

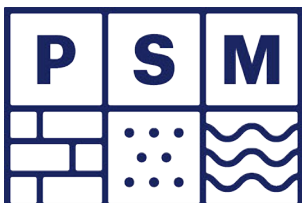


Macraes Phase Four Project

Waste Rock Stacks - Geotechnical Stability

PSM71-375R

21 August 2026



Executive Summary

The Macraes Phase Four (MP4) seeks to extend the life of OceanaGold New Zealand Limited (OGNZL) Macraes Operation in East Otago until at least 2039. The Project, which will enable ongoing gold production at a rate of approximately 130,000 ounces per annum, is identified as a Listed Project in Schedule 2 of the Fast-track Approvals Act 2024 (FTAA) as a project providing significant national or regional benefits.

This report presents an assessment of the geotechnical aspects of the proposed ex-pit waste rock stacks (WRS) to inform the Assessment of Environmental Effects in support of The Project's substantive application under the FTAA. This report documents the geotechnical model and assesses global stability of proposed ex-pit waste rock stacks. It includes an assessment of end-of-mine life and long term (post closure) stability and identifies potential interactions with open pit excavations and public roads for the following areas:

- Coronation North WRS Height Raise (CNWRS2 and CNBF2);
- Trimbells (TWRS2);
- Frasers West (FWWRS2); and
- Golden Bar (GBWRS).

The geotechnical model developed for this assessment is based on previous waste rock assessments completed by PSM and others, OGNZL fault models, historic performance of existing waste rock stacks and PSM's long-term experience with waste rock stack behaviour at Macraes.

PSM has undertaken detailed geotechnical assessment for each of the proposed ex-pit waste rock stacks to identify the key geotechnical hazards, potential failure modes and appropriate mitigation strategies. Two-dimensional limited equilibrium analyses were completed at critical locations on waste rock stack slopes to assess end-of-mine-life and long-term (post closure) stability, including pit lake filling where appropriate, for both static and seismic scenarios. The stability assessment also considers the sensitivity of the model to variability in groundwater scenarios (dry vs partially saturated) and foundation conditions (well prepared foundation vs potential for soil in the foundation, and potential impact of geological structure in the underlying bedrock).

Design acceptance criteria adopted for this assessment are:

- Static – minimum Factor of Safety of 1.3, under a reasonably expected combination of adverse events.
- Pseudo static (seismic):
 - Operating Basis Earthquake (1:150 years AEP) – minimum Factor of Safety of 1.1; and
 - Maximum Design Earthquake (1:2,500 years AEP) – minimum Factor of Safety of 1.0, or with satisfactory performance in terms of settlement and slope deformation.

Additionally, it is recommended that:

- Waste rock stacks shall be designed in accordance with industry best-practice, and to withstand a maximum design earthquake without catastrophic failure, noting that some deformation is allowable provided the structure retains a state of long-term stability post event.
- A design report shall be prepared for each new waste rock stack by a suitably qualified professional prior to the commencement of construction.

The outcome of the stability assessment is summarised in the following points:

- Static conditions:
 - All proposed waste rock stacks (except one section) achieved the proposed design acceptance criteria for overall stability for all groundwater and foundation scenarios.
 - o The exception, Trimbells waste rock stack where located above the Coronation North 8 pit, should be flattened to 30° to achieve this requirement.
- Seismic conditions:
 - OBE (1 in 150 year return period) – all scenarios met the proposed design acceptance criteria; and
 - MDE (1 in 2,500 year return period) – all waste rock stacks (except one section) achieved the proposed design acceptance criteria

- o The exception, Trimbells WRS as noted for static conditions.

Additional design and construction considerations are addressed in this report and summarised as follows:

- The implications of climate change to long-term slope stability have been considered by adopting an elevated groundwater profile to simulate groundwater response to high intensity rain events.
- The potential for crest regression impacting the toe of proposed and existing waste rock stacks has been identified. Typically, this is not expected to be an issue as the proposed waste rock stack designs are typically offset at least 60 m from the crest of the proposed pits. In some locations where waste rock stacks are closer, there is sufficient flexibility in their geometry to enable localised design modification to prevent undercutting of the waste rock stack toe or overloading of the pit crest.
- Foundation treatments, including grubbing/ripping of the foundation and terracing into sloping foundations, should be undertaken to provide additional confidence in long-term stability outcomes.
- Sub-surface drainage (involving the placement of free-draining rock) should be employed in the base of natural gullies to improve foundation drainage of the WRS.
- The proposed post mining Matheson Road is expected to be feasible as a 'fine weather four-wheel drive track' although the following measures are recommended to mitigate safety issues.
 - The road should be offset from the crest of the pit to mitigate the impact of potential crest breakback undermining the track;
 - Adopt safety/separation bunds along the open pit side of the track to mitigate the risk of vehicles leaving the track and entering the pit void;
 - Surface water drainage design is recommended where the track crosses waste rock stacks to mitigate concentrated surface water flows and infiltration of water into the waste rock stack; and
 - Cut slope batter angles for sections of the track cut into the slopes of WRS should be designed to mitigate the risk of local instability.

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This document has been produced for New Zealand consenting purposes only. Information contained herein must not be relied on for investment purposes.

Abbreviations

Abbreviation	Description
AEE	Assessment of Environmental Effects
AEP	Annual Exceedance Probability
BF	Backfills
CN4	Coronation North Stage 4
CN6	Coronation North Stage 6
CO7	Coronation Stage 7
CO8	Coronation Stage 8
DAC	Design Acceptance Criteria
DCC	Dunedin City Council
FF	Footwall Fault
FoS	Factor of Safety
FROP	Frasers Open Pit
FTAA	Fast Track Approvals Act 2024
FTSF	Frasers Tailings Storage Facility
FWWRS	Frasers West Waste Rock Stack
GB	Golden Bar
GB3	Golden Bar Stage 3
GPUG	Golden Point Underground mine
GSI	Geological Strength Index
HMSZ	Hyde-Macraes Shear Zone
HWS	Hanging Wall Shear
LE	Limited Equilibrium
LOM	Life of Mine
MDE	Maximum Design Earthquake
MEEA	Murphy's Ecological Enhancement Area
MGPG	Macraes Gold Project Grid
MWMS	Macraes Mine Water Management System
MP4	Macraes Phase Four Project
MTI	Mixed Tailings Impoundment
NSHM	National Seismic Hazard Model
NZTM	New Zealand Transverse Mercator 2000
NZVD	New Zealand Vertical Datum
OBE	Operational Basis Earthquake
OGNZL	OceanaGold (New Zealand) Limited
ORC	Otago Regional Council
PGA	Peak Ground Acceleration
SI	Site Investigation
SP	Southern Pit
TSF	Tailings Storage Facility
UCS	Unconfined Compressive Strength
WDC	Waitaki District Council
WRS	Waste Rock Stack

1. Introduction

OceanaGold (New Zealand) Limited (OGNZL) currently undertakes open pit and underground gold mining operations at the Macraes Operation located at Golden Point Road, Macraes Flat, East Otago. As part of their ongoing operations, OGNZL continually review the remaining life of the Macraes Operation in light of updated knowledge of the gold resource and the economics of mining.

Reflecting recent exploration success and optimisation work, together with higher gold prices, the Macraes Phase Four Project (MP4 or the Project) seeks to extend the life of mining at the Macraes Operation until at least 2039. The Project, which will enable ongoing gold production at a rate of approximately 130,000 ounces per annum, is identified as a Listed Project in Schedule 2 of the Fast-track Approvals Act 2024 (FTAA) as a project providing significant national or regional benefits.

To support the development of the substantive application for the Project, OGNZL has engaged PSM to provide an assessment of the Project's effects on geotechnical aspects of the proposed ex-pit Waste Rock Stacks (WRS) and, to the extent required, identify any necessary management and operation measures to address any such effects.

1.1 Scope

The scope of this report is to assess geotechnical aspects of the proposed ex-pit Waste Rock Stacks (WRS) to inform the Assessment of Environmental Effects (AEE) in support of the Project's substantive application under the FTAA. Ex-pit WRS's are defined as WRS's constructed outside the footprint of an existing or proposed open pit excavation. This report documents the site geotechnical model and assesses global stability of proposed ex-pit WRS's. This assessment includes review of end-of-mine life and long term (post closure) stability plus potential interactions with open pit excavations, public roads and nominated consent boundaries for the following areas:

- Coronation North WRS Height Raise (CNWRS2 and CNBF2);
- Trimbells (TWRS2);
- Frasers West (FWWRS2); and
- Golden Bar (GBWRS).

Specific details of our scope are summarised as follows:

- Refine existing geotechnical models for WRS material characteristics and design parameters based on:
 - Available data, including borehole logs, geomechanical testing, existing slope performance and survey monitoring (deformation and settlement);
 - OGNZL geological model;
 - Modelled fault structures based on historical mapping and boreholes;
 - Groundwater level and pore pressure estimates, and field observations provided by OGNZL personnel; and
 - PSM's previous experience, including:
 - o Slope performance of previous cutbacks at each site and waste rock stacks; and
 - o Back analyses of geotechnical parameters for rock mass and fault shear strengths.
- Completion of geotechnical stability modelling including:
 - Two-dimensional (2D) limit equilibrium (LE) stability analyses along critical sections of the proposed WRS geometries, with the focus on end-of-mine-life and long-term (post closure) stability including pit lake filling where appropriate for both static and dynamic (seismic) scenarios.
- Document assessment findings for inclusion in the AEE to support Resource Consent and Wildlife Permit applications for the wider MP4 FTAA Project.

As part of a broader FTAA study, PSM has completed geotechnical assessments for associated site elements which are captured in the following documents:

- In-pit backfills – PSM71-363R;
- Open pit extensions – PSM71-363R; and
- Golden Point Underground Mine (GPUG) – PSM71-373R.

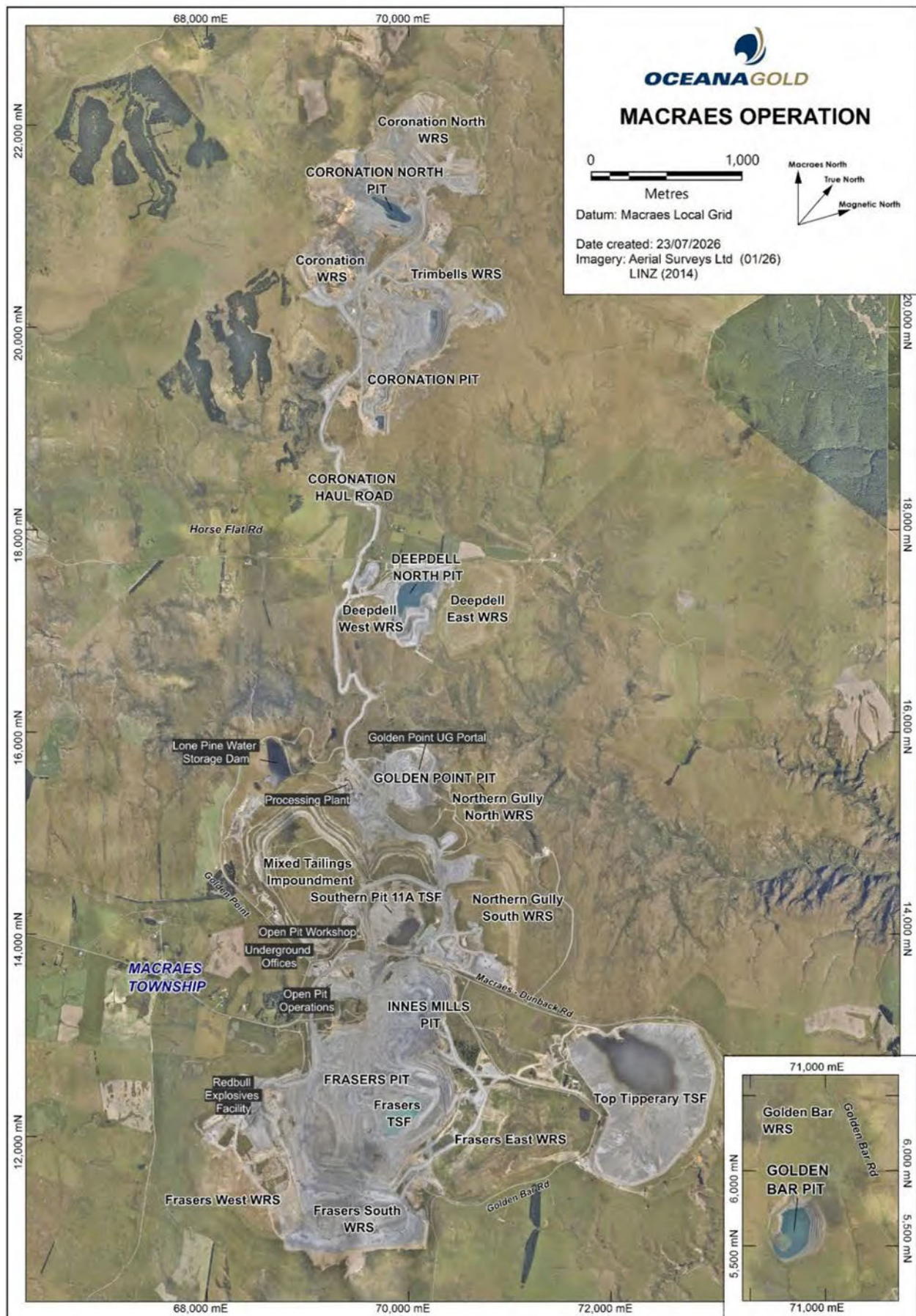
1.2 Site Location and Description

OGNZL owns and operates the Macraes Operation at Macraes Flat, approximately 30 km northwest of Palmerston in the Otago Region. The Macraes Operation is the largest gold mine in New Zealand and, since commissioning in 1990, has produced more than 6 million ounces of gold.

Macraes Flat is situated on an elevated plateau at approximately 500 m above sea level. The plateau is flanked by the Taieri Ridge to the northwest, Shag Valley and Horse Range to the east, and the coastal hills and extinct volcanic cones of Palmerston and Waikouaiti to the southeast. Macraes Road provides access to Macraes Flat and the Macraes Operation, connecting to State Highway 85 to the east and State Highway 87 (SH87, the Middlesmarch–Hyde Road) to the west.

The environment within and surrounding the Macraes Operation has been shaped by historic and current mining activities. Inset 1 shows the arrangement of the major mine features at the Macraes Operation. In summary, the current components of the Macraes Operation include:

- Numerous open pits (both operational and non-operational);
- Two underground mines (Fraser's, now closed, and Golden Point, which is actively mined);
- Waste rock stacks at various stages of operation and rehabilitation;
- A network of haul roads and general mine service tracks;
- A Processing Plant;
- Five tailings storage facilities (three inactive, one active but nearing capacity, and one under construction and currently receiving tailings);
- An extensive network of water management infrastructure, including diversion drains, silt ponds, sumps, pit lakes, and freshwater storage reservoirs;
- Two consented but not yet constructed water storage reservoirs (Camp Creek Dam and Coal Creek Dam); and
- Associated infrastructure supporting ongoing operations, including district roads, powerlines, workshops, offices, and associated water and amenity facilities.



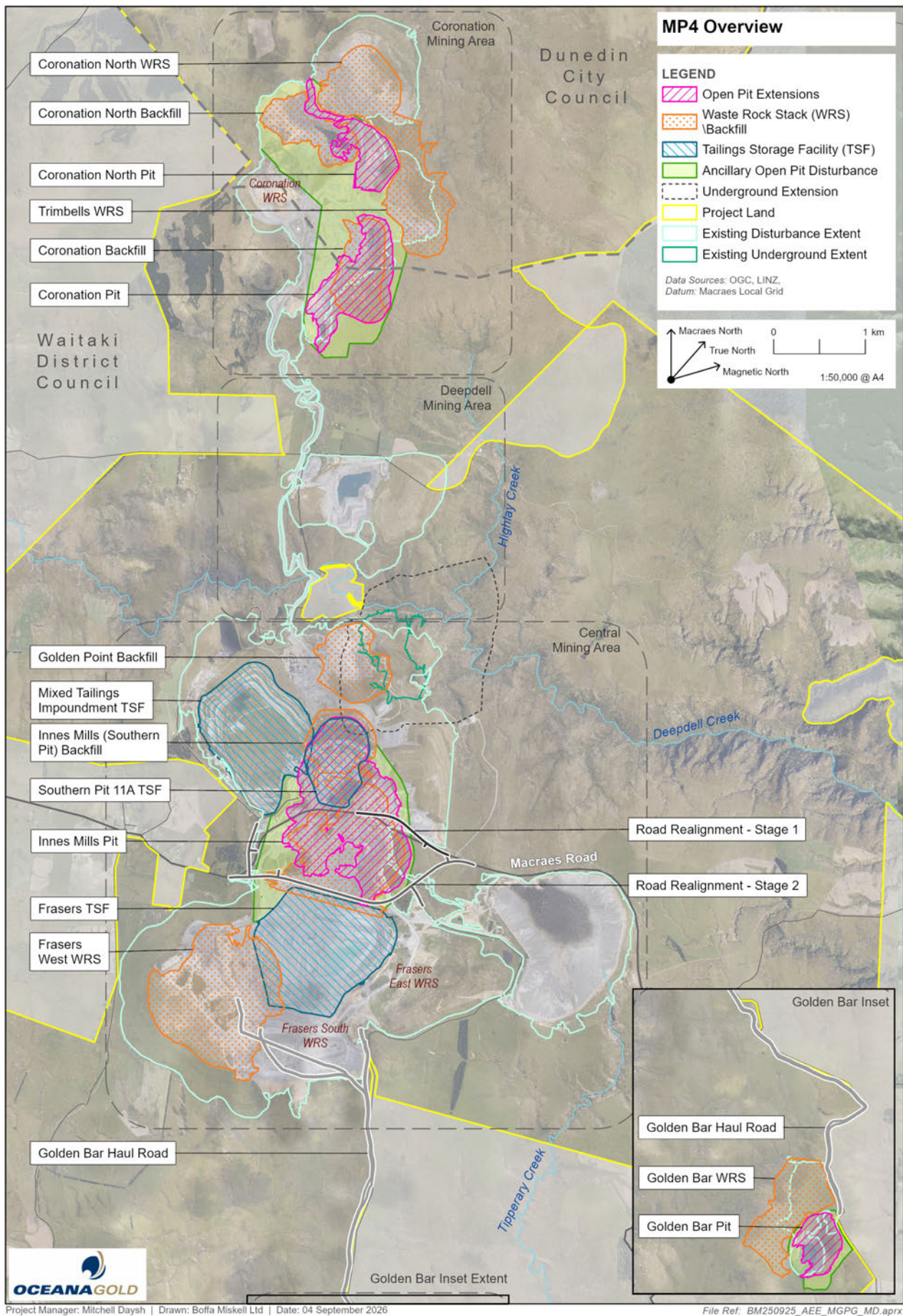
Inset 1: Existing site layout at the Macraes Operation (as of July 2026).

1.3 Project Overview

The Project is made up of the following proposed key activities:

- **Open pit extensions** at Coronation, Coronation North, Innes Mills, and Golden Bar.
- **Underground mine expansion** through further development of the Golden Point Underground mine (GPUG).
- **Tailings management**, including:
 - Construction of the Frasers Tailings Storage Facility (FTSF) Stage 3 to accommodate a total tailings storage of up to 153 Mt of tailings; and
 - Hydraulic mining and relocation of tailings from the Mixed Tailings Impoundment (MTI), Southern Pit Option 10 TSF (SP10), and Southern Pit Option 11A TSF (SP11A) to FTSF.
- **Waste rock disposal**, including increased storage capacity within open pits and at existing waste rock stacks at Coronation, Coronation North, Innes Mills, Golden Bar, Golden Point, and Frasers.
- **Water management infrastructure and operations**, including:
 - Construction of Camp Creek and Coal Creek water storage dams for flow and water quality management;
 - Construction, operation and maintenance of a Water Treatment Plant; and
 - Ongoing operation and maintenance of the Mine Water Management System (MWMS).
- **Infrastructure and roading works**, including:
 - Realignment of Macraes Road in two stages; and
 - Relocation of the Open Pit Mining Workshop.
- **Ecological enhancements**, including establishment of:
 - Murphys Ecological Enhancement Area (MEEA) near Murphys Creek, including predator-proof fencing, access tracks, and site facilities;
 - Mt Highlay restoration area;
 - Cranky Jims Link shrubland enhancement area;
 - Murphys Link tussock protection area; and
 - Additional compensation measures for residual ecological impacts.
- **Mine closure and rehabilitation activities**, including rehabilitation of mining landforms, creation of pit lakes, dry capping of tailings storage facilities, and revegetation in accordance closure objectives.

An overview of the proposed activities which make up the Project is shown in Inset 2 below.



Inset 2: MP4 Overview Plan.

1.4 Project Datum

The following datums are used for all work undertaken as part of this assessment:

- Horizontal datum: Macraes Gold Project Grid (MGPG) which is rotated approximately 45° west of true north;
- The magnetic declination at Macraes (45.38°S, 170.43°E) is approximately +25° east of True North; and
- Elevation is shown as metres RL per NZ vertical datum (NZVD 2016).

1.5 Data

Data provided by OGNZL and applicable to this assessment is listed in Appendix A.

2. Proposed Waste Rock Stacks

The following points summarise the proposed ex-pit MP4 WRS assessed in this report. Inset 2 presents proposed WRS footprints. The proposed capacity, footprint area and height for each WRS is presented in Table 1.

- Coronation North and Trimbells WRS – all waste rock from the Coronation and Coronation North open pit extensions will be disposed of as backfill to the respective pits or to Coronation, Coronation North and Trimbells WRS. To accommodate the additional capacity required, the consented capacity of all three WRS will be increased. The height of Coronation, Coronation North, Coronation North Backfill and Trimbells WRS will be increased. The Trimbells WRS footprint will be increased by extending it to the east.
- Frasers West WRS – excess waste rock from the mining of Innes Mills Pit extension will be disposed of within a new raise of Frasers West WRS.
- Golden Bar WRS – all waste rock from the Golden Bar open pit extension will be disposed of within the Golden Bar WRS that will be extended to the northwest.

Table 1 – MP4 waste rock disposal locations

Waste Rock Stack	Existing Design Capacity (Mm ³ (Mt))	Proposed Design Capacity (Mm ³ (Mt))	Additional MP4 Storage (Mm ³ (Mt))	Existing Maximum Design Height (mRL)	Proposed Maximum Design Height (mRL)	Additional MP4 height (m)
Coronation North WRS (CNWRS2)	51.22 (111.67)	67.11 (146.30)	15.89 (34.64)	640	670	30
Trimbells WRS (TWRSS2)	17.68 (38.54)	34.35 (74.88)	16.67 (36.33)	670	740	70
Coronation North Backfill (CNBF2)	9.2 (19.3)	24.2 (52.97)	15.10 (32.92)	640	670	30
Frasers West WRS (FWWRS2)	154.93 (337.75)	198.25 (432.19)	43.32 (94.43)	570	610	40
Golden Bar Waste Rock Stack (GBWRS)	6.77 (14.76)	22.12 (48.11)	15.35 (33.35)	550	600	50

3. Geotechnical Model

The following section describes the geotechnical model adopted in this assessment. The model is based on existing site investigations, site visit observations, and PSM's experience working at the Macraes Operation since 1993. The section is sub-divided into:

- A broad overview of the regional geology.
- Descriptions of the various components of the geological model including:
 - Waste rock material descriptions and geotechnical design parameters;

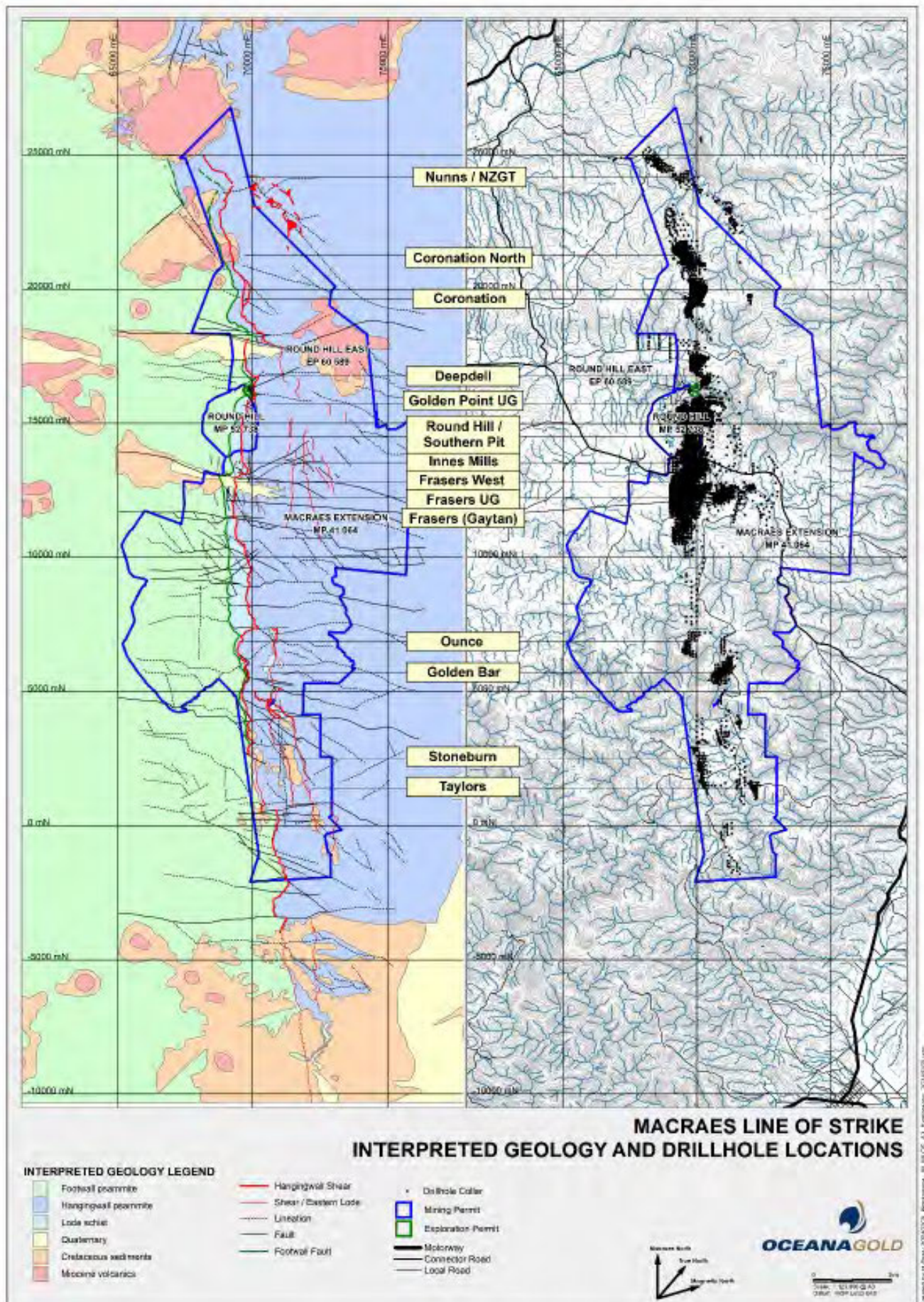
- Foundation conditions including surficial soil, weathered schist, unweathered schist and geological structures (i.e. faults); and
- Groundwater conditions.
- Summary of site-specific conditions for the four WRS considered by this assessment with reference to the above model components.

3.1 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 trending Hyde-Macraes Shear Zone (HMSZ) which has a strike length of at least 35 km. The HMSZ thickness varies from 5 m 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 HMSZ dips gently to the east from Stoneburn in the south to Coronation in the north. In the north from Coronation North to Nunns the HMSZ turns slightly to dip to the northeast, Inset 3.

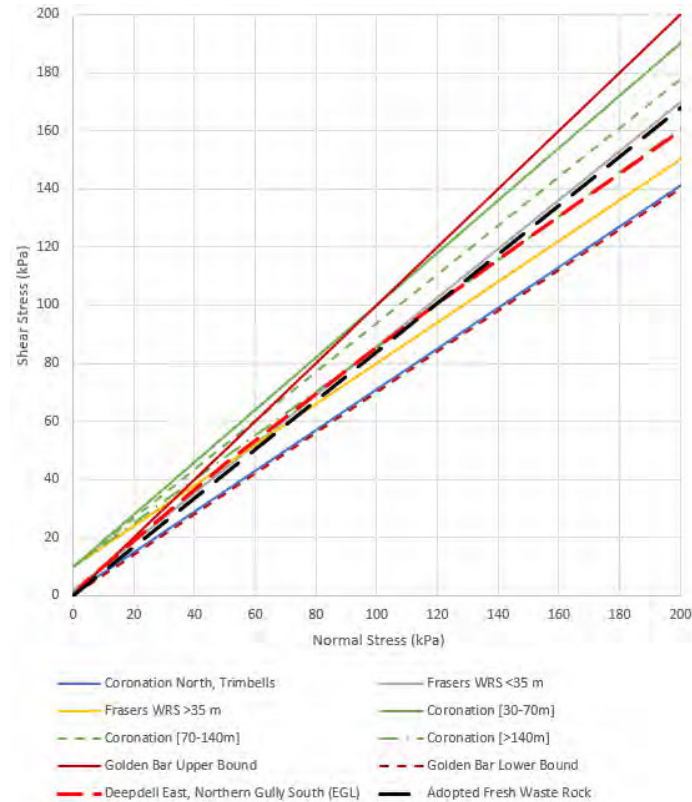


Inset 3: Plan of the Macraes Operation showing various pits and deposits and the HMSZ.

3.2 Waste Rock Material

Waste rock material at the Macraes Operation has been characterised and assessed as part of a past WRS reviews completed by PSM. The study concluded the following:

- Waste rock placement is typically undertaken using conventional paddock dumping and end-tipping methods from tip heads between 5 and 30 m high. The material can become segregated during placement with coarser rock near the bottom and finer materials at the top of the tip head. Heavy mining equipment (dump trucks and dozers) provides compaction to the top of each lift.
- Material description:
 - Waste rock material typically comprises a broad gradation of unweathered pelite-psammite waste rock fragments with some silts and sands;
 - Rock fragments are occasionally over a metre in size, but are generally 10 – 400 mm; and
 - Observations show waste rock to be free draining on an overall slope scale.
- Design shear strengths for waste rock fill varied for different WRS and between consultants (EGL and PSM). Inset 4 graphically presents the range of design shear strengths adopted in previous studies. The following shear strengths assessed by PSM have been adopted for this assessment:
 - Fresh Waste Rock:
 - o Unit Weight, γ 20 kN/m³
 - o Cohesion, c' 0 kPa
 - o Friction angle, ϕ' 40°
 - Oxidised Waste Rock:
 - o Unit Weight, γ 18 kN/m³
 - o Cohesion, c' 10 kPa
 - o Friction angle, ϕ' 30°
- PSM has assumed that blast fragmentation has remained unchanged over the years and therefore the particle size distribution and material performance is relatively consistent.



Inset 4: Shear stress vs normal stress plot of the various waste rock shear strengths adopted for previous WRS designs.

3.3 Foundation Conditions

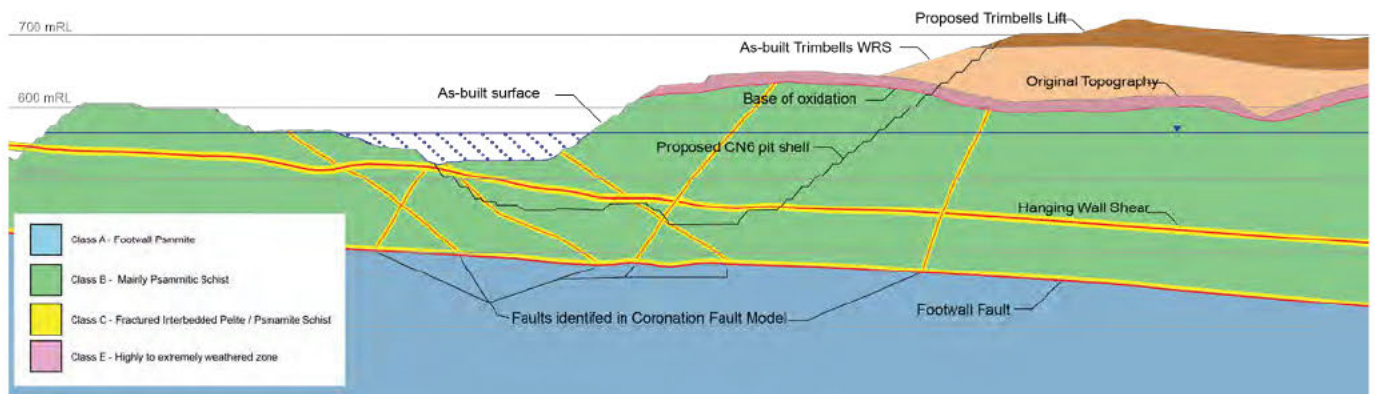
3.3.1 Rock Mass Model

The typical foundation conditions for WRS are described as follows:

- A thin 'topsoil'/surficial soil, assumed to be loess derived, is present across the site:
 - It is described as a very stiff, light yellow grey silt, sandy silt or silty fine sand.
 - Investigations at Back Road WRS, Deepdell East WRS, and Top Tipperary Tailings Storage Facility (TTTSF) identified typically 0.2 to 0.5 m of surficial soil, with a local maximum thickness of 4.0 m (EGL, 2019).
 - Yates and Russell (2023) describe the shear strengths of loess material at Banks Peninsula in Canterbury. These materials are considered similar in nature to the surficial soils at Macraes and the following design parameters have been adopted:
 - o Unit Weight, γ 20 kN/m³
 - o Cohesion, c' 15 kPa
 - o Friction angle, ϕ' 35°
 - Standard construction practice is to grub or remove surficial soils prior to WRS construction to prevent a low shear strength material forming a basal sliding path below the WRS. Where proposed WRS are founded on previously unmodified ground, this practice will occur prior to placement of waste material.
 - However, in some locations the proposed WRS designs extend the footprint of existing WRS meaning it is common for the new WRS to be built on top of previously placed waste material. It is not possible to verify whether grubbing or removal of surficial soils has been complete for previously constructed WRS. Hence, for this assessment, a lower strength, 0.5 m thick, soil layer is explicitly included for sensitivity analyses, i.e. foundation conditions where the surficial soil is assumed to be present.
- Below the surficial soil, the foundation material is Weathered Schist (Class E) – an oxidised, highly foliated schist rock mass dominated by semi-psammite with small amounts of psammite and semi-pelite, with the following shear strength adopted:
 - Weathered Schist:
 - o Unit Weight, γ 25 kN/m³
 - o Cohesion, c' 100 kPa
 - o Friction angle, ϕ' 38°
 - Depth to the base of the weathered schist varies across the site but is typically 20 to 30 m from the pre mining ground surface. For the purposes of this assessment the Base of Oxidised (BOO) surfaces developed by OGNZL have been used to define the base of the weathered schist.
- Below the base of weathering, rock mass conditions typically comprise:
 - A semi-psammitic schist 10 to 50 m above the Hanging Wall Shear (HWS) of fair to good quality with medium to high intact strength (Class B).
 - Within the HMSZ (between the HWS and the Footwall Fault (FF)) the mainly pelitic schist is of fair to good quality with low to medium intact strength. Class B is also adopted for this zone.
 - A psammitic schist below the FF of good to very good quality with medium to high intact strength (Class A).
 - The pelitic and semi-psammitic schist associated with faulting of generally very poor to poor quality with low to medium intact strength (Class C). This is typically modelled as a 5 m wide halo associated with regional faults.
 - Discrete fault zones comprising fault disturbed rock, such as the FF, are classified as Class D.
 - Table 2 presents typical material characteristics for the materials discussed above and Inset 5 presents a schematic representation of typical rock mass distribution.

Table 2 – Summary of Rock Mass Classes within the Macraes Operation

Class	Rock Mass	Description	Estimated Rock Strength	RQD	Typical Occurrence
A	Footwall Psammite	Lithified rock with frequent defects and rare shearing	Medium to high	Good: 75 – 90%	Below FF
B	Hanging Wall - Mainly Psammitic Schist	Fractured rock with frequent defects and some shearing	Low to high	Fair: 60 – 70%	Above HWS
C	Fractured Interbedded Pelite/Psammite schist	Fractured to fragmented rock with frequent shearing	Low to medium	Poor to fair: 40 – 60% with zones of very poor: 0 – 10%	Halo up to 5 m wide associated with regional faults
D	Fault Zones	Fault Zones	Extremely low to very low	Very poor: <15%	Include FF and zone of poor rock mass above
E	Weathered Schist	High to extremely weathered zone	Extremely low to soil	Very poor: 10 – 20%	Ranges between 30 – 70 m below surface



Inset 5: Schematic cross section through typical rock mass at Coronation North facing north.

3.3.2 Structural Geology

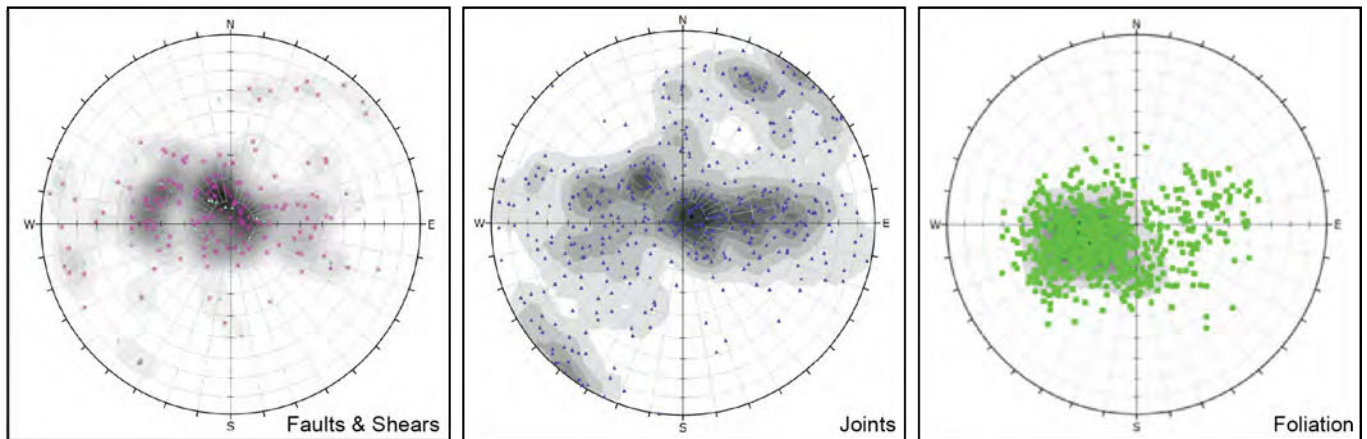
Generalised structural geology trends at Macraes can be summarised as follows:

- Foliation showing a broad range of dips from flat to moderately dipping towards the east (average 15 to 45°/100°) – see the right stereoplot Inset 6. The set parallels the FF and Hanging Wall HWS of the HMSZ.
- Mine and regional scale faults that dip moderately to steeply towards the east – see the left stereoplot Inset 6. This fault set includes the Northern Gully Fault and East Fault.
- Batter and mine scale faults and shears showing a broad range of dips from flat to moderately dipping towards the west – see the left stereoplot Inset 6. This fault set includes Ramp Shears which are typically truncated by the easterly dipping faults, described above.
- Joints are either:
 - Flat to steeply dipping towards the west with a conjugate set dipping towards the east; and
 - Moderately to steeply dipping to the north-east with a conjugate set dipping to the south-west.
 - See centre stereoplot Inset 6.

This information is incorporated into the stability modelling as follows:

- Faults (mine to regional scale) are included in the models based on the location and orientation of individual faults included in fault models developed by OGNZL, refer to Section 3.3.3 for further discussion; and

- Given the schist bedrock has a well-defined foliation fabric and exhibits strong strength anisotropy, a sensitivity scenario adopting an anisotropic strength function for the foundation materials (both weathered and unweathered schist) has also been completed. This scenario has typically been applied where foliation may daylight in the foundation beneath the WRS (i.e. foliation dips towards a pit slope or incised gully).



Inset 6: Stereoplots showing typical orientations of various geological structures.

3.3.3 Geological Faults

As part of this assessment, PSM reviewed the potential stability impacts due to known and inferred geological faults within the foundations of each of the WRS. Fault traces were incorporated into stability models to assess whether their presence may affect global stability. Details of the modelled faults are as follows:

- Fault traces adopt locations and orientations as identified and interpreted from OGNZL fault models;
- The typical fault geometry is modelled as a 0.5 m wide zone of fault material with a 5 m wide halo of Class C material above and below; and
- Where the Footwall Fault (FF) is present, a 0.5 m wide basal zone of low strength faulted material is inferred with a 5 m wide zone of Class C above.

The FF is a north-south trending regional scale fault typically dipping between 10° and 20° towards the east and delineates the base of the mineralised zone at the Macraes Operation. All mining across the Macraes Operation occurs above the FF, and some pits (such as Frasers and Coronation North) have experienced varying levels of west wall deformation relative to pit size, depth and final offset to the FF. Displacement is directly related to scale of active mining at the toe and has been managed successfully for 30 years through monitoring and operational controls.

The condition of the sliding surface results in a very low friction angle, creating a highly sensitive structure that responds to small changes in pore pressure and loading. The FF is potentially located in the foundation of the Frasers West WRS expansion, and its presence has been considered in the applicable slope stability analyses (FRW_WRS_Section 3).

3.4 Ground and Surface water

There are no piezometers available to inform groundwater conditions within any existing WRS. However, the following site observations suggest that groundwater pressures are likely to be low and the waste rock generally free draining:

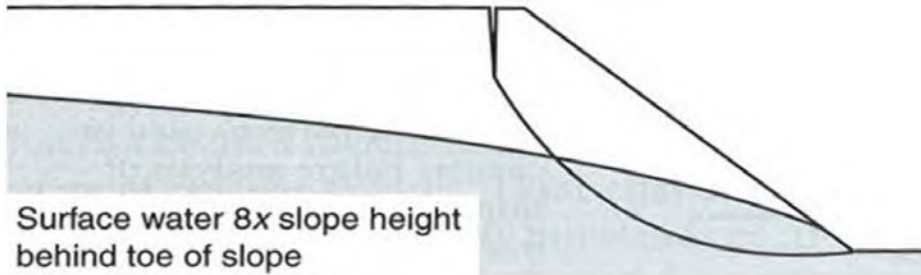
- As expected, seepage is observed at the base of WRS's where infilling existing gullies, discussed in further detail in Section 4,
- No other localised seepage points are observed higher on the slopes of existing WRS's (such as at the boundary between successive lifts for example).

For this assessment, the following two groundwater scenarios have been adopted:

- Dry:** the groundwater surface assumes:
 - WRS are free draining;
 - Surface water from rainfall events infiltrates and seeps through the WRS material accumulating on the less permeable natural surface at the base of the WRS before flowing away;

- A groundwater level of 1.3 m above the base of a WRS has been adopted, about double the annual rainfall at Macraes (OceanaGold, 2015); and
- The foundation is saturated.
- **Partially saturated:** the groundwater surface is assumed to be:
 - Curved from the WRS toe to a point at the WRS surface approximately 8x the WRS height, refer Inset 7. Based on Hoek and Bray (1981).

Both these assumptions are considered conservative.



Inset 7: Common groundwater assumption adopted for some WRS designs.

3.4.1 Climate Change

The implications of climate change to long-term slope stability have been raised as part of the wider project review. This particularly relates to high intensity rain events and a rapid increase in groundwater levels within cut and fill slopes. The following points outline how the impact on the groundwater profile due to climate change has been considered in this assessment:

- The character of the WRS material is typically coarse and granular and highly permeable. Rainfall will be dissipated relatively quickly, leaving minimum accumulation of internal pore pressure that may affect global stability; and
- 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).

4. Existing WRS Performance

The following points summarise the general condition of the existing Macraes WRS's inspected during a site visit undertaken by PSM in January 2024:

- No evidence of global instability was observed;
- WRS slopes are generally well vegetated with grass, particularly on the older more established WRS's;
- Sediment retention ponds are installed near the base of many gullies downstream of the WRS's to collect runoff and seepage for sediment capture before the water flows into the natural watercourse; and
- As expected, flows were observed at the toe of most WRS's where an existing gully has been backfilled. Examples indicating the presence of seepage include:
 - Visible flow from the toe of the batter;
 - Greener grass along base of the gully downstream of WRS's;
 - Soft or 'boggy' ground downstream to the toe of the WRS's; and
 - Water ponding within the sediment retention ponds installed in the downstream gullies.

5. Geotechnical Stability Analysis

5.1 General

Limit equilibrium (LE) slope stability analyses considering static and seismic cases have been completed using the Rocscience software *Slide2D* adopting the GLE-Morgenstern-Price method for analyses of circular and non-circular failure mechanisms.

Ten stability sections were analysed (and a further section reviewed) across the proposed MP4 WRS locations. Figures 1 to 3 presents stability section locations. Critical sections were selected to assess representative stability condition for each WRS, i.e. highest WRS elevation and ground surface sloping away. Table 3 presents a summary of the selected stability sections.

The stability analyses were completed to confirm the proposed MP4 WRS will achieve a satisfactory end-of-mine life and long term (post closure) stability outcome. Slope stability evaluation criteria are outlined in further detail in Section 5.4.

Table 3 – Summary of 2D LE WRS Cross Sections

Project Element	Project Area	Section Line	Design Surface	Comment
Waste Rock Stacks	Coronation North	CN_WRS_Section 1	CNWSR1 (existing Coronation North WRS), CNWSR2	- Section line to assess stability of the highest overall section of the WRS, includes the as-built geometry of the existing CNWSR1 - Details: maximum elevation of CNWSR2 is 670 mRL with an overall slope face height of approximately 180 m (from toe to crest including existing CNWSR1) and overall slope angle ~17°
		CN_WRS_Section 2	CN6 NE wall, CNWSR1, CNWSR2	- Section line to assess potential interaction of CNWSR2 with the crest of the CN6 NE wall, approximately 50 m offset behind the pit crest. WRS is constructed on top of existing CNWSR1 - Details: maximum elevation of CNWSR2 is 670 mRL with an overall slope face height of approximately ~90 m (from toe to crest of CNWSR2 geometry only) and overall slope angle ~16° - Same section line as CN_OPE_Section 3
		CN_WRS_Section 3	CNWSR1, CN6 outlet channel	- Section line above proposed CN6 outlet channel. To assess potential impact of WRS instability on the channel. - Details: maximum elevation of CNWSR2 is 670 mRL with an overall slope face height of approximately ~100 m (from toe to crest) and overall slope angle ~16°
		CN_WRS_Section 4	CNBF2, CN6 outlet channel	- Section line above proposed CN6 outlet channel. To assess potential impact of WRS instability on the channel. - Details: maximum elevation of CNBF2 is 665 mRL with an overall slope face height of approximately 70 m (from toe to crest) and overall slope angle ~8°
	Trimbells	TWRS_Section 1	TWRS1 (existing Trimbells WRS), TWRS2	- Section line to assess stability of the highest overall section of TWRS2, includes the as-built geometry of the existing TWRS1 - Details: maximum elevation of TWRS1 at this section is 715 mRL (maximum overall elevation 740 mRL) with an overall slope face height of approximately 160 m (from toe to crest) and overall slope angle ~17°
		TWRS_Section 2	TWRS1, TWRS2, CO8	Same section line as CO_OPE_Section 5, section developed to assess geometry and interaction with the CO8 pit slope. Not progressed to stability analysis given overall height is significantly less than TWRS_Section 1 and interaction with the pit is captured by CO_OPE_Section 5 (cross section developed for the open pit expansion component of this study).
		TWRS_Section 3	TWRS1, TWRS2, CN6	Same section line as CN_OPE_Section 1, section developed to assess geometry and interaction of the existing and proposed Trimbells WRS above the CO8 pit slope. The CO8 model mines the existing WRS material resulting in a steep WRS slope. This section has been developed to assess global stability of this 'mined' WRS slope and an optimised slope angle if required.
	Frasers West WRS	FRW_WRS_Section 1	FWWRS1 (existing Frasers West WRS), FWWRS2	- Section line to assess stability of FWWRS2 where it extends into the base of a gully - Details: maximum elevation of FWWRS2 is 610 mRL with an overall slope face height of approximately ~105 m (from toe to crest including existing FWWRS1) and overall slope angle ~13° - Includes the as-built geometry of the existing FWWRS1 - Potential interaction of FR W wall and Stage 3 realignment of Macraes-Dunback Road, approximately 240 m offset from toe of FWWRS2 and on existing FWWRS1
		FRW_WRS_Section 2	FWWRS1, FWWRS2	- Section line to assess stability of the highest section of FWWRS2, includes the as-built geometry of FWWRS1 - Details: maximum elevation of FWWRS2 is 610 mRL with an overall slope face height of approximately ~140 m (from toe to crest including existing FWWRS1) and overall slope angle ~15° - Includes the as-built geometry of the existing FWWRS1
		FRW_WRS_Section 3	FWWRS1, FWWRS2, FROP W wall	- Section line to assess stability of the eastern slope of FWWRS2 where it extends into the existing Frasers open pit - Details: maximum elevation of FWWRS2 is 610 mRL with an overall slope face height of approximately ~150 m (from toe to crest including extension of toe into the existing Frasers open pit) and overall slope angle ~14° - Includes the as-built geometry of the existing FWWRS1 - Includes tailings to 520 mRL within the FTSF. Closure/long-term scenario.
	Golden Bar	GB_WRS_Section 1	GBWRS1 (existing Golden Bar WRS), GBWRS2, GB3	- Section line to assess stability of the highest section of GBWRS1 - Details: maximum elevation of GBWRS2 is 600 mRL with an overall slope face height of approximately ~170 m (from toe to crest) and overall slope angle ~22° - Potential interaction with GB3, approximately 60 m offset

The following scenarios were analysed for each section:

- Foundation condition:
 - WRS founded directly on Weathered Schist;
 - WRS founded on 0.5 m of Surficial Soil overlying Weathered Schist; and
 - Anisotropic strength foundation materials where foliation may daylight in the foundation beneath the WRS (i.e. foliation dips towards a pit slope or incised gully).
- Groundwater scenario
 - Dry: the groundwater surface assumed to be 1.3 m above the base of a WRS, $H_u = 1$.
 - Partially saturated: the groundwater surface is assumed to be curved from the WRS toe to a point at the WRS surface approximately 8x the WRS height.
- The following seismic cases were applied for each foundation condition listed above:
 - Case 1: Static.
 - Case 2: Operating basis earthquake (OBE), 150 year return period.
 - Case 3: Maximum design earthquake (MDE), 2,500 year return period.
- Closure conditions, adopted where applicable
 - Pit lake levels:
 - Coronation North – 562.5 mRL (CN6 outlet level).
 - Coronation – 625.0 mRL (CO7 outlet level).
 - Golden Bar – 500 mRL.
 - Frasers TSF
 - Dry cap surface – 520 mRL.

This level has been adopted based on the proposed final tailings surface at approximately 519.5 mRL on the southeastern side of the FTSF, grading downs towards the northeast to approximately 509 mRL. An additional 0.5 m of dry cap above the final tailings surface raises the final level to 520 mRL.

The following failure mechanisms and search functions were applied:

- Rock mass/circular failure – searches for circular failure mechanisms through the WRS using the auto-refine search method;
- Non-circular – searches for a non-circular failure through the WRS using the auto-refine method; and
- Basal sliding/non-circular for specific faults – line search method used to target sliding along the FF at Frasers West (FRW_WRS_Section 3).

5.2 Material Strength Parameters

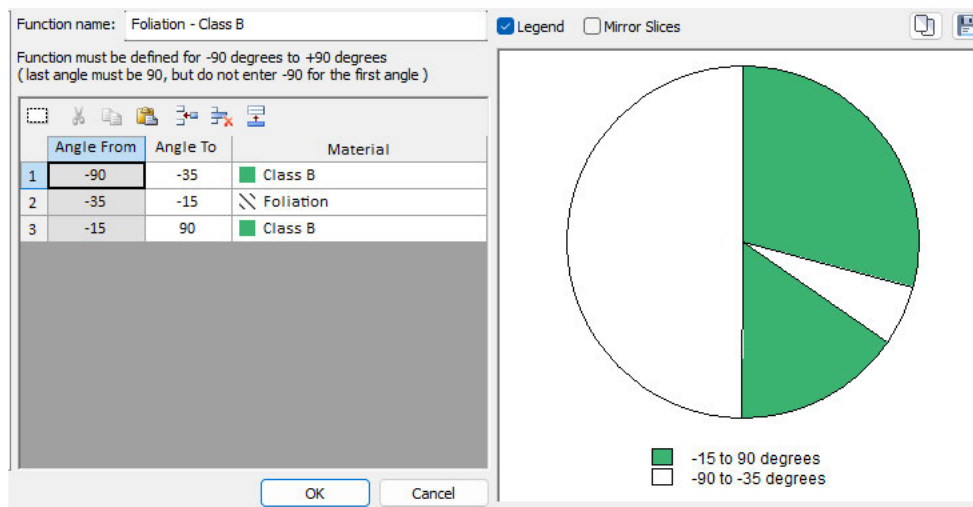
The rock mass strength parameters adopted for this assessment are based on extensive review of geotechnical logging, geomechanical lab testing, and experience with similar rock masses at Macraes. Table 4 summarises the material properties adopted for the stability analyses.

Table 4 – Material Strength Parameters

Material Type	Unit Weight (kN/m³)	Generalised Hoek-Brown			Mohr-Coulomb		Undrained Strength Ratio (S_u/σ_v')
		UCS (MPa)	GSI	m_i	Cohesion (kPa)	Friction Angle (°)	
Class A	27	40	65	12	NA		NA
Class B		40	55				
Class C		35	45				
Weathered schist	25	NA			100	38	
Failed Psammite					180	40	
Foliation					0	30	

Material Type	Unit Weight (kN/m ³)	Generalised Hoek-Brown			Mohr-Coulomb		Undrained Strength Ratio (S_u/σ_v')
		UCS (MPa)	GSI	m_i	Cohesion (kPa)	Friction Angle (°)	
Waste rock (fresh)	20	NA			0	40	
Surficial Soil (Loess)					15	35	
FF					0	9	
All modelled faults					50	20	
Tailings (saturated)	18.5	NA			NA		0.26

A Generalised Anisotropic Strength Function has also been adopted in Slide2 as a sensitivity assessment for scenarios where foliation dips towards a pit slope or incised gully. This function allows the software to adopt the foliation strength within a range of dips and simulates the potential for failure surfaces to form along foliation. Nominated rock mass strengths are adopted outside the specified foliation dip range. Inset 8 presents the anisotropic strength function adopted for this assessment, refer to Table 4 for material strength parameters. This applies to both fresh (Class B) and weathered schist.



Inset 8: Anisotropic strength function to account for foliation.

5.3 Seismicity

The horizontal seismic coefficient (K_h) for a failure surface over the full height of the WRS was assessed using the following method:

1. Base peak ground accelerations (PGA Base) adopted from the 2022 National Seismic Hazard Model (NSHM) v1.0.4 (GNS, 2022) and presented in Table 5. PGA values adopted from the NSHM are based on $V_{s30}=1000$ m/s as all WRS are founded on up to 30 m of weathered schist.
2. The PGA at the crest due to topographic amplification was assessed based on Harder et al (1998).
3. A reduction factor accounting for the scale of the failure surface relative to the overall slope height was obtained using the method developed by Makdisi and Seed (1978). The factor adopted for this assessment is based on a failure surface over the full height of the WRS.
4. Co-seismic displacements (where applicable) estimated using Jibson (2007).

Table 5 – Base PGA values for seismic assessment of WRS

Seismic Scenario	Annual Exceedance Probability (AEP)	PGA Base (g) 2022 NSHM Vs30 = 1000 m/s, T=0	PGA Crest (g)	Makdisi and Seed Scale Factor	Horizontal Seismic Coefficient (Kh)
Operating Basis Earthquake (OBE)	1:150 years	0.092	0.34 (~3.6x PGA Base)	0.35	0.12
Maximum Design Earthquake (MDE)	1:2,500 years	0.37	0.65 (~1.8x PGA Base)	0.35	0.23

5.4 Design Acceptance Criteria

Design Acceptance Criteria (DAC) for WRS stability have been selected on the basis of the following considerations:

- Existing consent conditions – the nominated acceptance criteria specified in the existing consent conditions varies slightly for each existing WRS but can typically be summarise as follows:
 - Static – FoS ranges from 1.2 (under the worst combination of events) to 1.5;
 - Seismic – WRS's shall be designed for operating basis earthquake (OBE) with a recurrence interval of 150 years and maximum design earthquake (MDE) with a recurrence interval of 2,500 years with satisfactory performance in terms of settlement and slope deformation. And otherwise shall be designed in accordance with sound engineering practice.
- Industry Guidelines for Mine Waste Dump and Stockpile Design (Hawley and Cuning, 2017) nominate design acceptance criteria based on a level of Consequence and Model Confidence. The levels assessed for this study are:
 - Moderate Consequence – *waste dumps with overall fill slopes less than 30° and less than 250 m high or repose angle slopes less than 100 m high. No critical infrastructure or unrestricted access, or robust containment/mitigative measures to protect critical infrastructure and access within potential runout shadow. Potential for moderate environmental impact, but manageable. Long-term (more than 5 years) exposure for sites subject to moderate (350 to 1000 mm) annual precipitation; medium-term (1 to 5 years) exposure for sites subject to high (1000 to 2000 mm) annual precipitation; short-term (less than 1 year) exposure for sites subject to very high (more than 2000 mm) annual precipitation or intensive rainy season(s).*
 - Moderate Confidence – *moderate confidence in foundation conditions, waste material properties, piezometric pressures, analysis technique or potential failure mechanism(s). Input parameters adequately defined; moderate data variability. For proposed structures, investigations at the pre-feasibility study level with adequate supporting data.*
- Recommended slope stability design acceptance criteria for MP4 WRS are:
 - Static – minimum FoS 1.3, under a reasonably expected combination of adverse events.
 - Pseudo static (seismic):
 - OBE – minimum FoS of 1.1; and
 - MDE – minimum FoS of 1.0, or with satisfactory performance in terms of settlement and slope deformation.
- Additionally, it is recommended that:
 - Waste rock stacks shall be designed in accordance with industry best-practice, and to withstand a 1-in-2500 annual-exceedance-probability earthquake (MDE) without catastrophic failure, noting that some deformation is allowable provided the structure retains a state of long-term stability post event.
 - A design report shall be prepared for each new waste rock stack by a suitably qualified geotechnical engineer or engineering geologist and this report provided to the Council prior to the commencement of construction of the structure. The report shall include details of the geotechnical model, loading assumptions, credible failure modes, and key design and construction requirements, and shall include an evaluation of the long-term stability for closure.

The recommended DAC are considered appropriate for consenting design stage based on established model understanding (confidence) and consequence and are consistent with previous Macraes WRS consent conditions.

5.5 Results

The results of the global stability analyses are presented in Appendix B with limit equilibrium stability model outputs included in Appendix C.

The following points summarise the outcomes of the stability analyses which assessed a global failure surface that encompassed the full height of the WRS:

- **Static:**
 - All WRS (except TWRS_Section 3 design geometry) achieved a FoS > 1.3 for overall stability for all scenarios.
 - o TWRS_Section 3 assessed the stability of the existing TWRS where it is incorporated into the wall of CN6. The design model has an overall slope angle of 37° which does not achieve a static FoS > 1.3. To achieve this requirement the slope angle in the stability analysis model was flattened to 30°.
- **Seismic:**
 - OBE (1 in 150 year return period) – all scenarios achieved a FoS > 1.1; and
 - MDE (1 in 2,500 year return period) – all WRS achieved a FoS > 1.0 except for Trimbells_TWRS_Section 3_Optimised.
 - o Where sections that did not achieve a FoS > 1.0, all seismically induced displacements are small based on the method proposed by Jibson (2007) and are expected to achieve satisfactory performance in terms of slope deformation.

6. Geotechnical Considerations

6.1 Design Considerations

The following design items have been considered as part of this assessment:

- Sensitivity scenarios:
 - **Perched groundwater tables**
 - o Perched groundwater tables may be present within the WRS due to the development of low permeability layers.
 - o Thin lower permeability layers are expected to develop during the placement of waste material due to trafficking of the upper surface of the WRS by mine equipment, see Inset 9.
 - o Breakdown of material at the surface and infilling of voids by fines is expected to form these layers.
 - o Individual layers are not expected to be laterally continuous or have a uniform thickness. They are likely to be more developed on heavily trafficked haul roads and less developed elsewhere and their spatial distribution will depend on the placement sequence of the waste material.
 - o The impact of this scenario on WRS stability has been considered by the inclusion of an elevated groundwater scenario in the stability modelling, refer to Section 3.4.
 - **Potential for low strength layers**
 - o Low strength layers have the potential to form during WRS construction due to accumulation of fines on the trafficked surface (development of this layer discussed in previous bullet point).
 - o These layers are still expected to have similar strength properties as the rest of the WRS material due to rock to rock contact between particles albeit with fines infilling voids.
 - o While this scenario has been considered as part of this assessment no specific analysis has been completed as these layers are very thin relative to the overall size of the WRS and material strengths are not expected to be significantly reduced therefore there is not expected to be any adverse impact on the outcome of the stability modelling.



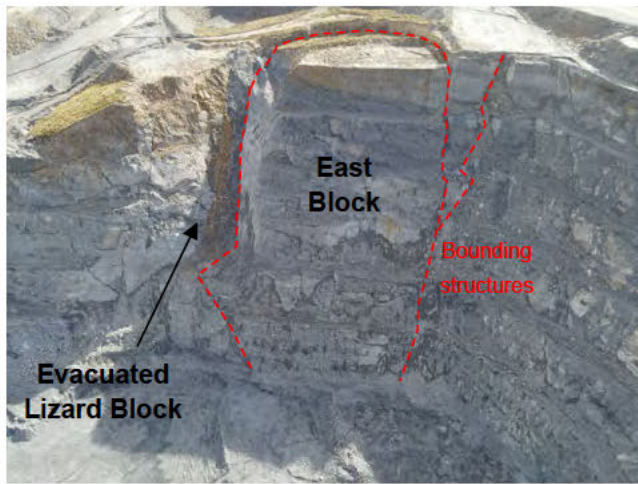
Inset 9: Accumulation of fine-grained material on trafficked surface during WRS construction.

