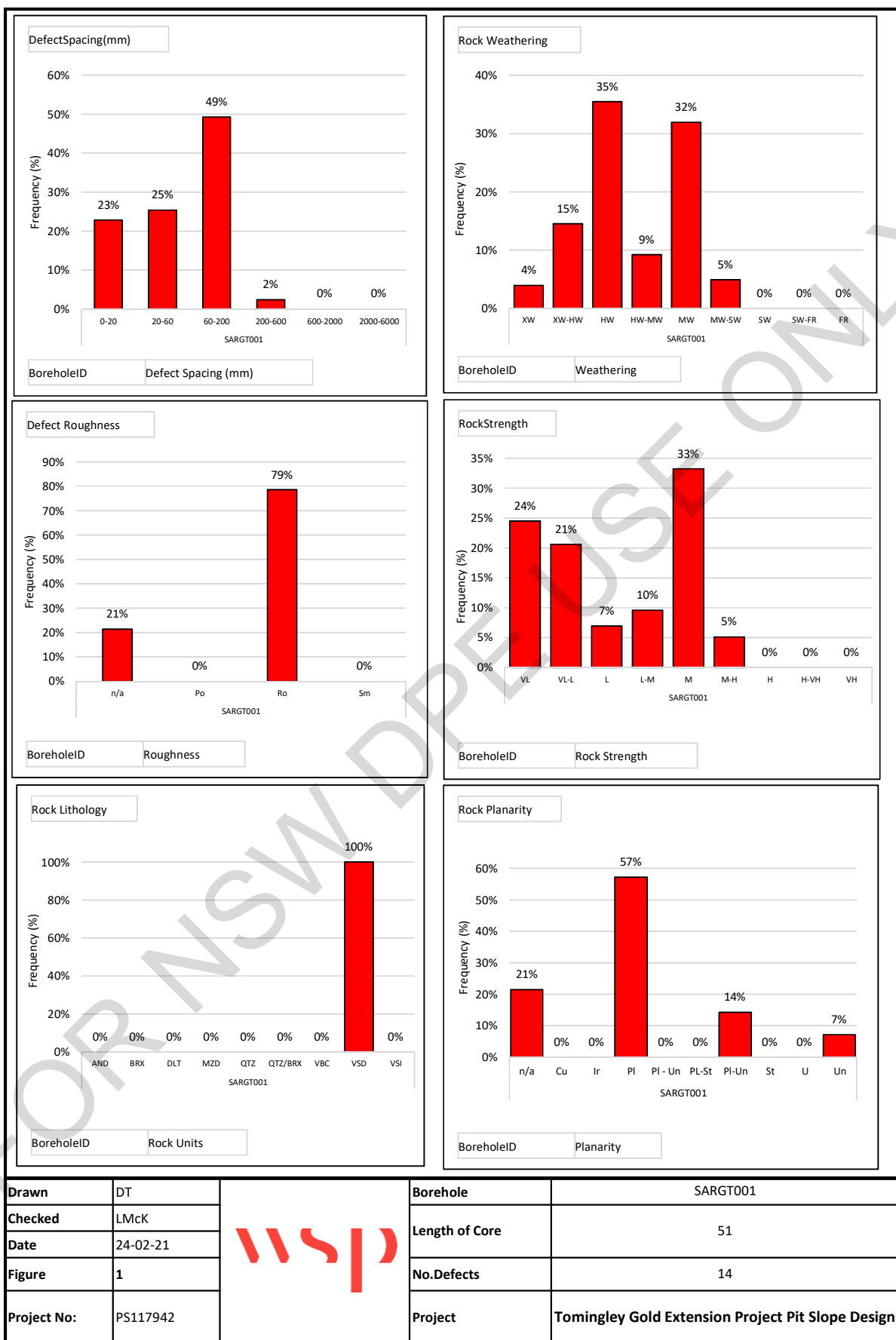
FOR NSW DPE USE ONLY

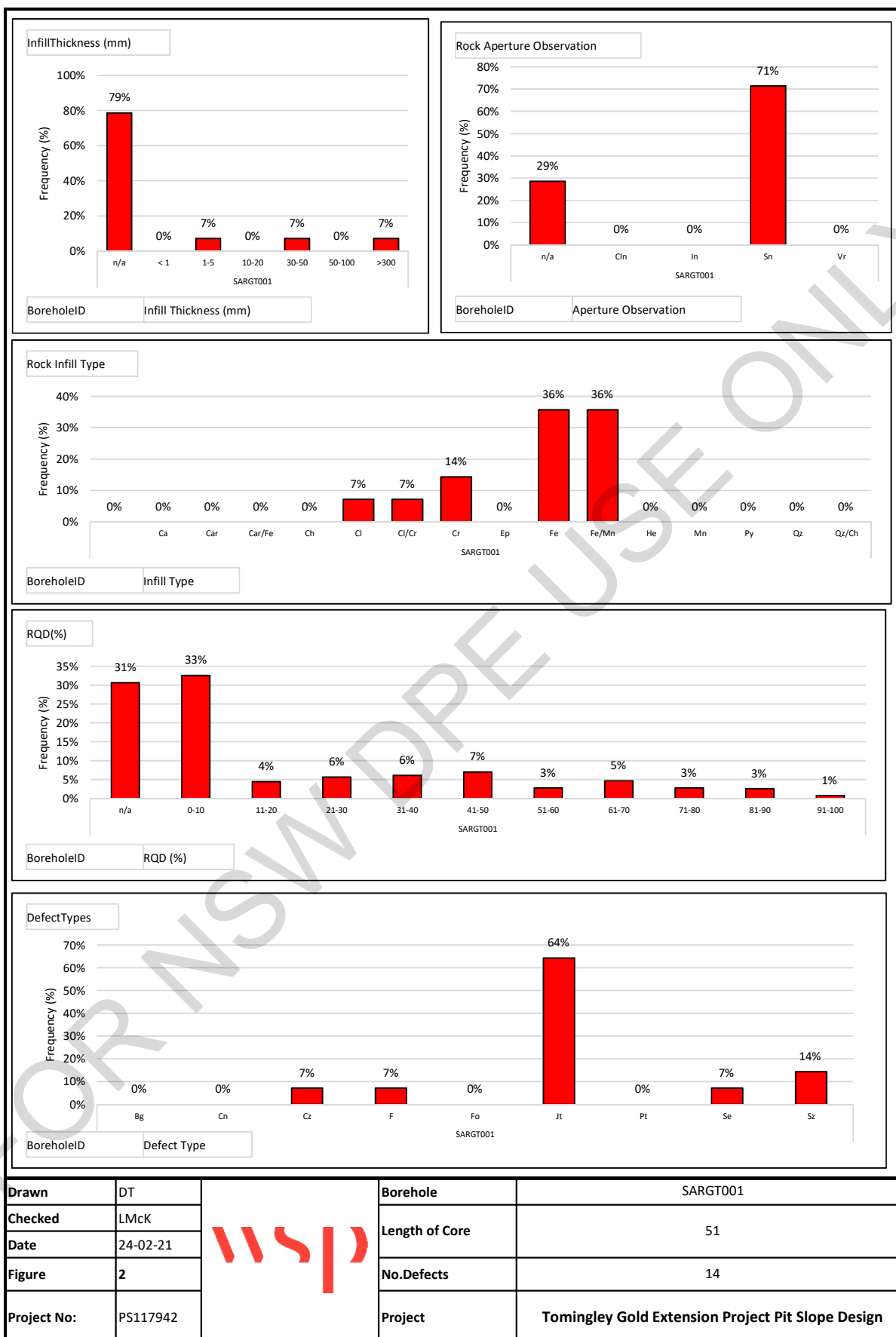
APPENDIX F

BOREHOLE HISTOGRAMS



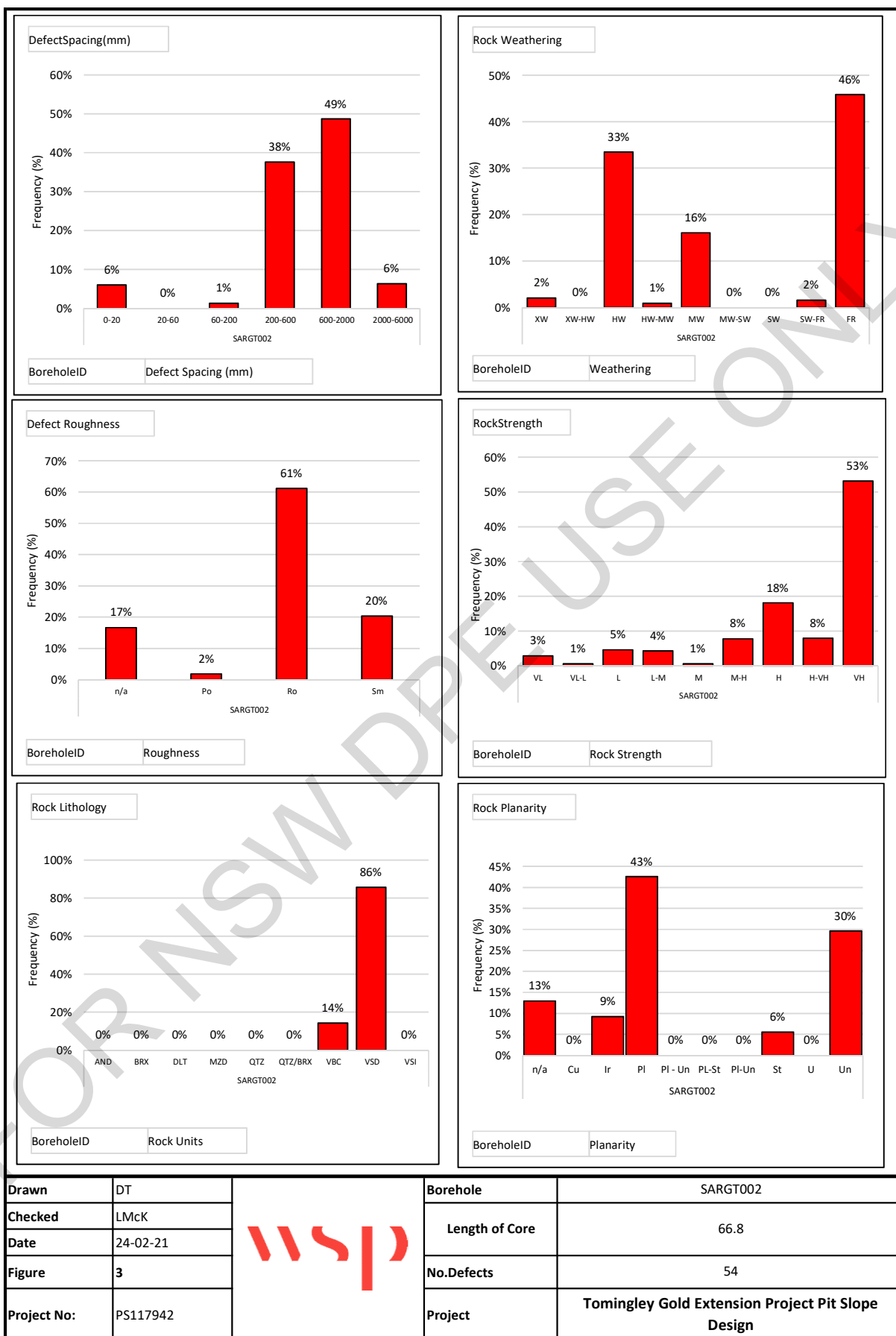
FOR NSW DPE USE ONLY

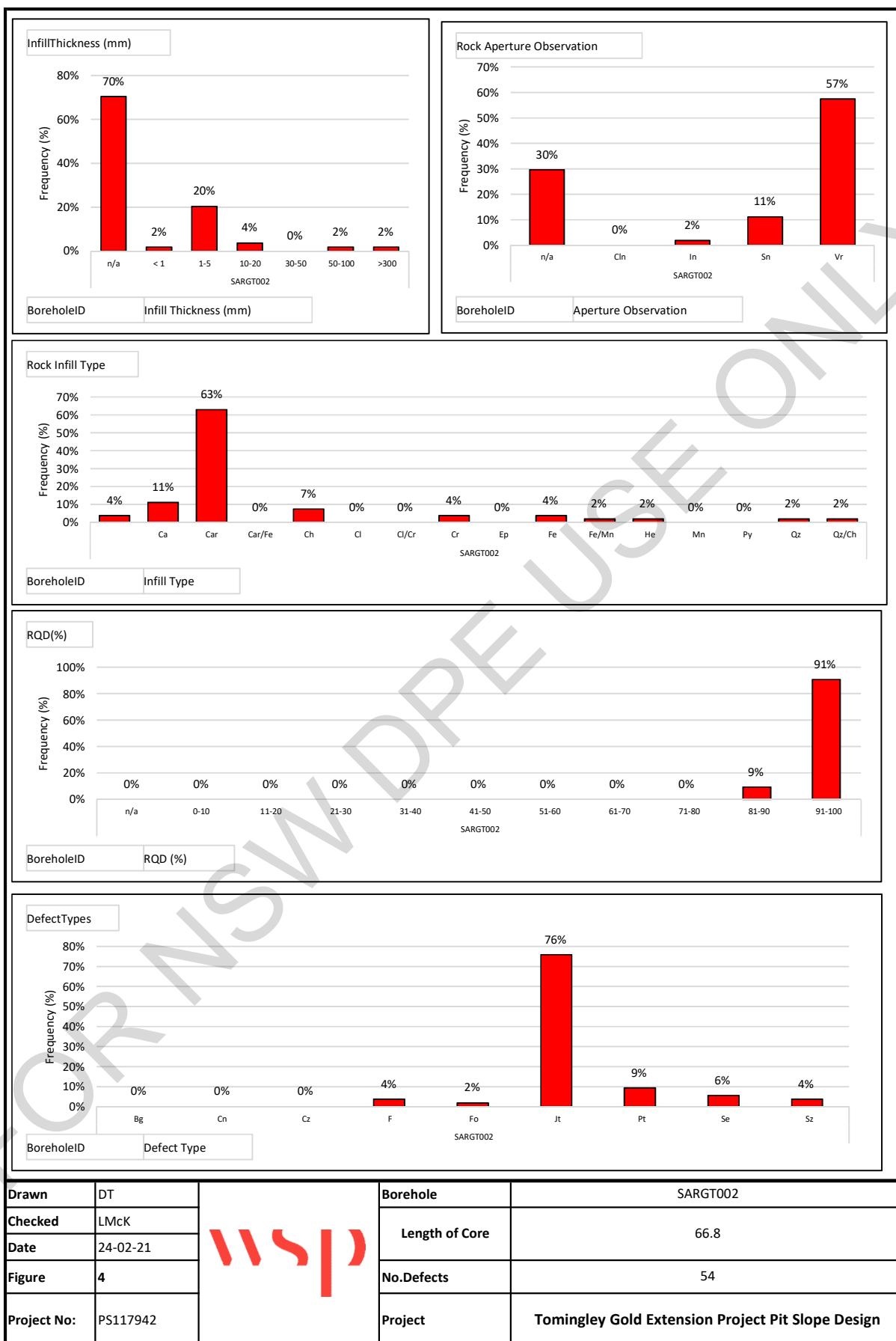




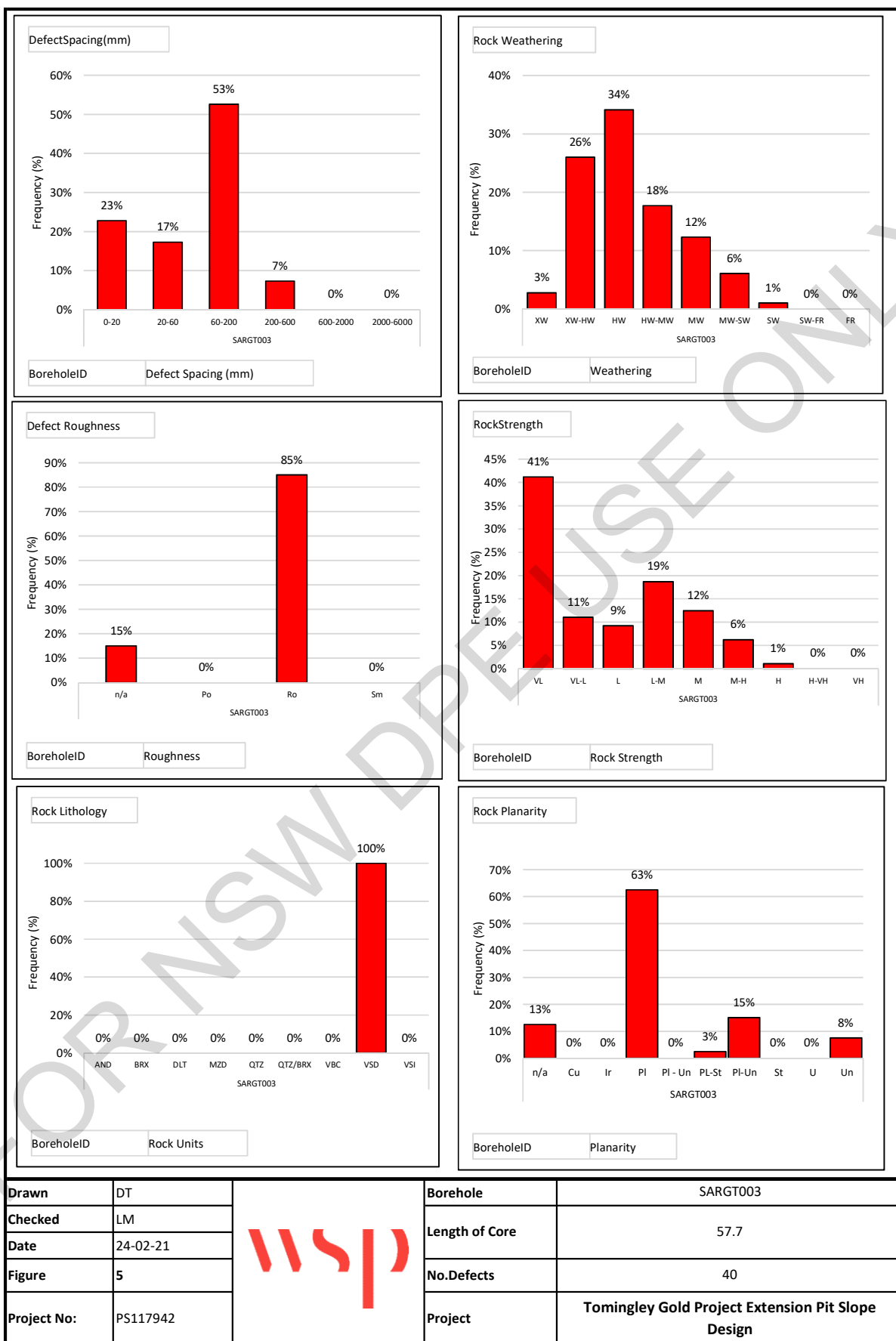
Drawn	DT
Checked	LMcK
Date	24-02-21
Figure	2
Project No:	PS117942

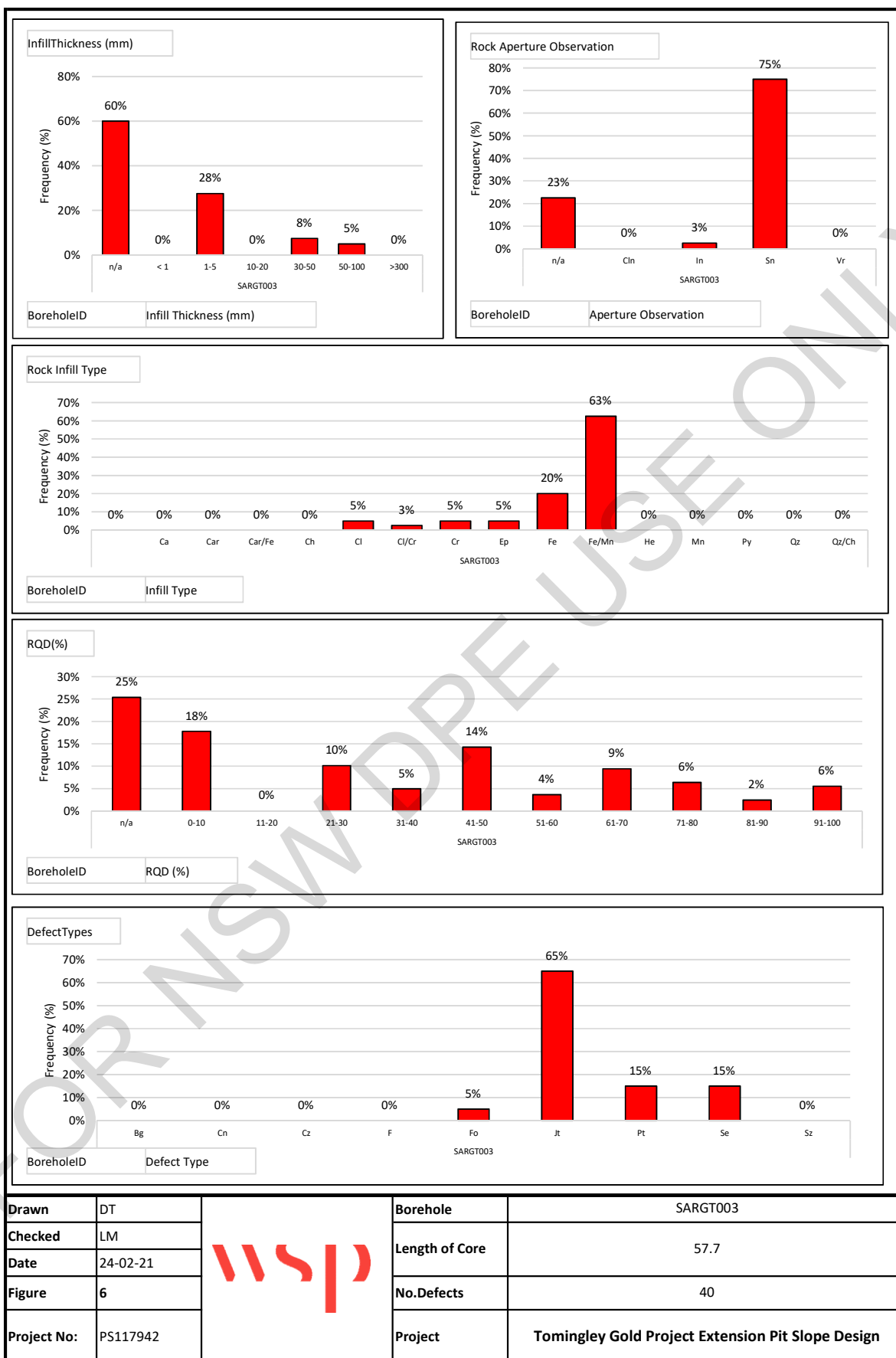
Borehole	SARGT001
Length of Core	51
No.Defects	14
Project	Tomingley Gold Extension Project Pit Slope Design





Drawn	DT		Borehole	SARGT002
Checked	LMcK		Length of Core	66.8
Date	24-02-21		No.Defects	54
Figure	4		Project	Tomingley Gold Extension Project Pit Slope Design
Project No:	PS117942			

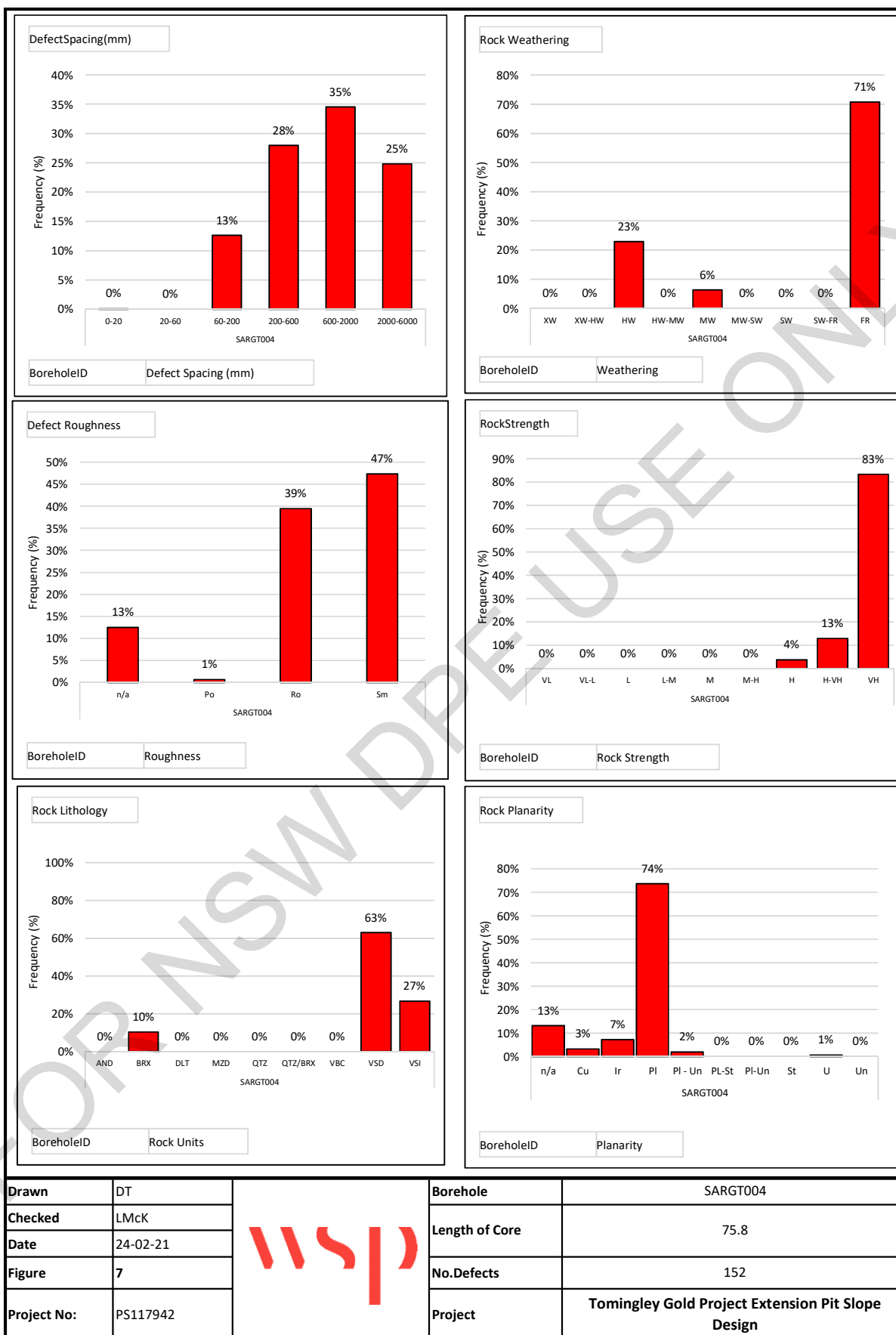


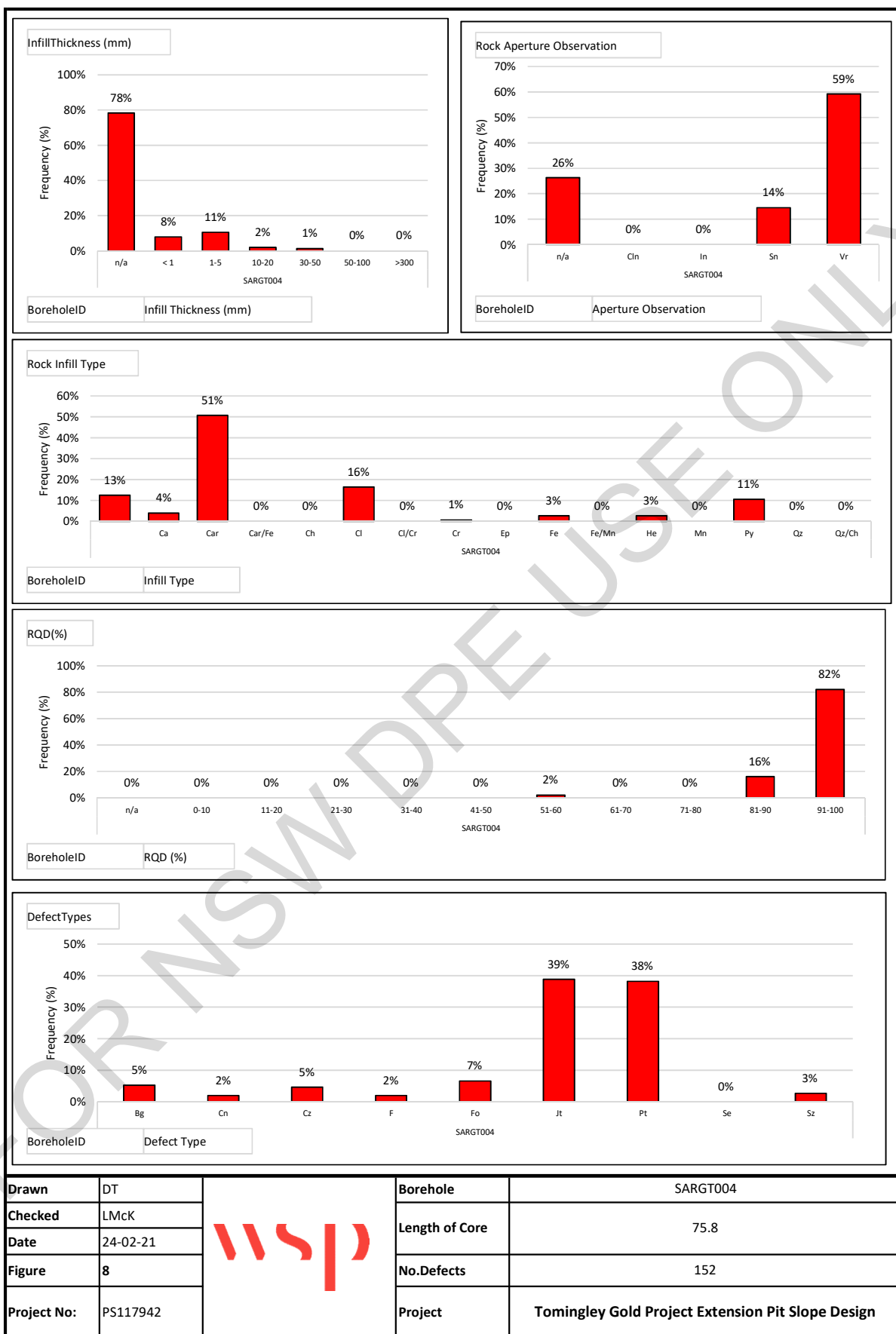


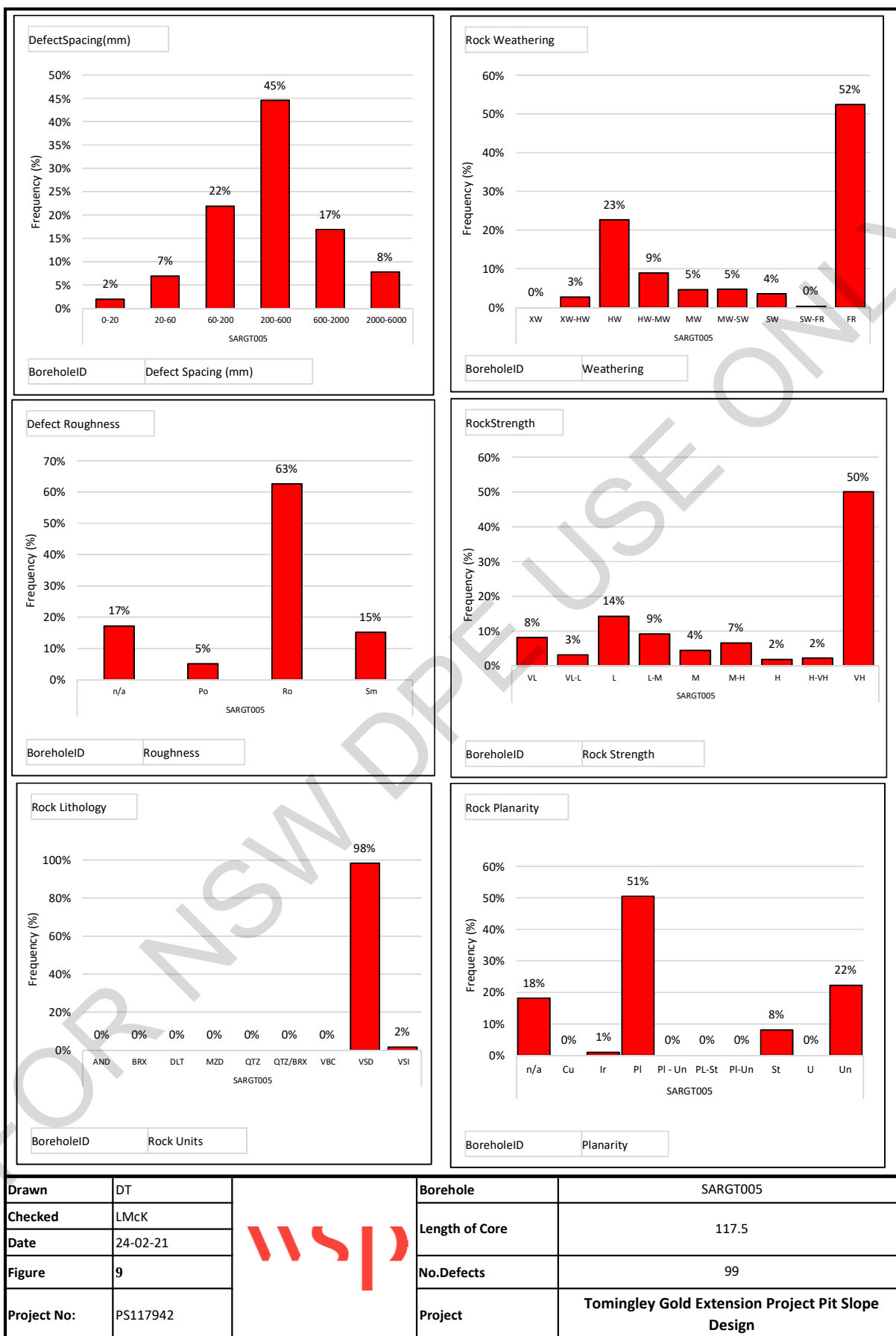
Drawn	DT
Checked	LM
Date	24-02-21
Figure	6
Project No:	PS117942

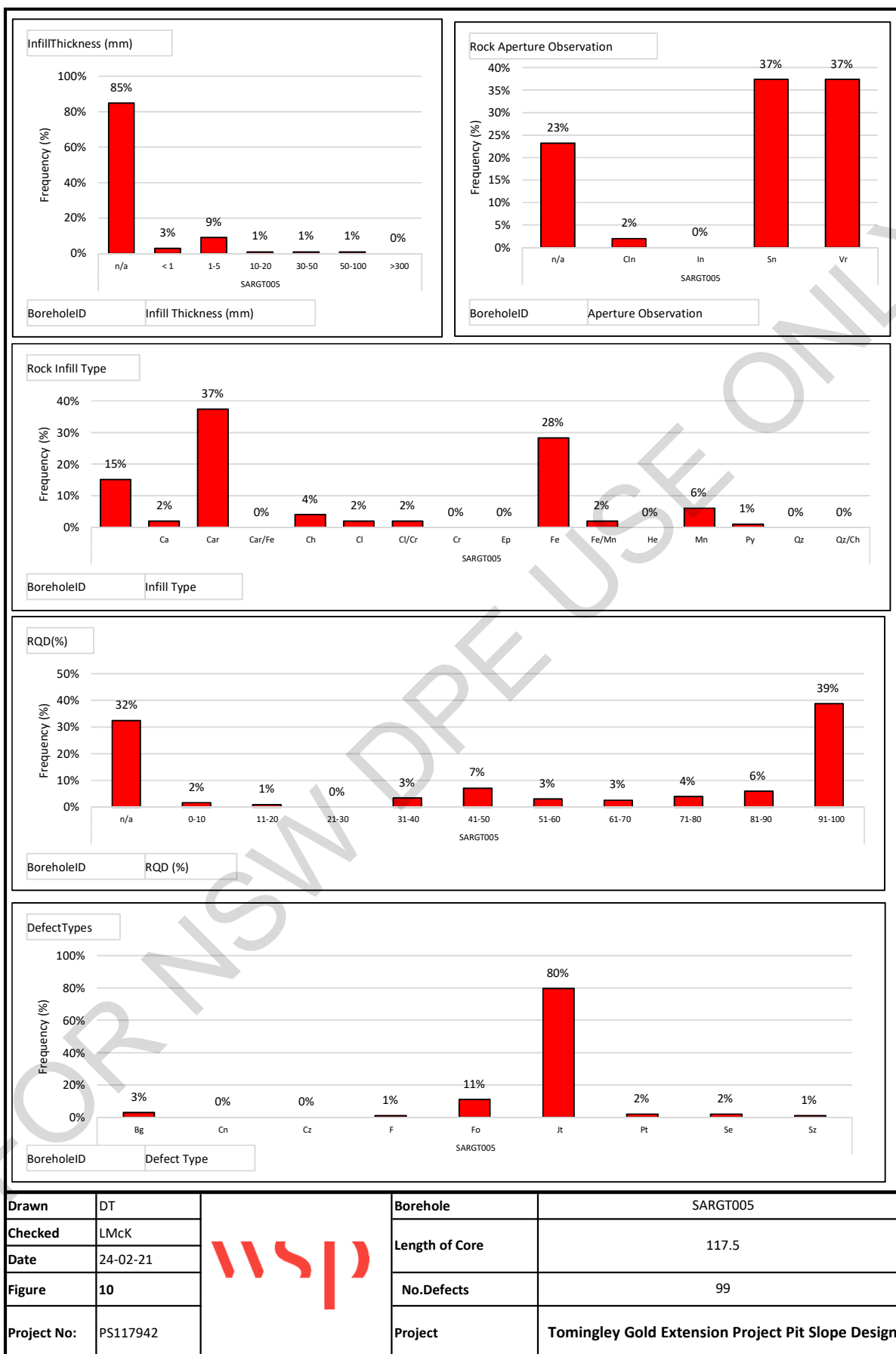
WSP

Borehole	SARGT003
Length of Core	57.7
No.Defects	40
Project	Tomingley Gold Project Extension Pit Slope Design

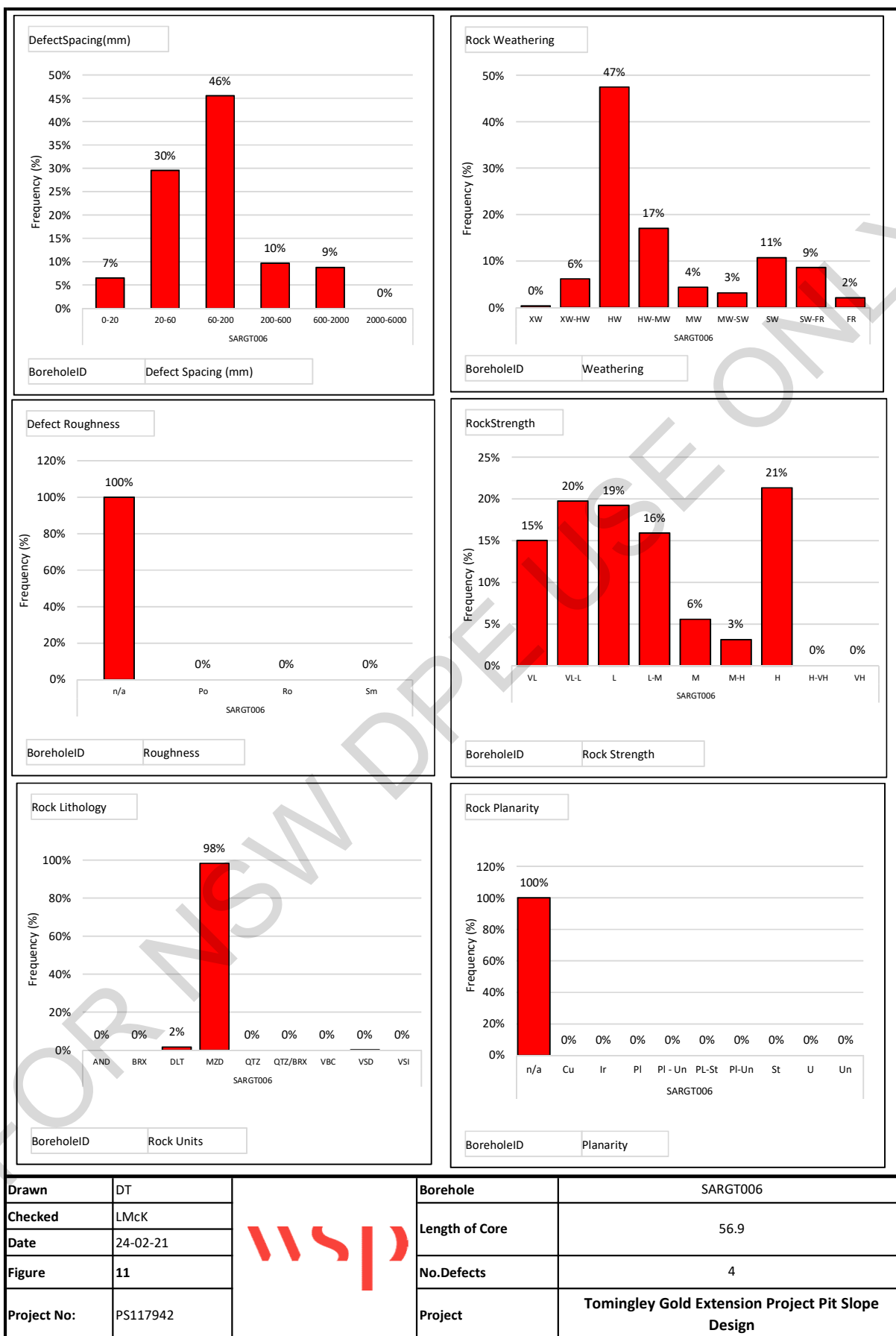


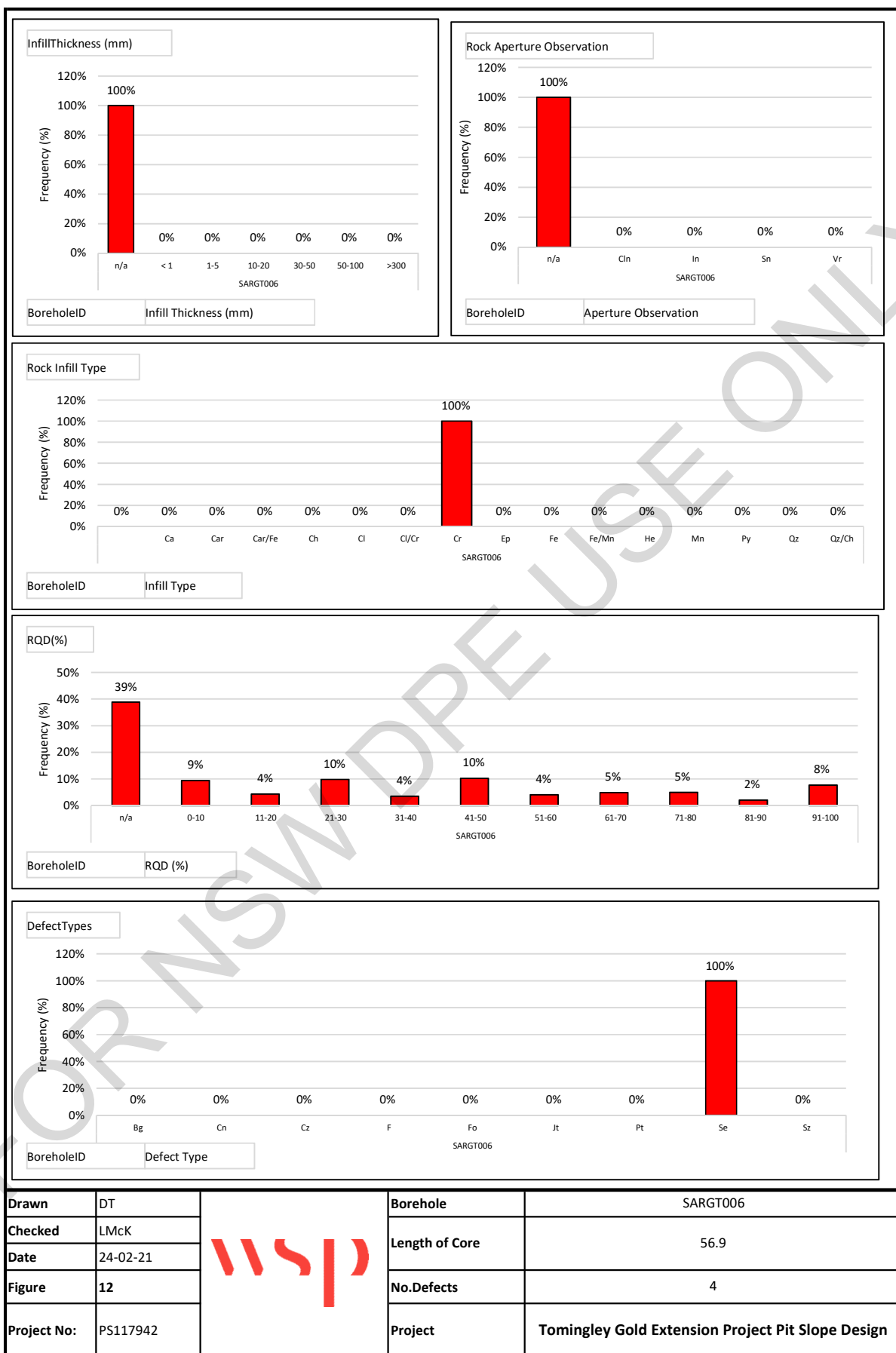


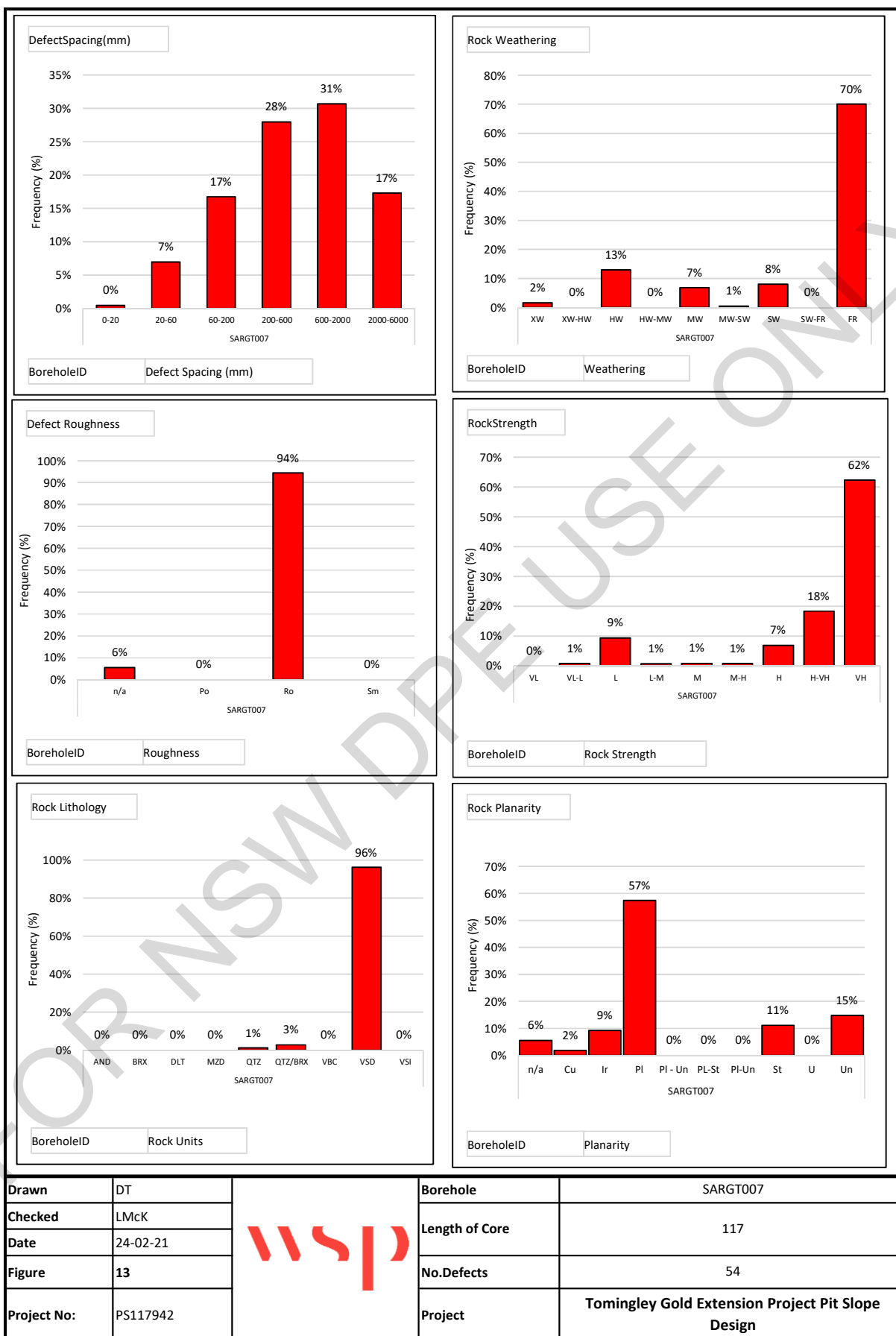


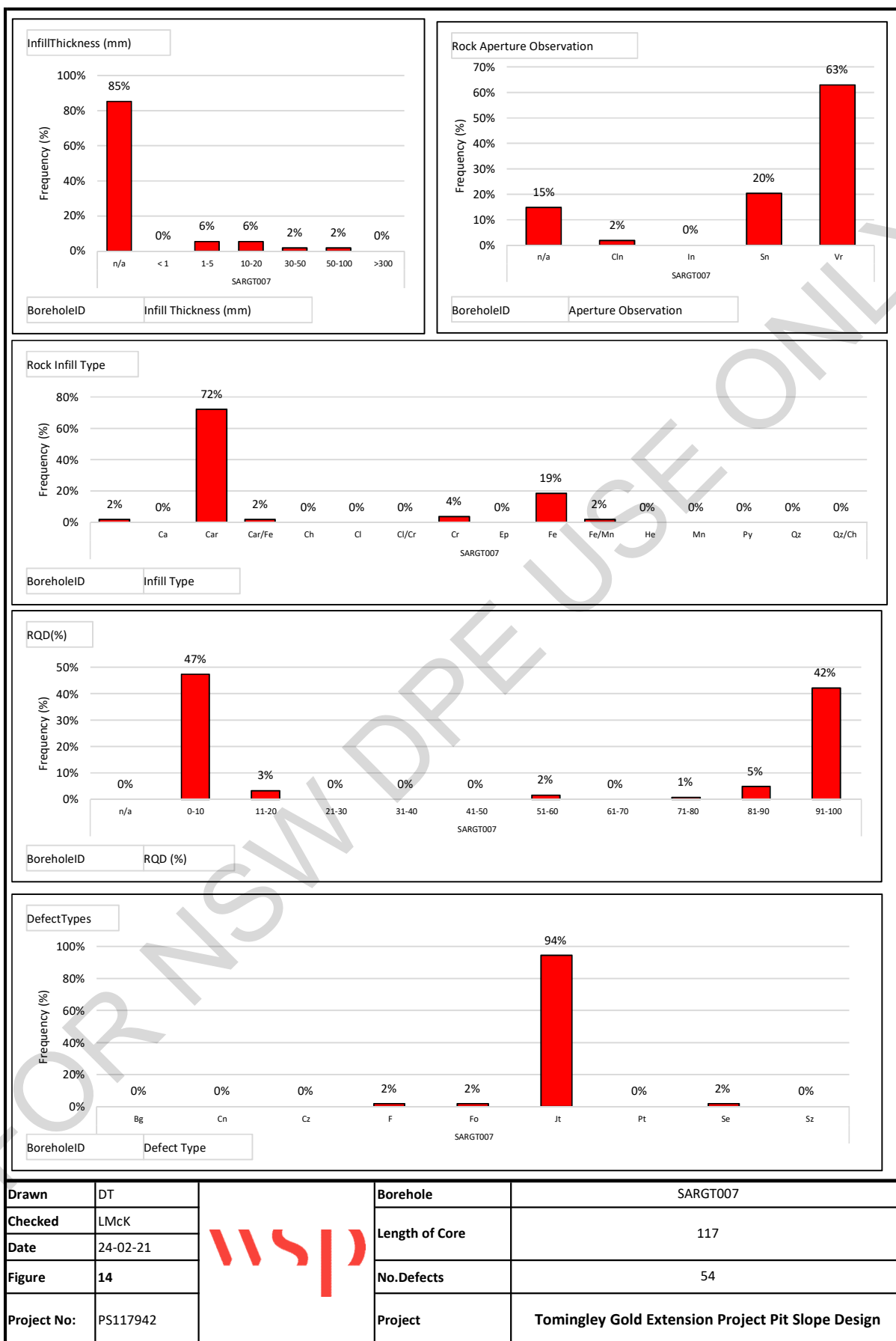


Drawn	DT		Borehole	SARGT005
Checked	LMcK		Length of Core	117.5
Date	24-02-21		No.Defects	99
Figure	10		Project	Tomingley Gold Extension Project Pit Slope Design
Project No:	PS117942			



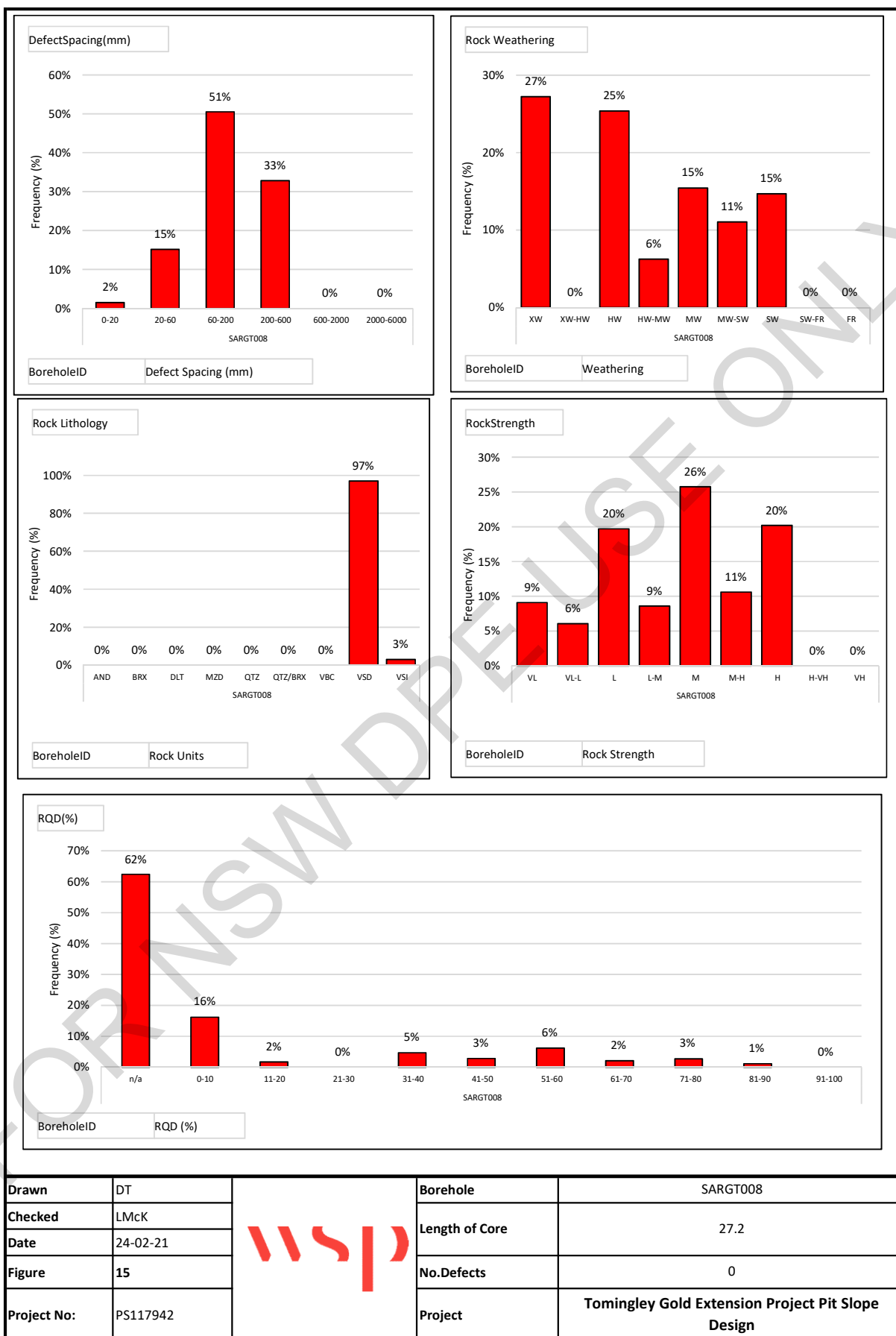


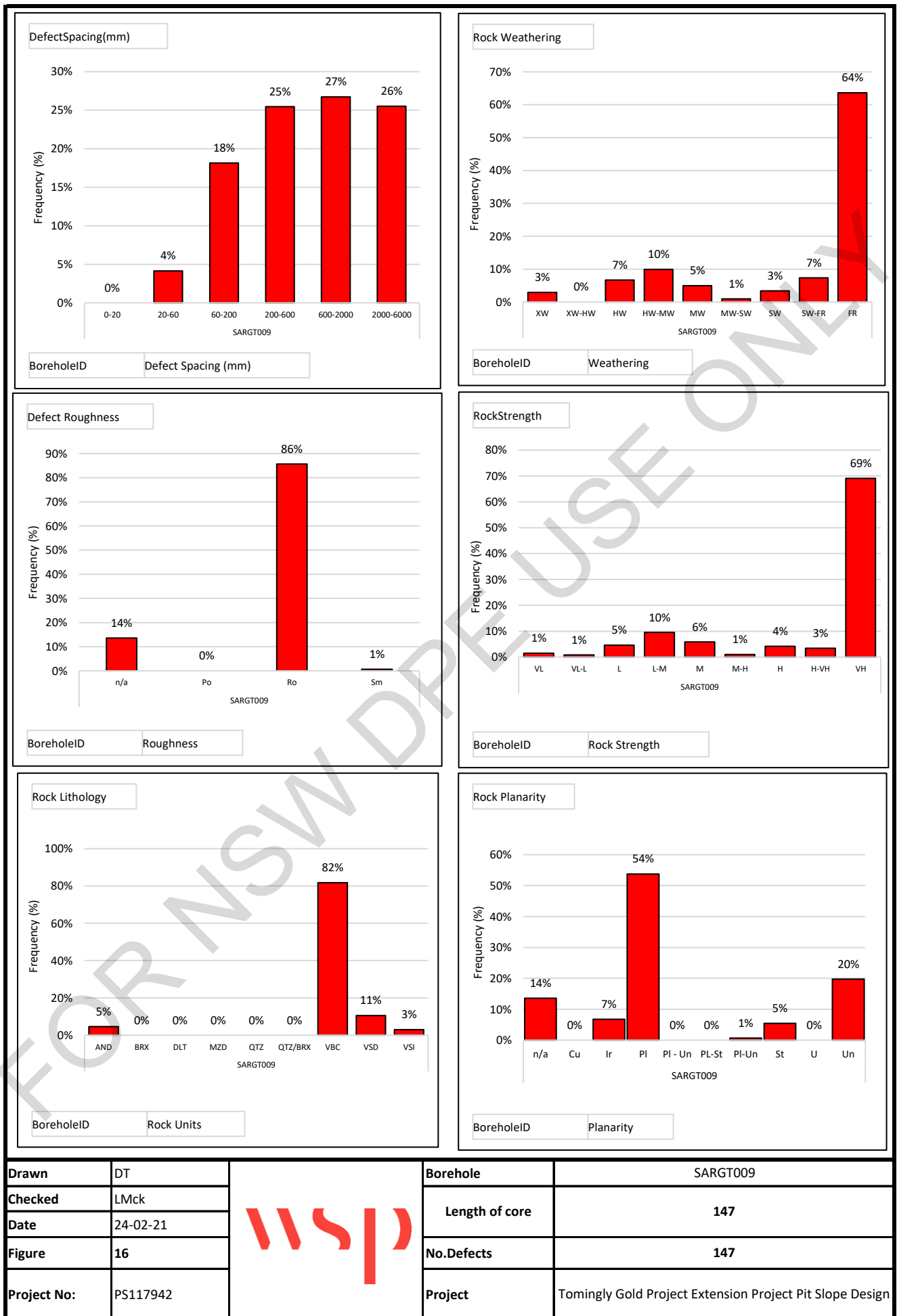


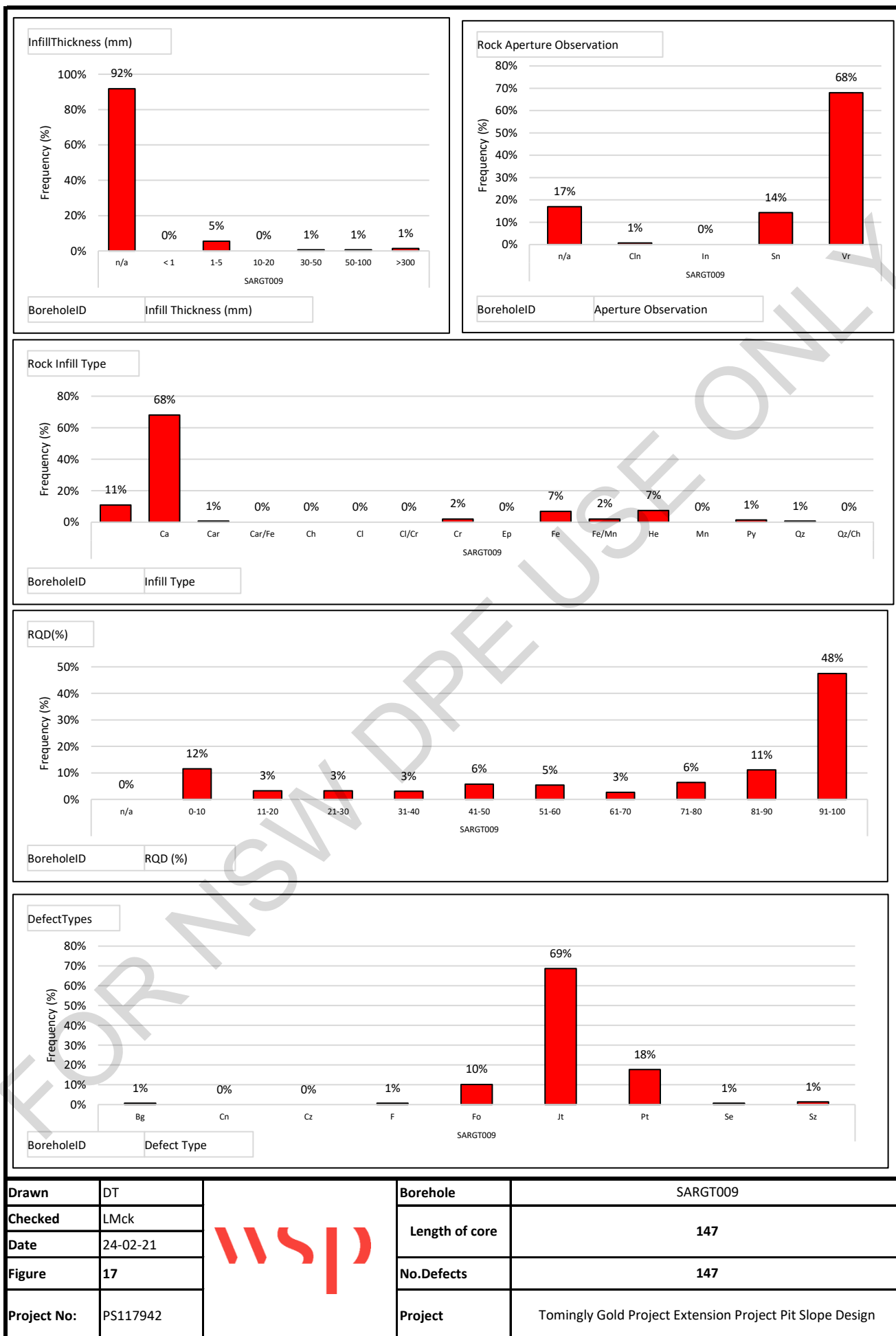


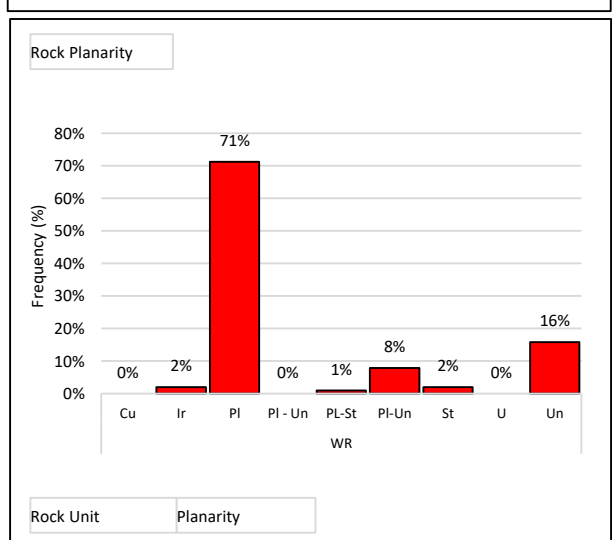
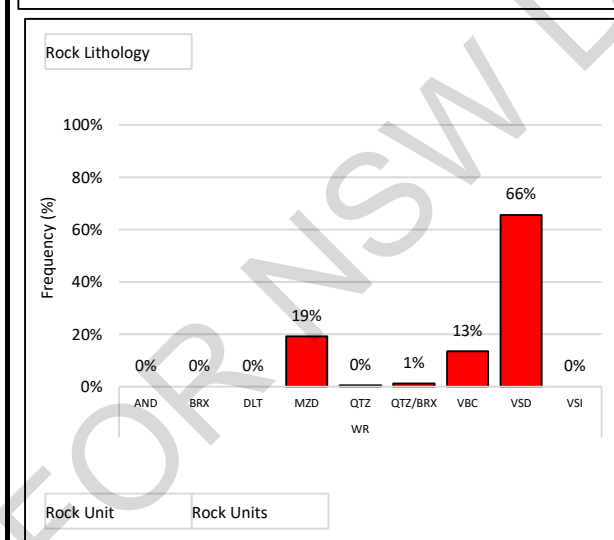
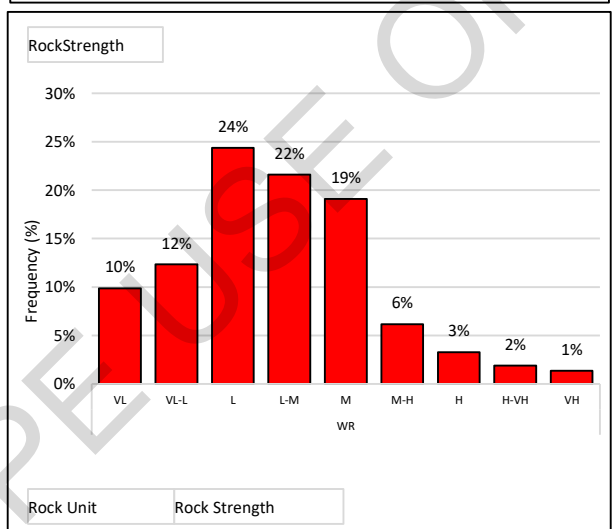
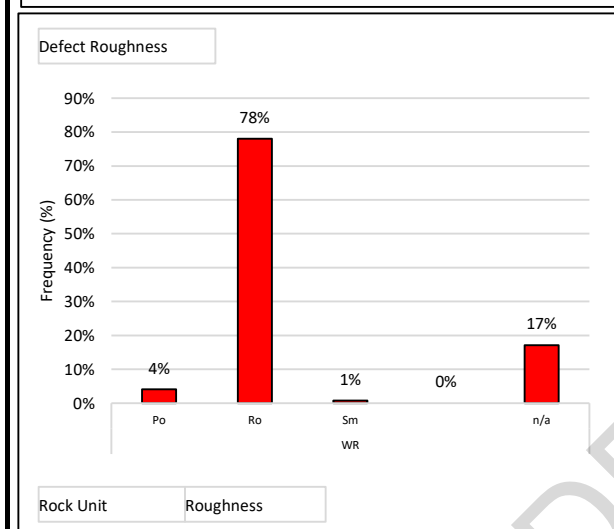
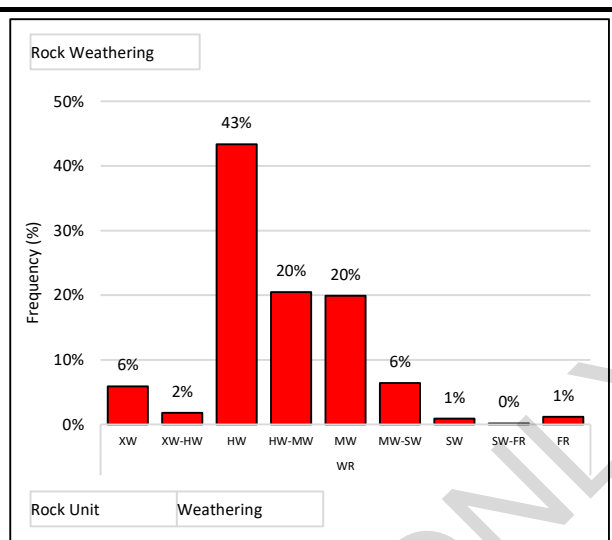
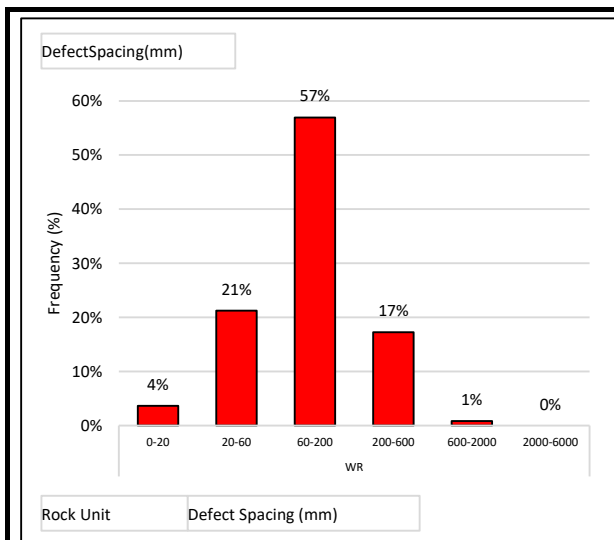
Drawn	DT
Checked	LMcK
Date	24-02-21
Figure	14
Project No:	PS117942

