Macraes Phase 4 Consenting

Project Element 4.3.2: Open Pit Extensions

PSM71-287R Rev 2 15 August 2024

Executive Summary

This report presents the results of a geotechnical assessment undertaken by PSM to analyse the stability of the proposed open pit extension within Innes Mills (IM) deposit as part of the Macraes Phase 4 (MP4) project. The MP4 project also involves the expansion of two satellite pits: Golden Bar (to the south) and Coronation (to the north), and backfilling of the Coronation North Pit.

Analyses focussed on the proposed cut back designs for the respective pits. PSM has been undertaking geotechnical analyses and providing advice for pit design and managing geotechnical risks for the past 25 years. Known instability features within the open pits are:

- Block sliding along adversely oriented geological structures
- Planar sliding along the Footwall Fault (FF) – applicable to the Coronation Stage 6 west wall.

The stability analyses focus on the following design cases for both static and seismic loading scenarios:

- Completion of mining
- Closure pit lake condition.

Two-dimensional (2D) limit equilibrium slope stability analyses have been completed using the Rocscience software program *Slide2D*. The stability assessment provides an understanding of the expected stability for the pit walls at the completion of mining and during closure to provide confidence to both OceanaGold (OG) and the consenting authority that:

- Operational safety can be maintained
- The existing pit walls will maintain sufficient stability during pit lake filling and under long-term seismic loading scenarios throughout closure.

Three cross-sections were analysed for each of the proposed pit expansion at Innes Mills stages 9 and 10, Coronation Stage 6 and Golden Bar Stage 2. A single analysis section was also completed to demonstrate stability improvements resulting from backfilling of the Coronation North pit. Analysis sections were selected to represent the most adverse geometry and rock mass conditions that would be influenced by the proposed cutbacks.

Stability analyses indicate the lowest Factor of Safety (FoS) occurs at the completion of mining prior to the pit lake filling. Pit slope stability generally improves during closure due to the hydrostatic pressure of water in the pit lakes acting on the pit walls.

Where adversely orientated geological structures are present, bench to inter ramp scale instabilities may be expected during mining. Any rapid movement is likely to initiate prior to lake filling where a change in condition has occurred (e.g., active mining, blasting, rapid water ingress). High wall block sliding is actively managed operationally by OG during mining through routine geotechnical mapping and thorough stability monitoring.

Seismic load of operational base earthquake (OBE) equivalence did not significantly impact on FoS for typical geological conditions without adverse geological structures; reduction in FoS from the static case was negligible.

Slope movements are anticipated under the maximum design earthquake (MDE) (low probability strong ground shaking) loading condition for closure. There is potential for failure scarps to extend behind the design pit crest. It should be noted that it is likely there would be many natural slopes in the surrounding area that will also deform at this level of shaking.

As illustrated by the history at site, rapid large-scale pit wall failures are not expected during closure due to the ductile nature of rock mass failures. Movements are expected to be progressive creep style events and therefore the likelihood of a seiche events is low.

Some ongoing deformation (tension cracking, slumping, ground loss) could occur behind the pit crest post-closure. PSM recommends defining a strip of land/zone of influence around the crest of the combined pits to isolate potential hazards associated with ground movement and falling from height. PSM understands a perimeter fence around the pit was included in the consent for MP3. Based on a FoS of 1.5, an exclusion zone at approximately 100 m from the pit crest is indicated as necessary. Further geotechnical assessment is recommended to better define the exclusion zone during detailed design and following mining.

Table of Contents

List of Tables

List of Insets

List of Photos

List of Figures

List of Appendices

1. Introduction

This report presents a geotechnical review undertaken by PSM of the Macraes open pit designs that have been prepared as part of OceanaGold Corporation's (OG) proposed Macraes Phase 4 (MP4) developments.

This review was undertaken in accordance with our proposal[(1)] and informs Project Element 4.3.1 of the wider MP4 Consenting project. The project aims to extend the current mine life until approximately 2030 and requires a suite of technical studies to document the assessment of environmental effects (AEE) which will support Resource Consent, Building Consent and Wildlife Permit applications.

This report includes:

- Description of the proposed development associated with Project Element 4.3.1 and previous work undertaken by PSM applicable to the study
- A history of design parameters associated with each deposit (pit) assessed in this study
- A summary of the geological and geotechnical model with justification for design parameters
- Discussion of the analysis outcomes relative to the proposed consenting application and recommendations for future investigation works and other risk mitigations.

2. Background

2.1 Proposed Development

The proposed MP4 consenting project focuses on three areas of pit development. The largest development is the progressive re-excavation and expansion of Innes Mills, Inset 1. OG has undertaken numerous phases of excavation and subsequent backfilling to develop the Innes Mills pit to the current position while managing waste rock and tailings disposal. The planned Stage 9-10 expansion lies within OG owned land and within MP 41064 though a significant portion of the Innes Mills planned cutback extends beyond the current consent boundary[(2)].

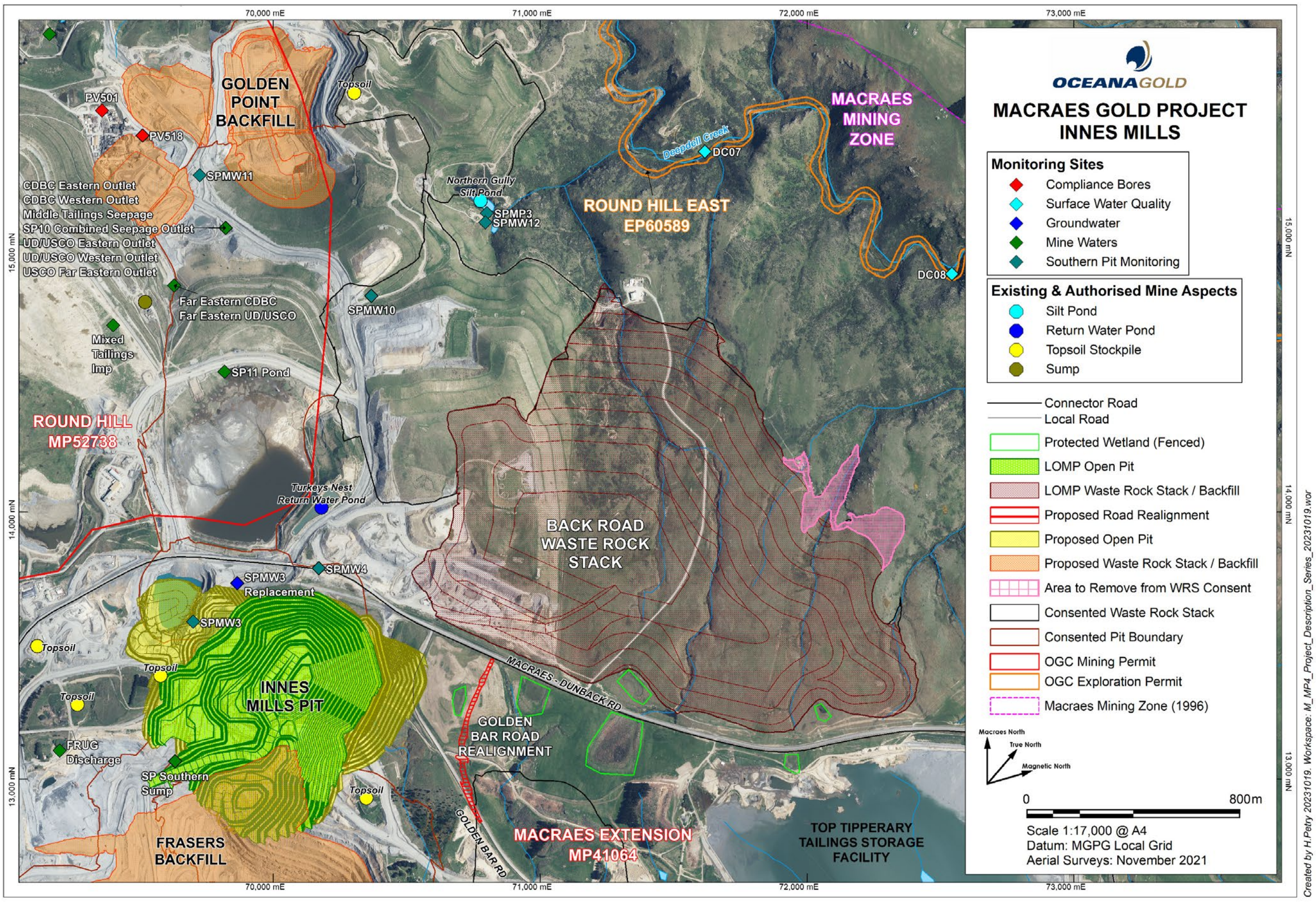
Key elements of the proposed Innes Mills Stage 9-10 pit expansion are summarised below:

- Expansion will extend 200 m to the east and 150 m to the west with mining predicted to continue from 2023 to 2028
- The expanded footprint extends over existing mine haul roads and pastureland
- The expanded pit goes slightly deeper than the deepest part of the currently consented Innes Mills pit
- Waste rock disposal will be based on progress of mining in surrounding areas become available for backfill. Initial waste will be placed in the currently consented FEWD WRS and then into Frasers Backfill (FRBF) on the completion of mining at Gay Tan Pit
- Some waste rock from Innes Mills will also be utilised for the MTI Buttress backfills in Golden Point Pit, expected during 2025.

---

[1] PSM71-276L Rev1 "Macraes Phase 4 Consenting – Proposal to Undertake Life of Mine Geotechnical Assessment" dated 9 April 2022

[2] OceanaGold "IM Open Pit – Project Description" dated 16 August 2023

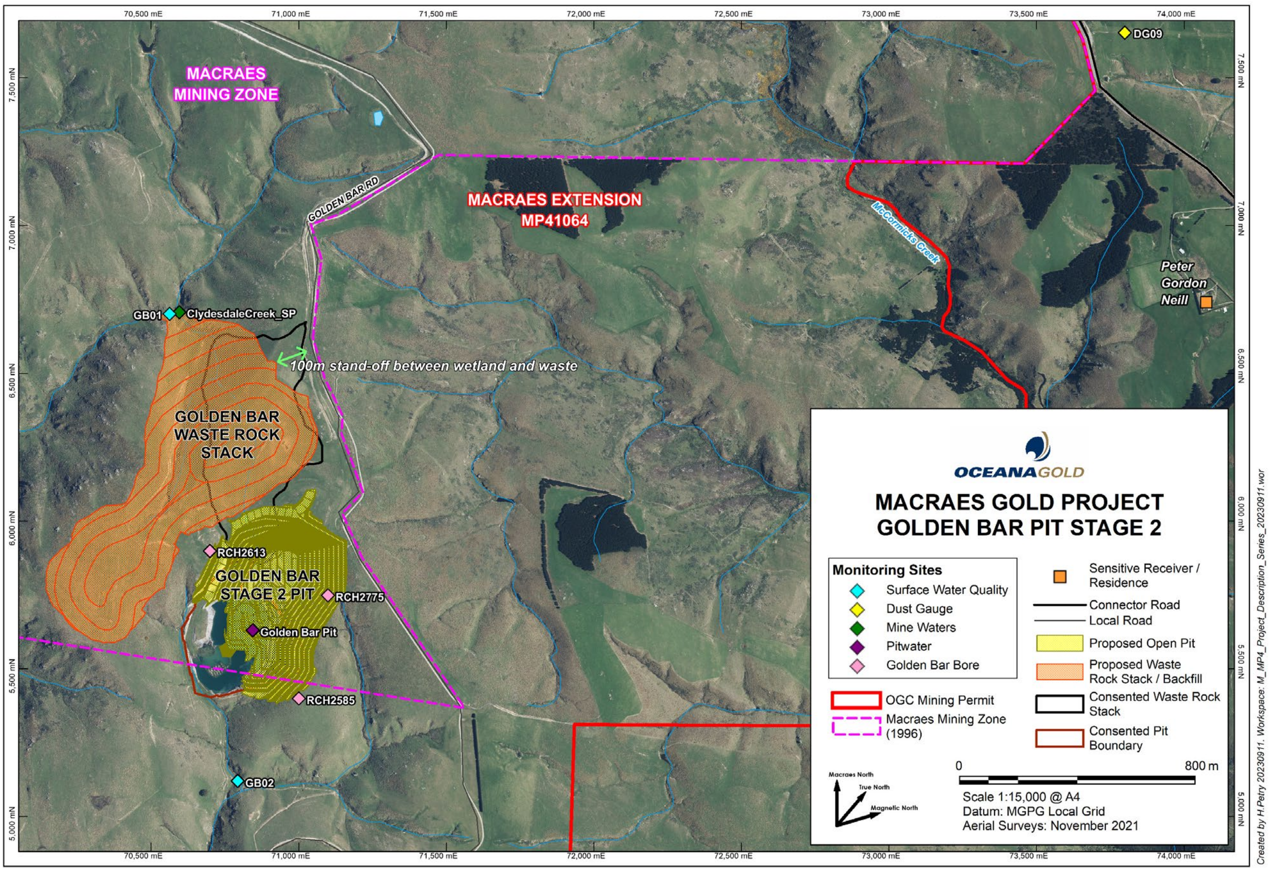


Inset 1: Plan view of the proposed Innes Mils pit development and locations of subsequent WRS (Source OG, 2023).

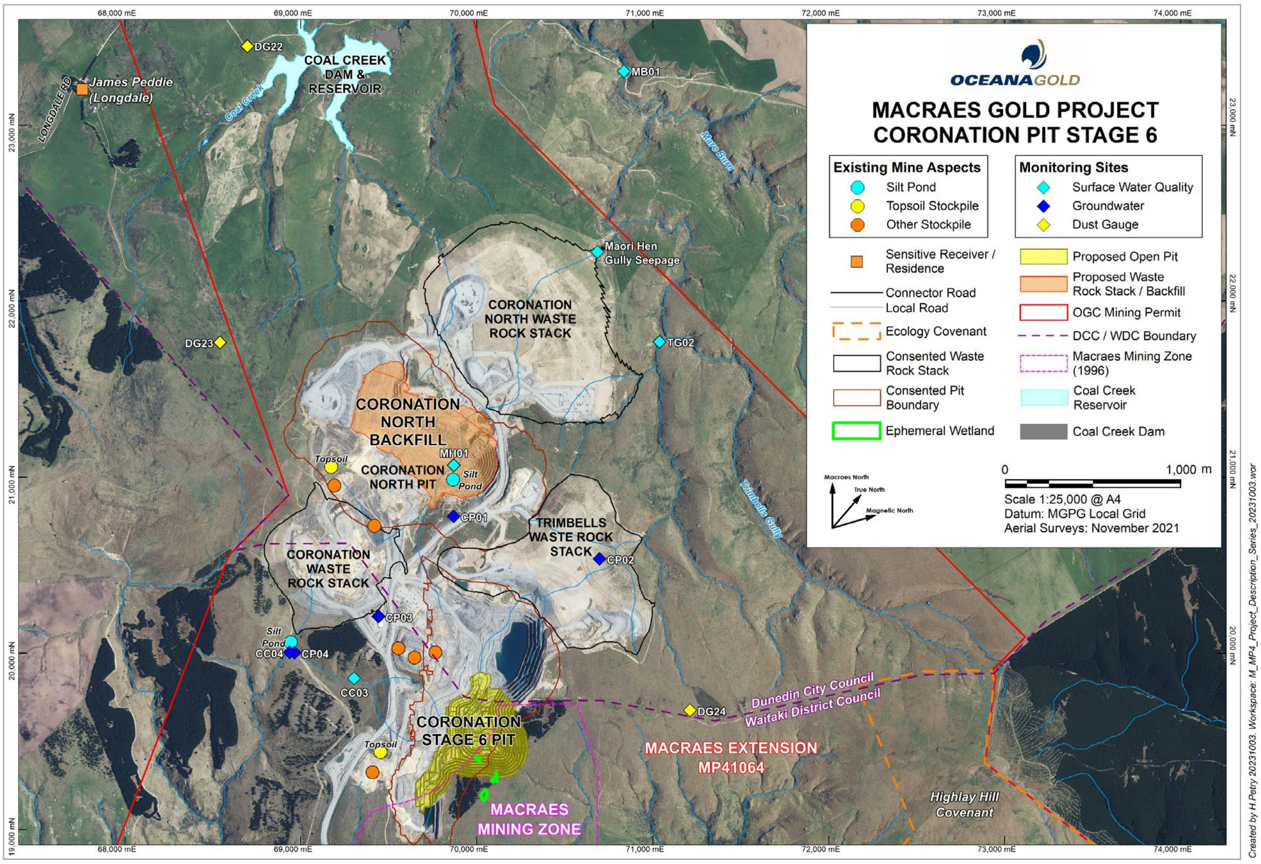
The MP4 project also involves the expansion of two satellite pits; Golden Bar (to the south) and Coronation (to the north) – see Inset 2 and Inset 3 – summarized below:

- Golden Bar (GB2):
  - Expansion will extend approximately 200 m to the east and north-east
  - Expansion will result in a 160 high east wall
  - The base of the proposed pit extends 45 m deeper than the previously mined Golden Bar pit to a level of 460 mRL
  - The proposed east wall pit crest is located directly adjacent to the Golden Bar Road. This marks the boundary of OG owned land with limited space for contingency works should they be required.
- Coronation Stage 6 (CO6):
  - Expansion will extend 250 m to the south-east with mining predicted to begin between 2024 and 2026[3]
  - Expansion will form a 125 m high east wall, 130 m high south wall and a single access haul road along the 60 m high west wall
  - The pit floor will extend 70 m deeper than the adjacent Stage 4 / 5 cutback to 568 mRL
  - The cutback design is well within OG owned land and within MP 41064
  - The completed Coronation North pit will be backfilled with CO6 waste to a maximum height of 600 mRL.

[3] OceanaGold "Coronation Stage 6 Open Pit – Project Description" dated 16 August 2023



Inset 2: **Plan view of the proposed Golden Bar Stage 2 cutback and WRS location. (Source OG. 2023).**



Inset 3: **Plan view of the proposed Coronation Hill Stage 6 cutback and WRS location. (Source OG. 2023).**

2.2 Scope of Work

The scope of work for this study is outlined in our proposal and assesses the stability of the proposed open pit highwall cutbacks for Innes Mills, Golden Bar and Coronation pits. This scope was further refined in August 2023[4].

Specific details of our scope are summarised as follows:

- Refine existing geotechnical models for each site based on:
  - Available data, including borehole logs, geomechanical testing and face mapping of previous cutbacks
  - Geological model
  - Modelled fault structures based on historical mapping and boreholes
  - Our previous experience including:
    - Slope performance of previous cutbacks at each site and waste rock stacks
    - Back analyses of geotechnical parameters for rock mass and fault shear strengths
  - Groundwater level and pore pressure estimates, and field observations provided by OG personnel
- Bench and inter-ramp stability analysis based on a review of kinematic failure mechanisms followed by a statistical probability of undercutting analysis on relevant aspects of each proposed pit shell
- Carry out two-dimensional limit equilibrium (LE) stability analyses along critical sections of the proposed pit shells and WRS slopes, with the focus on end-of-mine-life and long-term (post closure) stability including pit lake filling where appropriate
- Document assessment findings for inclusion in the AEE to support Resource Consent, Building Consent and Wildlife Permit applications for the wider MP4 Consenting Project.

2.3 Provided Data

The following points list the data provided by OG for the assessment of Innes Mills:

- Innes Mills pit shell (*Lines_IM_Stg8_MP4_Pit.dxf and Lines_IM_Stg9_MP4_Pit.dxf)*
- Golden Point buttress backfills (*Lines_BPBF_buttress1.dxf, Lines_BPBF_buttress1\2.dxf, Lines_BPBF_buttress3.dxf, Lines_BPBF_buttress4.dxf, Lines_BPBF_buttress5.dxf)*
- Topographic surfaces
  - Pre-mining (*0_PCD_2018_ORIGIANL_-_DD-FR_-_ORIGINAL_TOPO_PART1.dxf)*
  - As-mined (*0_PCD_2018_180331_SITE_AS_MINED_SURFACE_PART1.dxf)*
  - As-built/current *(0_PCD_2018_180331_SITE_SURFACE_AS-BUILT_PART1.dxf)*
- AcQuire borehole databases
- Structural data previously compiled by PSM
- Macraes-Dunback current road alignment (*Macraes_Current_Road_2022_MGPG.dxf)*
- Major fault surfaces:
  - Footwall Fault *(FWF_2022_2_2_Segments.00t* and *FWF_2022_2_3_Segments.00t)*
  - Hanging Wall Shear *(RH_Faults_v2022.3_100_HWS.dxf)*
  - Northern Gully Fault *(RH_Faults_v2022.1_NGF.dxf)*
  - Innes Mills Fault (*20220208_IM_FAULT_INTERP.00t)*
  - Macraes Fault Zone *(2022_MACRAES_FLT_HW_EXT.00t)*
  - Southern Pit Fault *(FAULTS_V2022_2_C8.00t)*
  - Round Hill Fault Model surfaces (*RH_FAULTS_V2022_1_8.00t and RH_FAULTS_V20220_1_9.00t).*

[4] PSM71-306L "MP4 Consenting Studies – Scope Update and Fee Variation Request – Open Pit Extensions and Frasers TSF" dated 11 August 2023

The following points list the provided data by OG for the assessment of Golden Bar Stage 2:

- Pit shell *(GB_MP4_PIT.dxf)*
- Waste rock stack *(GBWRS_Option_1.dxf)*
- Topographic surface *(GB_TOPO_2003.00t)*
- Major fault surfaces:
  - Hanging Wall Shear *(2020_HWS_GOLDENBAR.00t).*
- Original pre-mining piezometer data extrapolated for modelling purpose at 533 mRL
- AcQuire borehole databases
  - Provided 24 partially logged exploration boreholes totalling 1365.7 m
- Core photos for relevant diamond core
- Aerial photograph *(2021_CD17_5000_0205)*
- Golden Bar Stage 1 Highwall mapping of major faults (2005)
- 2003 Trench mapping
- A recent 3D photographic DEM model of the current pit highwall.

The following points list the provided data by OG for the assessment of Coronation Hill Stage 6:

- Pit shell *(CO6_MP4_PIT.dxf)*
- Topographic surface *(20220330_CORO_AS_MINED.dxf)*
- Coronation Stage 4 pit shell *(161017_CORO_STG4.dxf)*
- Coronation North Waste rock stack *(Lines_CNBF_stg2_design.dxf)*
- Major fault surfaces:
  - Hanging Wall Shear (*2020_HWS_CORO-CORONTH.dxf)*
  - Footwall Fault *(FWF_CORO_TG_INTERP.dxf* and *FWF_CORONORTH.dxf)*
  - Fault A *(CORO_FAULTA_MJA.dxf)*
  - Fault B *(CORO_FAULTB.dxf)*
  - Surfaces extrapolated from CO4 *(CORONATION_FAULTS_GG_F3_2018.dxf).*

3. Geotechnical Model

3.1 Geotechnical Setting

3.1.1 Regional Geology

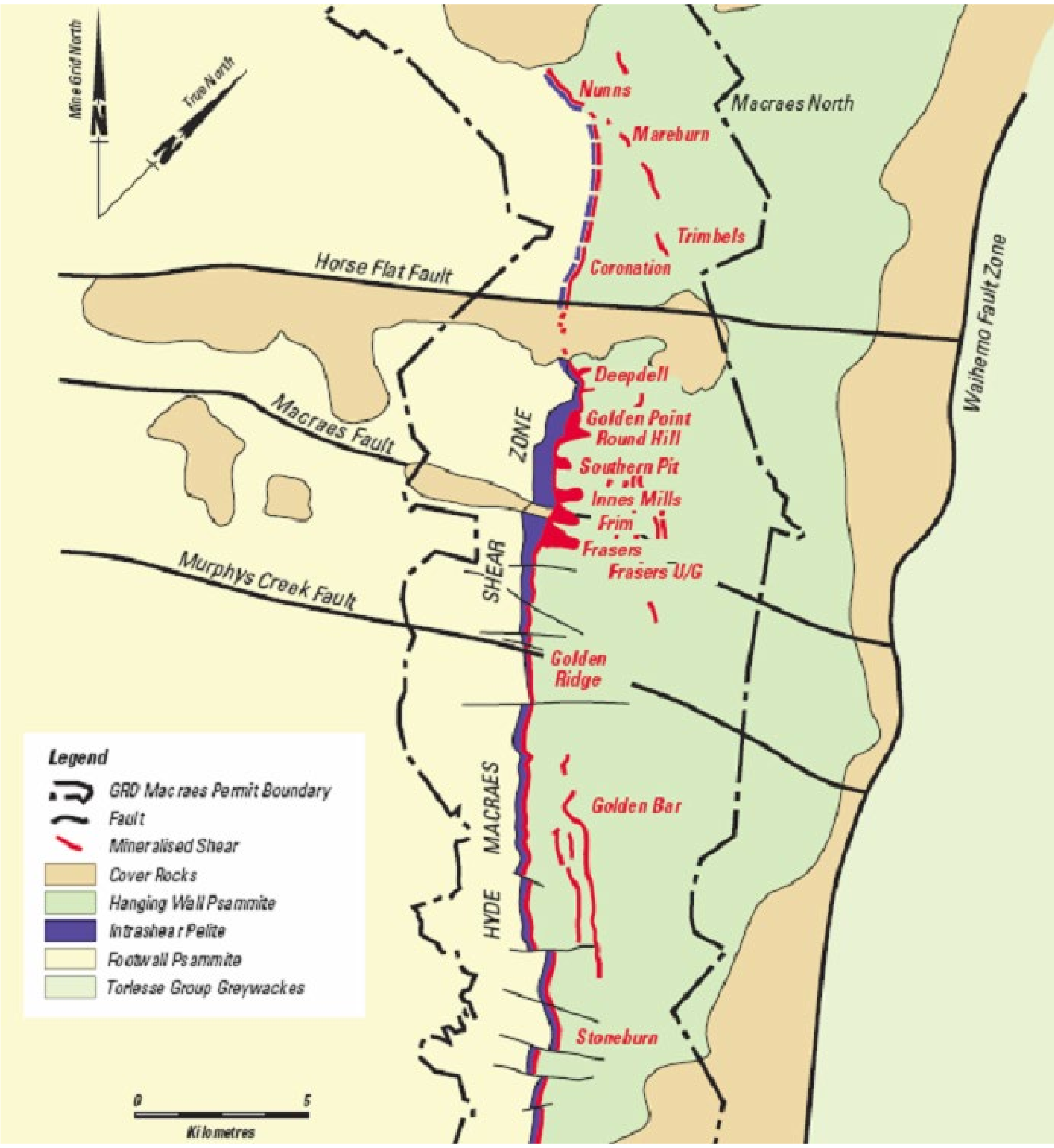
The Macraes Flat area is within the extensively deformed and moderately metamorphosed Otago-Haast Schist Belt. The schist comprises a sequence of gradational psammitic and pelitic lithologies derived by metamorphism of Mesozoic aged sandstone and mudstone. The rocks are strongly foliated and depending on the origins are either light grey, quartz rich and laminated (psammite) or dark grey to green, micaceous, and finely laminated (< 5 mm thick) (pelite).

Mineralisation occurs within the north-south[5] trending Hyde-Macraes Shear Zone (HMSZ) which has a strike length of at least 35 km. The HMSZ thickness varies from 5 to 140 m and is defined between the upper relatively continuous low angle Hanging Wall Shear (HWS) and lower sub-parallel Footwall Fault (FF). Its tectonic displacement has been inferred to be hundreds of metres. The strain associated with tectonic displacement was probably concentrated within the intra-shear pelite due to its finer grained composition compared to the coarse-grained psammite above and below the Shear Zone. The structural geology of the area is dominated by two main orthogonal fault sets, striking to the north and east.

The Shear Zone dips gently to the east from Stoneburn in the south to Coronation in the north but displays a broad bend at Nunns, turning to dip to the northeast, Inset 4.

---

[5] All directions quoted are relative to Macraes' mine grid which is rotated 45° west of true north



Inset 4: **Plan of Macraes Mine showing various pits and deposits and the HMSZ.**

3.2 Rock Mass Model

The rock mass conditions for the proposed cutbacks are expected to be in line with those typically exposed at Macraes[(6)] and are summarised as follows:

- Historic pit backfills and ex-pit waste rock stacks (where present) typically comprise loosely to moderately compacted, well-graded rock fill
- The surficial portion of the insitu schist rock displays a weathering profile up to 30 m deep and could be expected to be locally shallower around gully drainage lines due to incision and downcutting
- The highly foliated schist rock mass is dominated by semi-psammite with small amounts of psammite and semi-pelite schist
- The mainly pelitic schist above the FF is of generally very poor to poor quality with low to medium intact strength (Class C)
- The mainly pelitic schist within the HMSZ is of fair to good quality with low to medium intact strength
- The semi-psammitic schist 10 – 50 m above the HWS, is of fair to good quality with medium to high intact strength (Class B)
- The psammitic schist below the FF is good to very good quality with medium to high intact strength (Class A).

[6] PSM71-140M "Macraes Mine – Review of Geotechnical Logs" dated 14 February 2013

3.2.1 Innes Mills and Coronation Stage 6

Review of slope performance and localised borehole data for Coronation Stage 6 and Innes Mills Stage 9-10 indicate typical rock mass characteristics presented in Table 1. A schematic representation of typical rock mass distribution is shown in Figures 1 and 2.

Table 1 - Summary of Rock Mass Classes at Macraes Mine

Class	Rock Mass	Estimated Rock Strength	RQD	Typical Occurrence
A	Lithified rock with frequent defects and rare shearing	High rock strength	Good: 75 – 90%	Below FF
B	Fractured rock with frequent defects and some shearing	Low to high	Fair: 60 – 70%	Above HWS
C	Fractured to fragmented rock with frequent shearing	Low to medium	Poor to fair: 40 – 60% with zones of very poor: 0 – 10%	Above Class D to top of HWS
D	Fragmented / sheared rock	Extremely low to very low	Very poor: <15%	Include FF and zone of poor rock mass above
E	High to extremely weathered zone	Extremely low to soil	Very poor: 10 – 20%	Ranges between 30 – 70 m below surface

3.2.2 Golden Bar Stage 2

The Golden Bar pit targets the Eastern Lode ore zone which is a mainly psammite rock mass and is positioned approximately 400 m stratigraphically above the FF. The general rock mass observed after mining of Stage 1 is summarised below:

- Rock mass is typically more massive and stronger than encountered in other pits resulting in an upper bound GSI classification relative to other Class B rock mass at Macraes
- Large quartz veins are prominent along the walls
- Jointing is well defined
- Weathering extends to at least 70 m below surface as evidenced by oxide staining along the joints
- The massive, moderately strong rock mass is expected to continue east based on outcrops of psammite in the area.

The location of exploration boreholes with logged diamond drill core are presented in Figure 3. Of these boreholes, none were logged from surface and the majority of data was collected adjacent to and below the HWS resulting in a limited data set for the overlying material. An attempt was made to sub-divide the data by the HWS as typically done for the main mining area of Macraes, but the results showed little difference in rock mass properties. Slope performance supports this and suggests the absence of the typical Class C presented in Table 1 resulting in Class B to be modelled in the pit slopes with a halo of Class C associated with fault deformation only as shown in Figure 4.

3.2.3 Intact Rock Strength

Intact rock strength has been evaluated as an input to rock mass strength estimates. Intact strength data has been compiled by PSM over the last 28 years from a large suite of drill core logging estimates, point load strength testing and laboratory UCS testing. (e.g., PSM71.R8 and testing programmes in 2015, 2019 and 2021).

Intact strength is typically anisotropic due to influence of foliation, as highlighted by a large database of point load testing results. Laboratory UCS testing results have been used to calibrate a large suite of intact rock estimates from exploration and geotechnical logging across the mine site. Design UCS values based for each rock mass class are set out in Section 3.2.4.

3.2.4 Rock Mass Parameters

The Hoek-Brown rock mass strength parameters given in Table 2 have been used for slope stability analysis. The mean values are based on geotechnical logging, geomechanical lab testing, and PSM's vast experience of multiple pit designs and slope behaviour observations at Macraes over the past 28 years.

The GSI / Hoek-Brown methodology is empirically derived and requires:

1. An evaluation of the intact strength (UCS).
2. An assessment of GSI.
3. An empirical constant (m_i) which is taken from engineering experience.

A review of Hoek-Brown parameters was completed for the four rock mass classes at Macraes with adopted values presented in Table 2.

Table 2 - Material Strength Properties

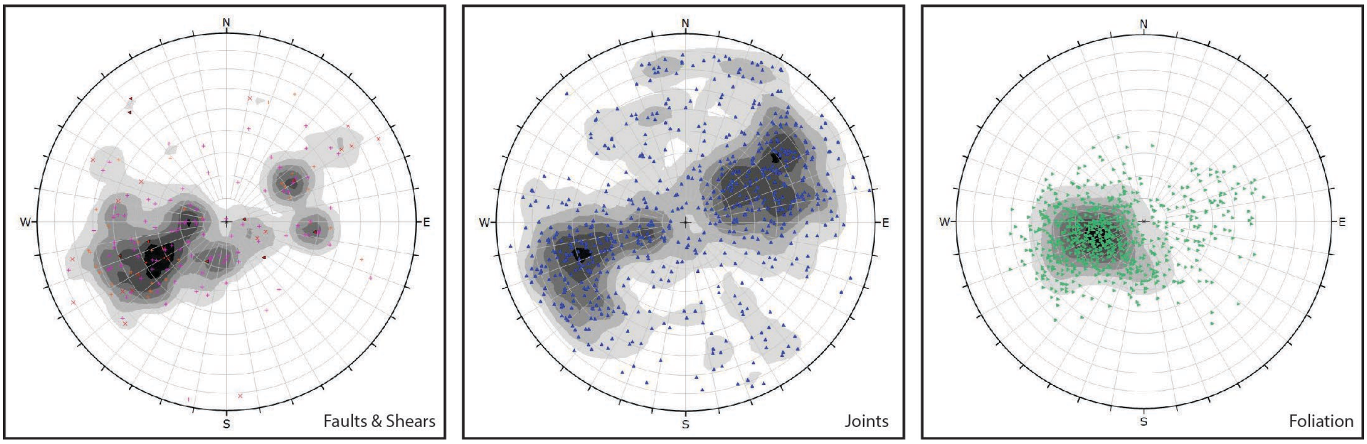
Unit	Unit Weight (kN/m^3)	Generalised Hoek-Brown Parameters		
		UCS (MPa)	GSI	m_i
Class A	27	40	65	12
Class B	27	40	55	12
Class C	27	30	30	12
Class D	20	1	20	9

3.3 Structural Model

The typical geological structural model at Macraes is summaries below with a stereographic representation presented in Inset 5:

- Foliation, joints and foliation shears show a broad range of dip (from flat to moderately dipping) towards the east – see the centre and right stereoplots in Inset 5. Foliation is typically orientated parallel to the FF and HWS of the HMSZ
- Mine and regional scale faults plus joints predominately dip moderately to steeply towards the east. These faults are often infilled with clay or breccia to 100 mm thick. This fault set includes the Northern Gully Fault (NGF)
- Less persistent batter and mine scale faults and shears present a broad range of dips from flat to moderately dipping towards the west. This fault set includes the Ramp Shears[7] which are typically truncated by the easterly dipping faults
- Less dominant joints and faults dip moderately to steeply dipping towards the north and south. These faults include the Macraes Fault Zone (MFZ) and Murphy's Gully Fault.

[7] A term given in late 1990's to westerly dipping faults dipping 20 - 60° towards 270 - 285°



Inset 5: Stereoplots illustrating the typical geological structure trend at Macraes (Round Hill 2021 acoustic teleview data). Left: faults and shears, Centre: joints, Right: foliation.

3.3.1 Innes Mills

Recent fault modelling by OG[8] provided surfaces for several large-scale faults which intersect the proposed Innes Mill Stage 9-10 pit shell, Figure 5. In addition to these structures, the Innes Mills Fault outcrops in the northeast and the MFZ in the south of the Innes Mills cutback. Historically these structures have played an integral role in stability of the east wall through multi-bench failures and pockets of elevated (perched) groundwater.

Large scale movement is known to occur along the FF in response to mining to which a minimum offset of 25 m perpendicular to the structure has been established as a baseline recommendation for slope design by PSM[9]. The west wall of the proposed Innes Mills pit shell maintains a minimum offset of 30 to 35 m, therefore the risk of movement along the structure is expected to be low under typical mining conditions.

Structural domains were assessed in 2016[10] for this area based on available structural data, expected rock mass conditions and an overarching understanding of the geological model. The main control of domain boundaries through Innes Mills are large scale structures of the FF, HWS and the MFZ therefore delineating the following four domains:

- SD1 – above HWS
- SD2 – between the HWS and the FF
- SD3 – below FF
- SD4 – Macraes Fault Zone.

These boundaries are presented in Figure 6 along with stereographic representation of structure for each domain.

3.3.1.1 SD1

The following five defect sets define this domain:

- Faults and joints dip moderately to steeply towards the east. The faults are often infilled with clay or breccia up to 100 mm thick
- Faults and joints dip moderately towards the west-northwest
- Faults and joints dip moderately to steeply towards the north and south
- Shears and foliations dipping shallowly to moderately dipping to the east
- Shallowly to moderately dipping shears towards the west.

[8] OceanaGold "Report On Round Hill Faults and Fault Modelling Procedure" dated 24 March 2022

[9] PSM71-107R "Round Hill and Southern Pits" dated 26 November 2010

[10] PSM71-184R "Macraes Gold-Tungsten Project – Geotechnical Feasibility Study" dated July 2016

3.3.1.2 SD2

The same five defect sets are represented in SD1 and SD2 with the key difference being:

- The shallowly to moderately foliation towards the west
- A shift in dominated joint orientation from moderately to steeply dipping toward the west to similar dip but rather towards the east. Potential controlled by sampling bias due to borehole orientation.

3.3.1.3 SD3

This domain represents structure below the FF. As the FF does not outcrop during the mining, a review of the limited data set was not deemed relevant.

3.3.1.4 SD4

This domain is defined by the 100 m wide MFZ. The data set is limited with the identified structural trends outlined below:

- Combined faults and shears highlight two sets. The first dips moderate to shallowly toward the northeast while the second dips steeply to the south-southeast
- Joints dipping moderately to the south
- Foliation dips steeply toward the north and south as a result of drag within the fault zone.

3.3.2 Coronation Stage 6

A review of geological structure and kinematic sliding analysis was undertaken in 2018 for the Coronation Stage 5 pit design[11]. In addition to the boreholes mentioned in Section 4.3.1, the additional data reviewed is summarised below:

- Structural data from berm mapping at CO3 'Fishbowl'
- Structural data from multiple trenches along the designed east wall and pit floor
- Structural data collected by Paul Angus in and around CO3 / CO4.

The data from CO4, and by inference the CO5 pit, can be considered one structural domain above the HWS. No additional data was available for this study therefore the orientation of geological structures identified in 2018 was used to assess the CO6 pit design. Stereoplots of the 2018 data are presented in Figure 7 and summarised below:

- Foliation dips shallowly to the east
- Faults are dipping steeply to the east and moderate to shallowly to the southeast
- Shears variable but a dominate set shallowly dipping to the south was identified
- Joints are steeply dipping to the northeast and southwest with a third set moderately dipping towards the west.

In addition to the identified fault sets above, the presence of westerly dipping, north-south trending faults are known to occur site wide and have the potential to impact stability of the east wall. Continuing to avoid the slope aspect of 270° will reduce the impact of these structures on pit wall stability.

3.3.2.1 Faults and Shears

"Fault B" was first identified in 2013 and is orientated 65/110°. Relative to the existing pit geometry this structure dipped into the slope with little impact on stability. The modelled location of Fault B in CO6 may potentially impact the west wall below the ramp as the east wall of CO4 now changes aspect to become the west wall of CO6. Outcrop of this fault and other projected faults are represented in Figure 7.

Based on review of the proposed CO6 pit shell, the FF offset distance appears to reach (and exceed) the recommended minimum limit of 25 m and continuing as close as 23 m along section 19505 mN.

[11] PSM71-231M "Coronation Pit – Review of Structural Data and Pit Design (CO5_181113)" dated 19 December 2018

3.3.3 Golden Bar

The structural model for Golden Bar Stage 2 is based on the following data sources:

- Geotechnical mapping of four trenches in 2003
- Large scale structural interpretation based on surface lineaments identified from aerial photography interpretation
- Highwall mapping of Golden Bar Stage 1.

Structural logging of exploration boreholes is available but considered to be a low confidence data set, therefore the 2003 trench mapping was used to define the condition and orientation of local structure. Stereoplots of the 2003 data is presented in Figure 8 and summarised below:

- Foliation dips shallowly towards the south-east averaging 20°/125°
- Joints are steeply dipping to the north-east and south-west
  - Planar to undulating with rough surfaces
  - No infill material of thickness recorded
- Faults are moderately to steeply dipping towards the north and west, and steeply dipping toward the south
  - Planar to undulating with smooth to rough surfaces
  - Infill thickness ranging from 2 to 200 mm of gouge and rock fill.

3.3.3.1 Faults and Shears

Large-scale faults and shears were mapped along the east and north walls during mining of Stage 1 by OG. This data is stereographically presented in Figure 8 and summarised below:

- Above hanging wall shear (AHWS)
  - Moderately to steeply dipping towards the northeast
- Below hanging wall shear (BHWS)
  - Moderately dipping towards the east and southeast
  - Shallowly dipping towards the northeast.

OG provided a photogrammetry model for the Stage 1 pit to aid in review of the current slope condition at Golden Bar. This dataset was used to confirm the location and extent of previously mapped structures relative to the proposed Stage 2 pit.

In addition to the photogrammetry data, geomorphological surface lineaments were interpreted using aerial photography to assess the potential for interactions with the proposed Stage 2 east wall, Figure 9. Several north-south, east-west creeks / incised gullies were identified which are often associated with fault traces. This review highlights a potential intersection near the north-east pit crest of north-south (Fault A) and east-west (Fault B) trending gullies. Should these features be present there is likely to be zones of degradation in the rock mass that will influence local slope stability.

3.3.4 Defect Shear Strengths

The following defect shear strengths have been adopted for design:

- Cohesion, c'= 0 and friction angle, ϕ' = 9° for the FF
- For major faults, like the Northern Gully Fault (NGF) and Golden Point Fault, which comprise thick structures mixed with rock fragments, rock flour and puggy clay zones, c' = 50 kPa and ϕ' = 20°
- Minor faults and shears, which typically are mapped as being infilled with clay and breccia, c'=0 and ϕ' = 16°
- c'= 0 and ϕ' = 40° for joints.

The adopted defect shear strengths are consistent with those used in previous design and back-analysis work completed by PSM at Macraes[12].

---

[12] PSM71-184R "Macraes Gold-Tungsten Project – Geotechnical Feasibility Study" dated July 2016

3.4 Groundwater

The interaction and influence of groundwater at Macraes is well understood in relation to slope instabilities. Slope failures at batter and inter-ramp scale have typically occurred following periods of heavy or sustained rainfall. As part of the MP4 study specific groundwater modelling is being completed by GHD.

The estimated groundwater surface is based on previous experience at Macraes where horizontal drains intercepted groundwater high in the slope profile and passive depressurisation at the face. An existing modelled surface provided by GHD is based on mean groundwater levels across VWPs and open standpipes monitored at Macraes. The modelled surface is typically too coarse for stability modelling purposes and excludes high groundwater conditions following rainfall events.

The estimated groundwater surface during mining is assumed to be close to the surface, i.e., 5 m back from the face and 5 m from the ground surface to simulate adverse groundwater conditions.

At the completion of mining, groundwater levels will gradually rebound to reflect their equilibrium state as has begun to occur within the completed Coronation North pit. OG's proposed closure configuration includes development of coalescing pit lakes between Fraser TSF and the remaining Innes Mills pit void. Groundwater is expected to initially lead pit lake levels however this differential will progressively decrease. A detailed assessment of groundwater response is documented with GHD's associated reporting[13].

4. Existing Slope Design and Observed Performance

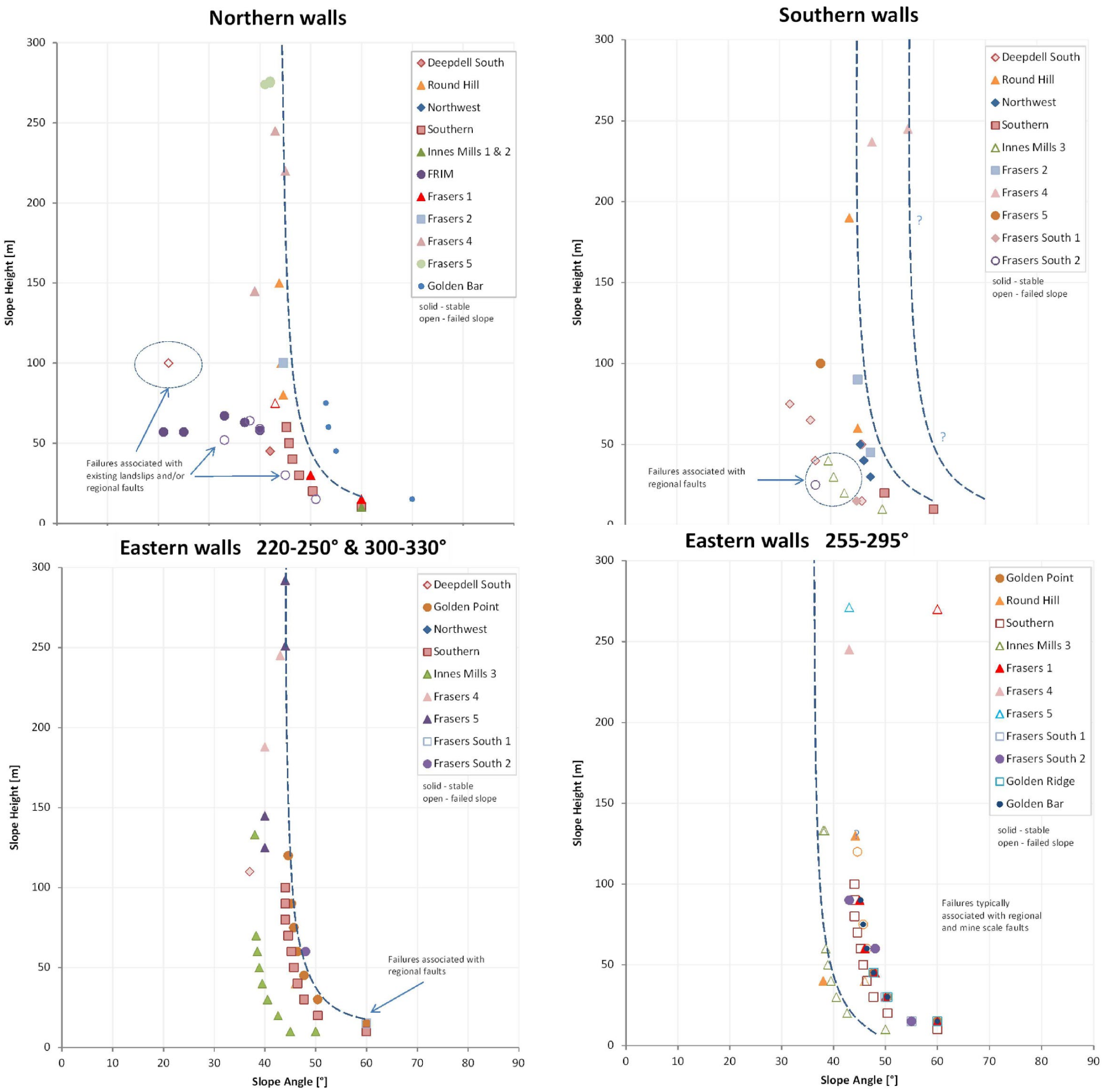
4.1 General

The slope designs at Coronation Hill, Golden Bar and Innes Mills have evolved with each cutback and review of real-time slope performance and monitoring data. General slope performance observations can be summarised as follows.

- Large faults and associated elevated groundwater pressures govern stability at bench and overall scale of the open pits at Macraes
- The western footwall slopes have a history of creep movement down dip along the FF towards the active mining area
- The northern and southern highwalls are generally the best performing pit slopes unless they are locally affected by large east-west trending faults
- High groundwater pressures impact slope stability of the eastern and western walls. Horizontal drains have been successfully used to reduce localised groundwater pressure if they target known structures.

Inset 6 presents a summary of the historic slope performance as graphs of slope height vs slope angle at Macraes.

[13] GHD 2022, 12576793-REP-REV B-Frasers Co-disposal Water Assessment.



Inset 6: Slope height vs. slope angle charts indicating previous slope performance at Macraes.

The following sections provide specific observations of historic performance for each of the proposed MP4 pit extensions included within this assessment. The proposed MP4 pits do not extend westward though historic performance of pit west walls has been included to highlight the influence of the FF as offset from this shallow dipping structure often drives design to the east.

4.2 Innes Mills

4.2.1 Design and Slope Performance of Innes Mills Stages 1 - 4

Mining at Innes Mills began in 1995 and continued until 2003 with four successive cutbacks to the east. The preliminary slope design for Stages 1 to 3 was completed in 1995[14] and Stage 4 in 2000[15]. The initial investigation identified the moderately dipping, east-west trending MFZ in the south of the pit. This structure resulted in a wide deformation zone with very poor quality, low strength rock mass south of 13200 mN. This northing was used as a boundary for slope design parameters as shown in Table 3 and was carried through into design for Stage 4.

[14] PSM71.R1 "Geotechnical Study for the Proposed Innes Mills Pit" dated 25 January 1995

[15] PSM71.R16 "Innes Mills Stage 4 Slope Design" dated 22 August 2000

Table 3 - Recommended Slope Design for Innes Mills Stage 1, 2 and 3 with a Bench Height of 20 m

Pit Slope	Batter Height (m)	North of 13200 mN		South of 13200 mN	
		Berm Width (m)	BFA (°)	Berm Width (m)	BFA (°)
North	20	7	75	7	50
East		10	50	10	50
South		n/a		7	45
West		7	< 60	7	50

BFA – Batter face angle

During the 2000 design investigation, a slope performance review of Stages 1 to 3 was completed in-house by Macraes and is summarised in Table 4.

Table 4 - Performance of Innes Mills Stage 1, 2 and 3. All benches 10 m High

Pit Stage	Slope	BFA (°)	Berm Width (m)	IRA (°)	Failure Percentage (%)	Dominate Failure Type	Performance
1 & 2	East	45	5	34	20	Toppling	Good
1 & 2	North	60	5	43	20	Wedge	Good
3	South	45	5	34	60 – 100	Planar Slide	Poor
3	West	50	5	37	65	Wedge	Poor
3	North	60	5	43	25	Wedge	Good
3	East	50	5	37	10	Toppling/wedge	Very good

IRA – Inter ramp angle

4.2.1.1 Design and Slope Performance of Innes Mills Stage 4

The data set used to review Stage 4 slope design parameters was considered to be robust. The main components are summarised below:

- Data set from the November 1997 design study[16]
- Defect data from six exploration trenches proximal to the Stage 4 pit
- Mapping data from bench mapping of Stage 3 eastern and northern walls
- Logs of 20 partially cored exploration holes drilled since 1998
- Slope performance of Innes Mills Stages 1, 2 and 3.

Key findings from the Stage 4 slope design report are summarised below:

- Foliation dips shallowly to the east
- Two major fault sets were identified with the following orientations:
  - 40° to 60° towards 270° – referred to as "Ramp Shears"
  - 40°/070° to 60°/110°
  - Faults recorded in borehole logs often had more the 10 mm of gouge infill
- Three dominant joint sets, typically clean but with variable apparent dip
  - 75°/030°
  - 60°/110°

[16] PSM71.R8 "Design Study" dated 20 November 1997

- 60°/270°.
- Three large scale structures with the potential to influence stability:
  - North Gully Fault (NGF) 60°/110°
  - Innes Mills Fault 70°/140°
  - Macraes Fault 50°/020°.
- Bench scale wedge failures were expected along the Innes Mills Fault
- Shears identified to be dipping at low to moderate angles toward the south occur adjacent to the MFZ. These shears act as basal surfaces along which rock mass blocks slide into the pit as seen during mining of Stage 3.

Slope design recommended for Innes Mills Stage 4 are presented in Table 5.

Table 5 - Innes Mills Stage 4 Recommended Design Parameters

Slope	Slope Aspect (º)	BFA (º)	Bench Height (m)	Berm Width (m)	IRA (º)
North	150 – 190	70	15	7.5	49
East	190 – 315	60	15	7.5	43
South	315 - 030	70	15	7.5	49
West	030 – 150	60	15	7.5	43
South wall within MFZ		50	15	7.5	37

BFA – Batter face angle. IRA – Inter-ramp angle

In November 2001 a site visit observed the first three 15 m benches constructed on the east wall[17]. Mapping of 20 - 30% of the slope had occurred and defect data differed slightly from earlier mapping:

- Defect sets are better defined in Stage 4
- Defect orientations (dip direction) indicated a rotation of approximately 20° anticlockwise for the majority of identified sets
- The rock mass was typically less jointed (mapping in hanging wall psammite higher above HWS than earlier mapping)
- Slope instabilities affected 5 – 10% of exposed batters.

Design recommendations from this review suggested steepening batter face angles to 70° in hanging wall psammite away from Innes Mills Fault, NGF and MFZ as overall stability was considered dependent on large-scale structures.

Further review of the Stage 4 east wall was completed in March 2002[18]. Two multi-bench scale failures were documented and can be seen in Photo 1.

- The first instability affected the southeast slope and was associated with poor quality rock mass adjacent to the MFZ. Failure occurred between the Macraes Fault and a steeply dipping fault toward 210° - 240°. This failure was analysed and reported on in detail in September 200[19] and October[20] when recommendations for remedial works were required
- The second failure is a large wedge failure between a steep fault dipping towards the north and a joint moderately dipping to the southwest. This failure occurred after a large rainfall event combined with poor management of surface water runoff. The documented slope performance is considered to present a typical example of east wall instability when interacting with large-scale structures.

---

[17] PSM71.R22 “October 2001 Site Visit” dated 8 November 2001

[18] PSM71.R23 “March 2002 Site Visit” dated 26 March 2002

[19] PSM71.R26 “Assessment of Failure IV #04” dated 24 September 2002

[20] PSM71.R27 “October 2002 Site Visit” dated 23 October 2002

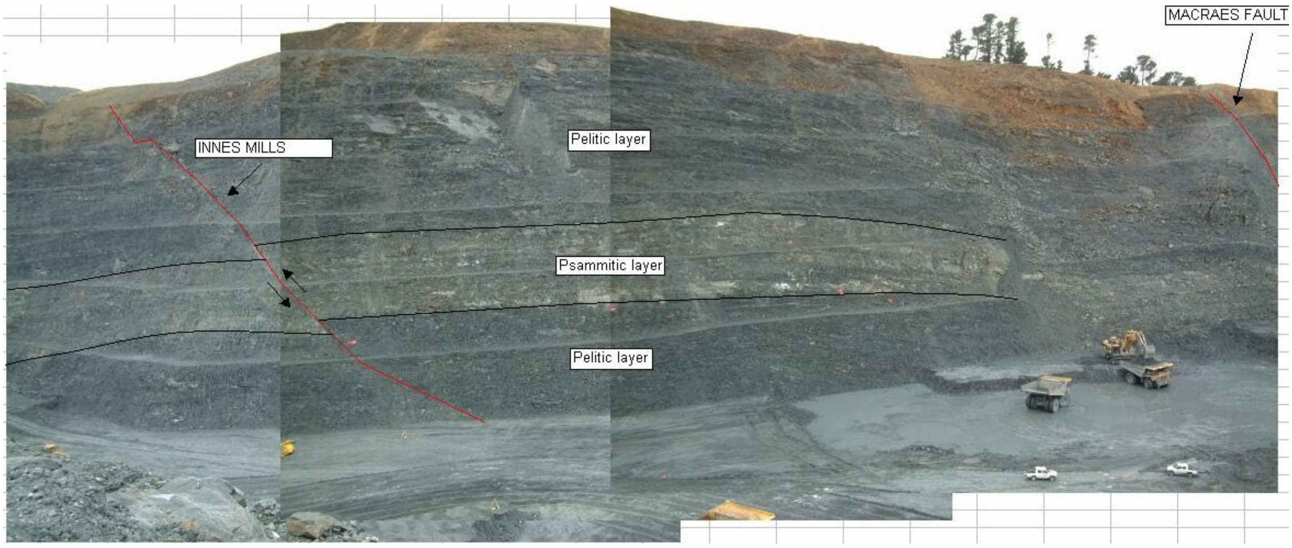


Photo 1: **Slope performance of Innes Mills Stage 4 east wall, 2002. Multiple multi-bench failures have occurred.**

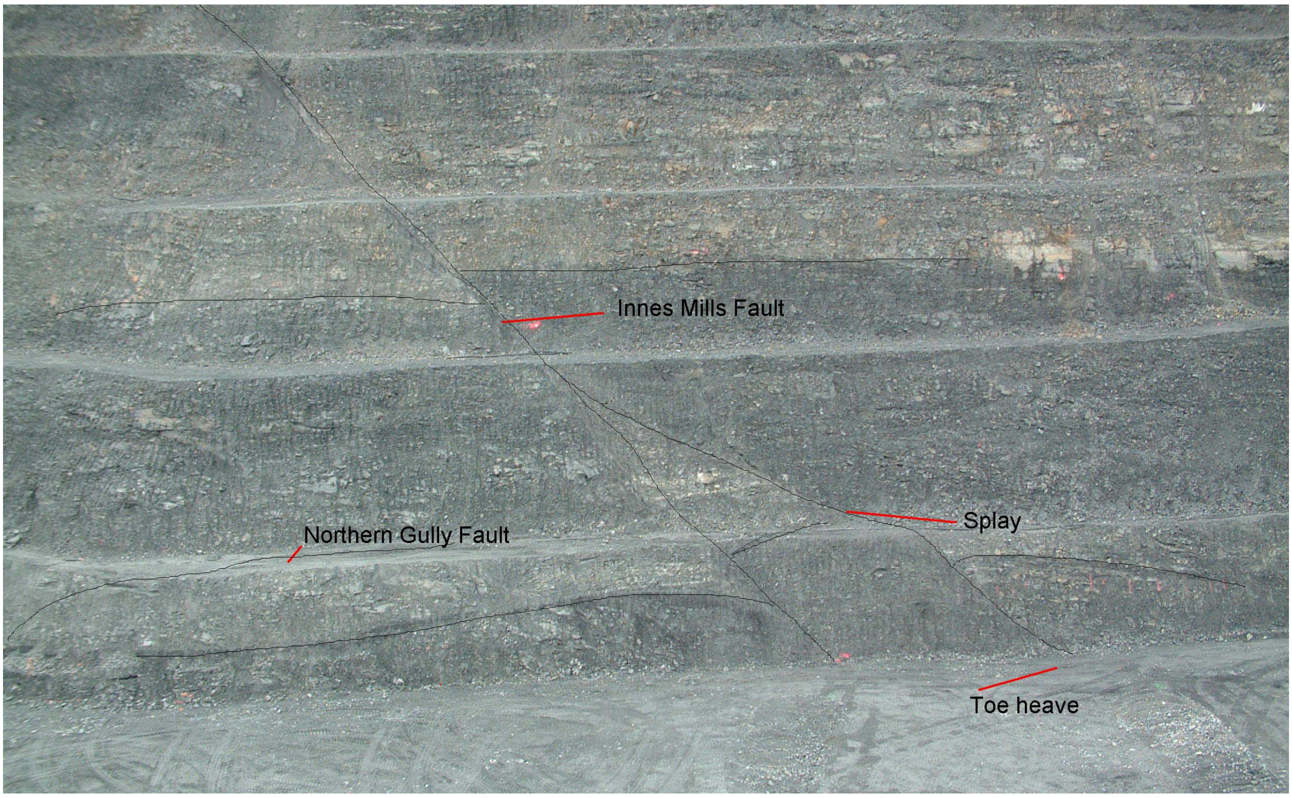


Photo 2: **Innes Mills Stage 4 east wall – large scale structures outcropping in the wall, 2002. These same structures are expected to intersect Innes Mills Stage 9 east wall.**

The easterly dipping NGF outcropped along the east wall of Innes Mills Pit and was responsible for numerous batter scale failures. It was also responsible for compartmentalisation of the groundwater profile resulting in pockets of perched water which often required the installation of horizontal drains to dewater and remediate areas of instability.

4.3 Coronation

Coronation Hill was mined between 2013 and mid-2020 in a series of five cutbacks reaching a pit floor at 555 mRL in the northeast corner of Stage 4 / 5. The Stage 4 / 5 pit maintained a consistent FF off-set of 25 m.

4.3.1 Coronation Pit Slope Design

The available data used for the investigation and design of Coronation Pit in 2013[21] is summarised below:

- Three diamond boreholes were completed and geotechnically logged from surface. Due to inconsistencies in the logged defect orientation, the data was not carried forward for structural analysis
- Five reverse circulation boreholes with diamond tails were geologically logged and used to complement the rock mass classification from the aforementioned diamond boreholes
- The geological model indicated geotechnical conditions were expected to be similar to other Macraes mining areas. Therefore, slope design was based upon PSM's 29 years' experience with open pit mining at Macraes as presented in Table 6.

In December 2013 four shallow trenches were excavated and mapped by OG[22] along the highest section of the east wall. The data showed a minor difference in structure orientation to the July design resulting in a recommendation to steepen the northern and eastern wall batters by 5°.

Table 6 - Slope Design Parameters for Coronation Hill Based on 60 m High toe-to-toe Inter-Ramp Angle

Pit Wall	BFA (º)		IRA (º)		Berm width (m)	Bench Height (m)	Comment
	July '13	Dec '13	July '13	Dec '13			
East & North	60	65	43	46	7.5	15	Top two 15 m high benches in weathered rock are recommended to be battered at 50°.

4.3.2 Slope Design and Performance of Stages 1, 2 and 3

A general site wide slope design recommendation was made in the 2012 LoM study[23] to reduce removal of waste rock. These recommendations increase batter height to 22.5 m and berm width to 11.25 m allowing the recommended inter-ramp angles to remain unchanged. This new geometry was adopted in most areas of Coronation Stages 1, 2 and 3 design.

A qualitative risk assessment was completed in 2014[24] for Coronation Stages 1, 2 and 3 slopes using the adjusted slope geometry and is summarised below:

- North and south walls – low risk
- West wall – low to moderate:
  - Some possible crest lost due to undercutting of the HWS remnants
  - The FF is located at least 60 m below the pit floor
- East wall – low to moderate for aspects 275° - 290°:
  - Possible undercutting of Ramp Shear defect set, low in all other aspects. Fault B was recognised as the only major structure to potential impact the east wall of Stage 3. This structure is north-south trending, easterly dipping with a similar orientation as the Northern Gully Fault therefore dipping into the wall.

[21] PSM71-149M "Coronation Hill Pit – Slope Design Angles" dated 31 July 2013

[22] PSM71-157L "Geotechnical Review – December 203 Site Visit" dated 12 December 2013

[23] PSM71-130R "Geotechnical Review of Macraes LoM Design" dated 14 September 2012

[24] PSM71-176R "Geotechnical Review of Macraes LoM Design 2014" dated 17 October 2014

In 2015 a performance review of the 22.5 m benches was carried out during a site visit[25]. Key observations are summarised below:

- Success to achieve design is based largely on lithology and blasting techniques
- Psammite and pelite respond differently to blasting often resulting in over-steeping in the pelite and over-hangs in the psammite
- Blasting techniques at the time were successful in the northern wall, partially successful on the eastern wall, with mixed results along the southern wall
- Failure to excavate to the toe design often results in loss of berm width.

During mining of Stage 1, continuous north-south trending, westerly dipping faults caused cracking along the eastern highwall crest and bench scale failures as shown in Photo 3. It was recommended that these structures be mapped and projected for further cutback designs to better orientate the wall.

The performance of Stage 2 eastern wall was reviewed in July 2017[26]. A 'nose' oriented towards 270° at approximately 19700 mN south of the 'fish bowl' performed poorly with 22.5 m batters due to outcropping north-south trending, westerly dipping faults, Photo 4. The southern limb of the slope south of the 'nose' also performed poorly in this rock mass, Photo 5. It was recommended that for future slopes cutback in this area, the batter height should return to 15 m[26]. This section of wall in relation to CO6 design is presented in Figure 1.

Photo 3: South-eastern wall of Coronation Pit Stage 1. Wedge failures and cracking have formed along north-south trending, westerly dipping faults, 2015.

---

[25] PSM71-193R "Macraes Open Pit Site Visit" dated 1 October 2015

[26] PSM71-214R "Geotechnical Review – April 2017 Site Visit" dated 3 May 2017

Photo 4: **Coronation Pit Stage 2– eastern wall immediately south of the 'fish bowl'. Westerly dipping faults can be seen outcropping at 270°.**

Photo 5: **Coronation Pit Stage 2 – eastern wall of the 'southern limb'. The 22.5 m high batters have not performed well in this rock mass.**

4.3.3 Performance of Stages 4 / 5

In 2019 the first two batters had been mined of Stage 5 and performance was favourable considered to be good[27]. Several expected large-scale faults and shears were exposed in the batter. No record of slope performance was captured by PSM after the March 2019 site visit.

Photo 6: East wall of Coronation Stage 5 pit. The floor is 675 mRL.

4.3.4 Coronation North Backfill

Rock mass conditions within Coronation North are unique within the wider Macraes' deposit due to a series of basalt intrusions located to the west of the pit and large scale folding and faulting. Early stages of mining encountered a sedimentary profile and volcaniclastic material that had undergone multiple episodes of folding creating a complex geotechnical environment within instabilities on multiple walls during mining. Excavation of the southwest footwall exposed a series of persistent foliation shears, which are thought to be associated with earlier emplacement events. These structures dip moderate to steeply to the northeast and act to reduce the integrity of the intra-shear rock mass which resulted in planar sliding within the broader footwall slopes. Since the completion of mining the slopes have reached a natural state of equilibrium as groundwater levels rebounded and a pit lake formed.

4.4 Golden Bar

The slope stability assessment for Golden Bar Stage 1 was completed internally by Macraes in 2003[28] under the guidance of PSM. PSM completed a review of the structural analysis[29], though a formal independent review of the entire slope design process was not completed[30].

4.4.1 Golden Bar Geotechnical Investigation

A geotechnical drilling program has not been completed at Golden Bar. The initial slope design was based on the following data outlined in OG's design report:

- Mapping of four geotechnical trenches along the north and east walls

---

[27] PSM71-234M "March 2019 Site Visit" dated 5 April 2019

[28] OceanaGold "Golden Bar Slope Design Report" dated August 2003

[29] PSM71.10M "Review of Geological Structural Analysis – Golden Bar" dated 4 September 2003

[30] PSM71.59L "Slope Design Completed by GRD Macraes for the Proposed Golden Bar Pit" dated 1 September 2003

- Logs of four fully cored and 32 partially cored exploration drill holes, primarily targeting the HWS
- Aerial photography review
- Interpretation of the HWS and major faulting completed by the OG's exploration group.

The key findings from the OG's design report are summarised below:

- The Golden Bar slope design report refers to 162 faults collected from logs. 2022 review of RC holes only resulted in nine faults being logged
- Estimated intact rock strength is low to medium for rock mass above and below the HWS
- Defect shear strengths are based on historical results
  - Friction angle for Joints = 40°
  - Friction angle for Faults = 16°
- Summary of trench mappings:
  - Foliation consistently dipped shallow to the east and southeast between 112° and 145°
  - Fault orientation is not listed in the text, rather identified in a figure which was not provided with the report document.

4.4.2 Golden Bar Stage 1 Design Parameters

The design parameters recommended and adopted from the OG design report are summarised in Table 7.

Table 7 - Design Recommendations for Golden Bar Stage 1

Slope	Slope Aspect (°)	BFA (°)	Bench Height (m)	Berm Width (m)	IRA (°)	Comments
North	130 – 245	75	15	7.5	52.5	BFA based on 10 – 30% chance of localised failures.
East and South	245 – 350	60	15	7.5	42.9	
West	025 – 130	No specific data available – design governed by HWS			35	

4.4.3 Performance of Golden Bar Stage 1 Pit Slopes

PSM completed a site visit in 2009 to review the expected geotechnical conditions of a potential cutback of the eastern wall at Golden Bar[31]. A slope performance review was completed at this time and summarised in Table 8.

[31] PSM71.R39 "March 2009 Site Visit" dated 20 March 2009

Table 8 - Performance of Golden Bar Stage 1

Pit Wall	Slope Aspect (°)	Bench Geometry	Overall		Length (m)	Failures
			Height (m)	IRA (°)		
North	175	15 m high, 60° & 75° (pre-spilt) BFA, 5 to 7.5 m berms	90	53	80	Loss of crest, joint bounded wedges – 10% of benches
East	325	15 m high, 60° BFA, 5 to 7.5 m berms	45	44 to 47	100	Loss of crest, joint bounded wedges mainly within the weathered zone – 10% of benches
	300		90		50	Nil Observed
	275		100		130	Nil Observed
	255		100		100	Wedge failure along weathered joints in upper benches – 30% of benches

Note: Table excluded the top 50° batter which is excavated in highly weathered rock.

In addition to the results in the site visit report, a visual review of final pit walls was completed using photographs from July 2005[32], April 2022 and photogrammetry survey from July 2022 (Photo 7 – Photo 10). This review supports the observations summarised in Table 7 and little has changed with respect to ongoing slope performance since mining ceased in 2005.

Photo 7: View of north-east wall taken July 2005. Notice the depth of weathering, the prominent quartz veins, and the very good performance of the slopes in fresh rock.

[32] PSM.R33 "July 2005 Site Visit" dated 20 July 2005

Photo 8: North-east wall of Stage 1 in 2005 taken from base of ramp.

Photo 9: January 2009 - east wall taken from crest facing south. Berms are relatively clean.

Photo 10: January 2009 – north wall. Photo taken from crest looking west. Pre-split 75° batters. Note joint bound wedges.

In the 2017 LoM[33] report, PSM presented the following design recommendations for a Stage 2 cutback based on mined slope performance and site experience:

- East wall
  - Due to deep weathering profile to approximately 70 m depth, benches between 30 and 60 m depth are recommended to be battered at 60°
  - Below 60 m, adopt 75° benches
- North Wall
  - Top two 15 m high benches are expected to be in weathered rock mass and recommended to be battered at 50°
  - The two benches between 30 and 60 m are recommended to be battered at 75°
  - Below 60 m depth, adopt vertical batters.

[33] PSM71-223R "Geotechnical Review of Macraes LoM Design 2017" dated 15 January 208

5. Proposed Pit Developments

5.1 Design Geometries

Proposed design geometries for each of the proposed pit expansions were collated from the respective pit shells provided, Section 2.3. Overall slope, IRA and bench scale components are summarised for the respective pits in Table 9 to Table 11 and the following observations noted:

- Innes Mills Stage 9-10:
  - This pit shell is preliminary and lacks bench-berm geometry in areas
  - The previous design boundary of 13200N has been observed in the Innes Mills pit shell indicated by a lower IRA. The southern section of the pit extends 400 m south of this boundary, 200 m of which will be constructed within the MFZ
  - The proposed pit shell presents a 'bullnose' into the pit in the centre of the east wall which historically cause local instability at Macraes. Further investigation into this section of wall is recommended based on previous slope performance.
- Coronation Stage 6:
  - The south wall design includes a single 50° bench within weathered rock mass while the east wall includes two benches
  - The main changes in slope geometry to previously mined Coronation cutbacks are detailed below:
    - Steepening of west wall IRA from 24° (CO4) to 43°
    - Reduced berm width from 11.5 m to 7.5 m
    - Reduced batter height from 22.5 m to 17.5 m to achieve IRA between 43° and 45°
    - Eliminated slope aspect 270°, opting for 255° and 285°. These aspects dominating the east wall
  - The poor rock mass identified in the southern limb of Stage 2 west wall may impact the southern limb of the east wall of CO6 if poor rock mass conditions persist to the east. It has previously been recommended that bench height be reduced to 15 m through this zone. Further investigation into this area is recommended to refine the final design slope geometry. Slope orientations of 300° and 345° along the southern limb has reduced the risk of planar failure along north-south trending faults
  - Waste generated from the expansion of the Coronation Stage 6 pit will be placed as backfill within the previously completed Coronation North pit void to a level of 600mRL. This provide benefits from both a geotechnical stability perspective as well as creation of a final closure landform.
- Golden Bar Stage 2:
  - The north, south and west walls include a single 50° bench to allow for weathered rock mass though not included for the east wall. There is a potential for a deeper weathering profile as presented in the 2017 LoM[34]
  - The north-east slope has been identified as low to moderate risk based on the potential intersection of large-scale faults. Other aspects to note are 305° and 320° which have the potential for batter scale wedge failures
  - The current design is within the recommended design parameters and previously achieved slope geometry of GB1. There is potential for a more aggressive design on the north and east walls though further investigation is needed to understand rock mass conditions and location of any major north-south / east-west trending faults.

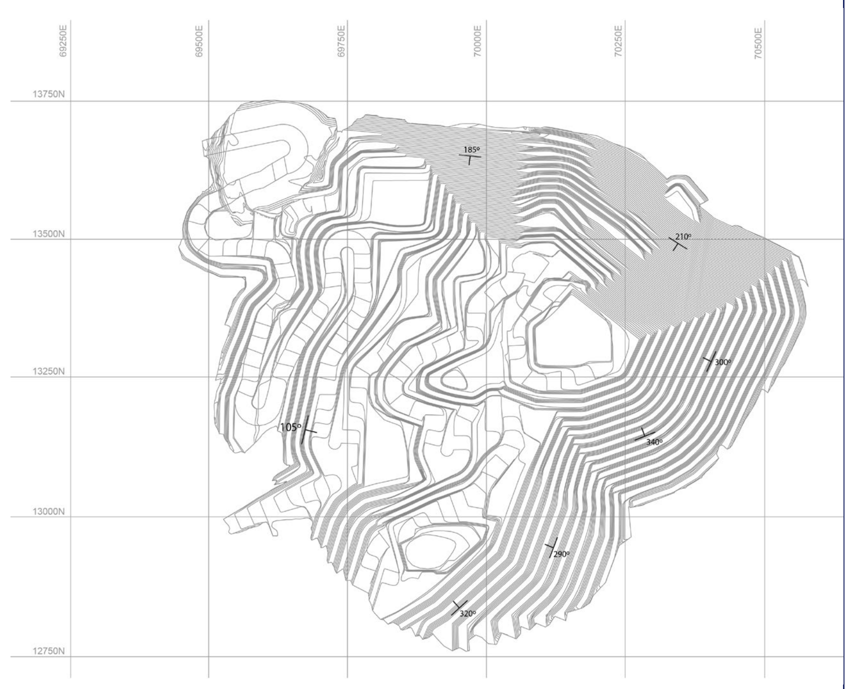
---

[34] PSM71-223R "Geotechnical Review of Macraes LoM Design 2017" dated 25 January 2018

Table 9 - Innes Mills Stage 9 Geometry Based on *Lines_IM_Stg9_MP4_Pit.dxf* Pit Shell

Slope	Slope Aspect (°)	Maximum Overall Slope Height (m)	Bench Geometry			Inter-ramp Angle (°)
			BFA (°)	Height (m)	Berm (m)	
North	185	200	Proposed pit shell does not indicate bench geometry			42[1]
North - East	210	250	Proposed pit shell does not indicate bench geometry			43[1]
East	300	235	60	12.5	9	38
	340	260	60	12.5	9	38
South - East	290	155	50	12.5	9	33
	320	155	50	12.5	9	33
West	105	175	60	12.5	9	38

Innes Mills Stage 9-10 Proposed Pit



1 Inter ramp angle measured using whittle shell, may be revised during pit optimisation.

Table 10 - Coronation Stage 6 Pit Geometry Based on *CO6_MP4_pit.dxf* Pit Shell

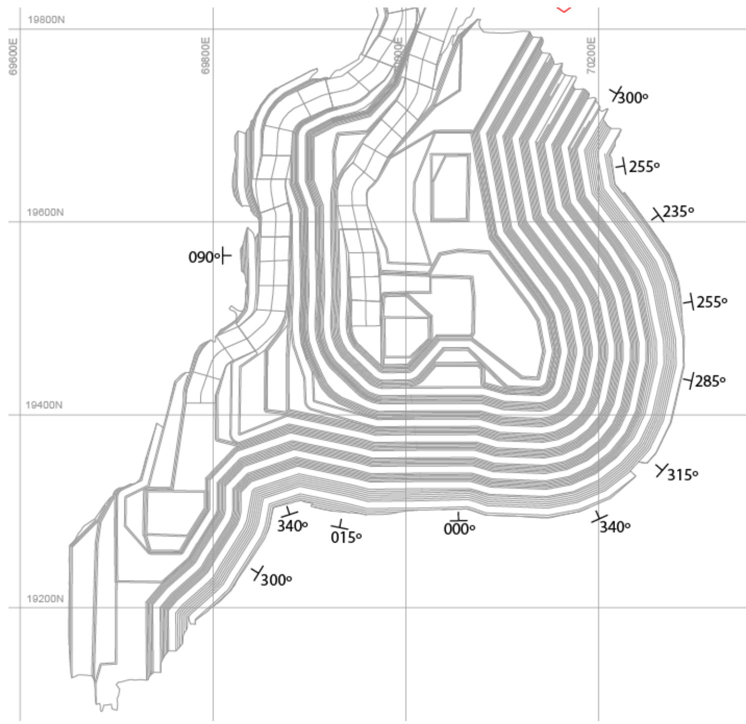
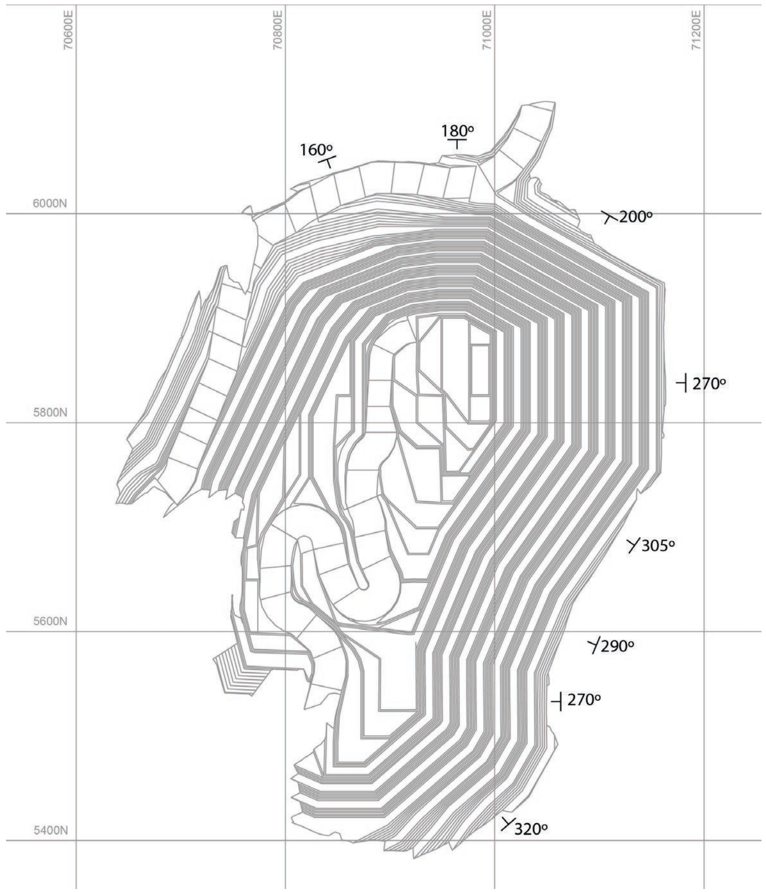
Slope	Slope Aspect (°)	Maximum Overall Slope Height (m)	Bench Geometry			Inter-ramp Angle (°)	Coronation Stage 6 Proposed Pit
			BFA[1] (°)	Height (m)	Berm (m)		
East	235	115	60	17.5	7.5	43	
	255	120					
	285	125					
	300	60					
South-east	315	125	60	17.5	7.5	43	
South	340	125	60	17.5	7.5	43	
	000	130					
	015	140					
West	090	60	60	17.5	7.5	43	

Table 11 - Golden Bar Stage 2 Pit Geometry Based on *GB_MP4_pit.dxf* Pit Shell

Slope	Slope Aspect (º)	Maximum Overall Slope Height (m)	Bench Geometry			Inter-ramp Angle (º)
			BFA (º)	Height (m)	Berm (m)	
North	160	135	60	17.5	3	52
	180					
North-east	200	110	60	17.5	3	52
East	270	160	60	17.5	7.5	43
	290	130				
	305	160				
South-east	320	113	60	17.5	7.5	43
South	000	52	60	17.5	7.5	43

Golden Bar Stage 2 Proposed Pit

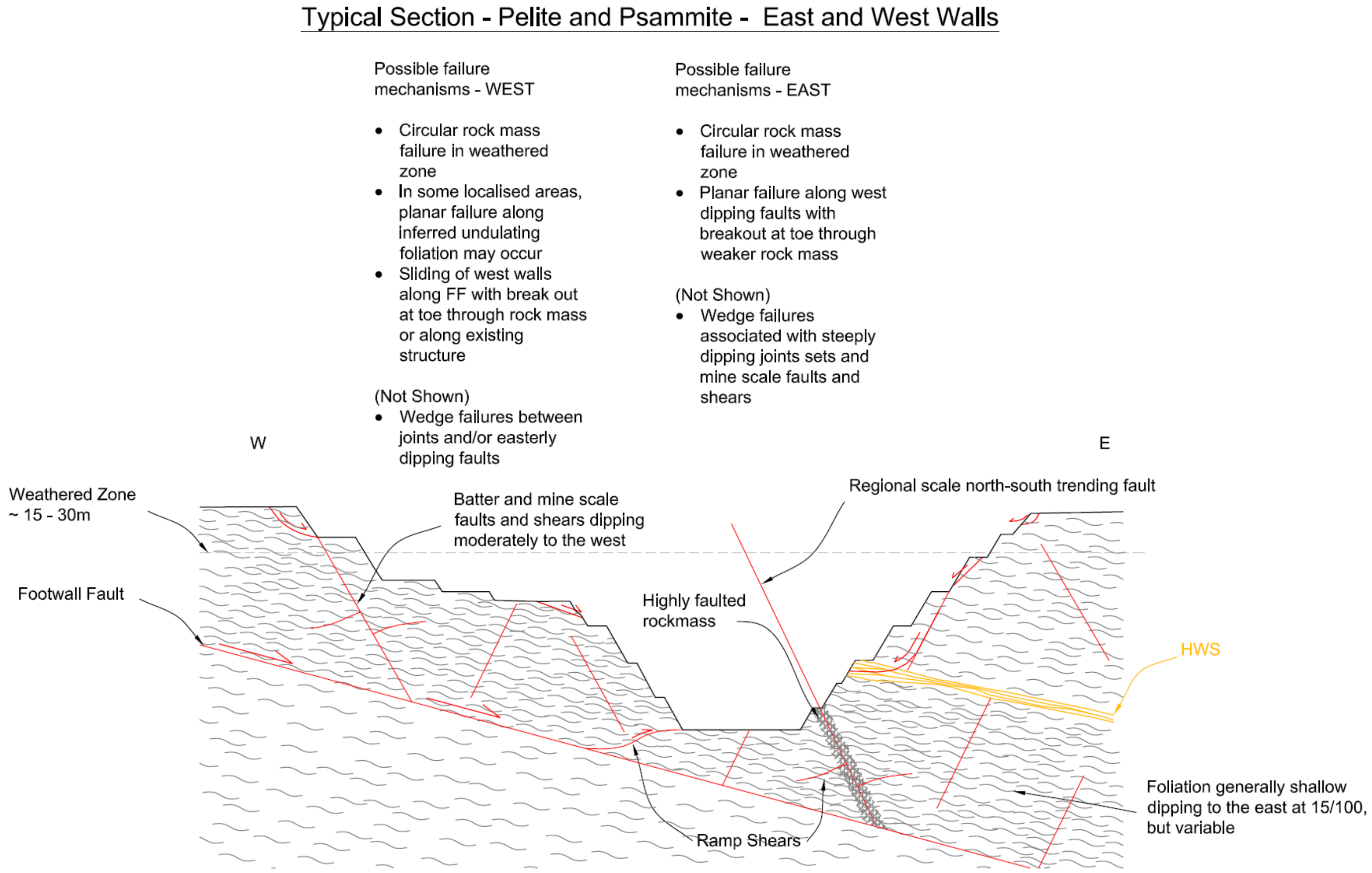


5.2 Failure Mechanisms

The critical failure mechanisms outlined in Table 12 and illustrated in Inset 7 are considered likely to control stability of individual and multiple batter slopes for the proposed pits based on the geotechnical model and past experience.

Table 12 - Critical Failure Mechanisms

Pit Wall	Scale	Critical Failure Mechanism
North and South	Bench and overall	Planar and wedge defined by faults, shears and joints dipping towards the north/south, east and west
East	Bench and overall	Planar sliding along faults and shears dipping towards the west. Orthogonal faults, shears and joints may define boundaries. In some cases, influenced by basal sliding on the HWS.
West	Bench	Wedge failure defined by shears and joints dipping towards the east and south
	Overall	Planar sliding along the FF
NE, SE, SW, and NW	Bench and overall	Wedge formed between faults, shears and joints



Inset 7: Schematic section of geotechnical model and failure mechanisms at Macraes.

6. Kinematic Stability Analysis

Kinematic analysis is a stereographic technique that assesses the critical failure mechanism and controlling defect sets. The method utilises the variable structural orientations of key defect sets and adopted defect shear strengths to assess the slope angle at which undercutting of the slope will take place for a given pit wall orientation. The scale of the slope, the concentration of defect orientations and the nature and persistence of the structures also influences the design.

The kinematic assessment is based on structural orientation and assumes the length and spacing of defects are sufficient to result in failure. The scale of the slope, the concentration of data points and the nature of the defects defines which data set is the most relevant for the design. The method may be conservative as it assumes that all defects interact and are of sufficient length to impact the slope. That is, the method does not explicitly consider defect spacing, continuity or termination.

The probability of failure, (P_f) is evaluated using $P_f = P_u \times P_l$, where:

- P_u is the percentage of defects in unstable orientations, or in other words, the chance a slope is undercut by a defect or wedge intersection, and
- P_l is the percentage of defects that are sufficiently extensive and continuous to result in failure for the height of slope analysed. For this study, the structures are assumed to be continuous over the slope height under consideration, that is $P_l = 1$.

The controlling failure mechanisms and structures identified in Section 5.2 based on proposed pit shells. The following points outline the approach taken for interpreting the results:

- Review of historical batter and inter-ramp angles for various slope orientations
- Assess controlling structures, mechanisms and proportion of pit walls showing evidence of instability over different scales
- Comparison between kinematic analysis results and historical pit wall performance.

The adopted acceptance criteria for probability of failure at both batter and inter ramp scales is based on a combination of industry best practice[35] and established site experience:

- Batter slopes - 30 to 40%
- Inter-ramp (multiple batter) slopes - 4%.

6.1.1 Innes Mills

Geological structure data collated during 2016 (Figure 6) was reviewed against the dominant slope aspects of Innes Mills. The empirical analysis results are presented in Appendix A and summarised in Table 13. Bench geometry is not fully defined on the proposed IM9-10 pit shell therefore typical bench face and inter-ramp angles have been as assigned based on historical wall geometry at Macraes. Slopes within the MFZ (SD4) were only assessed for faults and shears due to the limited structural database and the general nature of failure is expected to be driven by rock mass strength.

These results do not consider the performance of previously excavated slopes and are purely a statistical assessment. For example, previous analyses have targeted undercutting of benches at 30% however the as built slopes achieved less than 10%.

[35] J. Read, P.E. Stacey. Guidelines for open pit slope design. Melbourne : CSIRO Publishing, 2009.

Table 13 - Summary of Probability of Undercutting Analysis Results. All Batters Assumed to be 15 m High

Structural Domain	Wall	Slope Aspect (°)	BFA (°)	IRA (°)	Controlling Failure Mechanism	PoU Result at Proposed Slope Geometry
SD1	N	185	70	49	Planar slides along faults dipping to the south	Up to 70% BFA failure, up to 5% IRA failure
	NE	210	70	49	Wedges formed between joints dipping toward south and west,	Up to 65% BFA failure, up to 7% IRA failure
					Planar sliding along faults dipping to the south-west	Up to 50% BFA failure, up to 5% IRA failure
	E	300	60	43	Planar failure along faults and shears dipping to the west	Up to 50% BFA failure, up to 10% IRA failure
		340	60	43	Planar failure along westerly dipping faults	Up to 65% BFA failure, IRA controlled by faults and shears
SD2	N	185	70	49	Planar sliding on faults and shears dipping to the south	Up to 50% BFA failure
	W	105	60	43	Planar sliding on faults, shears and joints dipping to the east	Up to 40% BFA failure
SD4	SE	320	50	33	Planar failure along faults and shears dipping towards the northwest	Up to 40% BFA failure

6.1.2 Coronation Stage 6

Based on the criteria mentioned above, probability of undercutting was reviewed on key slope aspects of the 2022 CO6 pit shell and presented in Appendix B. This review was completed using the limited 2018 mapping data, totaling 564 data points. Results did not highlight any zones of instability at the current batter face angles of 50° or 60°.

6.1.3 Golden Bar Stage 2

Probability of undercutting was completed using the limited 2003 trench mapping data. Results are presented in Appendix C and summarised below:

- North-east facing slopes are susceptible to bench scale fault bound wedges at design batter face angles of 60°
- The proposed inter-ramp design angles are at a low risk of being undercut by daylighting geological structure.

7. Limit Equilibrium Stability Analysis

7.1 Introduction

The stability assessment presented herein is intended to provide OG with an understanding of the expected LoM and closure stability for the proposed pit geometries. These analyses are not considered to be at the level of a detailed design study but rather to provide confidence to both OG and the consenting authority that:

- The proposed design pit shells can be successfully mined within the consented boundaries
- Operations safety can be maintained throughout the mining life
- Resource extraction is achievable based on the proposed design geometries
- Long-term stability of final landforms and zones of potential deformation are understood.

Limit equilibrium (LE) slope stability analyses have been completed using the RocScience software program *Slide2D* adopting the GLE Morgenstern Price method for non-circular analyses and Bishop Simplified for circular mechanisms.

7.2 Section Locations

Three sections were analysed for each of the proposed pit expansions at Golden Bar, Innes Mills and Coronation plus an additional section for the alternative backfill scenario Coronation North. Section locations are presented in Figures 3, 5 and 7 respectively. Analysis sections were selected to represent the most adverse geometry and rock mass conditions that would be influenced by the proposed cutbacks.

7.3 Material Properties

The rock mass strength parameters adopted for this analysis are based on extensive review of geotechnical logging, geomechanical lab testing, and experience with similar rock masses at Macraes as discussed in Section 3.2. Furthermore, the parameters are calibrated against numerous back-analyses of both footwall (west wall) movements and slope failures from previous studies and demonstrate reliable predictions of rock mass behaviour and movement trends.

Table 14 summarises the material properties adopted for stability analyses. These properties were based on the recent work by PSM for Round Hill DFS geotechnical study. Localised variations in adopted parameters are outlined below:

- An upper bound GSI value was adopted for Class B at Golden Bar. This reflects the observation of higher quality rock in this unit at Golden Bar pit compared to the rest of the pits
- Class D rock mass is only applied to the FF damaged zone at Coronation. Damaged zones for other faults and shears adopted Class C properties.

Table 14 - Stability Model Material Properties

Rock Mass Unit	Unit Weight (kN/m³)	UCS (MPa)	GSI	mi	Mohr – Coulomb cohesion’ (kPa)	Mohr – Coulomb friction angle’ (°)
Class A	27	40	65	12	NA	
Class B (All pits but Golden Bar)		40	55			
Class B (Golden Bar)		40	70			
Class C		30	30			
Class D	20	1	20	9		
Weathered Zone	25	NA			100	38
Macraes Fault Zone	20				100	40
Foot Wall Fault	20				0	9
Hanging Wall Shear	20				50	20
Failed Zone Pelite[36]	25				200	43
Other Faults	20				50	20
Foliation Shears	20				50	20
Waste Rock	20				10	37

7.4 Design Cases

7.4.1 Groundwater Scenarios

The following groundwater assumptions are included in the stability assessment:

- A regional groundwater table with far field recharge located approximately 30 mbgl and assumed to gradually descend with mining before levelling out at the pit floor. The following two scenarios are adopted for analysis:
  - Partially saturated condition - Hu = 0.6 assumed as the typical case based on the adopted groundwater level
  - Saturated condition - Hu = 1.0 is assumed as an adverse case to reflect pore pressure at the pit wall e.g. where pit lakes are beginning to fill (Coronation North). Passive depressurisation near the surface of the pit wall is likely but for these analyses is not included
- Where WRS’s are included in stability sections, groundwater is assigned near the base of the WRS due to the nature of the highly permeable, coarse granular materials making up the rockfill
- Coronation North pit currently has a pit lake level at approximately 510 mRL following groundwater rebound since the completion of mining. With no active pumping (and therefore depressurisation effects) the groundwater profile will be shallower in the pit than active mining areas. For analysis within the Coronation North backfill scenario an Hu = 1.0 has been applied.
- Pit lake levels are based on the conceptual closure plan developed by OG for MP4 as follows:
  - Innes Mills 489 mRL
  - Golden Bar: ~500 mRL
  - Coronation: 660 mRL.

These assumptions are expected to be in line with the site wide groundwater modelling being undertaken by GHD for the MP4 studies (large-scale modelling outputs are typically too coarse for geotechnical analysis). The GHD assessment for the Frasers-Innes Mills pit lake is still in progress at the time of writing. We recommend that boundary conditions are reviewed during detailed design analysis.

[36] PSM71-261M – Macraes Coronation North – Southwest Wall Slope Movements dated 27 January 2021

7.4.1.1 Climate Change

The implications of climate change to long-term slope stability have been raised as a potential risk item as part of the wider project review. This particularly relates to high intensity rain events and a sudden increase in water levels in cut and fill slopes. To address these risks as part of the analytical design cases the following points are noted:

- Multiple groundwater scenarios have been adopted for the current stability analysis (as outlined above) covering a range of pit wall conditions (including filling of final pit lakes)
- The character of WRS material is coarse and granular and typically highly permeable. Rainfall will be dissipated quite quickly, leaving minimum accumulative of internal pore pressure that may affect global stability.

7.4.2 Seismic Loading

A site-specific seismic hazard analysis was completed for Macraes Mine in 2021 by Bradley Seismic Ltd[37] which referenced the Vs30 measured at Macraes by Southern Geophysical Ltd in 2021[38]. Horizontal seismic coefficients (Kh = 0.5 x Peak Ground Acceleration (PGA)) based on spectra values for Vs30 = 1100 m/s were adopted for the pseudo static stability analysis using the following Annual Exceedance Probabilities (AEP) of 1:500 for operations and a Maximum Design Earthquake (MDE) equivalence of 1:2500 for closure, Table 15.

GNS released an interim update to the National Seismic Hazard Model (NSHM) during 2022. These PGA spectra values are summarised in Table 15 relative to those defined by Bradley (2021). Due to the timing of the NSHM update, only a selection of analyses have been rerun to demonstrate the effects of the increased design loads in Coronation and Golden Bar Pits plus the Coronation North WRS (backfill). Innes Mills stability sections were selected after the NSHM update therefore scenarios have only been assessed using the NSHM values.

To align with parallel studies completed within the wider MP4 assessment, sensitivity checks carried out using NSHM data were based on Operational Base Earthquake (OBE) equivalence event with an AEP of 1:150.

Table 15 - Comparison of PGA for Earthquakes at Macraes

Project Stage	Annual Exceedance Probability (AEP)	Equivalence	Peak Ground Acceleration (g)[1] - Maximum Component		
			Bradley 2021 Vs30 =1100m/s	Bradley 2021 Vs30 = 1500m/s	Interim NSHM 2022 Vs30=1500m/s
Operational	1:150	Operational Basis Earthquake (OBE)	0.0621	0.0544	0.0775
Closure and Lake Filling	1:500	-	0.1296	0.1132	0.1550
Post Closure	1:2500	Maximum Design Earthquake (MDE)	0.3203	0.2787	0.3542

2 Horizontal Seismic Coefficients (kh = 0.5 PGA) have been used for limit equilibrium pseudo static analysis herein.

Seismic loading is only applied to critical stability sections for each pit. This typically includes sections and sliding surfaces with the lowest static Factor of Safety (FoS) for any given location.

The following groundwater scenarios are applied for the seismic stability:

- Hu = 0.6 is applied for the OBE seismic load
- Pit lake condition for the MDE seismic load.

[37] Bradley Seismic Limited. Probabilistic Seismic Hazard Analysis for Macraes, New Zealand. 23 May 2021.

[38] Southern Geophysical Ltd, Geophysical Site Investigations: Downhole Shear-wave Velocity Tests, Macraes Gold Operation, January 2021

7.5 Results

The following sections present the results of the stability analyses for the proposed pit expansions and respective design cases.

7.5.1 Innes Mills

A summary of the stability analysis undertaken for the IM9-10 pit is discussed below with individual FoS outputs presented for static and pseudo static analysis in Table 16 and Table 17 with graphical outputs included in Appendix D.

- Under static conditions:
  - Pit wall stability is assessed to have a FoS above 1.2 for baseline scenarios without the presence of adverse faults or shears under partially saturated and pit lake conditions
  - Where adverse groundwater conditions are modelled, a reduction in stability is noted with the resultant FoS approaching 1.0. This emphasises the need for in pit pumping and localised drainage strategies to maintain groundwater draw down behind pit walls during operations
  - Implicitly modelled fault and shear surfaces supplied by OG indicate there may be significant "shape" on individual geological structures. Section 1 illustrates a scenario where the modelled HWS surface is undulating. Analytically this creates a variable dipping shear surface which directly influences the resultant stability
  - Based on site experience at Macraes, highwall failures associated with sliding along west dipping HWS structures is not observed. This provides confidence that the geometry is related to a modelling artifact resulting in a simplification of real-world geological conditions
  - During closure conditions, the hydrostatic pressure of water in the pit lake improves the walls' stability
  - Review of potential sliding surfaces with FoS less than 1 indicates that adverse block geometries are structurally controlled and do not extend beyond the pit boundary
  - Pit wall stability adjacent to the MFZ is expected to be controlled by localised reductions in rock mass strength and associated shear surfaces. The modelled presence of less favourable ground conditions lower the FoS to 0.9, though instability does not extend beyond the pit crest.