- **Pit crest offsets**

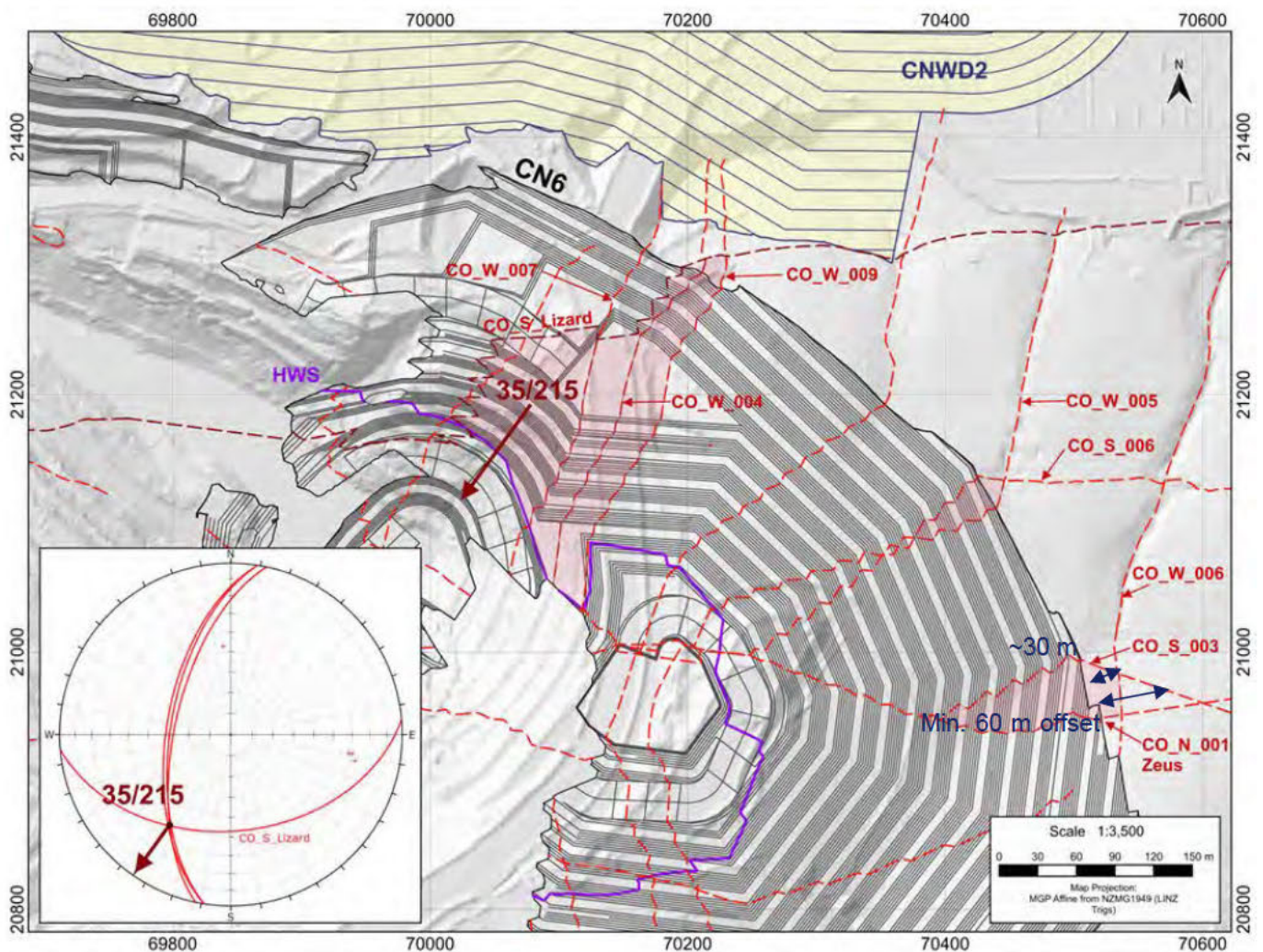
- There is potential for unstable wedges to develop in the east and north-east walls of the Coronation and Coronation North pits due to fault intersections occurring behind the walls. Inset 10 illustrates a previous example from Coronation North 4 (CN4) where intersecting fault planes formed wedge or planar block sliding mechanisms. This resulted in a zone of crest regression and deformation that extended up to 60 m behind the design crest. For this assessment, the current fault model provided by OGNZL for the Coronation area indicates potential wedges extending up to 30 m behind the proposed pit crests, see Inset 11.

Proposed WRS designs are typically 60 m or more offset from the crest of the proposed pits. In some locations where WRS's extend closer to the crest of the proposed pits we consider there is sufficient flexibility in the WRS geometry to enable localised design modification to prevent undercutting of the WRS or overloading of the pit crest, while still maintaining a long-term stable landform. Where applicable WRS slope angles can likely be locally steepened to 2H:1V while still achieving a $FoS > 1.3$.

Figure 4 presents locations where expansion of the open pits at Coronation (CO8) and Coronation North (CN6) see the new pit shells encroaching on existing WRS's (Coronation North and Trimbells WRS), shown as red shading overlapping the green proposed pit extents. It also presents an indicative 2H:1V WRS slope profile, with and without a 60 m offset, to show the flexibility inherent in the existing and proposed WRS geometries. With all pit-slope development there is an inherent risk of local crest instability and backbreak on unknown geological structure. Should this occur, or if required to manage operational safety or access, then local WRS design modification and additional cutback around the pit crest may be necessary.



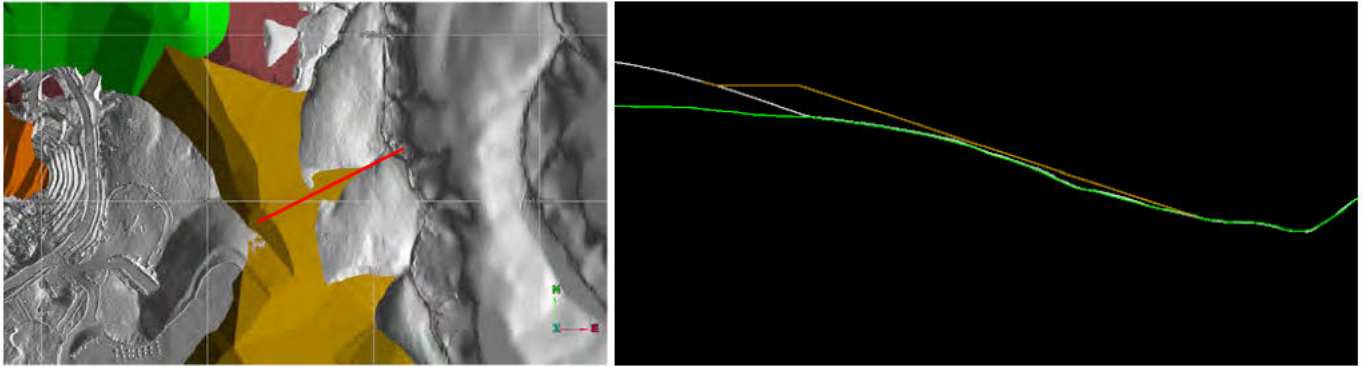
Inset 10: Photos of CN4 Northeast Wall instability. Left, Lizard and East Block. Right, slumping of Northeast Wall below the ramp.



Inset 11: Fault intersection forming potential wedge in the north-east wall of CN6 (similar location to Lizard Block).

- **Localised steepening of WRS toes**
 - Detailed design should reduce or remove thin sections of WRS geometry that chase the existing topography, typically at gullies such as at TWRS2, see Inset 12. This also provides a positive environmental outcome by minimising disturbance extents and disruption of surface water catchments.
 - Removal of these small sections reduces the overall footprint of the proposed WRS. This may be achieved by marginally steepening the toe of the WRS. Where applicable WRS slope angles can be

steepened to 2H:1V while still achieving a FoS > 1.3 without a detrimental impact on overall stability. Where applicable additional compaction or armouring should be used to mitigate local stability effects.



Inset 12: Example of WRS toe 'chasing' existing topography, plan and section. Section location shown by red line

- **Sedimentation and runoff**
 - WRS capping, sedimentation and runoff management in relation to the long-term performance of the WRS surfaces is addressed by others.
- **Overall slope angle of TWRS adjacent to CN6**
 - TWRS_Section 3 stability results indicate that the toe of TWRS should be reprofiled to approximately 30° as part of the Detailed Design process.

6.2 Construction Considerations

Typical WRS foundation treatment and placement methodology is outlined as follows:

- **Placement methodology** - Assumed to be consistent with previous methods that involve conventional paddock dumping and end-tipping waste rock by dump trucks and pushing with wheeled or tracked dozers. Tip heads are typically 15 to 20 m in height (range 5 to 30 m subject to construction staging).
- **Foundation Treatments** – Although instability along the basal surface of WRS is not predicted by modelling, we recommend nominal foundation treatment prior to the placement of the waste material, including:
 - Grubbing/ripping or removal of the surficial soil to mitigate the development of a low strength basal material in the WRS foundation.
 - Terracing is to be incorporated where waste material is placed on sloping natural topography or existing WRS to 'key' the basal waste material into the foundation and reduced the potential for the development of the shear surface at the base of the WRS. Terracing involves creating a flat surface within the foundation often by cutting a 'notch' into the existing ground with the outside of a dozer blade during placement of waste material. Terracing should be adopted when slope of the foundation exceeds 6H:1V (~10°).
 - The above treatments apply to both WRS founded on natural ground and against existing WRS.
- **Subsurface drainage** – coarse, free draining rock such as gravels and boulders segregated from other waste material, should be placed in the base of existing natural drainage paths to mitigate the build-up of porewater pressures at the base of the WRS. Sub-surface drainage should be constructed to mitigate the risk of surface flows becoming captured and diverted beneath the WRS.

6.3 Matheson Road Reinstatement

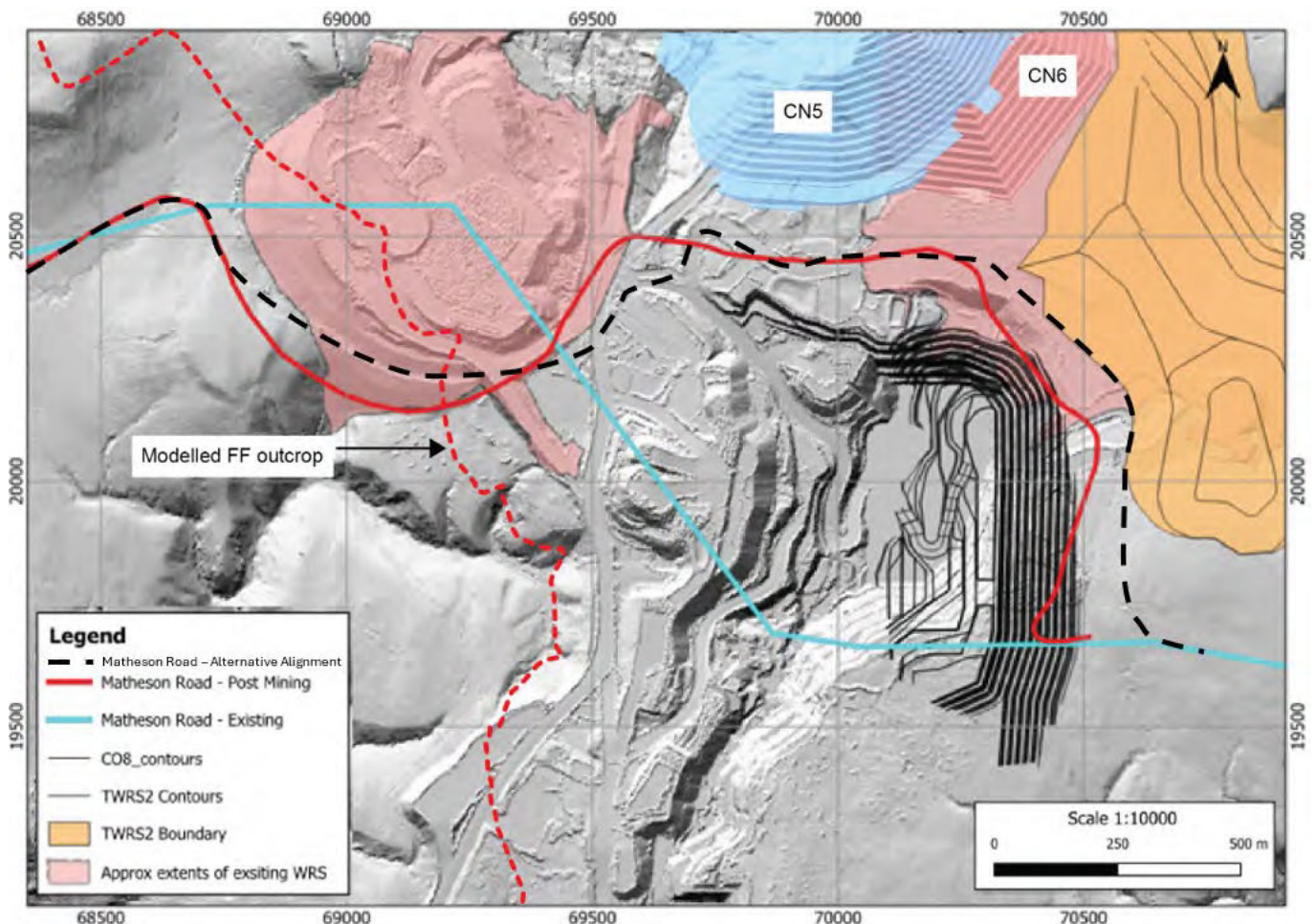
It is understood OGNZL have an existing resource consent obligation (consent reference: WDC 201.2019.1241/2, DCC LUC-2019-42A) to provide access through the site at closure to connect the eastern and western portions of Matheson Road which is an unformed road that crosses the site at the Coronation Pit, see Inset 13:

- *13.3 Within six months of completion of mining operations in Coronation North and Coronation Pits and rehabilitation of the project areas to the point of decommissioning silt ponds, the consent holder shall define and take steps to vest to the respective Councils (and make lawfully available to the Councils pending*

completion of vesting) a legal road of no less than 20m wide that approximately follows the blue line shown on the annexed Figure 2 (as a replacement for the unformed Matheson Road). Depending on the extent of pit excavations, the road may be modified to be south or southwest of the blue line. The grade of Matheson Road shall be no more than 1 Vertical, 6 Horizontal at any location of the alignment. Prior to vesting, the road shall be graded to a standard enabling it to be used as a fine weather track for four wheel drive vehicles. The consent holder shall not have any ongoing responsibility to maintain the track or any form of public access along this unformed road as a consequence of this grading.

The obligation requires a road 'graded to a standard enabling it to be used as a fine weather track for four wheel drive vehicles'. This does not include conformance with road design guidelines or standards, local council geotechnical requirements nor ongoing maintenance or any form of public access following instatement of the track.

The current indicative location of the track is marked as 'Post Mining Matheson Road' on Inset 13.



Inset 13: Location of Matheson Road (pre- and post-mining).

On the basis that the design requirements are not onerous and the purpose is to provide a 'fine weather track for four wheel drive vehicles' and not a fully formed public road, we believe construction is feasible.

The following points have been considered in regard to the vehicle track:

- Proximity to the final pit crests – the road is offset from the crest of the pit to mitigate the impact of potential crest breakback undermining the track.
- Safety – safety/separation bunds should be adopted for the open pit side of the track to mitigate the risk of vehicles leaving the track and entering the pit void.
- Settlement of waste material – Due to the uncompacted and loosely dumped nature of the waste rock material, particularly on the outside slopes, settlement of the waste material may continue beyond closure and construction of the track. This could result in localised deformation and cracking of the unsealed road surface which may need occasional repairs/periodic grading. This performance outcome is in keeping with the performance intent of a track to provide fine weather four-wheel drive access only.

- Local instability of the WRS may deposit material on or remove material from below the track again resulting in the need for occasional repairs or clean up.
- Surface Drainage – surface water drainage design is recommended where the track crosses WRS's to mitigate concentrated surface water flows and infiltration of water into the WRS increasing the risk of local instability.
- Cut slope batter angles for sections of the track cut into the slopes of WRS should be designed to mitigate the risk of local instability. It is expected that batter angles will be no more than 2H:1V (~27°) although this should be further assessed in the Detailed Design stage.
- It has been assumed that the road width is single track (i.e. ~3 m wide) and not constructed to the full legal width of 20 m as noted in the consent condition above.

7. Conclusions and Recommendations

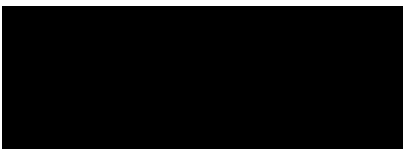
The following points summarise the key conclusions and recommendations from this assessment:

- Recommended slope stability design acceptance criteria for MP4 WRS are:
 - Static – minimum FoS 1.3, under a reasonable expected combination of adverse events.
 - Pseudo static (seismic):
 - o OBE – minimum FoS of 1.1; and
 - o MDE – minimum FoS of 1.0, or with satisfactory performance in terms of settlement and slope deformation.
- Additionally, it is recommended that:
 - Waste rock stacks shall be designed in accordance with industry best-practice, and to withstand a 1-in-2500 annual-exceedance-probability earthquake without catastrophic failure, noting that some deformation is allowable provided the structure retains a state of long-term stability post event.
 - A design report shall be prepared for each new waste rock stack by a suitably qualified geotechnical engineer or engineering geologist and this report provided to the Council prior to the commencement of construction of the structure. The report shall include details of the geotechnical model, loading assumptions, credible failure modes, and key design and construction requirements, and shall include an evaluation of the long-term stability for closure.
- Stability analyses indicate proposed MP4 WRS geometries have an acceptable stability outcome in regard to end-of-mine-life and long-term (post closure) stability, specifically:
 - Static:
 - o All WRS (except TWRS_Section 3 design geometry) achieved a FoS > 1.3 for overall stability for all scenarios.
 - TWRS_Section 3 – the overall slope angle at this location requires flattening to min. 30° to achieve a FoS > 1.3.
 - Seismic:
 - o OBE (1 in 150 year return period) – all scenarios achieved a FoS > 1.1; and
 - o MDE (1 in 2,500 year return period) – WRS achieved a FoS > 1.0 except for Trimbells_TWRS_Section 3_Optimised.
 - Where sections that did not achieve a FoS > 1.0, all seismically induced displacement predictions are small and are expected to achieve satisfactory performance in terms of slope deformation.
- The implications of climate change to long-term slope stability have been considered. This particularly relates to high intensity rain events and associated rapid increase in groundwater levels within WRS impacting both WRS stability and erosion potential. Stability implications have been addressed via the assessment of an additional elevated groundwater scenario. The stability outcomes from this assessment are acceptable. Mitigation of erosion risk is addressed by landform and landscape design.
- The potential for crest regression impacting the toe of proposed and existing WRS's has been identified in this study.

Proposed WRS designs are typically 60 m or more offset from the crest of the proposed pits. In some locations where WRS extend closer to the crest of the proposed pits we consider there is sufficient flexibility in the geometry to enable localised design modification to prevent undercutting of the WRS or overloading of the pit crest, while still maintaining a long-term stable landform. Where applicable WRS slope angles can be locally steepened to 2H:1V while still achieving a FoS > 1.3.

- Where the existing TWRS interfaces with CO8 pit design the WRS should be reprofiled to ~30° as part of the Detailed Design process.
- Detailed Design should reduce or remove thin sections of WRS geometry that chase the existing topography, typically at gullies such as at TWRS2. This also provides a positive environmental outcome by minimising disturbance and disruption of surface water catchments. Where applicable additional compaction or armouring should be used to mitigate local stability effects.
- Foundation treatments, including grubbing/ripping of the foundation and terracing into sloping foundations, should be undertaken to provide additional confidence in long-term stability outcomes.
- Sub-surface drainage (involving the placement of free-draining rock) should be employed in the base of natural gullies to improve foundation drainage of the WRS.
- The proposed post mining Matheson Road is expected to be feasible as a '*fine weather four wheel drive track*' although the following measures are recommended to mitigate safety issues:
 - The road should be offset from the crest of the pit to mitigate the impact of potential crest breakback undermining the track;
 - Adopt safety/separation bunds along the open pit side of the track to mitigate the risk of vehicles leaving the track and entering the pit void;
 - Surface water drainage design is recommended where the track crosses WRS's to mitigate concentrated surface water flows and infiltration of water into the WRS increasing the risk of local instability; and
 - Cut slope batter angles for sections of the track cut into the slopes of WRS should be designed to mitigate the risk of local instability. It is expected that batter angles will be no more than 2H:1V (~27°) although this should be further assessed in the Detailed Design stage.

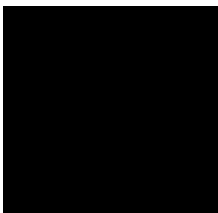
Yours Sincerely



TIM RUTHERFORD
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PRINCIPAL

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2. Yates, K. and Russell, A. R. 2023. The unsaturated characteristics of natural loess in slopes, New Zealand. *Géotechnique* 73, No. 10, 871–884.
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9. Hawley, P.M. and Cunning, J. (eds.). 2017. *Guidelines for Mine Waste Dump and Stockpile Design*. CSIRO Publishing / CRC Press.

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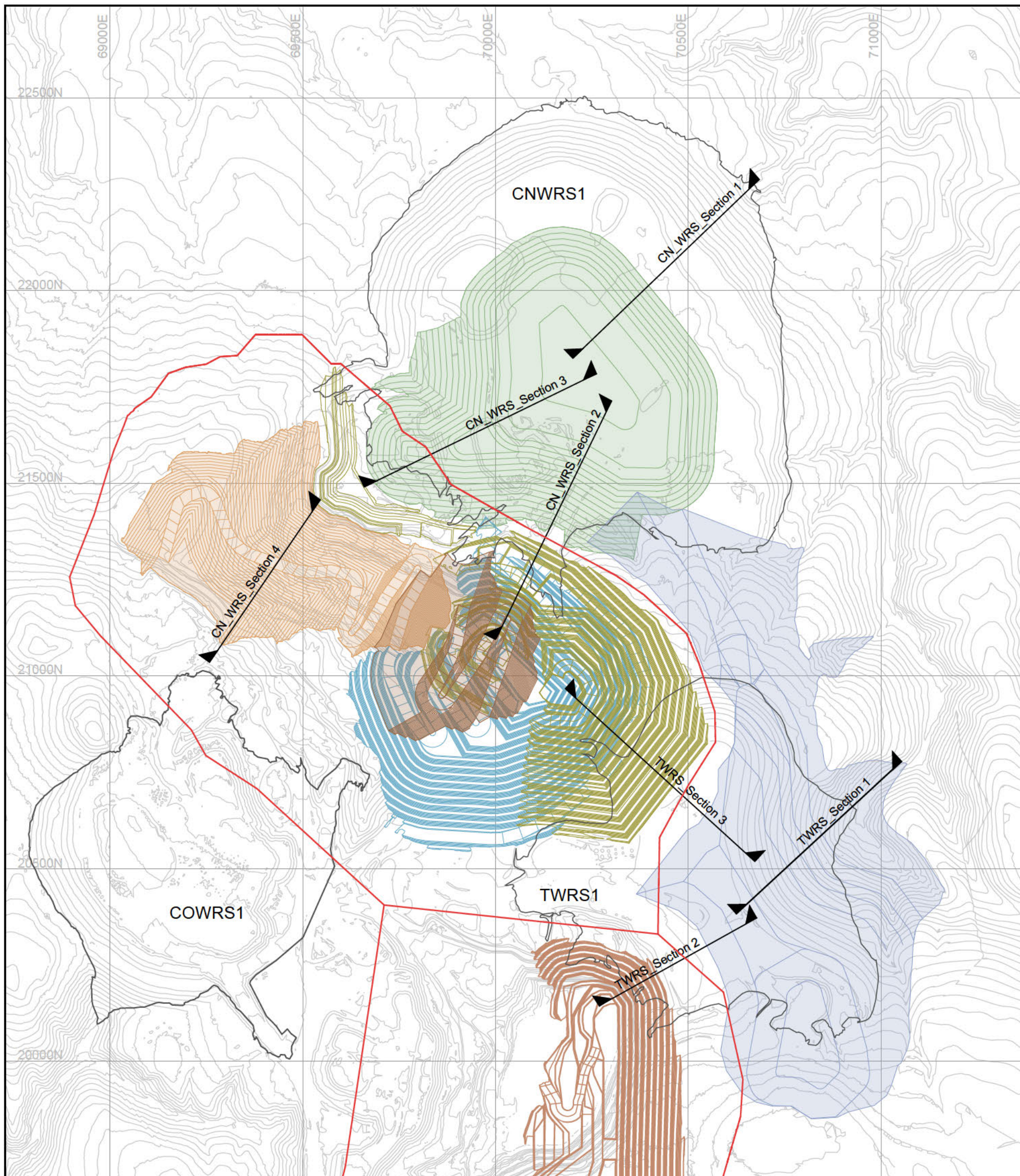
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Figures





LEGEND

- | | |
|--|--|
|  As-mined Surface (<i>Coro_site_surface 25 July 2025</i>) |  As-built Waste Rock Stack Footprint (<i>Feb 2024</i>) |
|  Coronation North Stage 5 (<i>CN5_250924</i>) |  Stability Cross Section |
|  Coronation North Stage 6 (<i>CN6_with_Drain_260216</i>) |  Open Pit Disturbance Boundary (<i>250818_CNCO_PIT_MP4FAST_POLYGON</i>) |
|  Coronation North Backfill 2 (<i>CNBF2_design_260216</i>) | |
|  Coronation North Backfill 3 (<i>CNBF3_design_260216</i>) | |
|  Coronation North Waste Rock Stack 2 (<i>CNWD2_design_260216</i>) | |
|  Trimbells Waste Rock Stack (<i>TWRS_design_251119</i>) | |
|  Coronation Stage 8 (<i>CO8_250731</i>) | |

0 100 200 300 400 500
Scale (m)

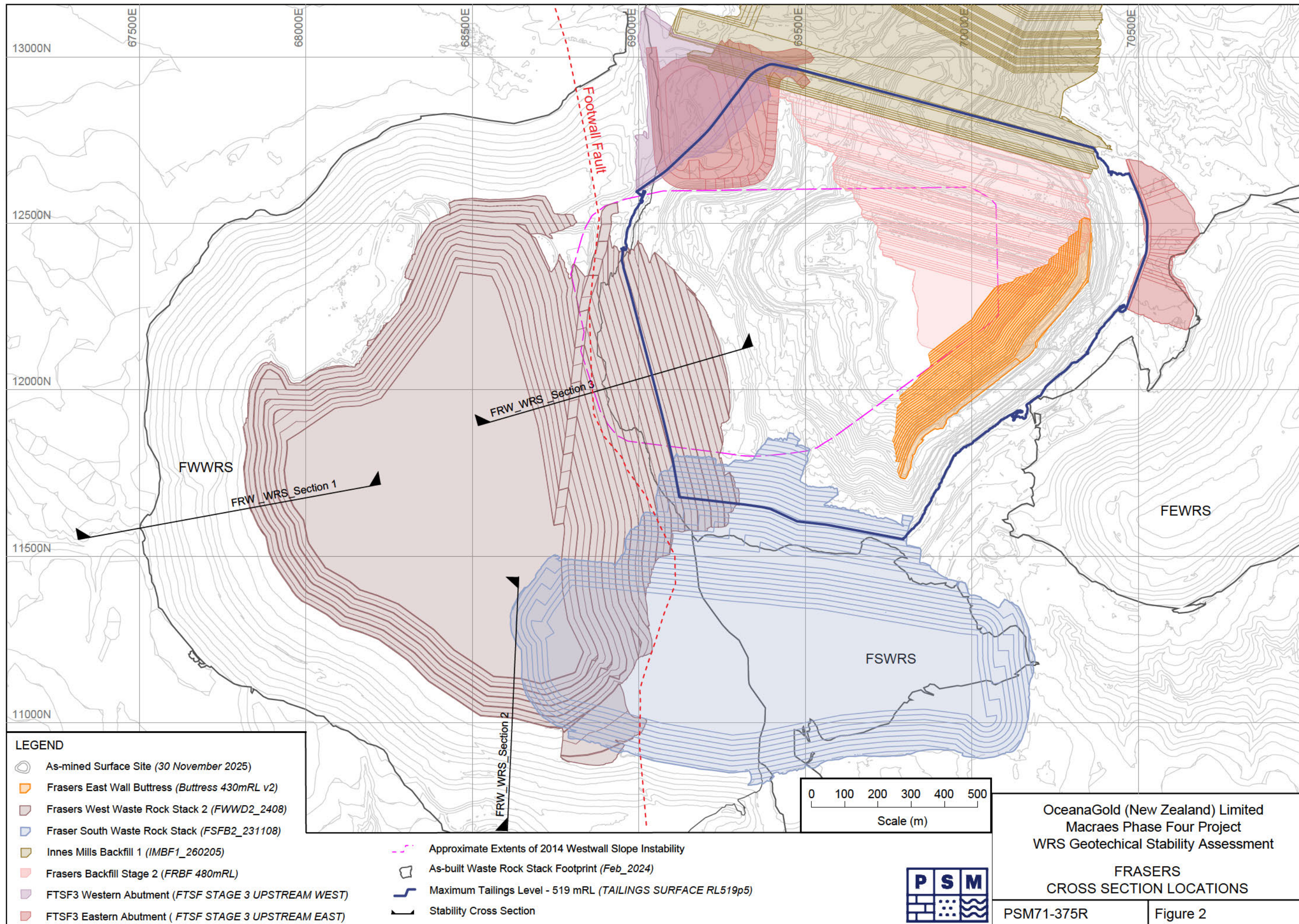


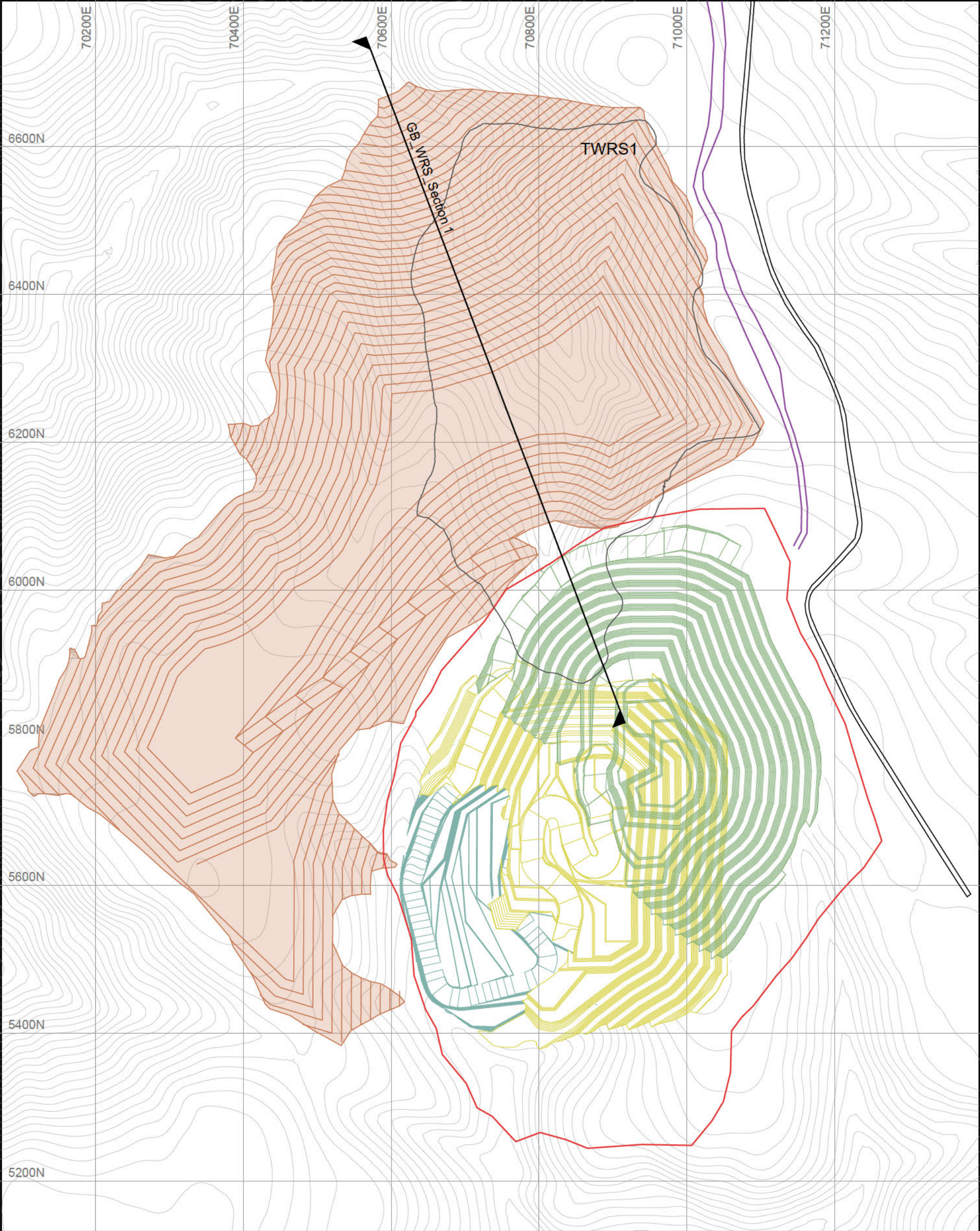
OceanaGold (New Zealand) Limited
Macraes Phase Four Project
WRS Geotechnical Stability Assessment

CORONATION
CROSS SECTION LOCATIONS

PSM71-375R

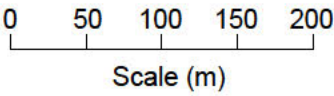
Figure 1





LEGEND

- | | |
|---|---|
|  As-mined Surface (<i>GB topo_2003</i>) |  Open Pit Disturbance Boundary (<i>251108_GB_MP4FAST_PIT_POLYGON_2025</i>) |
|  Golden Bar Stage 1 (<i>GB1_design</i>) |  As-built Waste Rock Stack Footprint (<i>Feb 2024</i>) |
|  Golden Bar Stage 2 (<i>GB2_240510</i>) |  Stability Cross Section |
|  Golden Bar Stage 3 (<i>GB3_260330</i>) |  Golden Bar Haul Road
(<i>GB_Haul_Road_MGPG_20250827</i>) |
|  Golden Bar Waste Rock Stack 2
(<i>GBWRS2_251119</i>) | |

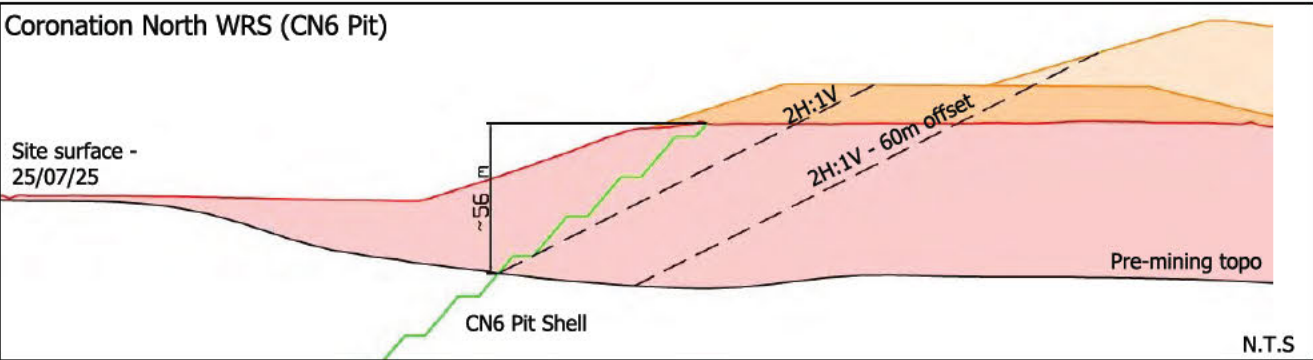
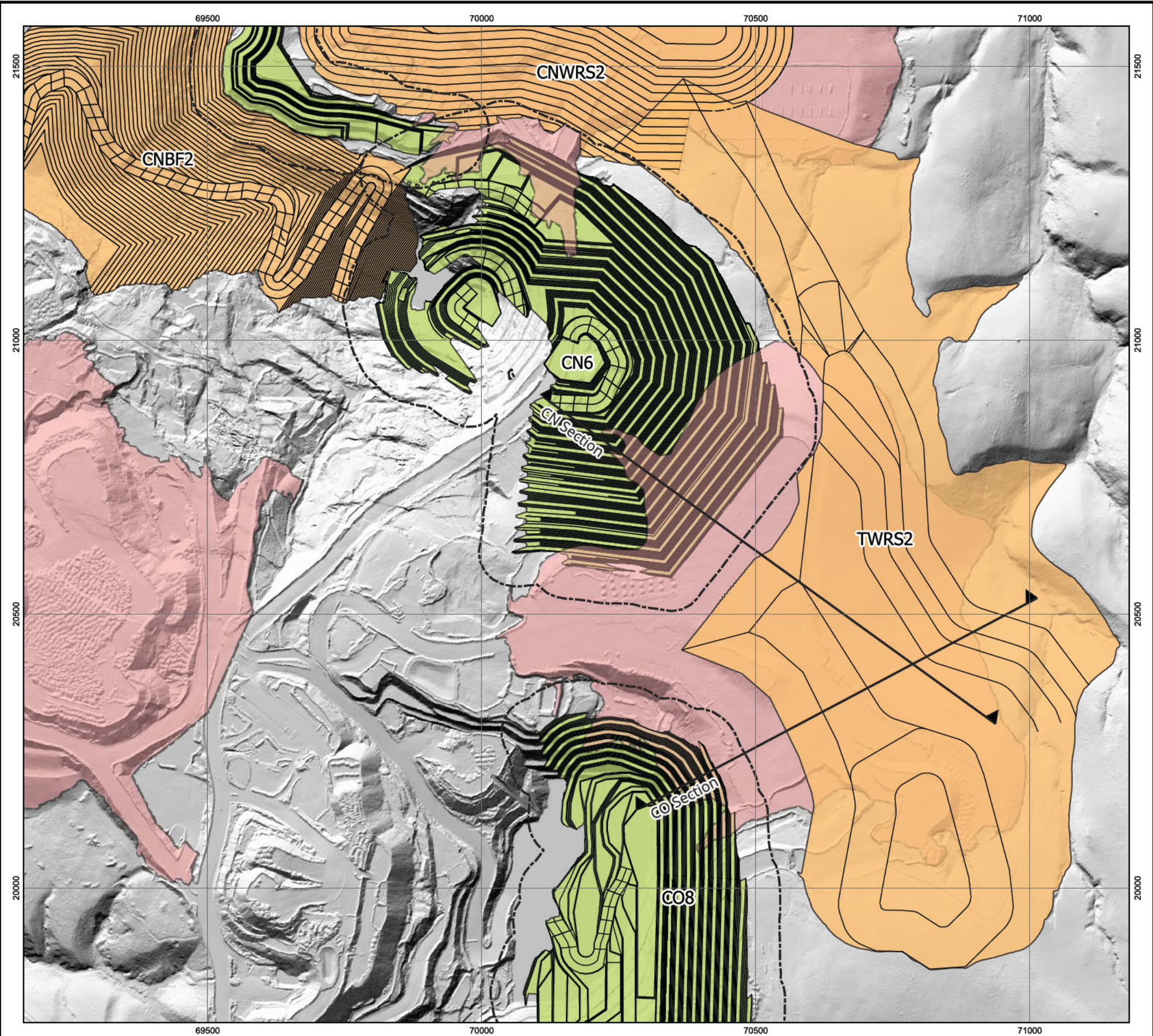


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GOLDEN BAR
CROSS SECTION LOCATIONS

PSM71-365R

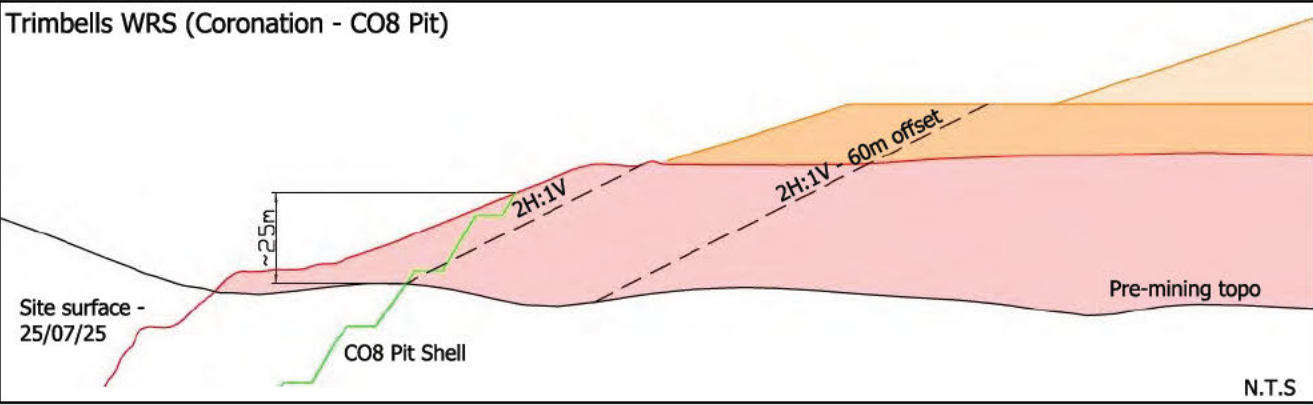
Figure 3



Proposed CNWRS2

Consented WRS

Existing WRS



Proposed TWRS2

Consented WRS

Existing WRS

- Legend
- Pit/WRS contours (typically 2.5 m)
 - 60m buffer from pit crest
 - Proposed Open Pit Extent
 - Existing WRS Extent
 - Proposed MP4 WRS Extent

Notes:

Base DEM:

DEM_MacraesFullSite_2023-01-08_NZTM-2193

Scale 1:7,500

100 0 100 200 300 m

Map Projection: MGP Local USER:100000

P S M	Created By: PSM	Revision: A
	Date: 23 Apr 2026	Paper Size: A3

OceanaGold (New Zealand) Limited

Macraes Phase Four Project

WRS Geotechnical Stability Assessment

CORONATION & CORONATION NTH

WRS/PIT CREST INTERACTION

PSM071-375R	Figure 4
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Appendix A

Data



1. Data

The following data was provided by OGNZL and used in this assessment.

1.1 Site Wide Data

- Site wide borehole database (*DH_251204surface.csv*)
- Proposed consent limits
 - Coronation Mining Area (*250818_CNCO_PIT_MP4FAST_POLYGON*)
 - Central Mining Area (*250811_IM_MP4FAST_PIT_POLYGON_2025_LINE*)
 - Golden Bar Mining Area (*251108_GB_MP4FAST_PIT_POLYGON_2025*)
- LiDAR (*Aerial_surveys_Ltd_LiDAR_2026-01-08*)

1.2 Design Surfaces

1.2.1 Waste rock stacks

1.2.1.1 Proposed

- Coronation and Coronation North
 - Coronation Backfill Stage 1 (*COBF1_260122.dxf*)
 - Coronation Backfill Stage 2 (*COBF2_260122.dxf*)
 - Coronation Backfill Stage 3 (*COBF3_Design_260216.dxf*)
 - Trimbells Stage 2 (*TWRS2_design.dxf*), dated 19 November 2025
 - Coronation North Backfill Stage 2 (*CNBF2_design_260216.dxf*)
 - Coronation North Backfill Stage 3 (*CNBF3_Design_260216.dxf*)
 - Coronation North West Dump Stage 2 (*CNWD2_design_260216.dxf*)
- Innes Mills
 - Innes Mills Backfill Stage 1 / FTSF embankment to 520 mRL (*IMBF1_260205.dxf*)
 - Innes Mills Backfill Stage 2 (*IMBF2_251202.dxf*)
 - Innes Mills Backfill Stage 3 (*IMBF3_251202.dxf*)
 - Frasers West Waste Dump Stage 2 (*FWWD2_design.dxf*), dated August 2024
 - Frasers West Backfill (*FWBF_221215.dxf*)
- Golden Bar
 - Golden Bar Waste Rock Stack Stage 2 (*GBWRS_Design_260330.dxf*), dated 30 March 2026

1.2.1.2 Previously Consented

- Coronation North WRS Stage 1 (*CNWRSA_170808.dxf*)
- Coronation WRS (*CWRS_cut_surface.dxf*)
- Trimbells WRS Stage 1 (*TWRS_250610.dxf*)
- Frasers South Backfill Stage 2 (*FSBF2_231108_clipped_surf.dxf*)
- Frasers West WRS (*FWWD_120829.dxf*)

1.2.2 Proposed Open Pit Geometries

- Coronation and Coronation North
 - Coronation Stage 6 (*CO6_250603.dxf*)
 - Coronation Stage 7 (*CO7_with_Drain_260216*)

- Coronation Stage 8 (*CO8_250731*)
- Coronation North Stage 5 (*CN5_250924.dxf*)
- Coronation North Stage 6 (*CN6_with Drain_260216.dxf*)
- Innes Mills
 - Innes Mills Stage 9 (*IM9_251208.dxf*)
 - Innes Mills Stage 10 (*IM10_251217.dxf*)
 - Innes Mills Stage 11 (*IM11_251218.dxf*)
 - Innes Mills Stage 12 (*IM12_260120.dxf*)
 - Innes Mills Stage 13 (*IM13_260302_clipped.dxf*)
- Golden Bar
 - Golden Bar Stage 2 (*GB2_240510.dxf*)
 - Golden Bar Stage 3 (*GB3_240510.dxf*)

1.2.3 Geological/Fault Models

Fault and geology models have been provided by OGNZL for the following areas:

- Coronation and Coronation North
 - 25 fault plane surfaces, dated 3 December 2025
- Innes Mills and Frasers
 - Innes Mills – 72 surfaces, dated 3 December 2025
 - FRUG faults – 195 surfaces
 - Frasers – 9 surfaces
- Golden Bar
 - Hanging wall shear (*GOLDEN BAR-OUNCE_TOPSURF_280821_3D.dxf*)
 - Top of oxidation (*GOLDEN BAR-OUNCE_OXIDE SURF_3D.dxf*)
 - Golden Bar Stage 1 highwall mapping of faults (2005)

1.2.4 Topographic surfaces

- Pre-mining topographic surface
 - (*DEM-MacaesFullSite_1970s_MGPG_9m.dxf*)
- As-mined surfaces
 - *Coro_as-mined_220330*
 - *Site_as-mined_251106*
- As-built Site surfaces
 - *Coro_site_surface_250725*
 - *Site_surface_251130*
 - *GB_topo_2017_without_water.dxf*

1.2.5 Infrastructure and Road Alignments

- Macraes Road Realignment Stage 1 (*260208_Macraes-Dunback_Road_Stage 1.dxf*)
- Macraes Road Realignment Stage 2 (*260208_Macraes-Dunback_Road_Stage 2.dxf*)
- Workshop building (*260211_Workshop_Buildings.dxf*)
- Golden Bar Haul Road (*250827_GB_haul_Road_MP4Fast.dxf*)
- Golden Bar Haul Road (*GB_Haul_Road_MGPG_20250827.dxf*)
- Existing Matheson Road (*MathesonRdExisting_MGPG_260205.dxf*)
- Post mining Matheson Road (*MathesonRd_PostMining_MGPG_260205.dxf*).

Appendix B

Stability Analysis Results



Location	Section	Foundation Condition	Case	Failure mechanism	Dry GW Scenario (GLE) Overall FoS	Partially Sat GW Scenario (GLE) Overall FoS	Co-seismic displacement			Comments - Overall Stability
							Kh (g)	Ky (g)	D (mm) Jibson (2007)	
Coronation North	CN_WRS_Section 1	No Soil	Static	Non circular	2.54	1.95				
				Circular	2.55	2.06				
			OBE	Non circular	1.79	1.35				
				Circular	1.80	1.44				
			MDE	Non circular	1.38	1.05				
				Circular	1.39	1.10				
		Soil + Anisotropic schist foundation	Static	Non circular	2.54	1.93				
				Circular	2.55	2.05				
			OBE	Non circular	1.79	1.33				
				Circular	1.80	1.43				
			MDE	Non circular	1.39	1.03				
				Circular	1.39	1.09				
	CN_WRS_Section 2	No Soil	Static	Non circular	2.53	2.53				
				Circular	2.54	2.54				
			OBE	Non circular	1.78	1.79				
				Circular	1.79	1.79				
			MDE	Non circular	1.38	1.38				
				Circular	1.38	1.38				
		No Soil + Pit Lake at 562 m	Static	Non circular	2.53	No water table sensisitivity analyses run - water expected to drain along natural gully in foundation				
				Circular	2.54					
			OBE	Non circular	1.78					
				Circular	1.79					
			MDE	Non circular	1.38					
				Circular	1.38					
	CN_WRS_Section 3	No Soil	Static	Non circular	4.65	No water table sensisitivity analyses run - water expected to drain along natural gully in foundation				
				Circular	5.97					
			OBE	Non circular	2.79					
				Circular	3.18					
			MDE	Non circular	2.00					
				Circular	2.21					
	CN_WRS_Section 4	No Soil	Static	Non circular	2.69	2.07				
				Circular	2.82	2.17				
			OBE	Non circular	1.89	1.45				
				Circular	1.94	1.50				
			MDE	Non circular	1.44	1.12				
				Circular	1.49	1.15				
		No Soil + Anisotropic schist foundation	Static	Non circular	2.68	2.05				
				Circular	2.82	2.17				
			OBE	Non circular	1.87	1.43				
				Circular	1.94	1.50				
			MDE	Non circular	1.45	1.12				
				Circular	1.49	1.15				

Location	Section	Foundation Condition	Case	Failure mechanism	Dry GW Scenario (GLE) Overall FoS	Partially Sat GW Scenario (GLE) Overall FoS	Kh (g)	Ky (g)	D (mm) Jibson (2007)	Comments - Overall Stability
Coronation North	TWRS_Section 1	No Soil	Static	Non circular	2.59	2.25				
				Circular	2.60	2.46				
			OBE	Non circular	1.81	1.56				
				Circular	1.82	1.68				
			MDE	Non circular	1.39	1.18				
				Circular	1.41	1.28				
		Soil + Anisotropic schist foundation	Static	Non circular	2.59	2.38				
				Circular	2.60	2.46				
			OBE	Non circular	1.20	1.65				
				Circular	1.82	1.68				
			MDE	Non circular	1.40	1.21				
				Circular	1.41	1.28				
	TWRS_Section 3	No Soil - design geometry (39°)	Static	Non circular	1.06	n/a				
				Circular	1.10	n/a				
		No Soil - Optimised geometry (30°)	Static	Non circular	1.45	1.45				
				Circular	1.46	1.46				
			OBE	Non circular	1.13	1.13				
				Circular	1.13	1.13				
			MDE	Non circular	0.90	0.90	0.23	0.18	0.7	Failure length = 95 m, Strain << 1%
				Circular	0.90	0.90	0.23	0.18	0.7	Failure length = 95 m, Strain << 1%
Frasers West	FRW_WRS_Section 1	Soil	Static	Non circular	2.87	2.85				
				Circular	3.63	3.13				
			OBE	Non circular	1.98	1.79				
				Circular	2.33	1.94				
			MDE	Non circular	1.49	1.31				
				Circular	1.73	1.41				
		No Soil	Static	Non circular	2.81	3.00				
				Circular	3.63	3.21				
			OBE	Non circular	1.97	1.90				
				Circular	2.33	1.99				
			MDE	Non circular	1.50	1.40				
				Circular	1.73	1.46				
	FRW_WRS_Section 2	Soil	Static	Non circular	2.83	2.89				
				Circular	3.35	3.35				
			OBE	Non circular	2.02	2.18				
				Circular	2.20	2.19				
			MDE	Non circular	1.55	1.63				
				Circular	1.65	1.63				
		No Soil	Static	Non circular	2.90	2.93				
				Circular	3.35	3.35				
			OBE	Non circular	2.00	2.19				
				Circular	2.20	2.20				
			MDE	Non circular	1.56	1.63				
				Circular	1.65	1.64				

Location	Section	Foundation Condition	Case	Failure mechanism	Dry GW Scenario (GLE) Overall FoS	Partially Sat GW Scenario (GLE) Overall FoS	Kh (g)	Ky (g)	D (mm) Jibson (2007)	Comments - Overall Stability
Fraser's West	FRW_WRS_Section 3	No Soil & Dry cap at 520 m (Closure)	Static	Line search	2.83	No water table sensitivity analyses run				
			OBE	Line search	1.10					
			MDE	Line search	0.84					Very shallow failure surface toeing out within tailings. All other failure surfaces have a FoS>1.0
Golden Bar	GB_WRS_Section 1	No Soil	Static	Non circular	1.87	No water table sensitivity analyses run - water expected to drain along natural gully in foundation				
				Circular	1.87					
			OBE	Non circular	1.40					
				Circular	1.40					
			MDE	Non circular	1.11					
				Circular	1.11					

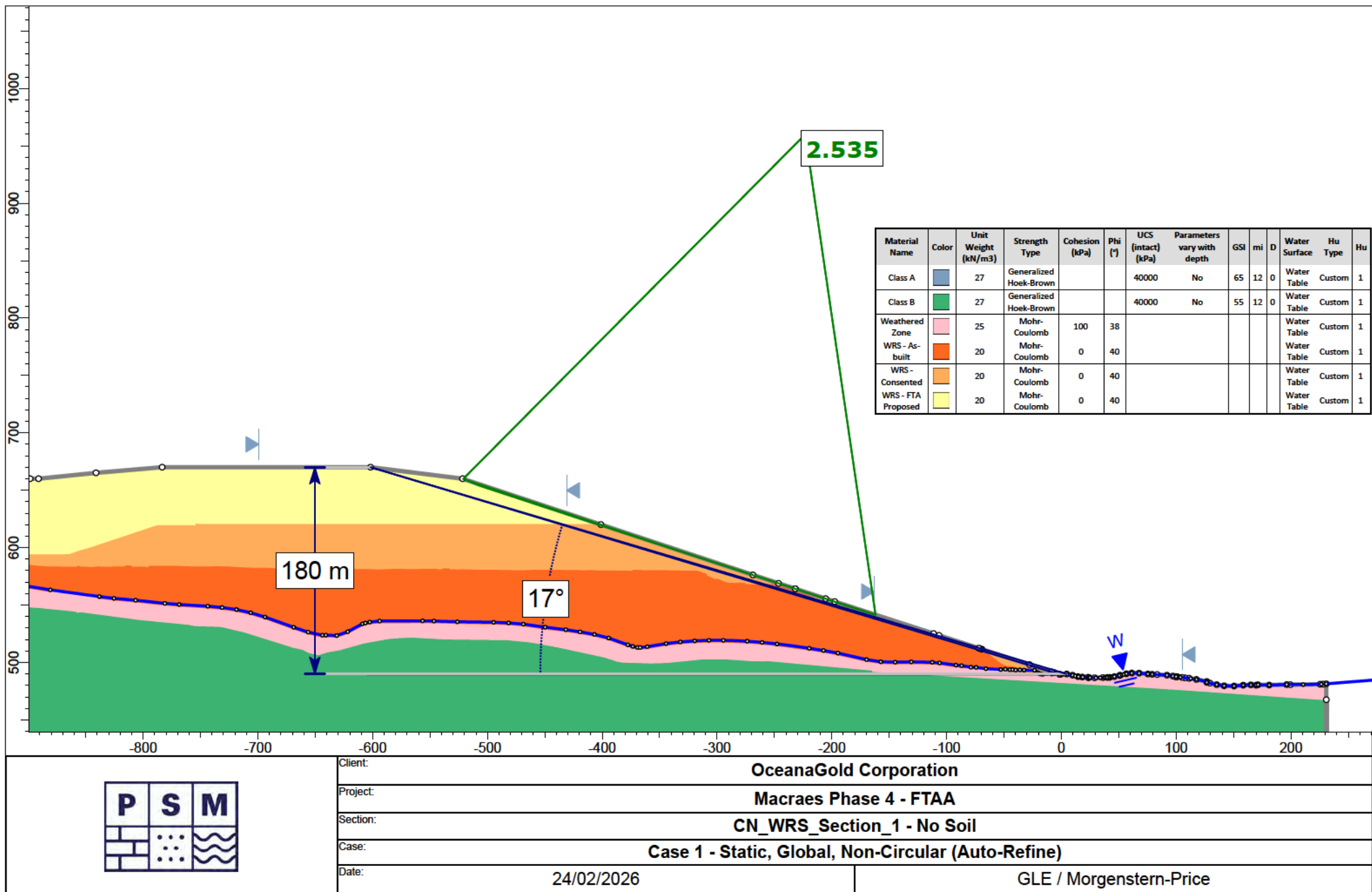
Appendix C
Limit Equilibrium Stability Analysis Outputs

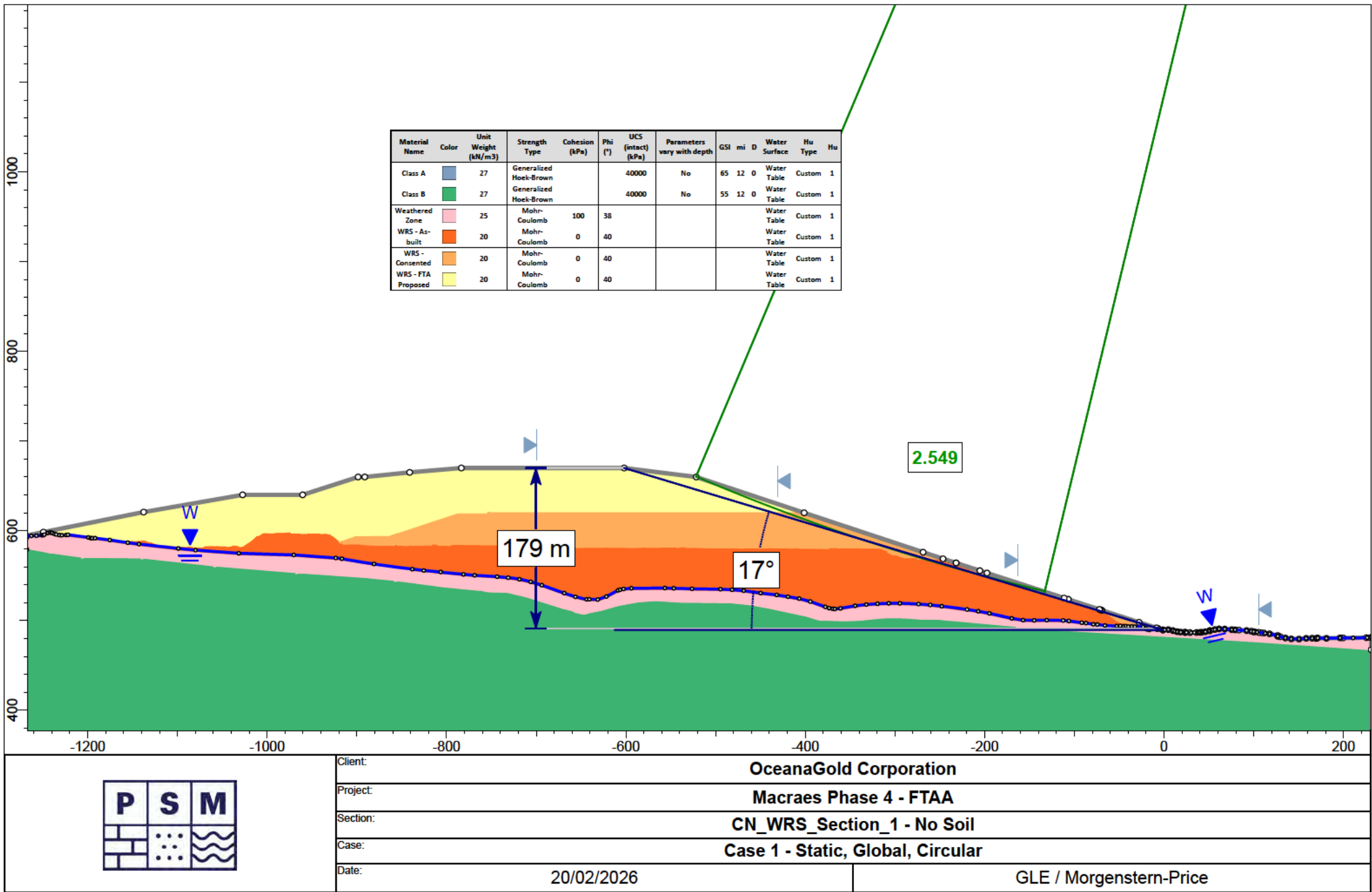


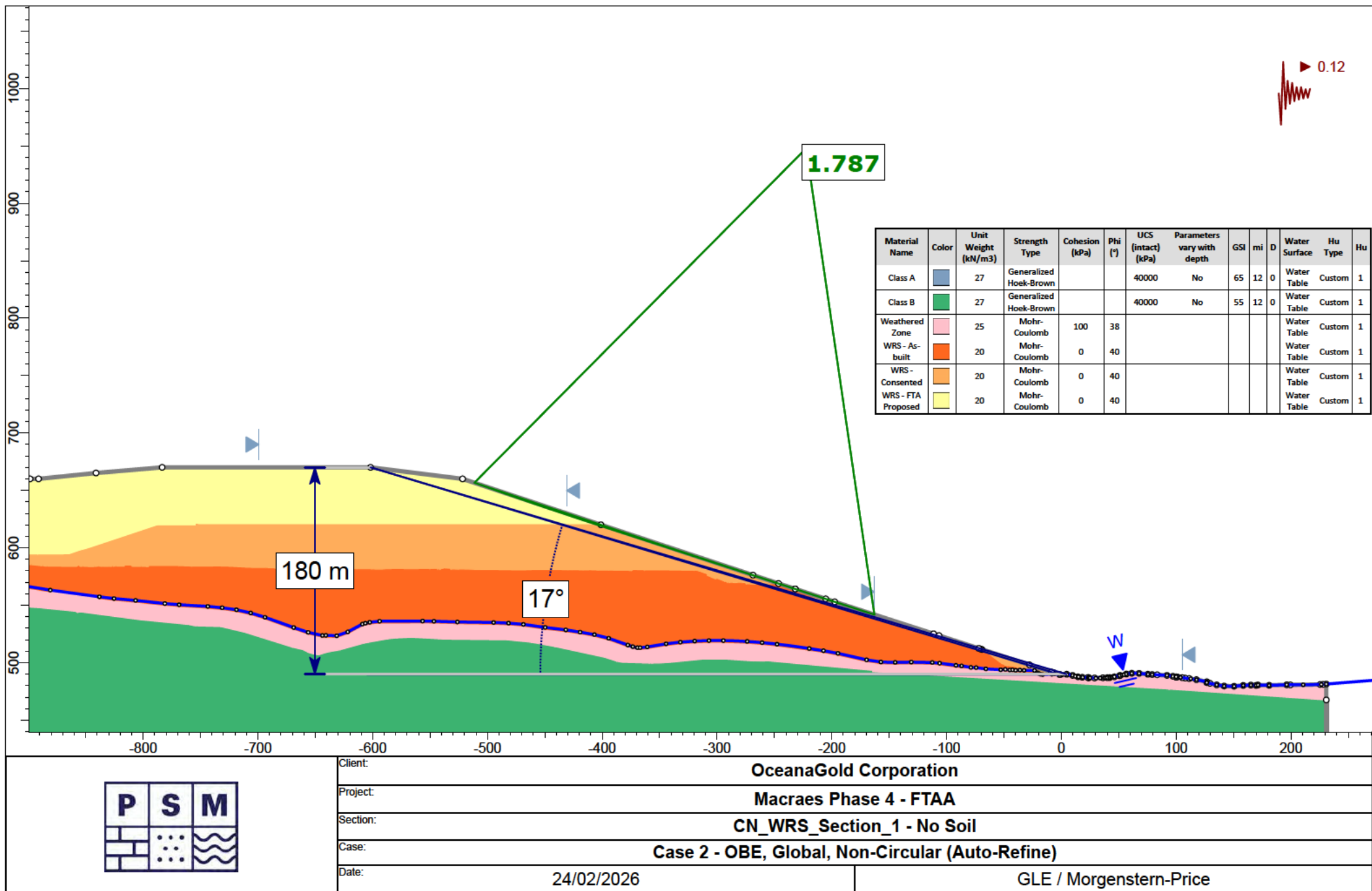
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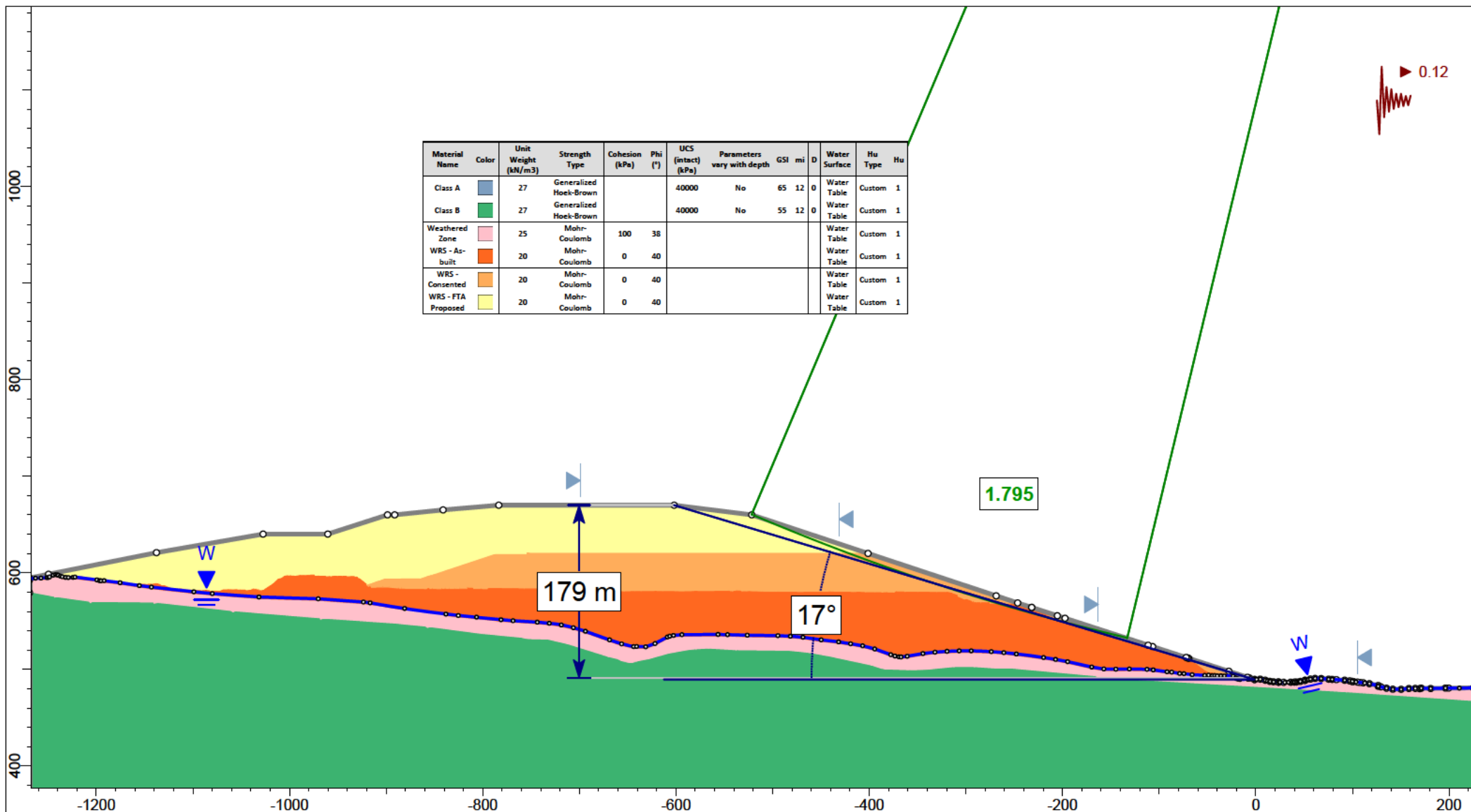
Limit Equilibrium Analysis Outputs