Borehole	SARGT007
Length of Core	117
No.Defects	54
Project	Tomingley Gold Extension Project Pit Slope Design





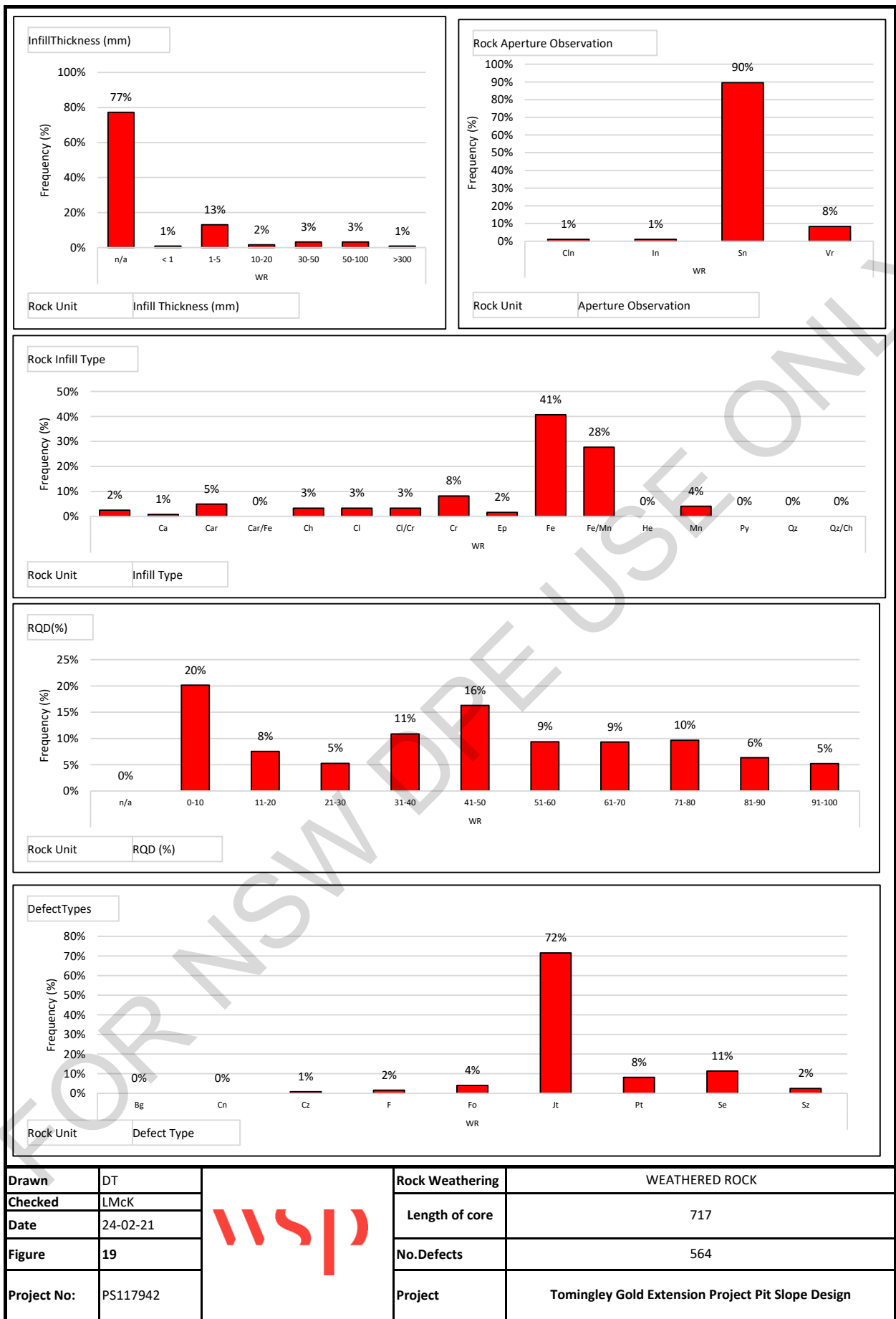


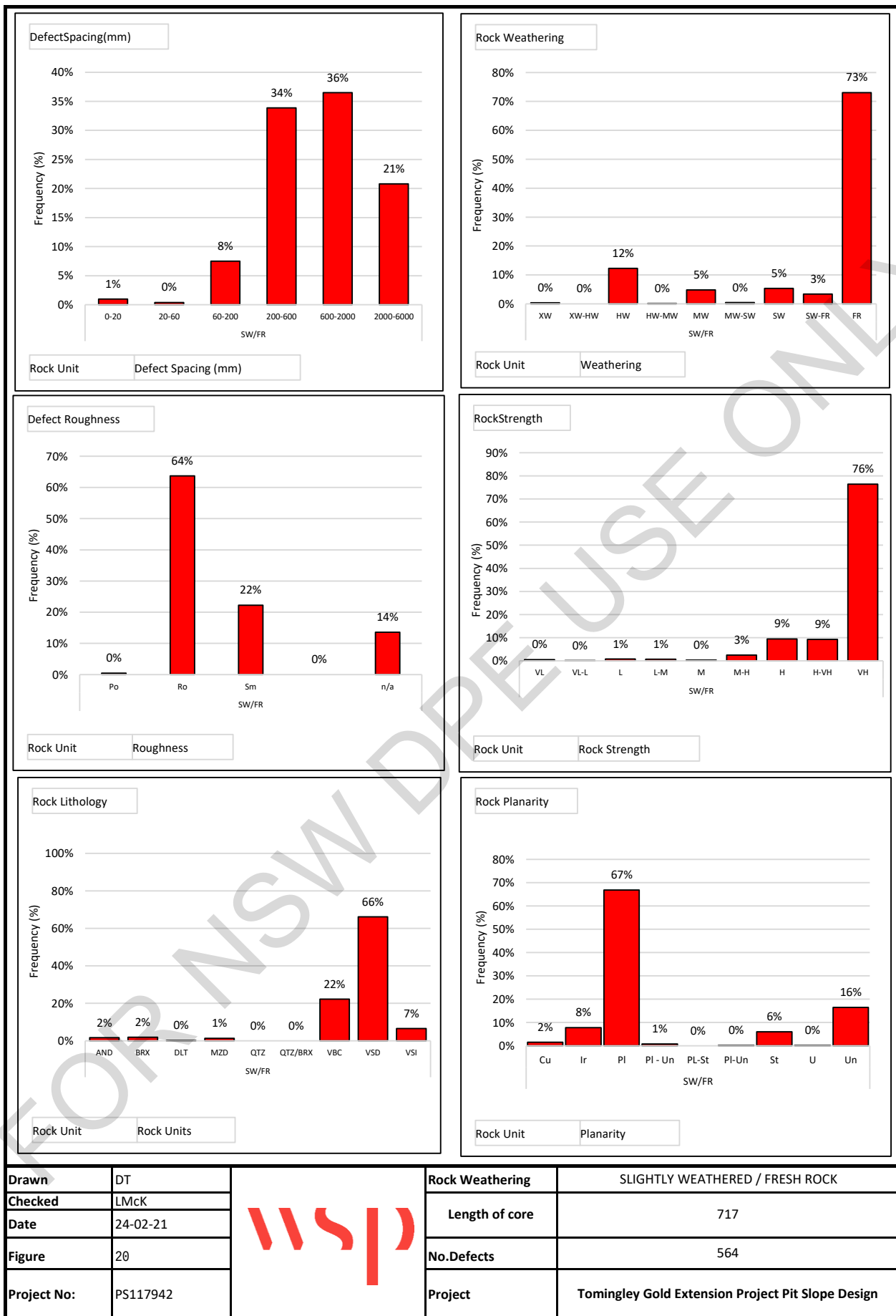


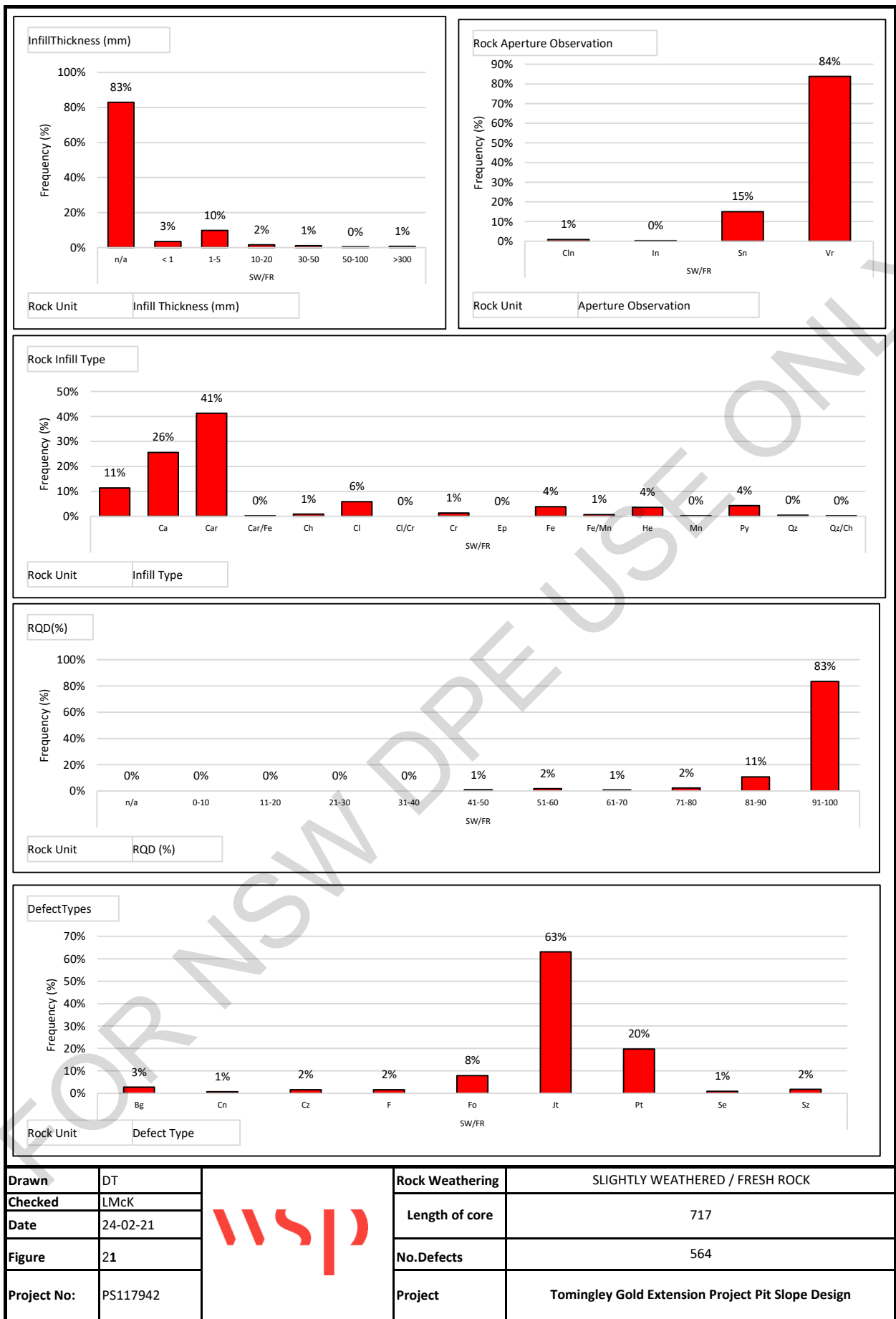
Drawn	DT
Checked	LMcK
Date	24-02-21
Figure	18
Project No:	PS117942

WSP

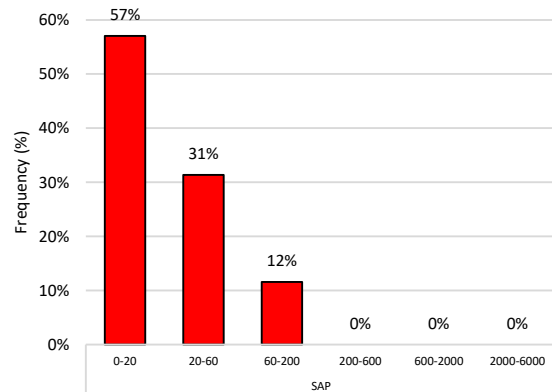
Rock Weathering	WEATHERED ROCK
Length of core	717
No.Defects	564
Project	Tomingley Gold Extension Project Pit Slope Design





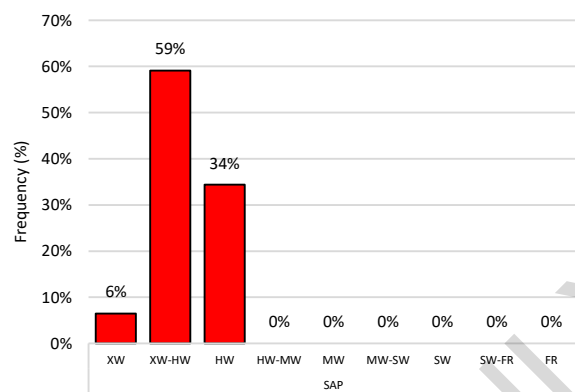


DefectSpacing(mm)



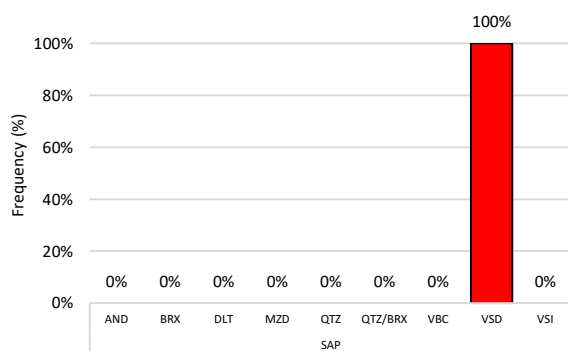
Rock Unit Defect Spacing (mm)

Rock Weathering



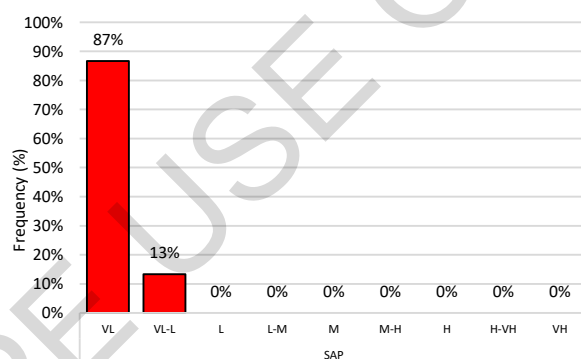
Rock Unit Weathering

Rock Lithology



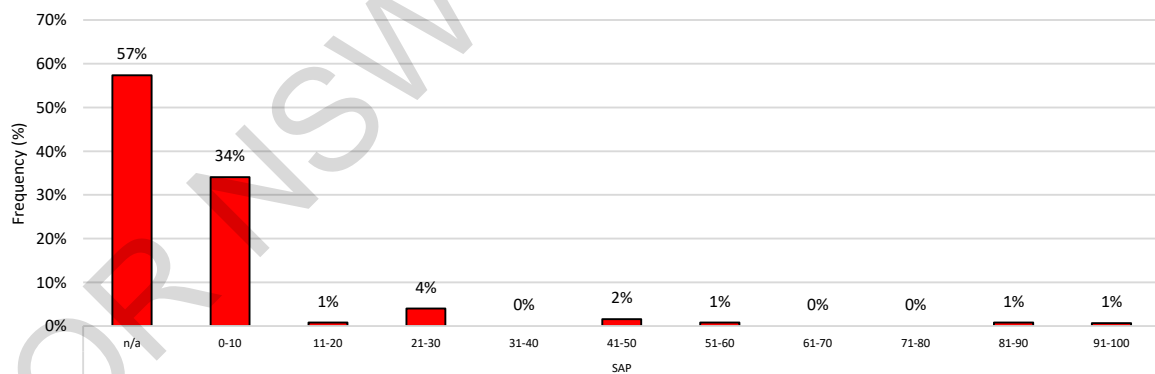
Rock Unit Rock Units

RockStrength



Rock Unit Rock Strength

RQD(%)



Rock Unit RQD (%)

Drawn	DT		Rock Weathering	Saprolite
Checked	LMcK		Length of core	717
Date	24-02-21		No. Defects	564
Figure	22		Project	Tomingley Gold Extension Project Pit Slope Design
Project No:	PS117942			

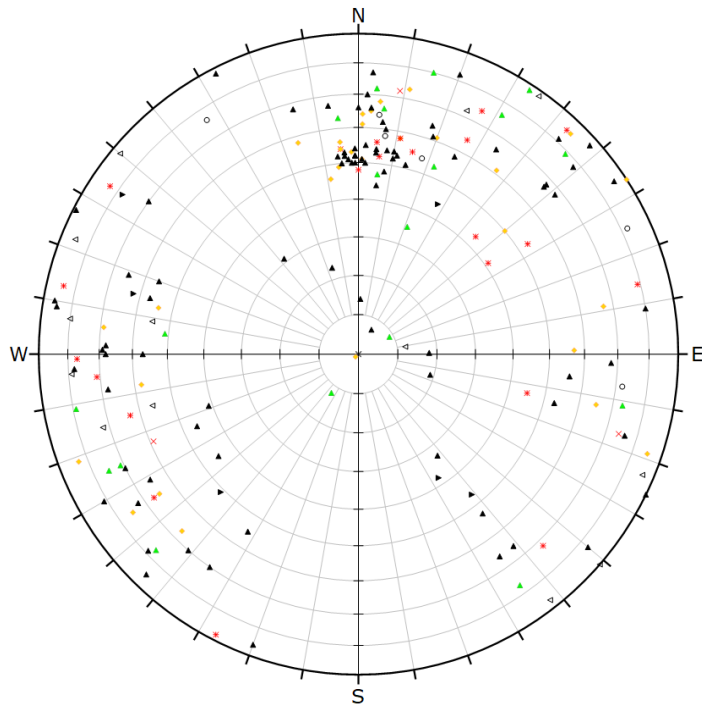
APPENDIX G

DOWNHOLE GEOPHYSICS STEREO PLOTS



FOR NSW DPE USE ONLY

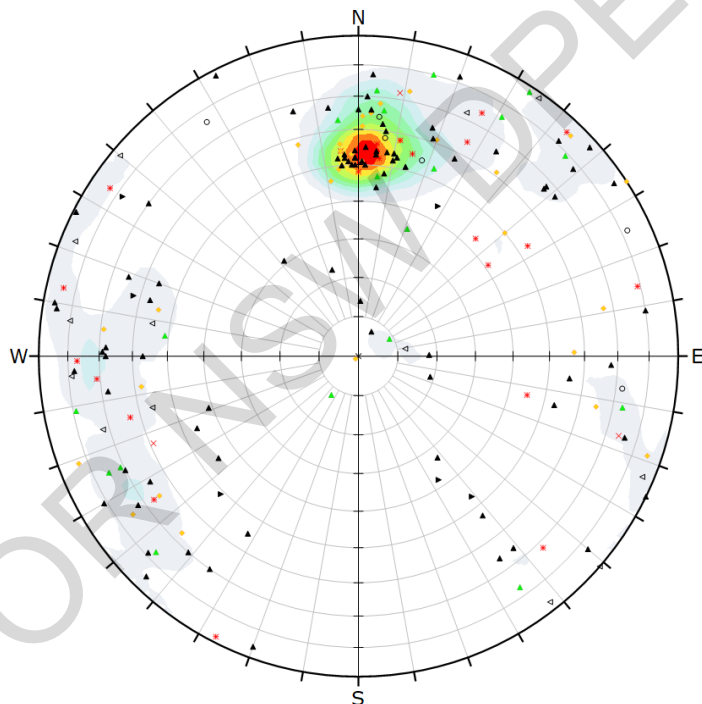
Unfiltered Data



Symbol	TYPE	Quantity
o	Cn	6
x	Cz	9
x	F	3
<	Fo	13
▲	Jt	86
▶	Pt	6
●	Se	30
x	Sz	13
▲	Vn	19

Plot Mode	Pole Vectors
Vector Count	185 (185 Entries)
Hemisphere	Lower
Projection	Equal Area

Unfiltered Data



Symbol	TYPE	Quantity
o	Cn	6
x	Cz	9
x	F	3
<	Fo	13
▲	Jt	86
▶	Pt	6
●	Se	30
x	Sz	13
▲	Vn	19

Color	Density Concentrations
	0.00 - 1.60
	1.60 - 3.20
	3.20 - 4.80
	4.80 - 6.40
	6.40 - 8.00
	8.00 - 9.60
	9.60 - 11.20
	11.20 - 12.80
	12.80 - 14.40
	14.40 - 16.00

Contour Data	Pole Vectors
Maximum Density	15.99%
Contour Distribution	Fisher
Counting Circle Size	1.0%

Plot Mode	Pole Vectors
Vector Count	185 (185 Entries)
Hemisphere	Lower
Projection	Equal Area

drawn

KM

approved

LMcK

date

6/3/21

scale

NTS

size

A4

client:

Alkane Resources Limited

project:

Tomingley Gold Extension Project
Geotechnical Assessment

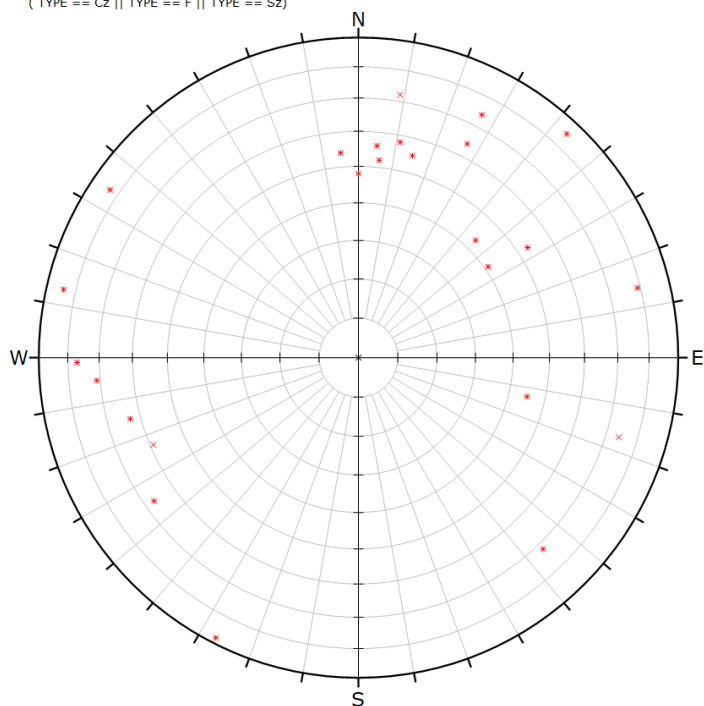
title:

STEREONET – DOWNHOLE GEOPHYSICS DATA

project no: PS117942

All Structures

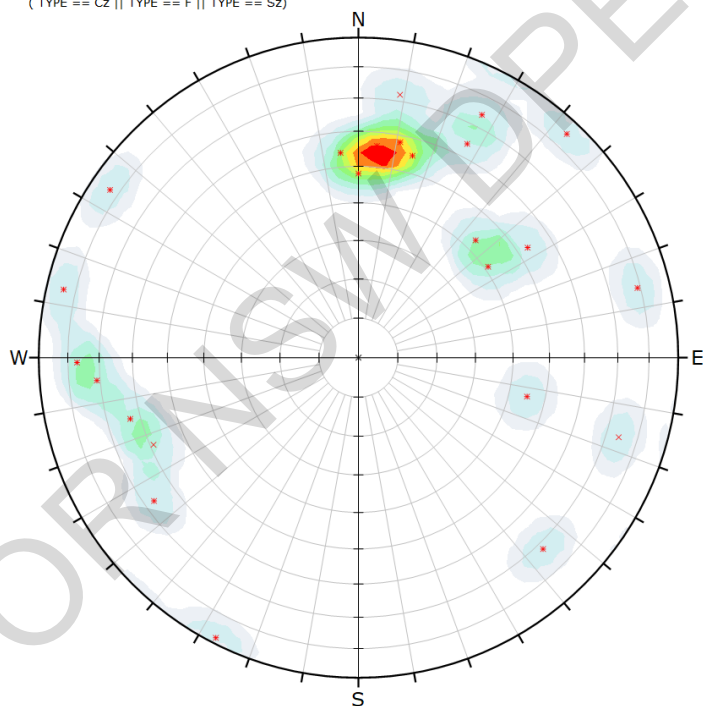
Current Filter Applied to Data: Major structures
(TYPE == Cz || TYPE == F || TYPE == Sz)



Symbol	TYPE	Quantity
*	Cz	9
x	F	3
*	Sz	13

Plot Mode	Pole Vectors
Vector Count	25 (25 Entries)
Hemisphere	Lower
Projection	Equal Area

Current Filter Applied to Data: Major structures
(TYPE == Cz || TYPE == F || TYPE == Sz)



Symbol	TYPE	Quantity
*	Cz	9
x	F	3
*	Sz	13

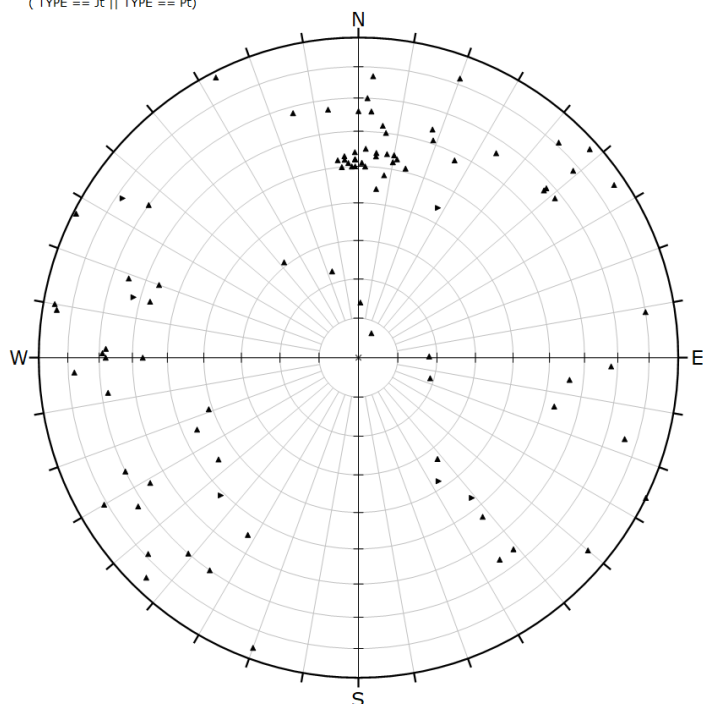
Color	Density Concentrations
	0.00 - 1.70
	1.70 - 3.40
	3.40 - 5.10
	5.10 - 6.80
	6.80 - 8.50
	8.50 - 10.20
	10.20 - 11.90
	11.90 - 13.60
	13.60 - 15.30
	15.30 - 17.00

Contour Data	Pole Vectors
Maximum Density	16.96%
Contour Distribution	Fisher
Counting Circle Size	1.0%

Plot Mode	Pole Vectors
Vector Count	25 (25 Entries)
Hemisphere	Lower
Projection	Equal Area

drawn	KM		client:	Alkane Resources Limited	
approved	LMcK		project:	Tomingley Gold Extension Project Geotechnical Assessment	
date	6/3/21		title:	STEREONET – DOWNHOLE GEOPHYSICS DATA	
scale	NTS		project no: PS117942	Major Structures	
size	A4				

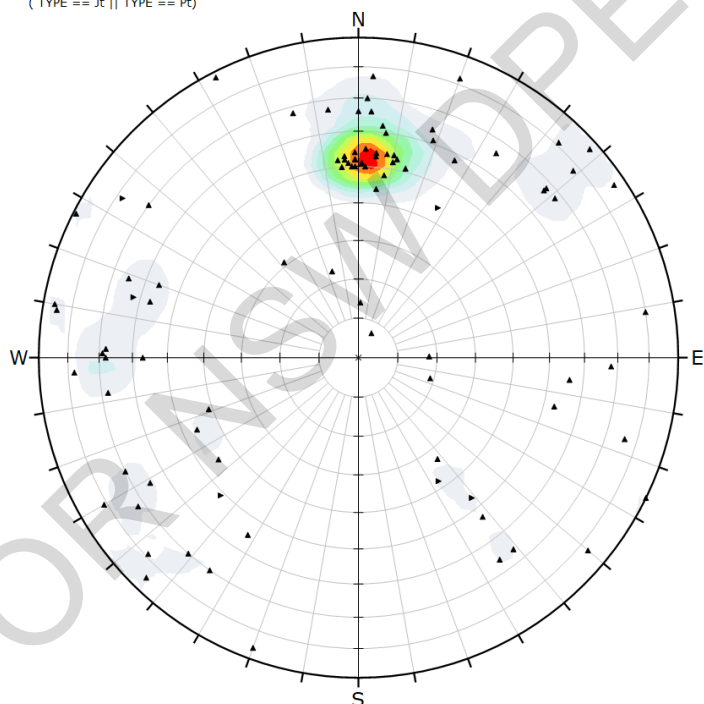
Current Filter Applied to Data: Minor structures
(TYPE == Jt || TYPE == Pt)



Symbol	TYPE	Quantity
▲	Jt	86
▶	Pt	6

Plot Mode	Pole Vectors
Vector Count	92 (92 Entries)
Hemisphere	Lower
Projection	Equal Area

Current Filter Applied to Data: Minor structures
(TYPE == Jt || TYPE == Pt)

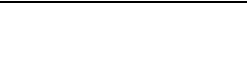


Symbol	TYPE	Quantity
▲	Jt	86
▶	Pt	6

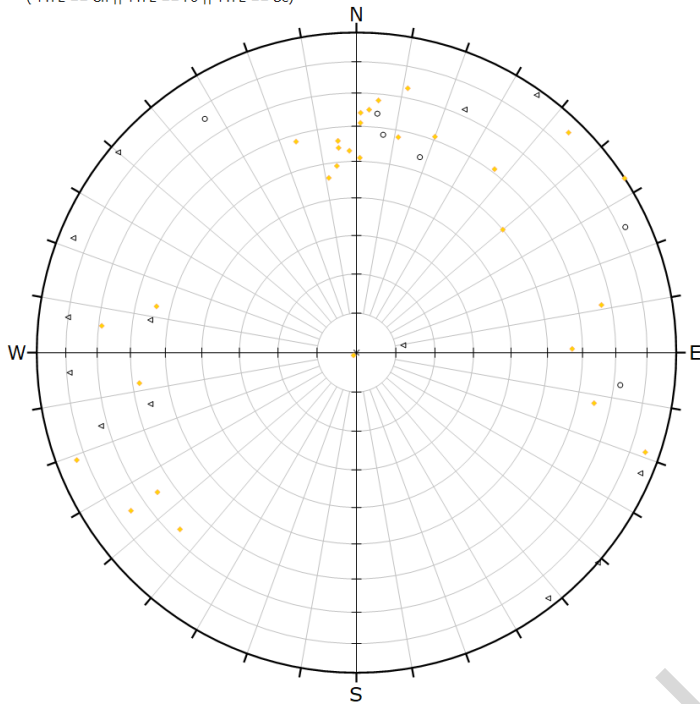
Color	Density Concentrations
	0.00 - 2.10
	2.10 - 4.20
	4.20 - 6.30
	6.30 - 8.40
	8.40 - 10.50
	10.50 - 12.60
	12.60 - 14.70
	14.70 - 16.80
	16.80 - 18.90
	18.90 - 21.00

Contour Data	Pole Vectors
Maximum Density	20.38%
Contour Distribution	Fisher
Counting Circle Size	1.0%

Plot Mode	Pole Vectors
Vector Count	92 (92 Entries)
Hemisphere	Lower
Projection	Equal Area

drawn	KM		client: Alkane Resources Limited	
approved	LMcK		project: Tomingley Gold Extension Project Geotechnical Assessment	
date	6/3/21		title: STEREONET – DOWNHOLE GEOPHYSICS DATA	
scale	NTS		project no: PS117942	
size	A4		Minor Structures	

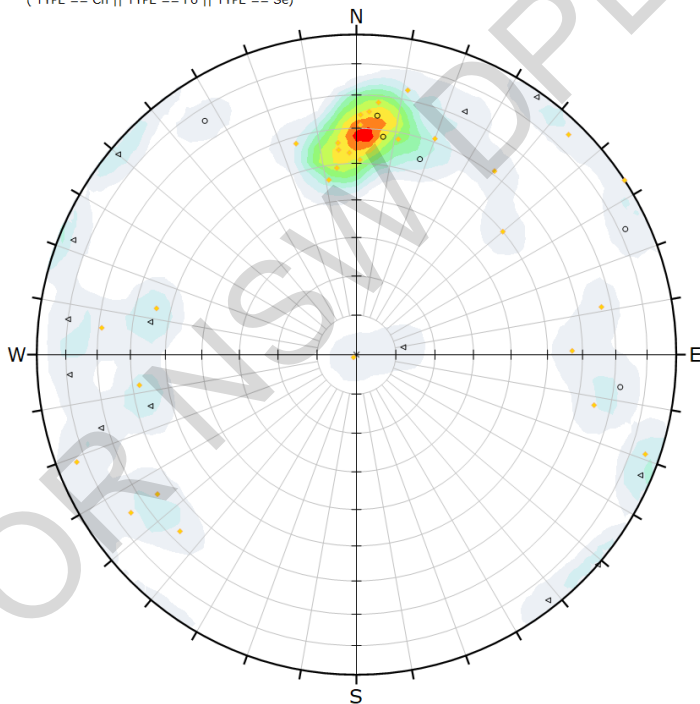
Current Filter Applied to Data: Cn Fo Se
(TYPE == Cn || TYPE == Fo || TYPE == Se)



Symbol	TYPE	Quantity
o	Cn	6
Δ	Fo	13
•	Se	30

Plot Mode	Pole Vectors
Vector Count	49 (49 Entries)
Hemisphere	Lower
Projection	Equal Area

Current Filter Applied to Data: Cn Fo Se
(TYPE == Cn || TYPE == Fo || TYPE == Se)



Symbol	TYPE	Quantity
o	Cn	6
Δ	Fo	13
•	Se	30

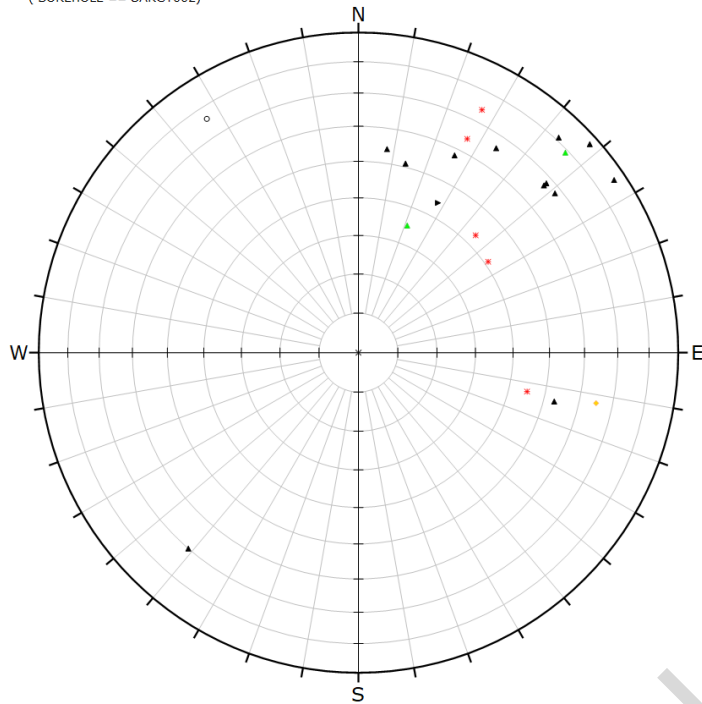
Color	Density Concentrations
0.00 - 1.60	
1.60 - 3.20	
3.20 - 4.80	
4.80 - 6.40	
6.40 - 8.00	
8.00 - 9.60	
9.60 - 11.20	
11.20 - 12.80	
12.80 - 14.40	
14.40 - 16.00	

Contour Data	Pole Vectors
Maximum Density	15.62%
Contour Distribution	Fisher
Counting Circle Size	1.0%

Plot Mode	Pole Vectors
Vector Count	49 (49 Entries)
Hemisphere	Lower
Projection	Equal Area

drawn	KM		client:	Alkane Resources Limited	
approved	LMcK		project:	Tomingley Gold Extension Project Geotechnical Assessment	
date	6/3/21		title:	STEREONET – DOWNHOLE GEOPHYSICS DATA	
scale	NTS		project no: PS117942	Contacts, foliation and seams	
size	A4				

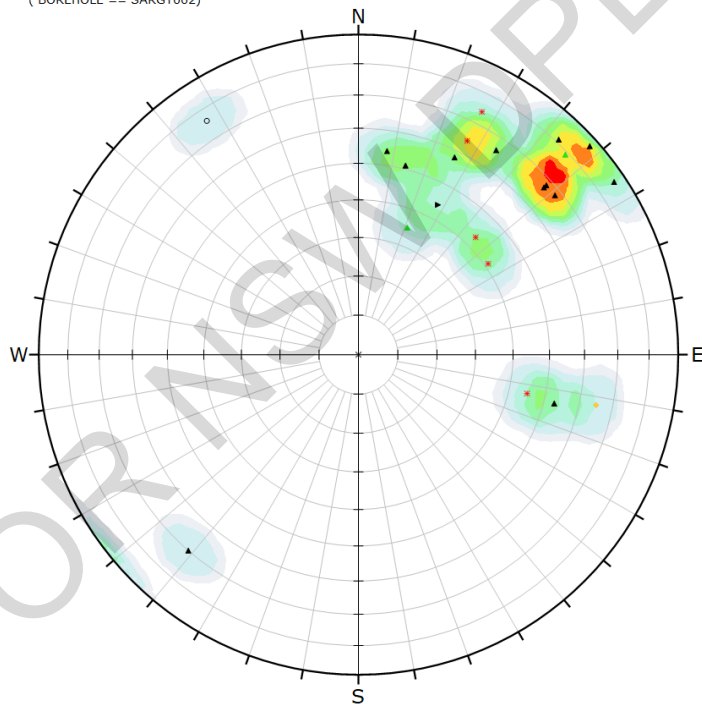
Current Filter Applied to Data: SARGT002
(BOREHOLE == SARGT002)



Symbol	TYPE	Quantity
o	Cn	1
x	Cz	1
▲	Jt	12
▶	Pt	1
+	Se	1
x	Sz	4
▲	Vn	2

Plot Mode	Pole Vectors
Vector Count	22 (22 Entries)
Hemisphere	Lower
Projection	Equal Area

Current Filter Applied to Data: SARGT002
(BOREHOLE == SARGT002)



Symbol	TYPE	Quantity
o	Cn	1
x	Cz	1
▲	Jt	12
▶	Pt	1
+	Se	1
x	Sz	4
▲	Vn	2

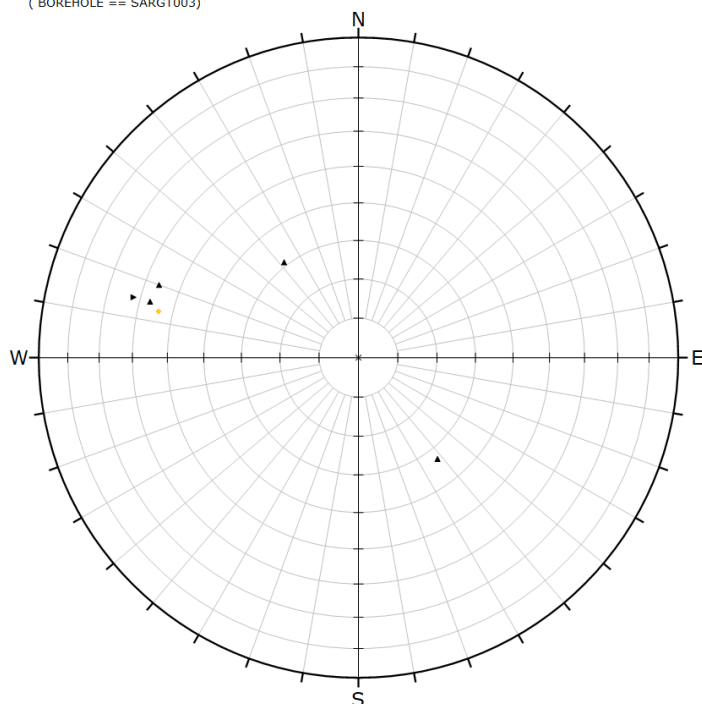
Color	Density Concentrations
	0.00 - 1.60
	1.60 - 3.20
	3.20 - 4.80
	4.80 - 6.40
	6.40 - 8.00
	8.00 - 9.60
	9.60 - 11.20
	11.20 - 12.80
	12.80 - 14.40
	14.40 - 16.00

Contour Data	Pole Vectors
Maximum Density	15.38%
Contour Distribution	Fisher
Counting Circle Size	1.0%

Plot Mode	Pole Vectors
Vector Count	22 (22 Entries)
Hemisphere	Lower
Projection	Equal Area

drawn	KM		client: Alkane Resources Limited	
approved	LMcK		project: Tomingley Gold Extension Project Geotechnical Assessment	
date	6/3/21		title: STEREONET – DOWNHOLE GEOPHYSICS DATA	
scale	NTS		project no: PS117942	
size	A4		SARGT002	

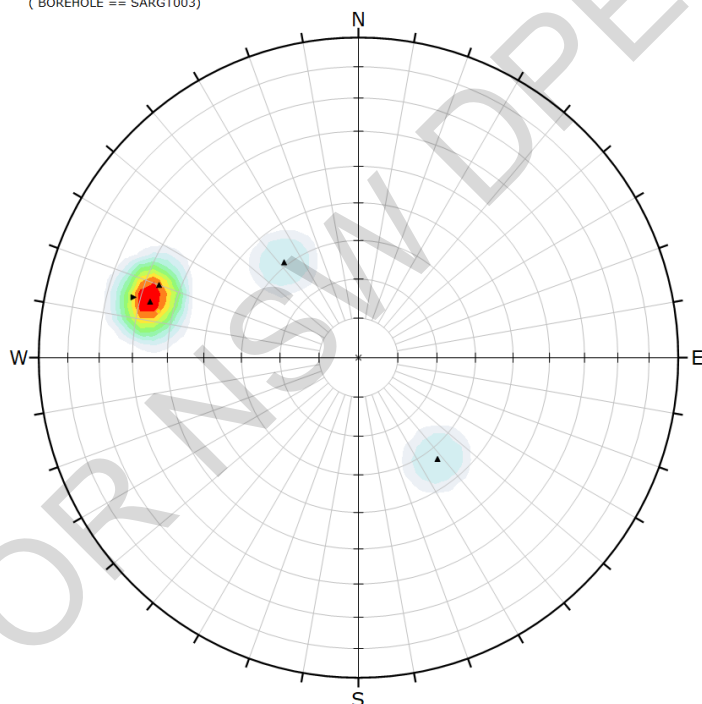
Current Filter Applied to Data: SARGT003
(BOREHOLE == SARGT003)



Symbol	TYPE	Quantity
▲	Jt	4
▶	Pt	1
●	Se	1

Plot Mode	Pole Vectors
Vector Count	6 (6 Entries)
Hemisphere	Lower
Projection	Equal Area

Current Filter Applied to Data: SARGT003
(BOREHOLE == SARGT003)



Symbol	TYPE	Quantity
▲	Jt	4
▶	Pt	1
●	Se	1

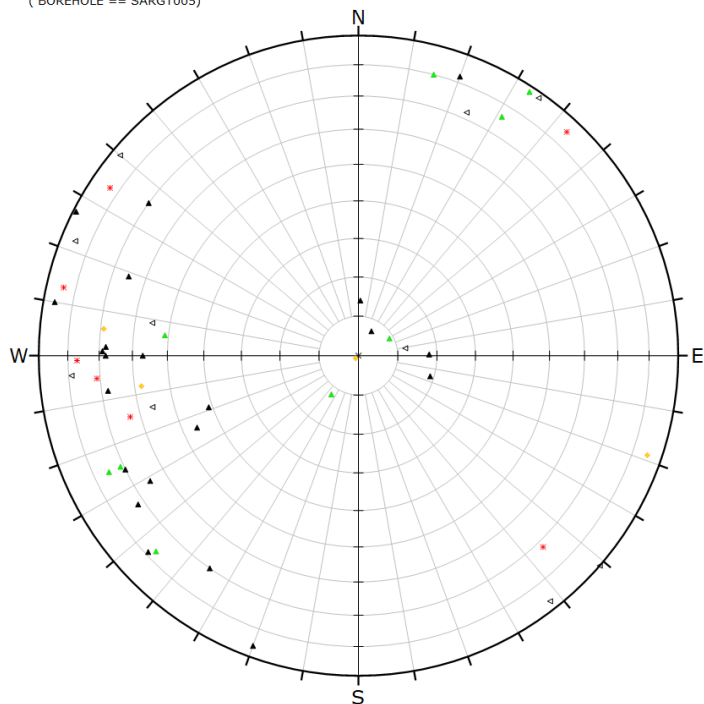
Color	Density Concentrations
	0.00 - 6.20
	6.20 - 12.40
	12.40 - 18.60
	18.60 - 24.80
	24.80 - 31.00
	31.00 - 37.20
	37.20 - 43.40
	43.40 - 49.60
	49.60 - 55.80
	55.80 - 62.00

Contour Data	Pole Vectors
Maximum Density	61.87%
Contour Distribution	Fisher
Counting Circle Size	1.0%

Plot Mode	Pole Vectors
Vector Count	6 (6 Entries)
Hemisphere	Lower
Projection	Equal Area

drawn	KM		client:	Alkane Resources Limited	
approved	LMcK		project:	Tomingley Gold Extension Project Geotechnical Assessment	
date	6/3/21		title:	STEREONET – DOWNHOLE GEOPHYSICS DATA	
scale	NTS		project no: PS117942	SARGT003	
size	A4				

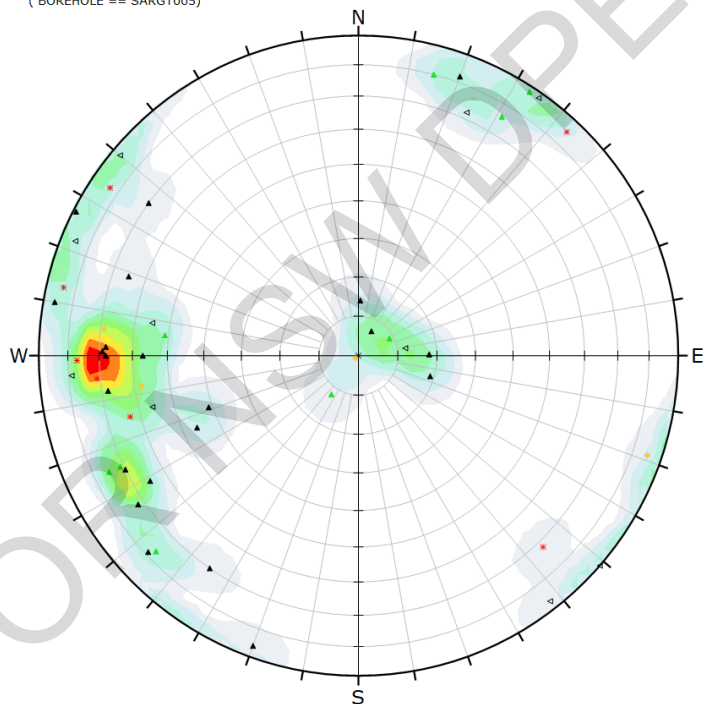
Current Filter Applied to Data: SARGT005
(BOREHOLE == SARGT005)



Symbol	TYPE	Quantity
*	Cz	3
△	Fo	10
▲	Jt	22
●	Se	4
×	Sz	4
▲	Vn	9

Plot Mode	Pole Vectors
Vector Count	52 (52 Entries)
Hemisphere	Lower
Projection	Equal Area

Current Filter Applied to Data: SARGT005
(BOREHOLE == SARGT005)



Symbol	TYPE	Quantity
*	Cz	3
△	Fo	10
▲	Jt	22
●	Se	4
×	Sz	4
▲	Vn	9

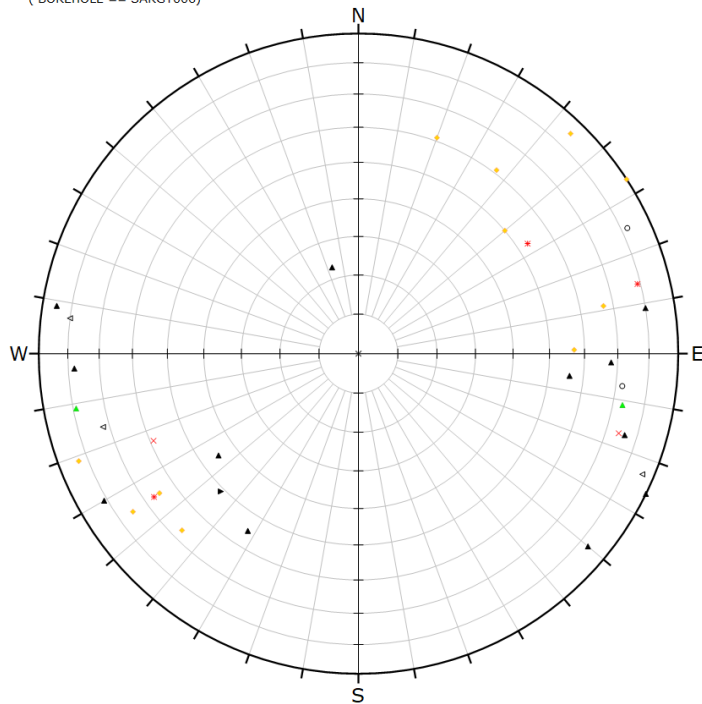
Color	Density Concentrations
	0.00 - 1.20
	1.20 - 2.40
	2.40 - 3.60
	3.60 - 4.80
	4.80 - 6.00
	6.00 - 7.20
	7.20 - 8.40
	8.40 - 9.60
	9.60 - 10.80
	10.80 - 12.00

Contour Data	Pole Vectors
Maximum Density	11.78%
Contour Distribution	Fisher
Counting Circle Size	1.0%

Plot Mode	Pole Vectors
Vector Count	52 (52 Entries)
Hemisphere	Lower
Projection	Equal Area

drawn	KM		client: Alkane Resources Limited	
approved	LMcK		project: Tomingley Gold Extension Project Geotechnical Assessment	
date	6/3/21		title: STERONET – DOWNHOLE GEOPHYSICS DATA	
scale	NTS		project no: PS117942	
size	A4		SARGT005	

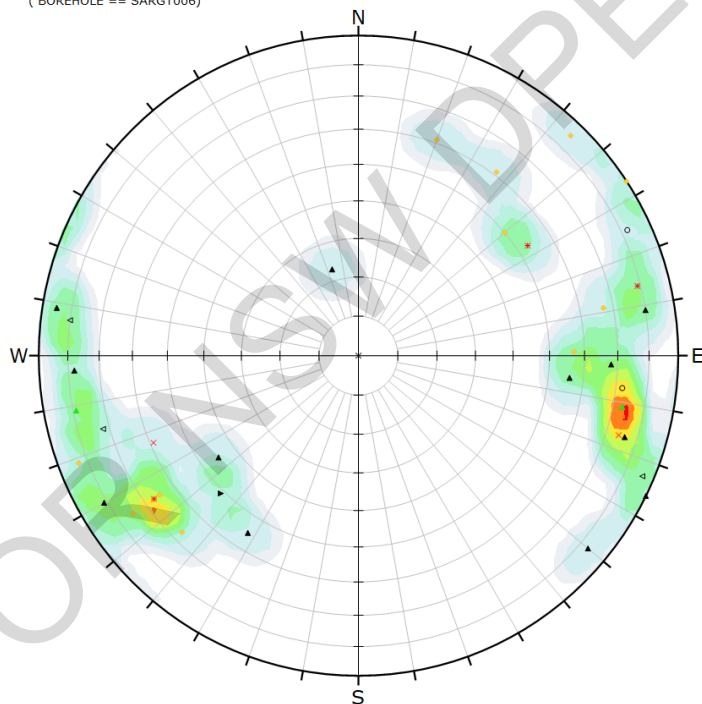
Current Filter Applied to Data: SARGT006
(BOREHOLE == SARGT006)



Symbol	TYPE	Quantity
o	Cn	2
×	Cz	2
×	F	2
△	Fo	3
▲	Jt	12
▶	Pt	1
◆	Se	11
×	Sz	1
▲	Vn	2

Plot Mode	Pole Vectors
Vector Count	36 (36 Entries)
Hemisphere	Lower
Projection	Equal Area

Current Filter Applied to Data: SARGT006
(BOREHOLE == SARGT006)



Symbol	TYPE	Quantity
o	Cn	2
×	Cz	2
×	F	2
△	Fo	3
▲	Jt	12
▶	Pt	1
◆	Se	11
×	Sz	1
▲	Vn	2

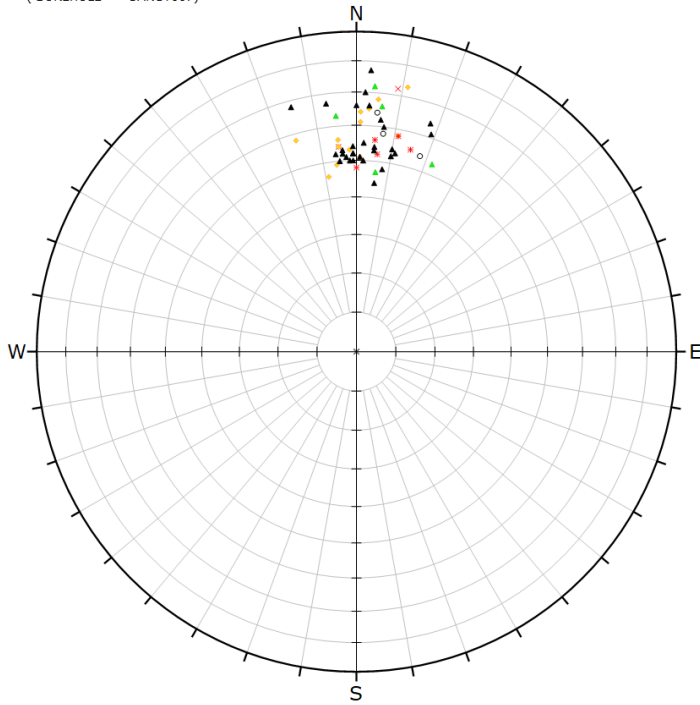
Color	Density Concentrations
	0.00 - 1.10
	1.10 - 2.20
	2.20 - 3.30
	3.30 - 4.40
	4.40 - 5.50
	5.50 - 6.60
	6.60 - 7.70
	7.70 - 8.80
	8.80 - 9.90
	9.90 - 11.00

Contour Data	Pole Vectors
Maximum Density	10.04%
Contour Distribution	Fisher
Counting Circle Size	1.0%

Plot Mode	Pole Vectors
Vector Count	36 (36 Entries)
Hemisphere	Lower
Projection	Equal Area

drawn	KM		client:	Alkane Resources Limited	
approved	LMcK		project:	Tomingley Gold Extension Project Geotechnical Assessment	
date	6/3/21		title:	STEREONET – DOWNHOLE GEOPHYSICS DATA	
scale	NTS		project no: PS117942	SARGT006	
size	A4				

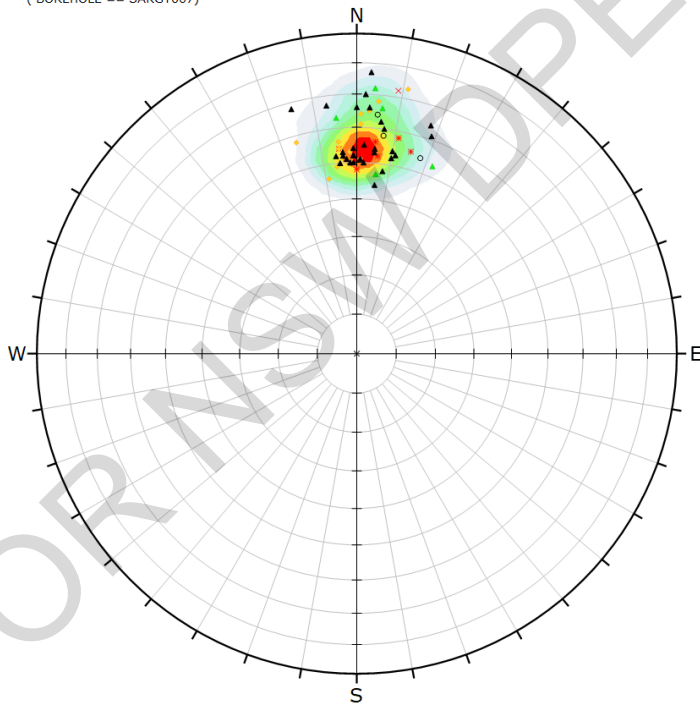
Current Filter Applied to Data: SARGT007
(BOREHOLE == SARGT007)



Symbol	TYPE	Quantity
o	Cn	3
x	Cz	2
x	F	1
▲	Jt	30
+	Se	13
x	Sz	4
▲	Vn	5

Plot Mode	Pole Vectors
Vector Count	58 (58 Entries)
Hemisphere	Lower
Projection	Equal Area

Current Filter Applied to Data: SARGT007
(BOREHOLE == SARGT007)



Symbol	TYPE	Quantity
o	Cn	3
x	Cz	2
x	F	1
▲	Jt	30
+	Se	13
x	Sz	4
▲	Vn	5

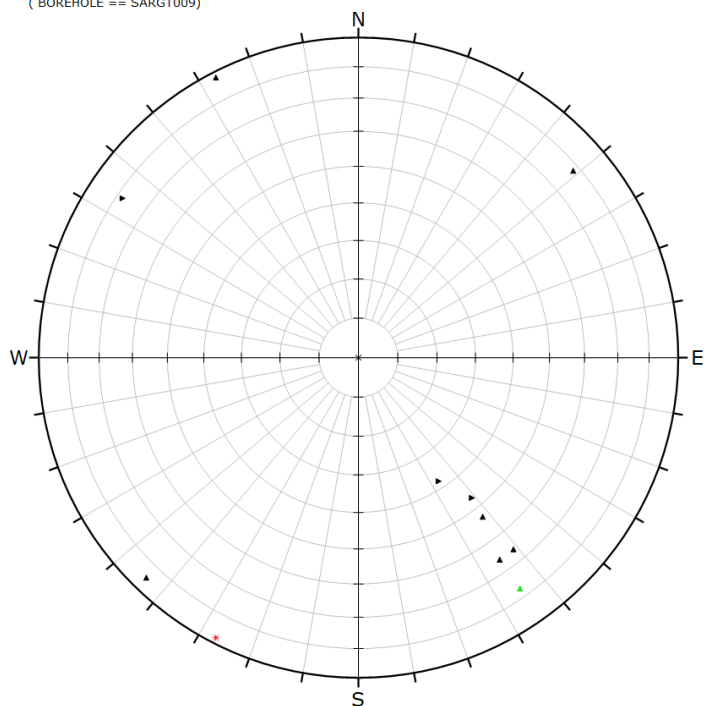
Color	Density Concentrations
	0.00 - 4.90
	4.90 - 9.80
	9.80 - 14.70
	14.70 - 19.60
	19.60 - 24.50
	24.50 - 29.40
	29.40 - 34.30
	34.30 - 39.20
	39.20 - 44.10
	44.10 - 49.00

Contour Data	Pole Vectors
Maximum Density	48.86%
Contour Distribution	Fisher
Counting Circle Size	1.0%

Plot Mode	Pole Vectors
Vector Count	58 (58 Entries)
Hemisphere	Lower
Projection	Equal Area

drawn	KM		client: Alkane Resources Limited	
approved	LMcK		project: Tomingley Gold Extension Project Geotechnical Assessment	
date	6/3/21		title: STERONET – DOWNHOLE GEOPHYSICS DATA	
scale	NTS		project no: PS117942	
size	A4		SARGT007	

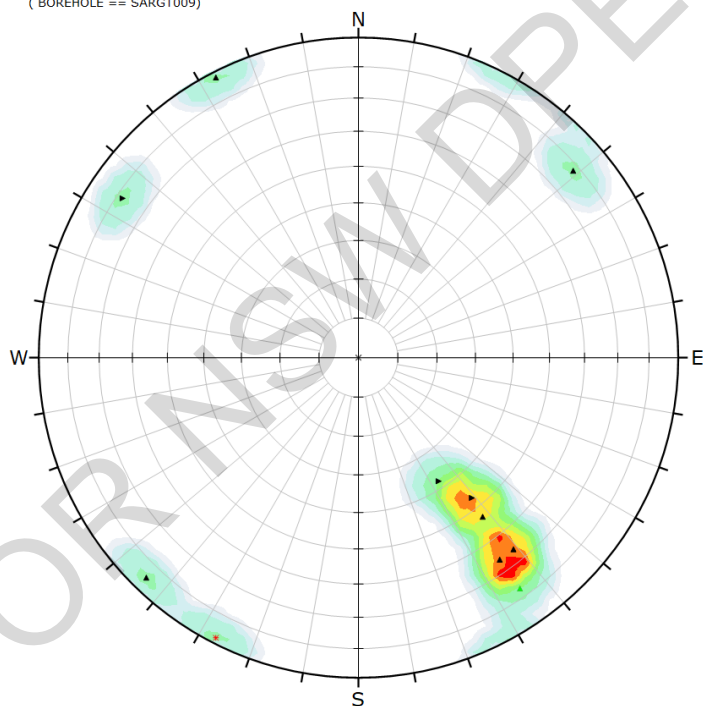
Current Filter Applied to Data: SARGT009
(BOREHOLE == SARGT009)