Table 16 - Summary of Innes Mills Static Stability Results

Section	Factor of Safety					
	Typical rock mass condition with basal sliding along the HWS			Circular failure path through sheared rock mass		
	Hu 0.6	Hu 1	Pit lake	Hu 0.6	Hu 1	Backfilled
Section 1	1.75	1.36	1.81	-	-	-
Section 2	1.45	1.00	1.83	-	-	-
Section 3(1)	-	-	-	1.23	0.92	2.25(2)

1 Assessed stability results are influenced by modelled "shape" of HWS contact dipping against foliation. This is a modelling artefact and unlikely to represent site conditions.

2 Area will be supported by FRBF

- For seismic scenarios:
  - Operational seismic loads of OBE equivalence did not have a significant impact on FoS for typical geological conditions without adverse geological structures; reduction in FoS from the static case was negligible
  - Under 1:2,500 year MDE loading, the FoS post pit lake filling, is greater than 1.5 based on a basal sliding mechanism along the HWS
  - Rapid large-scale pit wall failures are not expected during closure due to the ductile nature of rock mass failures. Movements are expected to be progressive creep style events and therefore the likelihood of a seiche events is low
  - Comparison of modelled outputs between seismic loads proposed by Bradley 2021 and Interim NSHM 2022 showed limited variability.

Table 17 - Summary of Innes Mills Seismic Stability Results using NSHM 2022

Section	Slip Surface	Factor of Safety	
		AEP = 1/150 (OBE)	AEP = 1/2500 (MDE)
Section 1	Typical rock mass condition with basal sliding along the HWS	1.62	1.57
Section 2		1.35	1.59
Section 3	Circular through MFZ	1.14	1.68

These analyses were based on known major structures within the east wall. Experience highlights the high possibility of localised westerly dipping faults of moderate to steep inclination within the pit face are present. Where adversely orientated geological structures are present, bench to inter ramp scale instabilities may be expected during mining. High wall block sliding is actively managed by OG during mining through routine geotechnical mapping and thorough stability monitoring. These instabilities are structurally bound and typically do not propagate beyond these limits.

7.5.2 Coronation Stage 6 and Coronation North Backfill

A summary of the stability analysis undertaken for the Coronation Stage 6 pit and Coronation North pit WRS (backfill) is discussed below. Individual FoS results are presented for static and pseudo static analysis in Table 18 to Table 21 and graphical outputs included in Appendix E.

- All static analyses for Coronation Stage 6 indicate a FoS greater than 1.3
- Sliding along the FF results in a FoS below 1 under pseudo static loading for a 2500 year earthquake scenario. We anticipate that such an extreme earthquake event could generate some minor deformation and crack development, however no significant post-earthquake strength loss or large-scale rapid displacements are predicted
- The analyses for the Coronation North WRS (backfill @ 600mRL) indicates a FoS greater than 1.5 for static conditions and both operational and closure earthquake scenarios for movement along FF and foliation shears
- The west wall of the proposed Stage 6 pit shell approaches the recommended minimum FF offset of 25 m. This introduces the possibility of mining-induced movement on the FF, albeit on a smaller scale than has occurred elsewhere at Macraes. The likely FF exposure length along strike will be approximately 300 m while the overall footwall height is relatively small at approximately 100 m. This will act to limit the overall scale of potential footwall instabilities relative to previous events within the wider mine and can be managed operationally without impacting the wider consenting boundary.

Table 18 - Summary of Coronation Static Stability Results

Section	Factor of Safety												
	FF			Block sliding along modelled faults and the FF			HWS			Block sliding along modelled faults and the HWS			Foliation Shears – Sensitivity Case
	Hu 0.6	Hu 1	Pit lake	Hu 0.6	Hu 1	Pit lake	Hu 0.6	Hu 1	Pit lake	Hu 0.6	Hu 1	Pit lake	Hu 1
Section 1	1.58	1.43	1.83	2.82	2.69	2.95	-	-	-	-	-	-	1.32
Section 2	1.95	1.88	2.58	-	-	-	1.94	1.42	2.43	-	-	-	-
Section 3	2.07	1.76	2.60	-	-	-	2.23	1.79	2.95	2.34	2.02	3.08	-

Table 19 - Summary of Coronation Seismic Stability Results

Section	Slip Surface	Factor of Safety			
		Bradley 2021 AEP = 1:500	NSHM 2022 AEP = 1/150	MDE earthquake AEP = 1/2500	
				Bradley 2021	NSHM 2022
Section 1 – West Wall	FF	1.29	1.30	0.90	0.72

Table 20 - Summary of Coronation North WRS Static Stability Results at Closure – Southwest Wall

Section	Factor of Safety (Hu – 1.0)		
	Foliation Shear above water table	Foliation Shear below water table	FF with Ramp Shear
Section 4	3.75	3.34	3.22

Table 21 - Summary of Coronation North WRS NSHM 2022 Seismic Stability Results

Section	Sliding Surface	Factor of Safety	
		AEP = 1/150 (OBE)	AEP = 1/2500 (MDE)
Section 4 – SW Wall	Shallow planar sliding on foliation shear above water table	3.32	2.47
	Planar sliding on foliation shear below water table with toe break out through rock mass	2.89	2.22
	Planar sliding on FF with toe break out through rock mass or along shallow SW dipping ramp shears	2.68	1.72

7.5.3 Golden Bar Stage 2

A summary of the stability analysis undertaken for the Golden Bar pit is included below. Individual FoS results are presented for static and pseudo static analysis in Table 22 and Table 23. Graphical outputs included in Appendix F.

- Under static conditions:
  - High wall stability for typical rock mass conditions (no adverse structure) at Golden Bar is assessed to have a FoS of approximately 1.5 or greater
  - The critical sliding mechanism assessed for inter-ramp stability is related to block sliding along the HWS and a projected sub-vertical fault under fully saturated (adverse) groundwater conditions (Hu=1). This was assessed to have a FoS of 0.82

    As noted in Section 3.3.3 there is limited structural data available for the Golden Bar Stage 2 development. Faults projected to intersect the proposed pit shell are based on a geomorphological lineament assessment for inclusion in the stability analysis. Further investigation will be required to confirm the presence of these structures during detailed design.

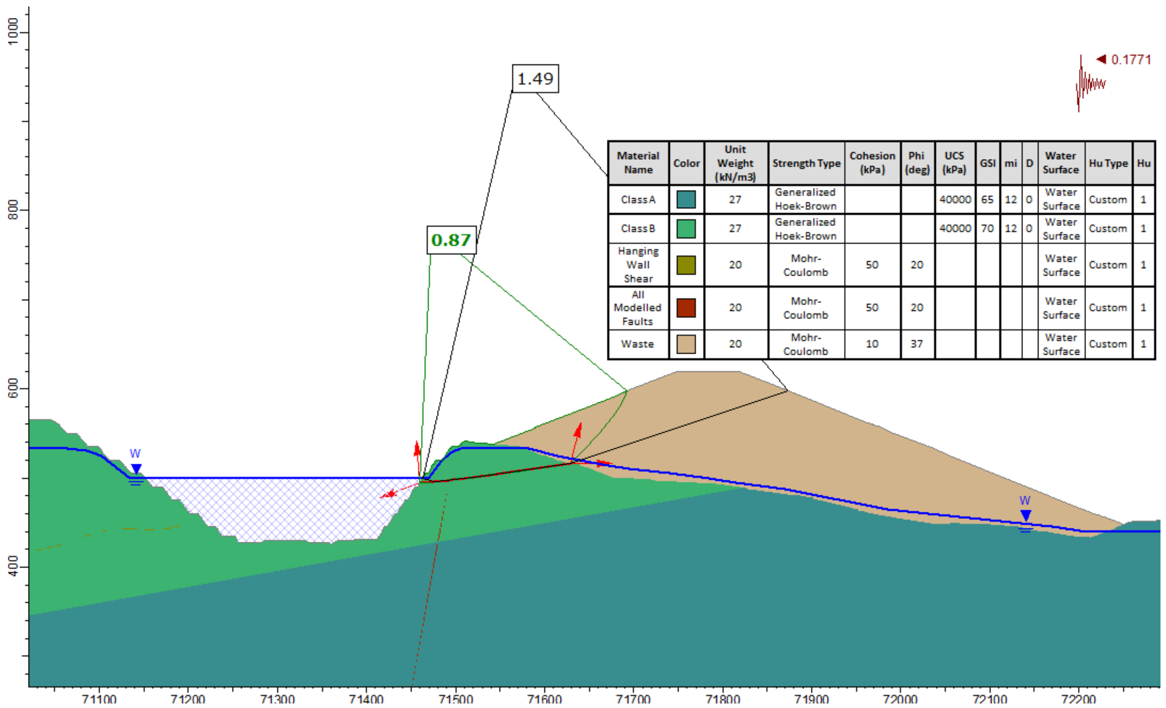
Table 22 - Summary of Golden Bar Static Stability Results

Section	Factor of Safety					
	Typical rock mass condition with basal sliding along the HWS			Block sliding along projected fault and the HWS		
	Hu 0.6	Hu 1	Pit lake	Hu 0.6	Hu 1	Pit lake
Section 1	1.59	1.49	1.47	1.33	1.09	1.15
Section 2	3.21	2.76	3.30	1.30	0.82	1.36
Section 3	3.28	2.73	2.82	1.78	1.65	1.65

- For seismic conditions:
  - Operational seismic loads of OBE equivalence did not have a significant impact on FoS for the typical geological conditions without adverse geological structures. Resultant FoS values are more than 1.25. Block sliding mechanisms were assessed to remain above equilibrium with a minimum FoS of 1.07
  - Under the 1:2,500 year MDE loading, the minimum FoS post pit lake filling, is 0.87 due to sliding along the saturated HWS. Even during this scenario, significant deformation would not be expected beyond the adjacent WRS (FoS = 1.5), Inset 8. Similarly, stability conditions in the east wall deteriorate below 1 under the same seismic conditions
  - We note a specific geotechnical design assessment of the Golden Bar WRS to support the MP4 AEE has been prepared separately (EGL, 2023).

Table 23 - Summary of Golden Bar Seismic Stability Results

Section	Slip Surface	Factor of Safety			
		Bradley 2021 AEP = 1:500	NSHM 2022 AEP = 1/150	MDE earthquake AEP = 1/2500	
				Bradley 2021	NSHM 2022
Section 1 – North Wall	Typical rock mass condition with basal sliding along the HWS	1.28	1.40	0.92	0.87
Section 2 – East Wall	Block sliding along projected fault and the HWS	1.13	1.07	1.04	0.90



Inset 8: Golden Bar Section 1 – North Wall, slip surface through HWS under MDE earthquake loading.

8. Operational Slope Stability Management

OceanaGold has extensive experience in mining deforming slopes throughout the Macraes operation with established and calibrated slope monitoring systems. As indicated by analyses presented in this report, slope performance will continue to be sensitive to changes in groundwater condition, mining rate, and offsets to the FF. The following strategies highlight options within the wider geotechnical slope management framework successfully utilised at Macraes to manage movement rates associated with mining footwall slopes:

- Limiting blast sizes to minimise disturbance and triggering of slope movement
- Considered pit design geometries including:
  - Limitation of west wall strike lengths to minimise FF exposure
  - ‘Stepping off’ in areas where the resource model indicates weak ore grades to maintain FF offsets
  - Active backfilling and buttressing of completed workings prior to the development of new mining area
- A cautious production approach allowing for staged mining sequences and stand down periods
- Rigorous slope monitoring procedures using radar, GPS, and prisms to capture real time slope movements during mining
- A documented history of geotechnical model development, stability analysis and external advice throughout all stages of mining
- Development, review, and implementation of Trigger Action Response Plan’s (TARP’s) with regular risk assessments.

9. Conclusions

The following points list our concluding comments:

- The proposed batter configurations are in line with established design precedents for kinematic stability at Macraes
- The indicated FoS for highwalls (both open pit extensions and those being backfilled against e.g.: Coronation North) which are generally more than 1.5
- Where adversely orientated geological structures are present, bench to inter ramp scale instabilities may be expected during mining. Any rapid movement is likely to initiate prior to lake filling where a change in condition has occurred (e.g., active mining, blasting, rapid water ingress)
- Where potential highwall instabilities have been identified, the failure extents are contained within the immediate bounds of the respective pits. They do not present a risk to the wider consent boundaries at closure
- Operational 1:150 year seismic loading does not have a significant impact on FoS for the typical geological conditions without adverse geological structures; reduction in FoS from the static case was negligible
- During closure conditions, the hydrostatic pressure of water in the pit lakes generally improves the walls' stability
- Slope movements are anticipated under an AEP 1:2,500 MDE (low probability strong ground shaking) loading condition for closure. There is potential for failure scarps to extend behind the design pit crest in some locations. It should be noted that there are likely to be many natural slopes in the surrounding area that will also deform at this level of shaking
- Rapid large-scale pit wall failures are not expected during closure due to the ductile nature of rock mass failures. Movements are expected to be progressive creep style events and therefore the likelihood of a seiche event is low
- Some ongoing deformation (tension cracking, slumping, subsidence) could occur behind the pit crest post-closure. PSM recommends defining a strip of land/zone of influence around the crest of the combined pits to isolate hazards associated with ground movement and falling from height. Based on a FoS of 1.5, an exclusion zone at approximately 100 m from the pit crest is recommended based on pit slope stability. Further geotechnical assessment is recommended following mining to better define the zone of influence
- The implications of climate change to long-term slope stability have been raised as a potential risk item as part of the wider project review. This particularly relates to high intensity rain events and a sudden increase in water levels in cut and fill slopes formed in materials susceptible to erosion such as weathered rock and soil profiles. Final slopes around the pit perimeters should be reviewed during detailed designed to manage surface water runoff.

Yours Sincerely

KELLY HORROCKS
SENIOR ENGINEERING GEOLOGIST

RICHARD BREHAUT
PRINCIPAL

Brisbane

Level 6, 500 Queen Street
Brisbane QLD 4000
+61 7 3220 8300

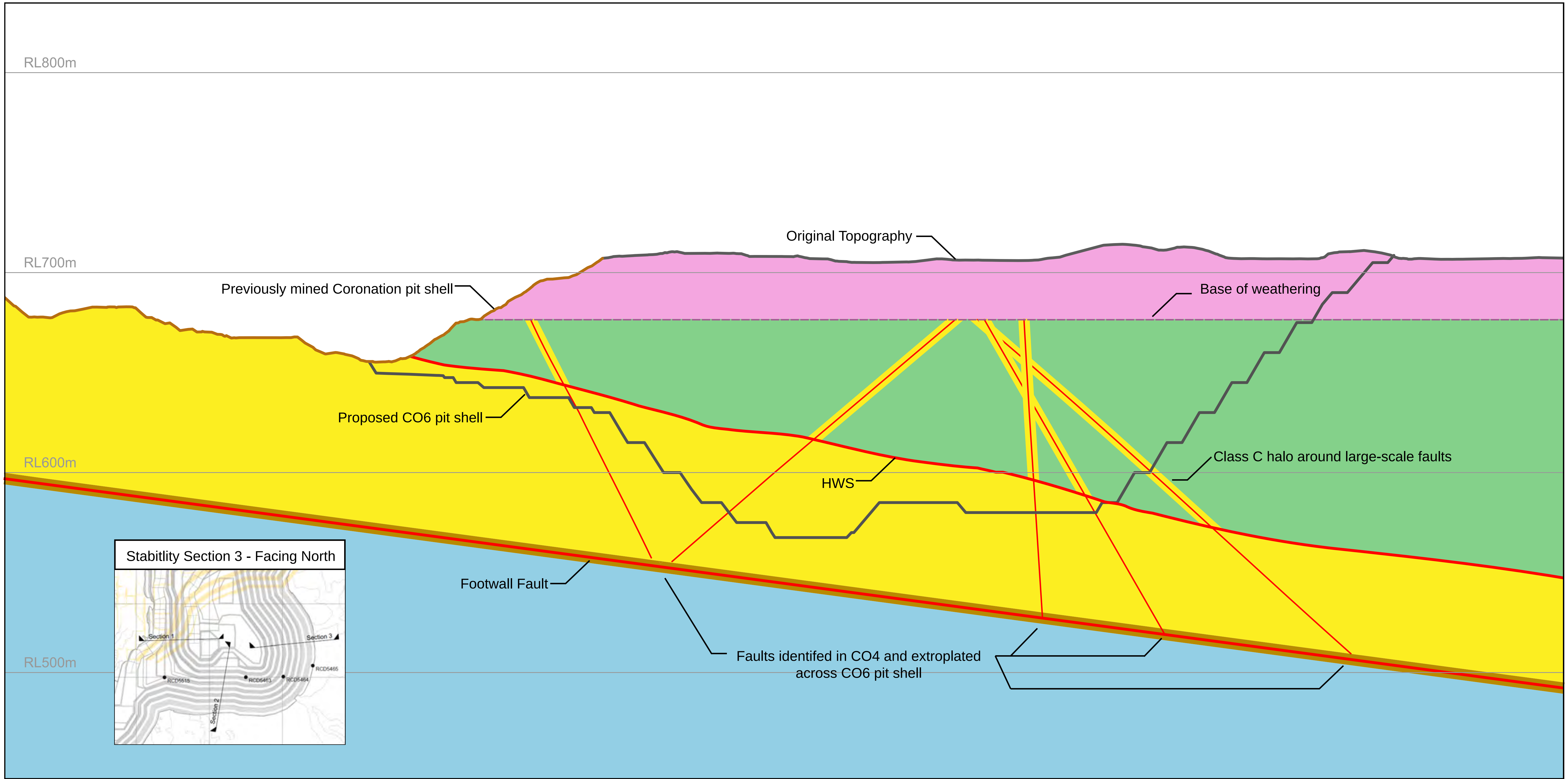
Sydney

G3-56 Delhi Road
North Ryde NSW 2113
+61 2 9812 5000

Perth

Level 3 22 Delhi Street
West Perth WA 6005
+61 8 9462 8400

Figures



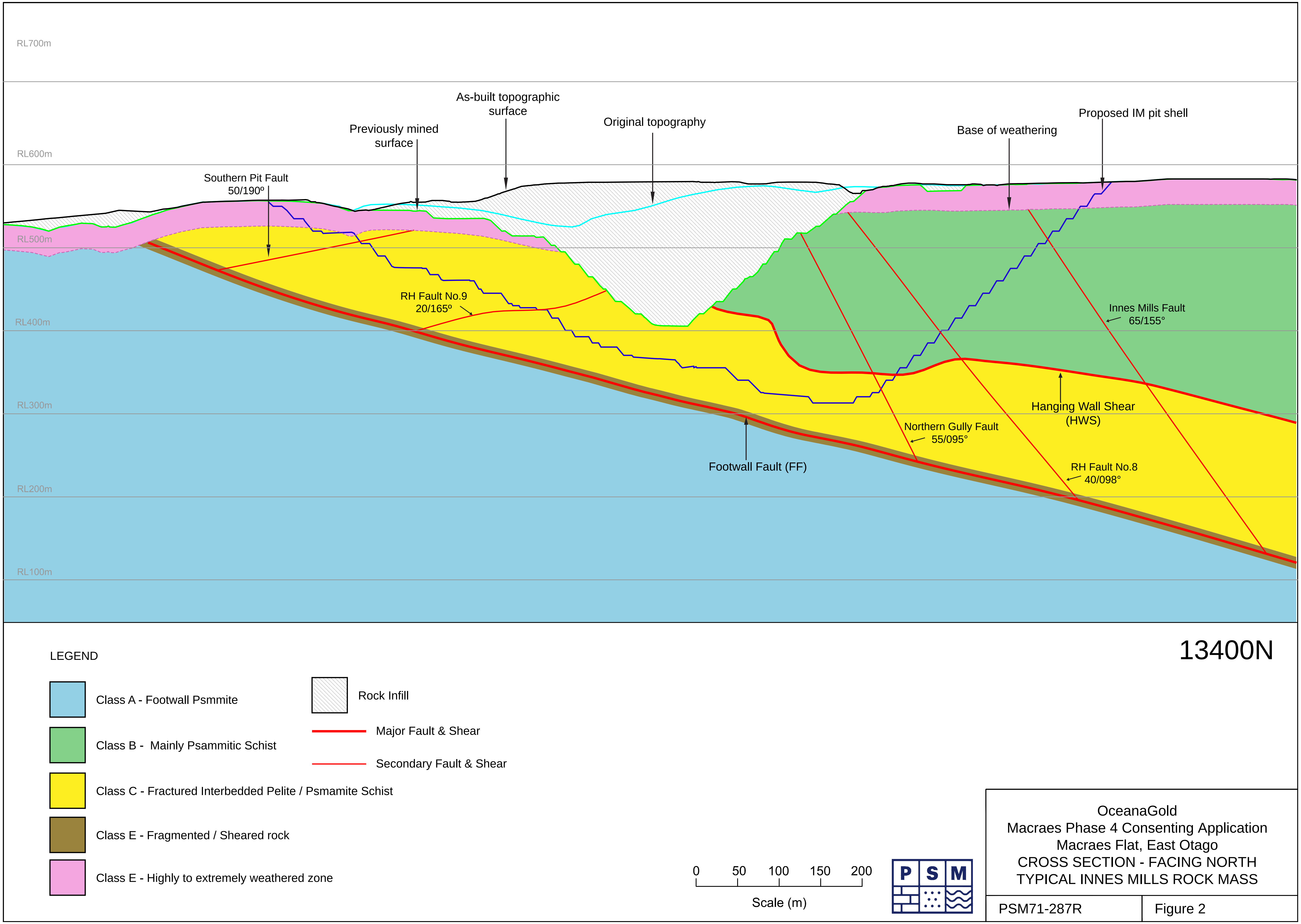
LEGEND

- Class A - Footwall Psmmite
- Class B - Mainly Psammitic Schist
- Class C - Fractured Interbedded Pelite / Psmamite Schist
- Class D - Fragmented / sheared Schist
- Class E - Highly to extremely weathered zone
- Major Fault & Shear
- Secondary Fault & Shear

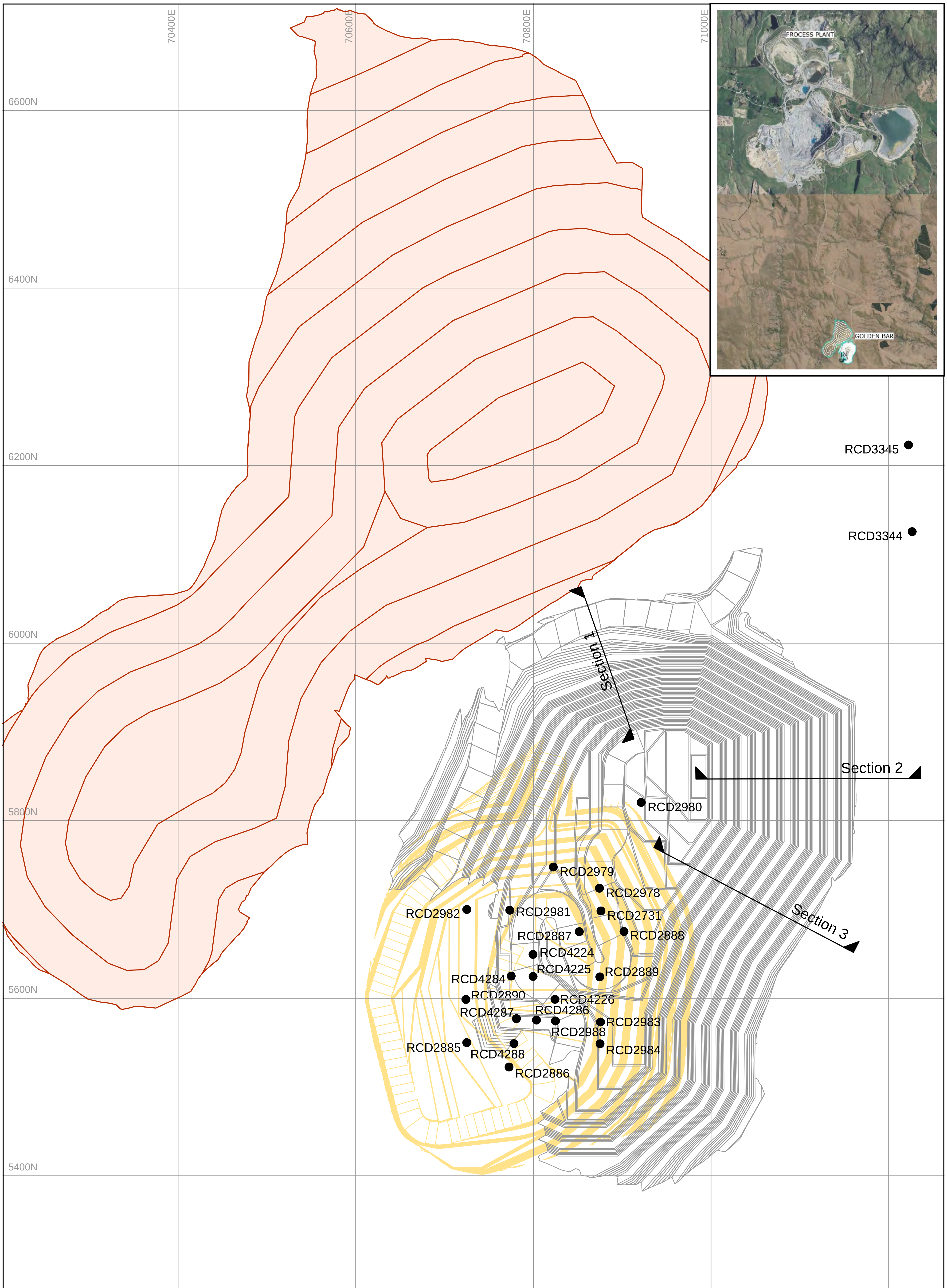
0 50 100
Scale (m)

OceanaGold
Macraes Phase 4 Consenting Application
Macraes Flat, East Otago
CO6 CROSS SECTION 3
TYPICAL MACRAES ROCK MASS

PSM71-287R	Figure 1



RL700m
RL600m
RL500m
RL400m
RL300m
RL200m
RL100m
As-built topographic surface
Previously mined surface
Original topography
Base of weathering
Proposed IM pit shell
Southern Pit Fault 50/190º
RH Fault No.9 20/165º
Innes Mills Fault 65/155°
Hanging Wall Shear (HWS)
Northern Gully Fault 55/095°
RH Fault No.8 40/098°
Footwall Fault (FF)
13400N
LEGEND
Class A - Footwall Psmmite
Class B - Mainly Psammitic Schist
Class C - Fractured Interbedded Pelite / Psmamite Schist
Class E - Fragmented / Sheared rock
Class E - Highly to extremely weathered zone
Rock Infill
Major Fault & Shear
Secondary Fault & Shear
0
50
100
150
200
Scale (m)
PSM
OceanaGold
Macraes Phase 4 Consenting Application
Macraes Flat, East Otago
CROSS SECTION - FACING NORTH
TYPICAL INNES MILLS ROCK MASS
PSM71-287R
Figure 2



LEGEND

GB2 MP4 Pit

GB1 Pit

WRS

RCD2285 Borehole Locations

Section Locations

0 50 100 150 200

Scale (m)

PSM

OceanaGold

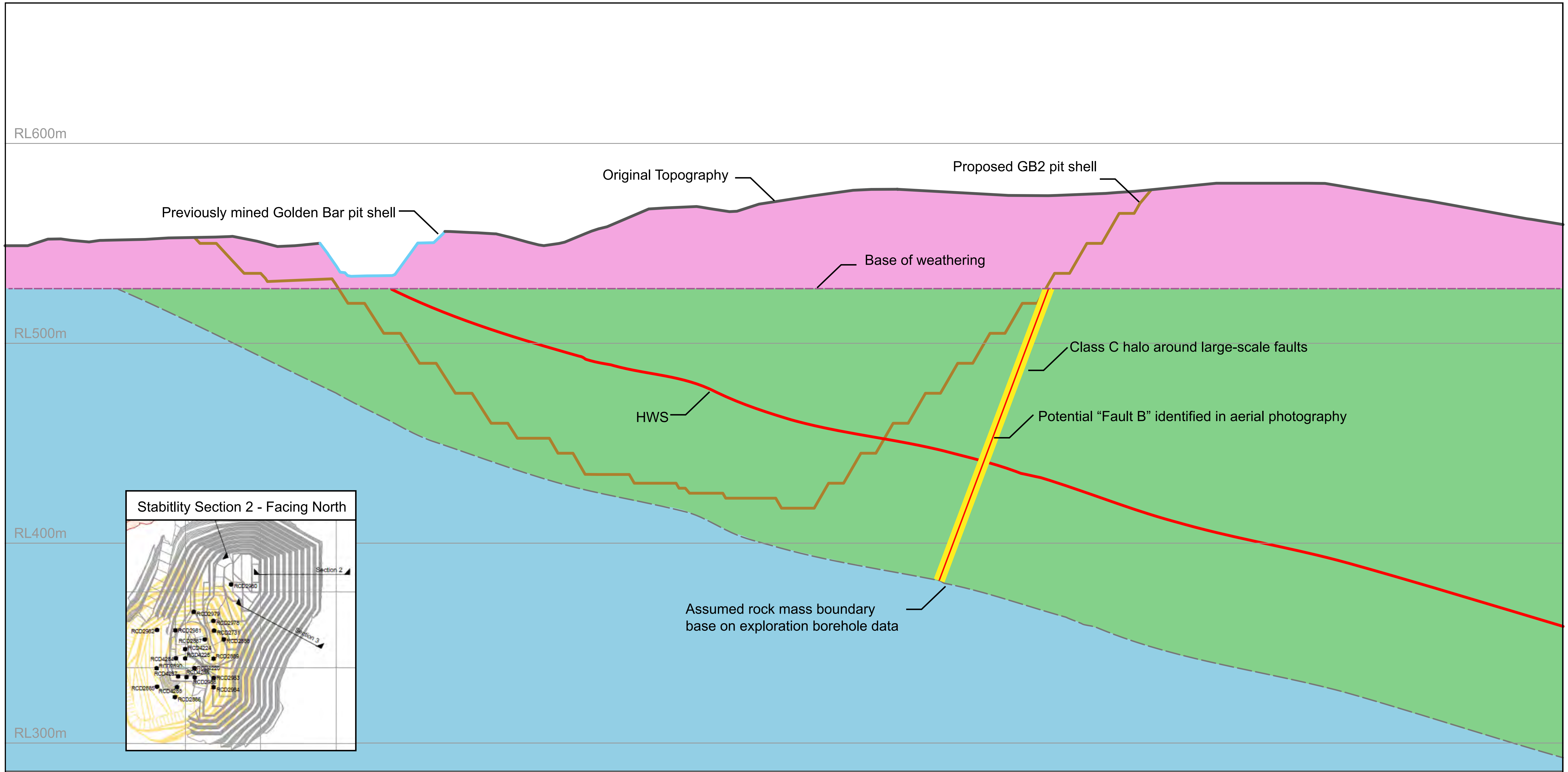
Macraes Phase 4 Consenting Application

Macraes Flat, East Otago

GOLDEN BAR STAGE 2

MP4 PIT PLAN

PSM71-287R	Figure 3



LEGEND

Class A - Footwall Psmmite

Class B - Mainly Psammitic Schist

Class C - Fractured Interbedded Pelite / Psmamite Schist

Class D - Fragmented / sheared Schist

Class E - Highly to extremely weathered zone

Major Fault & Shear

Secondary Fault & Shear

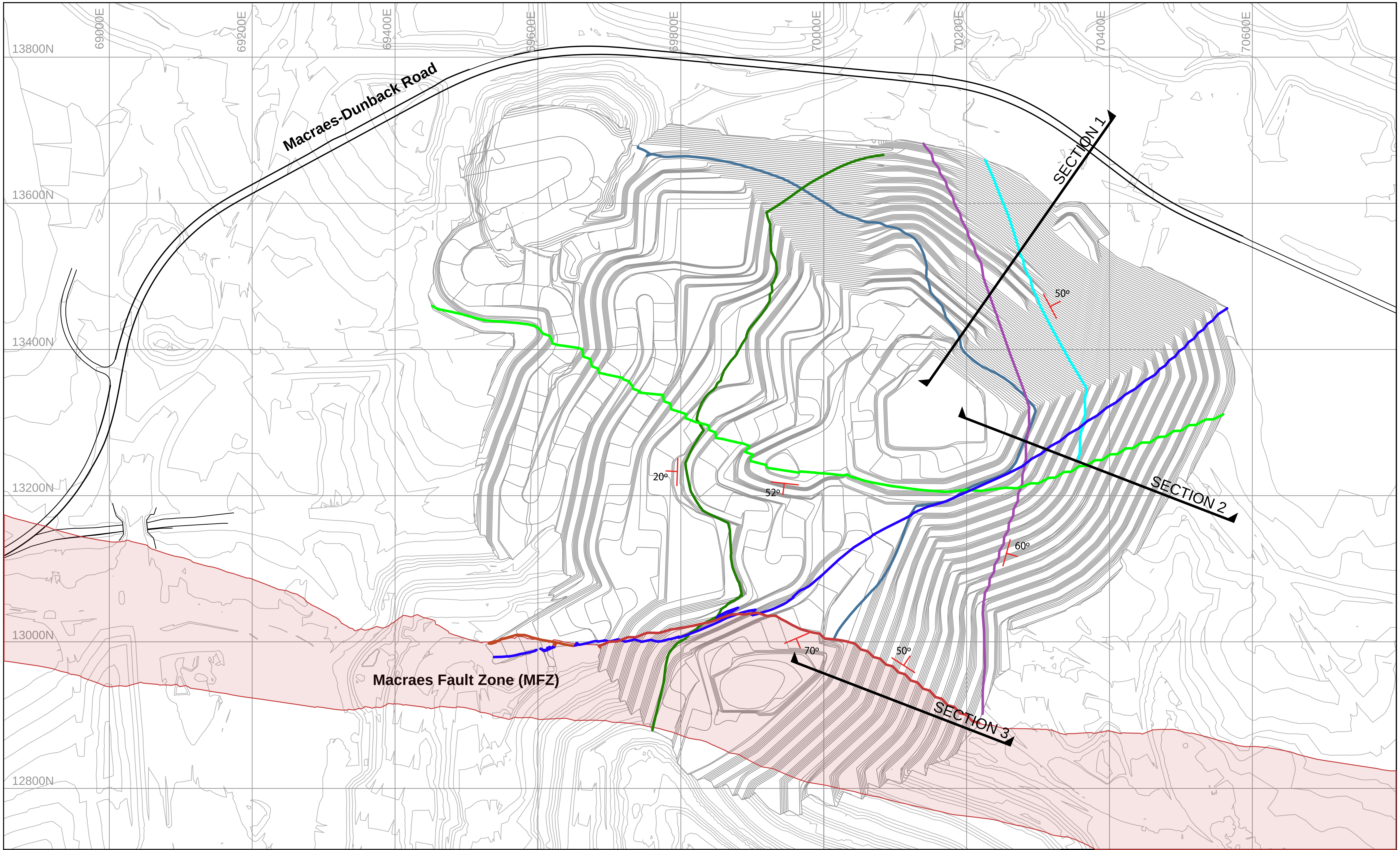
0 50 100

Scale (m)

PSM

OceanaGold
Macraes Phase 4 Consenting Application
Macraes Flat, East Otago
GOLDEN BAR STAGE 2 CROSS SECTION
TYPICAL ROCK MASS

PSM71-287R	Figure 4



LEGEND

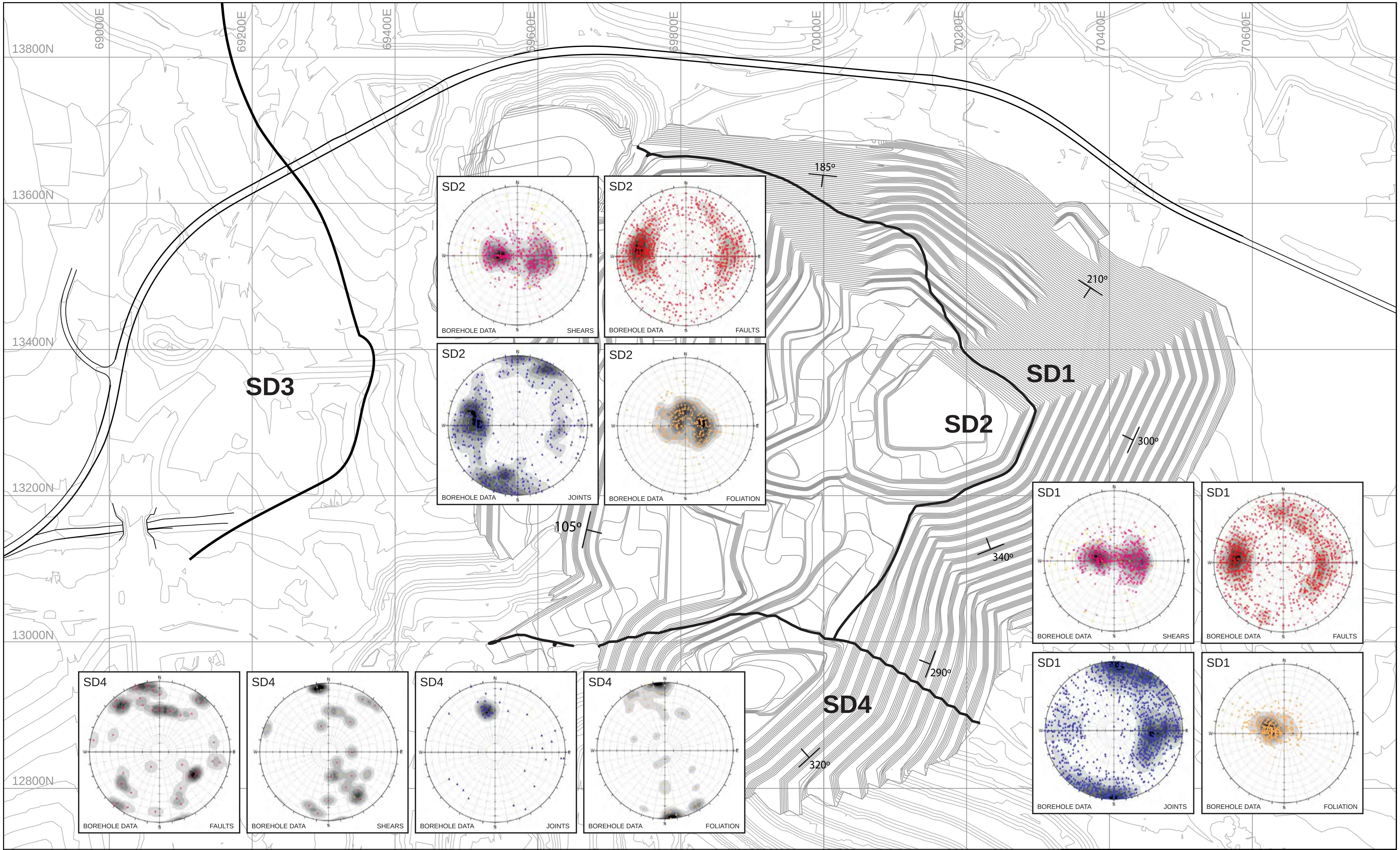
- Lines_IM_Stg9_MP4_Pit
- As-built topography
- Macraes Fault Zone
- 50 Dip / Dip Direction
- Innes Mills Fault
- Hanging Wall Shear
- Northern Gully Fault
- Macraes Fault
- RH Fault 9
- RH Fault 8
- Southern Pit Fault (C8)
- Stability Section Line

0 50 100 150 200
Scale (m)

PSM

OceanaGold
Macraes Phase 4 Consenting Application
Macraes Flat, East Otago
Innes Mills
MAJOR STRUCTURE PLAN &
STABILITY CROSS SECTION LOCATIONS

PSM071- 287R	Figure 5



LEGEND

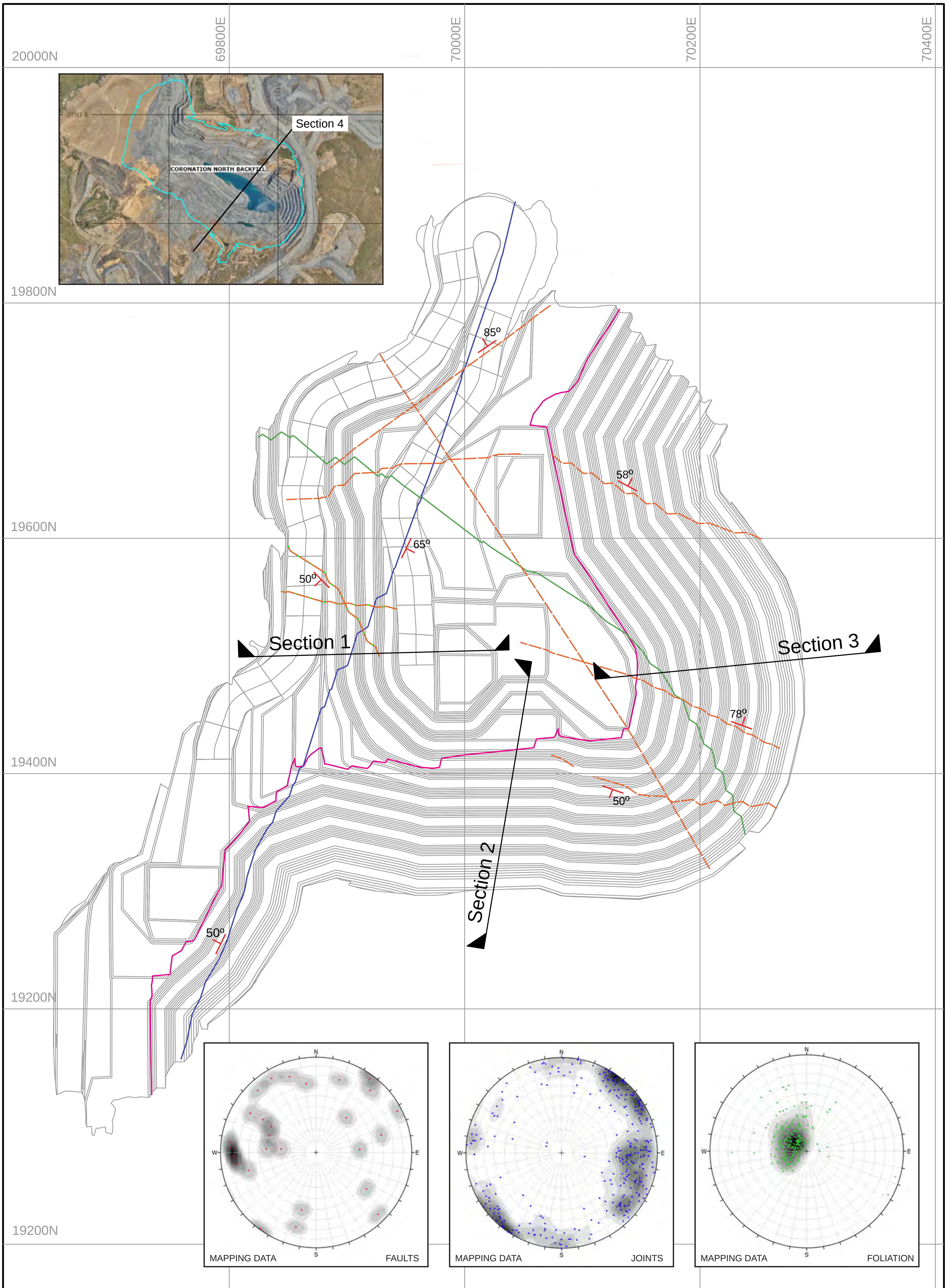
- Lines_IM_Stg9_MP4_Pit
- As-built topography
- Structural Domain Boundary
- 295º Slope Aspect

Scale (m): 0 50 100 150 200

PSM

OceanaGold
Macraes Phase 4 Consenting Application
Macraes Flat, East Otago
Innes Mills
STRUCTURAL DOMAINS

PSM071- 287R	Figure 6



LEGEND

C06 MP4 Pit
Hanging Wall Shear
Fault A
Fault B
Extrapolated Faults
Dip / Dip Direction
Stability Section Line

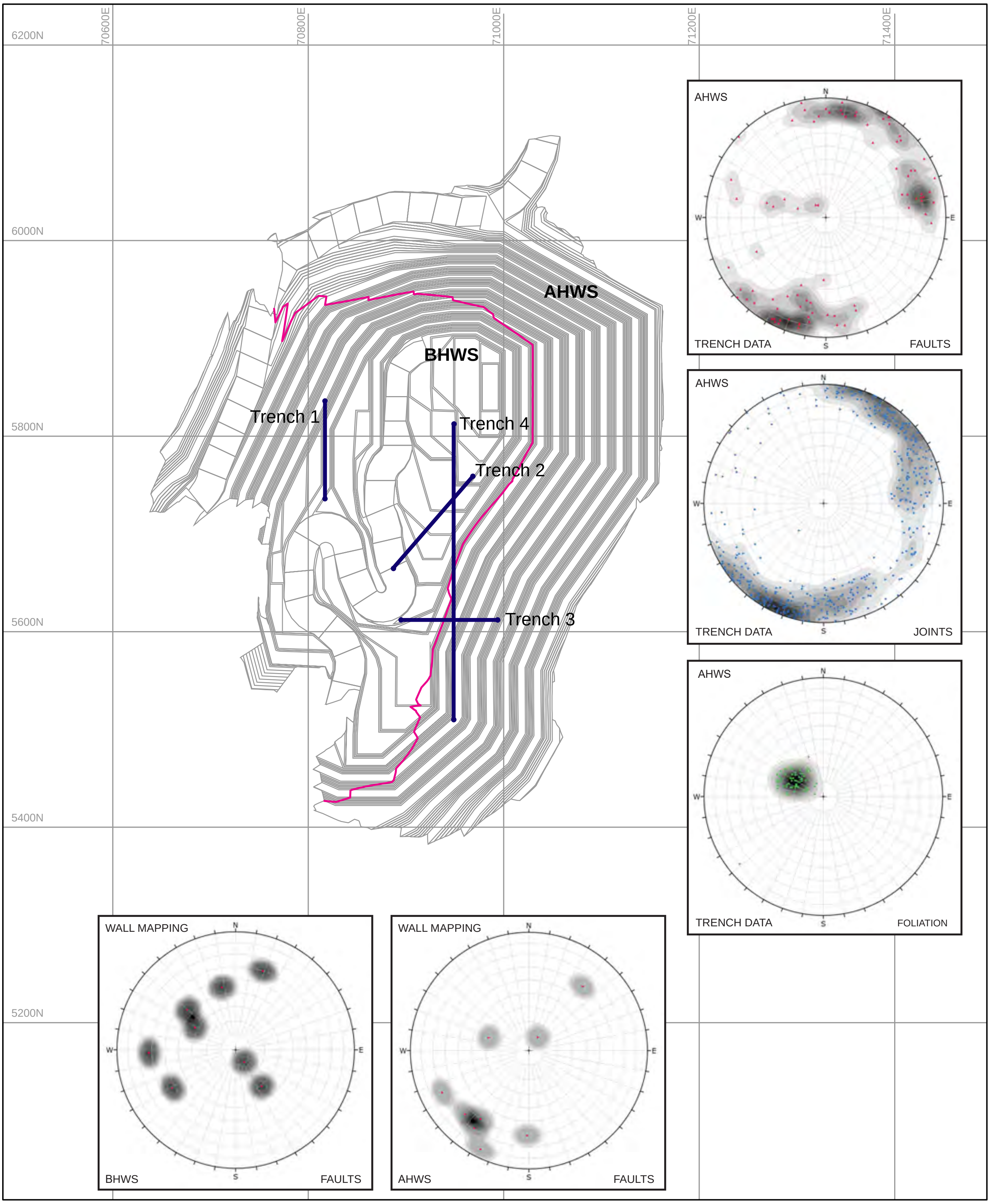
0 50 100 150 200

Scale (m)

PSM

OceanaGold
Macraes Phase 4 Consenting Application
Macraes Flat, East Otago
Coronation Stage 6
STRUCTURAL PLAN & STABLITY SECTION LINES

PSM71-287R	Figure 7



LEGEND

GB MP4 Pit

HWS intersect

2002 Trench Mapping

0 50 100 150 200

Scale (m)

PSM

OceanaGold
Macraes Phase 4 Consenting Application
Macraes Flat, East Otago

GOLDEN BAR STAGE 2
STRUCTURAL DATA

PSM71-287R | Figure 8

LEGEND

GB02 MP4 Pit

Waste Rock Stack

Geomorphological Surface Lineament

Potential Surface Lineament

0 50 100 150 200

Scale (m)

PSM

OceanaGold

Macraes Phase 4 Consenting Application

Macraes Flat, East Otago

GOLDEN BAR STAGE 2

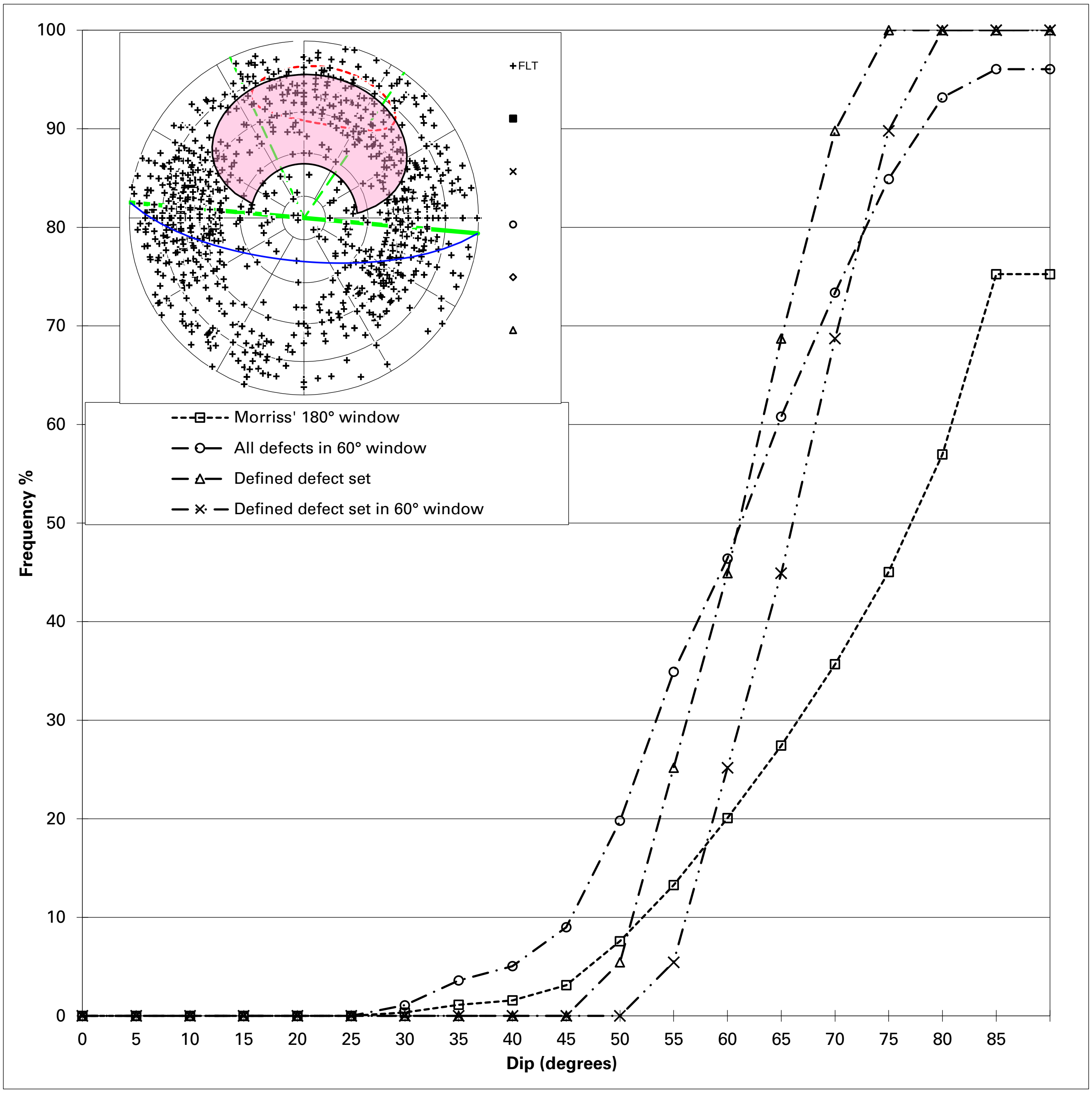
AERIAL PHOTOGRAPHY

PSM71-287R	Figure 9

Appendix A
Innes Mills Probability of Undercutting Plots

PLANAR SLIDING

Equal Area Polar Projection



PARAMETERS OF THE PIT WALL

Slope Direction	185
Kinematic Window ±	30

DEFECT SET

FT2	Mean	±
Dip	60	15
Dip Direction	190	30

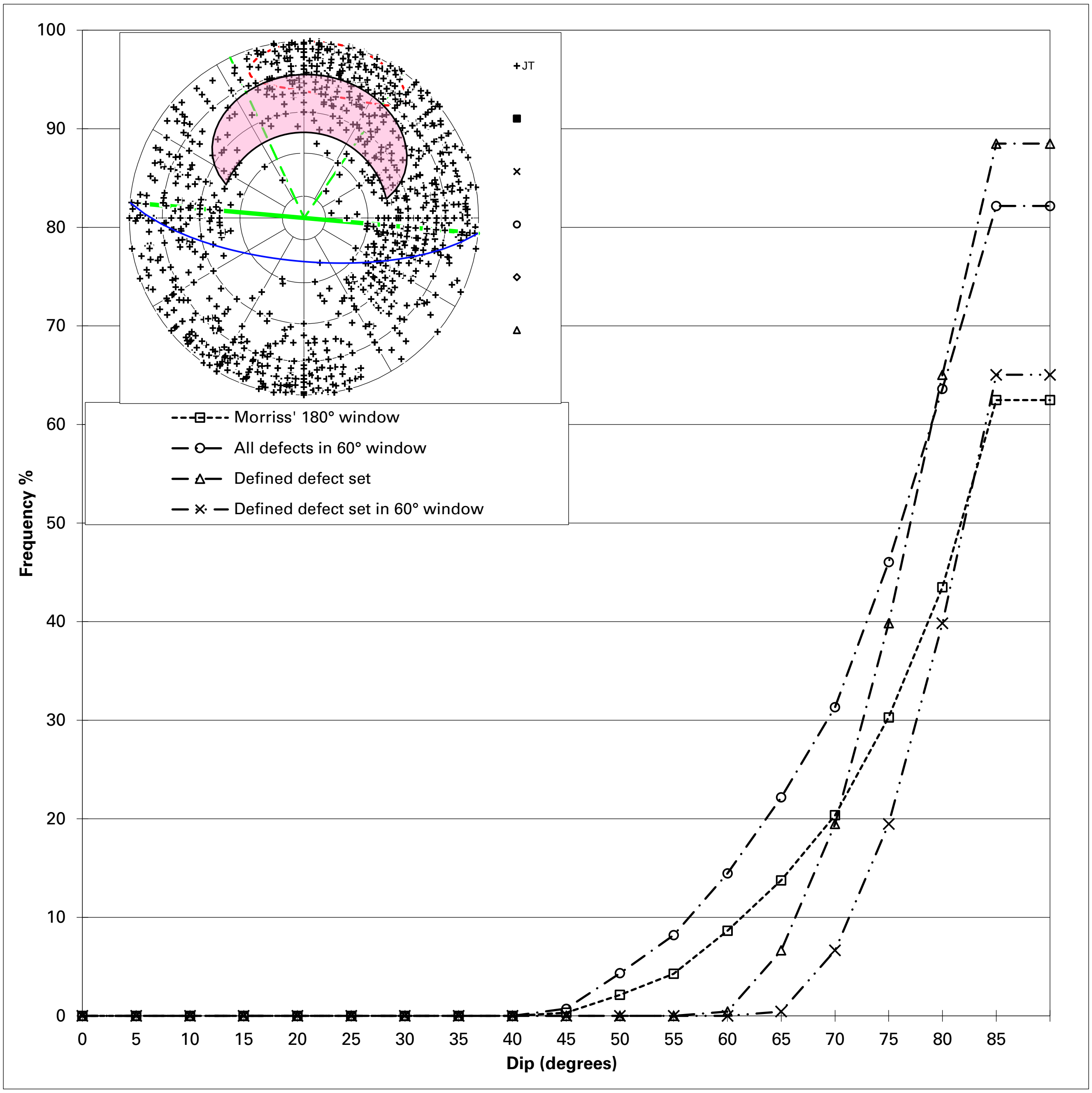
DEFECT SHEAR STRENGTHS

Cohesion	=	0 kPa
Friction Angle	=	25°

Defects in kinematic window	273
Defects in set FT2	147
Defect in set & window	147
Defects Dipping out of Slope	863

PLANAR SLIDING

Equal Area Polar Projection



PARAMETERS OF THE PIT WALL

Slope Direction	185
Kinematic Window ±	30

DEFECT SHEAR STRENGTHS

Cohesion	=	0 kPa
Friction Angle	=	40°

DEFECT SET

JN2	Mean	±
Dip	75	15
Dip Direction	190	30

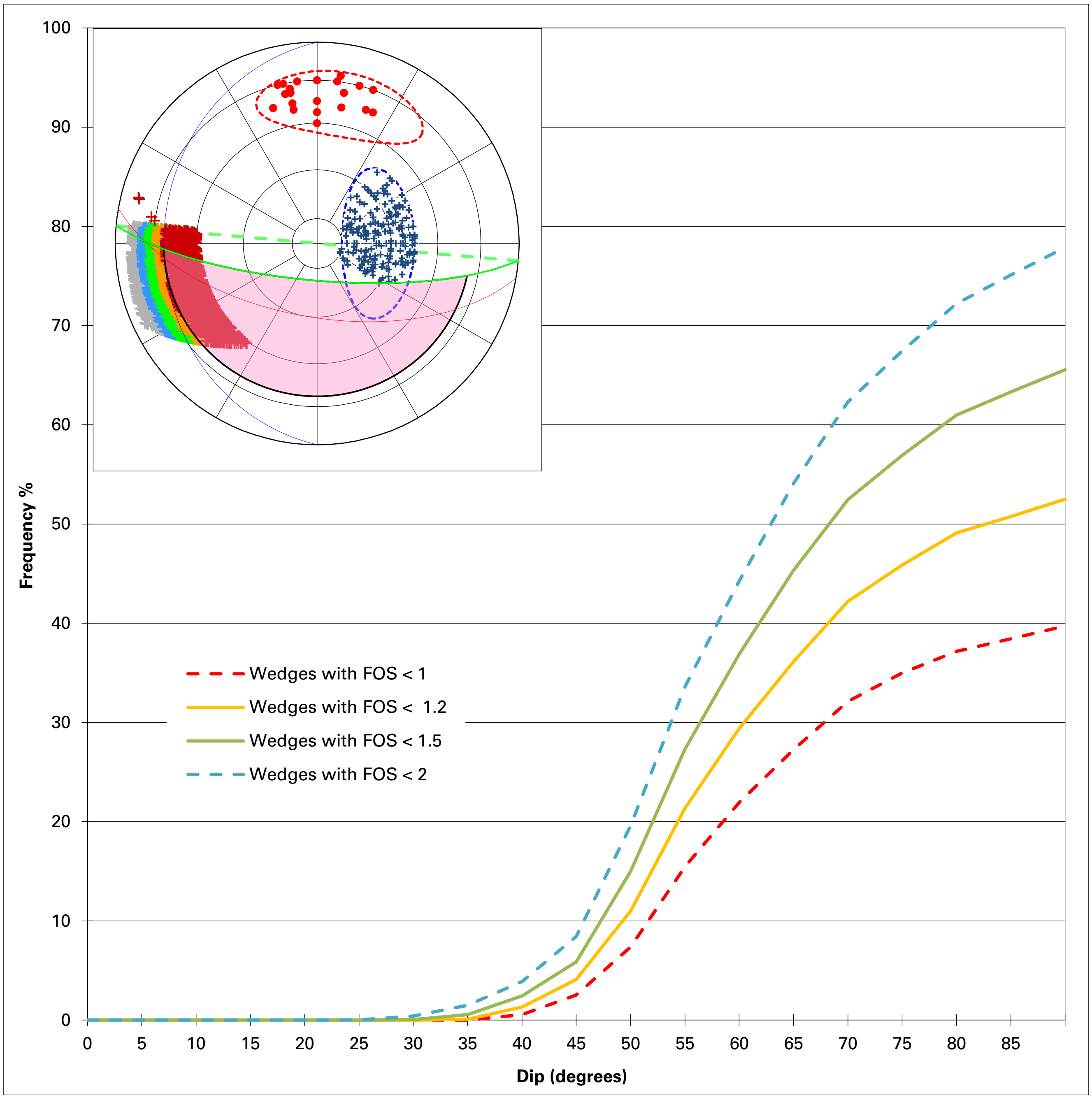
Defects in kinematic window	404
Defects in set JN2	224
Defect in set & window	224
Defects Dipping out of Slope	848

OceanaGold
MP4 LOM 2022

Innes Mills SD1
Faults and Shears

WEDGE FAILURE

Equal Area Polar Projection



PARAMETERS OF THE PIT WALL

Slope Direction 185

DEFECT SHEAR STRENGTHS

Cohesion = 0 kPa
Friction Angle = 25°

FIRST SET - RED

FT2	Mean	±
Dip	60	15
Dip Direction	190	30

Defects in set FT2 147

SECOND SET - BLUE

SH1	Mean	±
Dip	25	15
Dip Direction	270	30

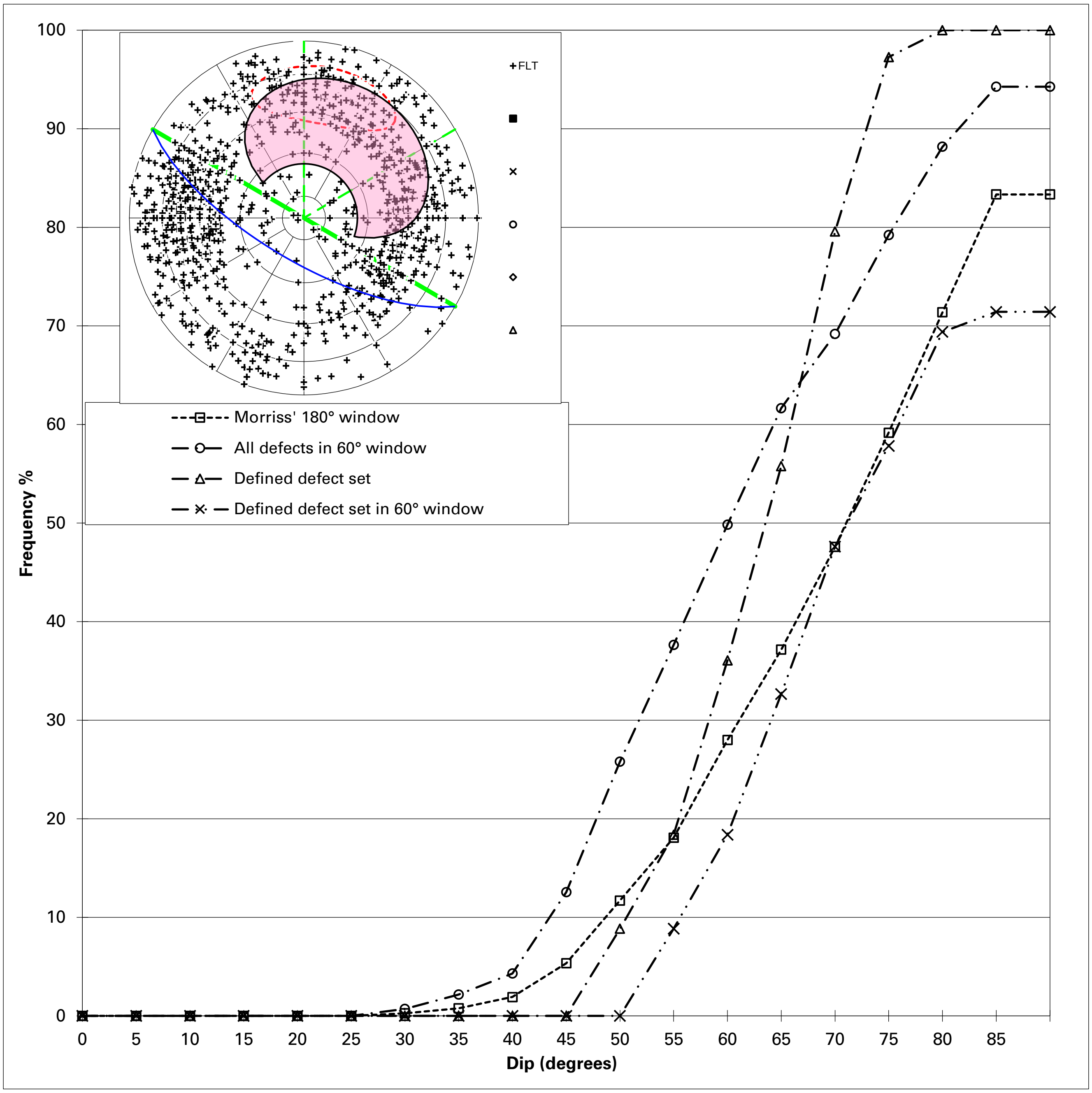
Defects in set SH1 314

Number of Unstable Wedges 18336
Number of Wedges Analysed 46158 From a possible Total Number of 46158

PSM

PLANAR SLIDING

Equal Area Polar Projection



PARAMETERS OF THE PIT WALL

Slope Direction	210
Kinematic Window ±	30

DEFECT SET

FT2	Mean	±
Dip	60	15
Dip Direction	190	30

DEFECT SHEAR STRENGTHS

Cohesion	=	0 kPa
Friction Angle	=	25°

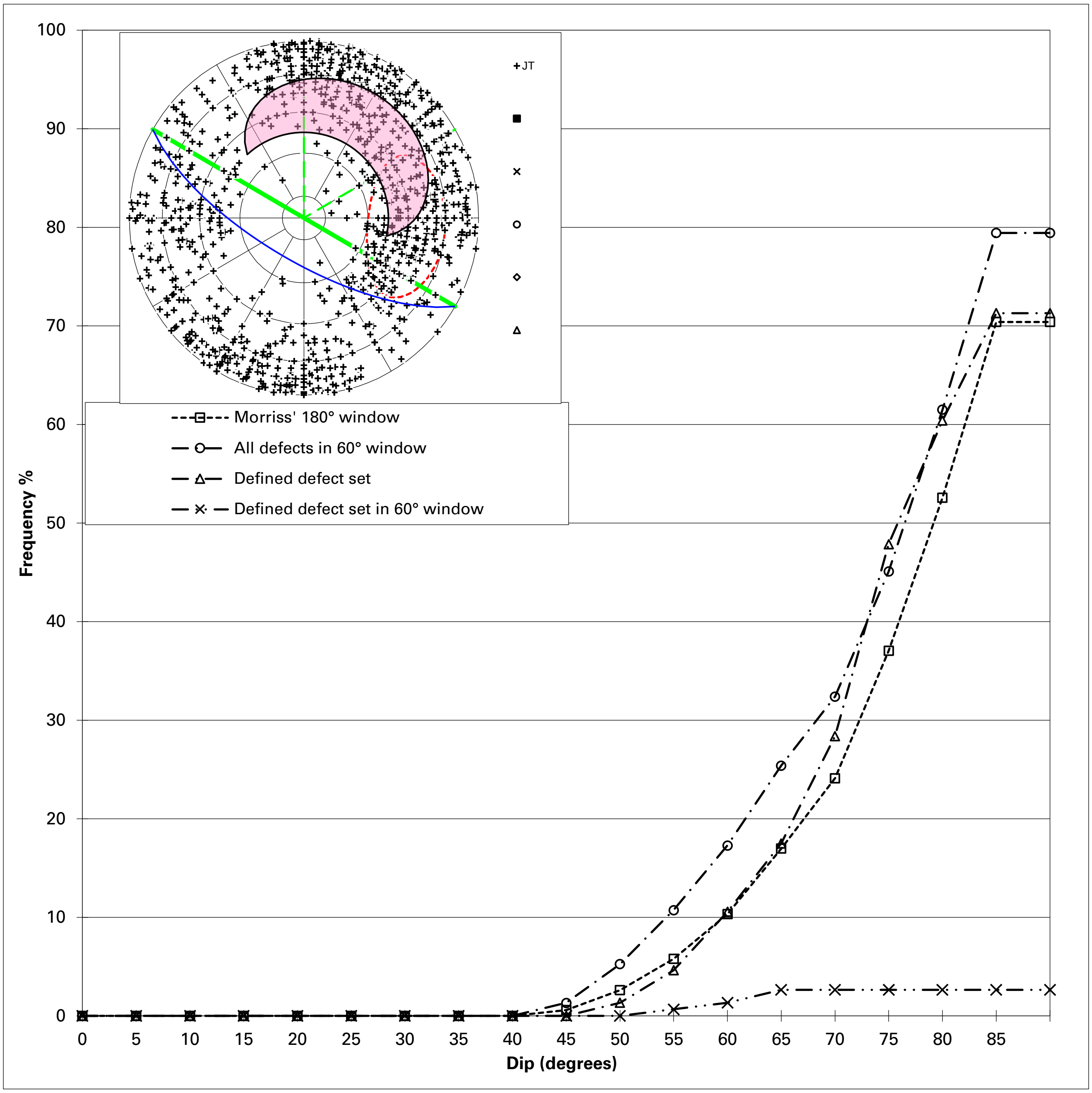
Defects in kinematic window	271
Defects in set FT2	147
Defect in set & window	105
Defects Dipping out of Slope	753

OceanaGold
MP4 LOM 2022

Innes Mills SD1
Joints

PLANAR SLIDING

Equal Area Polar Projection



PARAMETERS OF THE PIT WALL

Slope Direction	210
Kinematic Window ±	30

DEFECT SET

JN1	Mean	±
Dip	50	20
Dip Direction	275	30

DEFECT SHEAR STRENGTHS

Cohesion	=	0 kPa
Friction Angle	=	40°

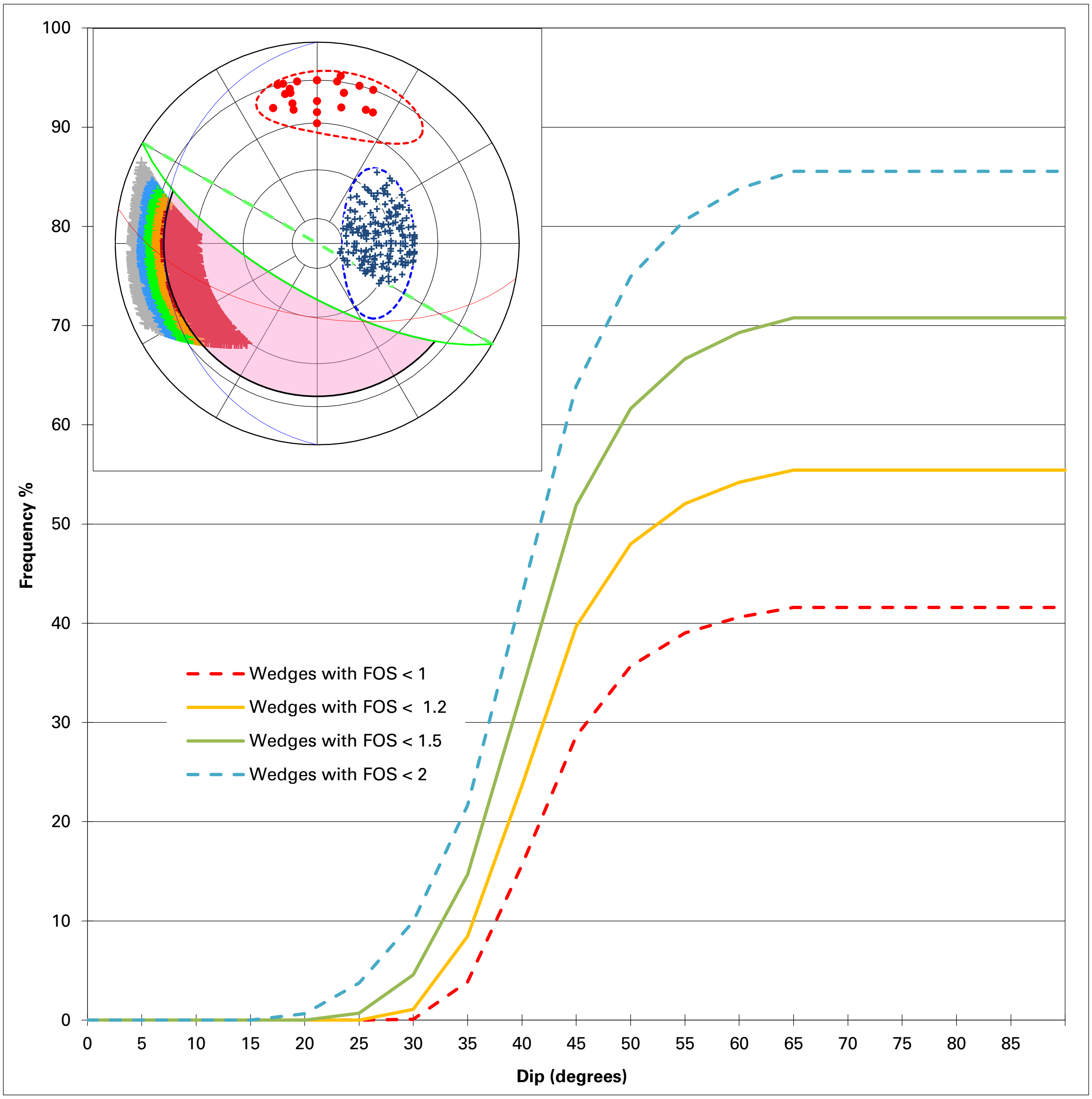
Defects in kinematic window	429
Defects in set JN1	232
Defect in set & window	8
Defects Dipping out of Slope	913

OceanaGold
MP4 LOM 2022

Innes Mills SD1
Faults & Shears

WEDGE FAILURE

Equal Area Polar Projection



PARAMETERS OF THE PIT WALL

Slope Direction 210

DEFECT SHEAR STRENGTHS

Cohesion = 0 kPa
Friction Angle = 25°

FIRST SET - RED

FT2	Mean	±
Dip	60	15
Dip Direction	190	30

Defects in set FT2 147

SECOND SET - BLUE

SH1	Mean	±
Dip	25	15
Dip Direction	270	30

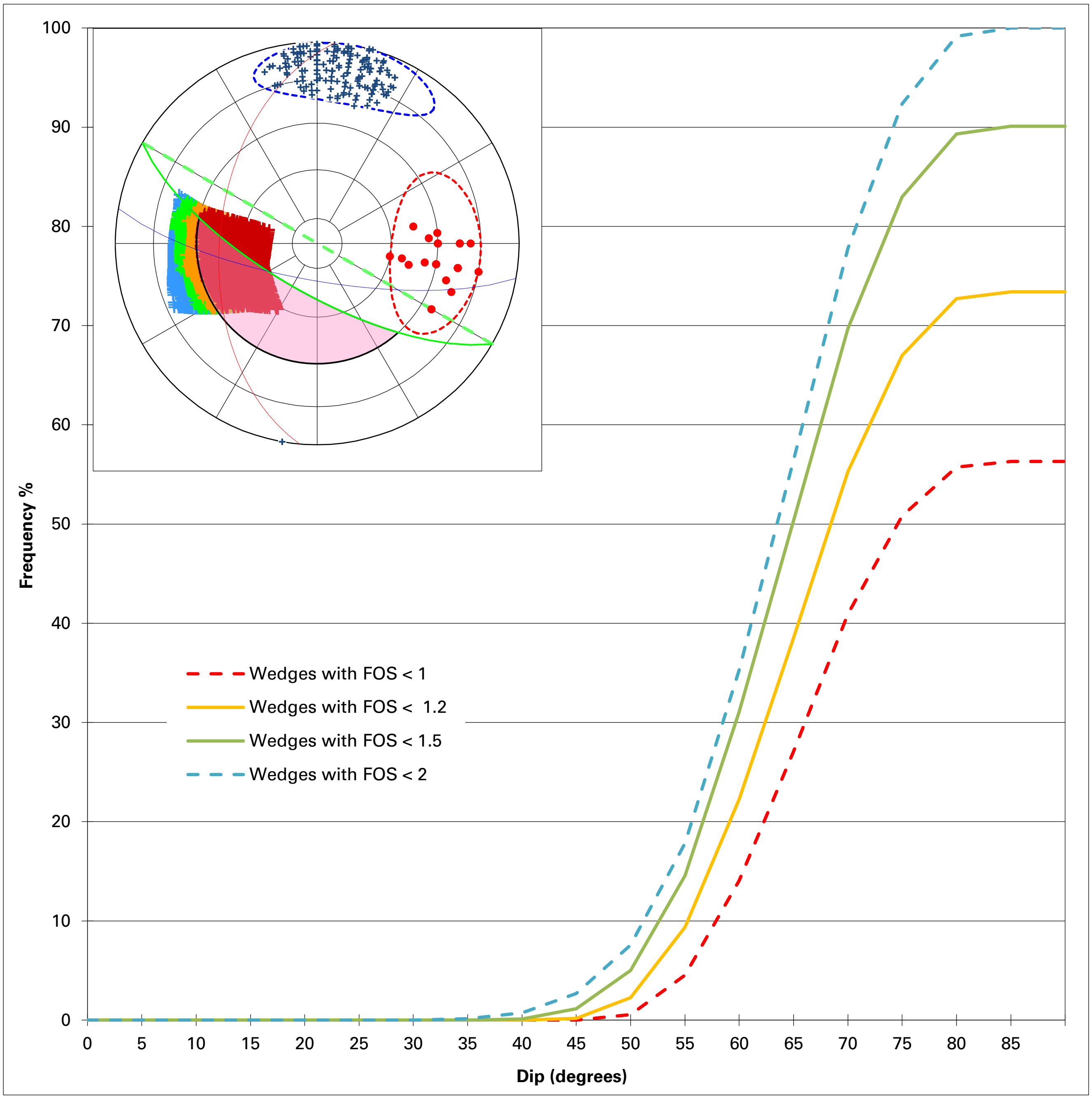
Defects in set SH1 314

Number of Unstable Wedges 19200
Number of Wedges Analysed 46158
From a possible Total Number of 46158

OceanaGold **Innes Mills SD1**
MP4 LOM 2022 Joints

WEDGE FAILURE

Equal Area Polar Projection



PARAMETERS OF THE PIT WALL

Slope Direction 210

DEFECT SHEAR STRENGTHS

Cohesion = 0 kPa
Friction Angle = 40°

FIRST SET - RED

JN1	Mean	±
Dip	50	20
Dip Direction	275	30

Defects in set JN1 303

SECOND SET - BLUE

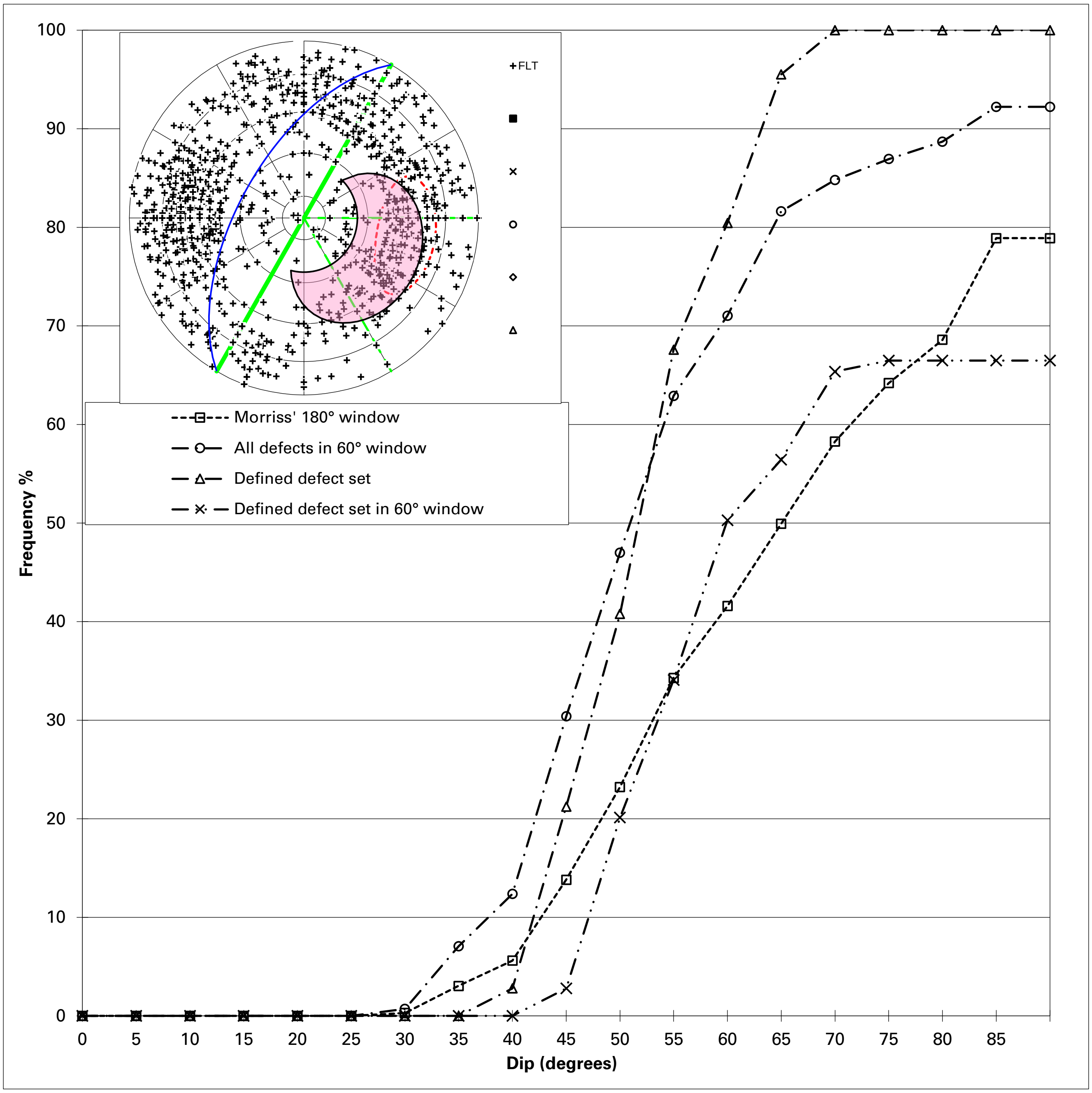
JN2	Mean	±
Dip	75	15
Dip Direction	190	30

Defects in set JN2 226

Number of Unstable Wedges 19348
Number of Wedges Analysed 34352 From a possible Total Number of 68478

PLANAR SLIDING

Equal Area Polar Projection



PARAMETERS OF THE PIT WALL

Slope Direction	300
Kinematic Window ±	30

DEFECT SHEAR STRENGTHS

Cohesion	=	0 kPa
Friction Angle	=	25°

DEFECT SET

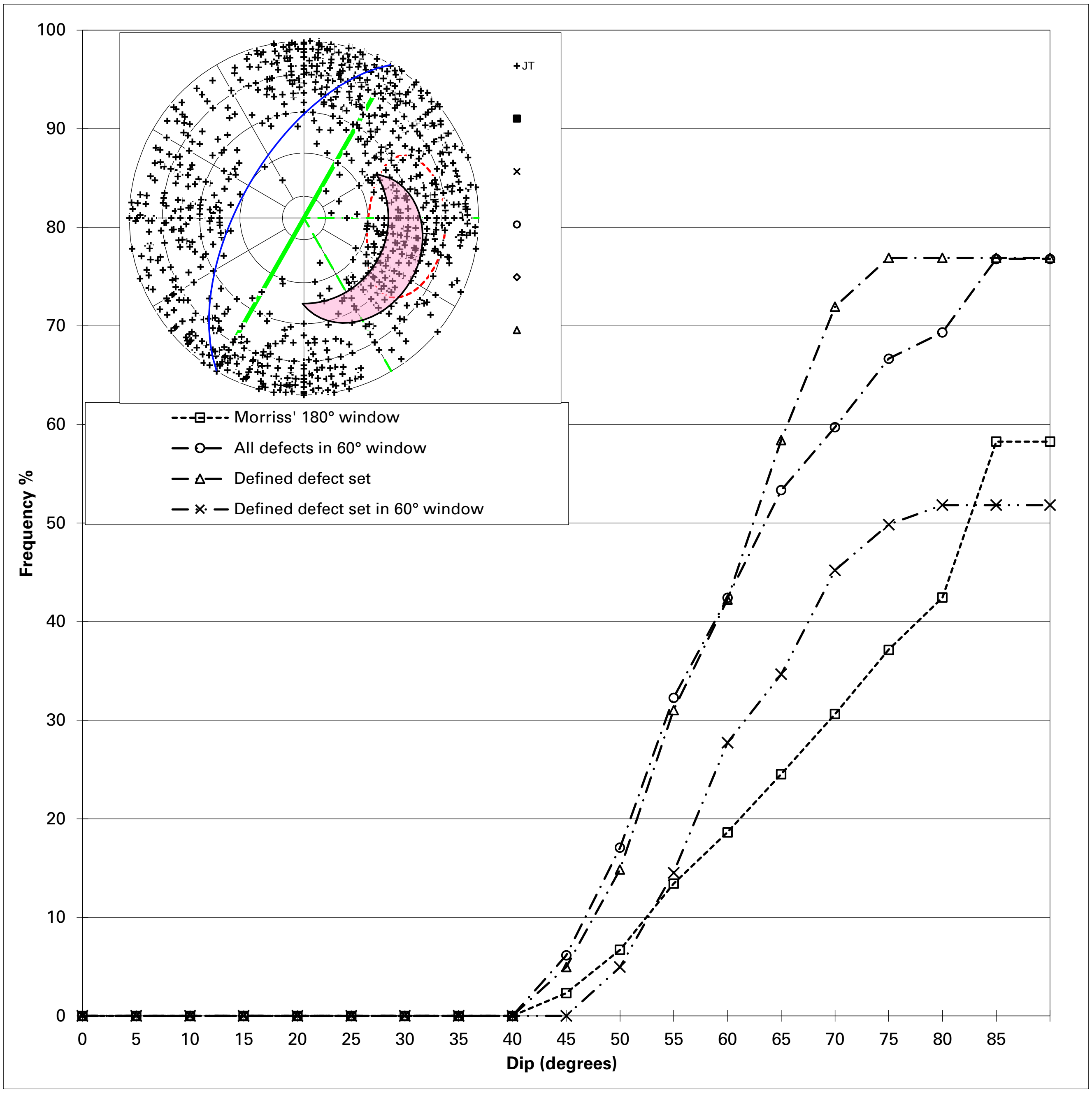
FT1	Mean	±
Dip	50	15
Dip Direction	280	25

Defects in kinematic window	267
Defects in set FT1	179
Defect in set & window	119
Defects Dipping out of Slope	629

OceanaGold | **Innes Mills SD1**
MP4 LOM 2022 | Joints

PLANAR SLIDING

Equal Area Polar Projection



PARAMETERS OF THE PIT WALL

Slope Direction	300
Kinematic Window ±	30

DEFECT SET

JN1	Mean	±
Dip	50	20
Dip Direction	275	30

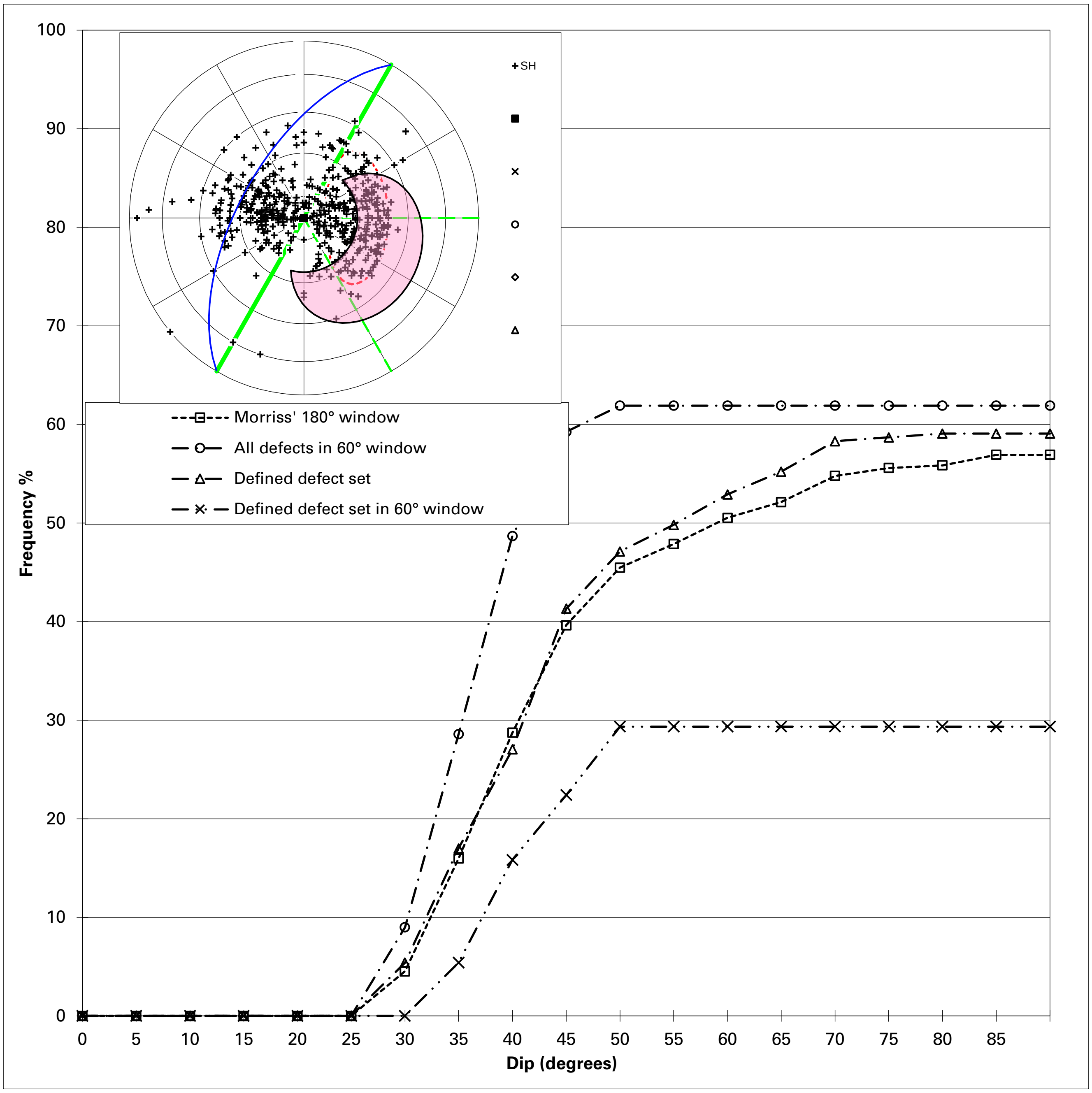
DEFECT SHEAR STRENGTHS

Cohesion	=	0 kPa
Friction Angle	=	40°

Defects in kinematic window	297
Defects in set JN1	233
Defect in set & window	157
Defects Dipping out of Slope	864

PLANAR SLIDING

Equal Area Polar Projection



PARAMETERS OF THE PIT WALL

Slope Direction	300
Kinematic Window ±	30

DEFECT SHEAR STRENGTHS

Cohesion	=	0 kPa
Friction Angle	=	25°

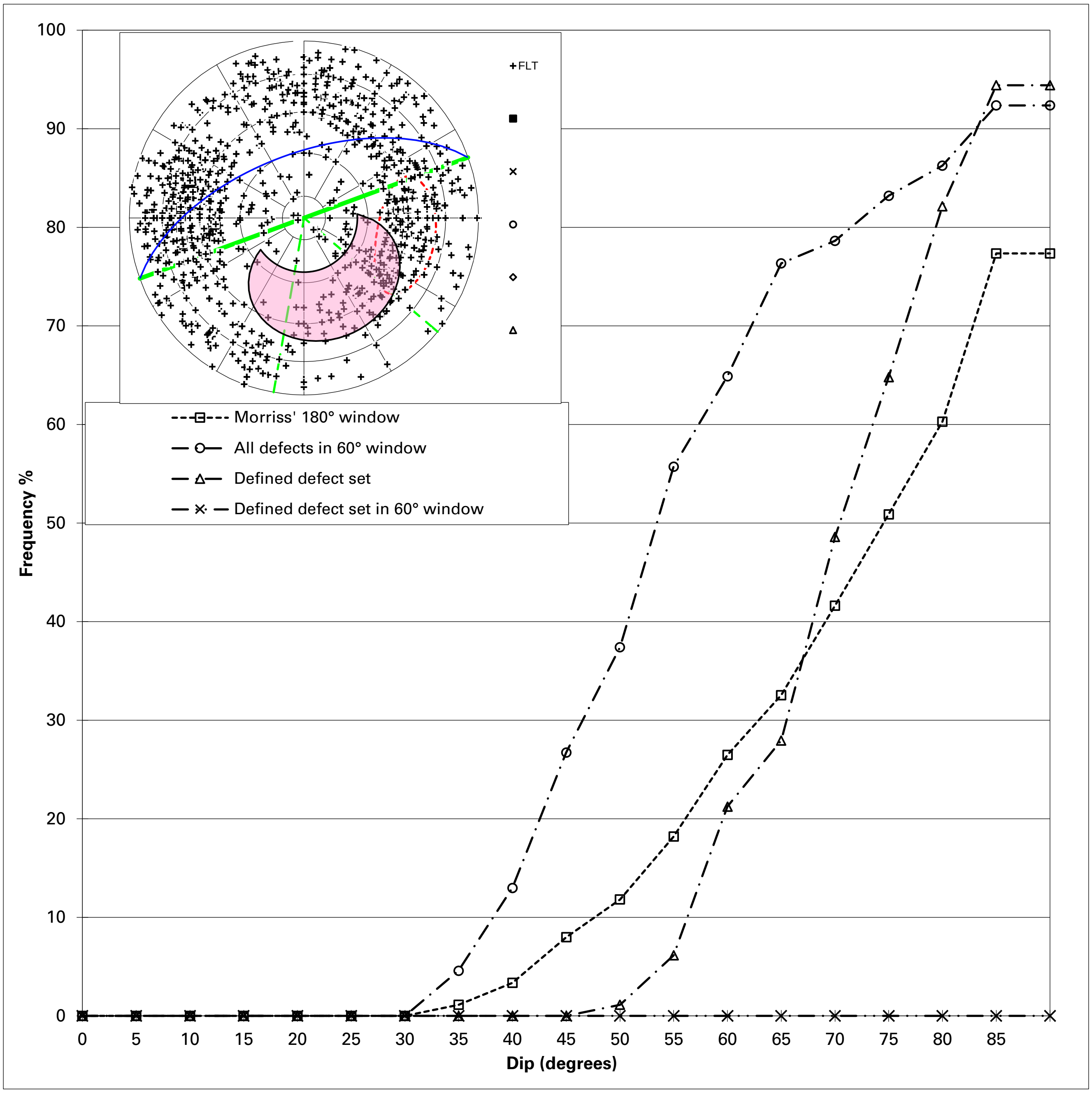
DEFECT SET

SH1	Mean	±
Dip	25	15
Dip Direction	270	30

Defects in kinematic window	117
Defects in set SH1	153
Defect in set & window	76
Defects Dipping out of Slope	219