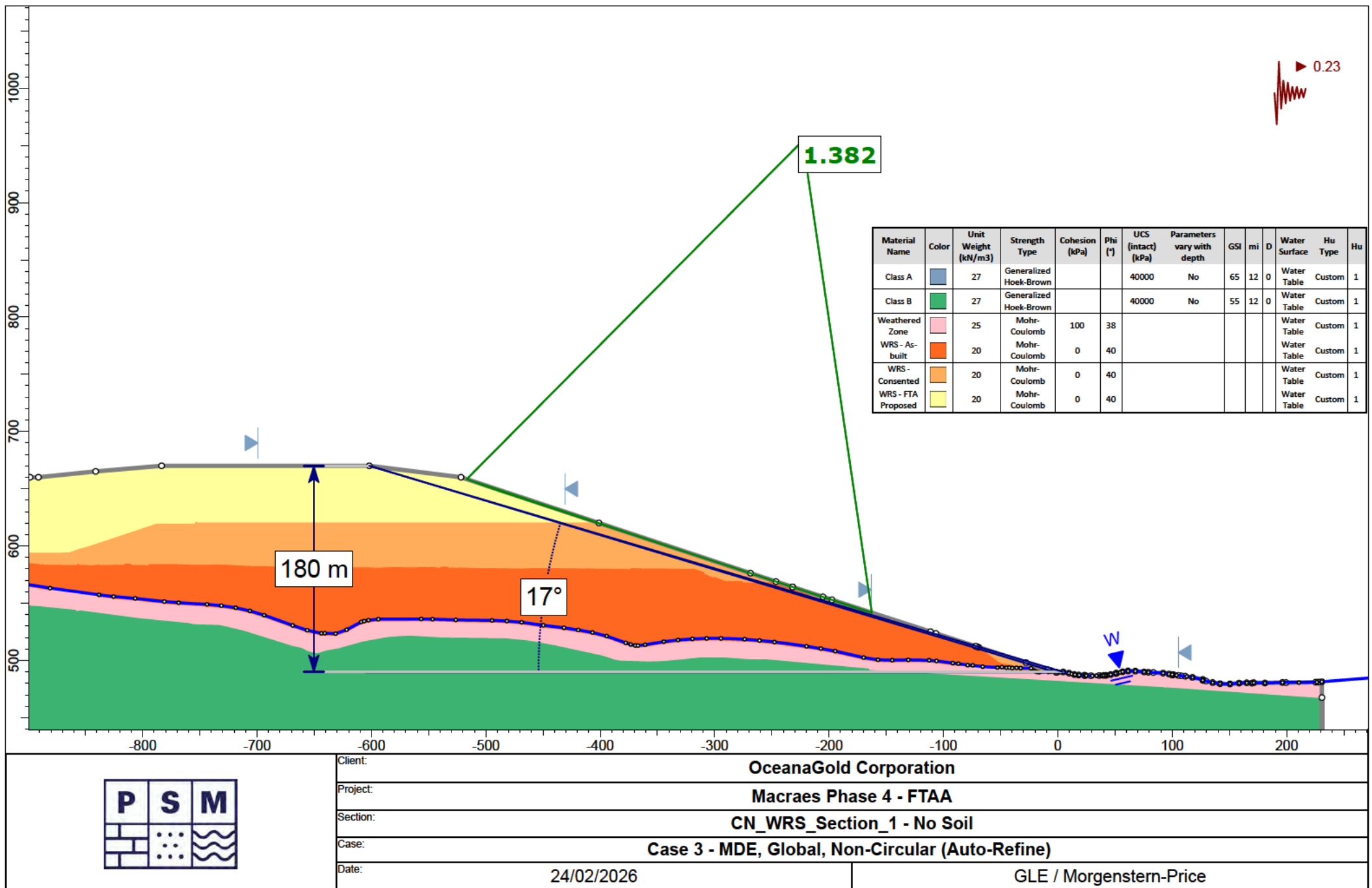


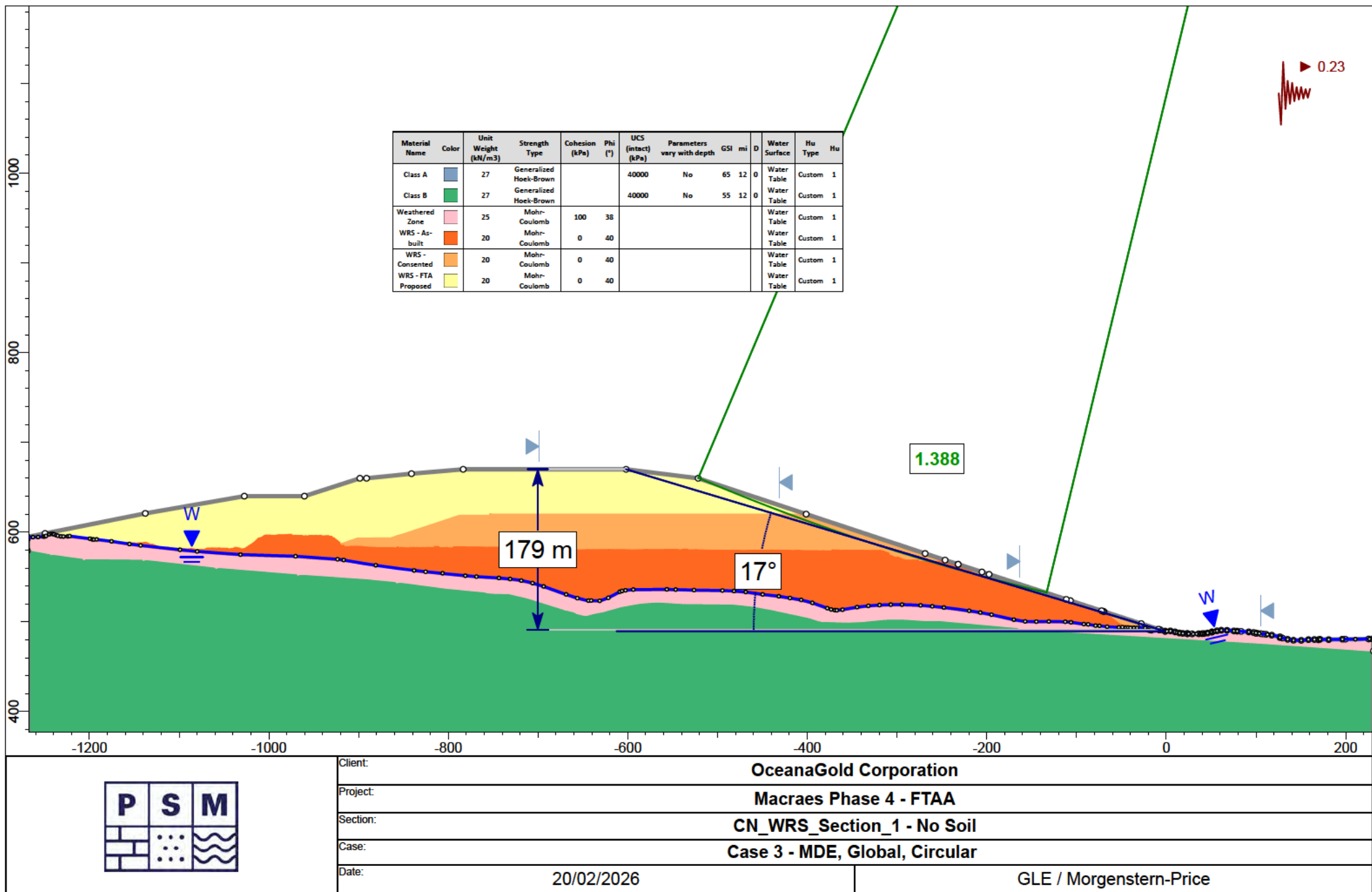


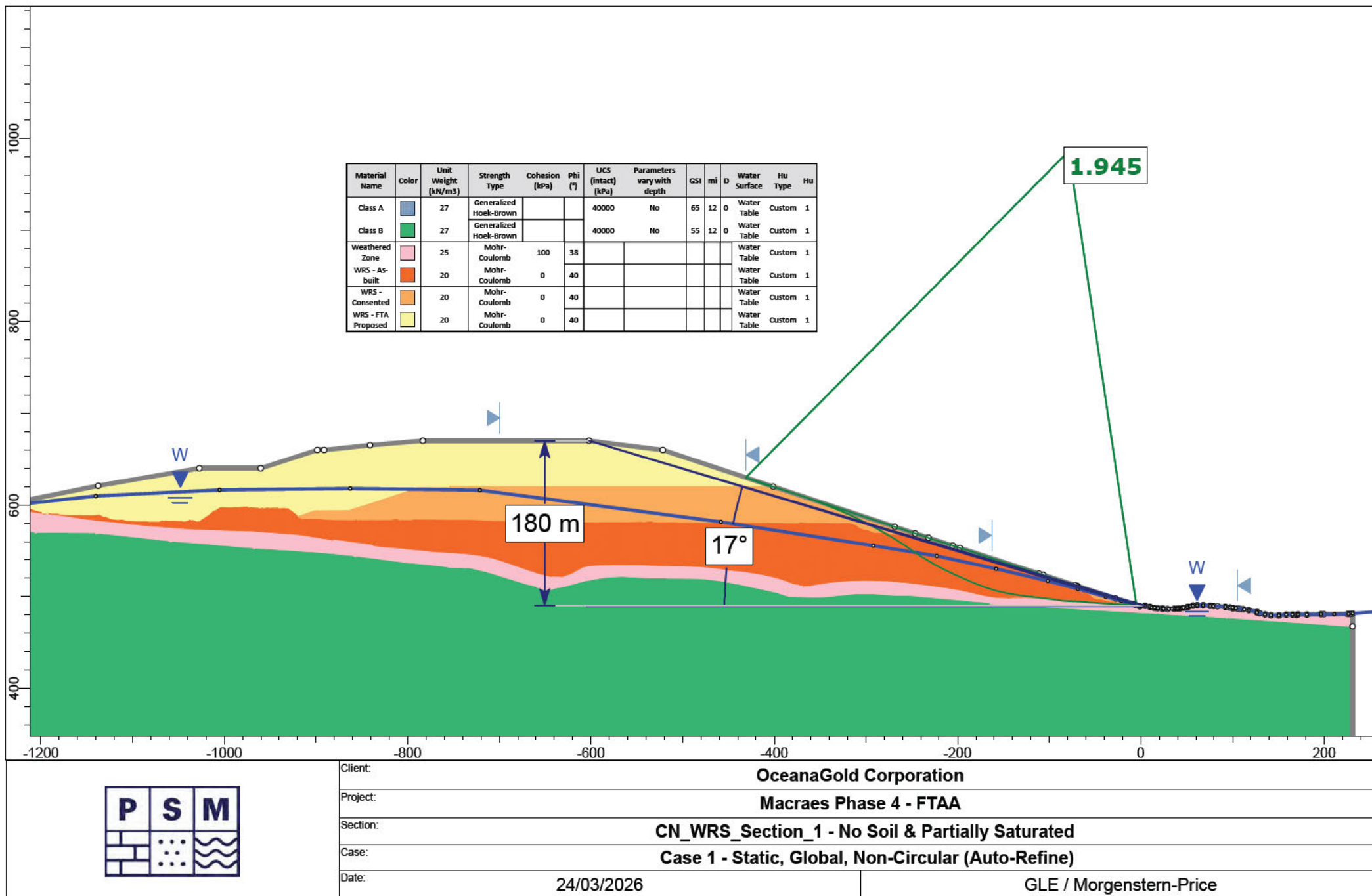


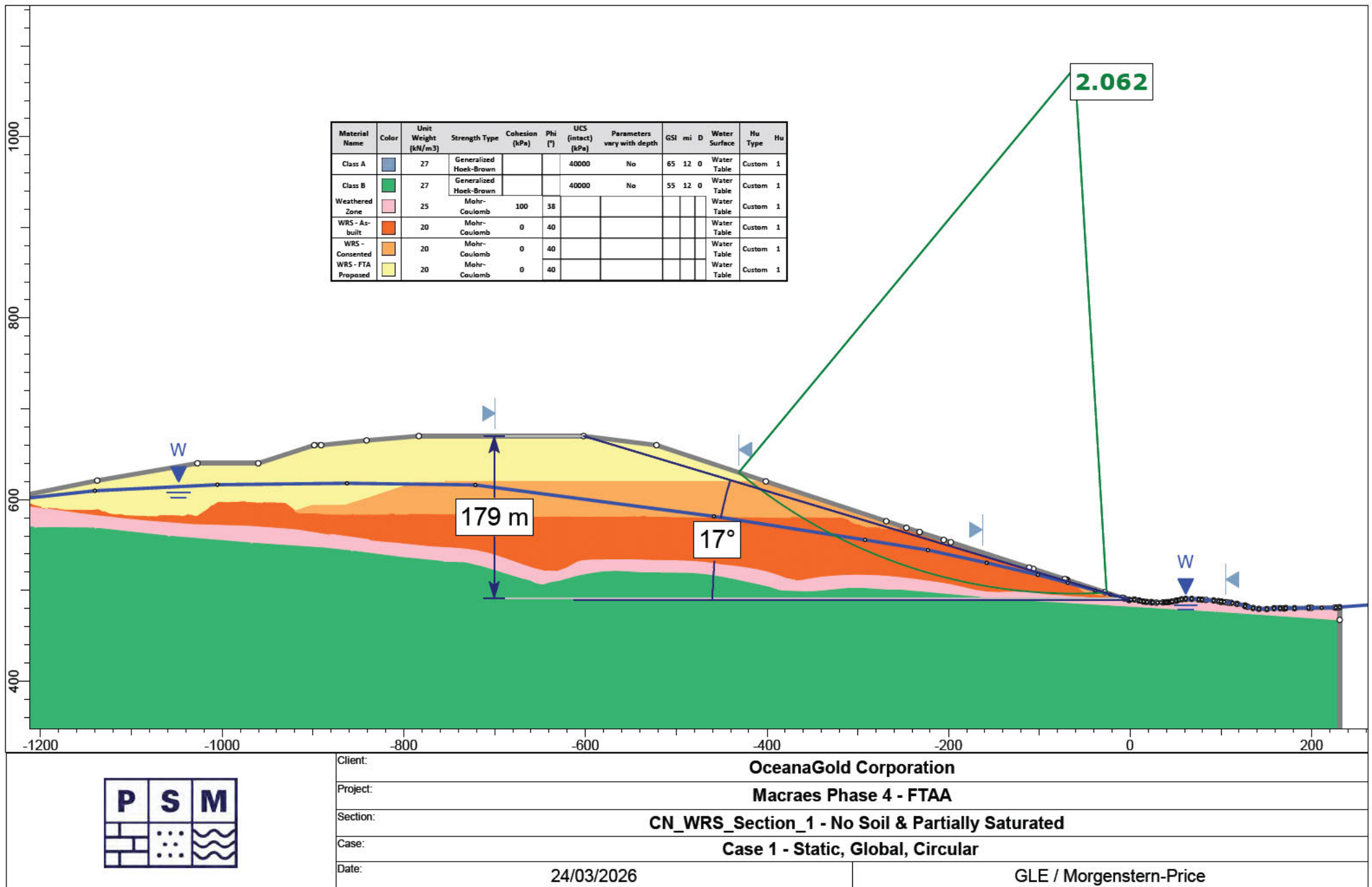


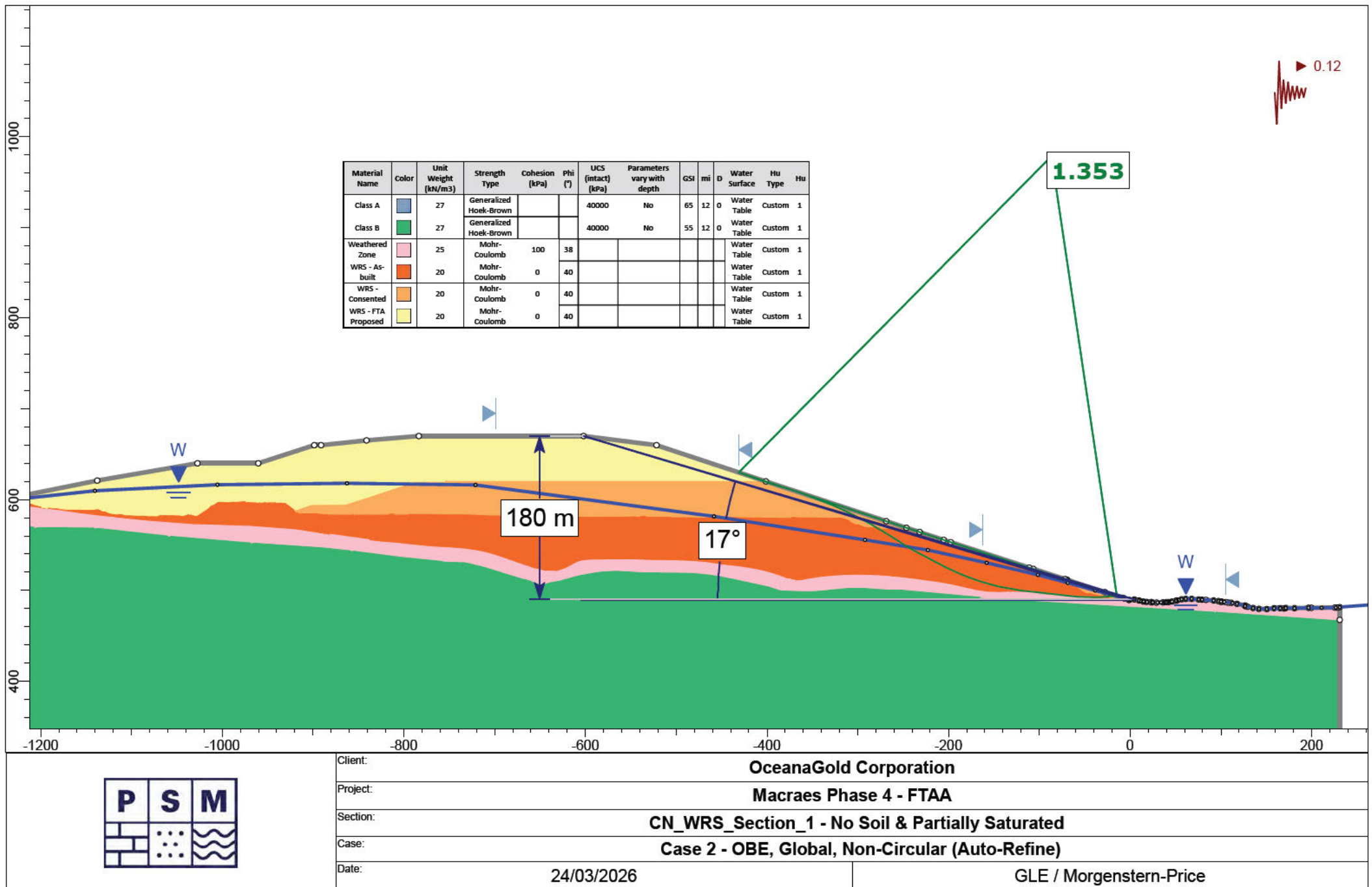
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Project:	Macraes Phase 4 - FTAA	
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Case:	Case 2 - OBE, Global, Circular	
Date:	20/02/2026	GLE / Morgenstern-Price