Symbol	TYPE	Quantity
*	Cz	1
▲	Jt	6
▶	Pt	3
▲	Vn	1

Plot Mode	Pole Vectors
Vector Count	11 (11 Entries)
Hemisphere	Lower
Projection	Equal Area

Current Filter Applied to Data: SARGT009
(BOREHOLE == SARGT009)



Symbol	TYPE	Quantity
*	Cz	1
▲	Jt	6
▶	Pt	3
▲	Vn	1

Color	Density Concentrations
	0.00 - 2.20
	2.20 - 4.40
	4.40 - 6.60
	6.60 - 8.80
	8.80 - 11.00
	11.00 - 13.20
	13.20 - 15.40
	15.40 - 17.60
	17.60 - 19.80
	19.80 - 22.00

Contour Data	Pole Vectors
Maximum Density	21.61%
Contour Distribution	Fisher
Counting Circle Size	1.0%

Plot Mode	Pole Vectors
Vector Count	11 (11 Entries)
Hemisphere	Lower
Projection	Equal Area

drawn	KM		client: Alkane Resources Limited	
approved	LMcK		project: Tomingley Gold Extension Project Geotechnical Assessment	
date	6/3/21		title: STERONET – DOWNHOLE GEOPHYSICS DATA	
scale	NTS		project no: PS117942	
size	A4		SARGT009	

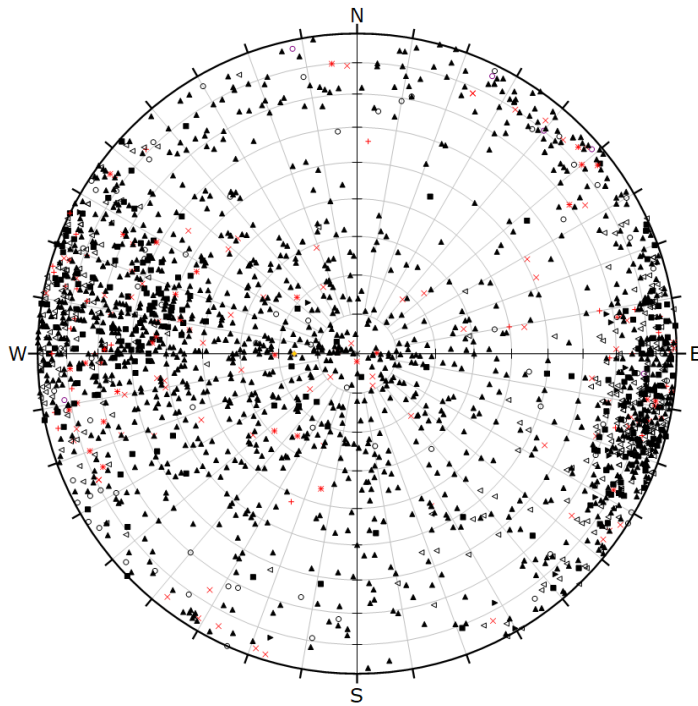
APPENDIX H

BOREHOLE STEREOPLOTS



FOR NSW DPE USE ONLY

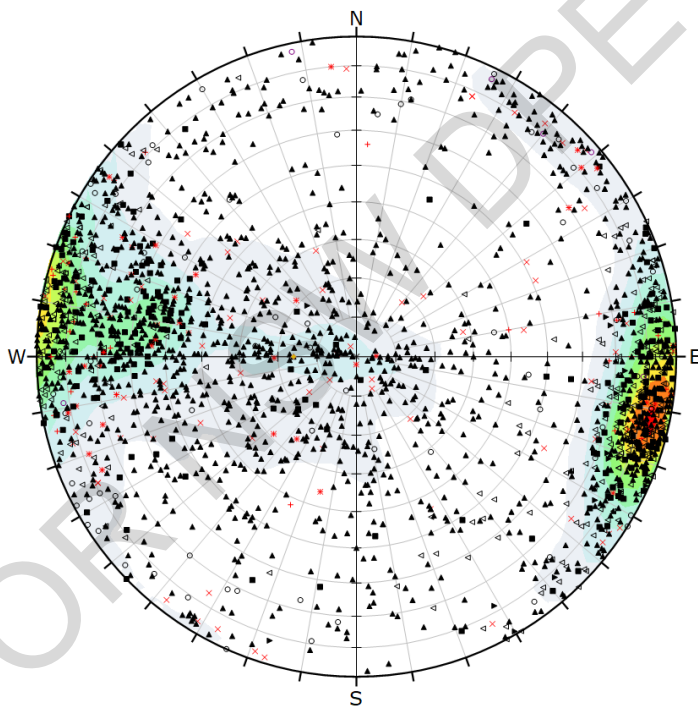
Unfiltered Data



Symbol	TYPE	Quantity
■	Bg	224
○	Cn	86
◊	Dyk	6
×	F	75
◁	Fo	312
▲	Jt	1370
▶	Pt	20
◆	Se	1
+	Sr	35
✱	Sz	42
	Others	2

Plot Mode	Pole Vectors
Vector Count	2173 (2173 Entries)
Hemisphere	Lower
Projection	Equal Area

Unfiltered Data



Symbol	TYPE	Quantity
■	Bg	224
○	Cn	86
◊	Dyk	6
×	F	75
◁	Fo	312
▲	Jt	1370
▶	Pt	20
◆	Se	1
+	Sr	35
✱	Sz	42
	Others	2

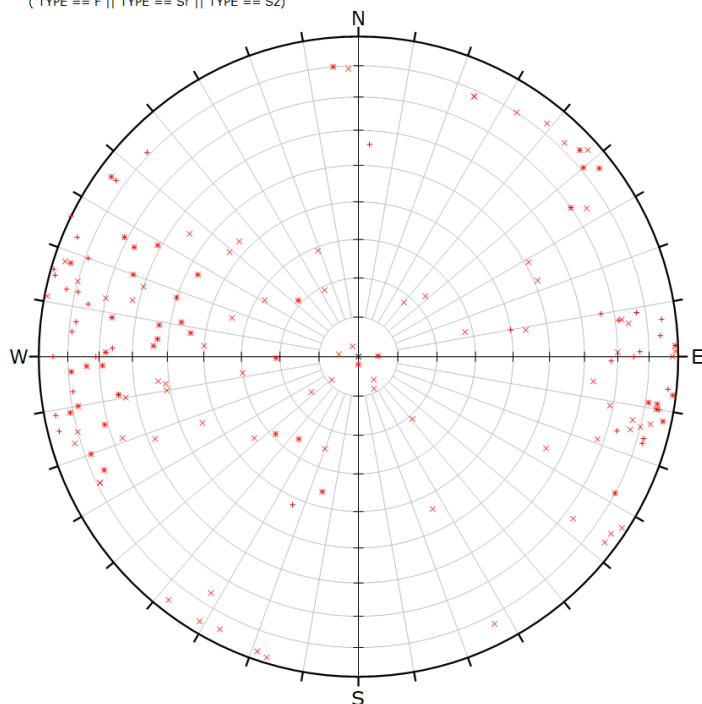
Color	Density Concentrations
	0.00 - 0.80
	0.80 - 1.60
	1.60 - 2.40
	2.40 - 3.20
	3.20 - 4.00
	4.00 - 4.80
	4.80 - 5.60
	5.60 - 6.40
	6.40 - 7.20
	7.20 - 8.00

Contour Data	Pole Vectors
Maximum Density	7.55%
Contour Distribution	Fisher
Counting Circle Size	1.0%

Plot Mode	Pole Vectors
Vector Count	2173 (2173 Entries)
Hemisphere	Lower
Projection	Equal Area

drawn	KM		client:	Alkane Resources Limited	
approved	LMcK		project:	Tomingley Gold Extension Project Geotechnical Assessment	
date	6/3/21		title:	STEREONET – NORTH PIT EXPLORATION AND GEOTECHNICAL BOREHOLE DATA	
scale	NTS		project no:	PS117942	All Defects
size	A4				

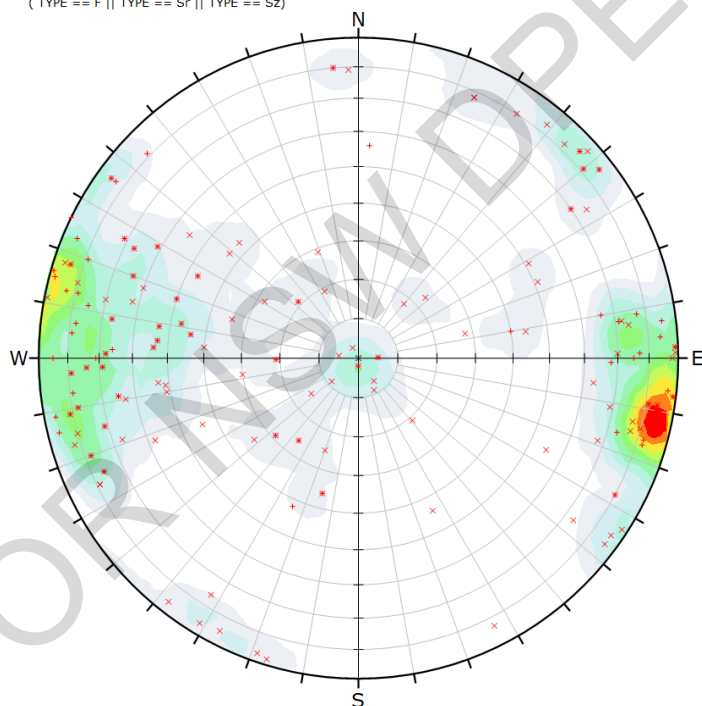
Current Filter Applied to Data: Major structures
(TYPE == F || TYPE == Sr || TYPE == Sz)



Symbol	TYPE	Quantity
x	F	75
+	Sr	35
*	Sz	42

Plot Mode	Pole Vectors
Vector Count	152 (152 Entries)
Hemisphere	Lower
Projection	Equal Area

Current Filter Applied to Data: Major structures
(TYPE == F || TYPE == Sr || TYPE == Sz)



Symbol	TYPE	Quantity
x	F	75
+	Sr	35
*	Sz	42

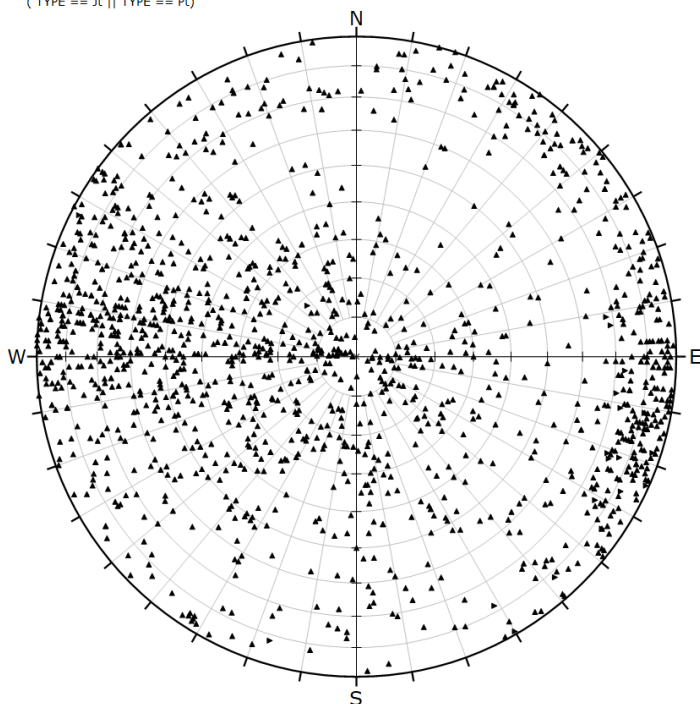
Color	Density Concentrations
	0.00 - 0.90
	0.90 - 1.80
	1.80 - 2.70
	2.70 - 3.60
	3.60 - 4.50
	4.50 - 5.40
	5.40 - 6.30
	6.30 - 7.20
	7.20 - 8.10
	8.10 - 9.00

Contour Data	Pole Vectors
Maximum Density	8.91%
Contour Distribution	Fisher
Counting Circle Size	1.0%

Plot Mode	Pole Vectors
Vector Count	152 (152 Entries)
Hemisphere	Lower
Projection	Equal Area

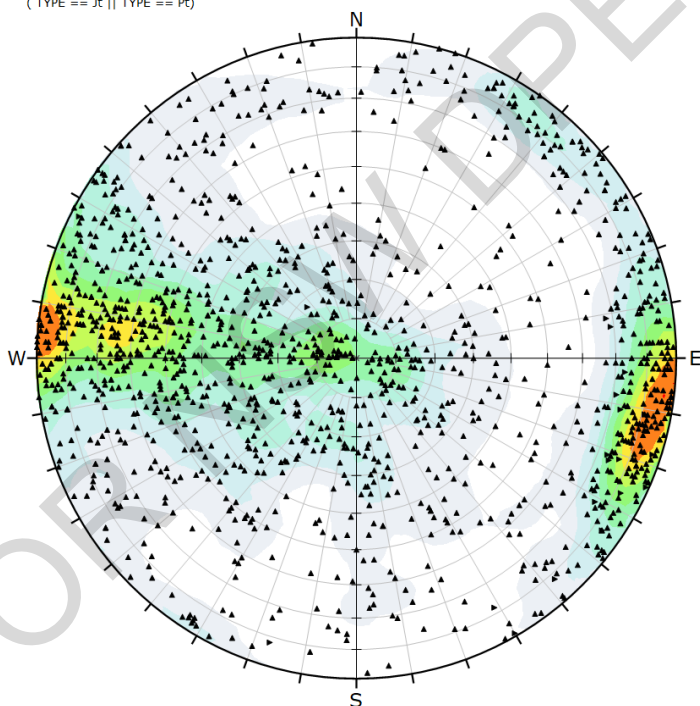
drawn	KM		client:	Alkane Resources Limited	
approved	LMcK		project:	Tomingley Gold Extension Project Geotechnical Assessment	
date	6/3/21		title:	STEREONET – NORTH PIT EXPLORATION AND GEOTECHNICAL BOREHOLE DATA	
scale	NTS		project no: PS117942	Major Structures	
size	A4				

Current Filter Applied to Data: Minor structures
(TYPE == Jt || TYPE == Pt)



Symbol	TYPE	Quantity
▲	Jt	1370
▶	Pt	20
Plot Mode		Pole Vectors
Vector Count		1390 (1390 Entries)
Hemisphere		Lower
Projection		Equal Area

Current Filter Applied to Data: Minor structures
(TYPE == Jt || TYPE == Pt)



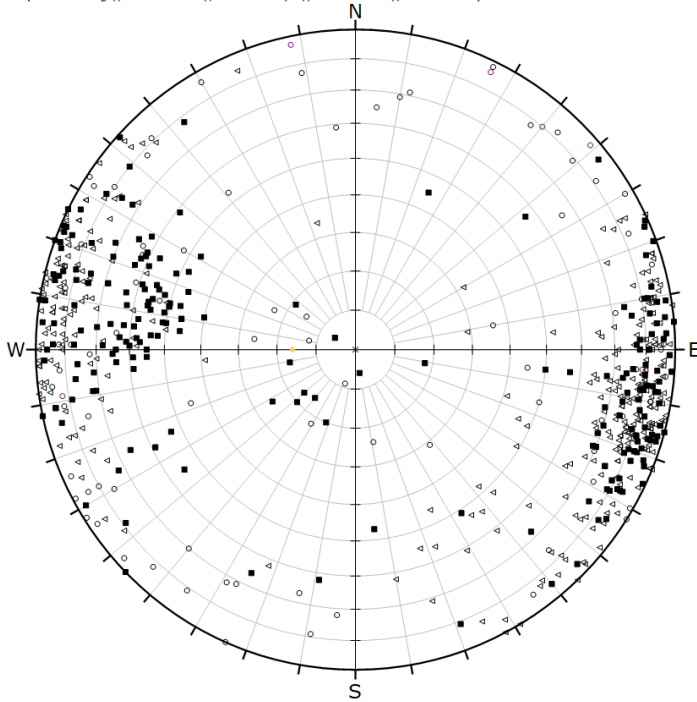
Symbol	TYPE	Quantity
▲	Jt	1370
▶	Pt	20
Color	Density Concentrations	
	0.00	- 0.50
	0.50	- 1.00
	1.00	- 1.50
	1.50	- 2.00
	2.00	- 2.50
	2.50	- 3.00
	3.00	- 3.50
	3.50	- 4.00
	4.00	- 4.50
	4.50	- 5.00
Contour Data		Pole Vectors
Maximum Density		4.52%
Contour Distribution		Fisher
Counting Circle Size		1.0%
Plot Mode		Pole Vectors
Vector Count		1390 (1390 Entries)
Hemisphere		Lower
Projection		Equal Area

drawn	KM
approved	LMcK
date	6/3/21
scale	NTS
size	A4



client:	Alkane Resources Limited	
project:	Tomingley Gold Extension Project Geotechnical Assessment	
title:	STEREONET –NORTH PIT EXPLORATION AND GEOTECHNICAL BOREHOLE DATA	
project no: PS117942	Minor Structures	

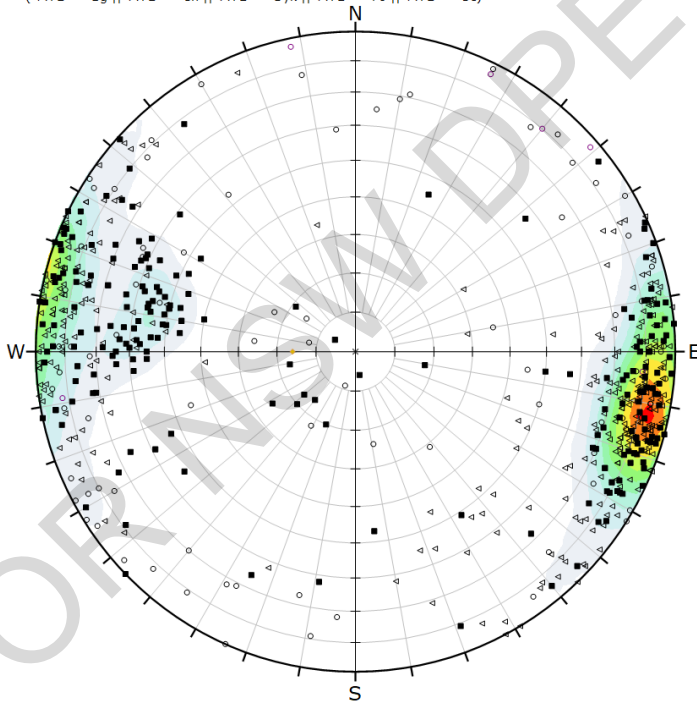
Current Filter Applied to Data: Bg Cn Fo Dyk and Se
(TYPE == Bg || TYPE == Cn || TYPE == Dyk || TYPE == Fo || TYPE == Se)



Symbol	TYPE	Quantity
■	Bg	224
○	Cn	86
△	Dyk	6
◊	Fo	312
★	Se	1

Plot Mode	Pole Vectors
Vector Count	629 (629 Entries)
Hemisphere	Lower
Projection	Equal Area

Current Filter Applied to Data: Bg Cn Fo Dyk and Se
(TYPE == Bg || TYPE == Cn || TYPE == Dyk || TYPE == Fo || TYPE == Se)



Symbol	TYPE	Quantity
■	Bg	224
○	Cn	86
△	Dyk	6
◊	Fo	312
★	Se	1

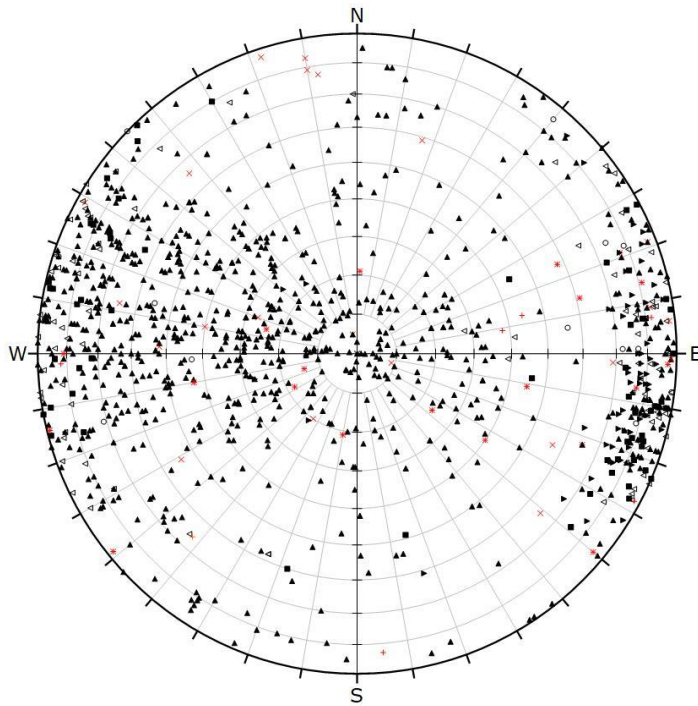
Color	Density Concentrations
	0.00 - 1.50
	1.50 - 3.00
	3.00 - 4.50
	4.50 - 6.00
	6.00 - 7.50
	7.50 - 9.00
	9.00 - 10.50
	10.50 - 12.00
	12.00 - 13.50
	13.50 - 15.00

Contour Data	Pole Vectors
Maximum Density	14.08%
Contour Distribution	Fisher
Counting Circle Size	1.0%

Plot Mode	Pole Vectors
Vector Count	629 (629 Entries)
Hemisphere	Lower
Projection	Equal Area

drawn	KM		client: Alkane Resources Limited	
approved	LMcK		project: Tomingley Gold Extension Project Geotechnical Assessment	
date	6/3/21			
scale	NTS		title: STERONET – NORTH PIT EXPLORATION AND GEOTECHNICAL BOREHOLE DATA	
size	A4		project no: PS117942	Bedding, contacts, foliation and dykes

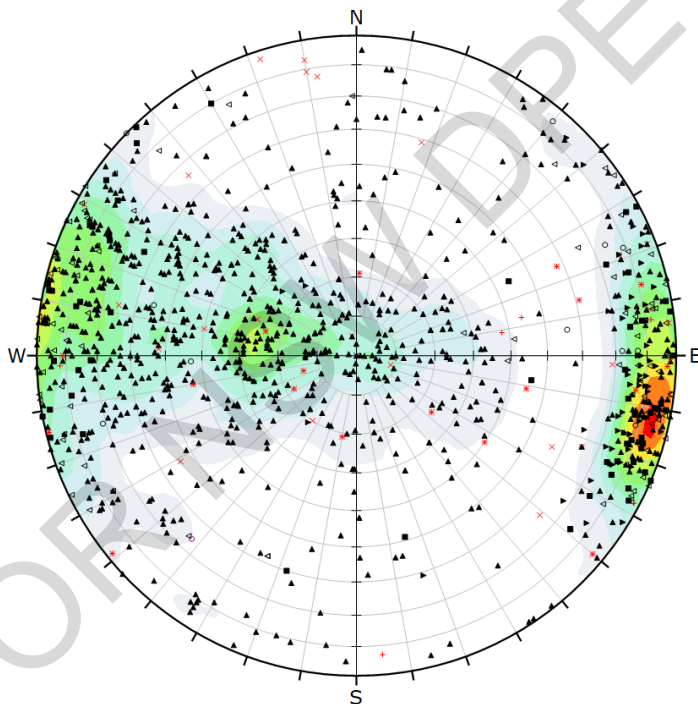
Unfiltered Data



Symbol	TYPE	Quantity
■	Bg	62
○	Cn	13
*	Cz	7
+	Dyk	1
×	F	22
△	Fo	93
▲	Jt	831
▶	Pt	60
+	Sr	7
*	Sz	13

Plot Mode	Pole Vectors
Vector Count	1109 (1109 Entries)
Hemisphere	Lower
Projection	Equal Area

Unfiltered Data



Symbol	TYPE	Quantity
■	Bg	62
○	Cn	13
*	Cz	7
+	Dyk	1
×	F	22
△	Fo	93
▲	Jt	831
▶	Pt	60
+	Sr	7
*	Sz	13

Color	Density Concentrations
	0.00 - 0.65
	0.65 - 1.30
	1.30 - 1.95
	1.95 - 2.60
	2.60 - 3.25
	3.25 - 3.90
	3.90 - 4.55
	4.55 - 5.20
	5.20 - 5.85
	5.85 - 6.50

Contour Data	Pole Vectors
Maximum Density	6.12%
Contour Distribution	Fisher
Counting Circle Size	1.0%

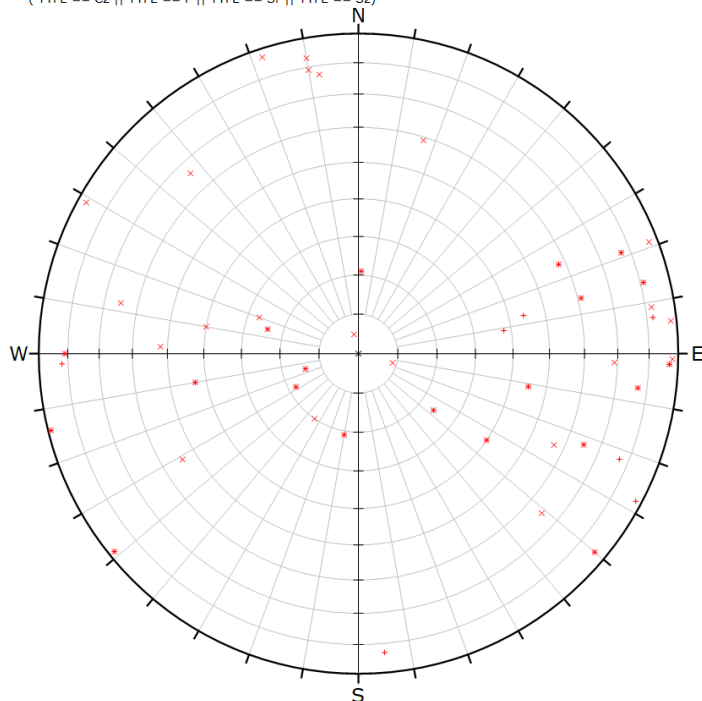
Plot Mode	Pole Vectors
Vector Count	1109 (1109 Entries)
Hemisphere	Lower
Projection	Equal Area

drawn	KM
approved	LMcK
date	6/3/21
scale	NTS
size	A4



client:	Alkane Resources Limited	
project:	Tomingley Gold Extension Project Geotechnical Assessment	
title:	STEREONET – CENTRAL PIT EXPLORATION AND GEOTECHNICAL BOREHOLE DATA	
project no: PS117942	All Defects	

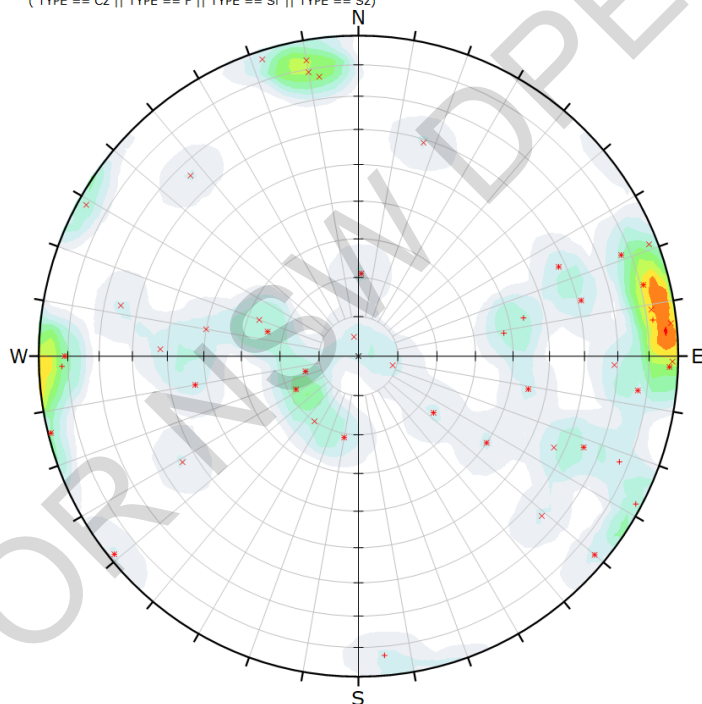
Current Filter Applied to Data: Major structures
(TYPE == Cz || TYPE == F || TYPE == Sr || TYPE == Sz)



Symbol	TYPE	Quantity
*	Cz	7
x	F	22
+	Sr	7
*	Sz	13

Plot Mode	Pole Vectors
Vector Count	49 (49 Entries)
Hemisphere	Lower
Projection	Equal Area

Current Filter Applied to Data: Major structures
(TYPE == Cz || TYPE == F || TYPE == Sr || TYPE == Sz)



Symbol	TYPE	Quantity
*	Cz	7
x	F	22
+	Sr	7
*	Sz	13

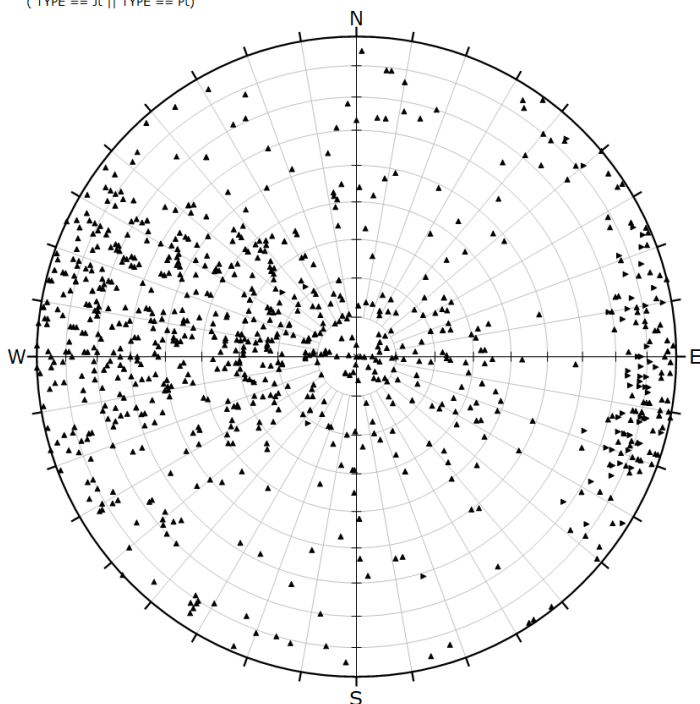
Color	Density Concentrations
	0.00 - 1.00
	1.00 - 2.00
	2.00 - 3.00
	3.00 - 4.00
	4.00 - 5.00
	5.00 - 6.00
	6.00 - 7.00
	7.00 - 8.00
	8.00 - 9.00
	9.00 - 10.00

Contour Data	Pole Vectors
Maximum Density	9.15%
Contour Distribution	Fisher
Counting Circle Size	1.0%

Plot Mode	Pole Vectors
Vector Count	49 (49 Entries)
Hemisphere	Lower
Projection	Equal Area

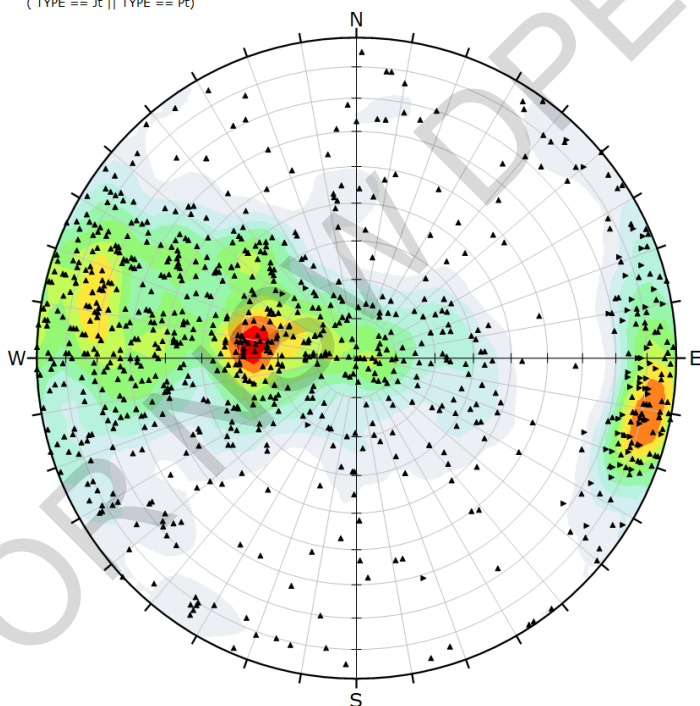
drawn	KM		client:	Alkane Resources Limited	
approved	LMcK		project:	Tomingley Gold Extension Project Geotechnical Assessment	
date	6/3/21		title:	STEREONET – CENTRAL PIT EXPLORATION AND GEOTECHNICAL BOREHOLE DATA	
scale	NTS		project no:	PS117942	Major Structures
size	A4				

Current Filter Applied to Data: Minor structures
(TYPE == Jt || TYPE == Pt)



Symbol	TYPE	Quantity
▲	Jt	831
▶	Pt	60
Plot Mode		Pole Vectors
Vector Count		891 (891 Entries)
Hemisphere		Lower
Projection		Equal Area

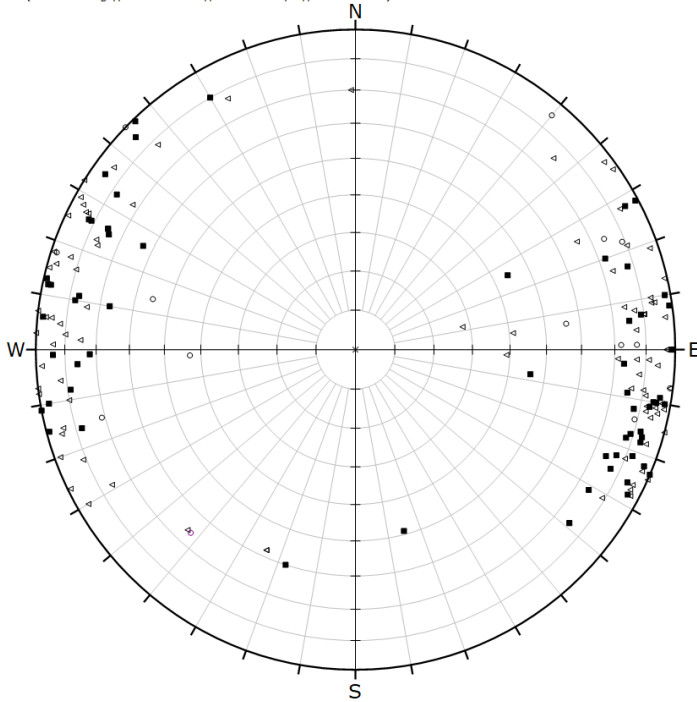
Current Filter Applied to Data: Minor structures
(TYPE == Jt || TYPE == Pt)



Symbol	TYPE	Quantity
▲	Jt	831
▶	Pt	60
Color	Density Concentrations	
	0.00	- 0.50
	0.50	- 1.00
	1.00	- 1.50
	1.50	- 2.00
	2.00	- 2.50
	2.50	- 3.00
	3.00	- 3.50
	3.50	- 4.00
	4.00	- 4.50
	4.50	- 5.00
Contour Data		Pole Vectors
Maximum Density		4.85%
Contour Distribution		Fisher
Counting Circle Size		1.0%
Plot Mode		Pole Vectors
Vector Count		891 (891 Entries)
Hemisphere		Lower
Projection		Equal Area

drawn	KM		client: Alkane Resources Limited	
approved	LMcK		project: Tomingley Gold Extension Project Geotechnical Assessment	
date	6/3/21		title: STERONET – CENTRAL PIT EXPLORATION AND GEOTECHNICAL BOREHOLE DATA	
scale	NTS		project no: PS117942	
size	A4		Minor Structures	

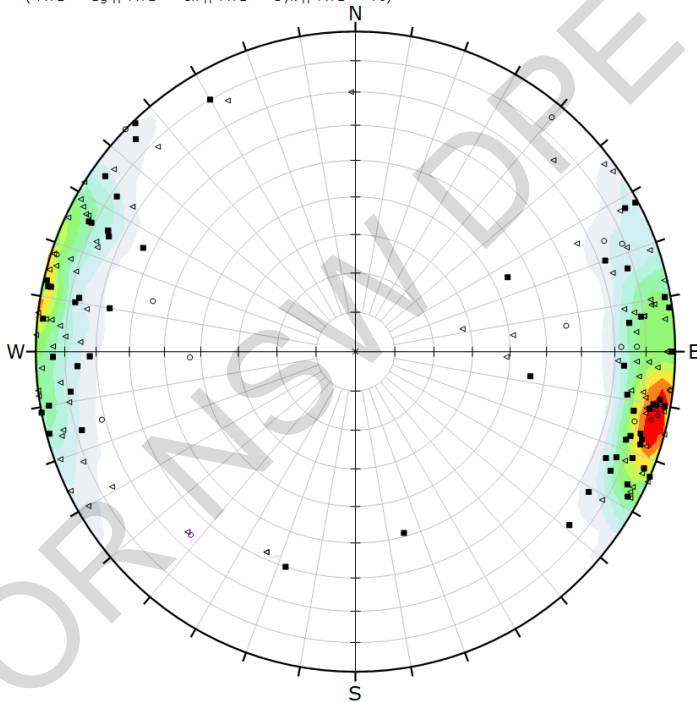
Current Filter Applied to Data: BG CN Dyk Fo
(TYPE == Bg || TYPE == Cn || TYPE == Dyk || TYPE == Fo)



Symbol	TYPE	Quantity
■	Bg	62
○	Cn	13
◇	Dyk	1
◁	Fo	93

Plot Mode	Pole Vectors
Vector Count	169 (169 Entries)
Hemisphere	Lower
Projection	Equal Area

Current Filter Applied to Data: BG CN Dyk Fo
(TYPE == Bg || TYPE == Cn || TYPE == Dyk || TYPE == Fo)



Symbol	TYPE	Quantity
■	Bg	62
○	Cn	13
◇	Dyk	1
◁	Fo	93

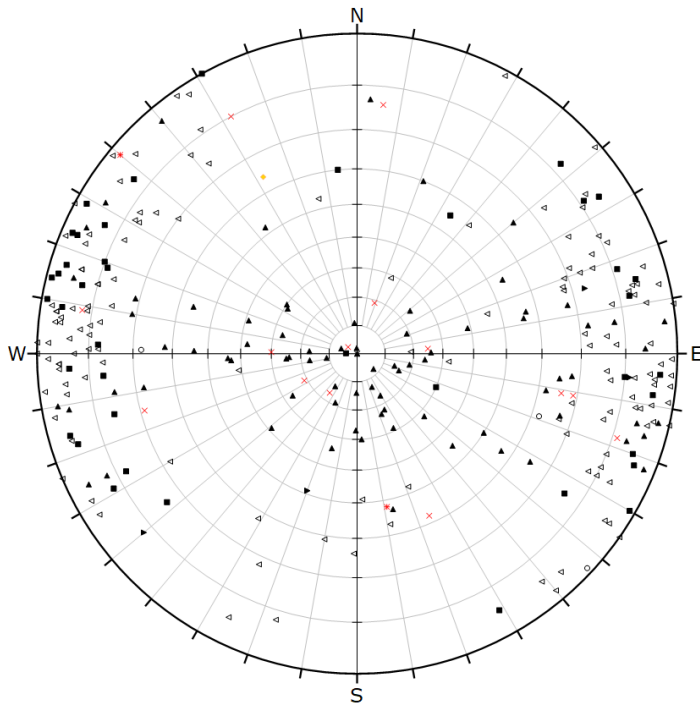
Color	Density Concentrations
	0.00 - 1.70
	1.70 - 3.40
	3.40 - 5.10
	5.10 - 6.80
	6.80 - 8.50
	8.50 - 10.20
	10.20 - 11.90
	11.90 - 13.60
	13.60 - 15.30
	15.30 - 17.00

Contour Data	Pole Vectors
Maximum Density	16.00%
Contour Distribution	Fisher
Counting Circle Size	1.0%

Plot Mode	Pole Vectors
Vector Count	169 (169 Entries)
Hemisphere	Lower
Projection	Equal Area

drawn	KM		client:	Alkane Resources Limited	
approved	LMcK		project:	Tomingley Gold Extension Project Geotechnical Assessment	
date	6/3/21		title:	STEREONET – CENTRAL PIT EXPLORATION AND GEOTECHNICAL BOREHOLE DATA	
scale	NTS		project no: PS117942	Bedding, contacts, foliation and dykes	
size	A4				

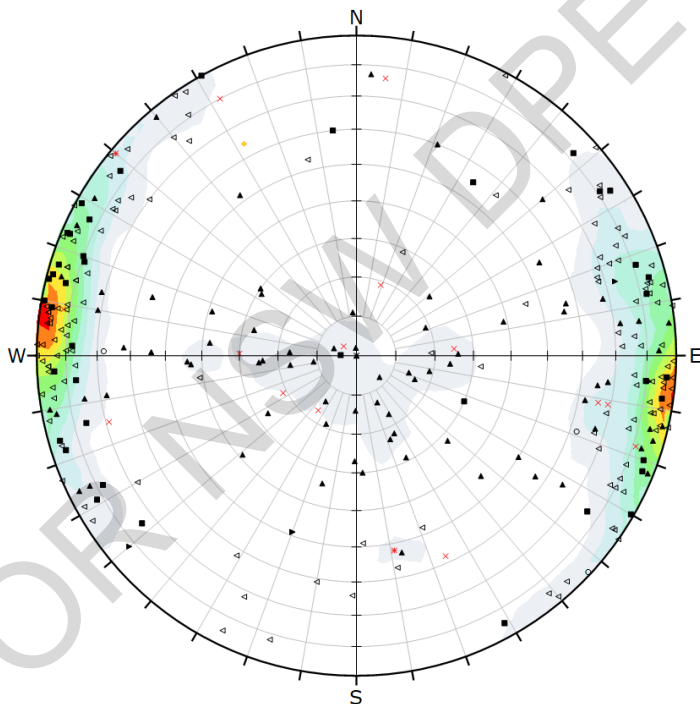
Unfiltered Data



Symbol	TYPE	Quantity
■	Bj	41
○	Cn	3
×	F	14
◄	Fo	138
▲	Jt	80
▶	Pt	5
●	Se	1
✱	Sz	2

Plot Mode	Pole Vectors
Vector Count	284 (284 Entries)
Hemisphere	Lower
Projection	Equal Angle

Unfiltered Data



Symbol	TYPE	Quantity
■	Bj	41
○	Cn	3
×	F	14
◄	Fo	138
▲	Jt	80
▶	Pt	5
●	Se	1
✱	Sz	2

Color	Density Concentrations
	0.00 - 1.20
	1.20 - 2.40
	2.40 - 3.60
	3.60 - 4.80
	4.80 - 6.00
	6.00 - 7.20
	7.20 - 8.40
	8.40 - 9.60
	9.60 - 10.80
	10.80 - 12.00

Contour Data	Pole Vectors
Maximum Density	11.12%
Contour Distribution	Fisher
Counting Circle Size	1.0%

Plot Mode	Pole Vectors
Vector Count	284 (284 Entries)
Hemisphere	Lower
Projection	Equal Area

drawn

KM

approved

LMcK

date

6/3/21

scale

NTS

size

A4

client:

Alkane Resources Limited

project:

Tomingley Gold Extension Project
Geotechnical Assessment

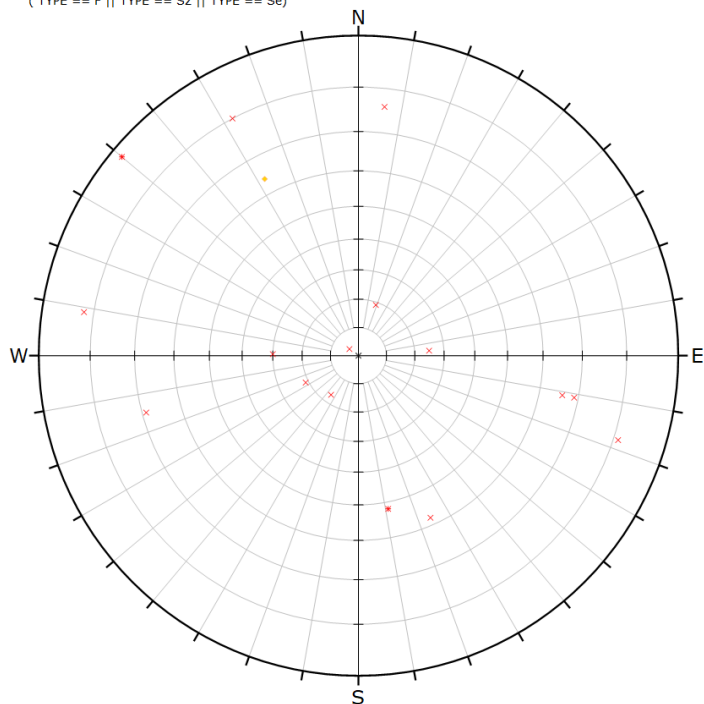
title:

STEREONET – SOUTH PIT
EXPLORATION AND GEOTECHNICAL BOREHOLE DATA

project no: PS117942

All Defects

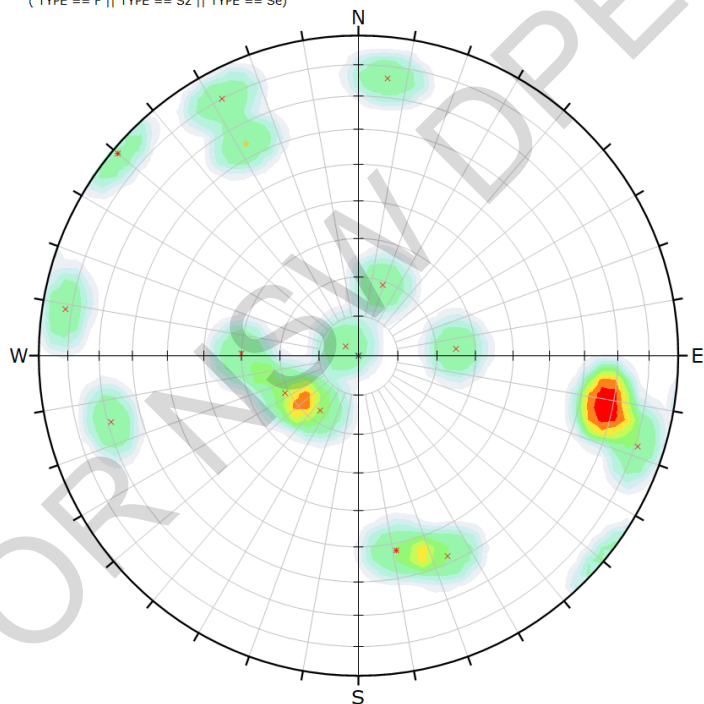
Current Filter Applied to Data: Major structures
(TYPE == F || TYPE == Sz || TYPE == Se)



Symbol	TYPE	Quantity
x	F	14
.	Se	1
*	Sz	2

Plot Mode	Pole Vectors
Vector Count	17 (17 Entries)
Hemisphere	Lower
Projection	Equal Angle

Current Filter Applied to Data: Major structures
(TYPE == F || TYPE == Sz || TYPE == Se)



Symbol	TYPE	Quantity
x	F	14
.	Se	1
*	Sz	2

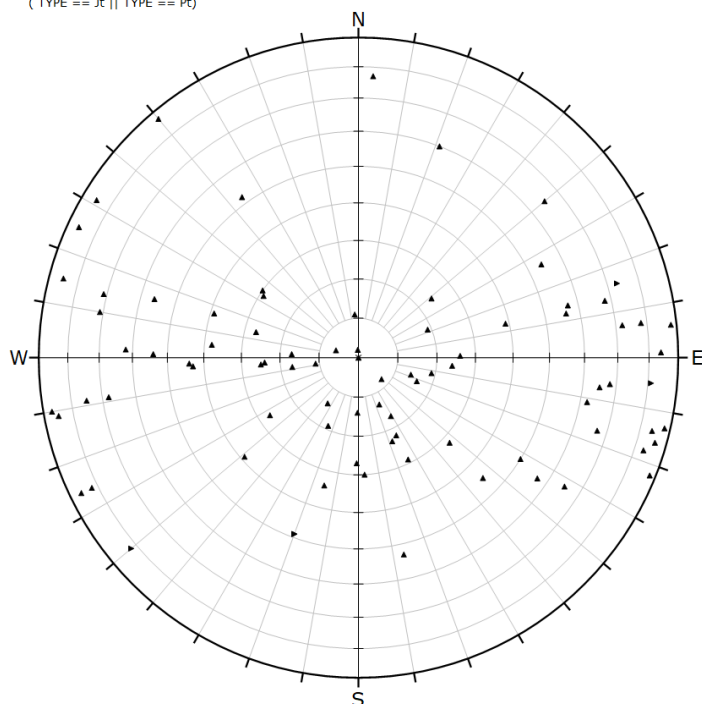
Color	Density Concentrations
	0.00 - 1.20
	1.20 - 2.40
	2.40 - 3.60
	3.60 - 4.80
	4.80 - 6.00
	6.00 - 7.20
	7.20 - 8.40
	8.40 - 9.60
	9.60 - 10.80
	10.80 - 12.00

Contour Data	Pole Vectors
Maximum Density	11.59%
Contour Distribution	Fisher
Counting Circle Size	1.0%

Plot Mode	Pole Vectors
Vector Count	17 (17 Entries)
Hemisphere	Lower
Projection	Equal Area

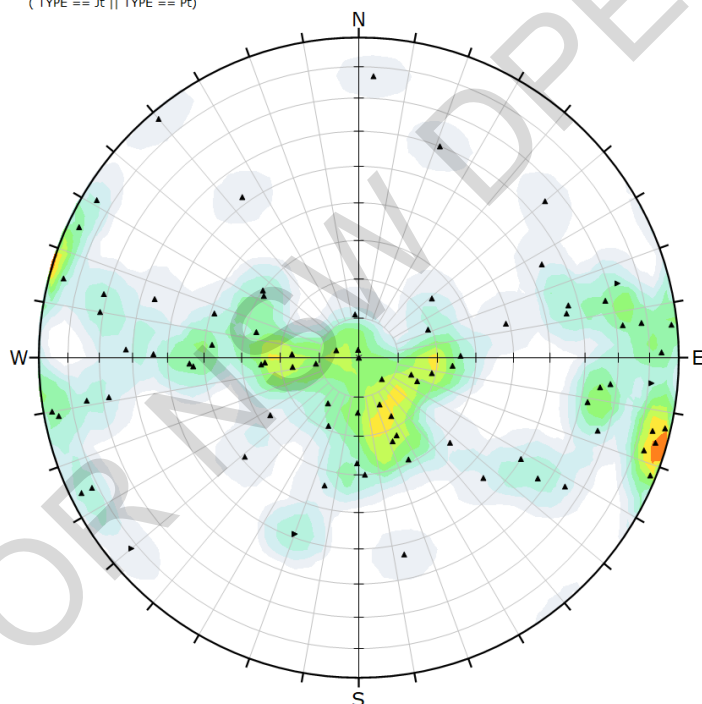
drawn	KM		client: Alkane Resources Limited	
approved	LMcK		project: Tomingley Gold Extension Project Geotechnical Assessment	
date	6/3/21		title: STERONET – SOUTH PIT EXPLORATION AND GEOTECHNICAL BOREHOLE DATA	
scale	NTS		project no: PS117942	
size	A4		Major Structures	

Current Filter Applied to Data: Minor structures
(TYPE == Jt || TYPE == Pt)



Symbol	TYPE	Quantity
▲	Jt	80
▶	Pt	5
Plot Mode		Pole Vectors
Vector Count		85 (85 Entries)
Hemisphere		Lower
Projection		Equal Area

Current Filter Applied to Data: Minor structures
(TYPE == Jt || TYPE == Pt)



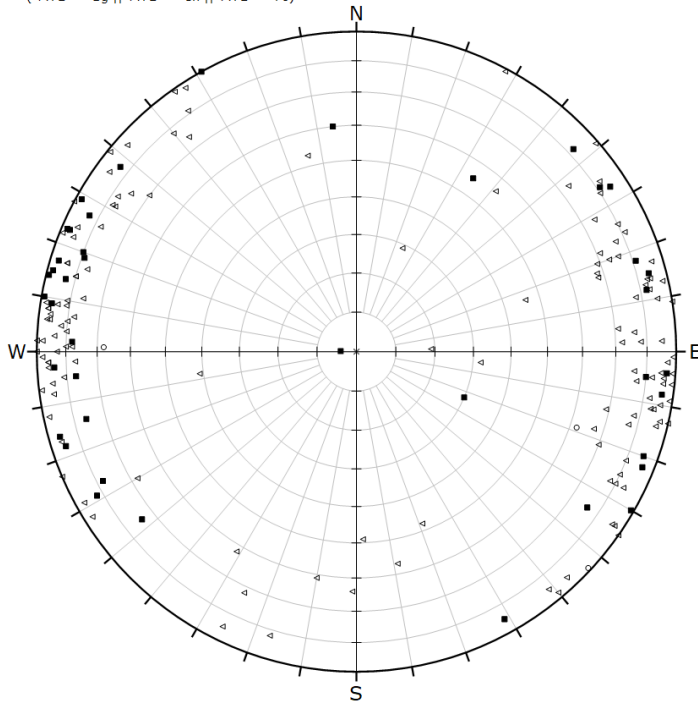
Symbol	TYPE	Quantity
▲	Jt	80
▶	Pt	5
Color	Density Concentrations	
	0.00	- 0.70
	0.70	- 1.40
	1.40	- 2.10
	2.10	- 2.80
	2.80	- 3.50
	3.50	- 4.20
	4.20	- 4.90
	4.90	- 5.60
	5.60	- 6.30
	6.30	- 7.00
Contour Data		Pole Vectors
Maximum Density		6.31%
Contour Distribution		Fisher
Counting Circle Size		1.0%
Plot Mode		Pole Vectors
Vector Count		85 (85 Entries)
Hemisphere		Lower
Projection		Equal Area

drawn	KM
approved	LMcK
date	6/3/21
scale	NTS
size	A4



client:	Alkane Resources Limited	
project:	Tomingley Gold Extension Project Geotechnical Assessment	
title:	STEREONET – SOUTH PIT EXPLORATION AND GEOTECHNICAL BOREHOLE DATA	
project no: PS117942	Minor Structures	

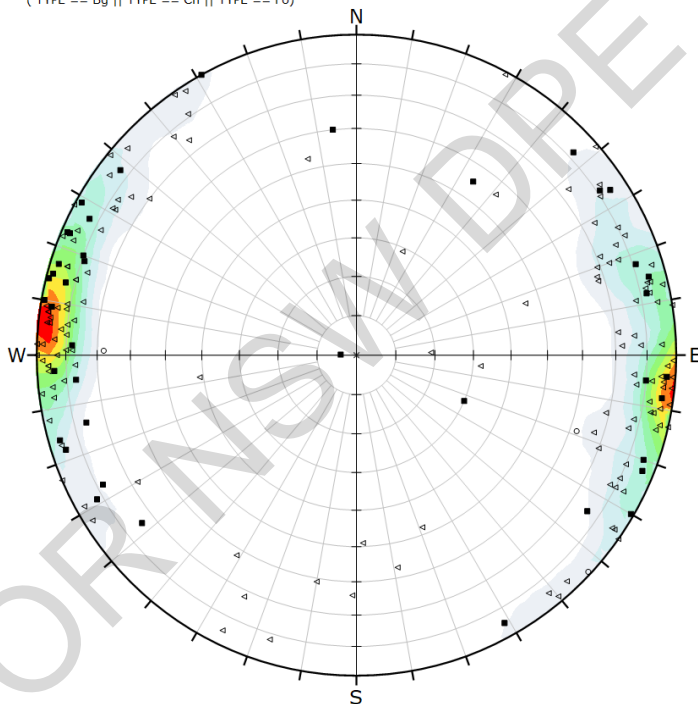
Current Filter Applied to Data: Bg Fo Cn
(TYPE == Bg || TYPE == Cn || TYPE == Fo)



Symbol	TYPE	Quantity
■	Bg	41
○	Cn	3
△	Fo	138

Plot Mode	Pole Vectors
Vector Count	182 (182 Entries)
Hemisphere	Lower
Projection	Equal Area

Current Filter Applied to Data: Bg Fo Cn
(TYPE == Bg || TYPE == Cn || TYPE == Fo)



Symbol	TYPE	Quantity
■	Bg	41
○	Cn	3
△	Fo	138

Color	Density Concentrations
	0.00 - 1.70
	1.70 - 3.40
	3.40 - 5.10
	5.10 - 6.80
	6.80 - 8.50
	8.50 - 10.20
	10.20 - 11.90
	11.90 - 13.60
	13.60 - 15.30
	15.30 - 17.00

Contour Data	Pole Vectors
Maximum Density	16.21%
Contour Distribution	Fisher
Counting Circle Size	1.0%

Plot Mode	Pole Vectors
Vector Count	182 (182 Entries)
Hemisphere	Lower
Projection	Equal Area

drawn	KM		client:	Alkane Resources Limited	
approved	LMcK		project:	Tomingley Gold Extension Project Geotechnical Assessment	
date	6/3/21		title:	STEREONET – SOUTH PIT EXPLORATION AND GEOTECHNICAL BOREHOLE DATA	
scale	NTS		project no:	PS117942	Bedding, contacts and foliation
size	A4				

APPENDIX I

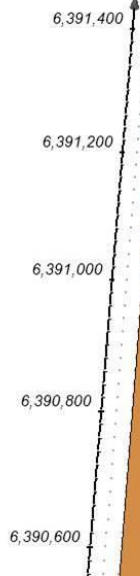
RESULTS OF SLOPES STABILITY



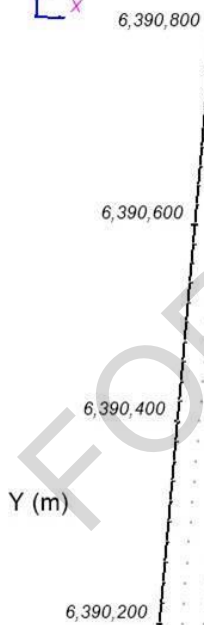
FOR NSW DPE USE ONLY

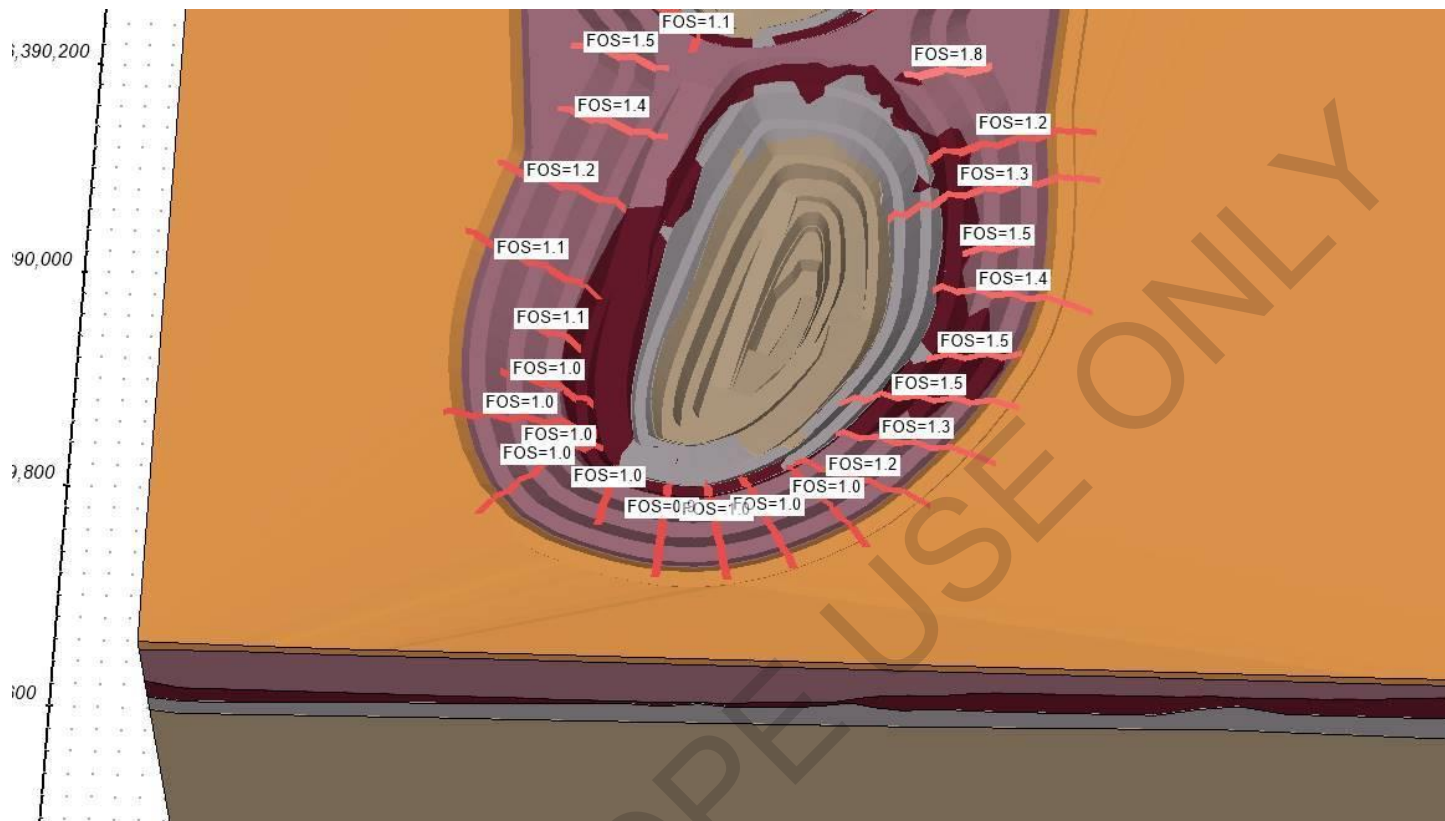
SVSoilvision FoS Plan View

3D View
No Scaling

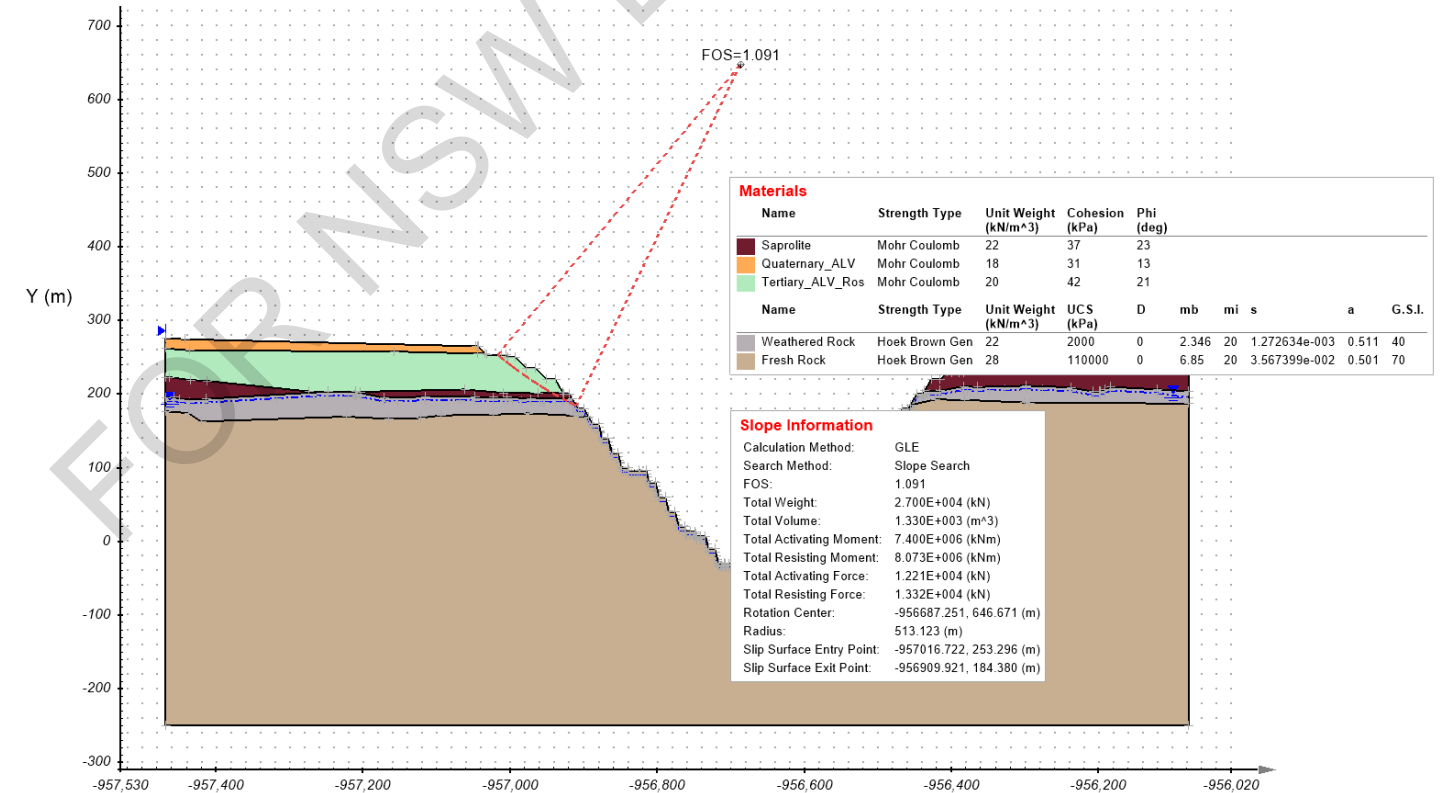
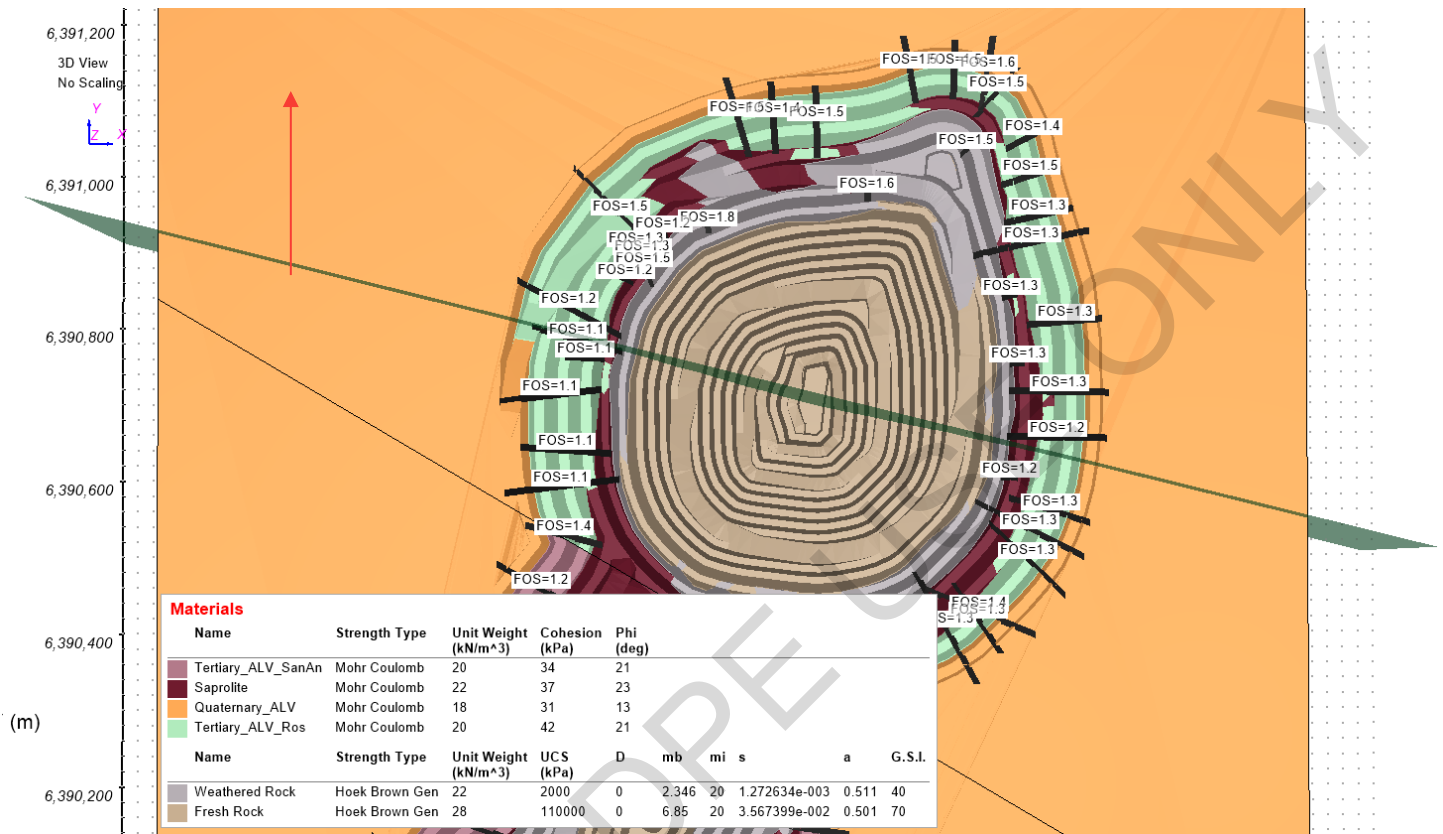