PLANAR SLIDING

Equal Area Polar Projection



PARAMETERS OF THE PIT WALL

Slope Direction	340
Kinematic Window ±	30

DEFECT SET

FT1	Mean	±
Dip	50	15
Dip Direction	280	25

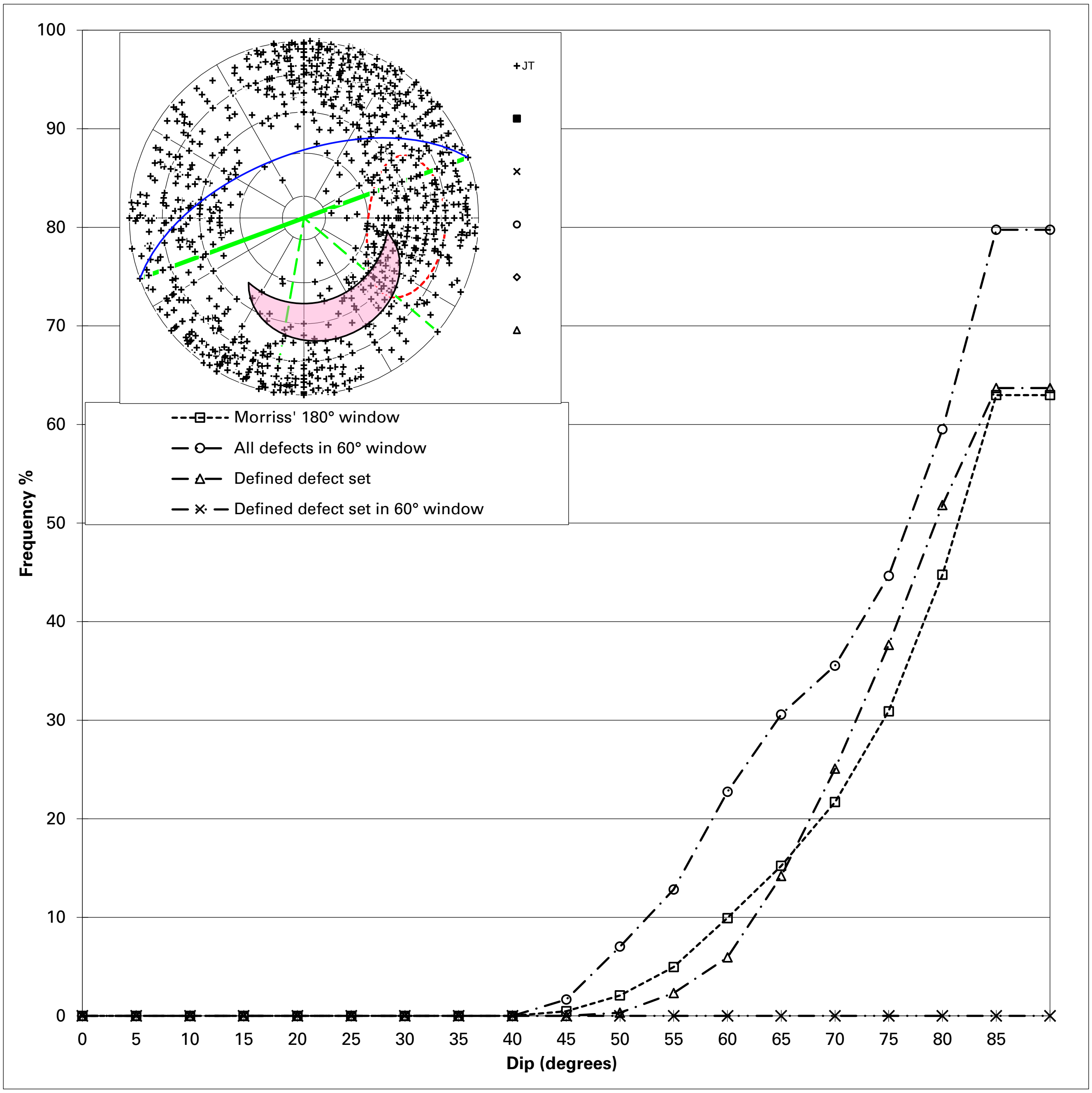
DEFECT SHEAR STRENGTHS

Cohesion	=	0 kPa
Friction Angle	=	25°

Defects in kinematic window	122
Defects in set FT1	179
Defect in set & window	0
Defects Dipping out of Slope	599

PLANAR SLIDING

Equal Area Polar Projection



PARAMETERS OF THE PIT WALL

Slope Direction	340
Kinematic Window ±	30

DEFECT SET

JN1	Mean	±
Dip	50	20
Dip Direction	275	30

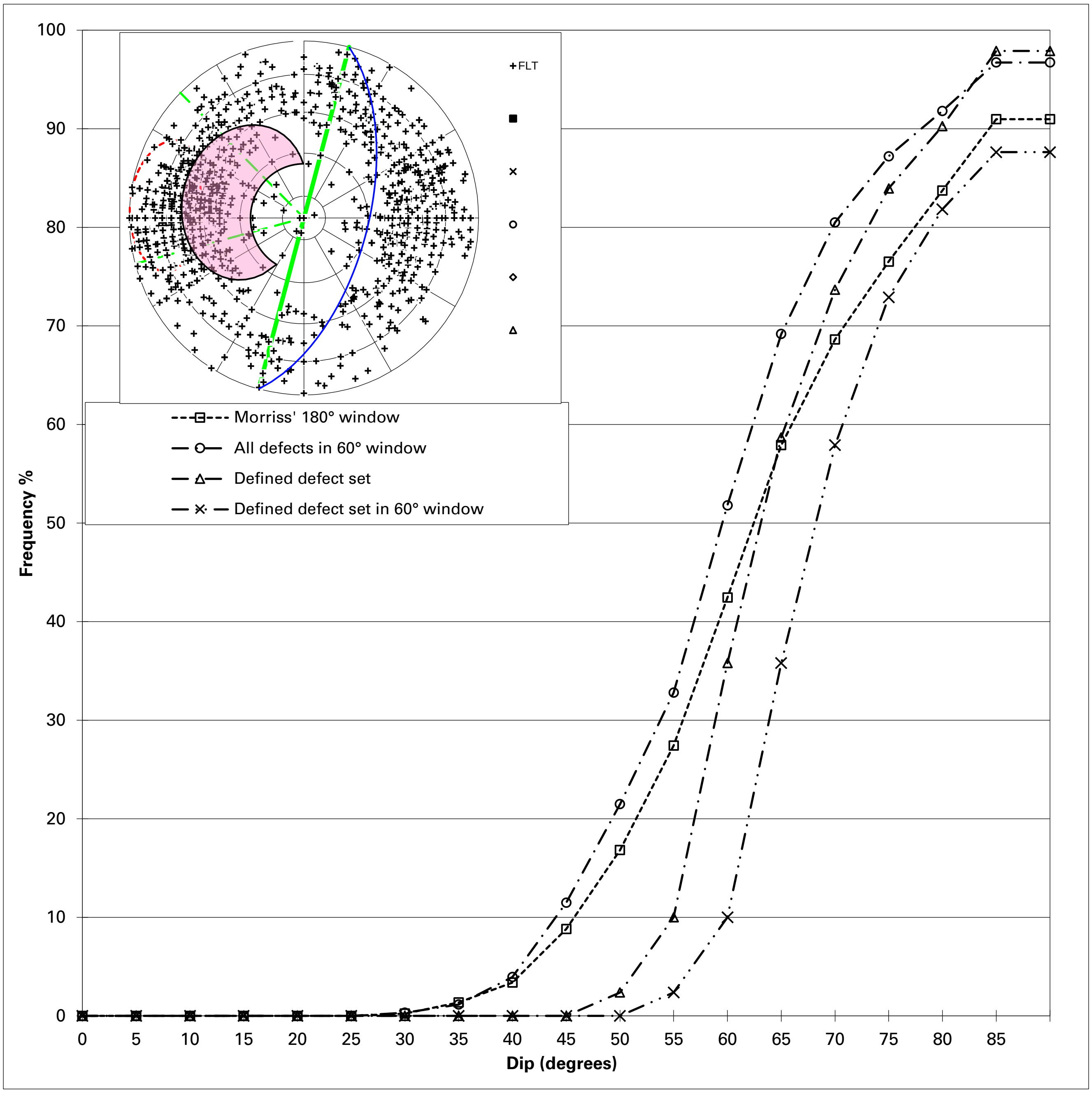
DEFECT SHEAR STRENGTHS

Cohesion	=	0 kPa
Friction Angle	=	40°

Defects in kinematic window	224
Defects in set JN1	221
Defect in set & window	0
Defects Dipping out of Slope	755

PLANAR SLIDING

Equal Area Polar Projection



PARAMETERS OF THE PIT WALL

Slope Direction	105
Kinematic Window ±	30

DEFECT SET

FT3	Mean	±
Dip	70	20
Dip Direction	95	25

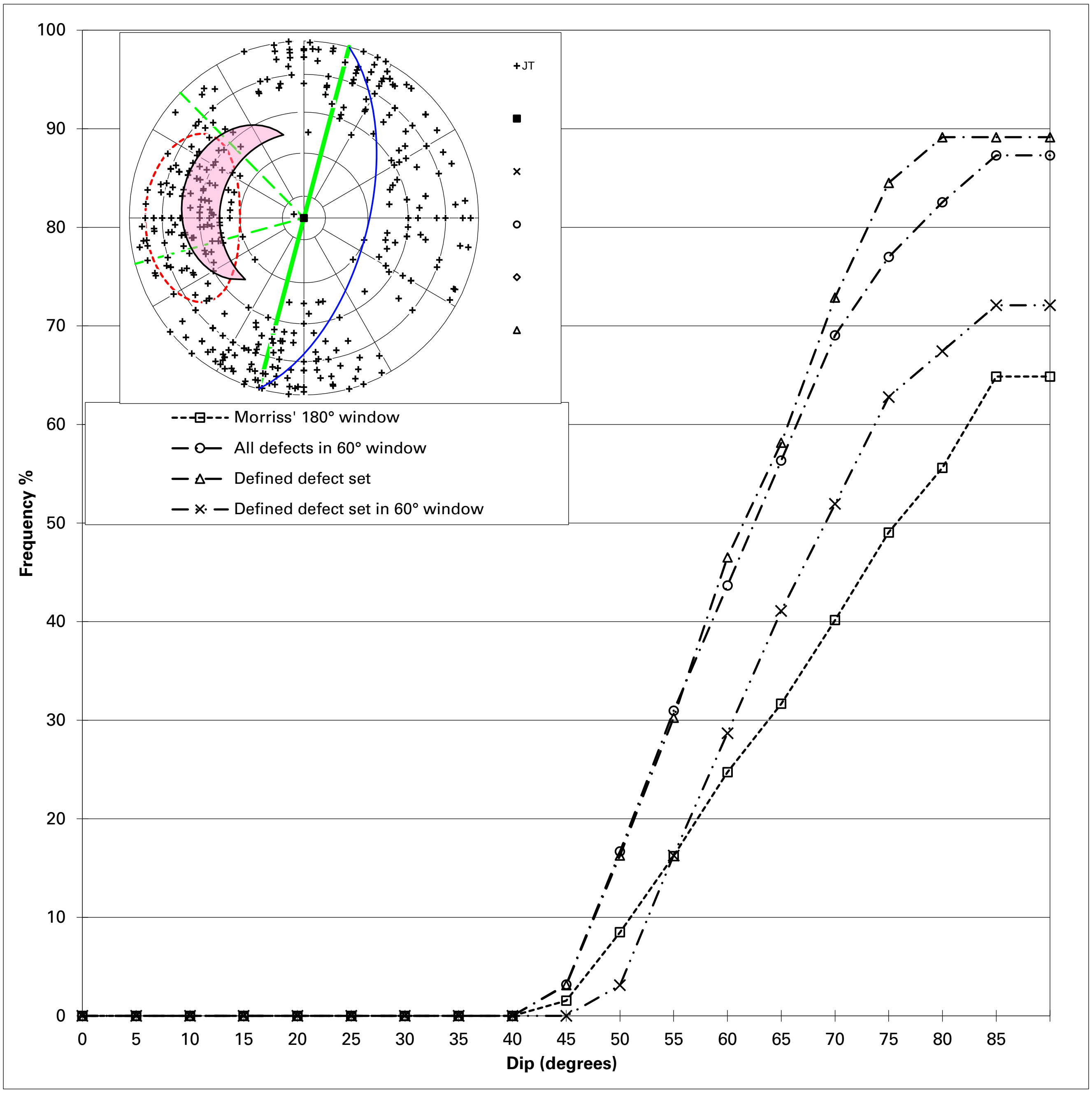
DEFECT SHEAR STRENGTHS

Cohesion	=	0 kPa
Friction Angle	=	25°

Defects in kinematic window	601
Defects in set FT3	380
Defect in set & window	368
Defects Dipping out of Slope	872

PLANAR SLIDING

Equal Area Polar Projection



PARAMETERS OF THE PIT WALL

Slope Direction	105
Kinematic Window ±	30

DEFECT SHEAR STRENGTHS

Cohesion	=	0 kPa
Friction Angle	=	40°

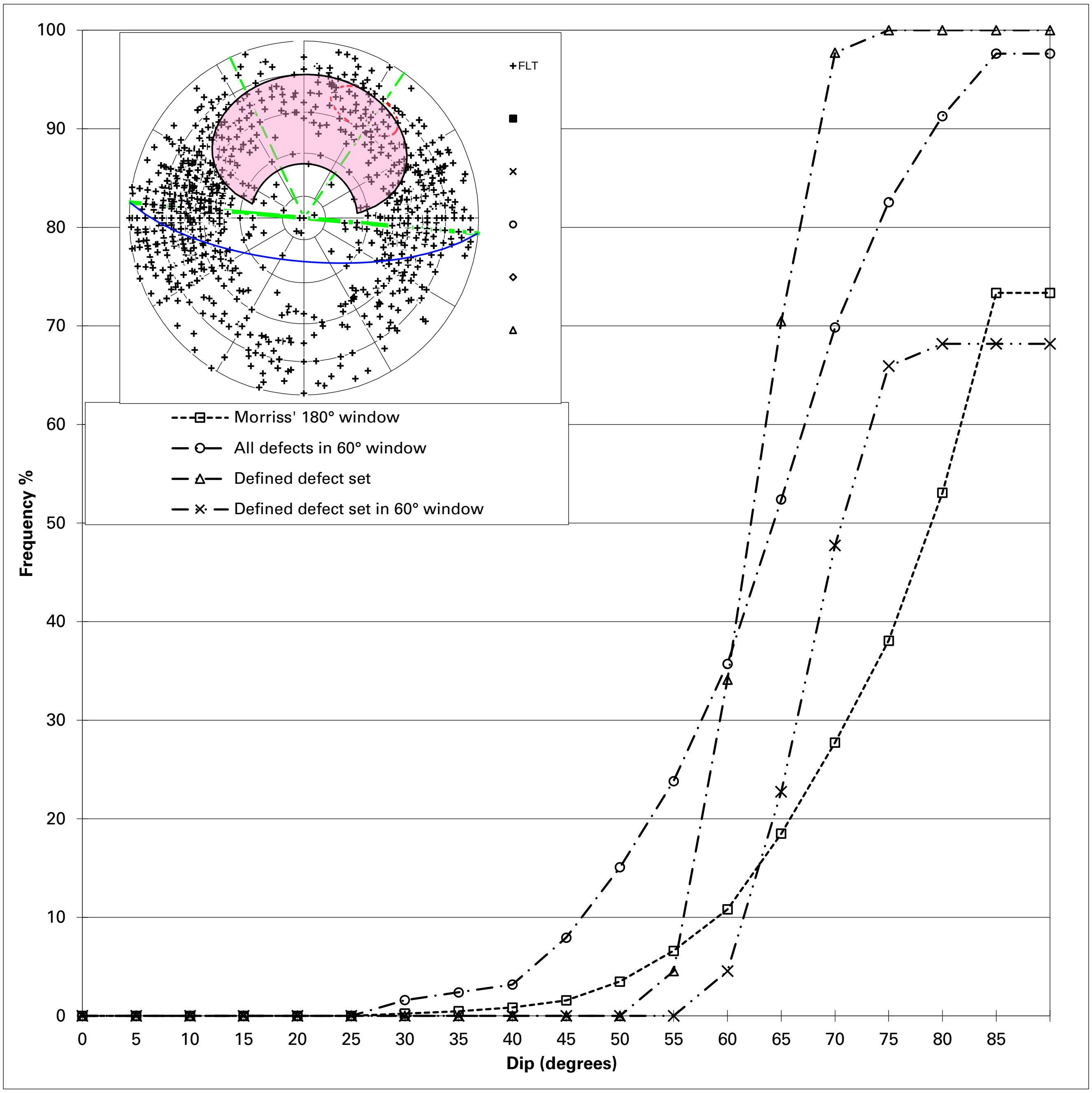
DEFECT SET

JN3	Mean	±
Dip	55	25
Dip Direction	90	35

Defects in kinematic window	111
Defects in set JN3	115
Defect in set & window	93
Defects Dipping out of Slope	239

PLANAR SLIDING

Equal Area Polar Projection



PARAMETERS OF THE PIT WALL

Slope Direction	185
Kinematic Window ±	30

DEFECT SET

FT7	Mean	±
Dip	60	10
Dip Direction	210	15

DEFECT SHEAR STRENGTHS

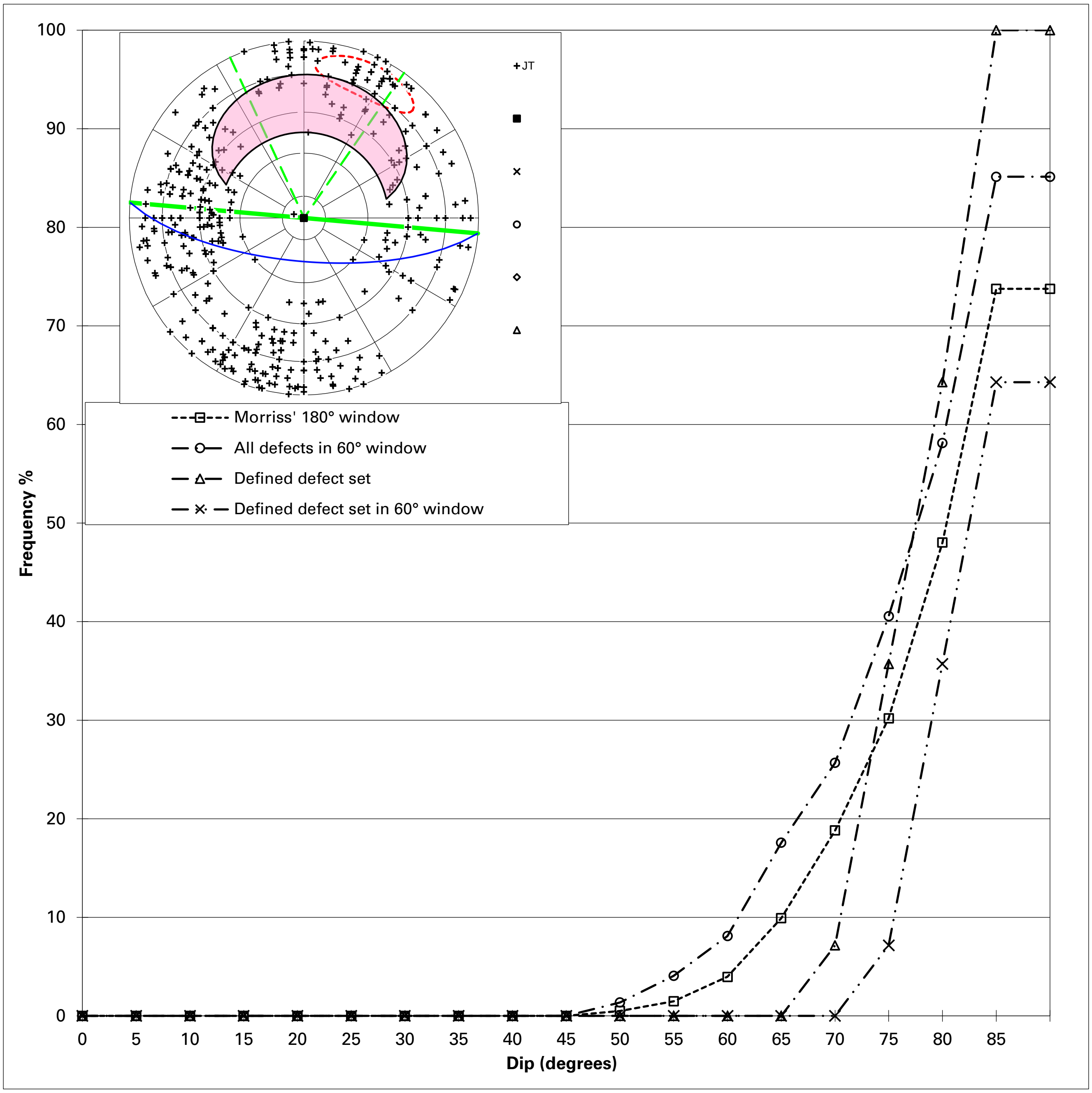
Cohesion	=	0 kPa
Friction Angle	=	25°

Defects in kinematic window	125
Defects in set FT7	44
Defect in set & window	30
Defects Dipping out of Slope	822

OceanaGold | **Innes Mills SD2**
MP4 LOM 2022 | Joints

PLANAR SLIDING

Equal Area Polar Projection



PARAMETERS OF THE PIT WALL

Slope Direction	185
Kinematic Window ±	30

DEFECT SHEAR STRENGTHS

Cohesion	=	0 kPa
Friction Angle	=	40°

DEFECT SET

JN6	Mean	±
Dip	75	10
Dip Direction	205	20

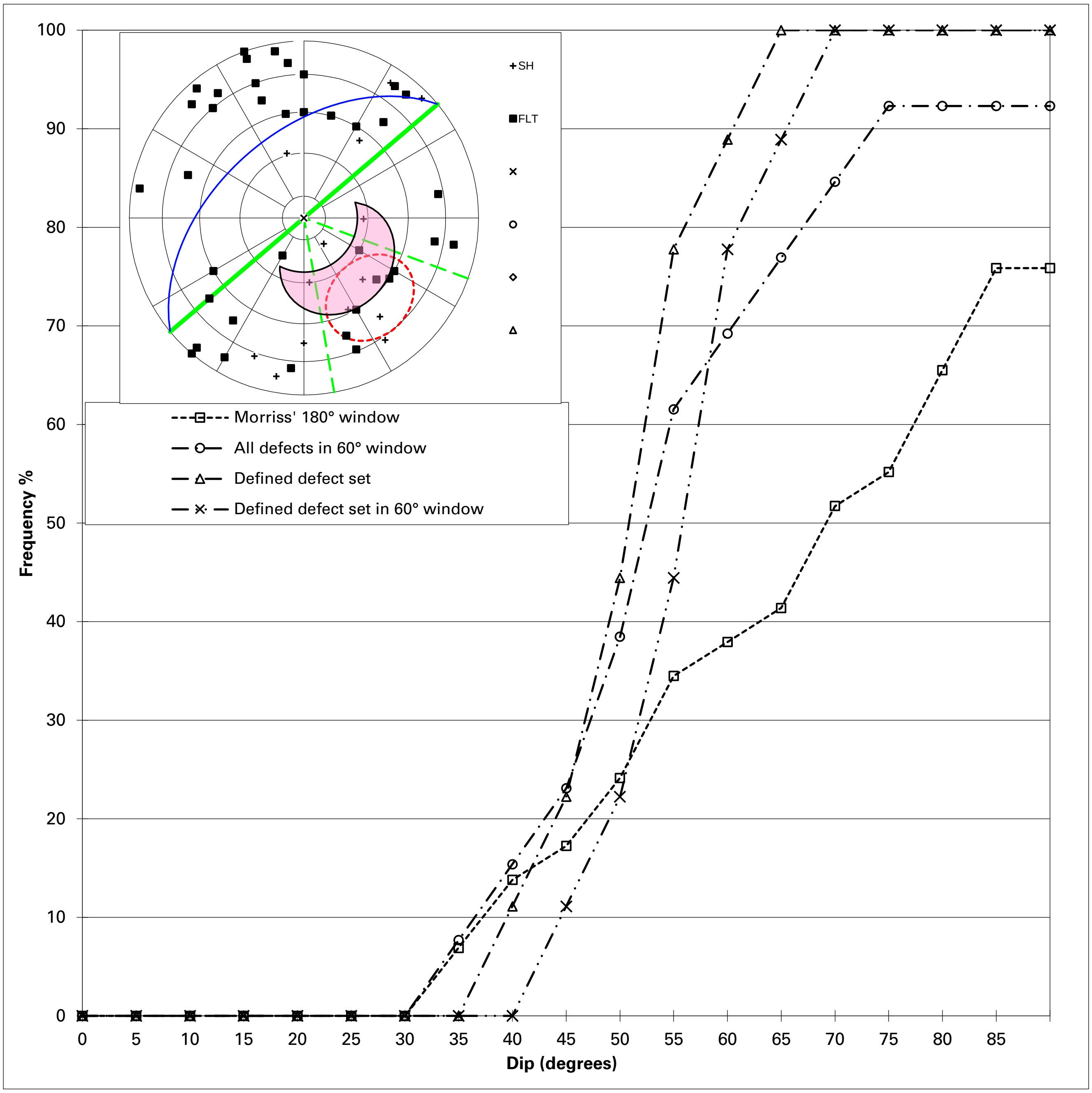
Defects in kinematic window	73
Defects in set JN6	28
Defect in set & window	28
Defects Dipping out of Slope	194

OceanaGold
MP4 LOM 2022

Innes Mills SD4
Faults & Shears

PLANAR SLIDING

Equal Area Polar Projection



PARAMETERS OF THE PIT WALL

Slope Direction	320
Kinematic Window ±	30

DEFECT SET

SH3	Mean	±
Dip	50	20
Dip Direction	320	20

DEFECT SHEAR STRENGTHS

Cohesion	=	0 kPa
Friction Angle	=	25°

Defects in kinematic window	12
Defects in set SH3	9
Defect in set & window	9
Defects Dipping out of Slope	27

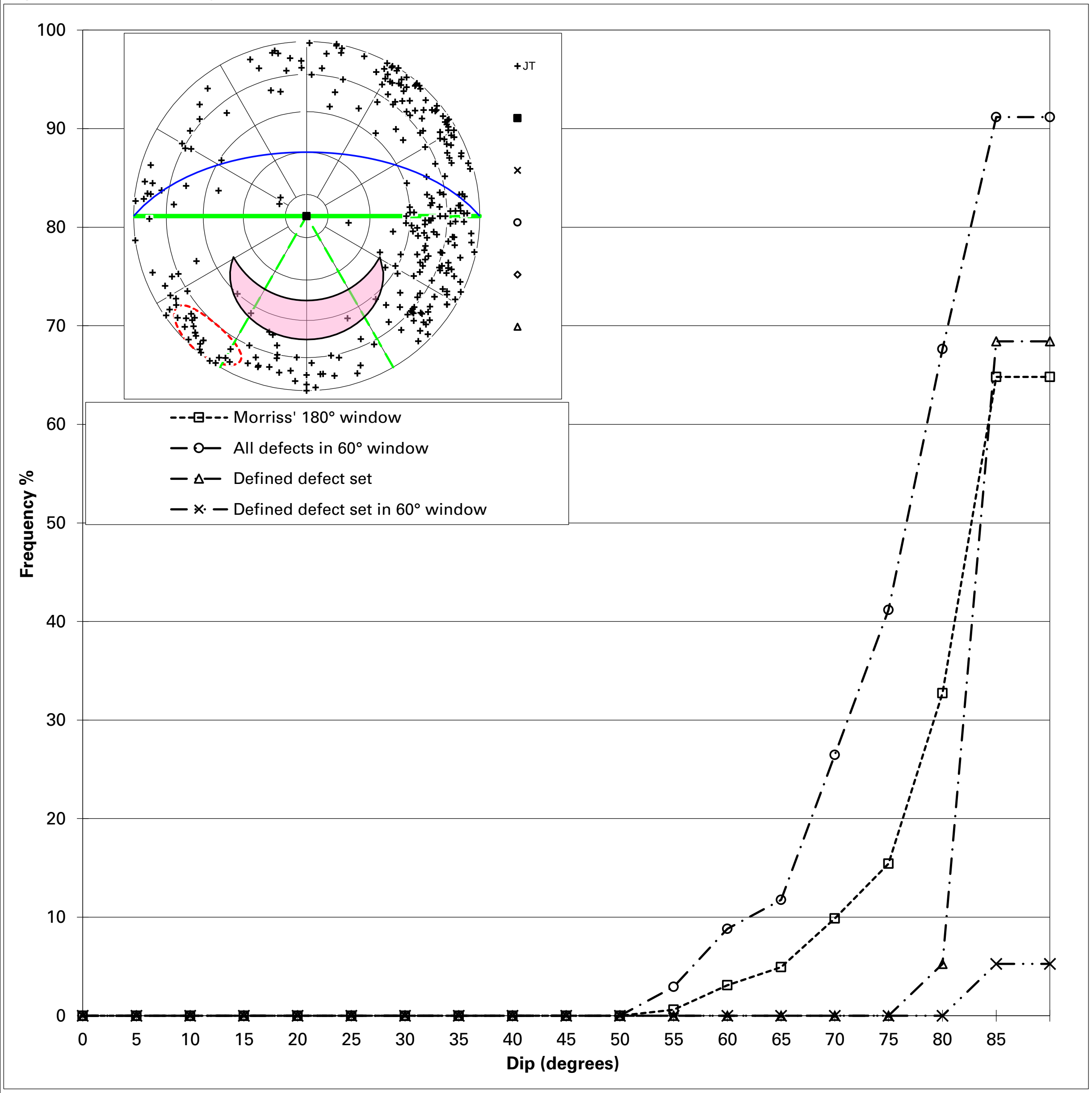
Appendix B
Coronation Stage 6 Probability of Undercutting Plots

OceanaGold
MP4 LOM 2022

CO4 mapping
Joints

PLANAR SLIDING

Equal Area Polar Projection



PARAMETERS OF THE PIT WALL

Slope Direction	0
Kinematic Window ±	30

DEFECT SHEAR STRENGTHS

Cohesion	=	0 kPa
Friction Angle	=	40°

DEFECT SET

JT 1	Mean	±
Dip	80	10
Dip Direction	40	15

Defects in kinematic window	34
Defects in set JT 1	19
Defect in set & window	3
Defects Dipping out of Slope	160

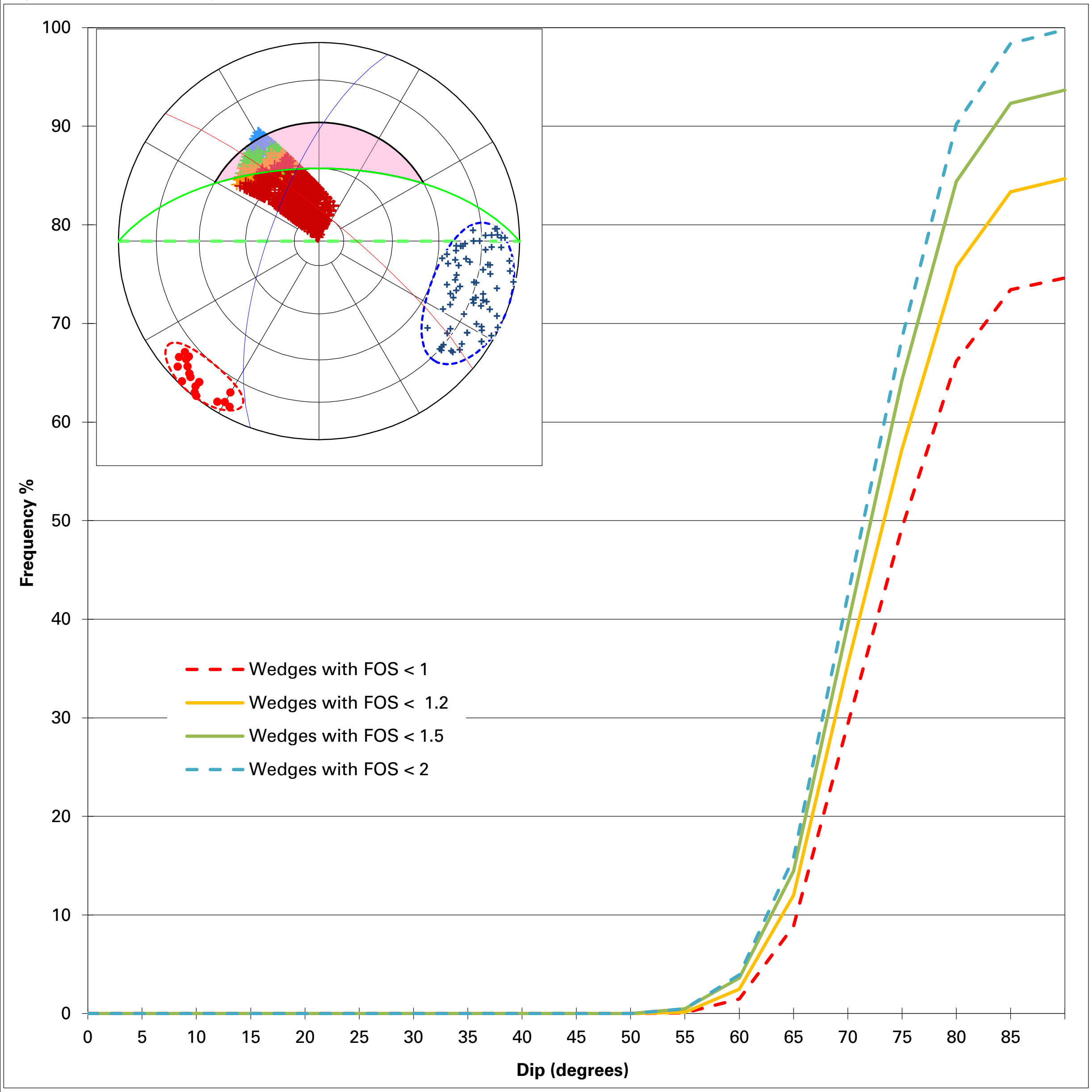
PSM

OceanaGold
MP4 LOM 2022

CO4 mapping
Joints

WEDGE FAILURE

Equal Area Polar Projection



PARAMETERS OF THE PIT WALL

Slope Direction 0

DEFECT SHEAR STRENGTHS

Cohesion = 0 kPa
Friction Angle = 40°

FIRST SET - RED

JT 1	Mean	±
Dip	80	10
Dip Direction	40	15

Defects in set JT 1 19

SECOND SET - BLUE

JT 3	Mean	±
Dip	70	20
Dip Direction	290	25

Defects in set JT 3 79

Number of Unstable Wedges 1121
Number of Wedges Analysed 1501
From a possible Total Number of 1501

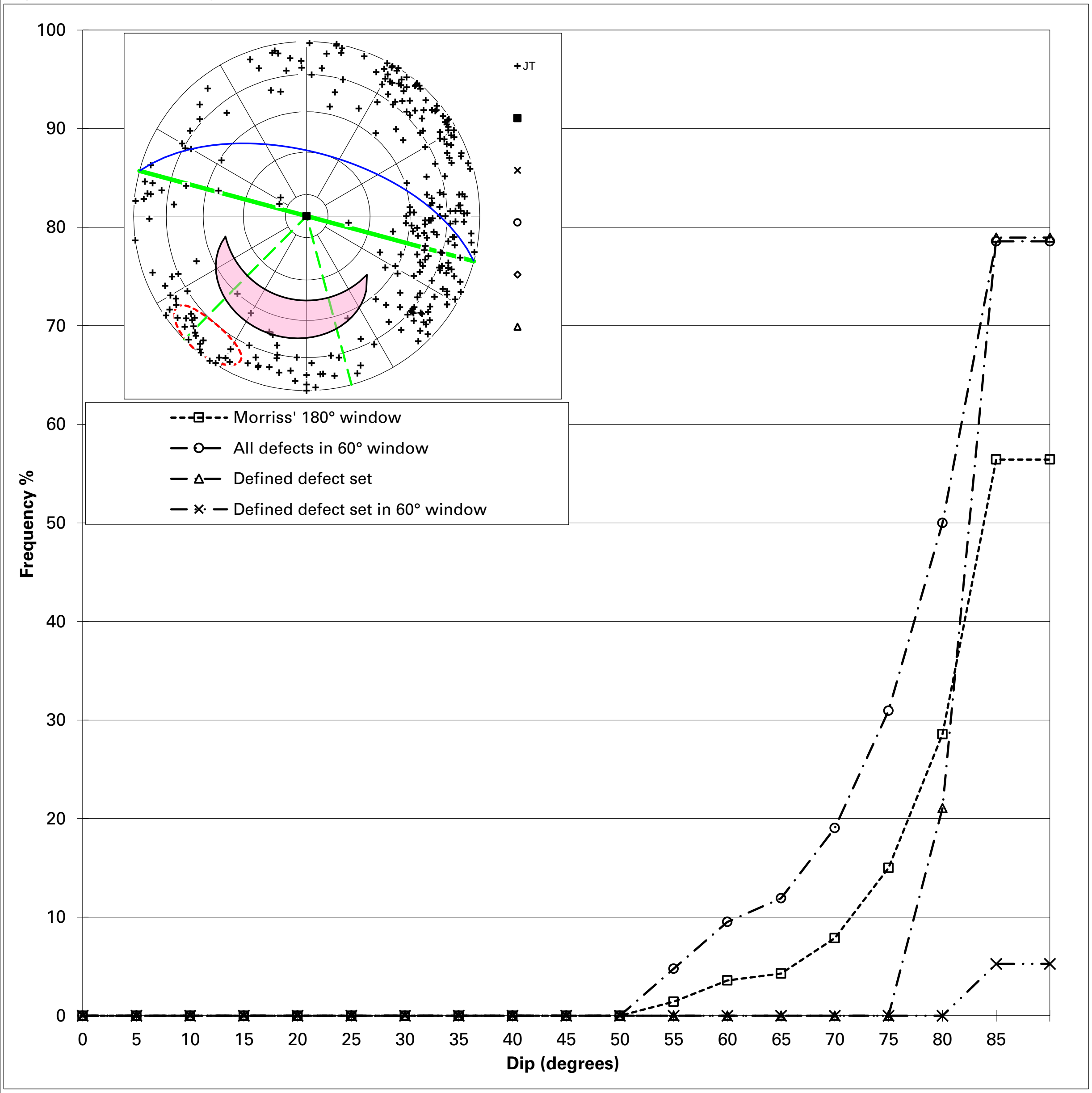
PSM

OceanaGold
MP4 LOM 2022

CO4 mapping
Joints

PLANAR SLIDING

Equal Area Polar Projection



PARAMETERS OF THE PIT WALL

Slope Direction	15
Kinematic Window ±	30

DEFECT SHEAR STRENGTHS

Cohesion	=	0 kPa
Friction Angle	=	40°

DEFECT SET

JT 1	Mean	±
Dip	80	10
Dip Direction	40	15

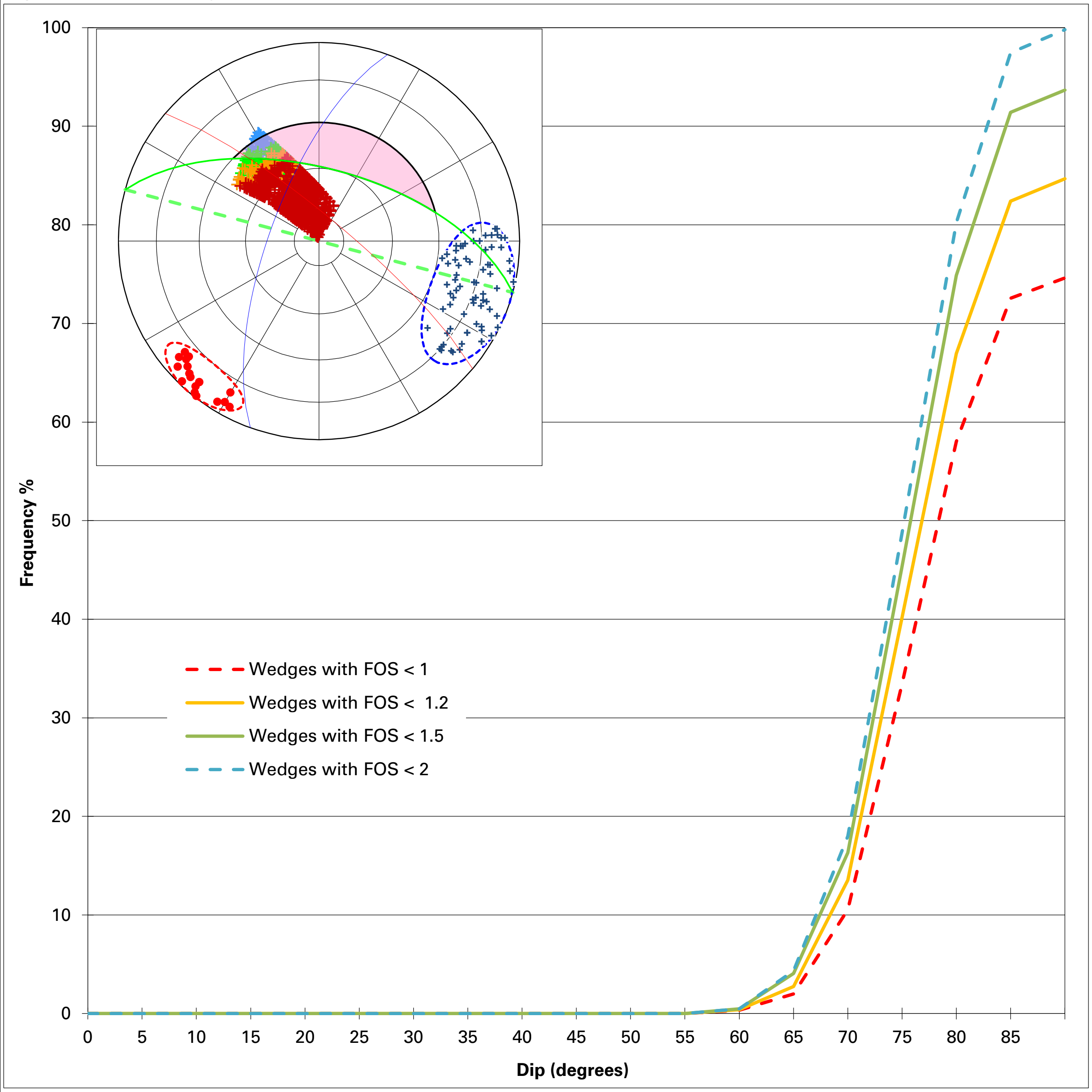
Defects in kinematic window	42
Defects in set JT 1	19
Defect in set & window	13
Defects Dipping out of Slope	139

OceanaGold
MP4 LOM 2022

CO4 mapping
Joints

WEDGE FAILURE

Equal Area Polar Projection



PARAMETERS OF THE PIT WALL

Slope Direction 15

DEFECT SHEAR STRENGTHS

Cohesion = 0 kPa
Friction Angle = 40°

FIRST SET - RED

JT 1	Mean	±
Dip	80	10
Dip Direction	40	15

Defects in set JT 1 19

SECOND SET - BLUE

JT 3	Mean	±
Dip	70	20
Dip Direction	290	25

Defects in set JT 3 79

Number of Unstable Wedges 1121
Number of Wedges Analysed 1501
From a possible Total Number of 1501

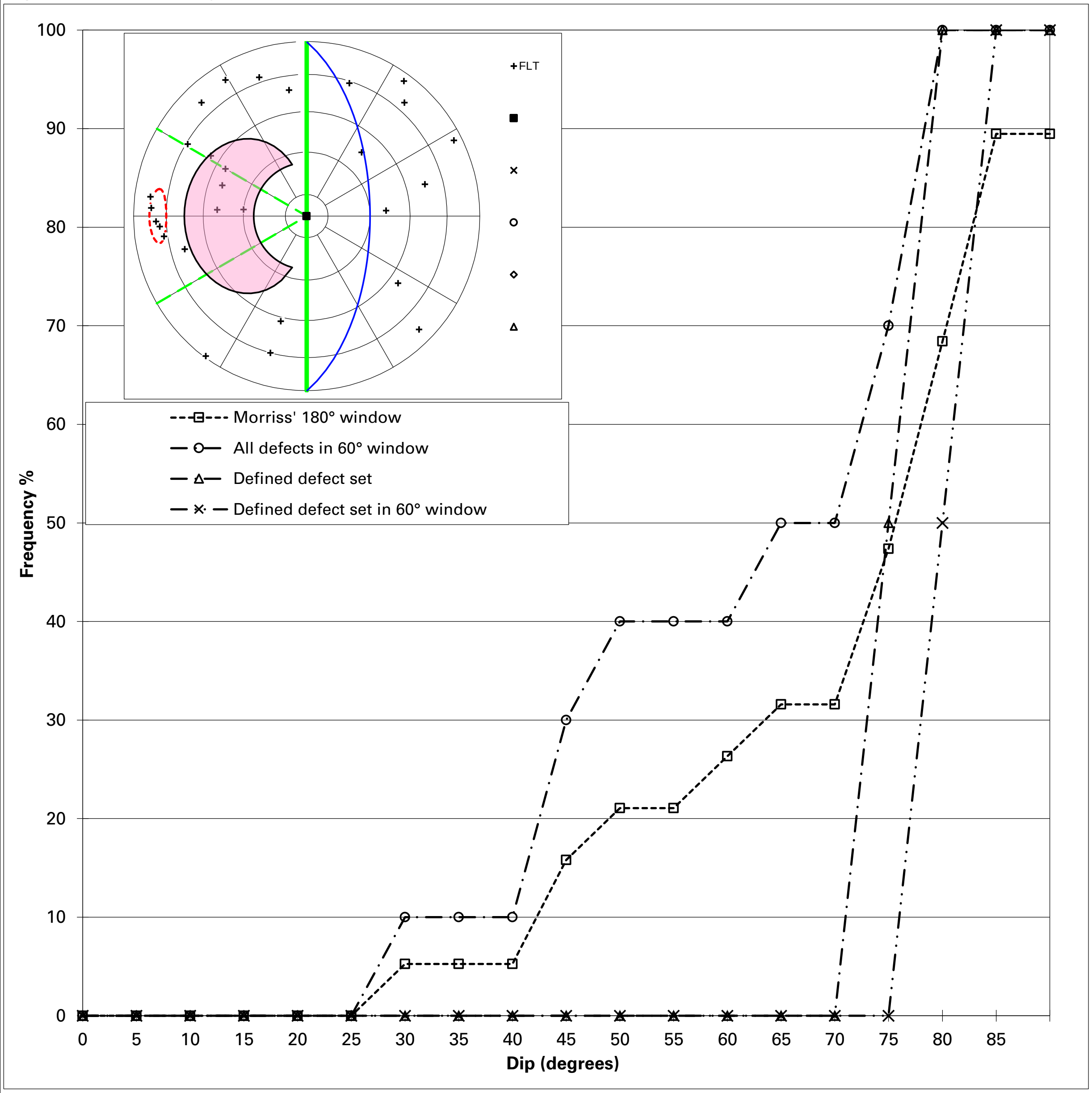
PSM Statistical Kinematics Analysis CO6 Wedge 28/07/2022 10:48 AM

OceanaGold
MP4 LOM 2022

CO4 mapping
Faults

PLANAR SLIDING

Equal Area Polar Projection



PARAMETERS OF THE PIT WALL

Slope Direction	90
Kinematic Window ±	30

DEFECT SHEAR STRENGTHS

Cohesion	=	0 kPa
Friction Angle	=	25°

DEFECT SET

FLT 1	Mean	±
Dip	75	5
Dip Direction	90	10

Defects in kinematic window	10
Defects in set FLT 1	4
Defect in set & window	4
Defects Dipping out of Slope	19

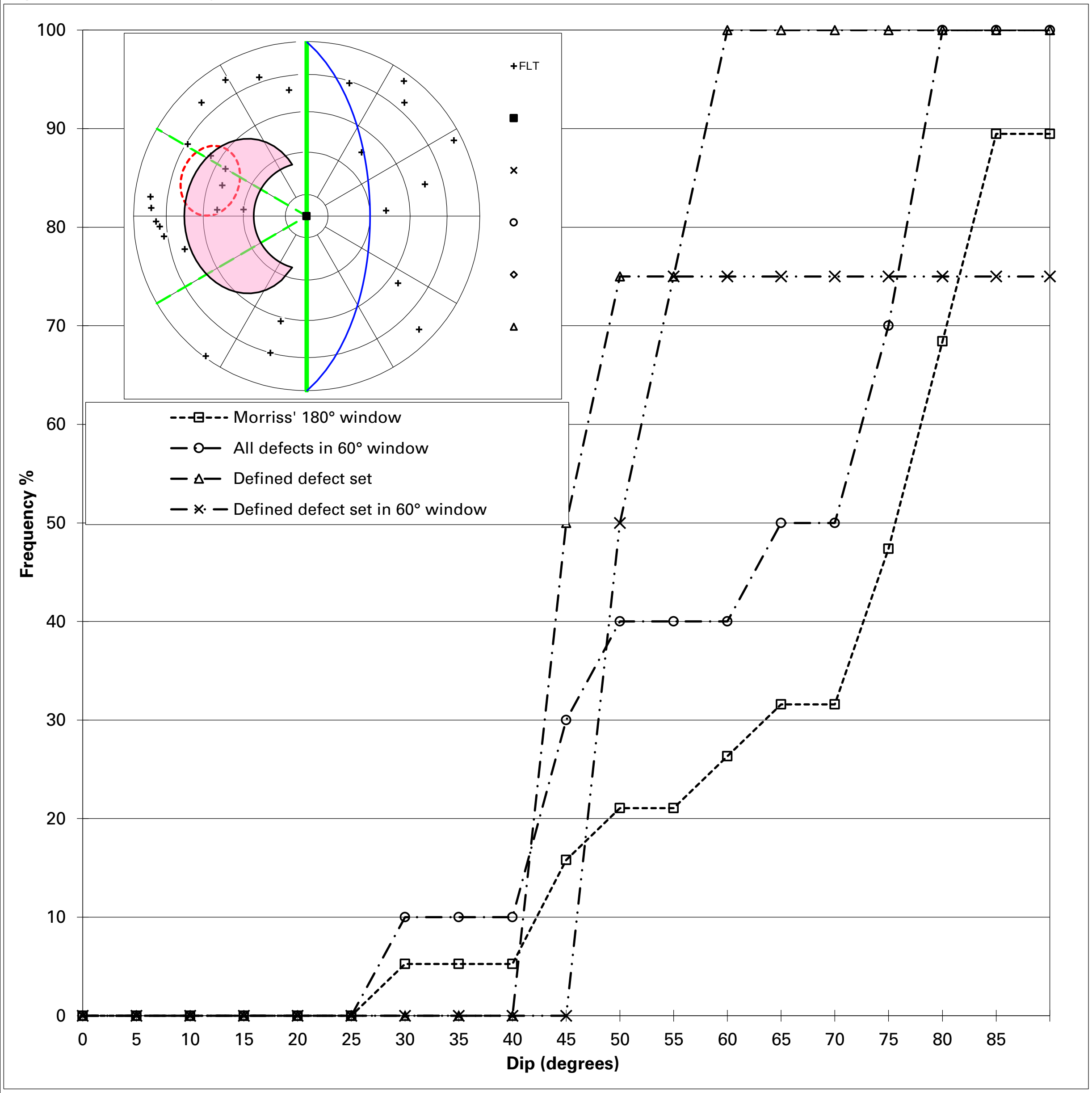
PSM

OceanaGold
MP4 LOM 2022

CO4 mapping
Faults

PLANAR SLIDING

Equal Area Polar Projection



PARAMETERS OF THE PIT WALL

Slope Direction	90
Kinematic Window ±	30

DEFECT SET

FLT 2	Mean	±
Dip	50	15
Dip Direction	110	15

DEFECT SHEAR STRENGTHS

Cohesion	=	0 kPa
Friction Angle	=	25°

Defects in kinematic window	10
Defects in set FLT 2	4
Defect in set & window	3
Defects Dipping out of Slope	19

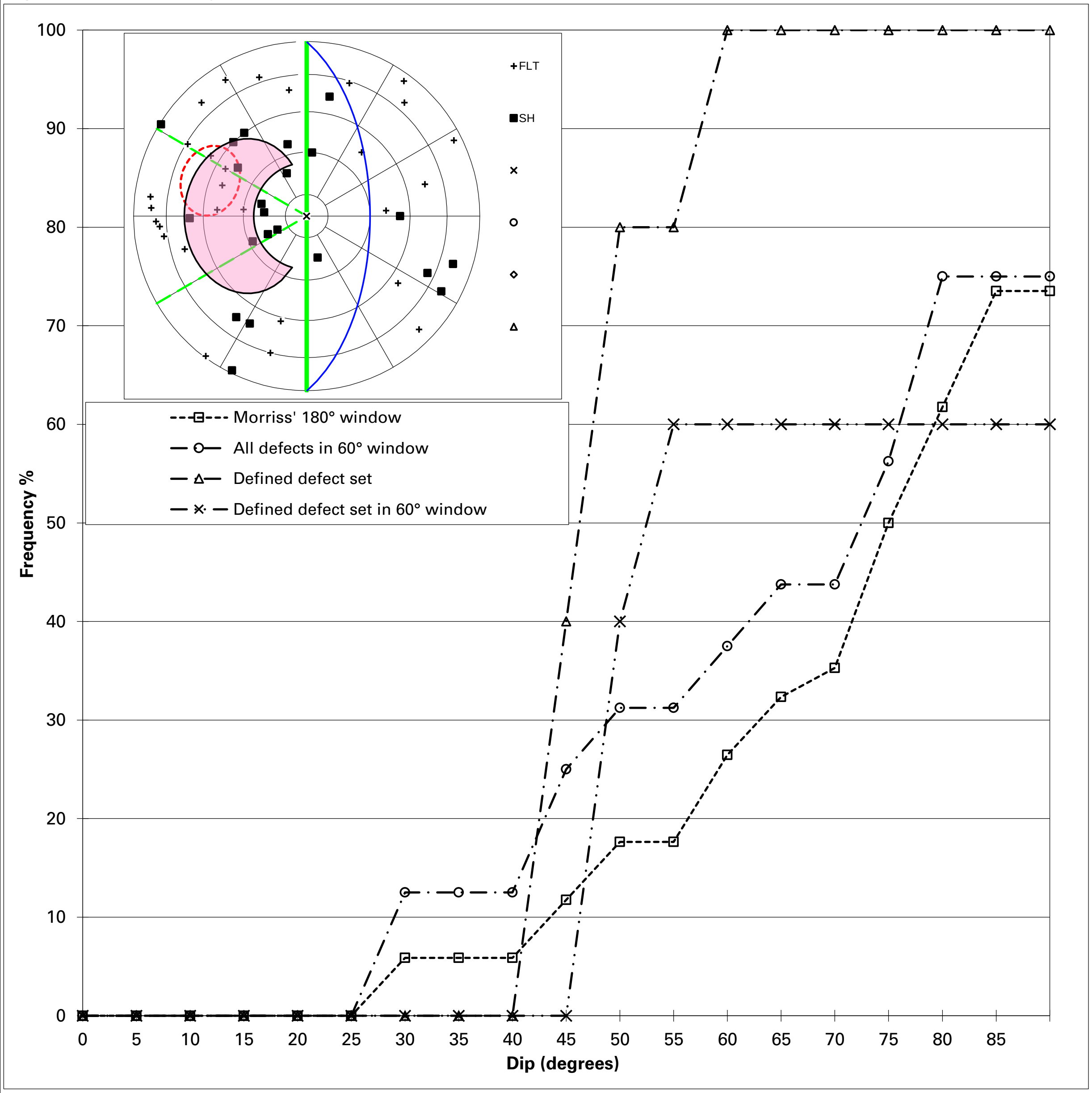
PSM

OceanaGold
MP4 LOM 2022

CO4 mapping
Faults and Shears

PLANAR SLIDING

Equal Area Polar Projection



PARAMETERS OF THE PIT WALL

Slope Direction	90
Kinematic Window ±	30

DEFECT SET

FLT 2	Mean	±
Dip	50	15
Dip Direction	110	15

DEFECT SHEAR STRENGTHS

Cohesion	=	0 kPa
Friction Angle	=	25°

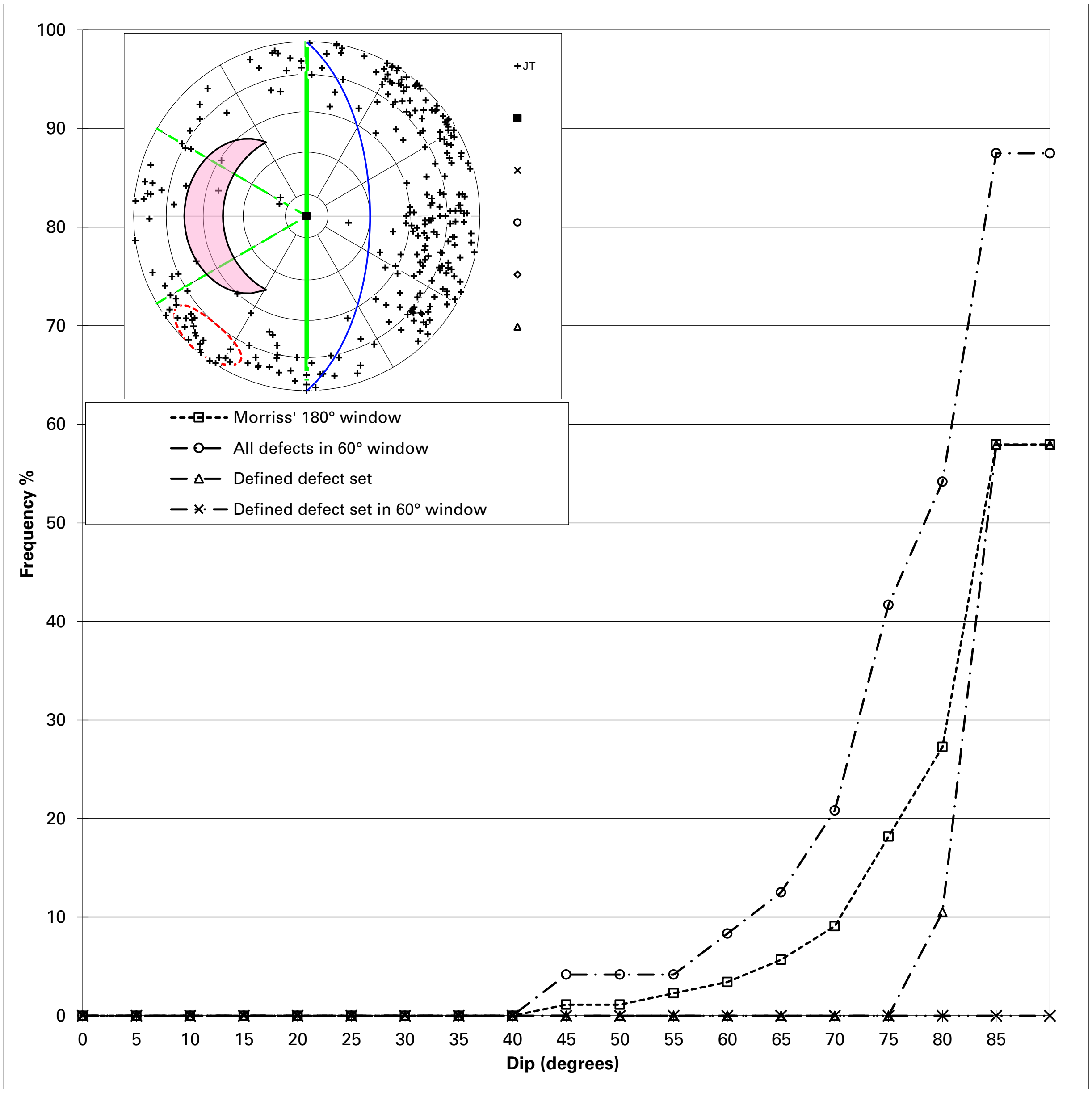
Defects in kinematic window	12
Defects in set FLT 2	5
Defect in set & window	3
Defects Dipping out of Slope	29

OceanaGold
MP4 LOM 2022

CO4 mapping
Joints

PLANAR SLIDING

Equal Area Polar Projection



PARAMETERS OF THE PIT WALL

Slope Direction	90
Kinematic Window ±	30

DEFECT SHEAR STRENGTHS

Cohesion	=	0 kPa
Friction Angle	=	40°

DEFECT SET

JT 1	Mean	±
Dip	80	10
Dip Direction	40	15

Defects in kinematic window	23
Defects in set JT 1	19
Defect in set & window	0
Defects Dipping out of Slope	86

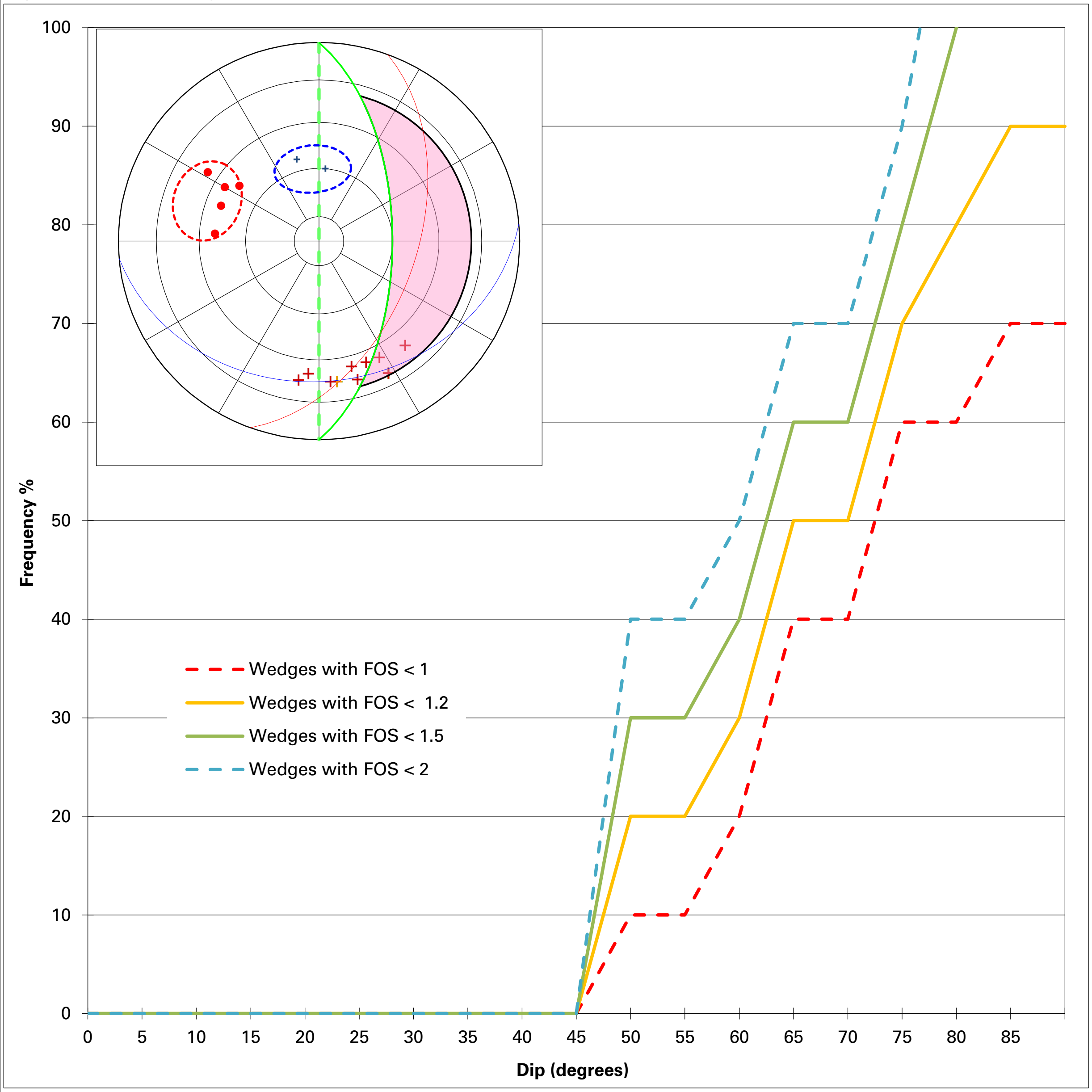
PSM Statistical Kinematics Analysis CO6 Planar 28/07/2022 10:50 AM

OceanaGold
MP4 LOM 2022

CO4 mapping
Faults and Shears

WEDGE FAILURE

Equal Area Polar Projection



PARAMETERS OF THE PIT WALL

Slope Direction 90

DEFECT SHEAR STRENGTHS

Cohesion = 0 kPa
Friction Angle = 25°

FIRST SET - RED

FLT 2	Mean	±
Dip	50	15
Dip Direction	110	15

Defects in set FLT 2 5

SECOND SET - BLUE

SH 1	Mean	±
Dip	30	10
Dip Direction	175	15

Defects in set SH 1 2

Number of Unstable Wedges 7
Number of Wedges Analysed 10 From a possible Total Number of 10

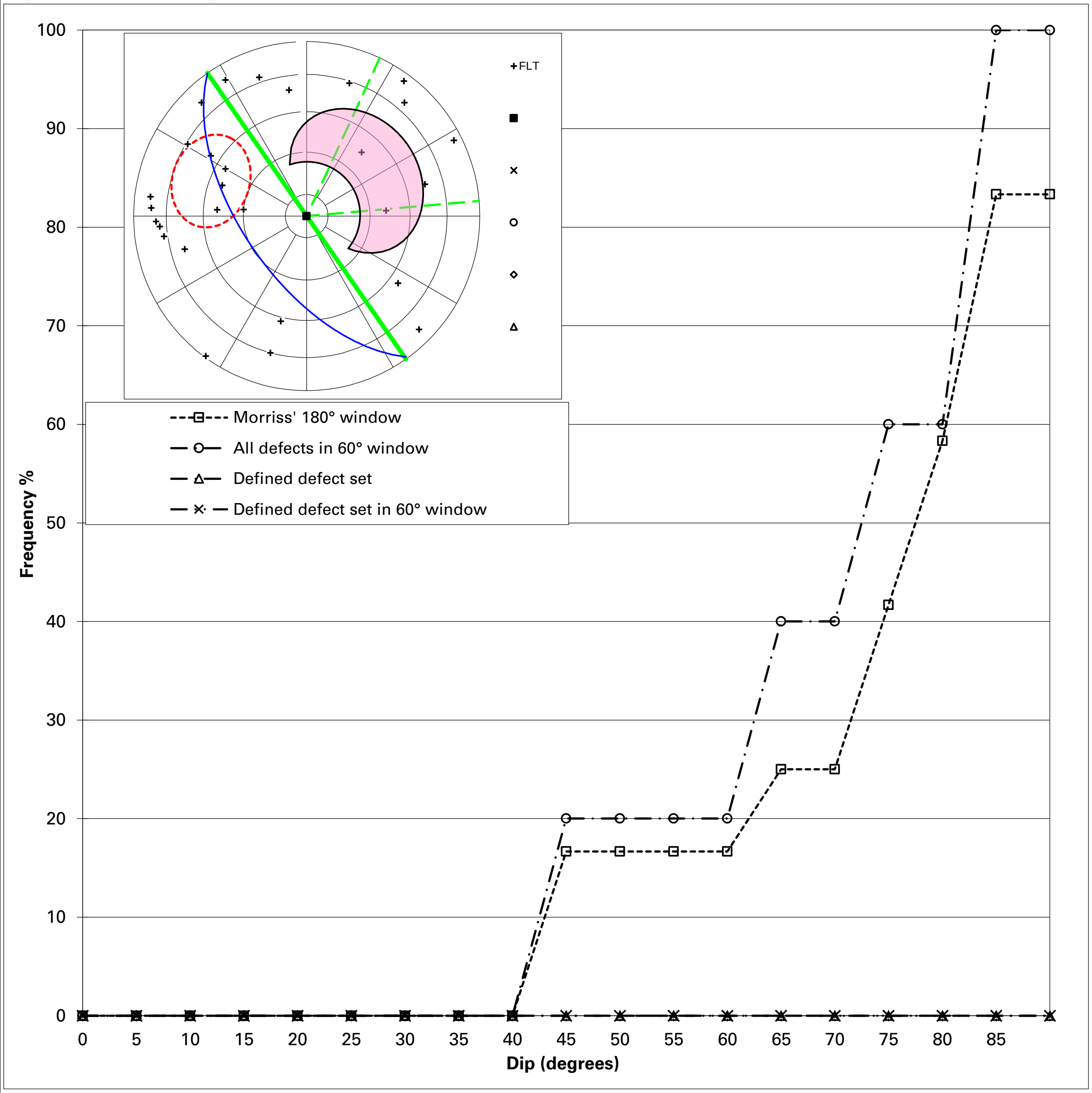
PSM

OceanaGold
MP4 LOM 2022

CO4 mapping
Fault

PLANAR SLIDING

Equal Area Polar Projection



PARAMETERS OF THE PIT WALL

Slope Direction	235
Kinematic Window ±	30

DEFECT SHEAR STRENGTHS

Cohesion	=	0 kPa
Friction Angle	=	25°

DEFECT SET

FLT 2	Mean	±
Dip	50	20
Dip Direction	110	20

Defects in kinematic window	5
Defects in set FLT 2	0
Defect in set & window	0
Defects Dipping out of Slope	12

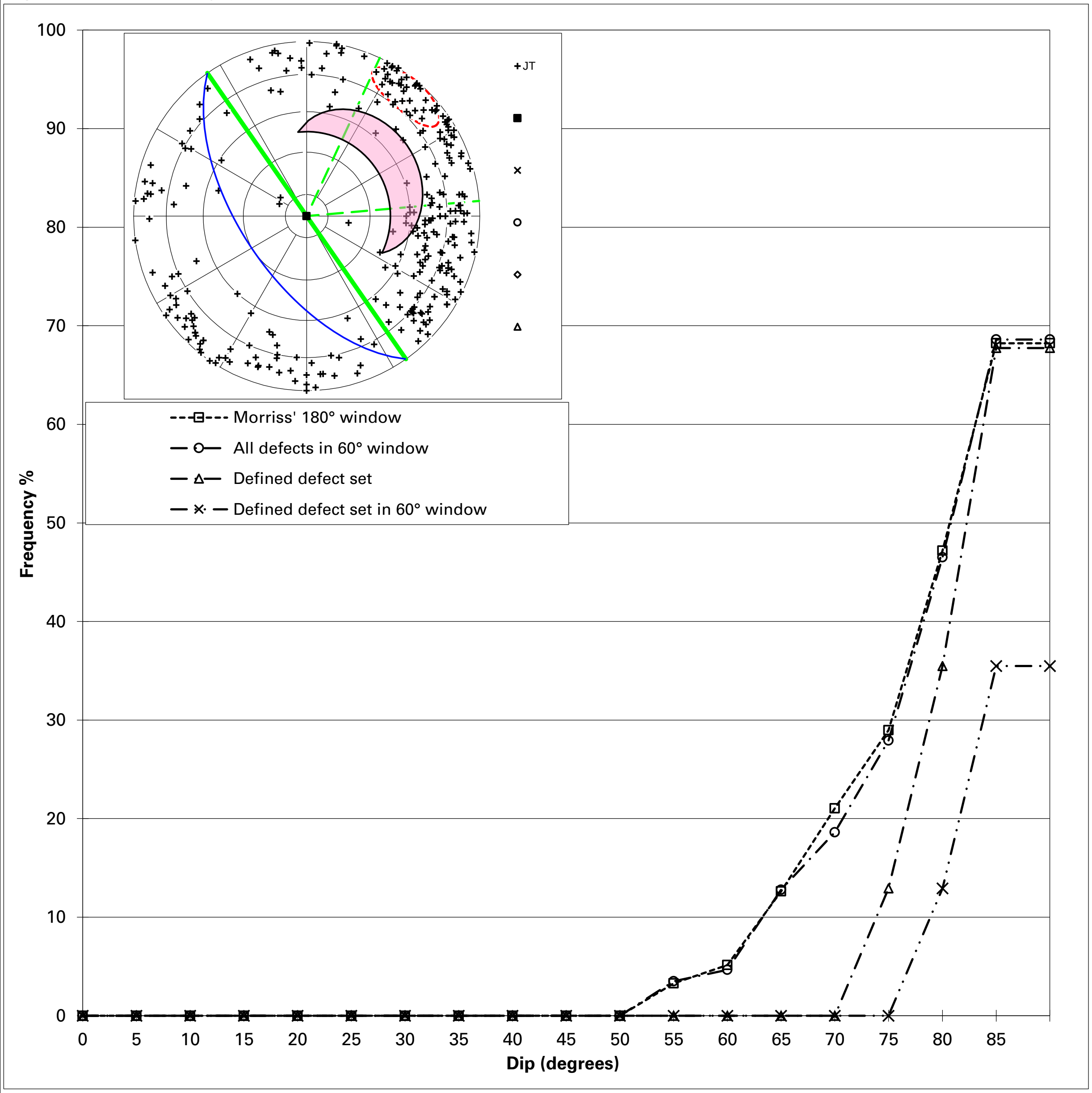
PSM

OceanaGold
MP4 LOM 2022

CO4 mapping
Joints

PLANAR SLIDING

Equal Area Polar Projection



PARAMETERS OF THE PIT WALL

Slope Direction	235
Kinematic Window ±	30

DEFECT SHEAR STRENGTHS

Cohesion	=	0 kPa
Friction Angle	=	40°

DEFECT SET

JT 2	Mean	±
Dip	80	10
Dip Direction	220	15

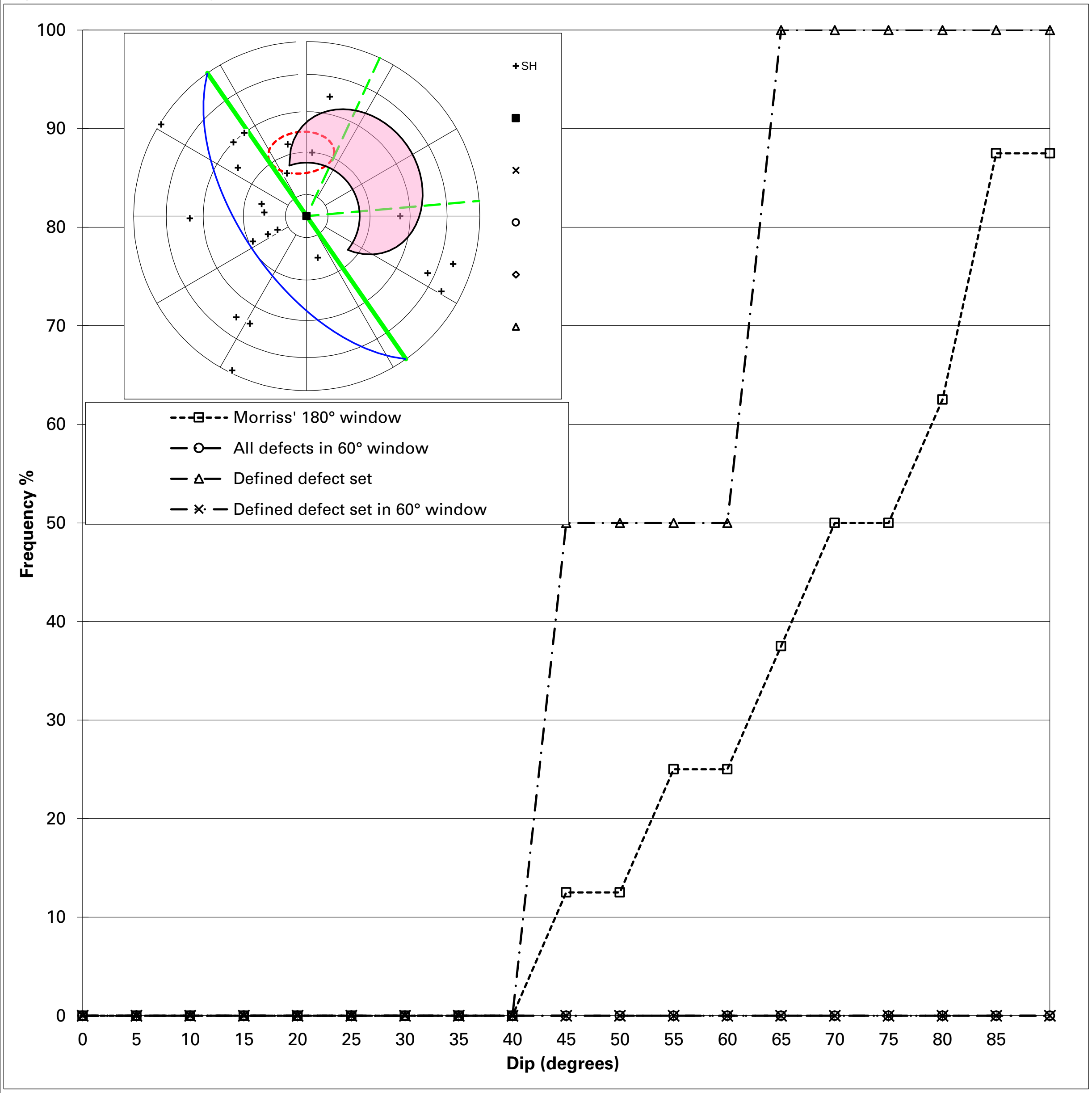
Defects in kinematic window	86
Defects in set JT 2	31
Defect in set & window	31
Defects Dipping out of Slope	212

OceanaGold
MP4 LOM 2022

CO4 mapping
Shears

PLANAR SLIDING

Equal Area Polar Projection



PARAMETERS OF THE PIT WALL

Slope Direction	235
Kinematic Window ±	30

DEFECT SHEAR STRENGTHS

Cohesion	=	0 kPa
Friction Angle	=	25°

DEFECT SET

SH 1	Mean	±
Dip	30	10
Dip Direction	175	15

Defects in kinematic window	0
Defects in set SH 1	2
Defect in set & window	0
Defects Dipping out of Slope	7

PSM

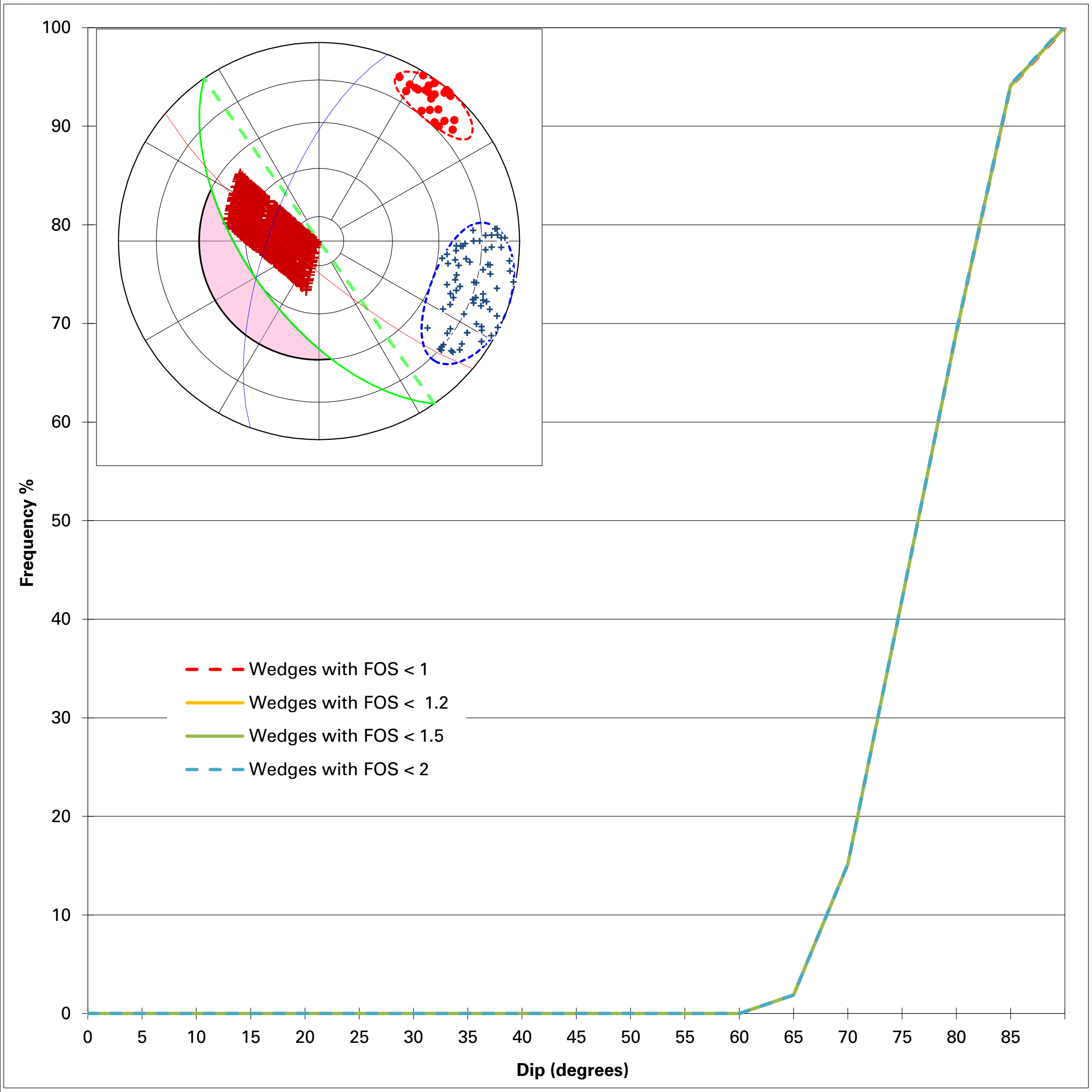
PSM Statistical Kinematics Analysis CO6 Planar 28/07/2022 10:32 AM

OceanaGold
MP4 LOM 2022

CO4 mapping
Joints

WEDGE FAILURE

Equal Area Polar Projection



PARAMETERS OF THE PIT WALL

Slope Direction	235

DEFECT SHEAR STRENGTHS

Cohesion	=	0 kPa
Friction Angle	=	40°

FIRST SET - RED

JT 2	Mean	±
Dip	80	10
Dip Direction	220	15

Defects in set JT 2 31

SECOND SET - BLUE

JT 3	Mean	±
Dip	70	20
Dip Direction	290	25

Defects in set JT 3 79

Number of Unstable Wedges 2347
Number of Wedges Analysed 2449
From a possible Total Number of 2449

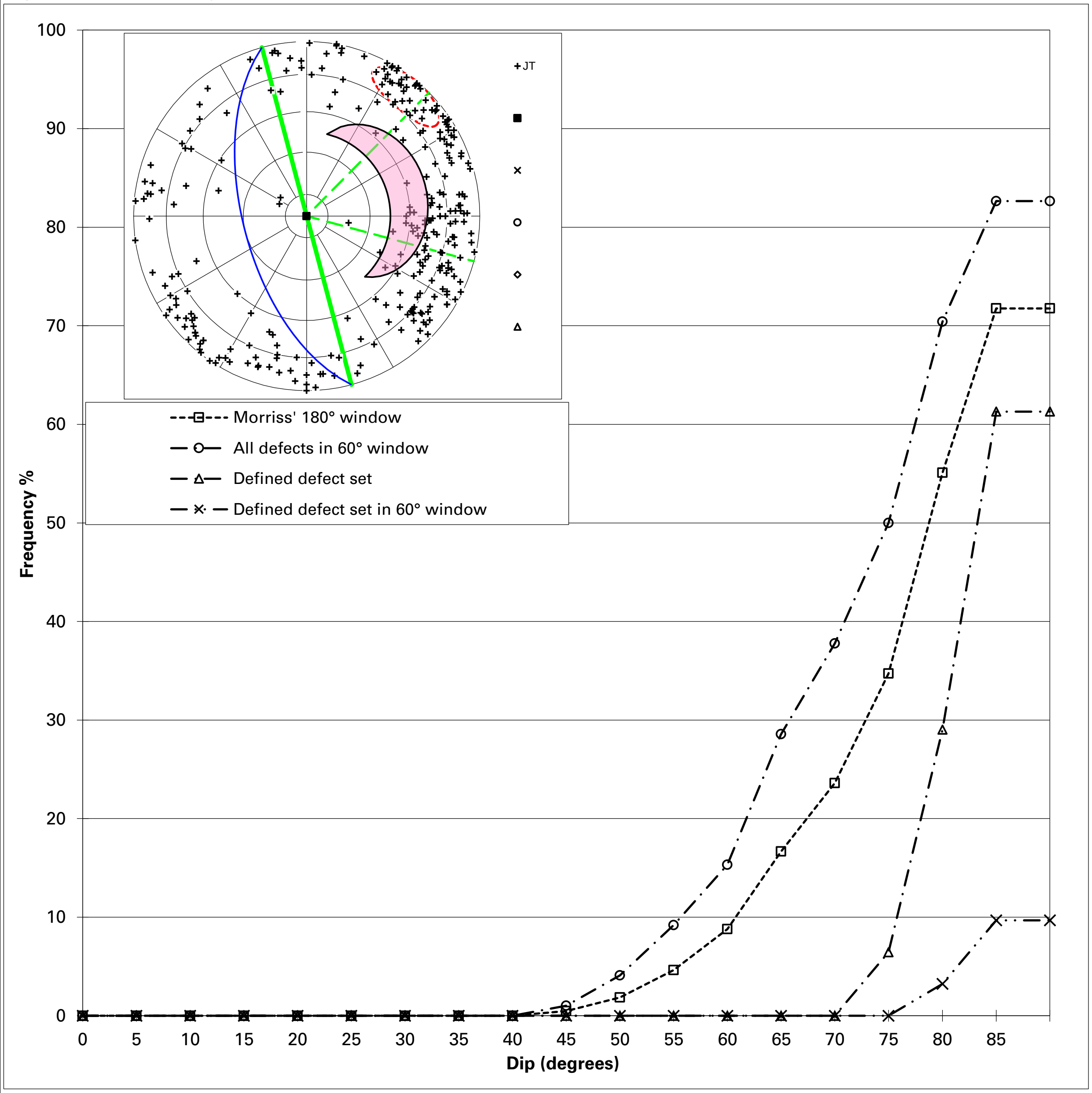
PSM Statistical Kinematics Analysis CO6 Wedge 28/07/2022 10:36 AM

OceanaGold
MP4 LOM 2022

CO4 mapping
Joints

PLANAR SLIDING

Equal Area Polar Projection



PARAMETERS OF THE PIT WALL

Slope Direction	255
Kinematic Window ±	30

DEFECT SHEAR STRENGTHS

Cohesion	=	0 kPa
Friction Angle	=	40°

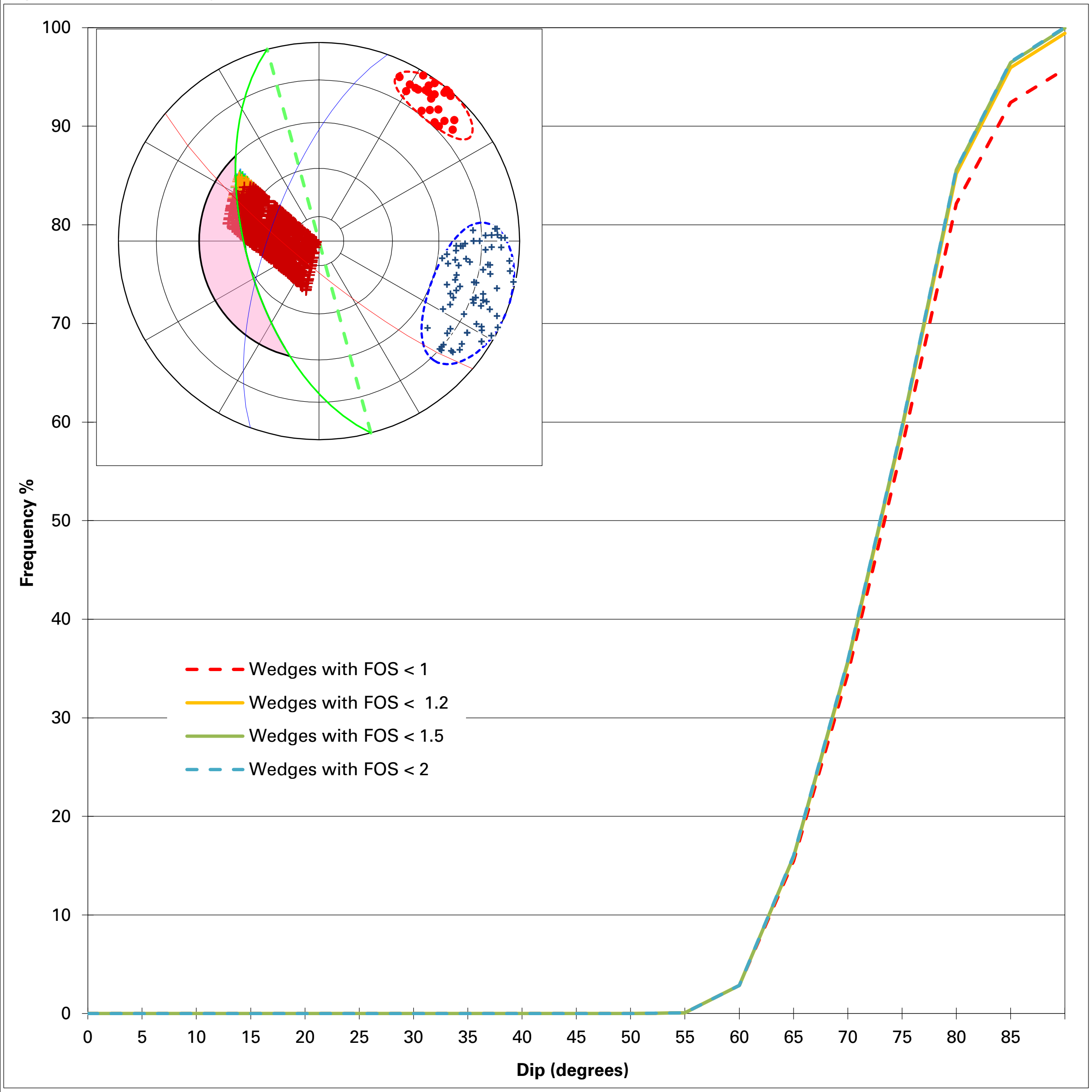
DEFECT SET

JT 2	Mean	±
Dip	80	10
Dip Direction	220	15

Defects in kinematic window	97
Defects in set JT 2	31
Defect in set & window	5
Defects Dipping out of Slope	214

WEDGE FAILURE

Equal Area Polar Projection



PARAMETERS OF THE PIT WALL

Slope Direction 255

DEFECT SHEAR STRENGTHS

Cohesion = 0 kPa
Friction Angle = 40°

FIRST SET - RED

JT 2	Mean	±
Dip	80	10
Dip Direction	220	15

Defects in set JT 2 31

SECOND SET - BLUE

JT 3	Mean	±
Dip	70	20
Dip Direction	290	25

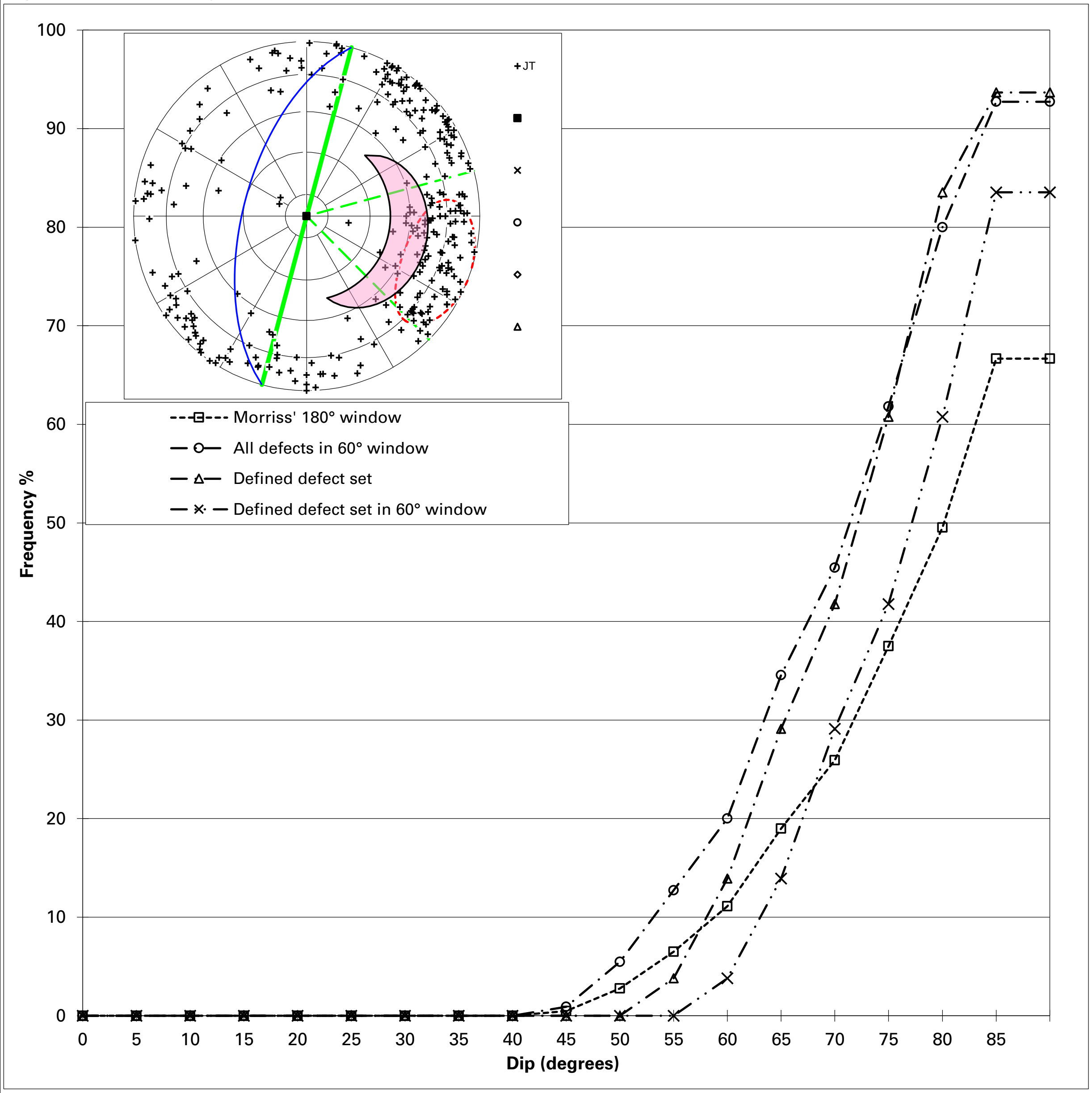
Defects in set JT 3 79

Number of Unstable Wedges 2347
Number of Wedges Analysed 2449 From a possible Total Number of 2449

OceanaGold **CO4 mapping**
MP4 LOM 2022 Joints

PLANAR SLIDING

Equal Area Polar Projection



PARAMETERS OF THE PIT WALL

Slope Direction	285
Kinematic Window ±	30

DEFECT SHEAR STRENGTHS

Cohesion	=	0 kPa
Friction Angle	=	40°

DEFECT SET

JT 3	Mean	±
Dip	70	20
Dip Direction	290	25

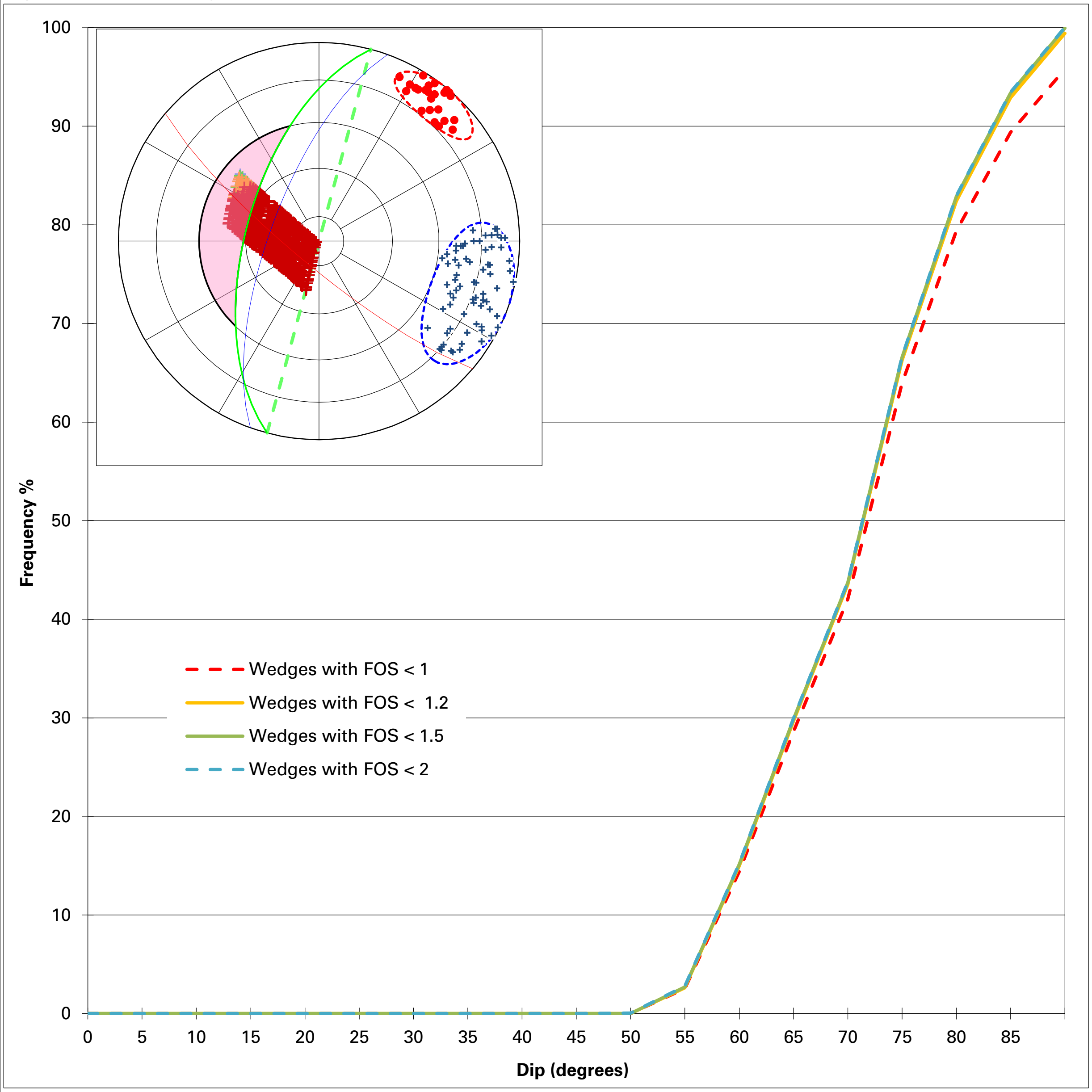
Defects in kinematic window	108
Defects in set JT 3	79
Defect in set & window	79
Defects Dipping out of Slope	214