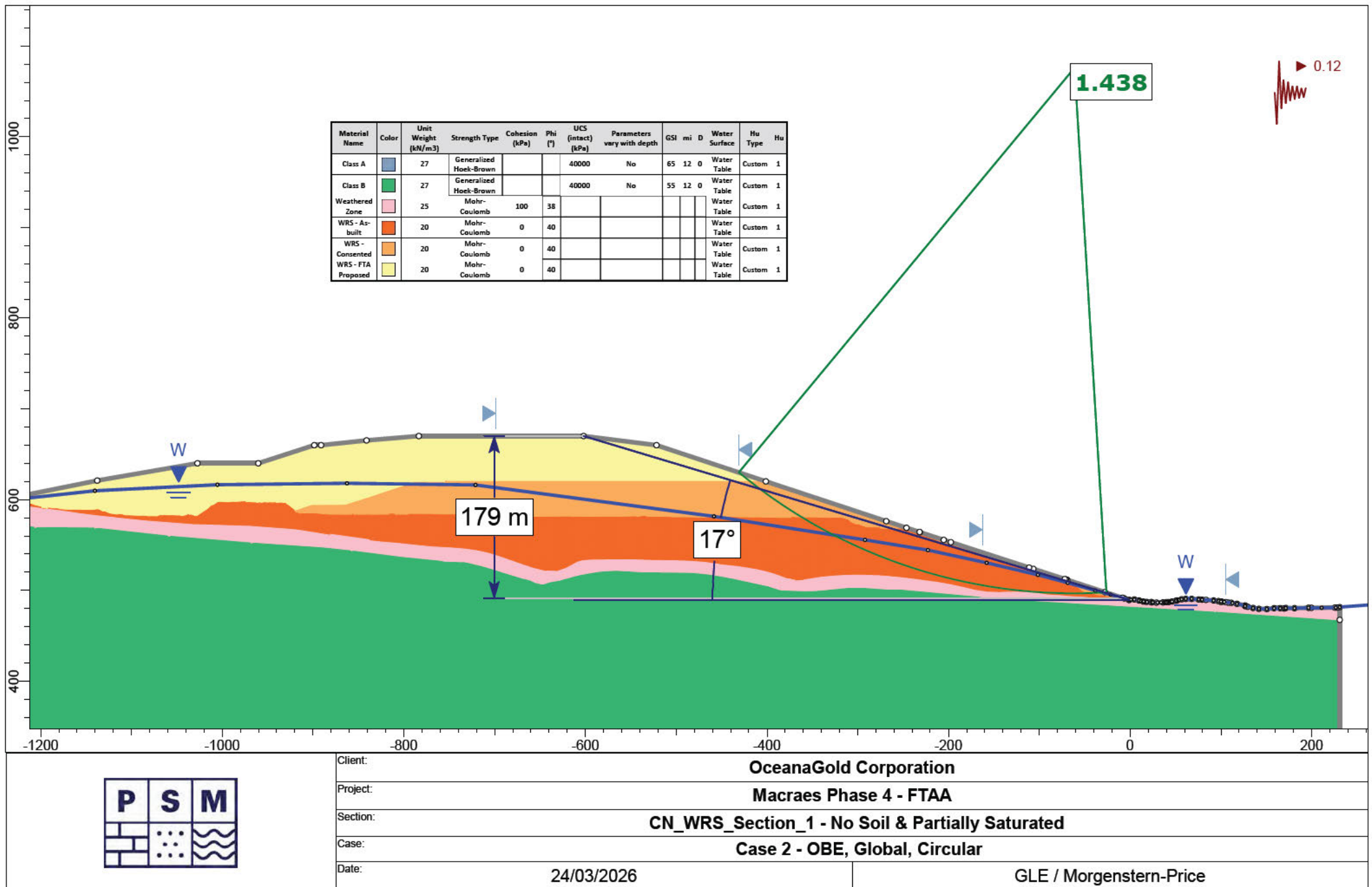


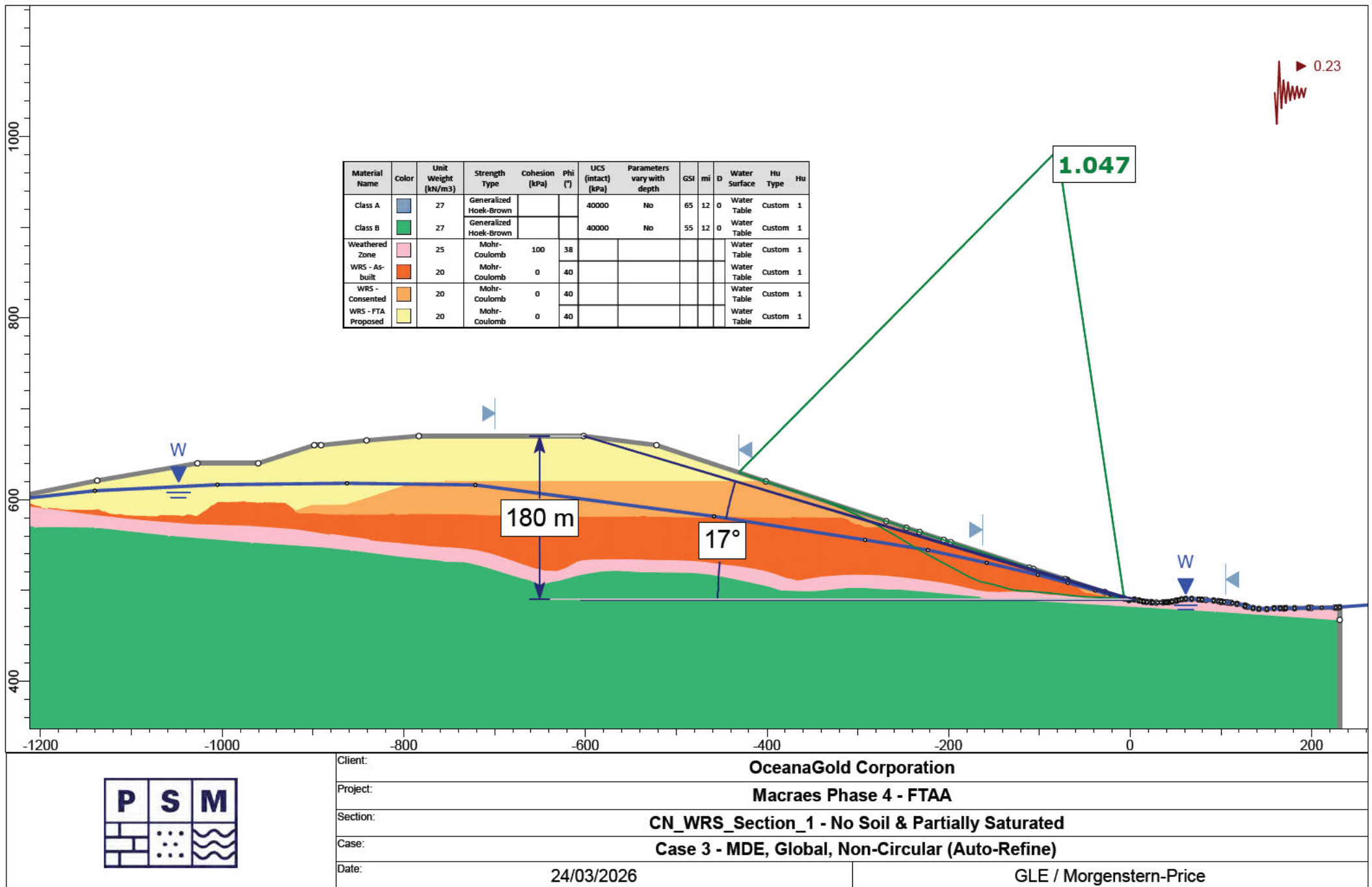


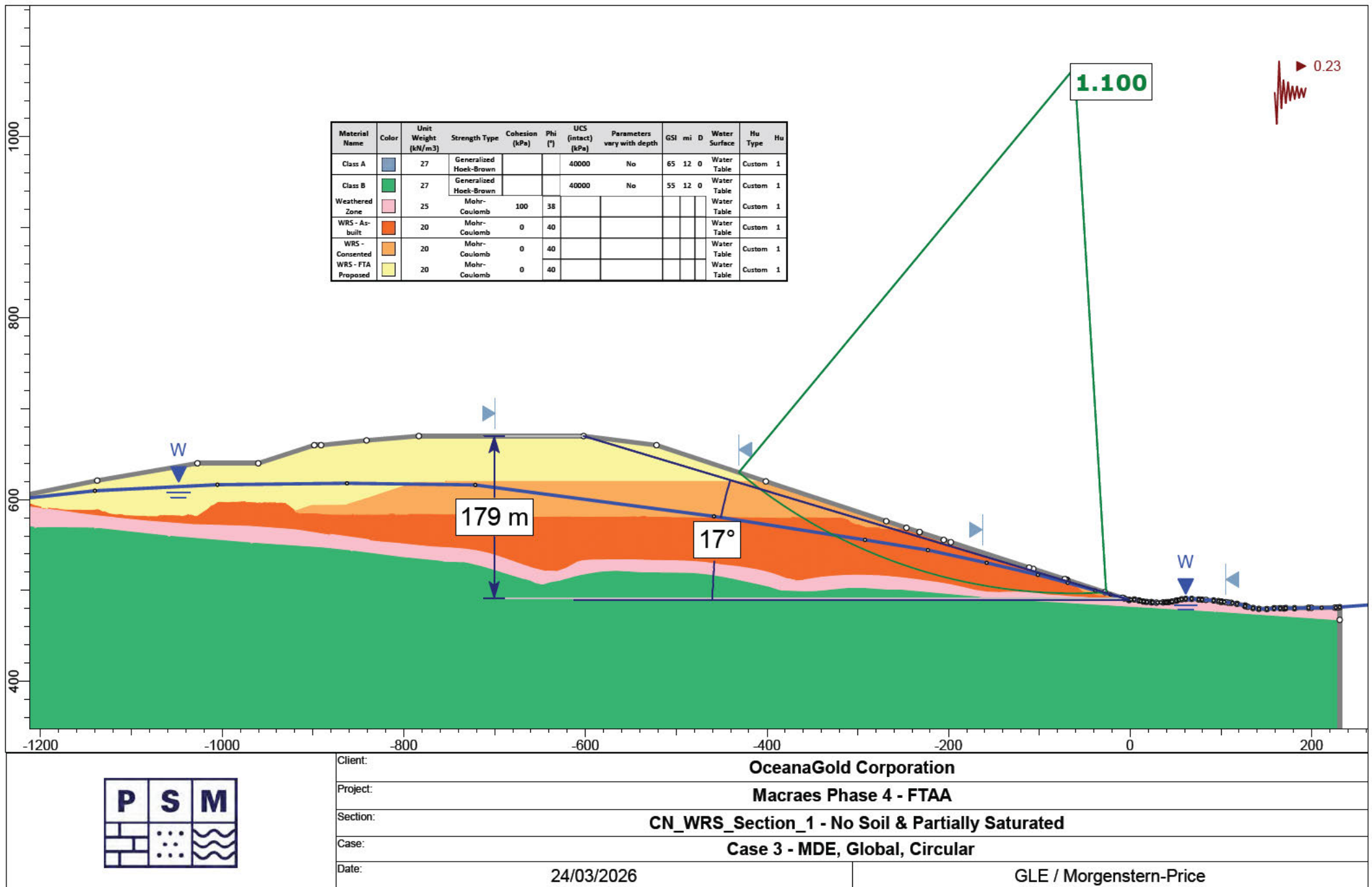


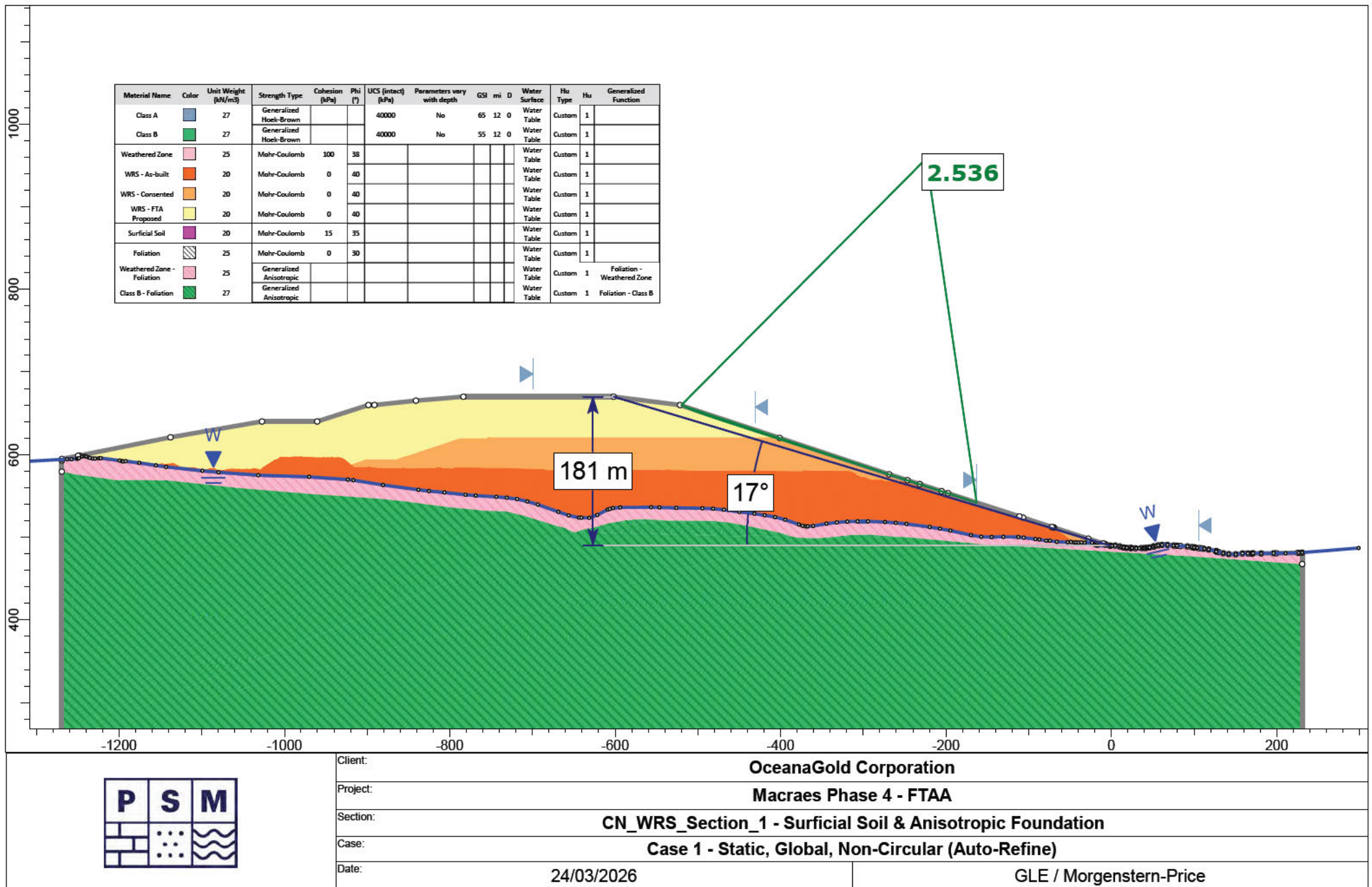


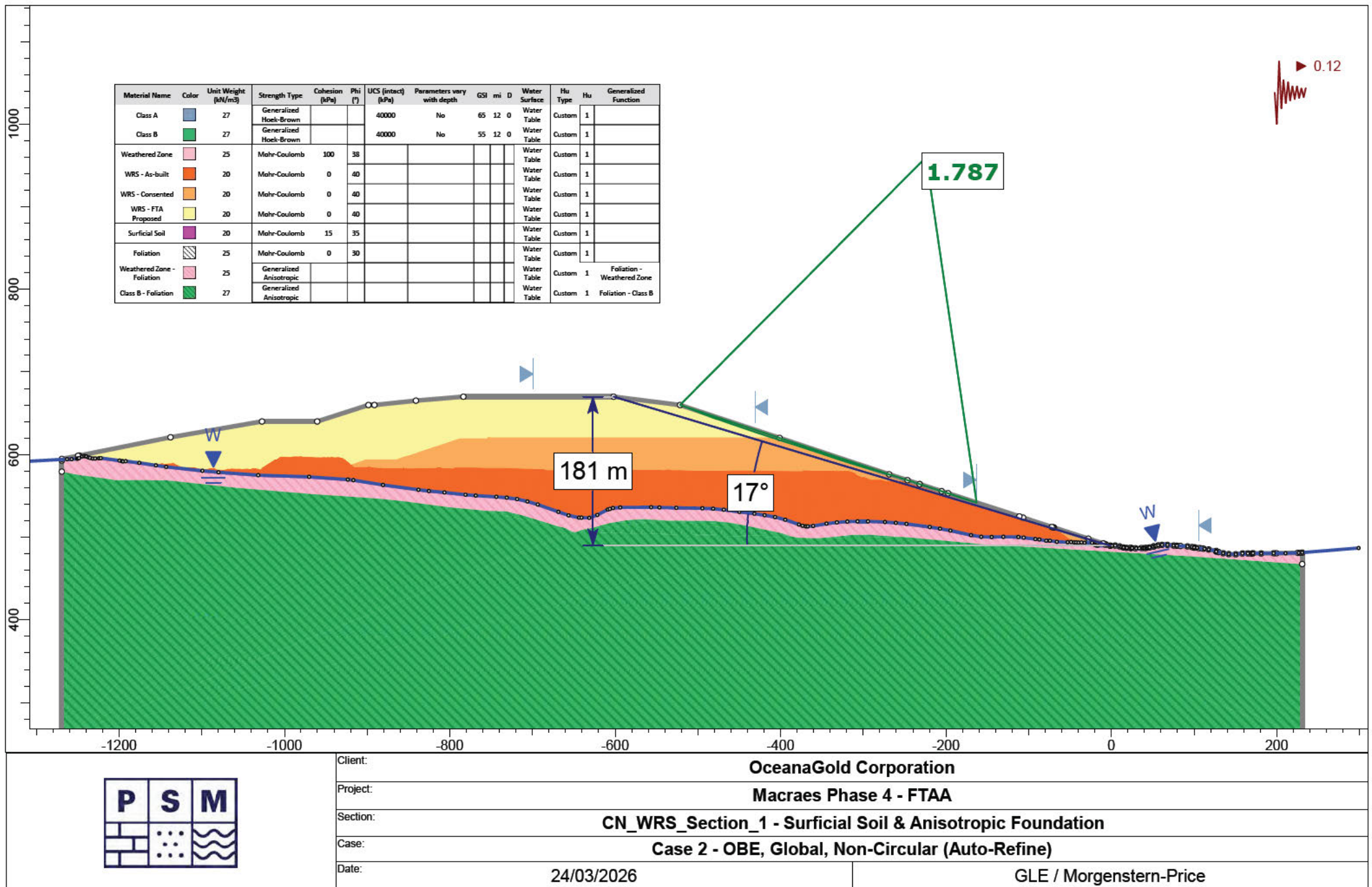


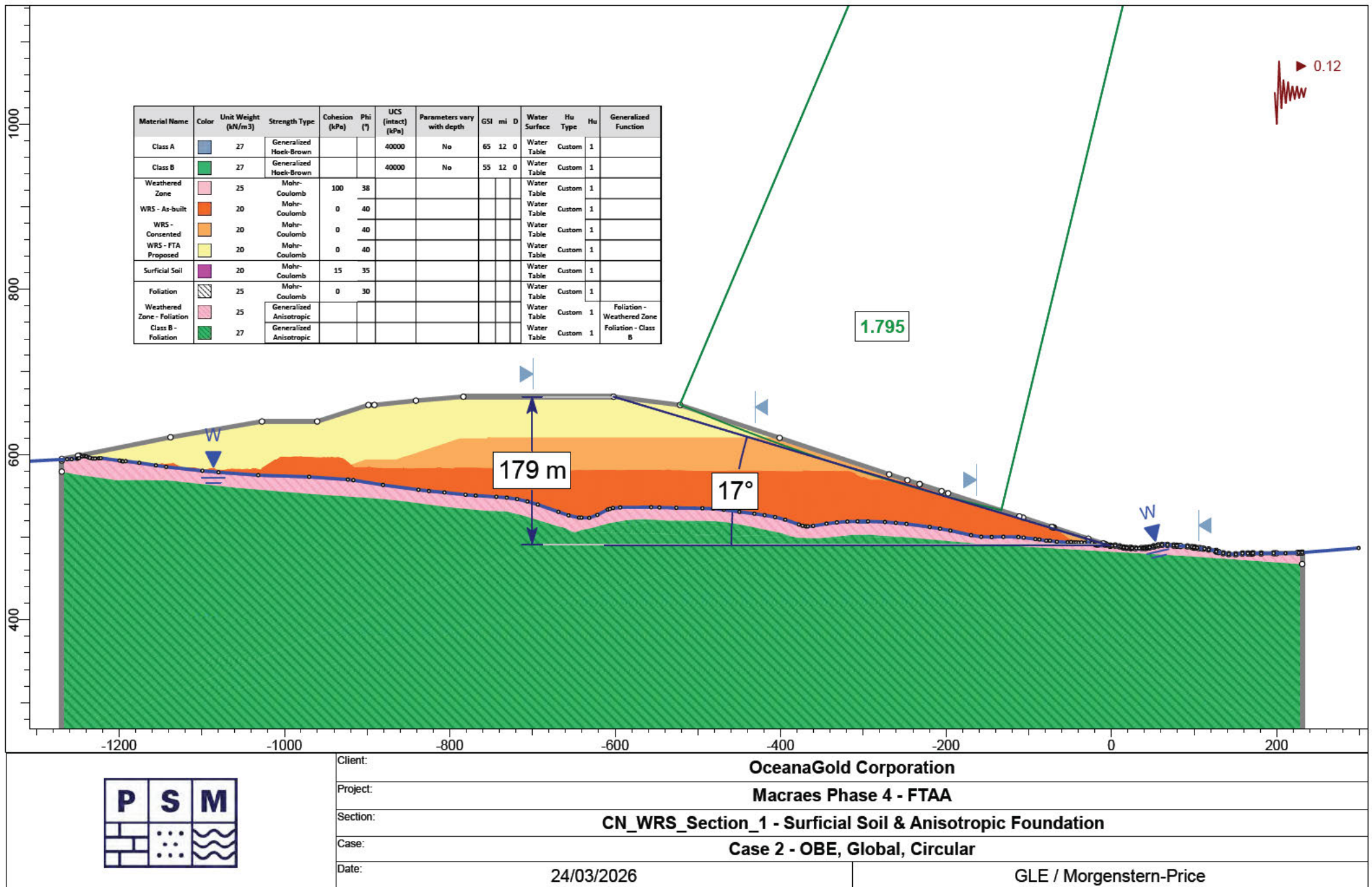


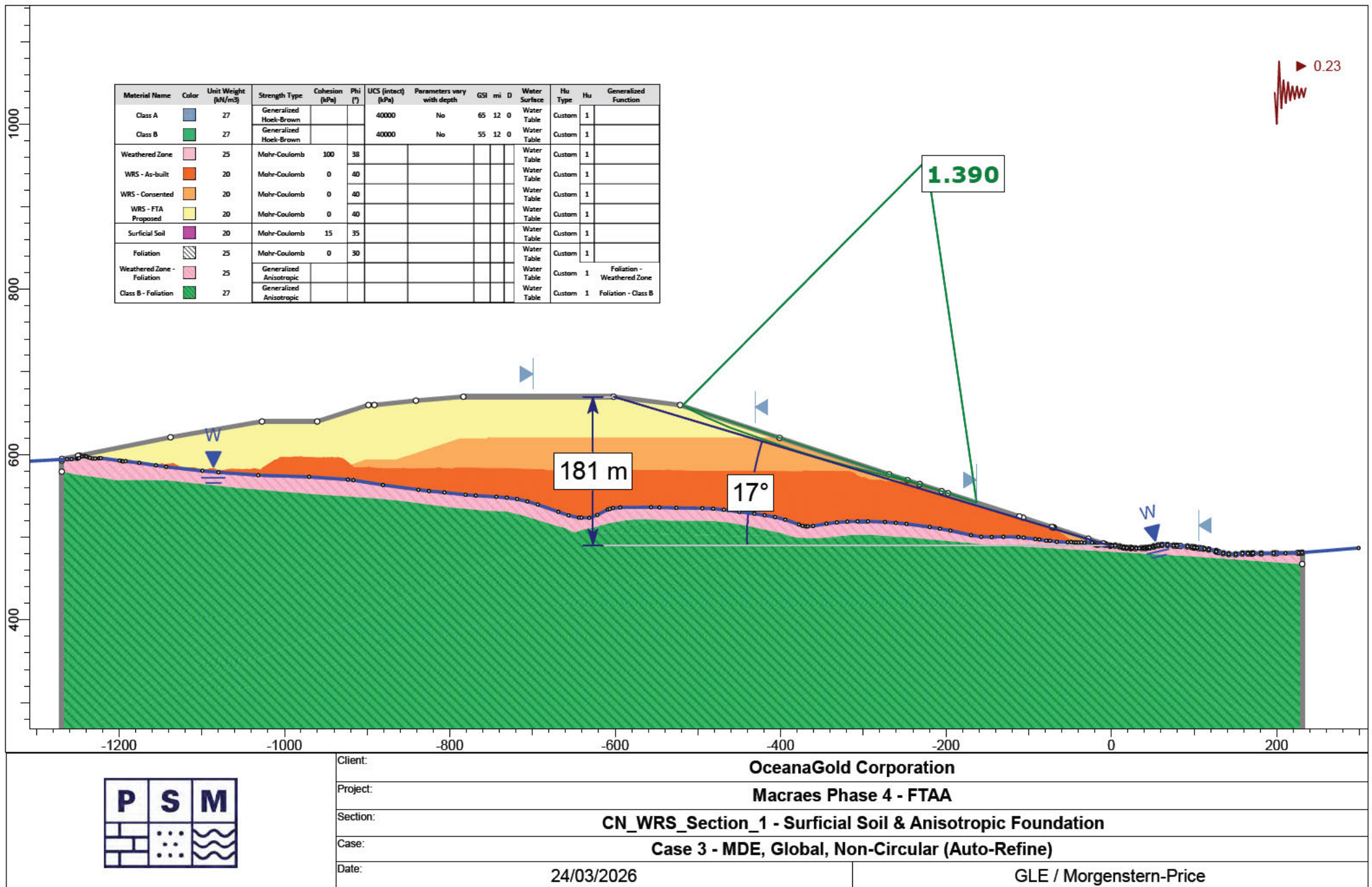


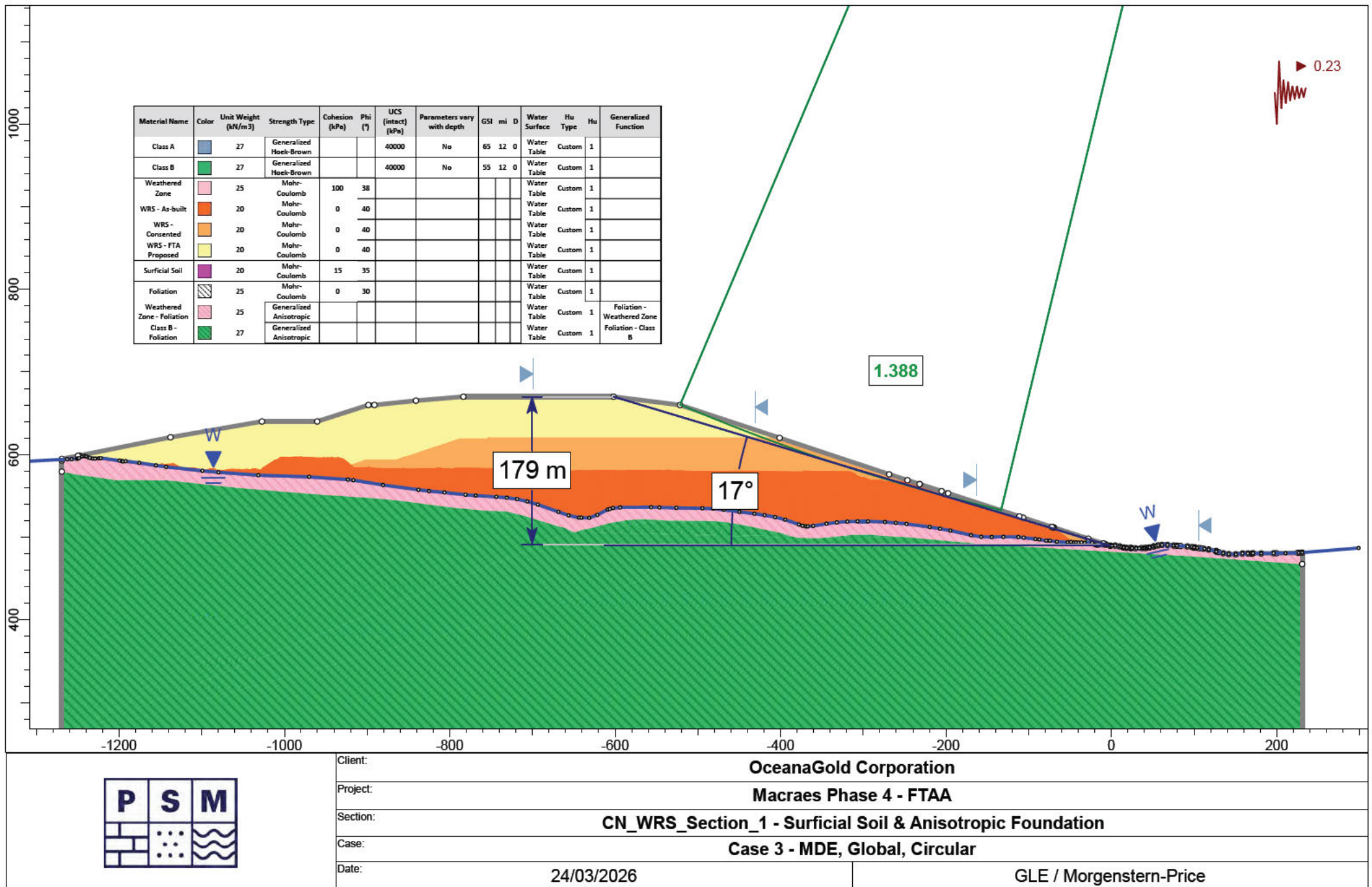


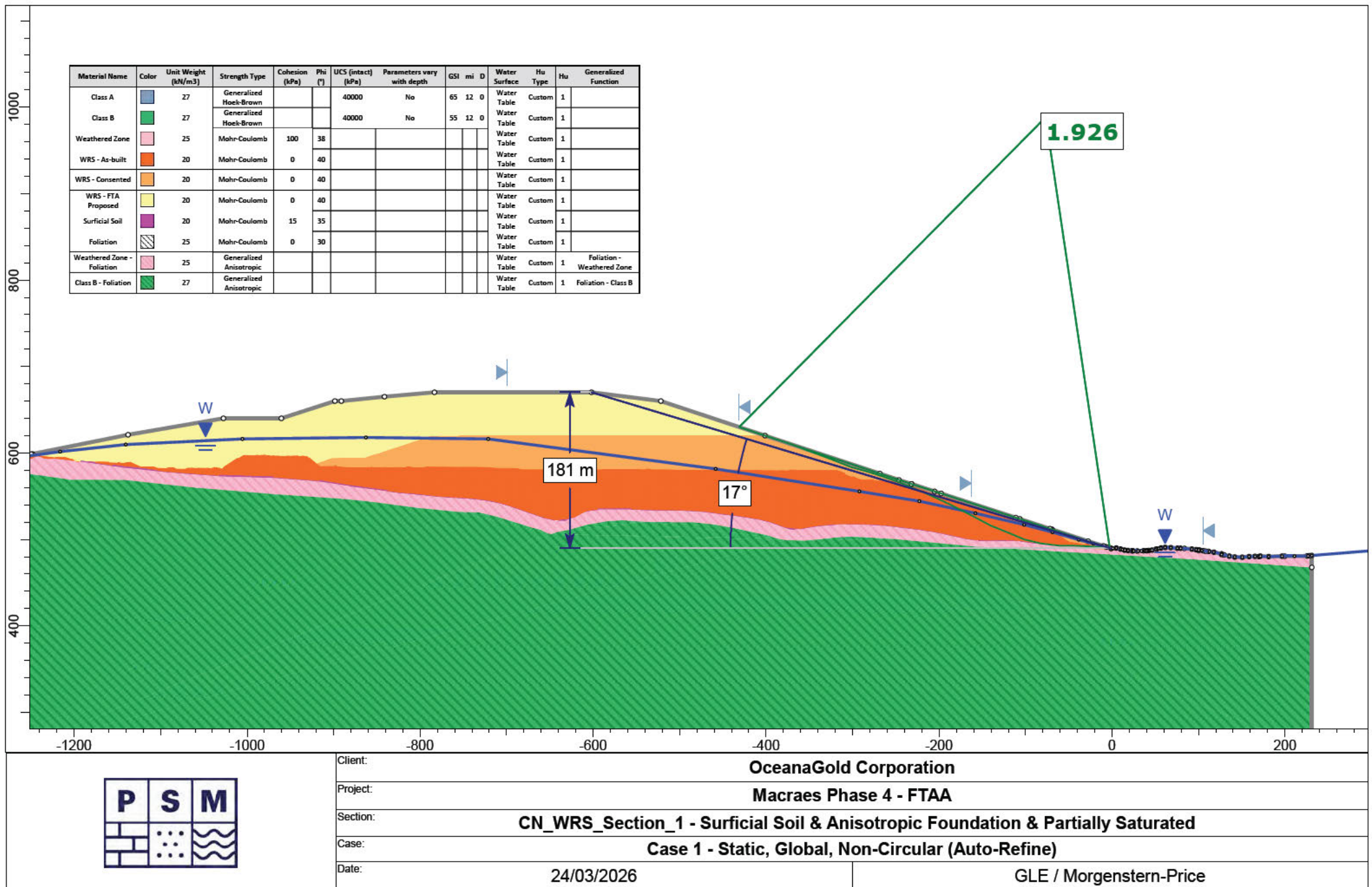


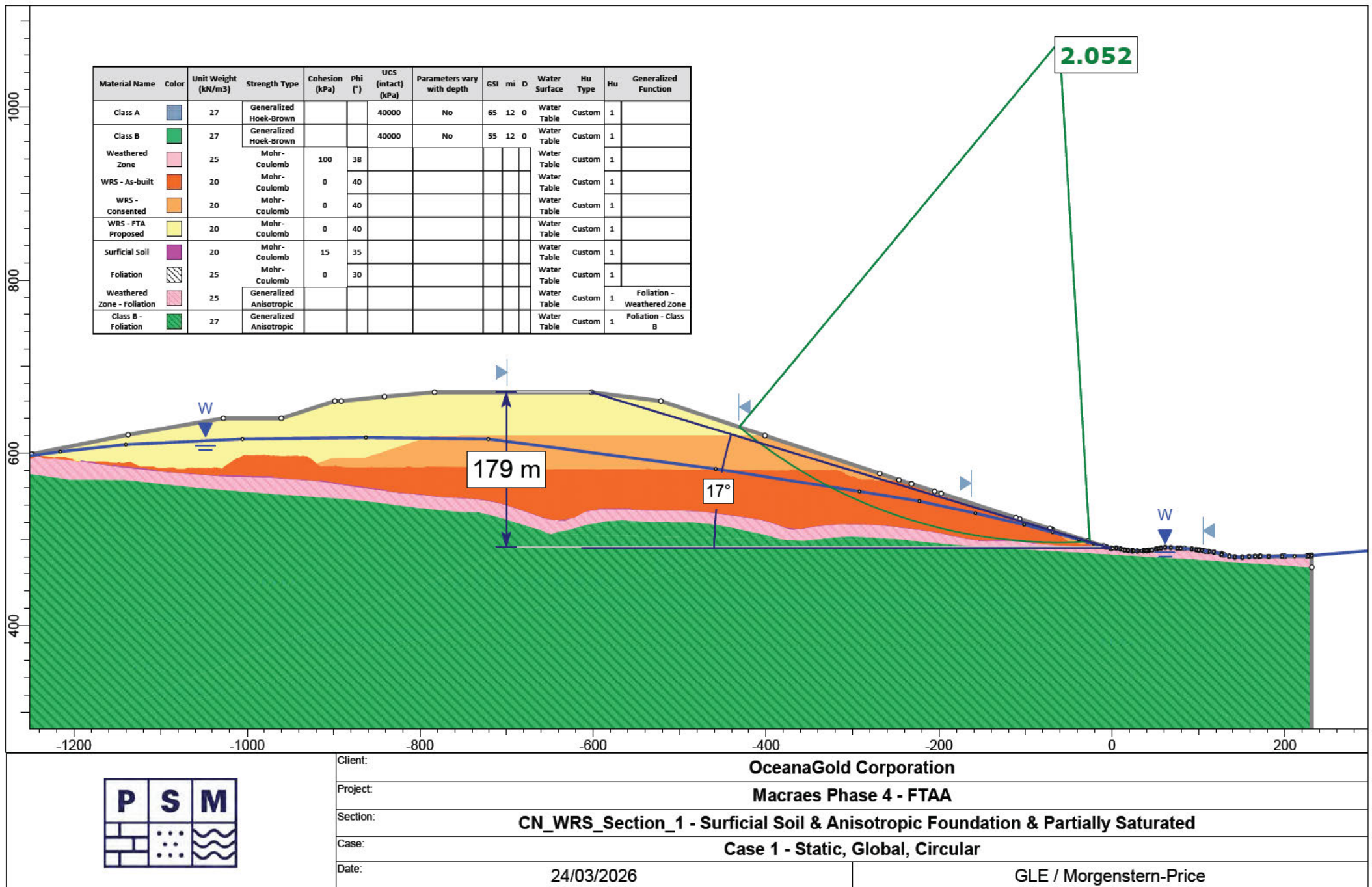


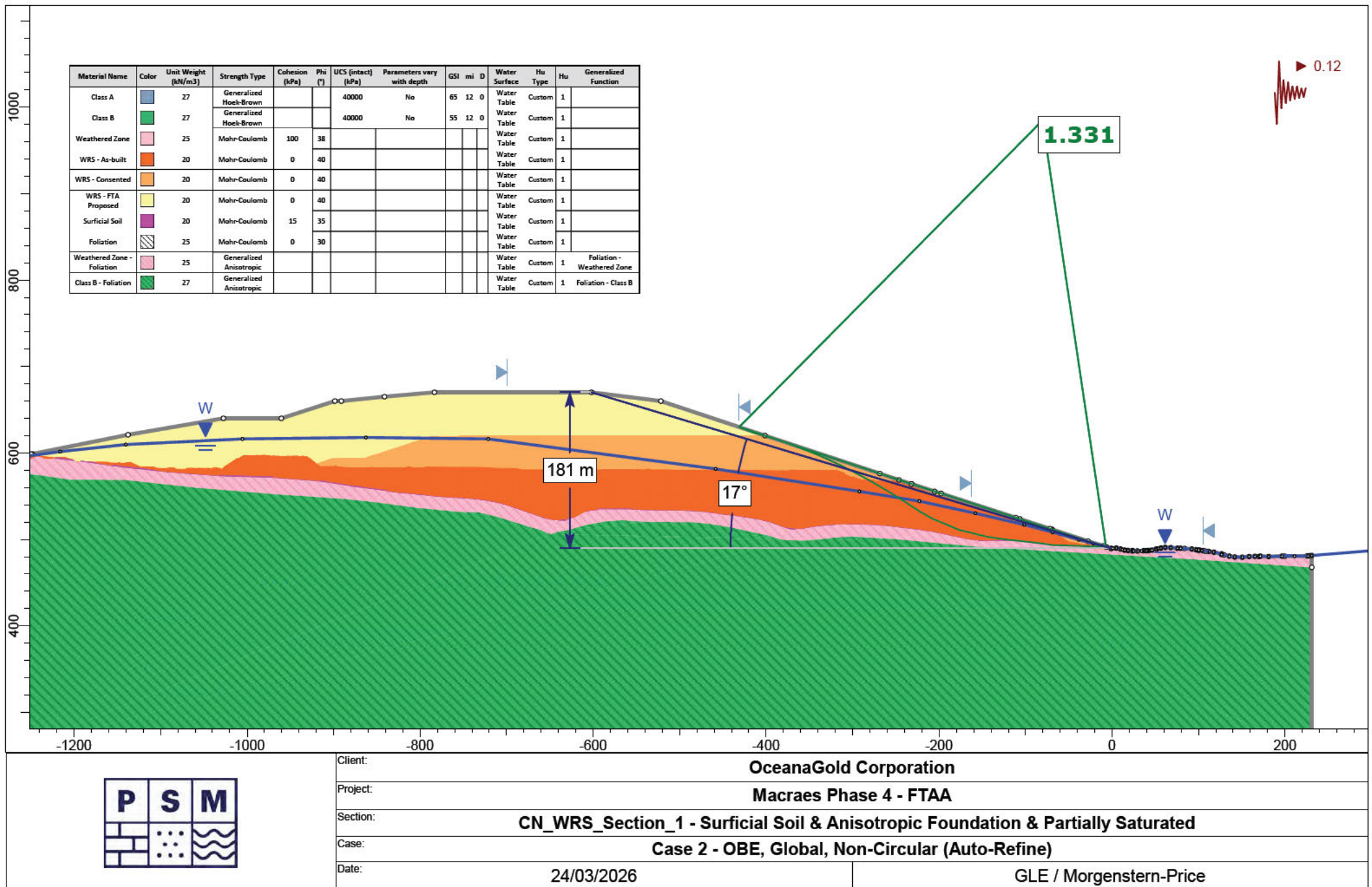


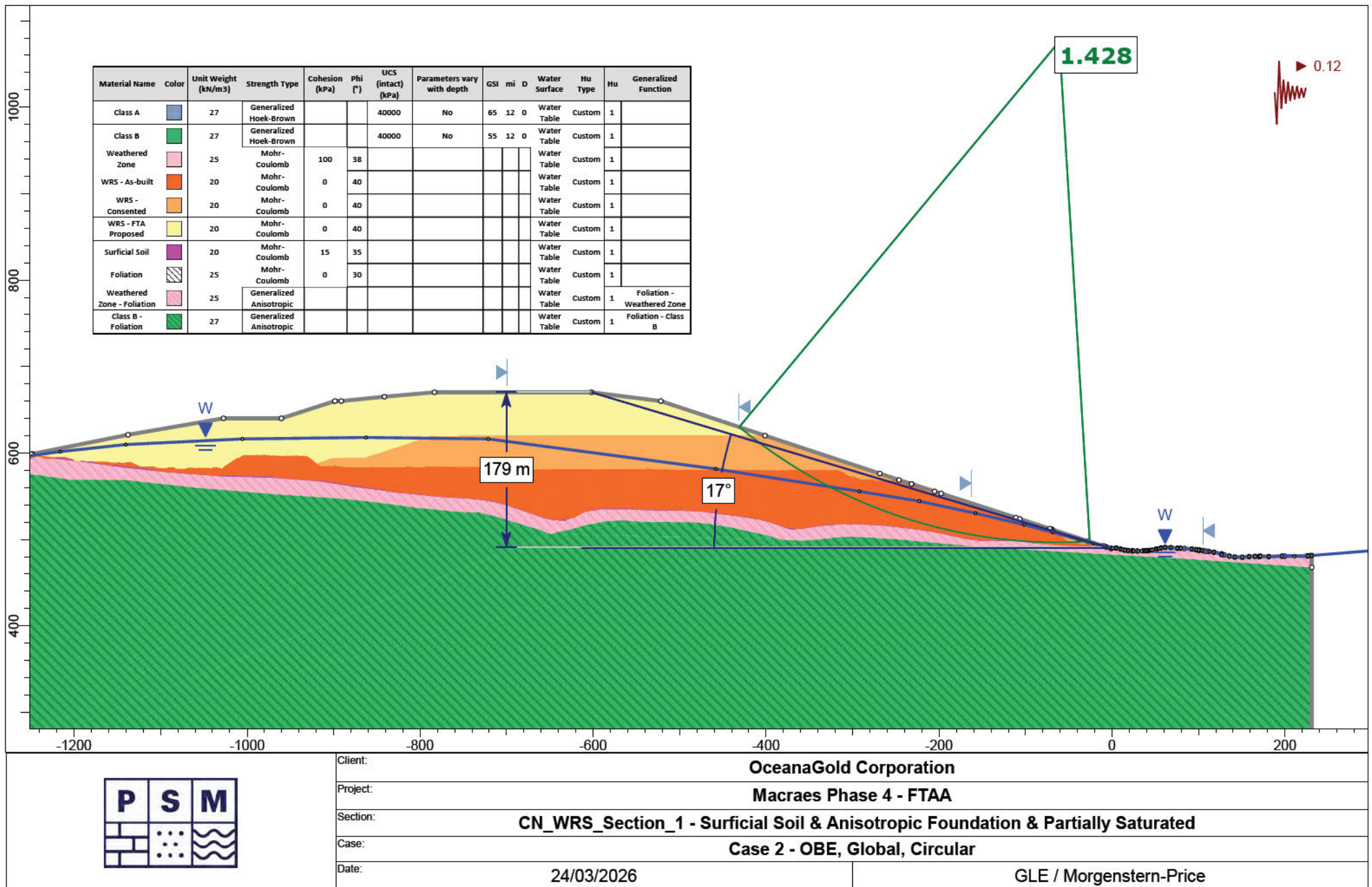


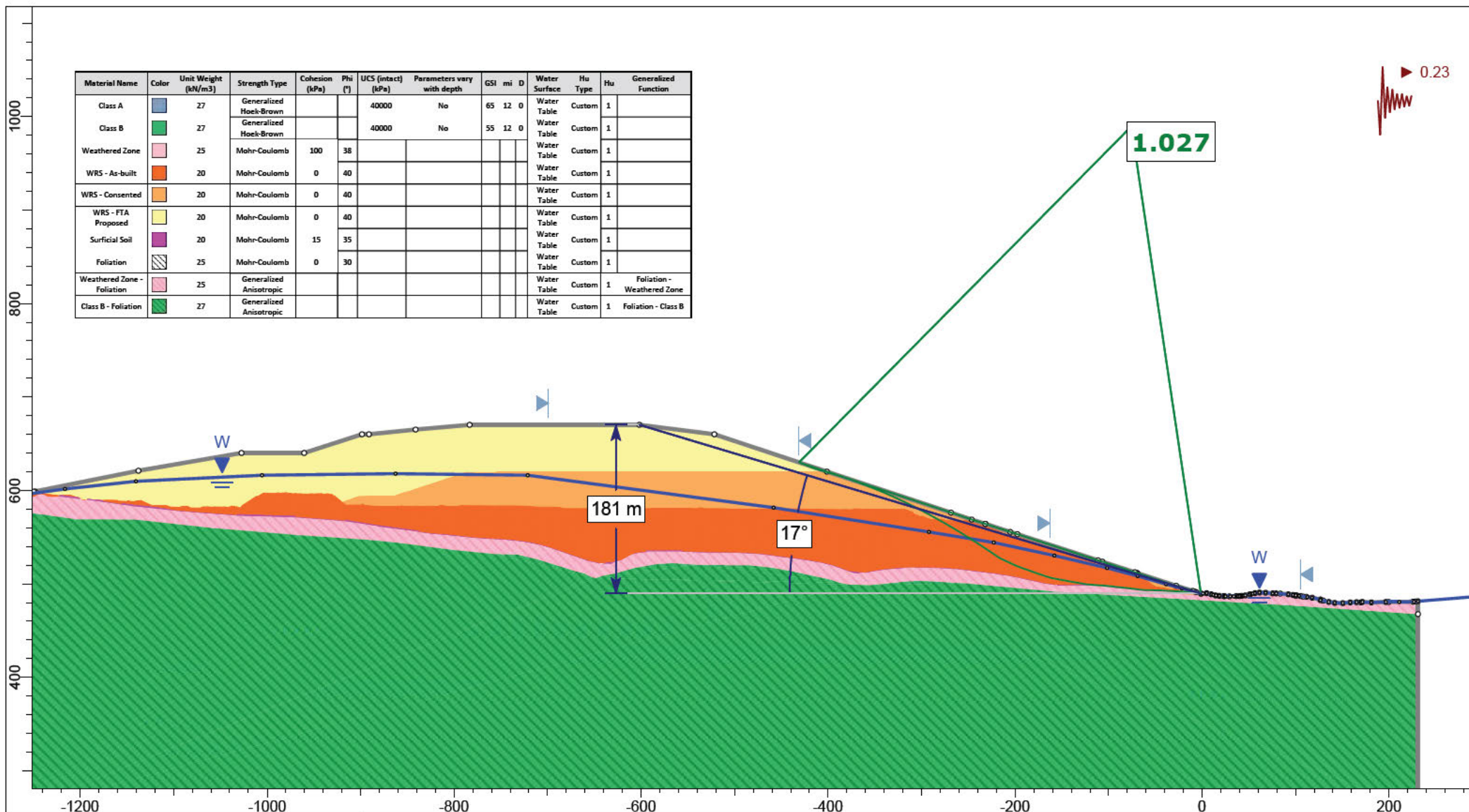




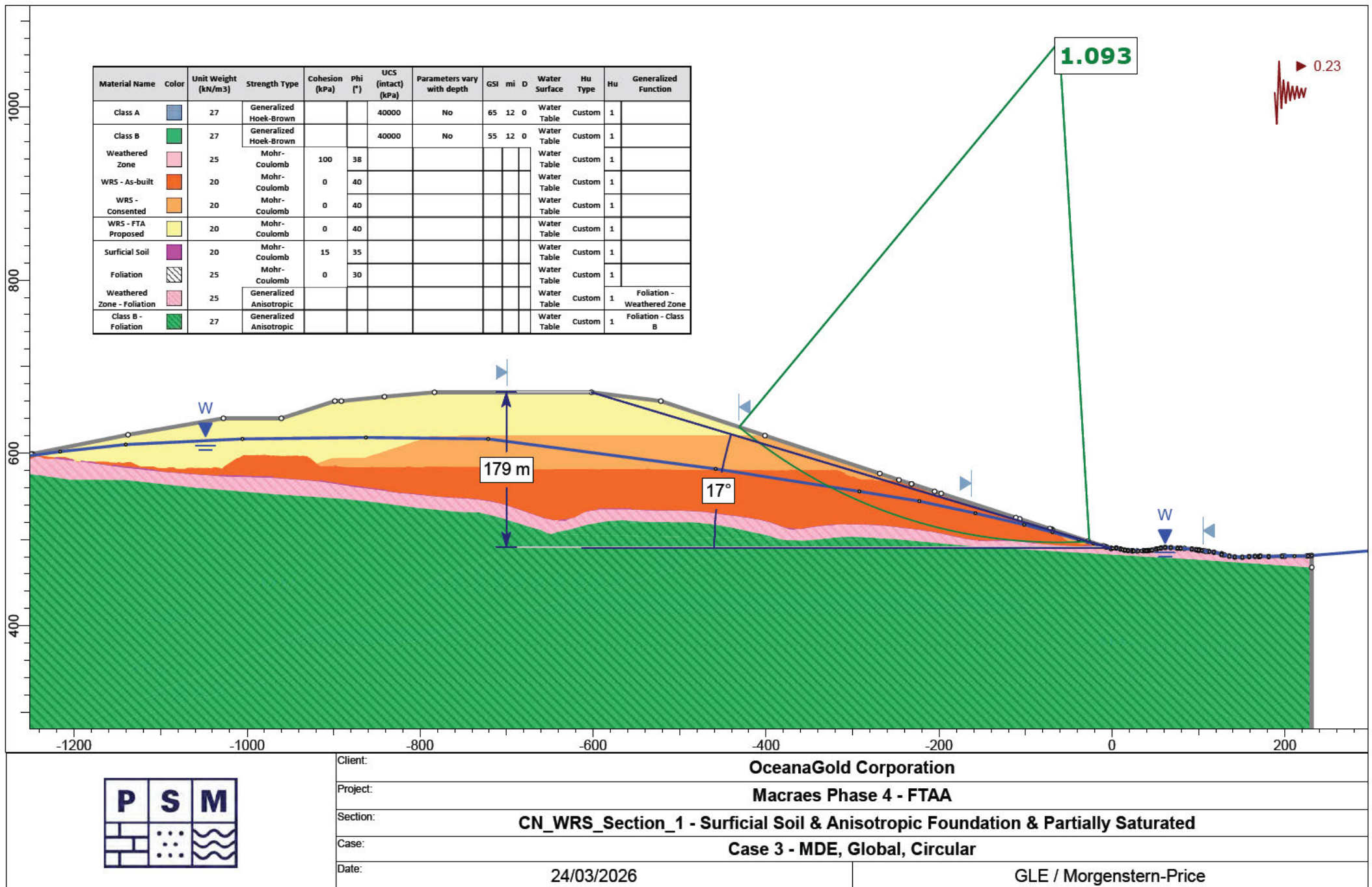


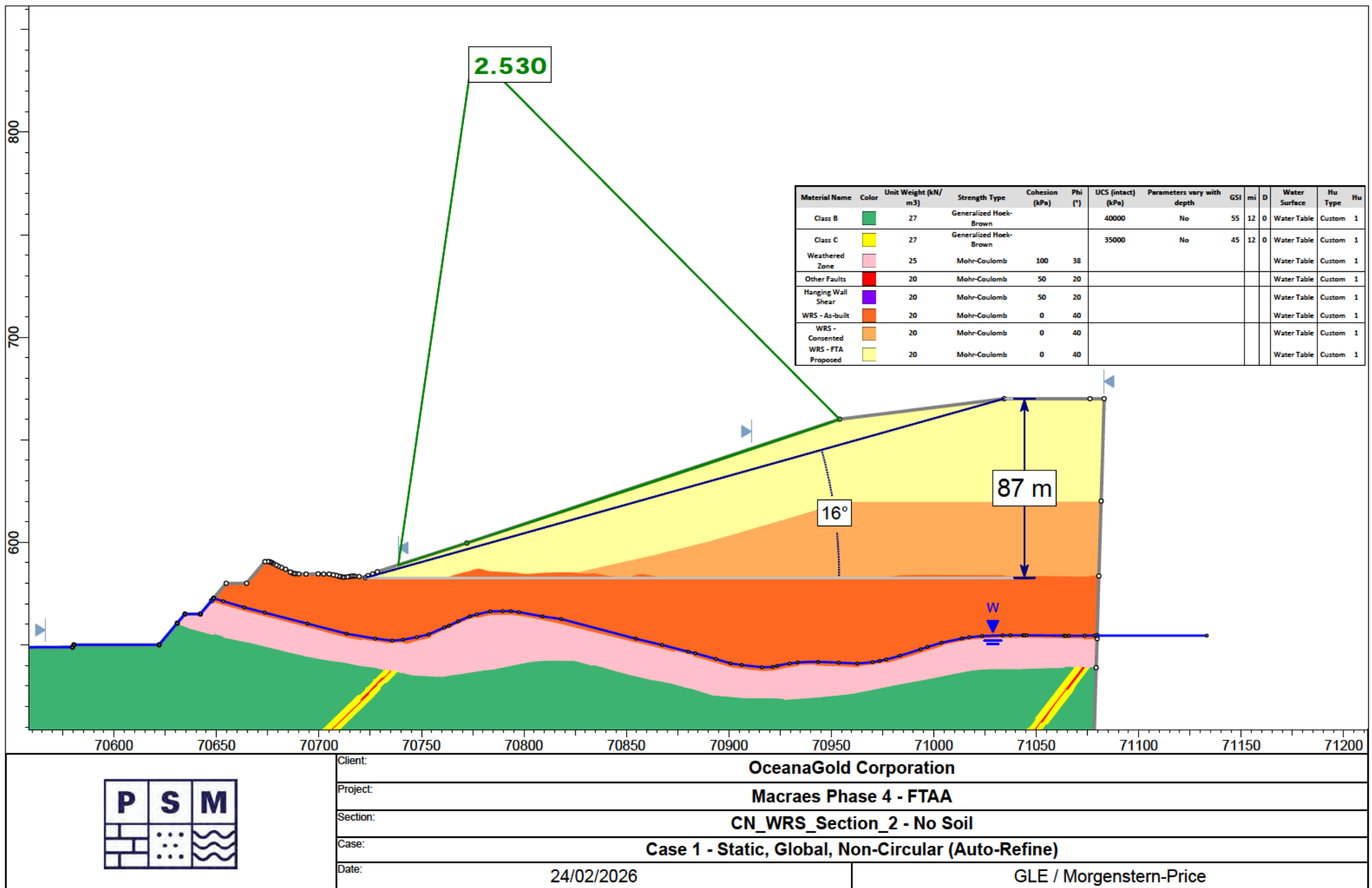


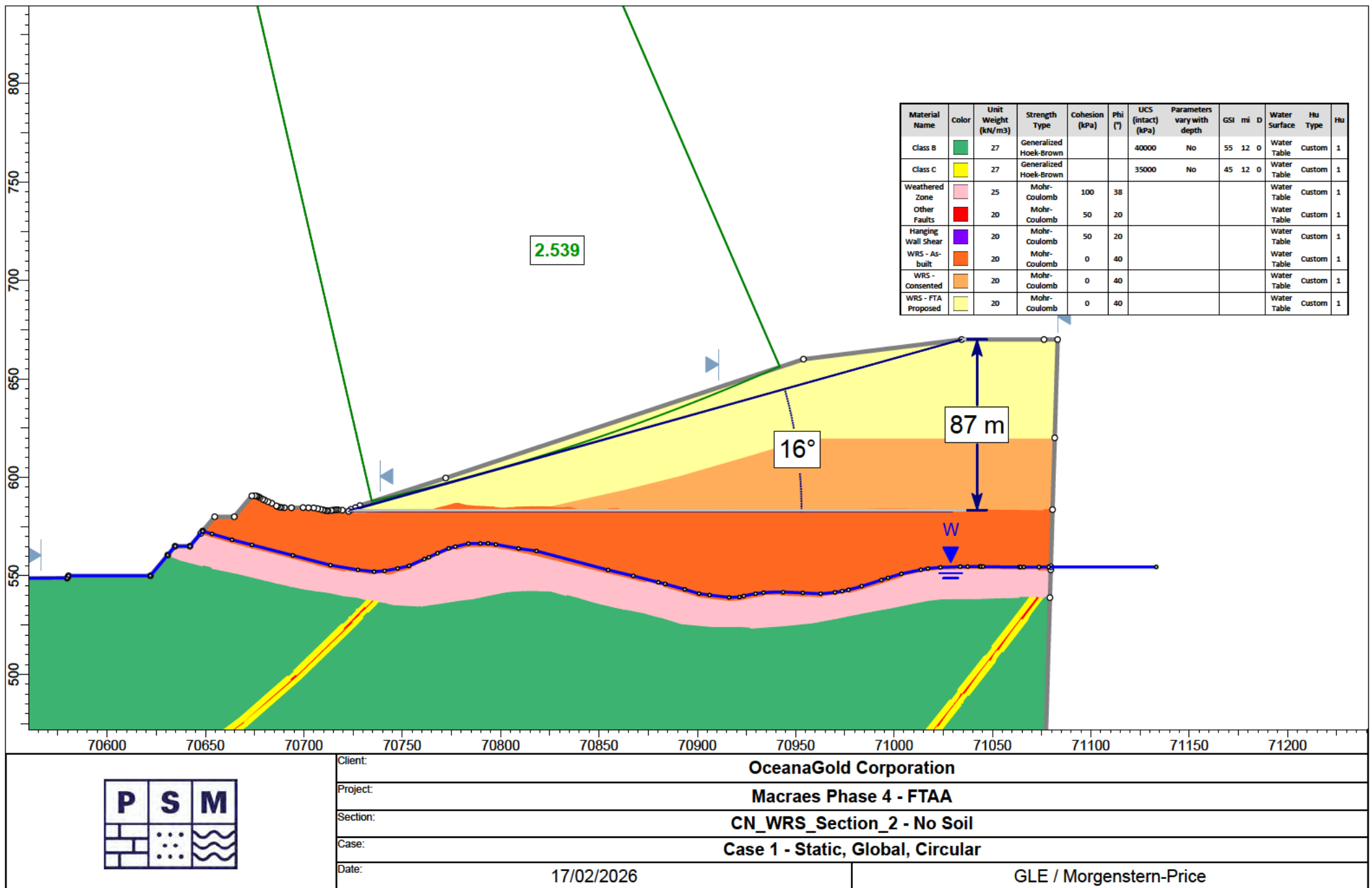


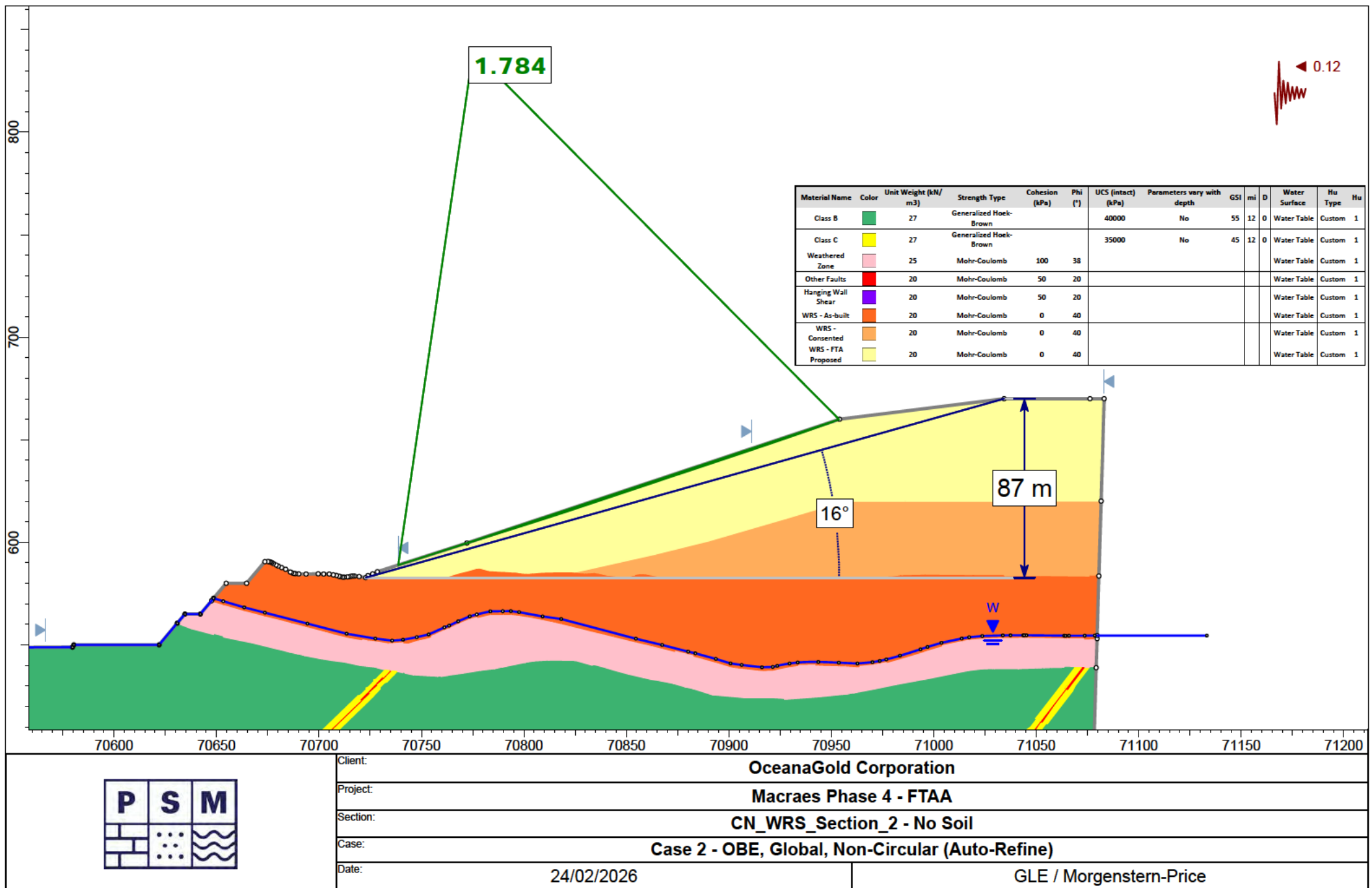


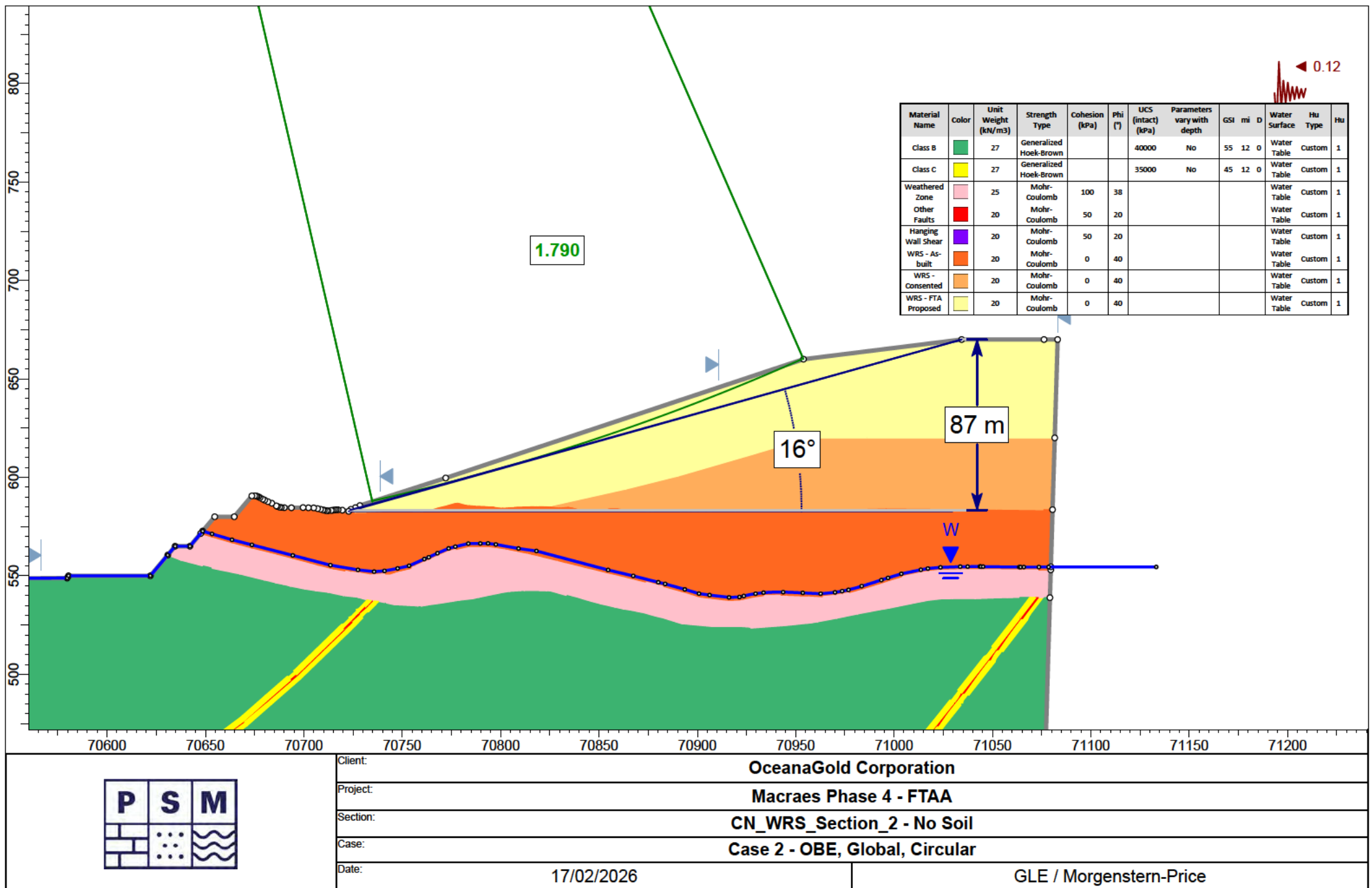
Client:	OceanaGold Corporation	
Project:	Macraes Phase 4 - FTA	
Section:	CN_WRS_Section_1 - Surficial Soil & Anisotropic Foundation & Partially Saturated	
Case:	Case 3 - MDE, Global, Non-Circular (Auto-Refine)	
Date:	24/03/2026	GLE / Morgenstern-Price

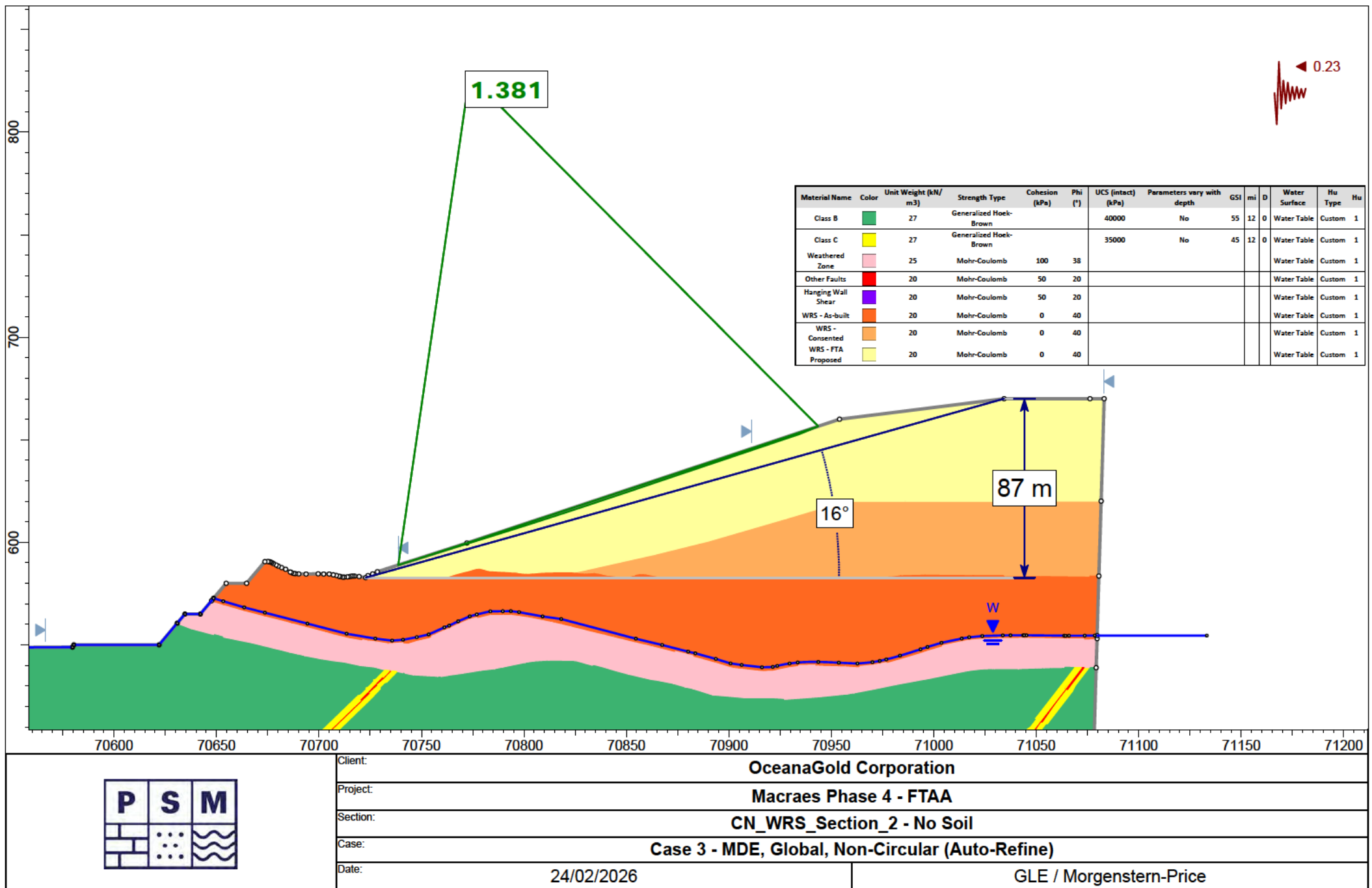


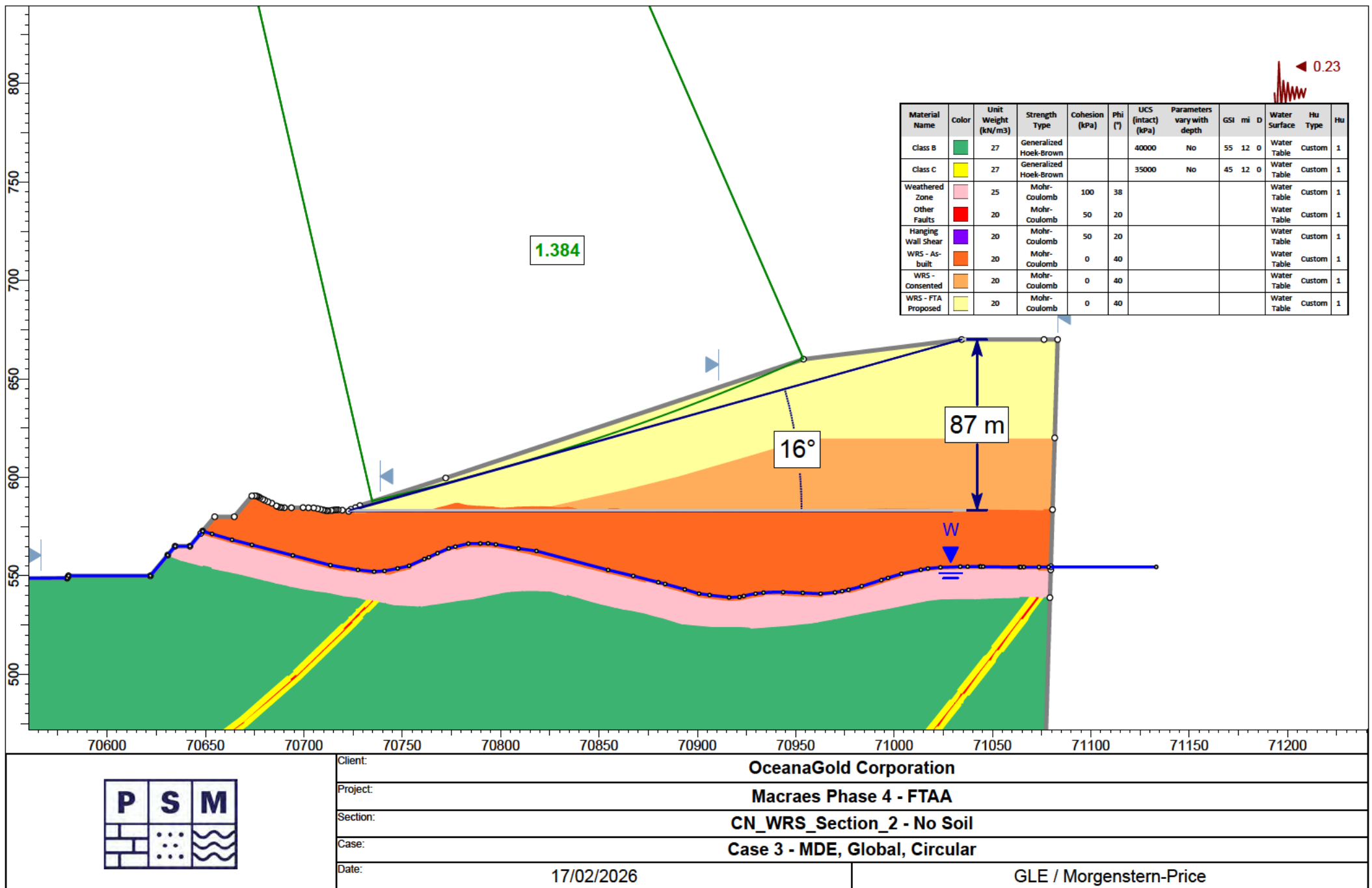


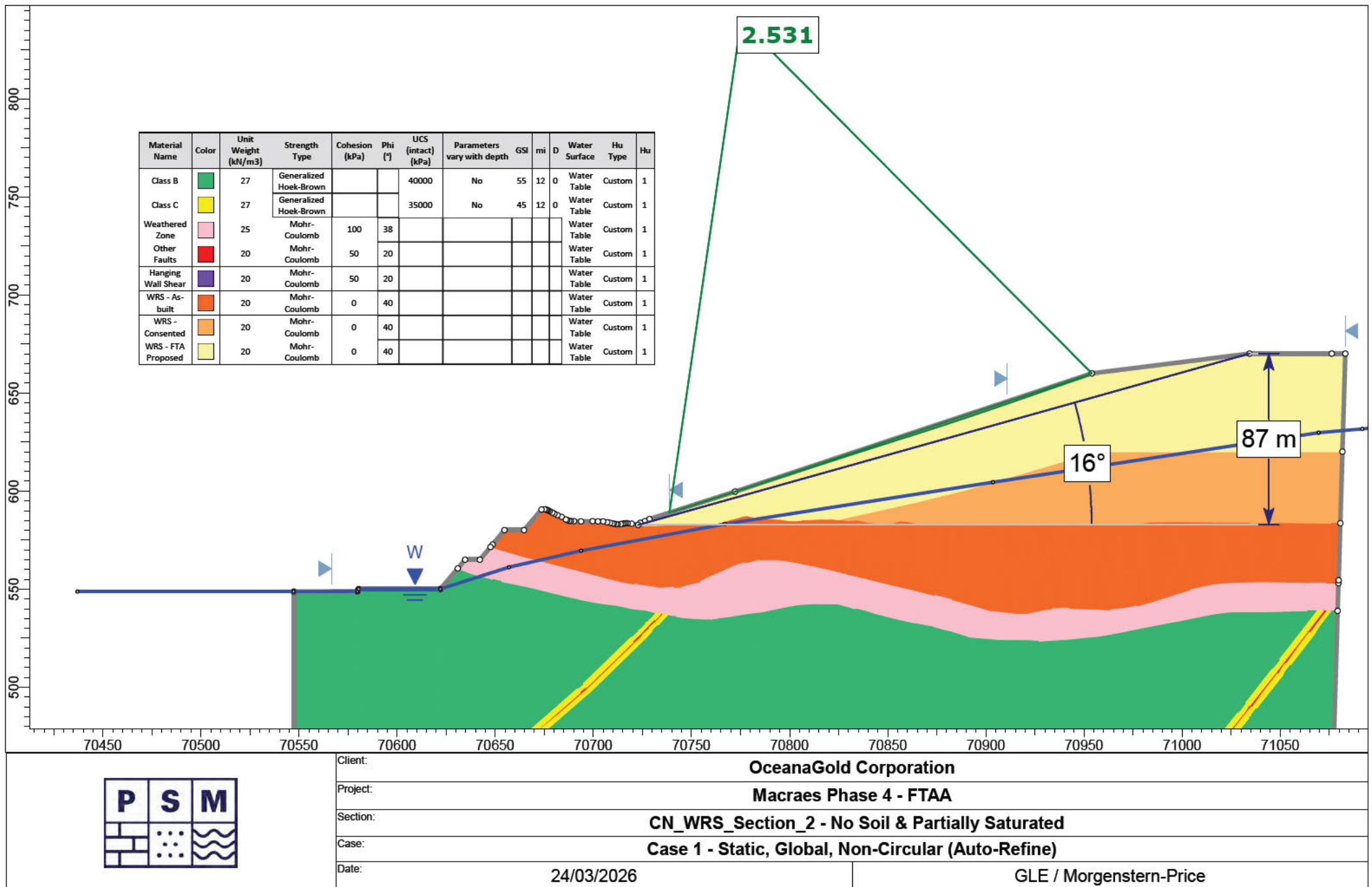


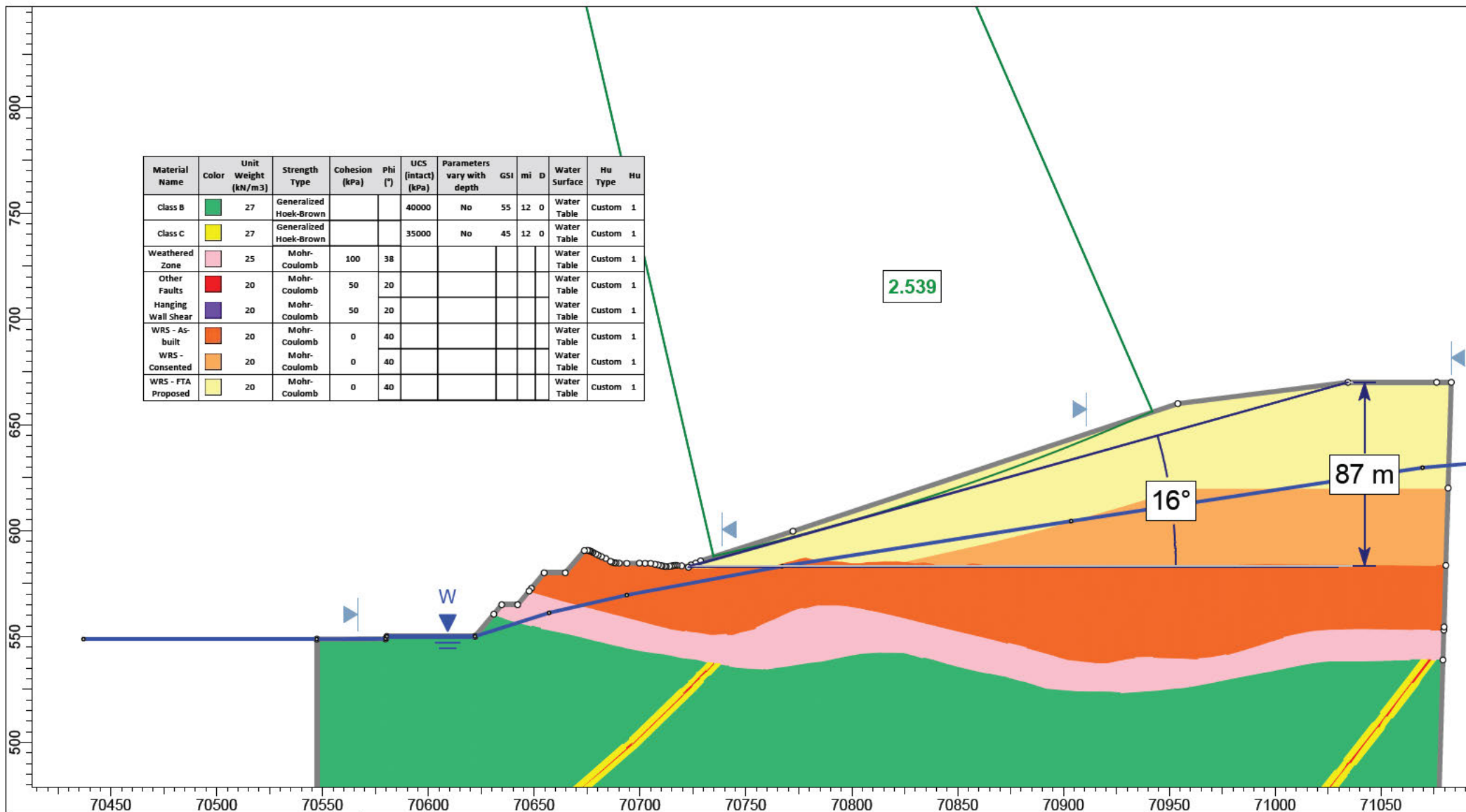








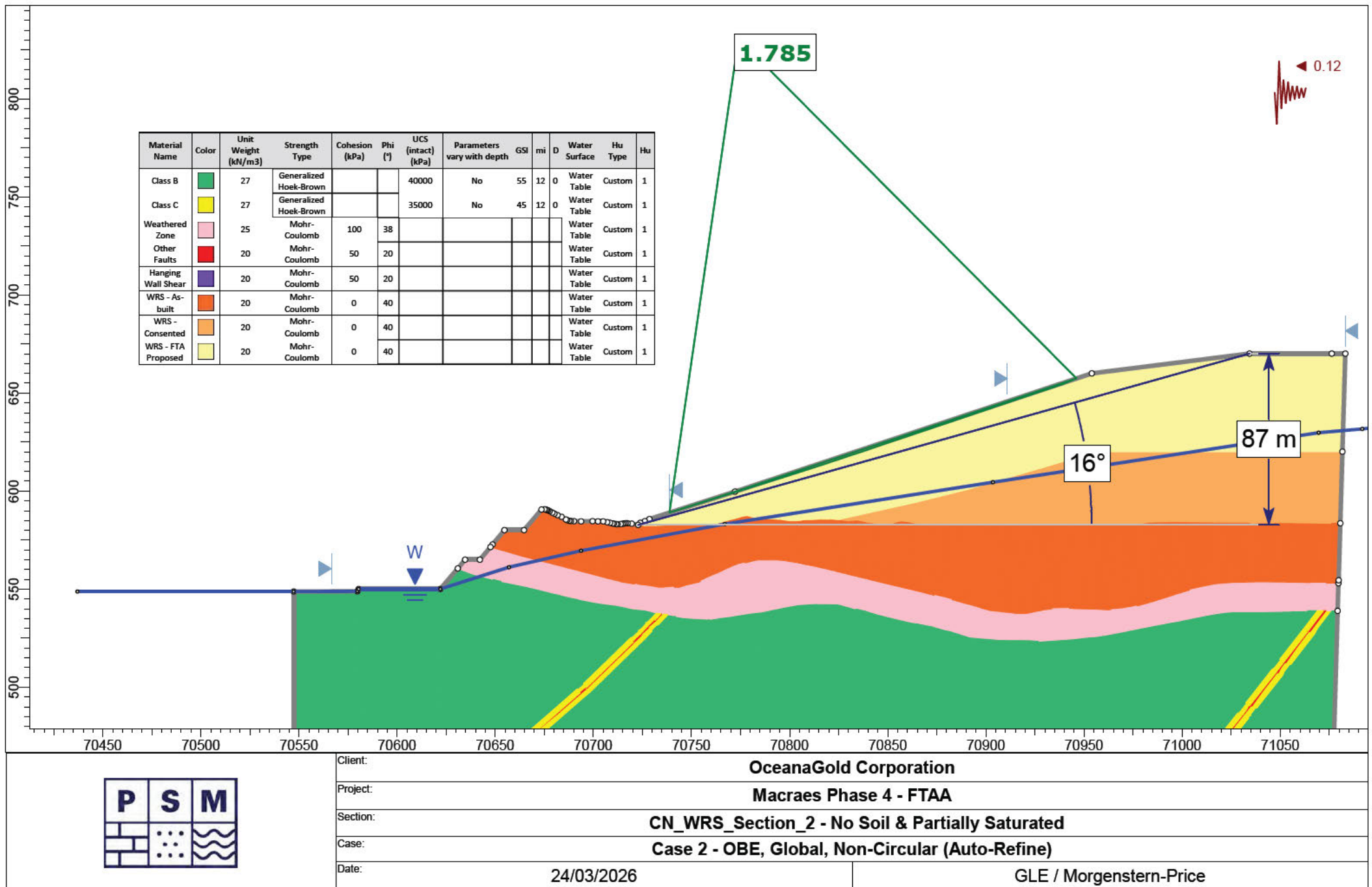


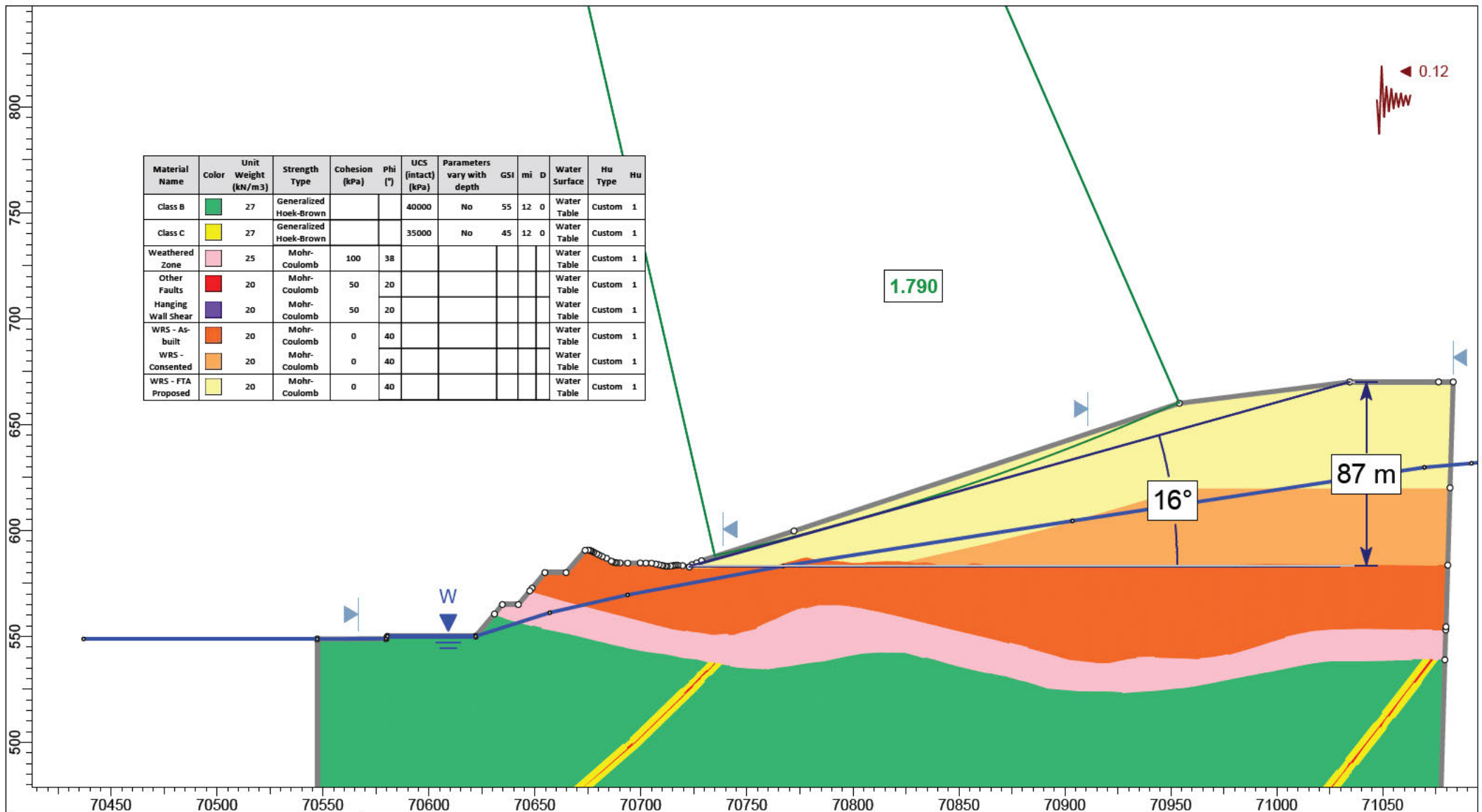


Material Name	Color	Unit Weight (kN/m ³)	Strength Type	Cohesion (kPa)	Phi (°)	UCS (intact) (kPa)	Parameters vary with depth	GSI	mi	D	Water Surface	Hu Type	Hu
Class B	Green	27	Generalized Hoek-Brown			40000	No	55	12	0	Water Table	Custom	1
Class C	Yellow	27	Generalized Hoek-Brown			35000	No	45	12	0	Water Table	Custom	1
Weathered Zone	Pink	25	Mohr-Coulomb	100	38						Water Table	Custom	1
Other Faults	Red	20	Mohr-Coulomb	50	20						Water Table	Custom	1
Hanging Wall Shear	Purple	20	Mohr-Coulomb	50	20						Water Table	Custom	1
WRS - As-built	Orange	20	Mohr-Coulomb	0	40						Water Table	Custom	1
WRS - Consented	Light Orange	20	Mohr-Coulomb	0	40						Water Table	Custom	1
WRS - FTA Proposed	Light Yellow	20	Mohr-Coulomb	0	40						Water Table	Custom	1

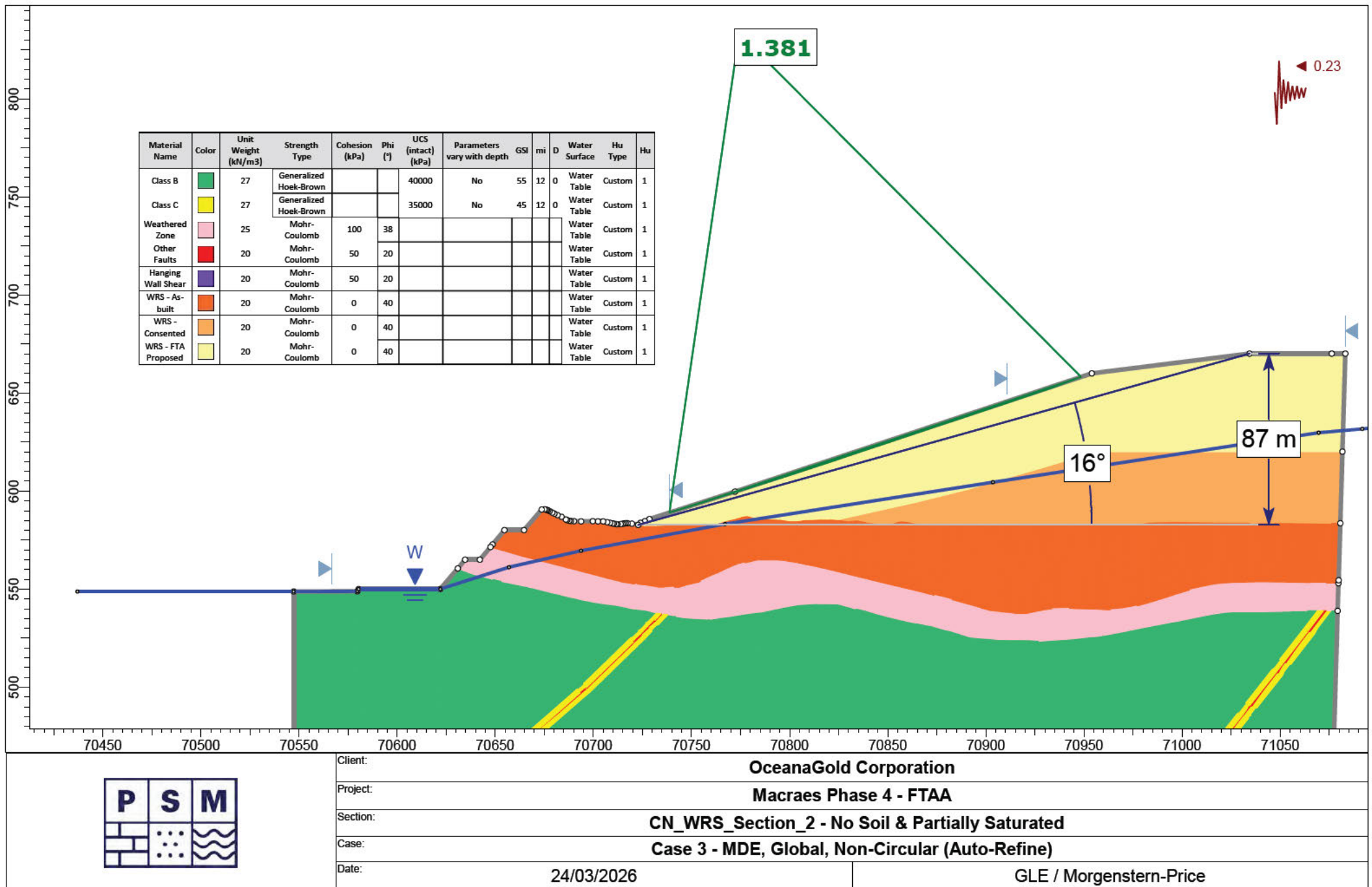


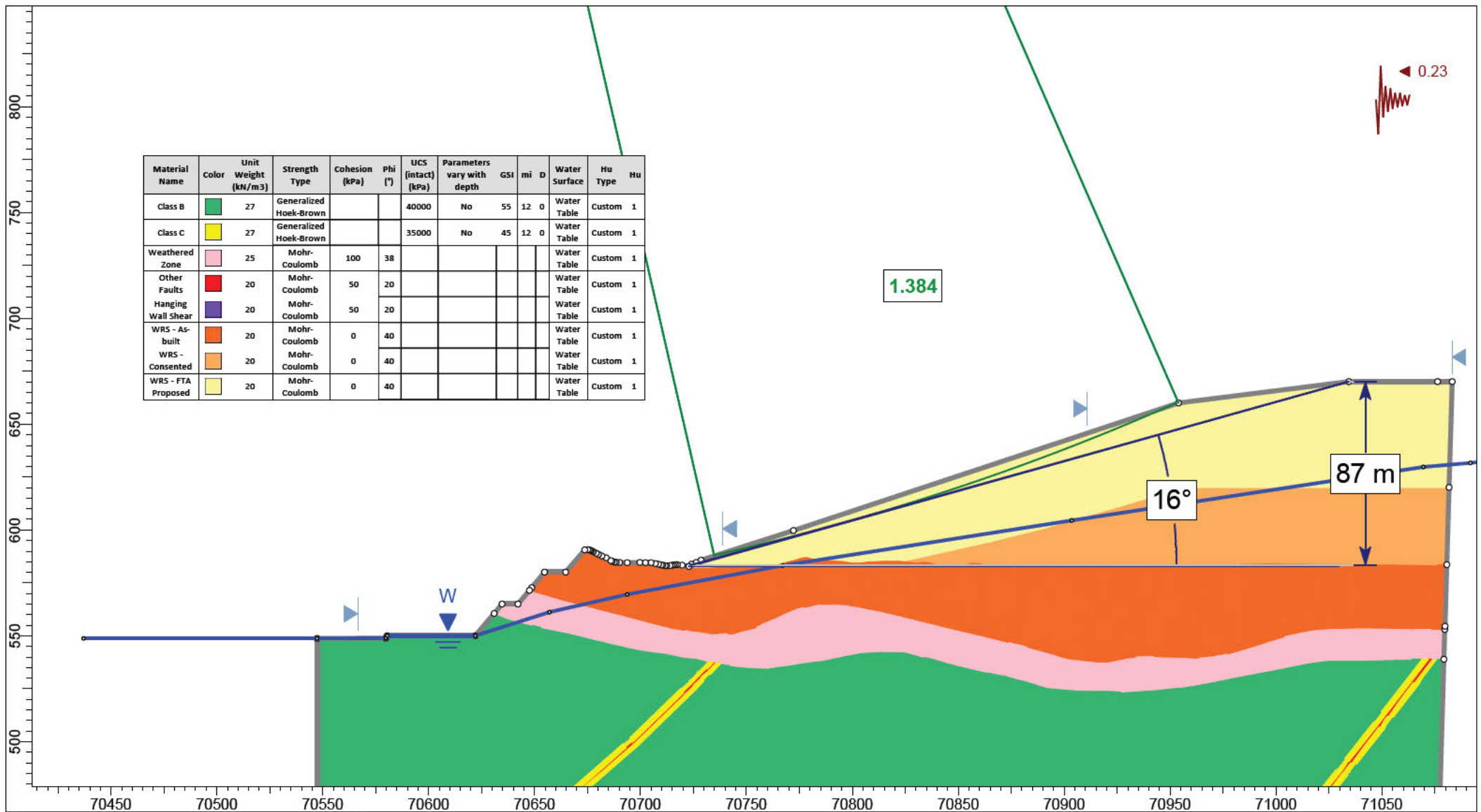
Client:	OceanaGold Corporation	
Project:	Macraes Phase 4 - FTAA	
Section:	CN_WRS_Section_2 - No Soil & Partially Saturated	
Case:	Case 1 - Static, Global, Circular	
Date:	24/03/2026	GLE / Morgenstern-Price



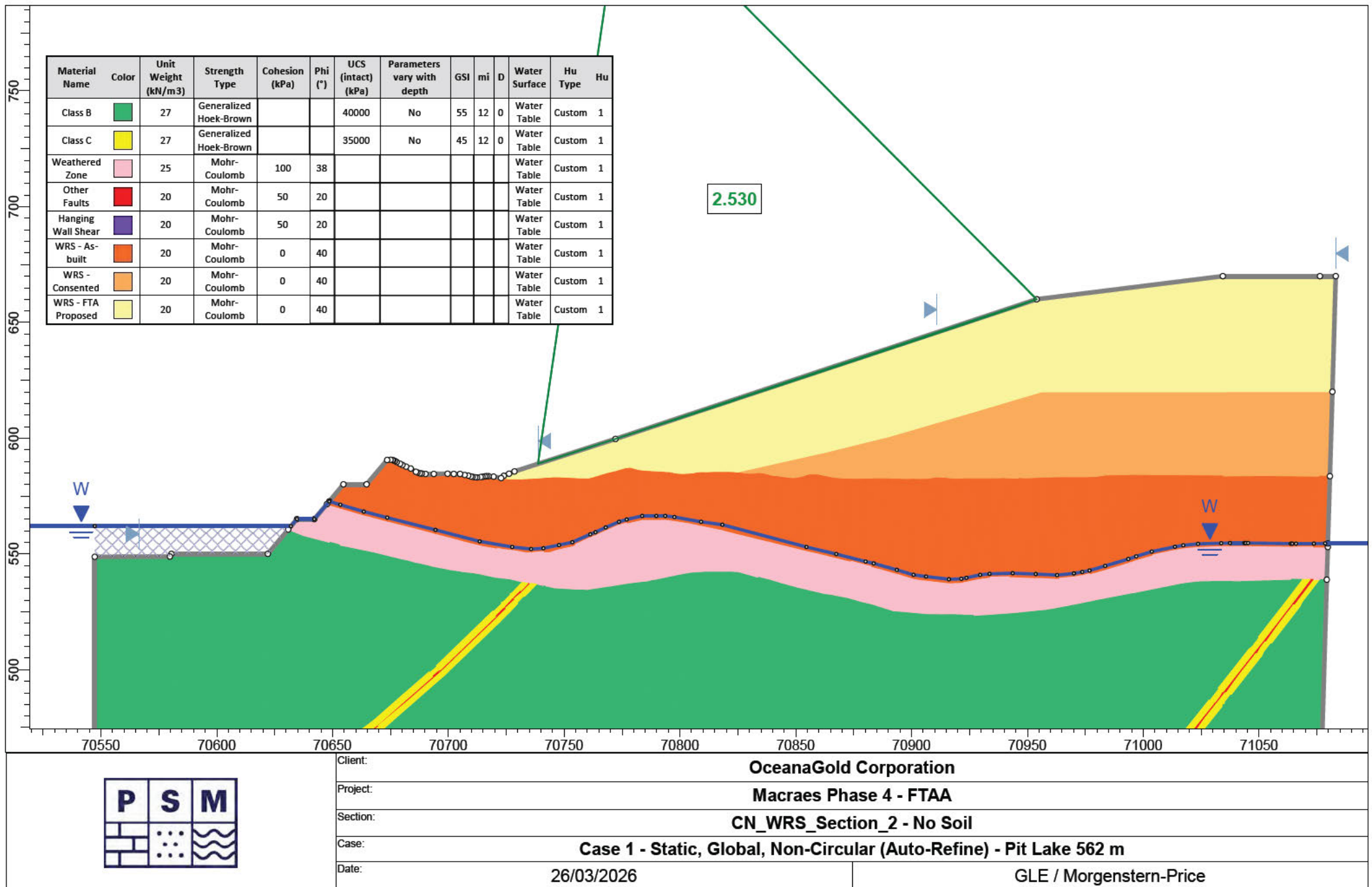


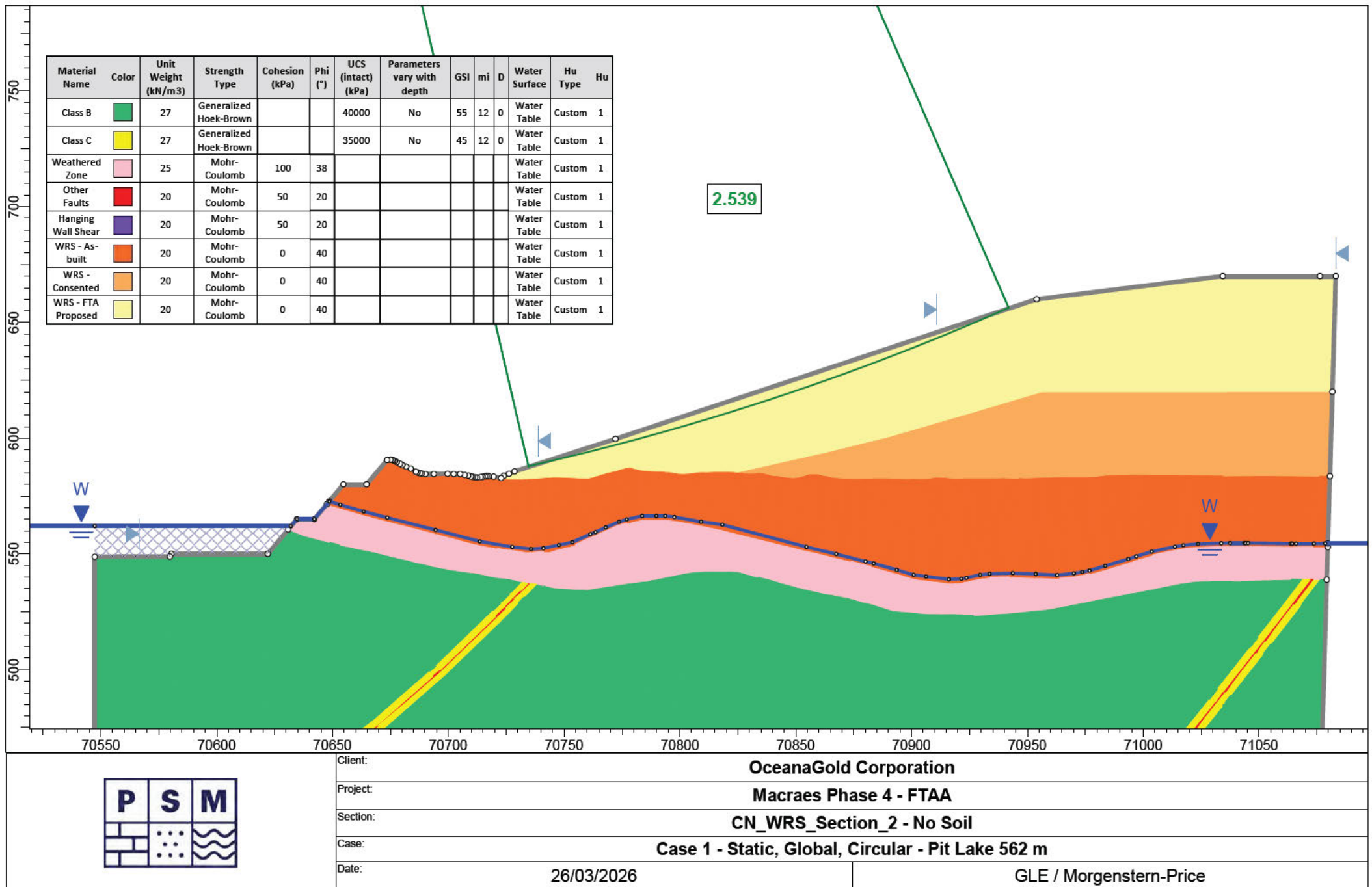
Client:	OceanaGold Corporation	
Project:	Macraes Phase 4 - FTAA	
Section:	CN_WRS_Section_2 - No Soil & Partially Saturated	
Case:	Case 2 - OBE, Global, Circular	
Date:	24/03/2026	GLE / Morgenstern-Price