3D View
No Scaling





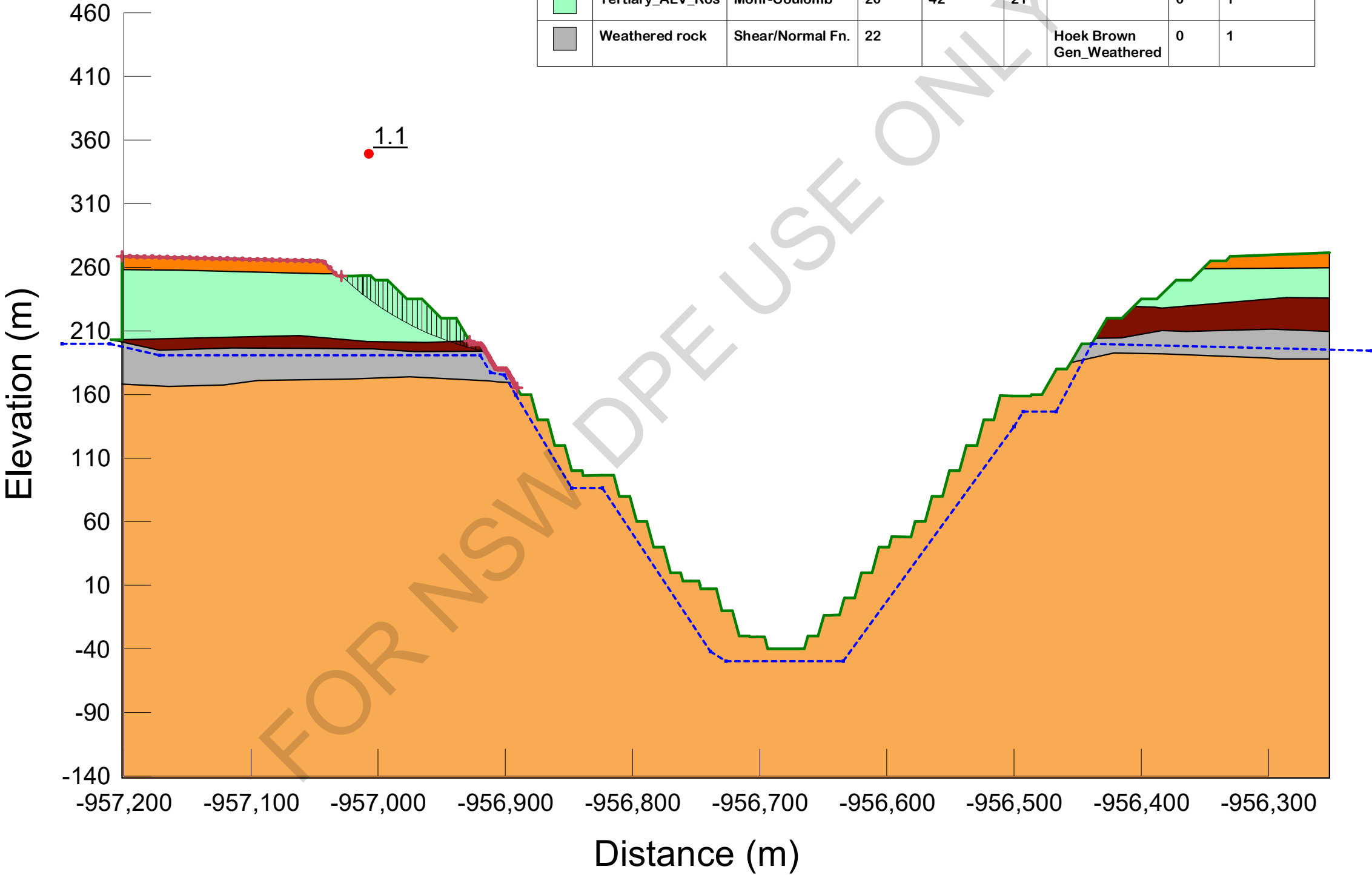
SECTION S-1 – MODEL 683731-0



PS117942 - Concept Pit Slope Design
Pit ref: sar_c5c11_201203

01_GWT_Existing_Design_Global
Current Analysis: 01_GWT_Existing_Design_Local

Color	Name	Model	Unit Weight (kN/m³)	Cohesion' (kPa)	Phi' (°)	Strength Function	Phi-B (°)	Piezometric Line
	Fresh Rock	Shear/Normal Fn.	28			Hoek Brown Gen	0	1
	Quaternary_ALV	Mohr-Coulomb	18	31	13		0	1
	Saprolite	Mohr-Coulomb	22	37	23		0	1
	Tertiary_ALV_Ros	Mohr-Coulomb	20	42	21		0	1
	Weathered rock	Shear/Normal Fn.	22			Hoek Brown Gen_Weathered	0	1



Analysis Method: Morgenstern-Price
Search Method: Entry and Exit

Analysis Name: 01_GWT_Existing_Design_Local

File Name: SECTION S-1 –MODEL 402914-0_RevB.gsz

Analysis Date: 09-Mar-21

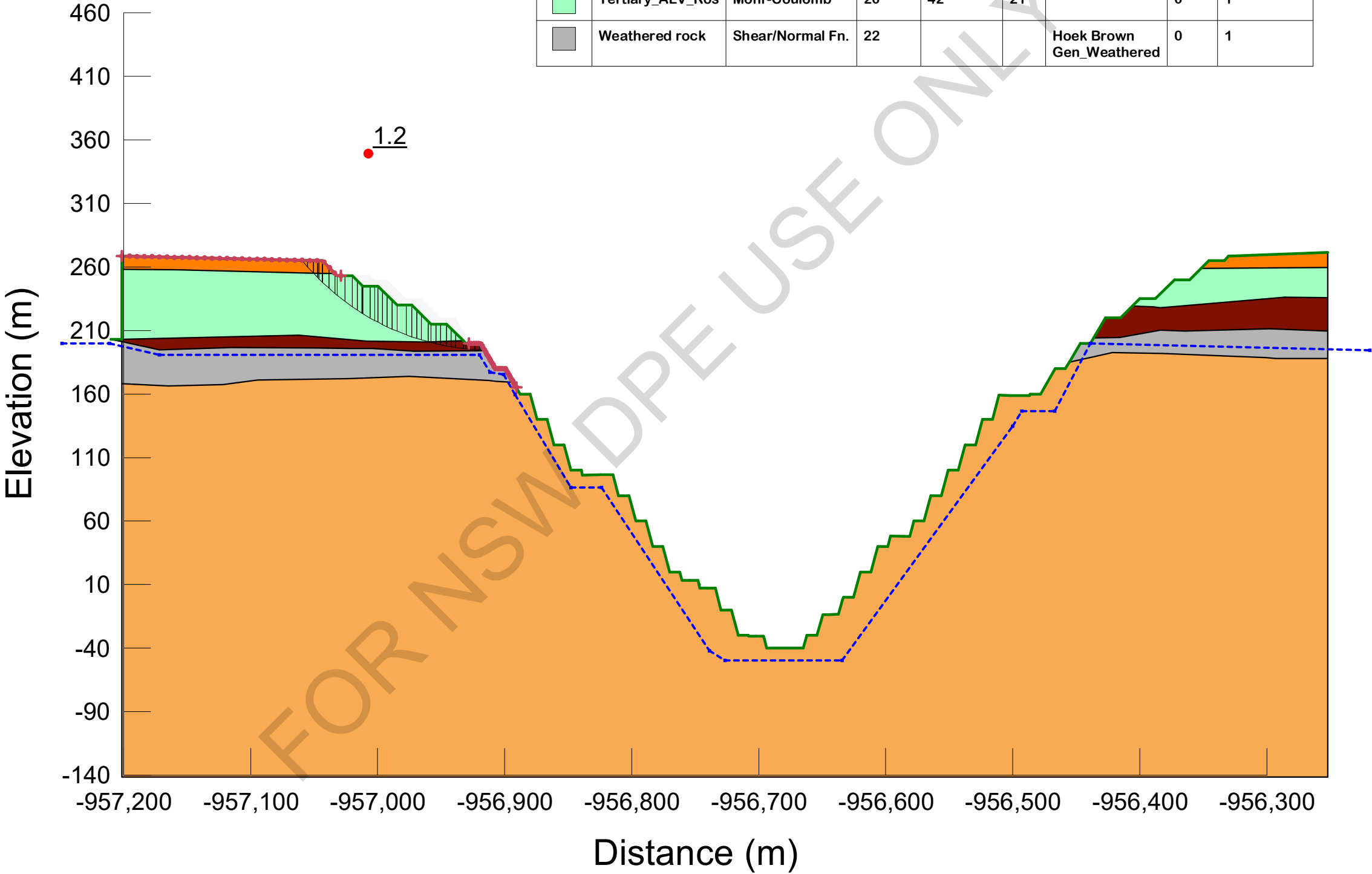
Analysis By: Tun, Douglas



PS117942 - Concept Pit Slope Design
Pit ref: sar_c5c11_201203

02_Proposed_Design_Global_12mW_15mH
Current Analysis: 02_Proposed_Design_Local

Color	Name	Model	Unit Weight (kN/m³)	Cohesion' (kPa)	Phi' (°)	Strength Function	Phi-B (°)	Piezometric Line
	Fresh Rock	Shear/Normal Fn.	28			Hoek Brown Gen	0	1
	Quaternary_ALV	Mohr-Coulomb	18	31	13		0	1
	Saprolite	Mohr-Coulomb	22	37	23		0	1
	Tertiary_ALV_Ros	Mohr-Coulomb	20	42	21		0	1
	Weathered rock	Shear/Normal Fn.	22			Hoek Brown Gen_Weathered	0	1



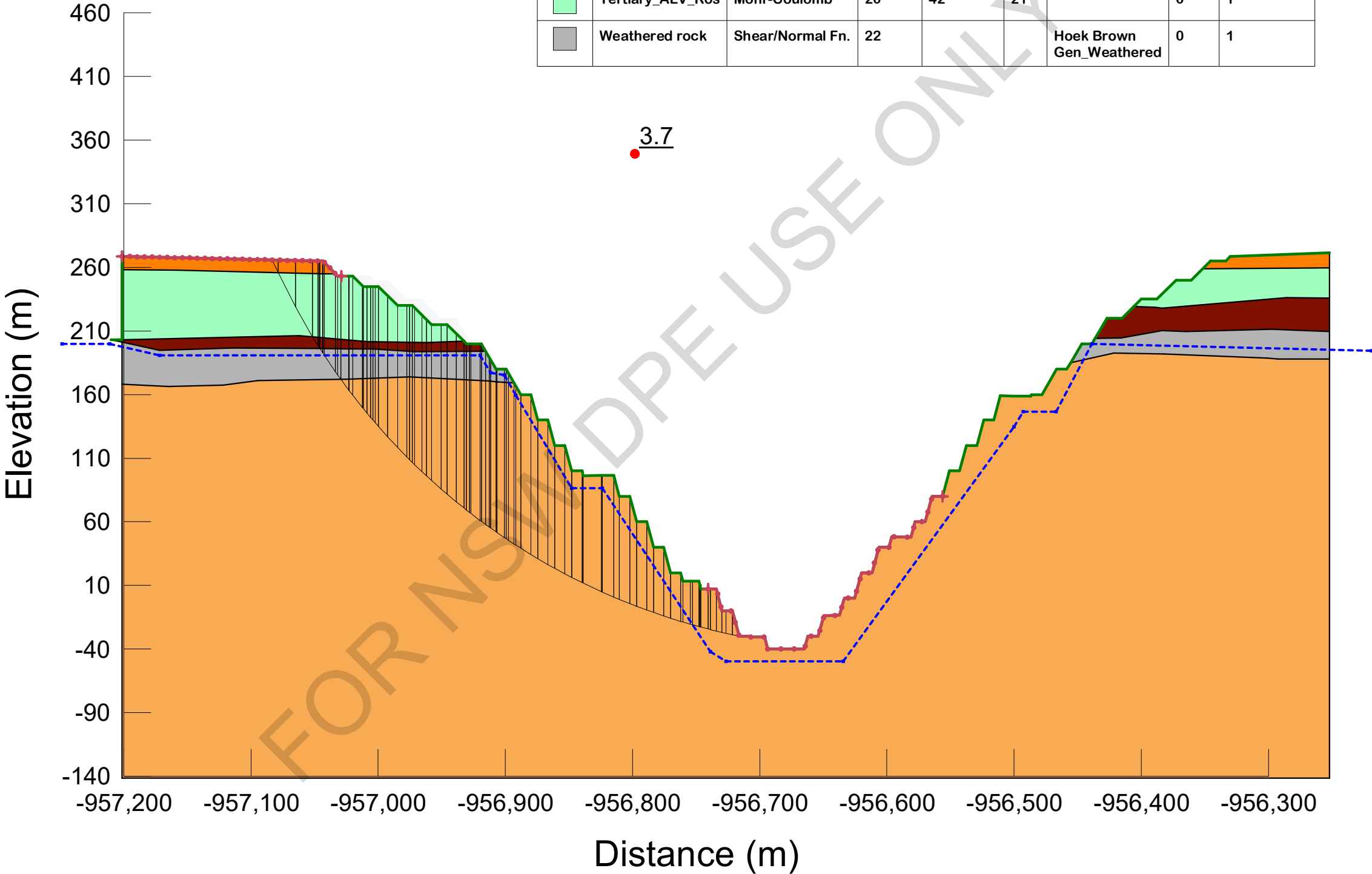
Analysis Method: Morgenstern-Price
Search Method: Entry and Exit

Analysis Name: 02_Proposed_Design_Local
File Name: SECTION S-1 –MODEL 402914-0_RevB.gsz
Analysis Date: 09-Mar-21

PS117942 - Concept Pit Slope Design
Pit ref: sar_c5c11_201203

Current Analysis: 03_Proposed_Design_Global_12mW_15mH

Color	Name	Model	Unit Weight (kN/m³)	Cohesion' (kPa)	Phi' (°)	Strength Function	Phi-B (°)	Piezometric Line
	Fresh Rock	Shear/Normal Fn.	28			Hoek Brown Gen	0	1
	Quaternary_ALV	Mohr-Coulomb	18	31	13		0	1
	Saprolite	Mohr-Coulomb	22	37	23		0	1
	Tertiary_ALV_Ros	Mohr-Coulomb	20	42	21		0	1
	Weathered rock	Shear/Normal Fn.	22			Hoek Brown Gen_Weathered	0	1



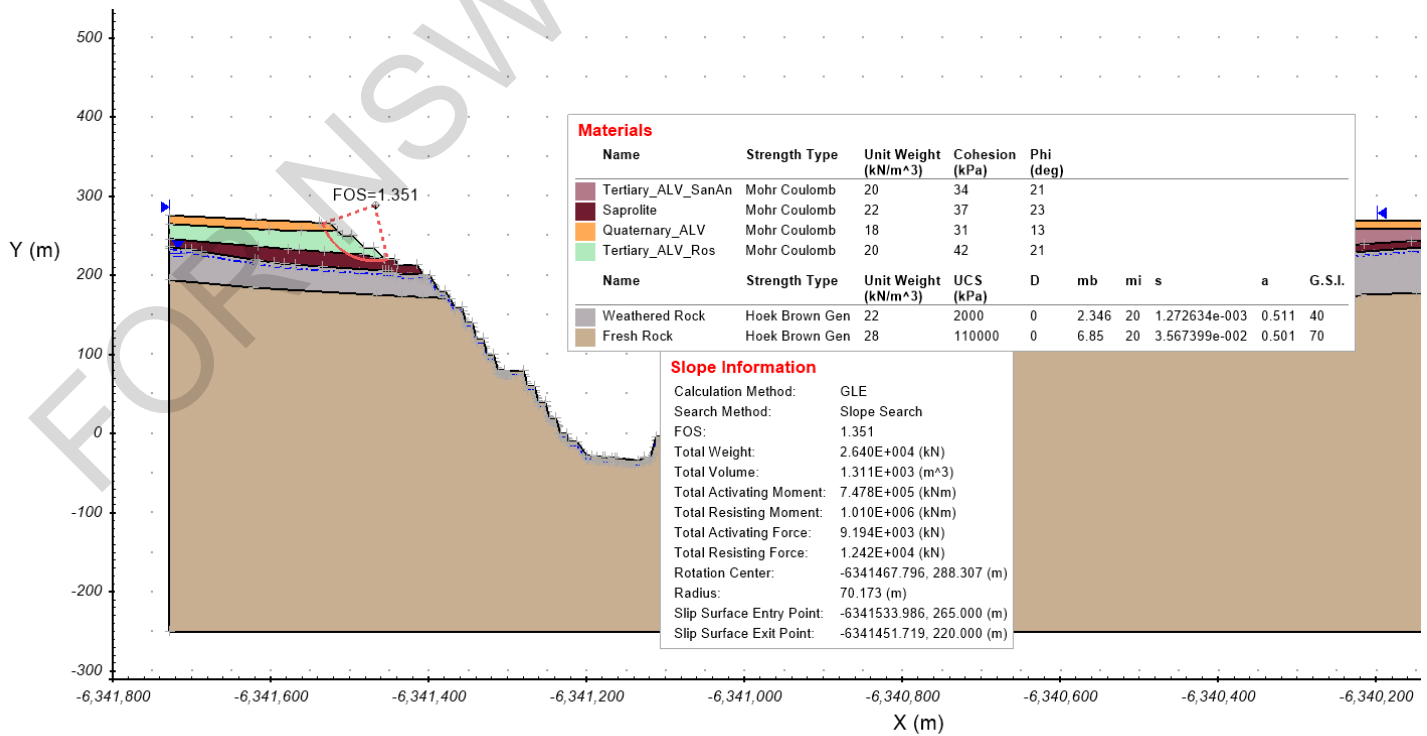
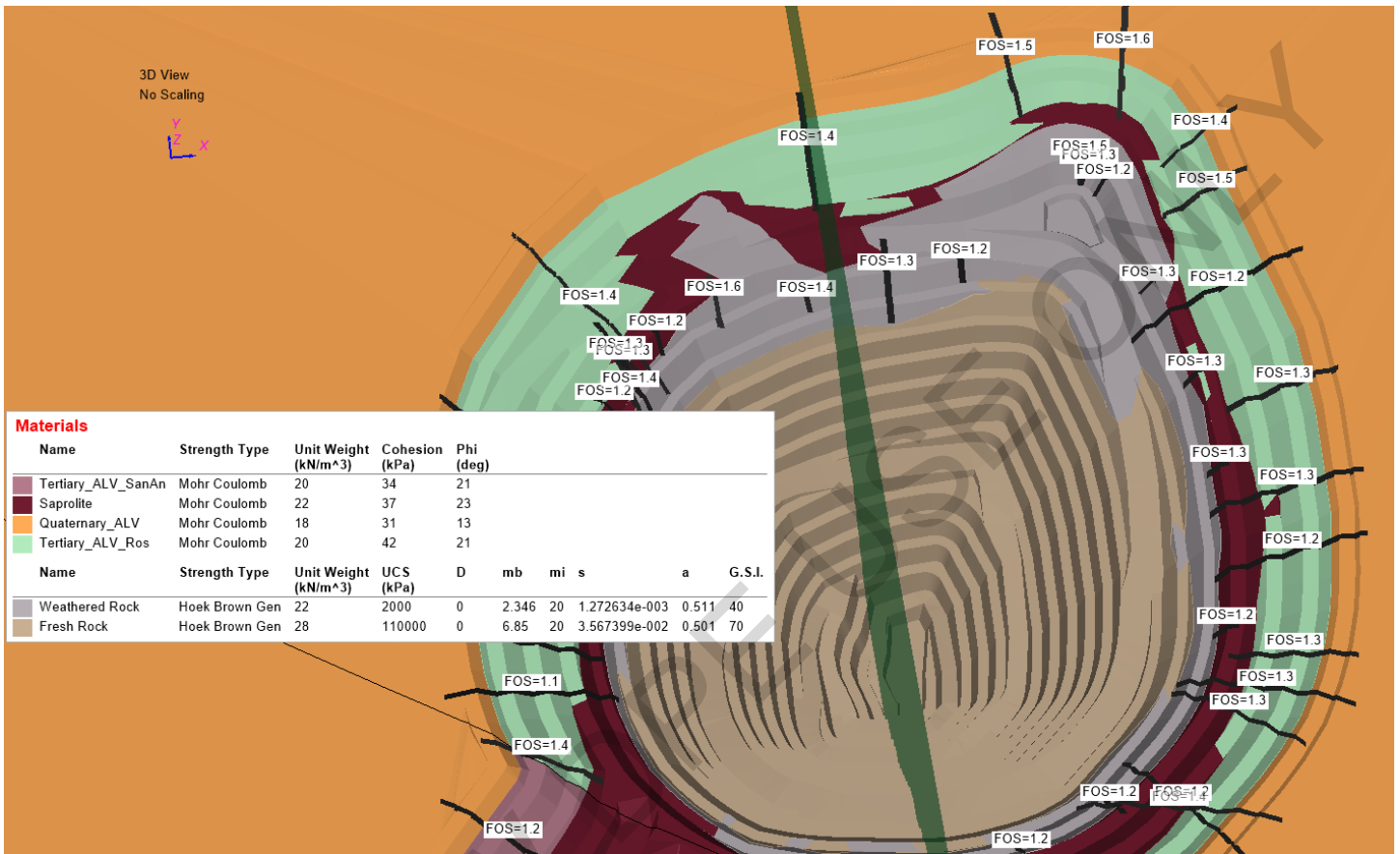
Analysis Method: Morgenstern-Price
Search Method: Entry and Exit

Analysis Name: 03_Proposed_Design_Global_12mW_15mH
File Name: SECTION S-1 –MODEL 402914-0_RevB.gsz
Analysis Date: 09-Mar-21

Analysis By: Tun, Douglas



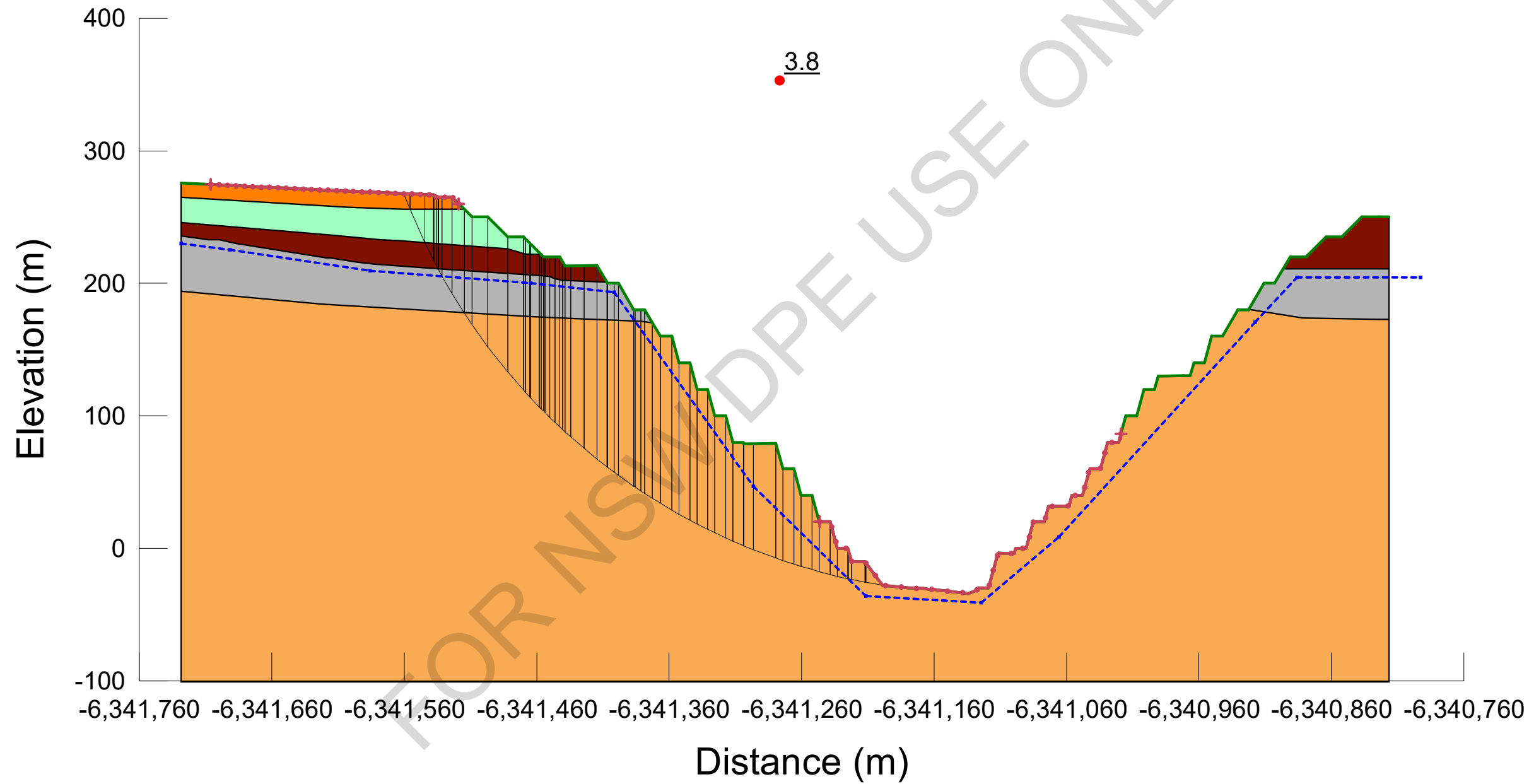
SECTION S-2 – MODEL 996659-0



PS117942 - Concept Pit Slope Design
Pit ref: sar_c5c11_201203

Current Analysis: 01_GWT_Existing_Design_Global

Color	Name	Model	Unit Weight (kN/m³)	Cohesion' (kPa)	Phi' (°)	Strength Function	Phi-B (°)	Piezometric Line
	Fresh Rock	Shear/Normal Fn.	28			Hoek Brown Gen	0	1
	Quaternary_ALV	Mohr-Coulomb	18	31	13		0	1
	Saprolite	Mohr-Coulomb	22	37	23		0	1
	Tertiary_ALV_Ros	Mohr-Coulomb	20	42	21		0	1
	Weathered rock	Shear/Normal Fn.	22			Hoek Brown Gen_Weathered	0	1

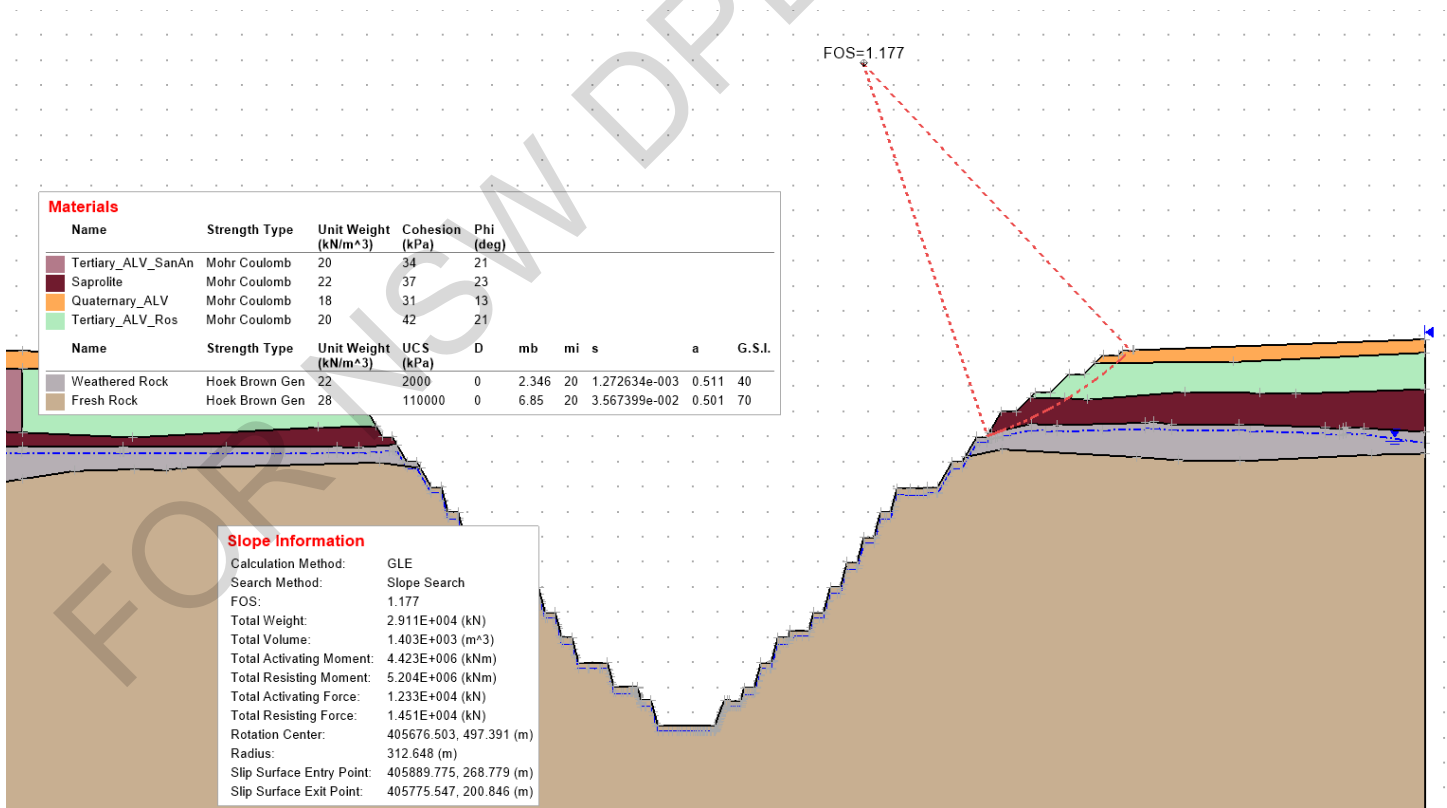
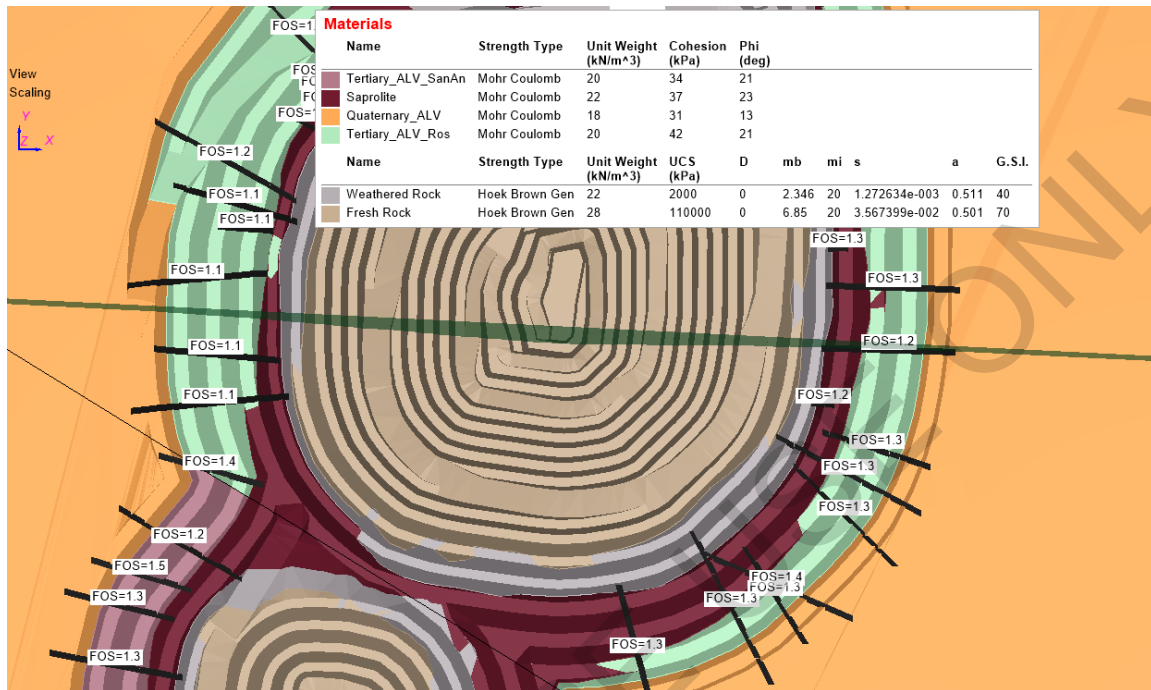


Analysis Method: Morgenstern-Price
Search Method: Entry and Exit

Analysis Name: 01_GWT_Existing_Design_Global
File Name: SECTION S-2 – MODEL 996659-0-RevA.gsz
Analysis Date: 09-Mar-21

Analysis By: Tun, Douglas

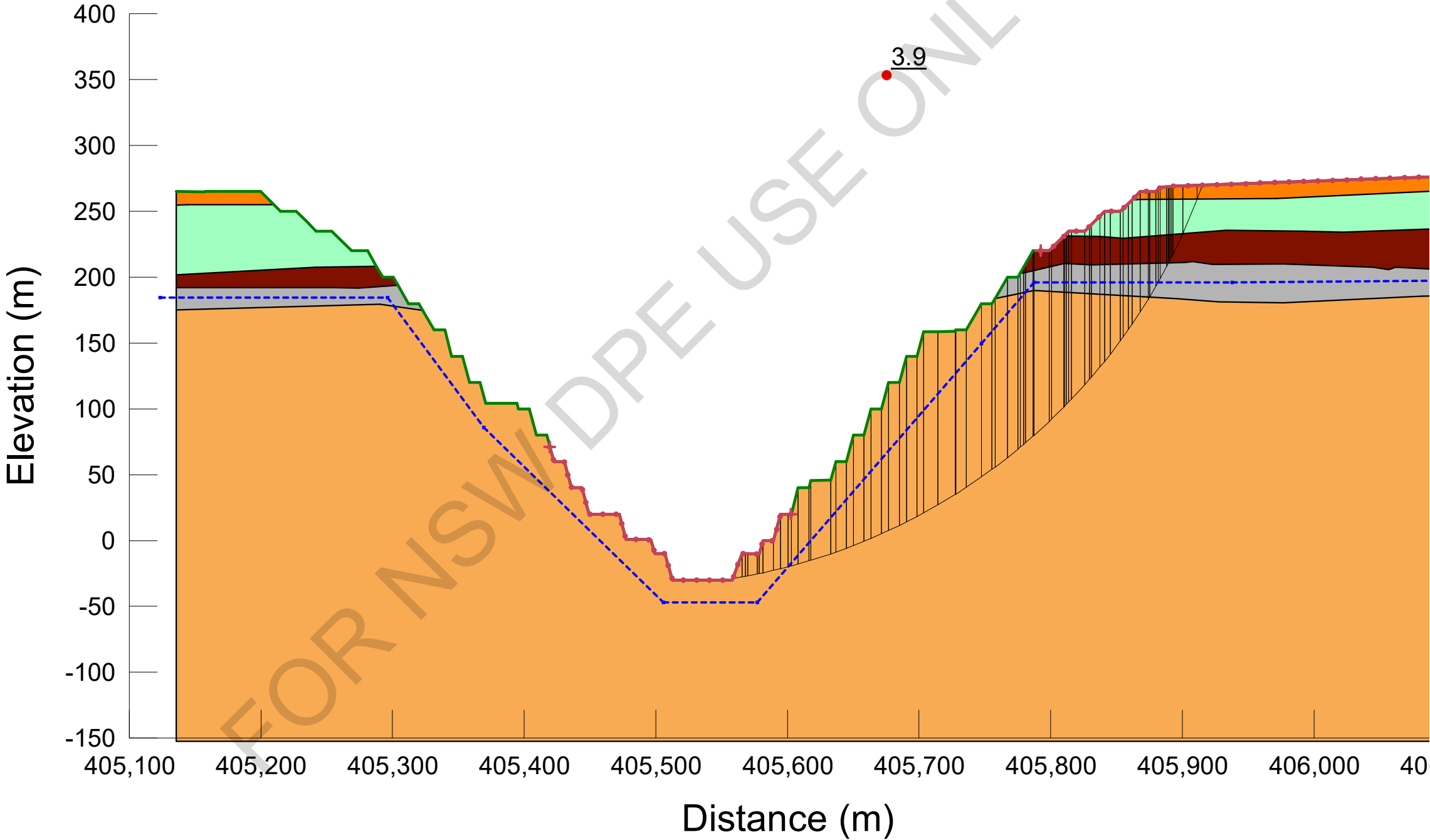
SECTION S-3 – MODEL 862699-0



Color	Name	Model	Unit Weight (kN/m³)	Cohesion' (kPa)	Phi' (°)	Strength Function	Phi-B (°)	Piezometric Line
	Fresh Rock	Shear/Normal Fn.	28			Hoek Brown Gen	0	1
	Quaternary_ALV	Mohr-Coulomb	18	31	13		0	1
	Saprolite	Mohr-Coulomb	22	37	23		0	1
	Tertiary_ALV_Ros	Mohr-Coulomb	20	42	21		0	1
	Weathered rock	Shear/Normal Fn.	22			Hoek Brown Gen_Weathered	0	1

PS117942 - Concept Pit Slope Design
Pit ref: sar_c5c11_201203

Current Analysis: 01_GWT_Existing_Design_Global

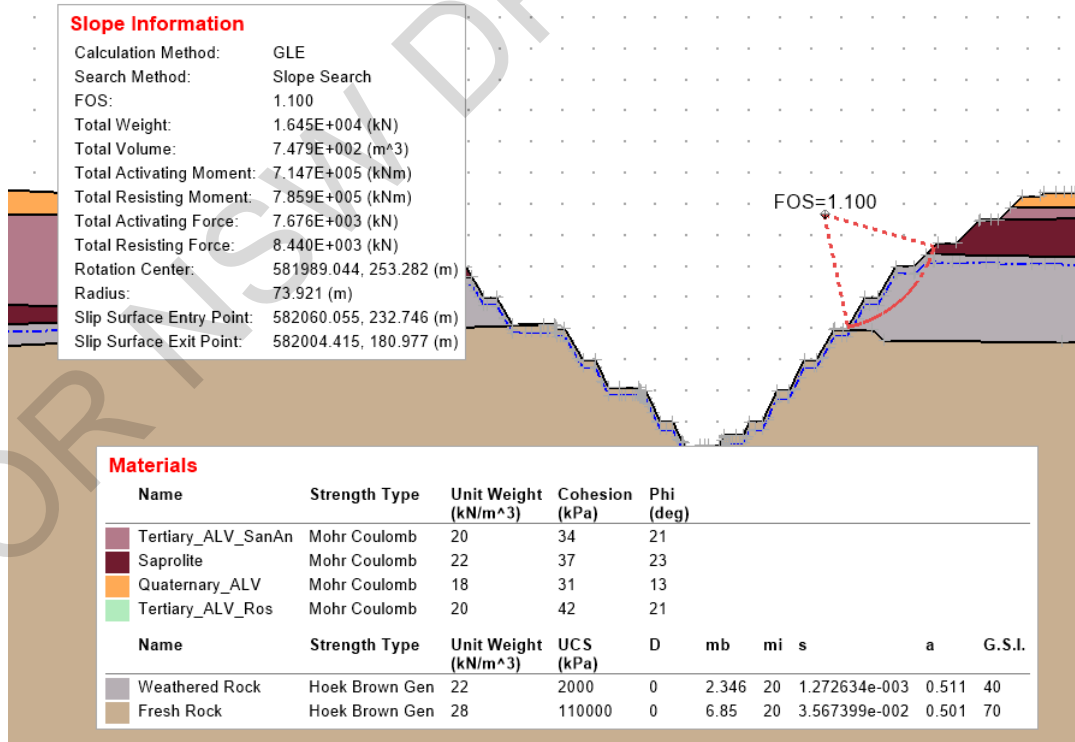
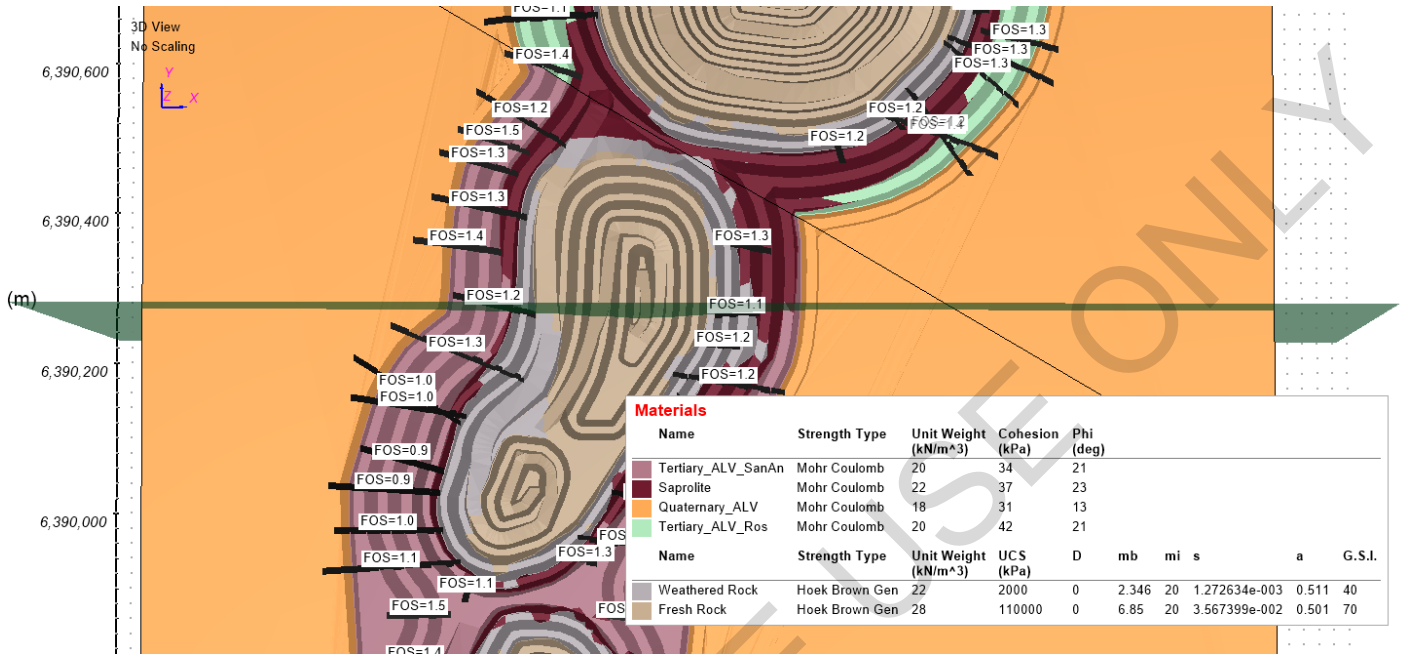


Analysis Method: Morgenstern-Price
Search Method: Entry and Exit

Analysis Name: 01_GWT_Existing_Design_Global
File Name: SECTION S-3 – MODEL 862699-0-RevB.gsz
Analysis Date: 09-Mar-21

Analysis By: Tun, Douglas

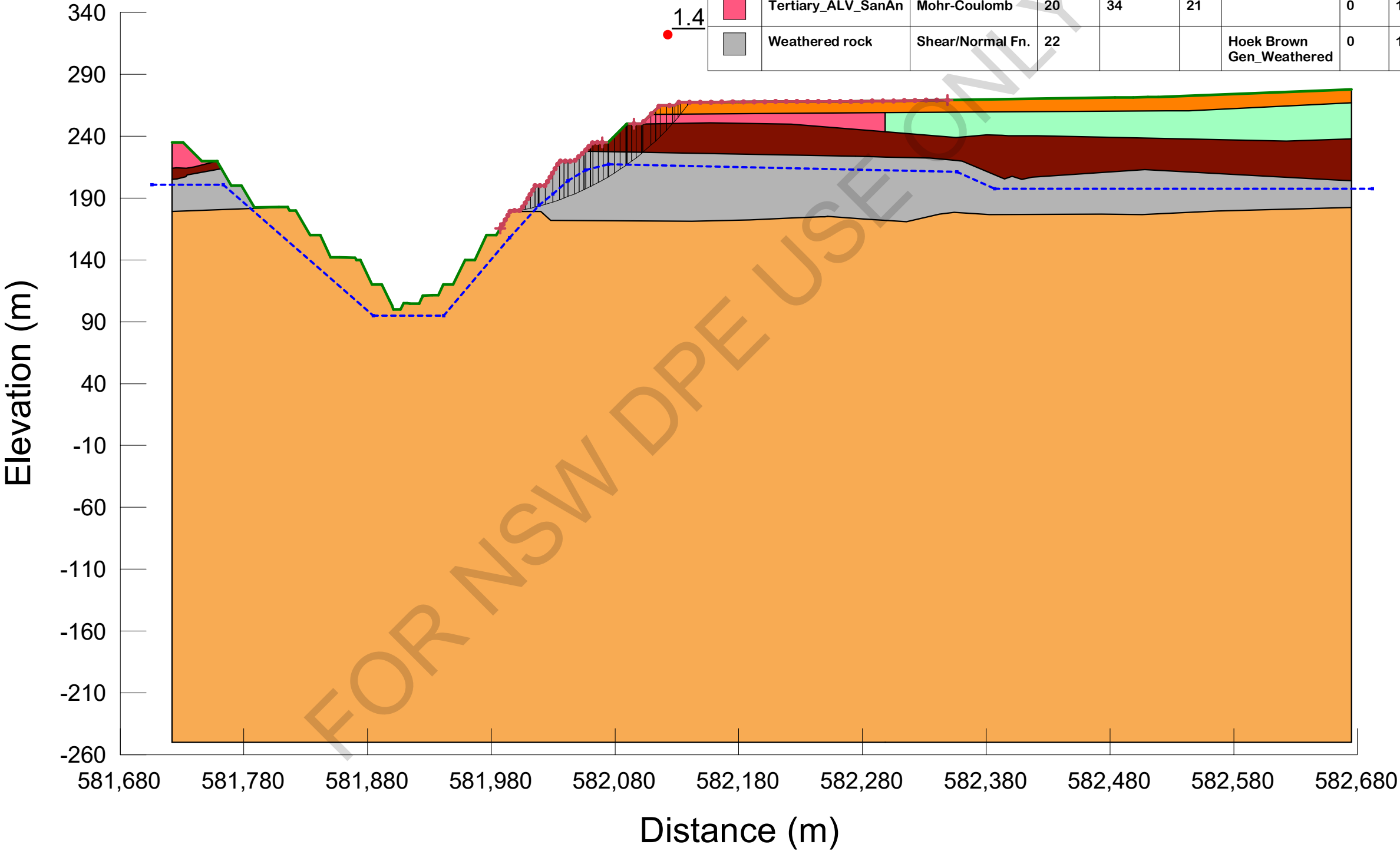
SECTION S-4 – MODEL 708620-0



PS117942 - Concept Pit Slope Design
Pit ref: sar_c5c11_201203

01_GWT_Existing_Design_Global
Current Analysis: 01_GWT_Existing_Design_Local

Color	Name	Model	Unit Weight (kN/m³)	Cohesion' (kPa)	Phi' (°)	Strength Function	Phi-B (°)	Piezometric Line
	Fresh Rock	Shear/Normal Fn.	28			Hoek Brown Gen	0	1
	Quaternary_ALV	Mohr-Coulomb	18	31	13		0	1
	Saprolite	Mohr-Coulomb	22	37	23		0	1
	Tertiary_ALV_Ros	Mohr-Coulomb	20	42	21		0	1
	Tertiary_ALV_SanAn	Mohr-Coulomb	20	34	21		0	1
	Weathered rock	Shear/Normal Fn.	22			Hoek Brown Gen_Weathered	0	1

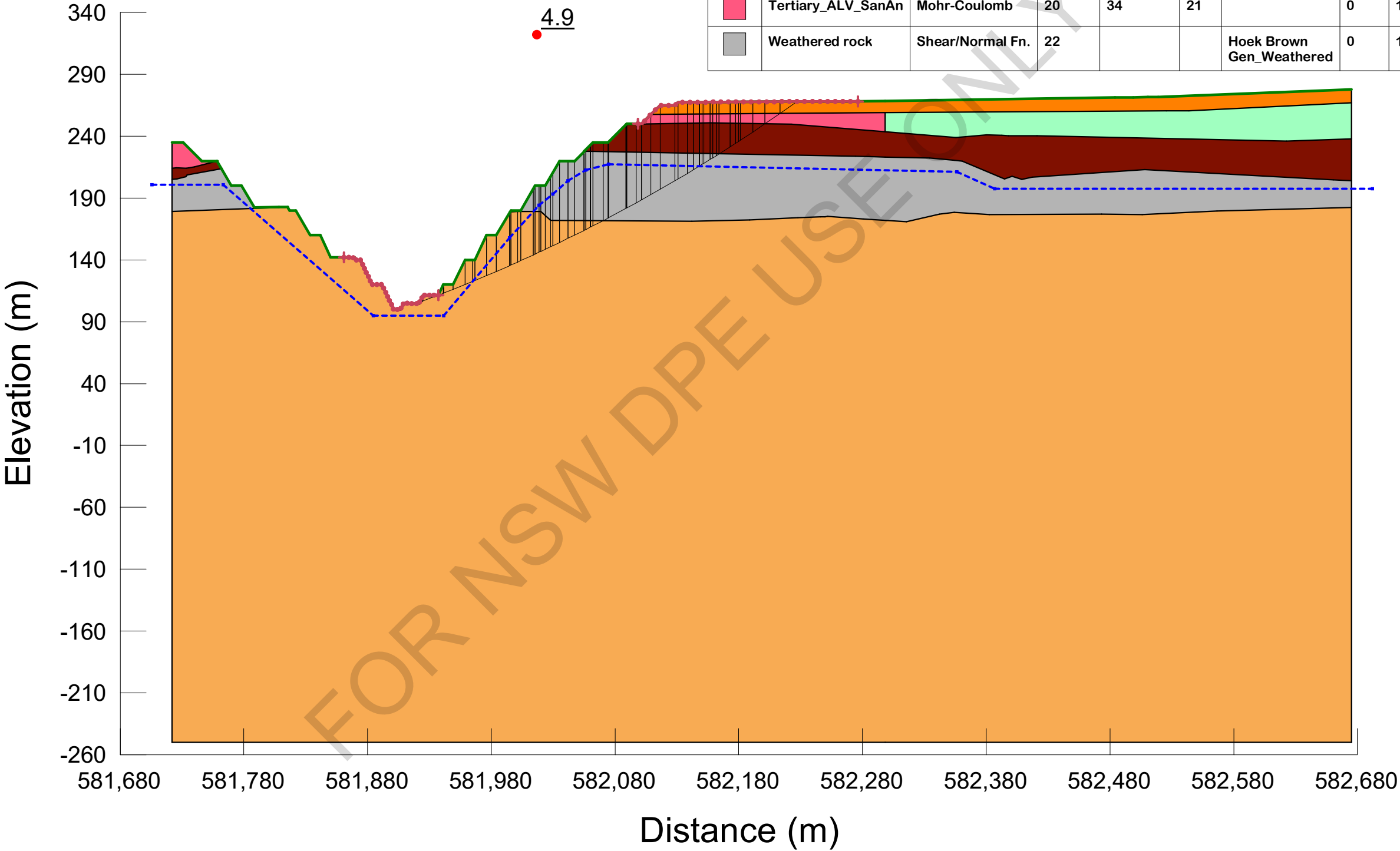


Analysis Method: Morgenstern-Price
Search Method: Entry and Exit

Analysis Name: 01_GWT_Existing_Design_Local
File Name: SECTION S-4 – MODEL 708620-0-RevA.gsz
Analysis Date: 09-Mar-21

Current Analysis: 02_GWT_Existing_Design_Global

Color	Name	Model	Unit Weight (kN/m³)	Cohesion' (kPa)	Phi' (°)	Strength Function	Phi-B (°)	Piezometric Line
	Fresh Rock	Shear/Normal Fn.	28			Hoek Brown Gen	0	1
	Quaternary_ALV	Mohr-Coulomb	18	31	13		0	1
	Saprolite	Mohr-Coulomb	22	37	23		0	1
	Tertiary_ALV_Ros	Mohr-Coulomb	20	42	21		0	1
	Tertiary_ALV_SanAn	Mohr-Coulomb	20	34	21		0	1
	Weathered rock	Shear/Normal Fn.	22			Hoek Brown Gen_Weathered	0	1



Analysis Method: Morgenstern-Price
Search Method: Entry and Exit

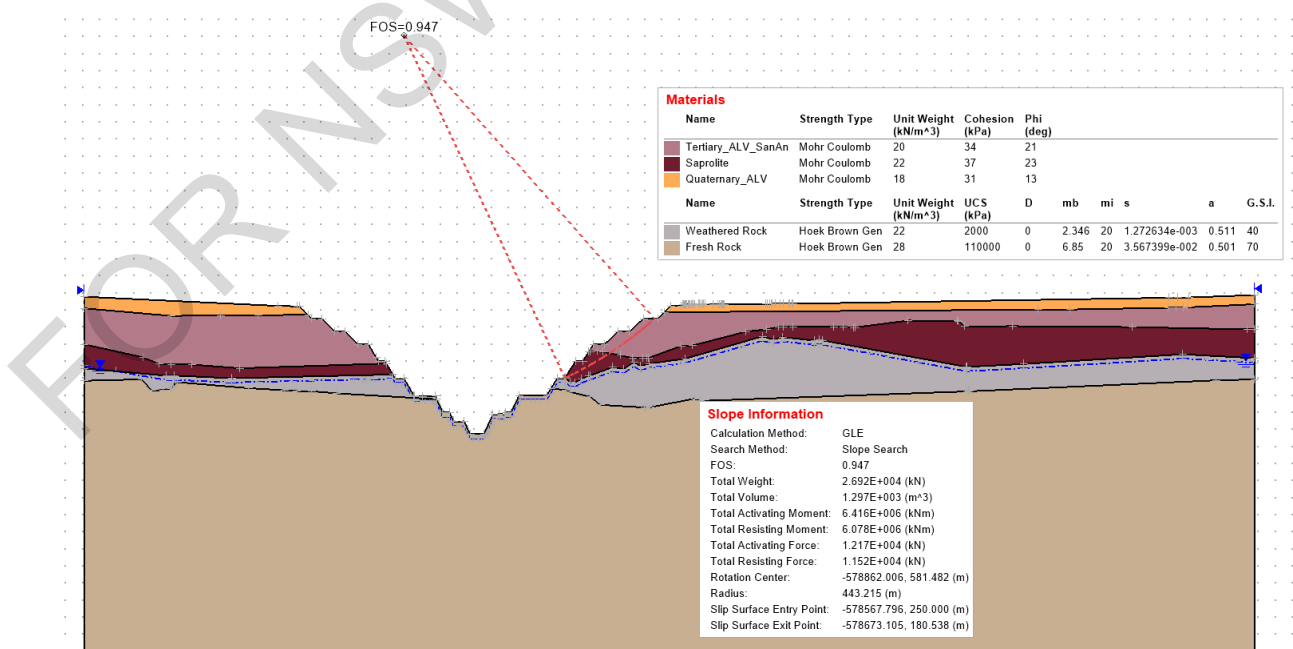
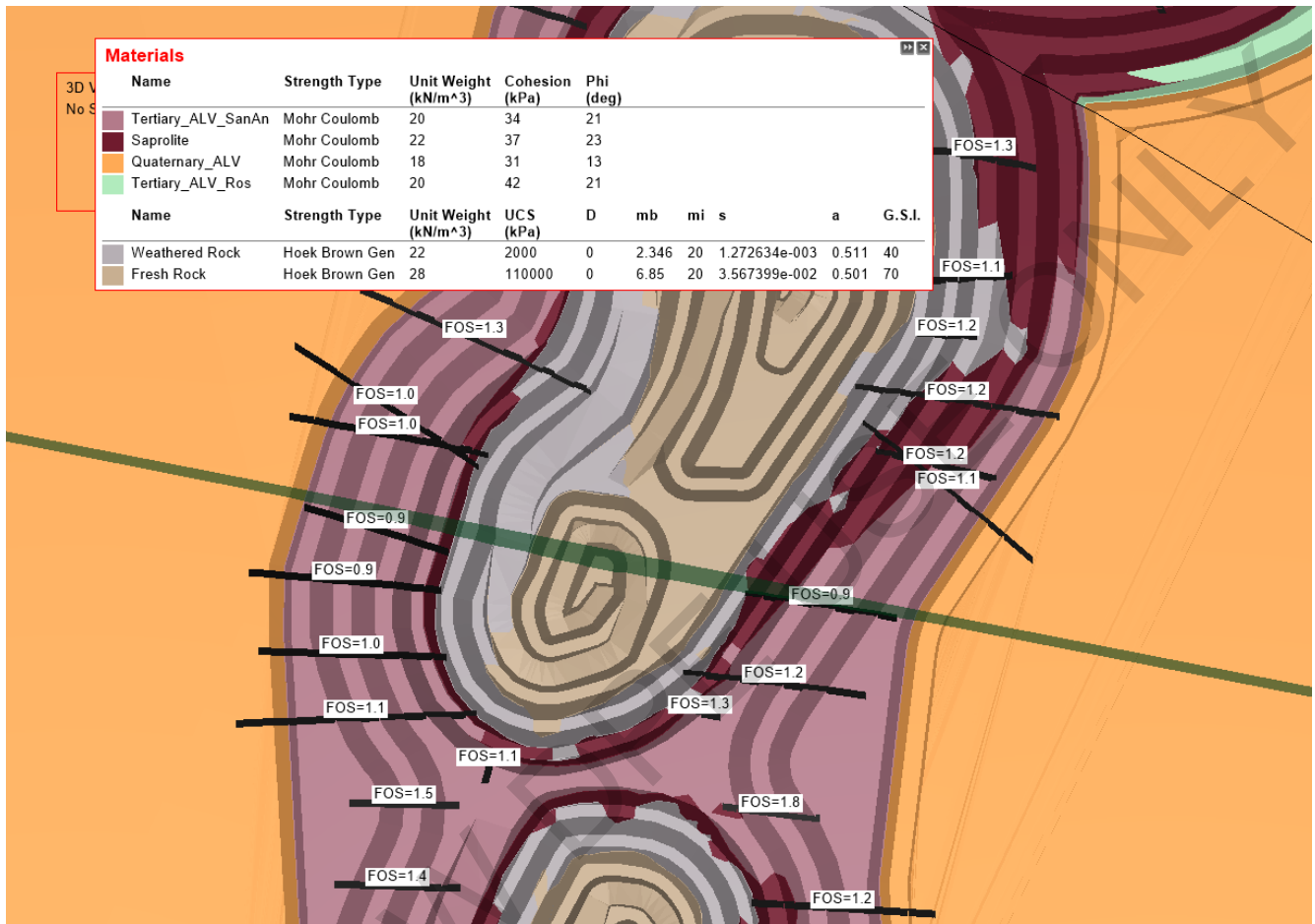
Analysis Name: 02_GWT_Existing_Design_Global

File Name: SECTION S-4 – MODEL 708620-0-RevA.gsz

Analysis Date: 09-Mar-21

Analysis By: Tun, Douglas

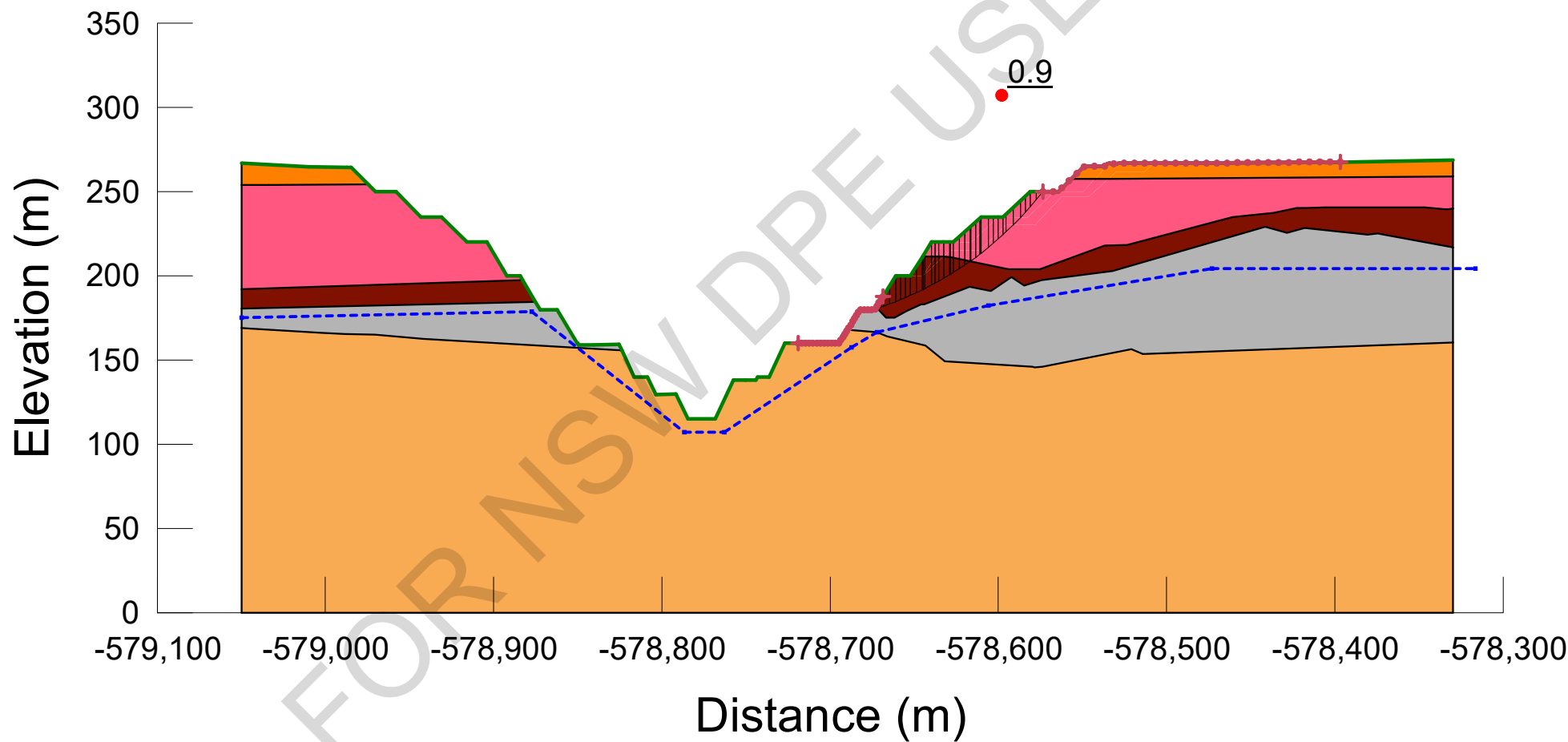
SECTION S-5 – MODEL 912646-0



PS117942 - Concept Pit Slope Design
Pit ref: sar_c5c11_201203

01_GWT_Existing_Design_Global
Current Analysis: 01_GWT_Existing_Design_Local

Color	Name	Model	Unit Weight (kN/m³)	Cohesion' (kPa)	Phi' (°)	Strength Function	Phi-B (°)	Piezometric Line
	Fresh Rock	Shear/Normal Fn.	28			Hoek Brown Gen	0	1
	Quaternary_ALV	Mohr-Coulomb	18	31	13		0	1
	Saprolite	Mohr-Coulomb	22	37	23		0	1
	Tertiary_ALV_SanAn	Mohr-Coulomb	20	34	21		0	1
	Weathered rock	Shear/Normal Fn.	22			Hoek Brown Gen_Weathered	0	1