OceanaGold
MP4 LOM 2022

CO4 mapping
Joints

WEDGE FAILURE

Equal Area Polar Projection



PARAMETERS OF THE PIT WALL

Slope Direction 285

DEFECT SHEAR STRENGTHS

Cohesion = 0 kPa
Friction Angle = 40°

FIRST SET - RED

JT 2	Mean	±
Dip	80	10
Dip Direction	220	15

Defects in set JT 2 31

SECOND SET - BLUE

JT 3	Mean	±
Dip	70	20
Dip Direction	290	25

Defects in set JT 3 79

Number of Unstable Wedges 2347
Number of Wedges Analysed 2449

From a possible Total Number of 2449

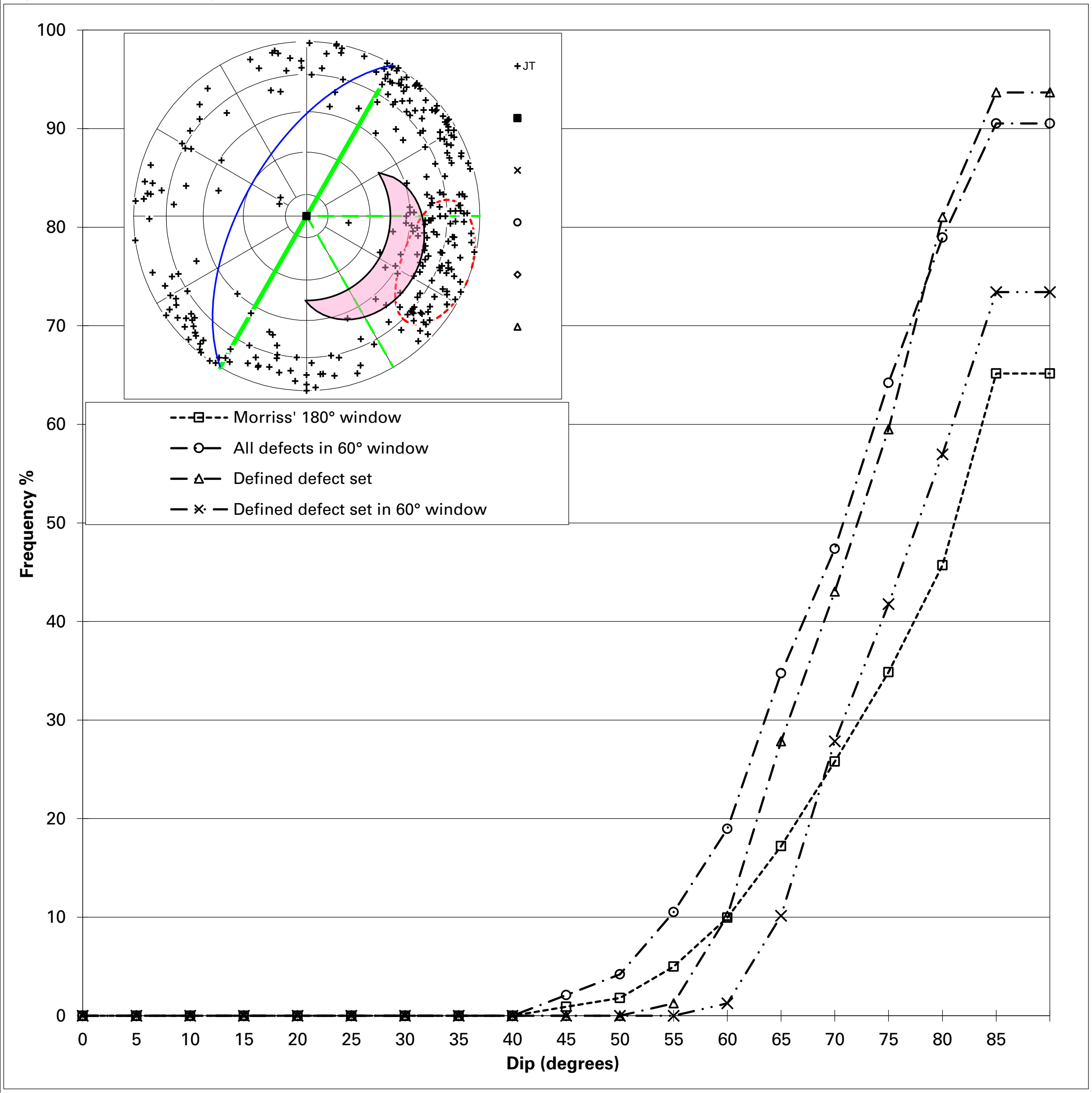
PSM

OceanaGold
MP4 LOM 2022

CO4 mapping
Joints

PLANAR SLIDING

Equal Area Polar Projection



PARAMETERS OF THE PIT WALL

Slope Direction	300
Kinematic Window ±	30

DEFECT SHEAR STRENGTHS

Cohesion	=	0 kPa
Friction Angle	=	40°

DEFECT SET

JT 3	Mean	±
Dip	70	20
Dip Direction	290	25

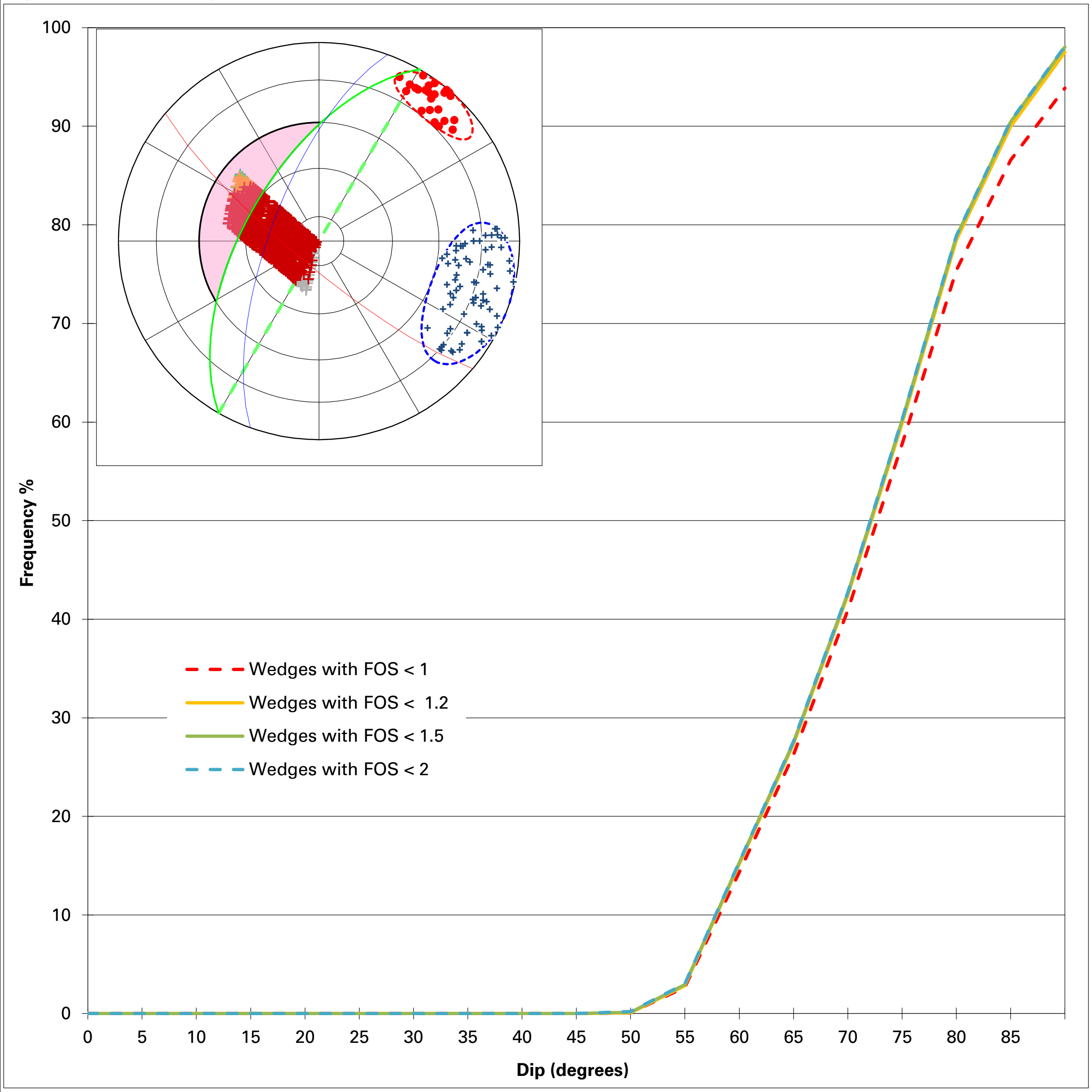
Defects in kinematic window	93
Defects in set JT 3	79
Defect in set & window	71
Defects Dipping out of Slope	219

OceanaGold
MP4 LOM 2022

CO4 mapping
Joints

WEDGE FAILURE

Equal Area Polar Projection



PARAMETERS OF THE PIT WALL

Slope Direction 300

DEFECT SHEAR STRENGTHS

Cohesion = 0 kPa
Friction Angle = 40°

FIRST SET - RED

JT 2	Mean	±
Dip	80	10
Dip Direction	220	15

Defects in set JT 2 31

SECOND SET - BLUE

JT 3	Mean	±
Dip	70	20
Dip Direction	290	25

Defects in set JT 3 79

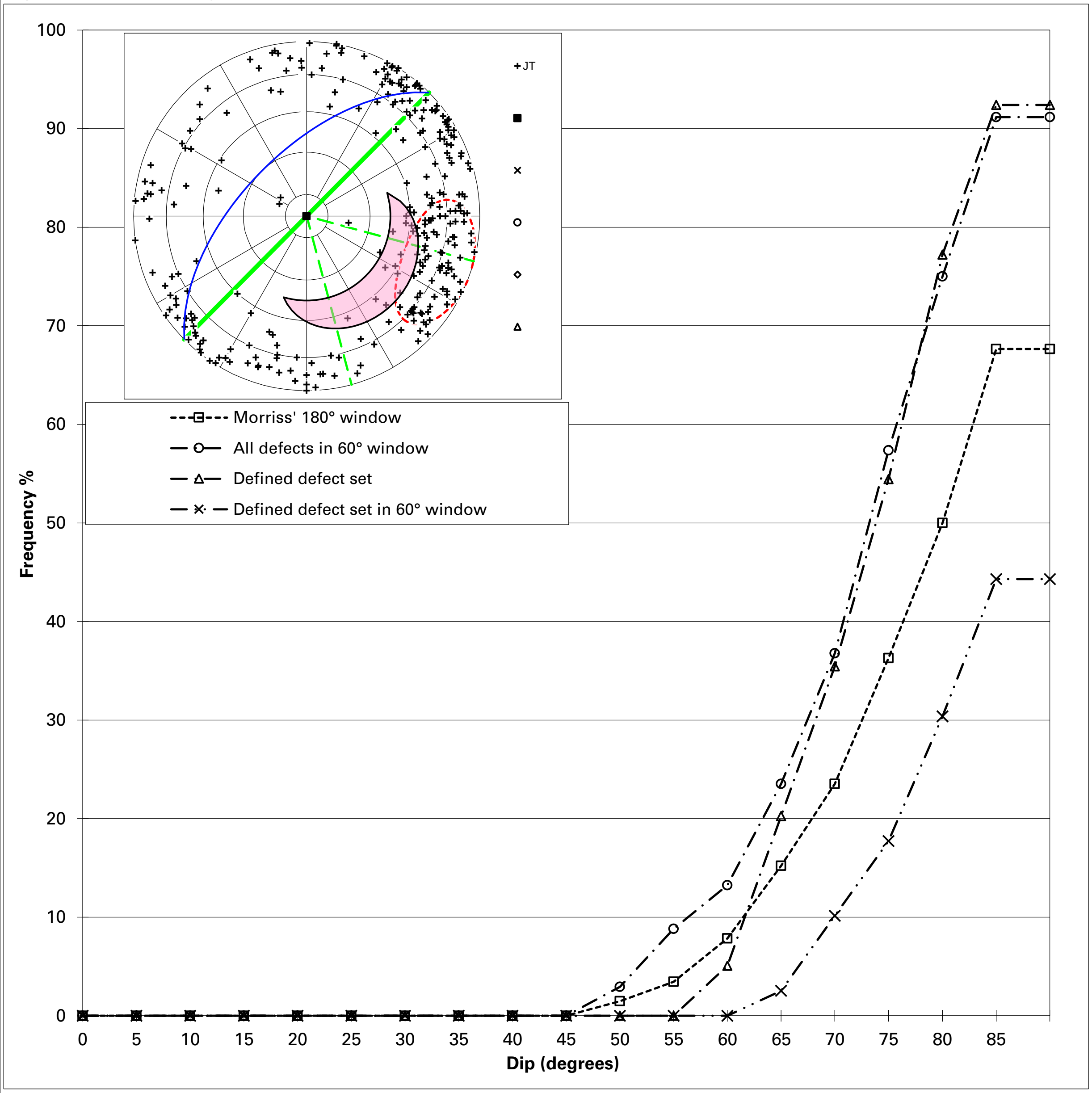
Number of Unstable Wedges 2300
Number of Wedges Analysed 2449 From a possible Total Number of 2449

OceanaGold
MP4 LOM 2022

CO4 mapping
Joints

PLANAR SLIDING

Equal Area Polar Projection



PARAMETERS OF THE PIT WALL

Slope Direction	315
Kinematic Window ±	30

DEFECT SHEAR STRENGTHS

Cohesion	=	0 kPa
Friction Angle	=	40°

DEFECT SET

JT 3	Mean	±
Dip	70	20
Dip Direction	290	25

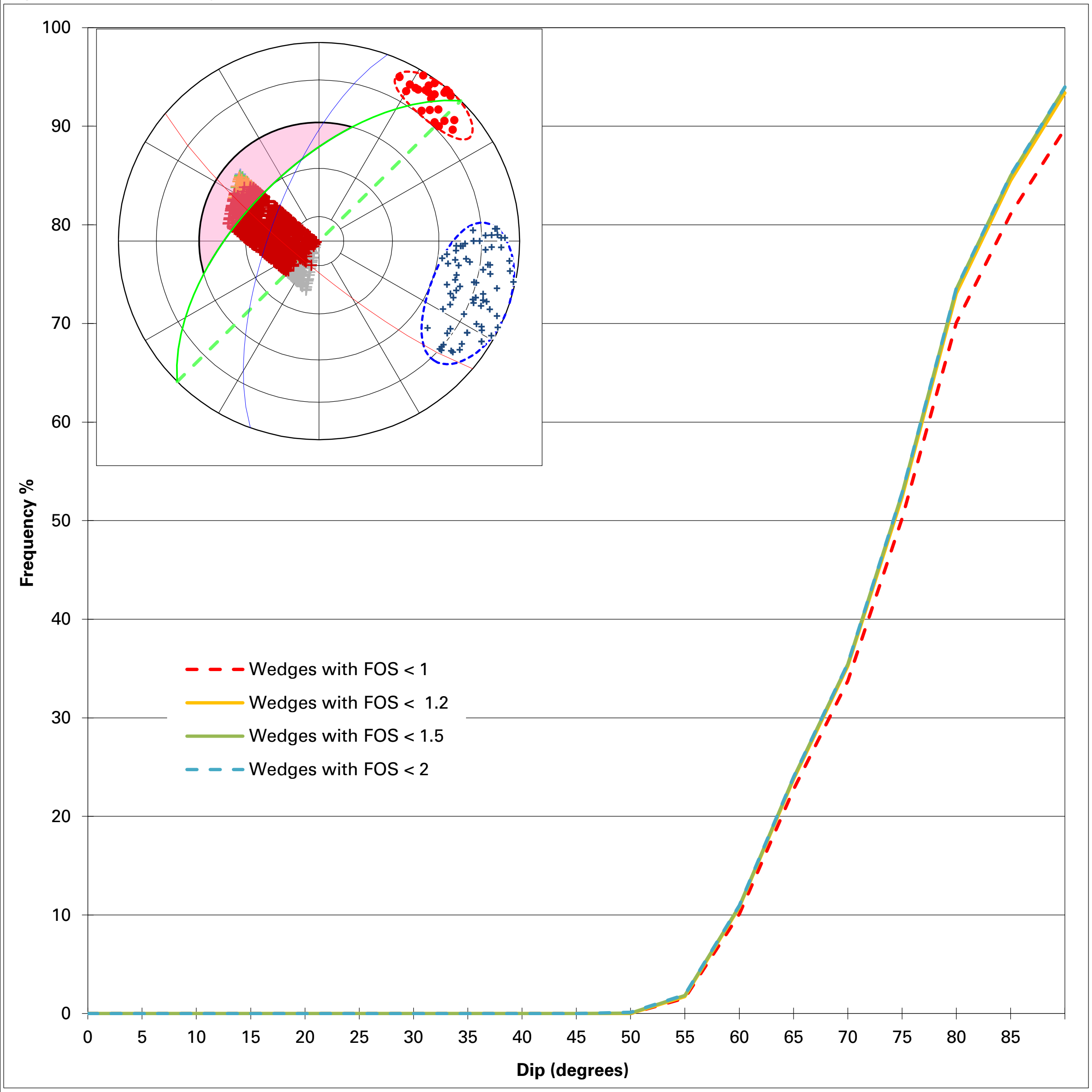
Defects in kinematic window	67
Defects in set JT 3	79
Defect in set & window	44
Defects Dipping out of Slope	202

OceanaGold
MP4 LOM 2022

CO4 mapping
Joints

WEDGE FAILURE

Equal Area Polar Projection



PARAMETERS OF THE PIT WALL

Slope Direction 315

DEFECT SHEAR STRENGTHS

Cohesion = 0 kPa
Friction Angle = 40°

FIRST SET - RED

JT 2	Mean	±
Dip	80	10
Dip Direction	220	15

Defects in set JT 2 31

SECOND SET - BLUE

JT 3	Mean	±
Dip	70	20
Dip Direction	290	25

Defects in set JT 3 79

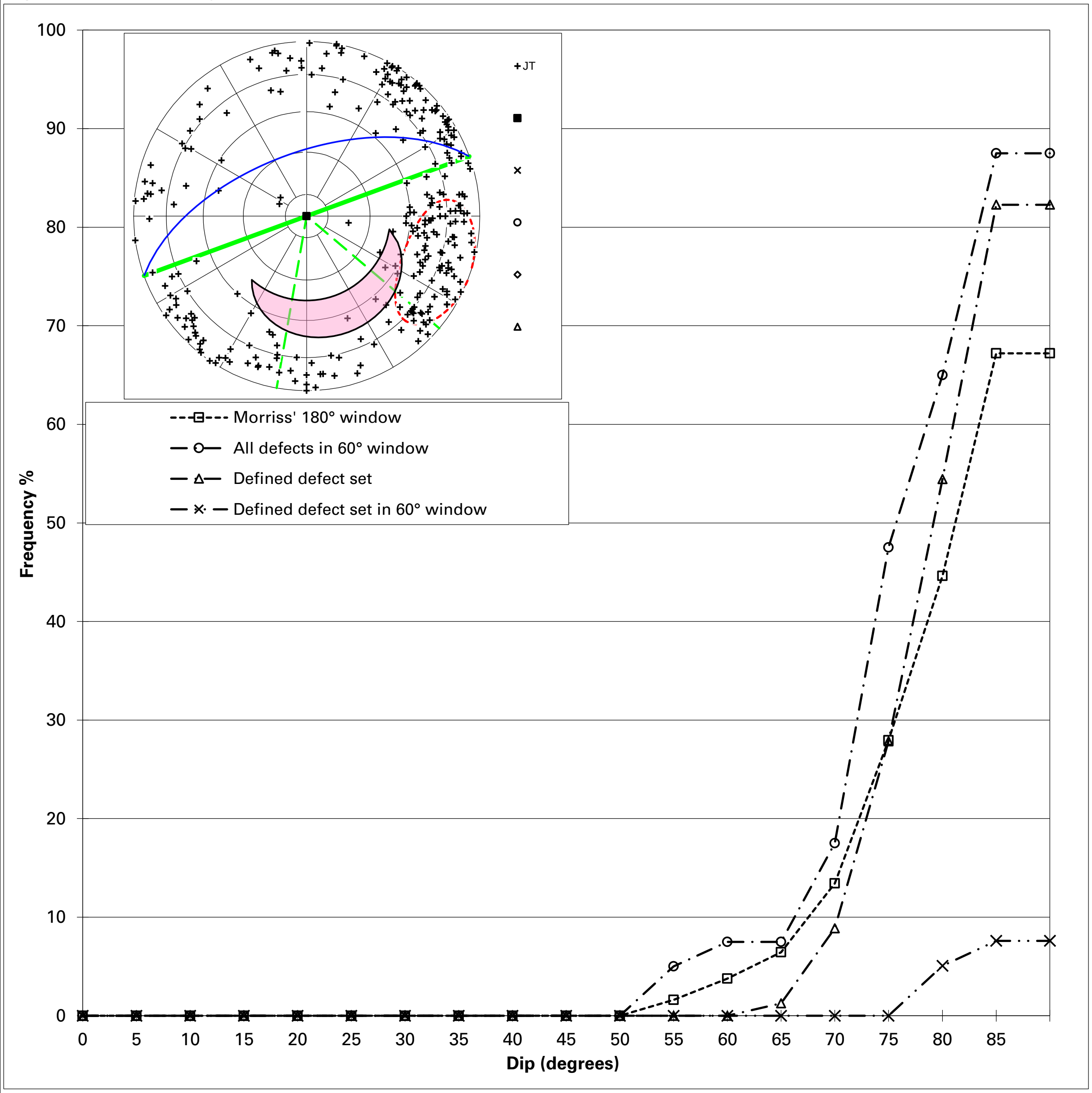
Number of Unstable Wedges 2199
Number of Wedges Analysed 2449 From a possible Total Number of 2449

OceanaGold
MP4 LOM 2022

CO4 mapping
Joints

PLANAR SLIDING

Equal Area Polar Projection



PARAMETERS OF THE PIT WALL

Slope Direction	340
Kinematic Window ±	30

DEFECT SET

JT 3	Mean	±
Dip	70	20
Dip Direction	290	25

DEFECT SHEAR STRENGTHS

Cohesion	=	0 kPa
Friction Angle	=	40°

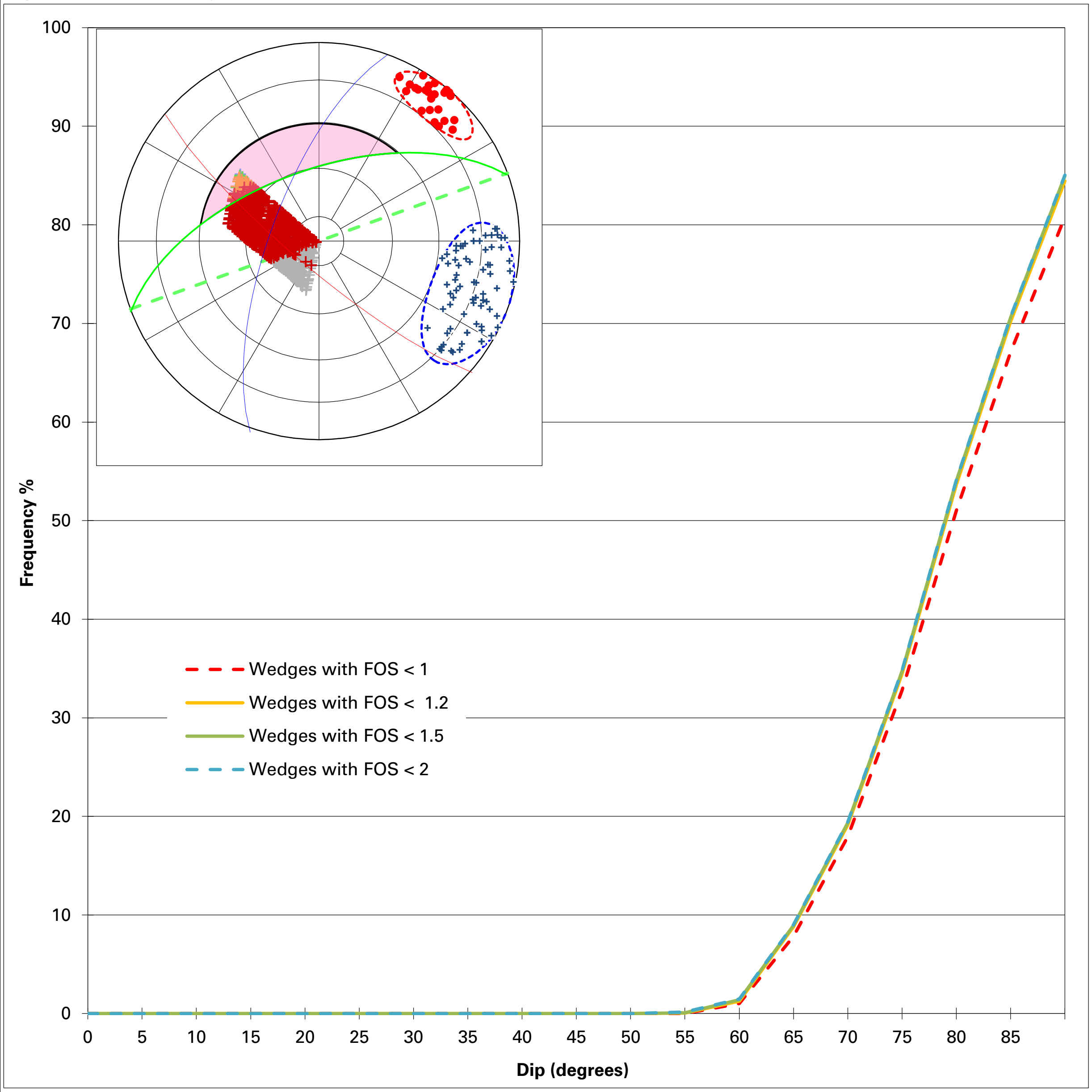
Defects in kinematic window	40
Defects in set JT 3	79
Defect in set & window	6
Defects Dipping out of Slope	184

OceanaGold
MP4 LOM 2022

CO4 mapping
Joints

WEDGE FAILURE

Equal Area Polar Projection



PARAMETERS OF THE PIT WALL

Slope Direction 340

DEFECT SHEAR STRENGTHS

Cohesion = 0 kPa

Friction Angle = 40°

FIRST SET - RED

JT 2	Mean	±
Dip	80	10
Dip Direction	220	15

Defects in set JT 2 31

SECOND SET - BLUE

JT 3	Mean	±
Dip	70	20
Dip Direction	290	25

Defects in set JT 3 79

Number of Unstable Wedges 1980
Number of Wedges Analysed 2449

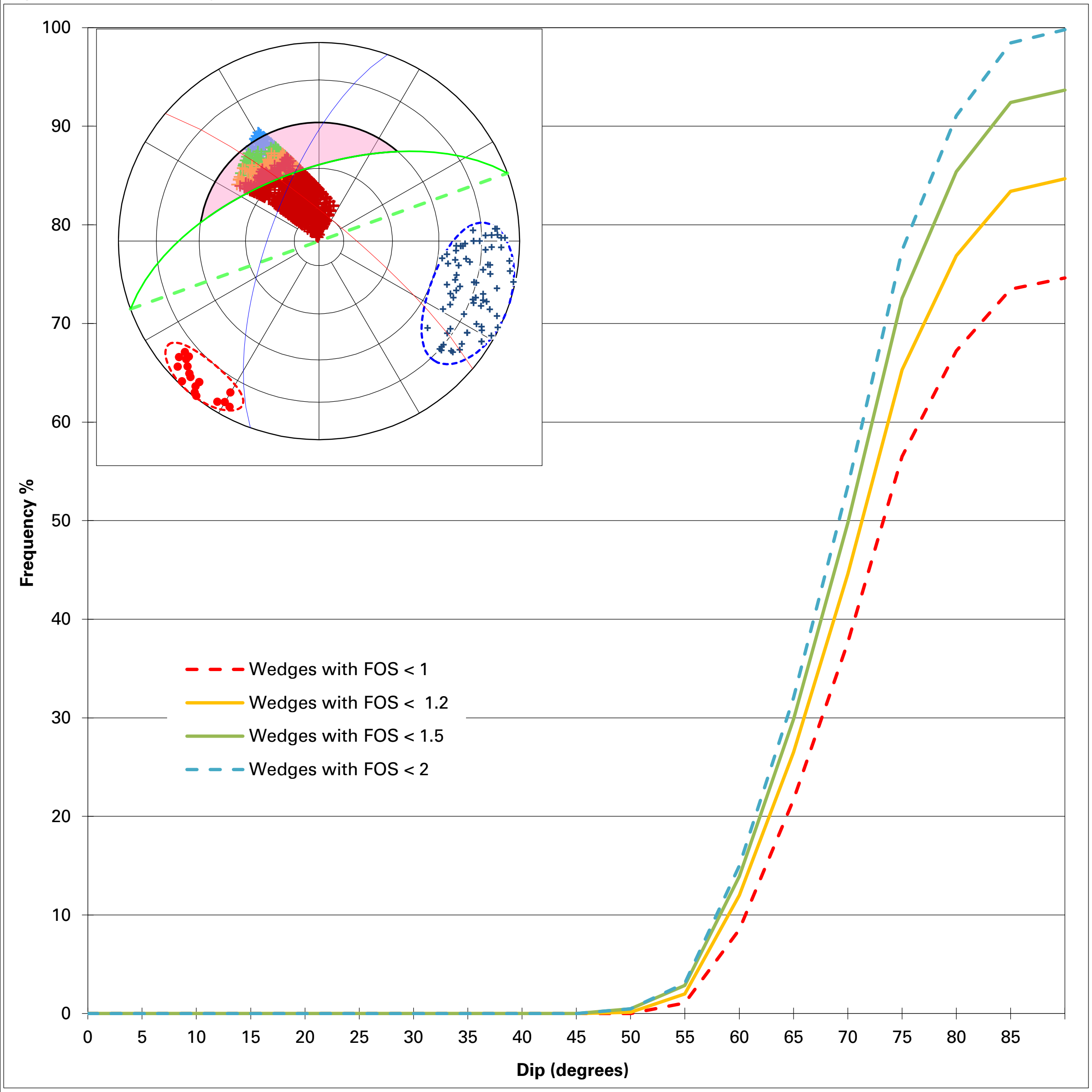
From a possible Total Number of 2449

OceanaGold
MP4 LOM 2022

CO4 mapping
Joints

WEDGE FAILURE

Equal Area Polar Projection



PARAMETERS OF THE PIT WALL

Slope Direction 340

DEFECT SHEAR STRENGTHS

Cohesion = 0 kPa

Friction Angle = 40°

FIRST SET - RED

JT 1	Mean	±
Dip	80	10
Dip Direction	40	15

Defects in set JT 1 19

SECOND SET - BLUE

JT 3	Mean	±
Dip	70	20
Dip Direction	290	25

Defects in set JT 3 79

Number of Unstable Wedges 1121

Number of Wedges Analysed 1501

From a possible Total Number of 1501

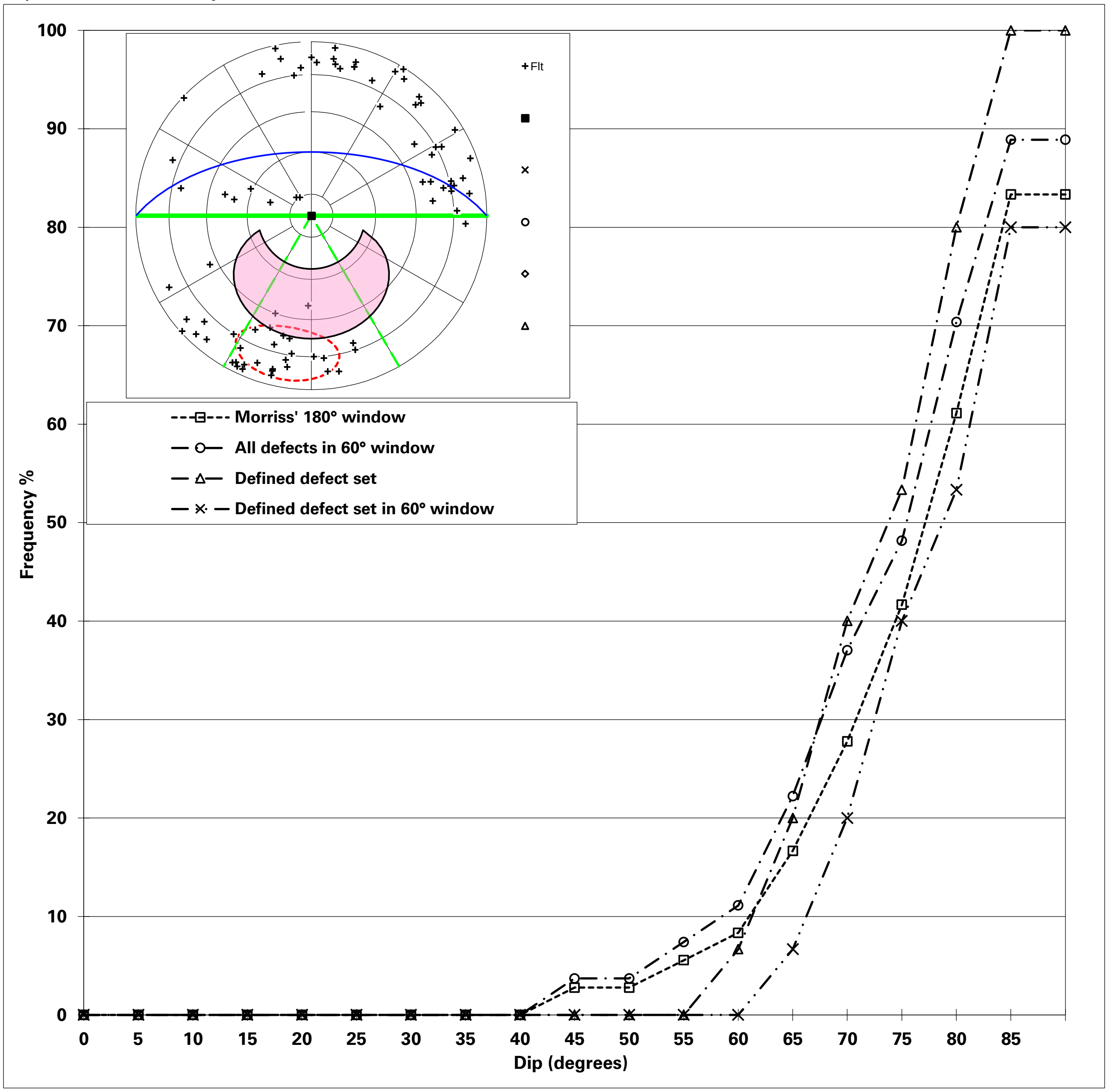
PSM Statistical Kinematics Analysis CO6 Wedge 28/07/2022 10:46 AM

Appendix C
Golden Bar Stage 2 Probability of Undercutting Plots

OceanaGold | **GB Trench Data**
MP4 LOM 2022 | Faults

PLANAR SLIDING

Equal Area Polar Projection



PARAMETERS OF THE PIT WALL

Slope Direction	000
Kinematic Window ±	30

DEFECT SET

FT8	Mean	±
Dip	70	15
Dip Direction	10	20

DEFECT SHEAR STRENGTHS

Cohesion	=	0 kPa
Friction Angle	=	25°

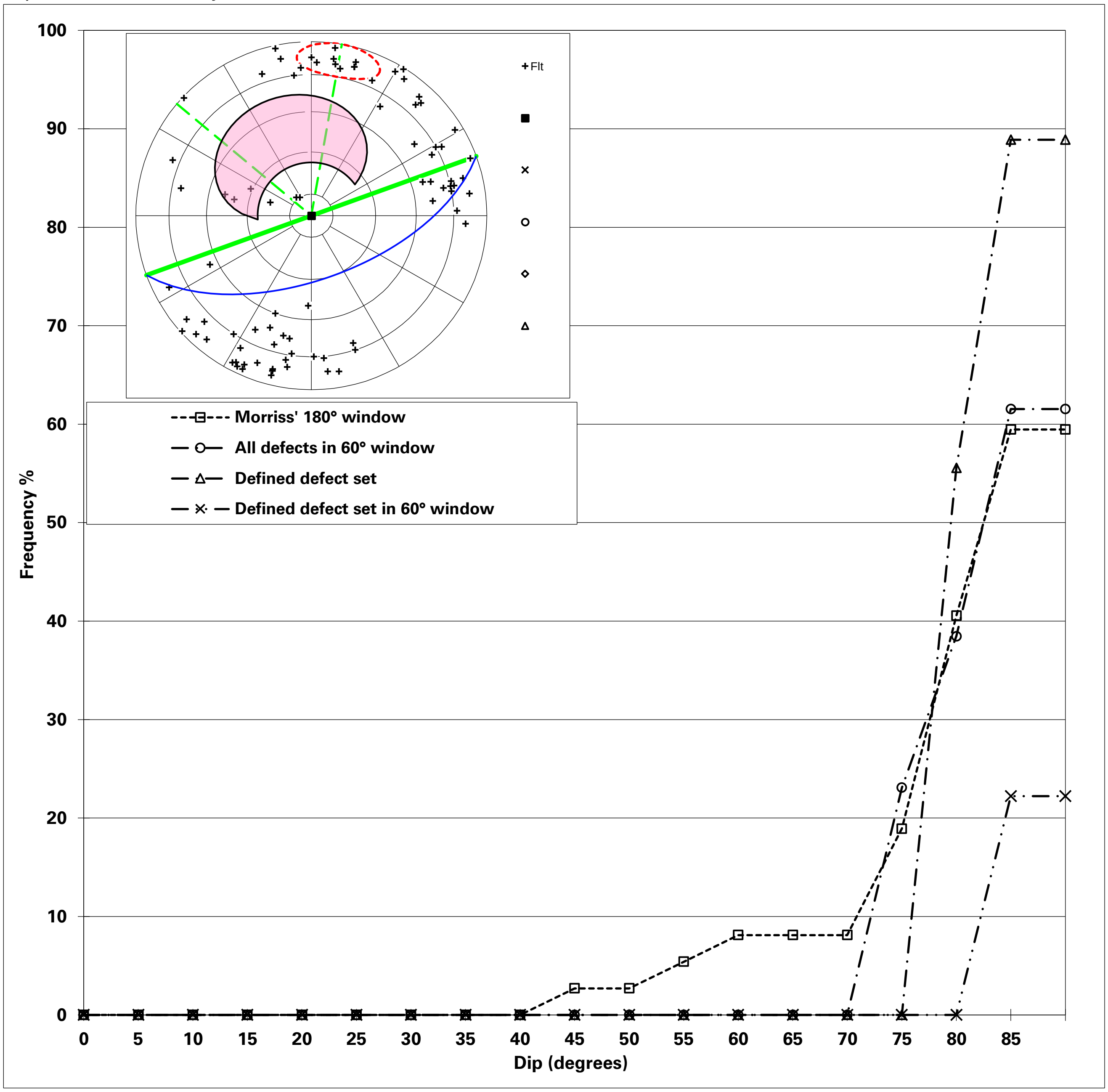
Defects in kinematic window	27
Defects in set TV8	15
Defect in set & window	15
Defects Dipping out of Slope	36

OceanaGold
MP4 LOM 2022

GB Trench Data
Faults

PLANAR SLIDING

Equal Area Polar Projection



PARAMETERS OF THE PIT WALL

Slope Direction	160
Kinematic Window ±	30

DEFECT SET

FT7	Mean	±
Dip	80	10
Dip Direction	190	15

DEFECT SHEAR STRENGTHS

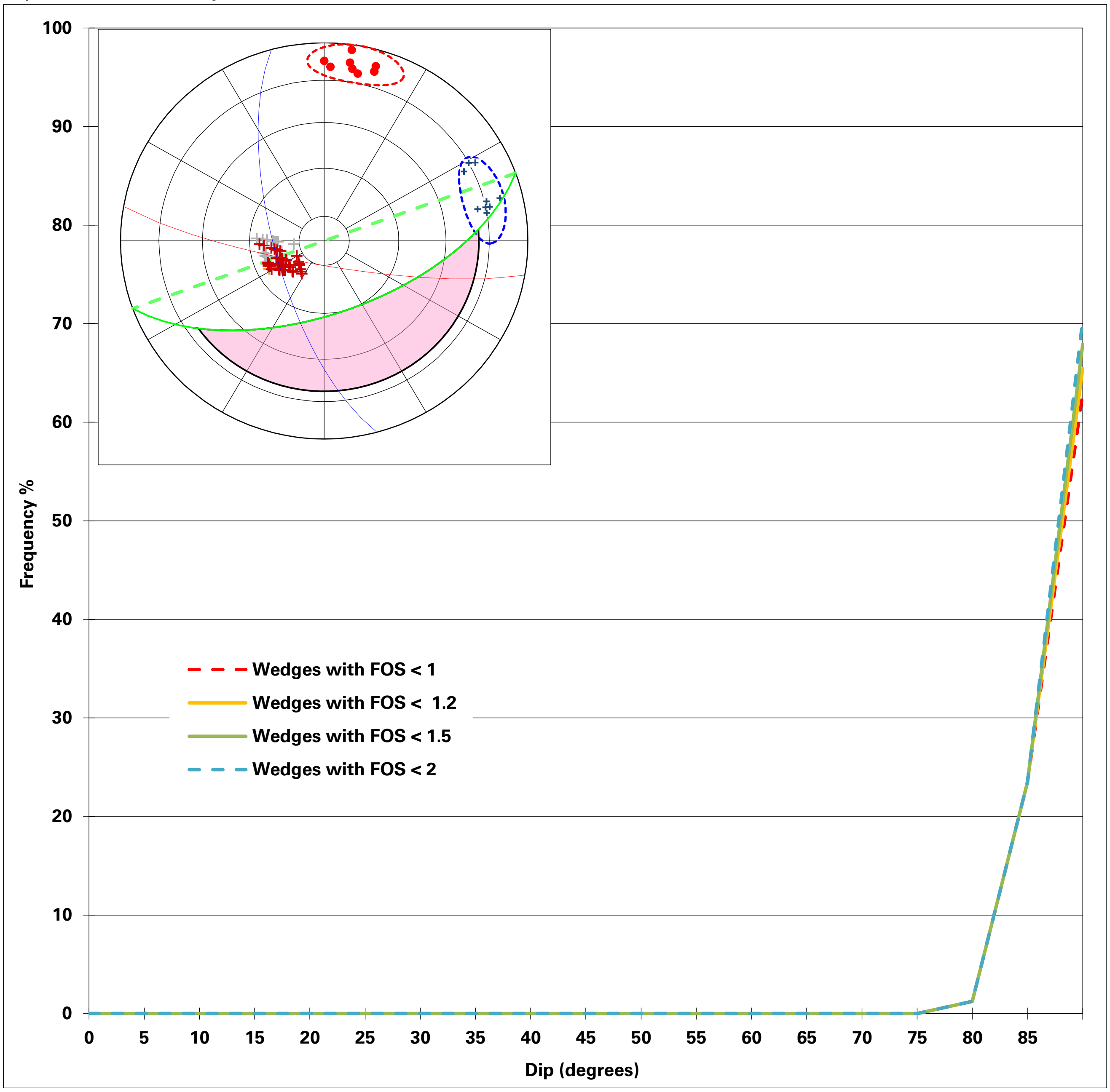
Cohesion	=	0 kPa
Friction Angle	=	25°

Defects in kinematic window	11
Defects in set FT7	9
Defect in set & window	5
Defects Dipping out of Slope	34

OceanaGold **GB Trench Data**
MP4 LOM 2022 Faults

WEDGE FAILURE

Equal Area Polar Projection



PARAMETERS OF THE PIT WALL

Slope Direction 160

DEFECT SHEAR STRENGTHS

Cohesion = 0 kPa
Friction Angle = 25°

FIRST SET - RED

FT7	Mean	±
Dip	80	10
Dip Direction	190	15

Defects in set FT7 9

SECOND SET - BLUE

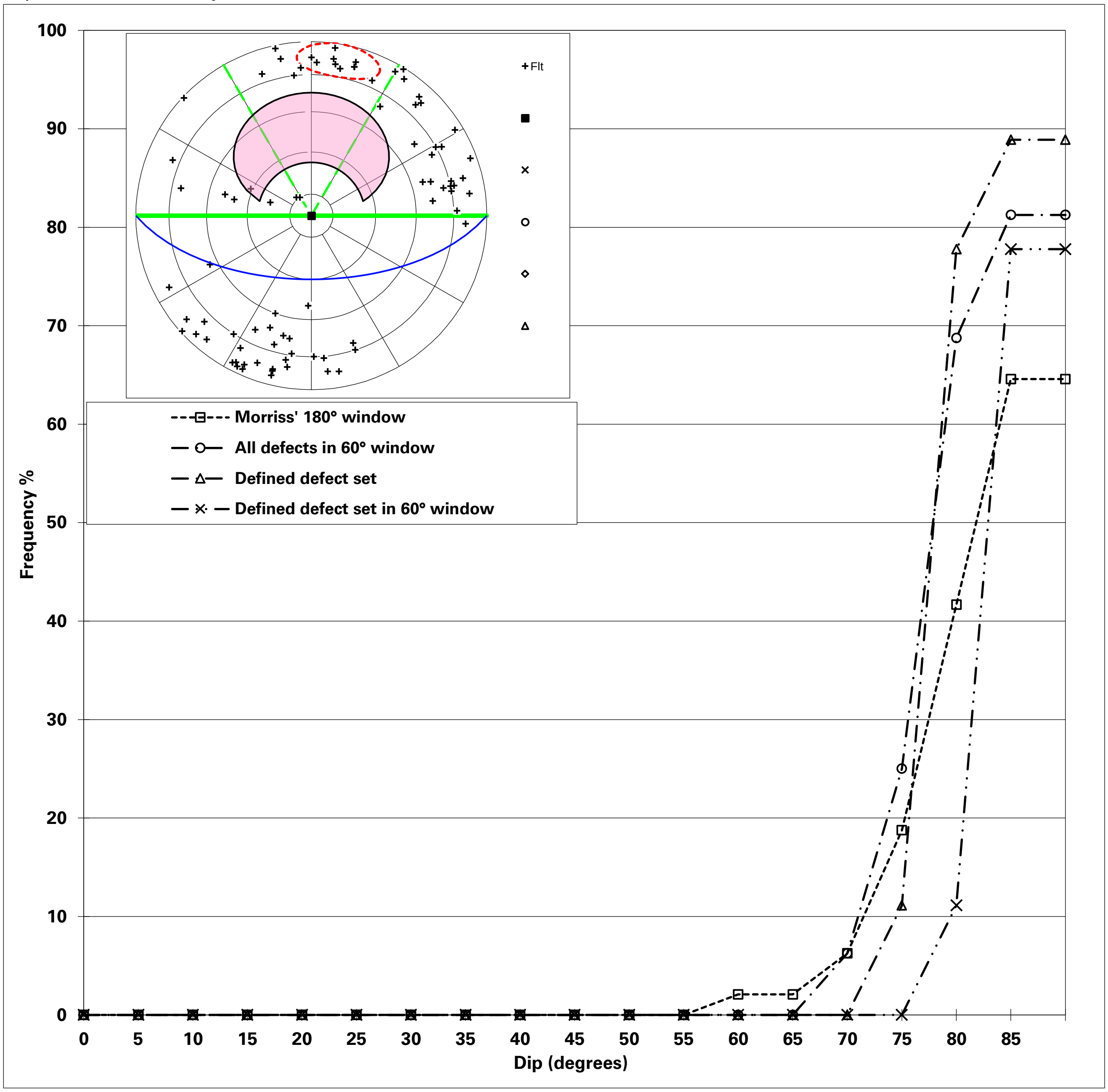
FT6	Mean	±
Dip	70	10
Dip Direction	255	15

Defects in set FT6 9

Number of Unstable Wedges 52
Number of Wedges Analysed 81 From a possible Total Number of 81

PLANAR SLIDING

Equal Area Polar Projection



PARAMETERS OF THE PIT WALL

Slope Direction	180
Kinematic Window ±	30

DEFECT SET

FT7	Mean	±
Dip	80	10
Dip Direction	190	15

DEFECT SHEAR STRENGTHS

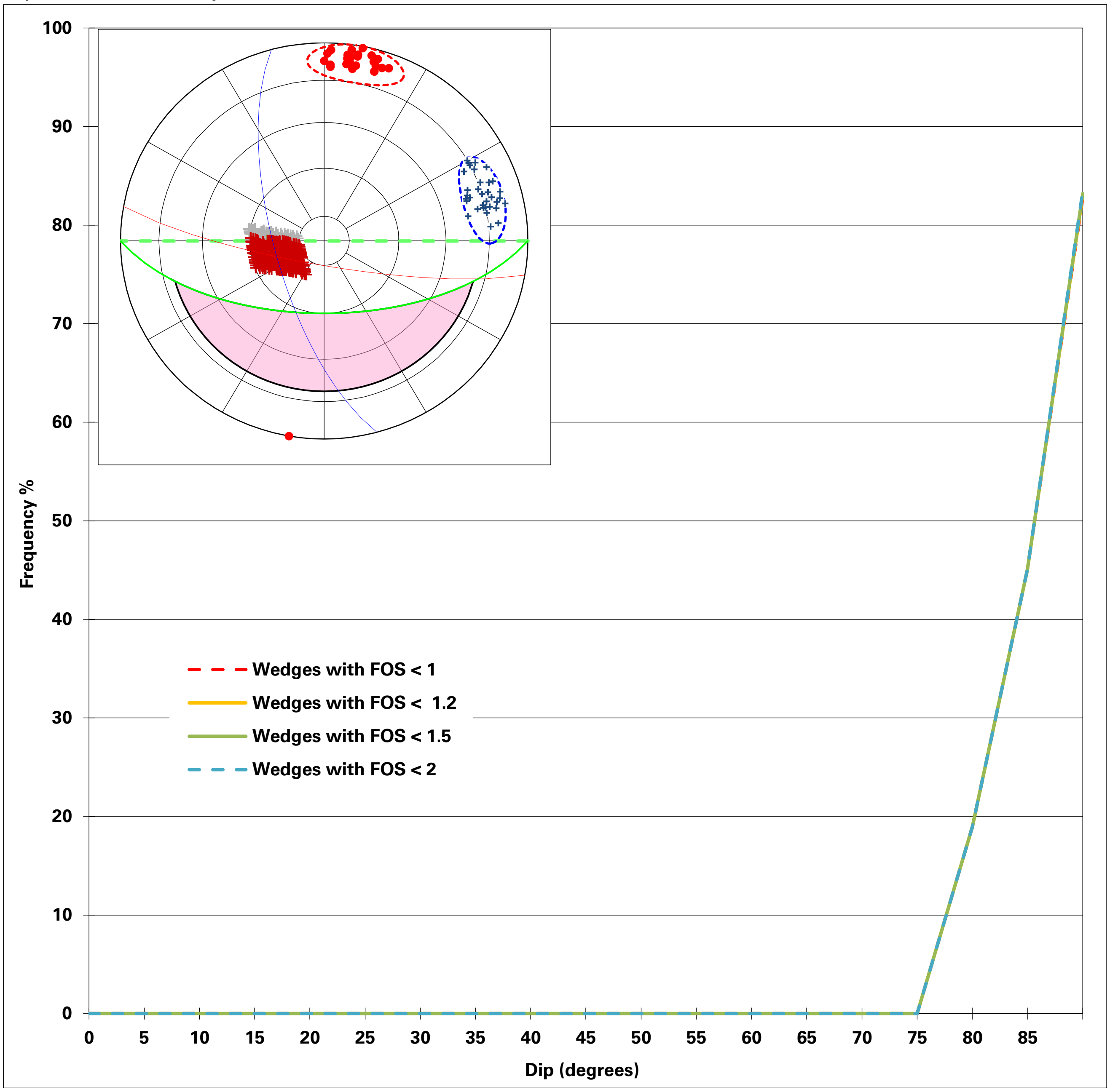
Cohesion	=	0 kPa
Friction Angle	=	25°

Defects in kinematic window	16
Defects in set FT7	9
Defect in set & window	9
Defects Dipping out of Slope	45

OceanaGold | **GB Trench Data**
MP4 LOM 2022 | Faults & Joints

WEDGE FAILURE

Equal Area Polar Projection



PARAMETERS OF THE PIT WALL

Slope Direction 180

DEFECT SHEAR STRENGTHS

Cohesion = 0 kPa

Friction Angle = 25°

FIRST SET - RED

TV7	Mean	±
Dip	80	10
Dip Direction	190	15

Defects in set FT7 28

SECOND SET - BLUE

TV6	Mean	±
Dip	70	10
Dip Direction	255	15

Defects in set FT6 34

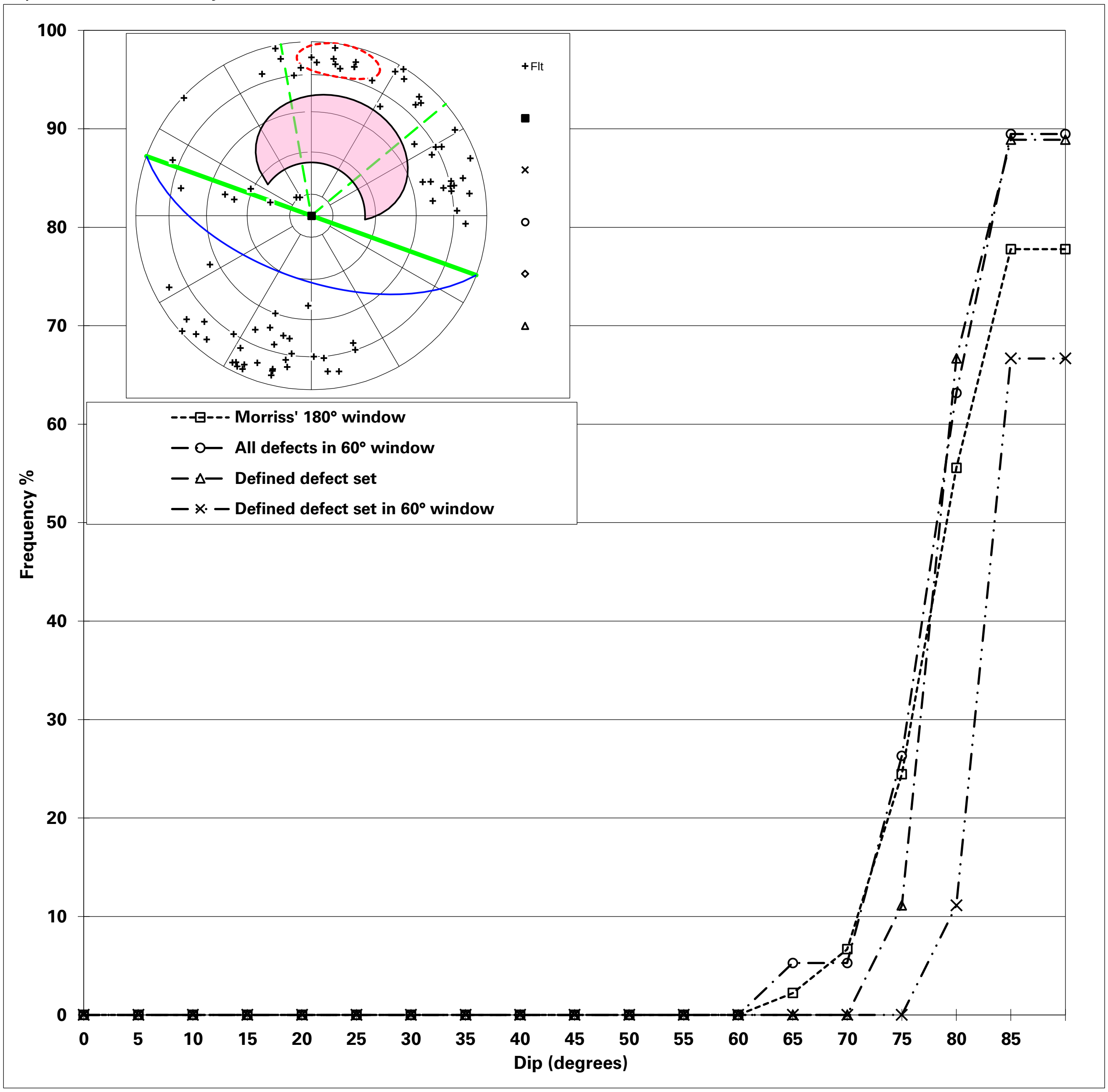
Number of Unstable Wedges 789

Number of Wedges Analysed 952 From a possible Total Number of 952

OceanaGold **GB Trench Data**
MP4 LOM 2022 Faults

PLANAR SLIDING

Equal Area Polar Projection



PARAMETERS OF THE PIT WALL	
Slope Direction	200
Kinematic Window ±	30

DEFECT SHEAR STRENGTHS		
Cohesion	=	0 kPa
Friction Angle	=	25°

DEFECT SET

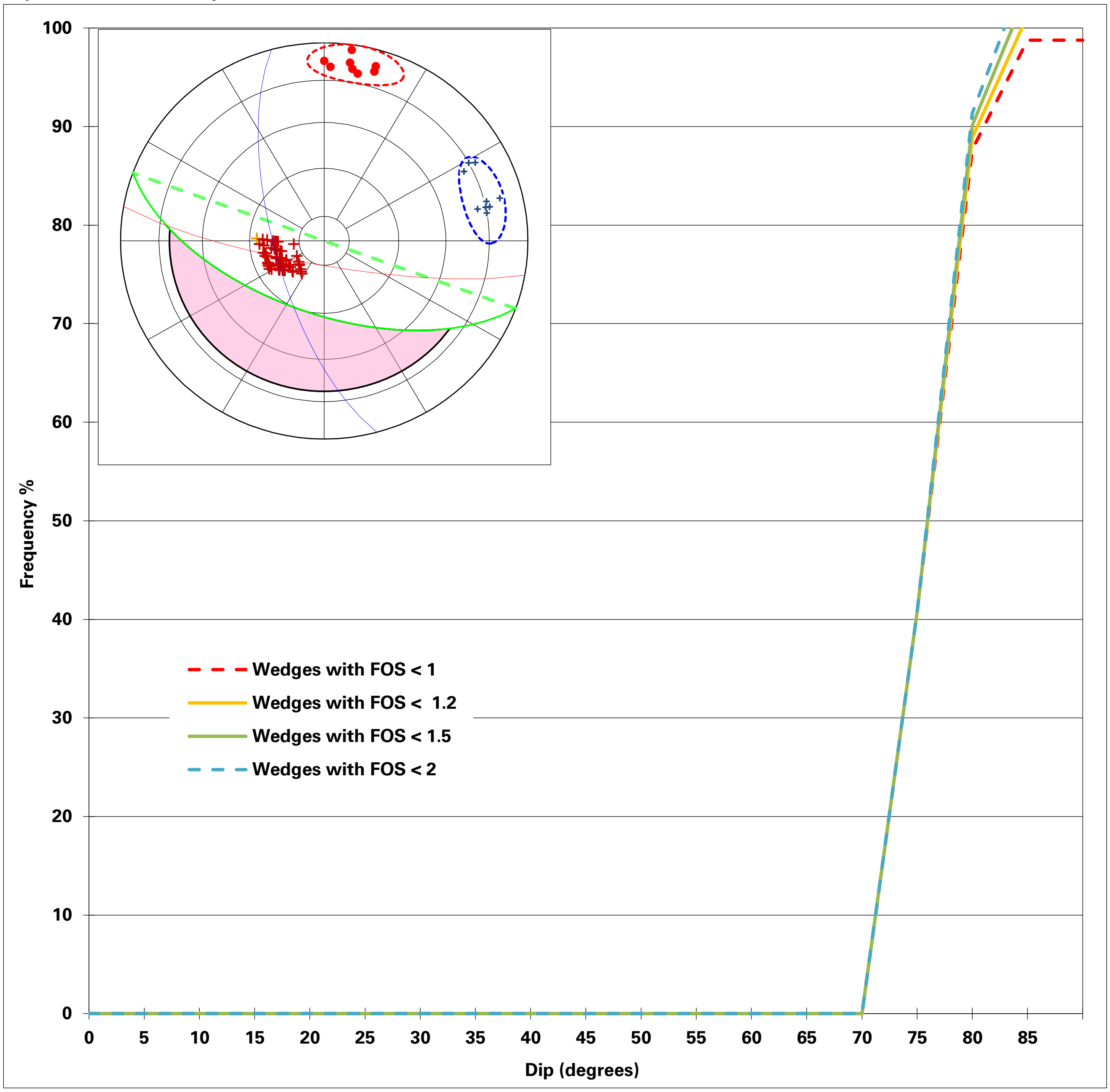
FT7	Mean	±
Dip	80	10
Dip Direction	190	15

Defects in kinematic window	19
Defects in set FT7	9
Defect in set & window	9
Defects Dipping out of Slope	43

OceanaGold | **GB Trench Data**
MP4 LOM 2022 | Faults

WEDGE FAILURE

Equal Area Polar Projection



PARAMETERS OF THE PIT WALL

Slope Direction 200

DEFECT SHEAR STRENGTHS

Cohesion = 0 kPa

Friction Angle = 25°

FIRST SET - RED

FT7	Mean	±
Dip	80	10
Dip Direction	190	15

Defects in set FT7 9

SECOND SET - BLUE

FT6	Mean	±
Dip	70	10
Dip Direction	255	15

Defects in set FT6 9

Number of Unstable Wedges 81

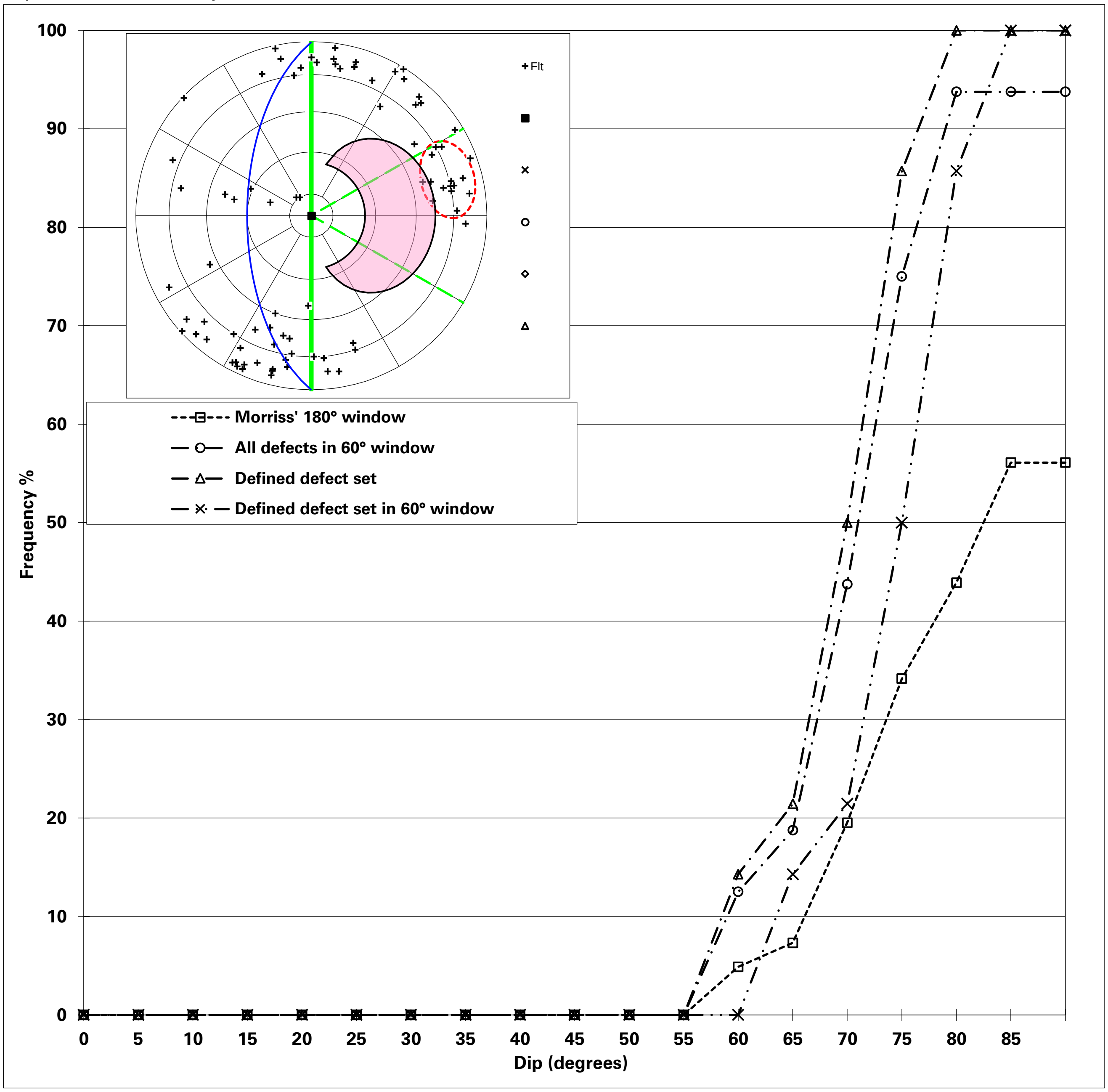
Number of Wedges Analysed 81 From a possible Total Number of 81

OceanaGold
MP4 LOM 2022

GB Trench Data
Faults

PLANAR SLIDING

Equal Area Polar Projection



PARAMETERS OF THE PIT WALL

Slope Direction	270
Kinematic Window ±	30

DEFECT SHEAR STRENGTHS

Cohesion	=	0 kPa
Friction Angle	=	25°

DEFECT SET

FT6	Mean	±
Dip	70	15
Dip Direction	255	15

Defects in kinematic window	16
Defects in set FT6	14
Defect in set & window	14
Defects Dipping out of Slope	41

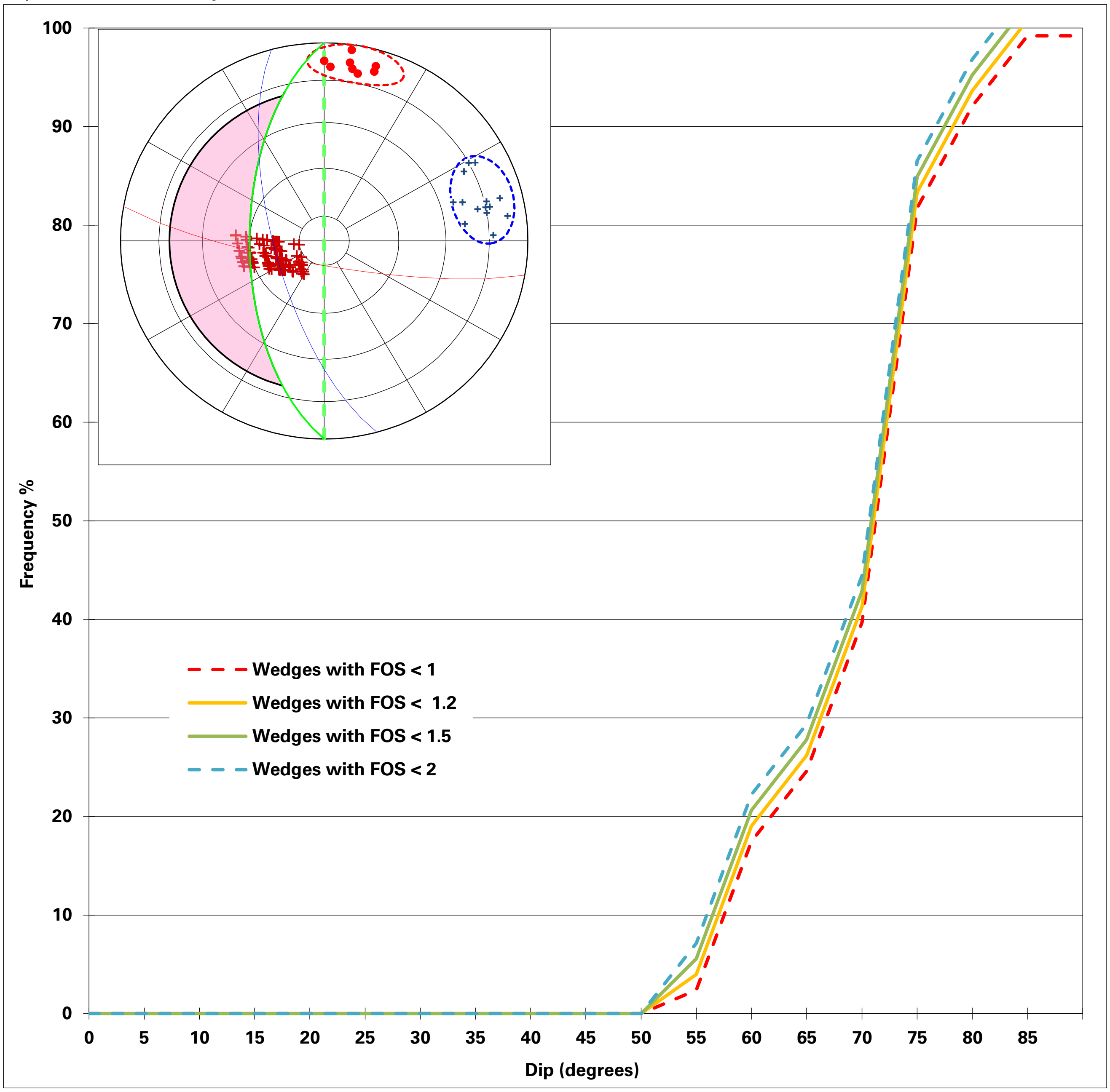
PSM Statistical Kinematics Analysis Planar 7/06/2022 11:09 AM

OceanaGold
MP4 LOM 2022

GB Trench Data
Faults

WEDGE FAILURE

Equal Area Polar Projection



PARAMETERS OF THE PIT WALL

Slope Direction 270

DEFECT SHEAR STRENGTHS

Cohesion	=	0 kPa
Friction Angle	=	25°

FIRST SET - RED

FT7	Mean	±
Dip	80	10
Dip Direction	190	15

Defects in set FT7 9

SECOND SET - BLUE

FT6	Mean	±
Dip	70	15
Dip Direction	255	15

Defects in set FT6 14

Number of Unstable Wedges 126
Number of Wedges Analysed 126 From a possible Total Number of 126

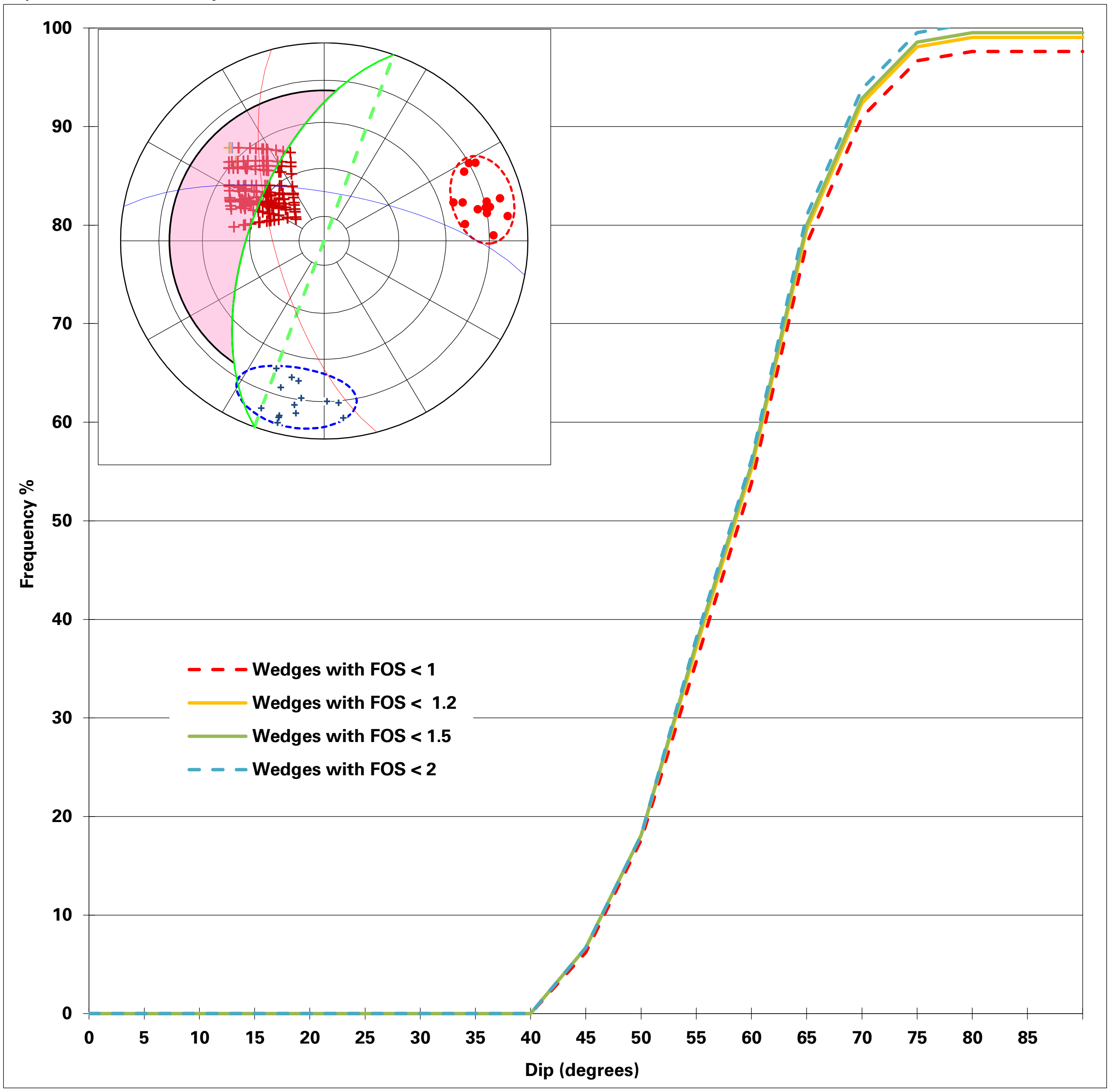
PSM

OceanaGold
MP4 LOM 2022

GB Trench Data
Faults

WEDGE FAILURE

Equal Area Polar Projection



PARAMETERS OF THE PIT WALL

Slope Direction 290

DEFECT SHEAR STRENGTHS

Cohesion	=	0 kPa
Friction Angle	=	25°

FIRST SET - RED

FT6	Mean	±
Dip	70	15
Dip Direction	255	15

Defects in set FT6 14

SECOND SET - BLUE

FT8	Mean	±
Dip	70	15
Dip Direction	10	20

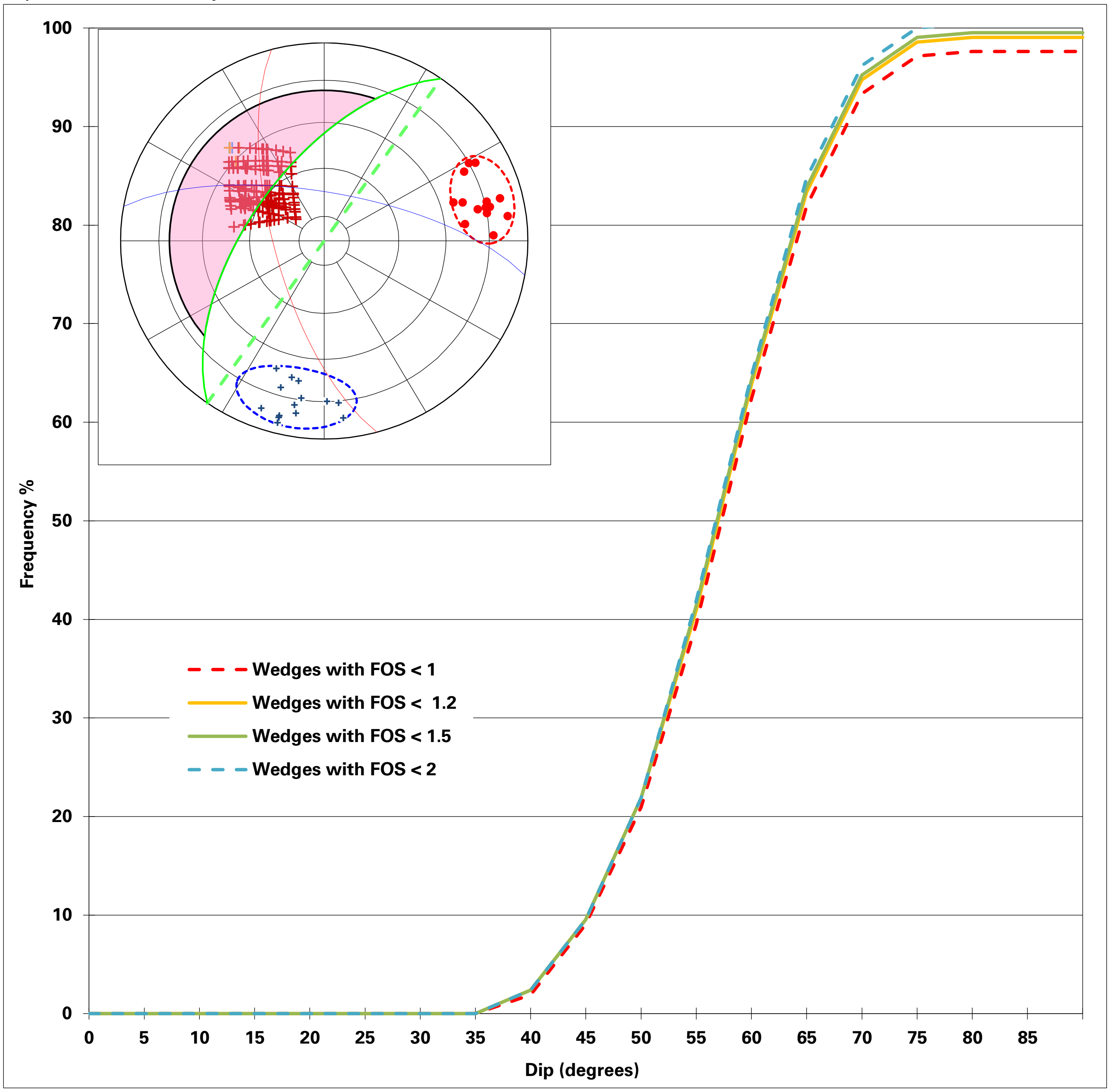
Defects in set FT8 15

Number of Unstable Wedges 206
Number of Wedges Analysed 210 From a possible Total Number of 210

OceanaGold | **GB Trench Data**
MP4 LOM 2022 | Faults

WEDGE FAILURE

Equal Area Polar Projection



PARAMETERS OF THE PIT WALL

Slope Direction 305

DEFECT SHEAR STRENGTHS

Cohesion = 0 kPa

Friction Angle = 25°

FIRST SET - RED

FT6	Mean	±
Dip	70	15
Dip Direction	255	15

Defects in set FT6 14

SECOND SET - BLUE

FT8	Mean	±
Dip	70	15
Dip Direction	10	20

Defects in set FT8 15

Number of Unstable Wedges 206

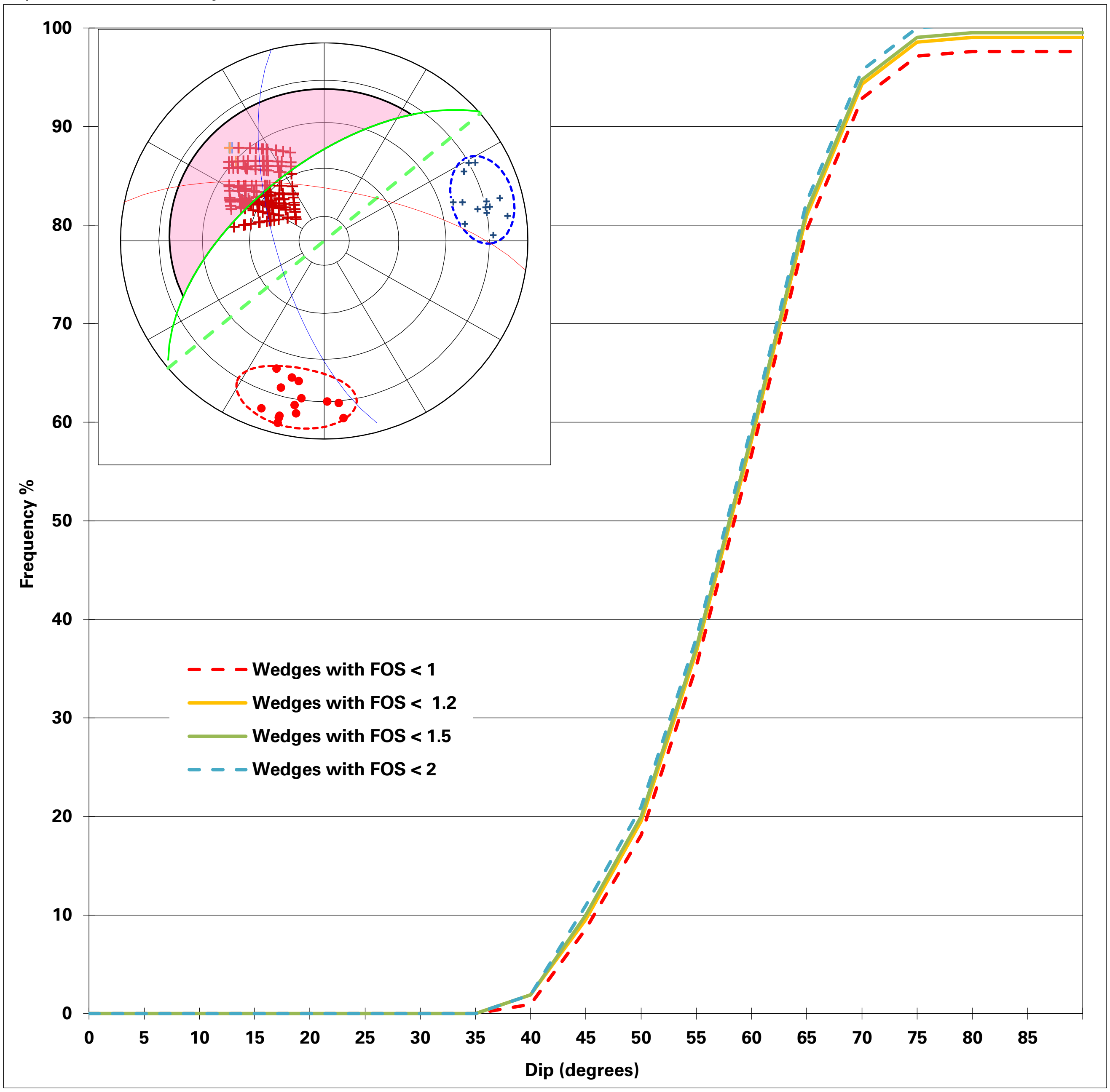
Number of Wedges Analysed 210

From a possible Total Number of 210

OceanaGold **GB Trench Data**
MP4 LOM 2022 Faults

WEDGE FAILURE

Equal Area Polar Projection



PARAMETERS OF THE PIT WALL

Slope Direction 320

DEFECT SHEAR STRENGTHS

Cohesion	=	0 kPa
Friction Angle	=	25°

FIRST SET - RED

TV8	Mean	±
Dip	70	15
Dip Direction	10	20

Defects in set FT8 15

SECOND SET - BLUE

TV6	Mean	±
Dip	70	15
Dip Direction	255	15

Defects in set FT6 14

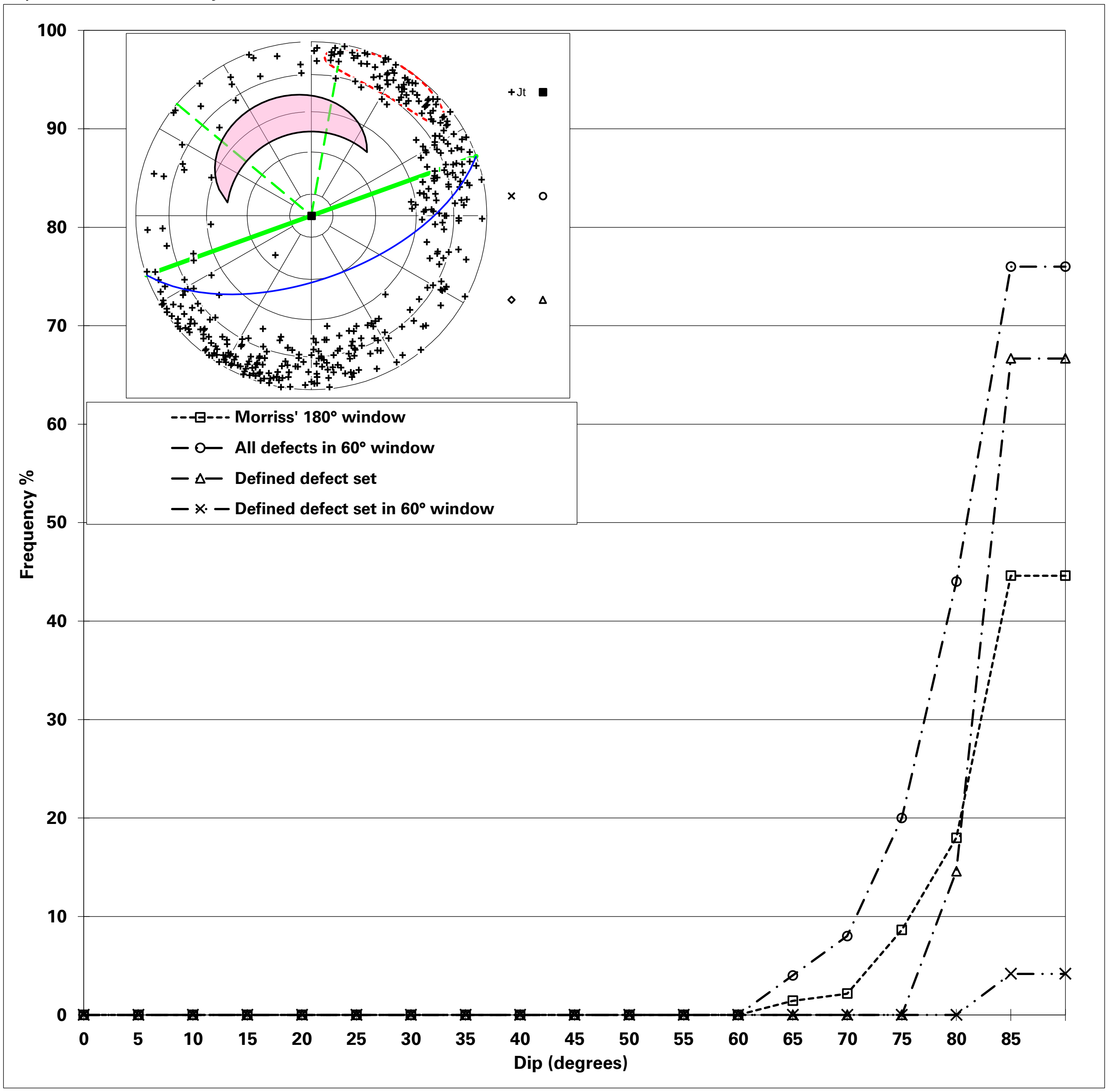
Number of Unstable Wedges 206
Number of Wedges Analysed 210 From a possible Total Number of 210

PSM

OceanaGold **GB Trench Data**
MP4 LOM 2022 Joints

PLANAR SLIDING

Equal Area Polar Projection



PARAMETERS OF THE PIT WALL

Slope Direction	160
Kinematic Window ±	30

DEFECT SHEAR STRENGTHS

Cohesion	=	0 kPa
Friction Angle	=	40°

DEFECT SET

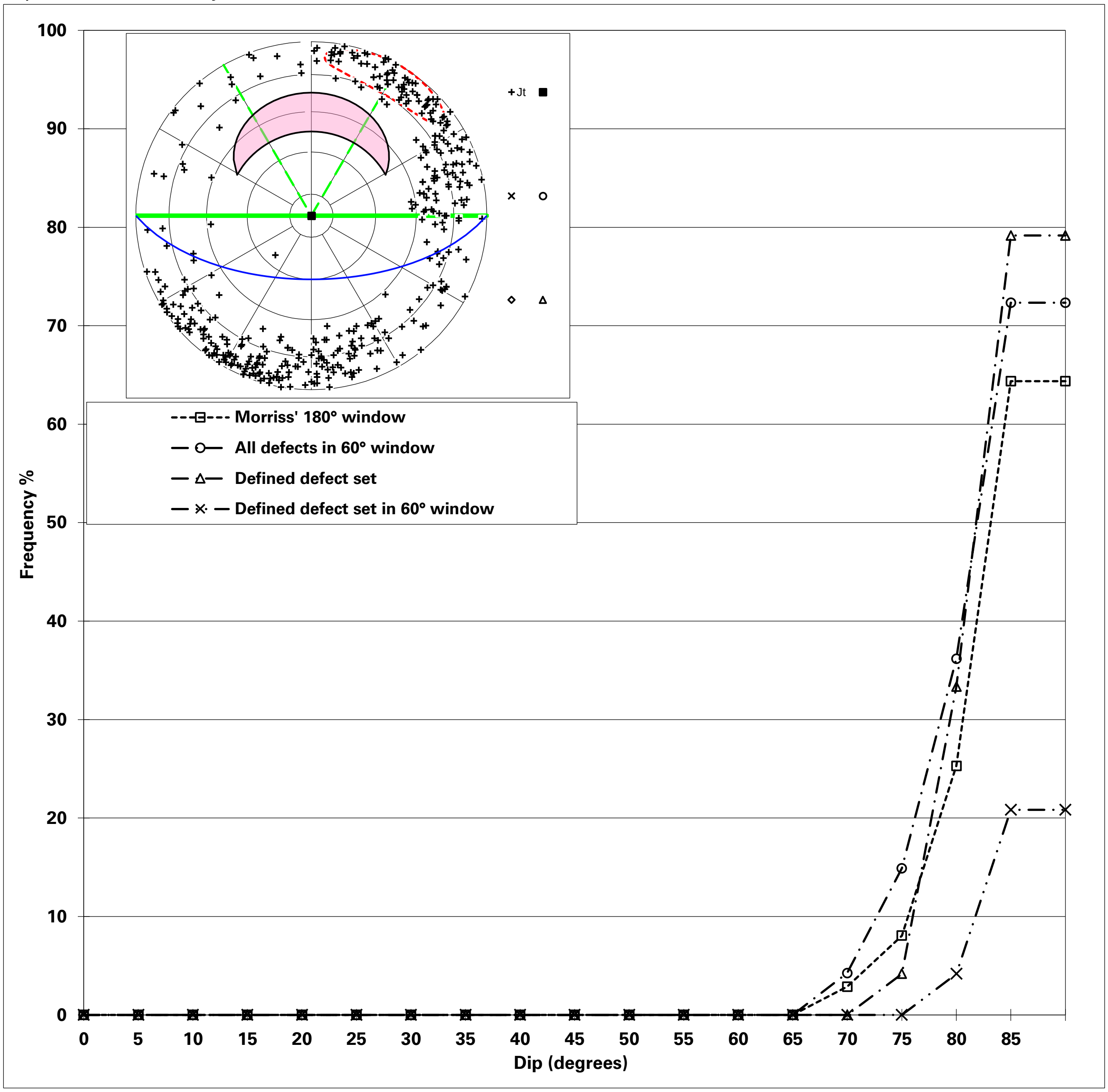
JT3	Mean	±
Dip	80	10
Dip Direction	210	25

Defects in kinematic window	25
Defects in set JT3	48
Defect in set & window	8
Defects Dipping out of Slope	139

OceanaGold | **GB Trench Data**
MP4 LOM 2022 | Joints

PLANAR SLIDING

Equal Area Polar Projection



PARAMETERS OF THE PIT WALL

Slope Direction	180
Kinematic Window ±	30

DEFECT SET

JT3	Mean	±
Dip	80	10
Dip Direction	210	25

DEFECT SHEAR STRENGTHS

Cohesion	=	0 kPa
Friction Angle	=	40°

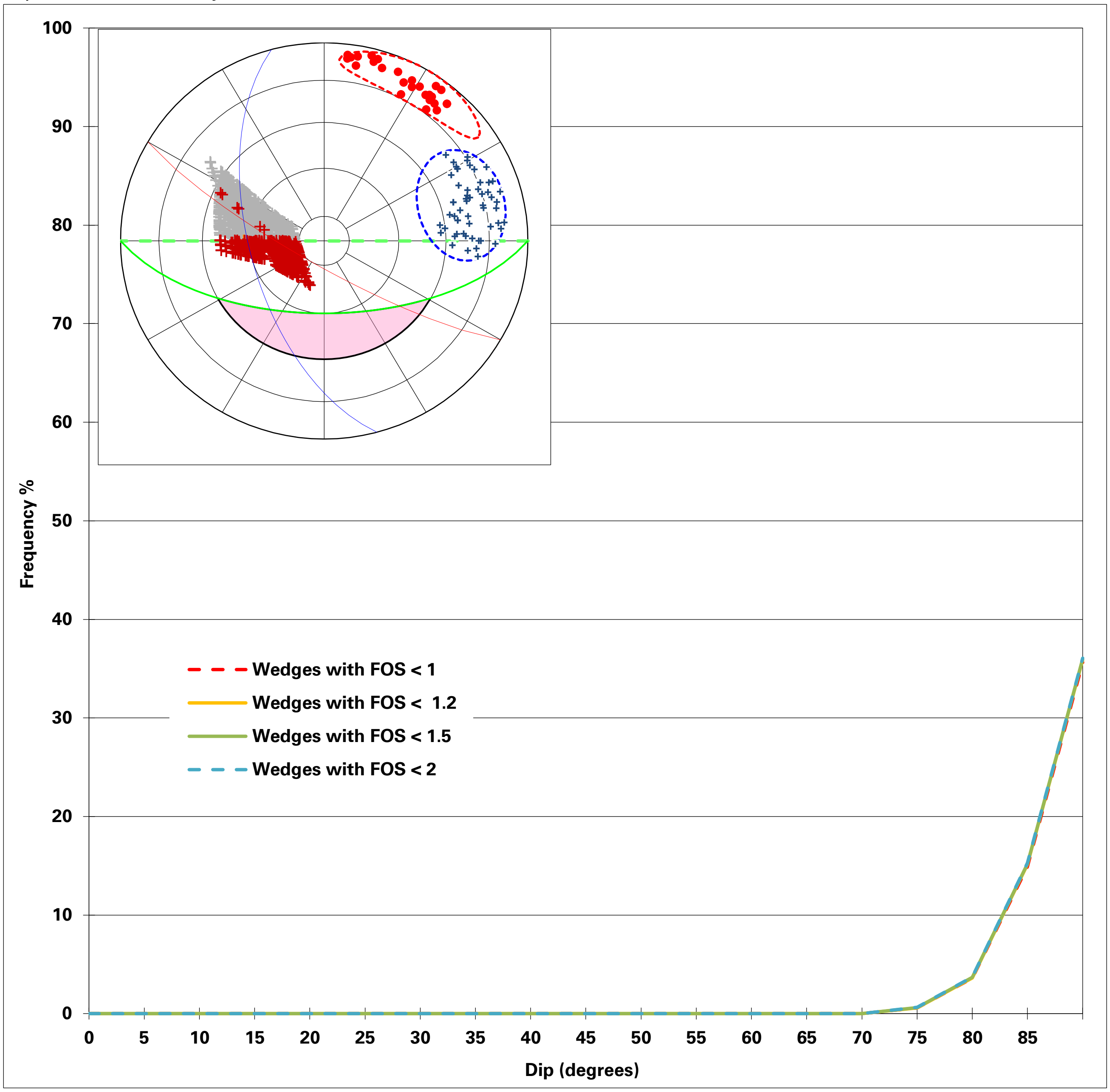
Defects in kinematic window	47
Defects in set JT3	48
Defect in set & window	30
Defects Dipping out of Slope	174

OceanaGold
MP4 LOM 2022

GB Trench Data
Joints

WEDGE FAILURE

Equal Area Polar Projection



PARAMETERS OF THE PIT WALL

Slope Direction 180

DEFECT SHEAR STRENGTHS

Cohesion = 0 kPa
Friction Angle = 40°

FIRST SET - RED

JT3	Mean	±
Dip	80	10
Dip Direction	210	25

Defects in set JT3 48

SECOND SET - BLUE

JT4	Mean	±
Dip	60	20
Dip Direction	255	20

Defects in set JT4 58

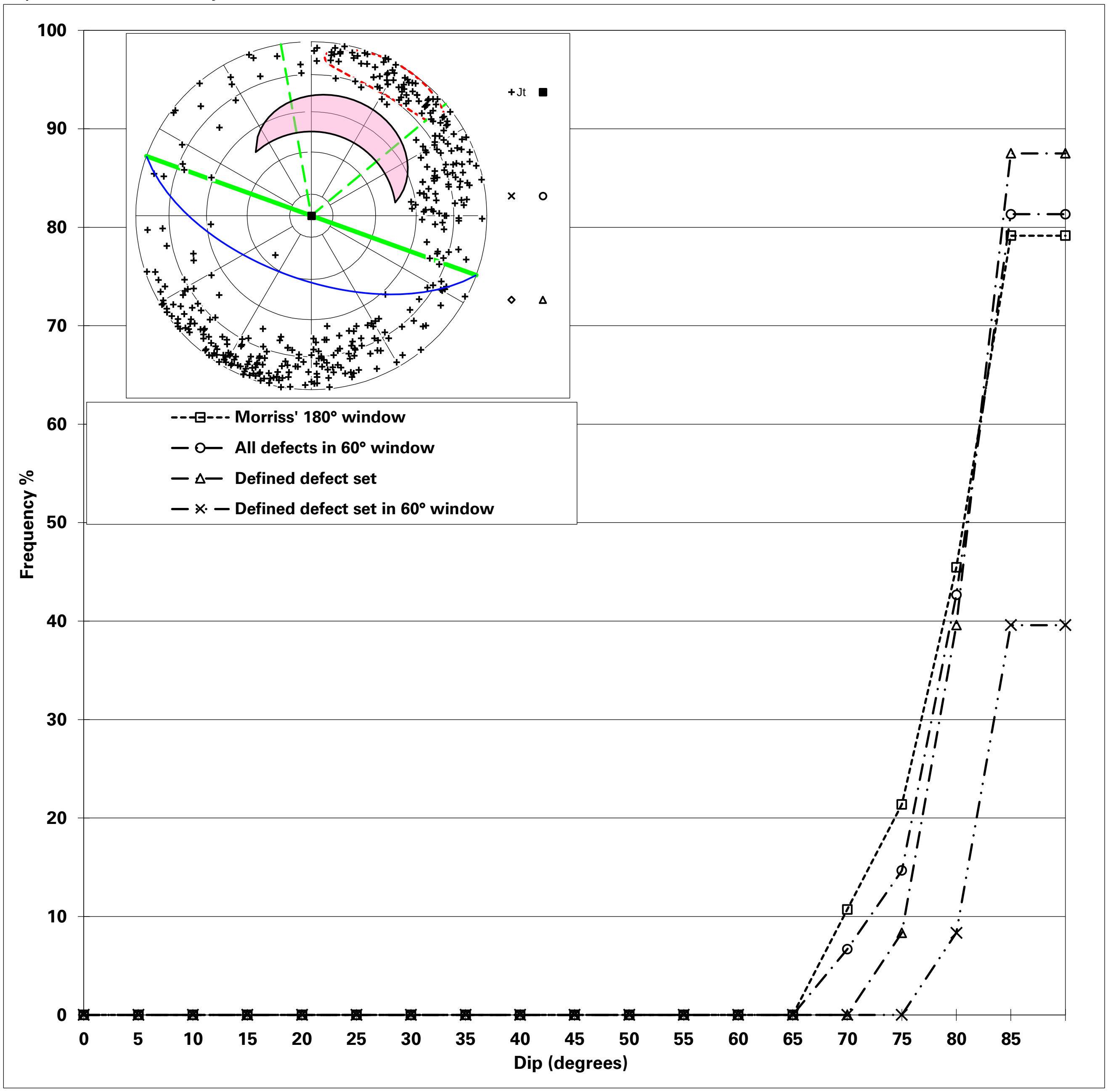
Number of Unstable Wedges 993
Number of Wedges Analysed 2784