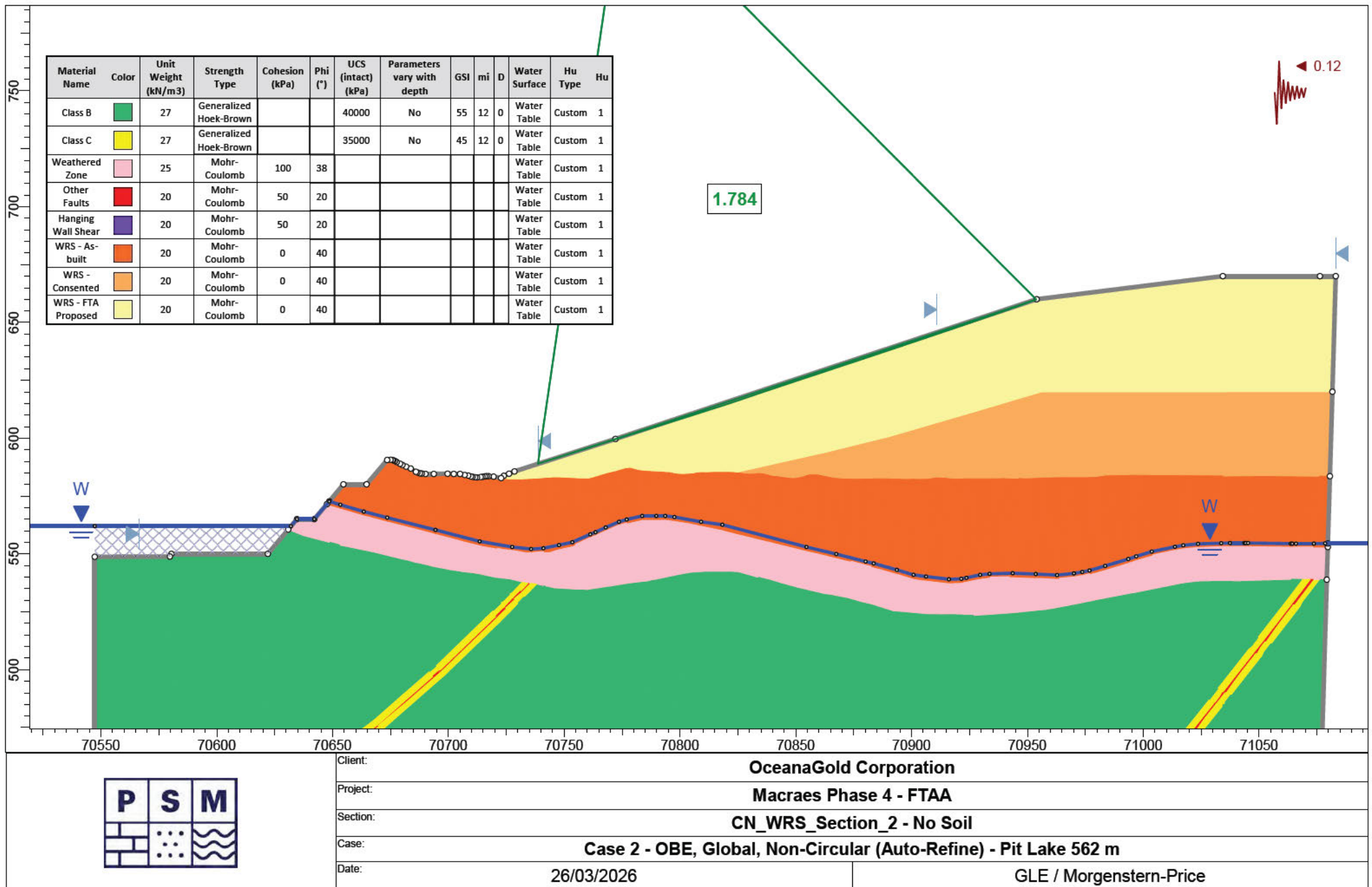


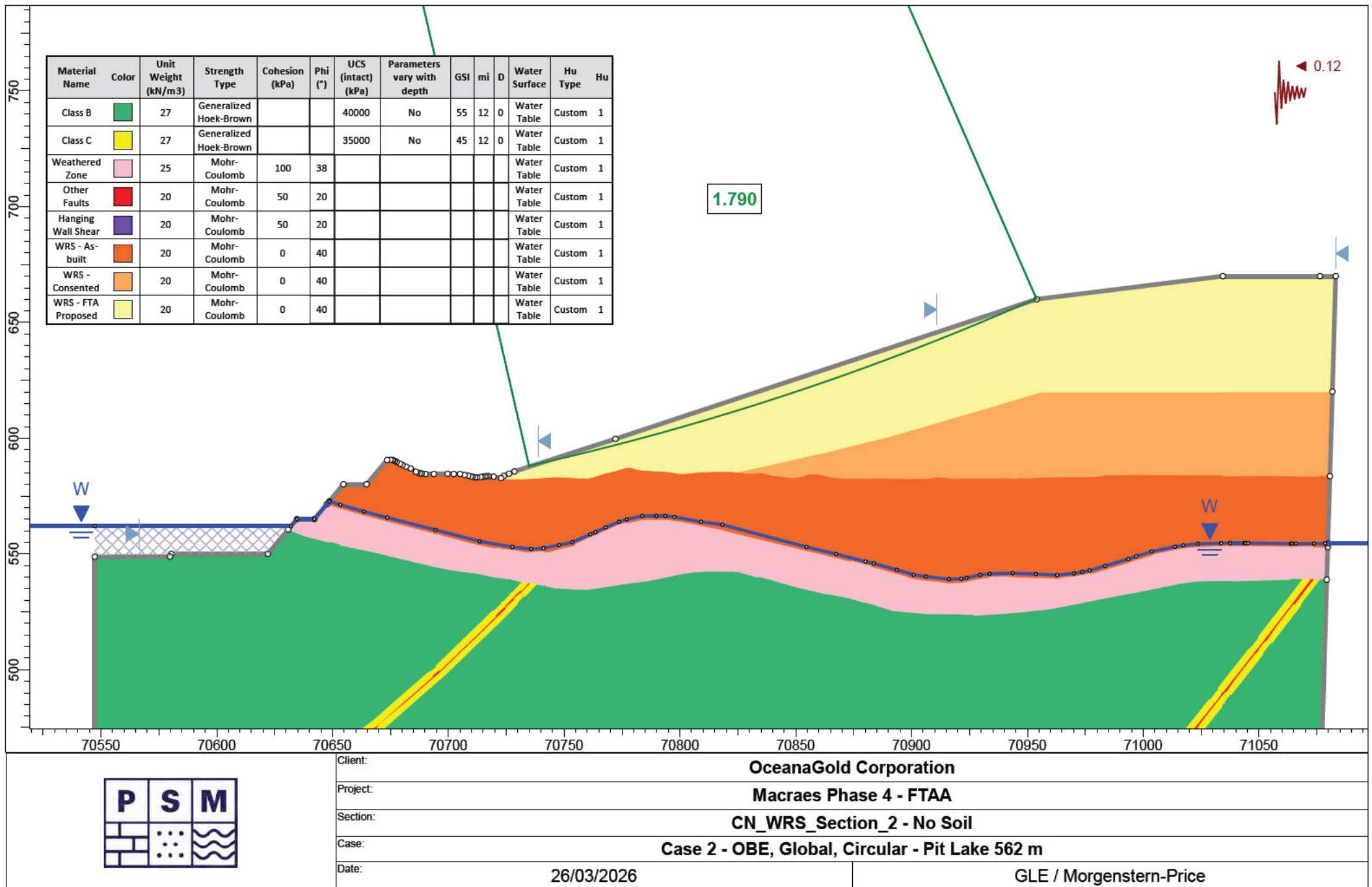


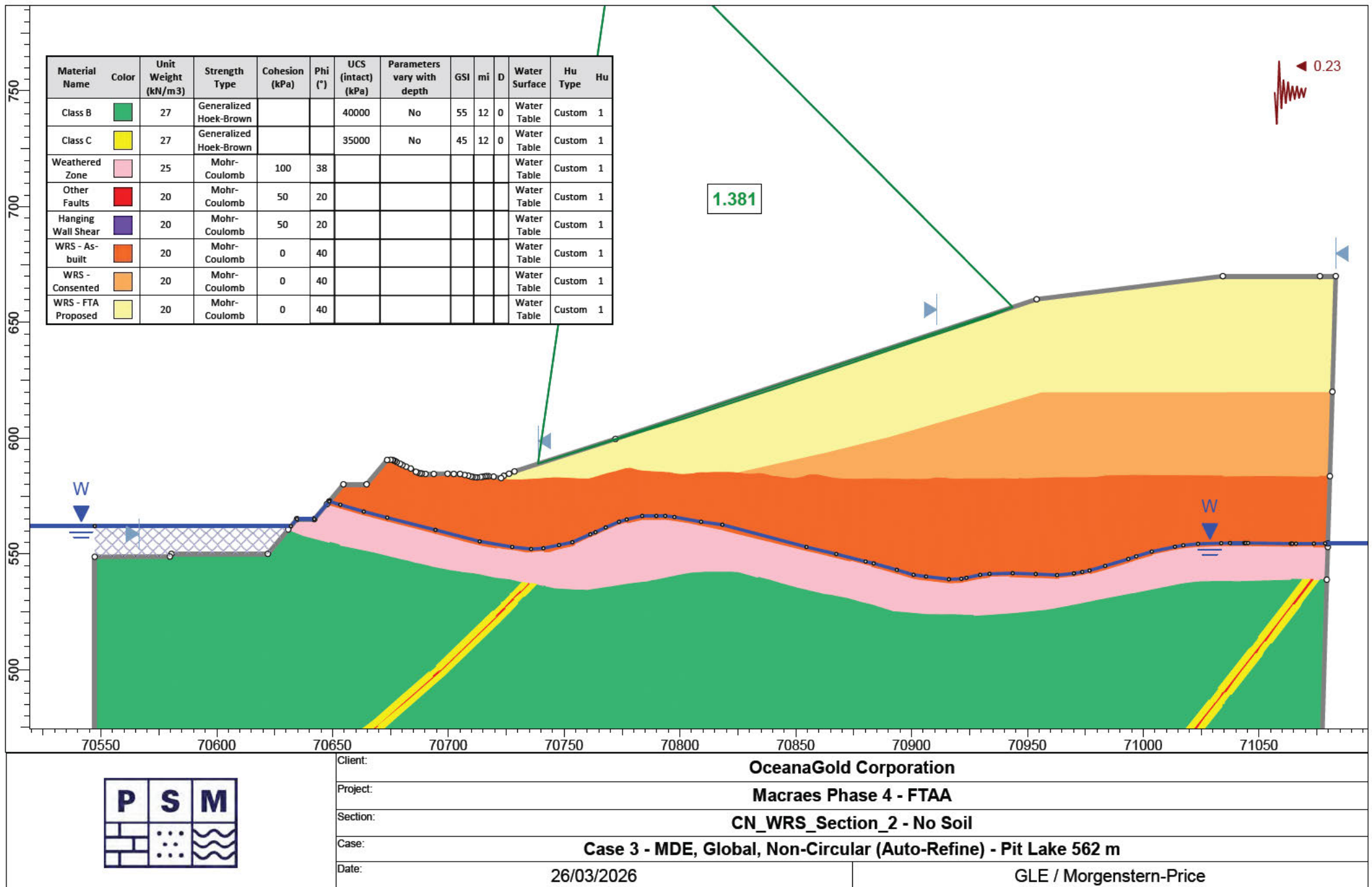
Client:	OceanaGold Corporation	
Project:	Macraes Phase 4 - FTAA	
Section:	CN_WRS_Section_2 - No Soil & Partially Saturated	
Case:	Case 3 - MDE, Global, Circular	
Date:	24/03/2026	GLE / Morgenstern-Price

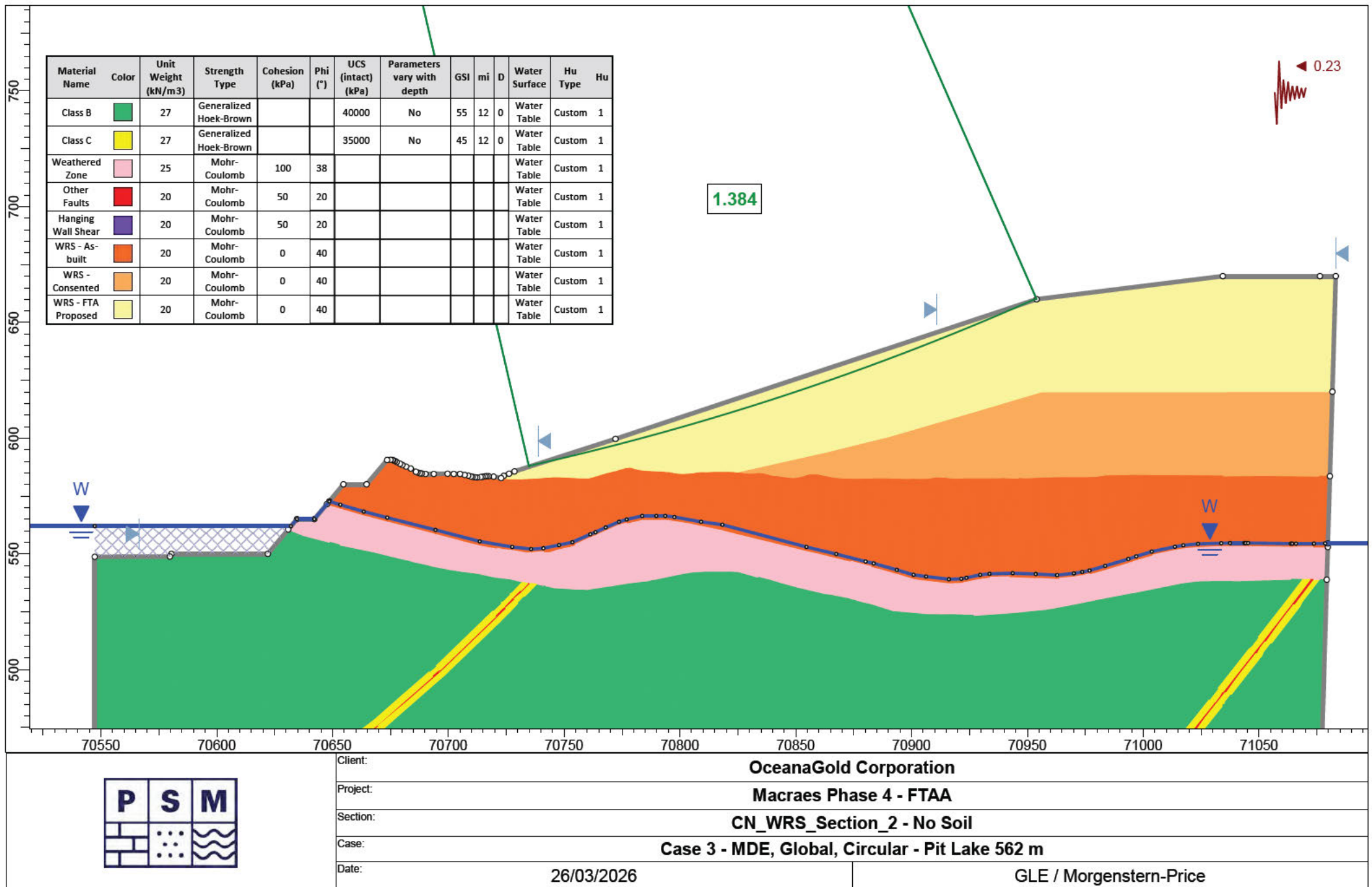


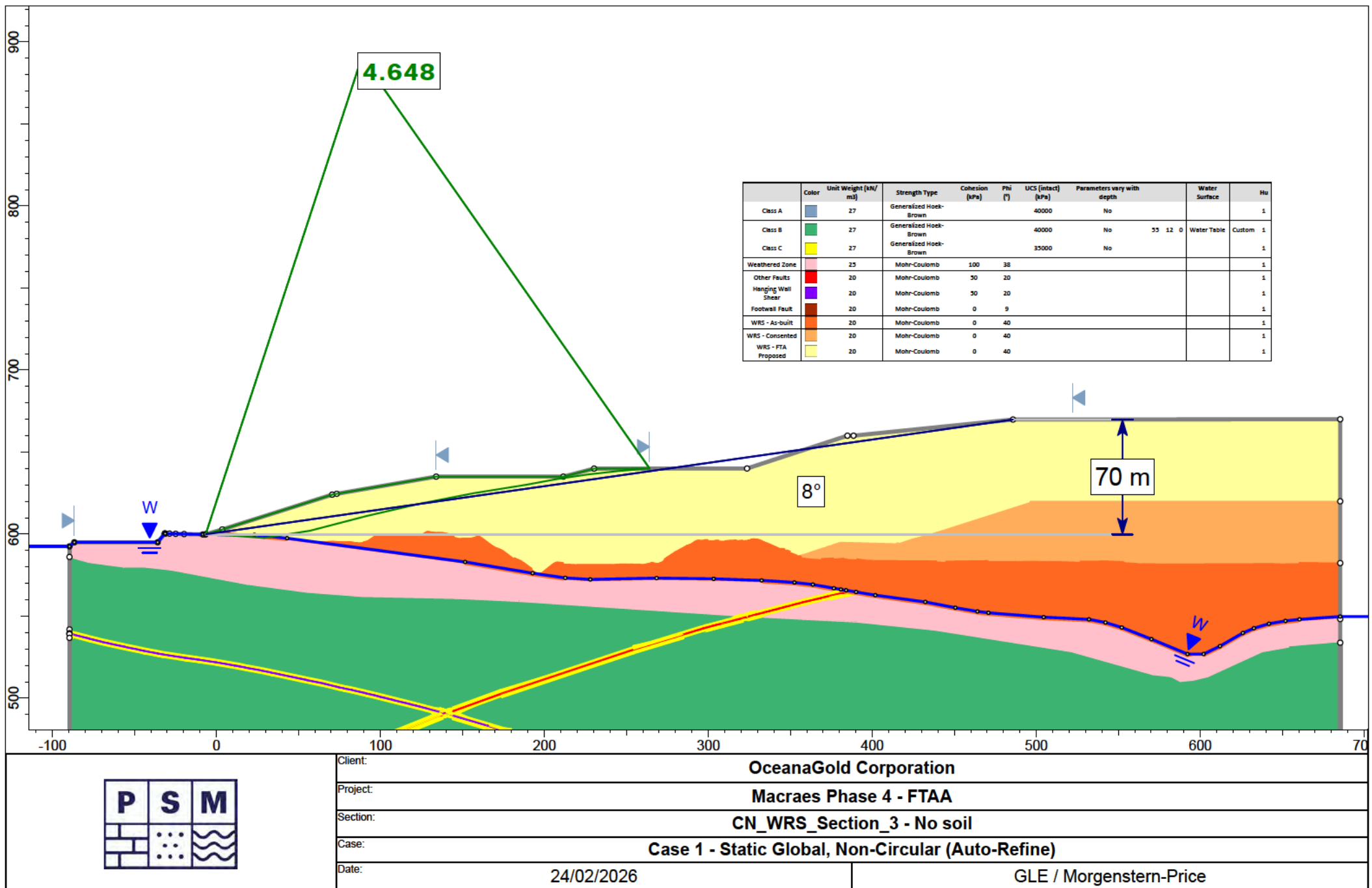


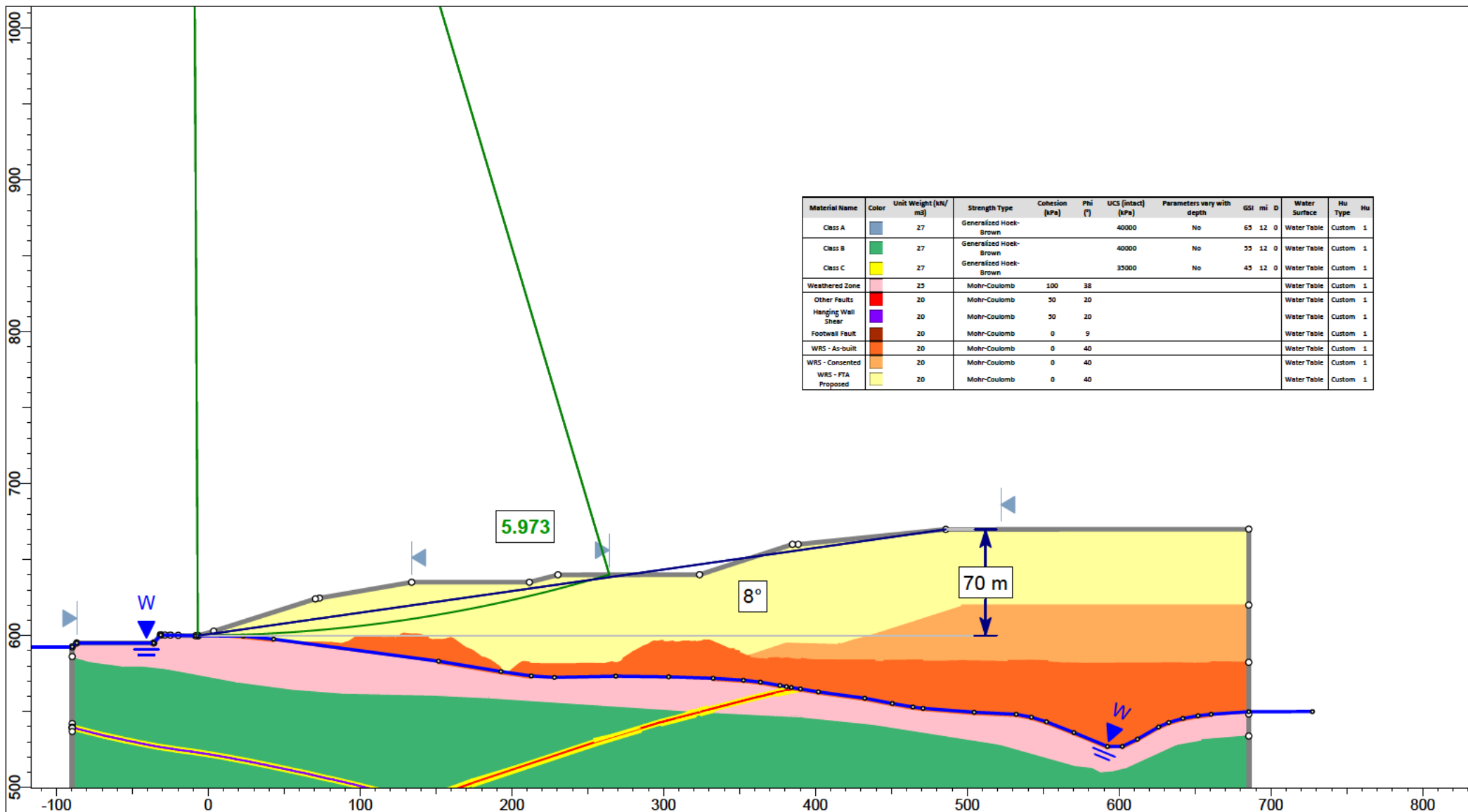








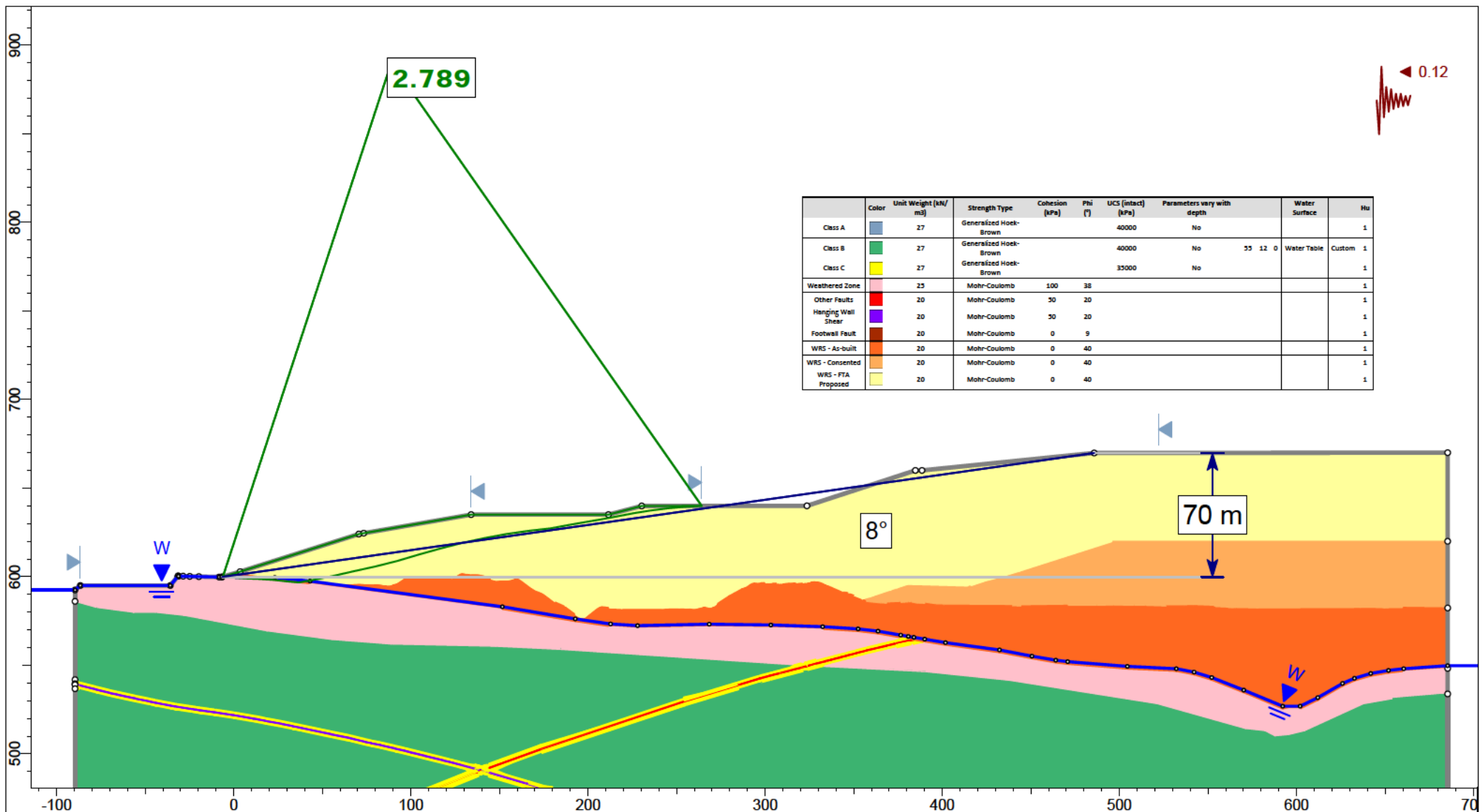




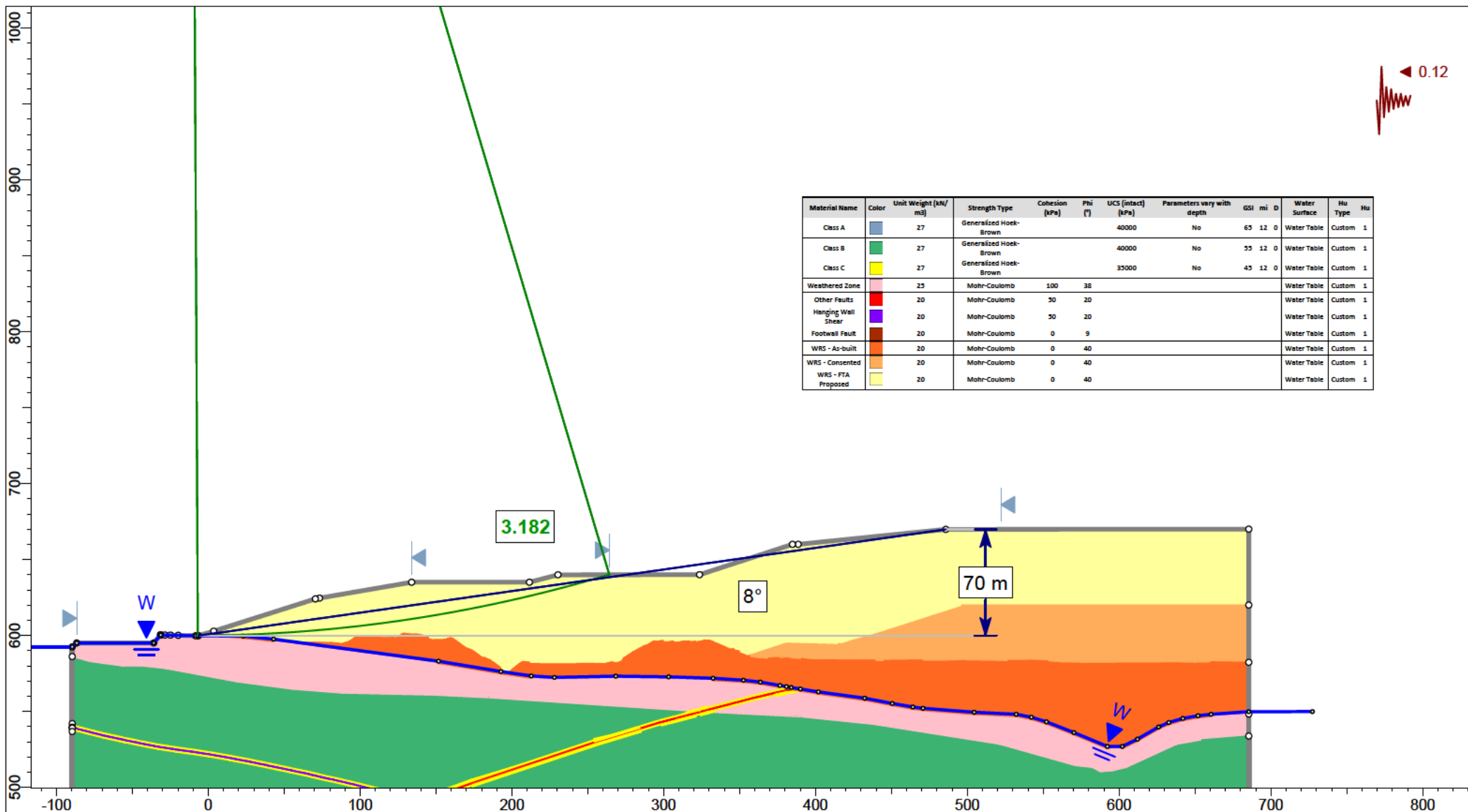
Material Name	Color	Unit Weight (kN/m ³)	Strength Type	Cohesion (kPa)	Phi (°)	UCS (intact) (kPa)	Parameters vary with depth	GSI	mi	D	Water Surface	Hu	Type	Hu
Class A		27	Generalized Hoek-Brown			40000	No	63	12	0	Water Table	Custom	1	
Class B		27	Generalized Hoek-Brown			40000	No	53	12	0	Water Table	Custom	1	
Class C		27	Generalized Hoek-Brown			35000	No	43	12	0	Water Table	Custom	1	
Weathered Zone		25	Mohr-Coulomb	100	38						Water Table	Custom	1	
Other Faults		20	Mohr-Coulomb	30	20						Water Table	Custom	1	
Hanging Wall Shear		20	Mohr-Coulomb	30	20						Water Table	Custom	1	
Footwall Fault		20	Mohr-Coulomb	0	9						Water Table	Custom	1	
WRS - As-built		20	Mohr-Coulomb	0	40						Water Table	Custom	1	
WRS - Consented		20	Mohr-Coulomb	0	40						Water Table	Custom	1	
WRS - FTA Proposed		20	Mohr-Coulomb	0	40						Water Table	Custom	1	



Client:	OceanaGold Corporation		
Project:	Macraes Phase 4 - FTAA		
Section:	CN_WRS_Section_3 - No soil		
Case:	Case 1 - Static Global, Circular		
Date:	23/02/2026	GLE / Morgenstern-Price	



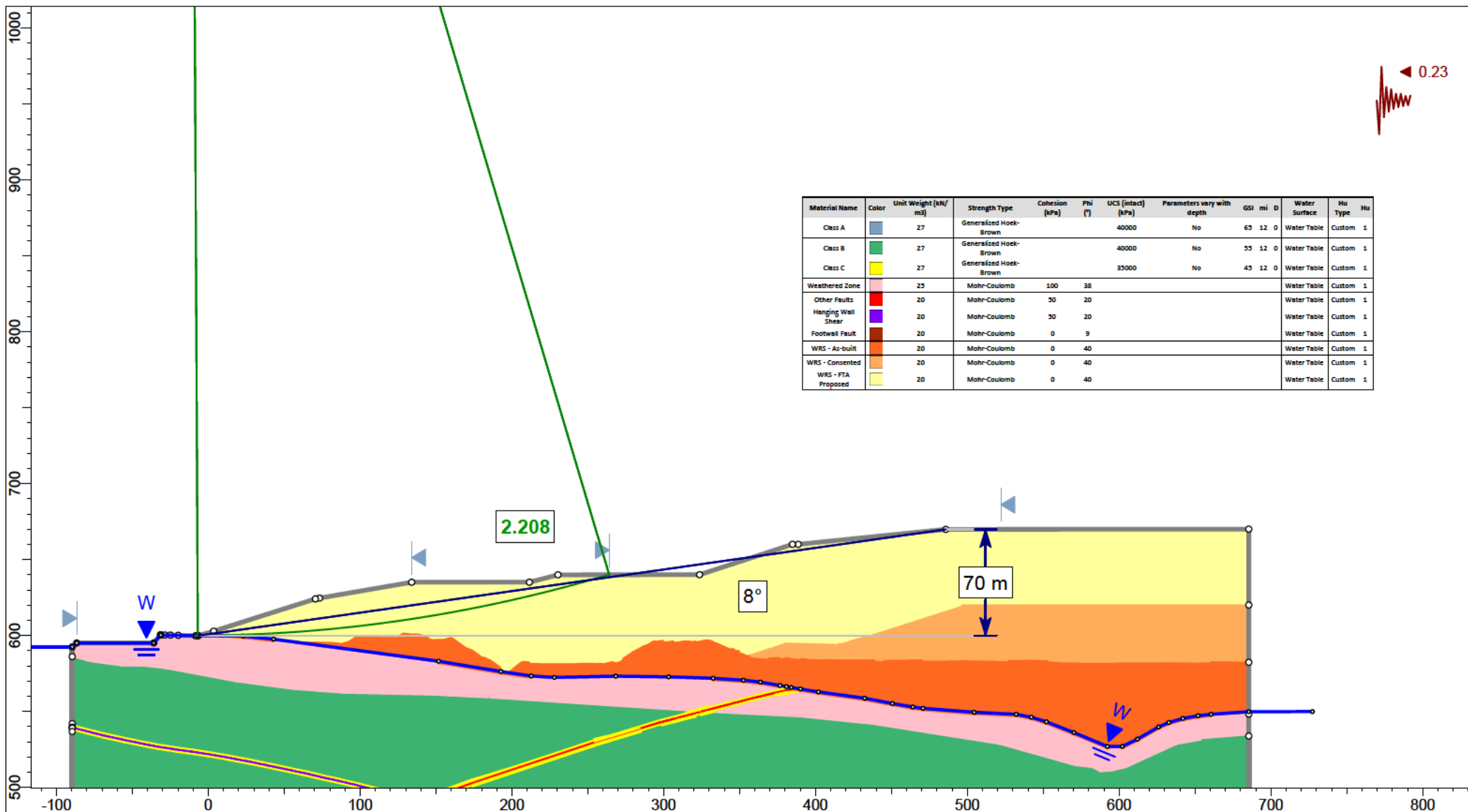
Client:	OceanaGold Corporation	
Project:	Macraes Phase 4 - FTA	
Section:	CN_WRS_Section_3 - No soil	
Case:	Case 2 - OBE, Global, Non-Circular (Auto-Refine)	
Date:	24/02/2026	GLE / Morgenstern-Price



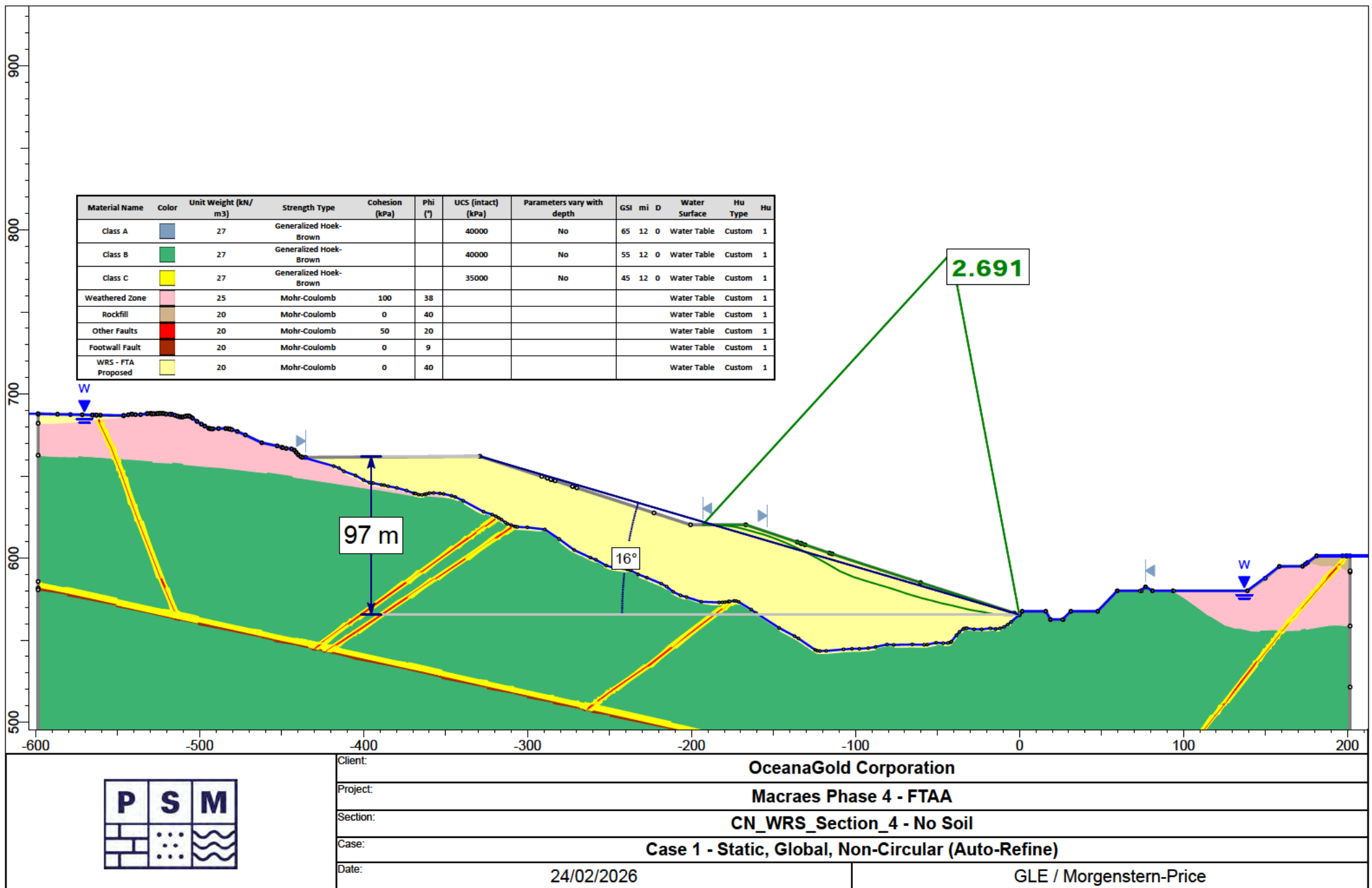
Material Name	Color	Unit Weight (kN/m ³)	Strength Type	Cohesion (kPa)	Phi (°)	UCS (intact) (kPa)	Parameters vary with depth	GSI	mi	D	Water Surface	Hu	Type	Hu
Class A		27	Generalized Hoek-Brown			40000	No	63	12	0	Water Table	Custom	1	
Class B		27	Generalized Hoek-Brown			40000	No	53	12	0	Water Table	Custom	1	
Class C		27	Generalized Hoek-Brown			35000	No	43	12	0	Water Table	Custom	1	
Weathered Zone		25	Mohr-Coulomb	100	38						Water Table	Custom	1	
Other Faults		20	Mohr-Coulomb	30	20						Water Table	Custom	1	
Hanging Wall Shear		20	Mohr-Coulomb	30	20						Water Table	Custom	1	
Footwall Fault		20	Mohr-Coulomb	0	9						Water Table	Custom	1	
WRS - As-built		20	Mohr-Coulomb	0	40						Water Table	Custom	1	
WRS - Consented		20	Mohr-Coulomb	0	40						Water Table	Custom	1	
WRS - FTA Proposed		20	Mohr-Coulomb	0	40						Water Table	Custom	1	

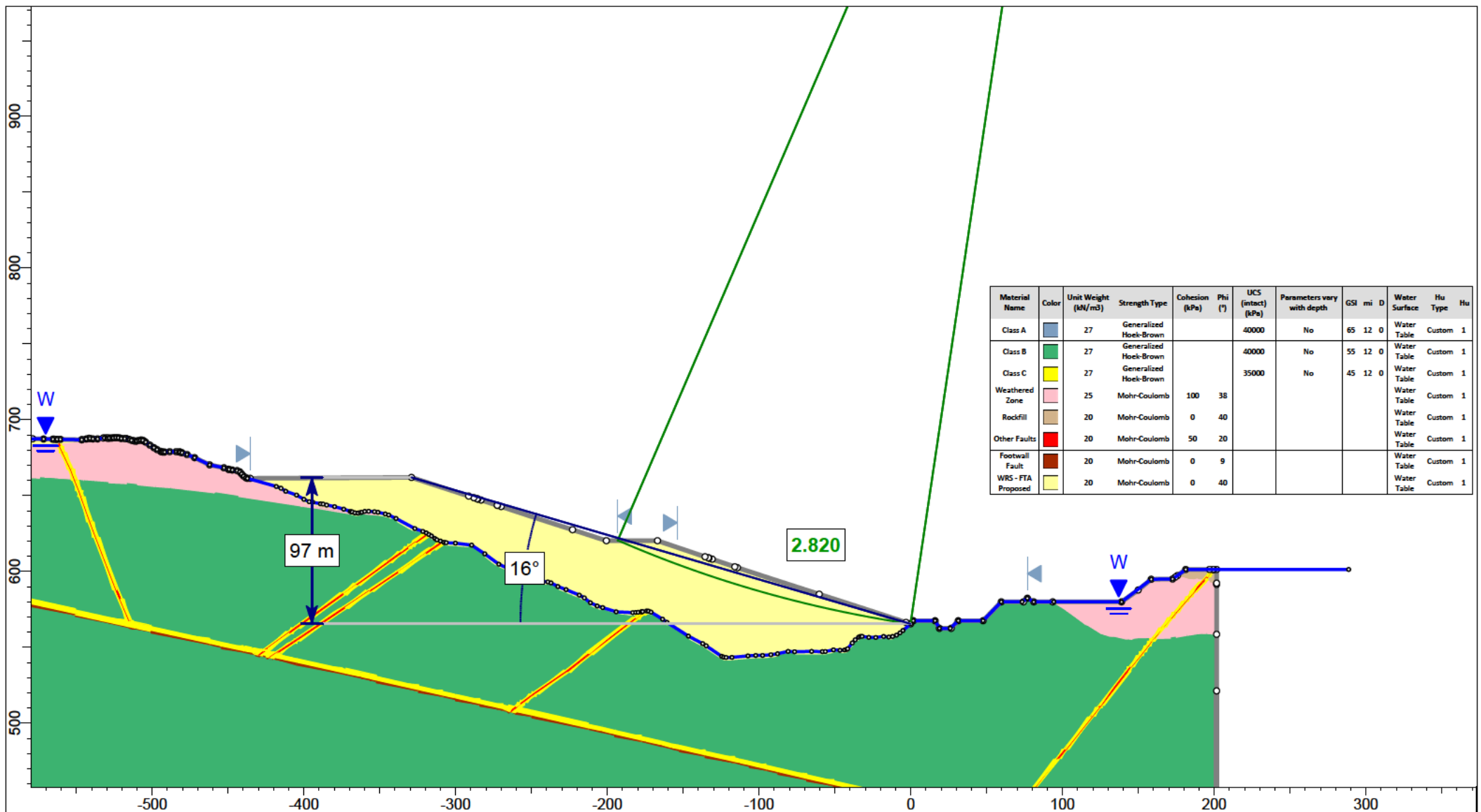


Client:	OceanaGold Corporation		
Project:	Macraes Phase 4 - FTAA		
Section:	CN_WRS_Section_3 - No soil		
Case:	Case 2 - OBE, Global, Circular		
Date:	23/02/2026	GLE / Morgenstern-Price	

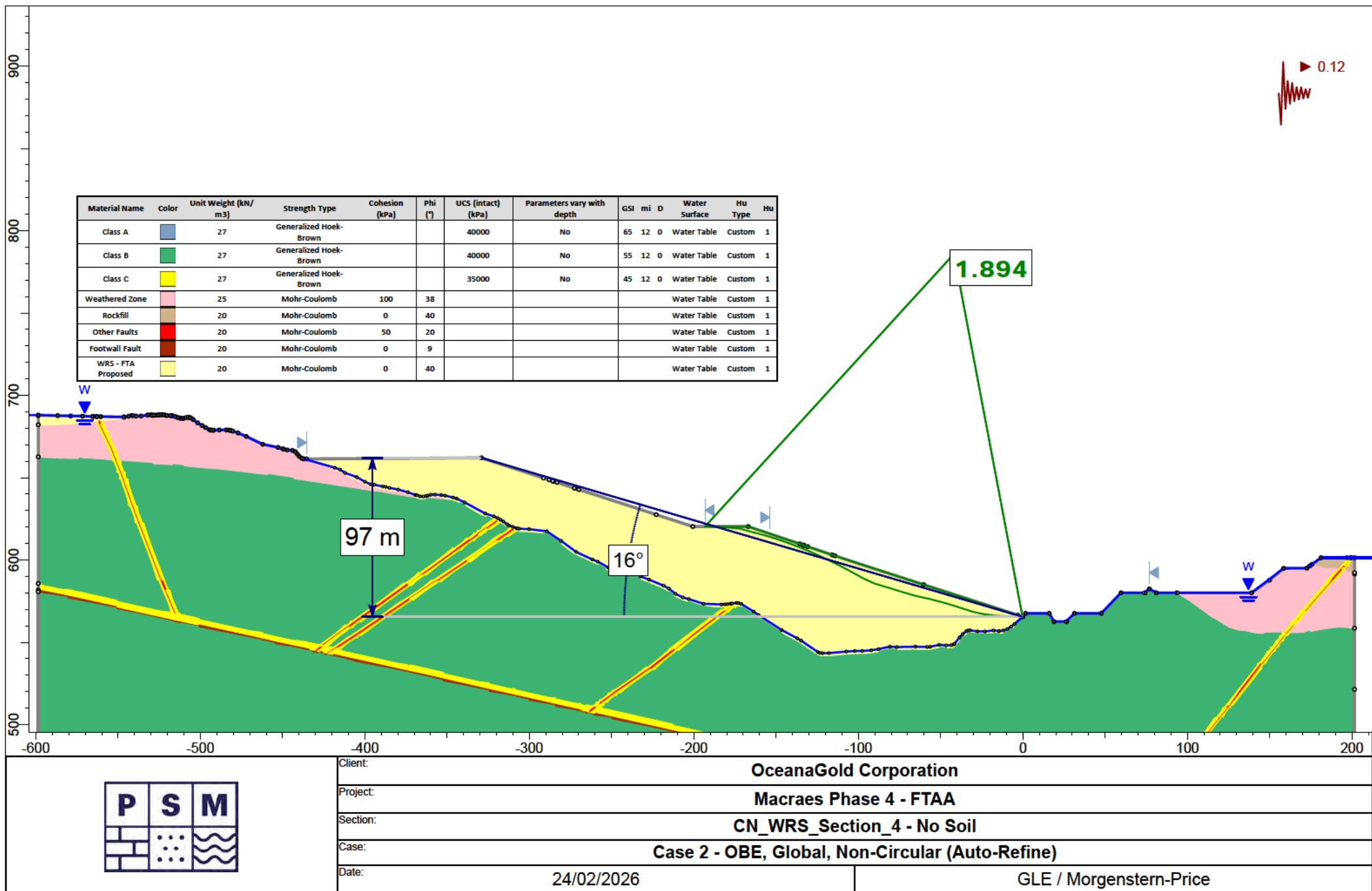


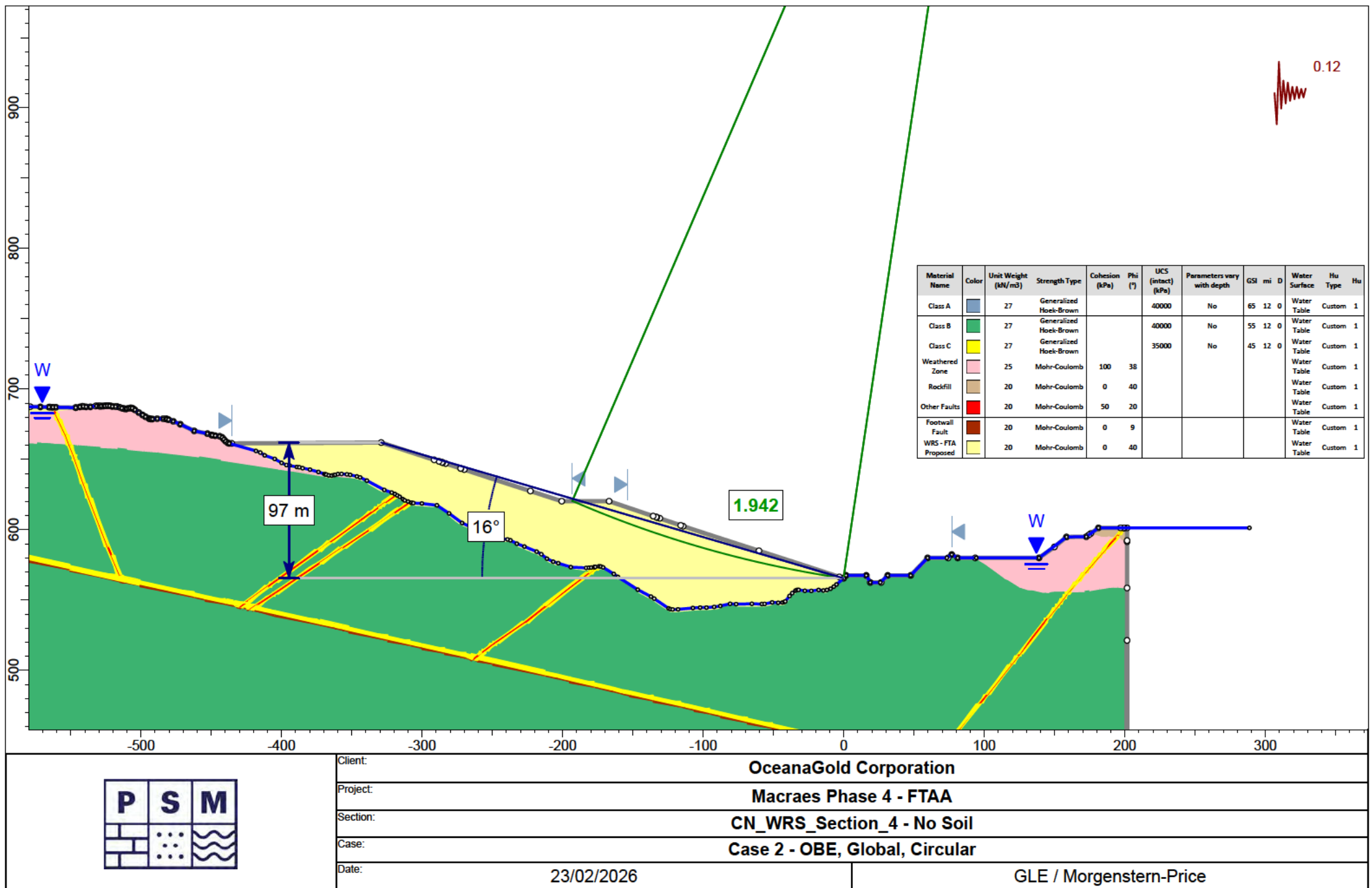
Client:	OceanaGold Corporation	
Project:	Macraes Phase 4 - FTAA	
Section:	CN_WRS_Section_3 - No soil	
Case:	Case 3- MDE, Global, Circular	
Date:	23/02/2026	GLE / Morgenstern-Price

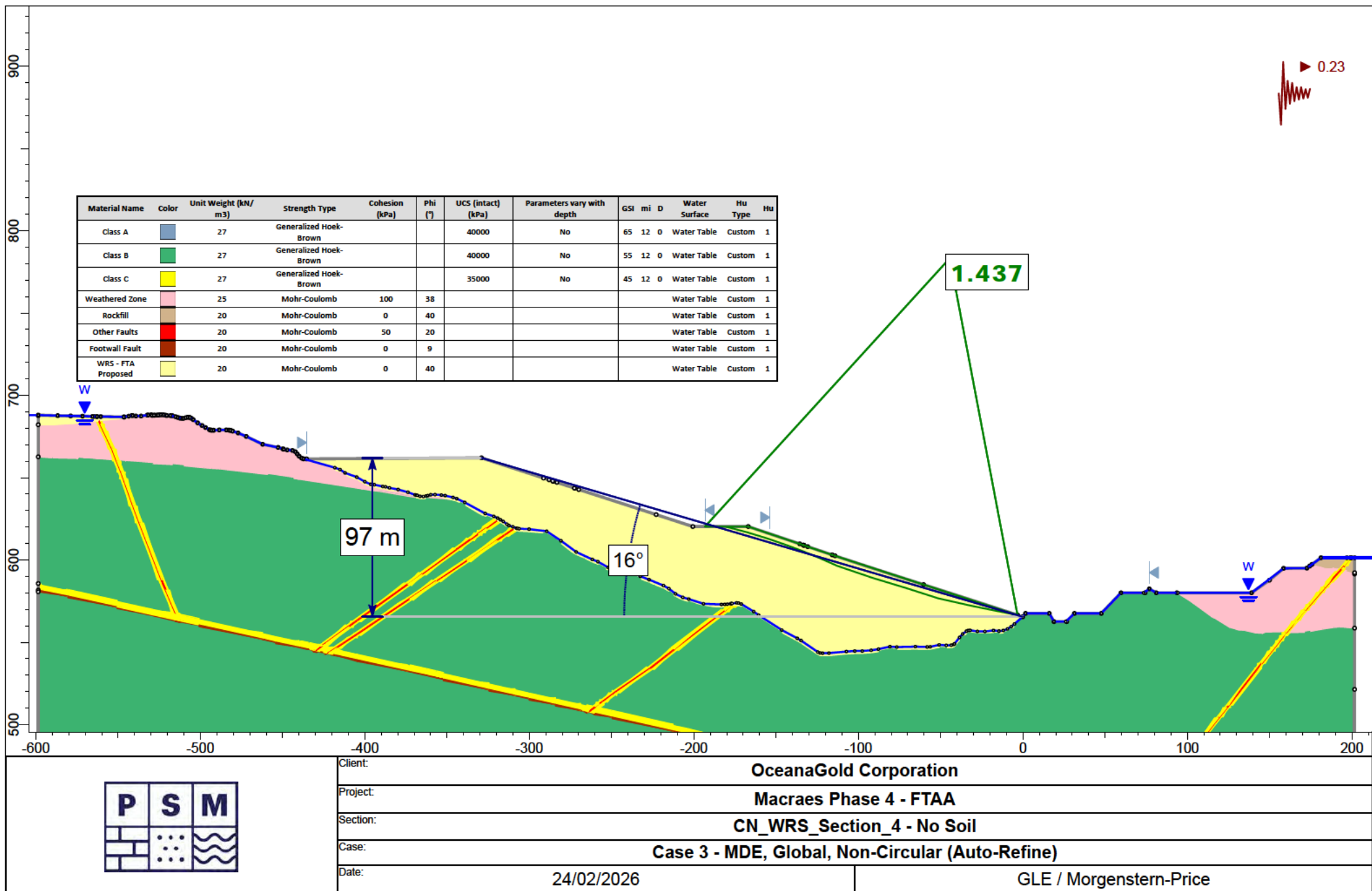


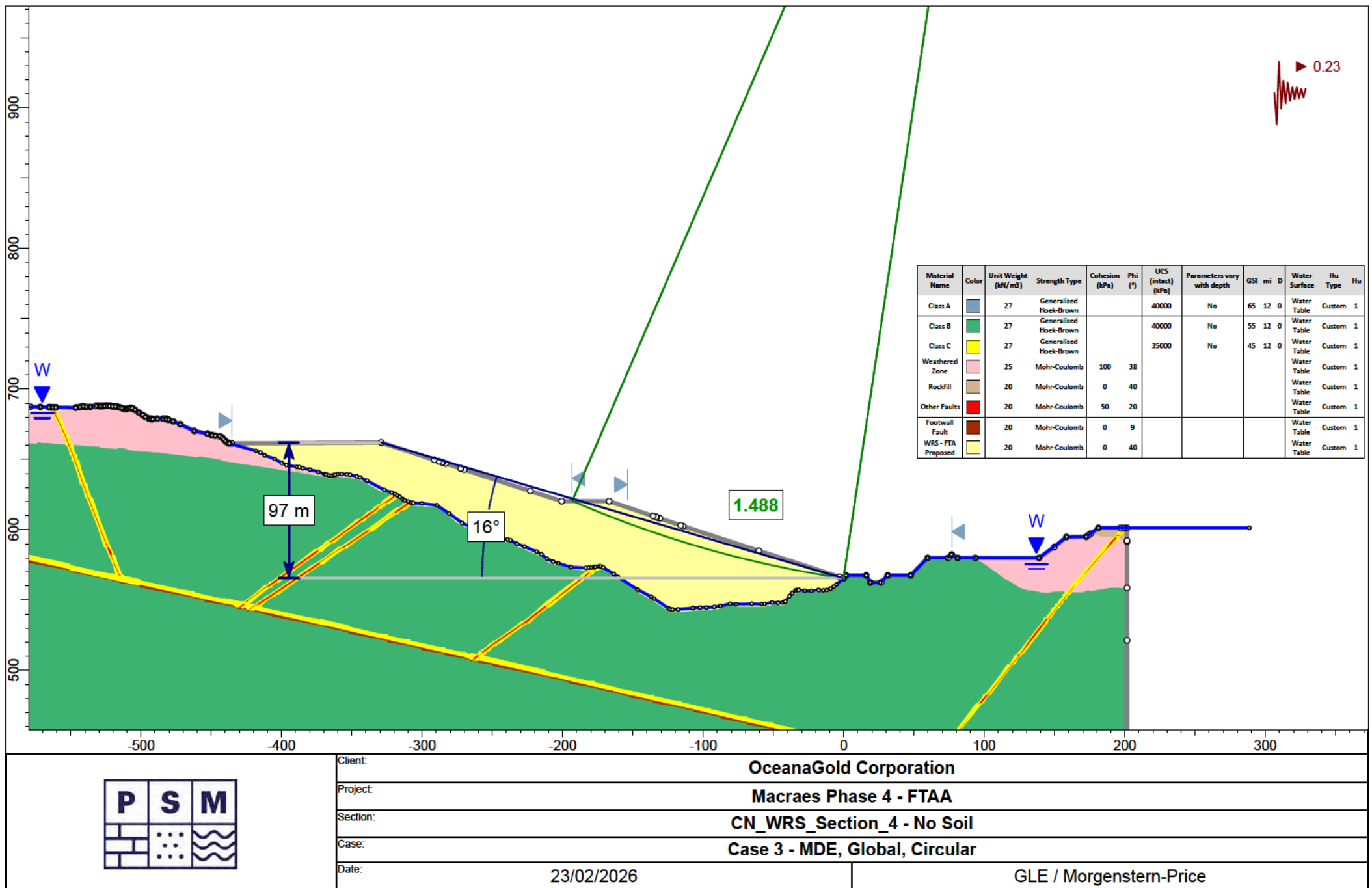


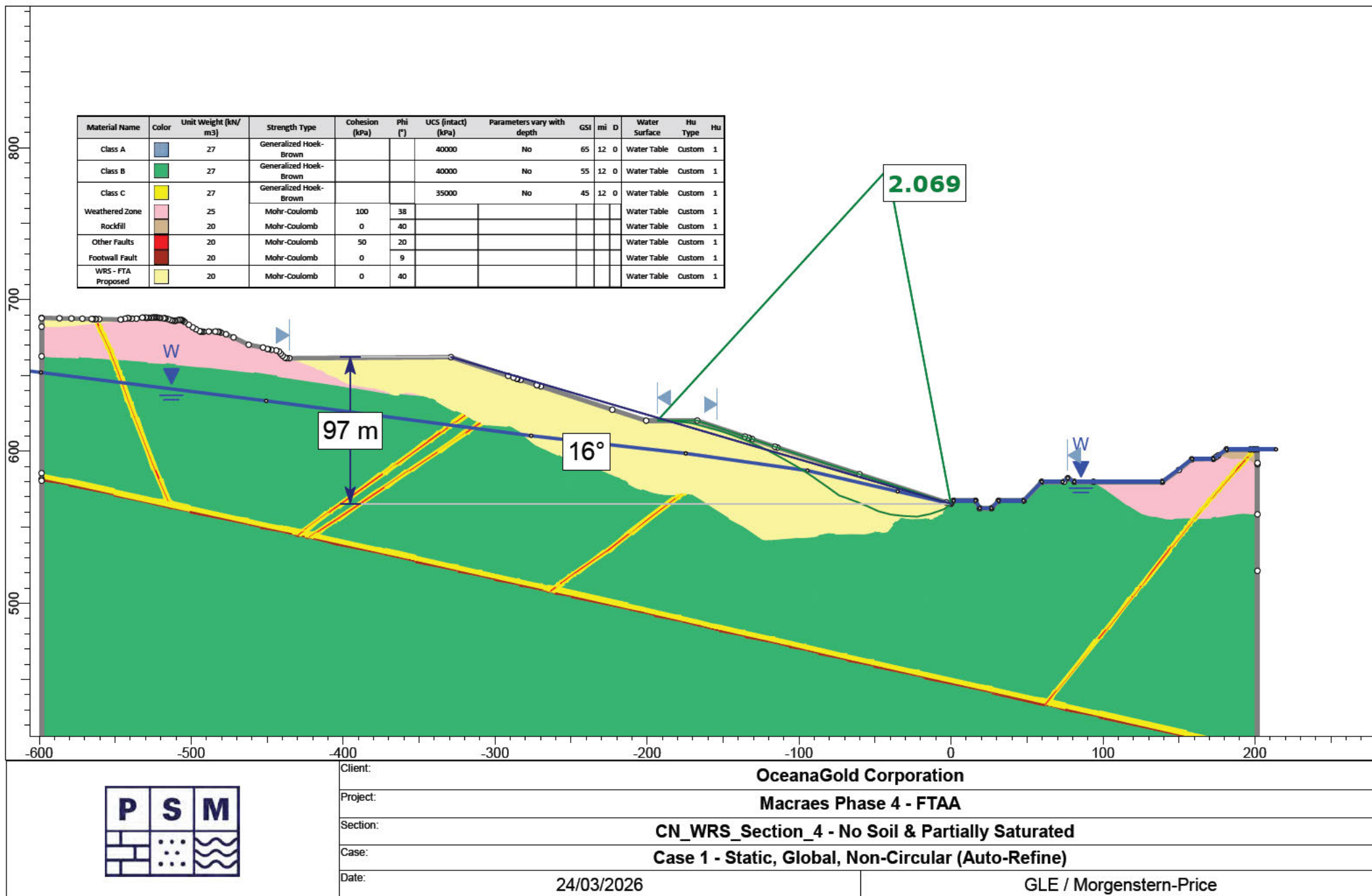
Client:	OceanaGold Corporation		
Project:	Macraes Phase 4 - FTA		
Section:	CN_WRS_Section_4 - No Soil		
Case:	Case 1 - Static, Global, Circular		
Date:	23/02/2026	GLE / Morgenstern-Price	