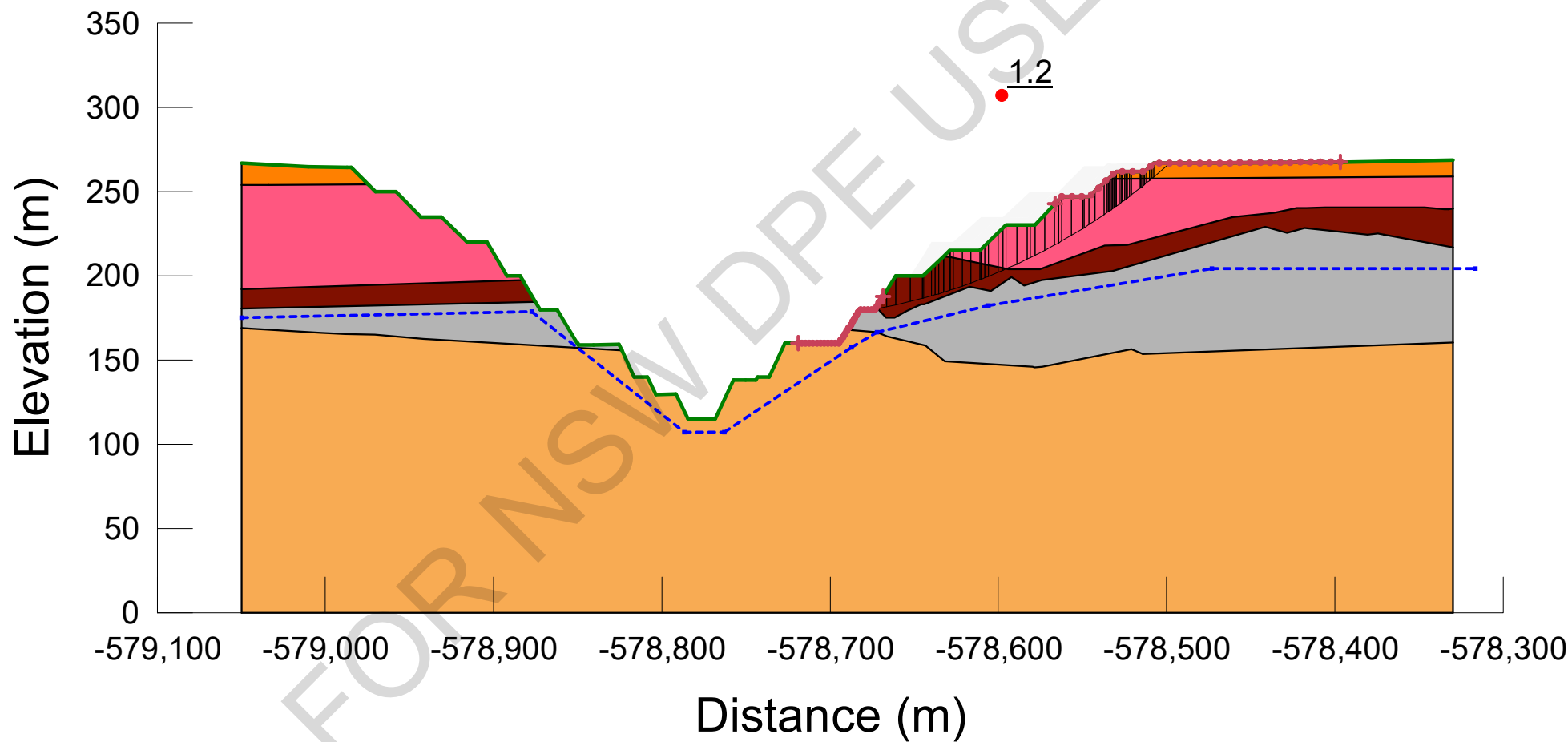
Analysis Method: Morgenstern-Price
Search Method: Entry and Exit

Analysis Name: 01_GWT_Existing_Design_Local
File Name: SECTION S-5 – MODEL 912646-0-RevB.gsz
Analysis Date: 09-Mar-21

PS117942 - Concept Pit Slope Design
Pit ref: sar_c5c11_201203

02_Proposed_Design_Global_16mW_15mH
Current Analysis: 02_Proposed_Design_Local

Color	Name	Model	Unit Weight (kN/m³)	Cohesion' (kPa)	Phi' (°)	Strength Function	Phi-B (°)	Piezometric Line
	Fresh Rock	Shear/Normal Fn.	28			Hoek Brown Gen	0	1
	Quaternary_ALV	Mohr-Coulomb	18	31	13		0	1
	Saprolite	Mohr-Coulomb	22	37	23		0	1
	Tertiary_ALV_SanAn	Mohr-Coulomb	20	34	21		0	1
	Weathered rock	Shear/Normal Fn.	22			Hoek Brown Gen_Weathered	0	1

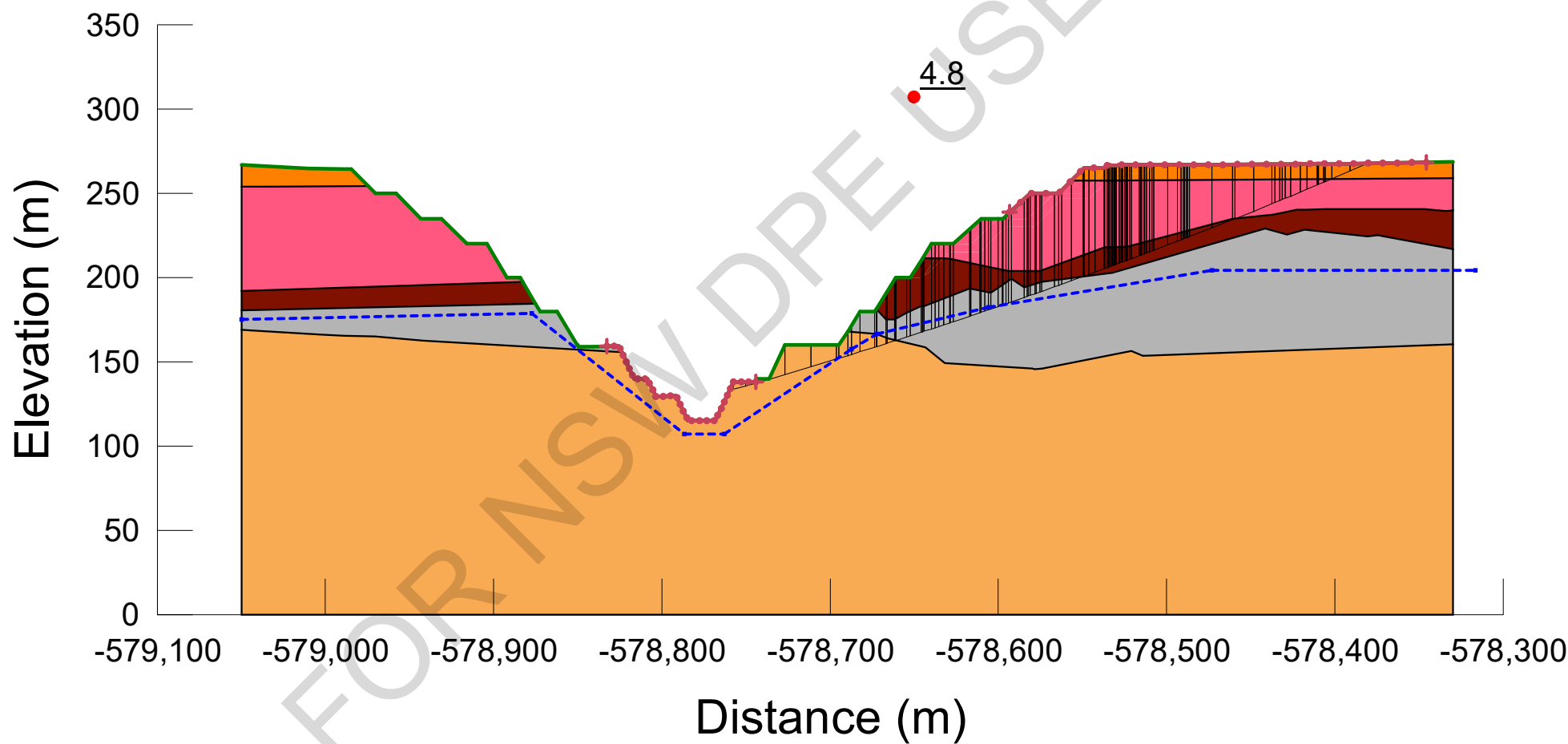


Analysis Method: Morgenstern-Price
Search Method: Entry and Exit

Analysis Name: 02_Proposed_Design_Local
File Name: SECTION S-5 – MODEL 912646-0-RevB.gsz
Analysis Date: 09-Mar-21

Current Analysis: 03_GWT_Existing_Design_Global

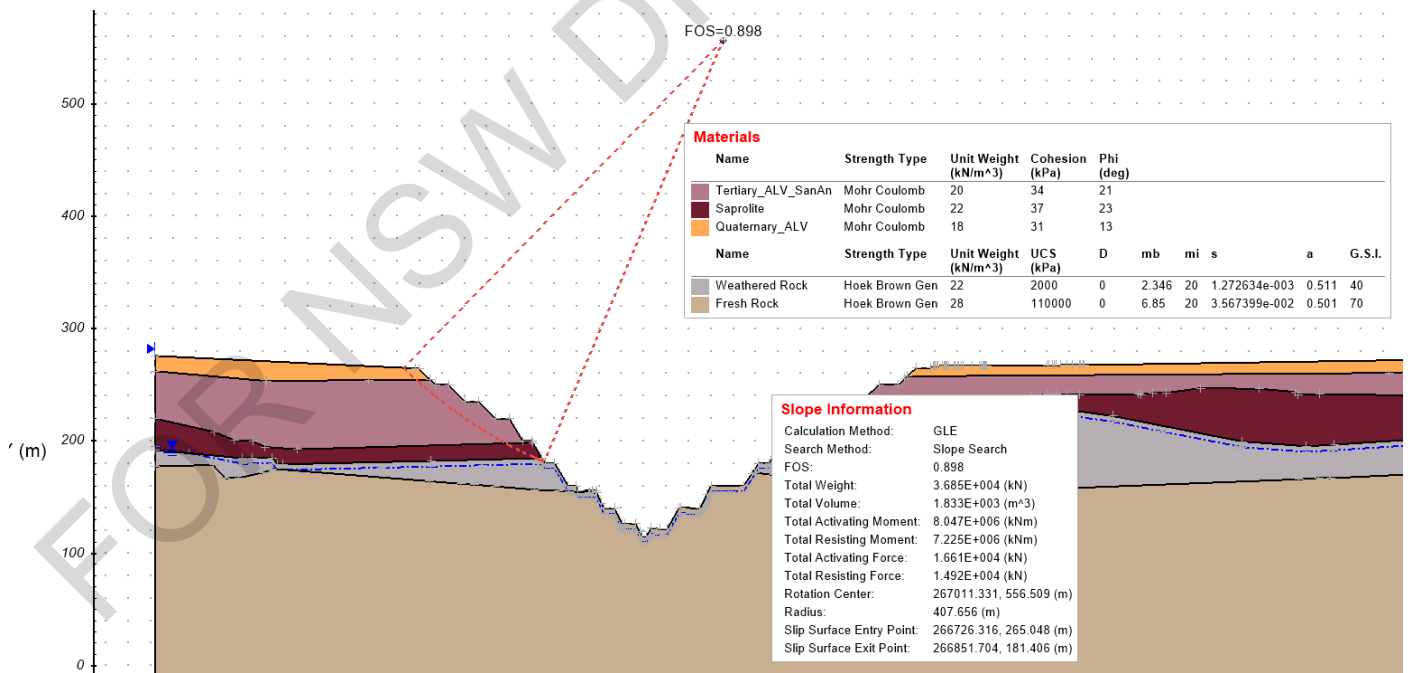
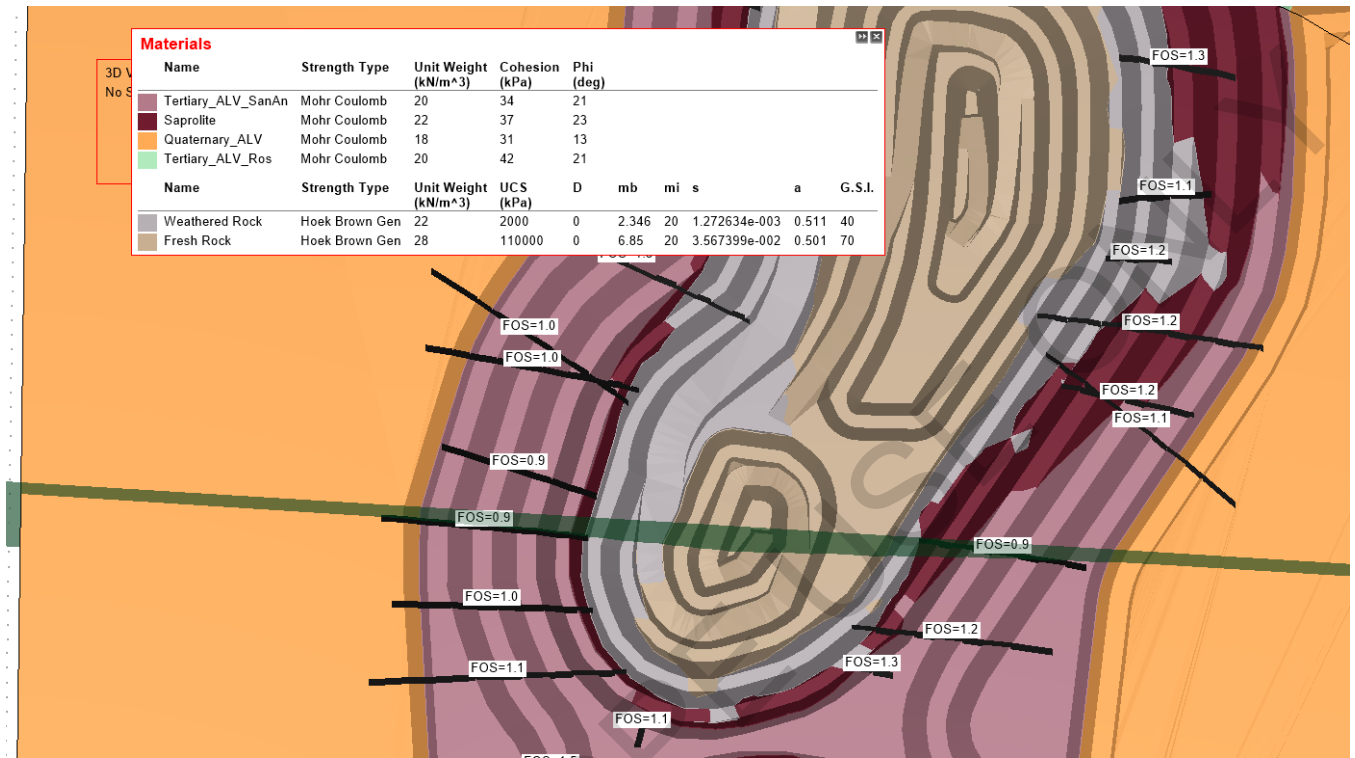
Color	Name	Model	Unit Weight (kN/m³)	Cohesion' (kPa)	Phi' (°)	Strength Function	Phi-B (°)	Piezometric Line
	Fresh Rock	Shear/Normal Fn.	28			Hoek Brown Gen	0	1
	Quaternary_ALV	Mohr-Coulomb	18	31	13		0	1
	Saprolite	Mohr-Coulomb	22	37	23		0	1
	Tertiary_ALV_SanAn	Mohr-Coulomb	20	34	21		0	1
	Weathered rock	Shear/Normal Fn.	22			Hoek Brown Gen_Weathered	0	1



Analysis Method: Morgenstern-Price
Search Method: Entry and Exit

Analysis Name: 03_GWT_Existing_Design_Global
File Name: SECTION S-5 – MODEL 912646-0-RevB.gsz
Analysis Date: 09-Mar-21

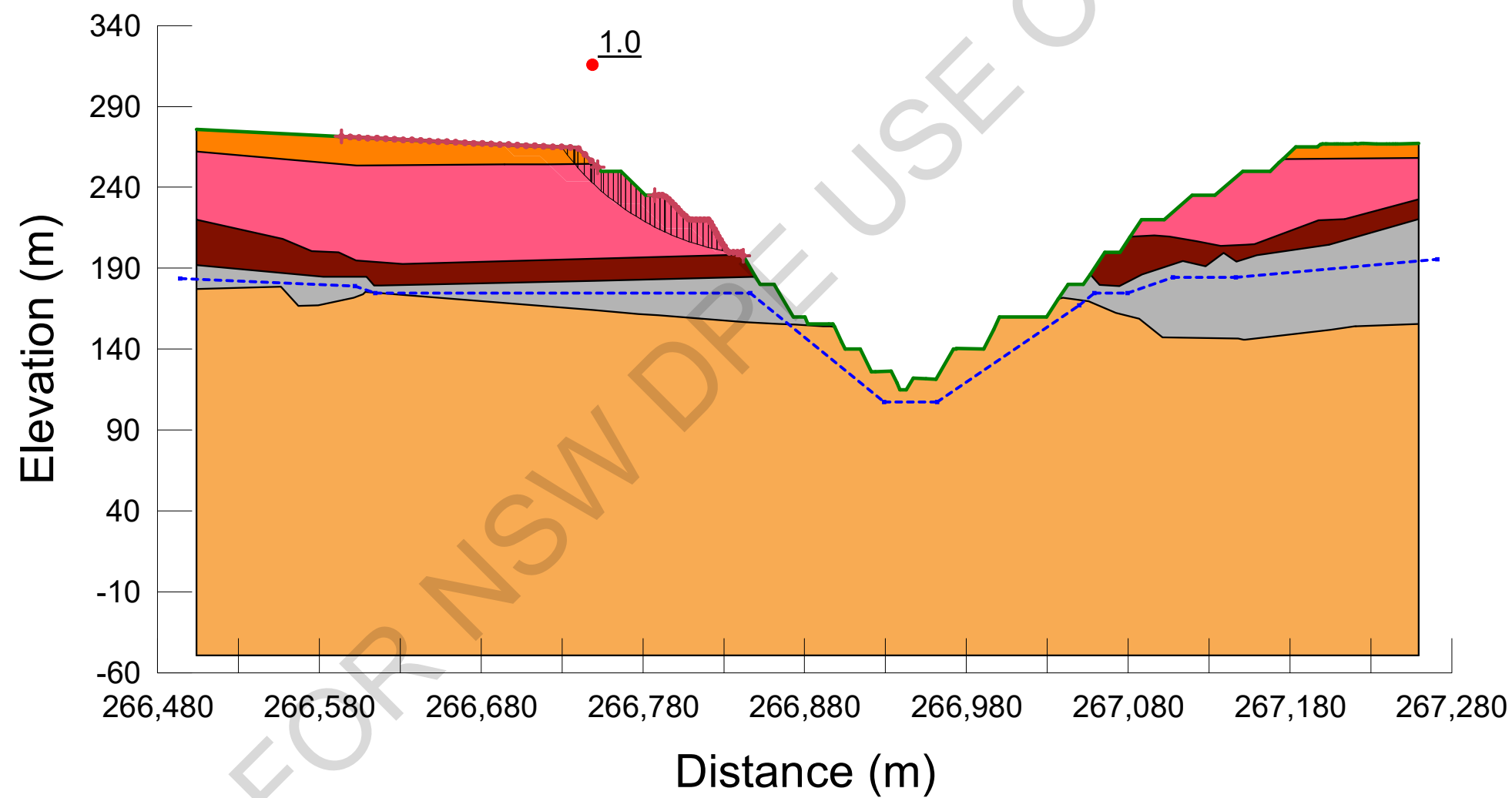
SECTION S-6 – MODEL 882403-0



PS117942 - Concept Pit Slope Design
Pit ref: sar_c5c11_201203

01_GWT_Existing_Design_Global
Current Analysis: 01_GWT_Existing_Design_ALV

Color	Name	Model	Unit Weight (kN/m³)	Cohesion' (kPa)	Phi' (°)	Strength Function	Phi-B (°)	Piezometric Line
	Fresh Rock	Shear/Normal Fn.	28			Hoek Brown Gen	0	1
	Quaternary_ALV	Mohr-Coulomb	18	31	13		0	1
	Saprolite	Mohr-Coulomb	22	37	23		0	1
	Tertiary_ALV_SanAn	Mohr-Coulomb	20	34	21		0	1
	Weathered rock	Shear/Normal Fn.	22			Hoek Brown Gen_Weathered	0	1



Analysis Method: Morgenstern-Price
Search Method: Entry and Exit

Analysis Name: 01_GWT_Existing_Design_ALV

File Name: SECTION S-6 – MODEL 882403-0-RevB.gsz

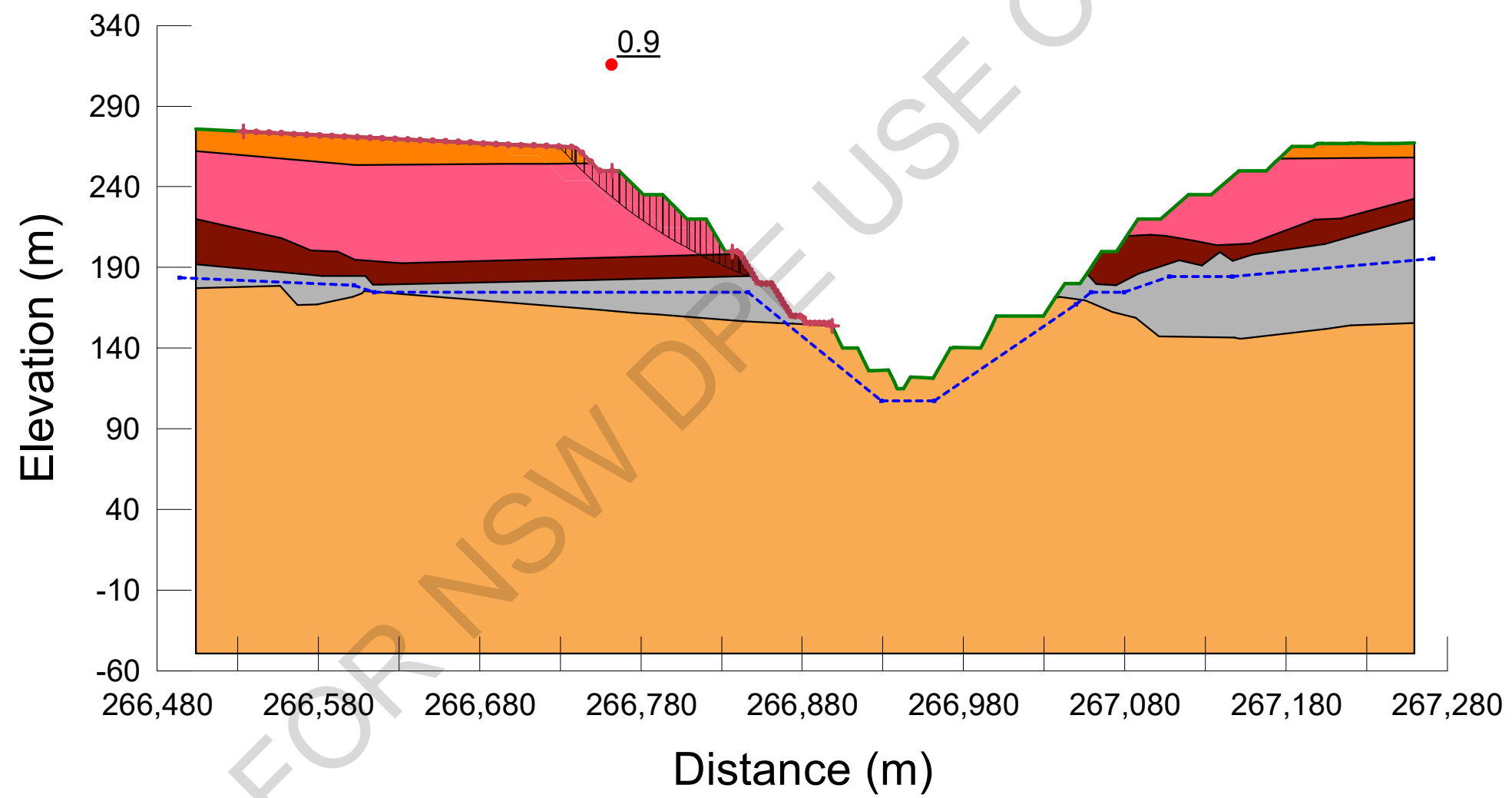
Analysis Date: 09-Mar-21

Analysis By: Tun, Douglas

PS117942 - Concept Pit Slope Design
Pit ref: sar_c5c11_201203

02_GWT_Existing_Design_Global
Current Analysis: 02_GWT_Existing_Design_Local

Color	Name	Model	Unit Weight (kN/m³)	Cohesion' (kPa)	Phi' (°)	Strength Function	Phi-B (°)	Piezometric Line
	Fresh Rock	Shear/Normal Fn.	28			Hoek Brown Gen	0	1
	Quaternary_ALV	Mohr-Coulomb	18	31	13		0	1
	Saprolite	Mohr-Coulomb	22	37	23		0	1
	Tertiary_ALV_SanAn	Mohr-Coulomb	20	34	21		0	1
	Weathered rock	Shear/Normal Fn.	22			Hoek Brown Gen_Weathered	0	1



Analysis Method: Morgenstern-Price
Search Method: Entry and Exit

Analysis Name: 02_GWT_Existing_Design_Local

File Name: SECTION S-6 – MODEL 882403-0-RevB.gsz

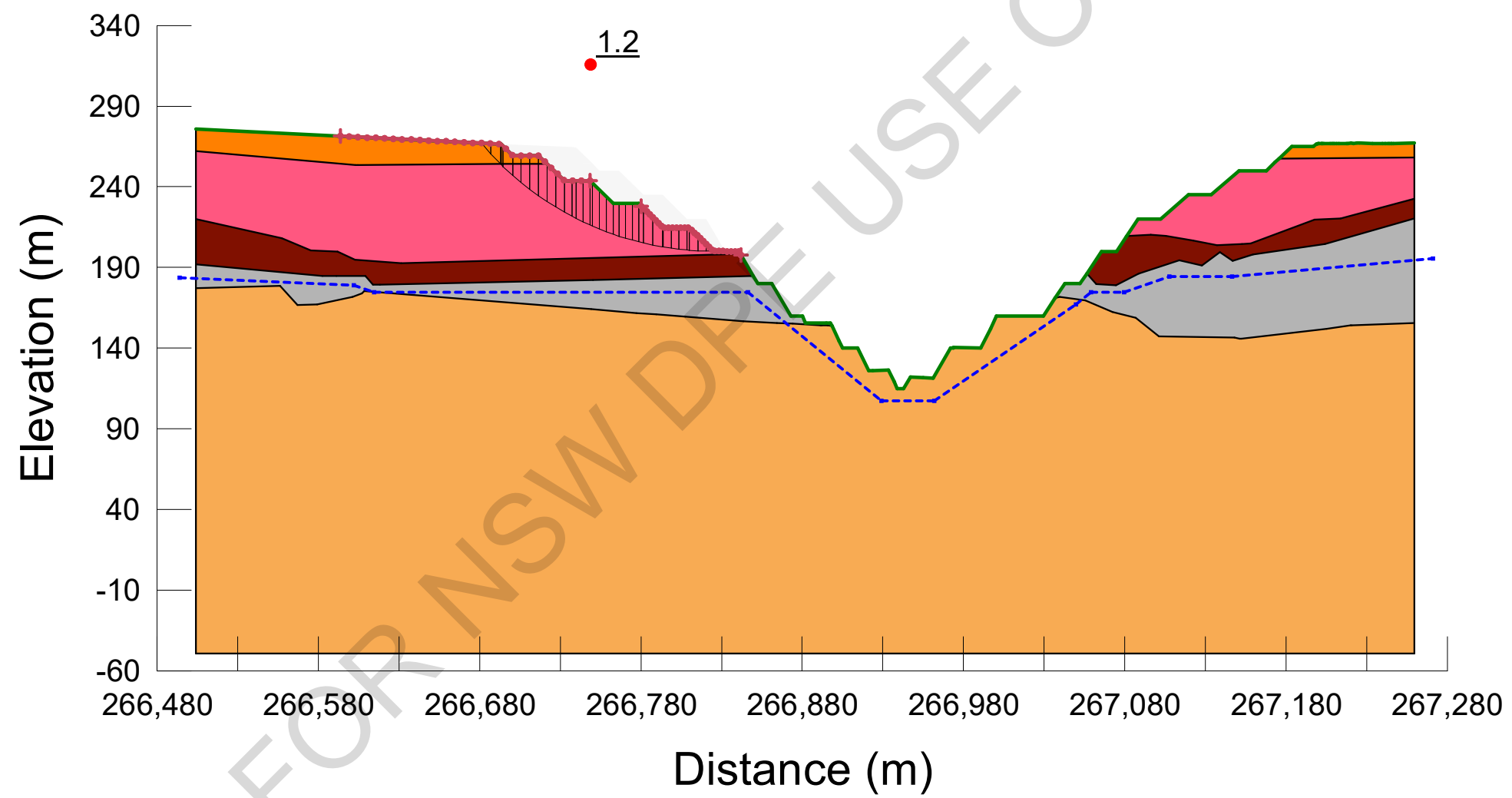
Analysis Date: 09-Mar-21

Analysis By: Tun, Douglas

PS117942 - Concept Pit Slope Design
Pit ref: sar_c5c11_201203

03_Proposed_Design_Global_16mW_15mH
Current Analysis: 03_Proposed_Design_ALV

Color	Name	Model	Unit Weight (kN/m³)	Cohesion' (kPa)	Phi' (°)	Strength Function	Phi-B (°)	Piezometric Line
	Fresh Rock	Shear/Normal Fn.	28			Hoek Brown Gen	0	1
	Quaternary_ALV	Mohr-Coulomb	18	31	13		0	1
	Saprolite	Mohr-Coulomb	22	37	23		0	1
	Tertiary_ALV_SanAn	Mohr-Coulomb	20	34	21		0	1
	Weathered rock	Shear/Normal Fn.	22			Hoek Brown Gen_Weathered	0	1



Analysis Method: Morgenstern-Price
Search Method: Entry and Exit

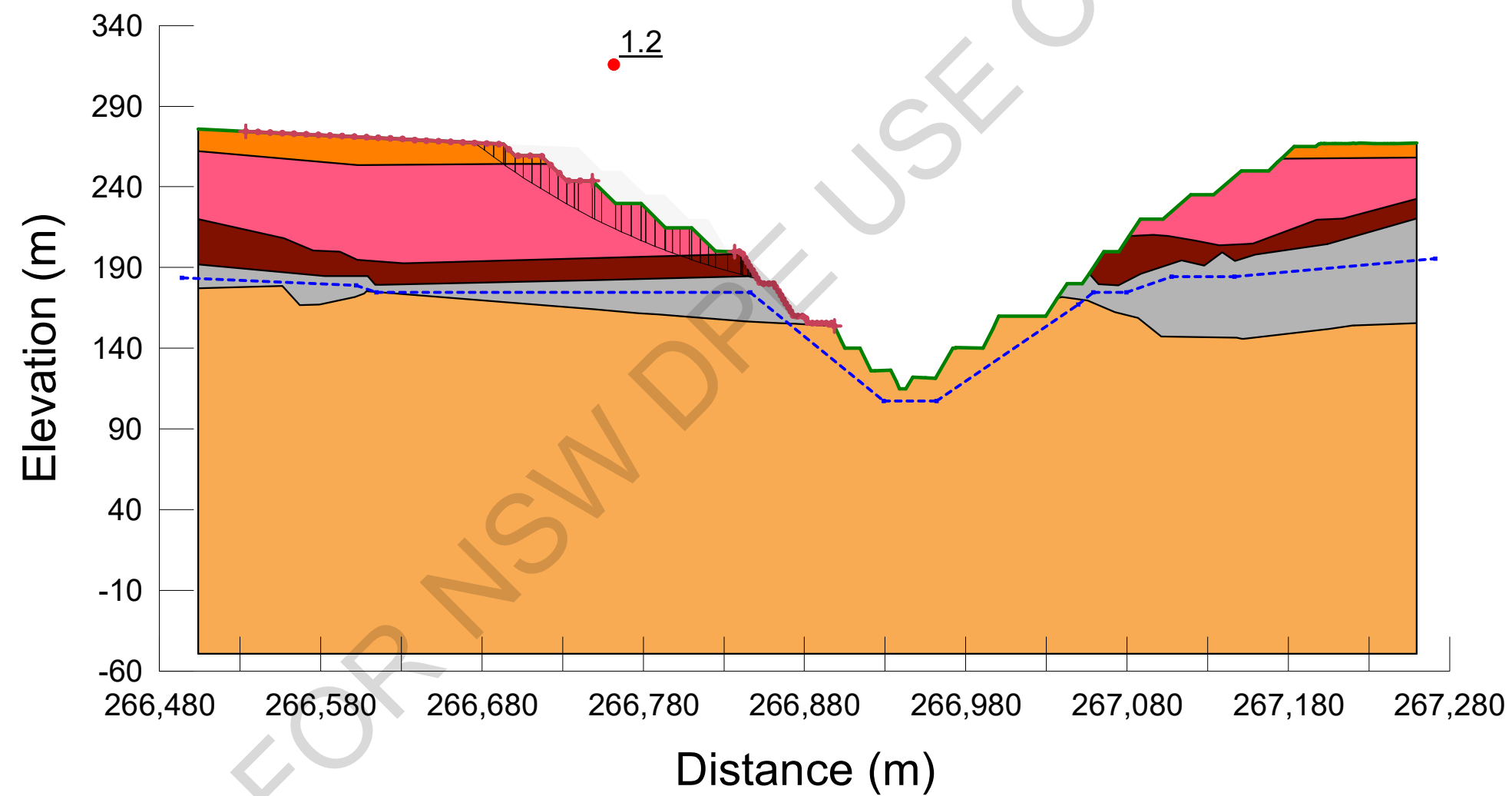
Analysis Name: 03_Proposed_Design_ALV
File Name: SECTION S-6 – MODEL 882403-0-RevB.gsz
Analysis Date: 09-Mar-21

Analysis By: Tun, Douglas

PS117942 - Concept Pit Slope Design
Pit ref: sar_c5c11_201203

04_Proposed_Design_Global_16mW_15mH
Current Analysis: 04_Proposed_Design_Local

Color	Name	Model	Unit Weight (kN/m³)	Cohesion' (kPa)	Phi' (°)	Strength Function	Phi-B (°)	Piezometric Line
	Fresh Rock	Shear/Normal Fn.	28			Hoek Brown Gen	0	1
	Quaternary_ALV	Mohr-Coulomb	18	31	13		0	1
	Saprolite	Mohr-Coulomb	22	37	23		0	1
	Tertiary_ALV_SanAn	Mohr-Coulomb	20	34	21		0	1
	Weathered rock	Shear/Normal Fn.	22			Hoek Brown Gen_Weathered	0	1



Analysis Method: Morgenstern-Price
Search Method: Entry and Exit

Analysis Name: 04_Proposed_Design_Local

File Name: SECTION S-6 – MODEL 882403-0-RevB.gsz

Analysis Date: 09-Mar-21

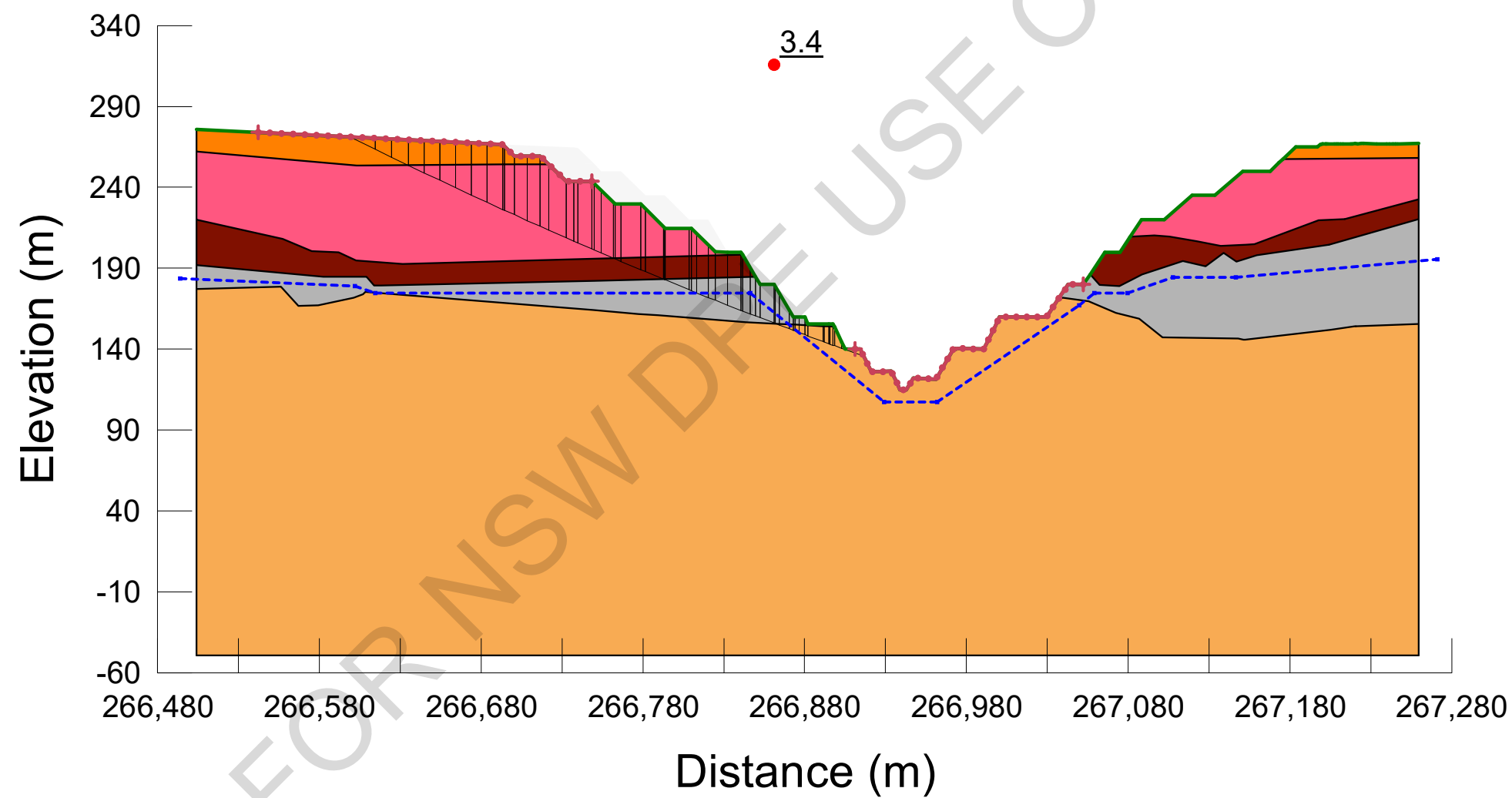
Analysis By: Tun, Douglas



PS117942 - Concept Pit Slope Design
Pit ref: sar_c5c11_201203

Current Analysis: 05_Proposed_Design_Global_16mW_15mH

Color	Name	Model	Unit Weight (kN/m³)	Cohesion' (kPa)	Phi' (°)	Strength Function	Phi-B (°)	Piezometric Line
	Fresh Rock	Shear/Normal Fn.	28			Hoek Brown Gen	0	1
	Quaternary_ALV	Mohr-Coulomb	18	31	13		0	1
	Saprolite	Mohr-Coulomb	22	37	23		0	1
	Tertiary_ALV_SanAn	Mohr-Coulomb	20	34	21		0	1
	Weathered rock	Shear/Normal Fn.	22			Hoek Brown Gen_Weathered	0	1

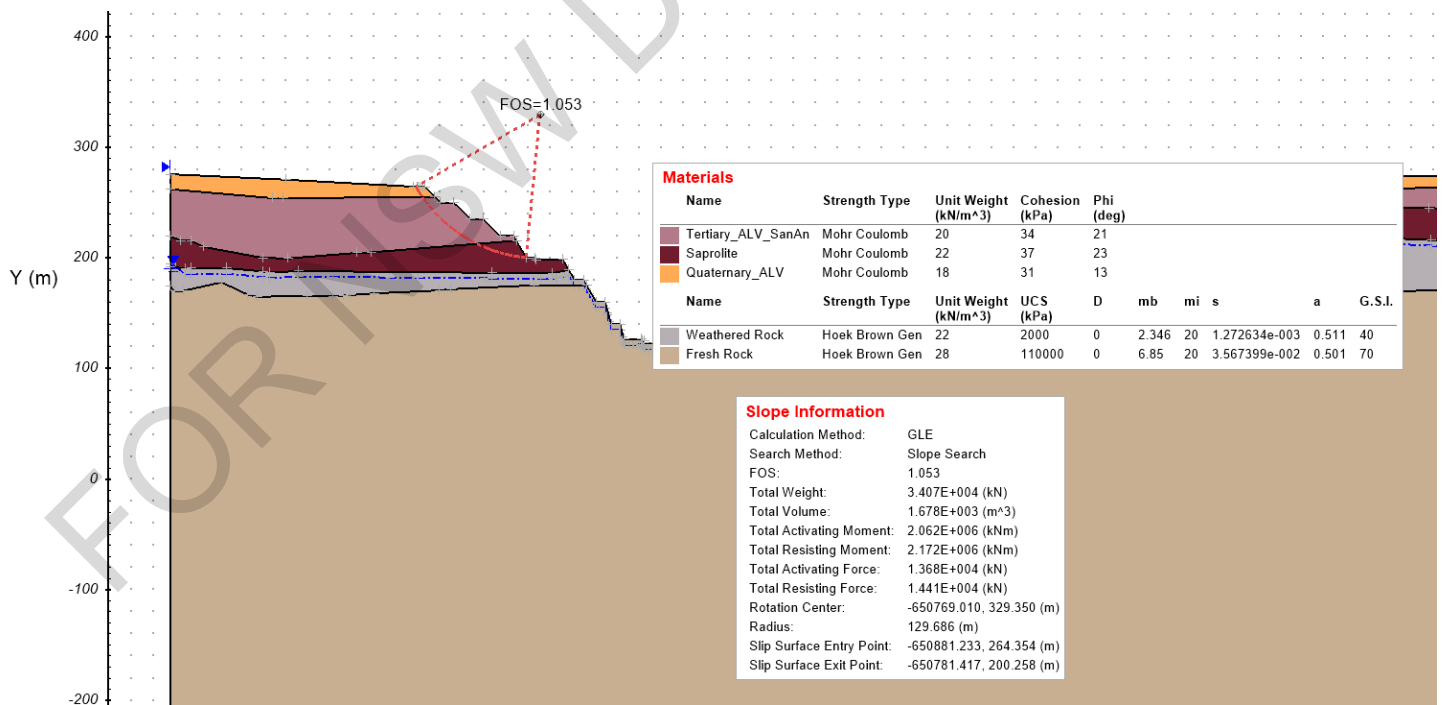
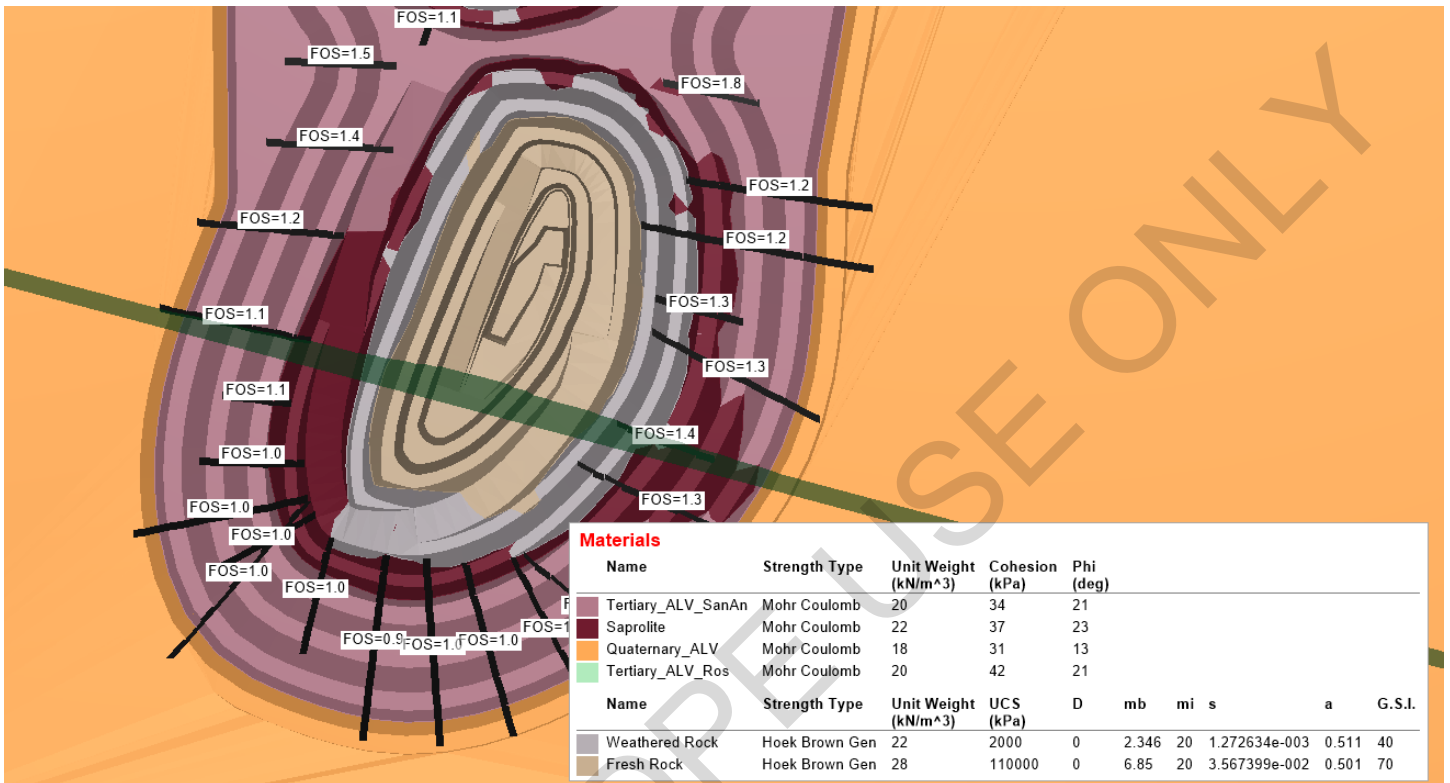


Analysis Method: Morgenstern-Price
Search Method: Entry and Exit

Analysis Name: 05_Proposed_Design_Global_16mW_15mH
File Name: SECTION S-6 – MODEL 882403-0-RevB.gsz
Analysis Date: 09-Mar-21

Analysis By: Tun, Douglas

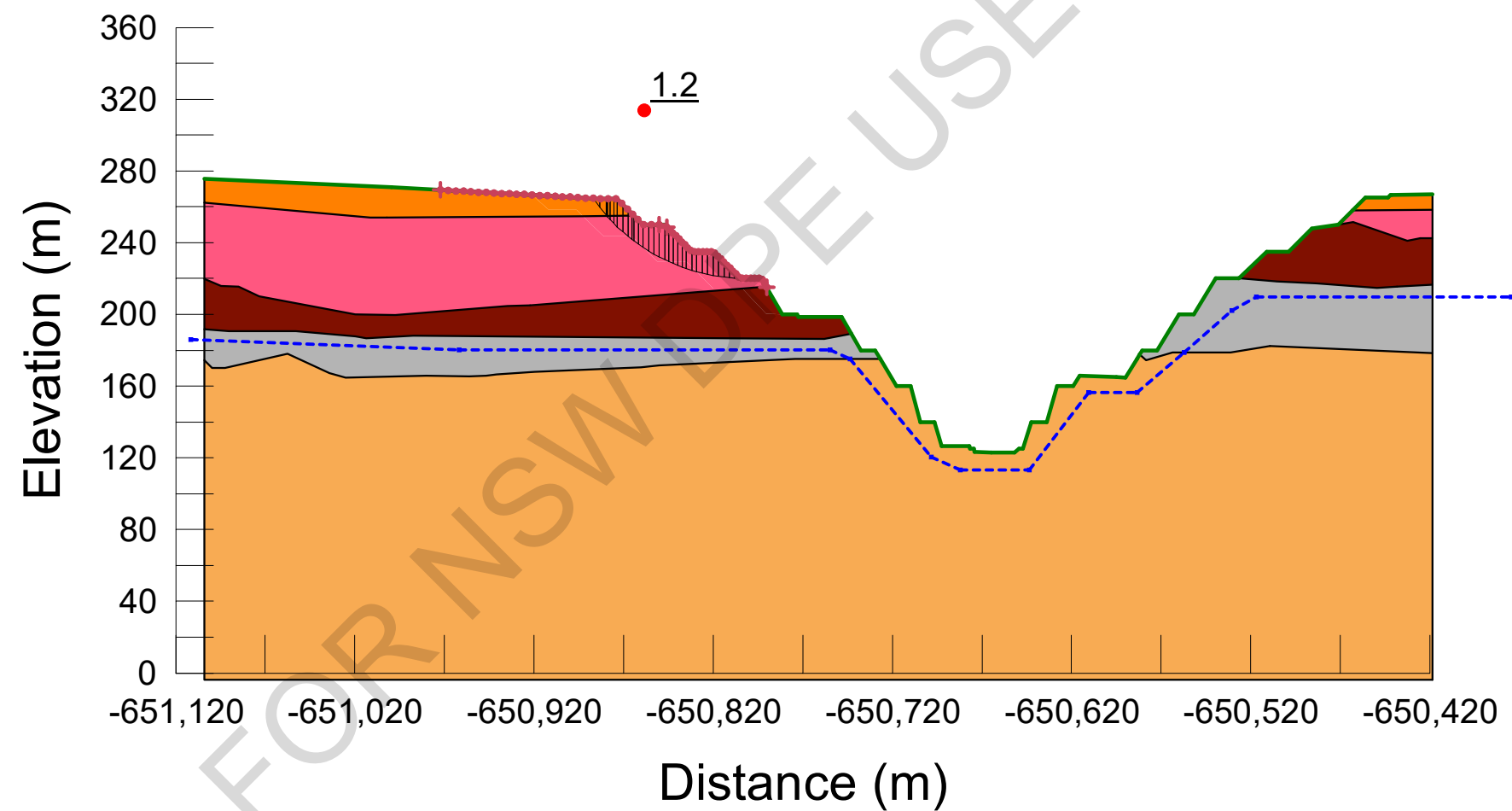
SECTION S-7 – MODEL 905456-0



PS117942 - Concept Pit Slope Design
Pit ref: sar_c5c11_201203

01_GWT_Existing_Design_Global
Current Analysis: 01_GWT_Existing_Design_ALV

Color	Name	Model	Unit Weight (kN/m³)	Cohesion' (kPa)	Phi' (°)	Strength Function	Phi-B (°)	Piezometric Line
	Fresh Rock	Shear/Normal Fn.	28			Hoek Brown Gen	0	1
	Quaternary_ALV	Mohr-Coulomb	18	31	13		0	1
	Saprolite	Mohr-Coulomb	22	37	23		0	1
	Tertiary_ALV_SanAn	Mohr-Coulomb	20	34	21		0	1
	Weathered rock	Shear/Normal Fn.	22			Hoek Brown Gen_Weathered	0	1



Analysis Method: Morgenstern-Price
Search Method: Entry and Exit

Analysis Name: 01_GWT_Existing_Design_ALV
File Name: SECTION S-7 – MODEL 905456-0-RevB.gsz
Analysis Date: 09-Mar-21

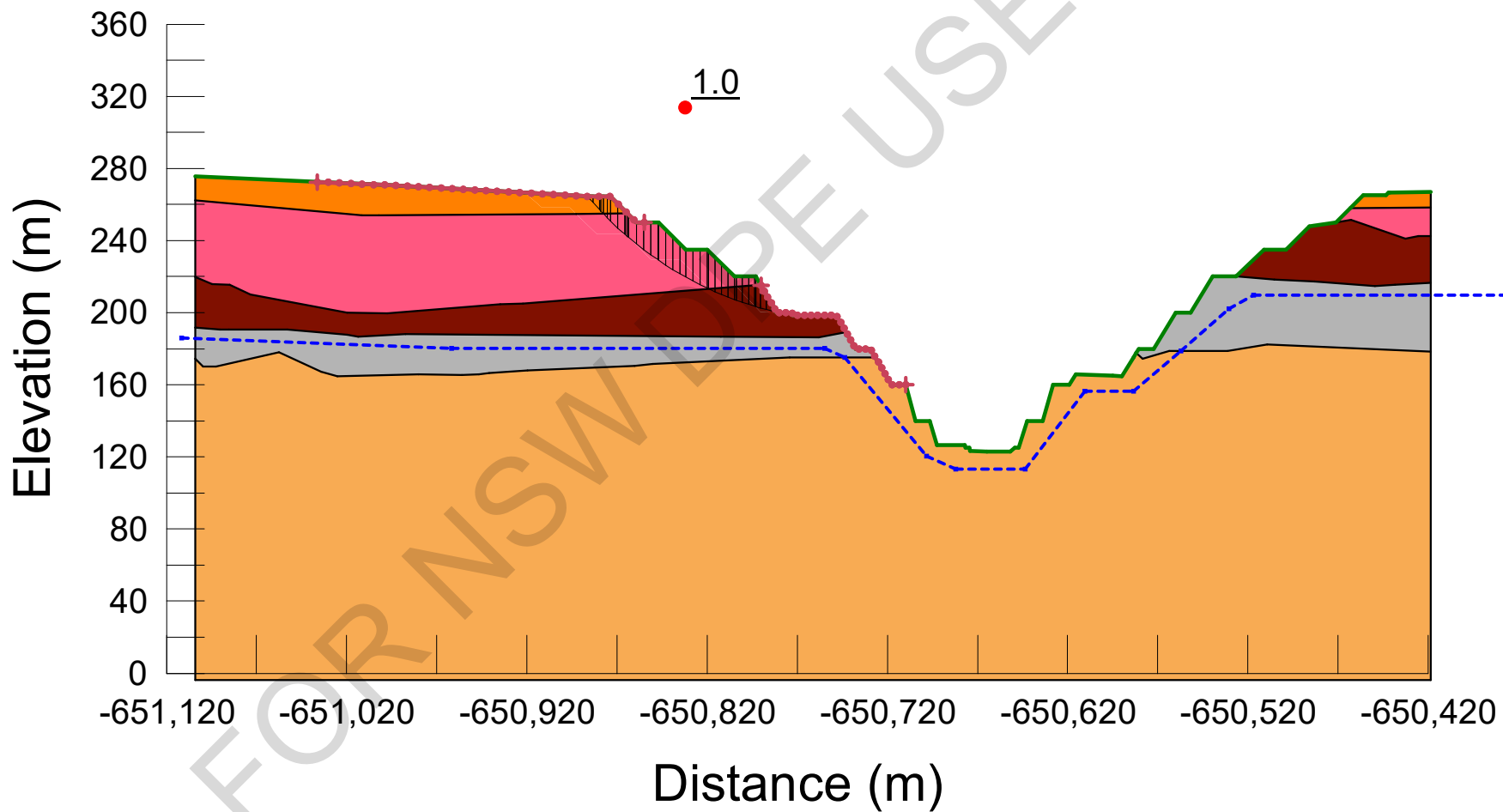
Analysis By: Tun, Douglas



PS117942 - Concept Pit Slope Design
Pit ref: sar_c5c11_201203

02_GWT_Existing_Design_Global
Current Analysis: 02_GWT_Existing_Design_Local

Color	Name	Model	Unit Weight (kN/m³)	Cohesion' (kPa)	Phi' (°)	Strength Function	Phi-B (°)	Piezometric Line
	Fresh Rock	Shear/Normal Fn.	28			Hoek Brown Gen	0	1
	Quaternary_ALV	Mohr-Coulomb	18	31	13		0	1
	Saprolite	Mohr-Coulomb	22	37	23		0	1
	Tertiary_ALV_SanAn	Mohr-Coulomb	20	34	21		0	1
	Weathered rock	Shear/Normal Fn.	22			Hoek Brown Gen_Weathered	0	1



Analysis Method: Morgenstern-Price
Search Method: Entry and Exit

Analysis Name: 02_GWT_Existing_Design_Local

File Name: SECTION S-7 – MODEL 905456-0-RevB.gsz

Analysis Date: 09-Mar-21

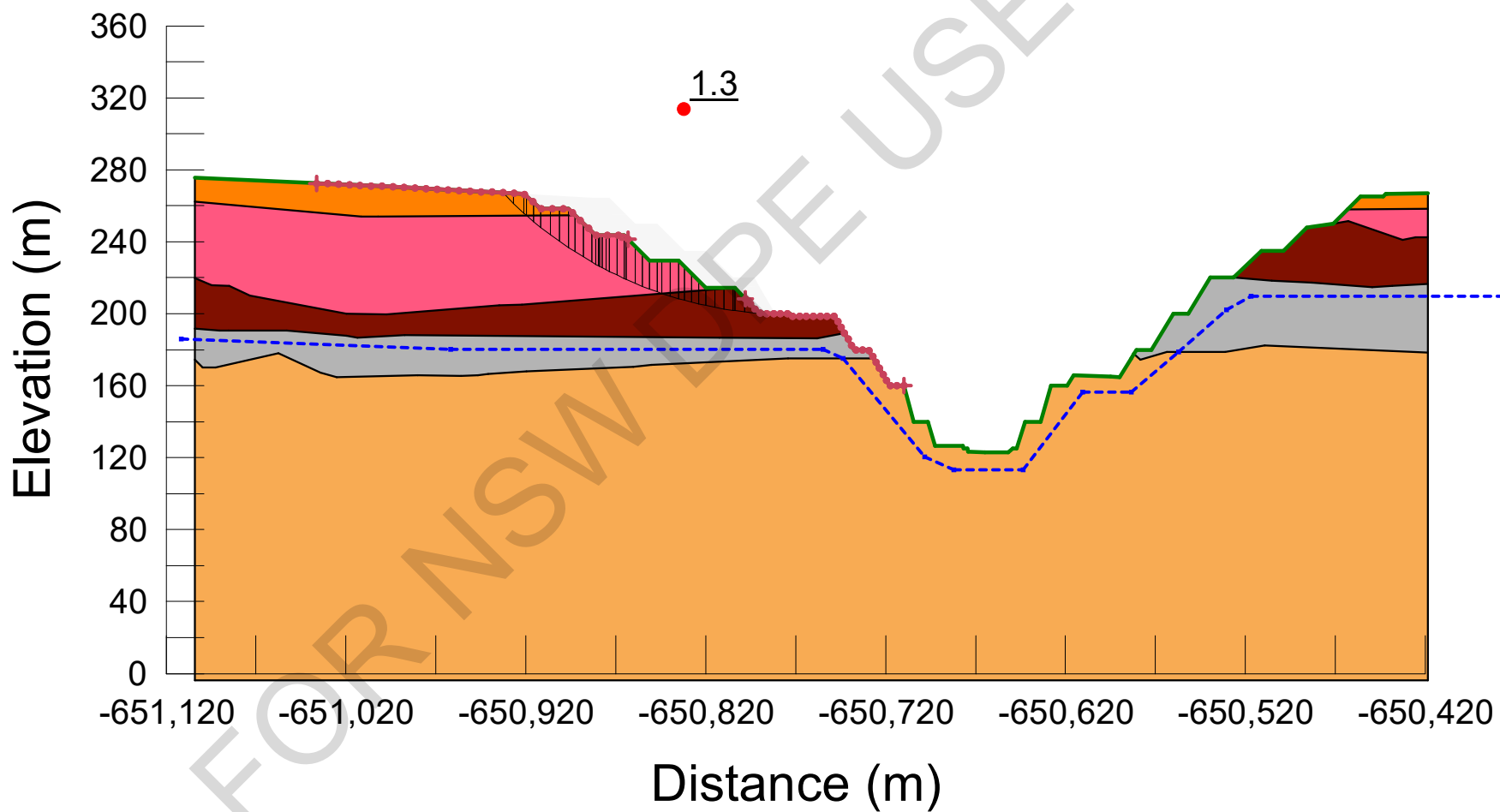
Analysis By: Tun, Douglas



PS117942 - Concept Pit Slope Design
Pit ref: sar_c5c11_201203

03_Proposed_Design_Global_16mW_15mH
Current Analysis: 03_Proposed_Design_Local

Color	Name	Model	Unit Weight (kN/m³)	Cohesion' (kPa)	Phi' (°)	Strength Function	Phi-B (°)	Piezometric Line
	Fresh Rock	Shear/Normal Fn.	28			Hoek Brown Gen	0	1
	Quaternary_ALV	Mohr-Coulomb	18	31	13		0	1
	Saprolite	Mohr-Coulomb	22	37	23		0	1
	Tertiary_ALV_SanAn	Mohr-Coulomb	20	34	21		0	1
	Weathered rock	Shear/Normal Fn.	22			Hoek Brown Gen_Weathered	0	1



Analysis Method: Morgenstern-Price
Search Method: Entry and Exit

Analysis Name: 03_Proposed_Design_Local

File Name: SECTION S-7 – MODEL 905456-0-RevB.gsz

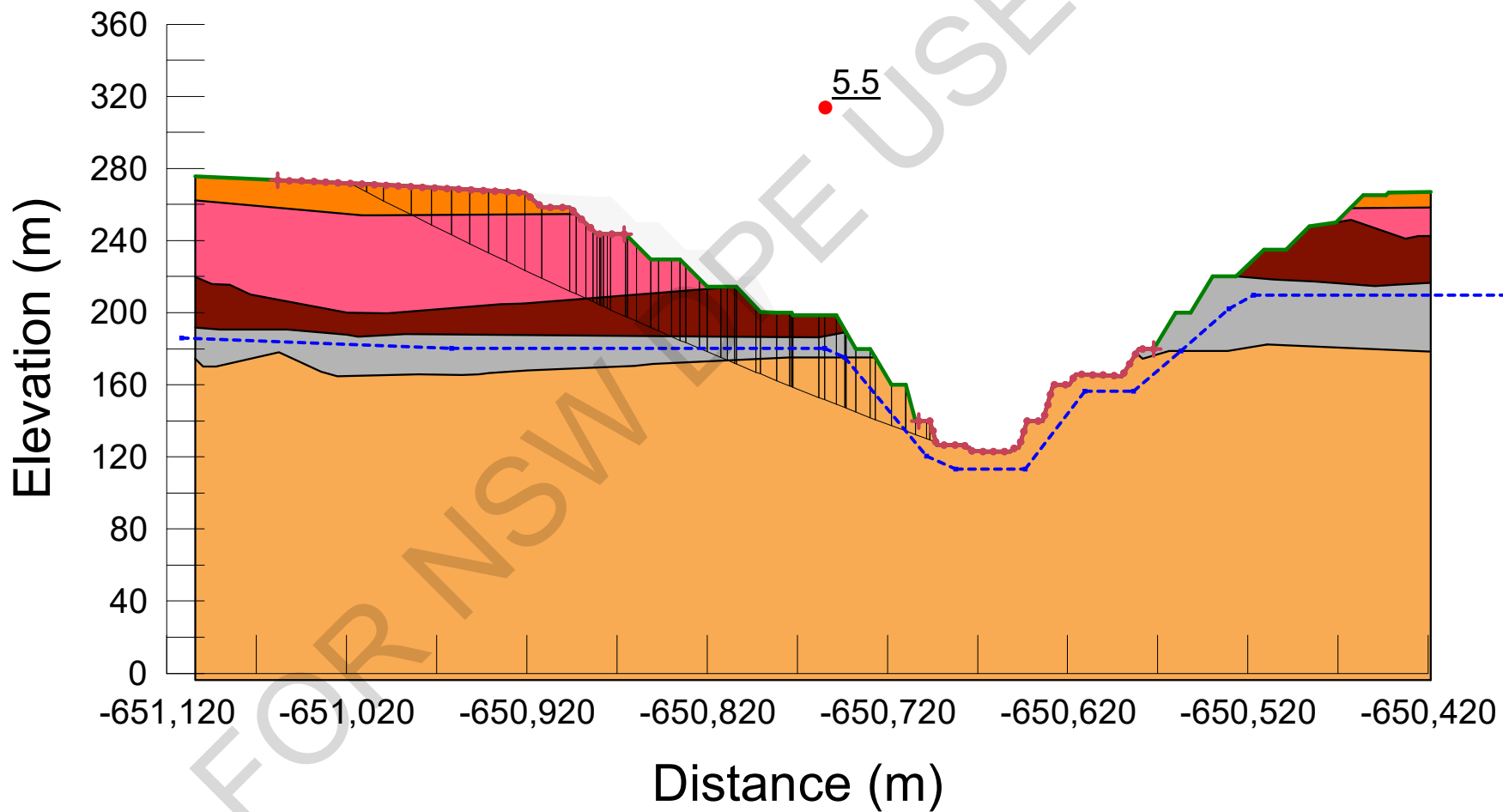
Analysis Date: 09-Mar-21

Analysis By: Tun, Douglas

PS117942 - Concept Pit Slope Design
Pit ref: sar_c5c11_201203

Current Analysis: 04_Proposed_Design_Global_16mW_15mH

Color	Name	Model	Unit Weight (kN/m³)	Cohesion' (kPa)	Phi' (°)	Strength Function	Phi-B (°)	Piezometric Line
	Fresh Rock	Shear/Normal Fn.	28			Hoek Brown Gen	0	1
	Quaternary_ALV	Mohr-Coulomb	18	31	13		0	1
	Saprolite	Mohr-Coulomb	22	37	23		0	1
	Tertiary_ALV_SanAn	Mohr-Coulomb	20	34	21		0	1
	Weathered rock	Shear/Normal Fn.	22			Hoek Brown Gen_Weathered	0	1