From a possible Total Number of 2784

OceanaGold | **GB Trench Data**
MP4 LOM 2022 | Joints

PLANAR SLIDING

Equal Area Polar Projection



PARAMETERS OF THE PIT WALL

Slope Direction	200
Kinematic Window ±	30

DEFECT SET

JT3	Mean	±
Dip	80	10
Dip Direction	210	25

DEFECT SHEAR STRENGTHS

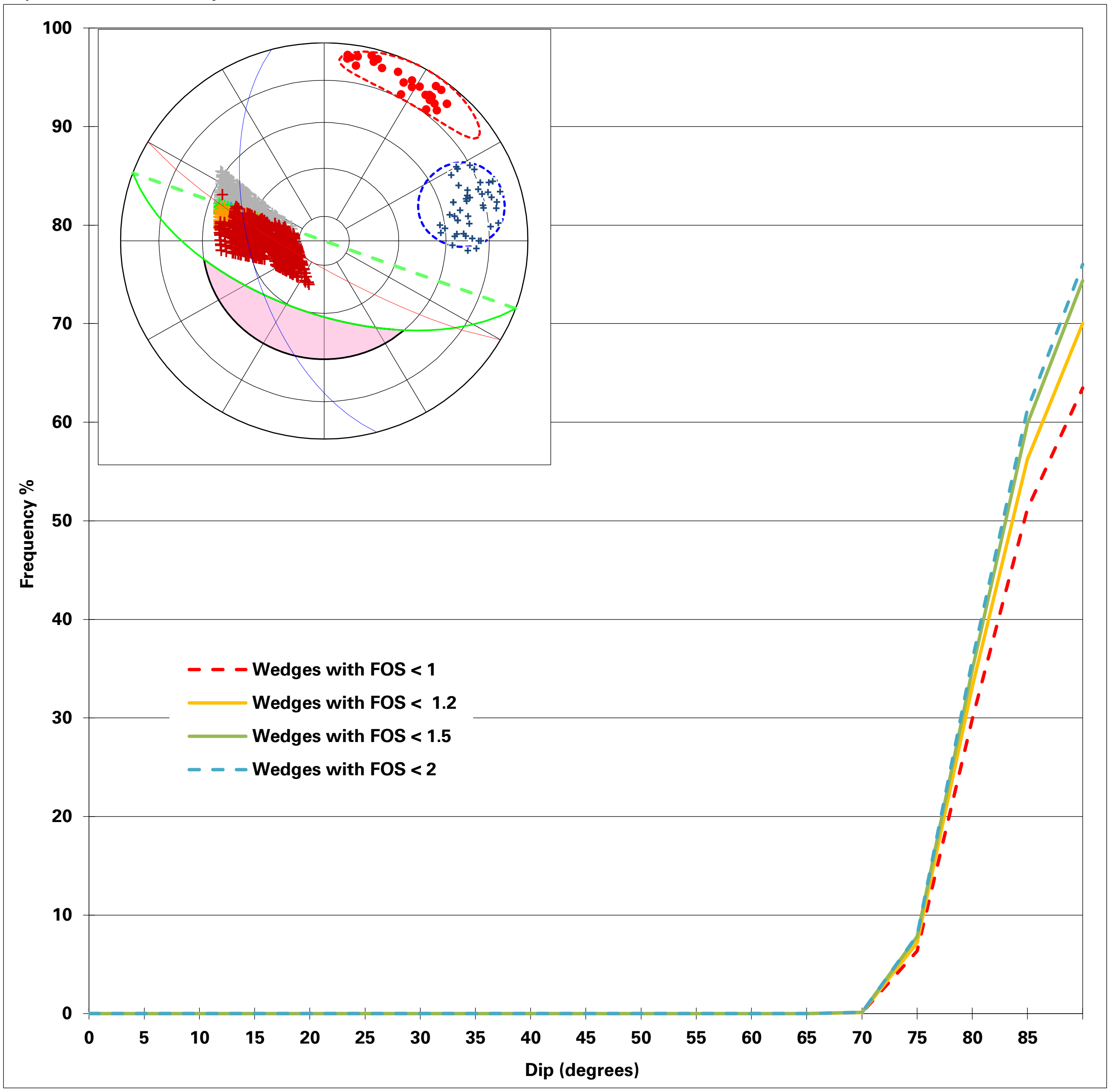
Cohesion	=	0 kPa
Friction Angle	=	40°

Defects in kinematic window	75
Defects in set JT3	48
Defect in set & window	48
Defects Dipping out of Slope	187

OceanaGold **GB Trench Data**
MP4 LOM 2022 Joints

WEDGE FAILURE

Equal Area Polar Projection



PARAMETERS OF THE PIT WALL

Slope Direction 200

DEFECT SHEAR STRENGTHS

Cohesion = 0 kPa

Friction Angle = 40°

FIRST SET - RED

JT3	Mean	±
Dip	80	10
Dip Direction	210	25

Defects in set JT3 48

SECOND SET - BLUE

JT4	Mean	±
Dip	60	20
Dip Direction	255	15

Defects in set JT4 49

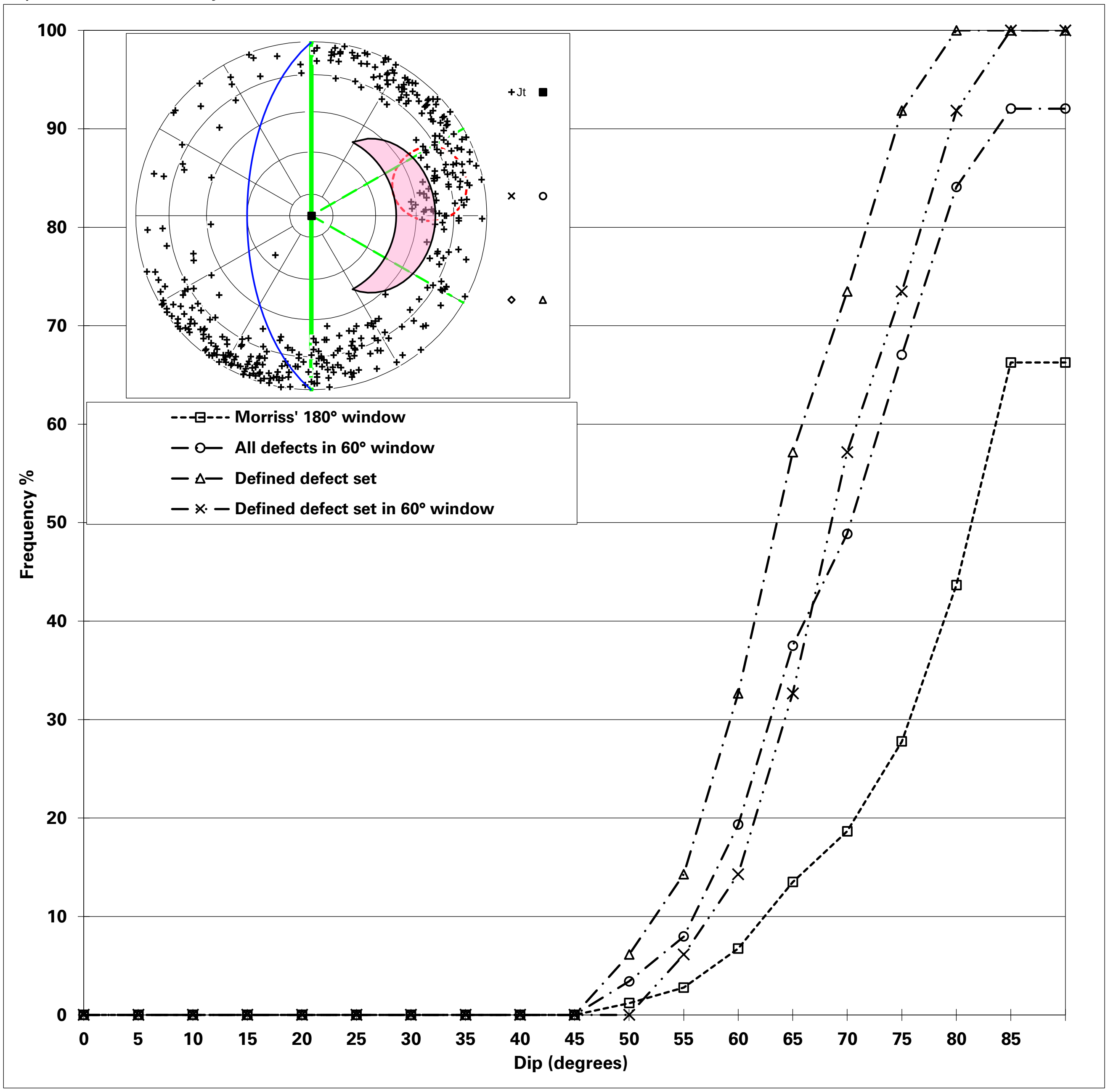
Number of Unstable Wedges 1494

Number of Wedges Analysed 2352

From a possible Total Number of 2352

PLANAR SLIDING

Equal Area Polar Projection



PARAMETERS OF THE PIT WALL

Slope Direction	270
Kinematic Window ±	30

DEFECT SET

JT4	Mean	±
Dip	60	20
Dip Direction	255	15

DEFECT SHEAR STRENGTHS

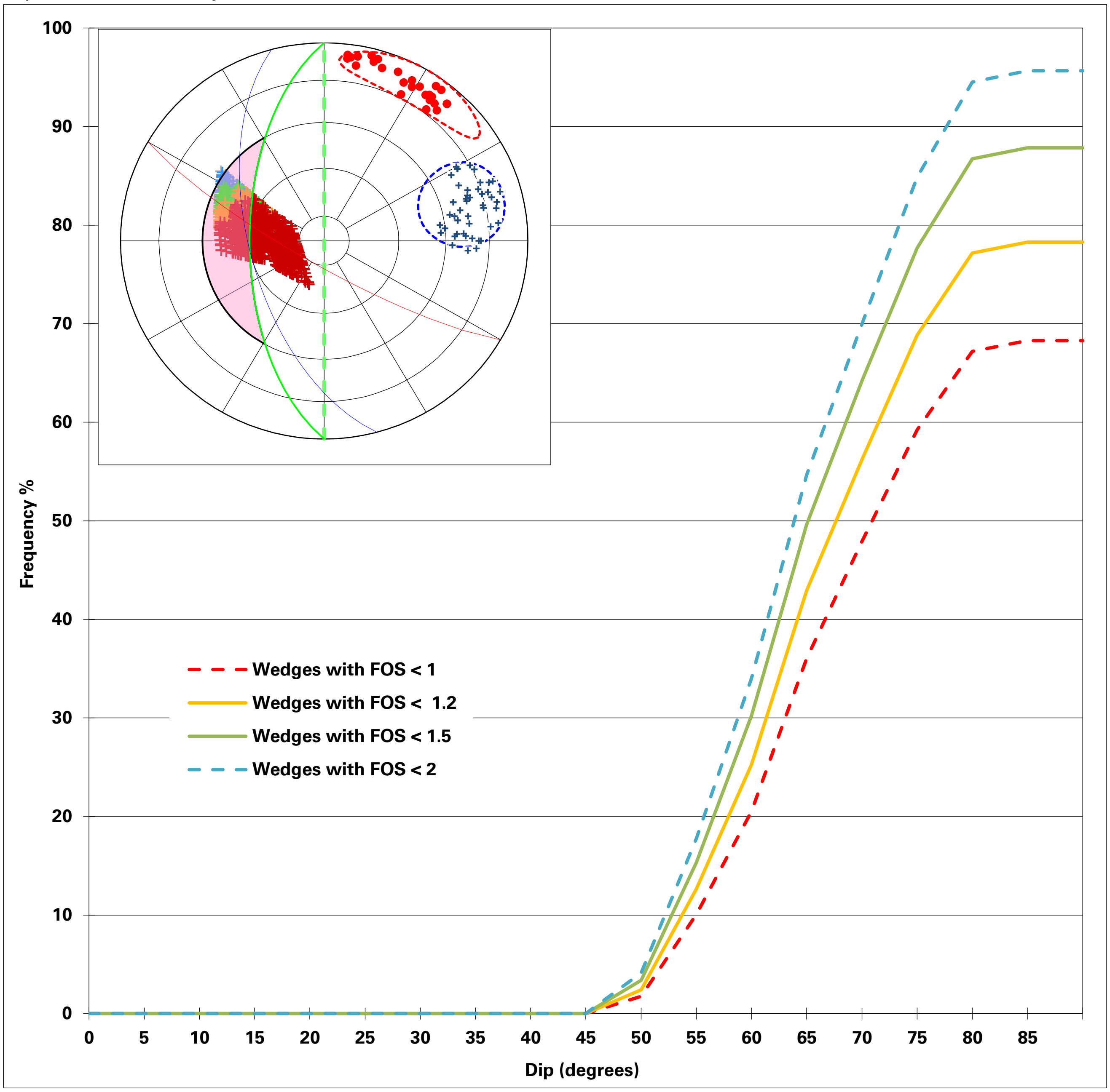
Cohesion	=	0 kPa
Friction Angle	=	40°

Defects in kinematic window	88
Defects in set JT4	49
Defect in set & window	49
Defects Dipping out of Slope	252

OceanaGold **GB Trench Data**
MP4 LOM 2022 Joints

WEDGE FAILURE

Equal Area Polar Projection



PARAMETERS OF THE PIT WALL

Slope Direction 270

DEFECT SHEAR STRENGTHS

Cohesion = 0 kPa

Friction Angle = 40°

FIRST SET - RED

JT3	Mean	±
Dip	80	10
Dip Direction	210	25

Defects in set JT3 48

SECOND SET - BLUE

JT4	Mean	±
Dip	60	20
Dip Direction	255	15

Defects in set JT4 49

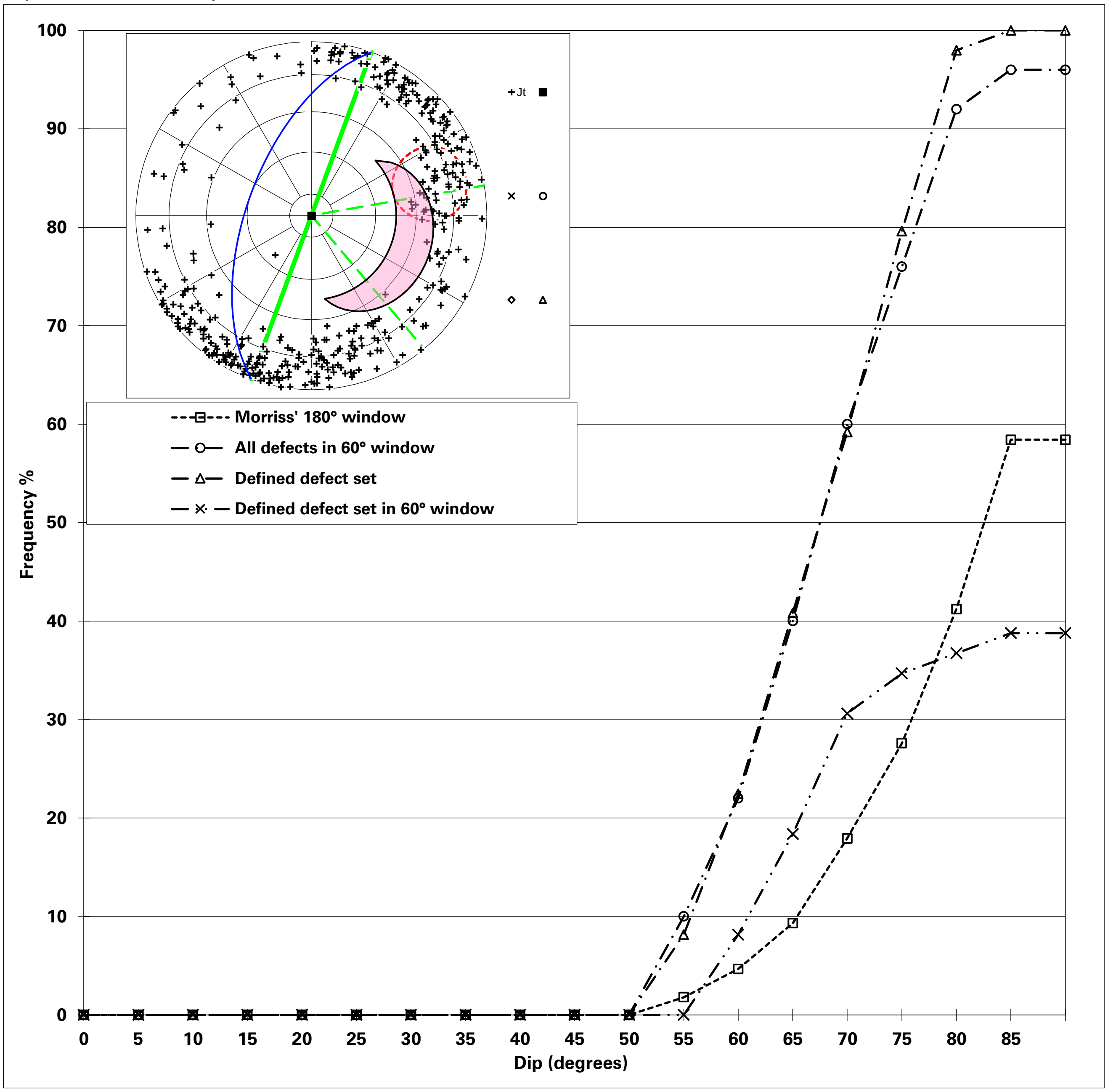
Number of Unstable Wedges 1607

Number of Wedges Analysed 2352 From a possible Total Number of 2352

OceanaGold **GB Trench Data**
MP4 LOM 2022 Joints

PLANAR SLIDING

Equal Area Polar Projection



PARAMETERS OF THE PIT WALL

Slope Direction	290
Kinematic Window ±	30

DEFECT SHEAR STRENGTHS

Cohesion	=	0 kPa
Friction Angle	=	40°

DEFECT SET

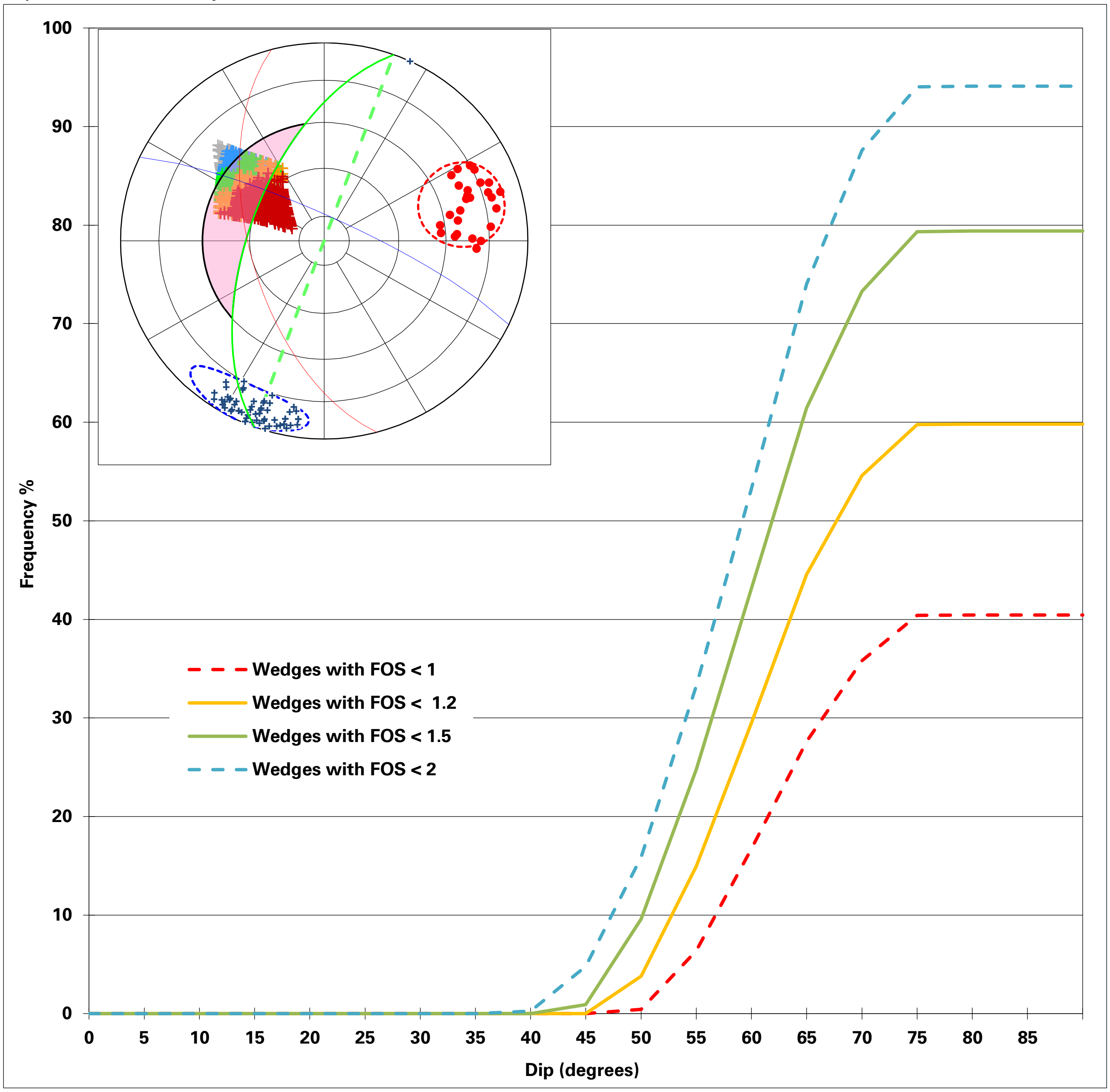
JT4	Mean	±
Dip	60	20
Dip Direction	255	15

Defects in kinematic window	50
Defects in set JT4	49
Defect in set & window	19
Defects Dipping out of Slope	279

OceanaGold **GB Trench Data**
MP4 LOM 2022 Joints

WEDGE FAILURE

Equal Area Polar Projection



PARAMETERS OF THE PIT WALL

Slope Direction 290

DEFECT SHEAR STRENGTHS

Cohesion = 0 kPa

Friction Angle = 40°

FIRST SET - RED

JT4	Mean	±
Dip	60	20
Dip Direction	255	15

Defects in set JT4 49

SECOND SET - BLUE

JT2	Mean	±
Dip	80	10
Dip Direction	25	20

Defects in set JT2 65

Number of Unstable Wedges 1289

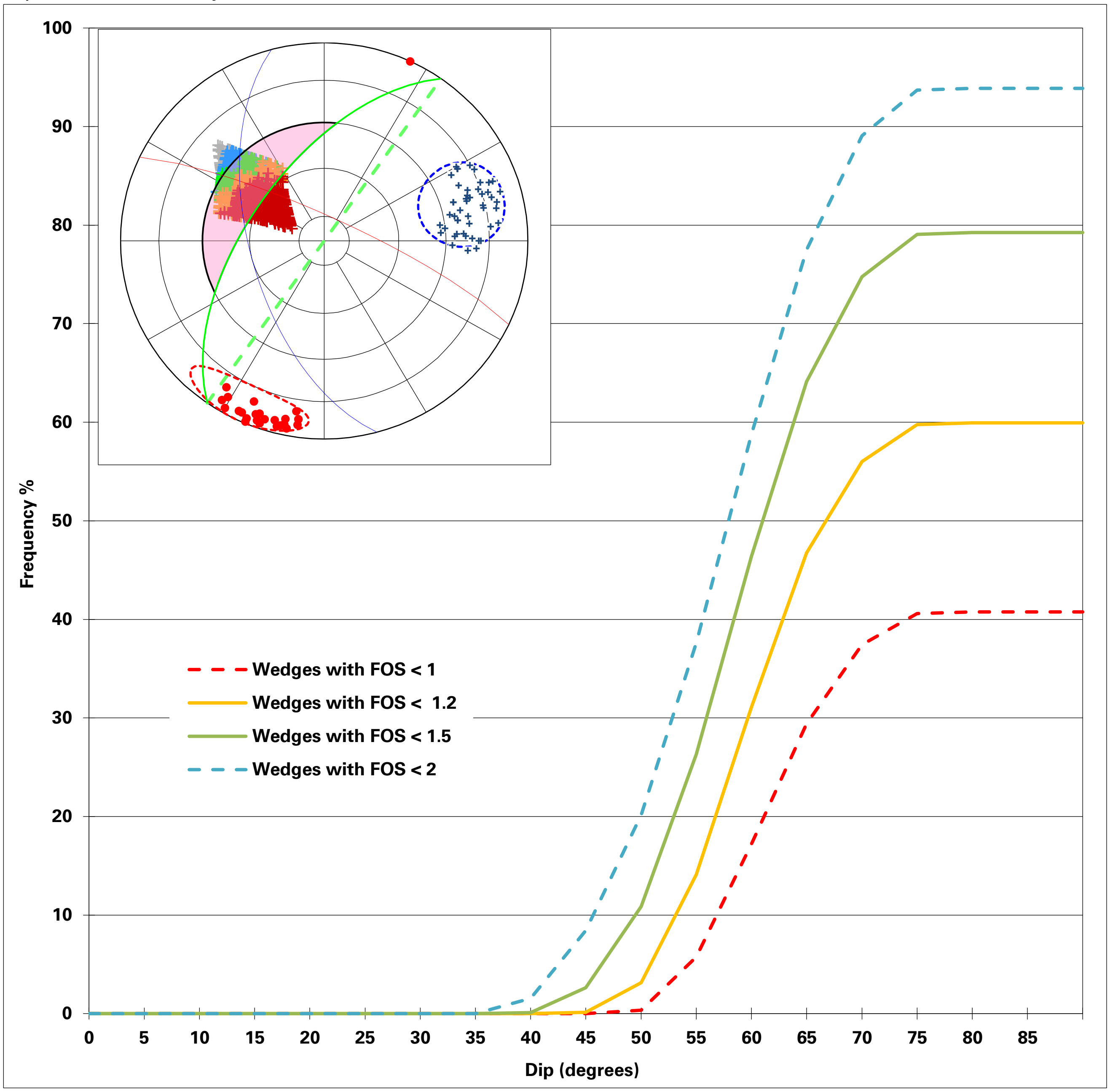
Number of Wedges Analysed 3185 From a possible Total Number of 3185

OceanaGold
MP4 LOM 2022

GB Trench Data
Joints

WEDGE FAILURE

Equal Area Polar Projection



PARAMETERS OF THE PIT WALL

Slope Direction 305

DEFECT SHEAR STRENGTHS

Cohesion	=	0 kPa
Friction Angle	=	40°

FIRST SET - RED

JT2	Mean	±
Dip	80	10
Dip Direction	25	20

Defects in set JT2 65

SECOND SET - BLUE

JT4	Mean	±
Dip	60	20
Dip Direction	255	15

Defects in set JT4 49

Number of Unstable Wedges 1299
Number of Wedges Analysed 3185

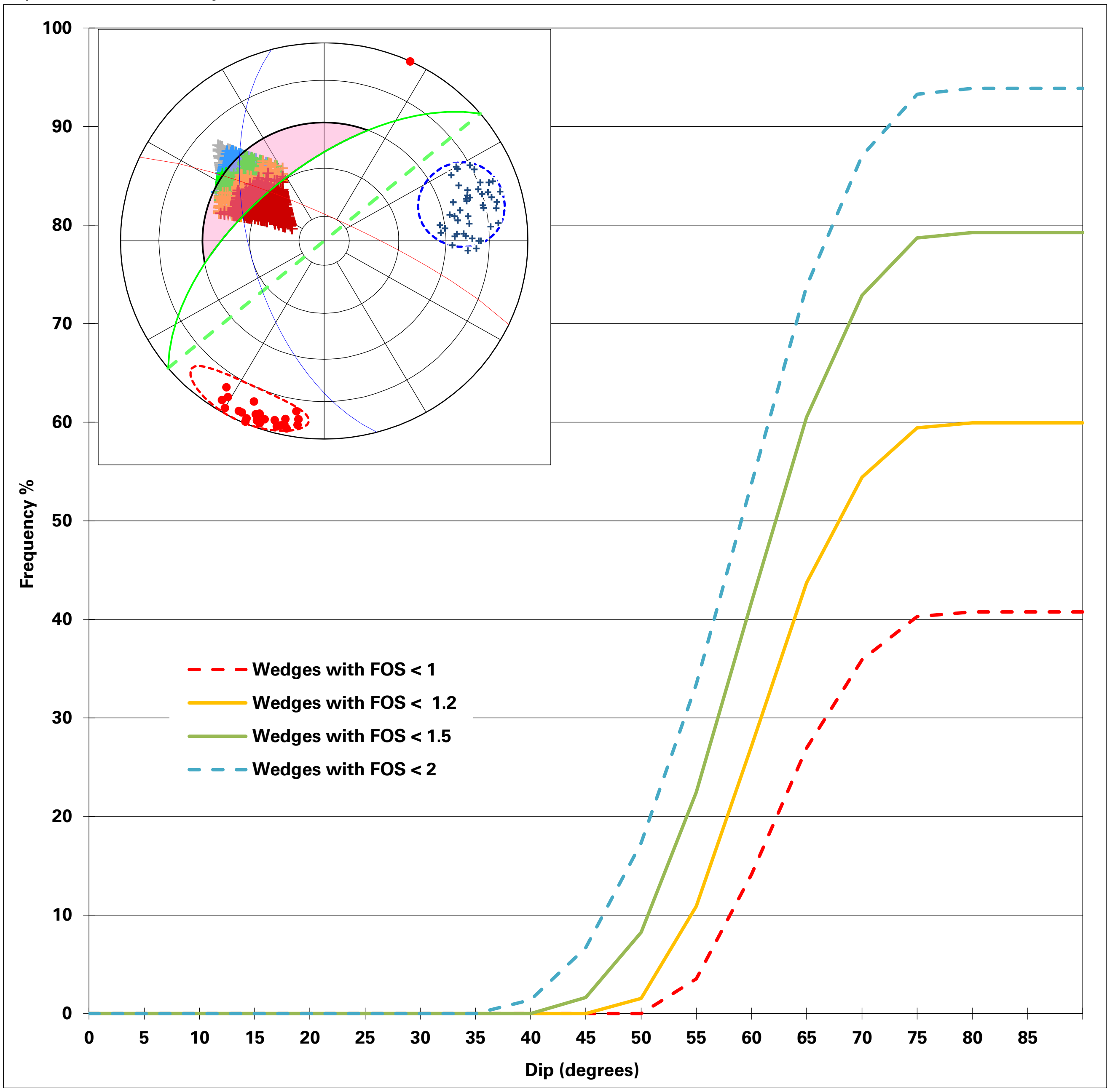
From a possible Total Number of 3185

OceanaGold
MP4 LOM 2022

GB Trench Data
Joints

WEDGE FAILURE

Equal Area Polar Projection



PARAMETERS OF THE PIT WALL

Slope Direction 320

FIRST SET - RED

JT2	Mean	±
Dip	80	10
Dip Direction	25	20

Defects in set JT2 65

DEFECT SHEAR STRENGTHS

Cohesion = 0 kPa
Friction Angle = 40°

SECOND SET - BLUE

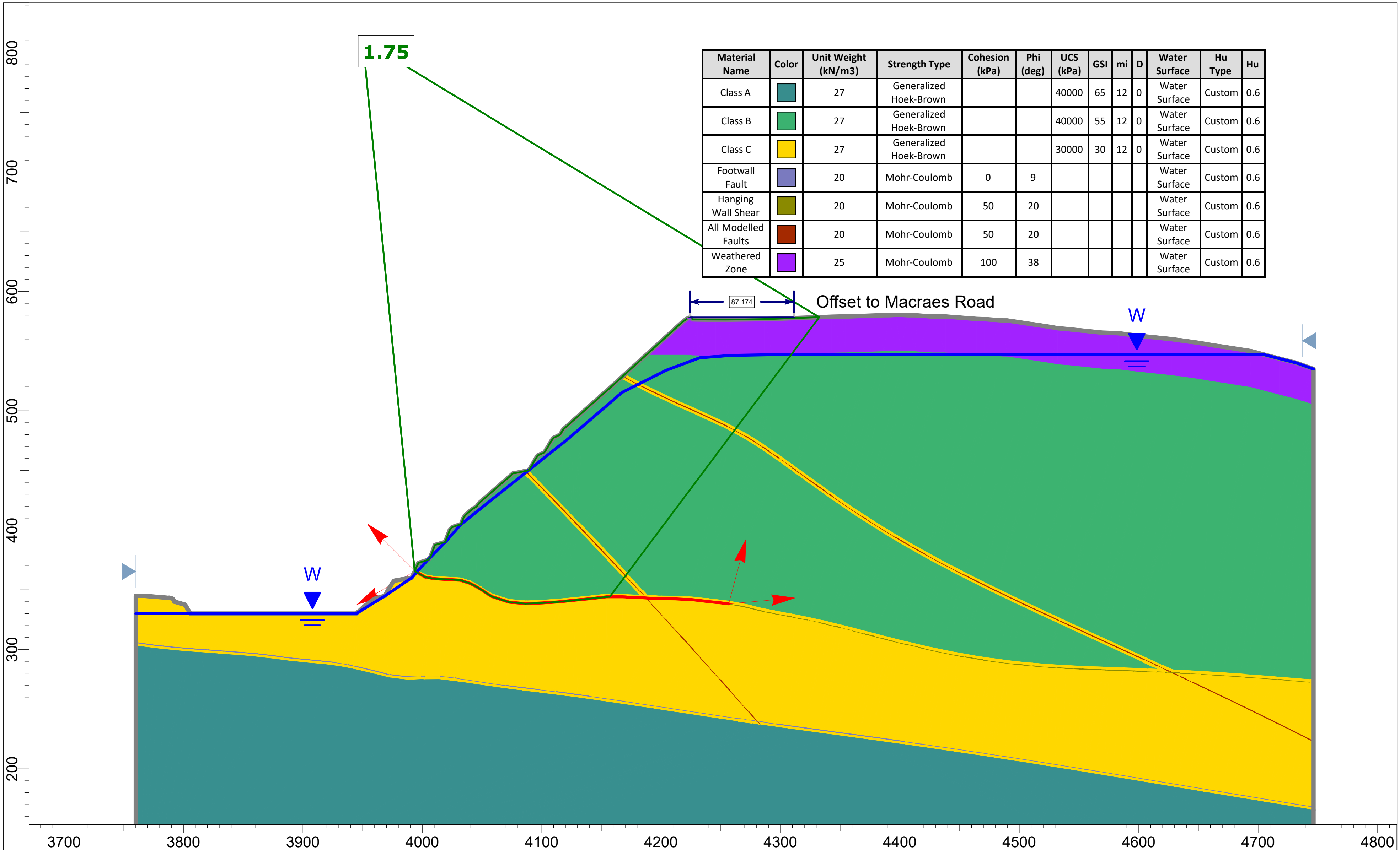
JT4	Mean	±
Dip	60	20
Dip Direction	255	15

Defects in set JT4 49

Number of Unstable Wedges 1299
Number of Wedges Analysed 3185 From a possible Total Number of 3185

PSM

Appendix D
Innes Mills 2D Stability Analyses

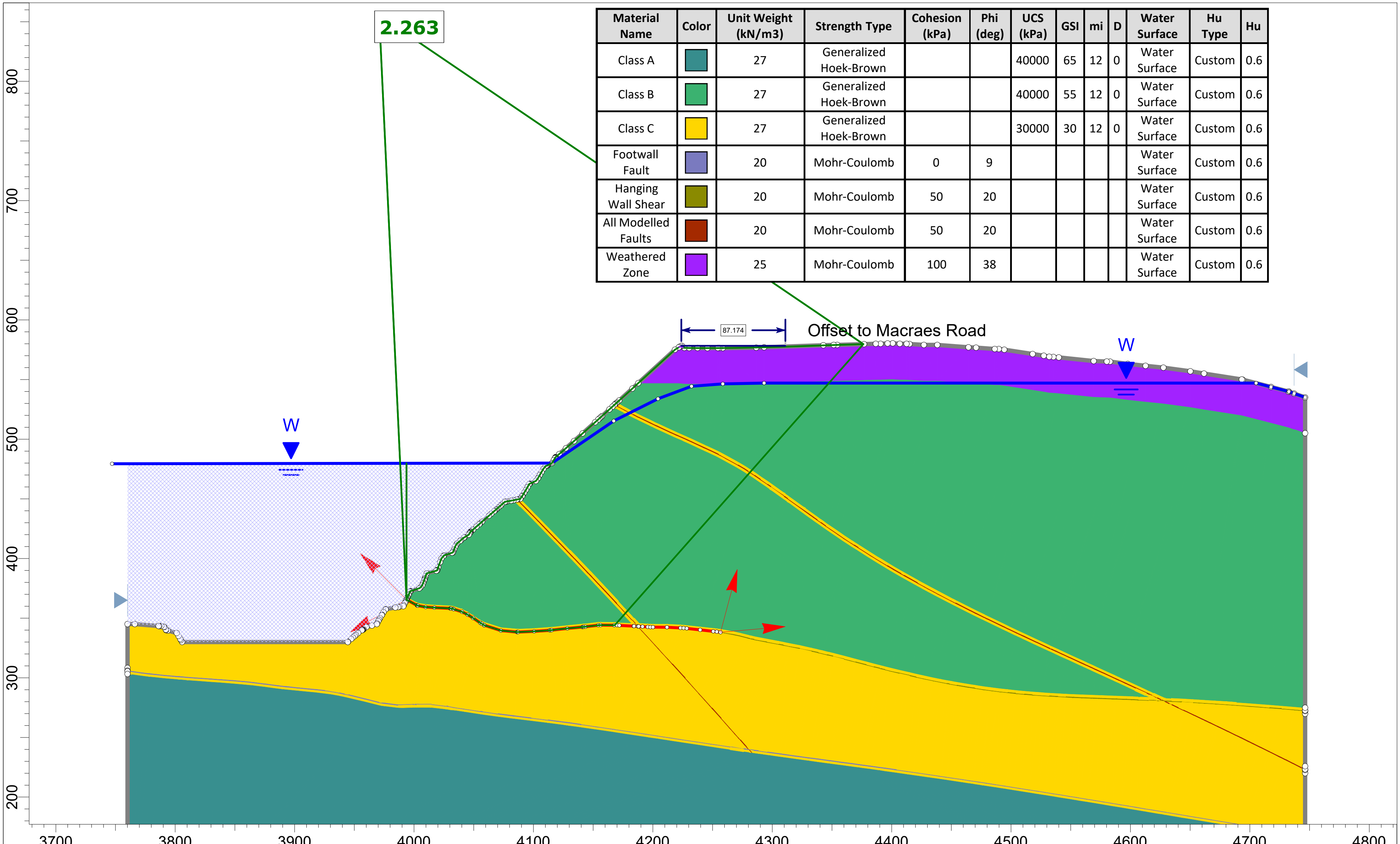


Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	UCS (kPa)	GSI	mi	D	Water Surface	Hu Type	Hu
Class A		27	Generalized Hoek-Brown			40000	65	12	0	Water Surface	Custom	0.6
Class B		27	Generalized Hoek-Brown			40000	55	12	0	Water Surface	Custom	0.6
Class C		27	Generalized Hoek-Brown			30000	30	12	0	Water Surface	Custom	0.6
Footwall Fault		20	Mohr-Coulomb	0	9					Water Surface	Custom	0.6
Hanging Wall Shear		20	Mohr-Coulomb	50	20					Water Surface	Custom	0.6
All Modelled Faults		20	Mohr-Coulomb	50	20					Water Surface	Custom	0.6
Weathered Zone		25	Mohr-Coulomb	100	38					Water Surface	Custom	0.6

Client:	**PSM71 - Macraes**
Project:	**MP4 Consenting**
Location:	**Innes Mills Stage 9 - Section 1**
Analysis description:	**Partially saturated - Hu = 0.6**

Job No:	By:	Date:	Scale:	Run ID:
PSM0071	**KH**	**10/10/2023**	**1:4500**	**Block Search**

SLIDEINTERPRET 9.027

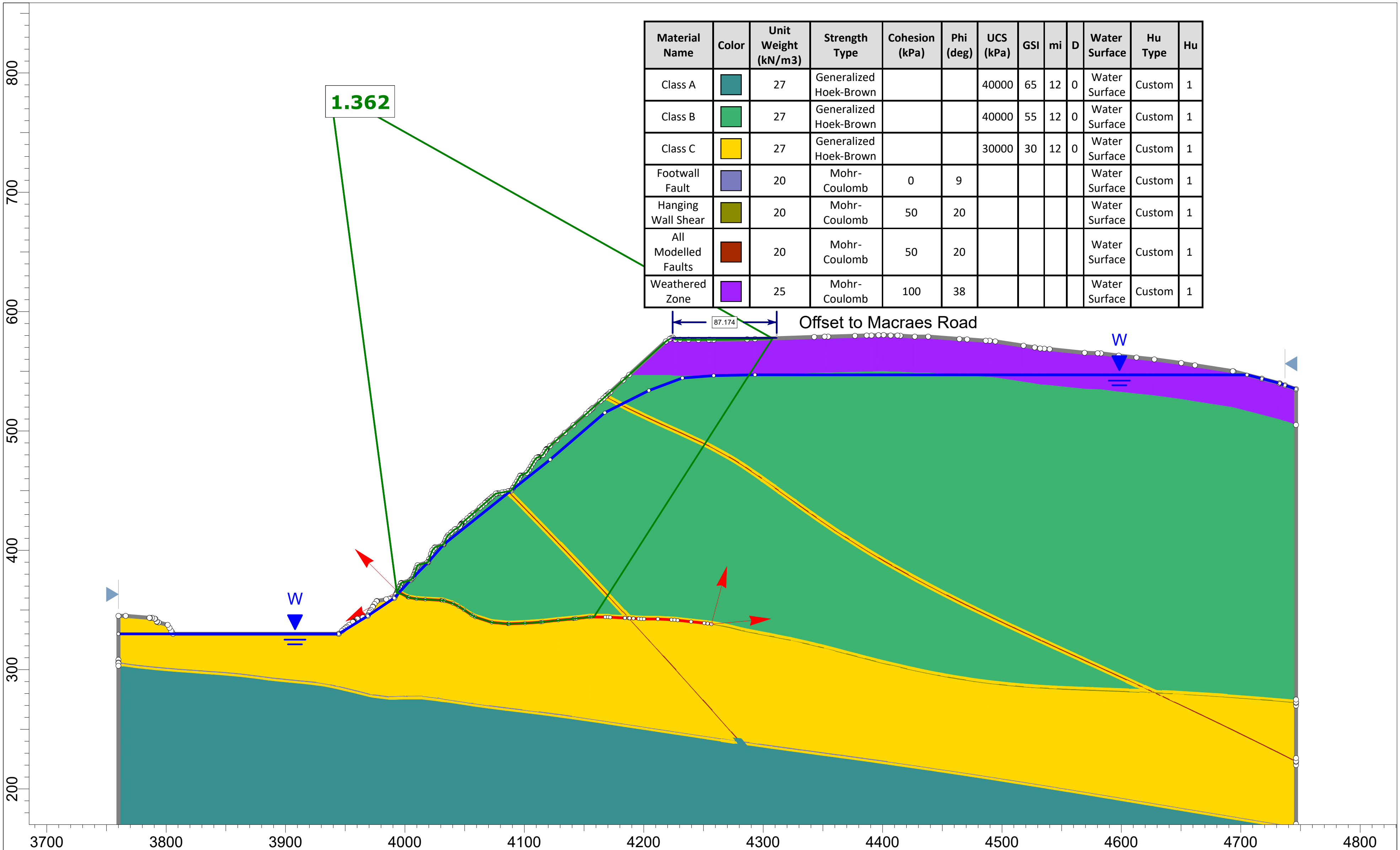


Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	UCS (kPa)	GSI	mi	D	Water Surface	Hu Type	Hu
Class A		27	Generalized Hoek-Brown			40000	65	12	0	Water Surface	Custom	0.6
Class B		27	Generalized Hoek-Brown			40000	55	12	0	Water Surface	Custom	0.6
Class C		27	Generalized Hoek-Brown			30000	30	12	0	Water Surface	Custom	0.6
Footwall Fault		20	Mohr-Coulomb	0	9					Water Surface	Custom	0.6
Hanging Wall Shear		20	Mohr-Coulomb	50	20					Water Surface	Custom	0.6
All Modelled Faults		20	Mohr-Coulomb	50	20					Water Surface	Custom	0.6
Weathered Zone		25	Mohr-Coulomb	100	38					Water Surface	Custom	0.6

Client:	**PSM71 - Macraes**
Project:	**MP4 Consenting**
Location:	**Innes Mills Stage 9 - Section 1**
Analysis description:	**Partially saturated - Hu = 0.6 - Pit Lake**

Job No:	**PSM0071**	By:	**KH**	Date:	**10/10/2023**	Scale:	**1:4500**	Run ID:	**Pit lake**

SLIDEINTERPRET 9.027

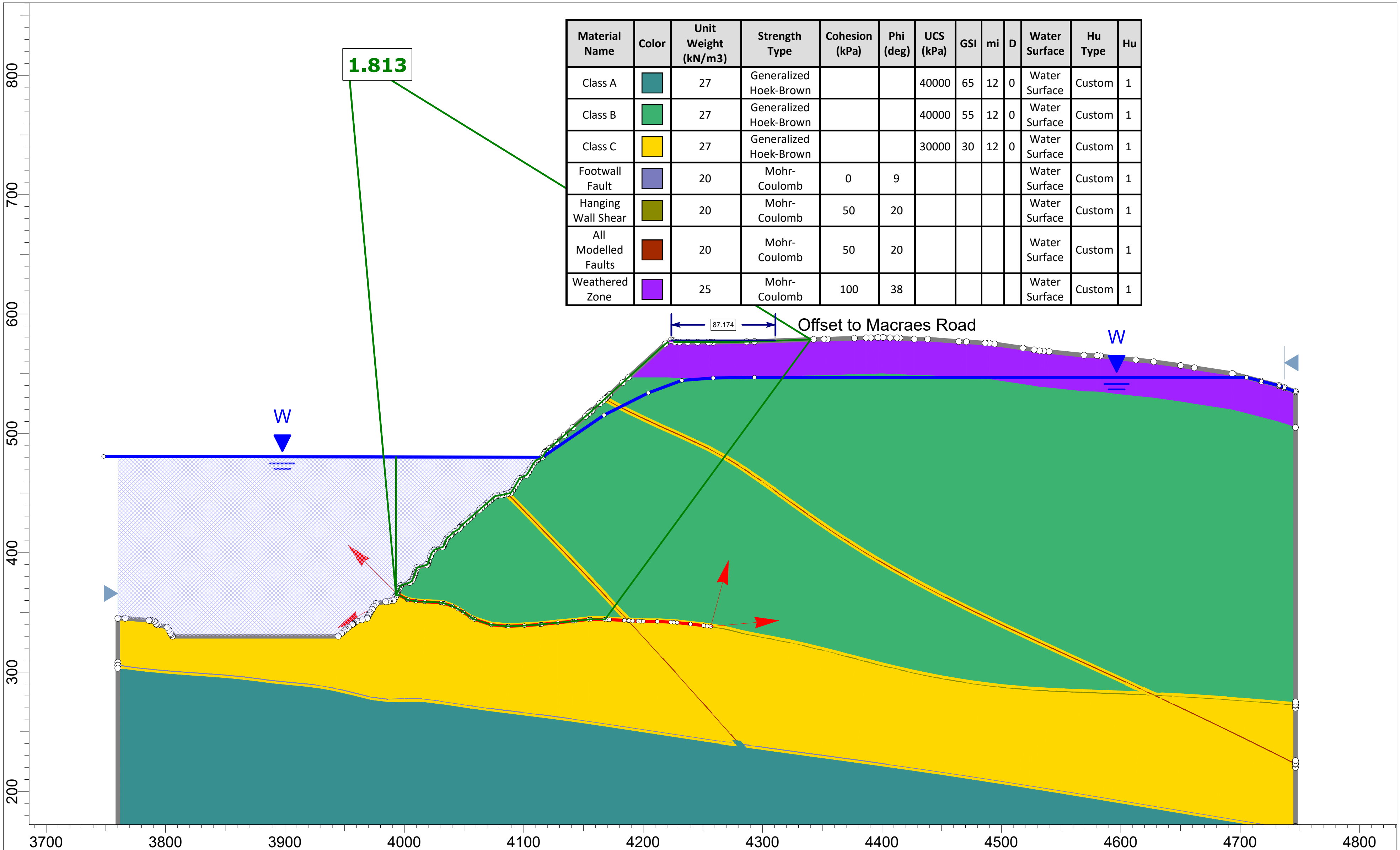


Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	UCS (kPa)	GSI	mi	D	Water Surface	Hu Type	Hu
Class A		27	Generalized Hoek-Brown			40000	65	12	0	Water Surface	Custom	1
Class B		27	Generalized Hoek-Brown			40000	55	12	0	Water Surface	Custom	1
Class C		27	Generalized Hoek-Brown			30000	30	12	0	Water Surface	Custom	1
Footwall Fault		20	Mohr-Coulomb	0	9					Water Surface	Custom	1
Hanging Wall Shear		20	Mohr-Coulomb	50	20					Water Surface	Custom	1
All Modelled Faults		20	Mohr-Coulomb	50	20					Water Surface	Custom	1
Weathered Zone		25	Mohr-Coulomb	100	38					Water Surface	Custom	1

Client:	**PSM71 - Macraes**
Project:	**MP4 Consenting**
Location:	**Innes Mills Stage 9 - Section 1**
Analysis description:	**Saturated - Hu = 1**

Job No:	By:	Date:	Scale:	Run ID:
PSM0071	**KH**	**10/10/2023**	**1:4500**	**Block Search**

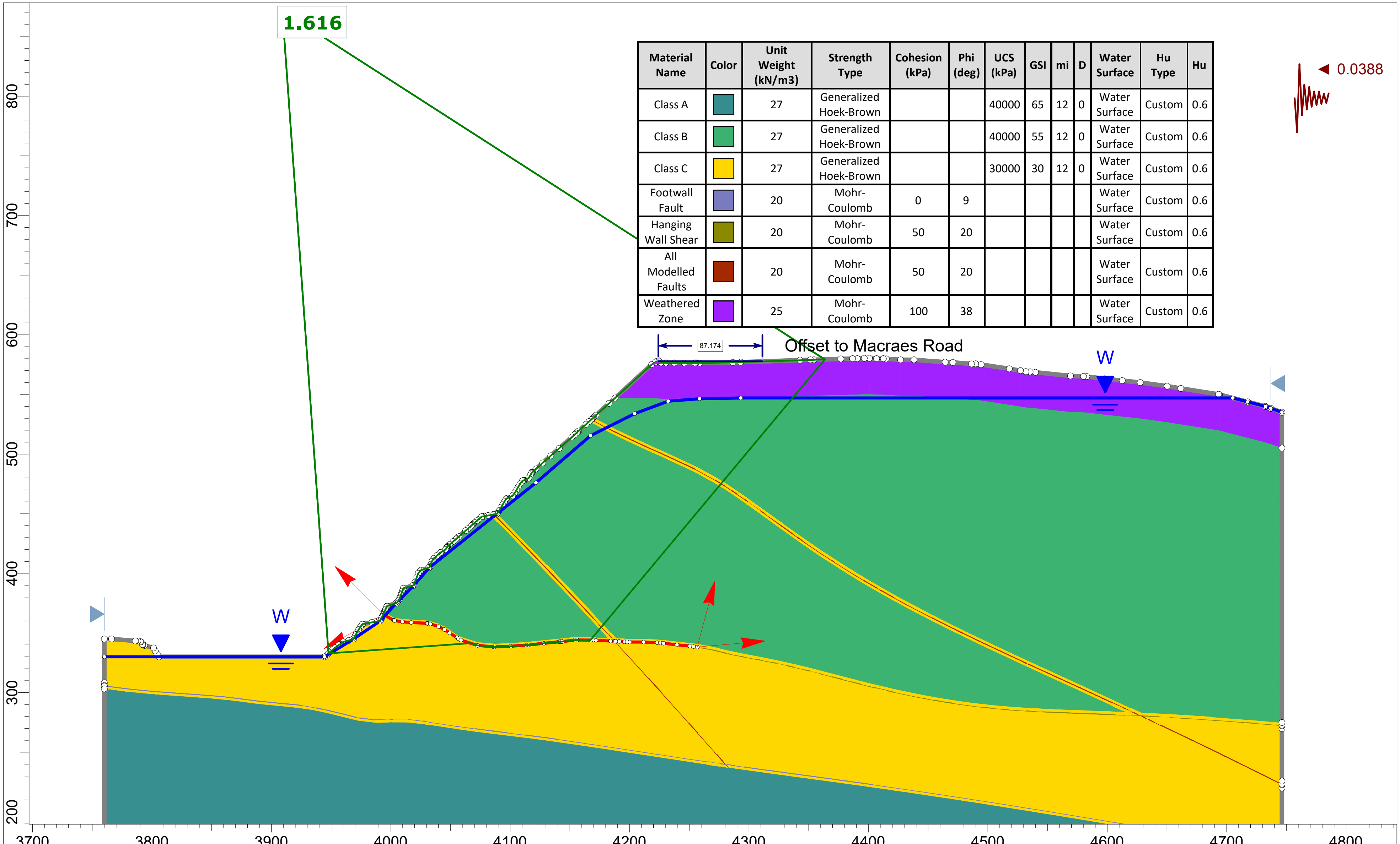
SLIDEINTERPRET 9.027



Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	UCS (kPa)	GSI	mi	D	Water Surface	Hu Type	Hu
Class A		27	Generalized Hoek-Brown			40000	65	12	0	Water Surface	Custom	1
Class B		27	Generalized Hoek-Brown			40000	55	12	0	Water Surface	Custom	1
Class C		27	Generalized Hoek-Brown			30000	30	12	0	Water Surface	Custom	1
Footwall Fault		20	Mohr-Coulomb	0	9					Water Surface	Custom	1
Hanging Wall Shear		20	Mohr-Coulomb	50	20					Water Surface	Custom	1
All Modelled Faults		20	Mohr-Coulomb	50	20					Water Surface	Custom	1
Weathered Zone		25	Mohr-Coulomb	100	38					Water Surface	Custom	1

Client:	**PSM71 - Macraes**								
Project:	**MP4 Consenting**								
Location:	**Innes Mills Stage 9 - Section 1**								
Analysis description:	**Saturated - Hu = 1 - Pit Lake**								
Job No:	**PSM0071**	By:	**KH**	Date:	**10/10/2023**	Scale:	**1:4500**	Run ID:	**Pit Lake**

SLIDEINTERPRET 9.027



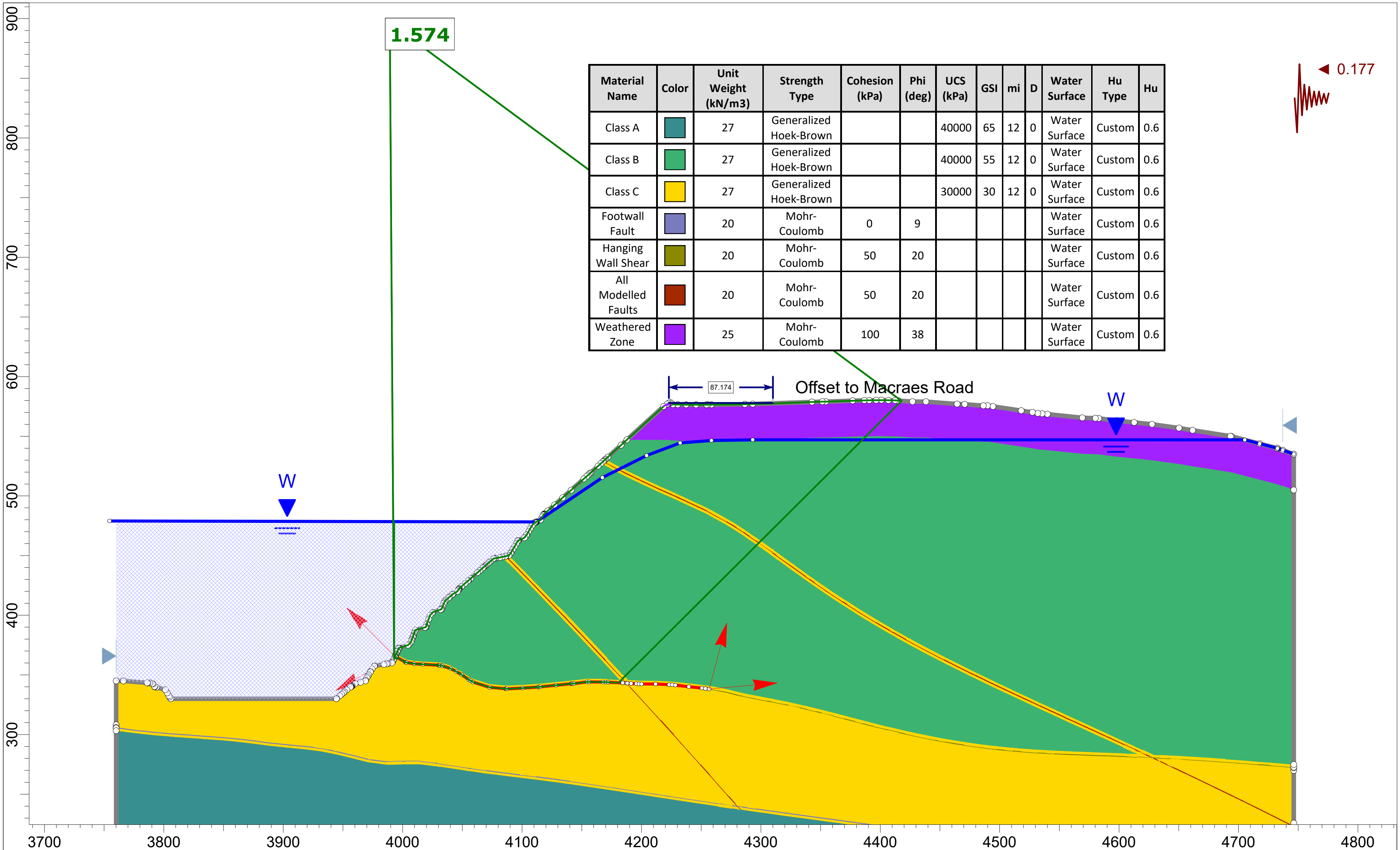
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	UCS (kPa)	GSI	mi	D	Water Surface	Hu Type	Hu
Class A		27	Generalized Hoek-Brown			40000	65	12	0	Water Surface	Custom	0.6
Class B		27	Generalized Hoek-Brown			40000	55	12	0	Water Surface	Custom	0.6
Class C		27	Generalized Hoek-Brown			30000	30	12	0	Water Surface	Custom	0.6
Footwall Fault		20	Mohr-Coulomb	0	9					Water Surface	Custom	0.6
Hanging Wall Shear		20	Mohr-Coulomb	50	20					Water Surface	Custom	0.6
All Modelled Faults		20	Mohr-Coulomb	50	20					Water Surface	Custom	0.6
Weathered Zone		25	Mohr-Coulomb	100	38					Water Surface	Custom	0.6

PSM

SLIDEINTERPRET 9.027

Client:	PSM71 - Macraes
Project:	MP4 Consenting
Location:	Innes Mills Stage 9 - Section 1
Analysis description:	NSHM Seismic OBE

Job No:	By:	Date:	Scale:	Run ID:
PSM0071	KH	10/10/2023	1:4500	Block Search



Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	UCS (kPa)	GSI	mi	D	Water Surface	Hu Type	Hu
Class A		27	Generalized Hoek-Brown			40000	65	12	0	Water Surface	Custom	0.6
Class B		27	Generalized Hoek-Brown			40000	55	12	0	Water Surface	Custom	0.6
Class C		27	Generalized Hoek-Brown			30000	30	12	0	Water Surface	Custom	0.6
Footwall Fault		20	Mohr-Coulomb	0	9					Water Surface	Custom	0.6
Hanging Wall Shear		20	Mohr-Coulomb	50	20					Water Surface	Custom	0.6
All Modelled Faults		20	Mohr-Coulomb	50	20					Water Surface	Custom	0.6
Weathered Zone		25	Mohr-Coulomb	100	38					Water Surface	Custom	0.6

SLIDEINTERPRET 9.027

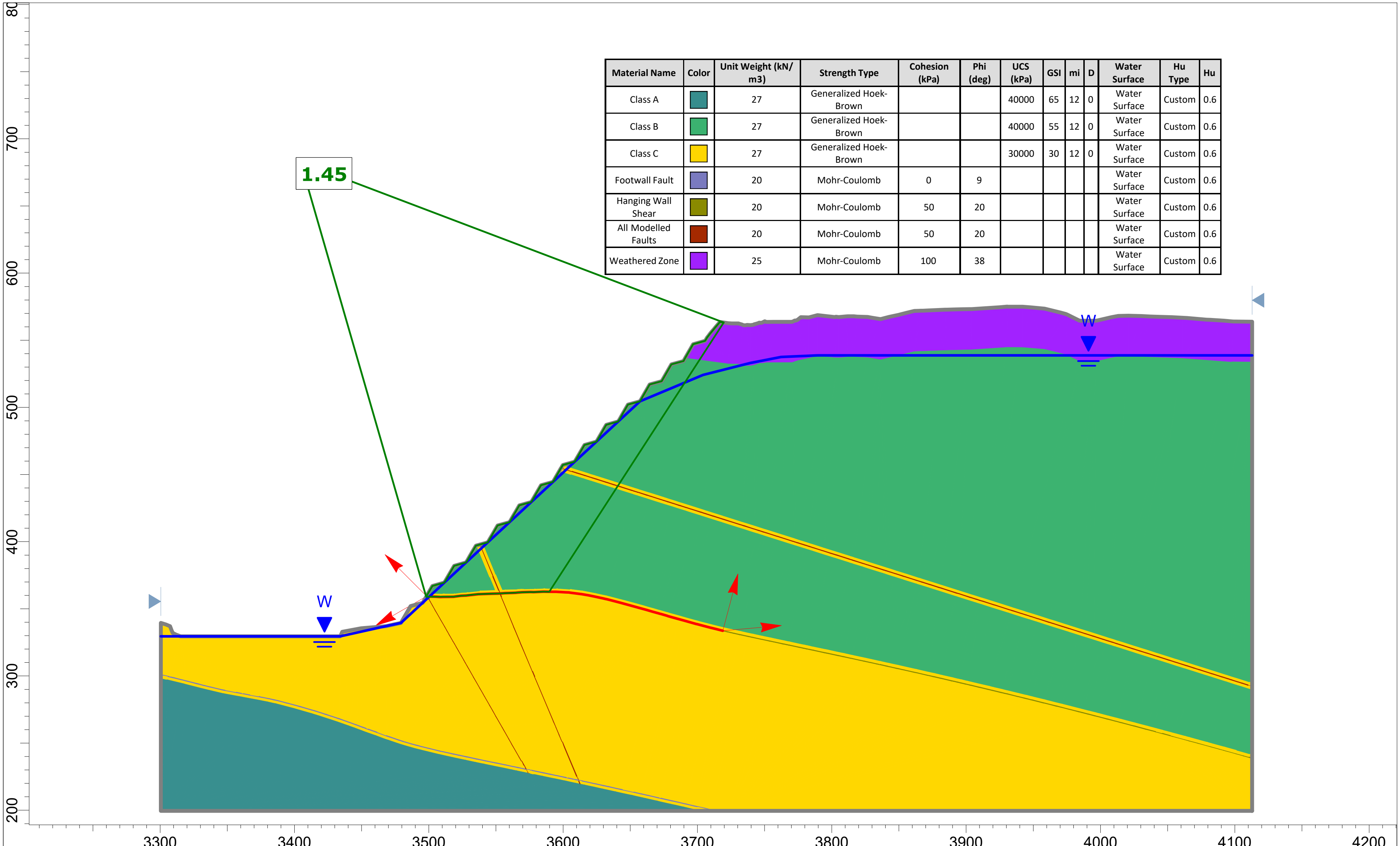
Client: **PSM71 - Macraes**

Project: **MP4 Consenting**

Location: **Innes Mills Stage 9 - Section 1**

Analysis description: **NSHM Seismic MDE - Post Closure**

Job No:	By:	Date:	Scale:	Run ID:
PSM0071	KH	10/10/2023	1:4500	Pit lake



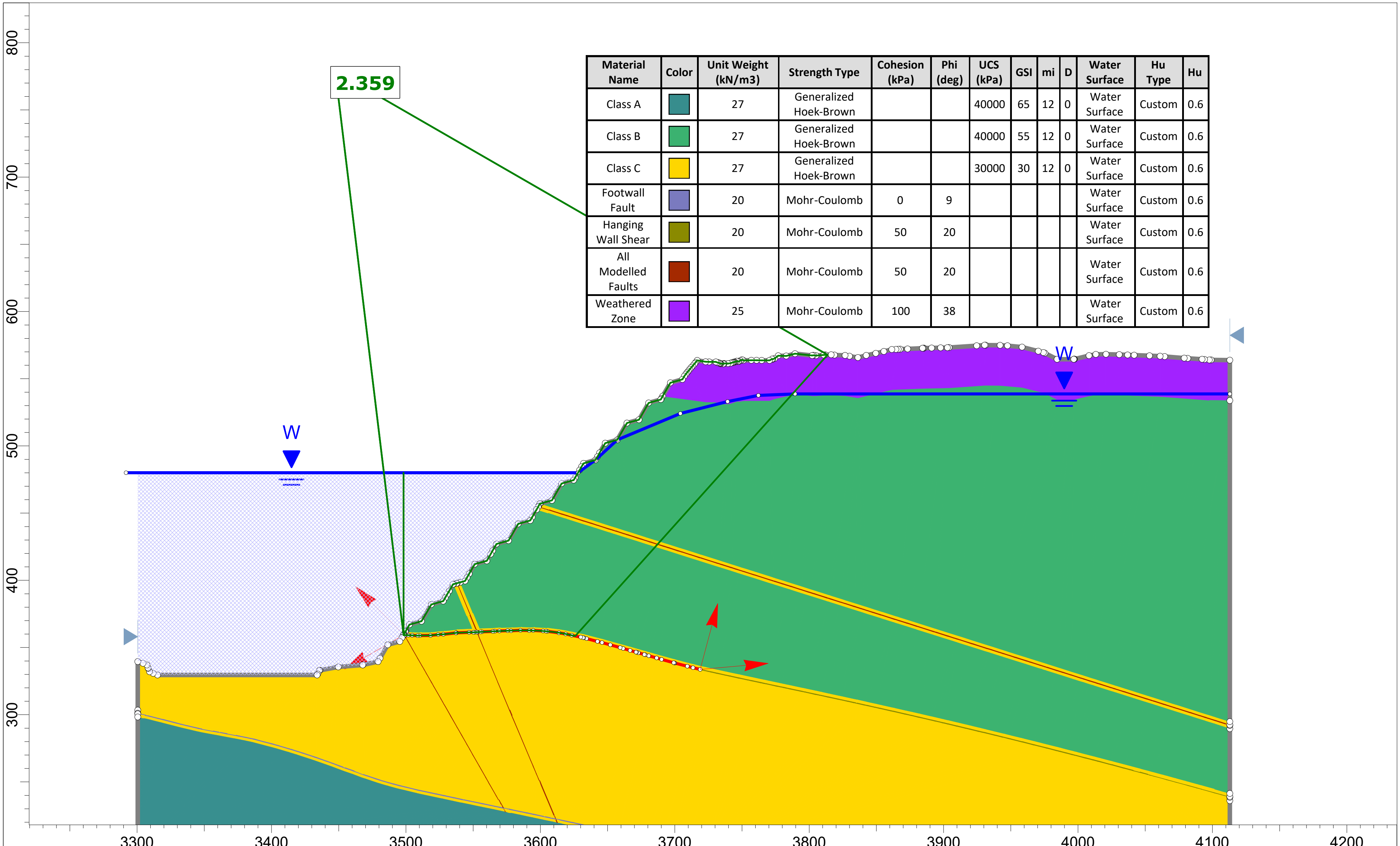
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	UCS (kPa)	GSI	mi	D	Water Surface	Hu Type	Hu
Class A		27	Generalized Hoek-Brown			40000	65	12	0	Water Surface	Custom	0.6
Class B		27	Generalized Hoek-Brown			40000	55	12	0	Water Surface	Custom	0.6
Class C		27	Generalized Hoek-Brown			30000	30	12	0	Water Surface	Custom	0.6
Footwall Fault		20	Mohr-Coulomb	0	9					Water Surface	Custom	0.6
Hanging Wall Shear		20	Mohr-Coulomb	50	20					Water Surface	Custom	0.6
All Modelled Faults		20	Mohr-Coulomb	50	20					Water Surface	Custom	0.6
Weathered Zone		25	Mohr-Coulomb	100	38					Water Surface	Custom	0.6

PSM

SLIDEINTERPRET 9.027

Client:	PSM71 - Macraes
Project:	MP4 Consenting
Location:	Innes Mills Stage 9 - Section 2
Analysis description:	Partially saturated - Hu = 0.6

Job No:	By:	Date:	Scale:	Run ID:
PSM0071	KH	10/10/2023	1:4000	Block Search

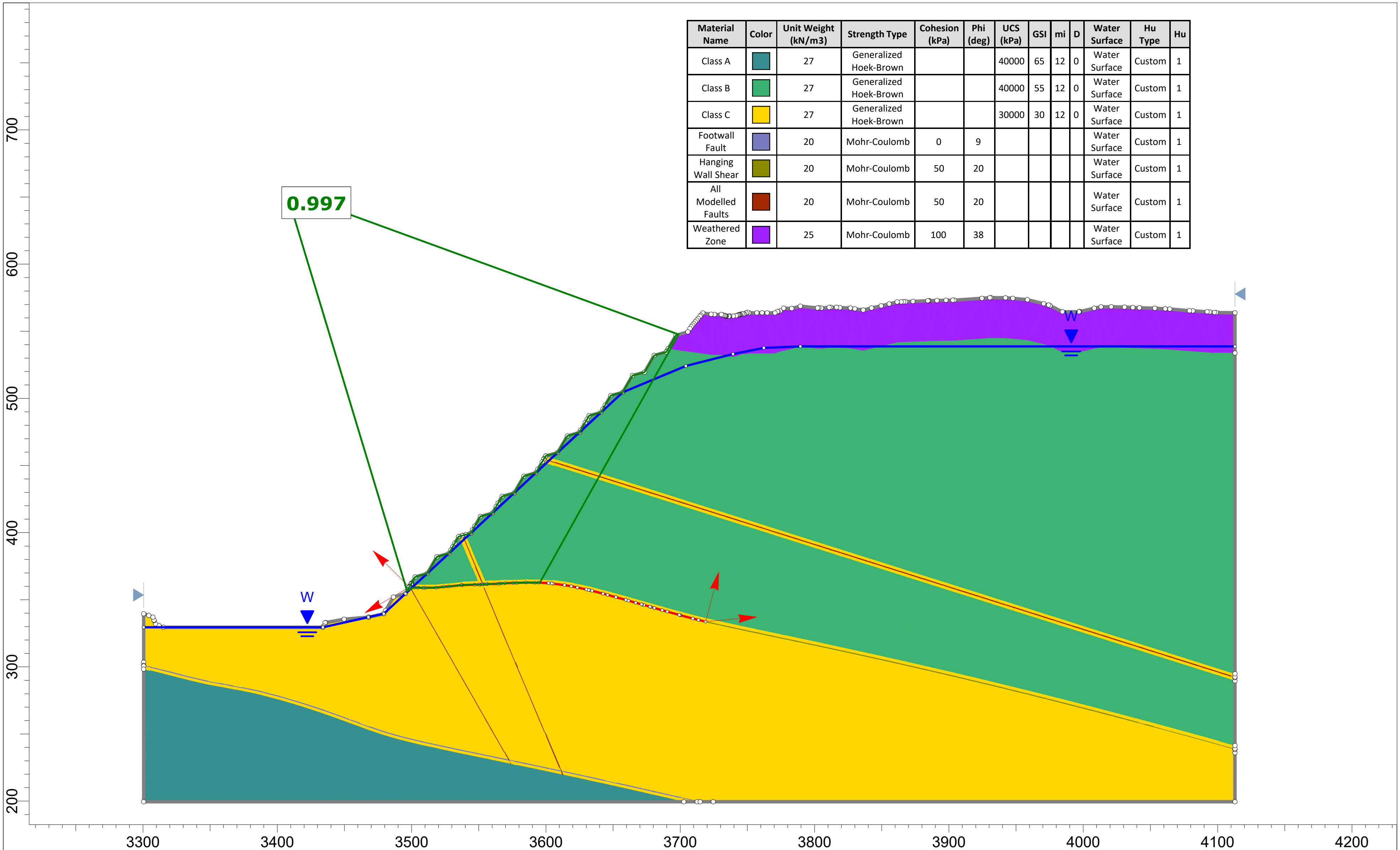


Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	UCS (kPa)	GSI	mi	D	Water Surface	Hu Type	Hu
Class A		27	Generalized Hoek-Brown			40000	65	12	0	Water Surface	Custom	0.6
Class B		27	Generalized Hoek-Brown			40000	55	12	0	Water Surface	Custom	0.6
Class C		27	Generalized Hoek-Brown			30000	30	12	0	Water Surface	Custom	0.6
Footwall Fault		20	Mohr-Coulomb	0	9					Water Surface	Custom	0.6
Hanging Wall Shear		20	Mohr-Coulomb	50	20					Water Surface	Custom	0.6
All Modelled Faults		20	Mohr-Coulomb	50	20					Water Surface	Custom	0.6
Weathered Zone		25	Mohr-Coulomb	100	38					Water Surface	Custom	0.6

SLIDEINTERPRET 9.027

Client:	PSM71 - Macraes
Project:	MP4 Consenting
Location:	Innes Mills Stage 9 - Section 2
Analysis description:	Partially saturated - Hu = 0.6 - Pit Lake

Job No:	PSM0071	By:	KH	Date:	27/09/2023	Scale:	1:3997	Run ID:	Pit lake

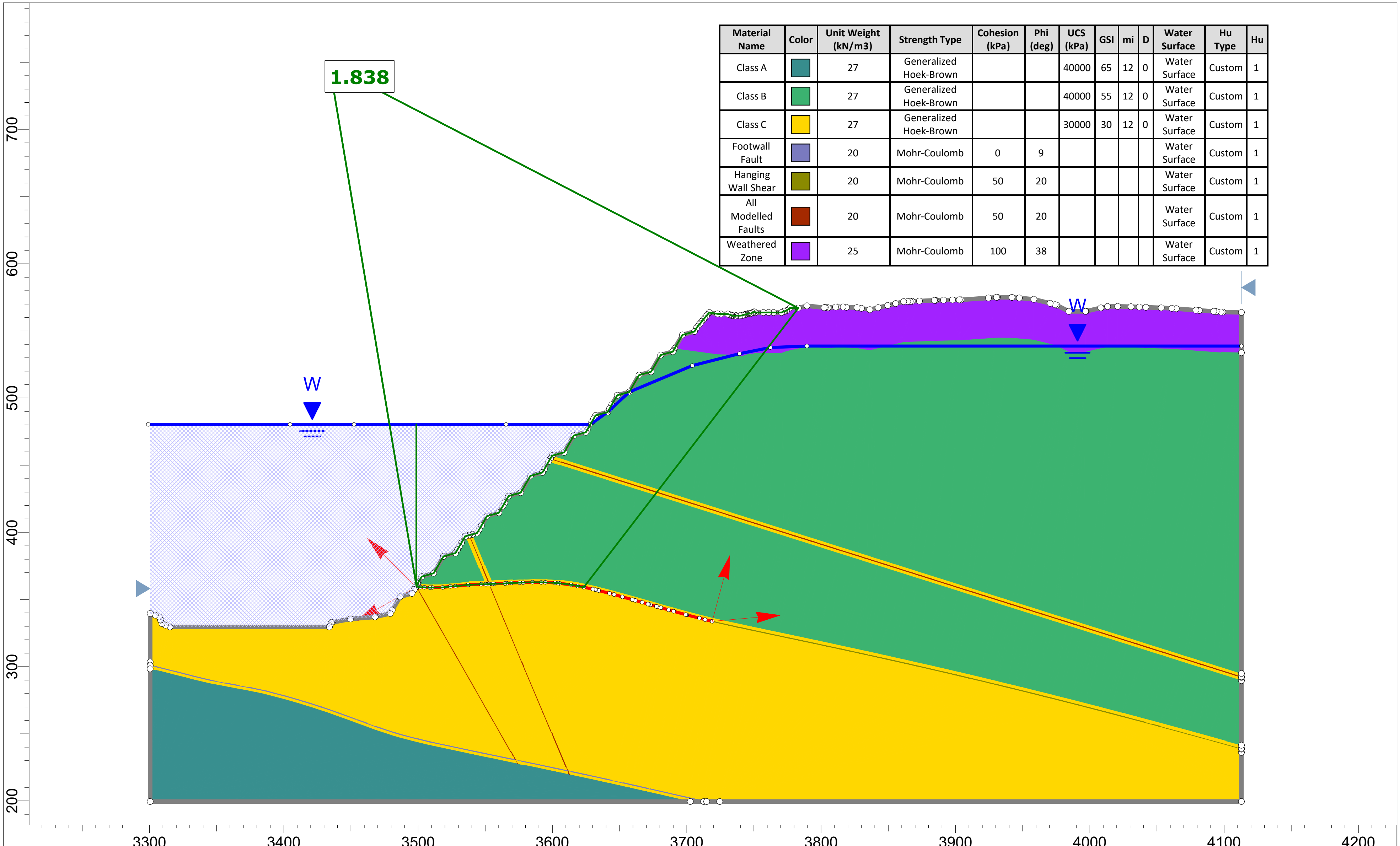


Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	UCS (kPa)	GSI	mi	D	Water Surface	Hu Type	Hu
Class A		27	Generalized Hoek-Brown			40000	65	12	0	Water Surface	Custom	1
Class B		27	Generalized Hoek-Brown			40000	55	12	0	Water Surface	Custom	1
Class C		27	Generalized Hoek-Brown			30000	30	12	0	Water Surface	Custom	1
Footwall Fault		20	Mohr-Coulomb	0	9					Water Surface	Custom	1
Hanging Wall Shear		20	Mohr-Coulomb	50	20					Water Surface	Custom	1
All Modelled Faults		20	Mohr-Coulomb	50	20					Water Surface	Custom	1
Weathered Zone		25	Mohr-Coulomb	100	38					Water Surface	Custom	1

Client:	PSM71 - Macraes
Project:	MP4 Consenting
Location:	Innes Mills Stage 9 - Section 2
Analysis description:	Saturated - Hu = 1

Job No:	By:	Date:	Scale:	Run ID:
PSM0071	KH	10/10/2023	1:4000	Block Search

SLIDEINTERPRET 9.027

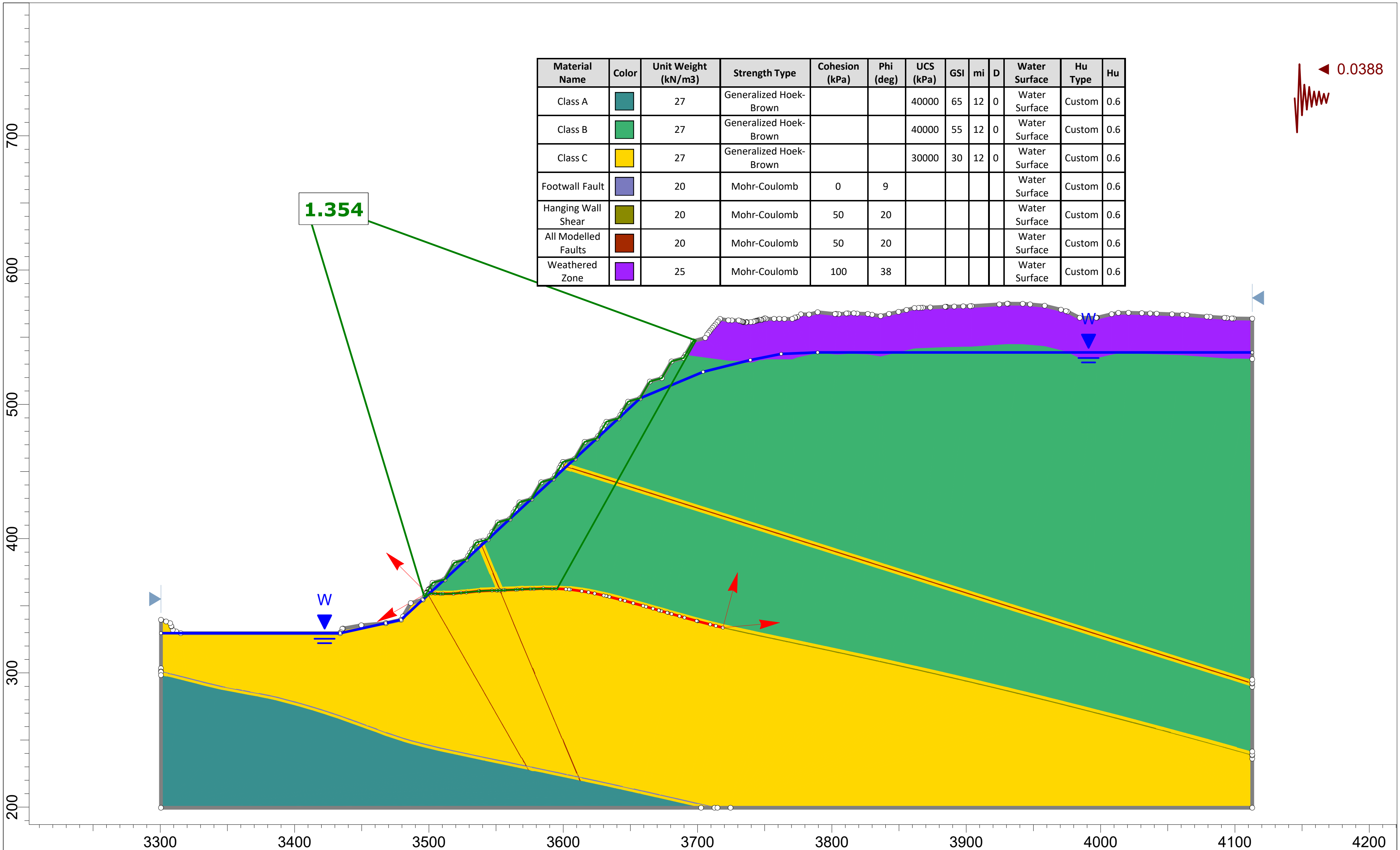


Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	UCS (kPa)	GSI	mi	D	Water Surface	Hu Type	Hu
Class A		27	Generalized Hoek-Brown			40000	65	12	0	Water Surface	Custom	1
Class B		27	Generalized Hoek-Brown			40000	55	12	0	Water Surface	Custom	1
Class C		27	Generalized Hoek-Brown			30000	30	12	0	Water Surface	Custom	1
Footwall Fault		20	Mohr-Coulomb	0	9					Water Surface	Custom	1
Hanging Wall Shear		20	Mohr-Coulomb	50	20					Water Surface	Custom	1
All Modelled Faults		20	Mohr-Coulomb	50	20					Water Surface	Custom	1
Weathered Zone		25	Mohr-Coulomb	100	38					Water Surface	Custom	1

SLIDEINTERPRET 9.027

Client:	**PSM71 - Macraes**
Project:	**MP4 Consenting**
Location:	**Innes Mills Stage 9 - Section 2**
Analysis description:	**Saturated - Hu = 1 - Pit Lake**

Job No:	By:	Date:	Scale:	Run ID:
PSM0071	**KH**	**10/10/2023**	**1:4000**	**Pit lake**

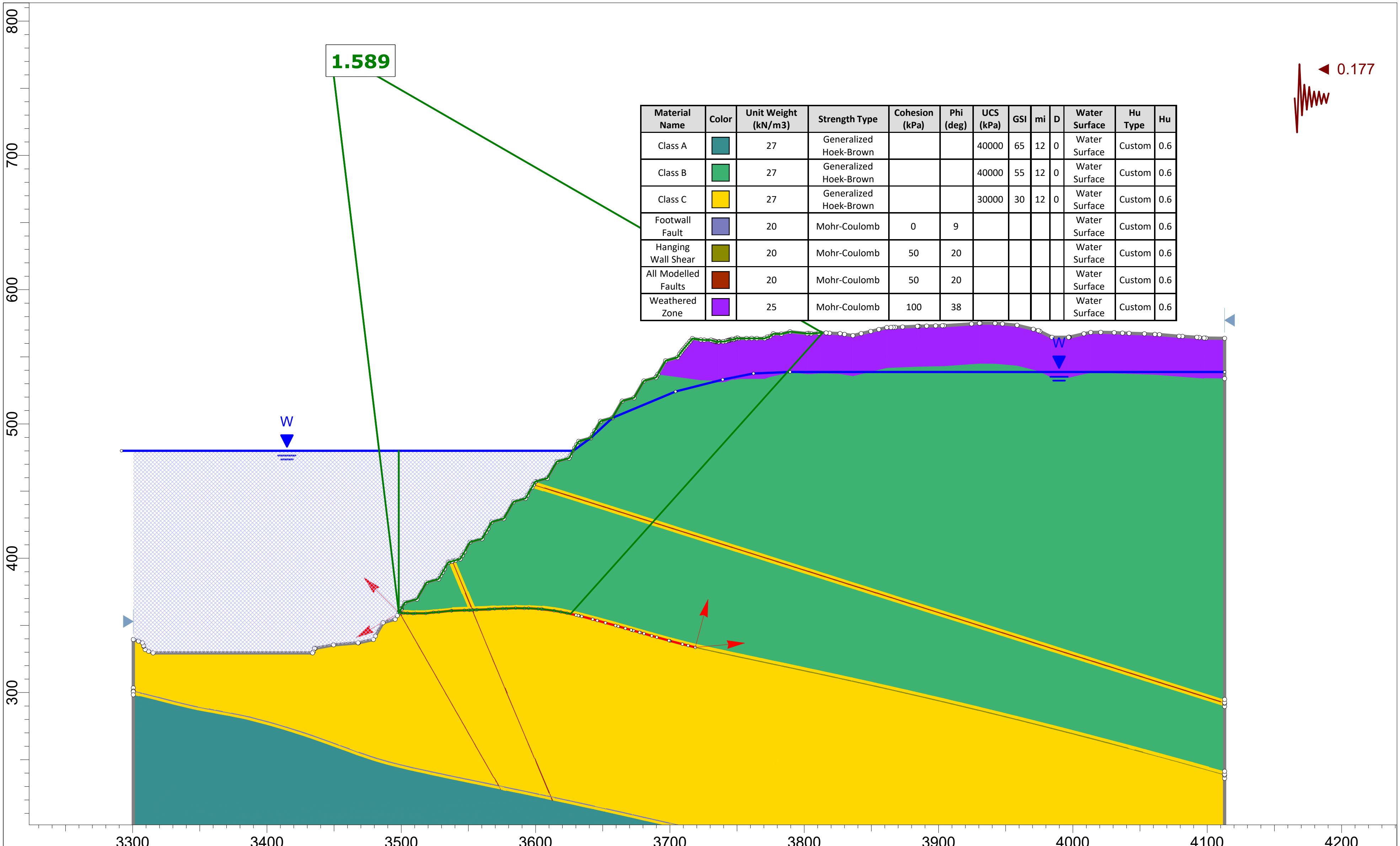


Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	UCS (kPa)	GSI	mi	D	Water Surface	Hu Type	Hu
Class A		27	Generalized Hoek-Brown			40000	65	12	0	Water Surface	Custom	0.6
Class B		27	Generalized Hoek-Brown			40000	55	12	0	Water Surface	Custom	0.6
Class C		27	Generalized Hoek-Brown			30000	30	12	0	Water Surface	Custom	0.6
Footwall Fault		20	Mohr-Coulomb	0	9					Water Surface	Custom	0.6
Hanging Wall Shear		20	Mohr-Coulomb	50	20					Water Surface	Custom	0.6
All Modelled Faults		20	Mohr-Coulomb	50	20					Water Surface	Custom	0.6
Weathered Zone		25	Mohr-Coulomb	100	38					Water Surface	Custom	0.6

SLIDEINTERPRET 9.027

Client:	PSM71 - Macraes
Project:	MP4 Consenting
Location:	Innes Mills Stage 9 - Section 2
Analysis description:	NSHM Seismic OBE

Job No:	PSM0071	By:	KH	Date:	10/10/2023	Scale:	1:4000	Run ID:	Block Search - OBE

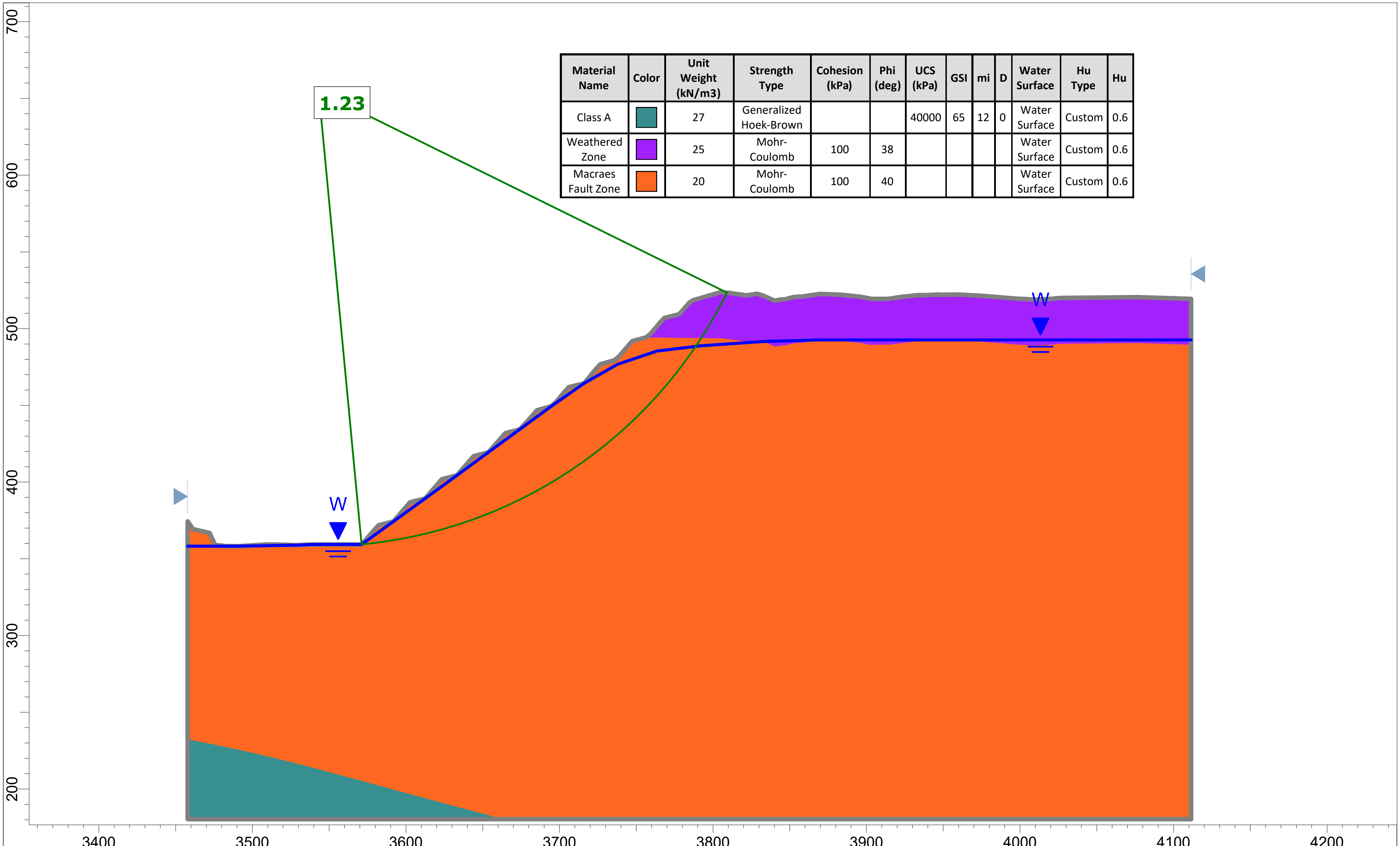


Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	UCS (kPa)	GSI	mi	D	Water Surface	Hu Type	Hu
Class A		27	Generalized Hoek-Brown			40000	65	12	0	Water Surface	Custom	0.6
Class B		27	Generalized Hoek-Brown			40000	55	12	0	Water Surface	Custom	0.6
Class C		27	Generalized Hoek-Brown			30000	30	12	0	Water Surface	Custom	0.6
Footwall Fault		20	Mohr-Coulomb	0	9					Water Surface	Custom	0.6
Hanging Wall Shear		20	Mohr-Coulomb	50	20					Water Surface	Custom	0.6
All Modelled Faults		20	Mohr-Coulomb	50	20					Water Surface	Custom	0.6
Weathered Zone		25	Mohr-Coulomb	100	38					Water Surface	Custom	0.6

SLIDEINTERPRET 9.027

Client:	PSM71 - Macraes
Project:	MP4 Consenting
Location:	Innes Mills Stage 9 - Section 2
Analysis description:	NSHM Seismic MDE - Post Closure

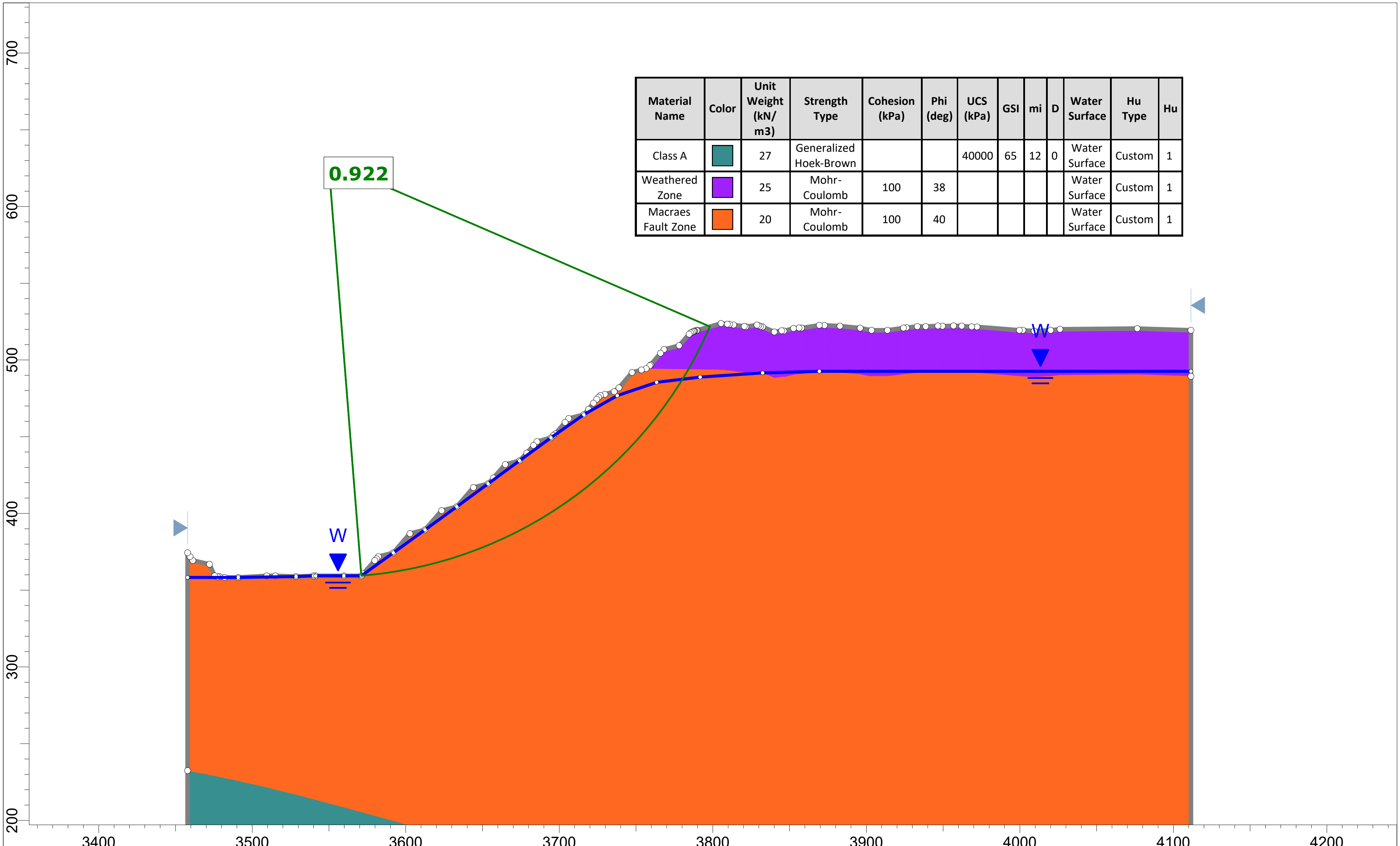
Job No:	By:	Date:	Scale:	Run ID:
PSM0071	KH	10/10/2023	1:4000	Pit lake- MDE



Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	UCS (kPa)	GSI	mi	D	Water Surface	Hu Type	Hu
Class A		27	Generalized Hoek-Brown			40000	65	12	0	Water Surface	Custom	0.6
Weathered Zone		25	Mohr-Coulomb	100	38					Water Surface	Custom	0.6
Macraes Fault Zone		20	Mohr-Coulomb	100	40					Water Surface	Custom	0.6

Client:	**PSM71 - Macraes**
Project:	**MP4 Consenting**
Location:	**Innes Mills Stage 9 - Section 3**
Analysis description:	**Partially saturated - Hu = 0.6**
Job No: **PSM71 - Macraes**	By: **KH** · Date: **10/10/2023** · Scale: **1:3500** · Run ID: **Circular Search**

SLIDEINTERPRET 9.027



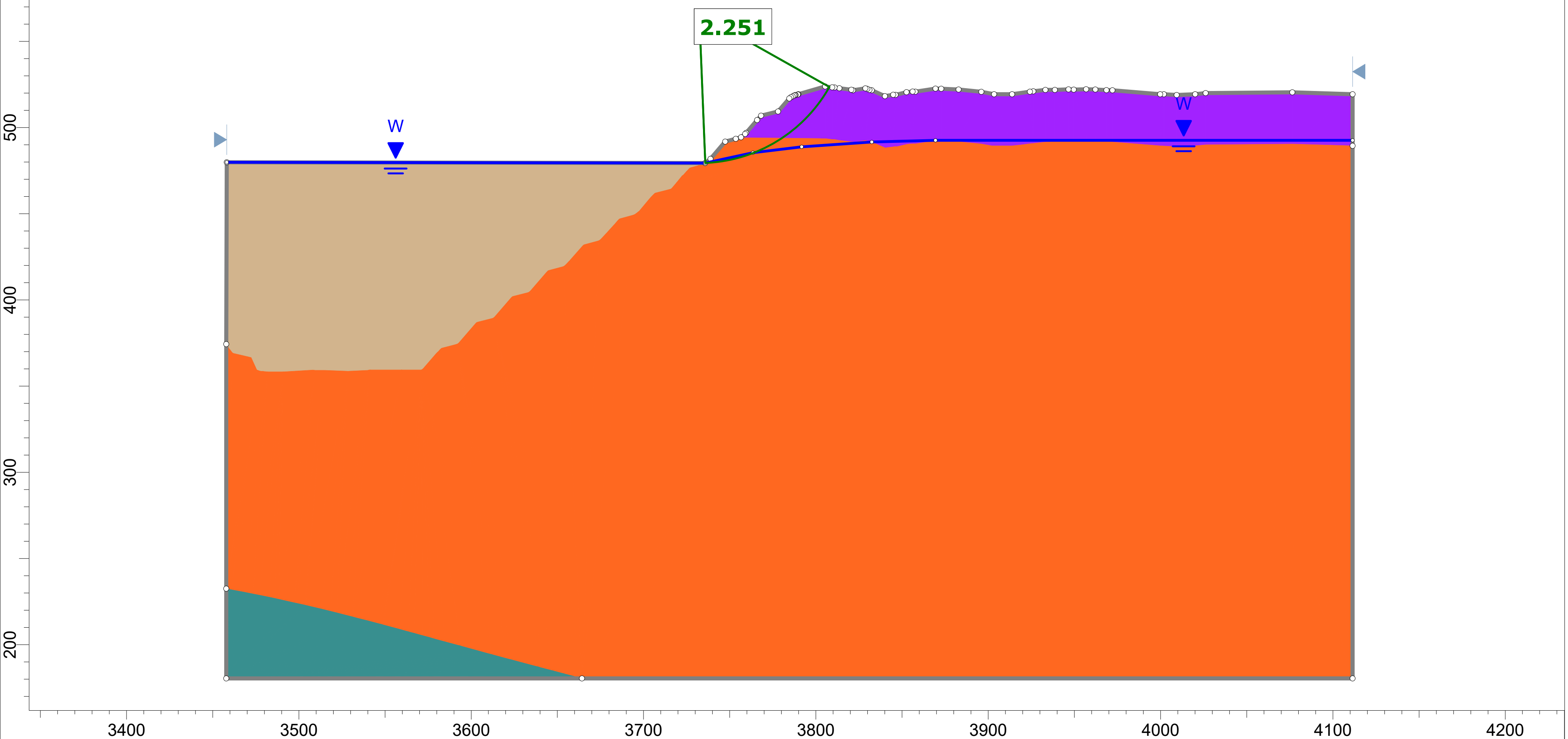
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	UCS (kPa)	GSI	mi	D	Water Surface	Hu Type	Hu
Class A		27	Generalized Hoek-Brown			40000	65	12	0	Water Surface	Custom	1
Weathered Zone		25	Mohr-Coulomb	100	38					Water Surface	Custom	1
Macraes Fault Zone		20	Mohr-Coulomb	100	40					Water Surface	Custom	1

Client:	**PSM71 - Macraes**
Project:	**MP4 Consenting**
Location:	**Innes Mills Stage 9 - Section 3**
Analysis description:	**Saturated - Hu = 1**

Job No:	By:	Date:	Scale:	Run ID:
PSM71 - Macraes	**KH**	**10/10/2023**	**1:3500**	**Circular Search**

SLIDEINTERPRET 9.027

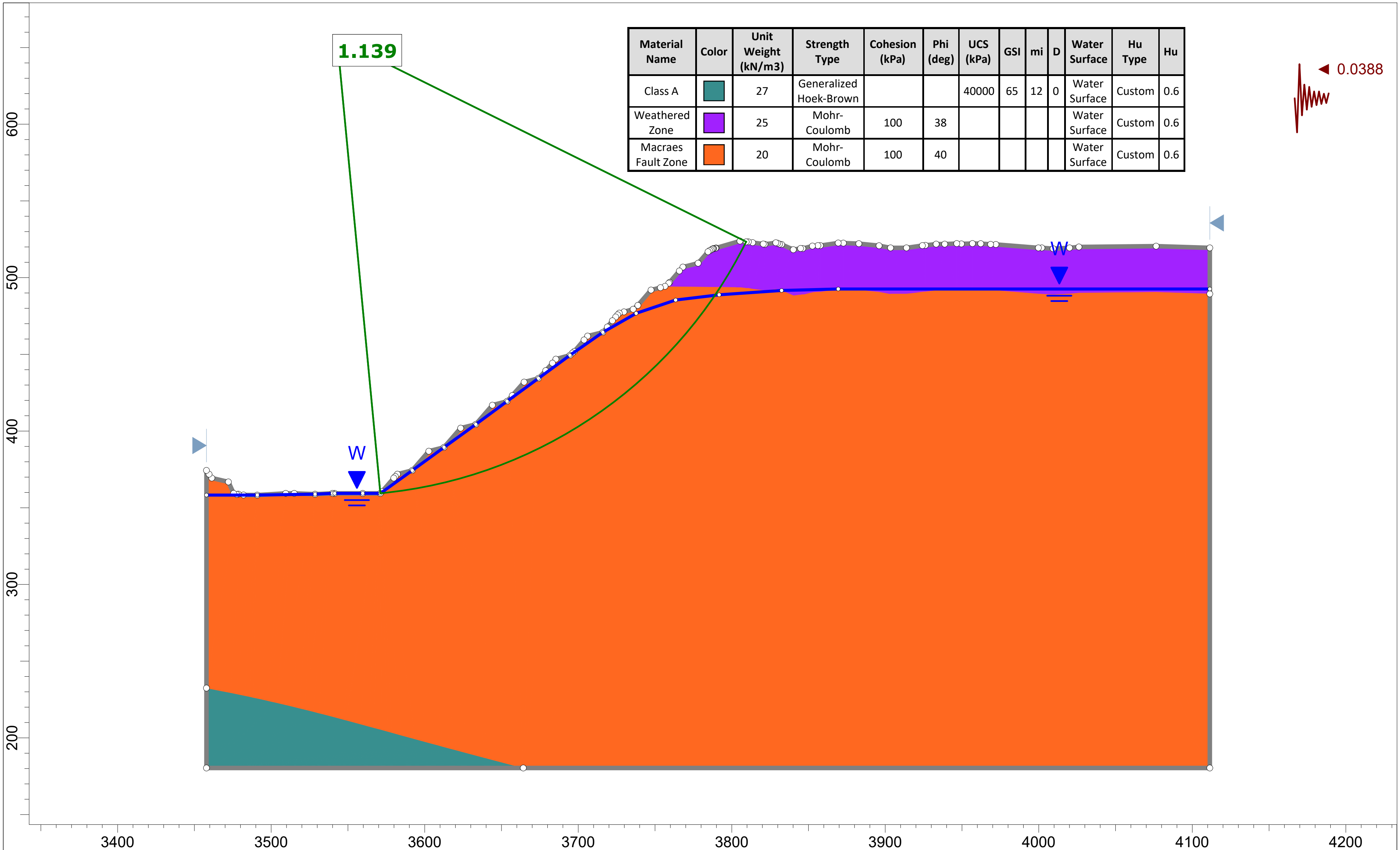
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	UCS (kPa)	GSI	mi	D	Water Surface	Hu Type	Hu
Class A		27	Generalized Hoek-Brown			40000	65	12	0	Water Surface	Custom	0.6
Weathered Zone		25	Mohr-Coulomb	100	38					Water Surface	Custom	0.6
Waste		20	Mohr-Coulomb	10	37					Water Surface	Custom	0.6
Macraes Fault Zone		20	Mohr-Coulomb	100	40					Water Surface	Custom	0.6



SLIDEINTERPRET 9.027

Client:	PSM71 - Macraes
Project:	MP4 Consenting
Location:	Innes Mills Stage 9 - Section 3
Analysis description:	Partially saturated - Hu = 0.6 - Backfilled

Job No:	By:	Date:	Scale:	Run ID:
PSM71 - Macraes	KH	10/10/2023	1:3500	Circular Search

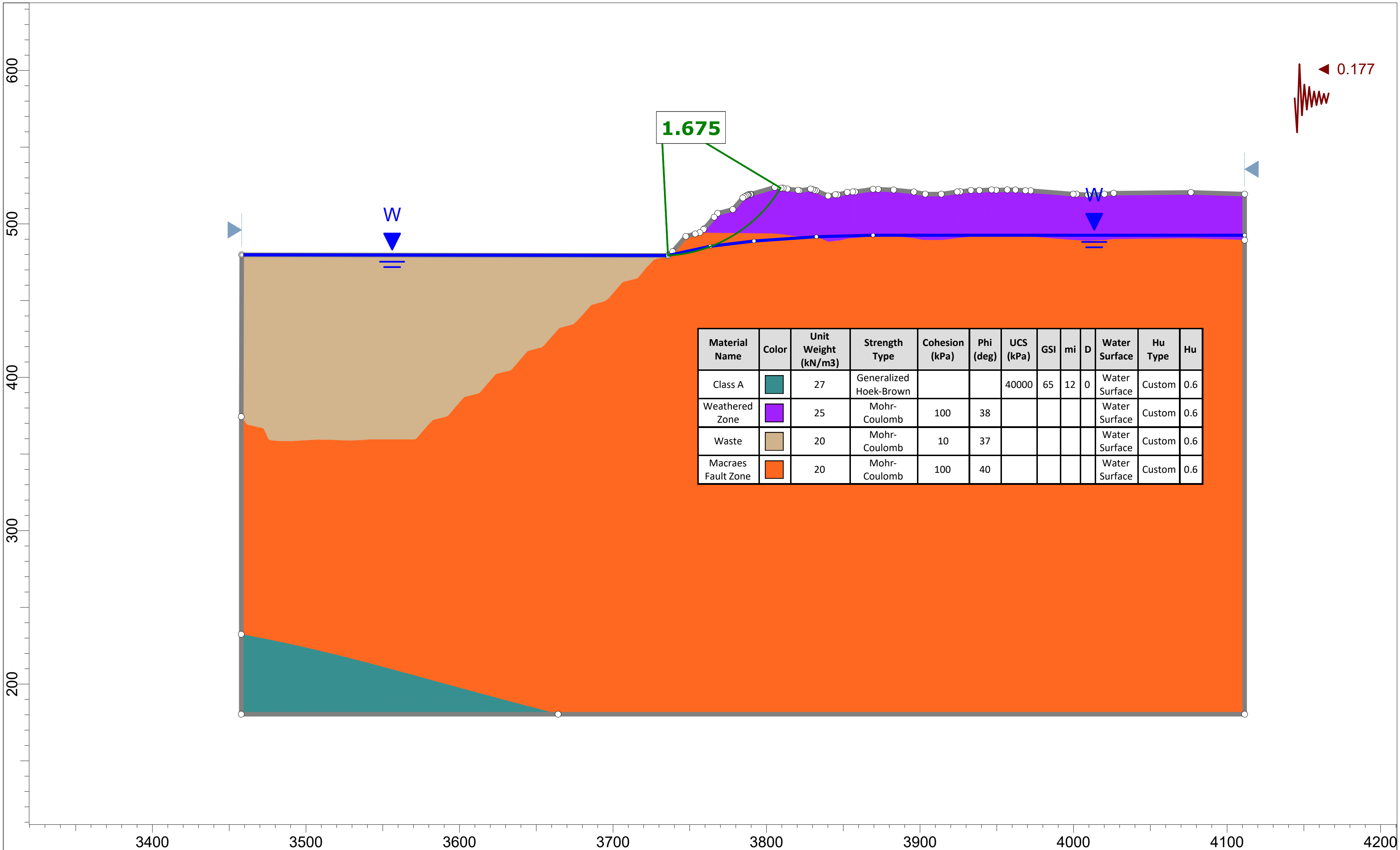


Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	UCS (kPa)	GSI	mi	D	Water Surface	Hu Type	Hu
Class A		27	Generalized Hoek-Brown			40000	65	12	0	Water Surface	Custom	0.6
Weathered Zone		25	Mohr-Coulomb	100	38					Water Surface	Custom	0.6
Macraes Fault Zone		20	Mohr-Coulomb	100	40					Water Surface	Custom	0.6

Client:	PSM71 - Macraes
Project:	MP4 Consenting
Location:	Innes Mills Stage 9 - Section 3
Analysis description:	NSHM Seismic OBE

Job No: PSM71 - Macraes | By: KH | Date: 10/10/2023 | Scale: 1:3500 | Run ID: Circular Search

SLIDEINTERPRET 9.027



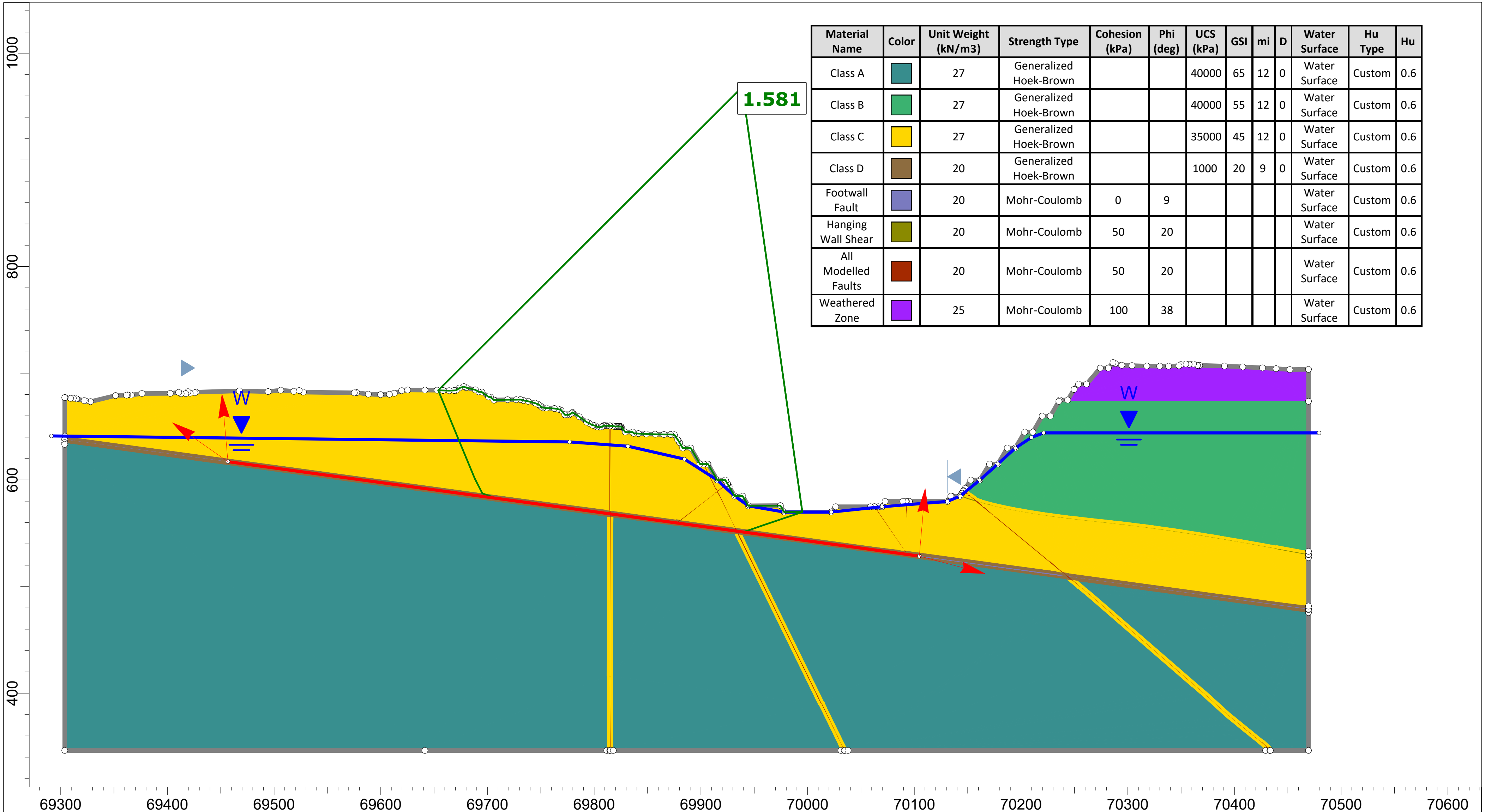
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	UCS (kPa)	GSI	mi	D	Water Surface	Hu Type	Hu
Class A		27	Generalized Hoek-Brown			40000	65	12	0	Water Surface	Custom	0.6
Weathered Zone		25	Mohr-Coulomb	100	38					Water Surface	Custom	0.6
Waste		20	Mohr-Coulomb	10	37					Water Surface	Custom	0.6
Macraes Fault Zone		20	Mohr-Coulomb	100	40					Water Surface	Custom	0.6

SLIDEINTERPRET 9.027

Client:	PSM71 - Macraes
Project:	MP4 Consenting
Location:	Innes Mills Stage 9 - Section 3
Analysis description:	NSHM Seismic MDE - Post Closure

Job No:	By:	Date:	Scale:	Run ID:
PSM71 - Macraes	KH	10/10/2023	1:3500	Seismic

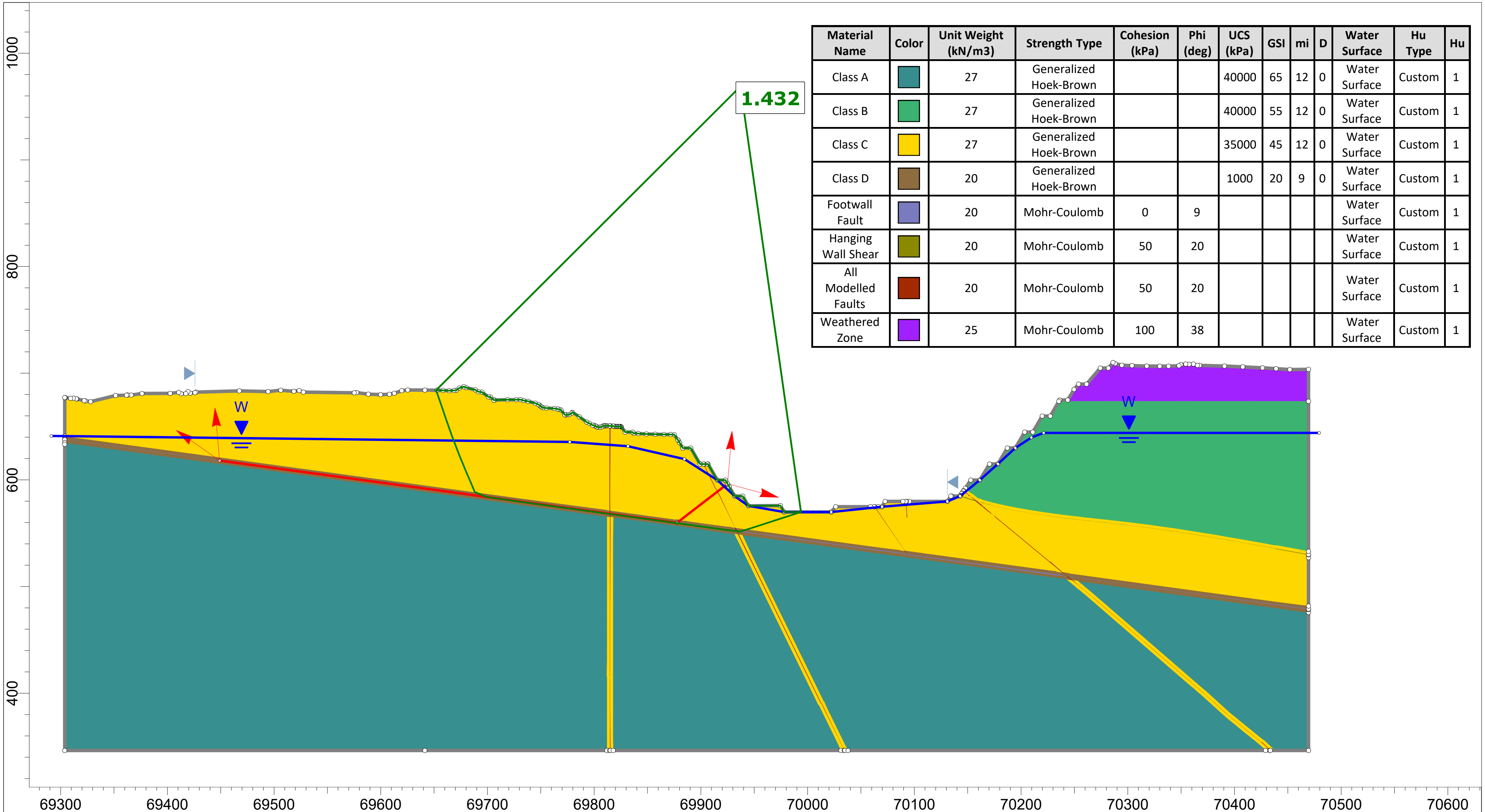
Appendix E
Coronation Stage 6 2D Stability Analyses



Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	UCS (kPa)	GSI	mi	D	Water Surface	Hu Type	Hu
Class A		27	Generalized Hoek-Brown			40000	65	12	0	Water Surface	Custom	0.6
Class B		27	Generalized Hoek-Brown			40000	55	12	0	Water Surface	Custom	0.6
Class C		27	Generalized Hoek-Brown			35000	45	12	0	Water Surface	Custom	0.6
Class D		20	Generalized Hoek-Brown			1000	20	9	0	Water Surface	Custom	0.6
Footwall Fault		20	Mohr-Coulomb	0	9					Water Surface	Custom	0.6
Hanging Wall Shear		20	Mohr-Coulomb	50	20					Water Surface	Custom	0.6
All Modelled Faults		20	Mohr-Coulomb	50	20					Water Surface	Custom	0.6
Weathered Zone		25	Mohr-Coulomb	100	38					Water Surface	Custom	0.6

Project	PSM0071 - Macraes		
Analysis Description	Hu=0.6 FWF		
Drawn By	DW	*Scale*	1:5000
Company	PSM		
Date	5/07/2022	*File Name*	Coronation Stage6 Section1_Run1.slmd

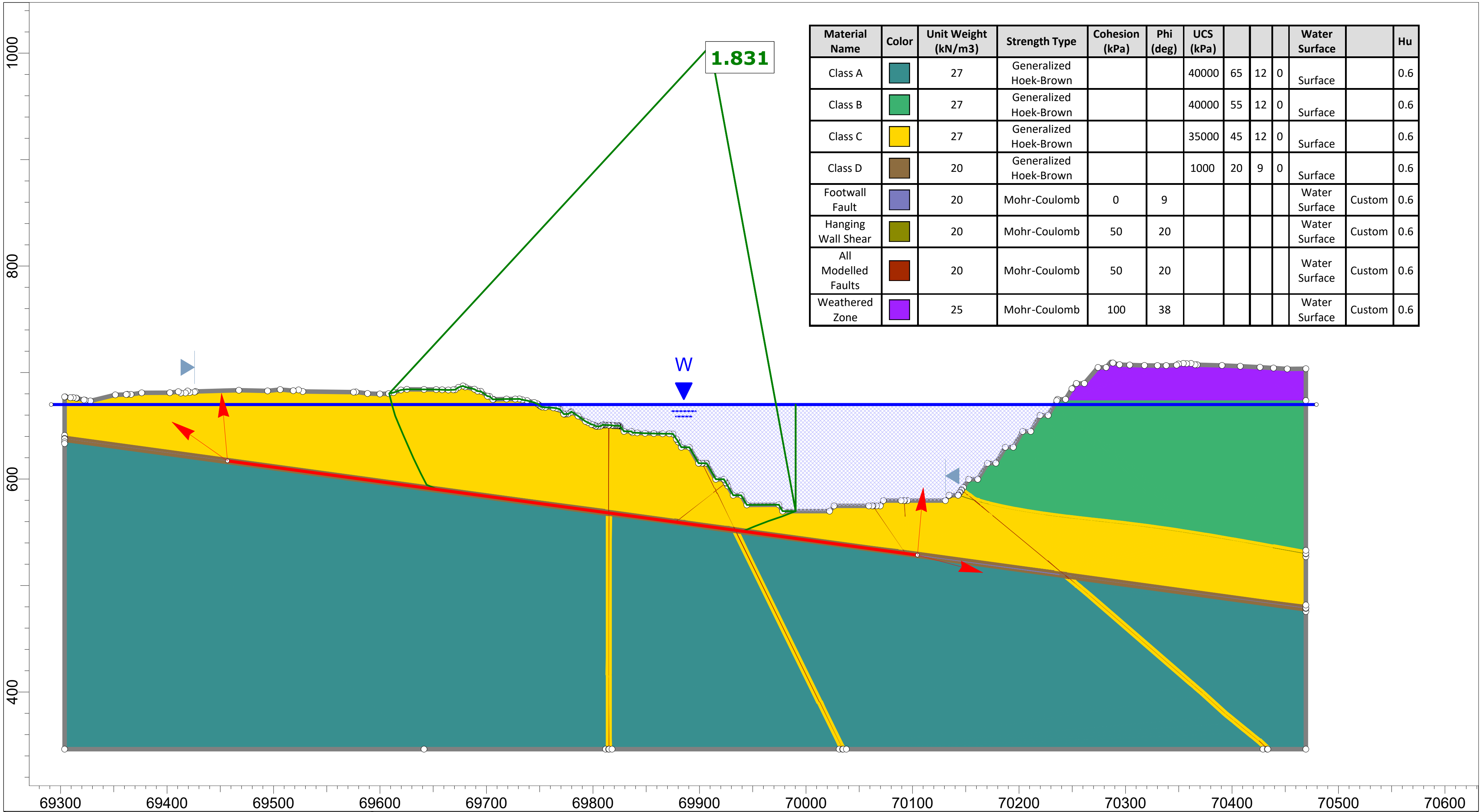
SLIDEINTERPRET 9.014



Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	UCS (kPa)	GSI	mi	D	Water Surface	Hu Type	Hu
Class A		27	Generalized Hoek-Brown			40000	65	12	0	Water Surface	Custom	1
Class B		27	Generalized Hoek-Brown			40000	55	12	0	Water Surface	Custom	1
Class C		27	Generalized Hoek-Brown			35000	45	12	0	Water Surface	Custom	1
Class D		20	Generalized Hoek-Brown			1000	20	9	0	Water Surface	Custom	1
Footwall Fault		20	Mohr-Coulomb	0	9					Water Surface	Custom	1
Hanging Wall Shear		20	Mohr-Coulomb	50	20					Water Surface	Custom	1
All Modelled Faults		20	Mohr-Coulomb	50	20					Water Surface	Custom	1
Weathered Zone		25	Mohr-Coulomb	100	38					Water Surface	Custom	1

Project	PSM0071 - Macraes
Analysis Description	Hu=1 FWF
Drawn By	DW
Scale	1:5000
Company	PSM
Date	27/06/2022
File Name	Coronation Stage6 Section1_Run1.slmd

SLIDEINTERPRET 9.014



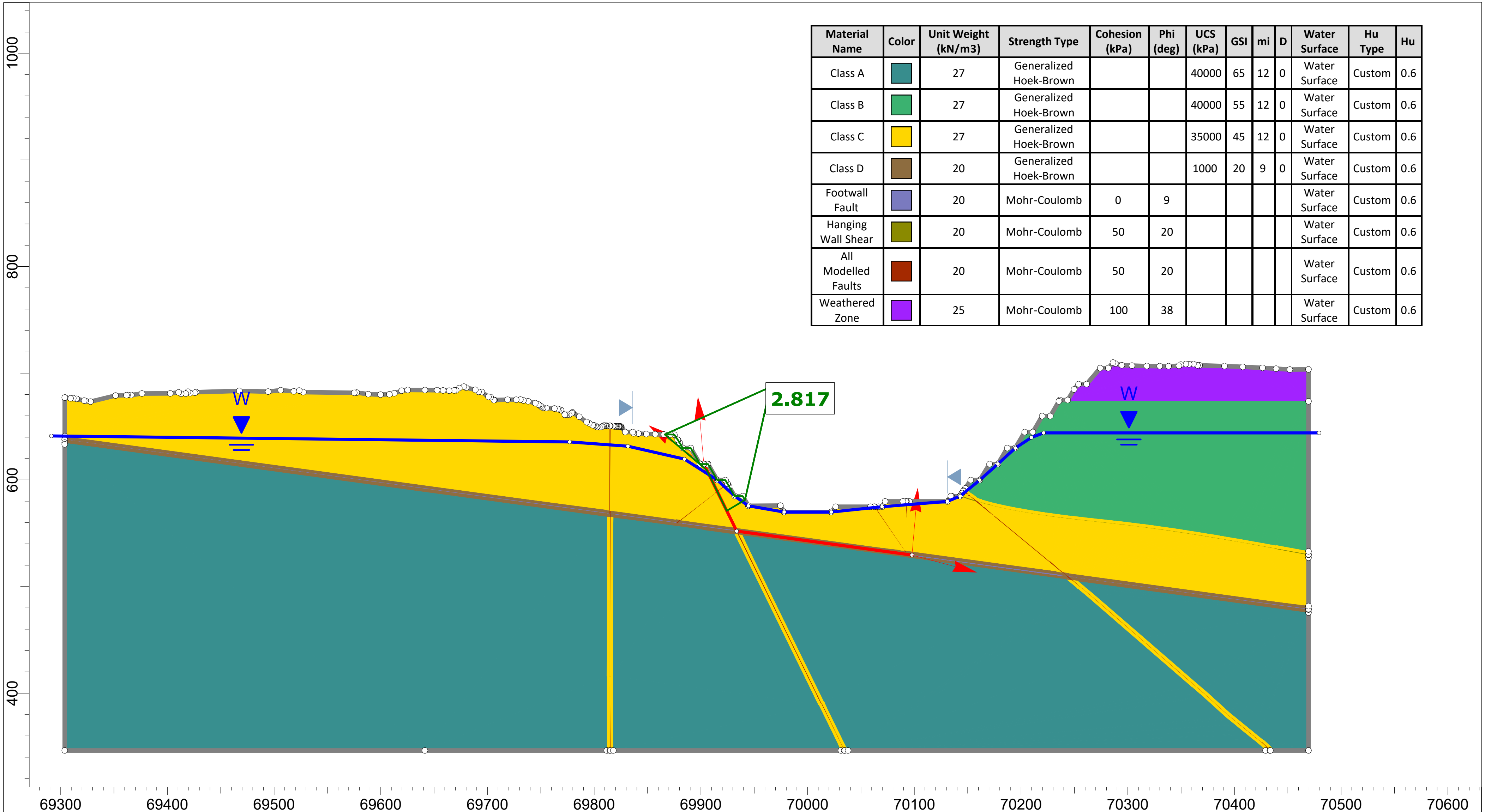
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	UCS (kPa)				Water Surface		Hu
Class A		27	Generalized Hoek-Brown			40000	65	12	0	Surface		0.6
Class B		27	Generalized Hoek-Brown			40000	55	12	0	Surface		0.6
Class C		27	Generalized Hoek-Brown			35000	45	12	0	Surface		0.6
Class D		20	Generalized Hoek-Brown			1000	20	9	0	Surface		0.6
Footwall Fault		20	Mohr-Coulomb	0	9					Water Surface	Custom	0.6
Hanging Wall Shear		20	Mohr-Coulomb	50	20					Water Surface	Custom	0.6
All Modelled Faults		20	Mohr-Coulomb	50	20					Water Surface	Custom	0.6
Weathered Zone		25	Mohr-Coulomb	100	38					Water Surface	Custom	0.6

PSM

SLIDEINTERPRET 9.022

Project	PSM0071 - Macraes		
Analysis Description	Pit lake - FWF		
Drawn By HG	*Scale* 1:5000	*Company* PSM	
Date		*File Name* Coronation Stage6 Section1_Run1_HG.slmd	

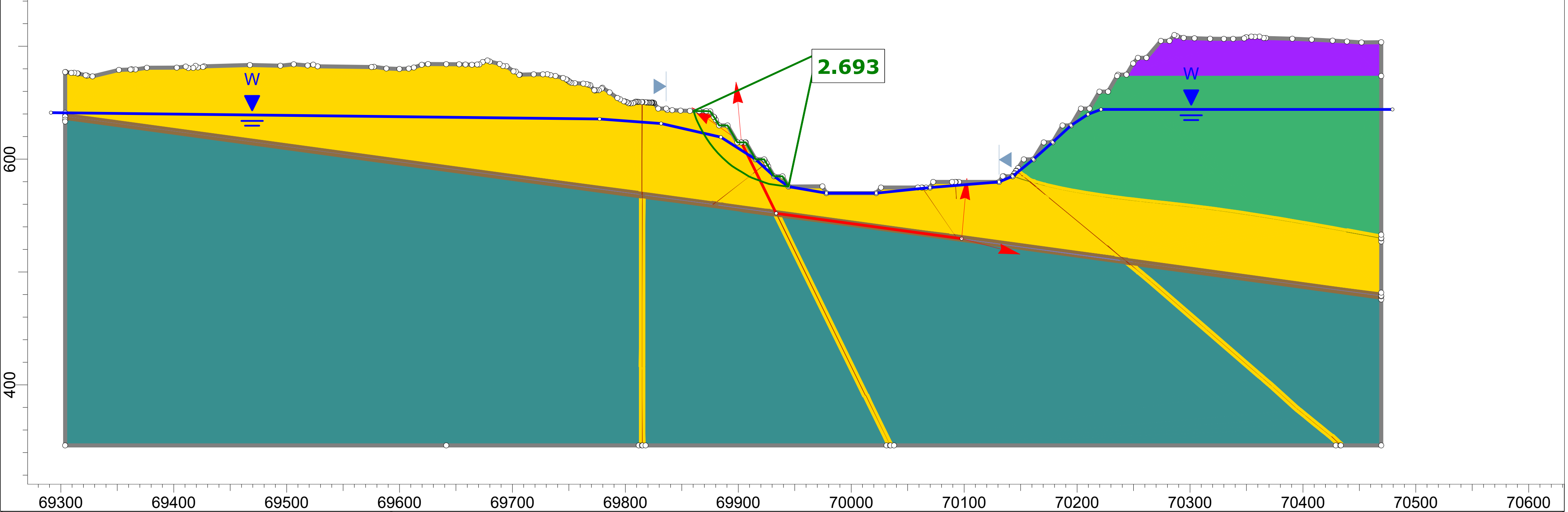
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	UCS (kPa)	GSI	mi	D	Water Surface	Hu Type	Hu
Class A		27	Generalized Hoek-Brown			40000	65	12	0	Water Surface	Custom	0.6
Class B		27	Generalized Hoek-Brown			40000	55	12	0	Water Surface	Custom	0.6
Class C		27	Generalized Hoek-Brown			35000	45	12	0	Water Surface	Custom	0.6
Class D		20	Generalized Hoek-Brown			1000	20	9	0	Water Surface	Custom	0.6
Footwall Fault		20	Mohr-Coulomb	0	9					Water Surface	Custom	0.6
Hanging Wall Shear		20	Mohr-Coulomb	50	20					Water Surface	Custom	0.6
All Modelled Faults		20	Mohr-Coulomb	50	20					Water Surface	Custom	0.6
Weathered Zone		25	Mohr-Coulomb	100	38					Water Surface	Custom	0.6



Project	PSM0071 - Macraes		
Analysis Description	Hu=0.6 wedge		
Drawn By DW	*Scale* 1:5000	*Company* PSM	
Date 5/07/2022		*File Name* Coronation Stage6 Section1_Run1.slmd	

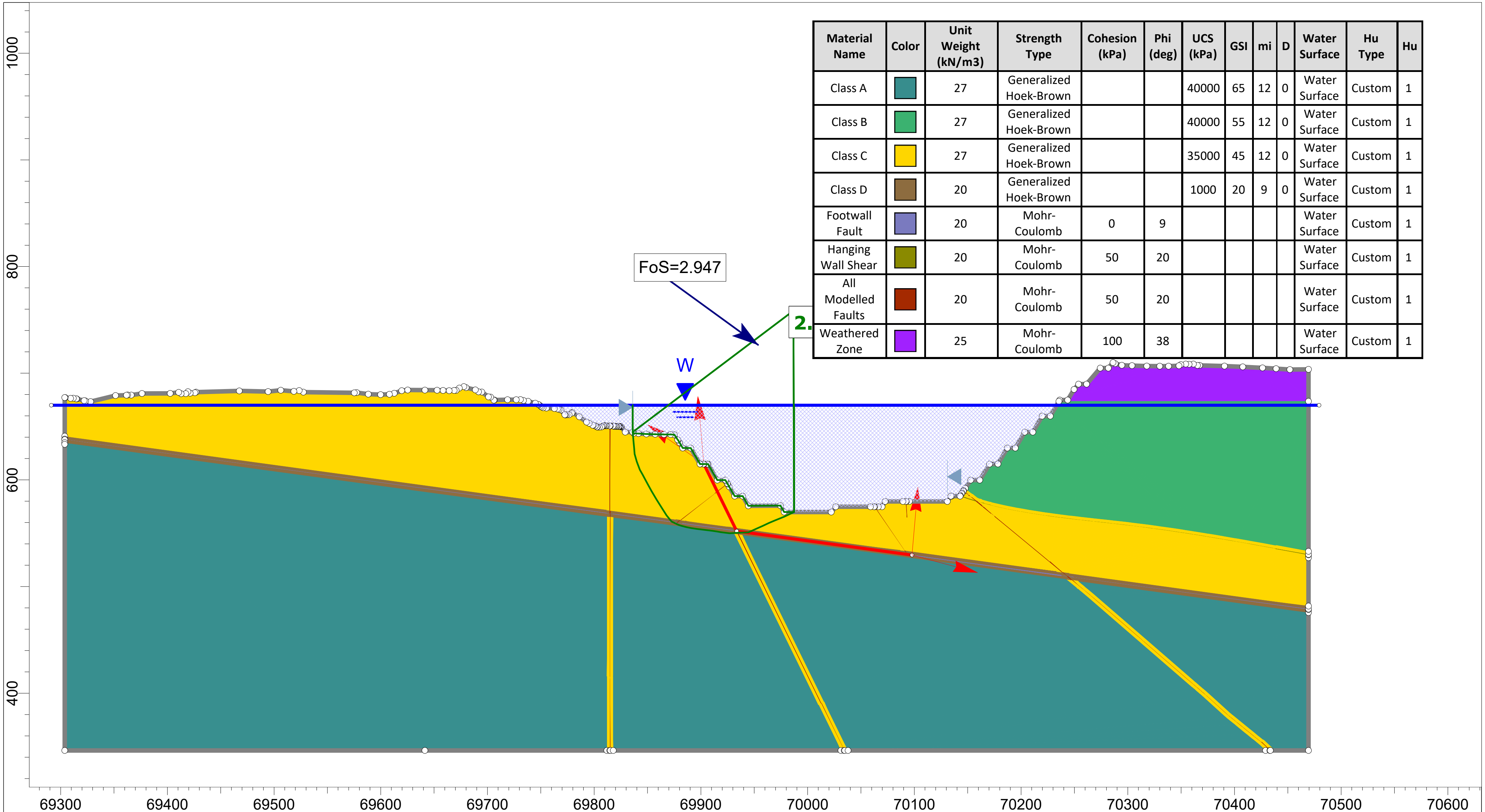
SLIDEINTERPRET 9.014

Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	UCS (kPa)	GSI	mi	D	Water Surface	Hu Type	Hu
Class A		27	Generalized Hoek-Brown			40000	65	12	0	Water Surface	Custom	1
Class B		27	Generalized Hoek-Brown			40000	55	12	0	Water Surface	Custom	1
Class C		27	Generalized Hoek-Brown			35000	45	12	0	Water Surface	Custom	1
Class D		20	Generalized Hoek-Brown			1000	20	9	0	Water Surface	Custom	1
Footwall Fault		20	Mohr-Coulomb	0	9					Water Surface	Custom	1
Hanging Wall Shear		20	Mohr-Coulomb	50	20					Water Surface	Custom	1
All Modelled Faults		20	Mohr-Coulomb	50	20					Water Surface	Custom	1
Weathered Zone		25	Mohr-Coulomb	100	38					Water Surface	Custom	1



Project	PSM0071 - Macraes
Analysis Description	Hu=1.0 wedge
Drawn By	DW
Scale	1:5000
Company	PSM
Date	5/07/2022
File Name	Coronation Stage6 Section1_Run1.slmd

SLIDEINTERPRET 9.014

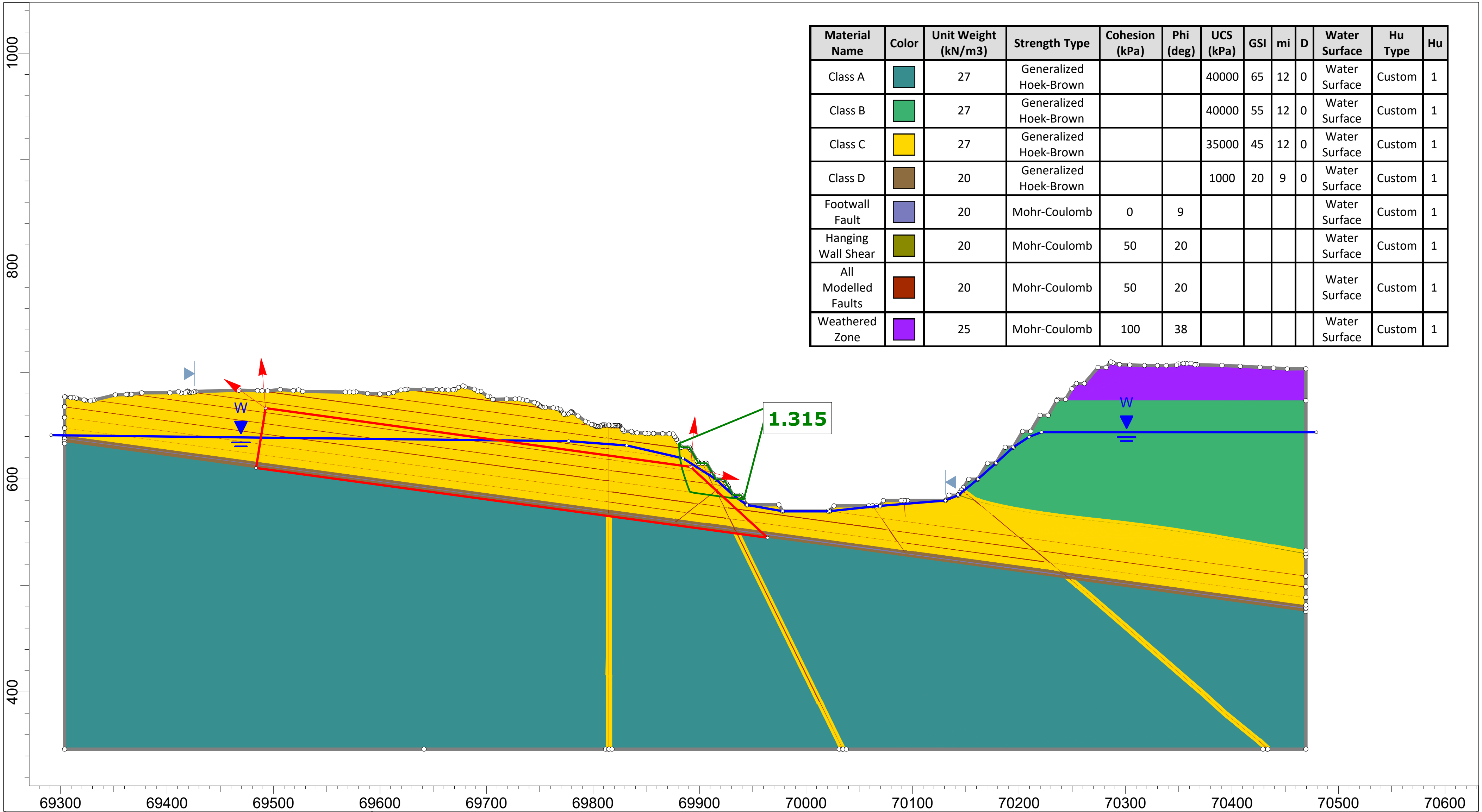


Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	UCS (kPa)	GSI	mi	D	Water Surface	Hu Type	Hu
Class A		27	Generalized Hoek-Brown			40000	65	12	0	Water Surface	Custom	1
Class B		27	Generalized Hoek-Brown			40000	55	12	0	Water Surface	Custom	1
Class C		27	Generalized Hoek-Brown			35000	45	12	0	Water Surface	Custom	1
Class D		20	Generalized Hoek-Brown			1000	20	9	0	Water Surface	Custom	1
Footwall Fault		20	Mohr-Coulomb	0	9					Water Surface	Custom	1
Hanging Wall Shear		20	Mohr-Coulomb	50	20					Water Surface	Custom	1
All Modelled Faults		20	Mohr-Coulomb	50	20					Water Surface	Custom	1
Weathered Zone		25	Mohr-Coulomb	100	38					Water Surface	Custom	1

SLIDEINTERPRET 9.022

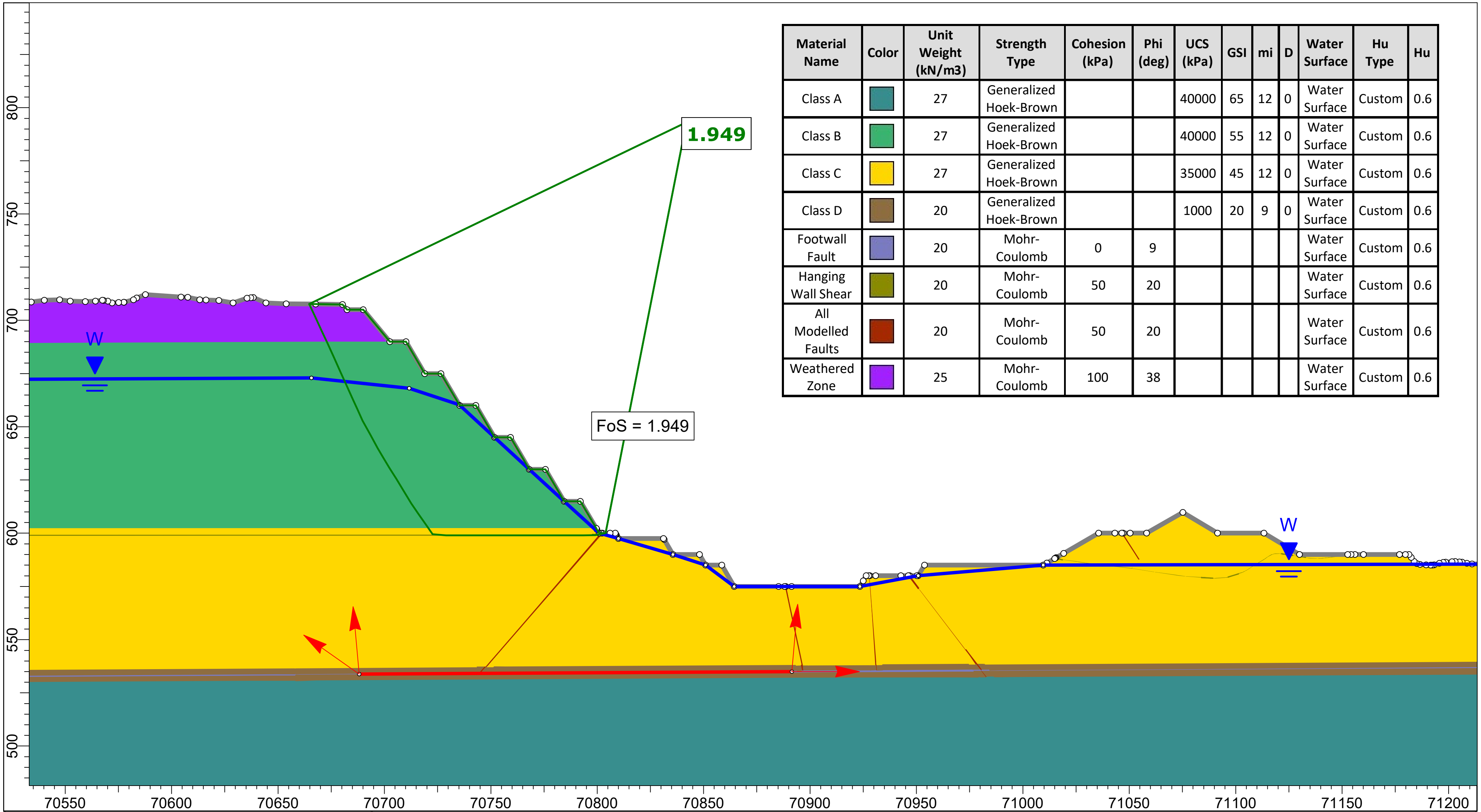
Project	PSM0071 - Macraes
Analysis Description	Pit Water wedge
Drawn By	HG
Scale	1:5000
Company	PSM
Date	
File Name	Coronation Stage6 Section1_Run1_HG.slmd

Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	UCS (kPa)	GSI	mi	D	Water Surface	Hu Type	Hu
Class A		27	Generalized Hoek-Brown			40000	65	12	0	Water Surface	Custom	1
Class B		27	Generalized Hoek-Brown			40000	55	12	0	Water Surface	Custom	1
Class C		27	Generalized Hoek-Brown			35000	45	12	0	Water Surface	Custom	1
Class D		20	Generalized Hoek-Brown			1000	20	9	0	Water Surface	Custom	1
Footwall Fault		20	Mohr-Coulomb	0	9					Water Surface	Custom	1
Hanging Wall Shear		20	Mohr-Coulomb	50	20					Water Surface	Custom	1
All Modelled Faults		20	Mohr-Coulomb	50	20					Water Surface	Custom	1
Weathered Zone		25	Mohr-Coulomb	100	38					Water Surface	Custom	1



Project	PSM0071 - Macraes		
Analysis Description	Wet - adding foliation		
Drawn By DW	*Scale* 1:5000	*Company* PSM	
Date 27/06/2022		*File Name* Coronation Stage6 Section1_Run1.slmd	

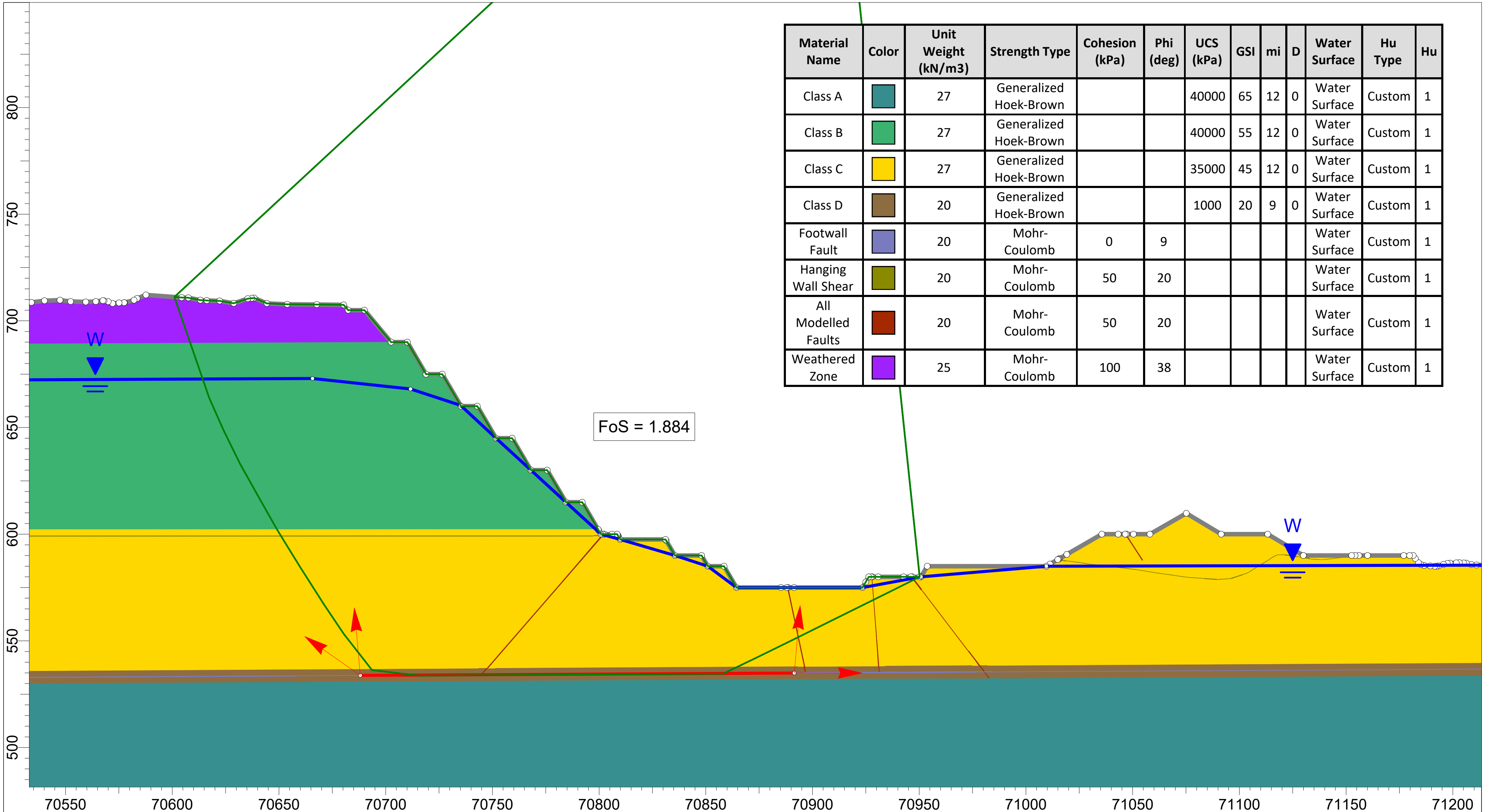
SLIDEINTERPRET 9.014



Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	UCS (kPa)	GSI	mi	D	Water Surface	Hu Type	Hu
Class A		27	Generalized Hoek-Brown			40000	65	12	0	Water Surface	Custom	0.6
Class B		27	Generalized Hoek-Brown			40000	55	12	0	Water Surface	Custom	0.6
Class C		27	Generalized Hoek-Brown			35000	45	12	0	Water Surface	Custom	0.6
Class D		20	Generalized Hoek-Brown			1000	20	9	0	Water Surface	Custom	0.6
Footwall Fault		20	Mohr-Coulomb	0	9					Water Surface	Custom	0.6
Hanging Wall Shear		20	Mohr-Coulomb	50	20					Water Surface	Custom	0.6
All Modelled Faults		20	Mohr-Coulomb	50	20					Water Surface	Custom	0.6
Weathered Zone		25	Mohr-Coulomb	100	38					Water Surface	Custom	0.6

Project	PSM0071 - Macraes
Analysis Description	Hu=0.6 FWF
Drawn By	DW
Scale	1:2500
Company	PSM
Date	1/07/2022
File Name	Coronation Stage6 Section2_Run1.slmd

SLIDEINTERPRET 9.019

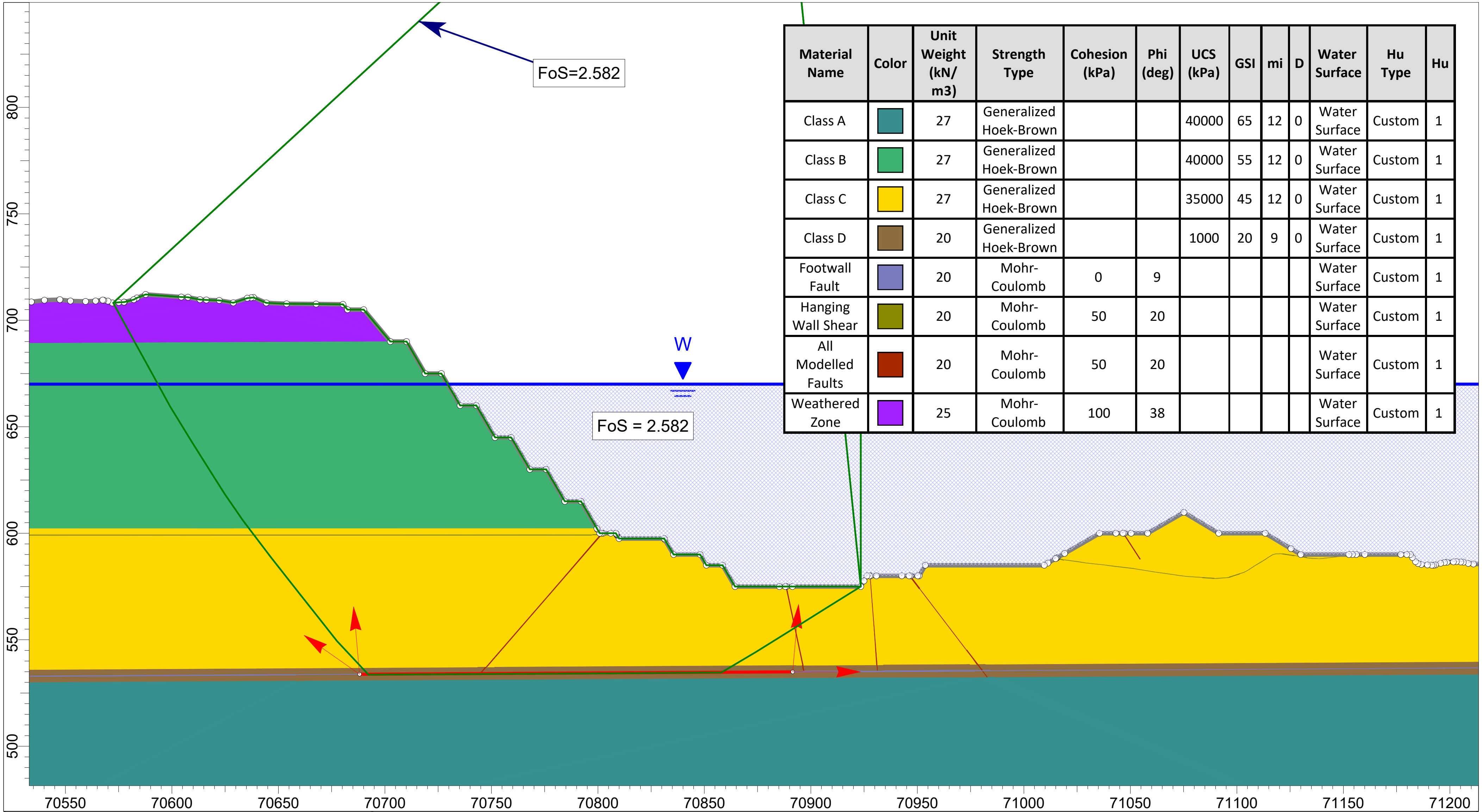


Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	UCS (kPa)	GSI	mi	D	Water Surface	Hu Type	Hu
Class A		27	Generalized Hoek-Brown			40000	65	12	0	Water Surface	Custom	1
Class B		27	Generalized Hoek-Brown			40000	55	12	0	Water Surface	Custom	1
Class C		27	Generalized Hoek-Brown			35000	45	12	0	Water Surface	Custom	1
Class D		20	Generalized Hoek-Brown			1000	20	9	0	Water Surface	Custom	1
Footwall Fault		20	Mohr-Coulomb	0	9					Water Surface	Custom	1
Hanging Wall Shear		20	Mohr-Coulomb	50	20					Water Surface	Custom	1
All Modelled Faults		20	Mohr-Coulomb	50	20					Water Surface	Custom	1
Weathered Zone		25	Mohr-Coulomb	100	38					Water Surface	Custom	1

PSM

SLIDEINTERPRET 9.014

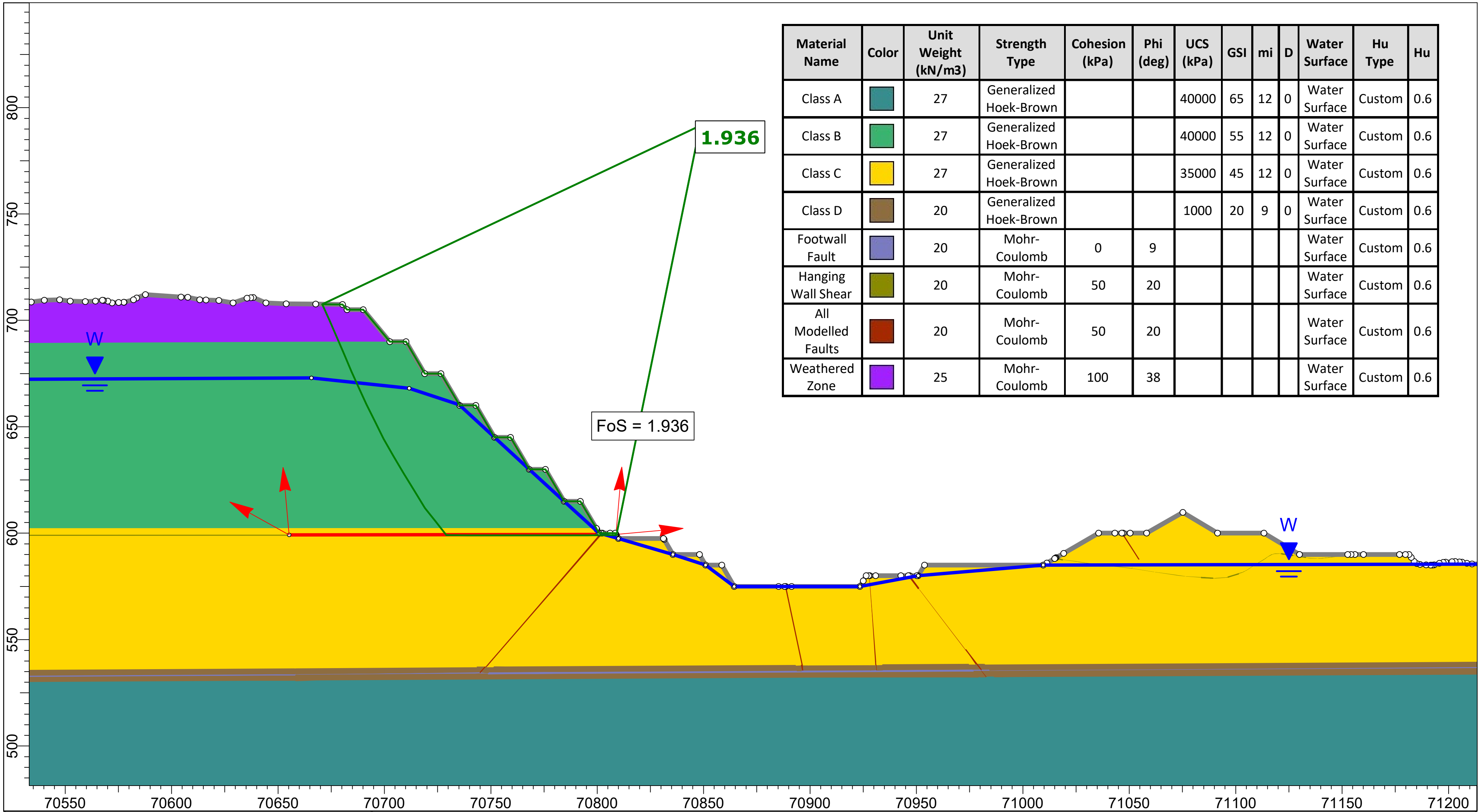
Project	PSM0071 - Macraes
Analysis Description	Hu=1 - FWF
Drawn By	DW
Scale	1:2500
Company	PSM
Date	27/06/2022
File Name	Coronation Stage6 Section2_Run1.slmd



Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	UCS (kPa)	GSI	mi	D	Water Surface	Hu Type	Hu
Class A		27	Generalized Hoek-Brown			40000	65	12	0	Water Surface	Custom	1
Class B		27	Generalized Hoek-Brown			40000	55	12	0	Water Surface	Custom	1
Class C		27	Generalized Hoek-Brown			35000	45	12	0	Water Surface	Custom	1
Class D		20	Generalized Hoek-Brown			1000	20	9	0	Water Surface	Custom	1
Footwall Fault		20	Mohr-Coulomb	0	9					Water Surface	Custom	1
Hanging Wall Shear		20	Mohr-Coulomb	50	20					Water Surface	Custom	1
All Modelled Faults		20	Mohr-Coulomb	50	20					Water Surface	Custom	1
Weathered Zone		25	Mohr-Coulomb	100	38					Water Surface	Custom	1

SLIDEINTERPRET 9.022

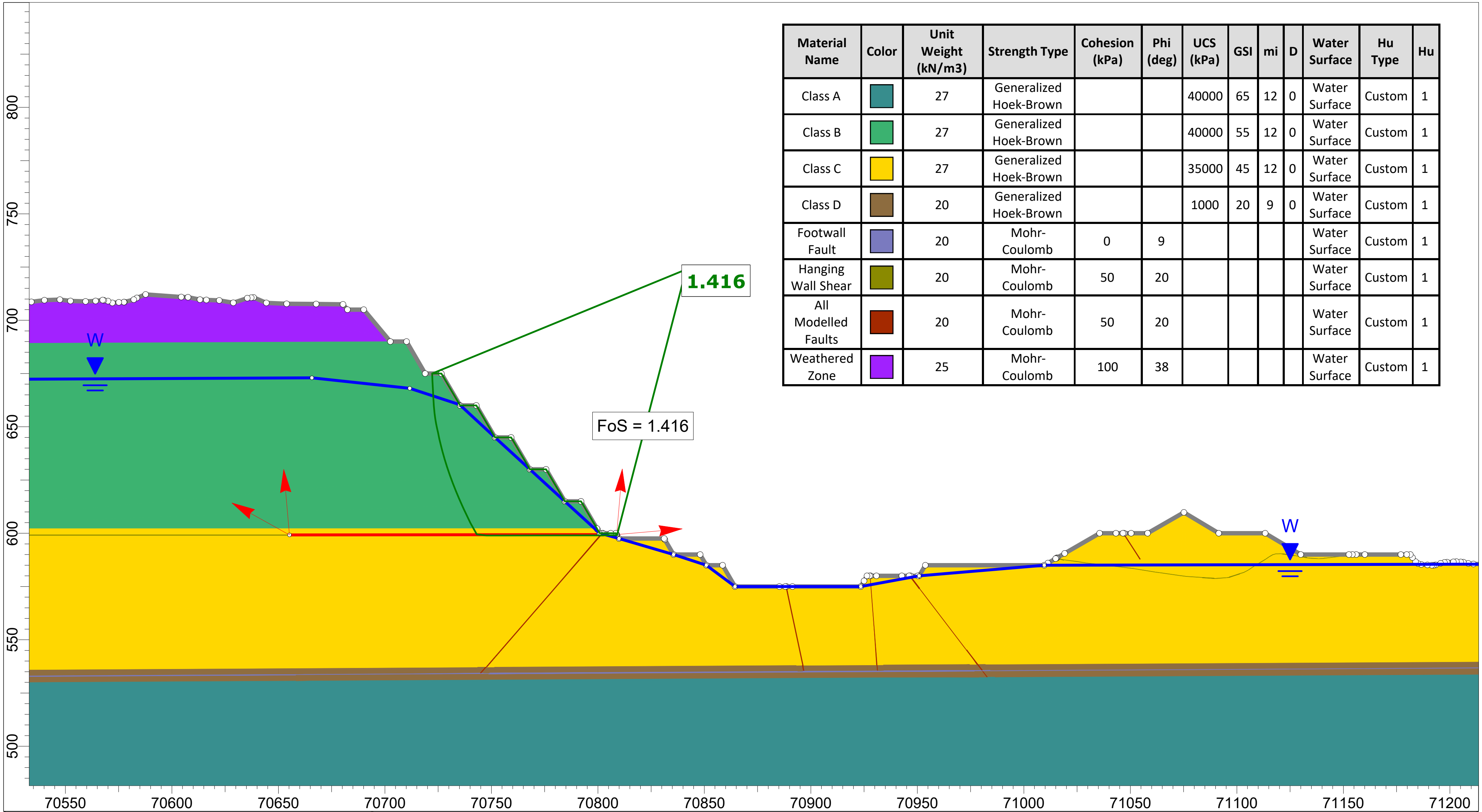
Project	PSM0071 - Macraes
Analysis Description	Pit Water FWF
Drawn By	HG
Scale	1:2500
Company	PSM
Date	
File Name	Coronation Stage6 Section2_Run1_HG.slmd



Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	UCS (kPa)	GSI	mi	D	Water Surface	Hu Type	Hu
Class A		27	Generalized Hoek-Brown			40000	65	12	0	Water Surface	Custom	0.6
Class B		27	Generalized Hoek-Brown			40000	55	12	0	Water Surface	Custom	0.6
Class C		27	Generalized Hoek-Brown			35000	45	12	0	Water Surface	Custom	0.6
Class D		20	Generalized Hoek-Brown			1000	20	9	0	Water Surface	Custom	0.6
Footwall Fault		20	Mohr-Coulomb	0	9					Water Surface	Custom	0.6
Hanging Wall Shear		20	Mohr-Coulomb	50	20					Water Surface	Custom	0.6
All Modelled Faults		20	Mohr-Coulomb	50	20					Water Surface	Custom	0.6
Weathered Zone		25	Mohr-Coulomb	100	38					Water Surface	Custom	0.6

SLIDEINTERPRET 9.019

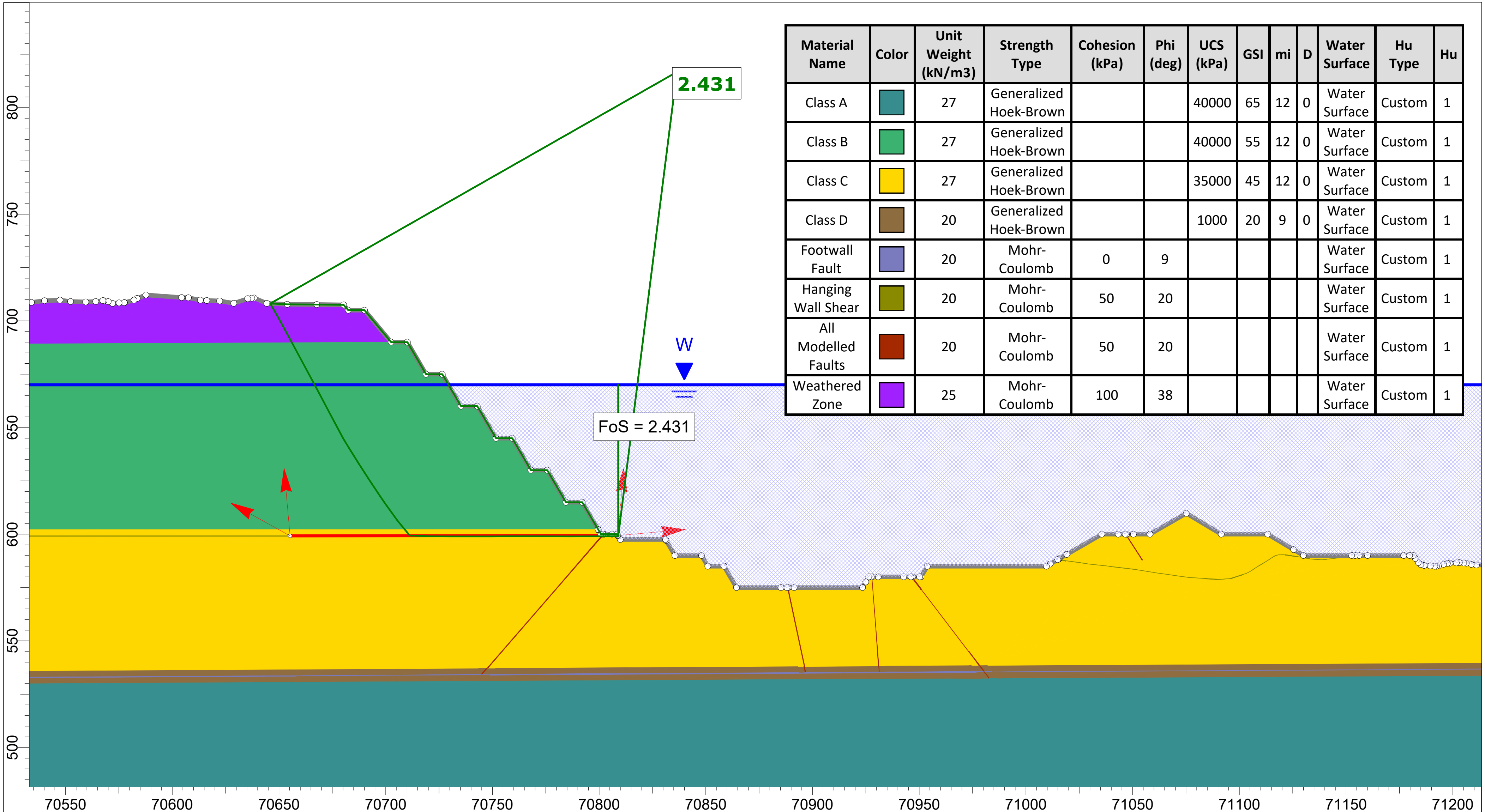
Project	PSM0071 - Macraes		
Analysis Description	Hu=0.6 HWS		
Drawn By	DW	*Scale*	1:2500
Company	PSM		
Date	1/07/2022	*File Name*	Coronation Stage6 Section2_Run1.slmd



Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	UCS (kPa)	GSI	mi	D	Water Surface	Hu Type	Hu
Class A		27	Generalized Hoek-Brown			40000	65	12	0	Water Surface	Custom	1
Class B		27	Generalized Hoek-Brown			40000	55	12	0	Water Surface	Custom	1
Class C		27	Generalized Hoek-Brown			35000	45	12	0	Water Surface	Custom	1
Class D		20	Generalized Hoek-Brown			1000	20	9	0	Water Surface	Custom	1
Footwall Fault		20	Mohr-Coulomb	0	9					Water Surface	Custom	1
Hanging Wall Shear		20	Mohr-Coulomb	50	20					Water Surface	Custom	1
All Modelled Faults		20	Mohr-Coulomb	50	20					Water Surface	Custom	1
Weathered Zone		25	Mohr-Coulomb	100	38					Water Surface	Custom	1

Project	PSM0071 - Macraes		
Analysis Description	Wet - HWS		
Drawn By	DW	*Scale*	1:2500
Company	PSM		
Date	27/06/2022	*File Name*	Coronation Stage6 Section2_Run1.slmd

SLIDEINTERPRET 9.014

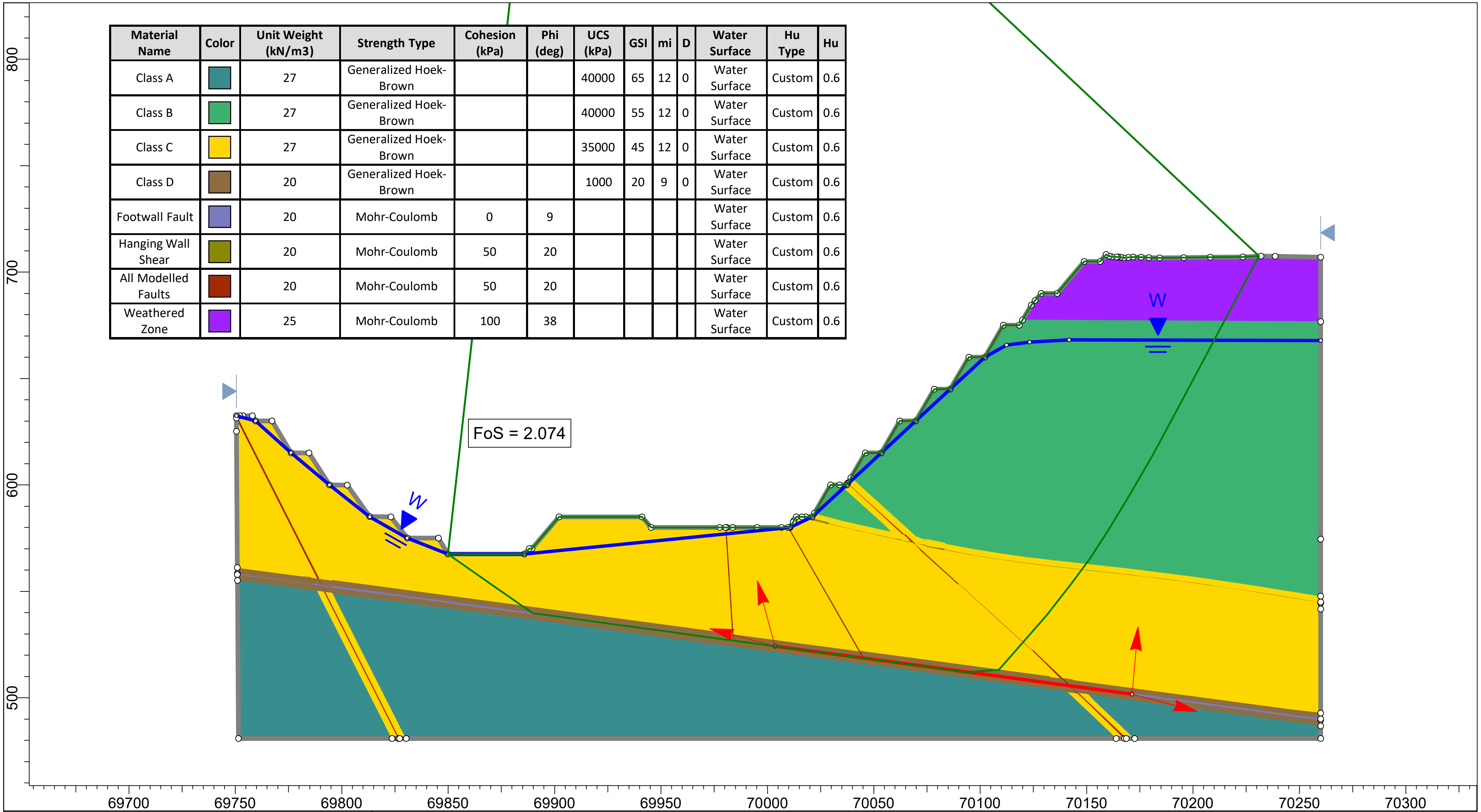


Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	UCS (kPa)	GSI	mi	D	Water Surface	Hu Type	Hu
Class A		27	Generalized Hoek-Brown			40000	65	12	0	Water Surface	Custom	1
Class B		27	Generalized Hoek-Brown			40000	55	12	0	Water Surface	Custom	1
Class C		27	Generalized Hoek-Brown			35000	45	12	0	Water Surface	Custom	1
Class D		20	Generalized Hoek-Brown			1000	20	9	0	Water Surface	Custom	1
Footwall Fault		20	Mohr-Coulomb	0	9					Water Surface	Custom	1
Hanging Wall Shear		20	Mohr-Coulomb	50	20					Water Surface	Custom	1
All Modelled Faults		20	Mohr-Coulomb	50	20					Water Surface	Custom	1
Weathered Zone		25	Mohr-Coulomb	100	38					Water Surface	Custom	1

PSM

SLIDEINTERPRET 9.022

Project	PSM0071 - Macraes		
Analysis Description	Pit Water HWS		
Drawn By HG	*Scale* 1:2500	*Company*	PSM
Date		*File Name*	Coronation Stage6 Section2_Run1_HG.slmd

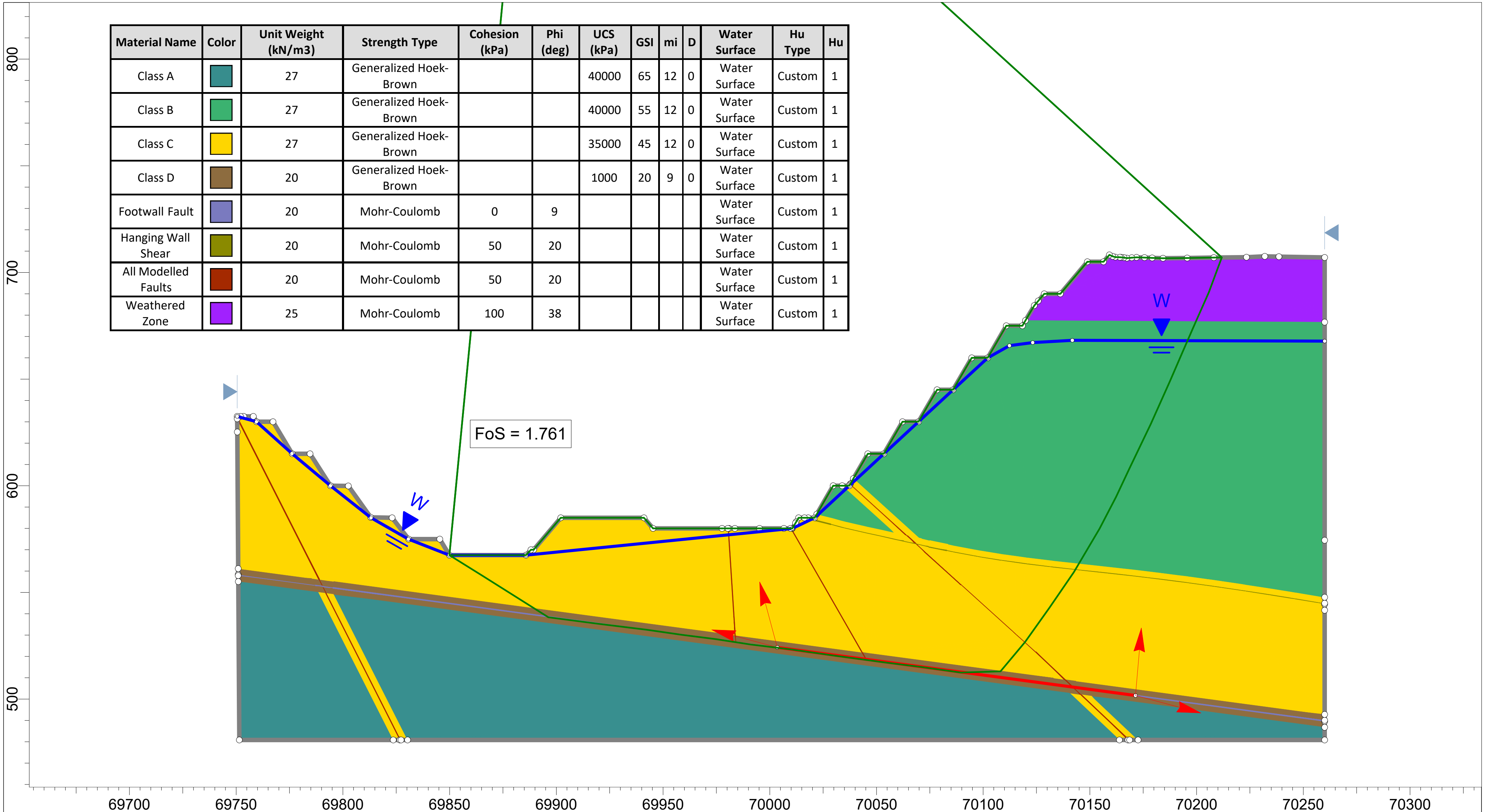


Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	UCS (kPa)	GSI	mi	D	Water Surface	Hu Type	Hu
Class A		27	Generalized Hoek-Brown			40000	65	12	0	Water Surface	Custom	0.6
Class B		27	Generalized Hoek-Brown			40000	55	12	0	Water Surface	Custom	0.6
Class C		27	Generalized Hoek-Brown			35000	45	12	0	Water Surface	Custom	0.6
Class D		20	Generalized Hoek-Brown			1000	20	9	0	Water Surface	Custom	0.6
Footwall Fault		20	Mohr-Coulomb	0	9					Water Surface	Custom	0.6
Hanging Wall Shear		20	Mohr-Coulomb	50	20					Water Surface	Custom	0.6
All Modelled Faults		20	Mohr-Coulomb	50	20					Water Surface	Custom	0.6
Weathered Zone		25	Mohr-Coulomb	100	38					Water Surface	Custom	0.6

SLIDEINTERPRET 9.019

Project	PSM0071 - Macraes		
Analysis Description	Hu=0.6 FWF		
Drawn By	DW	*Scale* 1:2500	*Company* PSM
Date	1/07/2022	*File Name*	Coronation Stage6 Section3_Run1.slmd

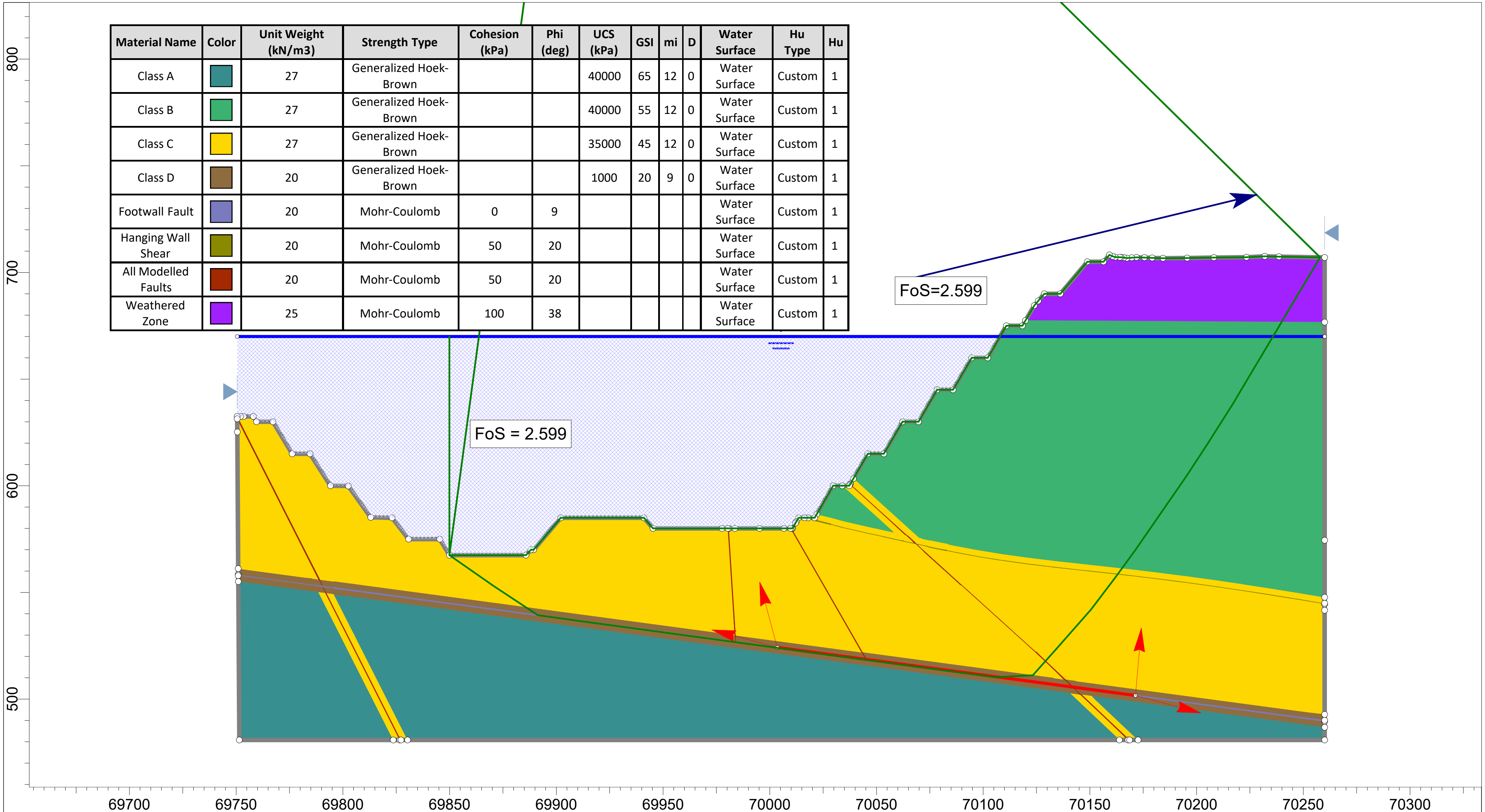
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	UCS (kPa)	GSI	mi	D	Water Surface	Hu Type	Hu
Class A		27	Generalized Hoek-Brown			40000	65	12	0	Water Surface	Custom	1
Class B		27	Generalized Hoek-Brown			40000	55	12	0	Water Surface	Custom	1
Class C		27	Generalized Hoek-Brown			35000	45	12	0	Water Surface	Custom	1
Class D		20	Generalized Hoek-Brown			1000	20	9	0	Water Surface	Custom	1
Footwall Fault		20	Mohr-Coulomb	0	9					Water Surface	Custom	1
Hanging Wall Shear		20	Mohr-Coulomb	50	20					Water Surface	Custom	1
All Modelled Faults		20	Mohr-Coulomb	50	20					Water Surface	Custom	1
Weathered Zone		25	Mohr-Coulomb	100	38					Water Surface	Custom	1



Project	PSM0071 - Macraes		
Analysis Description	Wet - FWF		
Drawn By DW	*Scale* 1:2500	*Company* PSM	
Date 27/06/2022		*File Name* Coronation Stage6 Section3_Run1.slmd	

SLIDEINTERPRET 9.014

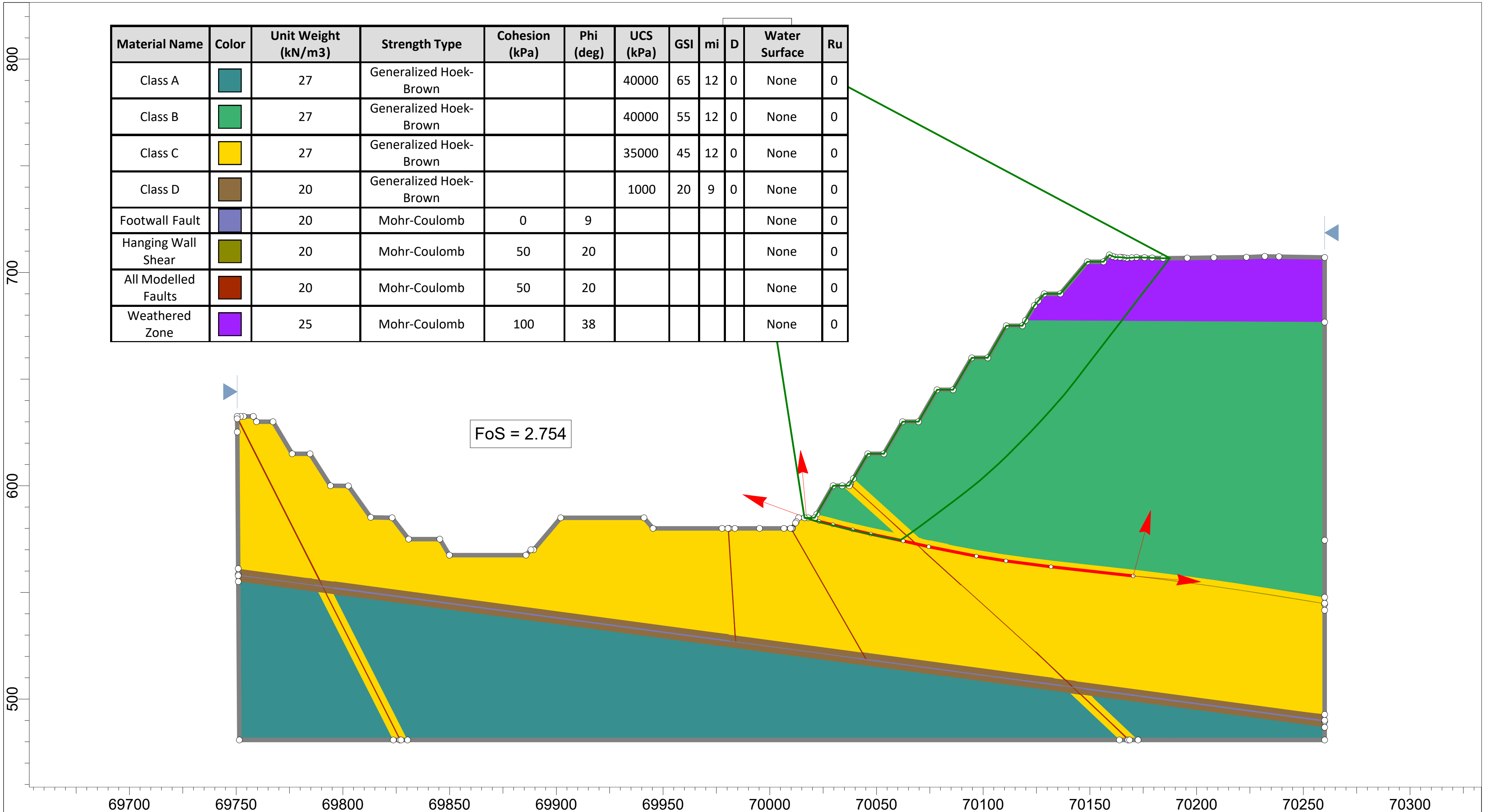
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	UCS (kPa)	GSI	mi	D	Water Surface	Hu Type	Hu
Class A		27	Generalized Hoek-Brown			40000	65	12	0	Water Surface	Custom	1
Class B		27	Generalized Hoek-Brown			40000	55	12	0	Water Surface	Custom	1
Class C		27	Generalized Hoek-Brown			35000	45	12	0	Water Surface	Custom	1
Class D		20	Generalized Hoek-Brown			1000	20	9	0	Water Surface	Custom	1
Footwall Fault		20	Mohr-Coulomb	0	9					Water Surface	Custom	1
Hanging Wall Shear		20	Mohr-Coulomb	50	20					Water Surface	Custom	1
All Modelled Faults		20	Mohr-Coulomb	50	20					Water Surface	Custom	1
Weathered Zone		25	Mohr-Coulomb	100	38					Water Surface	Custom	1



SLIDEINTERPRET 9.022

Project	PSM0071 - Macraes		
Analysis Description	Pit Water FWF		
Drawn By HG	*Scale* 1:2500	*Company*	PSM
Date		*File Name*	Coronation Stage6 Section3_Run1_HG.slmd