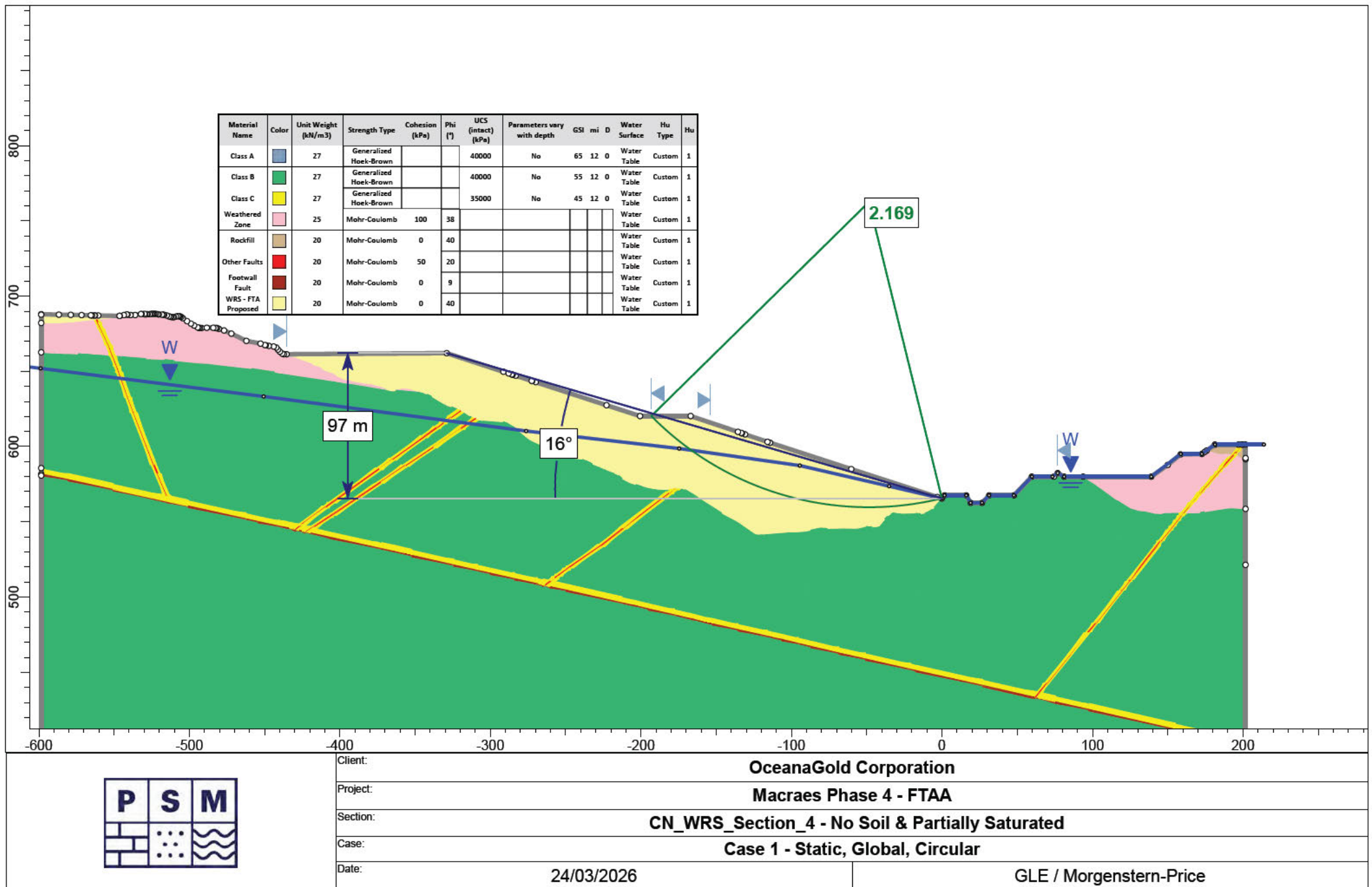


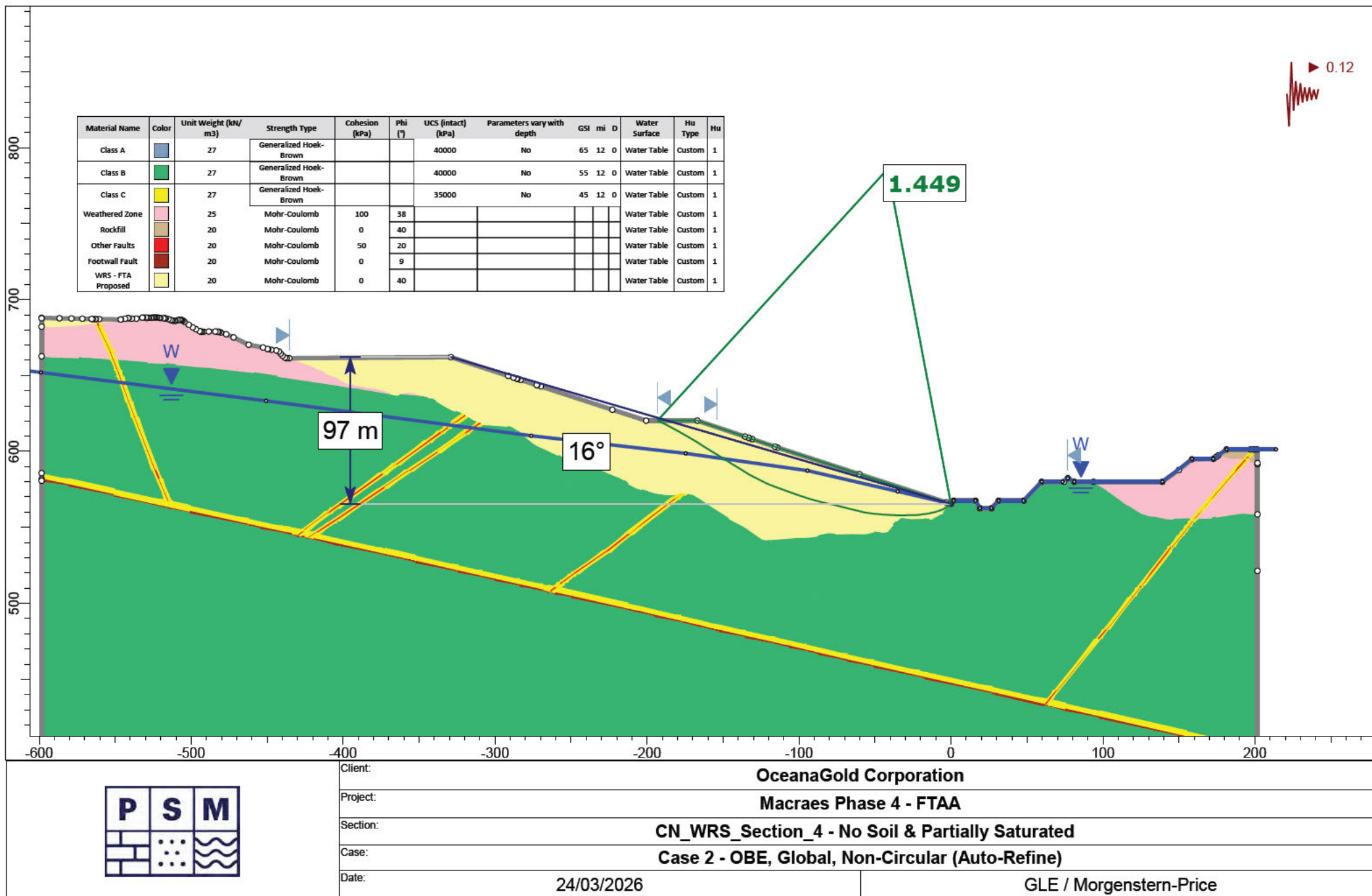


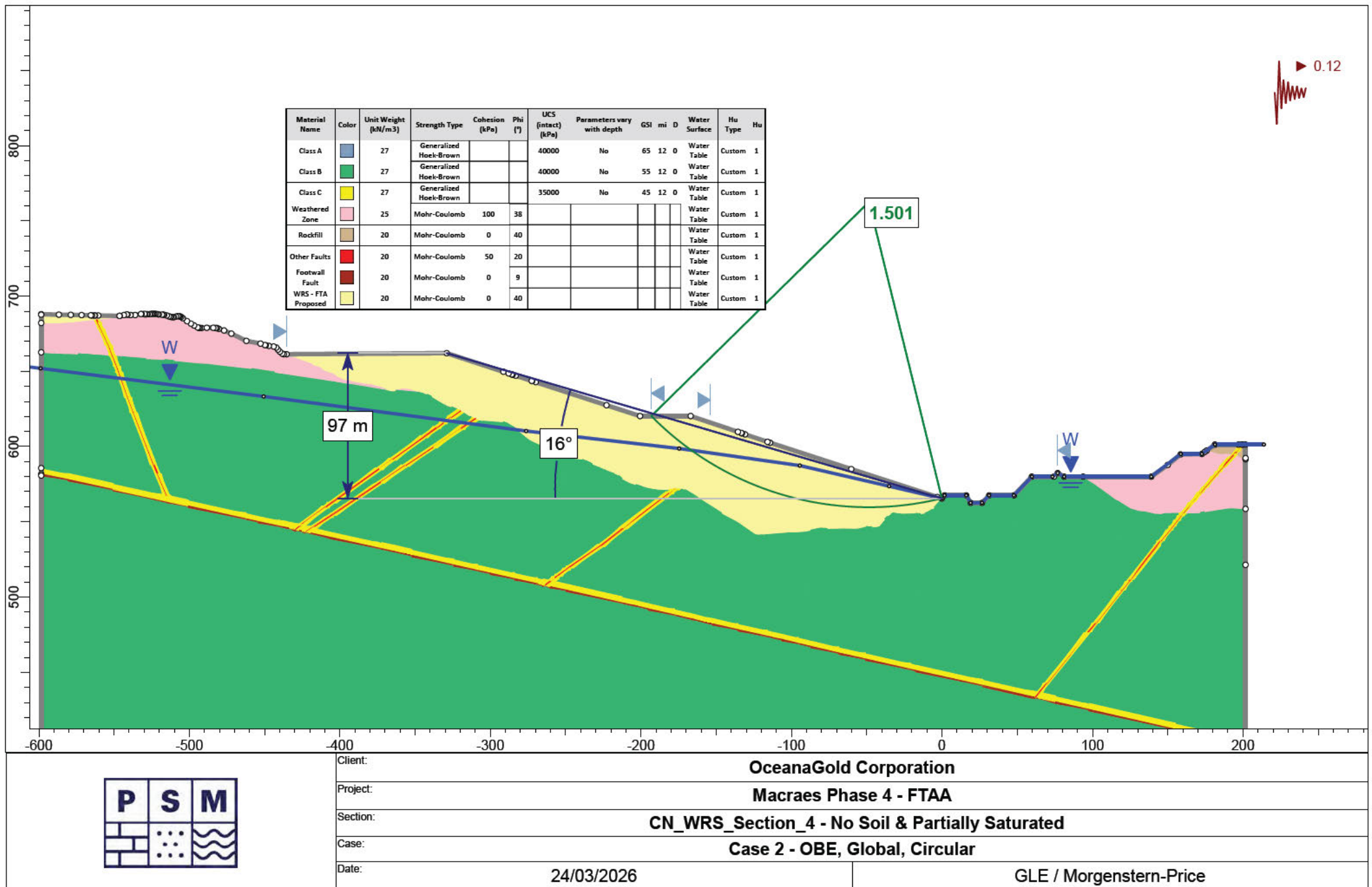


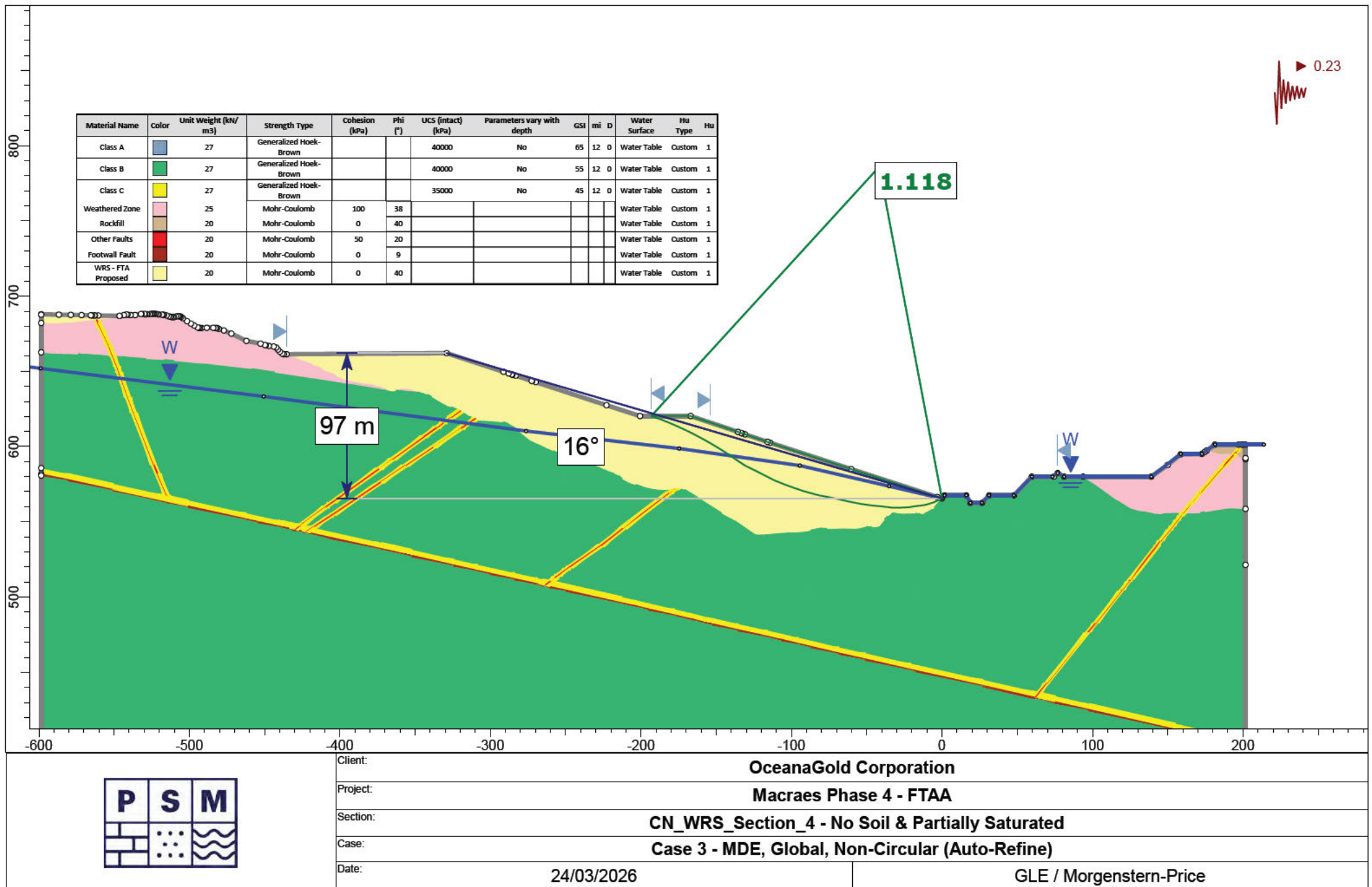


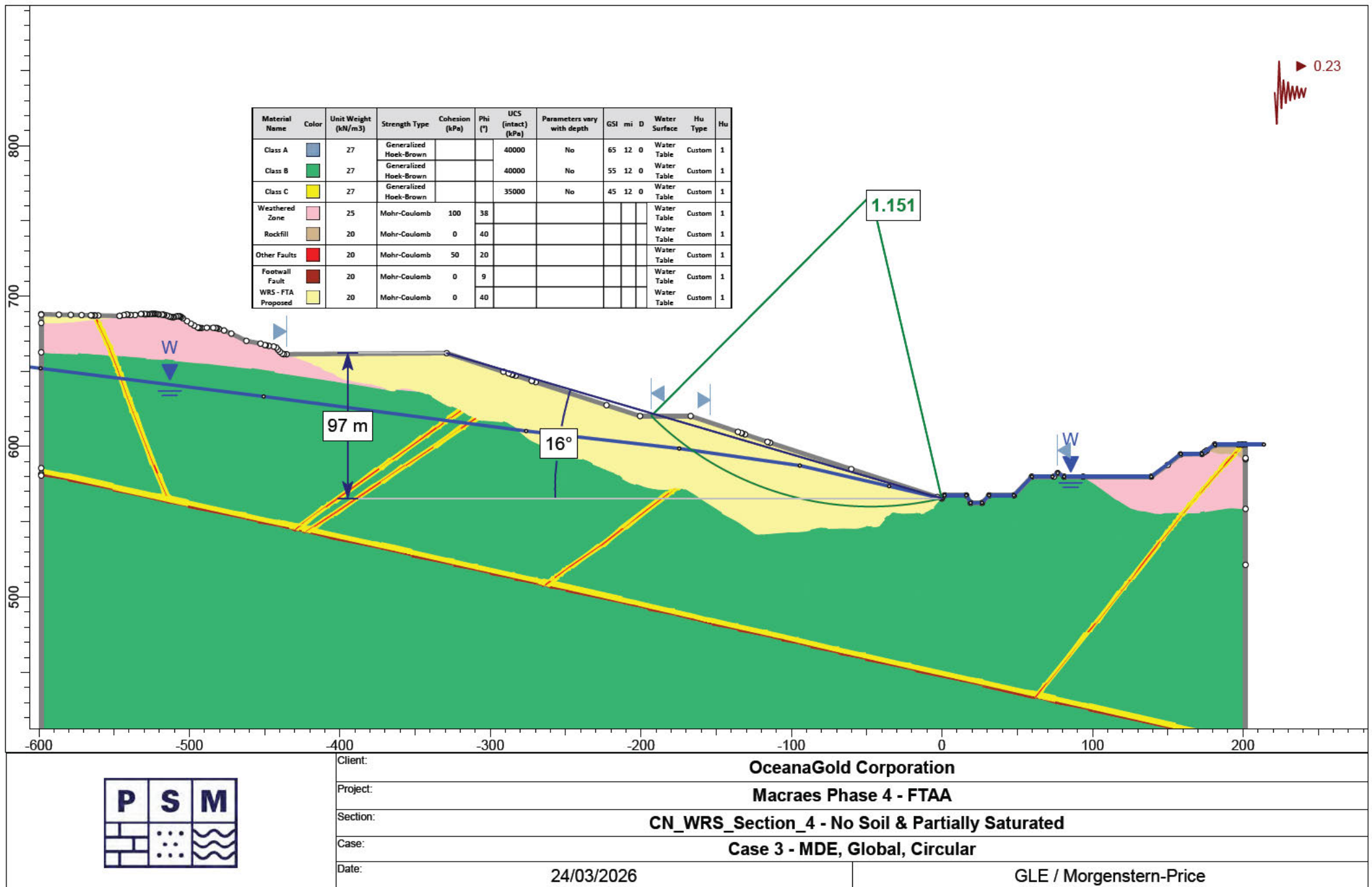


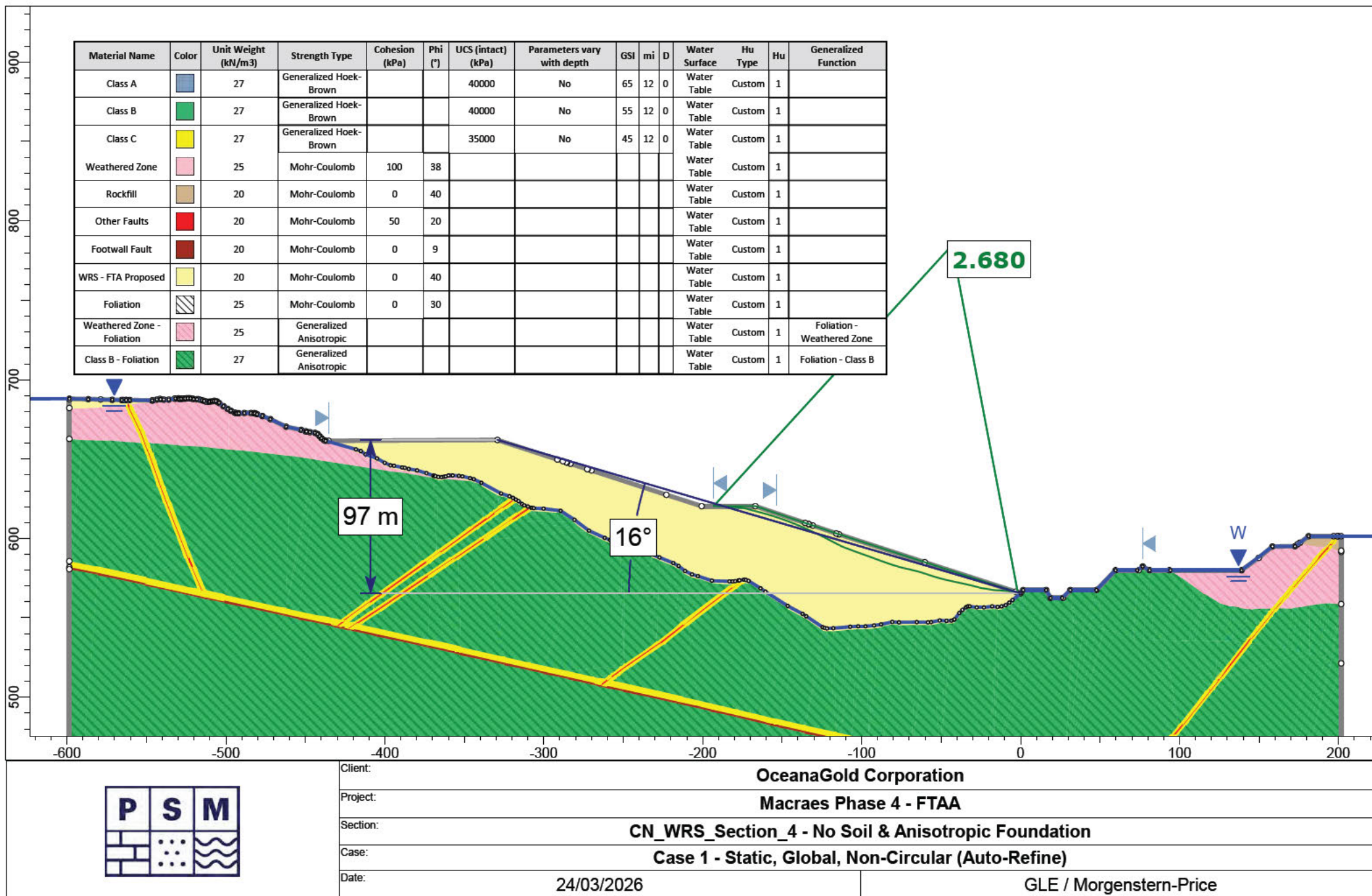


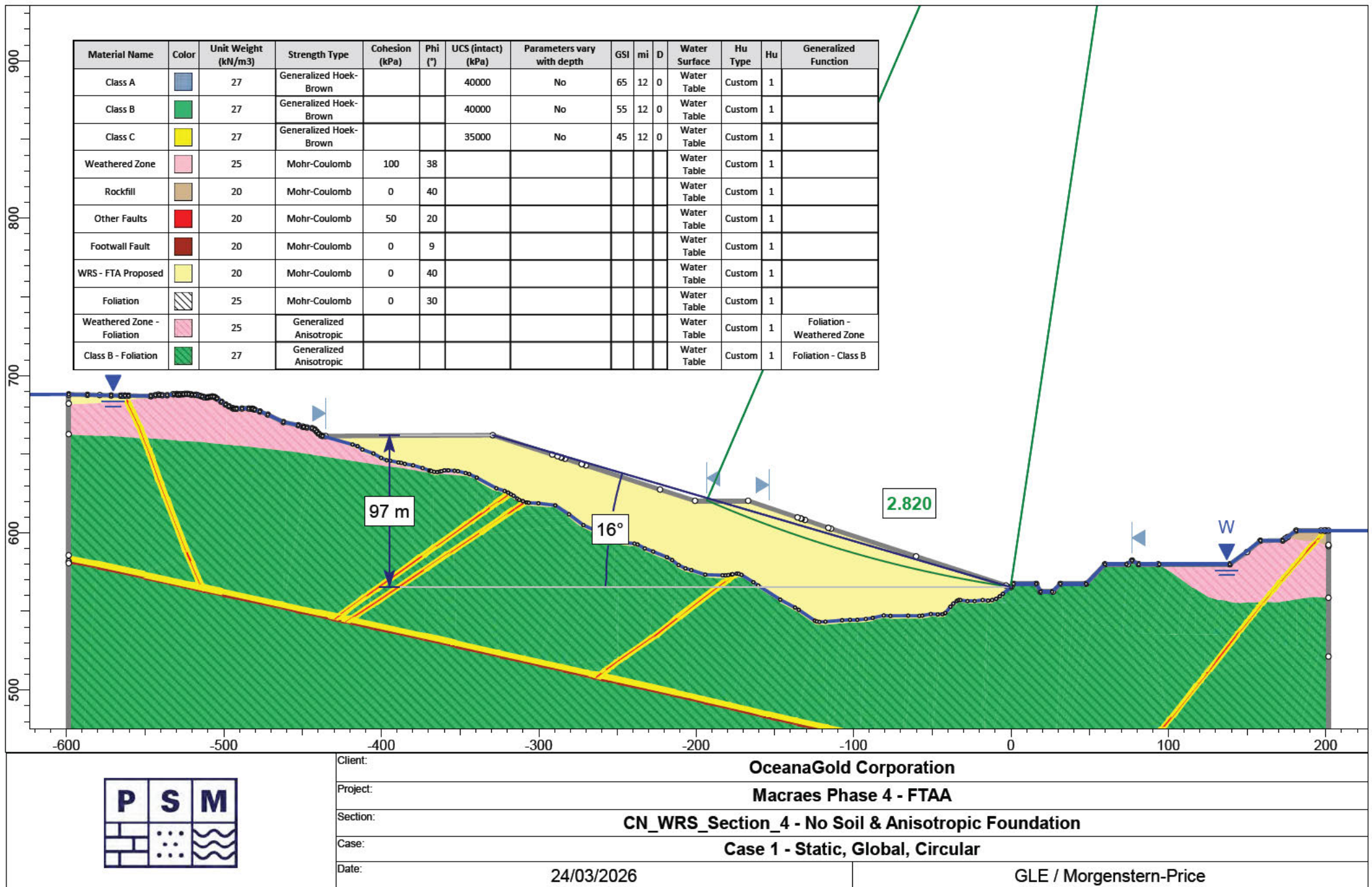


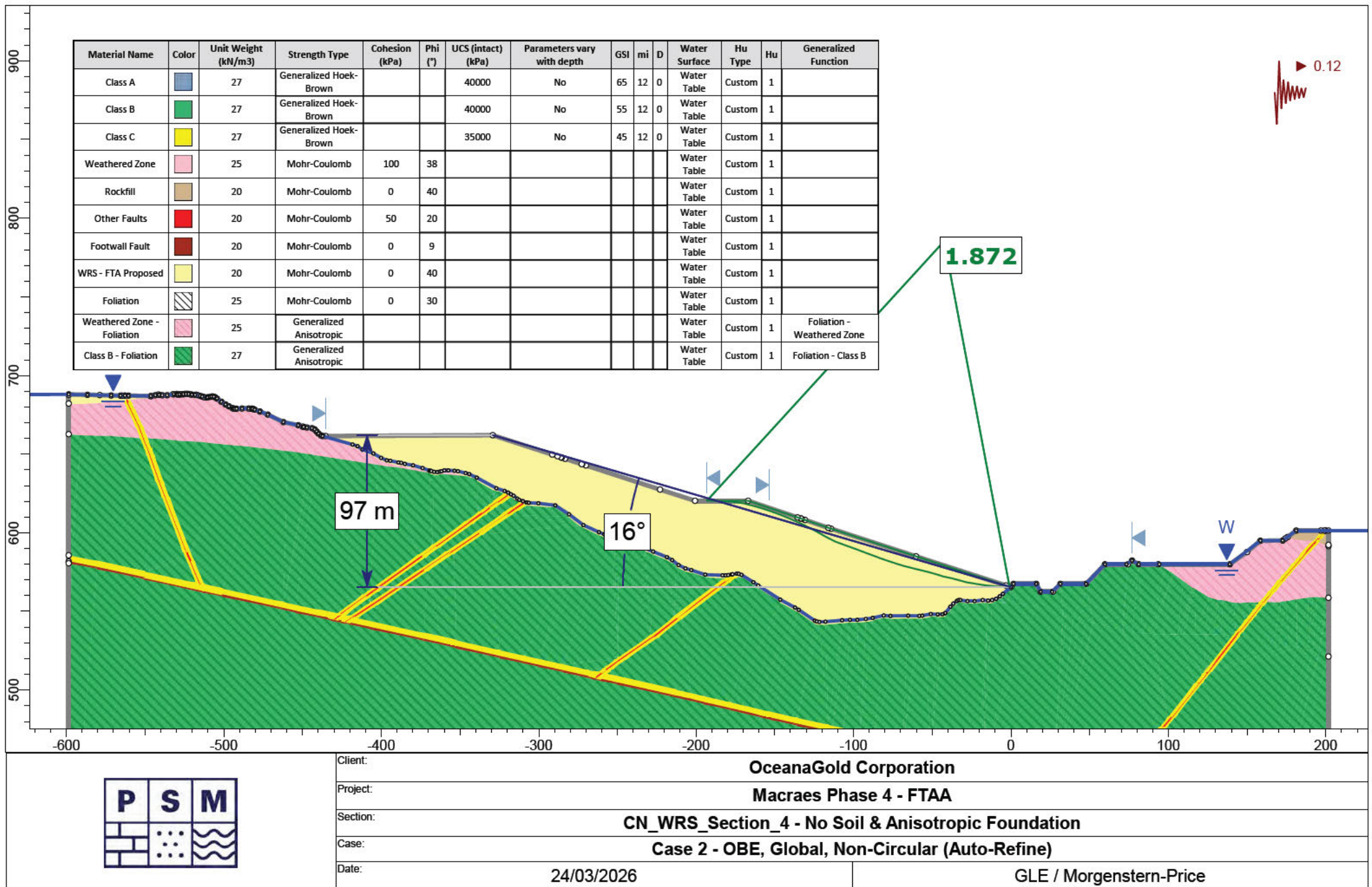


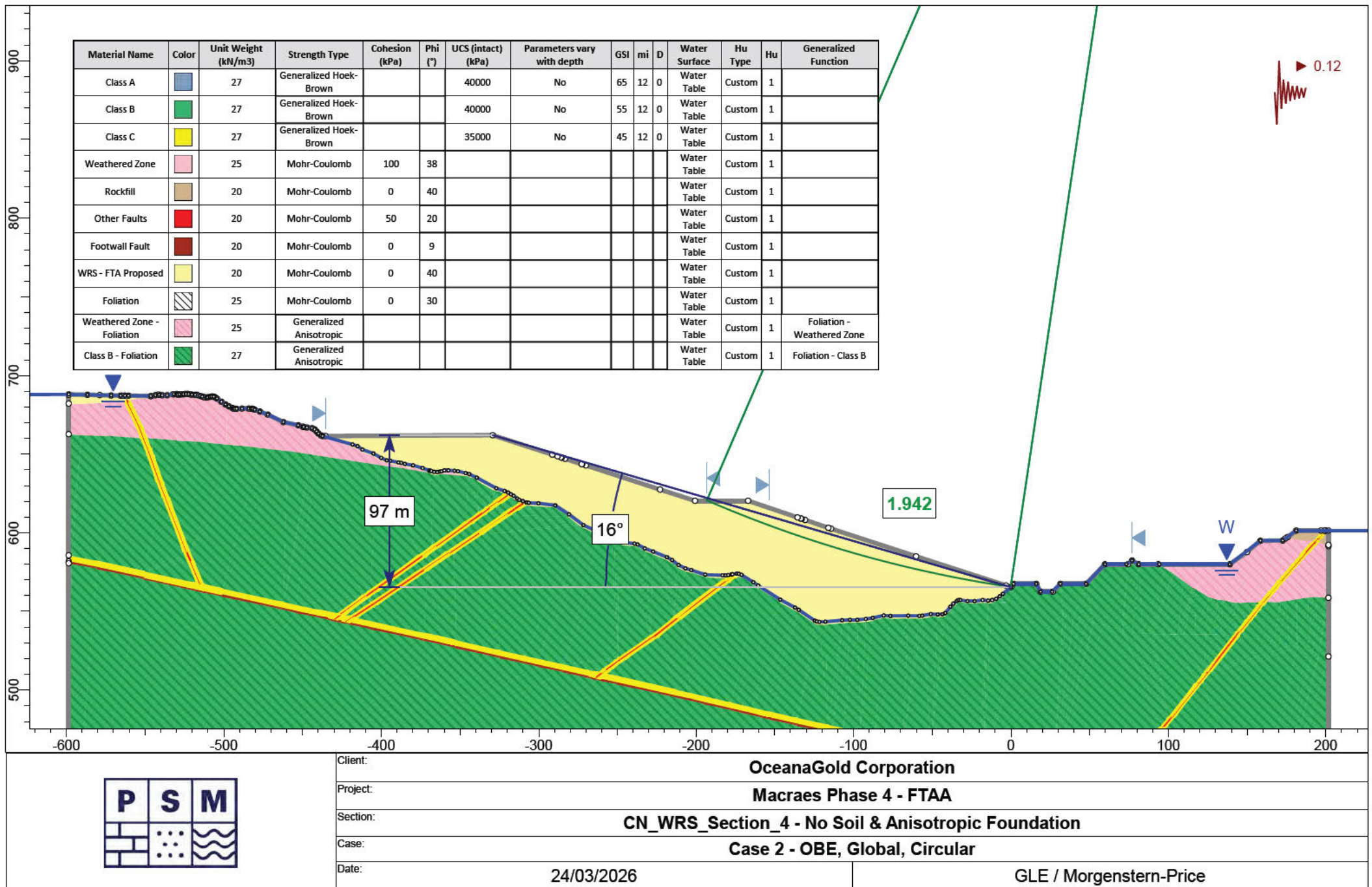


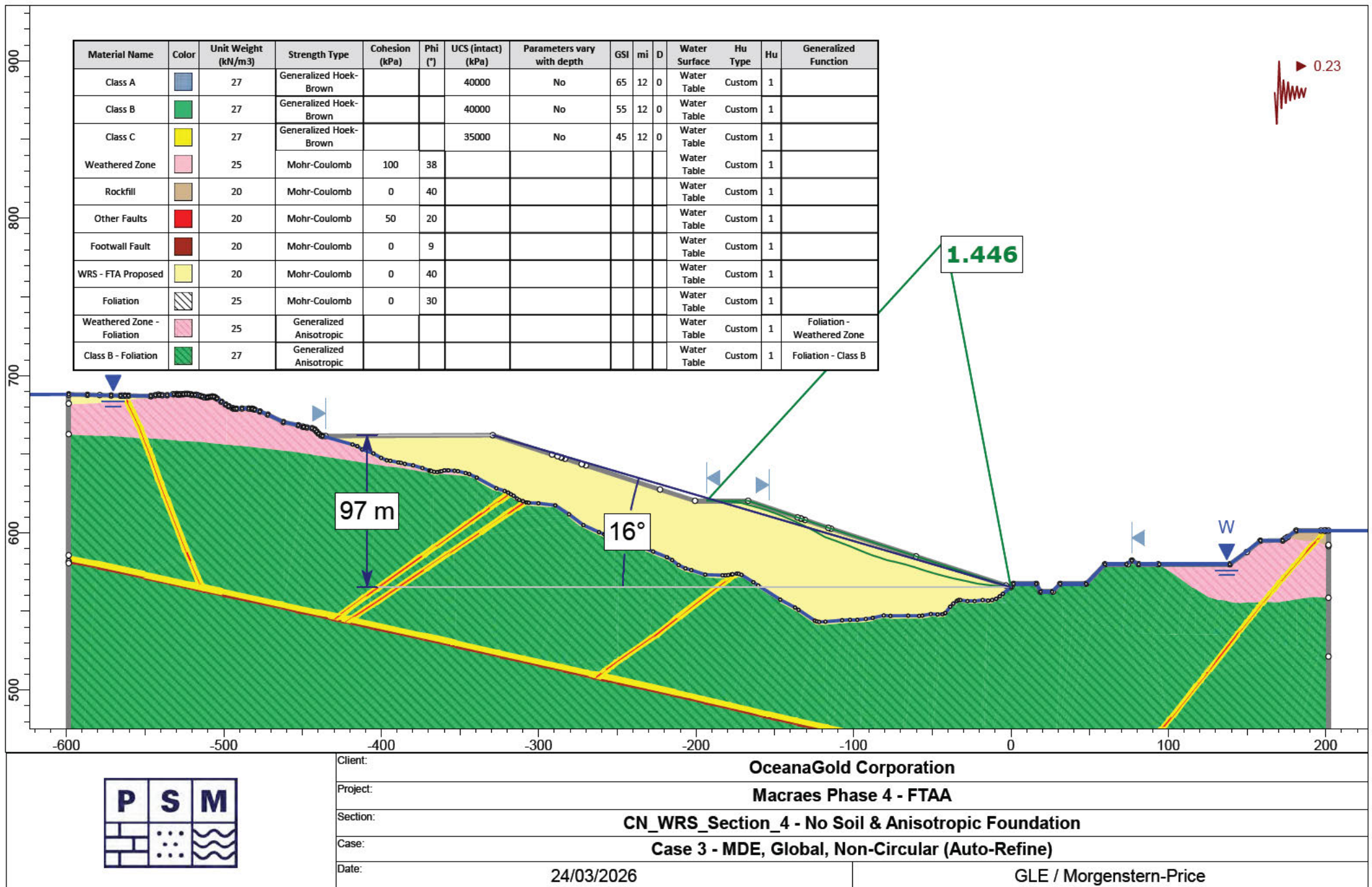


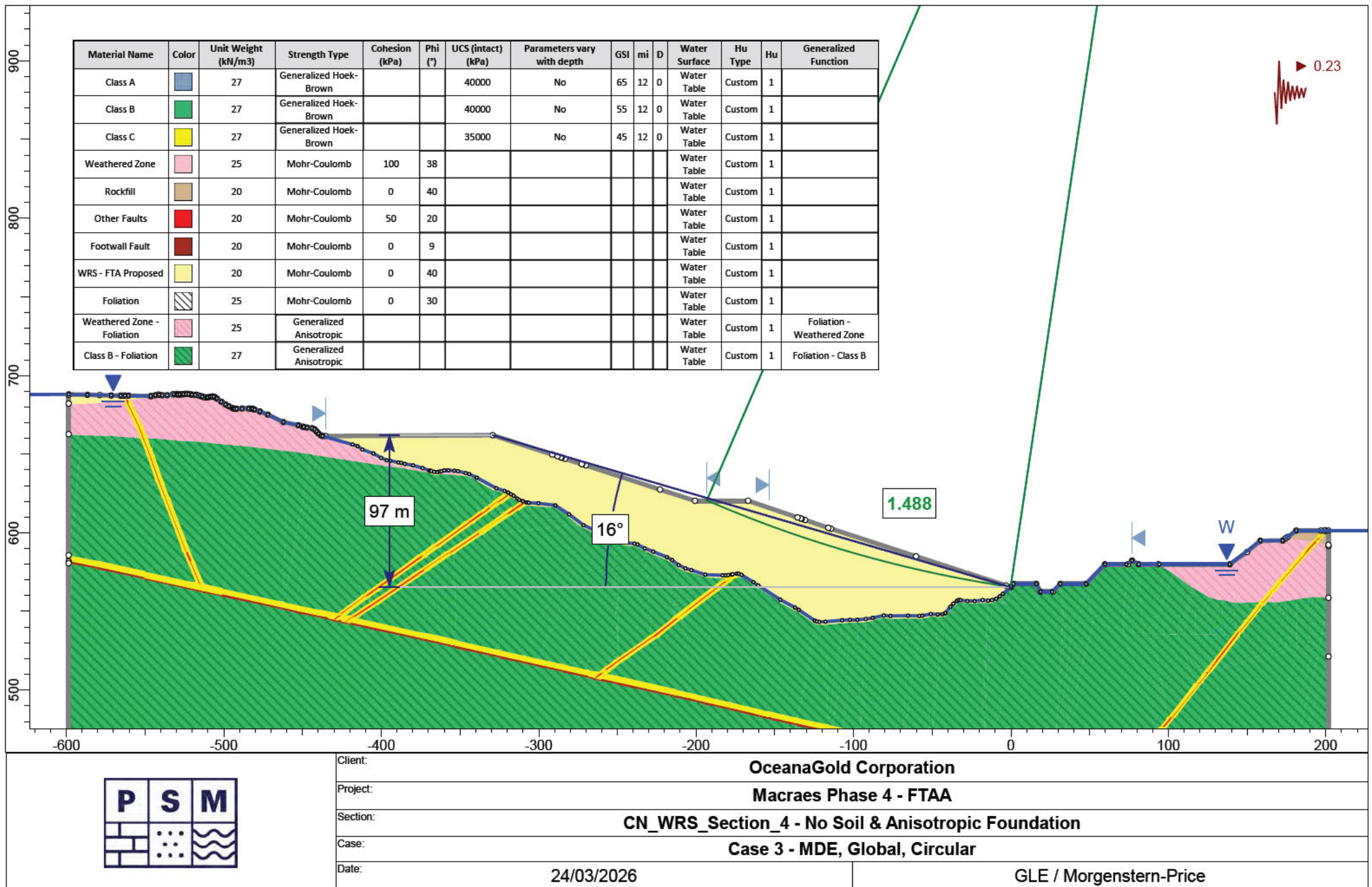


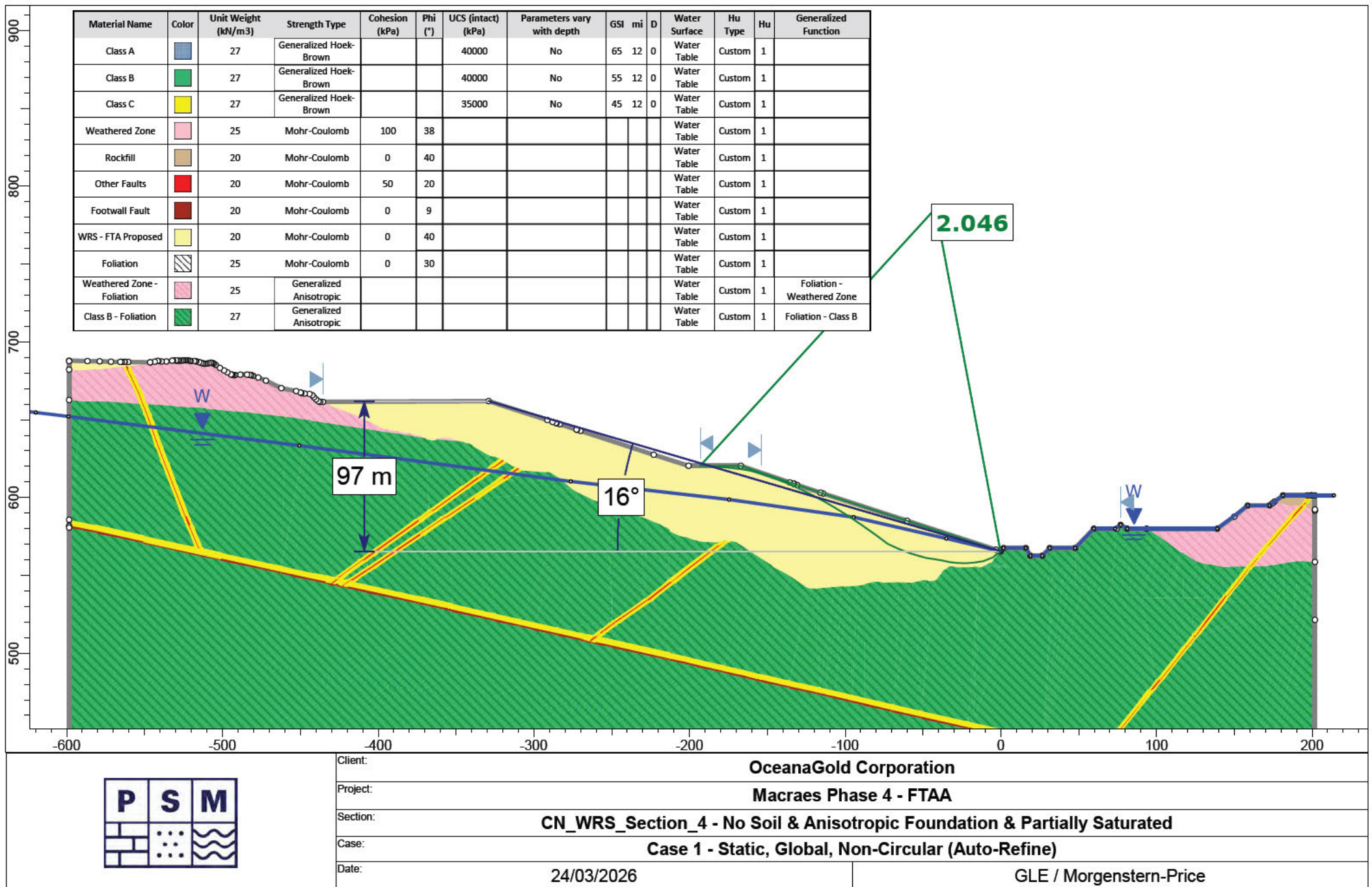


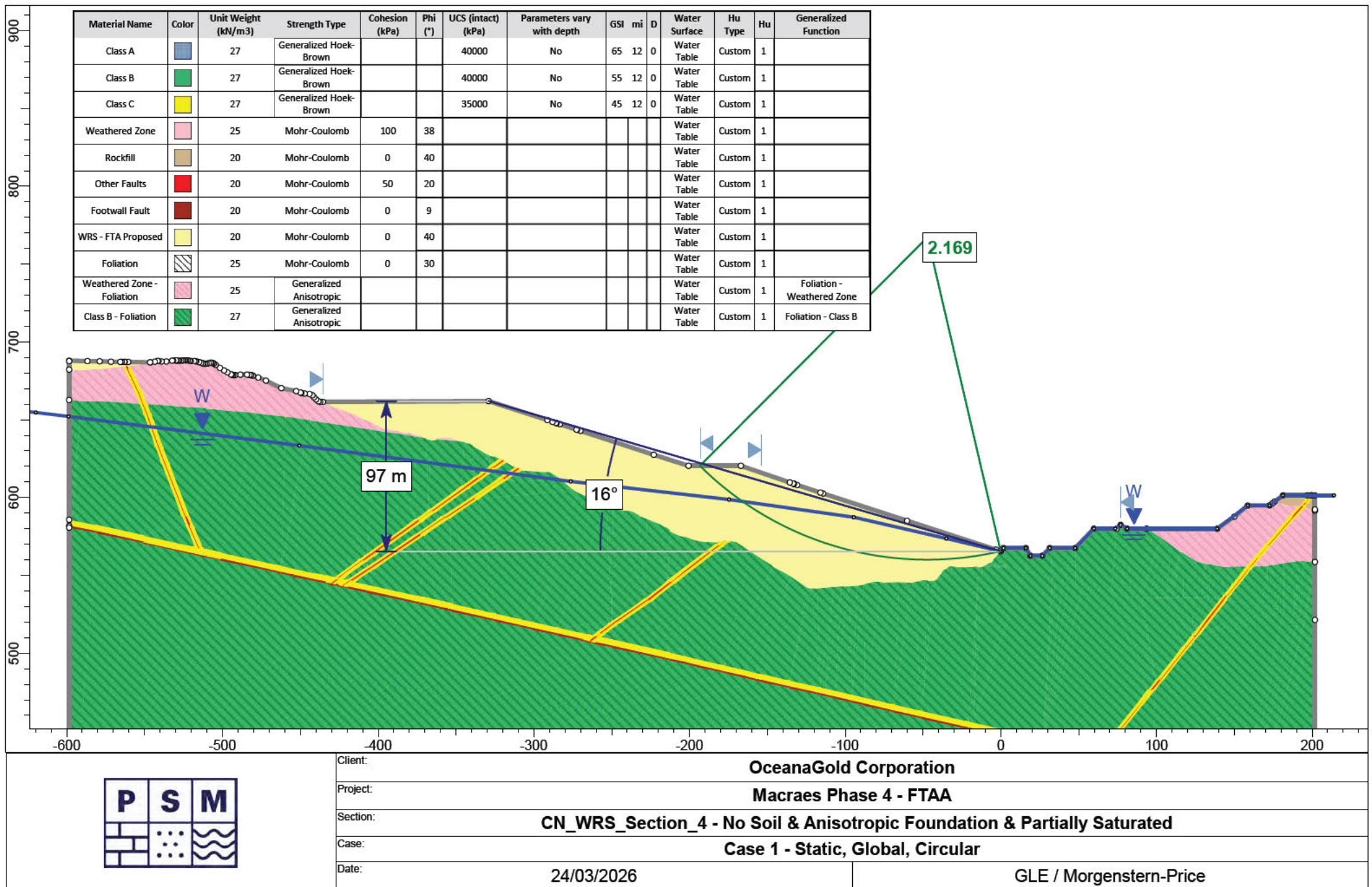


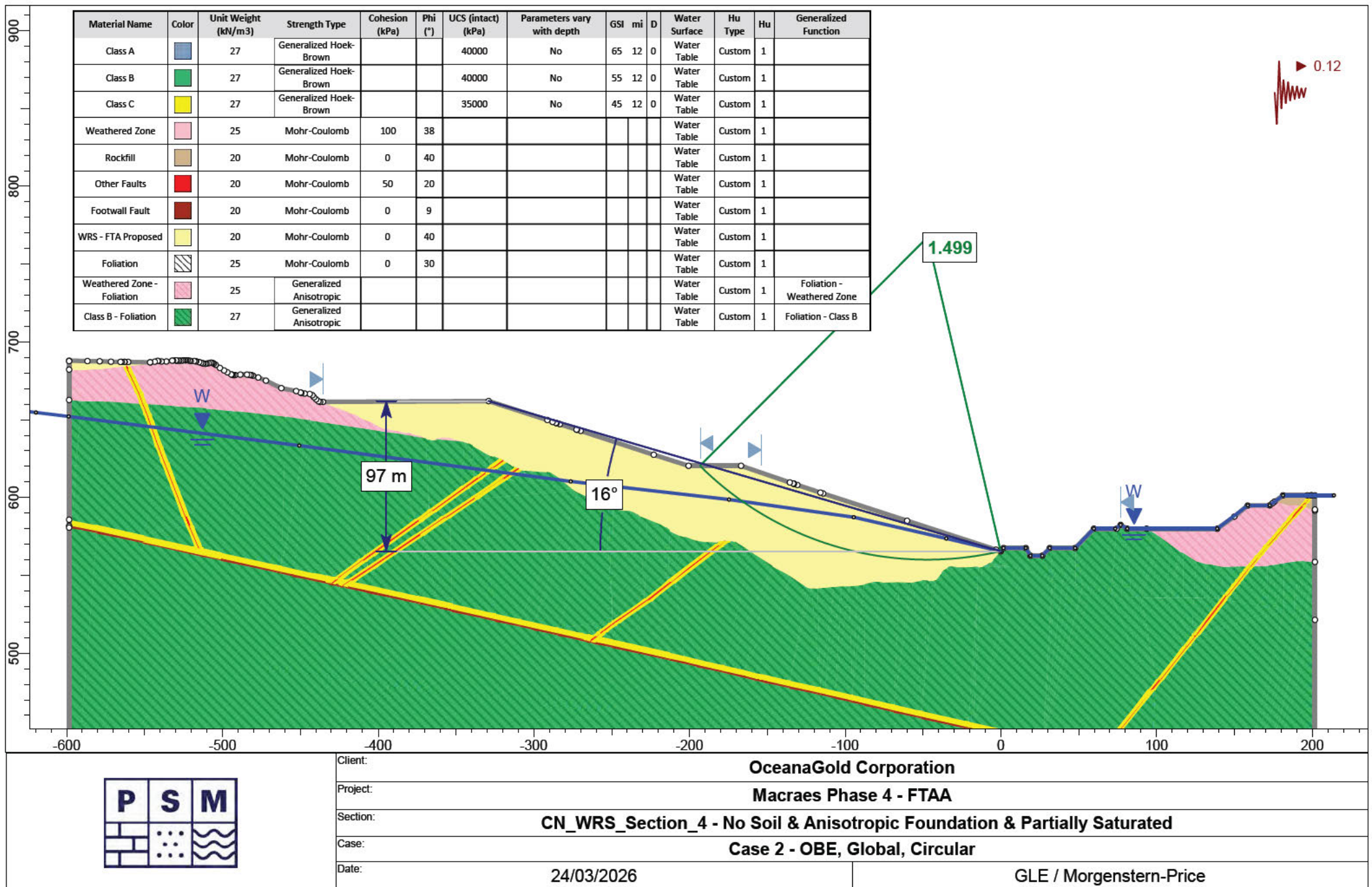


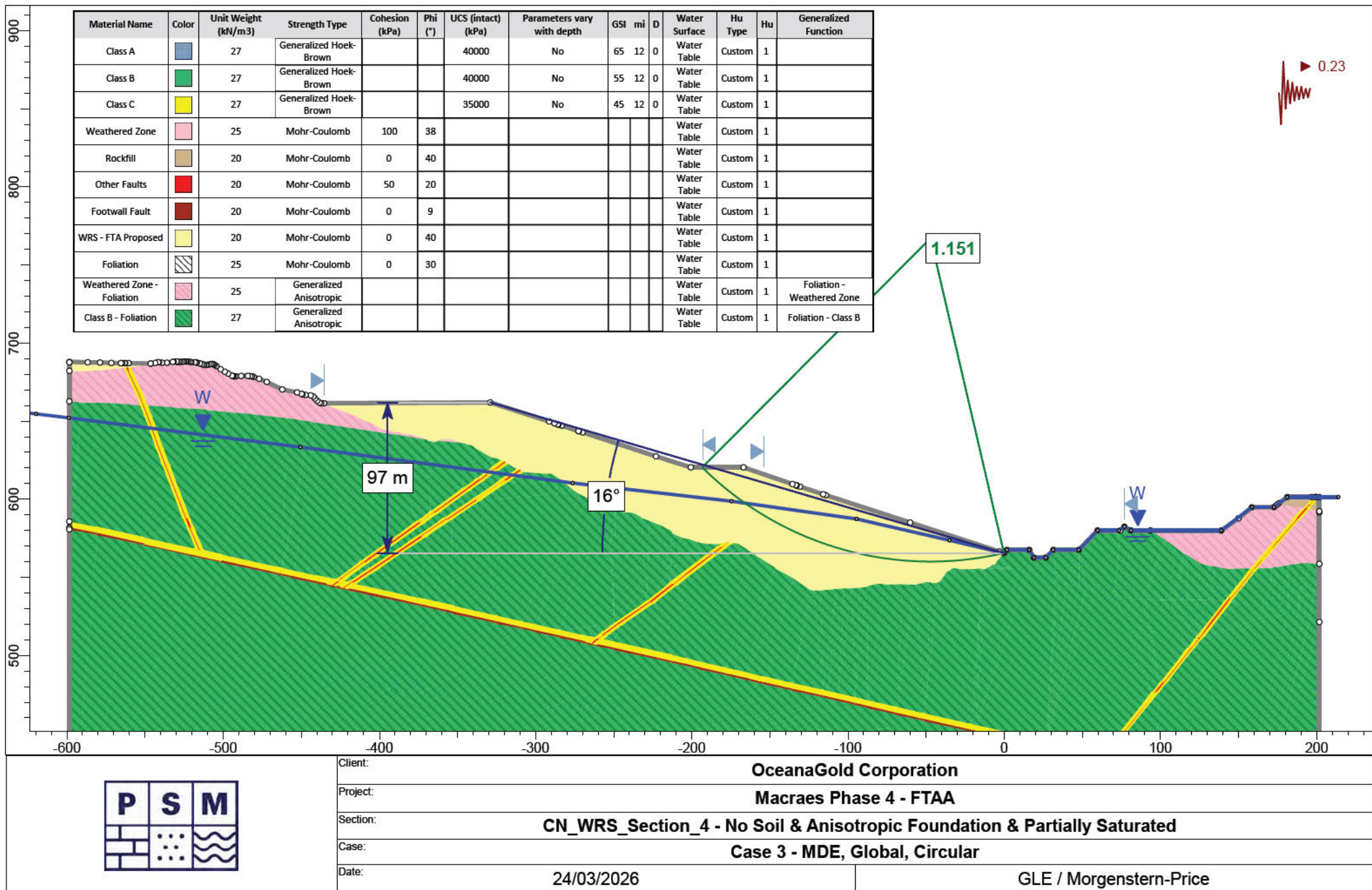








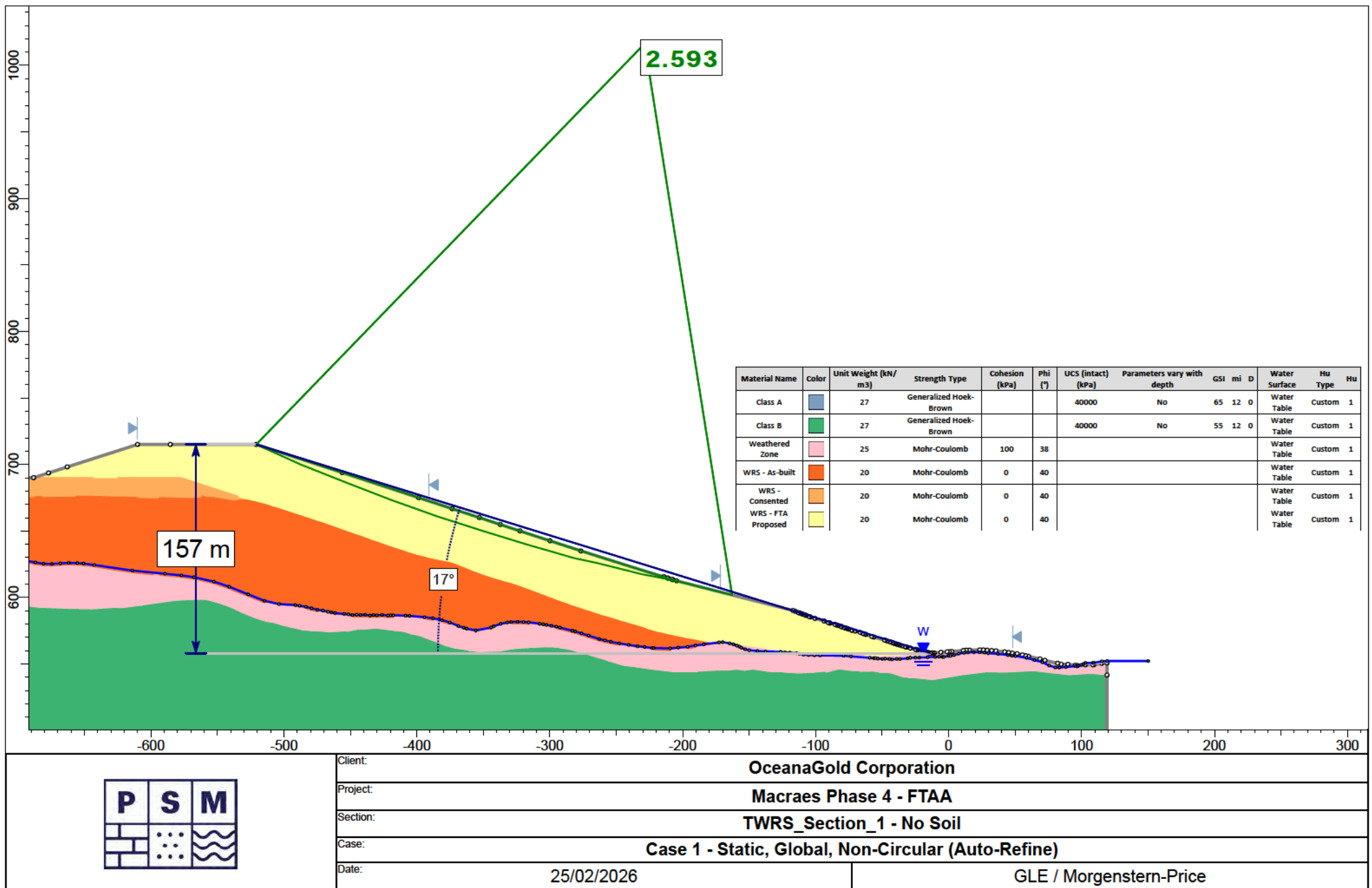


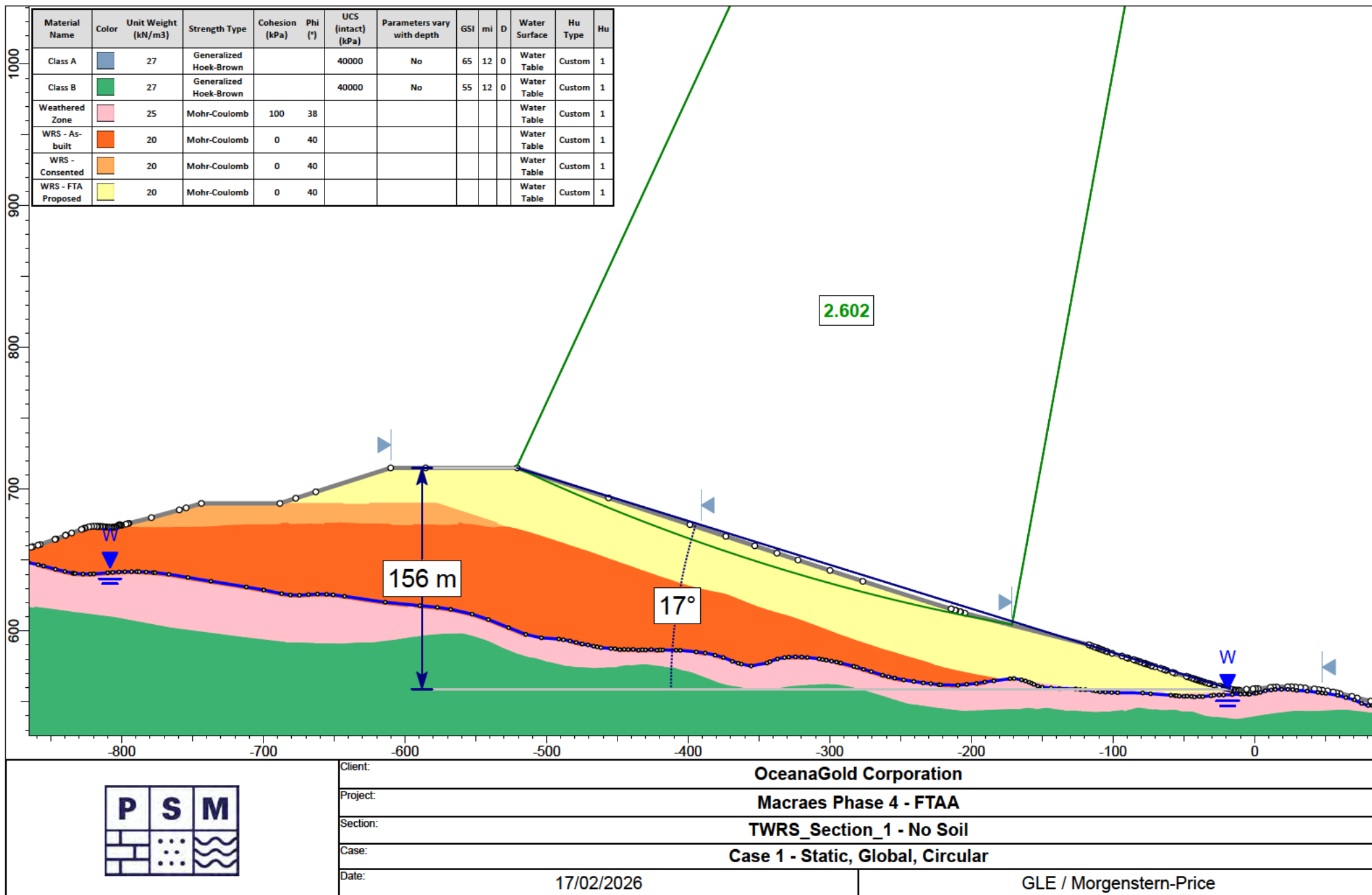


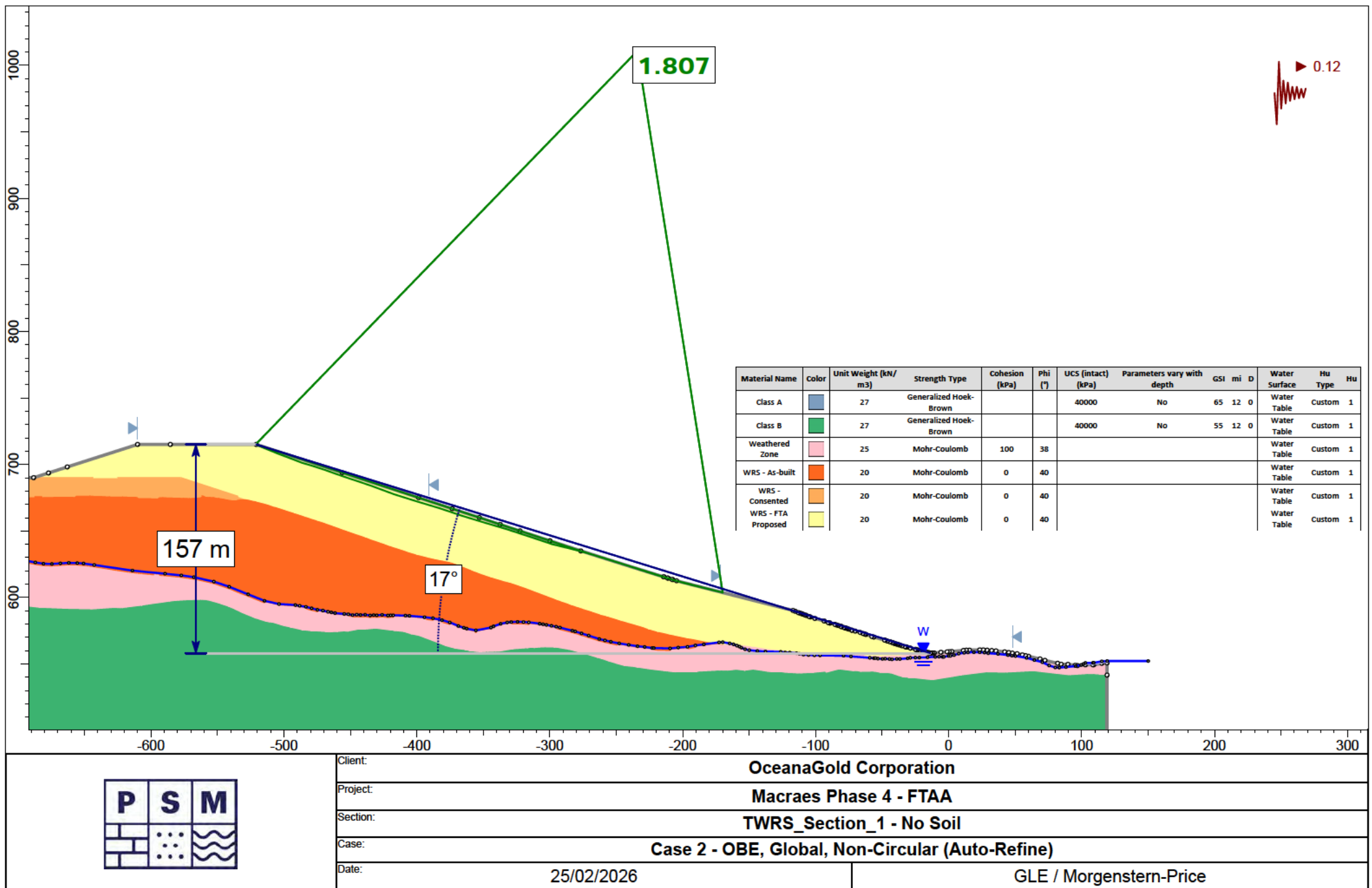
Trimbells WRS

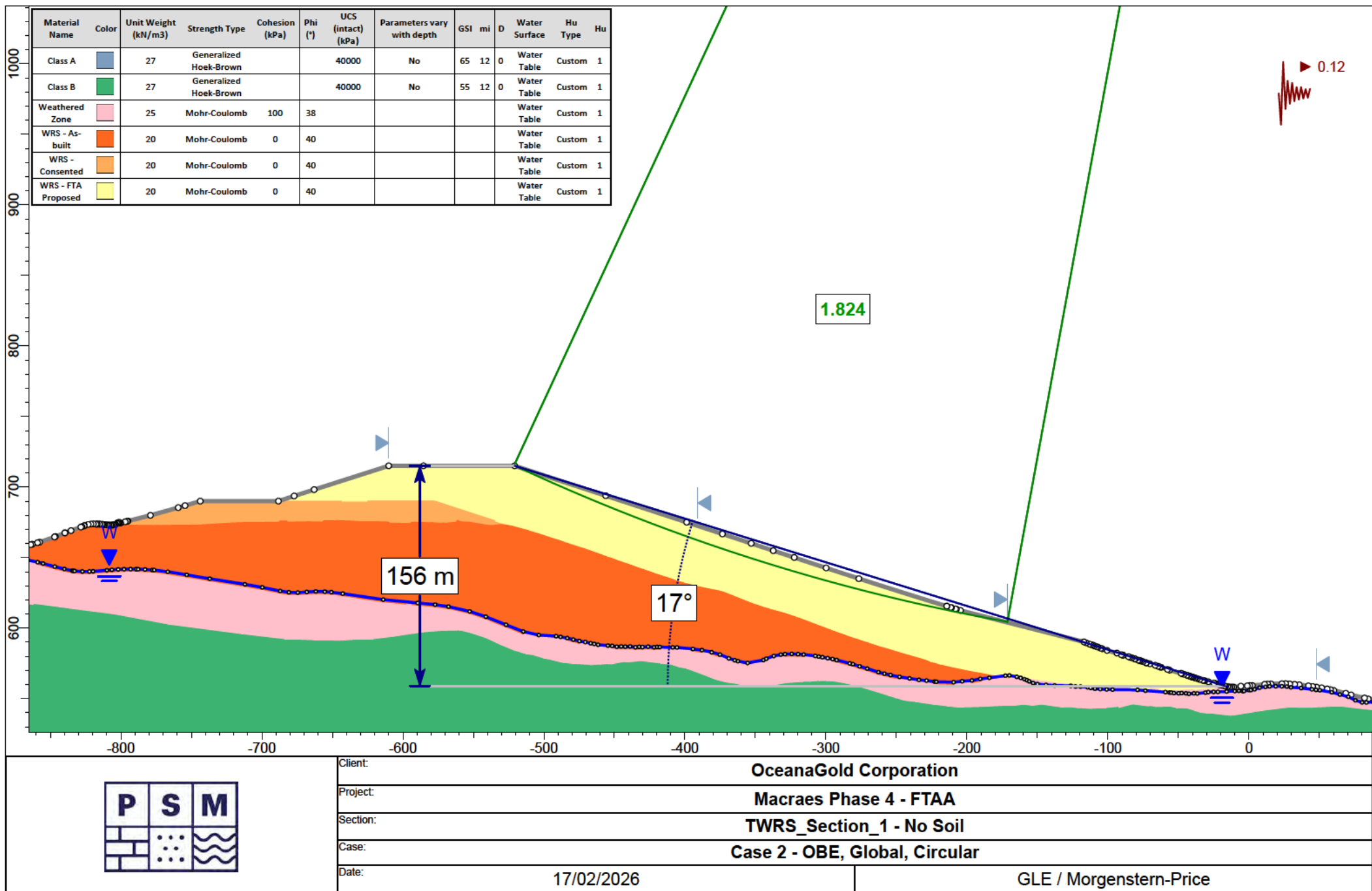
Limit Equilibrium Analysis Outputs

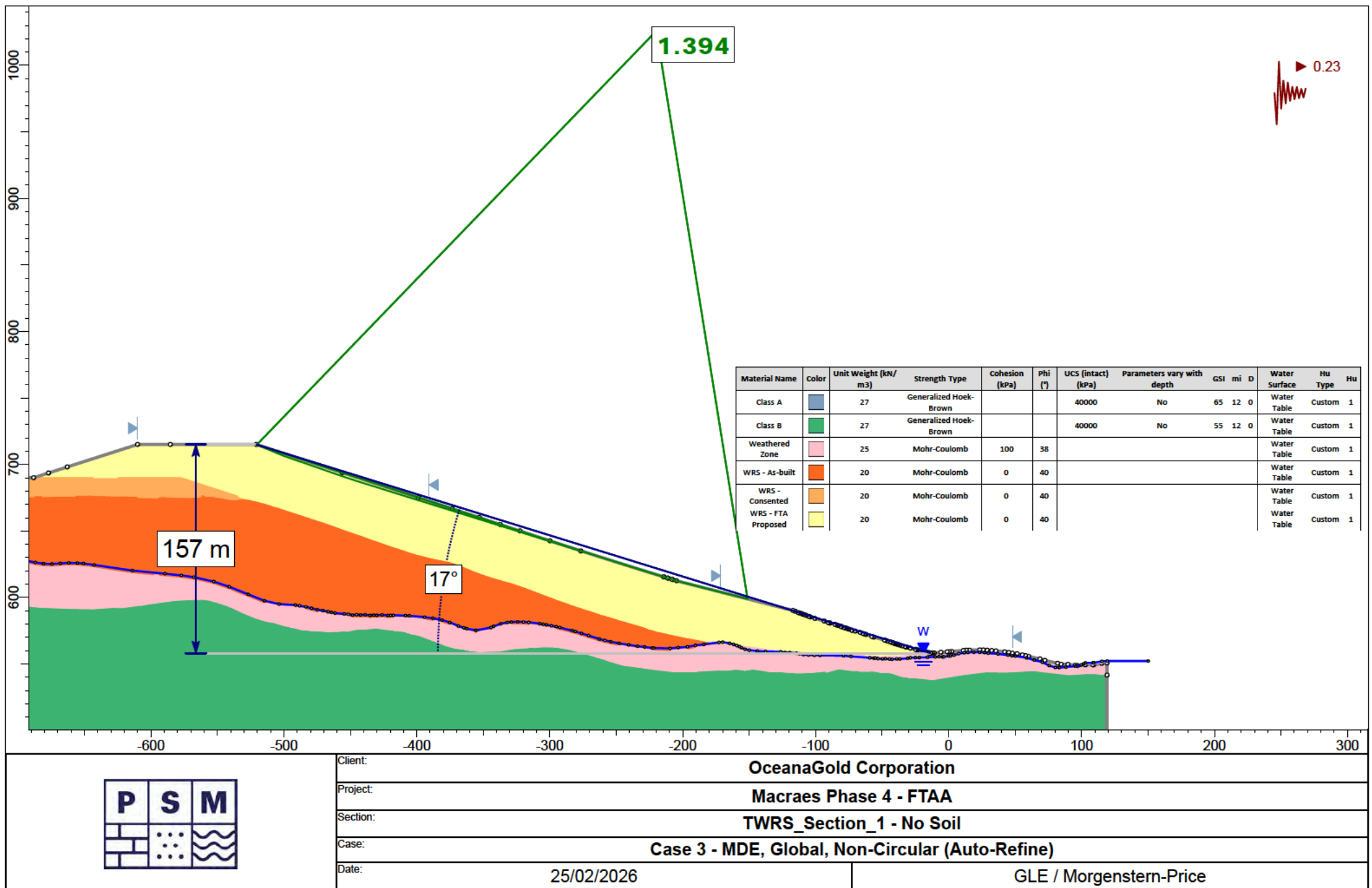


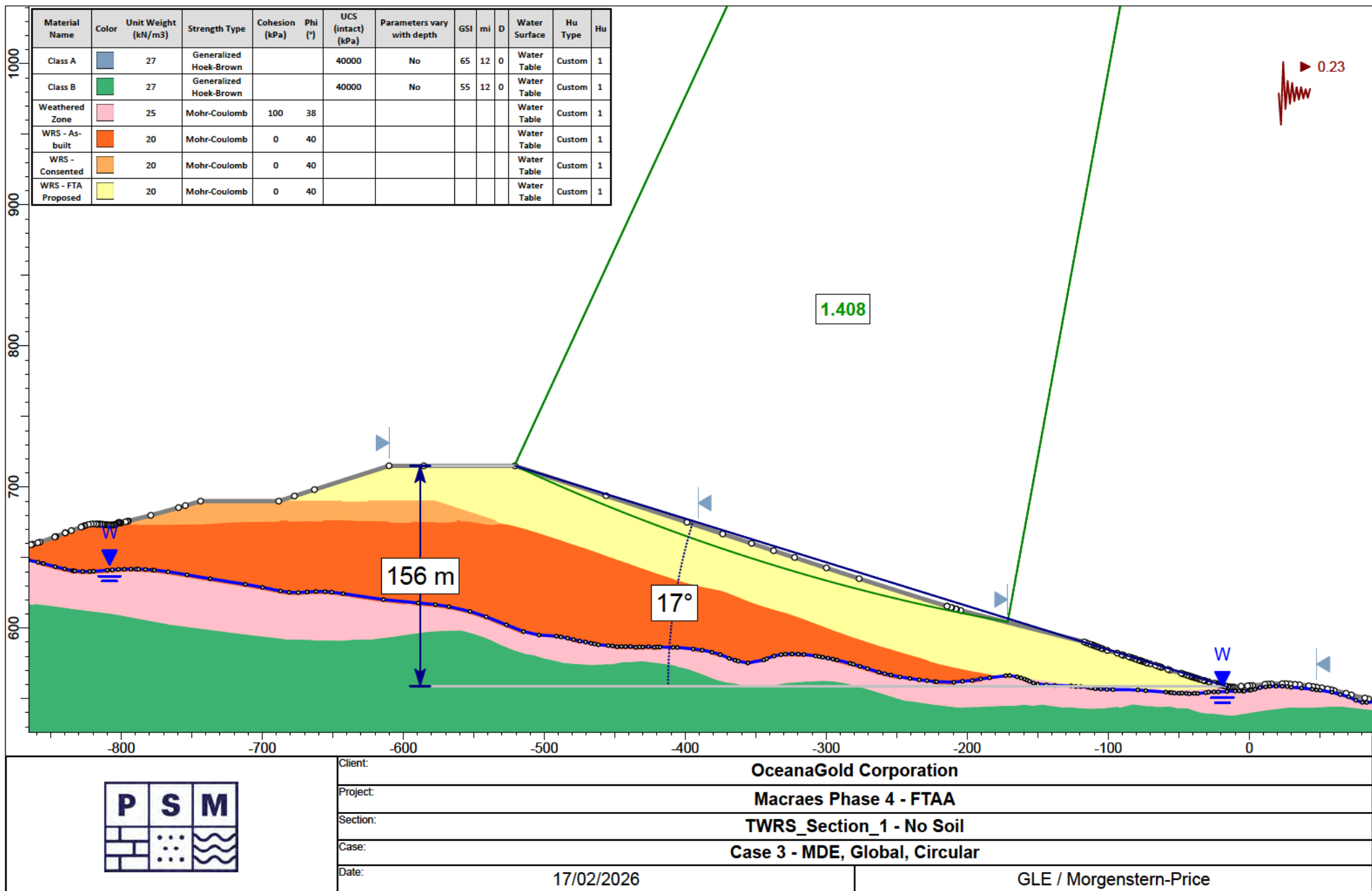


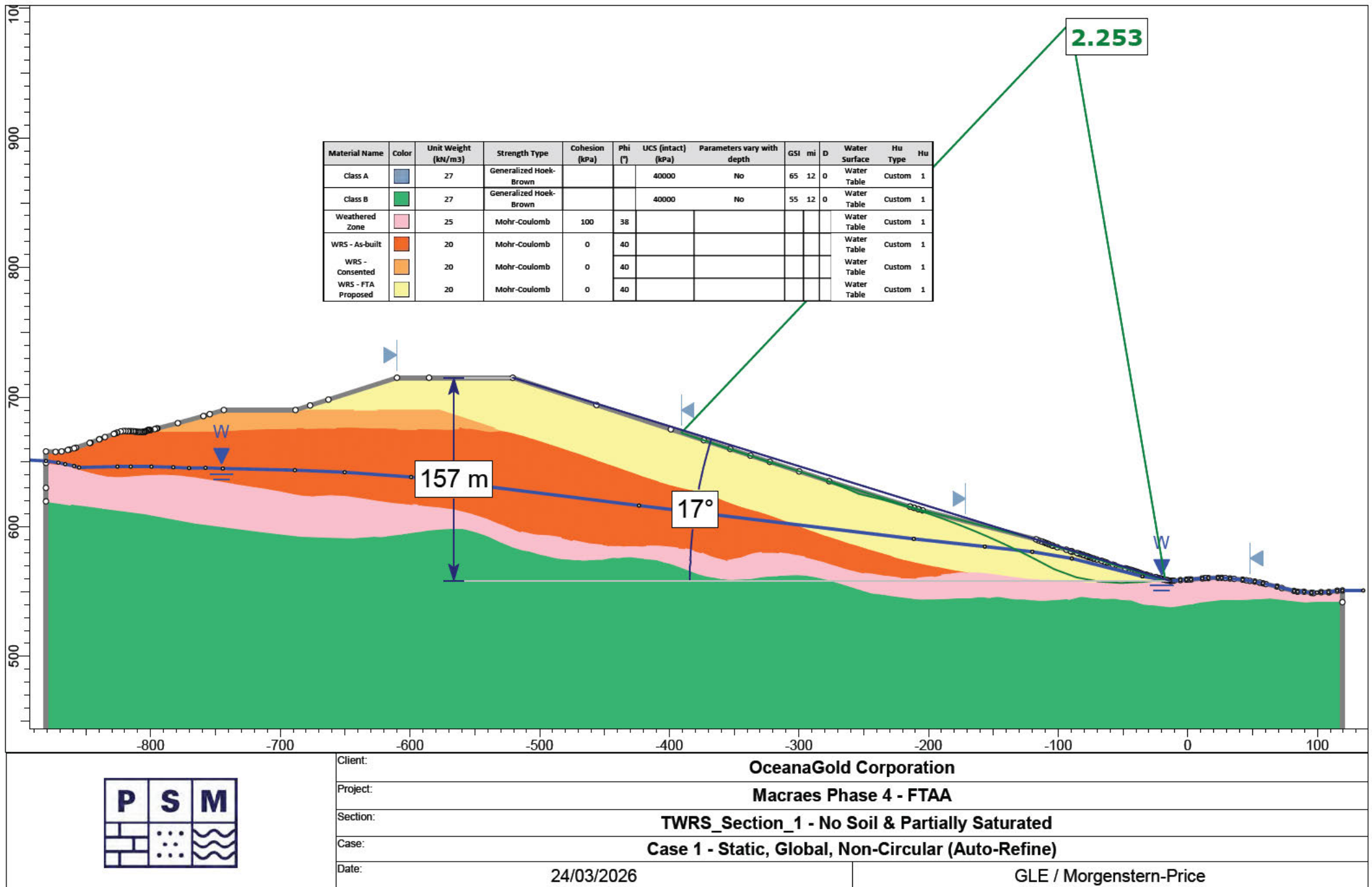