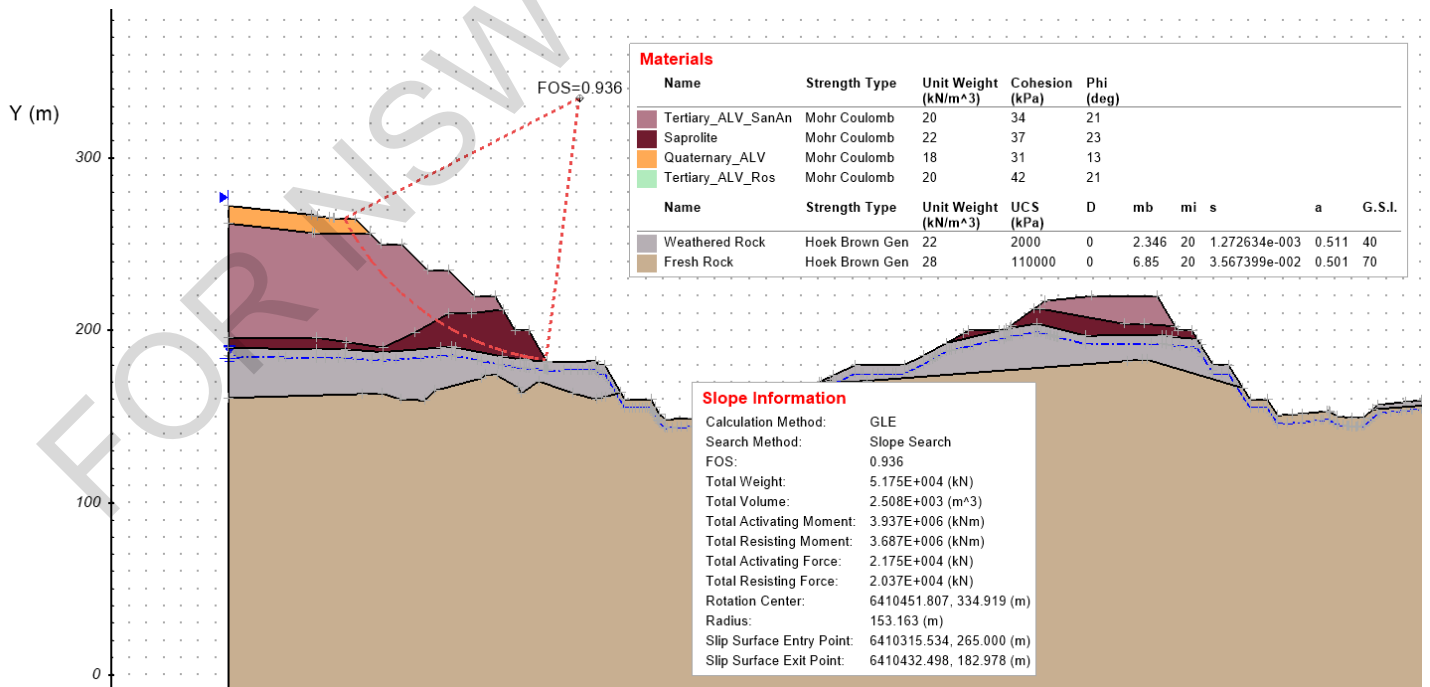
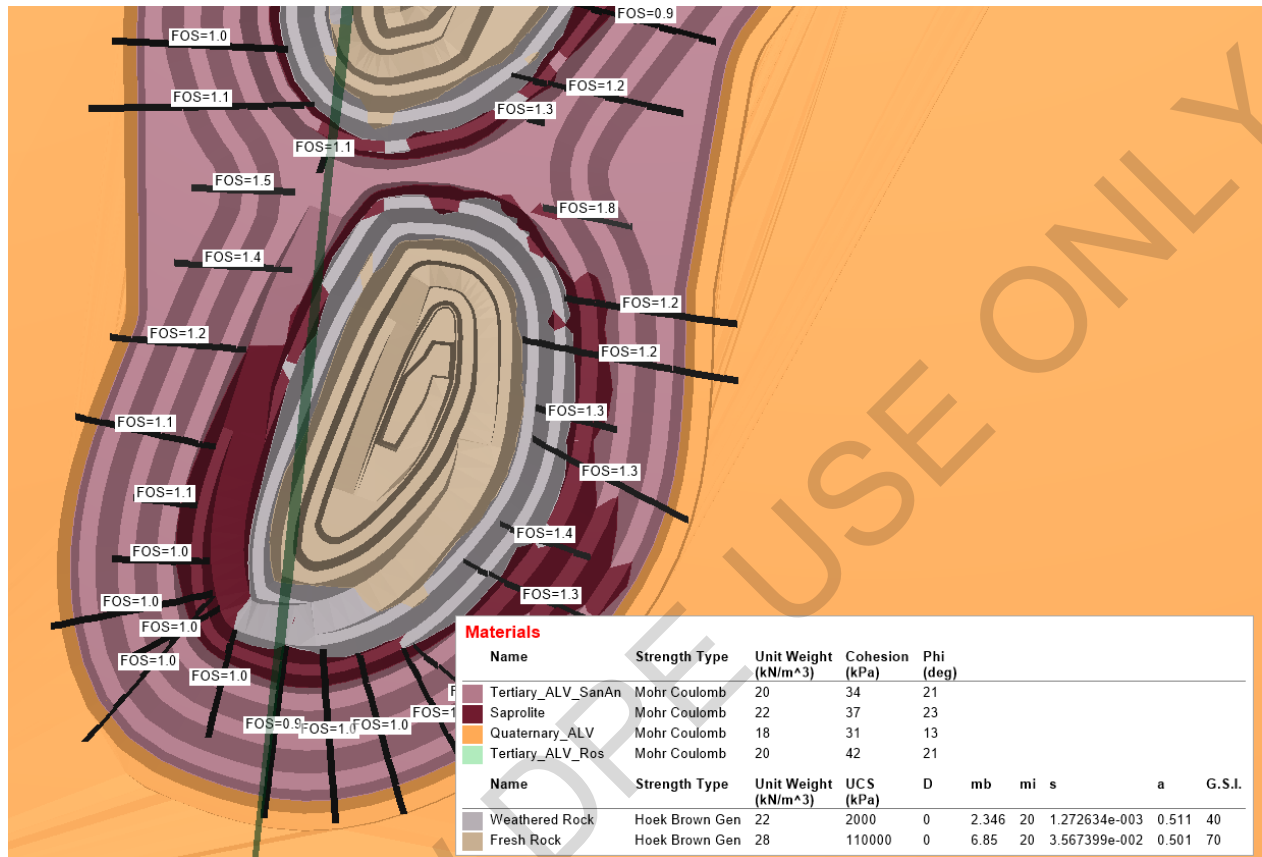


Analysis Method: Morgenstern-Price
Search Method: Entry and Exit

Analysis Name: 04_Proposed_Design_Global_16mW_15mH
File Name: SECTION S-7 – MODEL 905456-0-RevB.gsz
Analysis Date: 09-Mar-21

Analysis By: Tun, Douglas

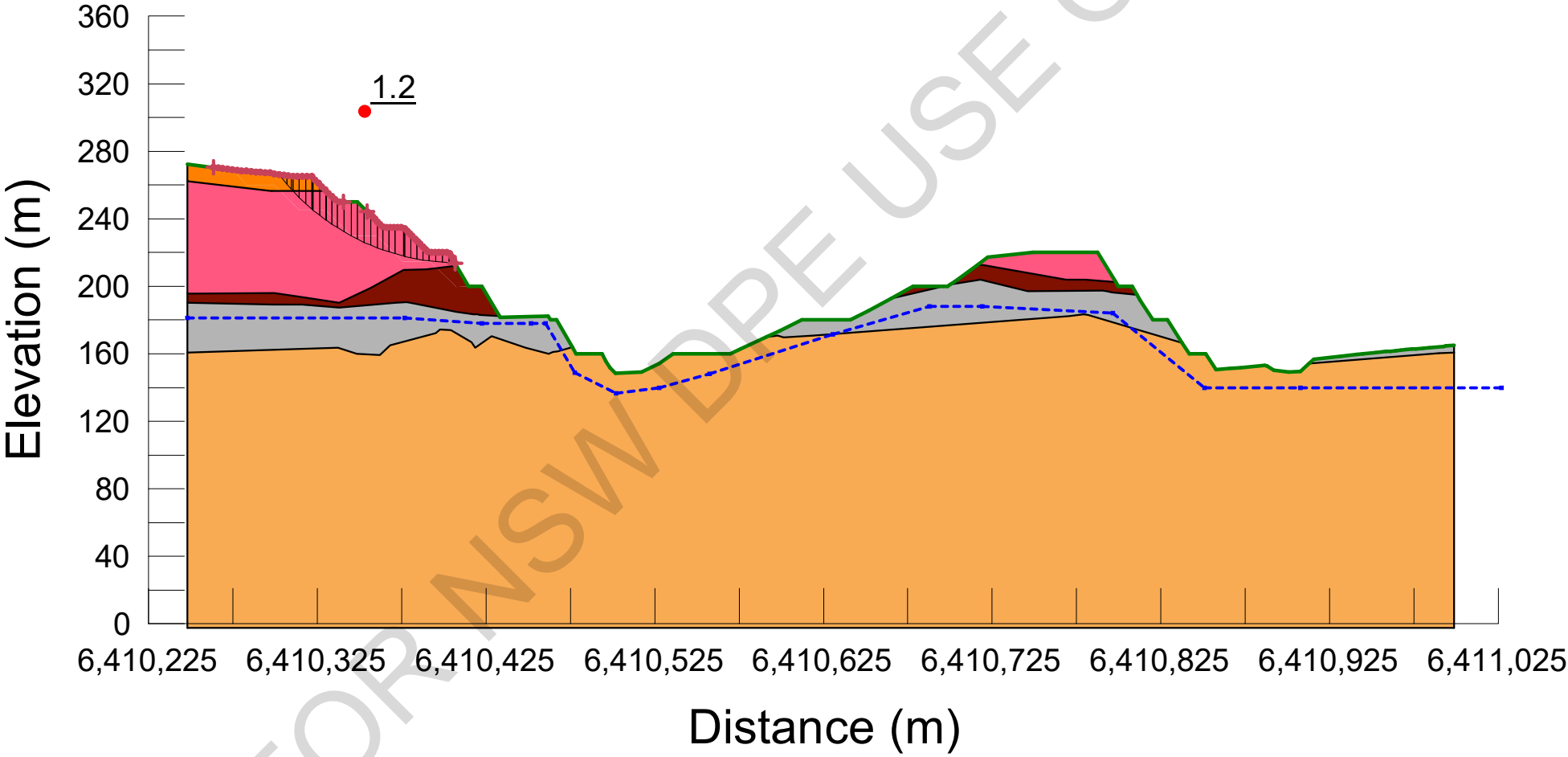
SECTION S-8 – MODEL 340141-0



PS117942 - Concept Pit Slope Design
Pit ref: sar_c5c11_201203

01_GWT_Existing_Design_Global
Current Analysis: 01_GWT_Existing_Design_ALV

Color	Name	Model	Unit Weight (kN/m³)	Cohesion' (kPa)	Phi' (°)	Strength Function	Phi-B (°)	Piezometric Line
	Fresh Rock	Shear/Normal Fn.	28			Hoek Brown Gen	0	1
	Quaternary_ALV	Mohr-Coulomb	18	31	13		0	1
	Saprolite	Mohr-Coulomb	22	37	23		0	1
	Tertiary_ALV_SanAn	Mohr-Coulomb	20	34	21		0	1
	Weathered rock	Shear/Normal Fn.	22			Hoek Brown Gen_Weathered	0	1



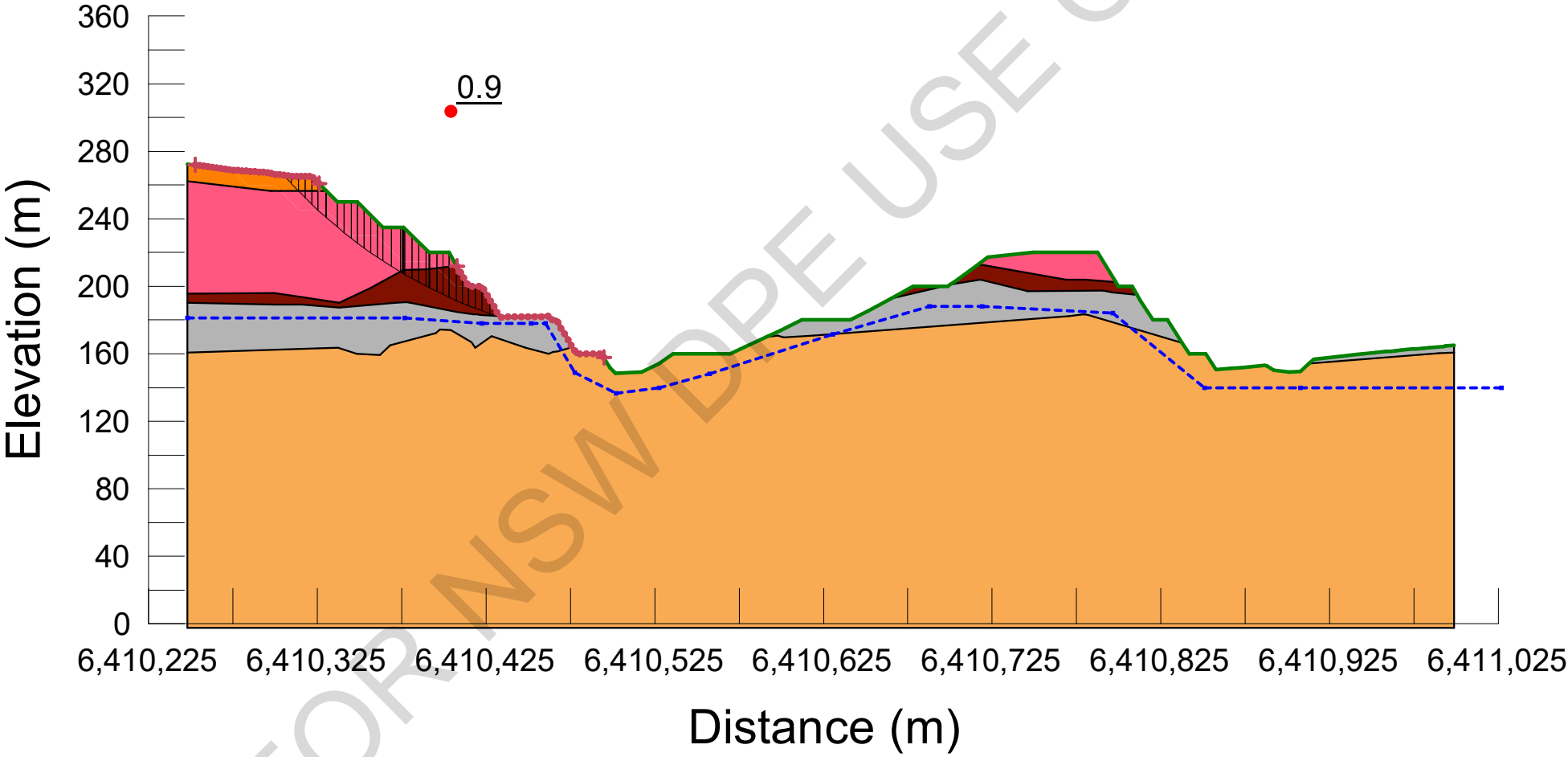
Analysis Method: Morgenstern-Price
Search Method: Entry and Exit

Analysis Name: 01_GWT_Existing_Design_ALV
File Name: SECTION S-8 – MODEL 340141-0-RevB.gsz
Analysis Date: 09-Mar-21

PS117942 - Concept Pit Slope Design
Pit ref: sar_c5c11_201203

02_GWT_Existing_Design_Global
Current Analysis: 02_GWT_Existing_Design_Local

Color	Name	Model	Unit Weight (kN/m³)	Cohesion' (kPa)	Phi' (°)	Strength Function	Phi-B (°)	Piezometric Line
	Fresh Rock	Shear/Normal Fn.	28			Hoek Brown Gen	0	1
	Quaternary_ALV	Mohr-Coulomb	18	31	13		0	1
	Saprolite	Mohr-Coulomb	22	37	23		0	1
	Tertiary_ALV_SanAn	Mohr-Coulomb	20	34	21		0	1
	Weathered rock	Shear/Normal Fn.	22			Hoek Brown Gen_Weathered	0	1



Analysis Method: Morgenstern-Price
Search Method: Entry and Exit

Analysis Name: 02_GWT_Existing_Design_Local

File Name: SECTION S-8 – MODEL 340141-0-RevB.gsz

Analysis Date: 09-Mar-21

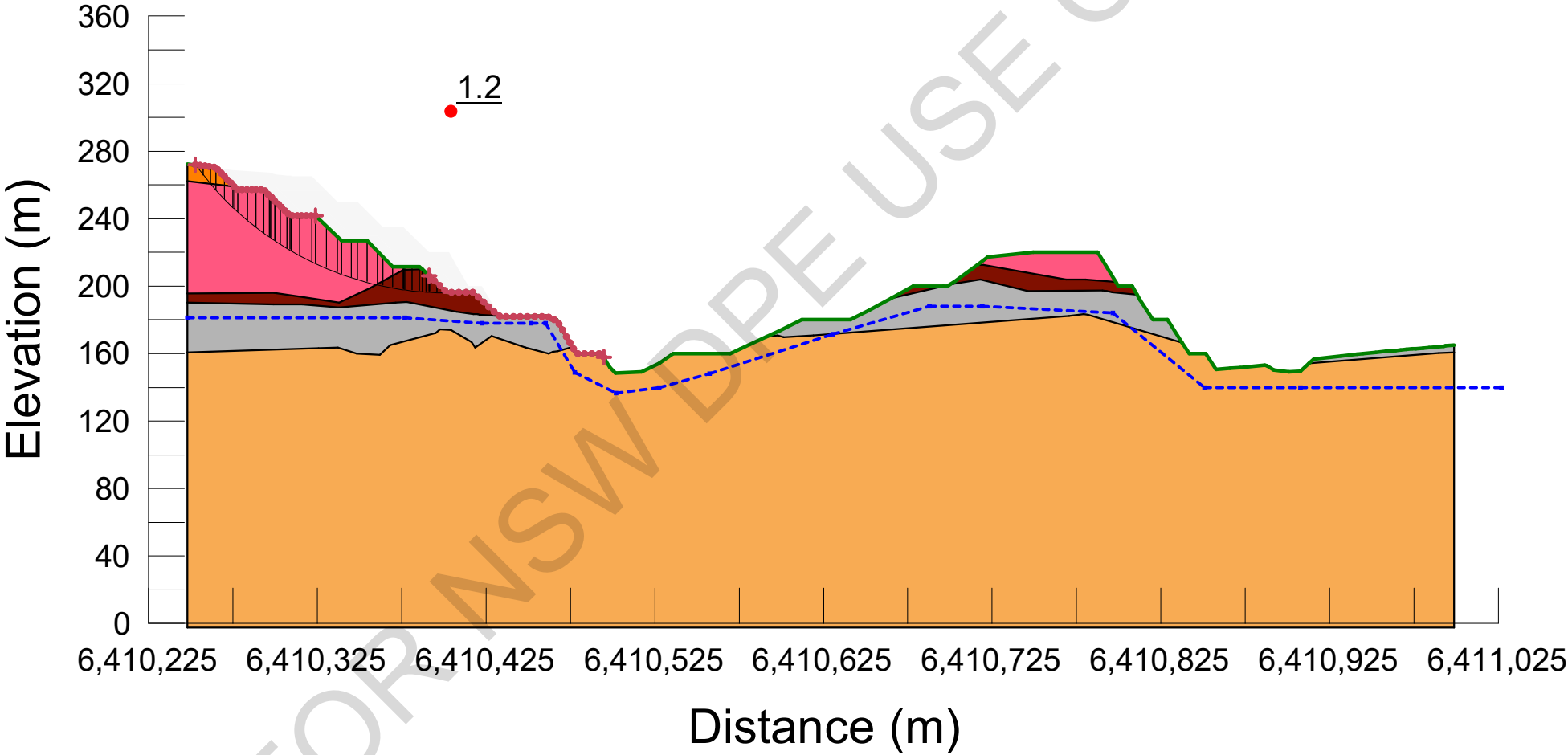
Analysis By: Tun, Douglas



PS117942 - Concept Pit Slope Design
Pit ref: sar_c5c11_201203

03_Proposed_Design_Global_16mW_15mH
Current Analysis: 03_Proposed_Design_Local

Color	Name	Model	Unit Weight (kN/m³)	Cohesion' (kPa)	Phi' (°)	Strength Function	Phi-B (°)	Piezometric Line
	Fresh Rock	Shear/Normal Fn.	28			Hoek Brown Gen	0	1
	Quaternary_ALV	Mohr-Coulomb	18	31	13		0	1
	Saprolite	Mohr-Coulomb	22	37	23		0	1
	Tertiary_ALV_SanAn	Mohr-Coulomb	20	34	21		0	1
	Weathered rock	Shear/Normal Fn.	22			Hoek Brown Gen_Weathered	0	1



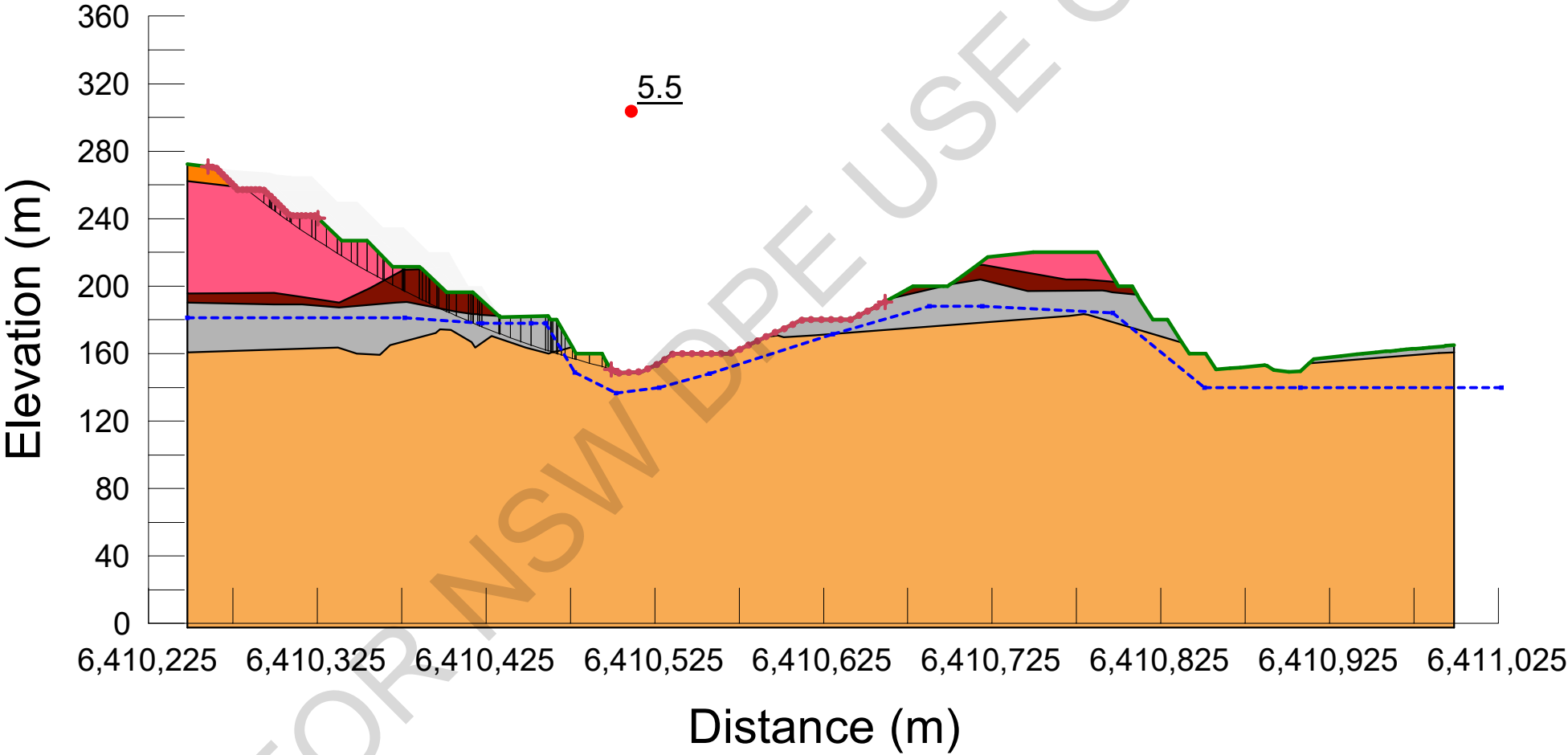
Analysis Method: Morgenstern-Price
Search Method: Entry and Exit

Analysis Name: 03_Proposed_Design_Local
File Name: SECTION S-8 – MODEL 340141-0-RevB.gsz
Analysis Date: 09-Mar-21

PS117942 - Concept Pit Slope Design
Pit ref: sar_c5c11_201203

Current Analysis: 04_Proposed_Design_Global_16mW_15mH

Color	Name	Model	Unit Weight (kN/m³)	Cohesion' (kPa)	Phi' (°)	Strength Function	Phi-B (°)	Piezometric Line
	Fresh Rock	Shear/Normal Fn.	28			Hoek Brown Gen	0	1
	Quaternary_ALV	Mohr-Coulomb	18	31	13		0	1
	Saprolite	Mohr-Coulomb	22	37	23		0	1
	Tertiary_ALV_SanAn	Mohr-Coulomb	20	34	21		0	1
	Weathered rock	Shear/Normal Fn.	22			Hoek Brown Gen_Weathered	0	1



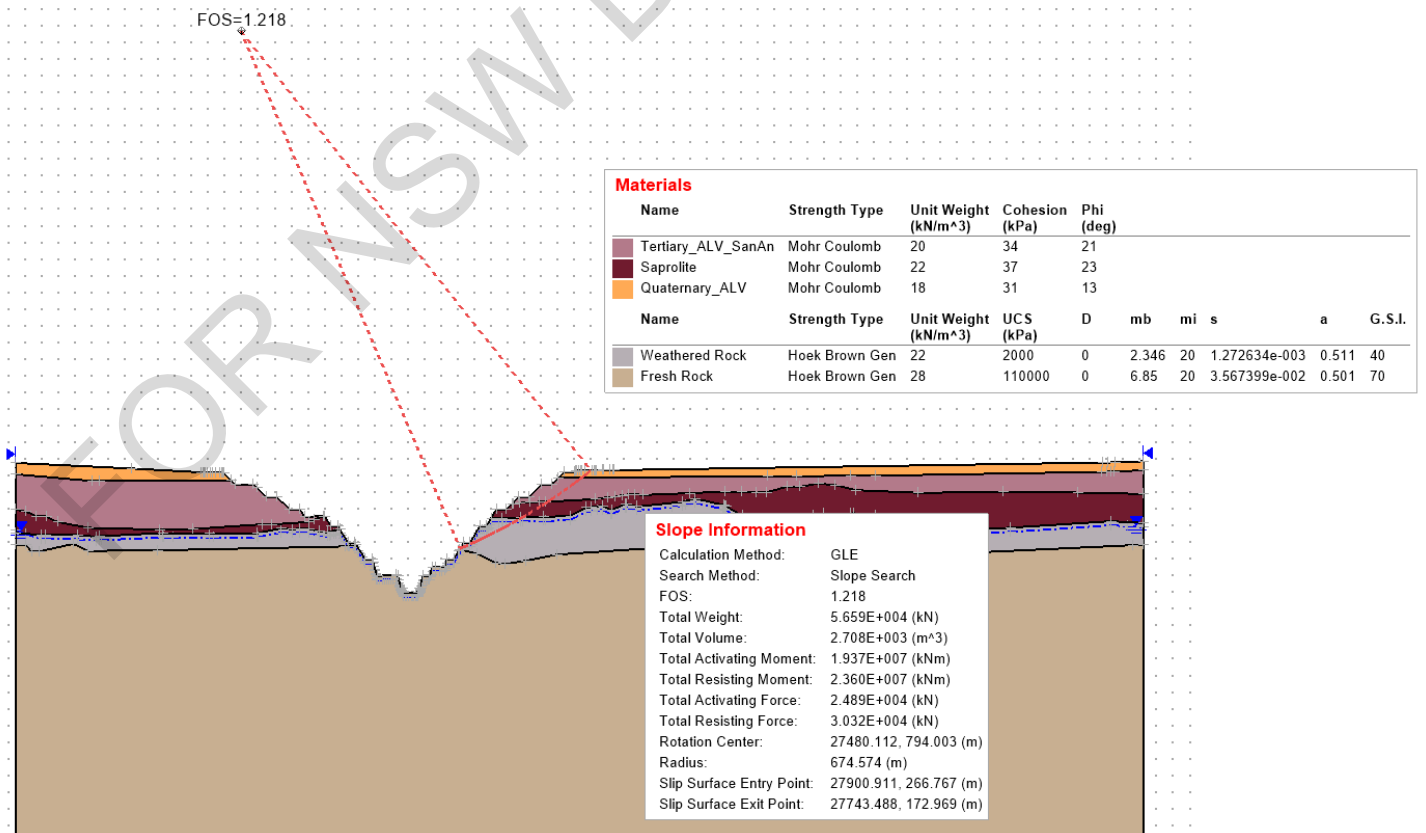
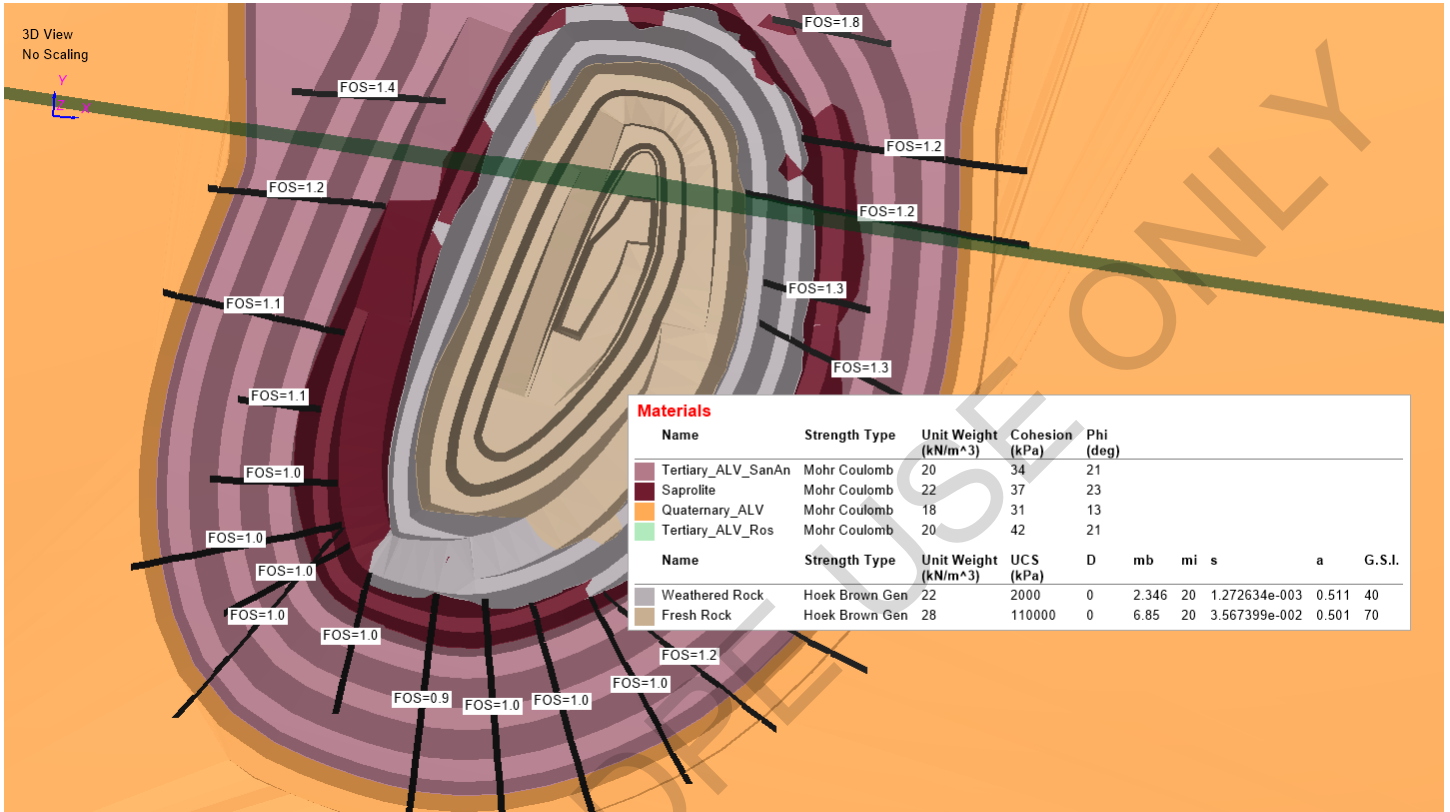
Analysis Method: Morgenstern-Price
Search Method: Entry and Exit

Analysis Name: 04_Proposed_Design_Global_16mW_15mH
File Name: SECTION S-8 – MODEL 340141-0-RevB.gsz
Analysis Date: 09-Mar-21

Analysis By: Tun, Douglas



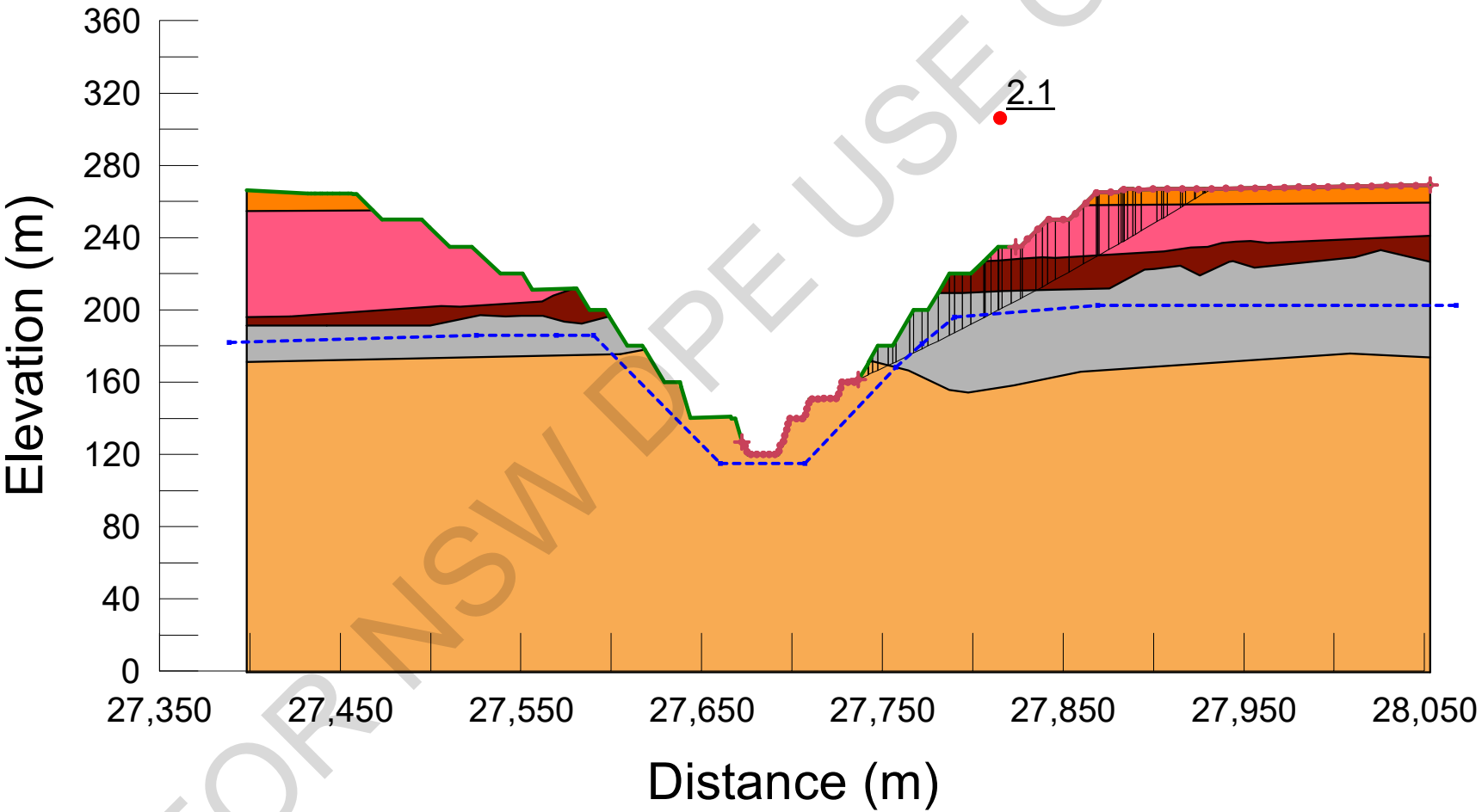
SECTION S-9 – MODEL 590360-0



PS117942 - Concept Pit Slope Design
Pit ref: sar_c5c11_201203

Current Analysis: 01_GWT_Existing_Design_Global

Color	Name	Model	Unit Weight (kN/m³)	Cohesion' (kPa)	Phi' (°)	Strength Function	Phi-B (°)	Piezometric Line
	Fresh Rock	Shear/Normal Fn.	28			Hoek Brown Gen	0	1
	Quaternary_ALV	Mohr-Coulomb	18	31	13		0	1
	Saprolite	Mohr-Coulomb	22	37	23		0	1
	Tertiary_ALV_SanAn	Mohr-Coulomb	20	34	21		0	1
	Weathered rock	Shear/Normal Fn.	22			Hoek Brown Gen_Weathered	0	1



Analysis Method: Morgenstern-Price
Search Method: Entry and Exit

Analysis Name: 01_GWT_Existing_Design_Global
File Name: SECTION S-9 – MODEL 590360-0-RevB.gsz
Analysis Date: 09-Mar-21

Analysis By: Tun, Douglas



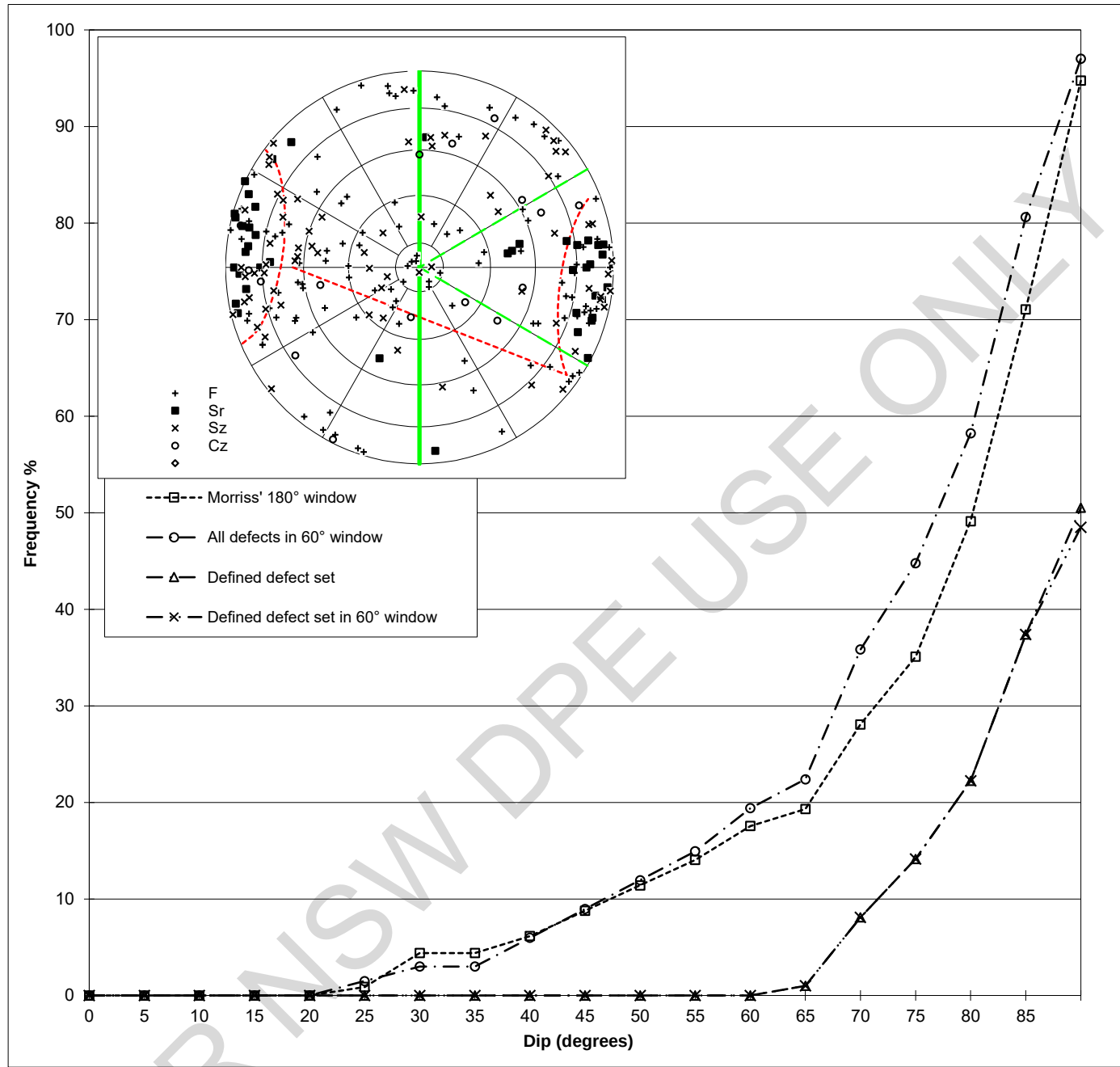
APPENDIX J

RESULTS OF KINEMATIC ANALYSES



FOR NSW DPE USE ONLY

PLANAR SLIDING



PARAMETERS OF THE PIT WALL

Slope Direction	270
Kinematic Window $\pm$	30
DEFECT SET	

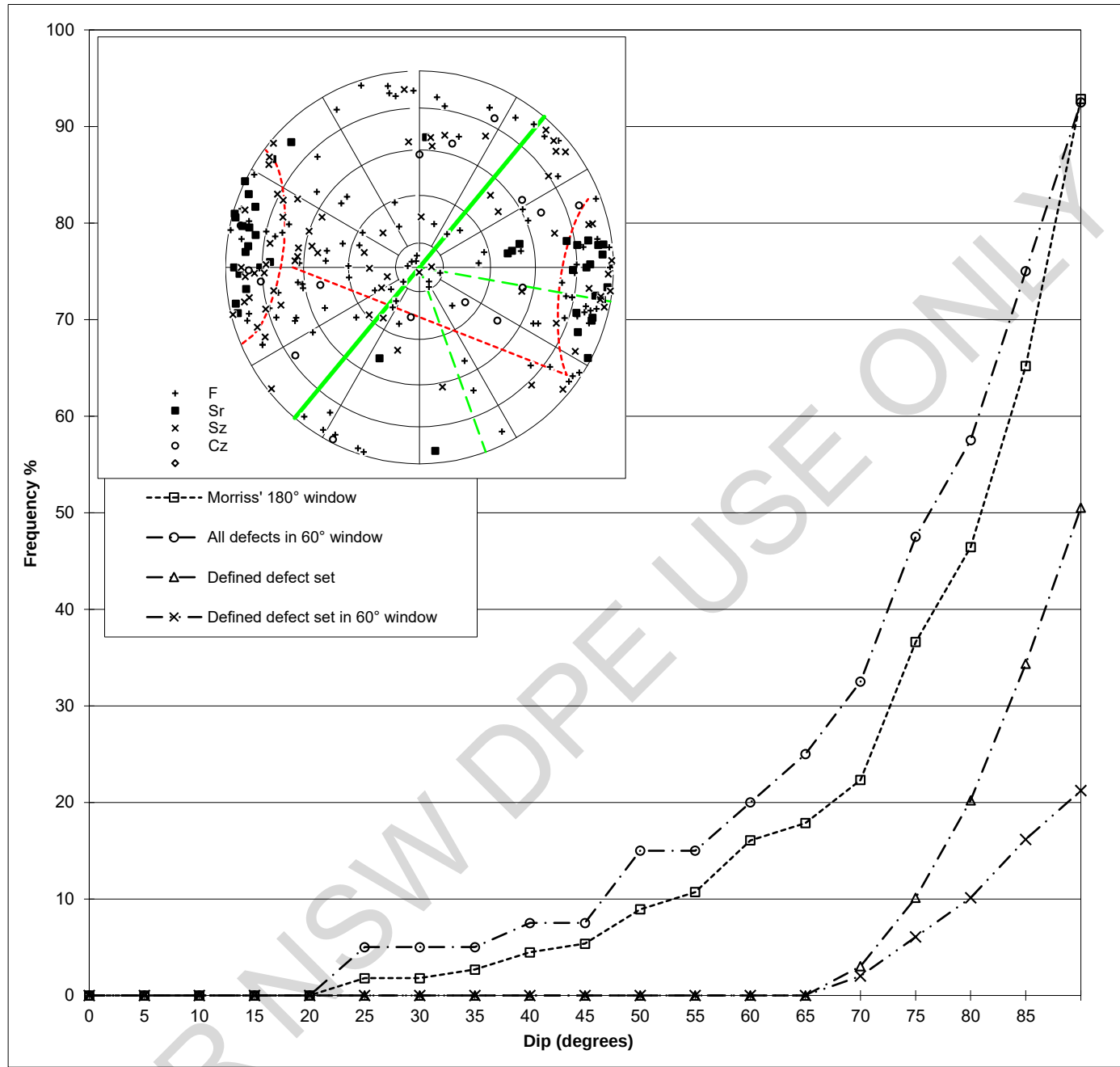
FL1	Mean	$\pm$
Dip	89	29
Dip Direction	97	30

DEFECT SHEAR STRENGTHS

Cohesion	=	0 kPa
Friction Angle	=	20°

Defects in kinematic window	65
Defects in set FL1	50
Defect in set & window	48
Defects Dipping out of Slope	108

PLANAR SLIDING



PARAMETERS OF THE PIT WALL

Slope Direction	310
Kinematic Window ±	30
DEFECT SET	

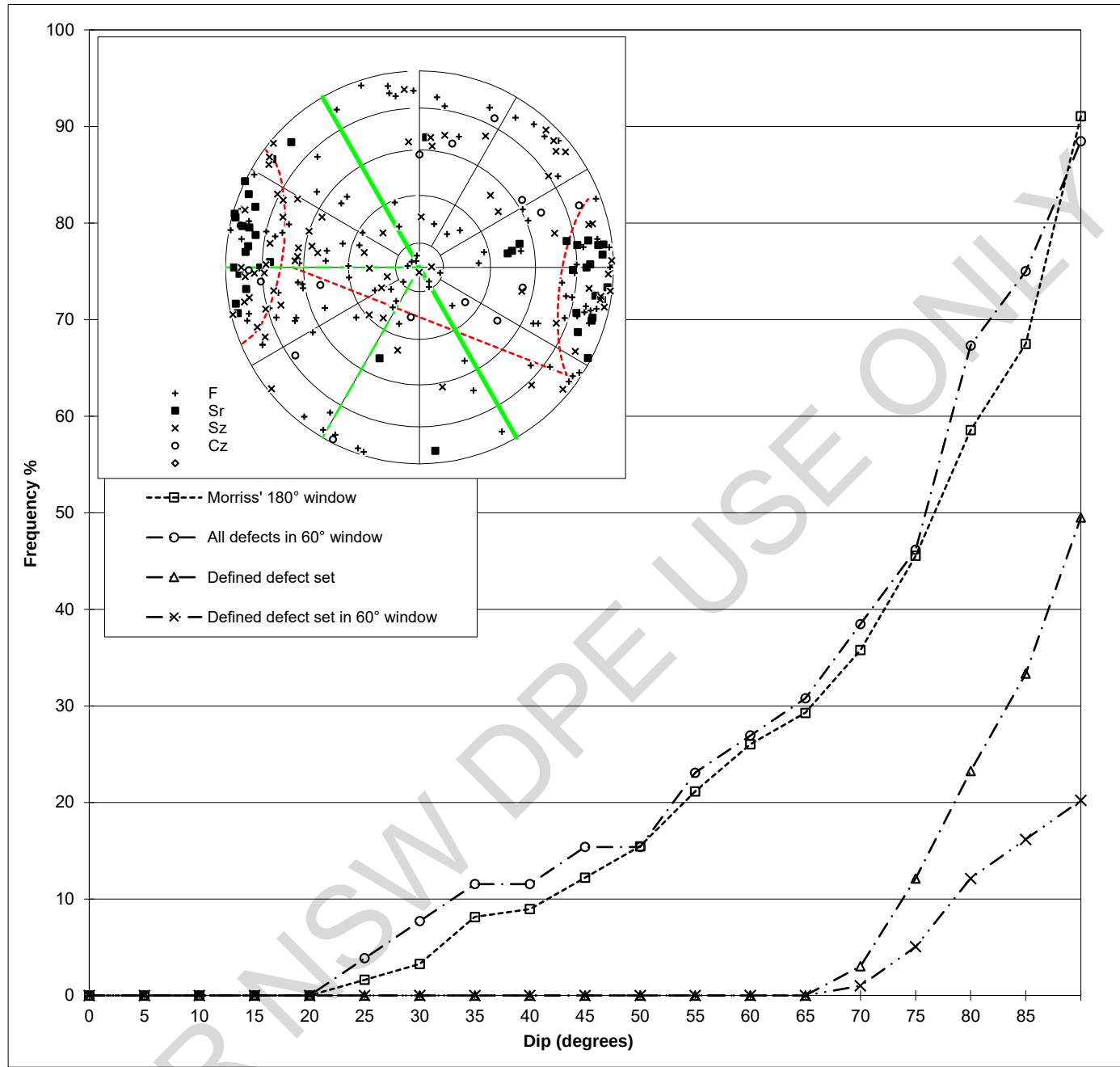
FL1	Mean	±
Dip	89	29
Dip Direction	97	30

DEFECT SHEAR STRENGTHS

Cohesion	=	0 kPa
Friction Angle	=	20°

Defects in kinematic window	37
Defects in set FL1	50
Defect in set & window	21
Defects Dipping out of Slope	104

PLANAR SLIDING



PARAMETERS OF THE PIT WALL

Slope Direction	60
Kinematic Window $\pm$	30
DEFECT SET	

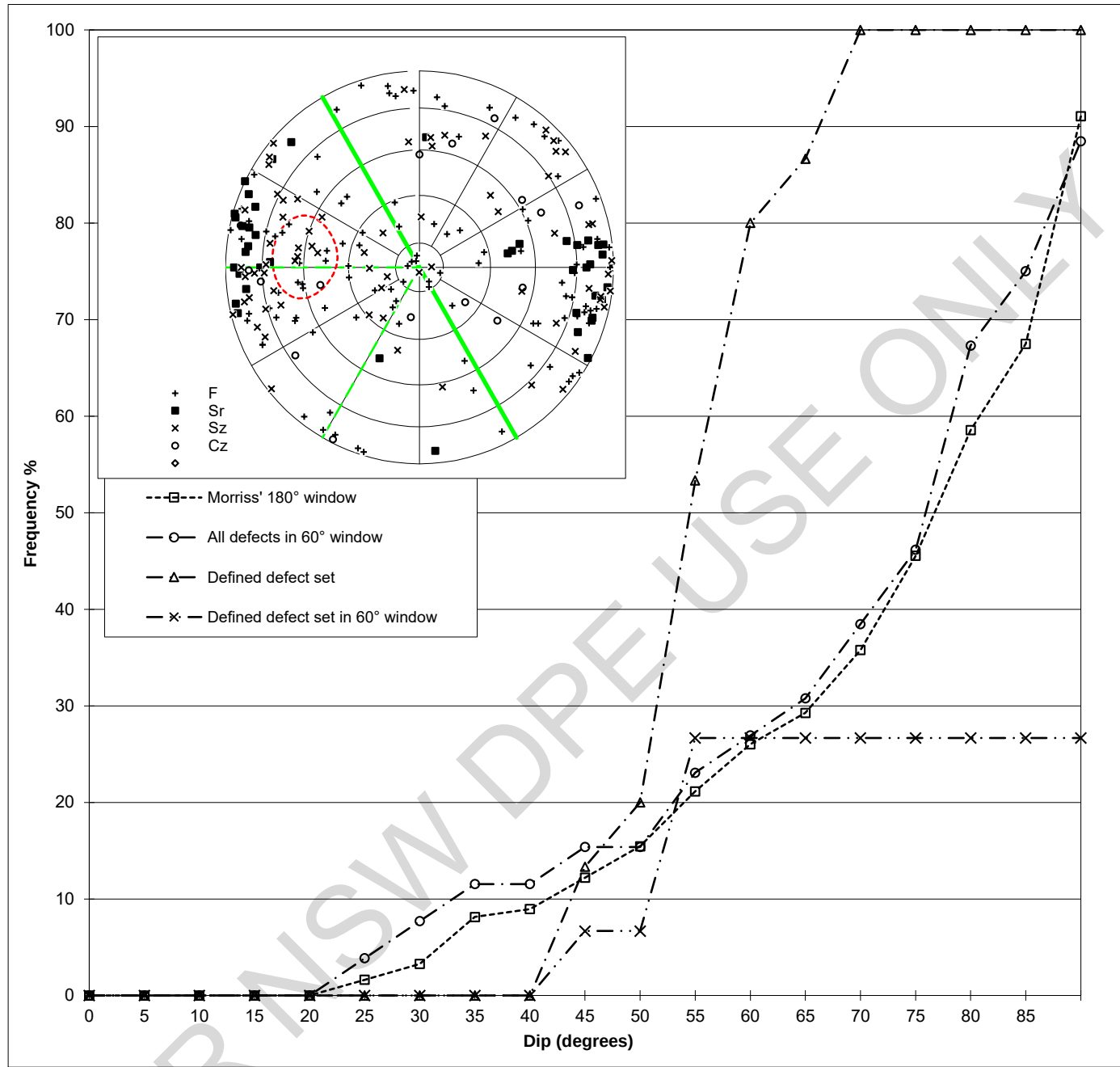
FL1	Mean	$\pm$
Dip	89	29
Dip Direction	97	30

DEFECT SHEAR STRENGTHS

Cohesion	=	0 kPa
Friction Angle	=	20°

Defects in kinematic window	46
Defects in set FL1	49
Defect in set & window	20
Defects Dipping out of Slope	112

PLANAR SLIDING



PARAMETERS OF THE PIT WALL

Slope Direction	60
Kinematic Window ±	30
DEFECT SET	

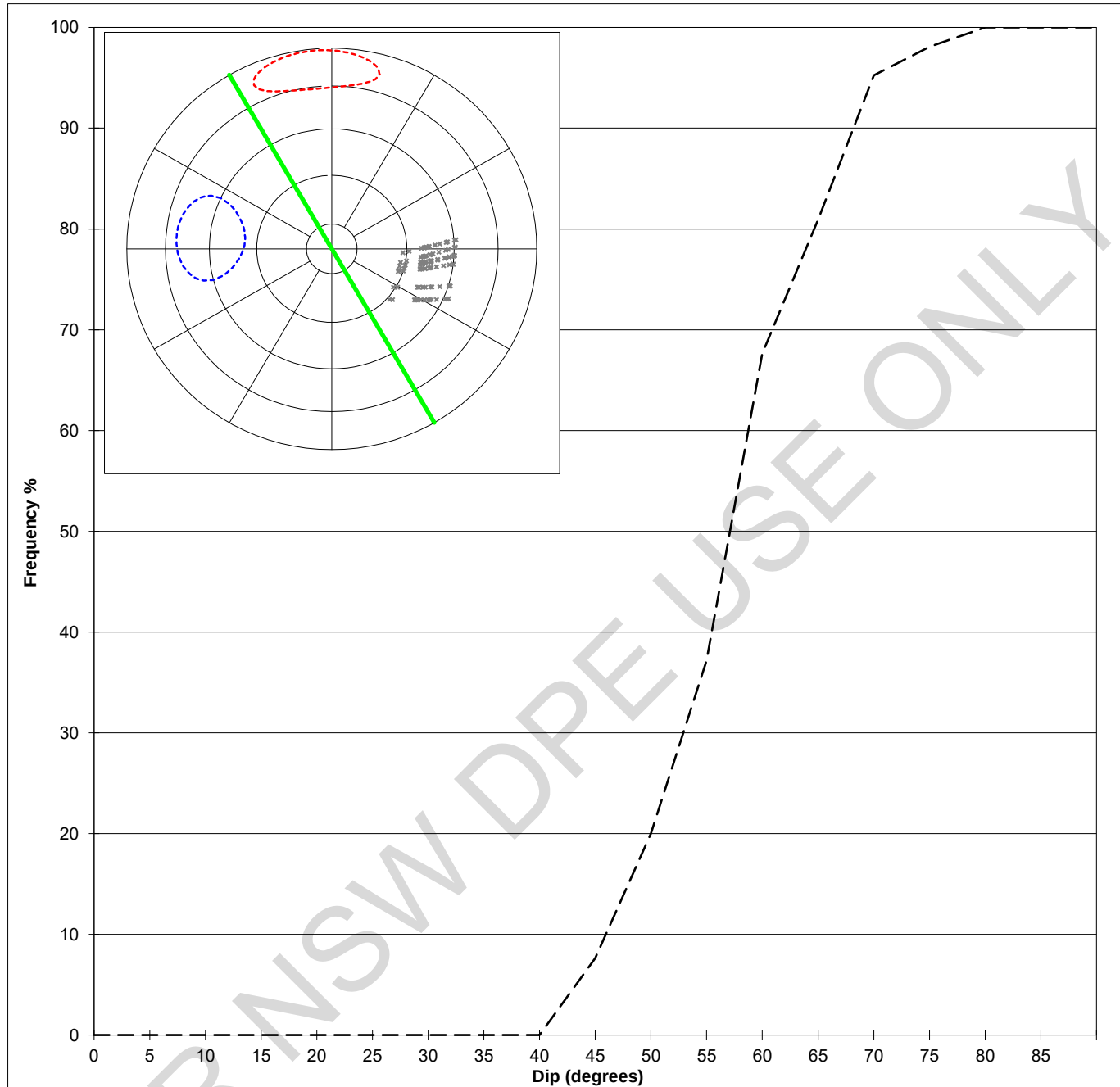
FL5	Mean	±
Dip	50	15
Dip Direction	95	20

DEFECT SHEAR STRENGTHS

Cohesion	=	0 kPa
Friction Angle	=	20°

Defects in kinematic window	46
Defects in set FL5	15
Defect in set & window	4
Defects Dipping out of Slope	112

WEDGE FAILURE



PARAMETERS OF THE PIT WALL

Slope Direction 60

FIRST SET			
FL4	Mean	±	
Dip	79	10	
Dip Direction	175	20	

Defects in set FL4 7

DEFECT SHEAR STRENGTHS

Cohesion = 0 kPa

Friction Angle = 20°

SECOND SET			
FL5	Mean	±	
Dip	50	15	
Dip Direction	95	20	

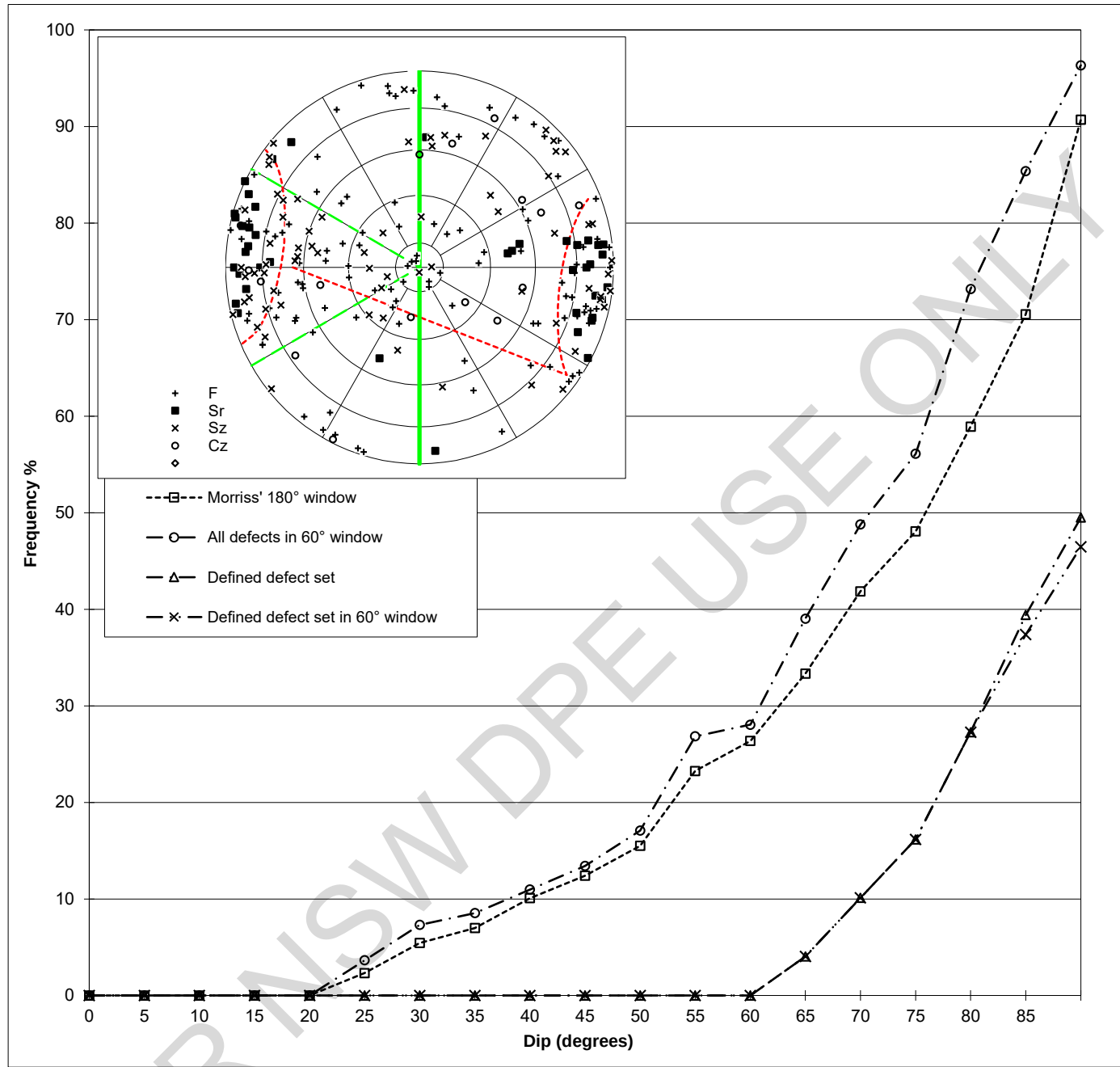
Defects in set FL5 15

Number of Unstable Wedges 105

Number of Wedges Analysed 105

From a possible Total Number of 105

PLANAR SLIDING



PARAMETERS OF THE PIT WALL

Slope Direction	90
Kinematic Window ±	30
DEFECT SET	

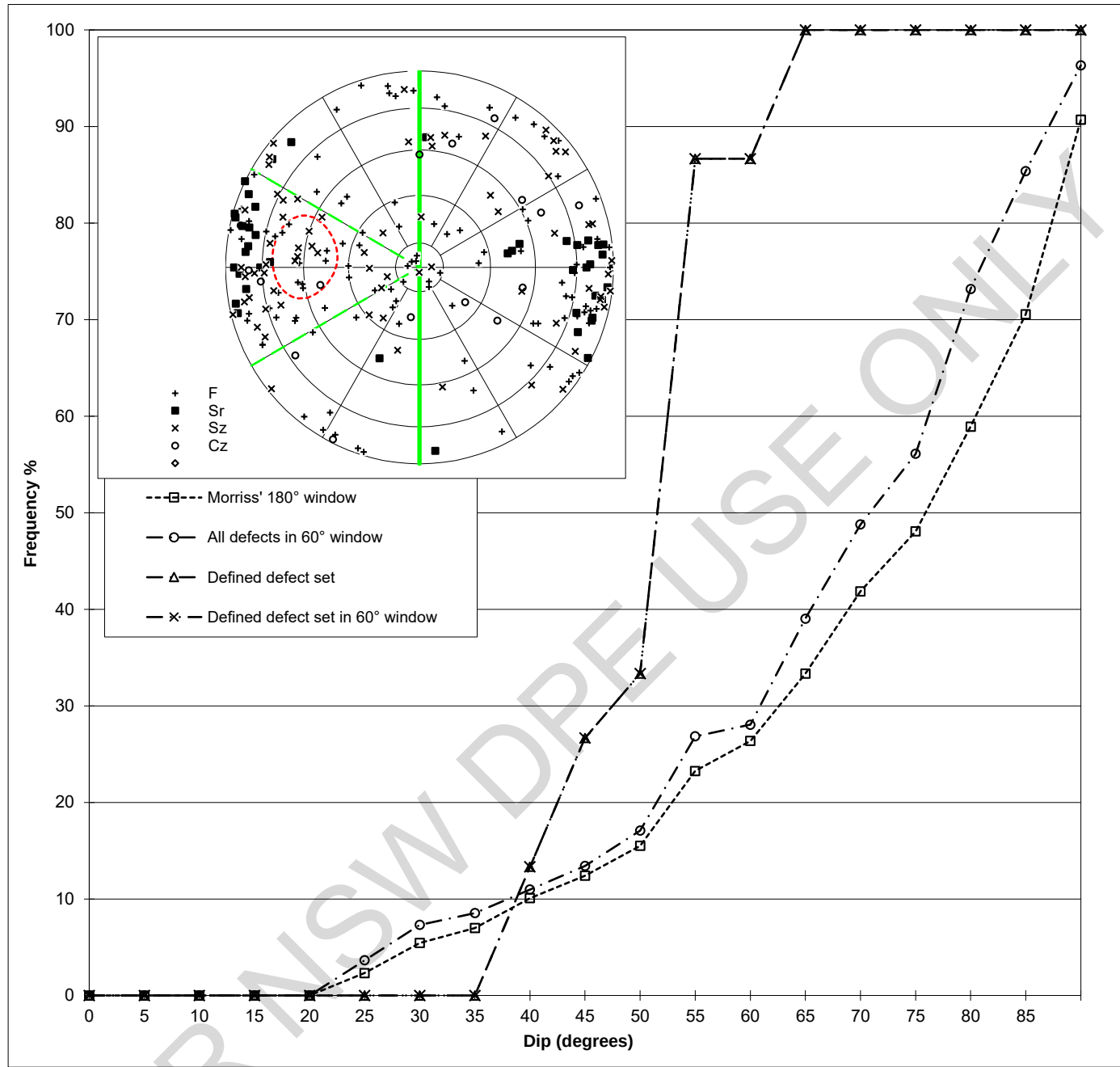
FL1	Mean	±
Dip	89	29
Dip Direction	97	30

DEFECT SHEAR STRENGTHS

Cohesion	=	0 kPa
Friction Angle	=	20°

Defects in kinematic window	79
Defects in set FL1	49
Defect in set & window	46
Defects Dipping out of Slope	117

PLANAR SLIDING



PARAMETERS OF THE PIT WALL

Slope Direction	90
Kinematic Window ±	30
DEFECT SET	

FL5	Mean	±
Dip	50	15
Dip Direction	95	20

DEFECT SHEAR STRENGTHS

Cohesion	=	0 kPa
Friction Angle	=	20°

Defects in kinematic window	79
Defects in set FL5	15
Defect in set & window	15
Defects Dipping out of Slope	117

The figure consists of two main plots. The top-left plot is a rose diagram (polar histogram) showing the frequency distribution of dip angles. The radial axis represents frequency percentage, ranging from 0 to 100. The angular axis represents dip angle in degrees, ranging from 0 to 90. A red dashed circle highlights a peak in frequency around 10 degrees, and a blue dashed circle highlights a peak around 20 degrees. The bottom plot is a cumulative frequency plot. The x-axis is labeled 'Dip (degrees)' and ranges from 0 to 90. The y-axis is labeled 'Frequency %' and ranges from 0 to 100. A dashed line represents the cumulative frequency distribution, showing that approximately 35% of the observations have a dip less than 35 degrees, and approximately 95% have a dip less than 65 degrees.