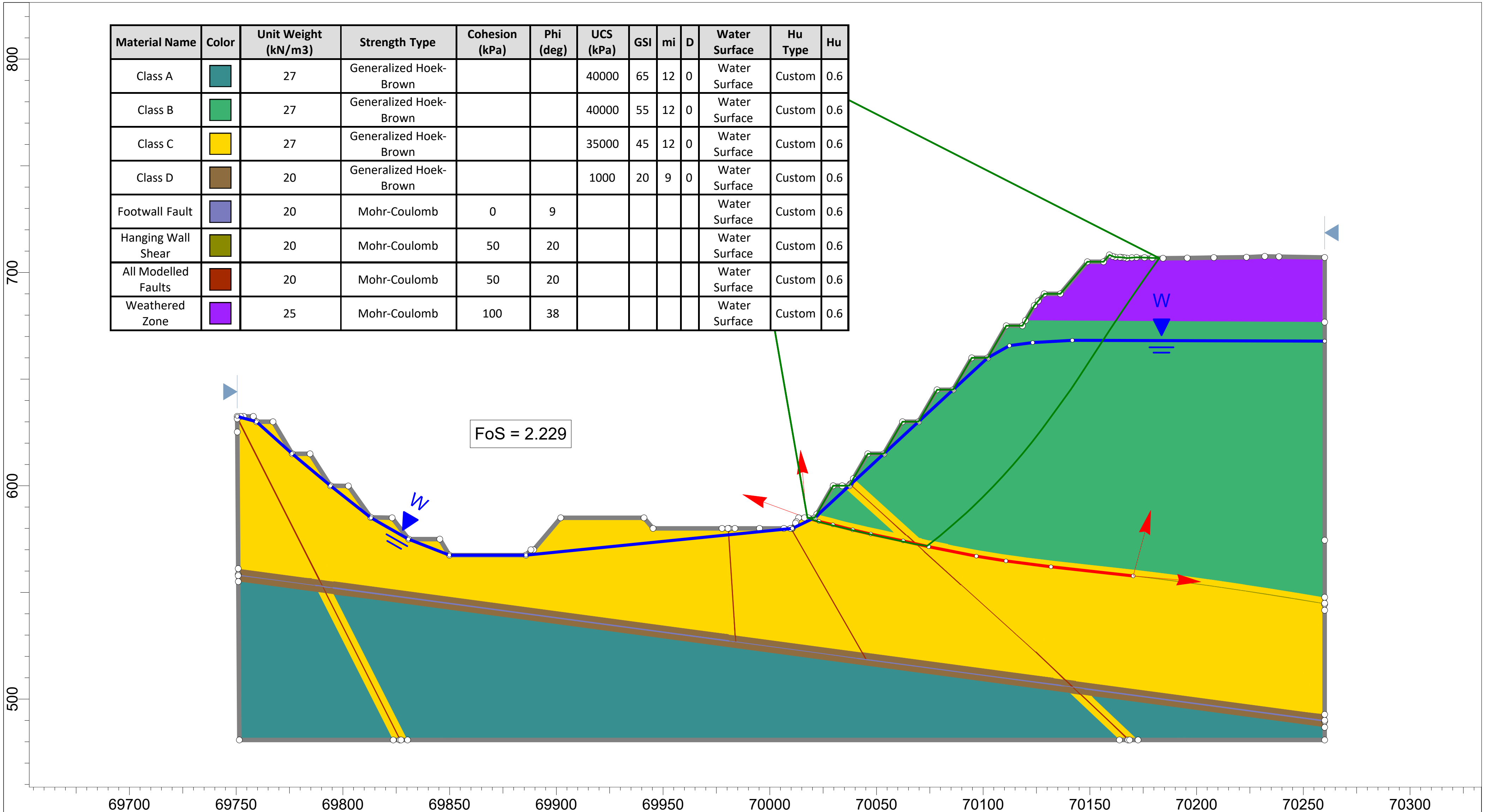
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	UCS (kPa)	GSI	mi	D	Water Surface	Ru
Class A		27	Generalized Hoek-Brown			40000	65	12	0	None	0
Class B		27	Generalized Hoek-Brown			40000	55	12	0	None	0
Class C		27	Generalized Hoek-Brown			35000	45	12	0	None	0
Class D		20	Generalized Hoek-Brown			1000	20	9	0	None	0
Footwall Fault		20	Mohr-Coulomb	0	9					None	0
Hanging Wall Shear		20	Mohr-Coulomb	50	20					None	0
All Modelled Faults		20	Mohr-Coulomb	50	20					None	0
Weathered Zone		25	Mohr-Coulomb	100	38					None	0



Project	PSM0071 - Macraes
Analysis Description	Dry - HWS
Drawn By	DW
Scale	1:2500
Company	PSM
Date	5/07/2022
File Name	Coronation Stage6 Section3_Run1.slmd

SLIDEINTERPRET 9.014

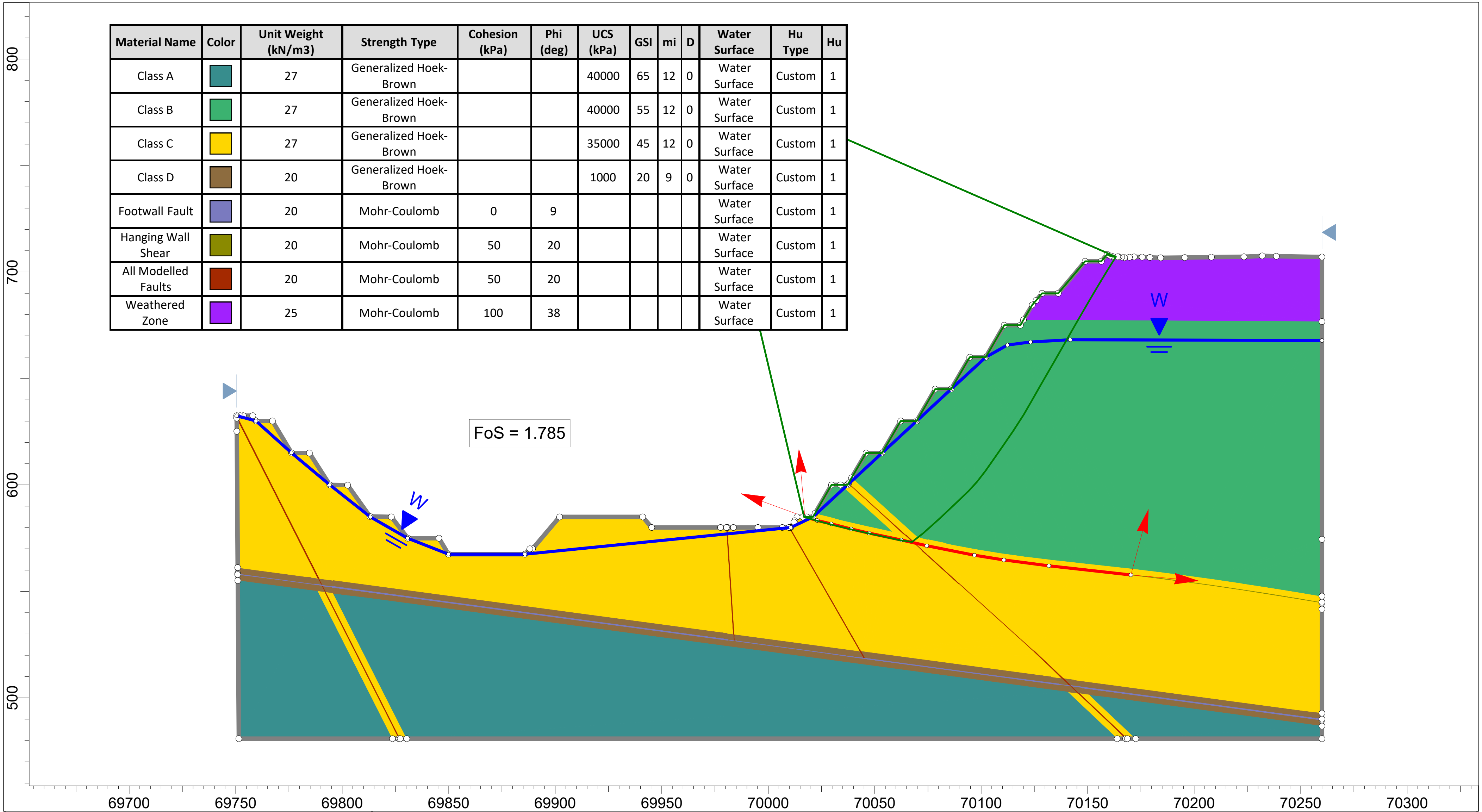
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	UCS (kPa)	GSI	mi	D	Water Surface	Hu Type	Hu
Class A		27	Generalized Hoek-Brown			40000	65	12	0	Water Surface	Custom	0.6
Class B		27	Generalized Hoek-Brown			40000	55	12	0	Water Surface	Custom	0.6
Class C		27	Generalized Hoek-Brown			35000	45	12	0	Water Surface	Custom	0.6
Class D		20	Generalized Hoek-Brown			1000	20	9	0	Water Surface	Custom	0.6
Footwall Fault		20	Mohr-Coulomb	0	9					Water Surface	Custom	0.6
Hanging Wall Shear		20	Mohr-Coulomb	50	20					Water Surface	Custom	0.6
All Modelled Faults		20	Mohr-Coulomb	50	20					Water Surface	Custom	0.6
Weathered Zone		25	Mohr-Coulomb	100	38					Water Surface	Custom	0.6



Project	PSM0071 - Macraes		
Analysis Description	Hu=0.6 HWS		
Drawn By	DW	Scale	1:2500
Company	PSM		
Date	5/07/2022	File Name	Coronation Stage6 Section3_Run1.slmd

SLIDEINTERPRET 9.014

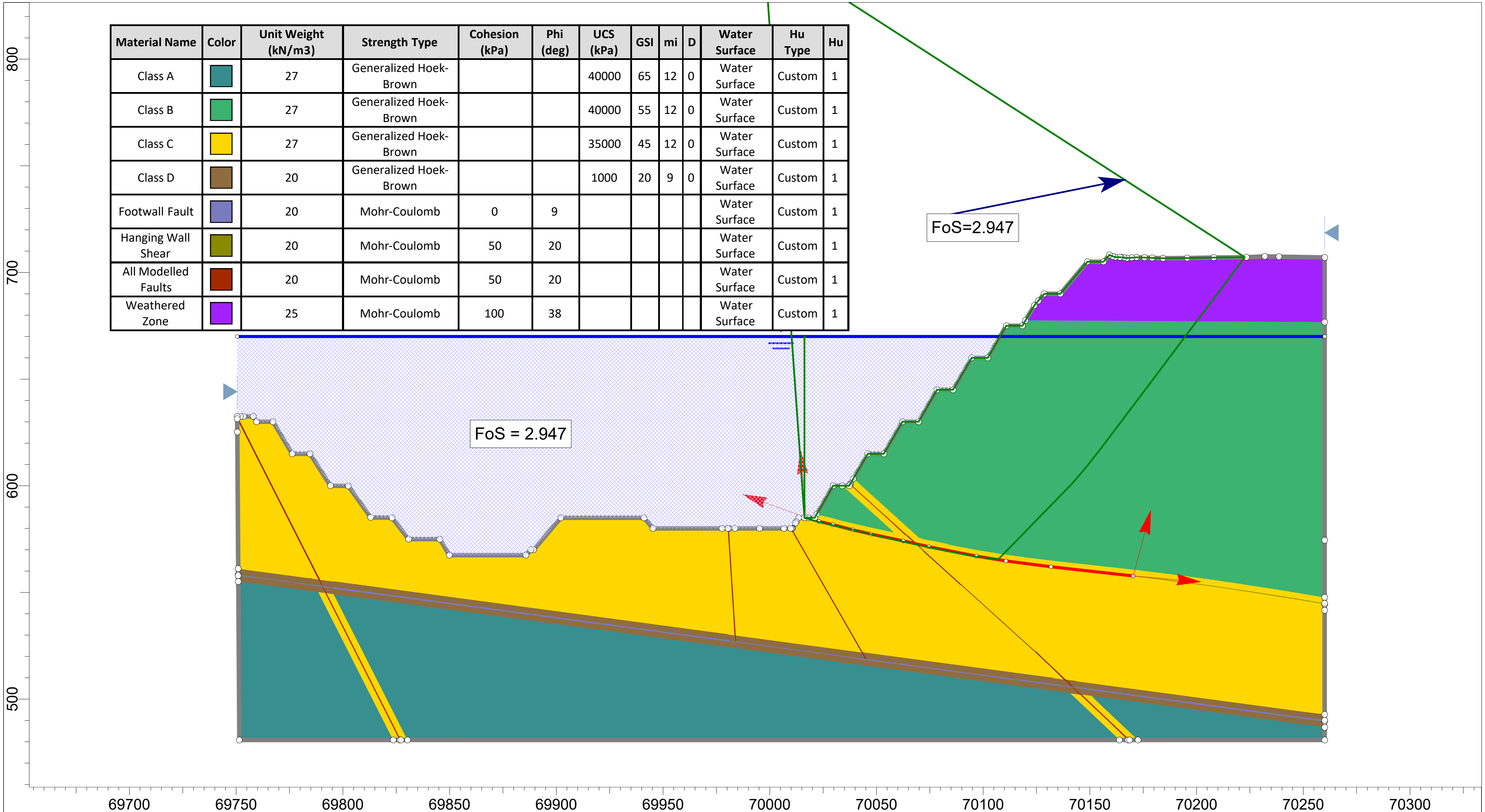
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	UCS (kPa)	GSI	mi	D	Water Surface	Hu Type	Hu
Class A		27	Generalized Hoek-Brown			40000	65	12	0	Water Surface	Custom	1
Class B		27	Generalized Hoek-Brown			40000	55	12	0	Water Surface	Custom	1
Class C		27	Generalized Hoek-Brown			35000	45	12	0	Water Surface	Custom	1
Class D		20	Generalized Hoek-Brown			1000	20	9	0	Water Surface	Custom	1
Footwall Fault		20	Mohr-Coulomb	0	9					Water Surface	Custom	1
Hanging Wall Shear		20	Mohr-Coulomb	50	20					Water Surface	Custom	1
All Modelled Faults		20	Mohr-Coulomb	50	20					Water Surface	Custom	1
Weathered Zone		25	Mohr-Coulomb	100	38					Water Surface	Custom	1



Project	PSM0071 - Macraes		
Analysis Description	Wet - HWS		
Drawn By DW	*Scale* 1:2500	*Company*	PSM
Date	5/07/2022	*File Name*	Coronation Stage6 Section3_Run1.slmd

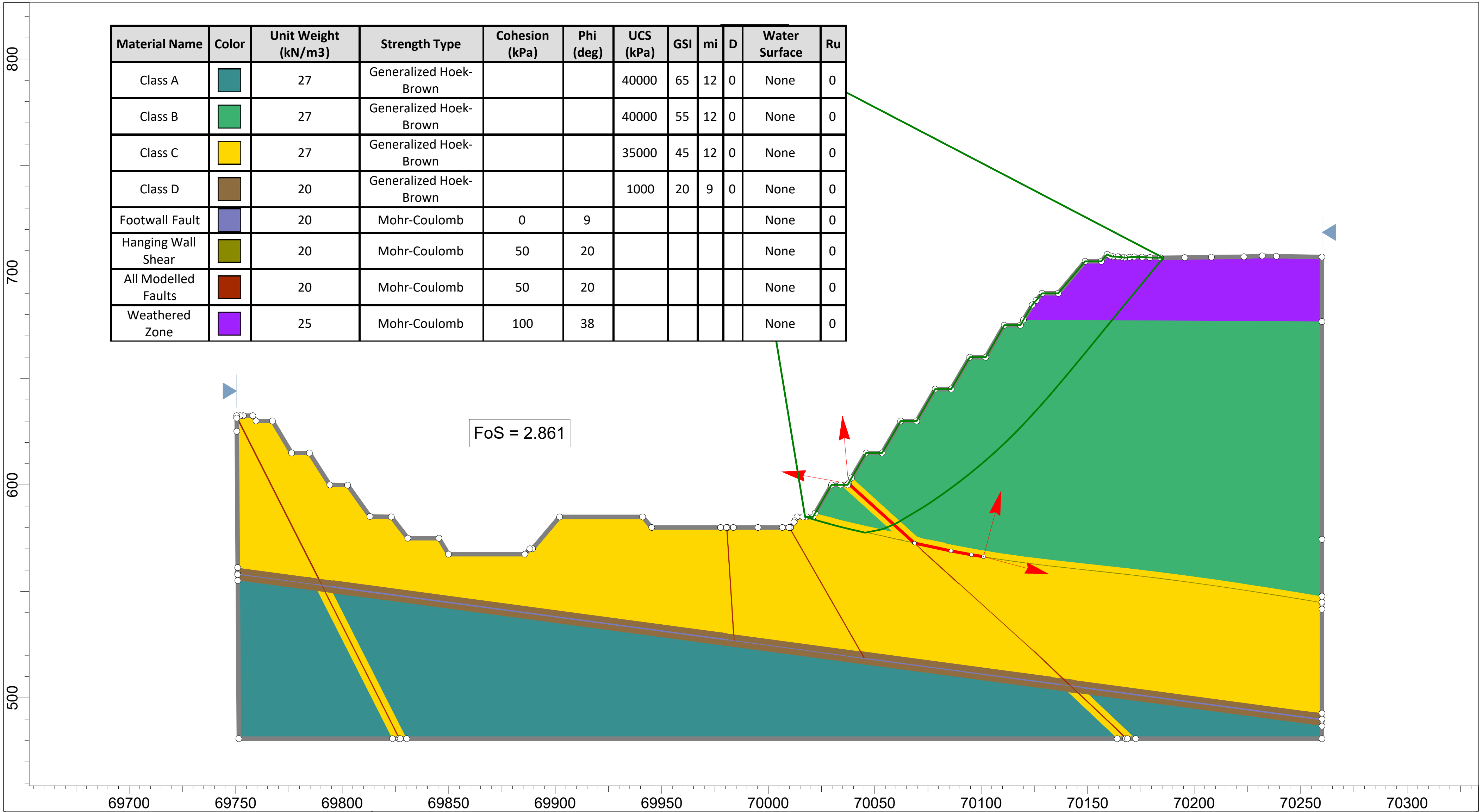
SLIDEINTERPRET 9.014

Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	UCS (kPa)	GSI	mi	D	Water Surface	Hu Type	Hu
Class A		27	Generalized Hoek-Brown			40000	65	12	0	Water Surface	Custom	1
Class B		27	Generalized Hoek-Brown			40000	55	12	0	Water Surface	Custom	1
Class C		27	Generalized Hoek-Brown			35000	45	12	0	Water Surface	Custom	1
Class D		20	Generalized Hoek-Brown			1000	20	9	0	Water Surface	Custom	1
Footwall Fault		20	Mohr-Coulomb	0	9					Water Surface	Custom	1
Hanging Wall Shear		20	Mohr-Coulomb	50	20					Water Surface	Custom	1
All Modelled Faults		20	Mohr-Coulomb	50	20					Water Surface	Custom	1
Weathered Zone		25	Mohr-Coulomb	100	38					Water Surface	Custom	1



SLIDEINTERPRET 9.022

Project	PSM0071 - Macraes		
Analysis Description	Pit Water HWS		
Drawn By HG	*Scale* 1:2500	*Company*	PSM
Date		*File Name*	Coronation Stage6 Section3_Run1_HG.slmd



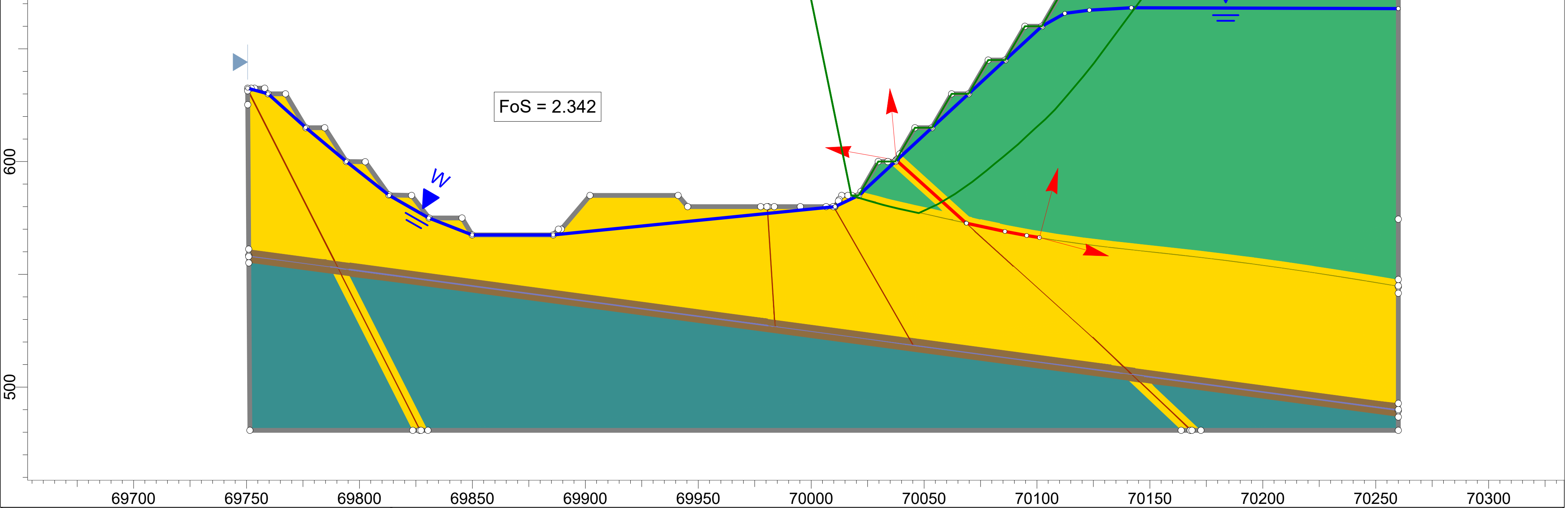
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	UCS (kPa)	GSI	mi	D	Water Surface	Ru
Class A		27	Generalized Hoek-Brown			40000	65	12	0	None	0
Class B		27	Generalized Hoek-Brown			40000	55	12	0	None	0
Class C		27	Generalized Hoek-Brown			35000	45	12	0	None	0
Class D		20	Generalized Hoek-Brown			1000	20	9	0	None	0
Footwall Fault		20	Mohr-Coulomb	0	9					None	0
Hanging Wall Shear		20	Mohr-Coulomb	50	20					None	0
All Modelled Faults		20	Mohr-Coulomb	50	20					None	0
Weathered Zone		25	Mohr-Coulomb	100	38					None	0

PSM

SLIDEINTERPRET 8.014

Project	PSM0071 - Macraes		
Analysis Description	Dry - HWS wedge		
Drawn By	DW	*Scale*	1:2500
Company	PSM		
Date	5/07/2022	*File Name*	Coronation Stage6 Section3_Run1.slmd

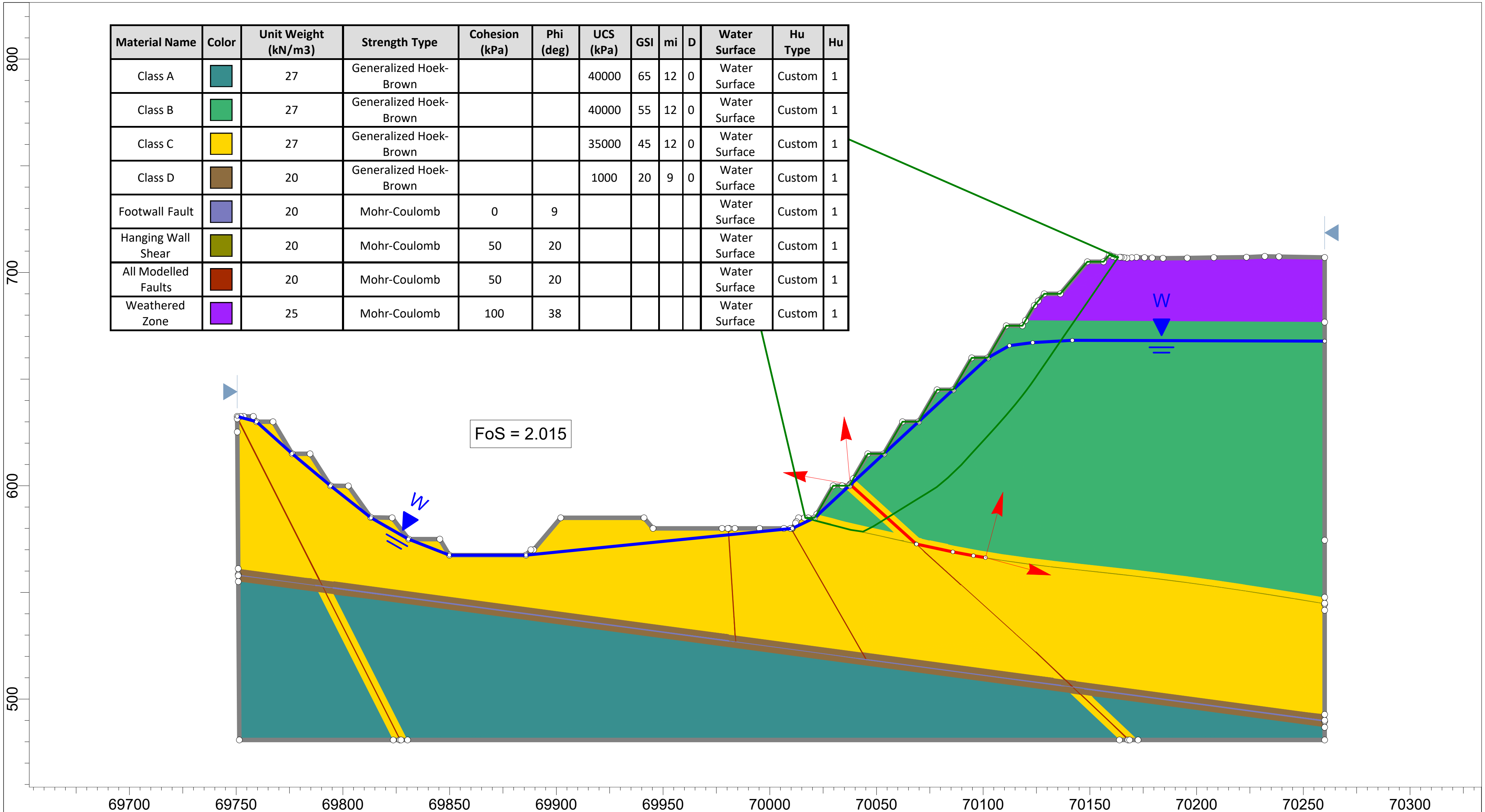
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	UCS (kPa)	GSI	mi	D	Water Surface	Hu Type	Hu
Class A		27	Generalized Hoek-Brown			40000	65	12	0	Water Surface	Custom	0.6
Class B		27	Generalized Hoek-Brown			40000	55	12	0	Water Surface	Custom	0.6
Class C		27	Generalized Hoek-Brown			35000	45	12	0	Water Surface	Custom	0.6
Class D		20	Generalized Hoek-Brown			1000	20	9	0	Water Surface	Custom	0.6
Footwall Fault		20	Mohr-Coulomb	0	9					Water Surface	Custom	0.6
Hanging Wall Shear		20	Mohr-Coulomb	50	20					Water Surface	Custom	0.6
All Modelled Faults		20	Mohr-Coulomb	50	20					Water Surface	Custom	0.6
Weathered Zone		25	Mohr-Coulomb	100	38					Water Surface	Custom	0.6



Project	PSM0071 - Macraes		
Analysis Description	Hu=0.6 HWS wedge		
Drawn By	DW	Scale	1:2500
Company	PSM		
Date	5/07/2022	File Name	Coronation Stage6 Section3_Run1.slmd

SLIDEINTERPRET 9.014

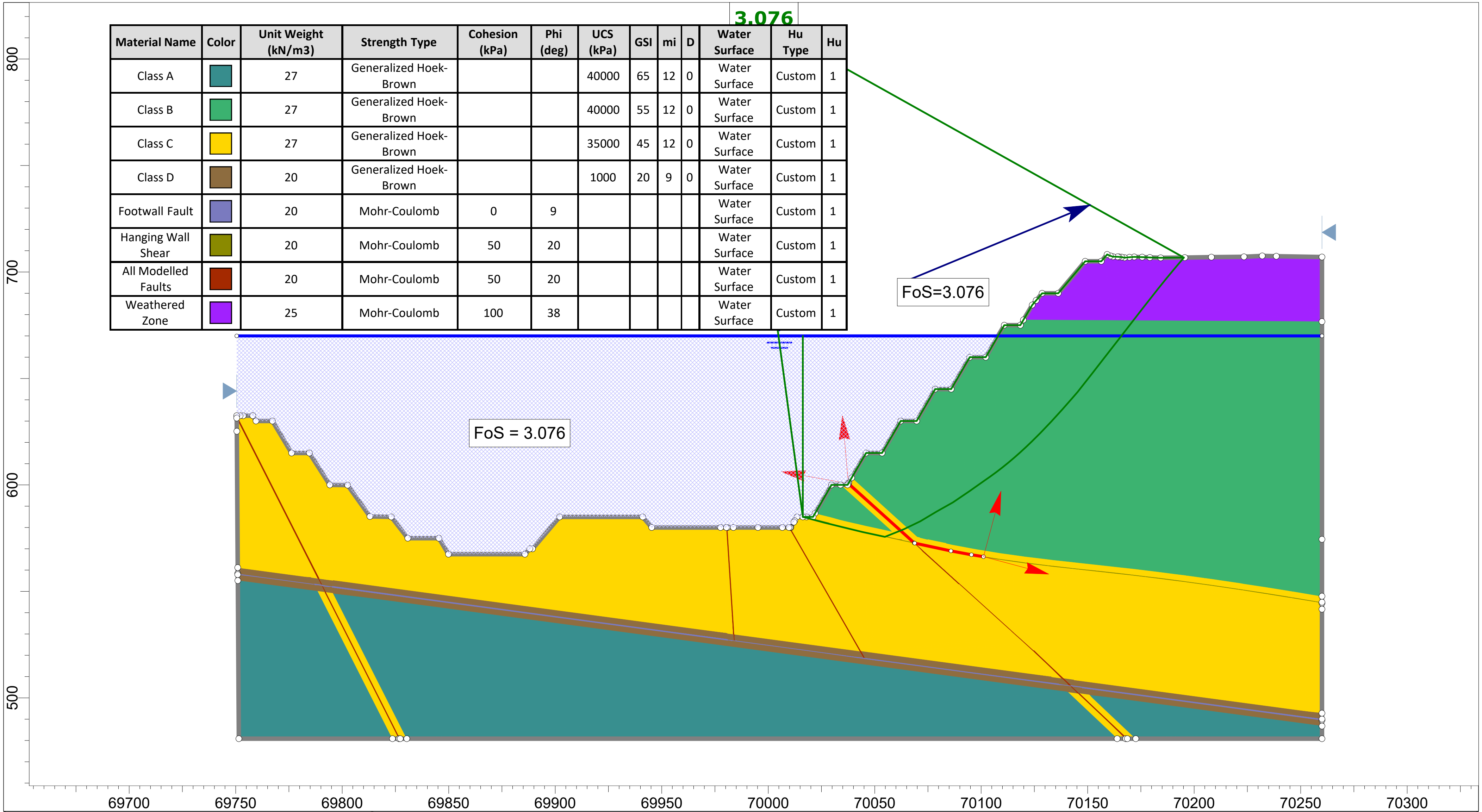
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	UCS (kPa)	GSI	mi	D	Water Surface	Hu Type	Hu
Class A		27	Generalized Hoek-Brown			40000	65	12	0	Water Surface	Custom	1
Class B		27	Generalized Hoek-Brown			40000	55	12	0	Water Surface	Custom	1
Class C		27	Generalized Hoek-Brown			35000	45	12	0	Water Surface	Custom	1
Class D		20	Generalized Hoek-Brown			1000	20	9	0	Water Surface	Custom	1
Footwall Fault		20	Mohr-Coulomb	0	9					Water Surface	Custom	1
Hanging Wall Shear		20	Mohr-Coulomb	50	20					Water Surface	Custom	1
All Modelled Faults		20	Mohr-Coulomb	50	20					Water Surface	Custom	1
Weathered Zone		25	Mohr-Coulomb	100	38					Water Surface	Custom	1



Project	PSM0071 - Macraes		
Analysis Description	Wet - HWS wedge		
Drawn By DW	*Scale* 1:2500	*Company* PSM	
Date 5/07/2022		*File Name* Coronation Stage6 Section3_Run1.slmd	

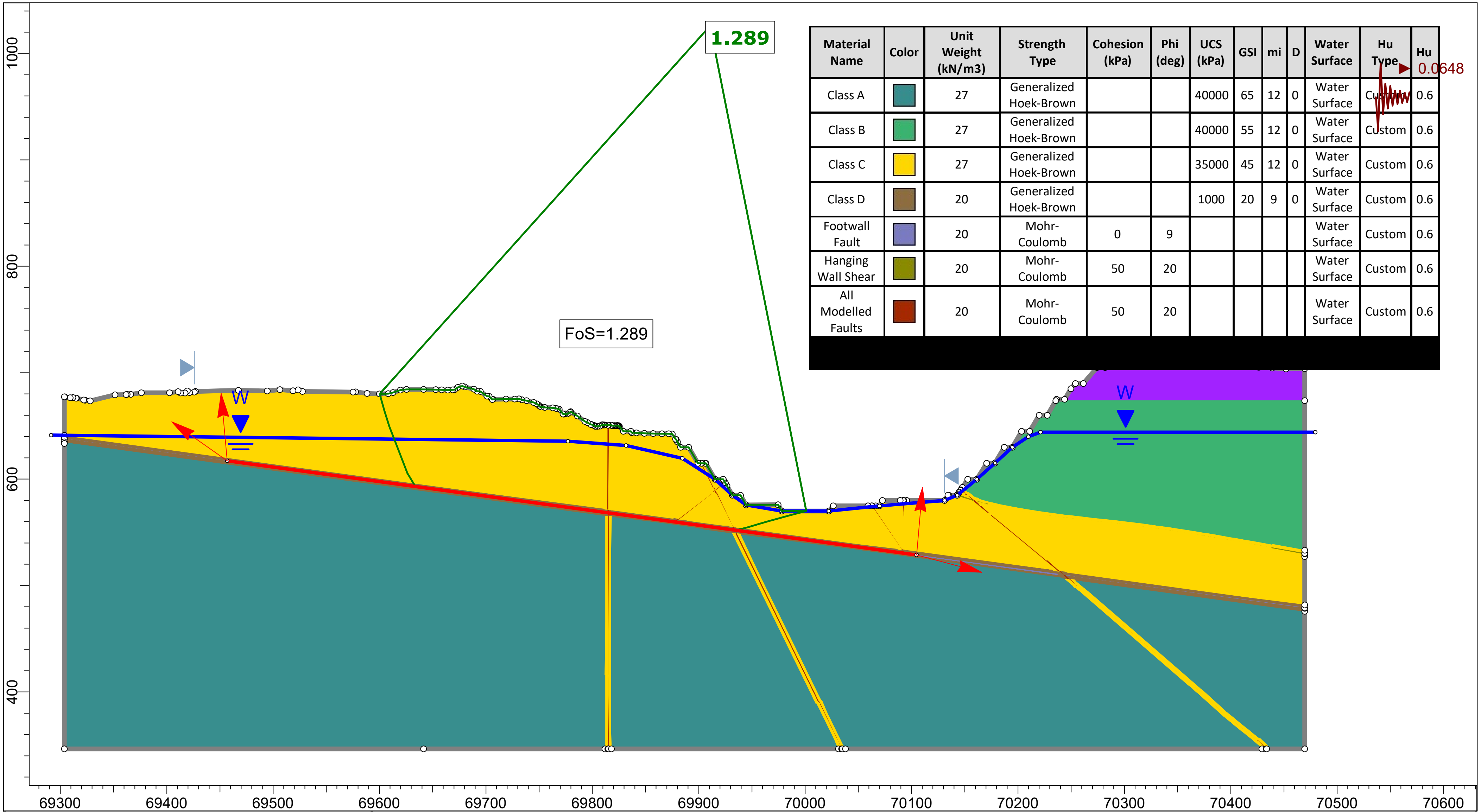
SLIDEINTERPRET 9.014

Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	UCS (kPa)	GSI	mi	D	Water Surface	Hu Type	Hu
Class A		27	Generalized Hoek-Brown			40000	65	12	0	Water Surface	Custom	1
Class B		27	Generalized Hoek-Brown			40000	55	12	0	Water Surface	Custom	1
Class C		27	Generalized Hoek-Brown			35000	45	12	0	Water Surface	Custom	1
Class D		20	Generalized Hoek-Brown			1000	20	9	0	Water Surface	Custom	1
Footwall Fault		20	Mohr-Coulomb	0	9					Water Surface	Custom	1
Hanging Wall Shear		20	Mohr-Coulomb	50	20					Water Surface	Custom	1
All Modelled Faults		20	Mohr-Coulomb	50	20					Water Surface	Custom	1
Weathered Zone		25	Mohr-Coulomb	100	38					Water Surface	Custom	1



Project	PSM0071 - Macraes		
Analysis Description	Pit Water HWS wedge		
Drawn By HG	*Scale* 1:2500	*Company*	PSM
Date		*File Name*	Coronation Stage6 Section3_Run1_HG.slmd

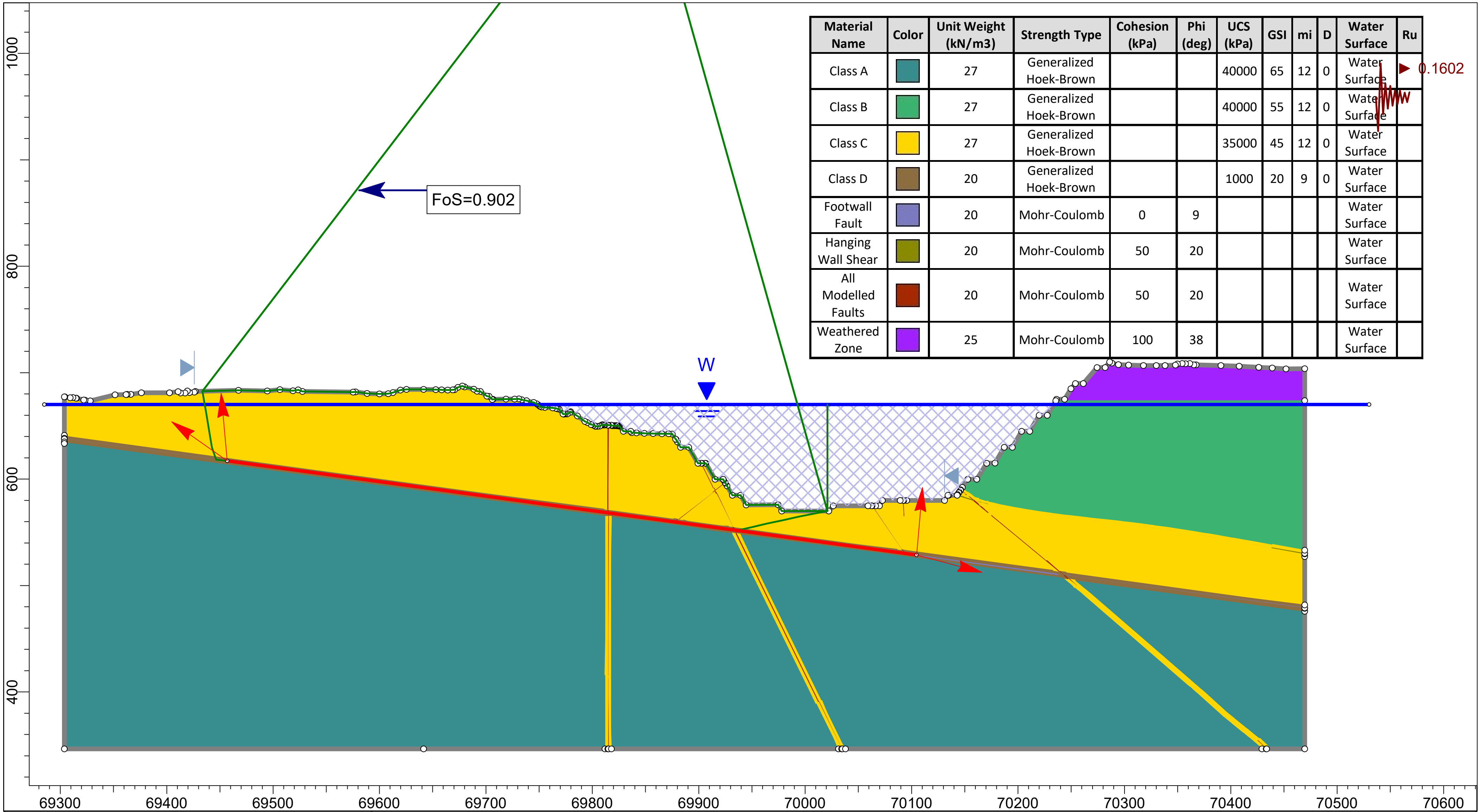
SLIDEINTERPRET 9.022



Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	UCS (kPa)	GSI	mi	D	Water Surface	Hu Type	Hu
Class A		27	Generalized Hoek-Brown			40000	65	12	0	Water Surface	Custom	0.6
Class B		27	Generalized Hoek-Brown			40000	55	12	0	Water Surface	Custom	0.6
Class C		27	Generalized Hoek-Brown			35000	45	12	0	Water Surface	Custom	0.6
Class D		20	Generalized Hoek-Brown			1000	20	9	0	Water Surface	Custom	0.6
Footwall Fault		20	Mohr-Coulomb	0	9					Water Surface	Custom	0.6
Hanging Wall Shear		20	Mohr-Coulomb	50	20					Water Surface	Custom	0.6
All Modelled Faults		20	Mohr-Coulomb	50	20					Water Surface	Custom	0.6

Project	PSM0071 - Macraes		
Analysis Description	Hu=0.6 FWF_0.0648		
Drawn By	DW	*Scale*	1:5000
Company	PSM		
Date	6/07/2022	*File Name*	Coronation Stage6 Section1_Run1.slmd

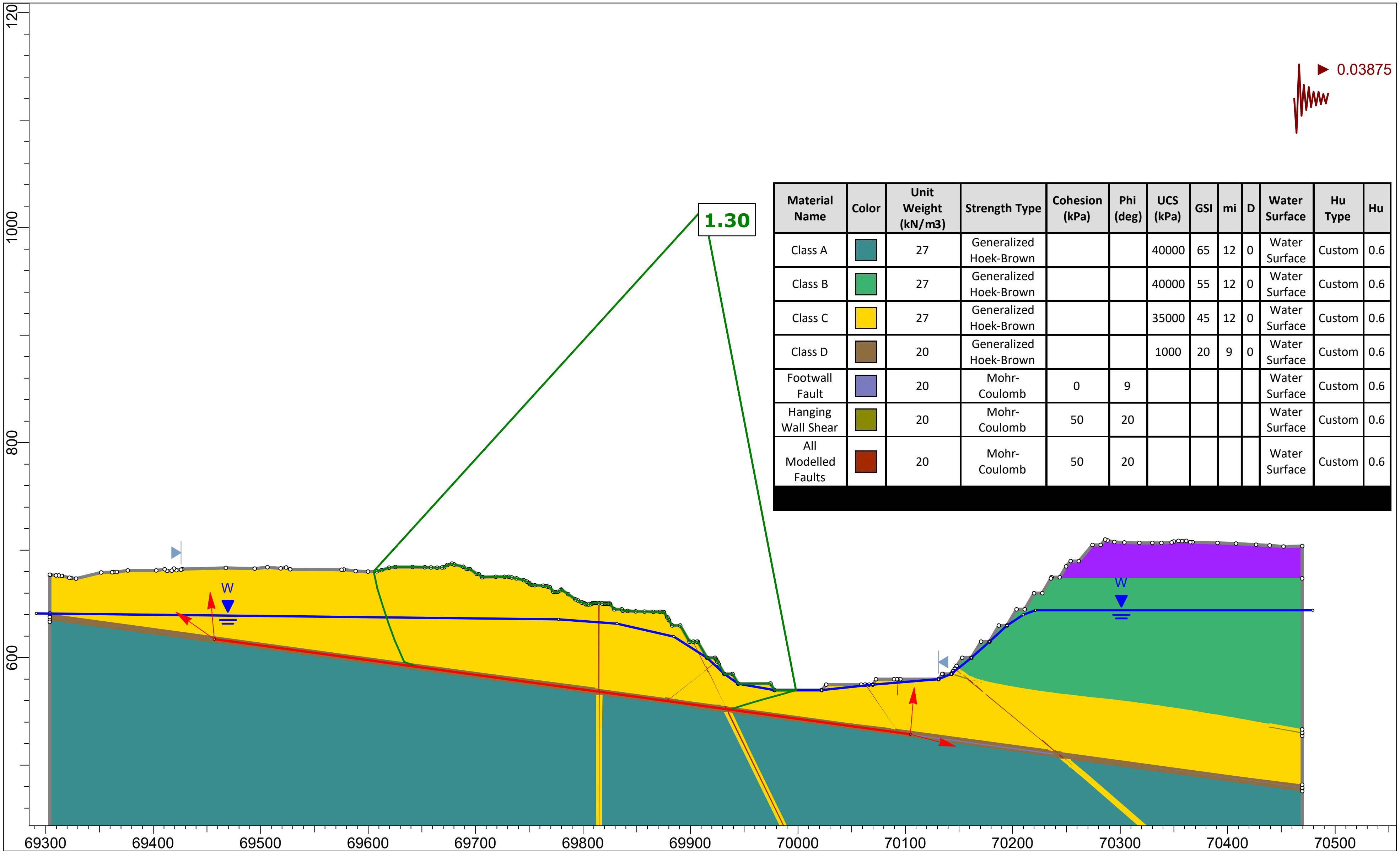
SLIDEINTERPRET 9.019



Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	UCS (kPa)	GSI	mi	D	Water Surface	Ru
Class A		27	Generalized Hoek-Brown			40000	65	12	0	Water Surface	
Class B		27	Generalized Hoek-Brown			40000	55	12	0	Water Surface	
Class C		27	Generalized Hoek-Brown			35000	45	12	0	Water Surface	
Class D		20	Generalized Hoek-Brown			1000	20	9	0	Water Surface	
Footwall Fault		20	Mohr-Coulomb	0	9					Water Surface	
Hanging Wall Shear		20	Mohr-Coulomb	50	20					Water Surface	
All Modelled Faults		20	Mohr-Coulomb	50	20					Water Surface	
Weathered Zone		25	Mohr-Coulomb	100	38					Water Surface	

SLIDEINTERPRET 9.019

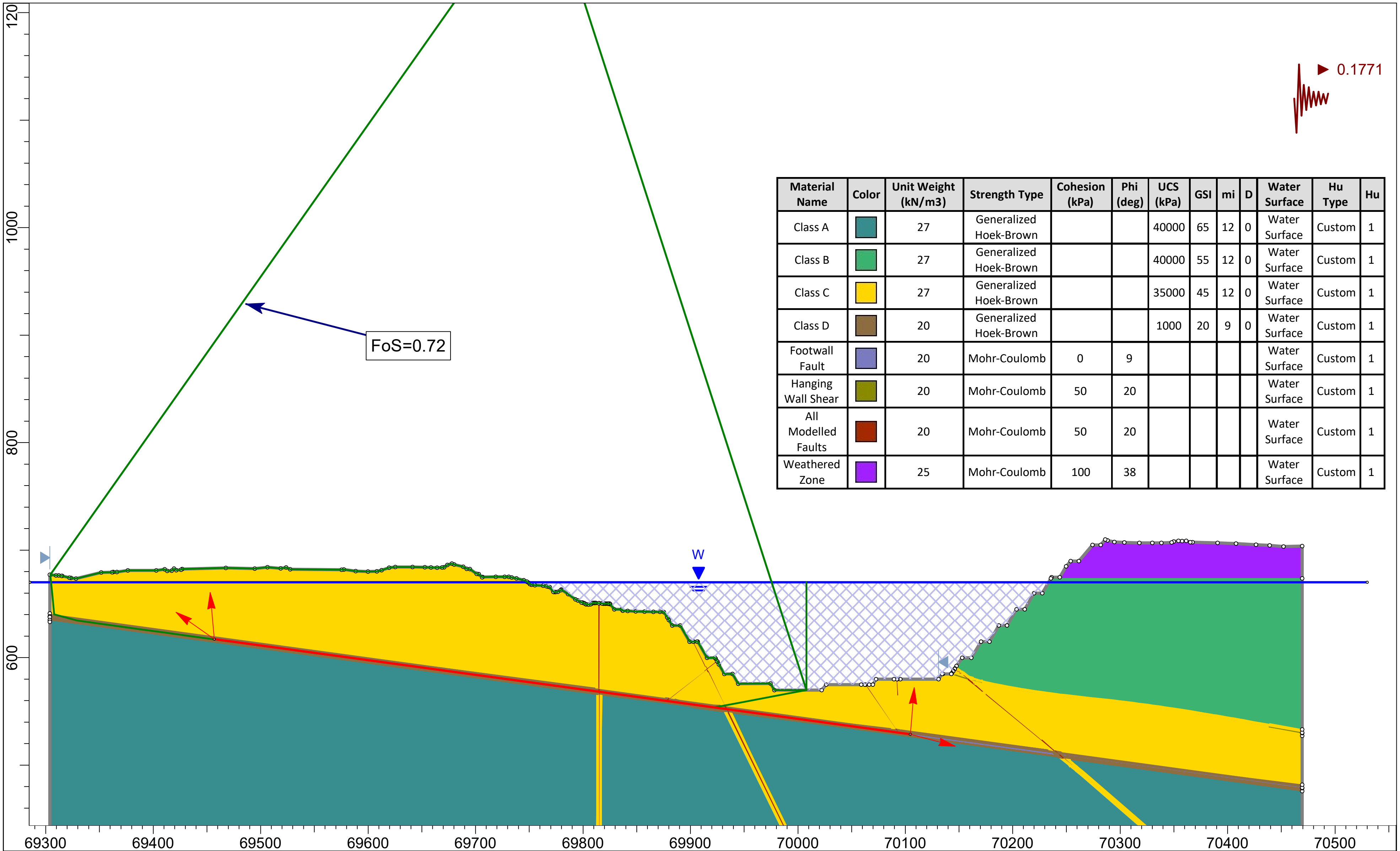
Project	PSM0071 - Macraes		
Analysis Description	Hu=1.0 Pit Lake - FWF_SC=0.1602		
Drawn By	DW	*Scale*	1:5000
Company	PSM		
Date	7/07/2022	*File Name*	Coronation Stage6 Section1_Run1.slmd



Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	UCS (kPa)	GSI	mi	D	Water Surface	Hu Type	Hu
Class A		27	Generalized Hoek-Brown			40000	65	12	0	Water Surface	Custom	0.6
Class B		27	Generalized Hoek-Brown			40000	55	12	0	Water Surface	Custom	0.6
Class C		27	Generalized Hoek-Brown			35000	45	12	0	Water Surface	Custom	0.6
Class D		20	Generalized Hoek-Brown			1000	20	9	0	Water Surface	Custom	0.6
Footwall Fault		20	Mohr-Coulomb	0	9					Water Surface	Custom	0.6
Hanging Wall Shear		20	Mohr-Coulomb	50	20					Water Surface	Custom	0.6
All Modelled Faults		20	Mohr-Coulomb	50	20					Water Surface	Custom	0.6

Client:	**OceanaGold Corporation**
Project:	**Macraes Phase 4 (MP4) Development**
Location:	**Coronation**
Analysis description:	**Coronation Stage6 Section1_NSHM.slmd - Hu=0.6 FWF_SC=0.03875, Master Scenario**

Job No:	By:	Date:	Scale:	Run ID:
PSM0071	**JS**	**23/03/2023**	**1:5000**	**Master Scenario**



Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	UCS (kPa)	GSI	mi	D	Water Surface	Hu Type	Hu
Class A		27	Generalized Hoek-Brown			40000	65	12	0	Water Surface	Custom	1
Class B		27	Generalized Hoek-Brown			40000	55	12	0	Water Surface	Custom	1
Class C		27	Generalized Hoek-Brown			35000	45	12	0	Water Surface	Custom	1
Class D		20	Generalized Hoek-Brown			1000	20	9	0	Water Surface	Custom	1
Footwall Fault		20	Mohr-Coulomb	0	9					Water Surface	Custom	1
Hanging Wall Shear		20	Mohr-Coulomb	50	20					Water Surface	Custom	1
All Modelled Faults		20	Mohr-Coulomb	50	20					Water Surface	Custom	1
Weathered Zone		25	Mohr-Coulomb	100	38					Water Surface	Custom	1

PSM

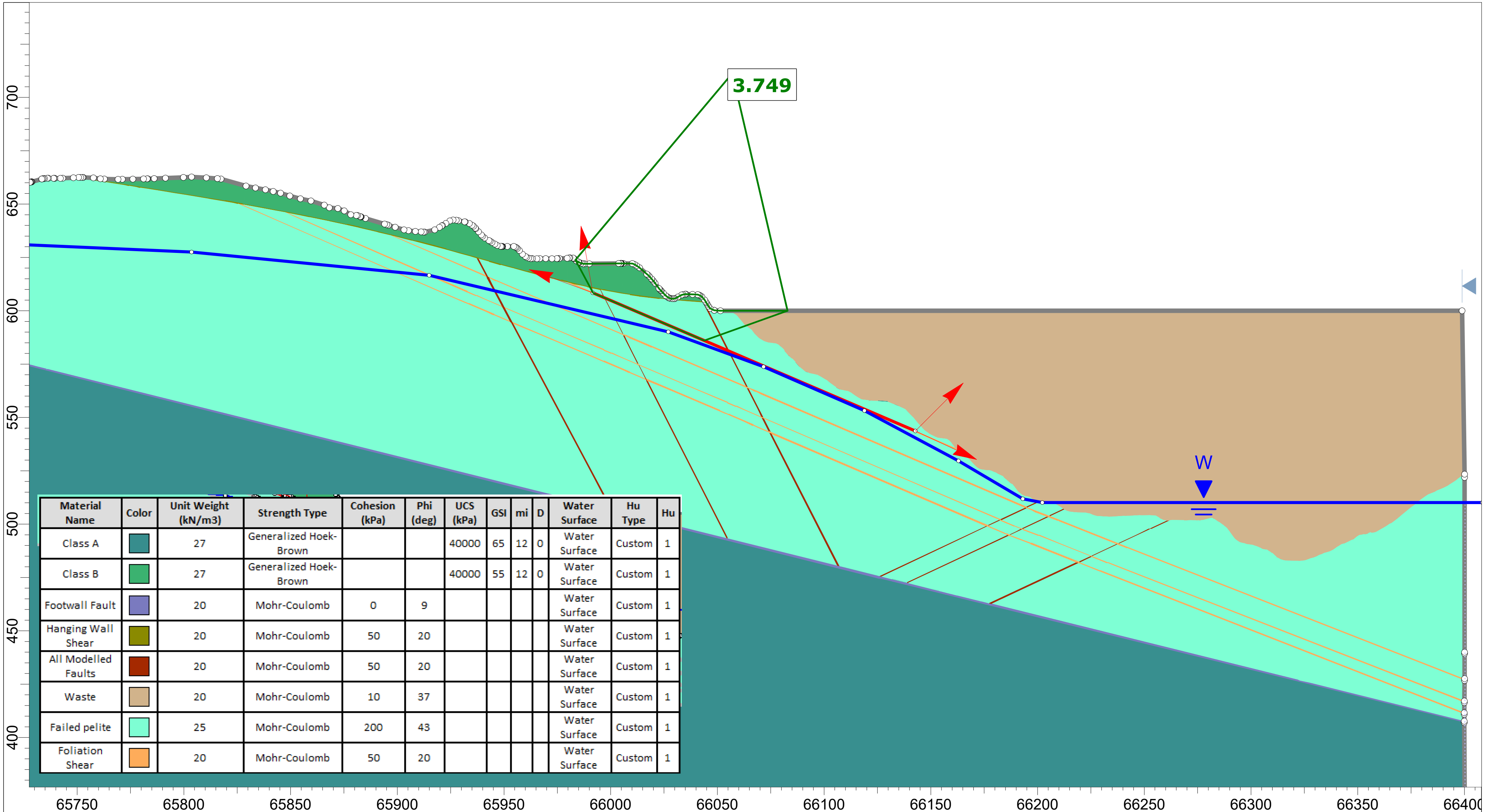
Client: **OceanaGold Corporation**

Project: **Macraes Phase 4 (MP4) Development**

Location: **Coronation**

Analysis description: **Coronation Stage6 Section1_NSHM.slmd - Hu=1.0 Pit Lake - FWF_SC=0.1771, Master Scenario**

Job No: **PSM0071** By: **JS** Date: **23/03/2023** Scale: **1:5000** Run ID: **Master Scenario**

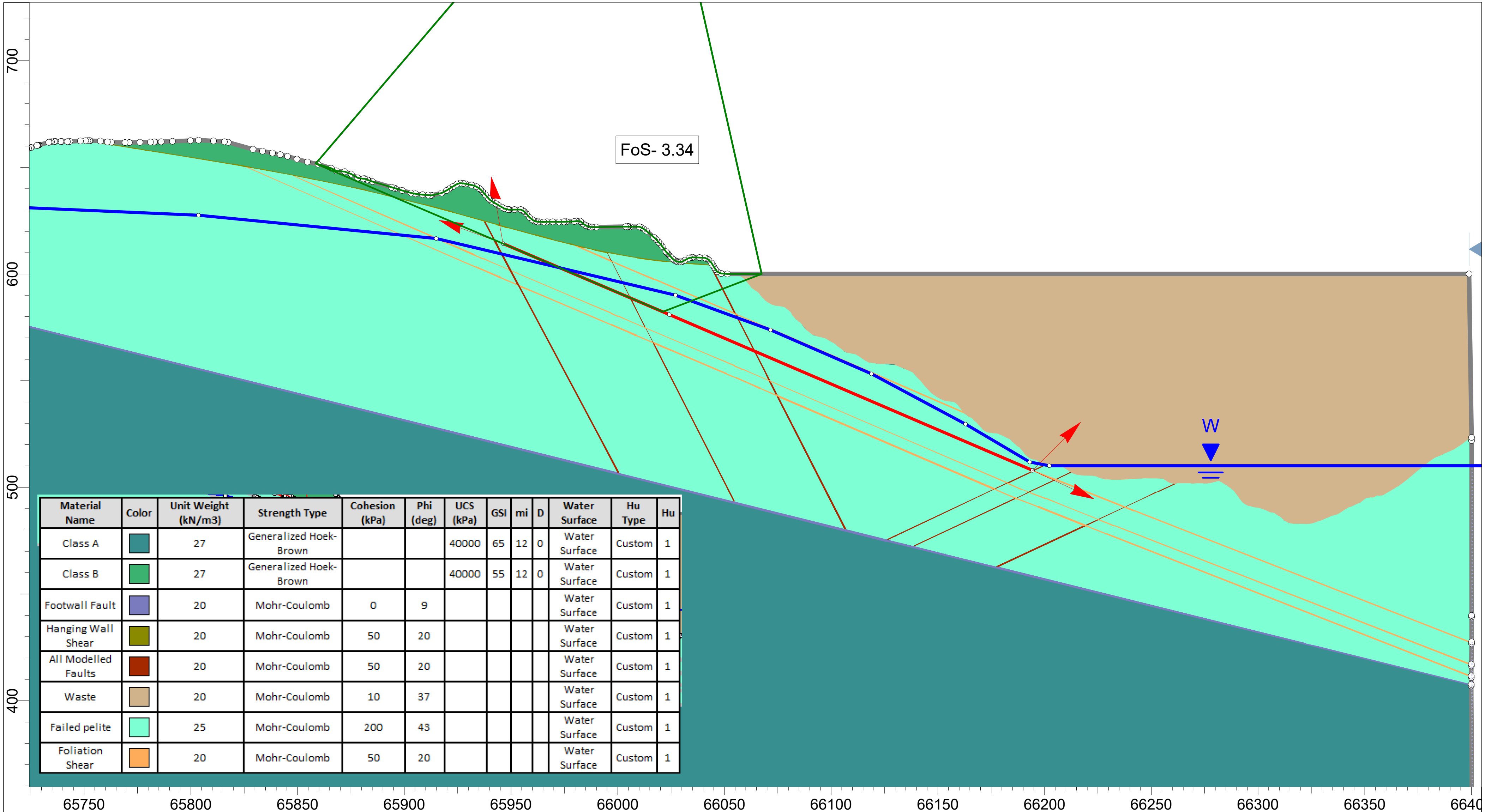


Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	UCS (kPa)	GSI	mi	D	Water Surface	Hu Type	Hu
Class A		27	Generalized Hoek-Brown			40000	65	12	0	Water Surface	Custom	1
Class B		27	Generalized Hoek-Brown			40000	55	12	0	Water Surface	Custom	1
Footwall Fault		20	Mohr-Coulomb	0	9					Water Surface	Custom	1
Hanging Wall Shear		20	Mohr-Coulomb	50	20					Water Surface	Custom	1
All Modelled Faults		20	Mohr-Coulomb	50	20					Water Surface	Custom	1
Waste		20	Mohr-Coulomb	10	37					Water Surface	Custom	1
Failed pelite		25	Mohr-Coulomb	200	43					Water Surface	Custom	1
Foliation Shear		20	Mohr-Coulomb	50	20					Water Surface	Custom	1

Client:	OceanaGold
Project:	Macraes Phase 4 Consenting
Location:	Coronation North Backfill - Southwest slope
Analysis description:	Backfill - 600 mRL Static

Job No:	PSM71	By:	KH	Date:	12/08/2024	Scale:	1:2500	Run ID:	AWT Foliation Shear

SLIDEINTERPRET 9.027

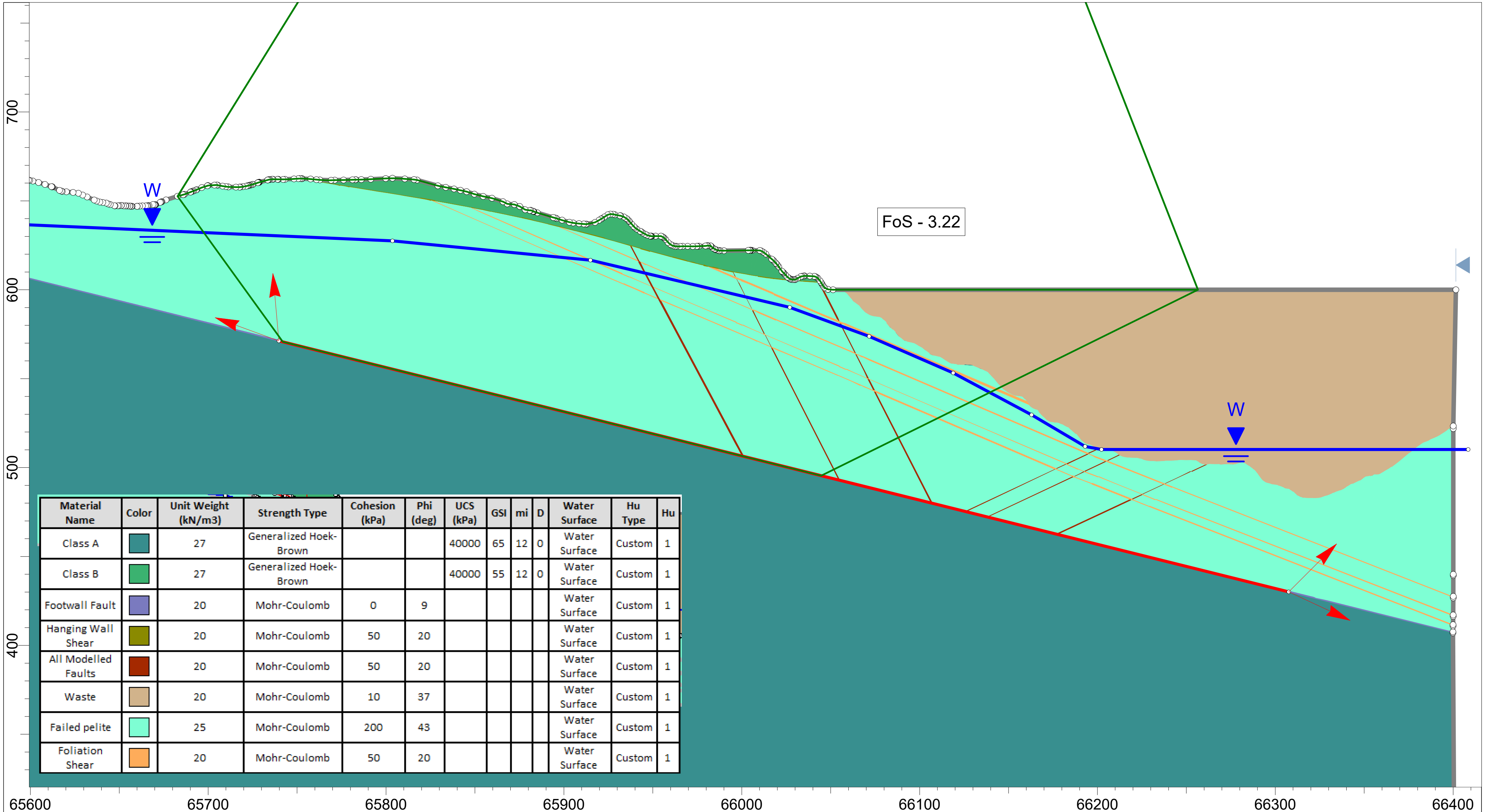


Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	UCS (kPa)	GSI	mi	D	Water Surface	Hu Type	Hu
Class A		27	Generalized Hoek-Brown			40000	65	12	0	Water Surface	Custom	1
Class B		27	Generalized Hoek-Brown			40000	55	12	0	Water Surface	Custom	1
Footwall Fault		20	Mohr-Coulomb	0	9					Water Surface	Custom	1
Hanging Wall Shear		20	Mohr-Coulomb	50	20					Water Surface	Custom	1
All Modelled Faults		20	Mohr-Coulomb	50	20					Water Surface	Custom	1
Waste		20	Mohr-Coulomb	10	37					Water Surface	Custom	1
Failed pelite		25	Mohr-Coulomb	200	43					Water Surface	Custom	1
Foliation Shear		20	Mohr-Coulomb	50	20					Water Surface	Custom	1

Client:	OceanaGold
Project:	Macraes Phase 4 Consenting
Location:	Coronation North Backfill - Southwest slope
Analysis description:	Backfill - 600 mRL Static

Job No:	By:	Date:	Scale:	Run ID:
PSM71	KH	12/08/2024	1:2500	BWT Foliation Shear

SLIDEINTERPRET 9.027

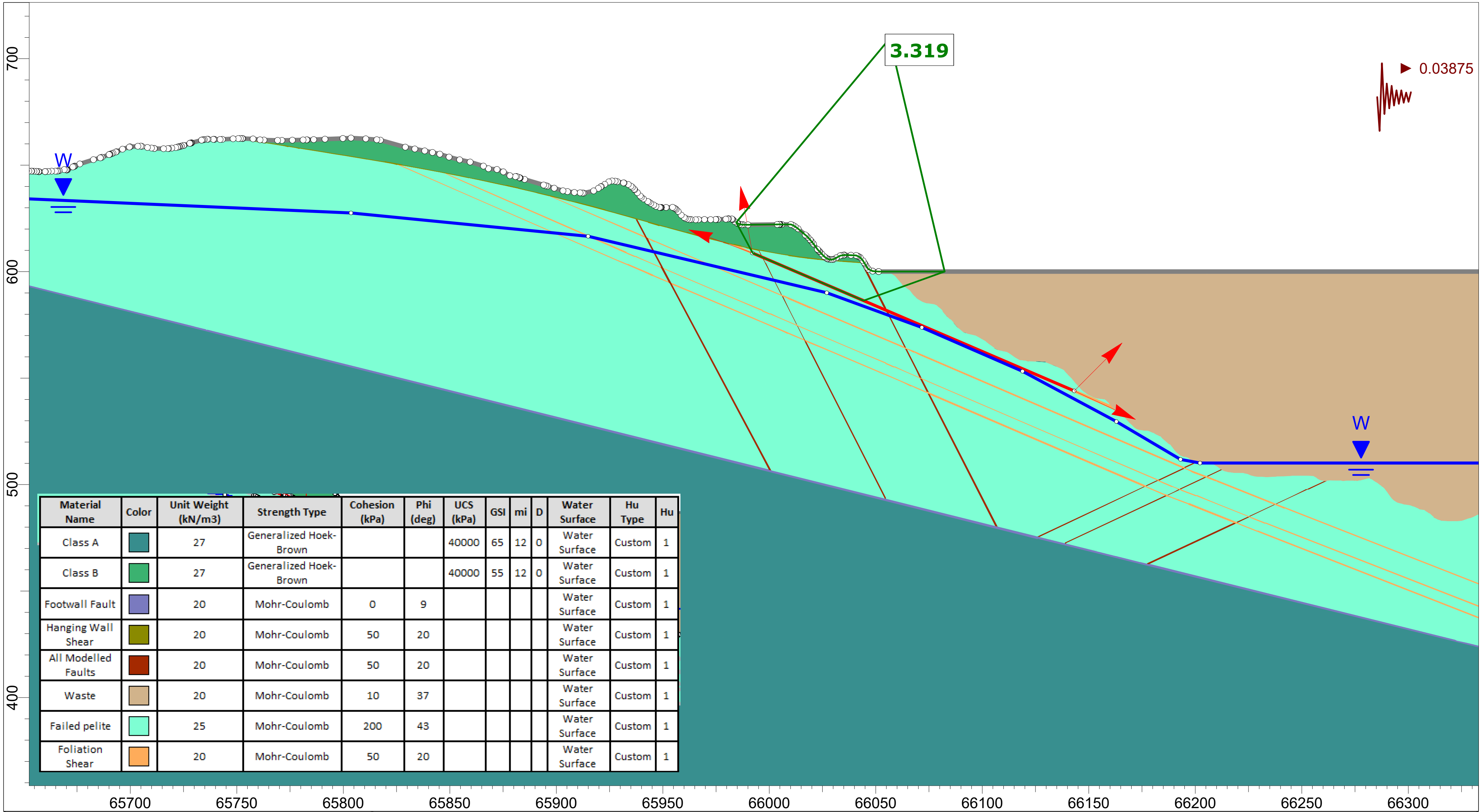


Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	UCS (kPa)	GSI	mi	D	Water Surface	Hu Type	Hu
Class A		27	Generalized Hoek-Brown			40000	65	12	0	Water Surface	Custom	1
Class B		27	Generalized Hoek-Brown			40000	55	12	0	Water Surface	Custom	1
Footwall Fault		20	Mohr-Coulomb	0	9					Water Surface	Custom	1
Hanging Wall Shear		20	Mohr-Coulomb	50	20					Water Surface	Custom	1
All Modelled Faults		20	Mohr-Coulomb	50	20					Water Surface	Custom	1
Waste		20	Mohr-Coulomb	10	37					Water Surface	Custom	1
Failed pelite		25	Mohr-Coulomb	200	43					Water Surface	Custom	1
Foliation Shear		20	Mohr-Coulomb	50	20					Water Surface	Custom	1

SLIDEINTERPRET 9.027

Client:	OceanaGold
Project:	Macraes Phase 4 Consenting
Location:	Coronation North Backfill - Southwest slope
Analysis description:	Backfill - 600 mRL Static

Job No:	PSM71	By:	KH	Date:	13/08/2024	Scale:	1:3000	Run ID:	Planar Sliding FF



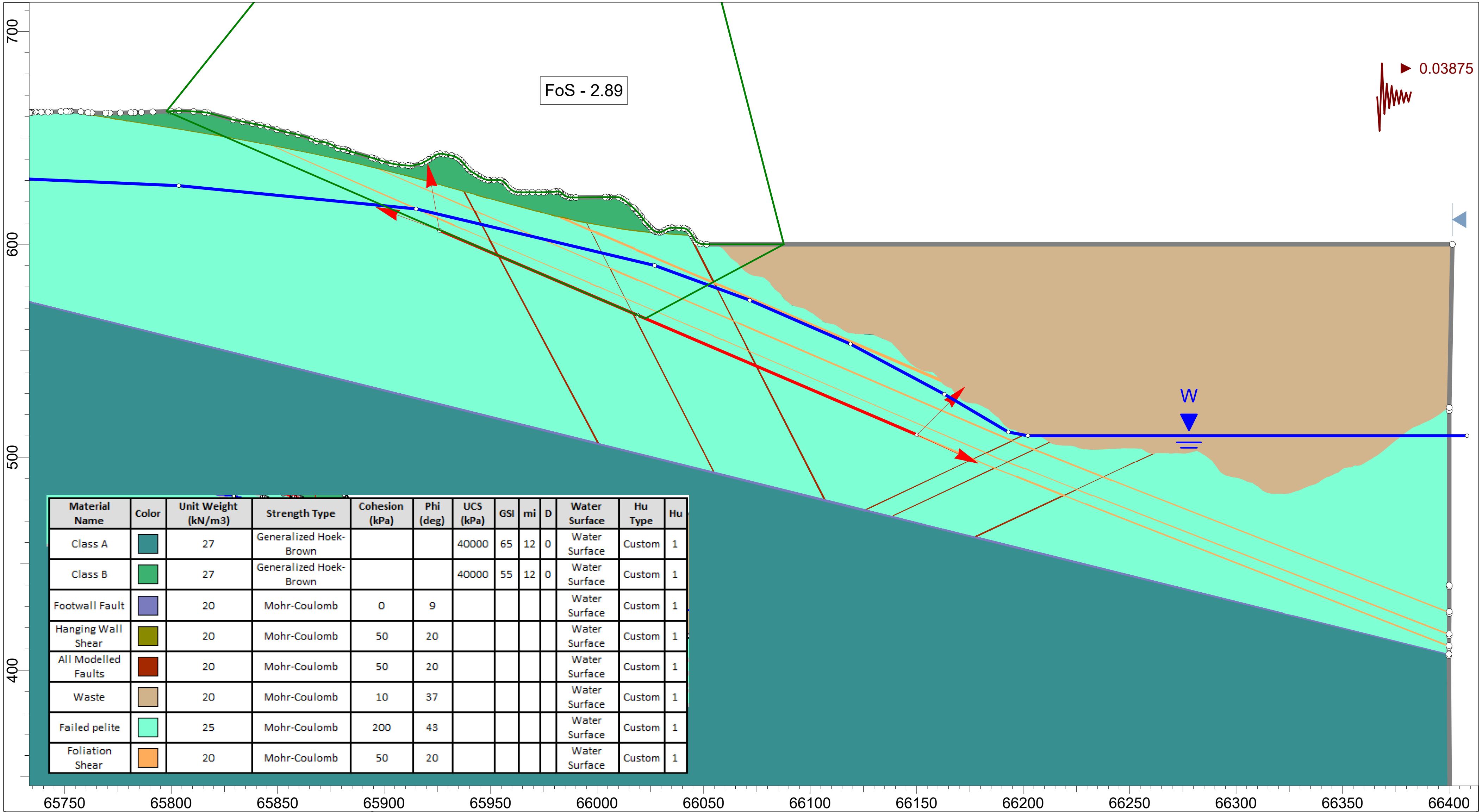
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	UCS (kPa)	GSI	mi	D	Water Surface	Hu Type	Hu
Class A		27	Generalized Hoek-Brown			40000	65	12	0	Water Surface	Custom	1
Class B		27	Generalized Hoek-Brown			40000	55	12	0	Water Surface	Custom	1
Footwall Fault		20	Mohr-Coulomb	0	9					Water Surface	Custom	1
Hanging Wall Shear		20	Mohr-Coulomb	50	20					Water Surface	Custom	1
All Modelled Faults		20	Mohr-Coulomb	50	20					Water Surface	Custom	1
Waste		20	Mohr-Coulomb	10	37					Water Surface	Custom	1
Failed pelite		25	Mohr-Coulomb	200	43					Water Surface	Custom	1
Foliation Shear		20	Mohr-Coulomb	50	20					Water Surface	Custom	1

PSM

SLIDEINTERPRET 9.027

Client:	OceanaGold
Project:	Macraes Phase 4 Consenting
Location:	Coronation North Backfill - Southwest slope
Analysis description:	Backfill - 600 mRL OBE

Job No:	By:	Date:	Scale:	Run ID:
PSM71	KH	12/08/2024	1:2500	AWT Foliation Shear



Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	UCS (kPa)	GSI	mi	D	Water Surface	Hu Type	Hu
Class A		27	Generalized Hoek-Brown			40000	65	12	0	Water Surface	Custom	1
Class B		27	Generalized Hoek-Brown			40000	55	12	0	Water Surface	Custom	1
Footwall Fault		20	Mohr-Coulomb	0	9					Water Surface	Custom	1
Hanging Wall Shear		20	Mohr-Coulomb	50	20					Water Surface	Custom	1
All Modelled Faults		20	Mohr-Coulomb	50	20					Water Surface	Custom	1
Waste		20	Mohr-Coulomb	10	37					Water Surface	Custom	1
Failed pelite		25	Mohr-Coulomb	200	43					Water Surface	Custom	1
Foliation Shear		20	Mohr-Coulomb	50	20					Water Surface	Custom	1

PSM

SLIDEINTERPRET 9.027

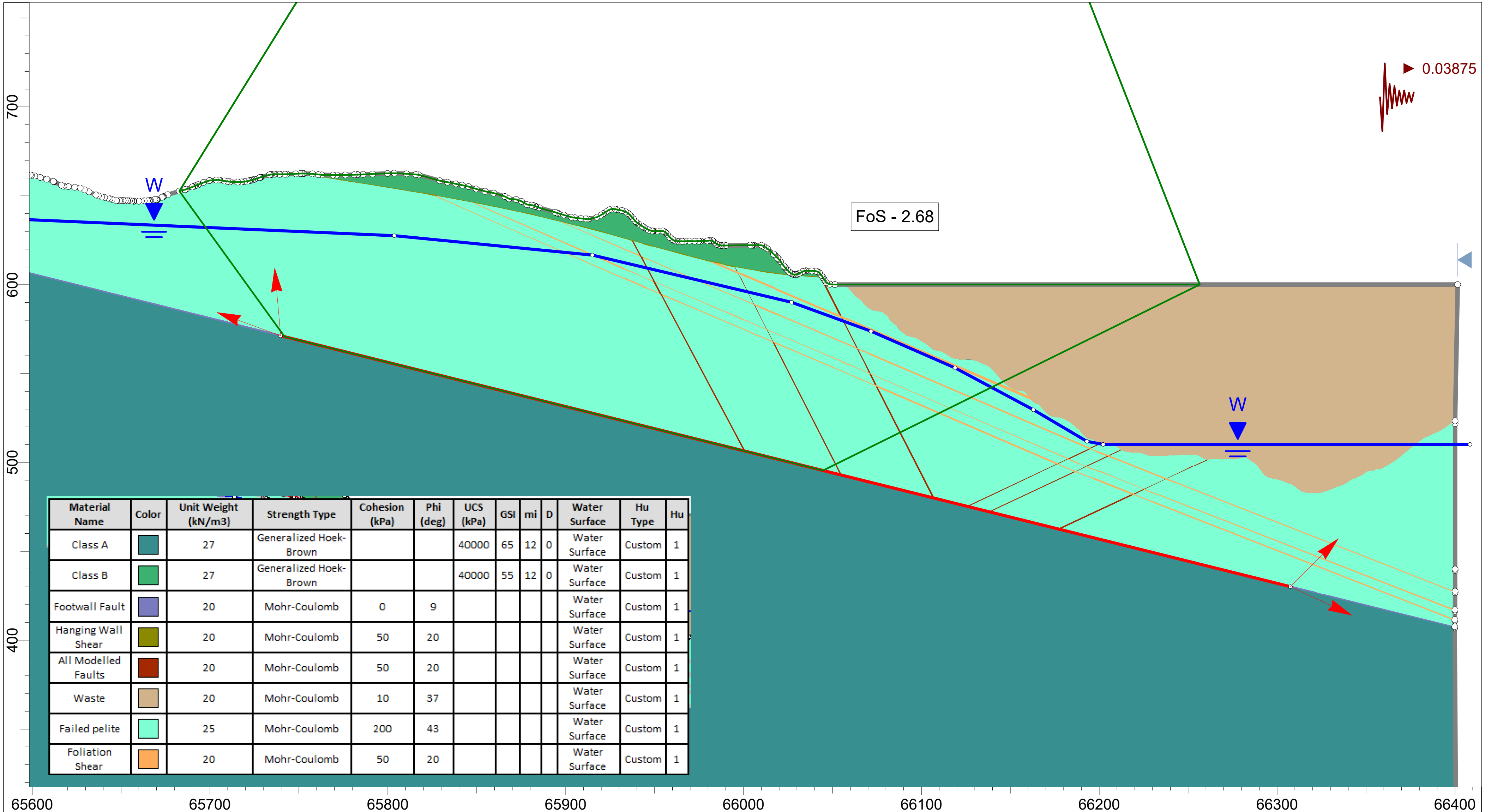
Client: **OceanaGold**

Project: **Macraes Phase 4 Consenting**

Location: **Coronation North Backfill - Southwest slope**

Analysis description: **Backfill - 600 mRL OBE**

Job No: **PSM71** | By: **KH** | Date: **12/08/2024** | Scale: **1:2500** | Run ID: **BWT Foliation Shear**

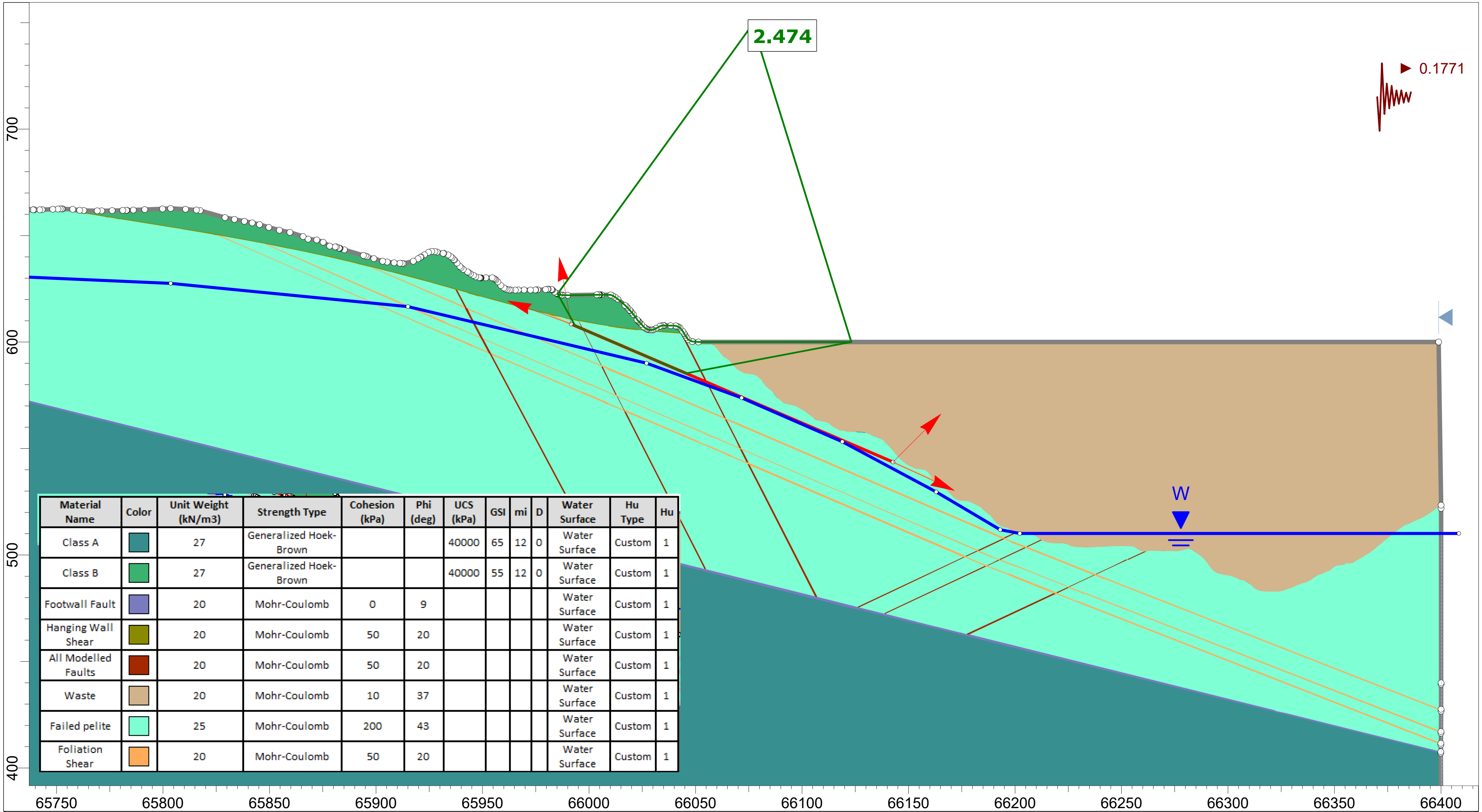


Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	UCS (kPa)	GSI	mi	D	Water Surface	Hu Type	Hu
Class A		27	Generalized Hoek-Brown			40000	65	12	0	Water Surface	Custom	1
Class B		27	Generalized Hoek-Brown			40000	55	12	0	Water Surface	Custom	1
Footwall Fault		20	Mohr-Coulomb	0	9					Water Surface	Custom	1
Hanging Wall Shear		20	Mohr-Coulomb	50	20					Water Surface	Custom	1
All Modelled Faults		20	Mohr-Coulomb	50	20					Water Surface	Custom	1
Waste		20	Mohr-Coulomb	10	37					Water Surface	Custom	1
Failed pelite		25	Mohr-Coulomb	200	43					Water Surface	Custom	1
Foliation Shear		20	Mohr-Coulomb	50	20					Water Surface	Custom	1

Client:	OceanaGold
Project:	Macraes Phase 4 Consenting
Location:	Coronation North Backfill - Southwest slope
Analysis description:	Backfill - 600 mRL OBE

Job No:	PSM71	By:	KH	Date:	13/08/2024	Scale:	1:3000	Run ID:	Planar Sliding FF

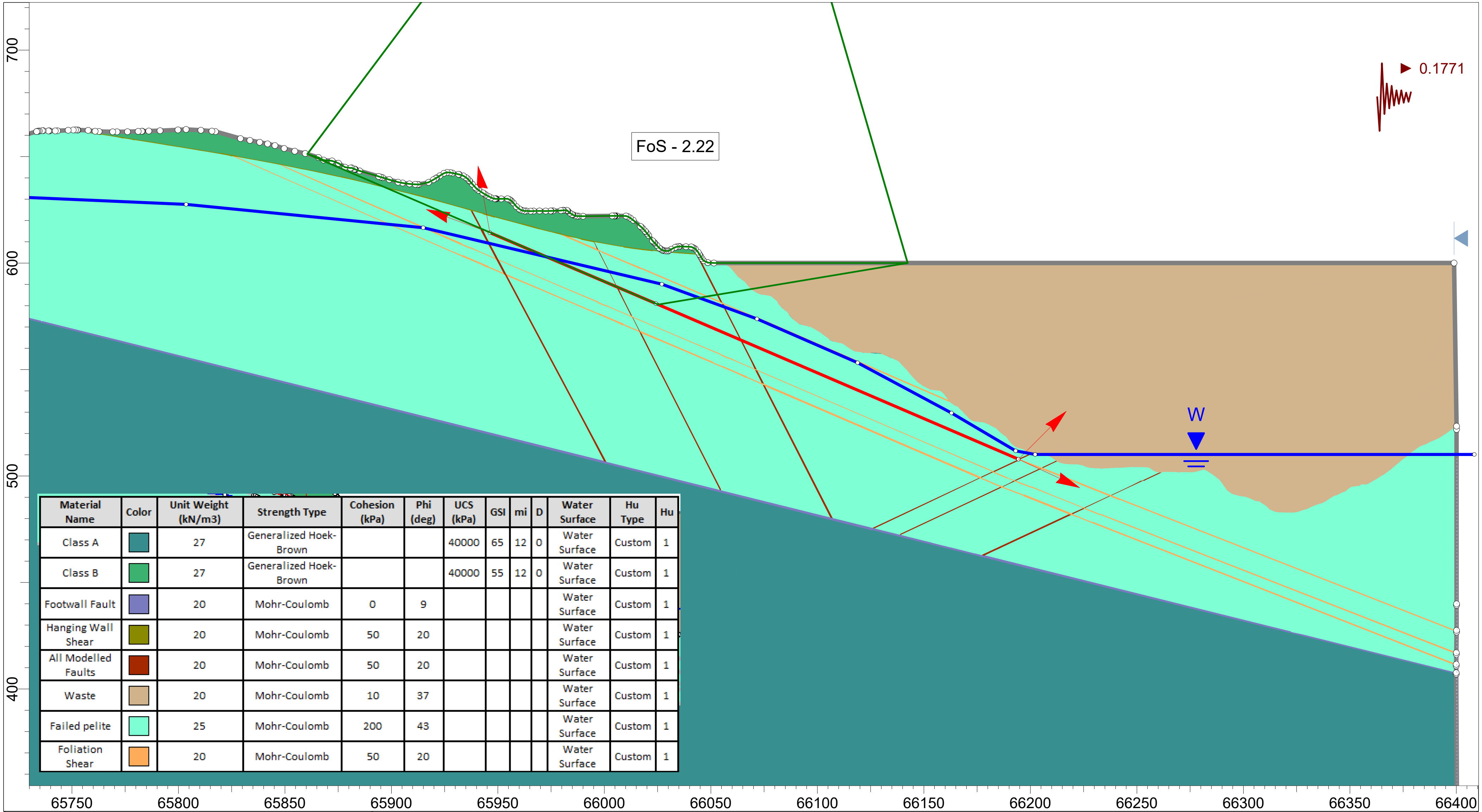
SLIDEINTERPRET 9.027



Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	UCS (kPa)	GSI	mi	D	Water Surface	Hu Type	Hu
Class A		27	Generalized Hoek-Brown			40000	65	12	0	Water Surface	Custom	1
Class B		27	Generalized Hoek-Brown			40000	55	12	0	Water Surface	Custom	1
Footwall Fault		20	Mohr-Coulomb	0	9					Water Surface	Custom	1
Hanging Wall Shear		20	Mohr-Coulomb	50	20					Water Surface	Custom	1
All Modelled Faults		20	Mohr-Coulomb	50	20					Water Surface	Custom	1
Waste		20	Mohr-Coulomb	10	37					Water Surface	Custom	1
Failed pelite		25	Mohr-Coulomb	200	43					Water Surface	Custom	1
Foliation Shear		20	Mohr-Coulomb	50	20					Water Surface	Custom	1

Client:	OceanaGold
Project:	Macraes Phase 4 Consenting
Location:	Coronation North Backfill - Southwest slope
Analysis description:	Backfill - 600 mRL MDE
Job No: PSM71	By: KH
Date: 12/08/2024	Scale: 1:2500
Run ID:	AWT Foliation Shear

SLIDEINTERPRET 9.027

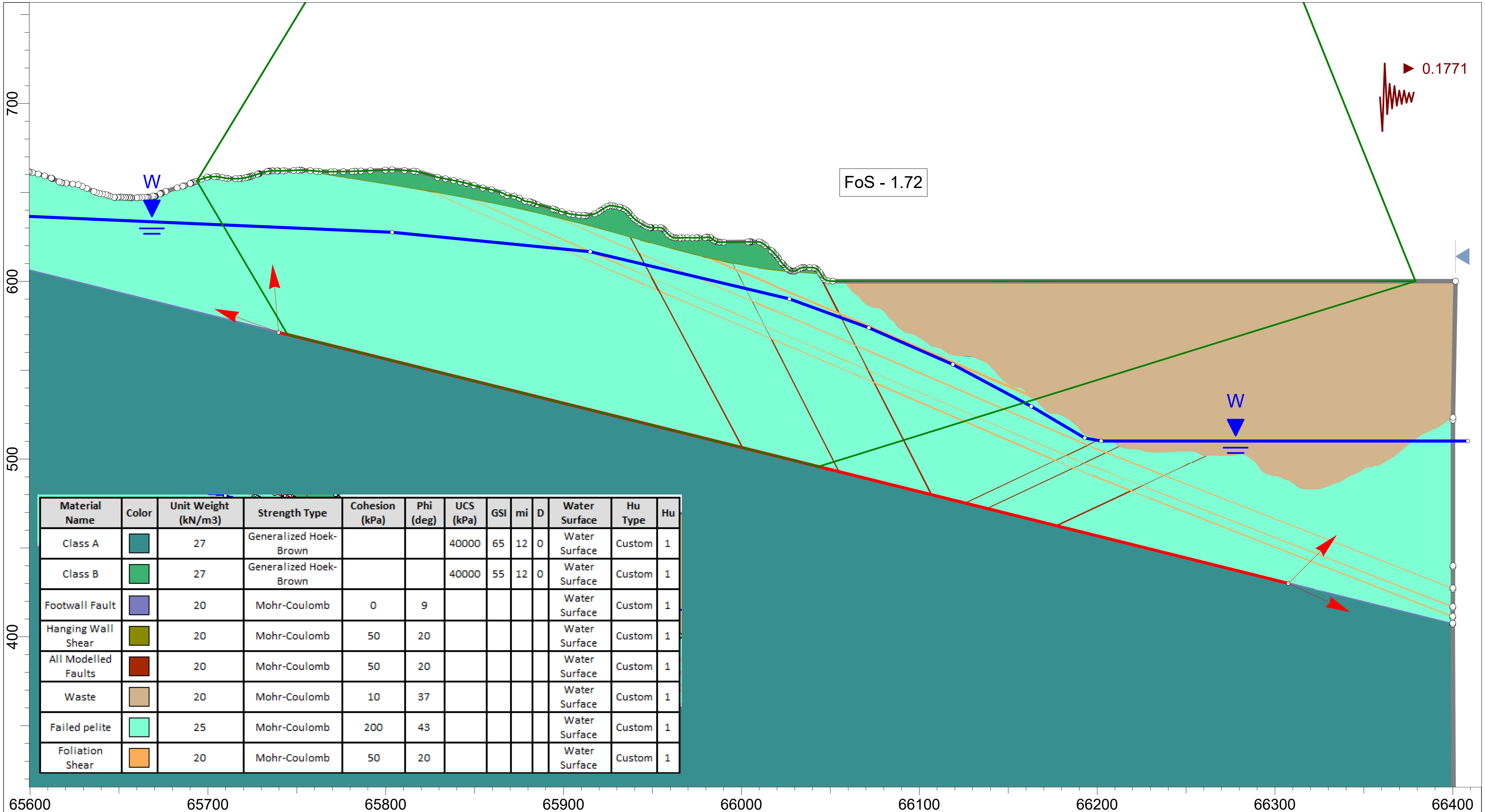


Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	UCS (kPa)	GSI	mi	D	Water Surface	Hu Type	Hu
Class A		27	Generalized Hoek-Brown			40000	65	12	0	Water Surface	Custom	1
Class B		27	Generalized Hoek-Brown			40000	55	12	0	Water Surface	Custom	1
Footwall Fault		20	Mohr-Coulomb	0	9					Water Surface	Custom	1
Hanging Wall Shear		20	Mohr-Coulomb	50	20					Water Surface	Custom	1
All Modelled Faults		20	Mohr-Coulomb	50	20					Water Surface	Custom	1
Waste		20	Mohr-Coulomb	10	37					Water Surface	Custom	1
Failed pelite		25	Mohr-Coulomb	200	43					Water Surface	Custom	1
Foliation Shear		20	Mohr-Coulomb	50	20					Water Surface	Custom	1

SLIDEINTERPRET 9.027

Client:	**OceanaGold**
Project:	**Macraes Phase 4 Consenting**
Location:	**Coronation North Backfill - Southwest slope**
Analysis description:	**Backfill - 600 mRL MDE**

Job No:	By:	Date:	Scale:	Run ID:
PSM71	**KH**	**12/08/2024**	**1:2500**	**BWT Foliation Shear**



Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	UCS (kPa)	GSI	mi	D	Water Surface	Hu Type	Hu
Class A		27	Generalized Hoek-Brown			40000	65	12	0	Water Surface	Custom	1
Class B		27	Generalized Hoek-Brown			40000	55	12	0	Water Surface	Custom	1
Footwall Fault		20	Mohr-Coulomb	0	9					Water Surface	Custom	1
Hanging Wall Shear		20	Mohr-Coulomb	50	20					Water Surface	Custom	1
All Modelled Faults		20	Mohr-Coulomb	50	20					Water Surface	Custom	1
Waste		20	Mohr-Coulomb	10	37					Water Surface	Custom	1
Failed pelite		25	Mohr-Coulomb	200	43					Water Surface	Custom	1
Foliation Shear		20	Mohr-Coulomb	50	20					Water Surface	Custom	1

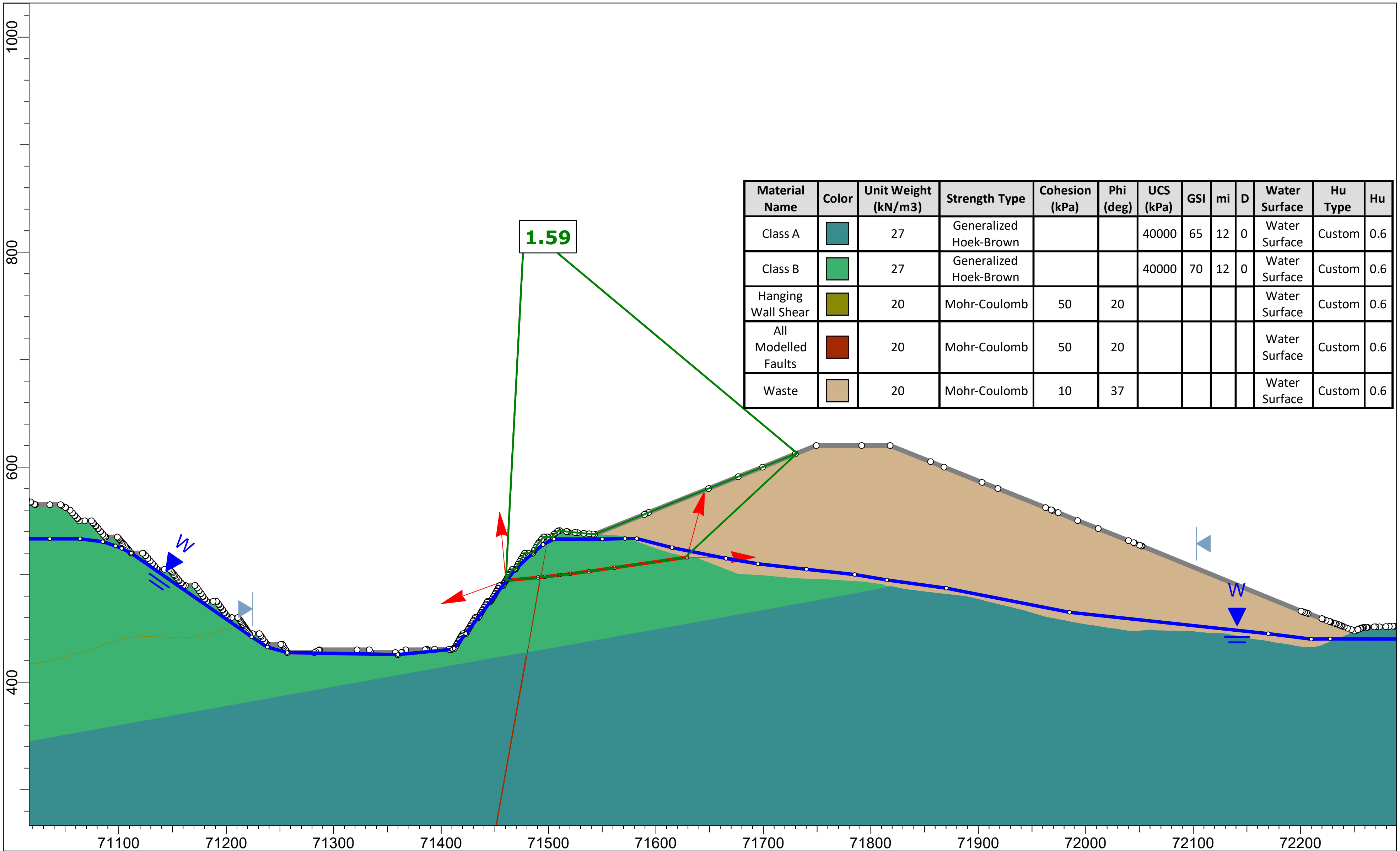
PSM

SLIDEINTERPRET 9.027

Client:	OceanaGold
Project:	Macraes Phase 4 Consenting
Location:	Coronation North Backfill - Southwest slope
Analysis description:	Backfill - 600 mRL MDE