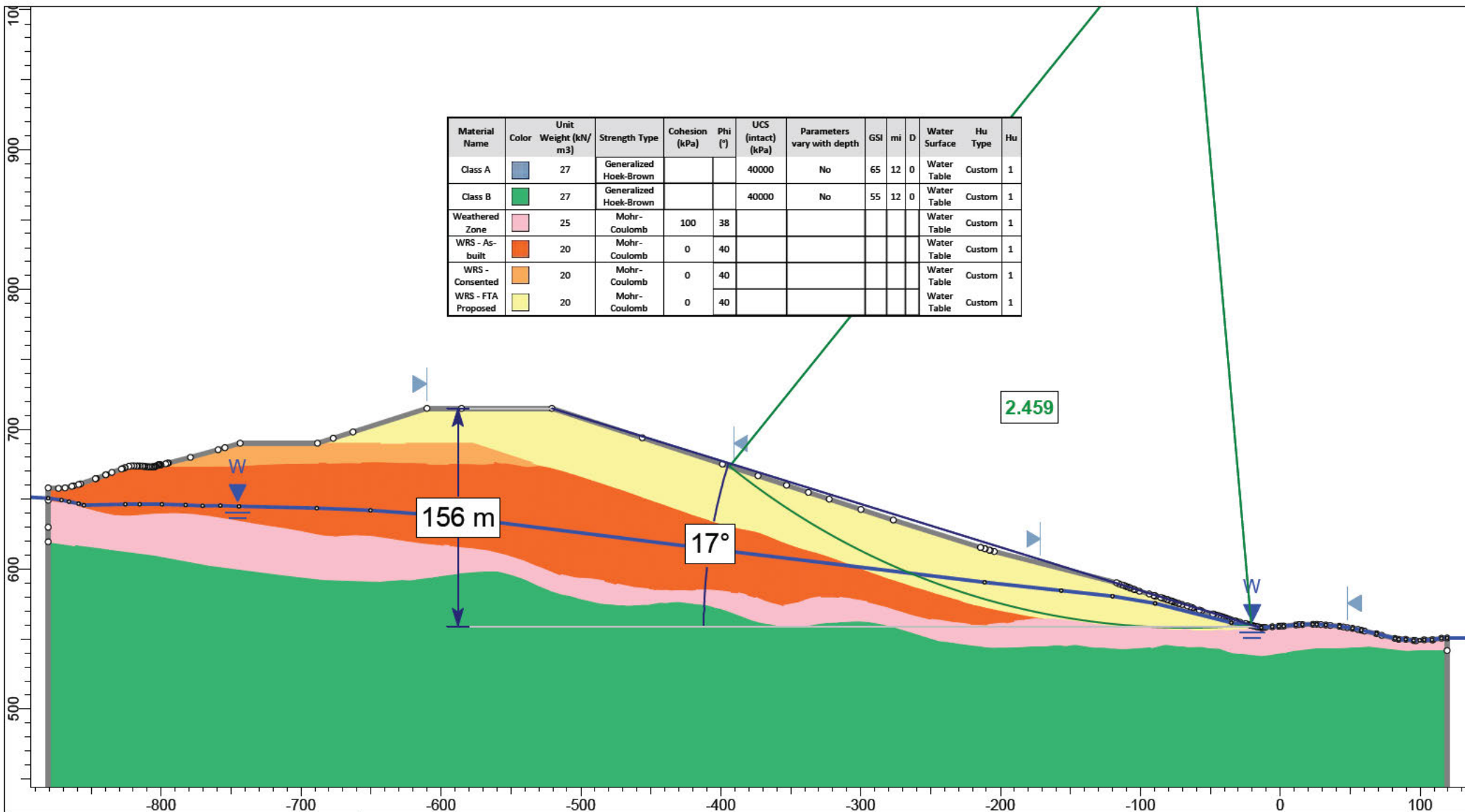




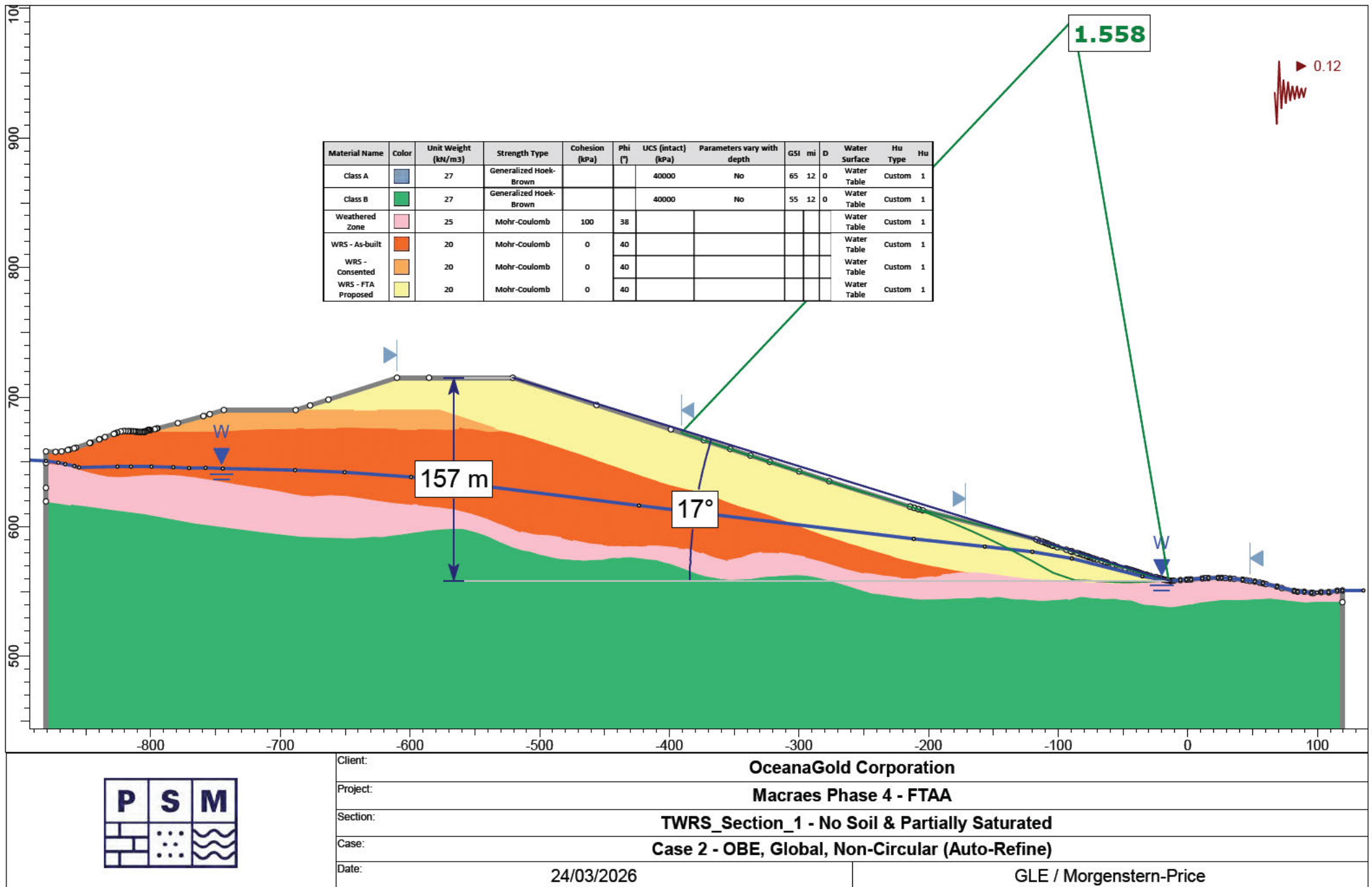


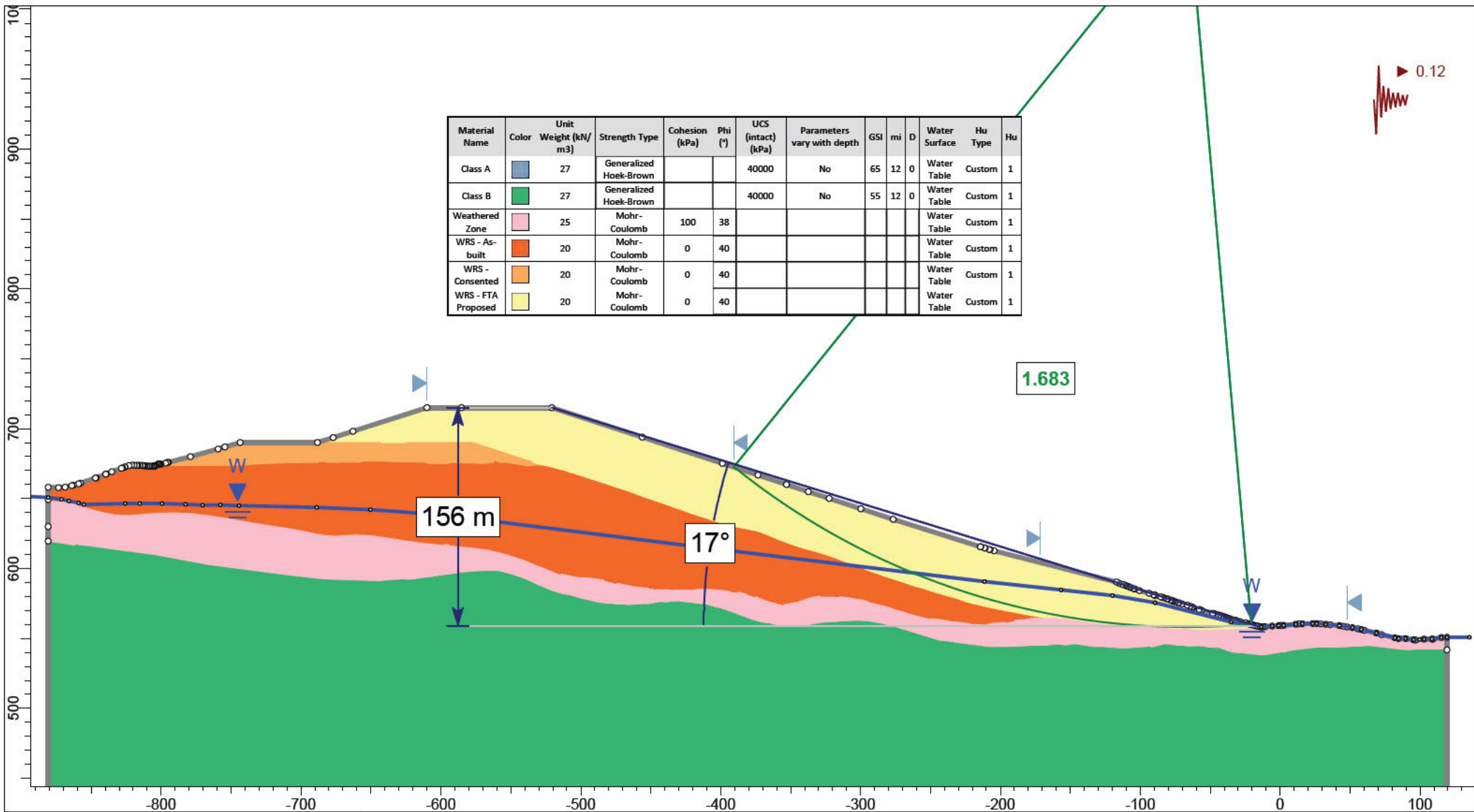




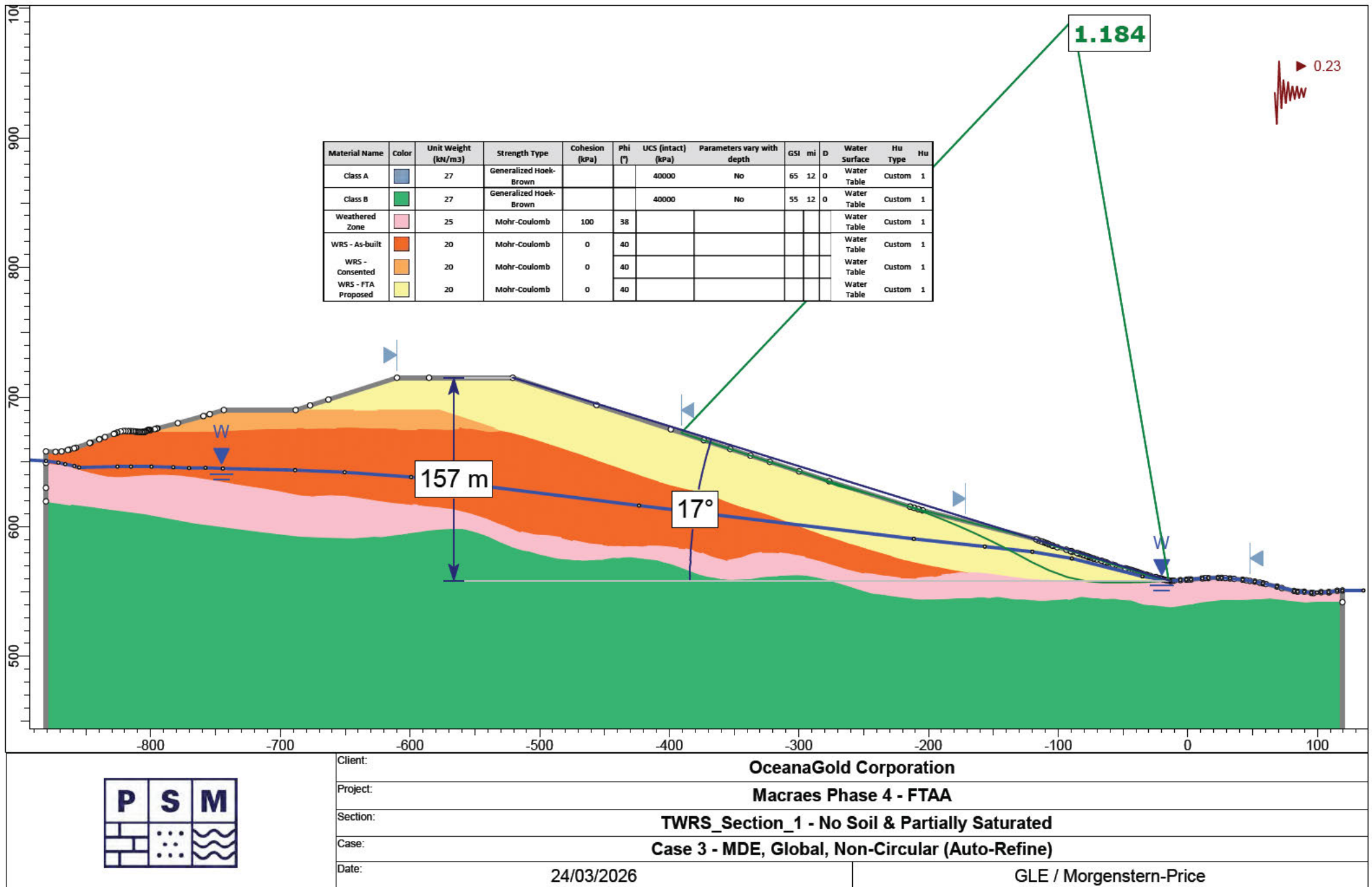


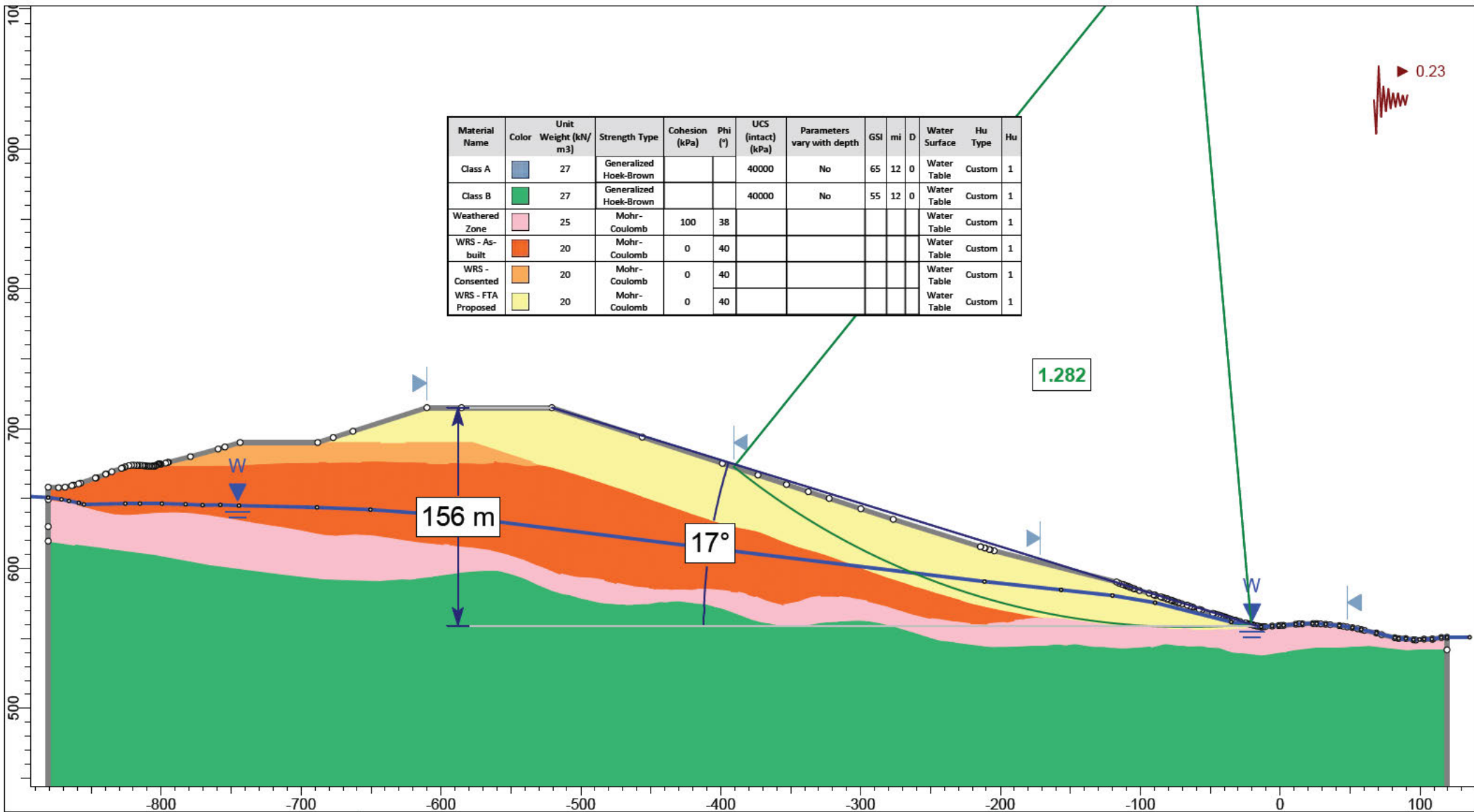
Client:	OceanaGold Corporation	
Project:	Macraes Phase 4 - FTAA	
Section:	TWRS_Section_1 - No Soil & Partially Saturated	
Case:	Case 1 - Static, Global, Circular	
Date:	24/03/2026	GLE / Morgenstern-Price



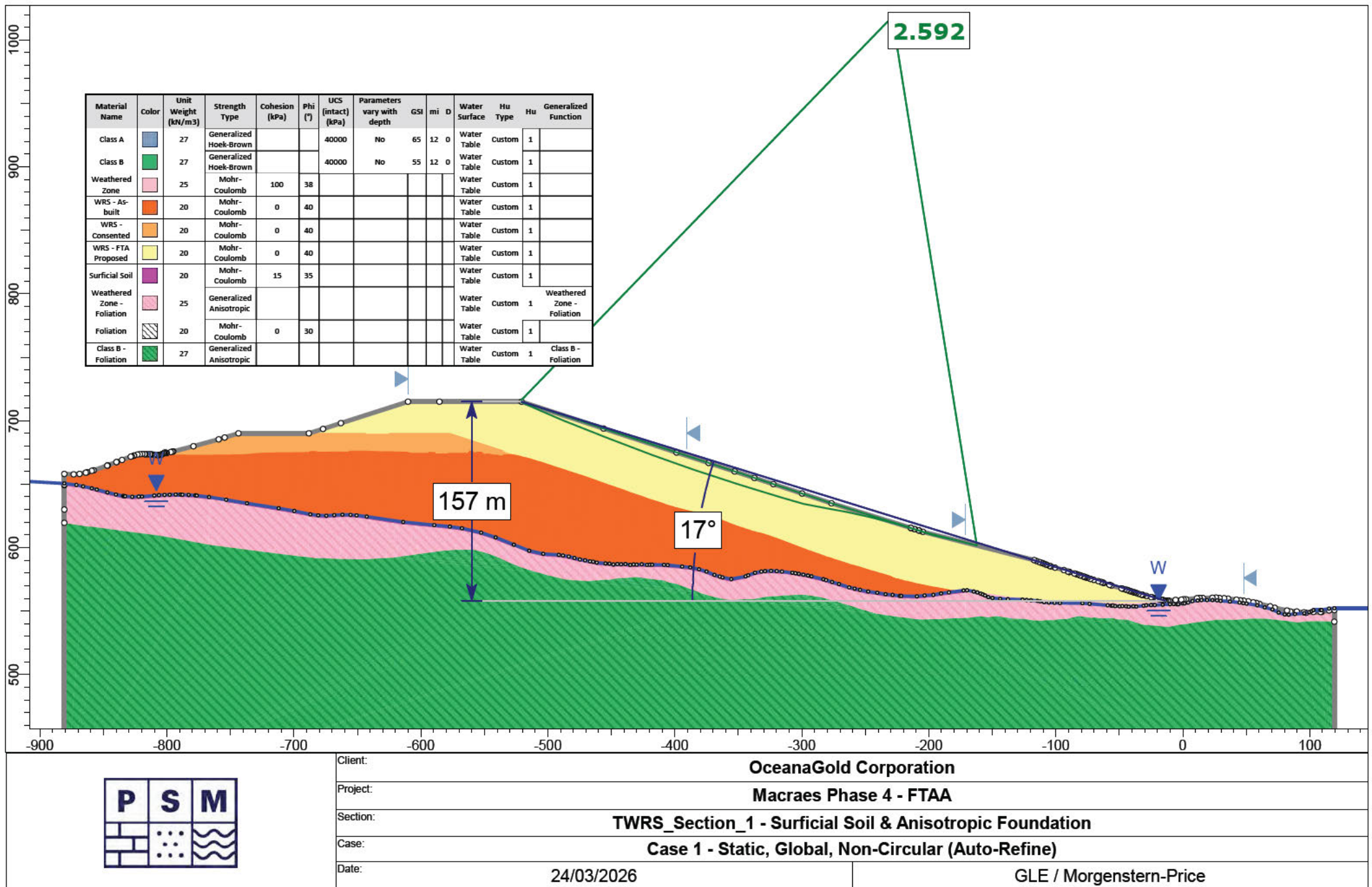


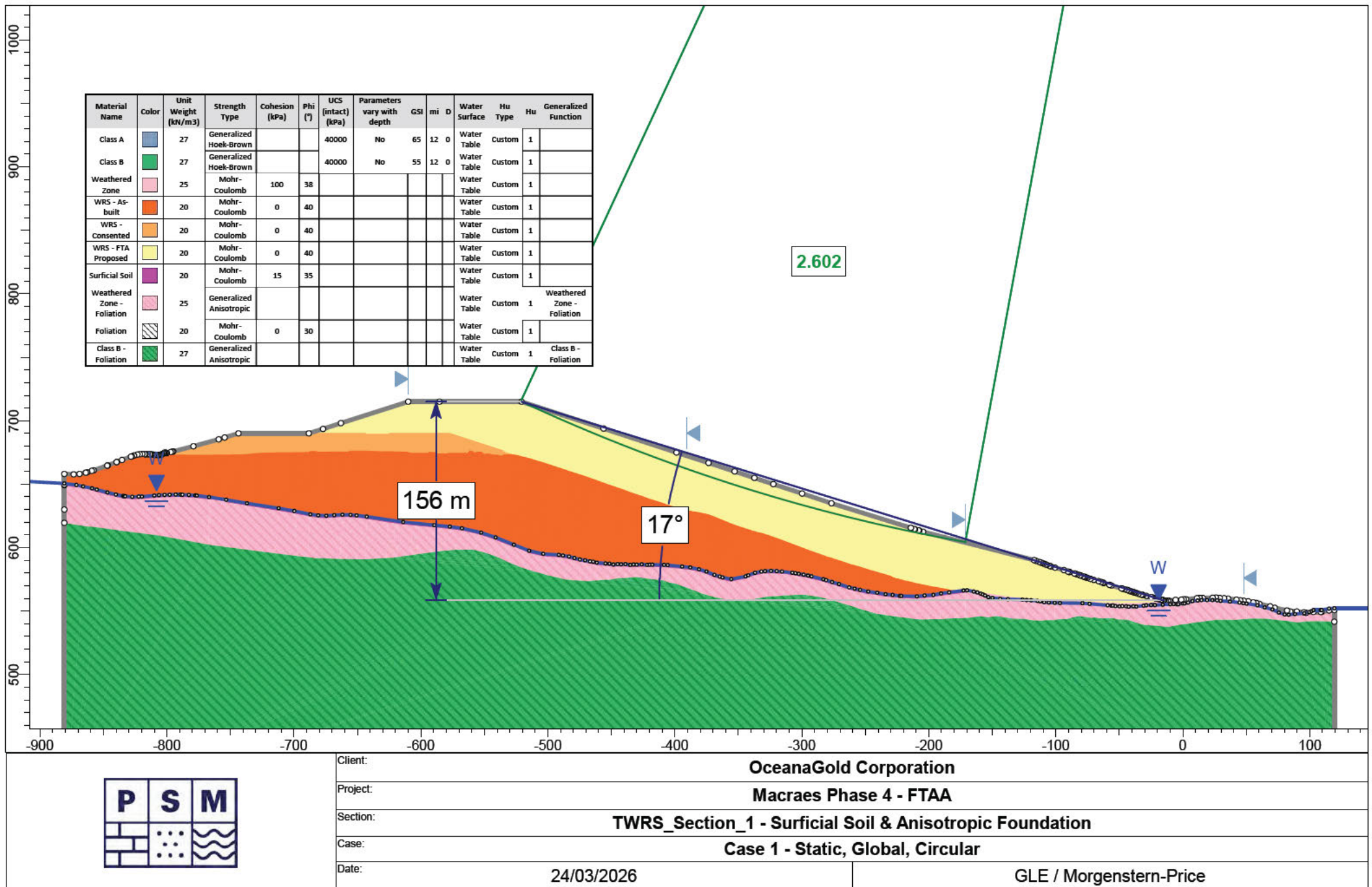
Client:	OceanaGold Corporation	
Project:	Macraes Phase 4 - FTAA	
Section:	TWRS_Section_1 - No Soil & Partially Saturated	
Case:	Case 2 - OBE, Global, Circular	
Date:	24/03/2026	GLE / Morgenstern-Price

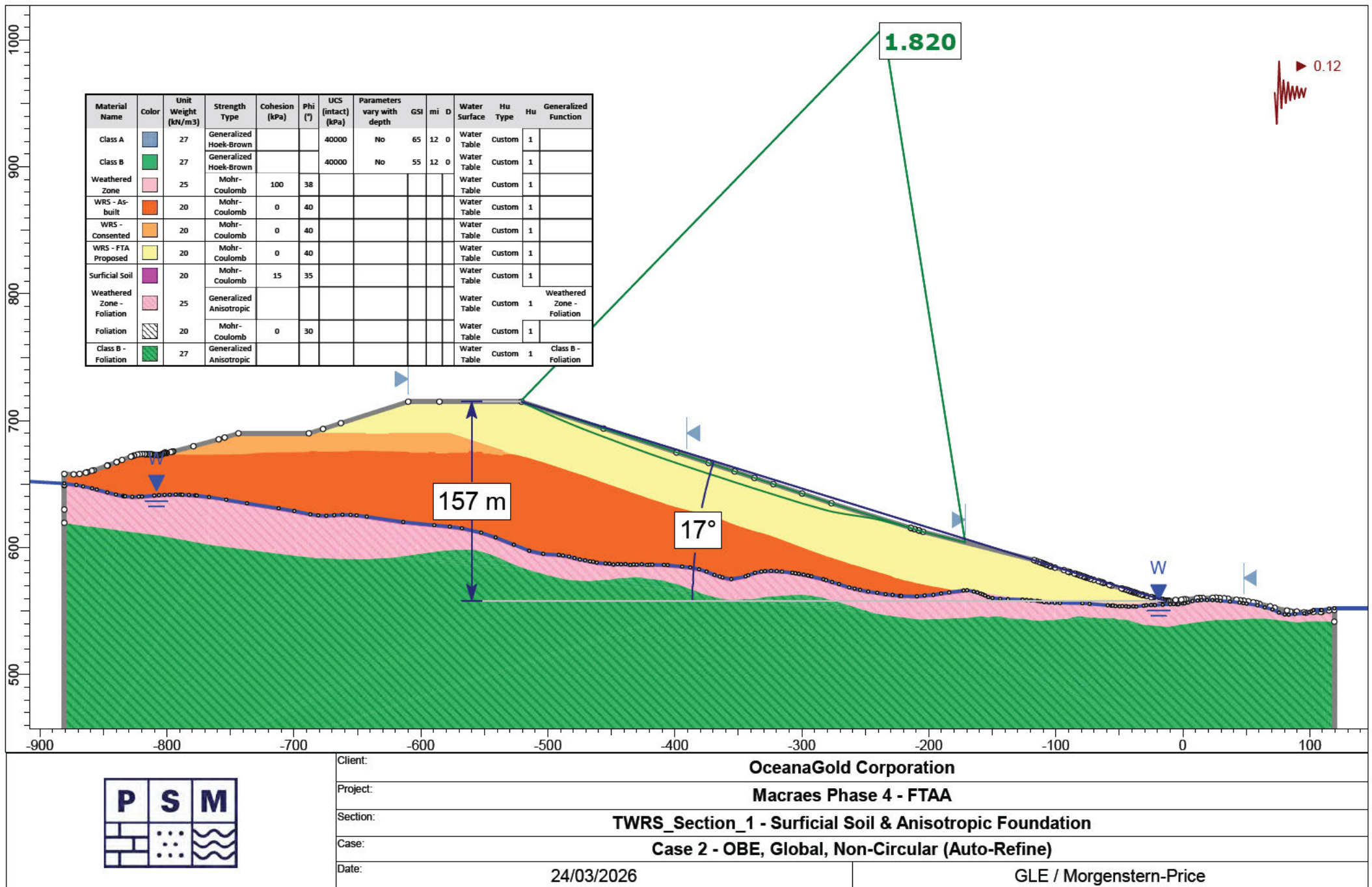


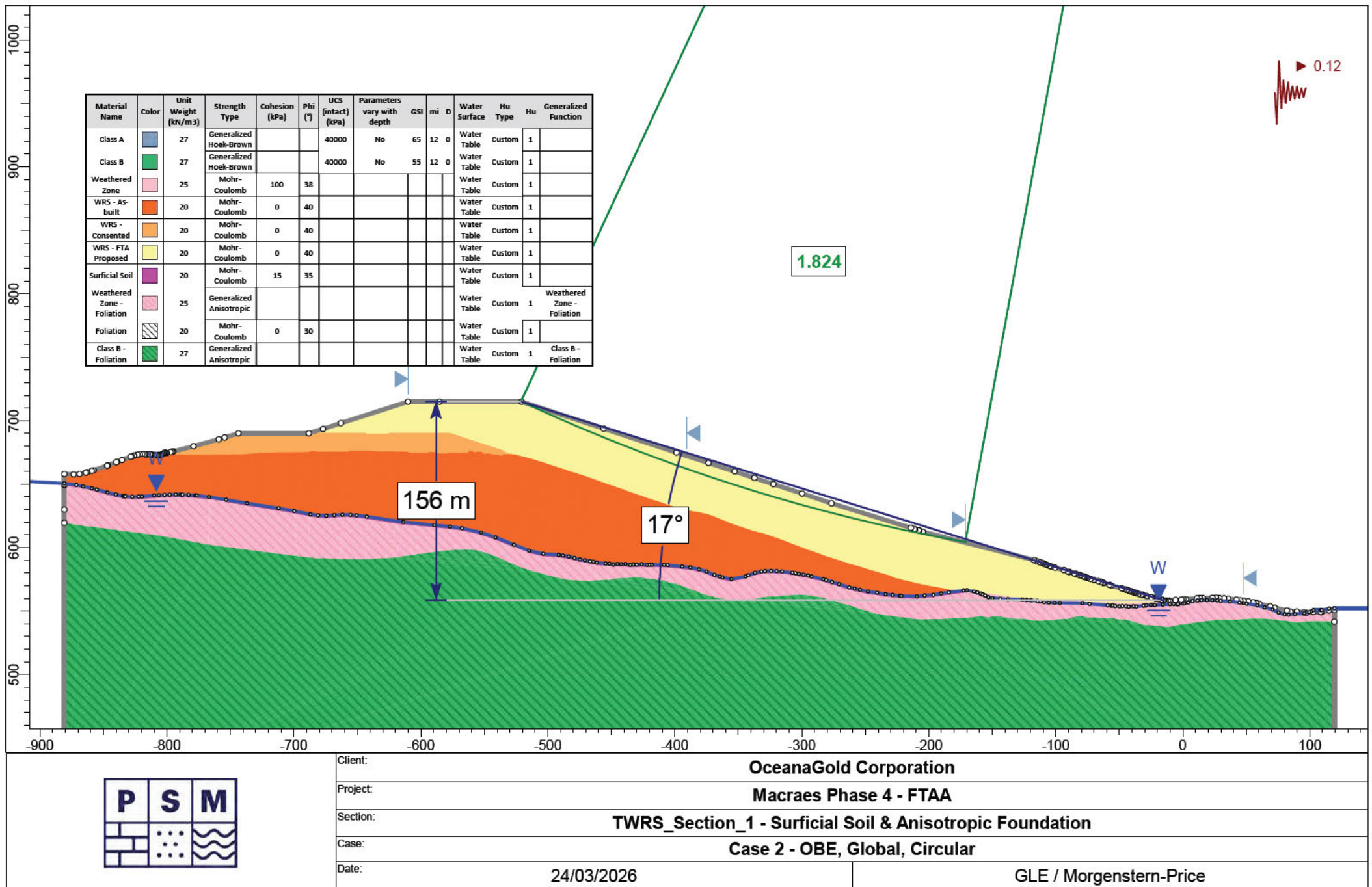


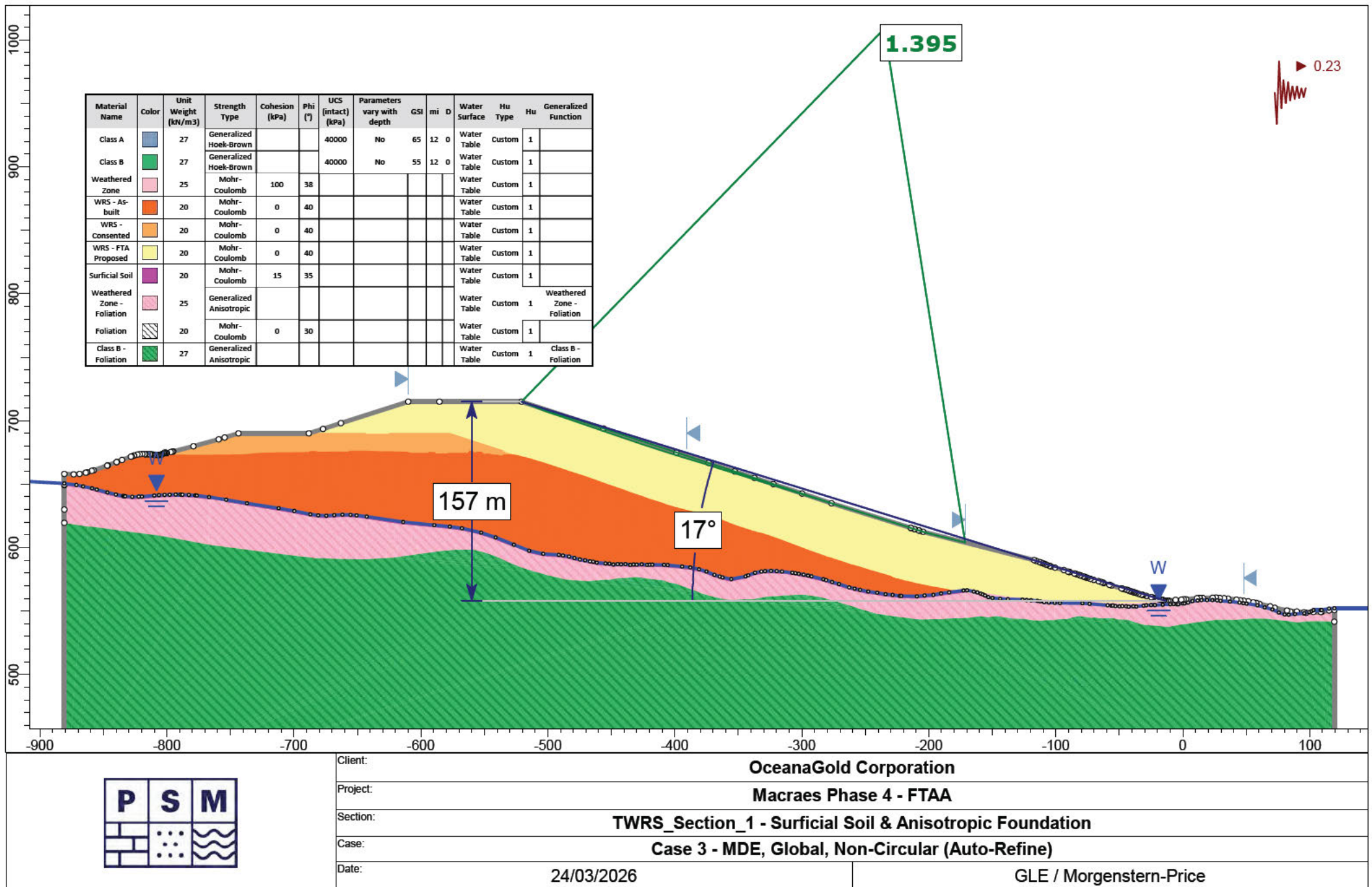
Client:	OceanaGold Corporation	
Project:	Macraes Phase 4 - FTAA	
Section:	TWRS_Section_1 - No Soil & Partially Saturated	
Case:	Case 3 - MDE, Global, Circular	
Date:	24/03/2026	GLE / Morgenstern-Price