DEFECT SHEAR STRENGTHS

Cohesion	=	0 kPa
Friction Angle	=	20°

SECOND SET

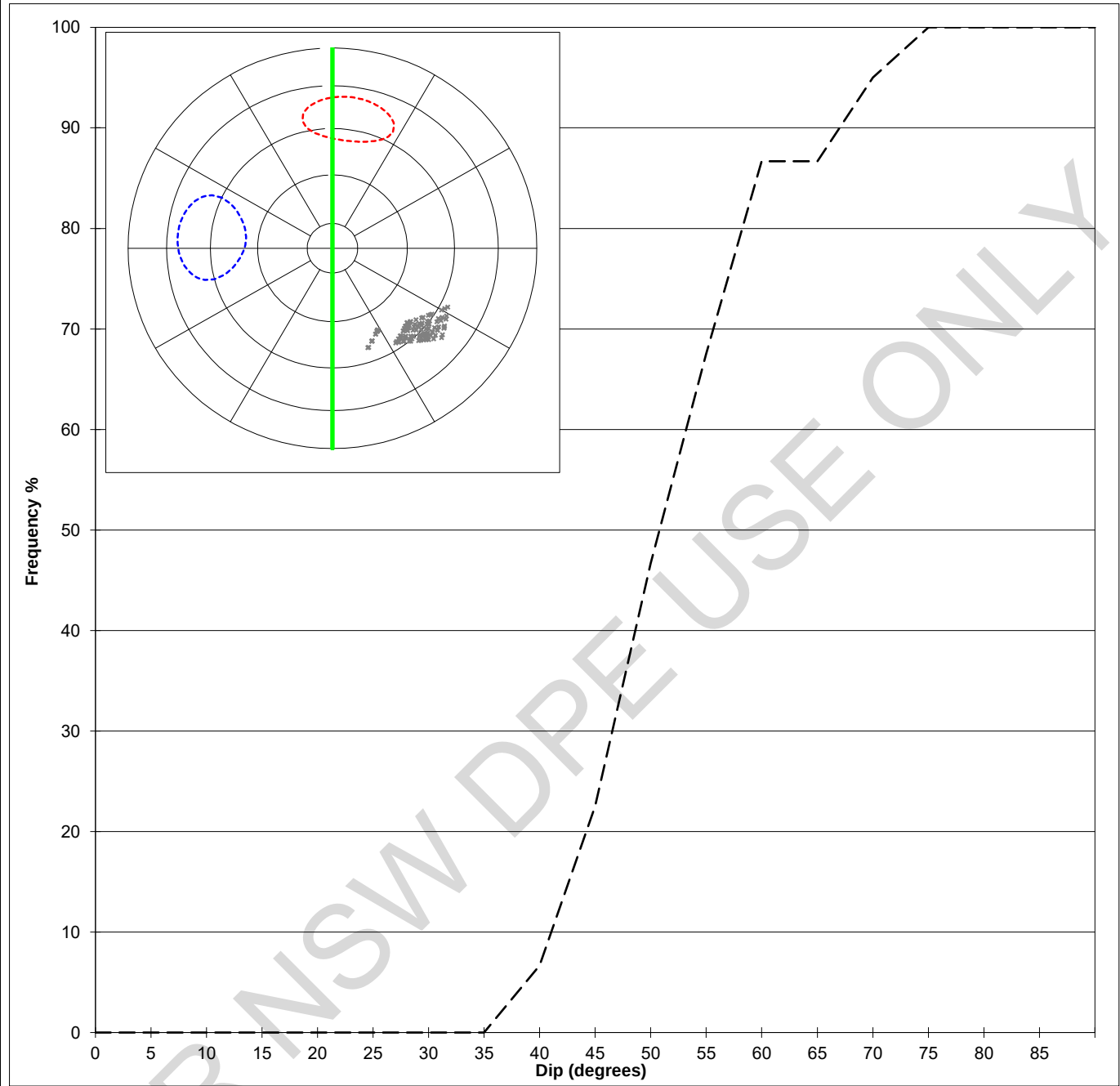
FL5	Mean	±
Dip	50	15
Dip Direction	95	20

Defects in set FL5

15

From a possible Total Number of 105

WEDGE FAILURE



PARAMETERS OF THE PIT WALL

Slope Direction 90

FIRST SET

FL3	Mean	±
Dip	55	10
Dip Direction	187	20

Defects in set FL3 8

DEFECT SHEAR STRENGTHS

Cohesion = 0 kPa
Friction Angle = 20°

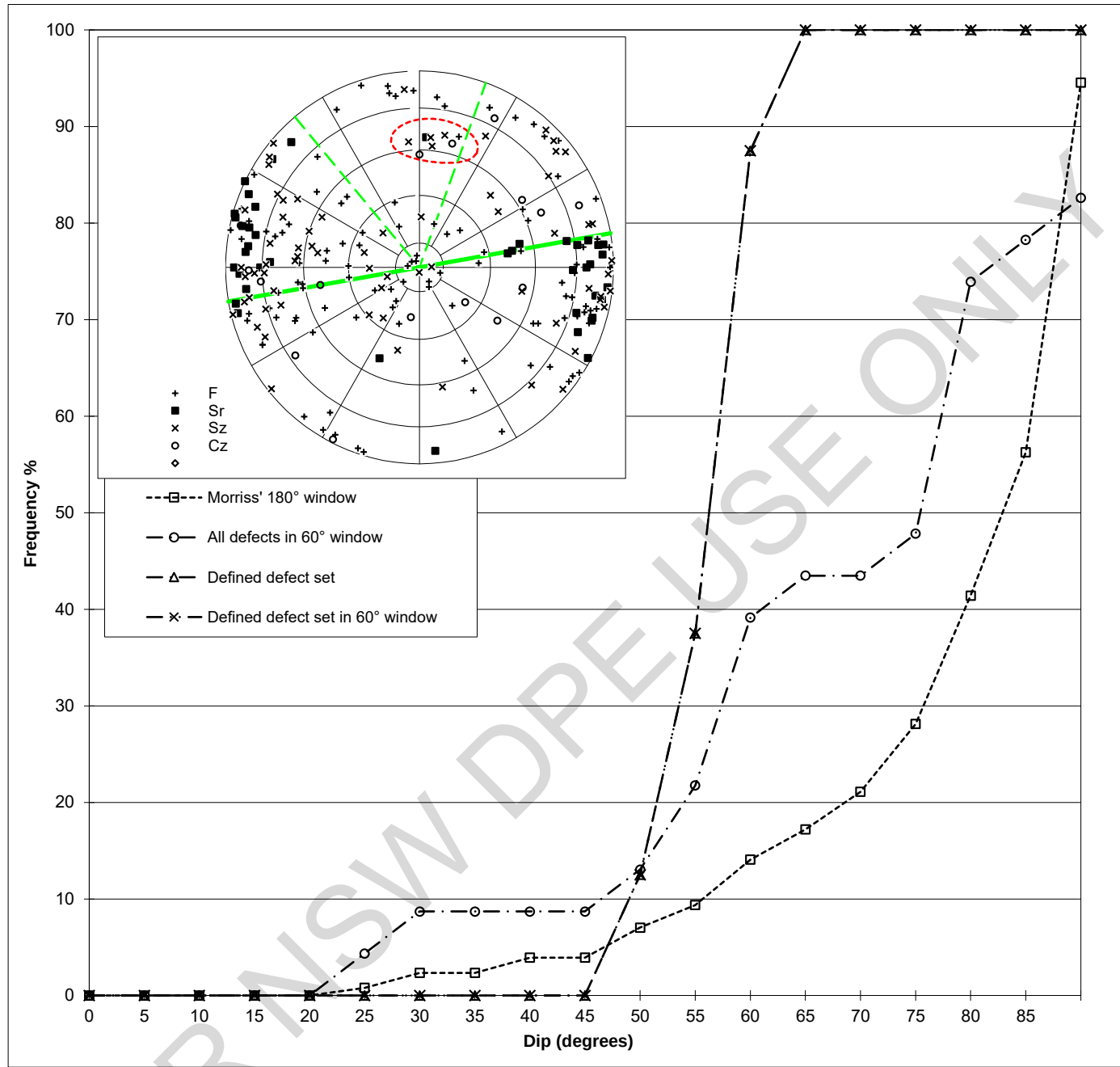
SECOND SET

FL5	Mean	±
Dip	50	15
Dip Direction	95	20

Defects in set FL5 15

Number of Unstable Wedges 120
Number of Wedges Analysed 120 From a possible Total Number of 120

PLANAR SLIDING



PARAMETERS OF THE PIT WALL

Slope Direction	170
Kinematic Window $\pm$	30
DEFECT SET	

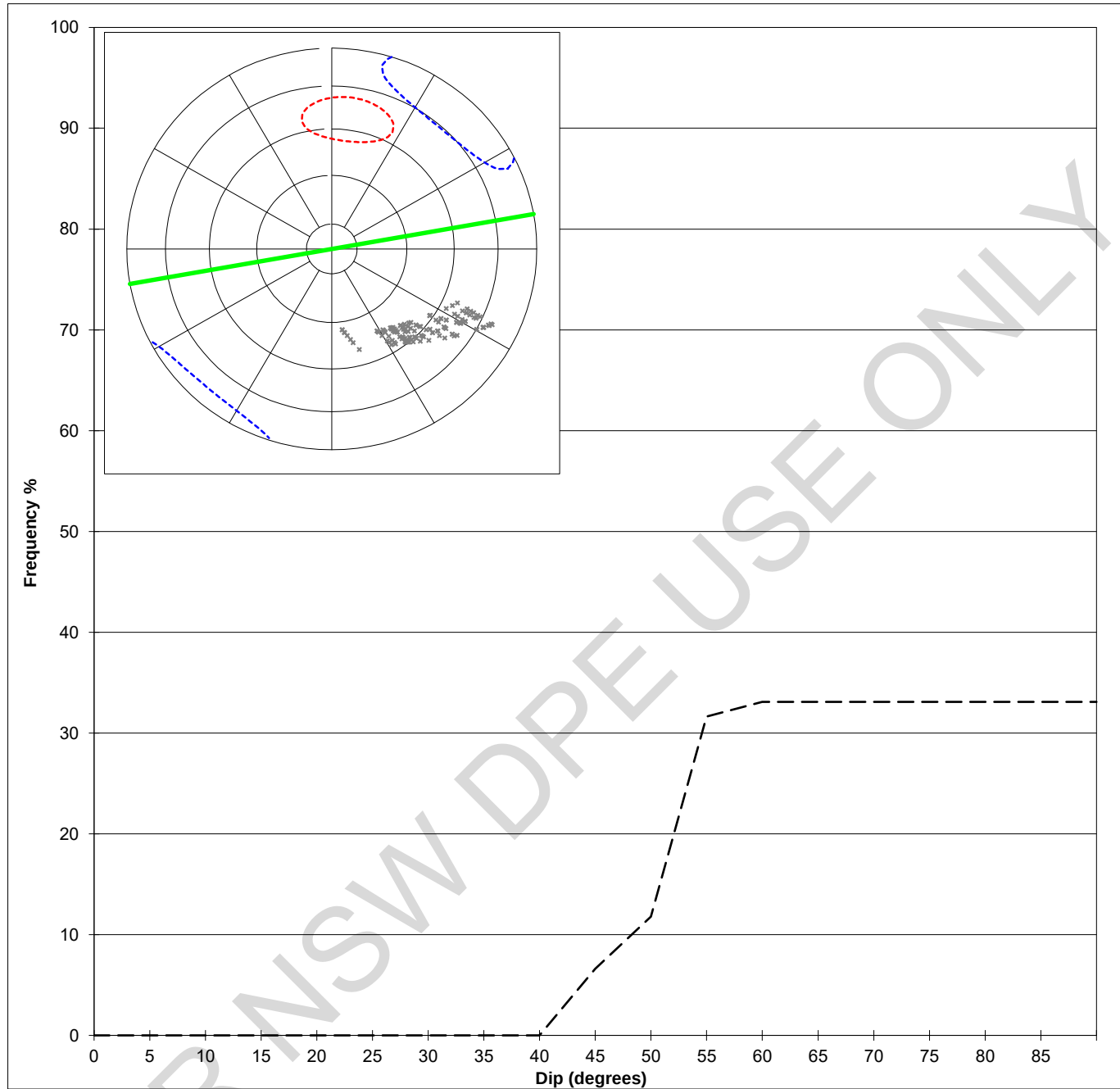
FL3	Mean	$\pm$
Dip	55	10
Dip Direction	187	20

DEFECT SHEAR STRENGTHS

Cohesion	=	0 kPa
Friction Angle	=	20°

Defects in kinematic window	19
Defects in set FL3	8
Defect in set & window	8
Defects Dipping out of Slope	121

WEDGE FAILURE



PARAMETERS OF THE PIT WALL

Slope Direction 170

FIRST SET

FL3	Mean	±
Dip	55	10
Dip Direction	187	20

Defects in set FL3 8

DEFECT SHEAR STRENGTHS

Cohesion = 0 kPa
Friction Angle = 20°

SECOND SET

FL2	Mean	±
Dip	84	15
Dip Direction	220	25

Defects in set FL2 17

Number of Unstable Wedges 45
Number of Wedges Analysed 136

From a possible Total Number of 136

DEFECT SHEAR STRENGTHS

Cohesion	=	0 kPa
Friction Angle	=	20°

SECOND SET

FL5	Mean	±
Dip	50	15
Dip Direction	95	20

15

From a possible Total Number of 255

DEFECT SHEAR STRENGTHS

Cohesion = 0 kPa

SECOND SET

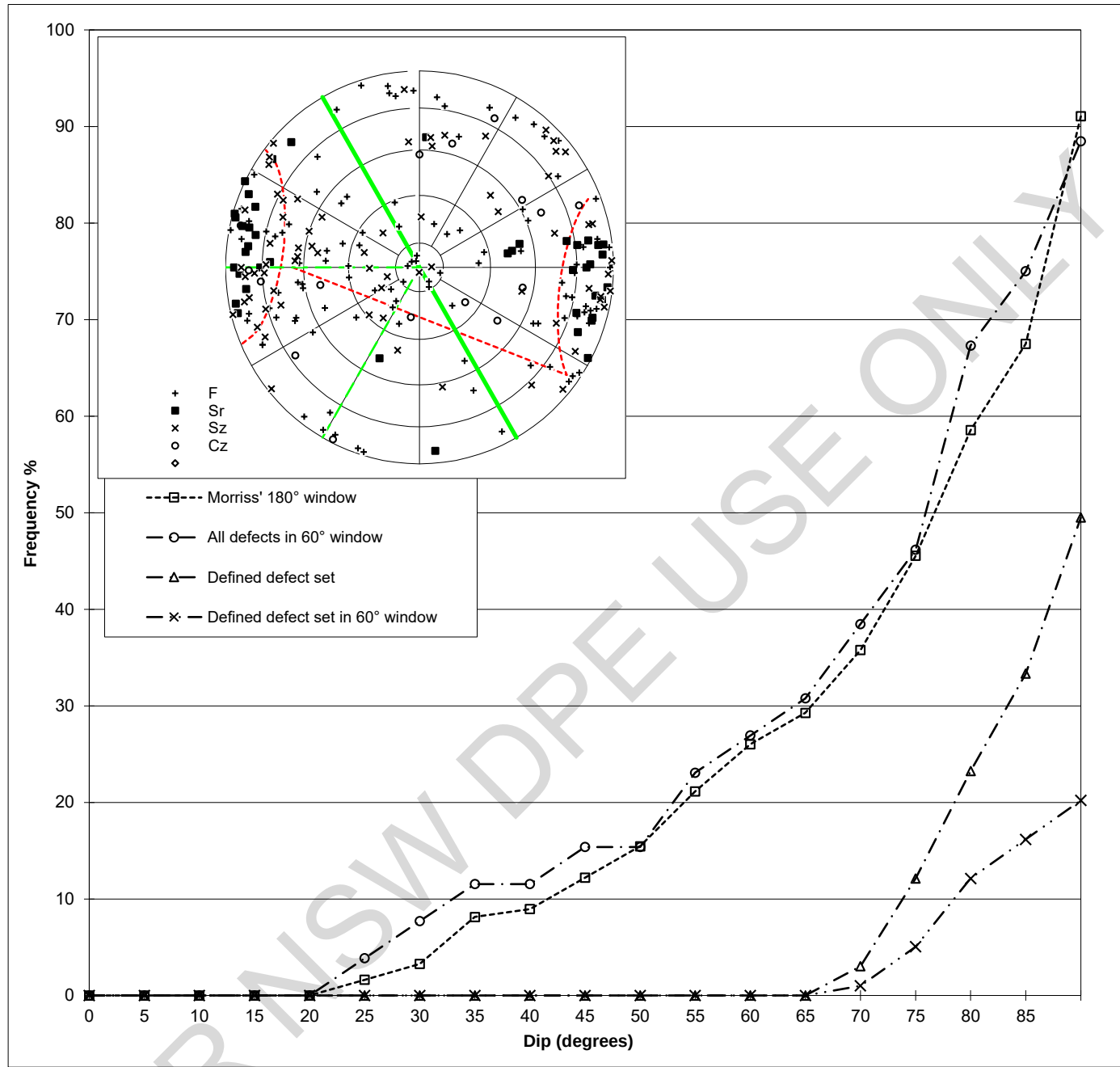
SECOND SET

FL5	Mean	±
Dip	50	15
Dip Direction	95	20

15

From a possible Total Number of 120

PLANAR SLIDING



PARAMETERS OF THE PIT WALL

Slope Direction	60
Kinematic Window ±	30
DEFECT SET	

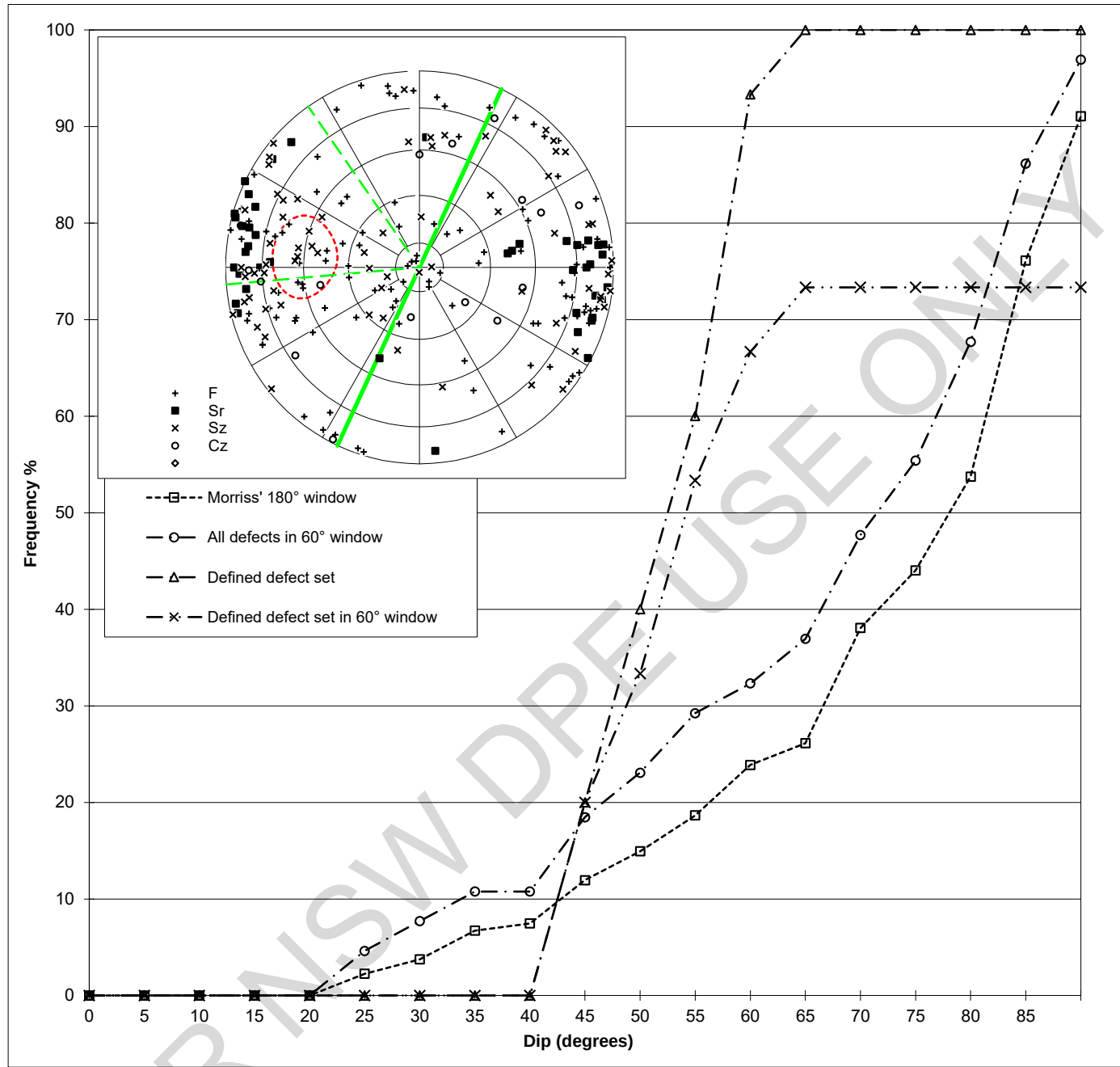
FL1	Mean	±
Dip	89	29
Dip Direction	97	30

DEFECT SHEAR STRENGTHS

Cohesion	=	0 kPa
Friction Angle	=	20°

Defects in kinematic window	46
Defects in set FL1	49
Defect in set & window	20
Defects Dipping out of Slope	112

PLANAR SLIDING



PARAMETERS OF THE PIT WALL

Slope Direction	115
Kinematic Window $\pm$	30
DEFECT SET	

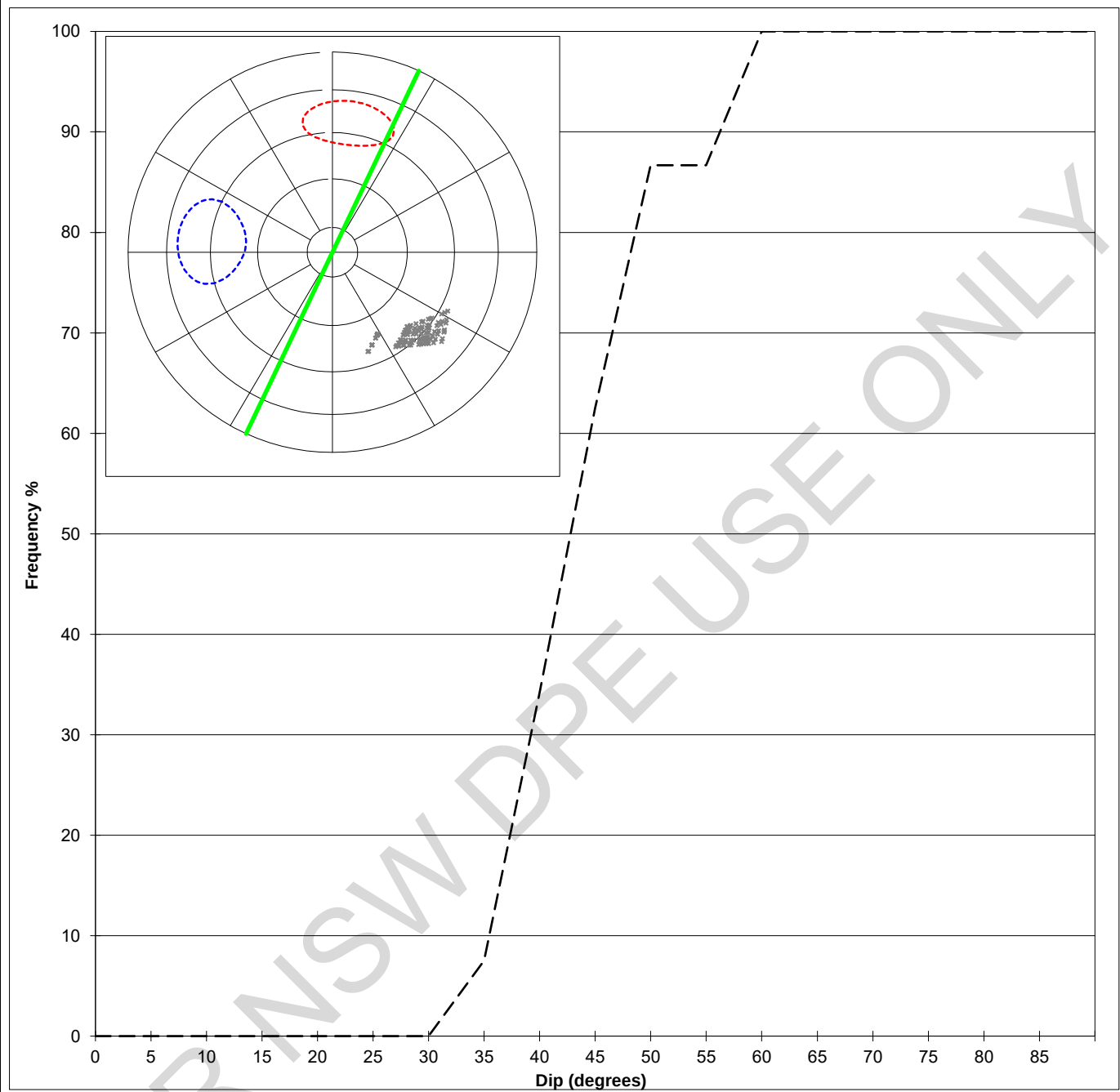
FL5	Mean	$\pm$
Dip	50	15
Dip Direction	95	20

DEFECT SHEAR STRENGTHS

Cohesion	=	0 kPa
Friction Angle	=	20°

Defects in kinematic window	63
Defects in set FL5	15
Defect in set & window	11
Defects Dipping out of Slope	122

WEDGE FAILURE



PARAMETERS OF THE PIT WALL

Slope Direction 115

FIRST SET

FL3	Mean	±
Dip	55	10
Dip Direction	187	20

Defects in set FL3

8

DEFECT SHEAR STRENGTHS

Cohesion = 0 kPa
Friction Angle = 20°

SECOND SET

FL5	Mean	±
Dip	50	15
Dip Direction	95	20

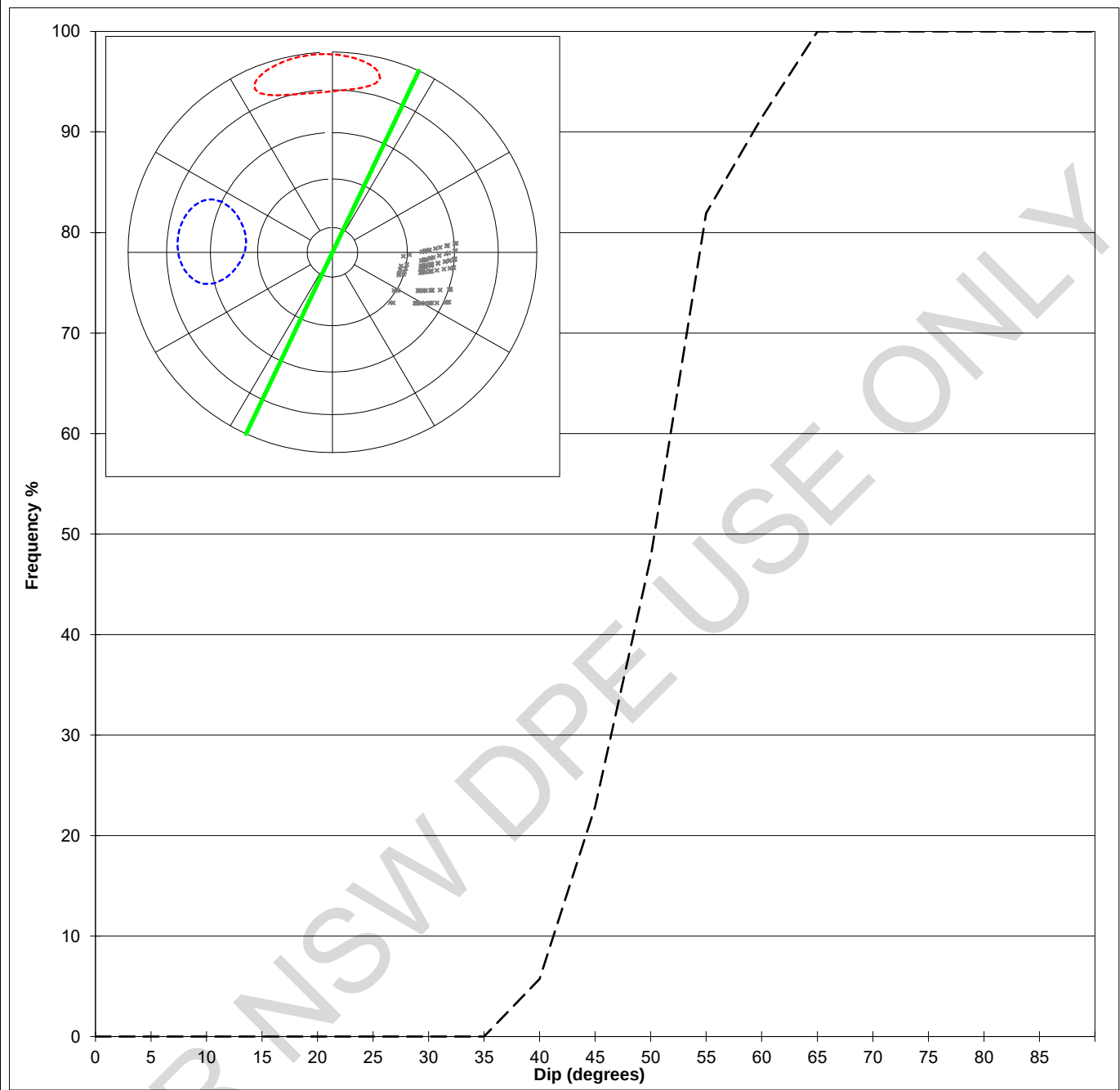
Defects in set FL5

15

Number of Unstable Wedges 120
Number of Wedges Analysed 120

From a possible Total Number of 120

WEDGE FAILURE



PARAMETERS OF THE PIT WALL

Slope Direction 115

FIRST SET

FL4	Mean	±
Dip	79	10
Dip Direction	175	20

Defects in set FL4

7

DEFECT SHEAR STRENGTHS

Cohesion = 0 kPa
Friction Angle = 20°

SECOND SET

FL5	Mean	±
Dip	50	15
Dip Direction	95	20

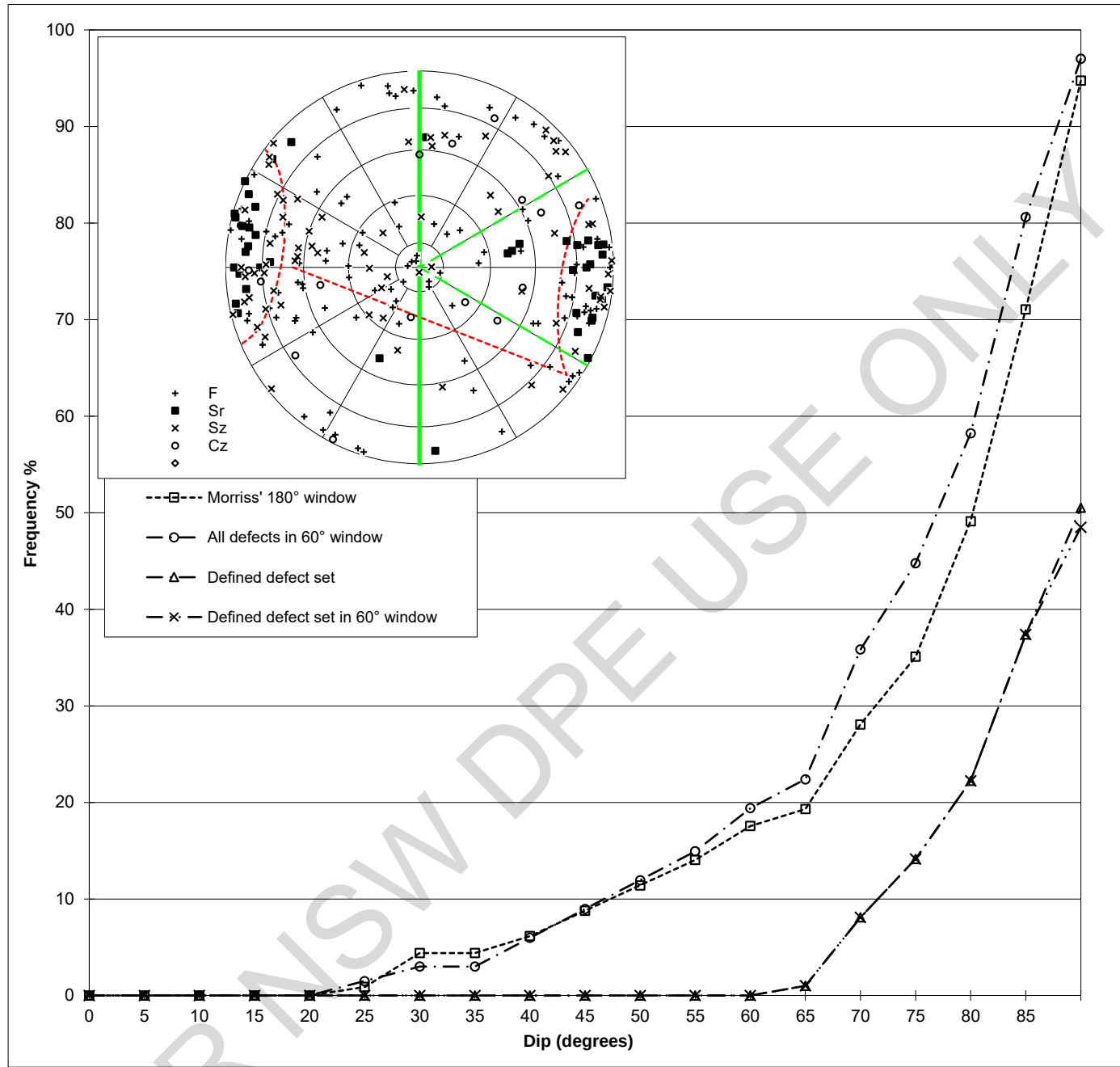
Defects in set FL5

15

Number of Unstable Wedges 105
Number of Wedges Analysed 105

From a possible Total Number of 105

PLANAR SLIDING



PARAMETERS OF THE PIT WALL

Slope Direction	270
Kinematic Window ±	30
DEFECT SET	

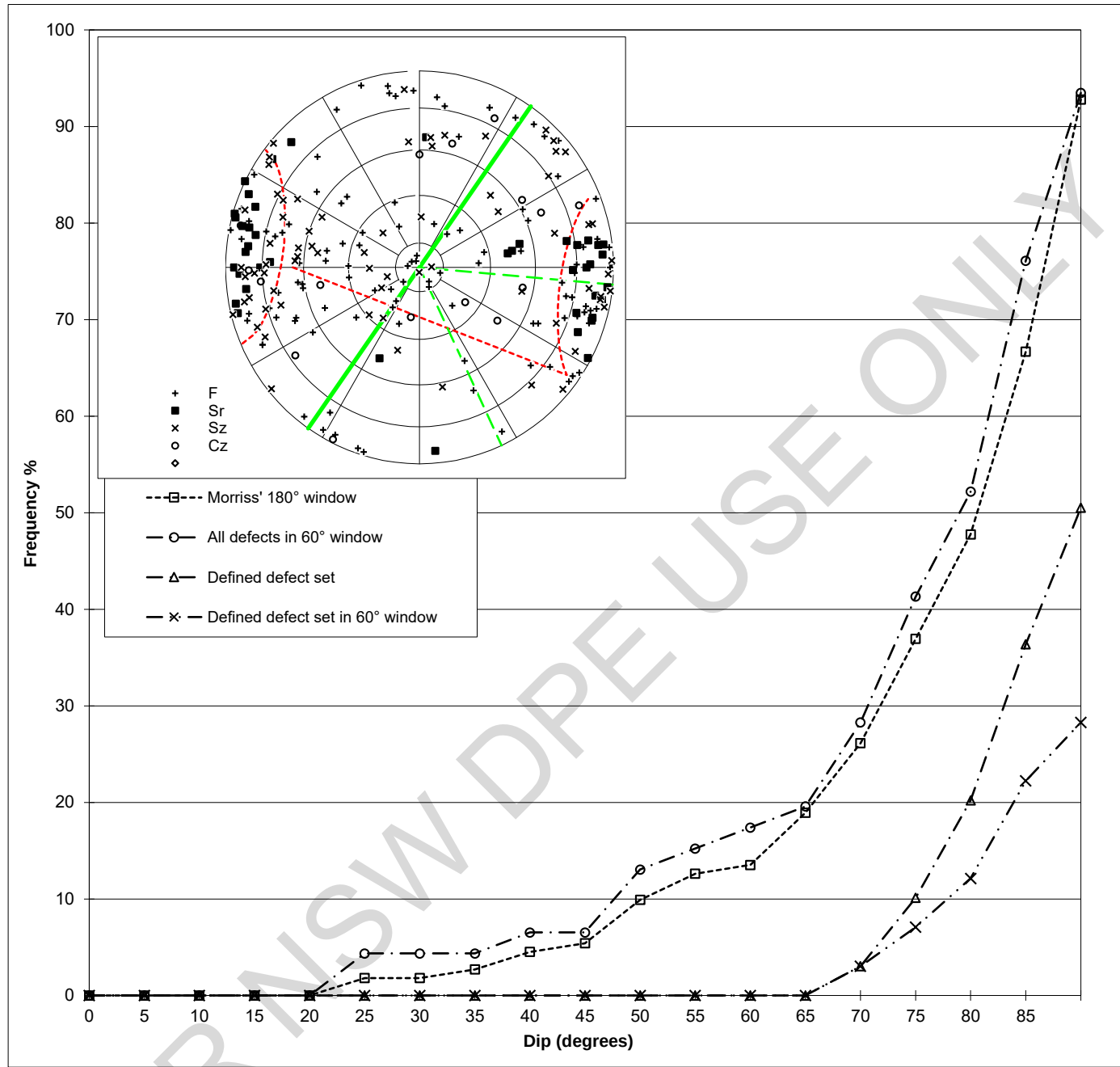
FL1	Mean	±
Dip	89	29
Dip Direction	97	30

DEFECT SHEAR STRENGTHS

Cohesion	=	0 kPa
Friction Angle	=	20°

Defects in kinematic window	65
Defects in set FL1	50
Defect in set & window	48
Defects Dipping out of Slope	108

PLANAR SLIDING



PARAMETERS OF THE PIT WALL

Slope Direction	305
Kinematic Window $\pm$	30
DEFECT SET	

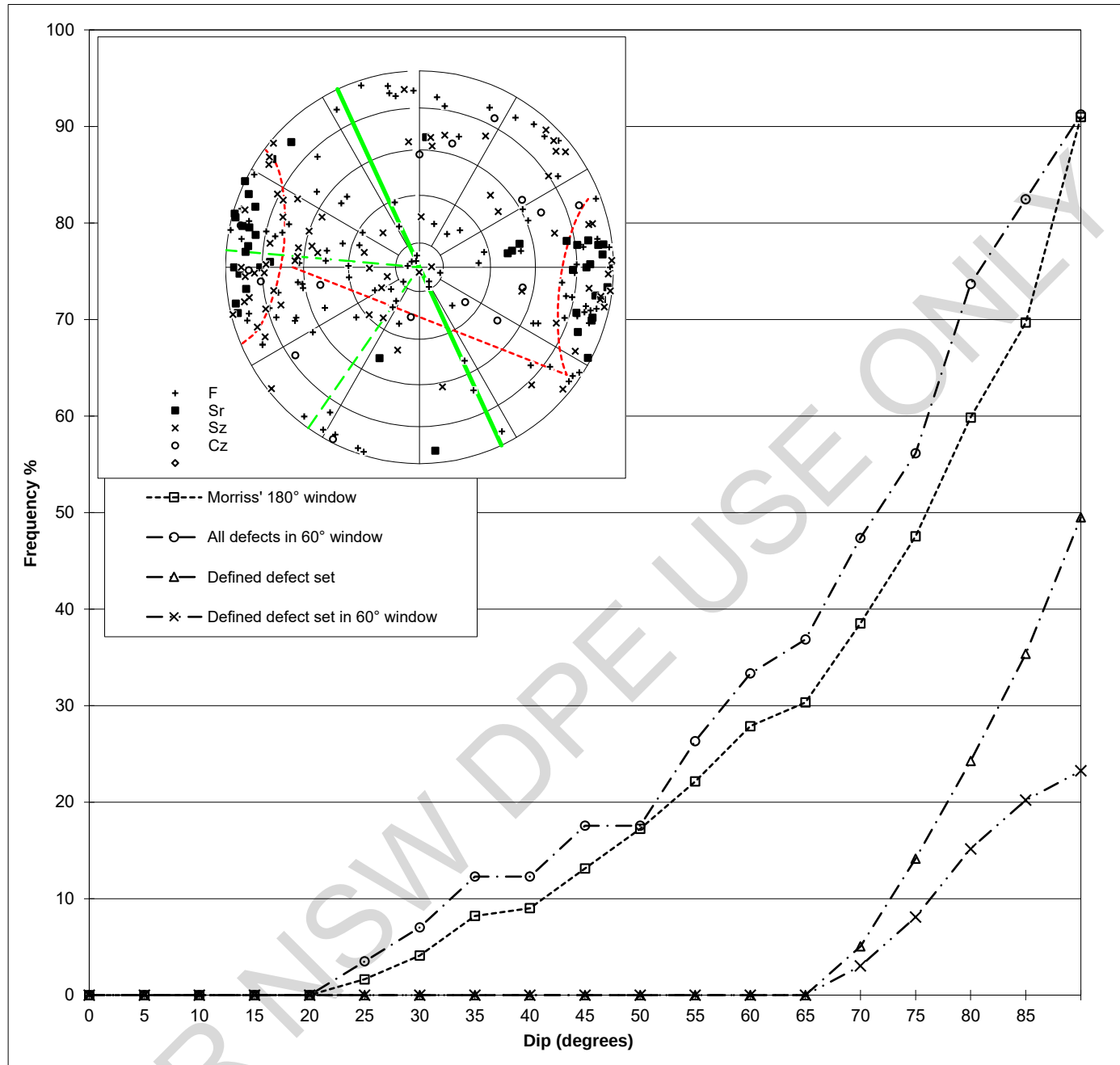
FL1	Mean	$\pm$
Dip	89	29
Dip Direction	97	30

DEFECT SHEAR STRENGTHS

Cohesion	=	0 kPa
Friction Angle	=	20°

Defects in kinematic window	43
Defects in set FL1	50
Defect in set & window	28
Defects Dipping out of Slope	103

PLANAR SLIDING



PARAMETERS OF THE PIT WALL

Slope Direction	65
Kinematic Window ±	30
DEFECT SET	

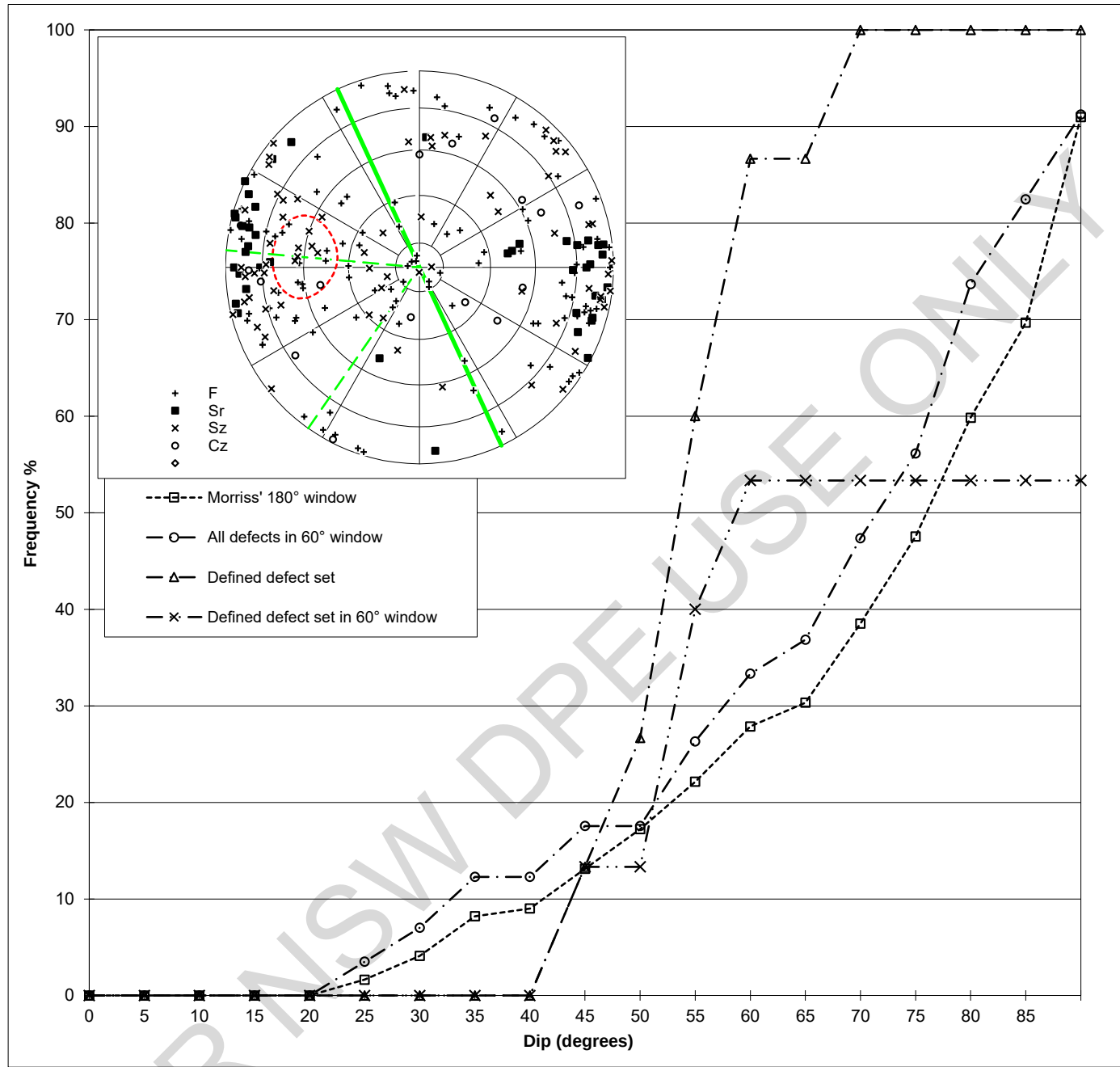
FL1	Mean	±
Dip	89	29
Dip Direction	97	30

DEFECT SHEAR STRENGTHS

Cohesion	=	0 kPa
Friction Angle	=	20°

Defects in kinematic window	52
Defects in set FL1	49
Defect in set & window	23
Defects Dipping out of Slope	111

PLANAR SLIDING



PARAMETERS OF THE PIT WALL

Slope Direction	65
Kinematic Window ±	30
DEFECT SET	

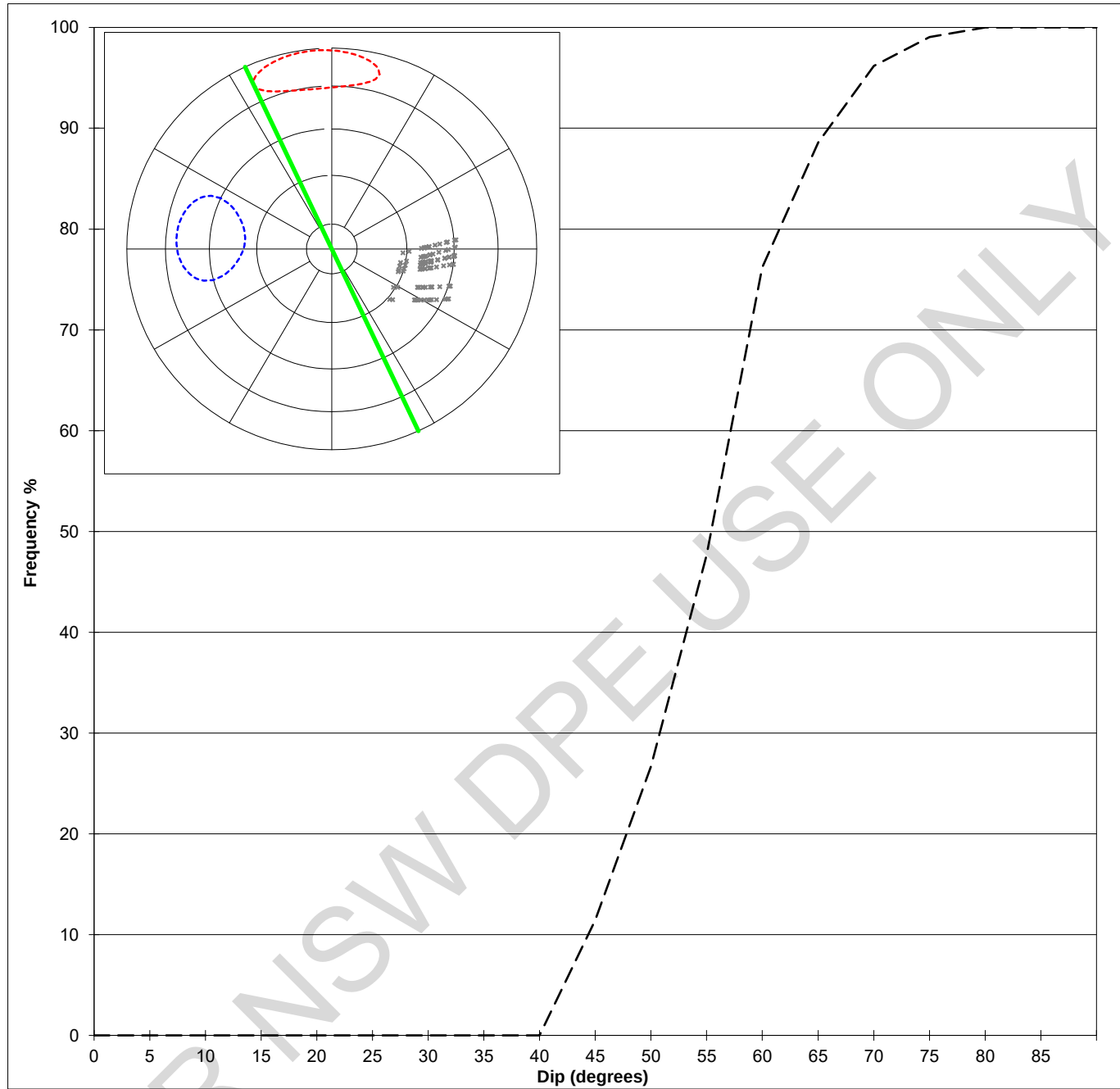
FL5	Mean	±
Dip	50	15
Dip Direction	95	20

DEFECT SHEAR STRENGTHS

Cohesion	=	0 kPa
Friction Angle	=	20°

Defects in kinematic window	52
Defects in set FL5	15
Defect in set & window	8
Defects Dipping out of Slope	111

WEDGE FAILURE



PARAMETERS OF THE PIT WALL

Slope Direction 65

FIRST SET			
FL4	Mean	±	
Dip	79	10	
Dip Direction	175	20	

Defects in set FL4 7

DEFECT SHEAR STRENGTHS

Cohesion = 0 kPa
Friction Angle = 20°

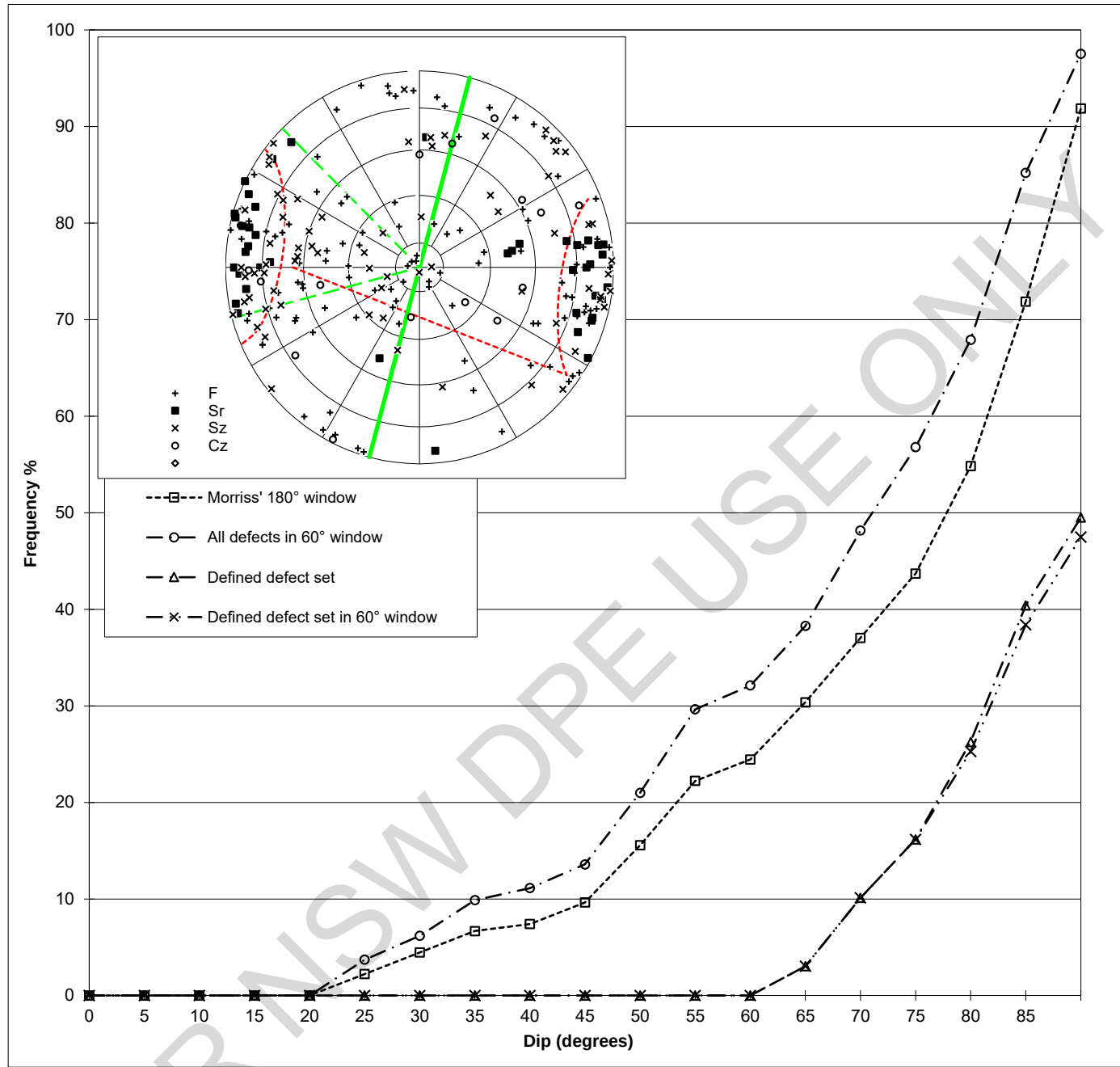
SECOND SET

FL5	Mean	±	
Dip	50	15	
Dip Direction	95	20	

Defects in set FL5 15

Number of Unstable Wedges 105
Number of Wedges Analysed 105 From a possible Total Number of 105

PLANAR SLIDING



PARAMETERS OF THE PIT WALL

Slope Direction	105
Kinematic Window $\pm$	30
DEFECT SET	

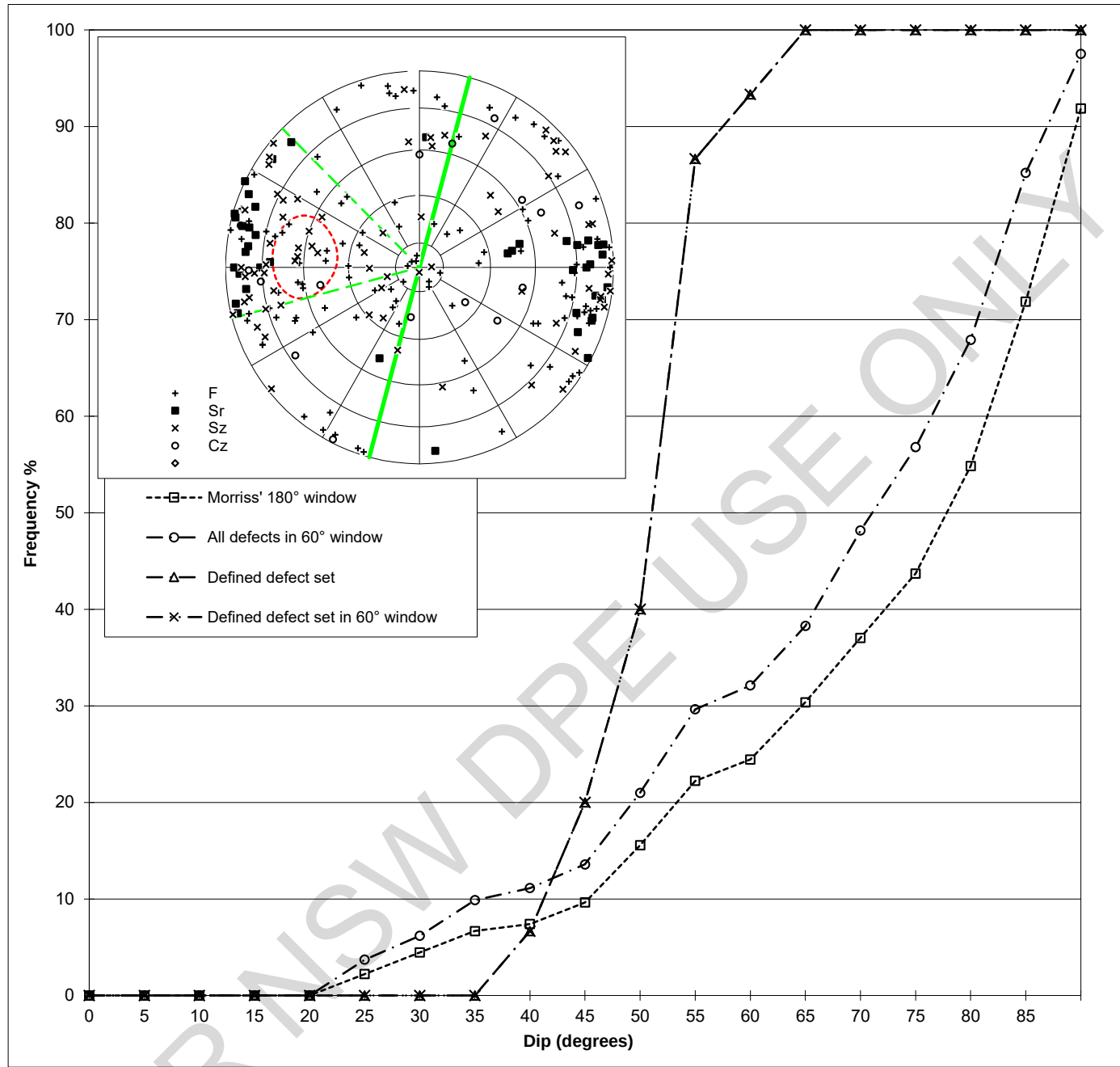
FL1	Mean	$\pm$
Dip	89	29
Dip Direction	97	30

DEFECT SHEAR STRENGTHS

Cohesion	=	0 kPa
Friction Angle	=	20°

Defects in kinematic window	79
Defects in set FL1	49
Defect in set & window	47
Defects Dipping out of Slope	124

PLANAR SLIDING



PARAMETERS OF THE PIT WALL

Slope Direction	105
Kinematic Window $\pm$	30
DEFECT SET	

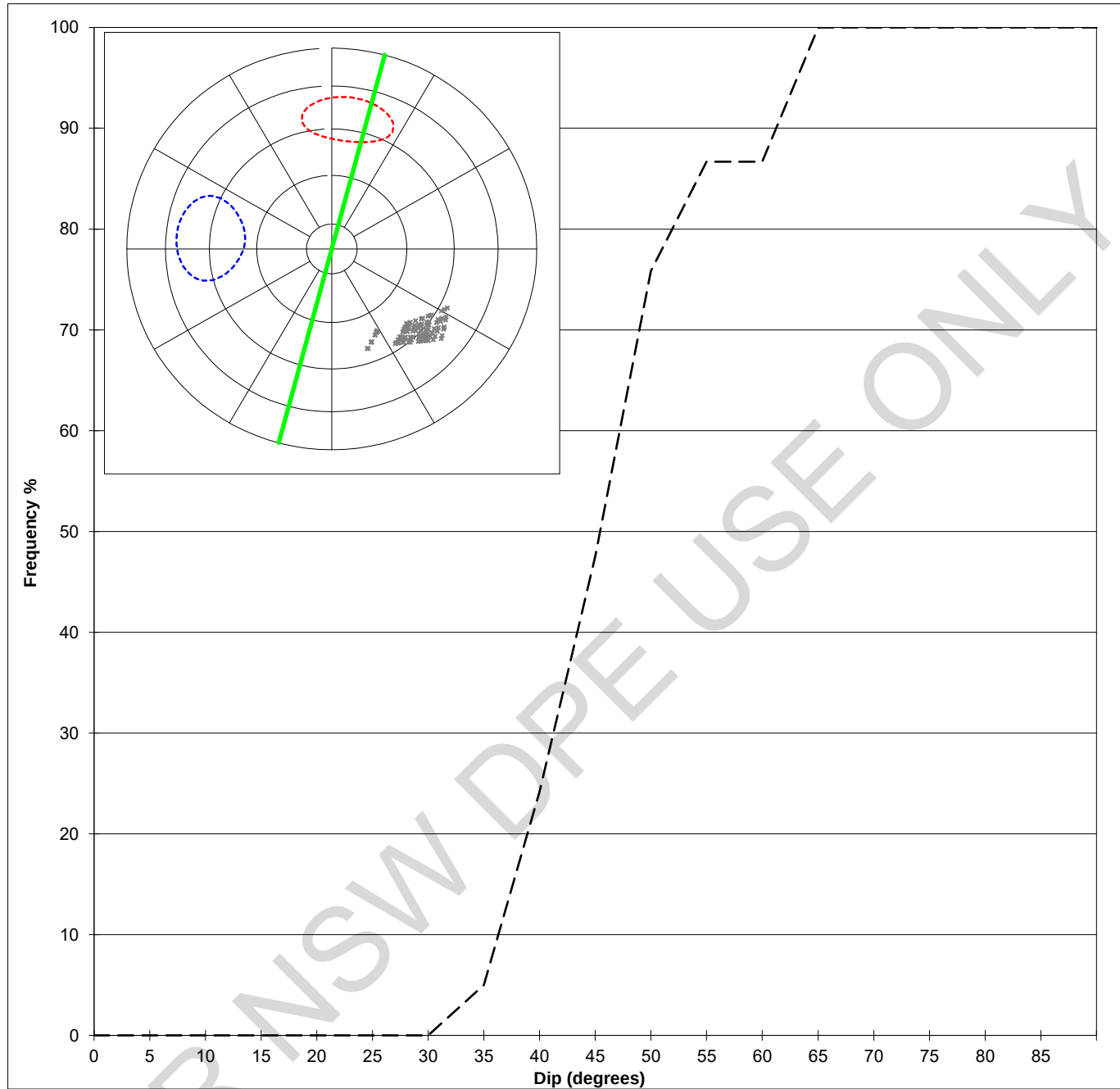
FL5	Mean	$\pm$
Dip	50	15
Dip Direction	95	20