Job No:	PSM71	By:	KH	Date:	13/08/2024	Scale:	1:3000	Run ID:	Planar Sliding FF

Appendix F
Golden Bar Stage 2 2D Stability Analyses

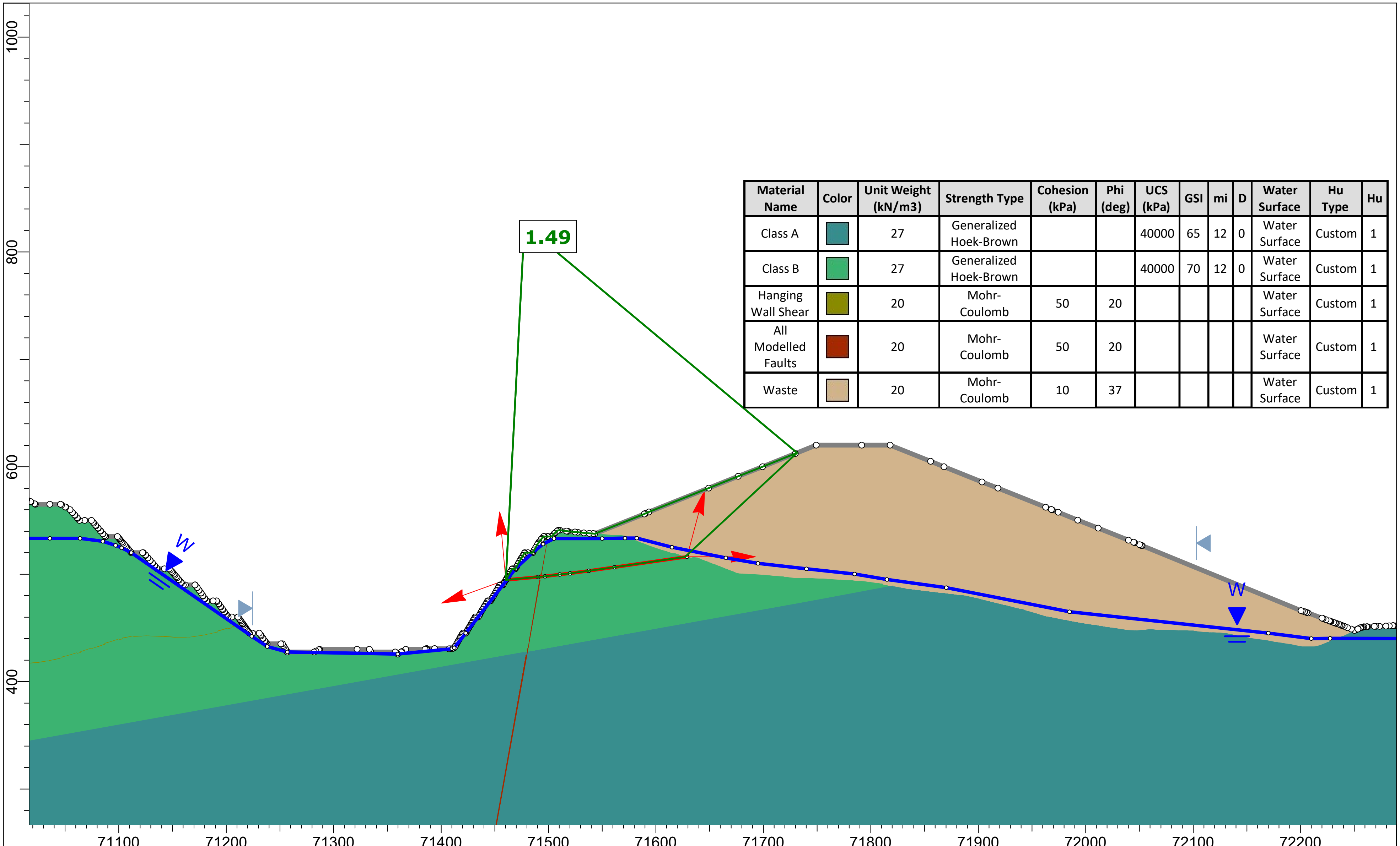


Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	UCS (kPa)	GSI	mi	D	Water Surface	Hu Type	Hu
Class A		27	Generalized Hoek-Brown			40000	65	12	0	Water Surface	Custom	0.6
Class B		27	Generalized Hoek-Brown			40000	70	12	0	Water Surface	Custom	0.6
Hanging Wall Shear		20	Mohr-Coulomb	50	20					Water Surface	Custom	0.6
All Modelled Faults		20	Mohr-Coulomb	50	20					Water Surface	Custom	0.6
Waste		20	Mohr-Coulomb	10	37					Water Surface	Custom	0.6

PSM

Client:	OceanaGold Corporation
Project:	Macraes Phase 4 (MP4) Development
Location:	Golden Bar
Analysis description:	Golden Bar Section 1.slmd - Hu=0.6 North Wall - HWS, Master Scenario

Job No:	By:	Date:	Scale:	Run ID:
PSM0071	JS	23/03/2023	1:5000	Master Scenario

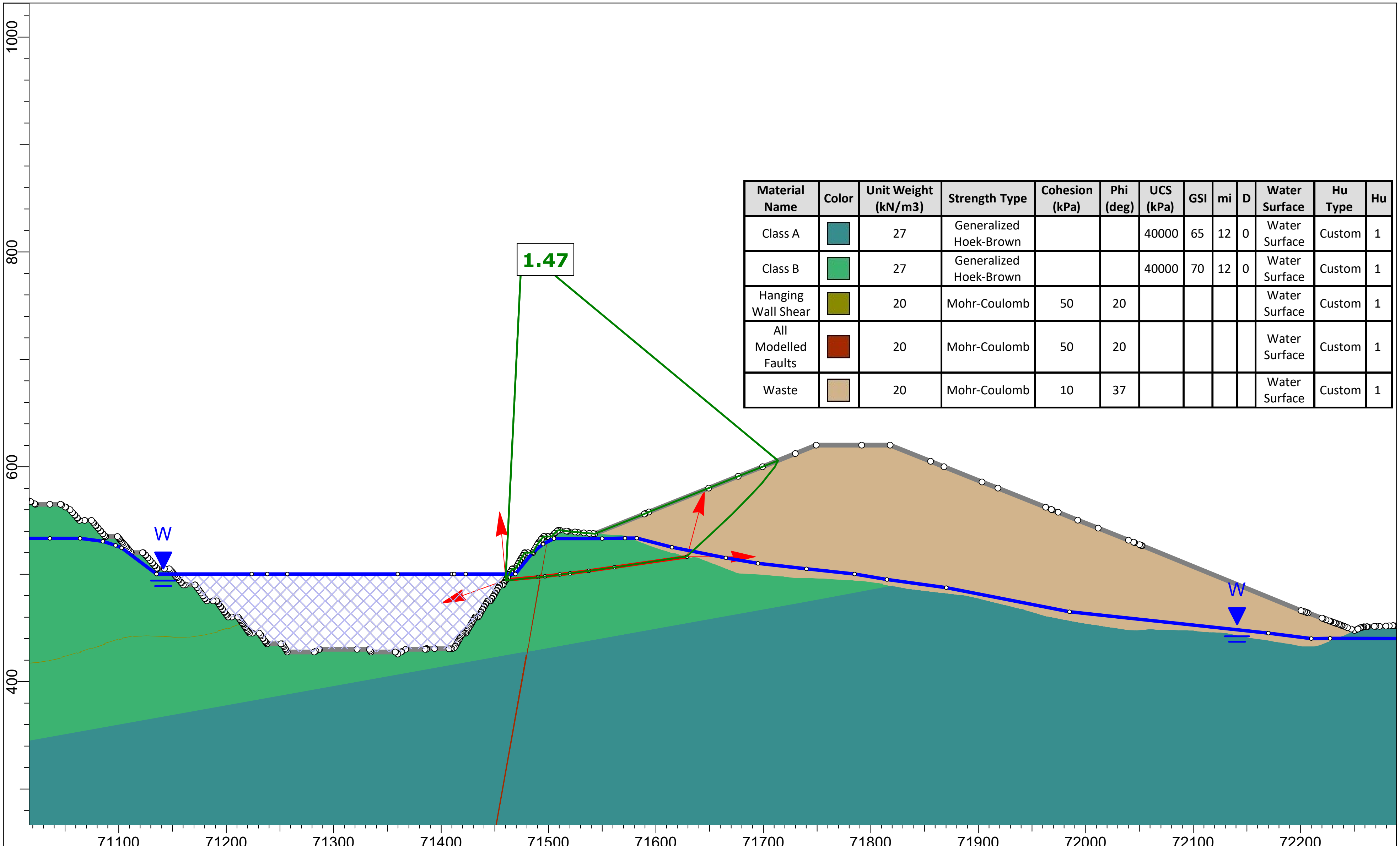


Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	UCS (kPa)	GSI	mi	D	Water Surface	Hu Type	Hu
Class A		27	Generalized Hoek-Brown			40000	65	12	0	Water Surface	Custom	1
Class B		27	Generalized Hoek-Brown			40000	70	12	0	Water Surface	Custom	1
Hanging Wall Shear		20	Mohr-Coulomb	50	20					Water Surface	Custom	1
All Modelled Faults		20	Mohr-Coulomb	50	20					Water Surface	Custom	1
Waste		20	Mohr-Coulomb	10	37					Water Surface	Custom	1

PSM

Client:	**OceanaGold Corporation**
Project:	**Macraes Phase 4 (MP4) Development**
Location:	**Golden Bar**
Analysis description:	**Golden Bar Section 1.slmd - Hu=1.0 North Wall - HWS, Master Scenario**

Job No:	By:	Date:	Scale:	Run ID:
PSM0071	**JS**	**23/03/2023**	**1:5000**	**Master Scenario**

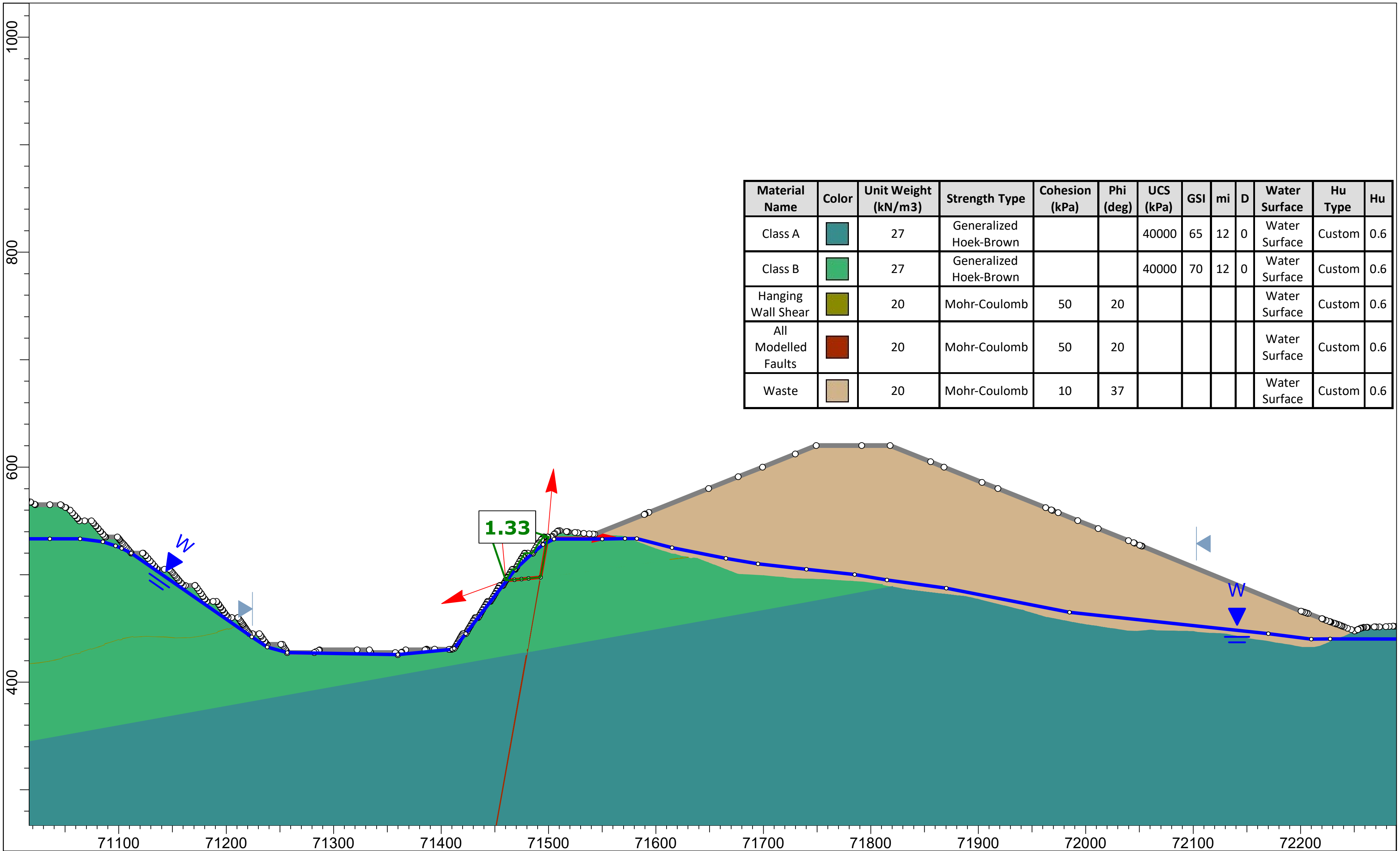


Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	UCS (kPa)	GSI	mi	D	Water Surface	Hu Type	Hu
Class A		27	Generalized Hoek-Brown			40000	65	12	0	Water Surface	Custom	1
Class B		27	Generalized Hoek-Brown			40000	70	12	0	Water Surface	Custom	1
Hanging Wall Shear		20	Mohr-Coulomb	50	20					Water Surface	Custom	1
All Modelled Faults		20	Mohr-Coulomb	50	20					Water Surface	Custom	1
Waste		20	Mohr-Coulomb	10	37					Water Surface	Custom	1

PSM

Client:	**OceanaGold Corporation**
Project:	**Macraes Phase 4 (MP4) Development**
Location:	**Golden Bar**
Analysis description:	**Golden Bar Section 1.slmd - Pit Lake North Wall - HWS, Master Scenario**

Job No:	By:	Date:	Scale:	Run ID:
PSM0071	**JS**	**23/03/2023**	**1:5000**	**Master Scenario**



Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	UCS (kPa)	GSI	mi	D	Water Surface	Hu Type	Hu
Class A		27	Generalized Hoek-Brown			40000	65	12	0	Water Surface	Custom	0.6
Class B		27	Generalized Hoek-Brown			40000	70	12	0	Water Surface	Custom	0.6
Hanging Wall Shear		20	Mohr-Coulomb	50	20					Water Surface	Custom	0.6
All Modelled Faults		20	Mohr-Coulomb	50	20					Water Surface	Custom	0.6
Waste		20	Mohr-Coulomb	10	37					Water Surface	Custom	0.6

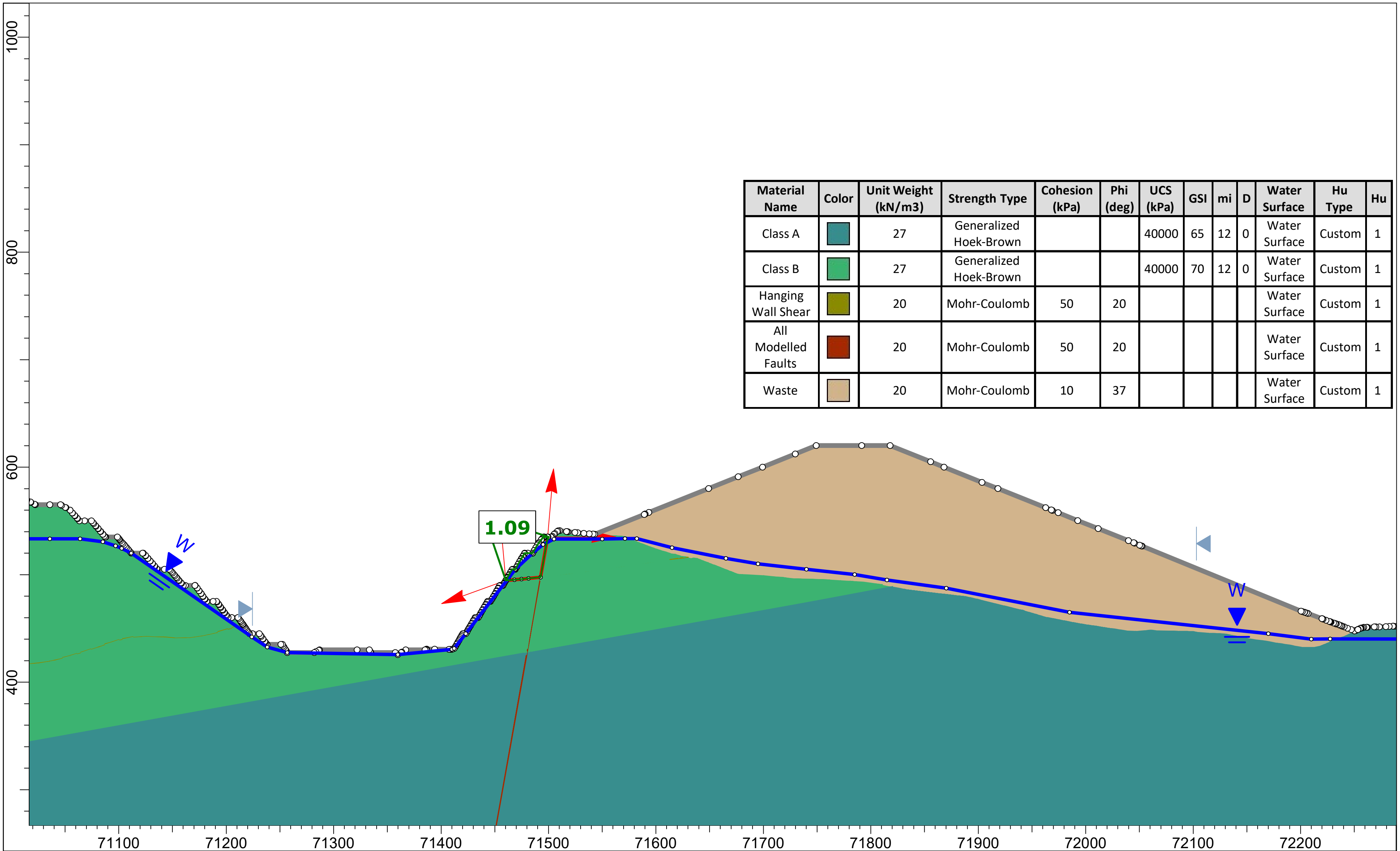
Client: **OceanaGold Corporation**

Project: **Macraes Phase 4 (MP4) Development**

Location: **Golden Bar**

Analysis description: **Golden Bar Section 1.slmd - Hu=0.6 North Wall - Block Slide, Master Scenario**

Job No:	By:	Date:	Scale:	Run ID:
PSM0071	JS	23/03/2023	1:5000	Master Scenario



Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	UCS (kPa)	GSI	mi	D	Water Surface	Hu Type	Hu
Class A		27	Generalized Hoek-Brown			40000	65	12	0	Water Surface	Custom	1
Class B		27	Generalized Hoek-Brown			40000	70	12	0	Water Surface	Custom	1
Hanging Wall Shear		20	Mohr-Coulomb	50	20					Water Surface	Custom	1
All Modelled Faults		20	Mohr-Coulomb	50	20					Water Surface	Custom	1
Waste		20	Mohr-Coulomb	10	37					Water Surface	Custom	1

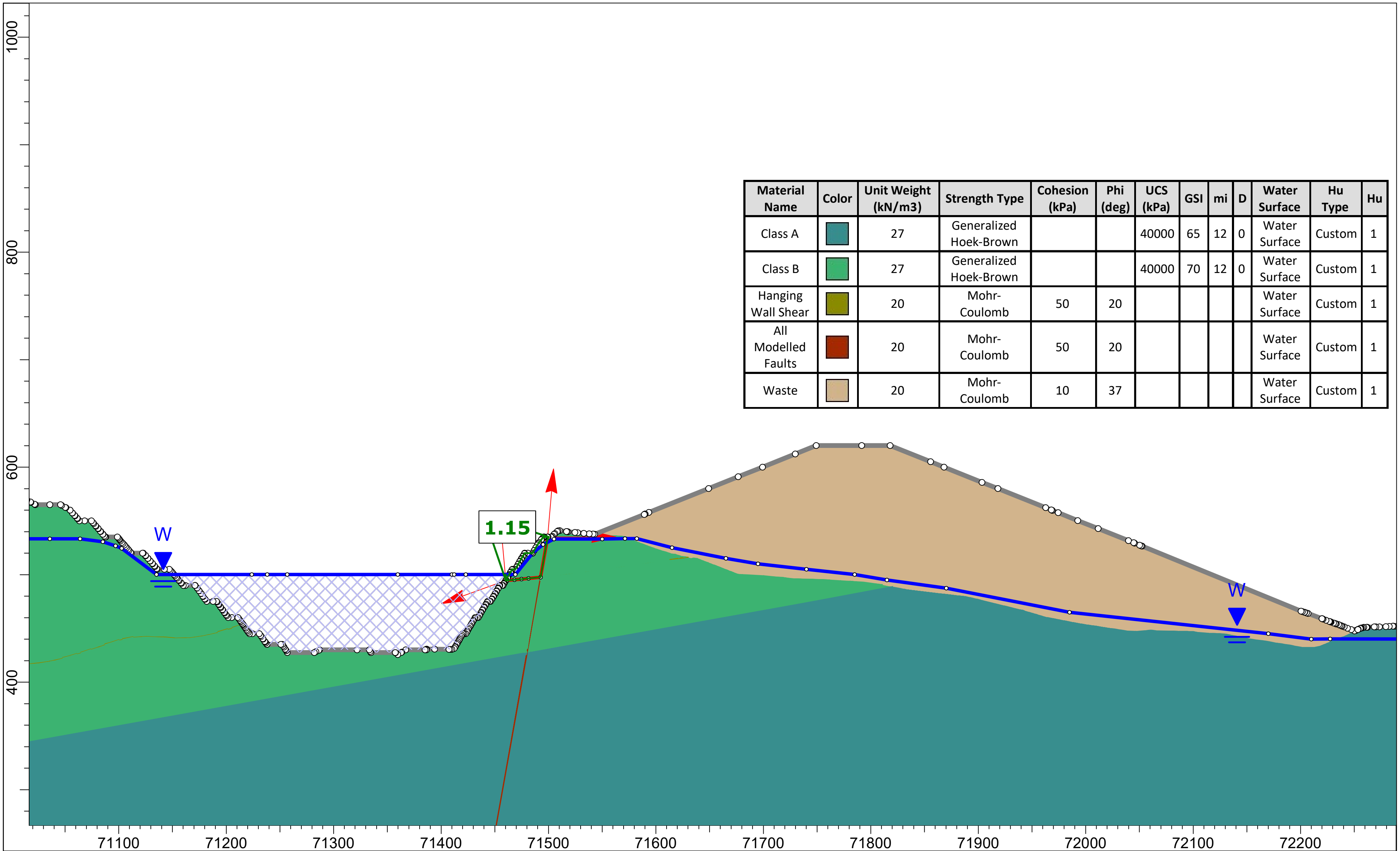
Client: **OceanaGold Corporation**

Project: **Macraes Phase 4 (MP4) Development**

Location: **Golden Bar**

Analysis description: **Golden Bar Section 1.slmd - Hu=1.0 North Wall - Block Slide, Master Scenario**

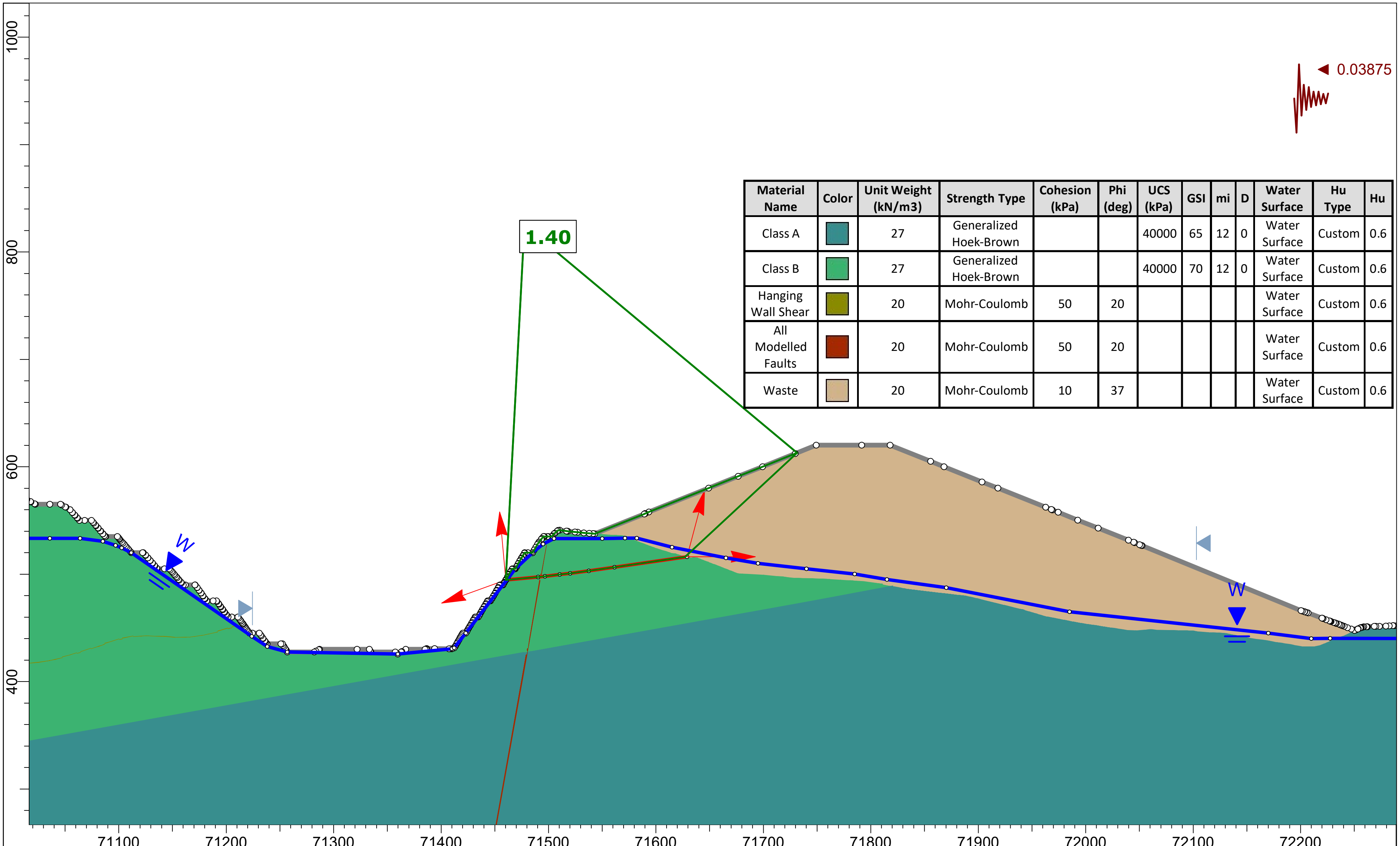
Job No: **PSM0071** | By: **JS** | Date: **23/03/2023** | Scale: **1:5000** | Run ID: **Master Scenario**



Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	UCS (kPa)	GSI	mi	D	Water Surface	Hu Type	Hu
Class A		27	Generalized Hoek-Brown			40000	65	12	0	Water Surface	Custom	1
Class B		27	Generalized Hoek-Brown			40000	70	12	0	Water Surface	Custom	1
Hanging Wall Shear		20	Mohr-Coulomb	50	20					Water Surface	Custom	1
All Modelled Faults		20	Mohr-Coulomb	50	20					Water Surface	Custom	1
Waste		20	Mohr-Coulomb	10	37					Water Surface	Custom	1

Client:	**OceanaGold Corporation**
Project:	**Macraes Phase 4 (MP4) Development**
Location:	**Golden Bar**
Analysis description:	**Golden Bar Section 1.slmd - Pit Lake North Wall - Block Slide, Master Scenario**

Job No:	By:	Date:	Scale:	Run ID:
PSM0071	**JS**	**23/03/2023**	**1:5000**	**Master Scenario**

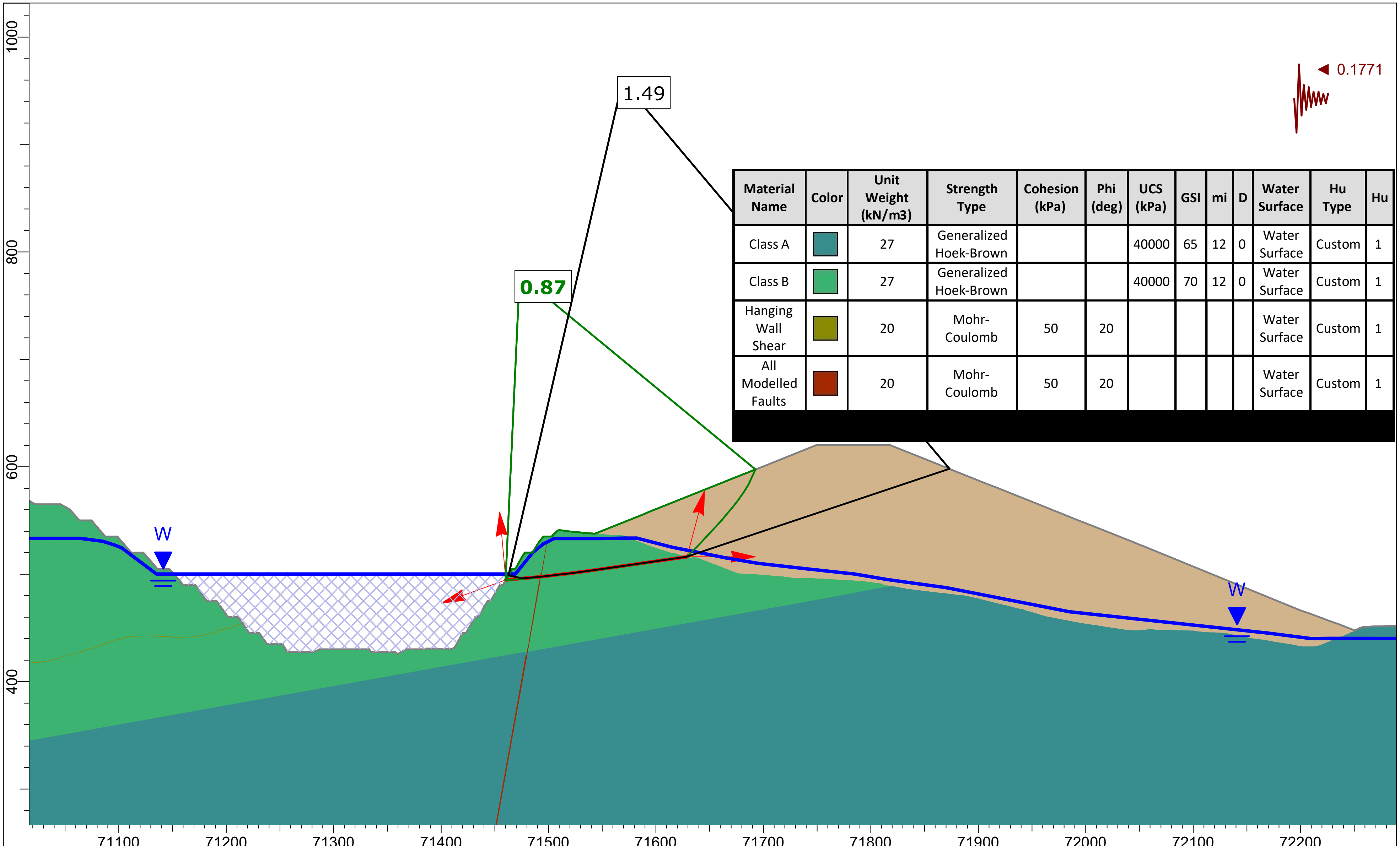


Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	UCS (kPa)	GSI	mi	D	Water Surface	Hu Type	Hu
Class A		27	Generalized Hoek-Brown			40000	65	12	0	Water Surface	Custom	0.6
Class B		27	Generalized Hoek-Brown			40000	70	12	0	Water Surface	Custom	0.6
Hanging Wall Shear		20	Mohr-Coulomb	50	20					Water Surface	Custom	0.6
All Modelled Faults		20	Mohr-Coulomb	50	20					Water Surface	Custom	0.6
Waste		20	Mohr-Coulomb	10	37					Water Surface	Custom	0.6

PSM

Client:	**OceanaGold Corporation**
Project:	**Macraes Phase 4 (MP4) Development**
Location:	**Golden Bar**
Analysis description:	**Golden Bar Section 1.slmd - Hu=0.6 North Wall - HWS_SC=0.03875, Master Scenario**

Job No:	By:	Date:	Scale:	Run ID:
PSM0071	**JS**	**23/03/2023**	**1:5000**	**Master Scenario**



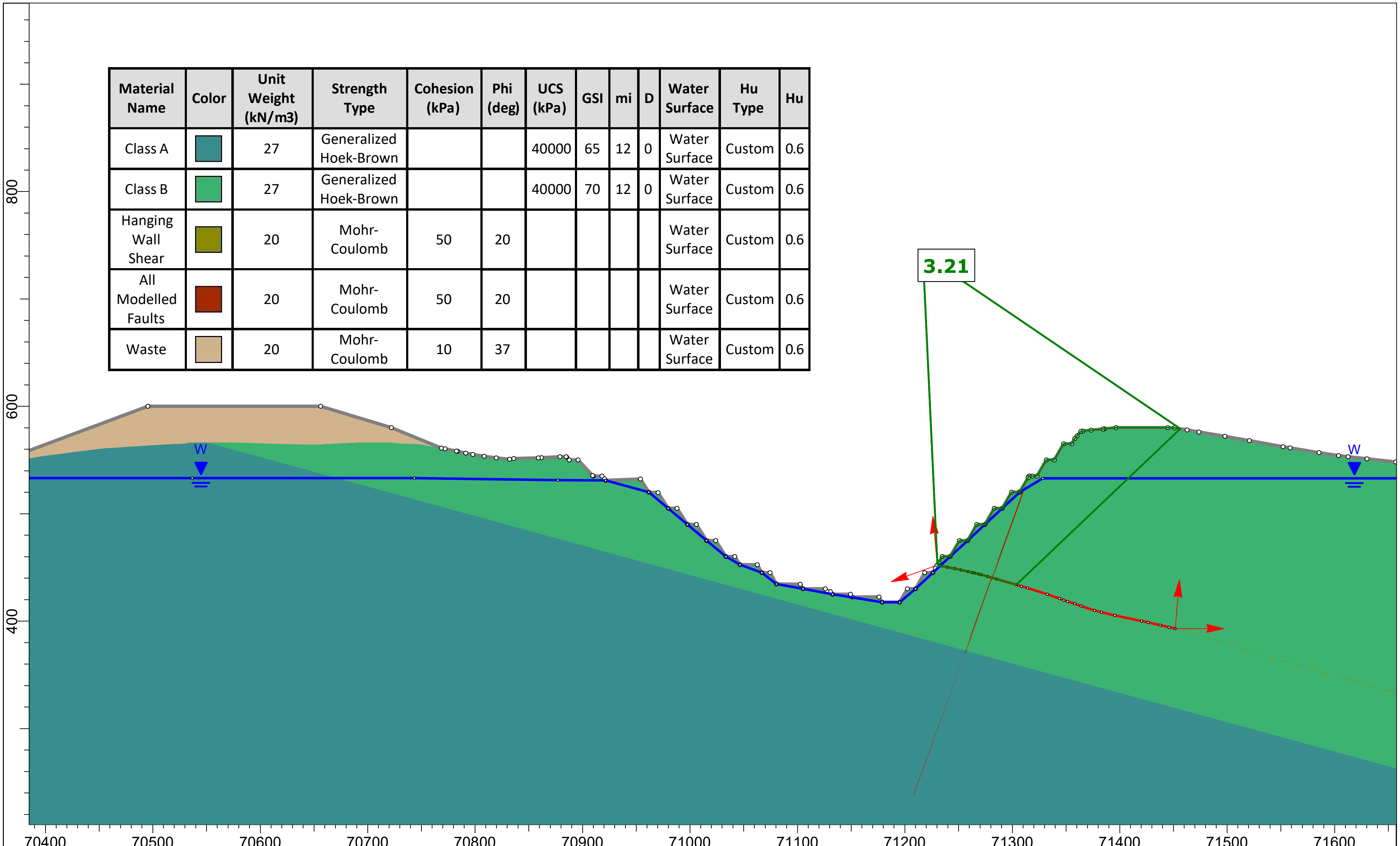
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	UCS (kPa)	GSI	mi	D	Water Surface	Hu Type	Hu
Class A		27	Generalized Hoek-Brown			40000	65	12	0	Water Surface	Custom	1
Class B		27	Generalized Hoek-Brown			40000	70	12	0	Water Surface	Custom	1
Hanging Wall Shear		20	Mohr-Coulomb	50	20					Water Surface	Custom	1
All Modelled Faults		20	Mohr-Coulomb	50	20					Water Surface	Custom	1

PSM

Client:	**OceanaGold Corporation**
Project:	**Macraes Phase 4 (MP4) Development**
Location:	**Golden Bar**
Analysis description:	**Golden Bar Section 1.slmd - Pit Lake North Wall - HWS_SC=0.1771, Master Scenario**

Job No:	By:	Date:	Scale:	Run ID:
PSM0071	**JS**	**23/03/2023**	**1:5000**	**Master Scenario**

Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	UCS (kPa)	GSI	mi	D	Water Surface	Hu Type	Hu
Class A		27	Generalized Hoek-Brown			40000	65	12	0	Water Surface	Custom	0.6
Class B		27	Generalized Hoek-Brown			40000	70	12	0	Water Surface	Custom	0.6
Hanging Wall Shear		20	Mohr-Coulomb	50	20					Water Surface	Custom	0.6
All Modelled Faults		20	Mohr-Coulomb	50	20					Water Surface	Custom	0.6
Waste		20	Mohr-Coulomb	10	37					Water Surface	Custom	0.6

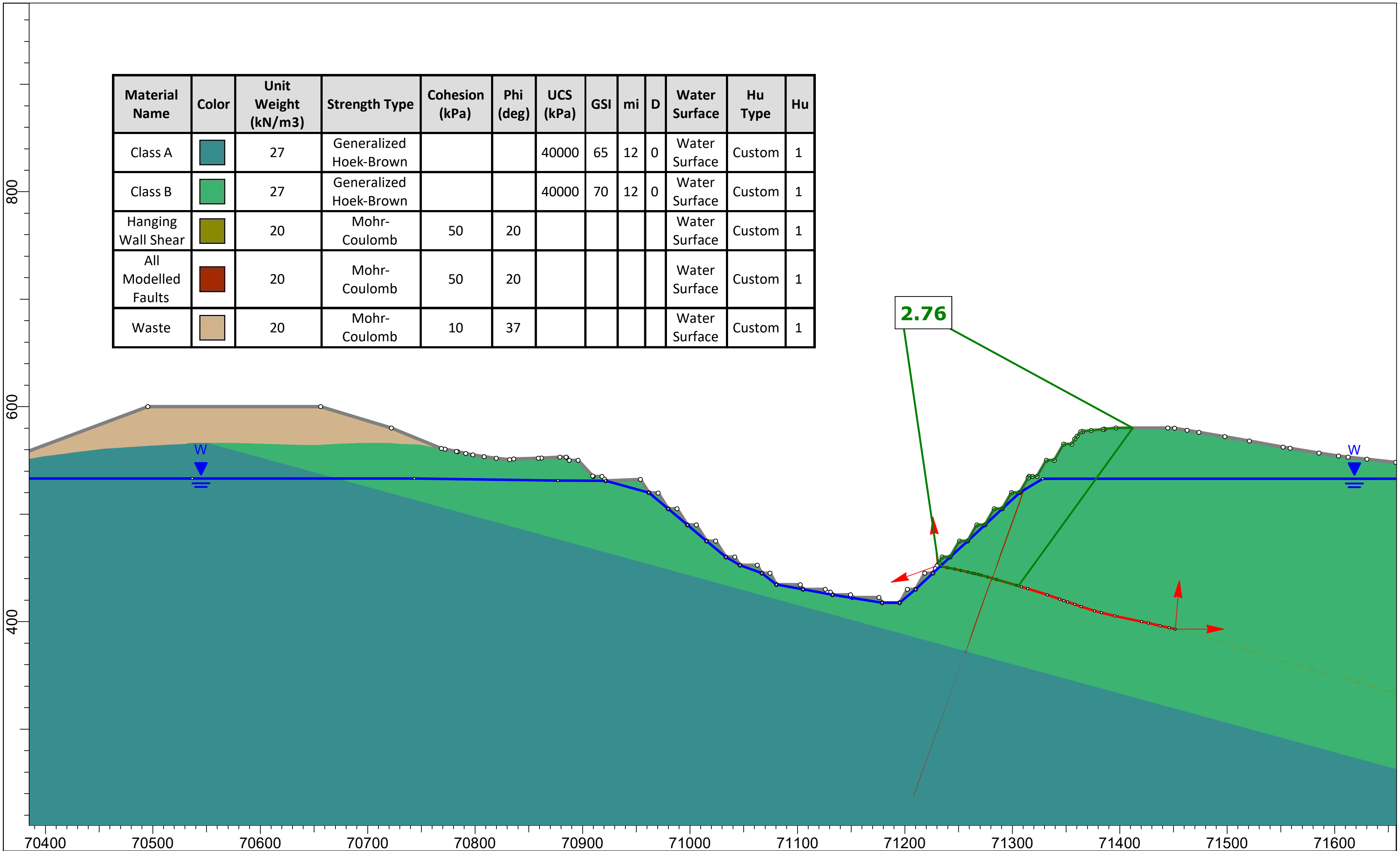


PSM

Client:	**OceanaGold Corporation**
Project:	**Macraes Phase 4 (MP4) Development**
Location:	**Golden Bar**
Analysis description:	**Golden Bar Section 2.slmd - Hu=0.6 East Wall - HWS, Master Scenario**

Job No:	By:	Date:	Scale:	Run ID:
PSM0071	**JS**	**23/03/2023**	**1:5000**	**Master Scenario**

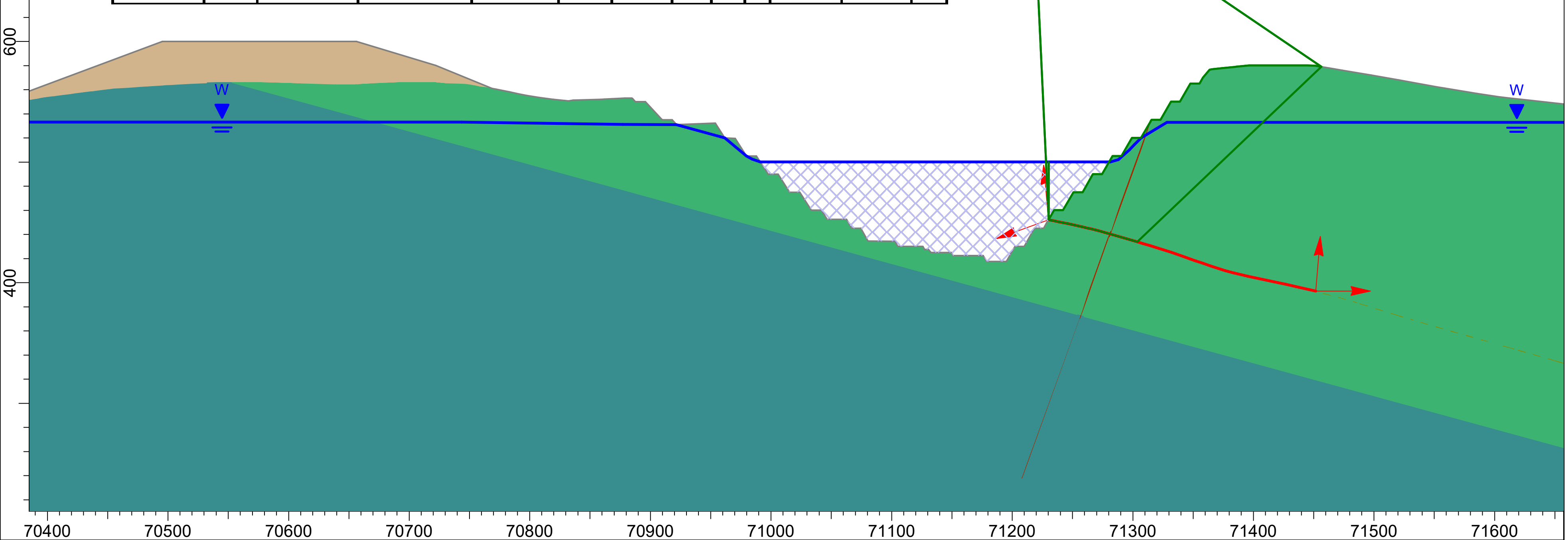
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	UCS (kPa)	GSI	mi	D	Water Surface	Hu Type	Hu
Class A		27	Generalized Hoek-Brown			40000	65	12	0	Water Surface	Custom	1
Class B		27	Generalized Hoek-Brown			40000	70	12	0	Water Surface	Custom	1
Hanging Wall Shear		20	Mohr-Coulomb	50	20					Water Surface	Custom	1
All Modelled Faults		20	Mohr-Coulomb	50	20					Water Surface	Custom	1
Waste		20	Mohr-Coulomb	10	37					Water Surface	Custom	1



Client:	OceanaGold Corporation
Project:	Macraes Phase 4 (MP4) Development
Location:	Golden Bar
Analysis description:	Golden Bar Section 2.slmd - Hu=1 East Wall - HWS, Master Scenario

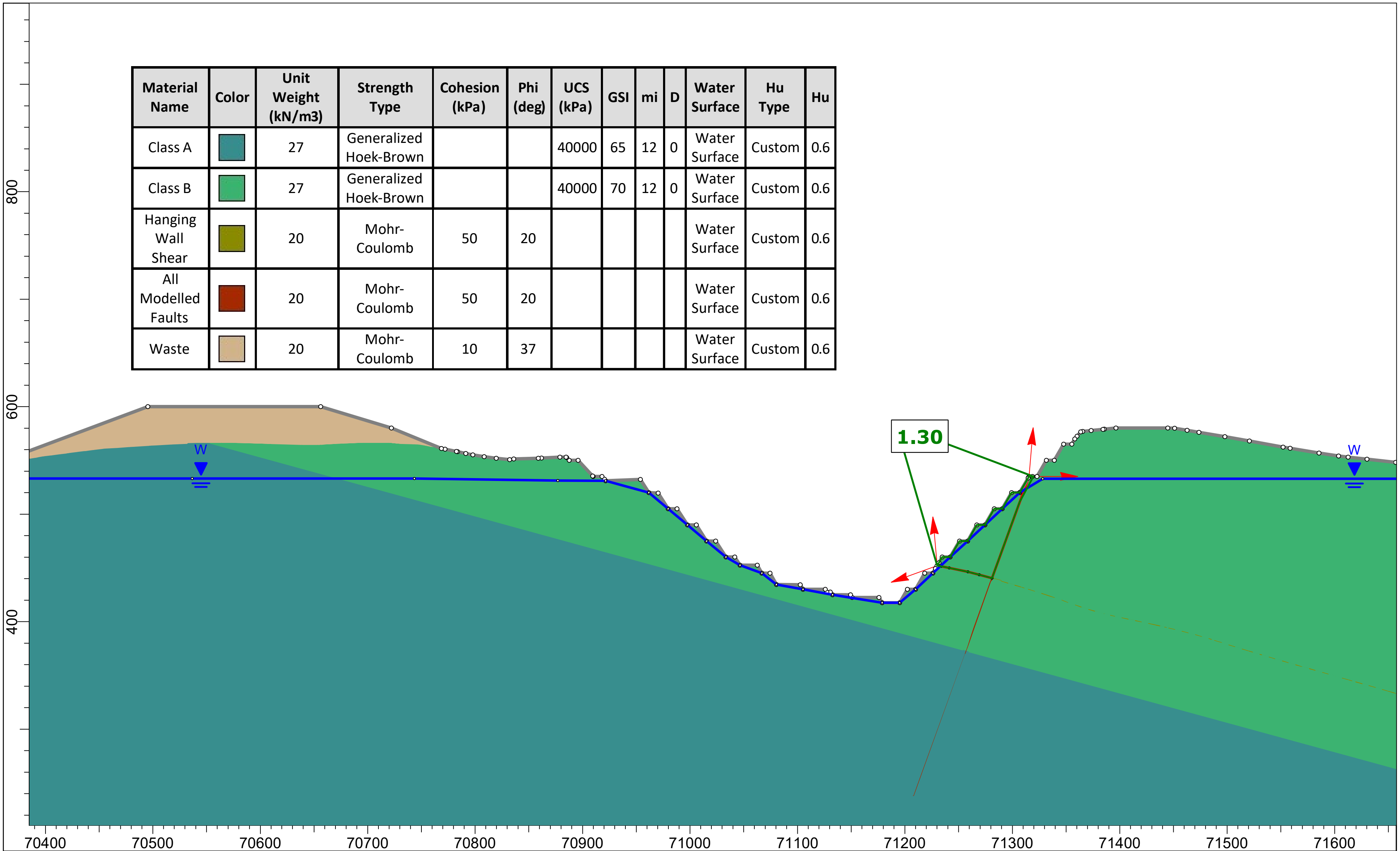
Job No:	By:	Date:	Scale:	Run ID:
PSM0071	JS	23/03/2023	1:5000	Master Scenario

Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	UCS (kPa)	GSI	mi	D	Water Surface	Hu Type	Hu
Class A		27	Generalized Hoek-Brown			40000	65	12	0	Water Surface	Custom	1
Class B		27	Generalized Hoek-Brown			40000	70	12	0	Water Surface	Custom	1
Hanging Wall Shear		20	Mohr-Coulomb	50	20					Water Surface	Custom	1
All Modelled Faults		20	Mohr-Coulomb	50	20					Water Surface	Custom	1
Waste		20	Mohr-Coulomb	10	37					Water Surface	Custom	1



Client:	OceanaGold Corporation						
Project:	Macraes Phase 4 (MP4) Development						
Location:	Golden Bar						
Analysis description:	Golden Bar Section 2.slmd - Pit Lake East Wall - HWS, Master Scenario						
Job No: PSM0071	By: JS	Date: 23/03/2023	Scale: 1:5000	Run ID: Master Scenario			

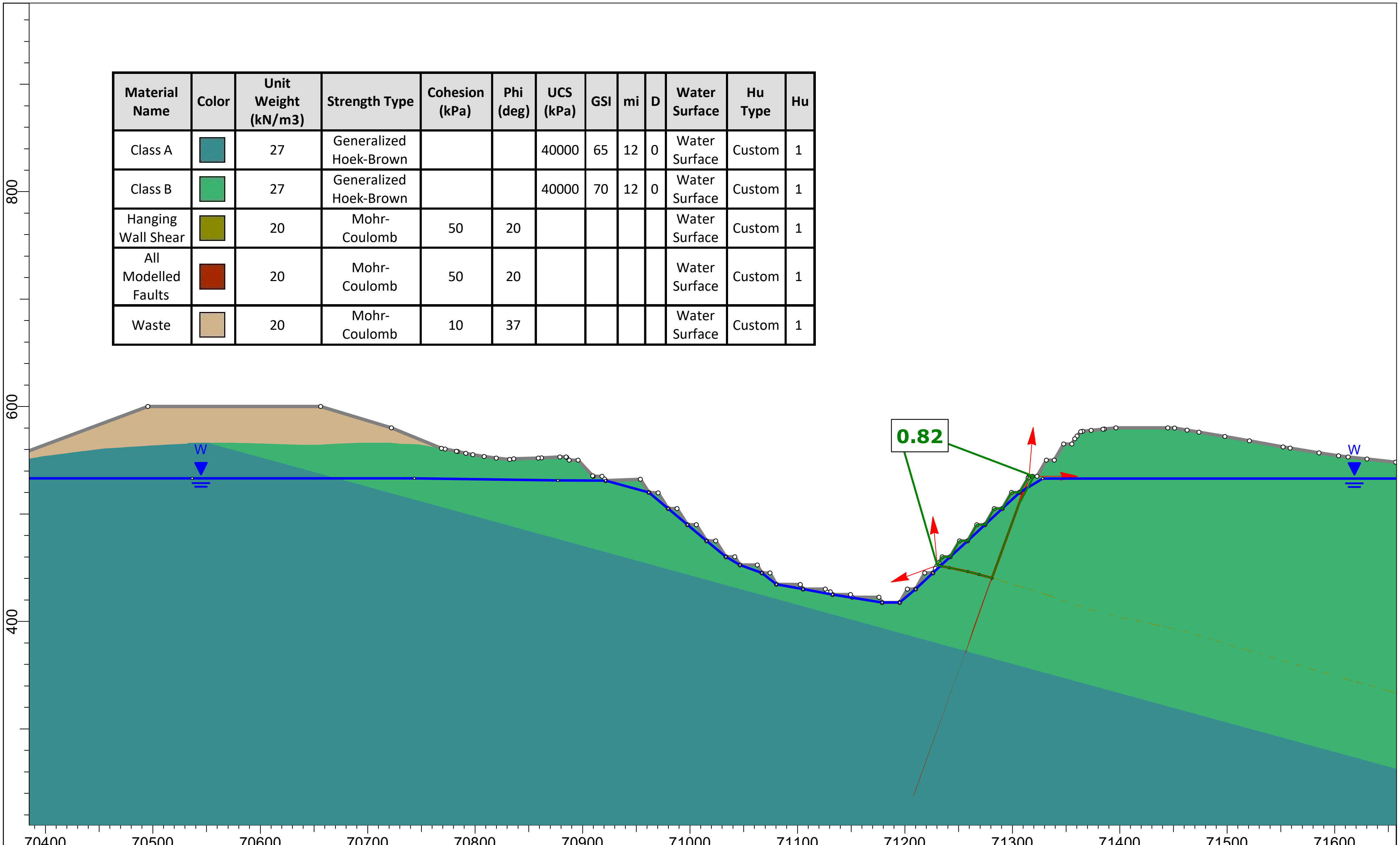
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	UCS (kPa)	GSI	mi	D	Water Surface	Hu Type	Hu
Class A		27	Generalized Hoek-Brown			40000	65	12	0	Water Surface	Custom	0.6
Class B		27	Generalized Hoek-Brown			40000	70	12	0	Water Surface	Custom	0.6
Hanging Wall Shear		20	Mohr-Coulomb	50	20					Water Surface	Custom	0.6
All Modelled Faults		20	Mohr-Coulomb	50	20					Water Surface	Custom	0.6
Waste		20	Mohr-Coulomb	10	37					Water Surface	Custom	0.6



Client:	**OceanaGold Corporation**
Project:	**Macraes Phase 4 (MP4) Development**
Location:	**Golden Bar**
Analysis description:	**Golden Bar Section 2.slmd - Hu=0.6 East Wall - Block Slide, Master Scenario**

Job No:	By:	Date:	Scale:	Run ID:
PSM0071	**JS**	**23/03/2023**	**1:5000**	**Master Scenario**

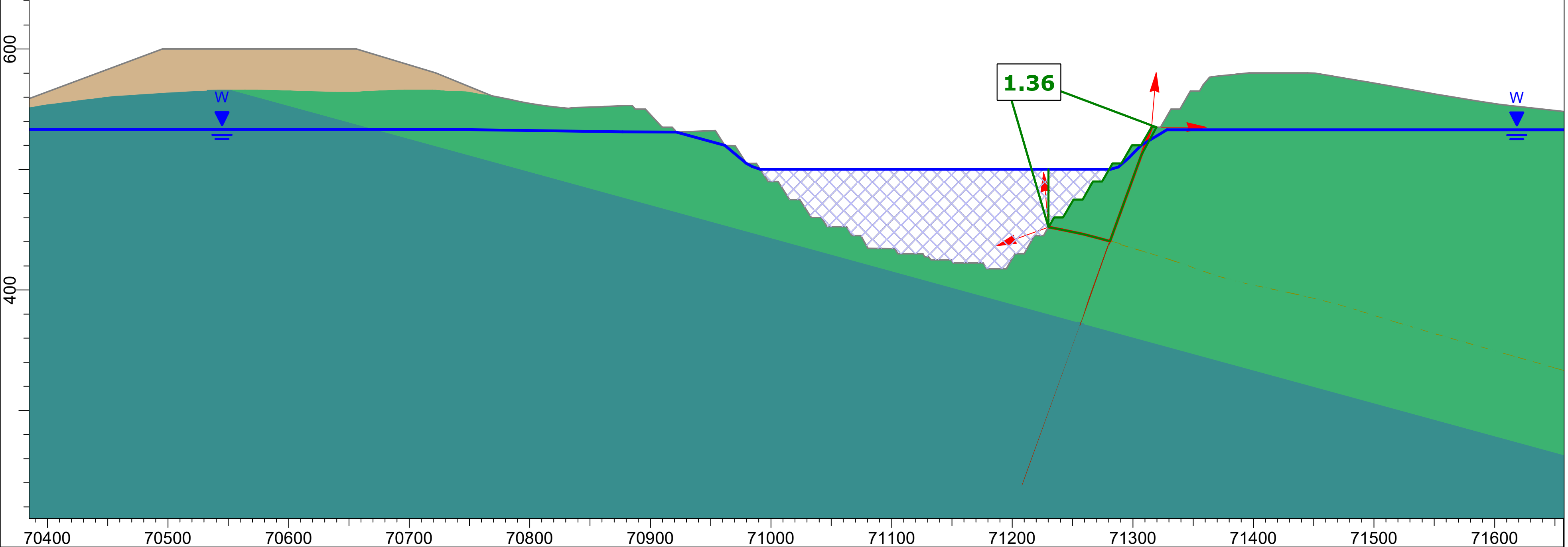
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	UCS (kPa)	GSI	mi	D	Water Surface	Hu Type	Hu
Class A		27	Generalized Hoek-Brown			40000	65	12	0	Water Surface	Custom	1
Class B		27	Generalized Hoek-Brown			40000	70	12	0	Water Surface	Custom	1
Hanging Wall Shear		20	Mohr-Coulomb	50	20					Water Surface	Custom	1
All Modelled Faults		20	Mohr-Coulomb	50	20					Water Surface	Custom	1
Waste		20	Mohr-Coulomb	10	37					Water Surface	Custom	1



Client:	**OceanaGold Corporation**
Project:	**Macraes Phase 4 (MP4) Development**
Location:	**Golden Bar**
Analysis description:	**Golden Bar Section 2.slmd - Hu=1 East Wall - Block Slide, Master Scenario**

Job No:	By:	Date:	Scale:	Run ID:
PSM0071	JS	23/03/2023	1:5000	Master Scenario

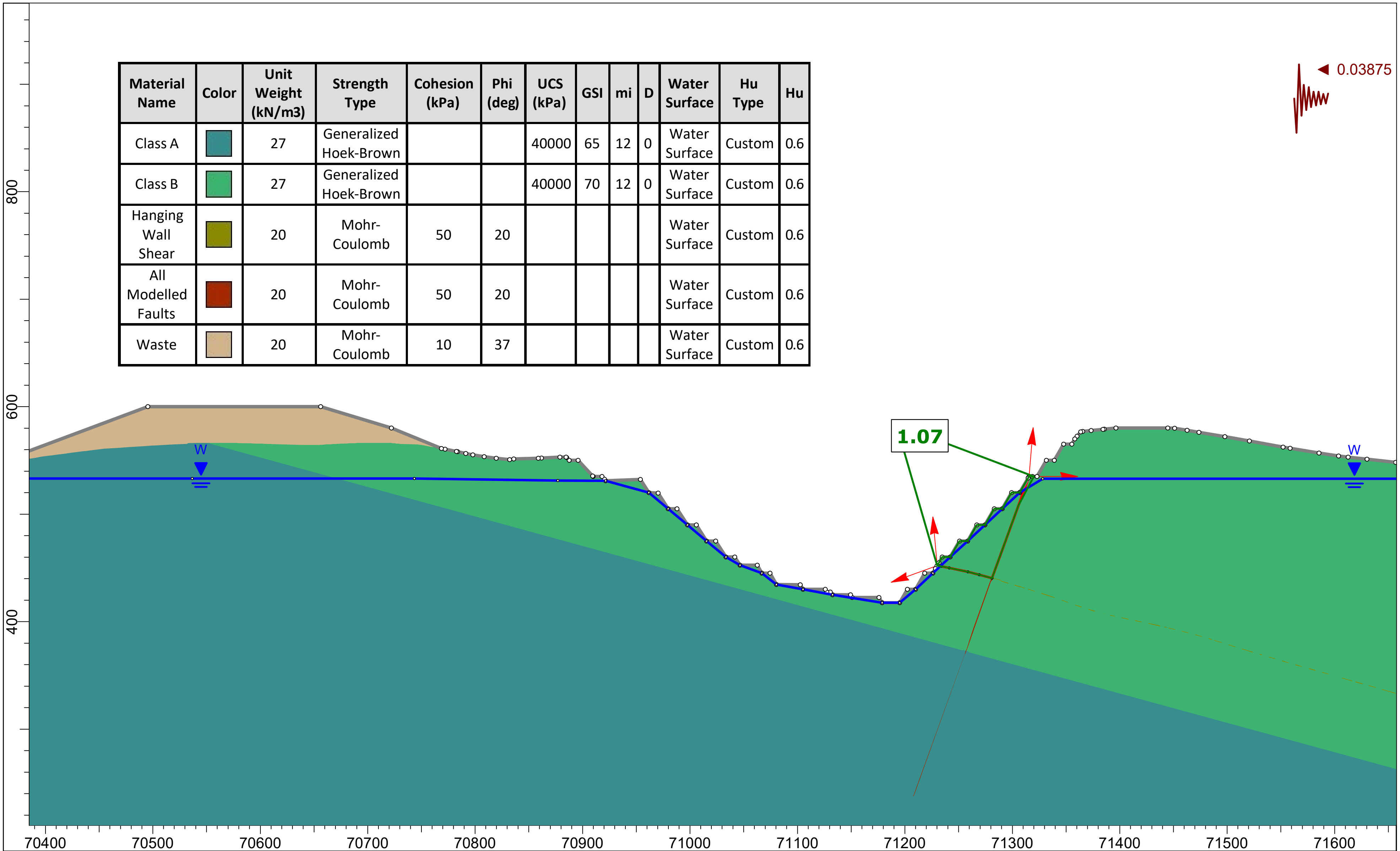
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	UCS (kPa)	GSI	mi	D	Water Surface	Hu Type	Hu
Class A		27	Generalized Hoek-Brown			40000	65	12	0	Water Surface	Custom	1
Class B		27	Generalized Hoek-Brown			40000	70	12	0	Water Surface	Custom	1
Hanging Wall Shear		20	Mohr-Coulomb	50	20					Water Surface	Custom	1
All Modelled Faults		20	Mohr-Coulomb	50	20					Water Surface	Custom	1
Waste		20	Mohr-Coulomb	10	37					Water Surface	Custom	1



Client:	OceanaGold Corporation
Project:	Macraes Phase 4 (MP4) Development
Location:	Golden Bar
Analysis description:	Golden Bar Section 2.slmd - Pit Lake East Wall - Block Slide, Master Scenario

Job No:	PSM0071	By:	JS	Date:	23/03/2023	Scale:	1:5000	Run ID:	Master Scenario

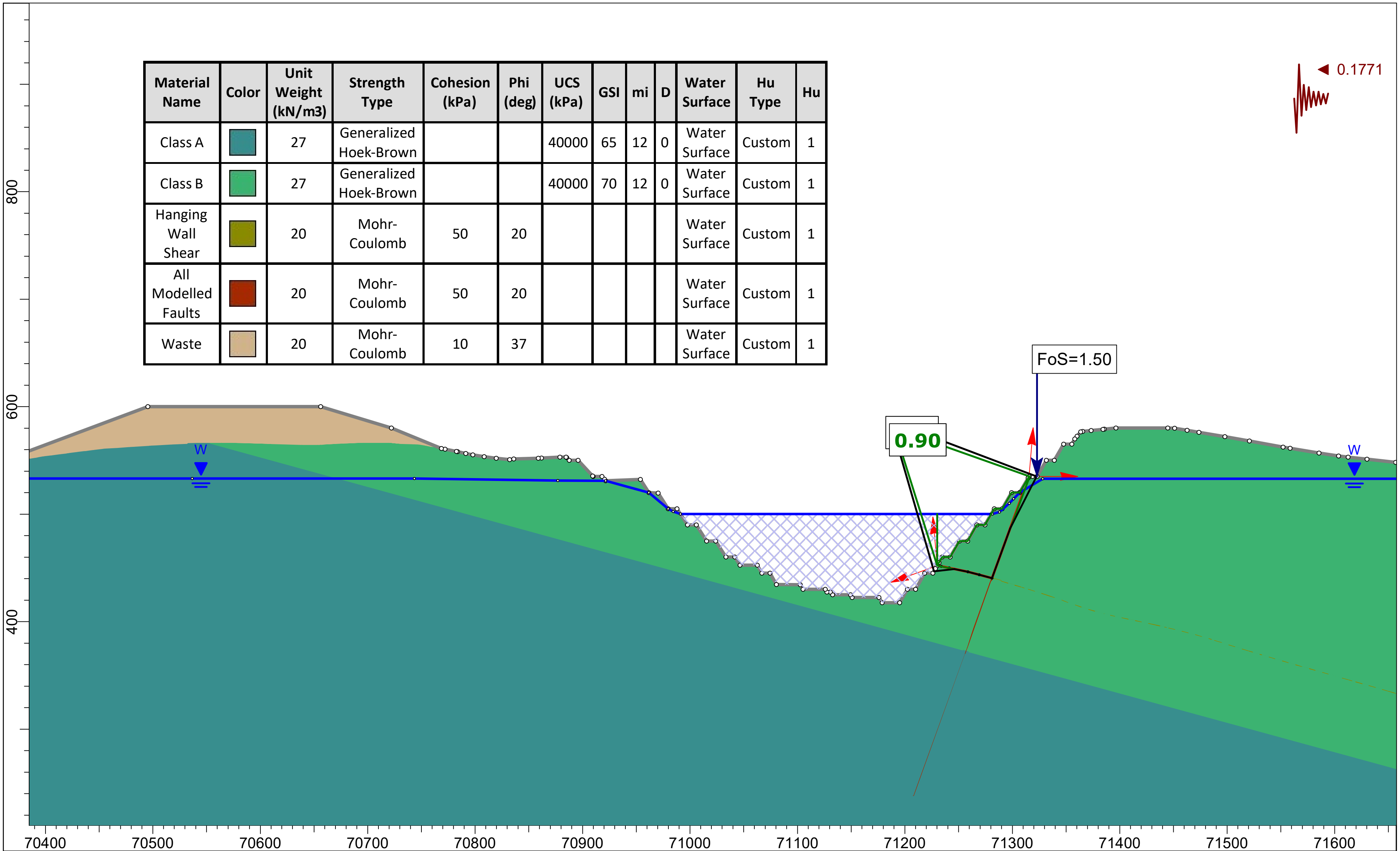
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	UCS (kPa)	GSI	mi	D	Water Surface	Hu Type	Hu
Class A		27	Generalized Hoek-Brown			40000	65	12	0	Water Surface	Custom	0.6
Class B		27	Generalized Hoek-Brown			40000	70	12	0	Water Surface	Custom	0.6
Hanging Wall Shear		20	Mohr-Coulomb	50	20					Water Surface	Custom	0.6
All Modelled Faults		20	Mohr-Coulomb	50	20					Water Surface	Custom	0.6
Waste		20	Mohr-Coulomb	10	37					Water Surface	Custom	0.6



Client:	OceanaGold Corporation
Project:	Macraes Phase 4 (MP4) Development
Location:	Golden Bar
Analysis description:	Golden Bar Section 2.slmd - Hu=0.6 East Wall - Block Slide_SC=0.03875, Master Scenario

Job No:	PSM0071	By:	JS	Date:	23/03/2023	Scale:	1:5000	Run ID:	Master Scenario

Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	UCS (kPa)	GSI	mi	D	Water Surface	Hu Type	Hu
Class A		27	Generalized Hoek-Brown			40000	65	12	0	Water Surface	Custom	1
Class B		27	Generalized Hoek-Brown			40000	70	12	0	Water Surface	Custom	1
Hanging Wall Shear		20	Mohr-Coulomb	50	20					Water Surface	Custom	1
All Modelled Faults		20	Mohr-Coulomb	50	20					Water Surface	Custom	1
Waste		20	Mohr-Coulomb	10	37					Water Surface	Custom	1



PSM

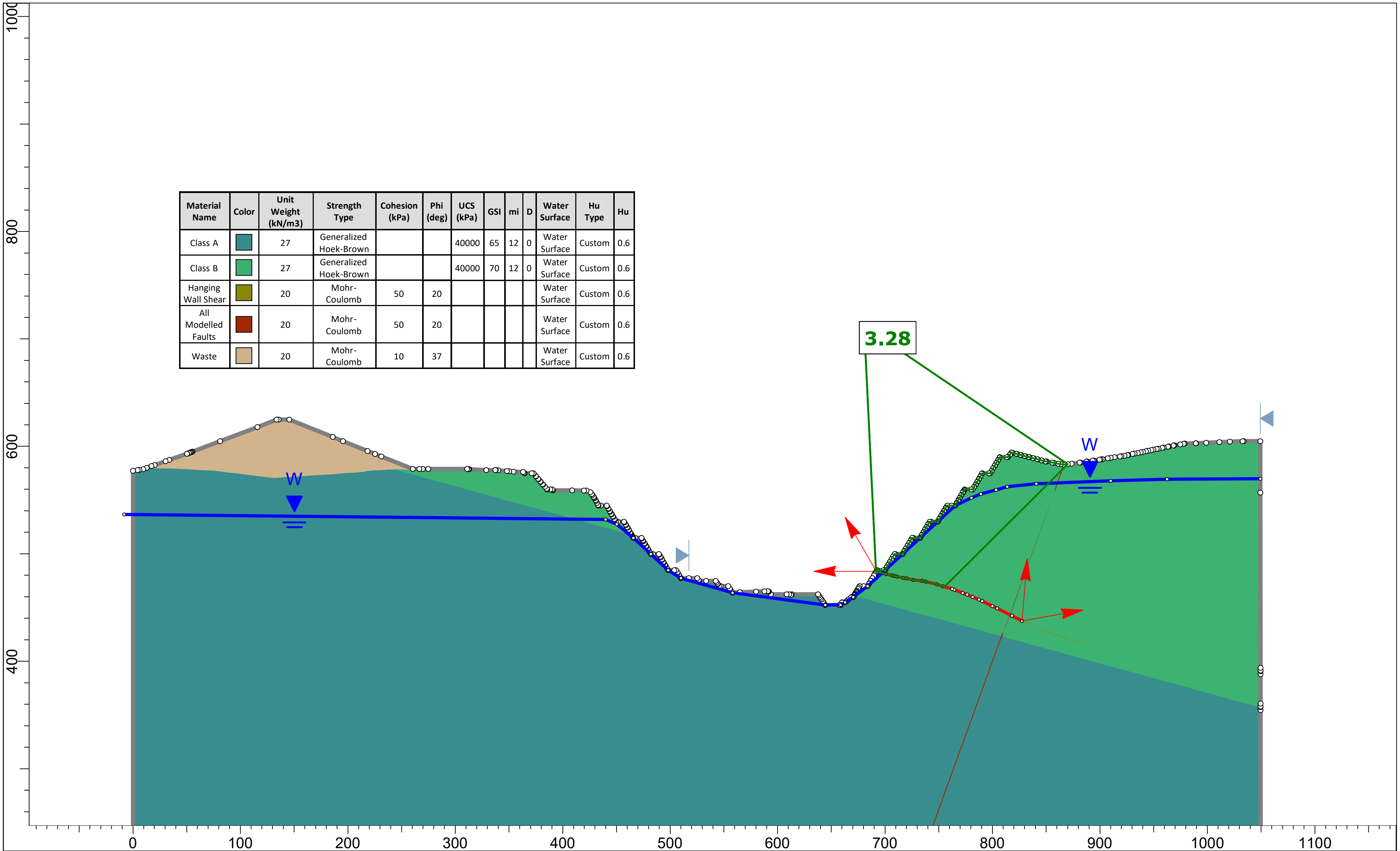
Client: **OceanaGold Corporation**

Project: **Macraes Phase 4 (MP4) Development**

Location: **Golden Bar**

Analysis description: **Golden Bar Section 2.slmd - Pit Lake East Wall - Block Slide_SC=0.1771, Master Scenario**

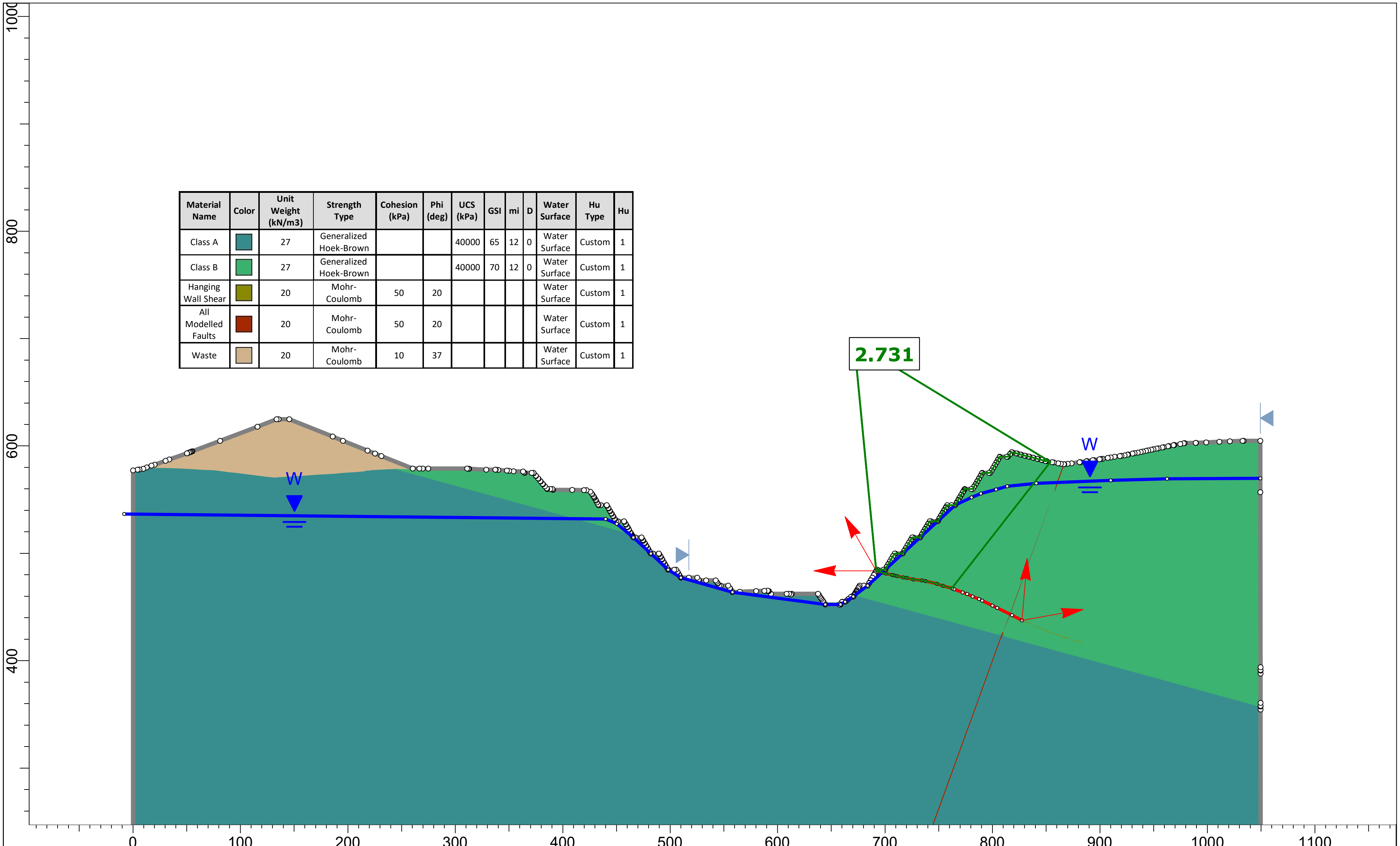
Job No:	By:	Date:	Scale:	Run ID:
PSM0071	JS	23/03/2023	1:5000	Master Scenario



Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	UCS (kPa)	GSI	mi	D	Water Surface	Hu Type	Hu
Class A		27	Generalized Hoek-Brown			40000	65	12	0	Water Surface	Custom	0.6
Class B		27	Generalized Hoek-Brown			40000	70	12	0	Water Surface	Custom	0.6
Hanging Wall Shear		20	Mohr-Coulomb	50	20					Water Surface	Custom	0.6
All Modelled Faults		20	Mohr-Coulomb	50	20					Water Surface	Custom	0.6
Waste		20	Mohr-Coulomb	10	37					Water Surface	Custom	0.6

Client:	OceanaGold Corporation
Project:	Macraes Phase 4 (MP4) Development
Location:	Golden Bar
Analysis description:	Golden Bar Section 3.slmd - Hu=0.6 East Wall - HSW, Master Scenario

Job No:	PSM0071	By:	JS	Date:	23/03/2023	Scale:	1:5000	Run ID:	Master Scenario

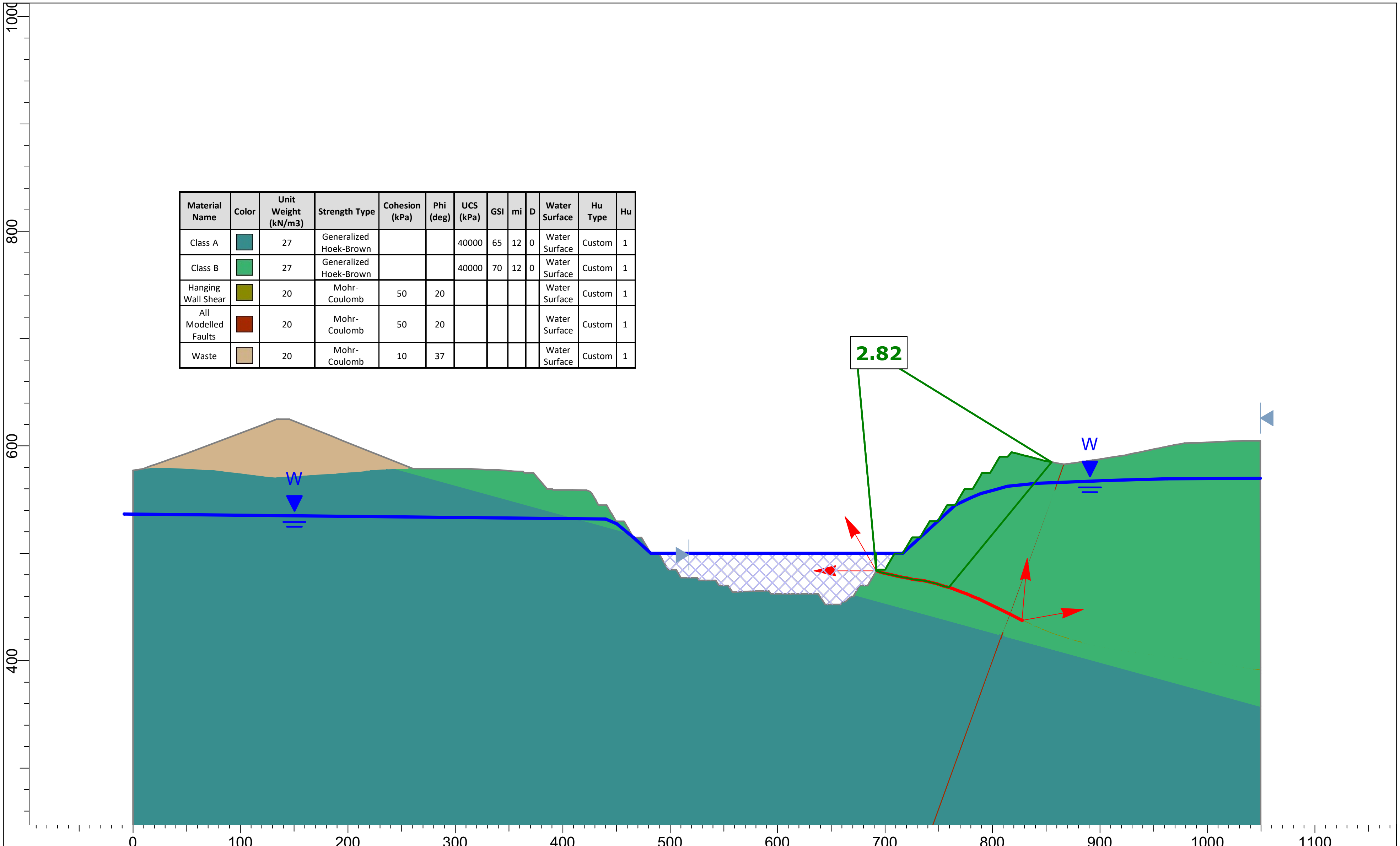


Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	UCS (kPa)	GSI	mi	D	Water Surface	Hu Type	Hu
Class A		27	Generalized Hoek-Brown			40000	65	12	0	Water Surface	Custom	1
Class B		27	Generalized Hoek-Brown			40000	70	12	0	Water Surface	Custom	1
Hanging Wall Shear		20	Mohr-Coulomb	50	20					Water Surface	Custom	1
All Modelled Faults		20	Mohr-Coulomb	50	20					Water Surface	Custom	1
Waste		20	Mohr-Coulomb	10	37					Water Surface	Custom	1

PSM

Client:	**OceanaGold Corporation**
Project:	**Macraes Phase 4 (MP4) Development**
Location:	**Golden Bar**
Analysis description:	**Golden Bar Section 3.slmd - Hu=1 East Wall - HWS, Master Scenario**

Job No:	By:	Date:	Scale:	Run ID:
PSM0071	JS	23/03/2023	1:5000	Master Scenario

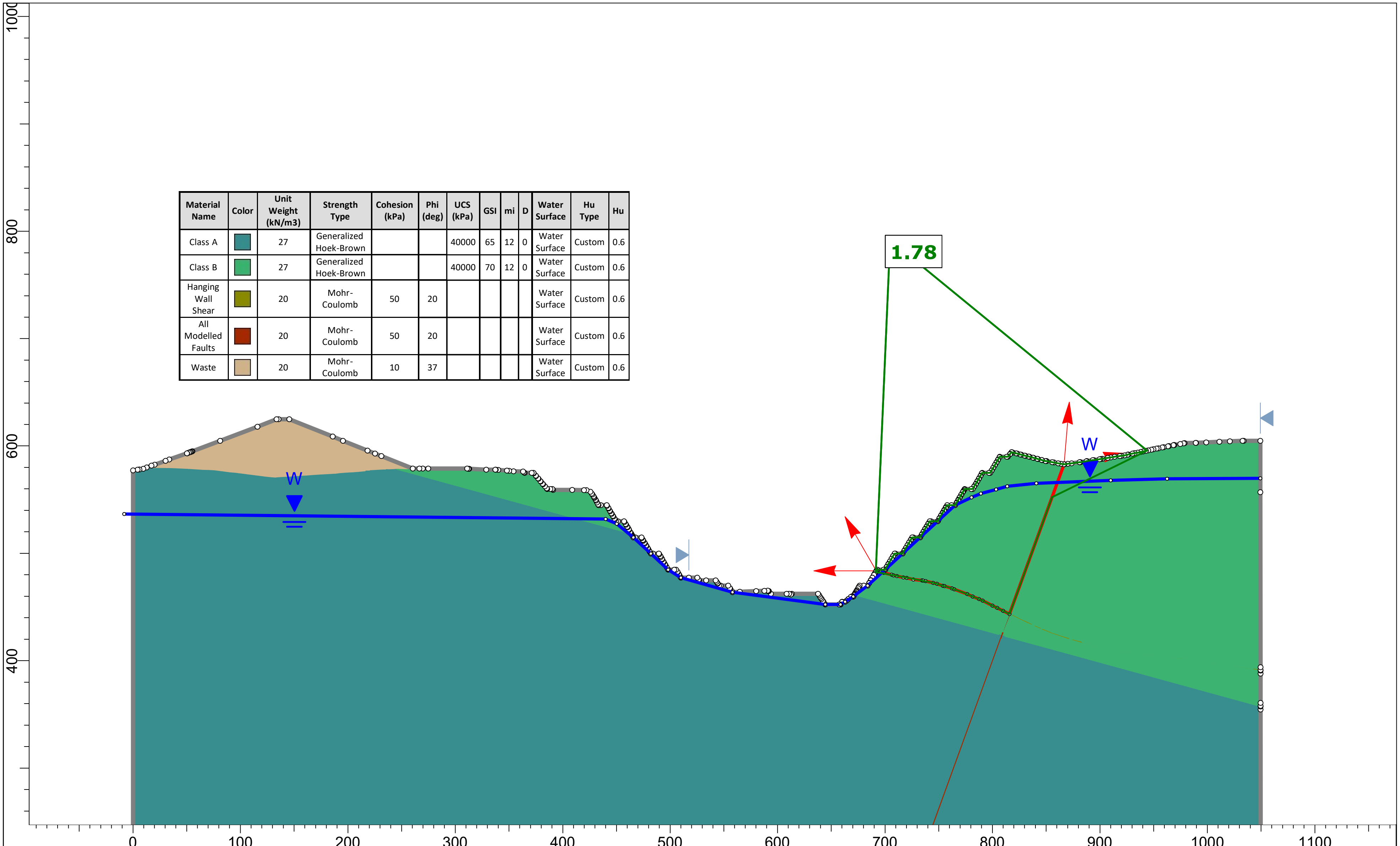


Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	UCS (kPa)	GSI	mi	D	Water Surface	Hu Type	Hu
Class A		27	Generalized Hoek-Brown			40000	65	12	0	Water Surface	Custom	1
Class B		27	Generalized Hoek-Brown			40000	70	12	0	Water Surface	Custom	1
Hanging Wall Shear		20	Mohr-Coulomb	50	20					Water Surface	Custom	1
All Modelled Faults		20	Mohr-Coulomb	50	20					Water Surface	Custom	1
Waste		20	Mohr-Coulomb	10	37					Water Surface	Custom	1

PSM

Client:	**OceanaGold Corporation**
Project:	**Macraes Phase 4 (MP4) Development**
Location:	**Golden Bar**
Analysis description:	**Golden Bar Section 3.slmd - Pit Lake East Wall - HWS, Master Scenario**

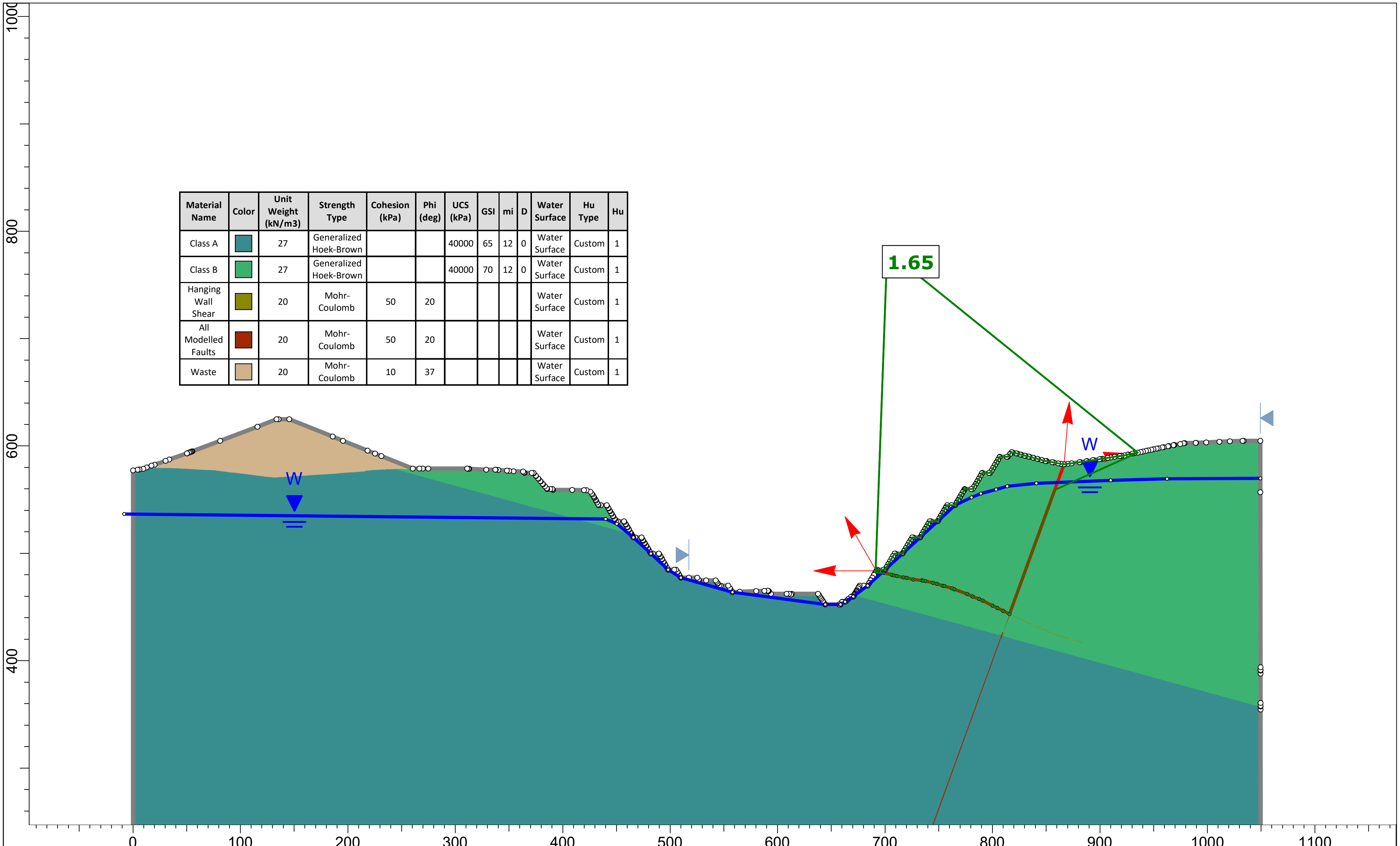
Job No:	By:	Date:	Scale:	Run ID:
PSM0071	JS	23/03/2023	1:5000	Master Scenario



Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	UCS (kPa)	GSI	mi	D	Water Surface	Hu Type	Hu
Class A		27	Generalized Hoek-Brown			40000	65	12	0	Water Surface	Custom	0.6
Class B		27	Generalized Hoek-Brown			40000	70	12	0	Water Surface	Custom	0.6
Hanging Wall Shear		20	Mohr-Coulomb	50	20					Water Surface	Custom	0.6
All Modelled Faults		20	Mohr-Coulomb	50	20					Water Surface	Custom	0.6
Waste		20	Mohr-Coulomb	10	37					Water Surface	Custom	0.6

Client:	**OceanaGold Corporation**
Project:	**Macraes Phase 4 (MP4) Development**
Location:	**Golden Bar**
Analysis description:	**Golden Bar Section 3.slmd - Hu=0.6 East Wall - Block Slide, Master Scenario**

Job No:	By:	Date:	Scale:	Run ID:
PSM0071	**JS**	**23/03/2023**	**1:5000**	**Master Scenario**

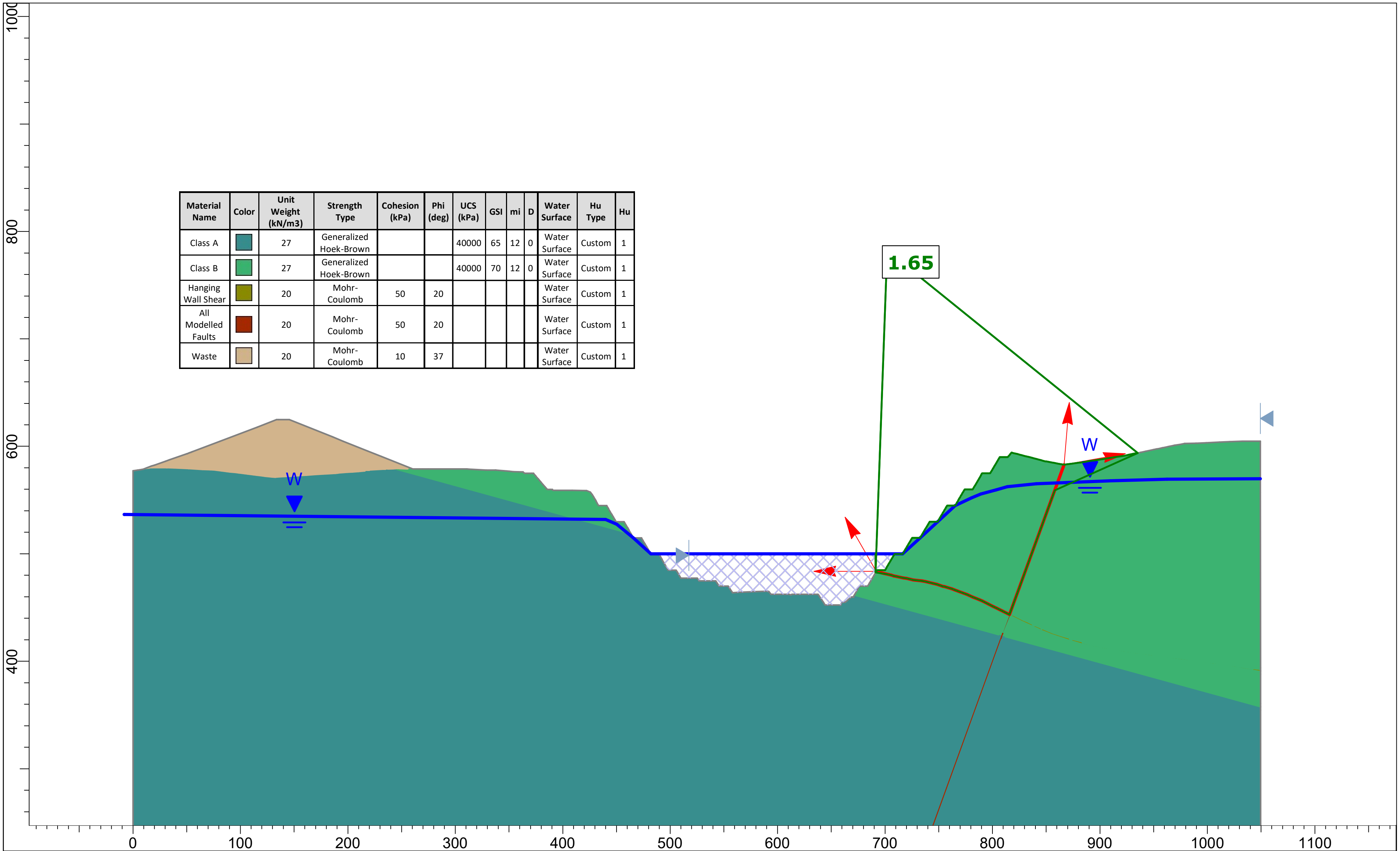


Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	UCS (kPa)	GSI	mi	D	Water Surface	Hu Type	Hu
Class A		27	Generalized Hoek-Brown			40000	65	12	0	Water Surface	Custom	1
Class B		27	Generalized Hoek-Brown			40000	70	12	0	Water Surface	Custom	1
Hanging Wall Shear		20	Mohr-Coulomb	50	20					Water Surface	Custom	1
All Modelled Faults		20	Mohr-Coulomb	50	20					Water Surface	Custom	1
Waste		20	Mohr-Coulomb	10	37					Water Surface	Custom	1

Client:	OceanaGold Corporation
Project:	Macraes Phase 4 (MP4) Development
Location:	Golden Bar
Analysis description:	Golden Bar Section 3.slmd - Hu=1 East Wall - Block Slide, Master Scenario

Job No: PSM0071 | By: JS | Date: 23/03/2023 | Scale: 1:5000 | Run ID: Master Scenario

Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	UCS (kPa)	GSI	mi	D	Water Surface	Hu Type	Hu
Class A		27	Generalized Hoek-Brown			40000	65	12	0	Water Surface	Custom	1
Class B		27	Generalized Hoek-Brown			40000	70	12	0	Water Surface	Custom	1
Hanging Wall Shear		20	Mohr-Coulomb	50	20					Water Surface	Custom	1
All Modelled Faults		20	Mohr-Coulomb	50	20					Water Surface	Custom	1
Waste		20	Mohr-Coulomb	10	37					Water Surface	Custom	1



Client:	OceanaGold Corporation
Project:	Macraes Phase 4 (MP4) Development
Location:	Golden Bar
Analysis description:	Golden Bar Section 3.slmd - Pit Lake East Wall - Block Slide, Master Scenario

Job No:	PSM0071	By:	JS	Date:	23/03/2023	Scale:	1:5000	Run ID:	Master Scenario