DEFECT SHEAR STRENGTHS

Cohesion	=	0 kPa
Friction Angle	=	20°

Defects in kinematic window	79
Defects in set FL5	15
Defect in set & window	15
Defects Dipping out of Slope	124

WEDGE FAILURE



PARAMETERS OF THE PIT WALL

Slope Direction 105

FIRST SET			
FL3	Mean	±	
Dip	55	10	
Dip Direction	187	20	

Defects in set FL3 8

DEFECT SHEAR STRENGTHS

Cohesion = 0 kPa
Friction Angle = 20°

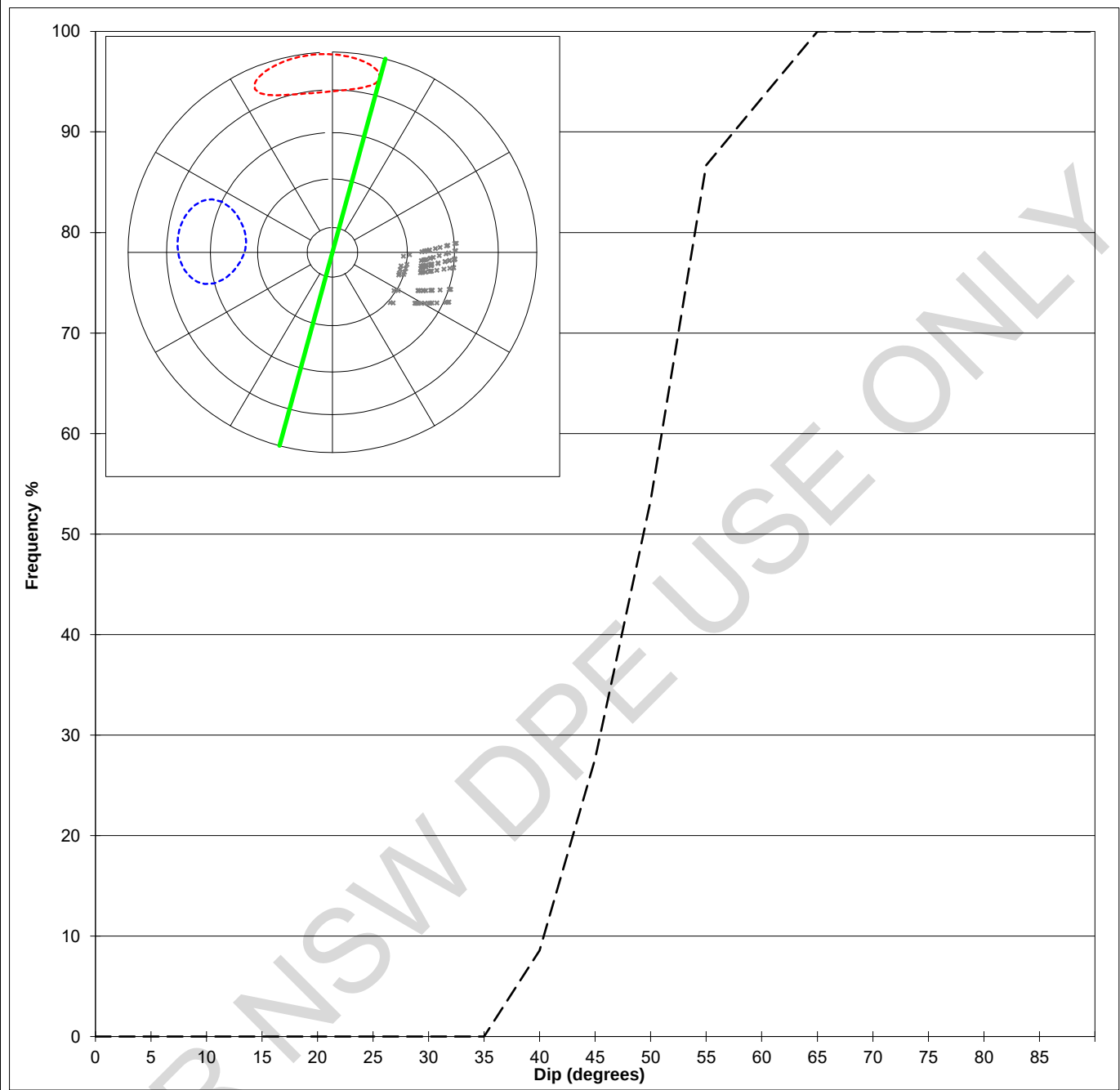
SECOND SET			
FL5	Mean	±	
Dip	50	15	
Dip Direction	95	20	

Defects in set FL5 15

Number of Unstable Wedges 120
Number of Wedges Analysed 120

From a possible Total Number of 120

WEDGE FAILURE



PARAMETERS OF THE PIT WALL

Slope Direction 105

FIRST SET

FL4	Mean	±
Dip	79	10
Dip Direction	175	20

Defects in set FL4

7

DEFECT SHEAR STRENGTHS

Cohesion = 0 kPa
Friction Angle = 20°

SECOND SET

FL5	Mean	±
Dip	50	15
Dip Direction	95	20

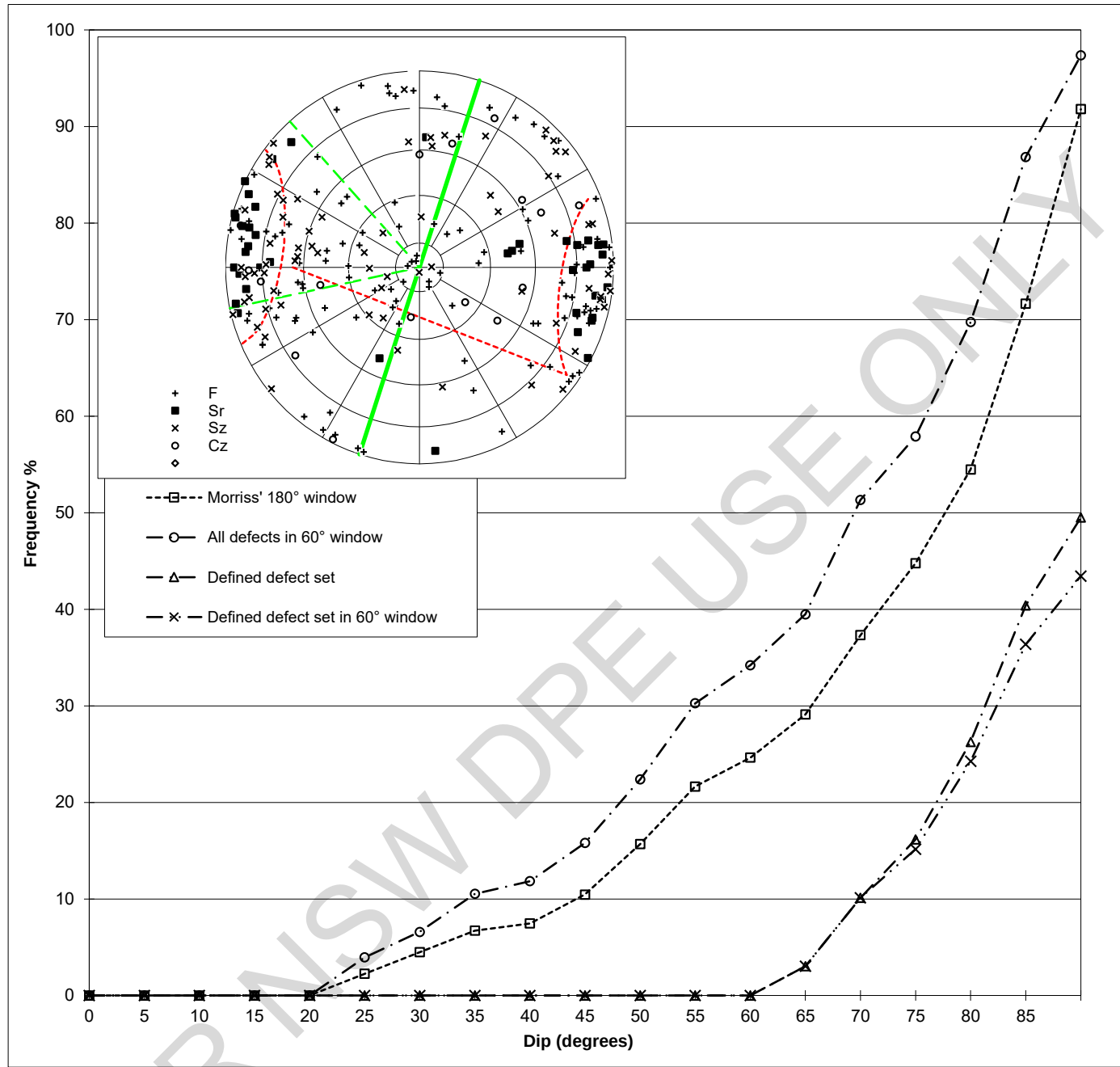
Defects in set FL5

15

Number of Unstable Wedges 105
Number of Wedges Analysed 105

From a possible Total Number of 105

PLANAR SLIDING



PARAMETERS OF THE PIT WALL

Slope Direction	108
Kinematic Window $\pm$	30
DEFECT SET	

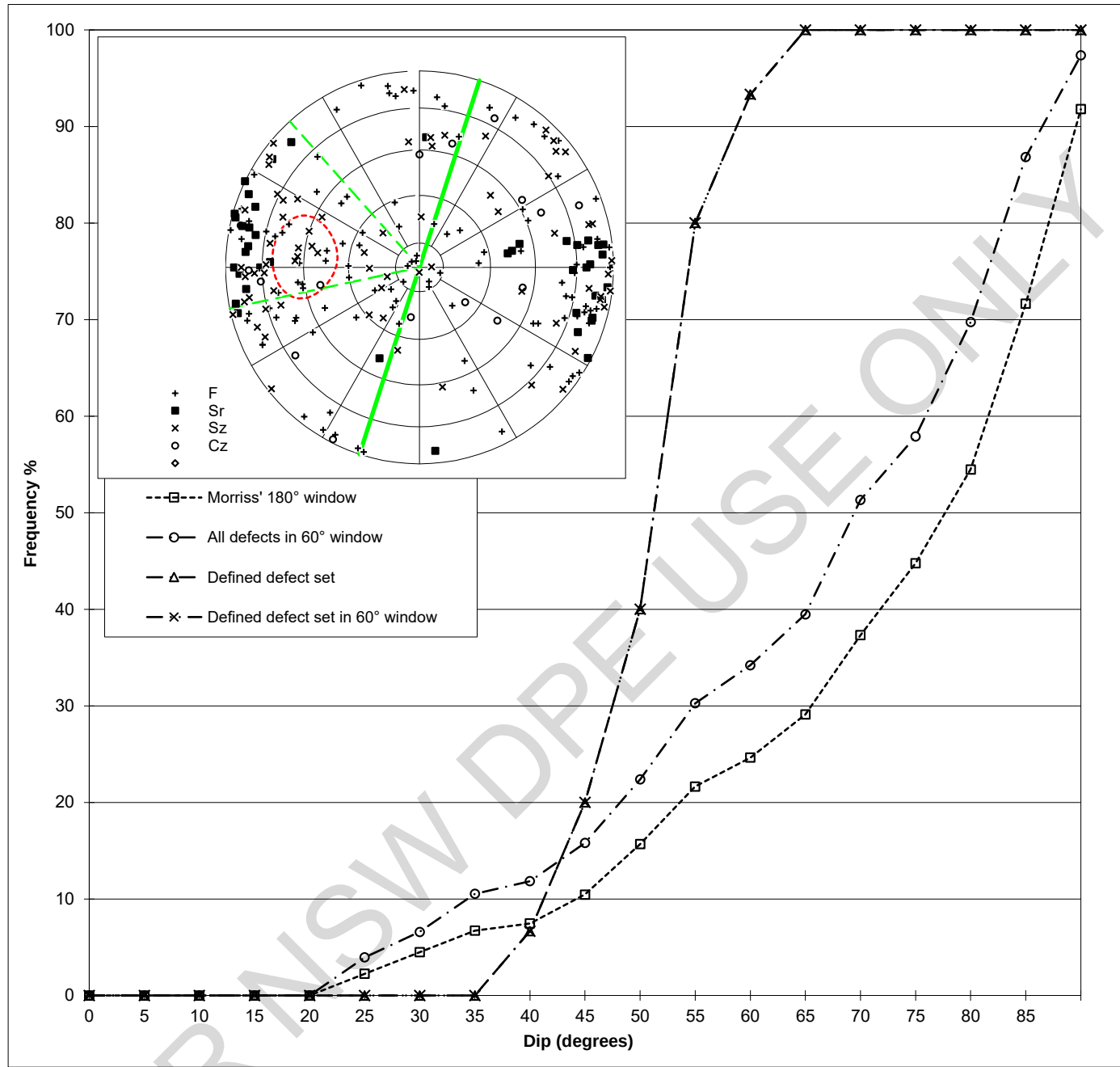
FL1	Mean	$\pm$
Dip	89	29
Dip Direction	97	30

DEFECT SHEAR STRENGTHS

Cohesion	=	0 kPa
Friction Angle	=	20°

Defects in kinematic window	74
Defects in set FL1	49
Defect in set & window	43
Defects Dipping out of Slope	123

PLANAR SLIDING



PARAMETERS OF THE PIT WALL

Slope Direction	108
Kinematic Window ±	30
DEFECT SET	

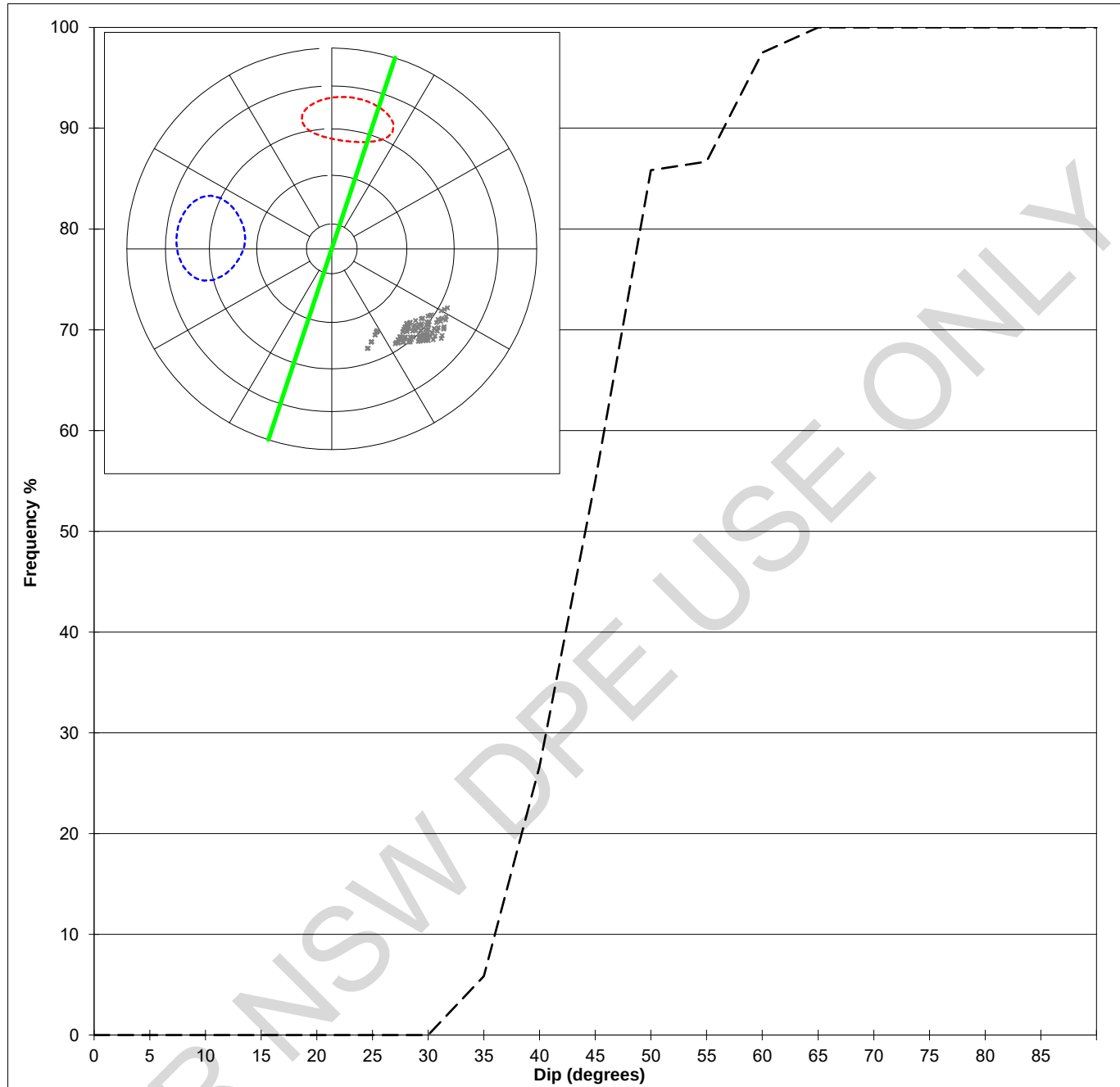
FL5	Mean	±
Dip	50	15
Dip Direction	95	20

DEFECT SHEAR STRENGTHS

Cohesion	=	0 kPa
Friction Angle	=	20°

Defects in kinematic window	74
Defects in set FL5	15
Defect in set & window	15
Defects Dipping out of Slope	123

WEDGE FAILURE



PARAMETERS OF THE PIT WALL

Slope Direction 108

FIRST SET

FL3	Mean	±
Dip	55	10
Dip Direction	187	20

Defects in set FL3 8

DEFECT SHEAR STRENGTHS

Cohesion = 0 kPa
Friction Angle = 20°

SECOND SET

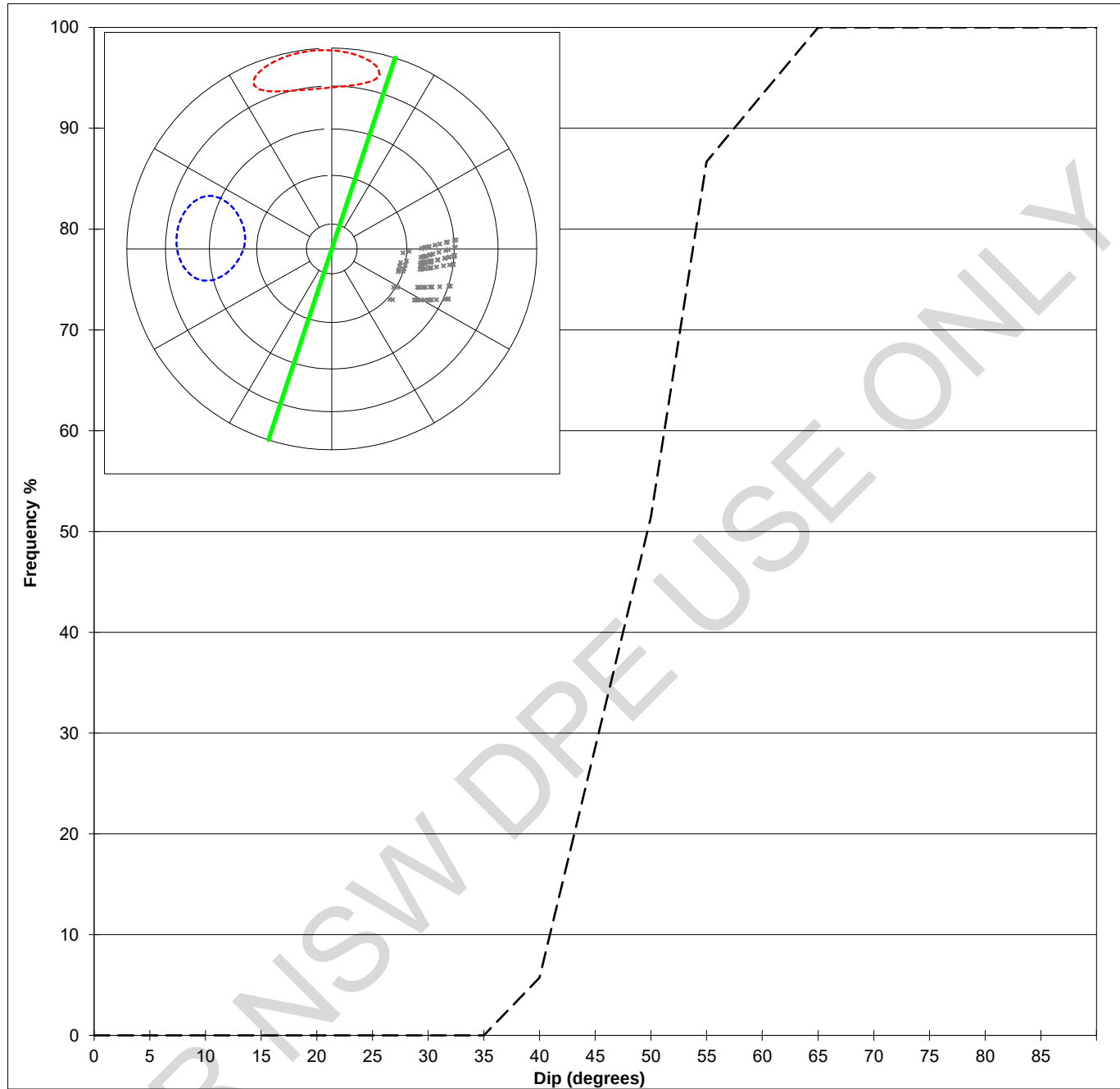
FL5	Mean	±
Dip	50	15
Dip Direction	95	20

Defects in set FL5 15

Number of Unstable Wedges 120
Number of Wedges Analysed 120

From a possible Total Number of 120

WEDGE FAILURE



PARAMETERS OF THE PIT WALL

Slope Direction 108

FIRST SET

FL4	Mean	±
Dip	79	10
Dip Direction	175	20

Defects in set FL4

7

DEFECT SHEAR STRENGTHS

Cohesion = 0 kPa
Friction Angle = 20°

SECOND SET

FL5	Mean	±
Dip	50	15
Dip Direction	95	20

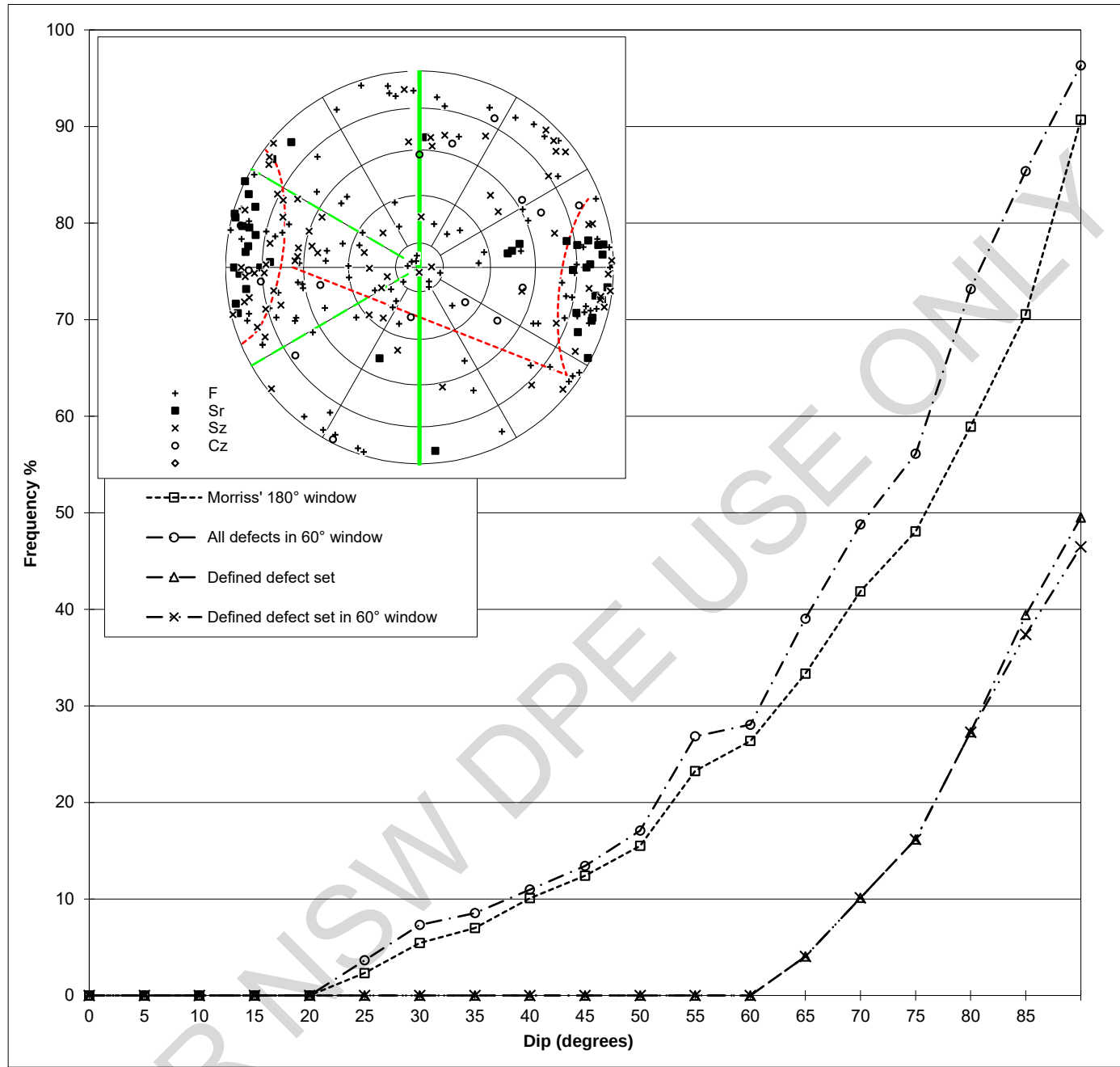
Defects in set FL5

15

Number of Unstable Wedges 105
Number of Wedges Analysed 105

From a possible Total Number of 105

PLANAR SLIDING



PARAMETERS OF THE PIT WALL

Slope Direction	90
Kinematic Window ±	30
DEFECT SET	

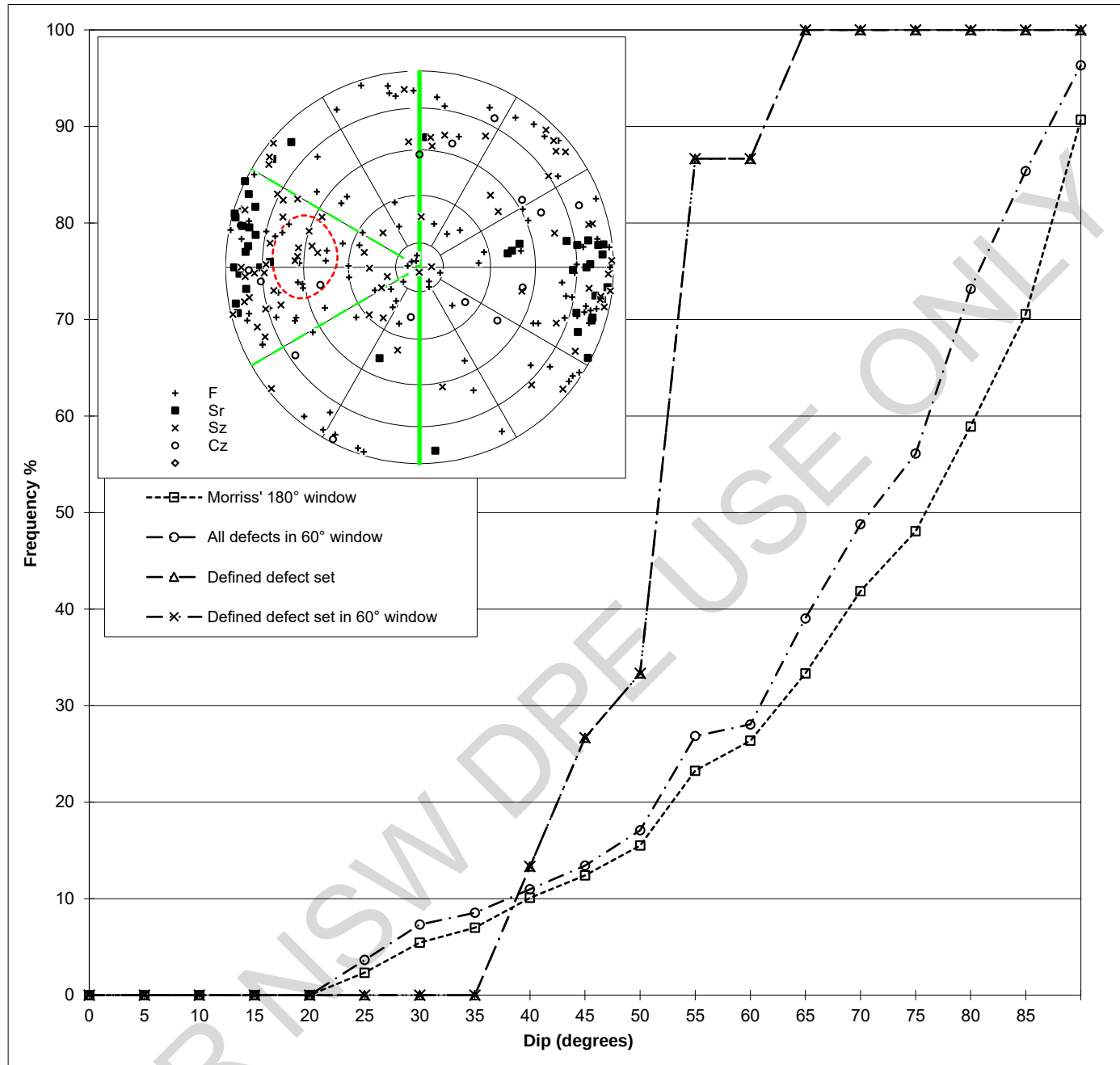
FL1	Mean	±
Dip	89	29
Dip Direction	97	30

DEFECT SHEAR STRENGTHS

Cohesion	=	0 kPa
Friction Angle	=	20°

Defects in kinematic window	79
Defects in set FL1	49
Defect in set & window	46
Defects Dipping out of Slope	117

PLANAR SLIDING



PARAMETERS OF THE PIT WALL

Slope Direction	90
Kinematic Window ±	30
DEFECT SET	

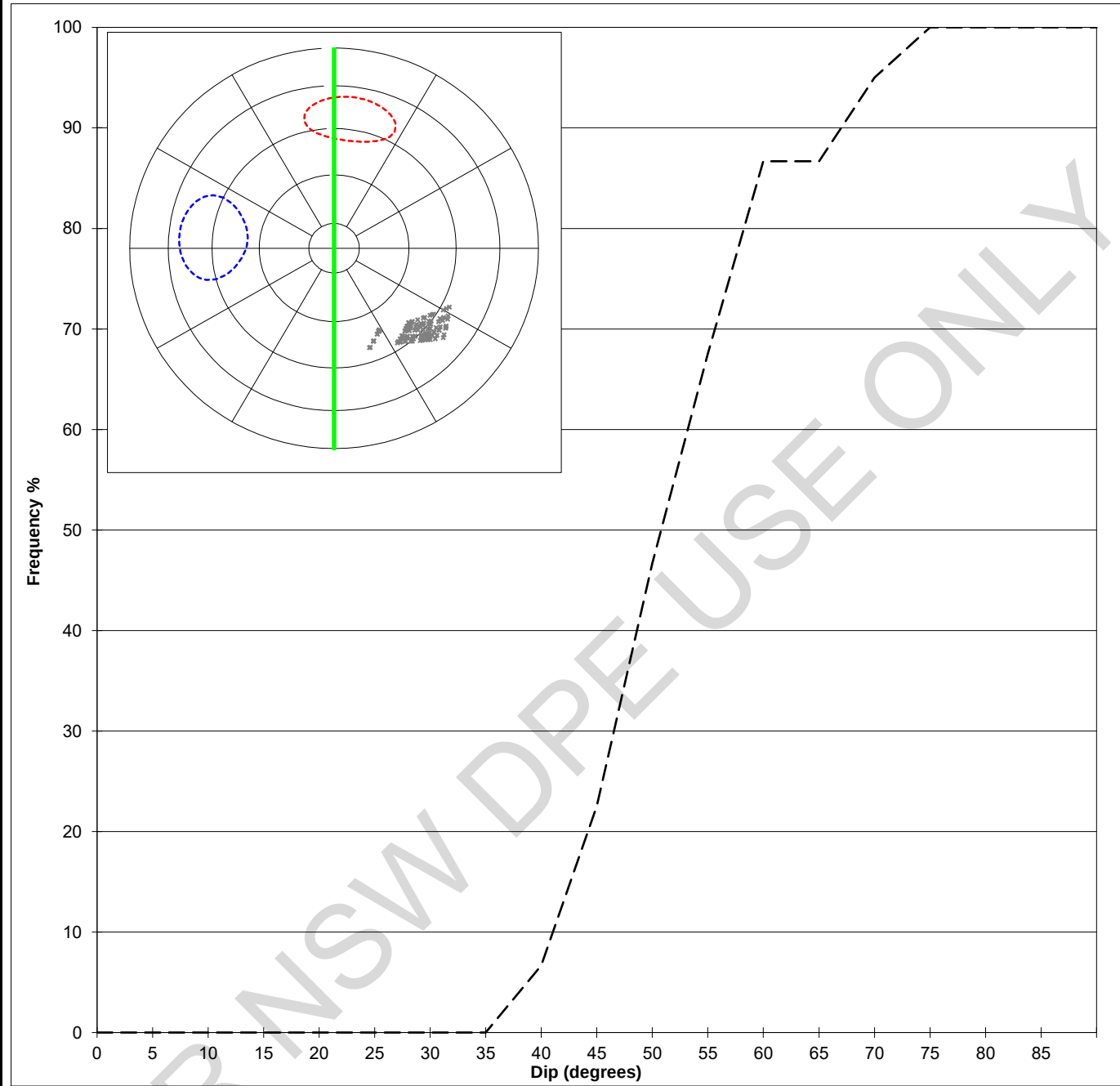
FL5	Mean	±
Dip	50	15
Dip Direction	95	20

DEFECT SHEAR STRENGTHS

Cohesion	=	0 kPa
Friction Angle	=	20°

Defects in kinematic window	79
Defects in set FL5	15
Defect in set & window	15
Defects Dipping out of Slope	117

WEDGE FAILURE



PARAMETERS OF THE PIT WALL

Slope Direction 90

FIRST SET

FL3	Mean	±
Dip	55	10
Dip Direction	187	20

Defects in set FL3 8

DEFECT SHEAR STRENGTHS

Cohesion = 0 kPa
Friction Angle = 20°

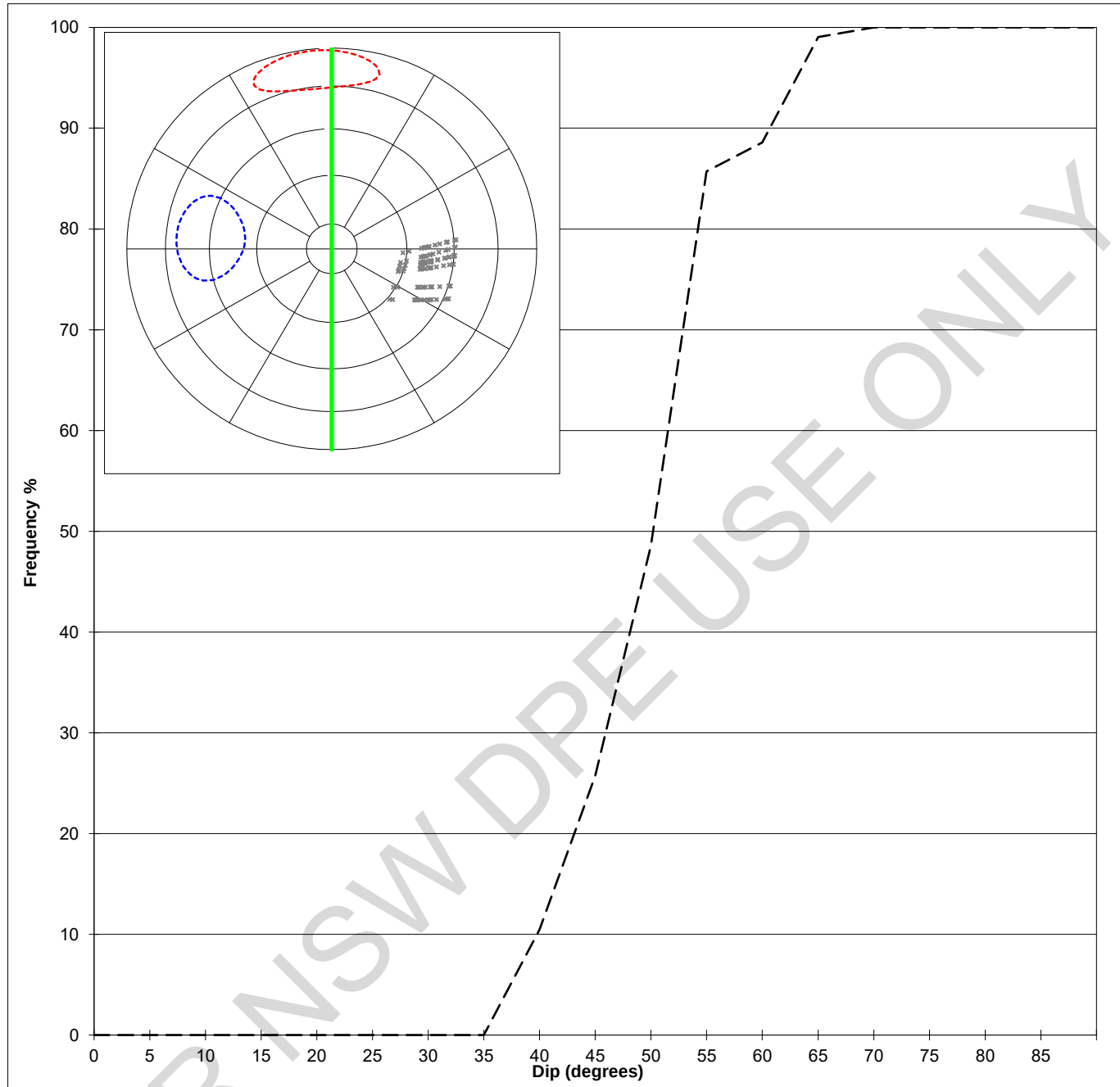
SECOND SET

FL5	Mean	±
Dip	50	15
Dip Direction	95	20

Defects in set FL5 15

Number of Unstable Wedges 120
Number of Wedges Analysed 120 From a possible Total Number of 120

WEDGE FAILURE



PARAMETERS OF THE PIT WALL
Slope Direction 90

FIRST SET			
FL4	Mean	±	
Dip	79	10	
Dip Direction	175	20	

Defects in set FL47

DEFECT SHEAR STRENGTHS
Cohesion = 0 kPa
Friction Angle = 20°

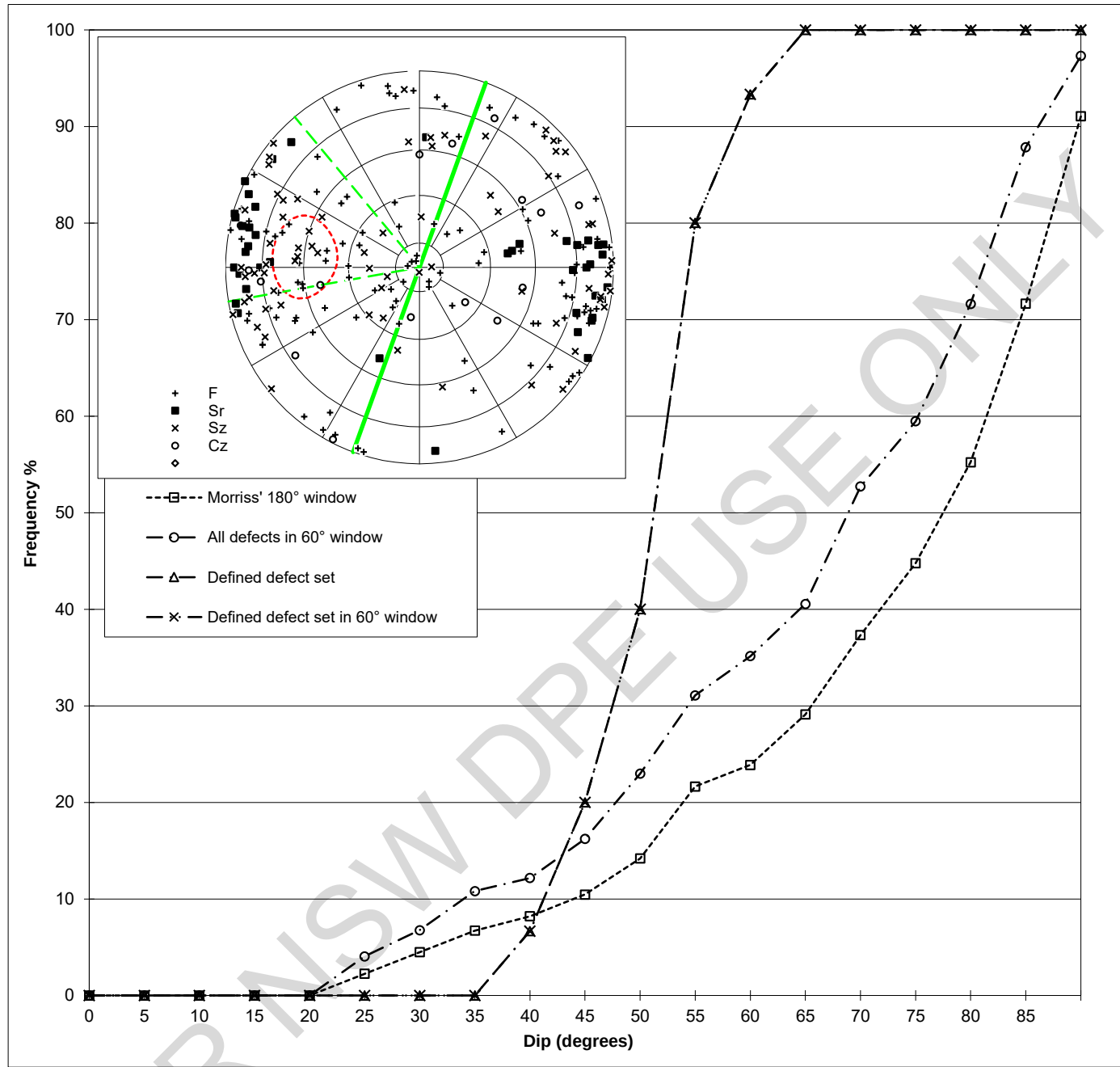
SECOND SET			
FL5	Mean	±	
Dip	50	15	
Dip Direction	95	20	

Defects in set FL515

Number of Unstable Wedges105
Number of Wedges Analysed105

From a possible Total Number of105

PLANAR SLIDING



PARAMETERS OF THE PIT WALL

Slope Direction	110
Kinematic Window ±	30
DEFECT SET	

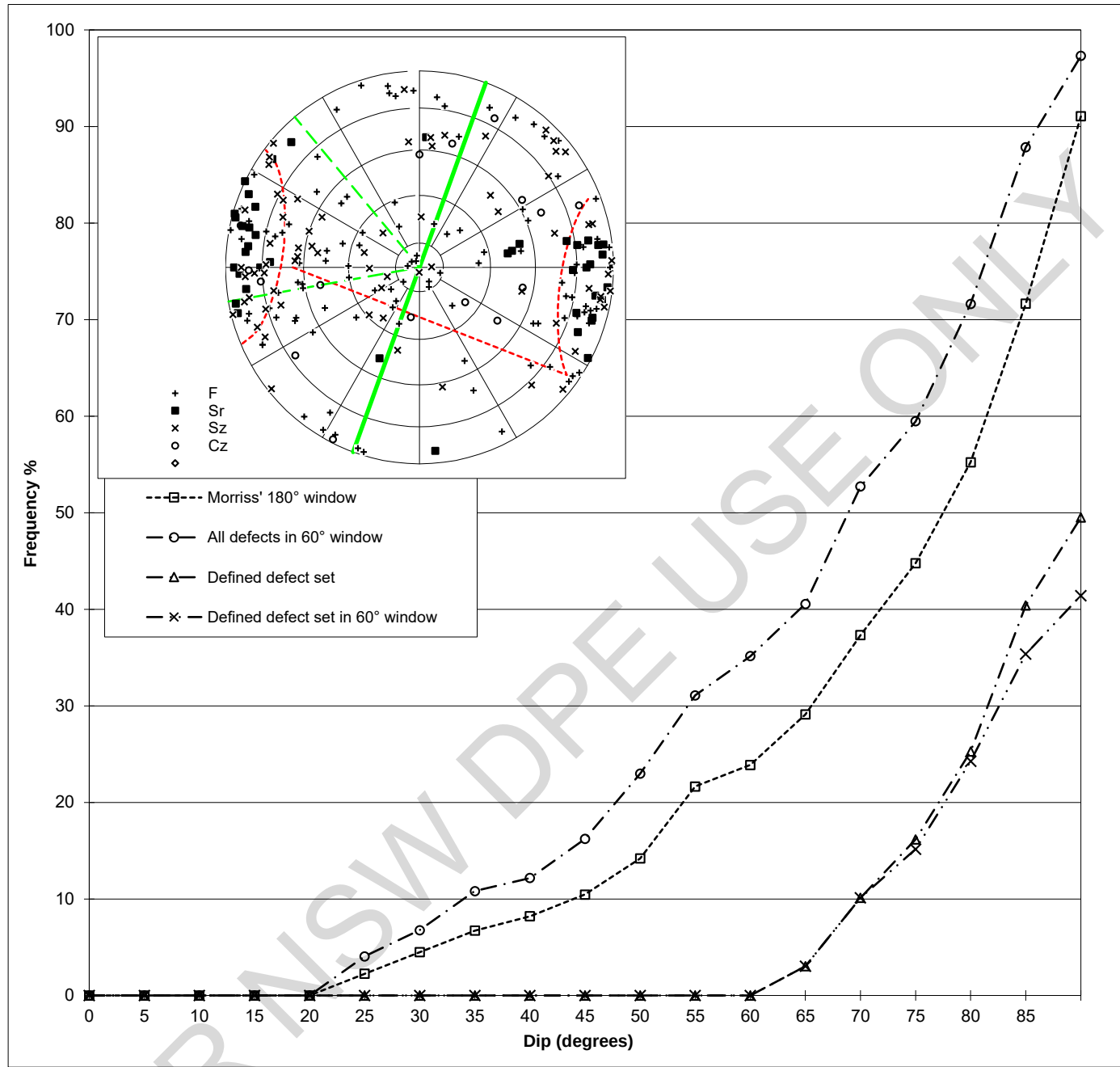
FL5	Mean	±
Dip	50	15
Dip Direction	95	20

DEFECT SHEAR STRENGTHS

Cohesion	=	0 kPa
Friction Angle	=	20°

Defects in kinematic window	72
Defects in set FL5	15
Defect in set & window	15
Defects Dipping out of Slope	122

PLANAR SLIDING



PARAMETERS OF THE PIT WALL

Slope Direction	110
Kinematic Window ±	30
DEFECT SET	

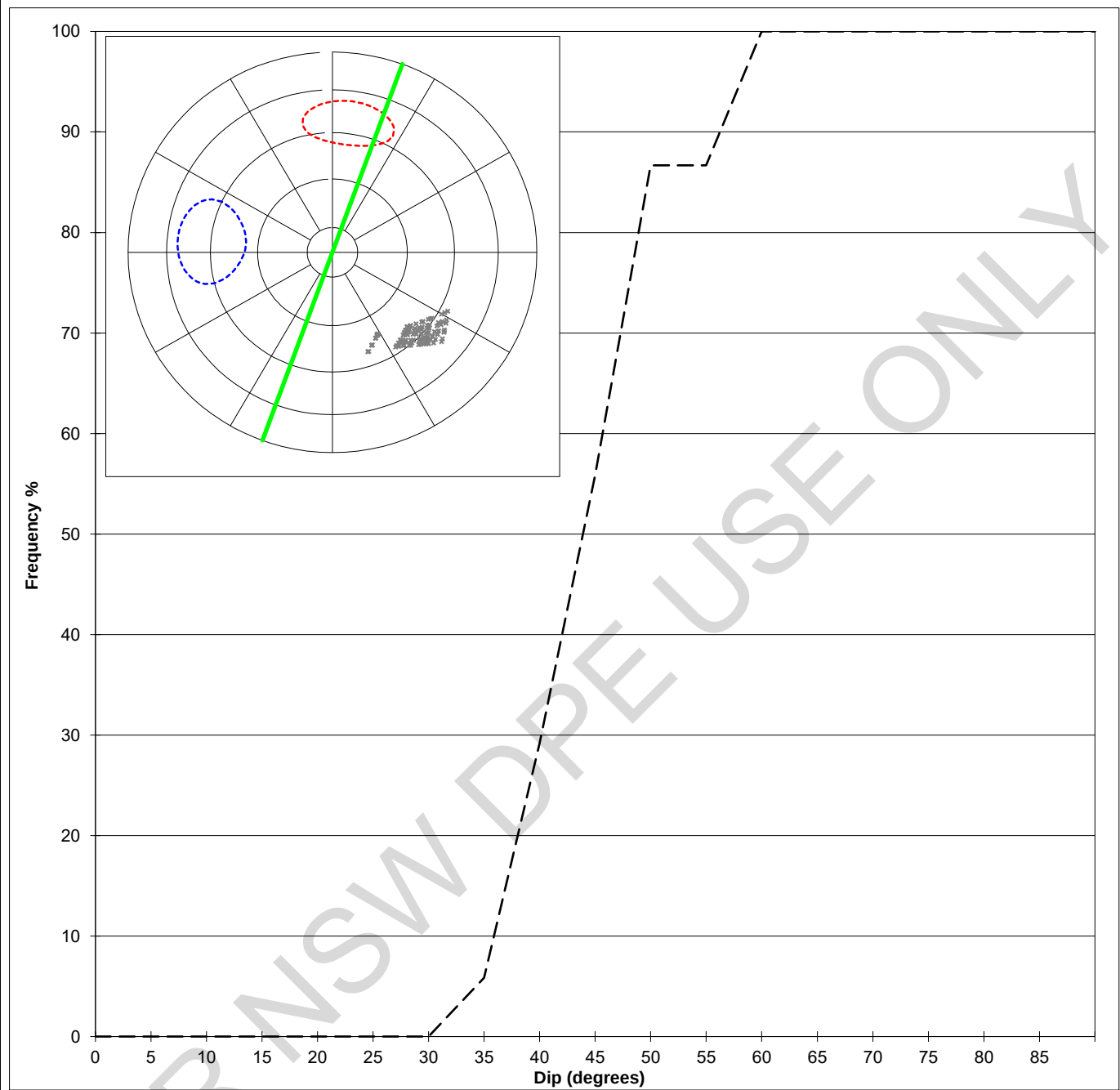
FL1	Mean	±
Dip	89	29
Dip Direction	97	30

DEFECT SHEAR STRENGTHS

Cohesion	=	0 kPa
Friction Angle	=	20°

Defects in kinematic window	72
Defects in set FL1	49
Defect in set & window	41
Defects Dipping out of Slope	122

WEDGE FAILURE



PARAMETERS OF THE PIT WALL

Slope Direction 110

FIRST SET

FL3	Mean	±
Dip	55	10
Dip Direction	187	20

Defects in set FL3

8

DEFECT SHEAR STRENGTHS

Cohesion = 0 kPa
Friction Angle = 20°

SECOND SET

FL5	Mean	±
Dip	50	15
Dip Direction	95	20

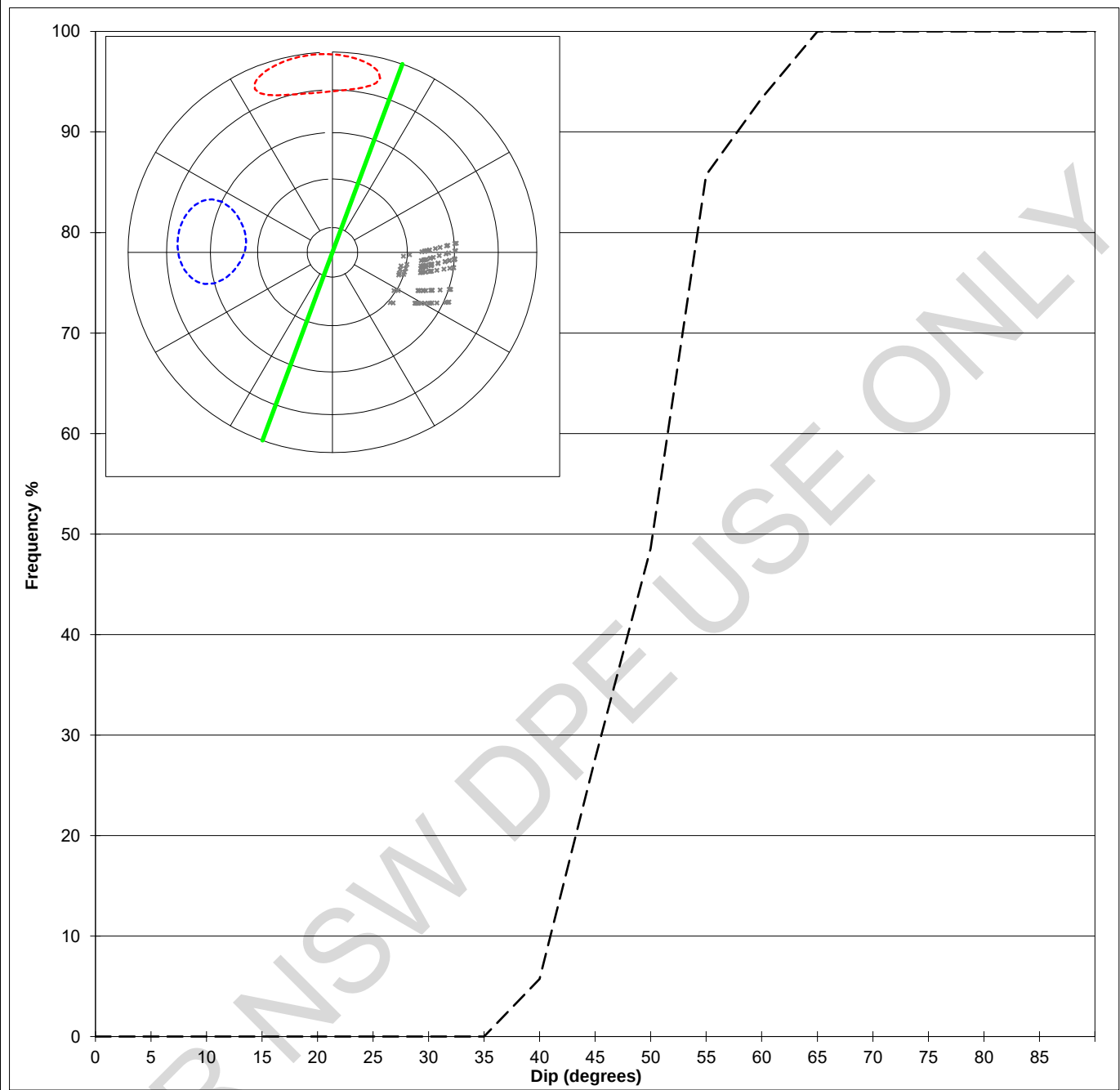
Defects in set FL5

15

Number of Unstable Wedges 120
Number of Wedges Analysed 120

From a possible Total Number of 120

WEDGE FAILURE



PARAMETERS OF THE PIT WALL

Slope Direction 110

FIRST SET

FL4	Mean	±
Dip	79	10
Dip Direction	175	20

Defects in set FL4

7

DEFECT SHEAR STRENGTHS

Cohesion = 0 kPa
Friction Angle = 20°

SECOND SET

FL5	Mean	±
Dip	50	15
Dip Direction	95	20

Defects in set FL5

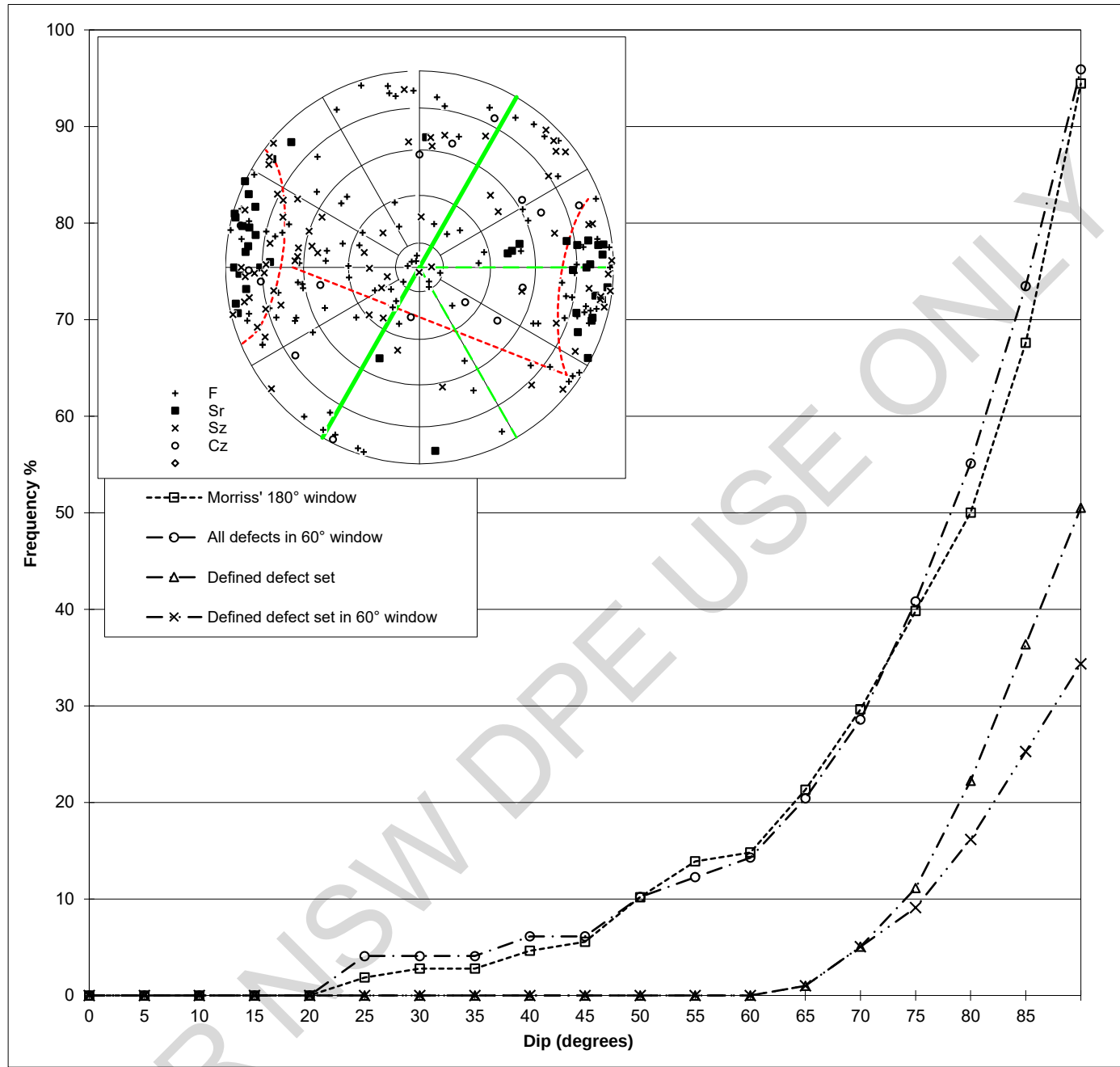
15

Number of Unstable Wedges 105
Number of Wedges Analysed 105

From a possible Total Number of 105

From a possible Total Number of 120

PLANAR SLIDING



PARAMETERS OF THE PIT WALL

Slope Direction	300
Kinematic Window $\pm$	30
DEFECT SET	

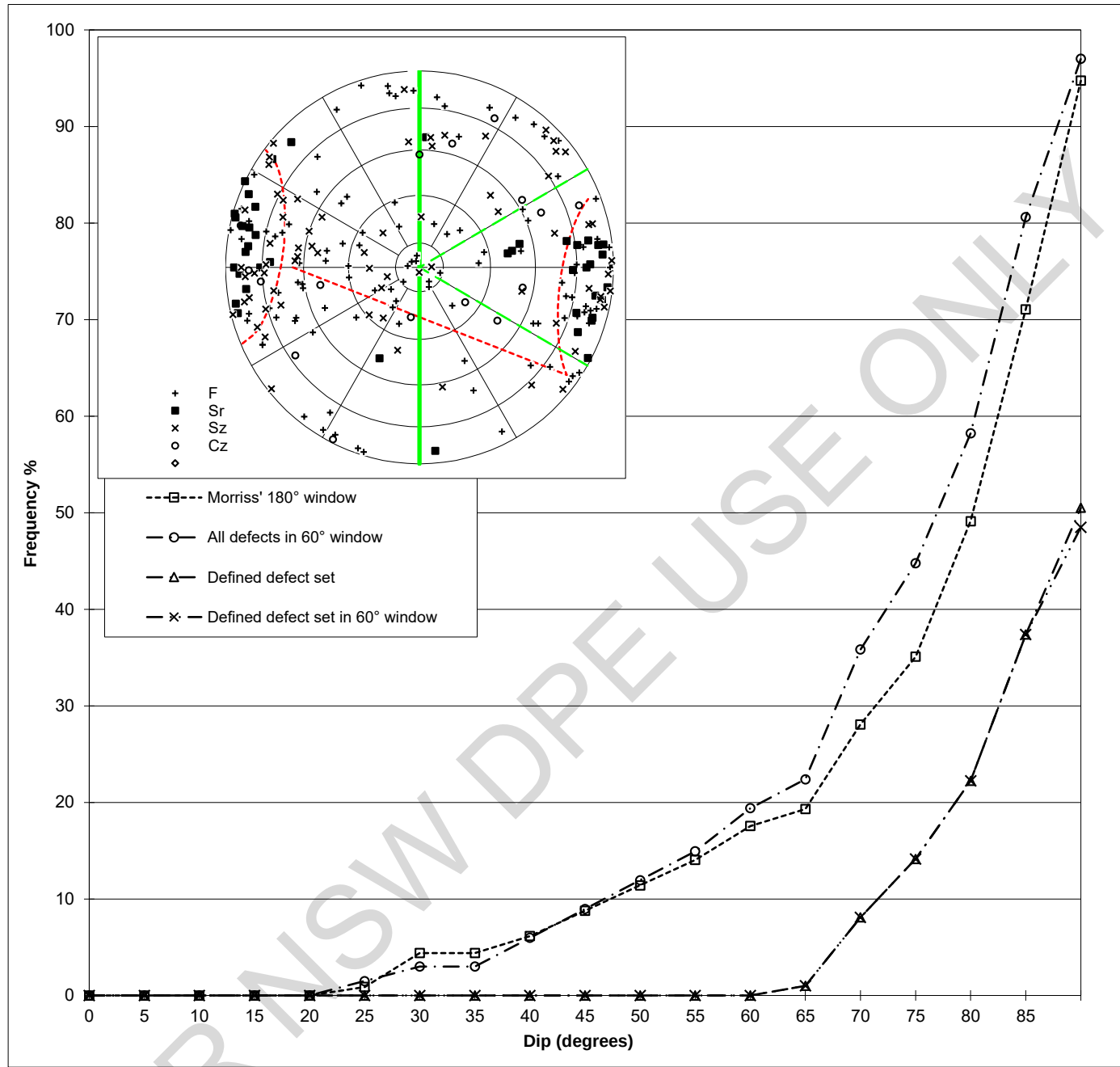
FL1	Mean	$\pm$
Dip	89	29
Dip Direction	97	30

DEFECT SHEAR STRENGTHS

Cohesion	=	0 kPa
Friction Angle	=	20°

Defects in kinematic window	47
Defects in set FL1	50
Defect in set & window	34
Defects Dipping out of Slope	102

PLANAR SLIDING



PARAMETERS OF THE PIT WALL

Slope Direction	270
Kinematic Window $\pm$	30
DEFECT SET	

FL1	Mean	$\pm$
Dip	89	29
Dip Direction	97	30

DEFECT SHEAR STRENGTHS

Cohesion	=	0 kPa
Friction Angle	=	20°

Defects in kinematic window	65
Defects in set FL1	50
Defect in set & window	48
Defects Dipping out of Slope	108