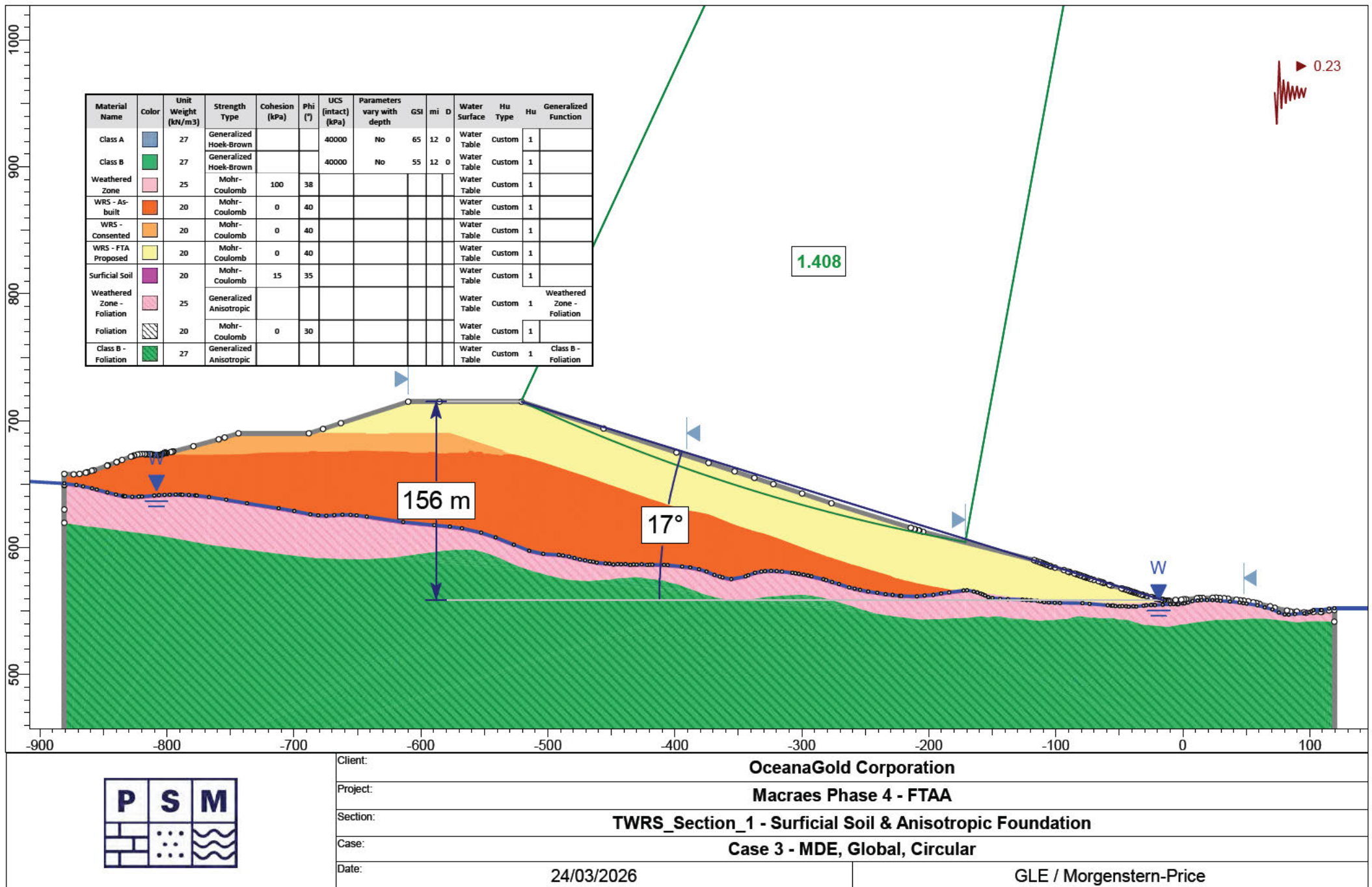


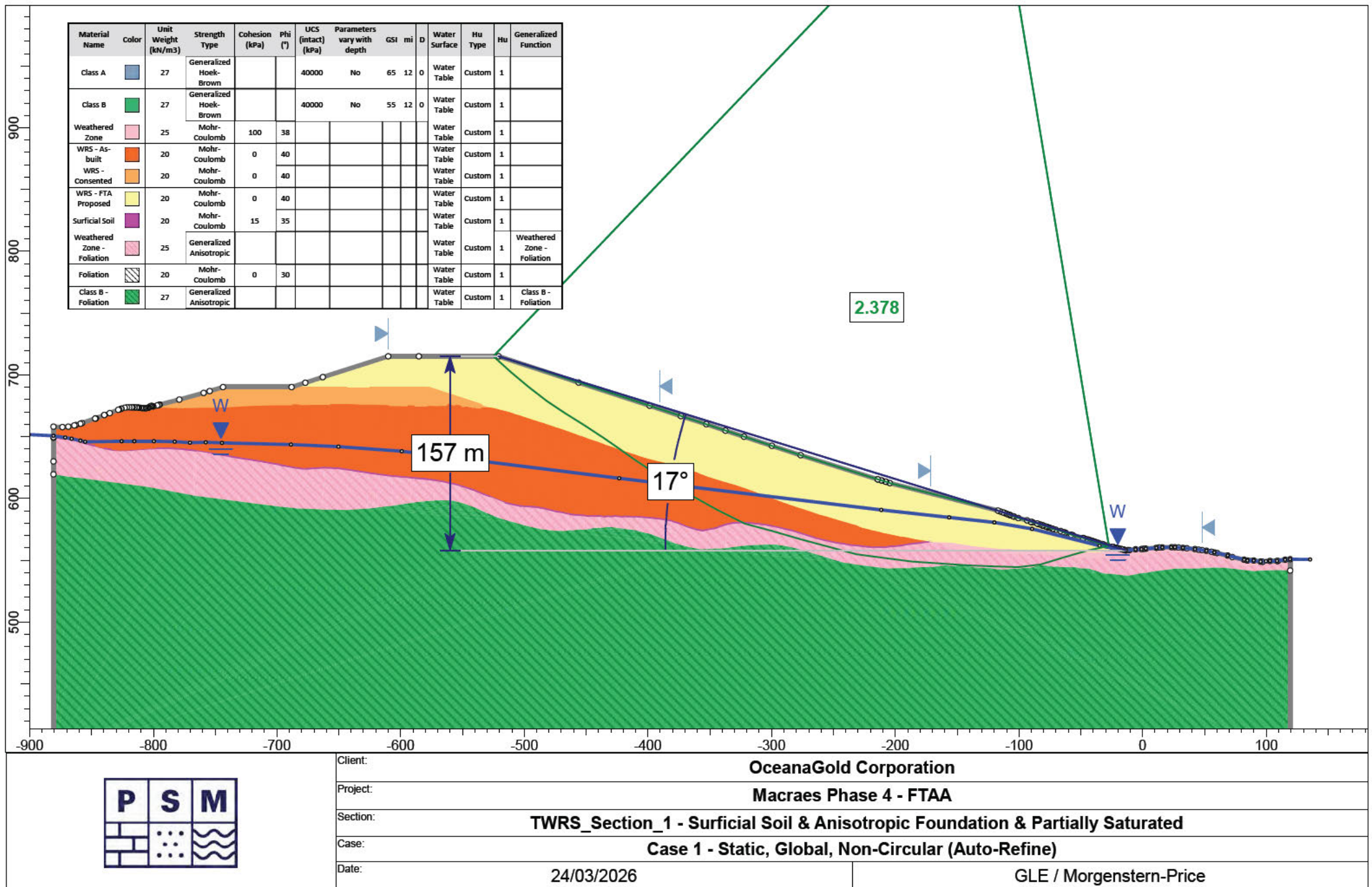


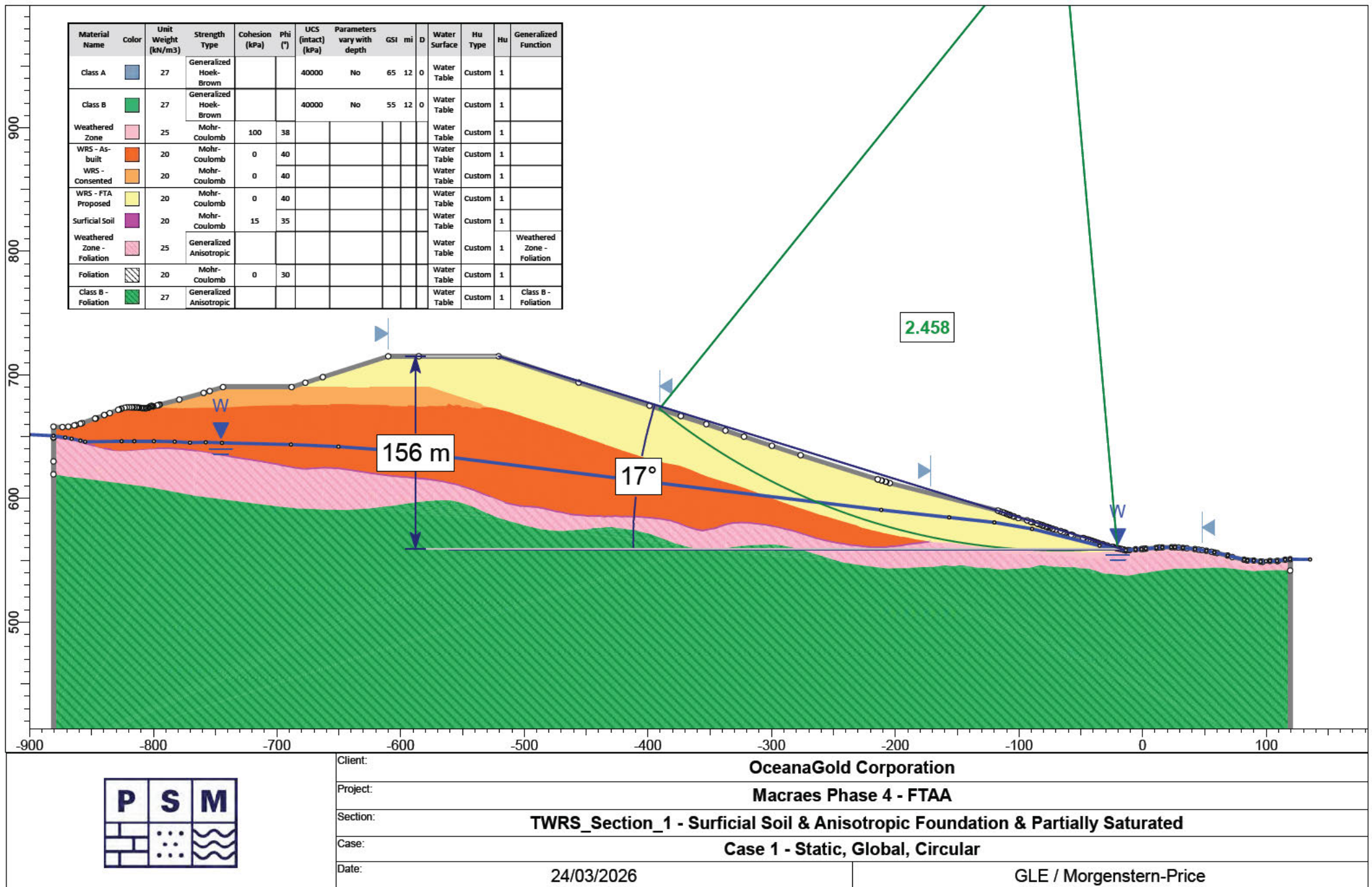


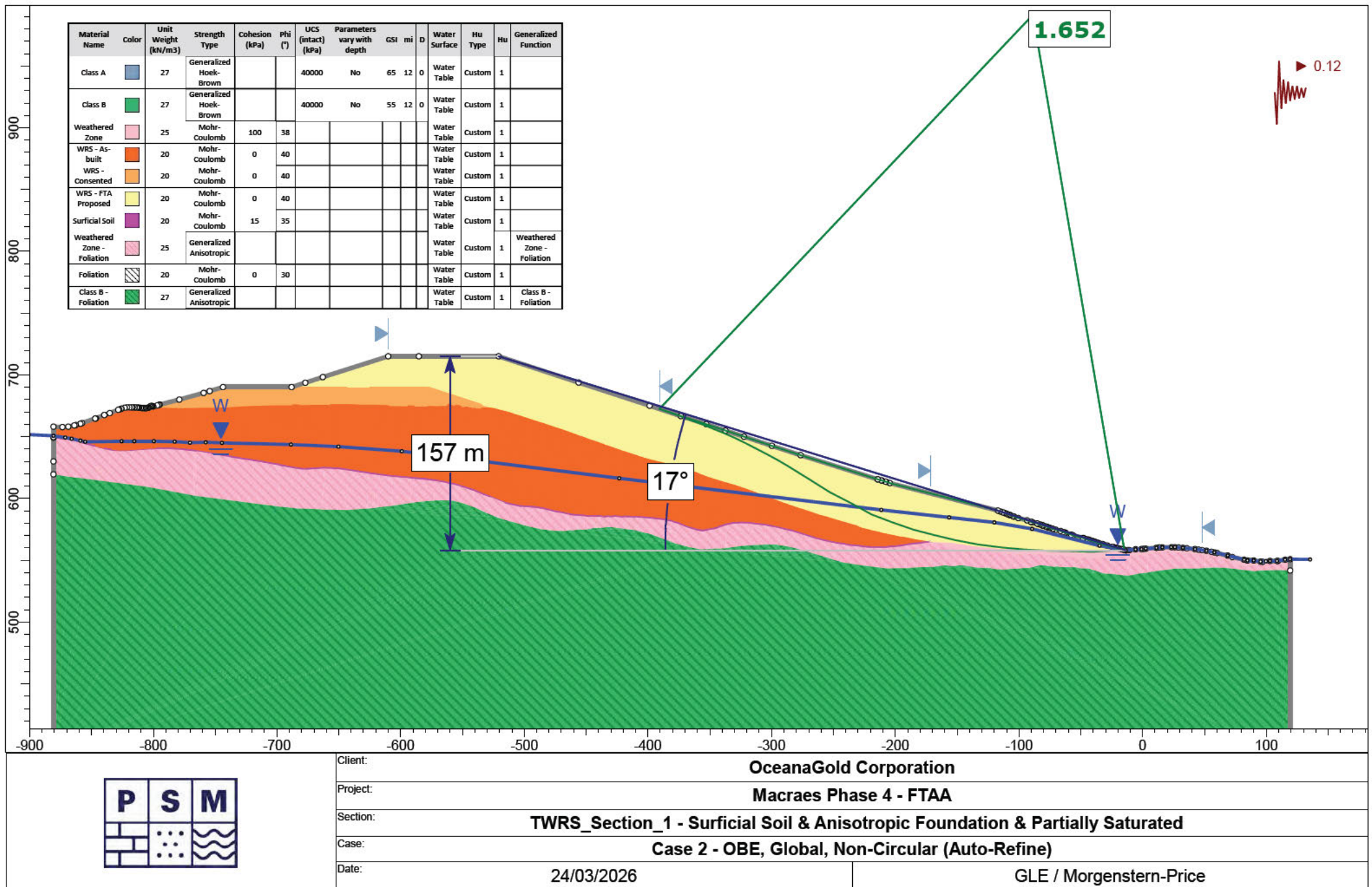


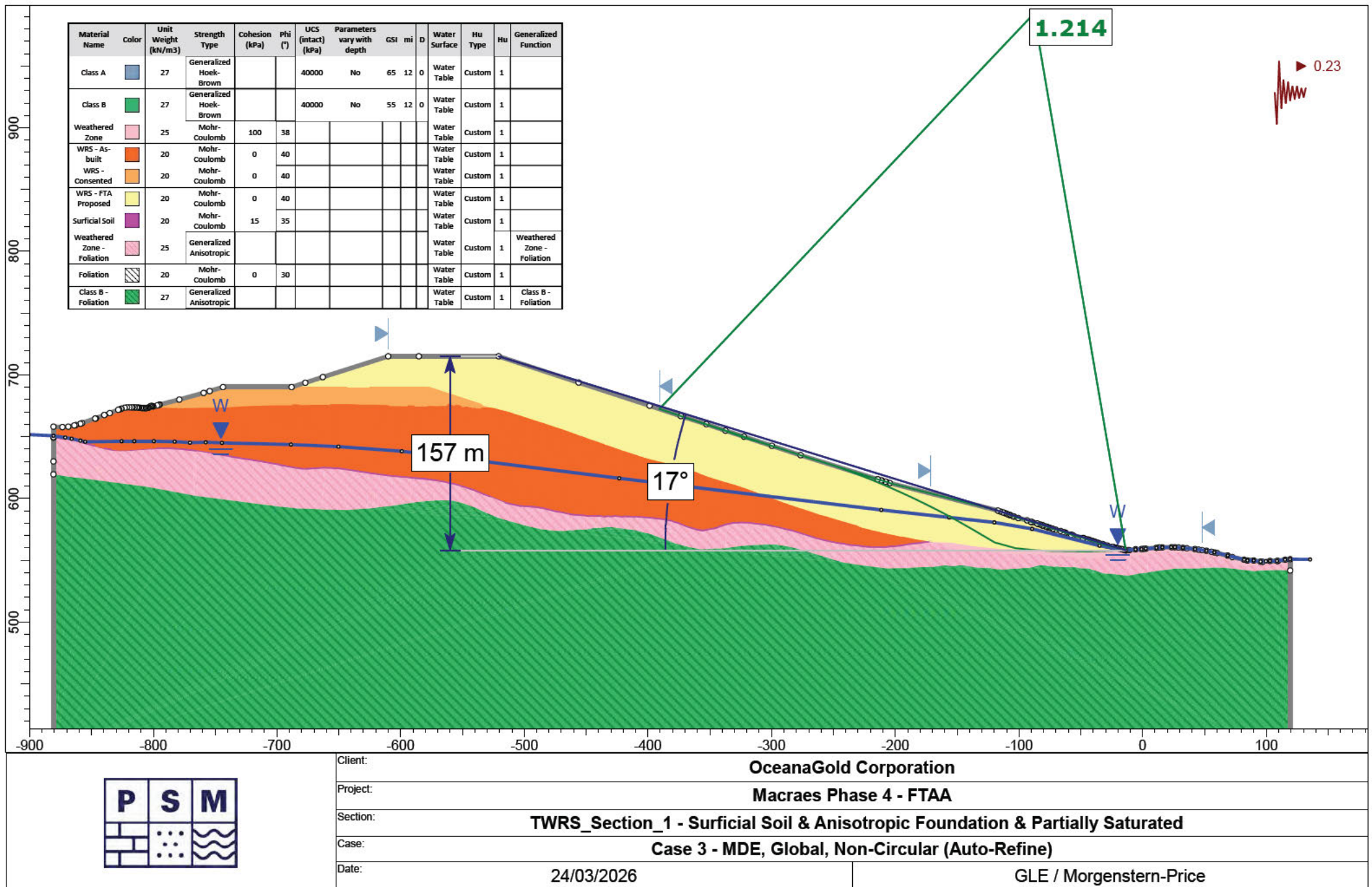


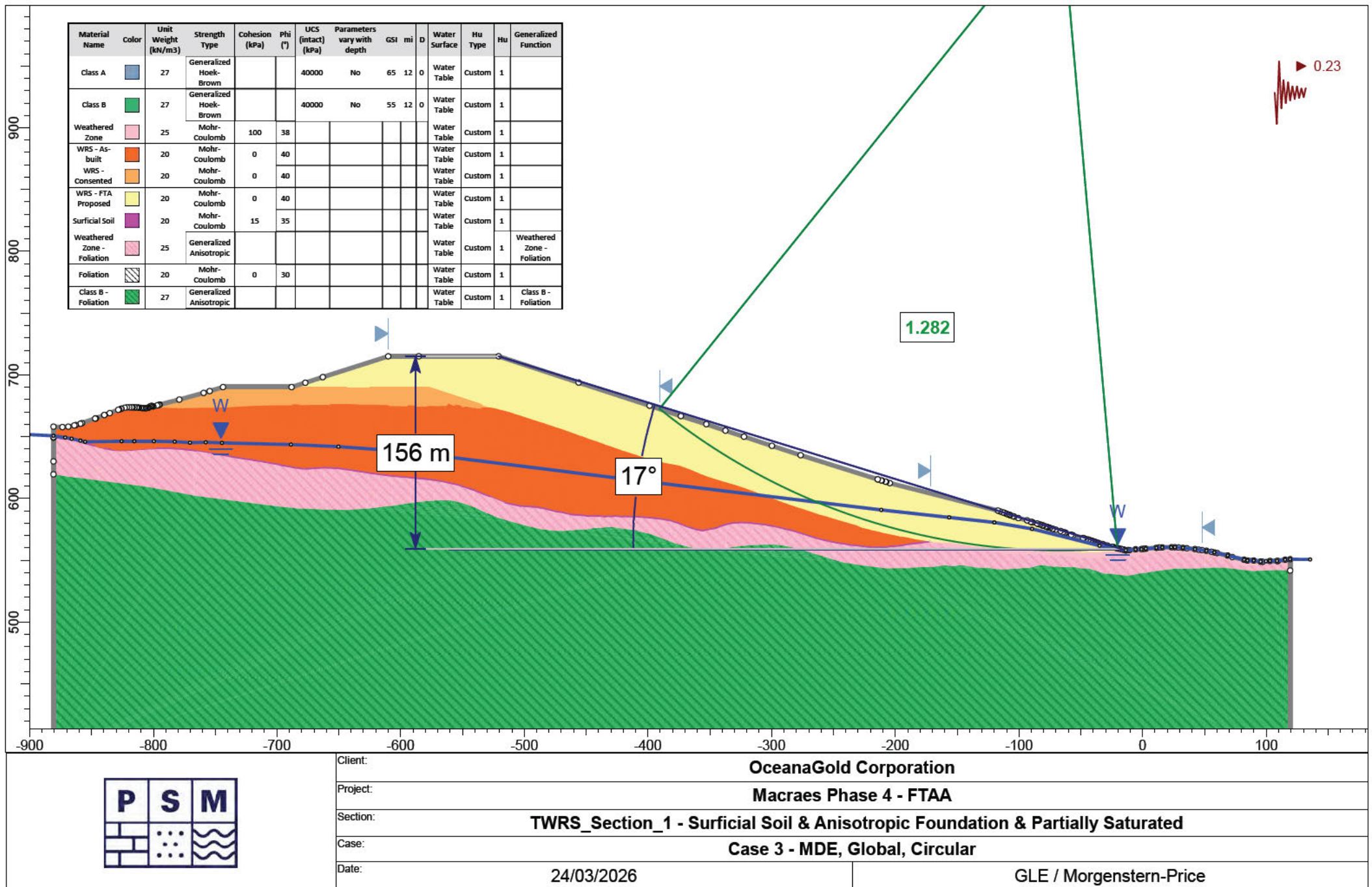


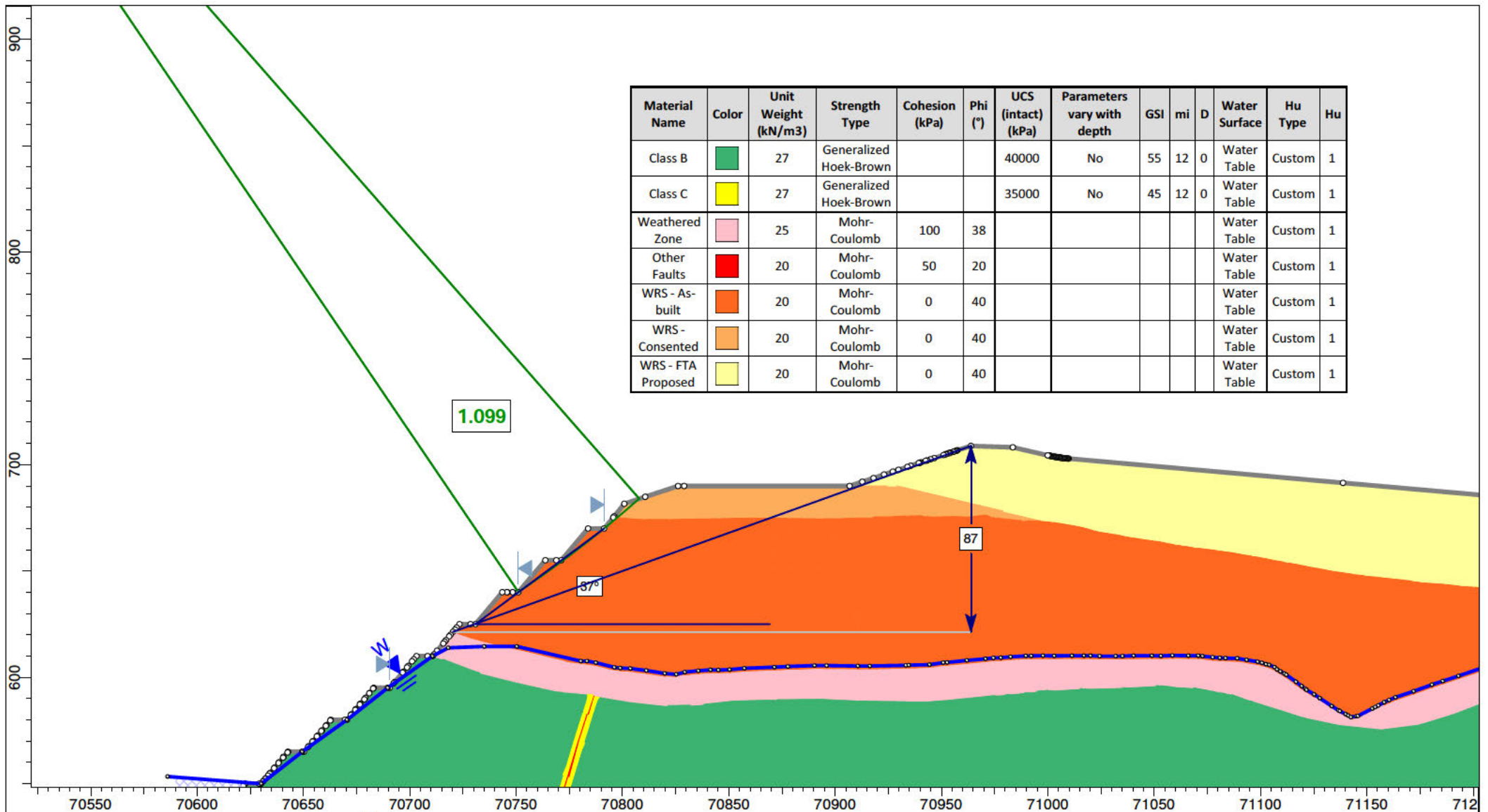








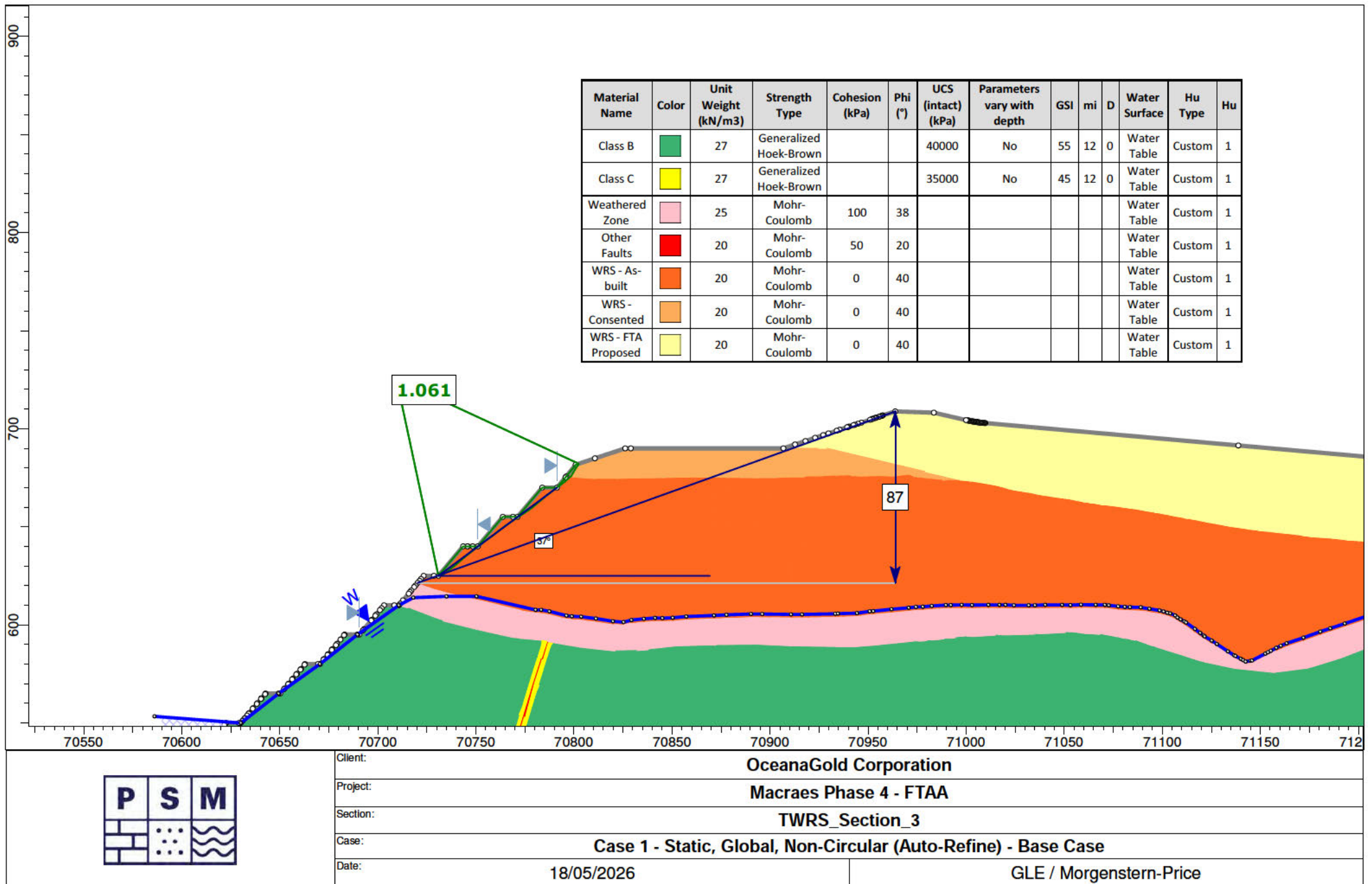


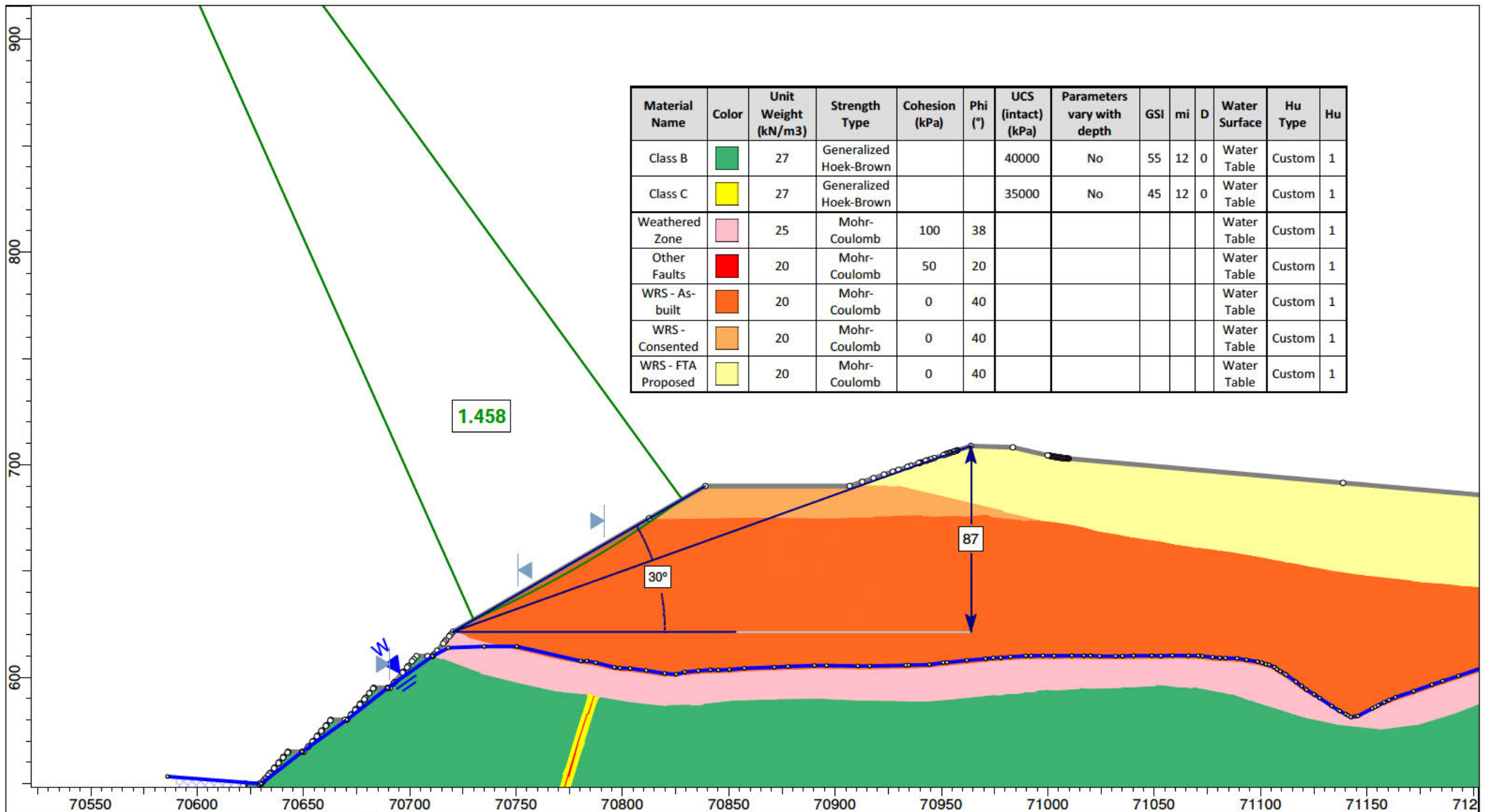


Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	UCS (intact) (kPa)	Parameters vary with depth	GSI	mi	D	Water Surface	Hu Type	Hu
Class B		27	Generalized Hoek-Brown			40000	No	55	12	0	Water Table	Custom	1
Class C		27	Generalized Hoek-Brown			35000	No	45	12	0	Water Table	Custom	1
Weathered Zone		25	Mohr-Coulomb	100	38						Water Table	Custom	1
Other Faults		20	Mohr-Coulomb	50	20						Water Table	Custom	1
WRS - As-built		20	Mohr-Coulomb	0	40						Water Table	Custom	1
WRS - Consented		20	Mohr-Coulomb	0	40						Water Table	Custom	1
WRS - FTA Proposed		20	Mohr-Coulomb	0	40						Water Table	Custom	1



Client:	OceanaGold Corporation		
Project:	Macraes Phase 4 - FTAA		
Section:	TWRS_Section_3		
Case:	Case 1 - Static, Global, Circular- Base Case		
Date:	18/05/2026	GLE / Morgenstern-Price	

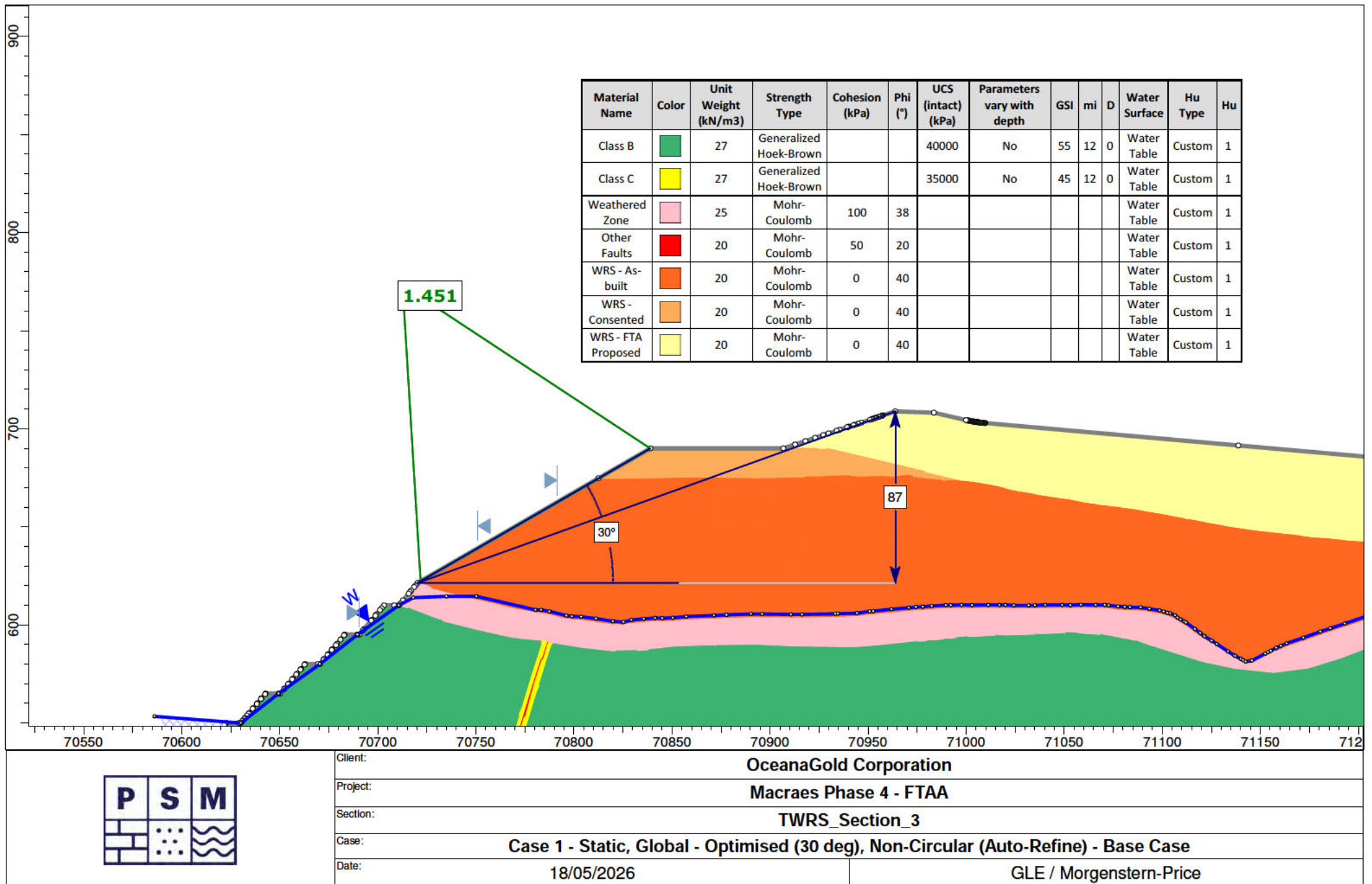


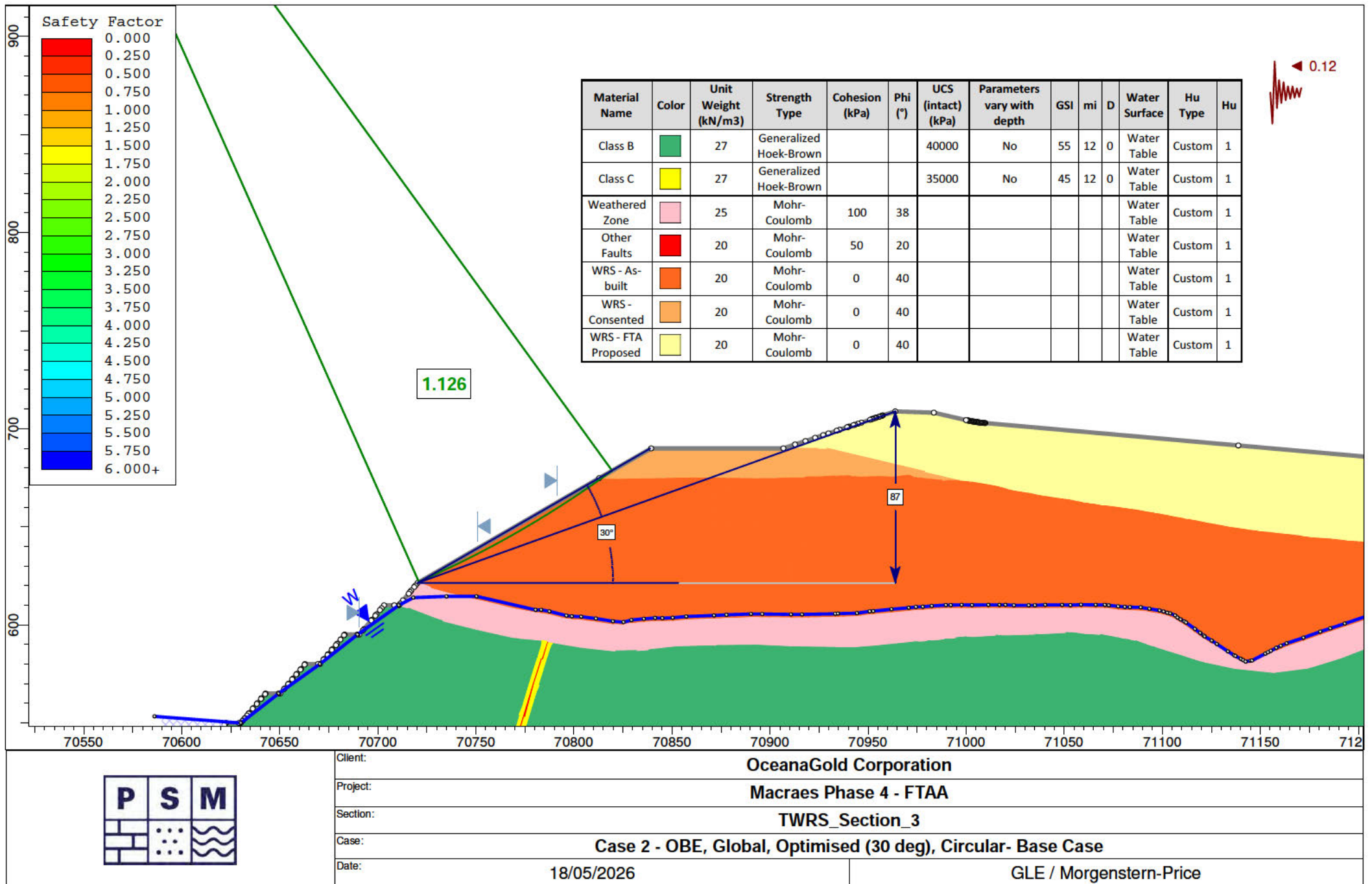


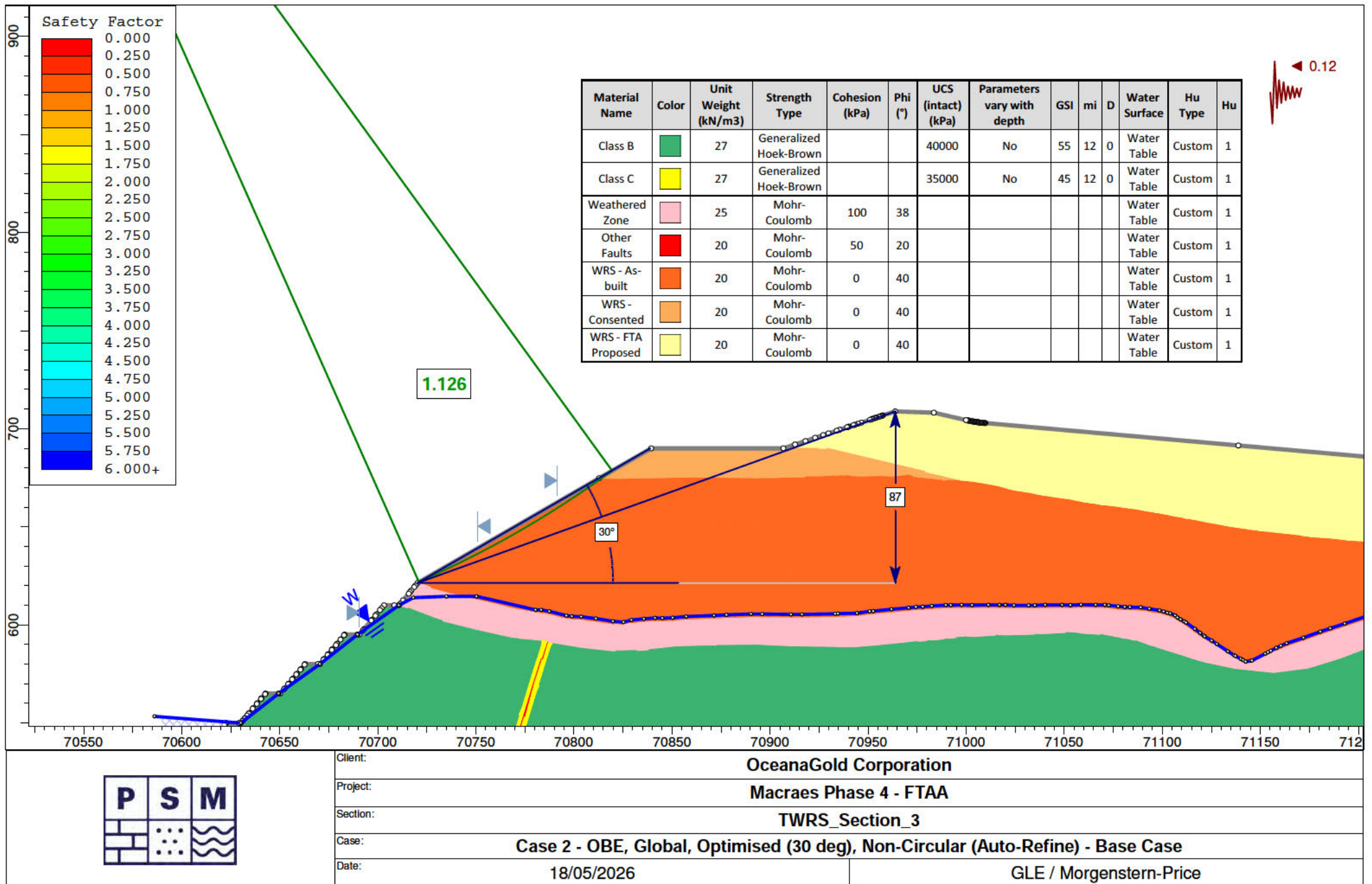
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Class B		27	Generalized Hoek-Brown			40000	No	55	12	0	Water Table	Custom	1
Class C		27	Generalized Hoek-Brown			35000	No	45	12	0	Water Table	Custom	1
Weathered Zone		25	Mohr-Coulomb	100	38						Water Table	Custom	1
Other Faults		20	Mohr-Coulomb	50	20						Water Table	Custom	1
WRS - As-built		20	Mohr-Coulomb	0	40						Water Table	Custom	1
WRS - Consented		20	Mohr-Coulomb	0	40						Water Table	Custom	1
WRS - FTA Proposed		20	Mohr-Coulomb	0	40						Water Table	Custom	1

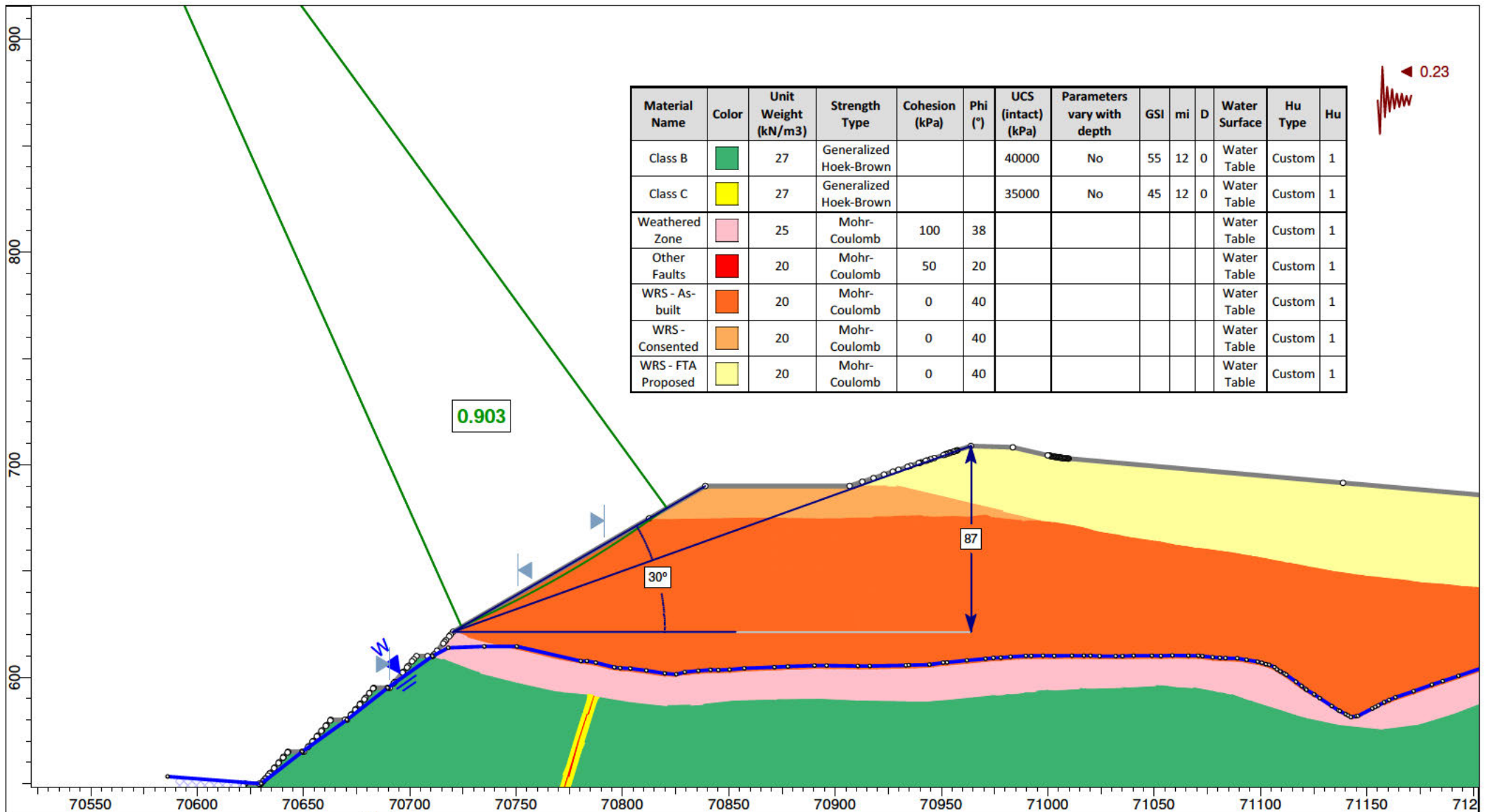


Client:	OceanaGold Corporation		
Project:	Macraes Phase 4 - FTAA		
Section:	TWRS_Section_3		
Case:	Case 1 - Static, Global - Optimised (30 deg), Circular- Base Case		
Date:	18/05/2026	GLE / Morgenstern-Price	

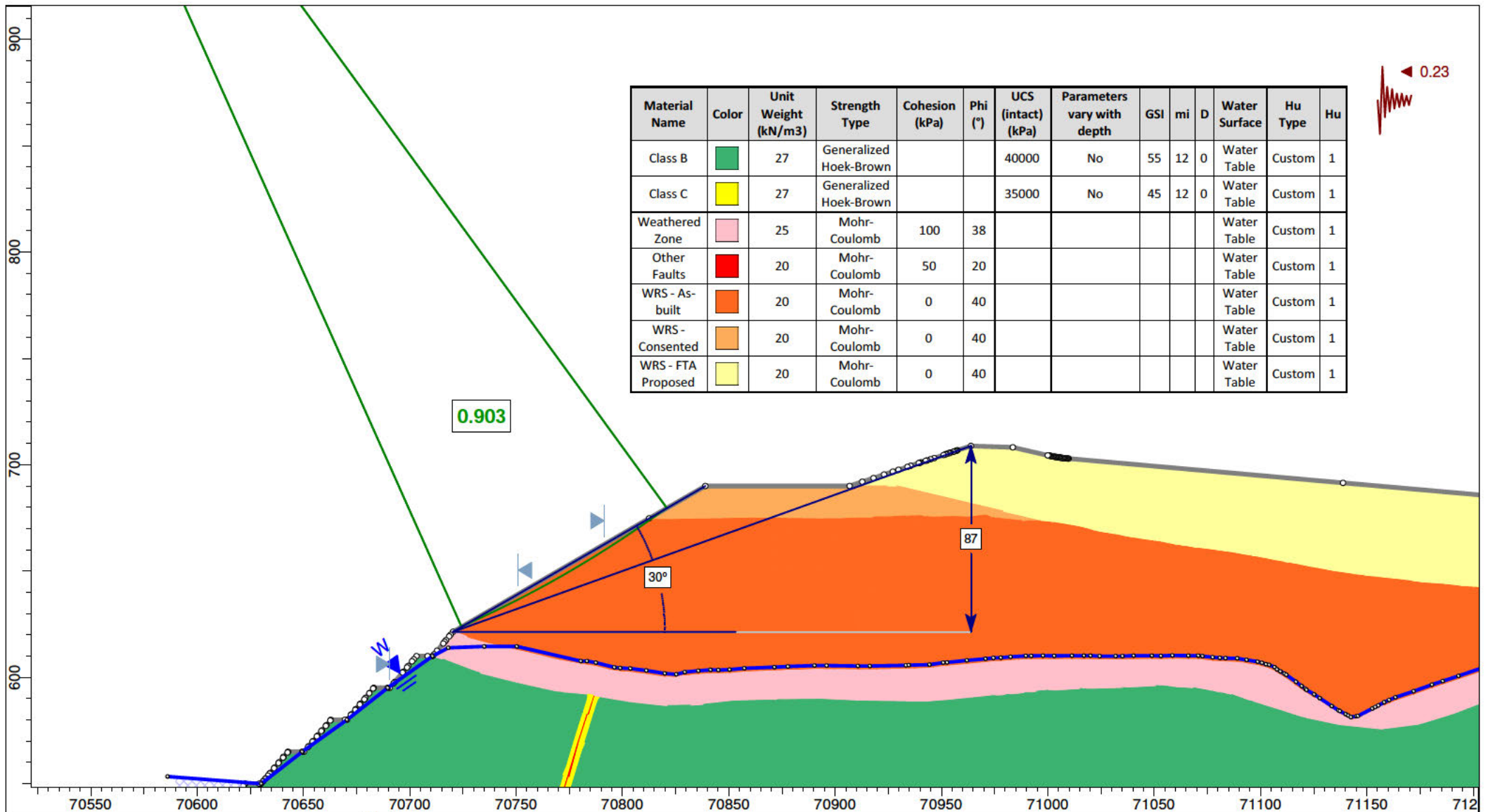








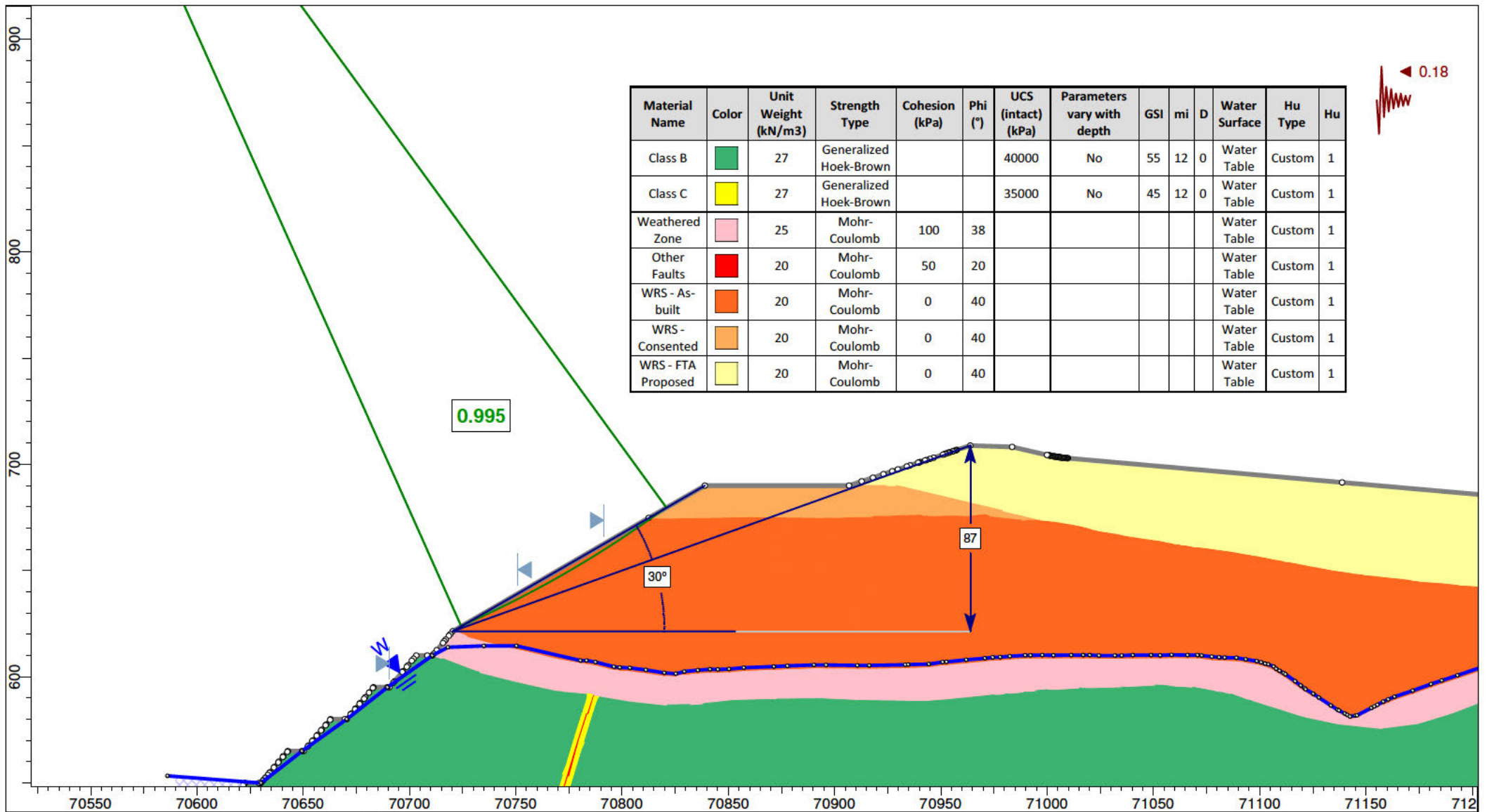
Client:	OceanaGold Corporation	
Project:	Macraes Phase 4 - FTAA	
Section:	TWRS_Section_3	
Case:	Case 2 - MDE, Global, Optimised (30 deg), Circular- Base Case	
Date:	18/05/2026	GLE / Morgenstern-Price



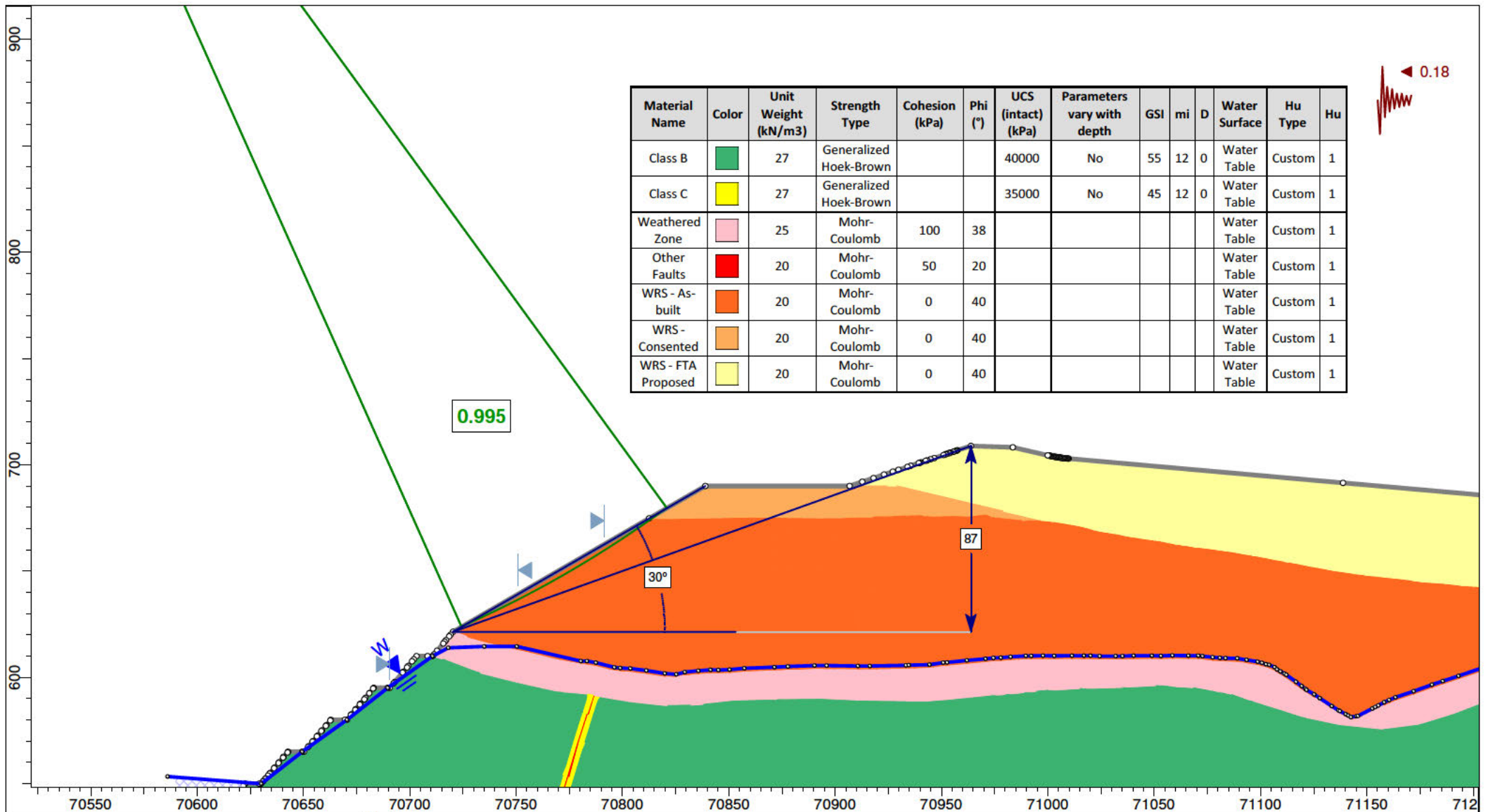
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	UCS (intact) (kPa)	Parameters vary with depth	GSI	mi	D	Water Surface	Hu Type	Hu
Class B		27	Generalized Hoek-Brown			40000	No	55	12	0	Water Table	Custom	1
Class C		27	Generalized Hoek-Brown			35000	No	45	12	0	Water Table	Custom	1
Weathered Zone		25	Mohr-Coulomb	100	38						Water Table	Custom	1
Other Faults		20	Mohr-Coulomb	50	20						Water Table	Custom	1
WRS - As-built		20	Mohr-Coulomb	0	40						Water Table	Custom	1
WRS - Consented		20	Mohr-Coulomb	0	40						Water Table	Custom	1
WRS - FTA Proposed		20	Mohr-Coulomb	0	40						Water Table	Custom	1



Client:	OceanaGold Corporation		
Project:	Macraes Phase 4 - FTAA		
Section:	TWRS_Section_3		
Case:	Case 2 - MDE, Global, Optimised (30 deg), Non-Circular (Auto-Refine) - Base Case		
Date:	18/05/2026	GLE / Morgenstern-Price	



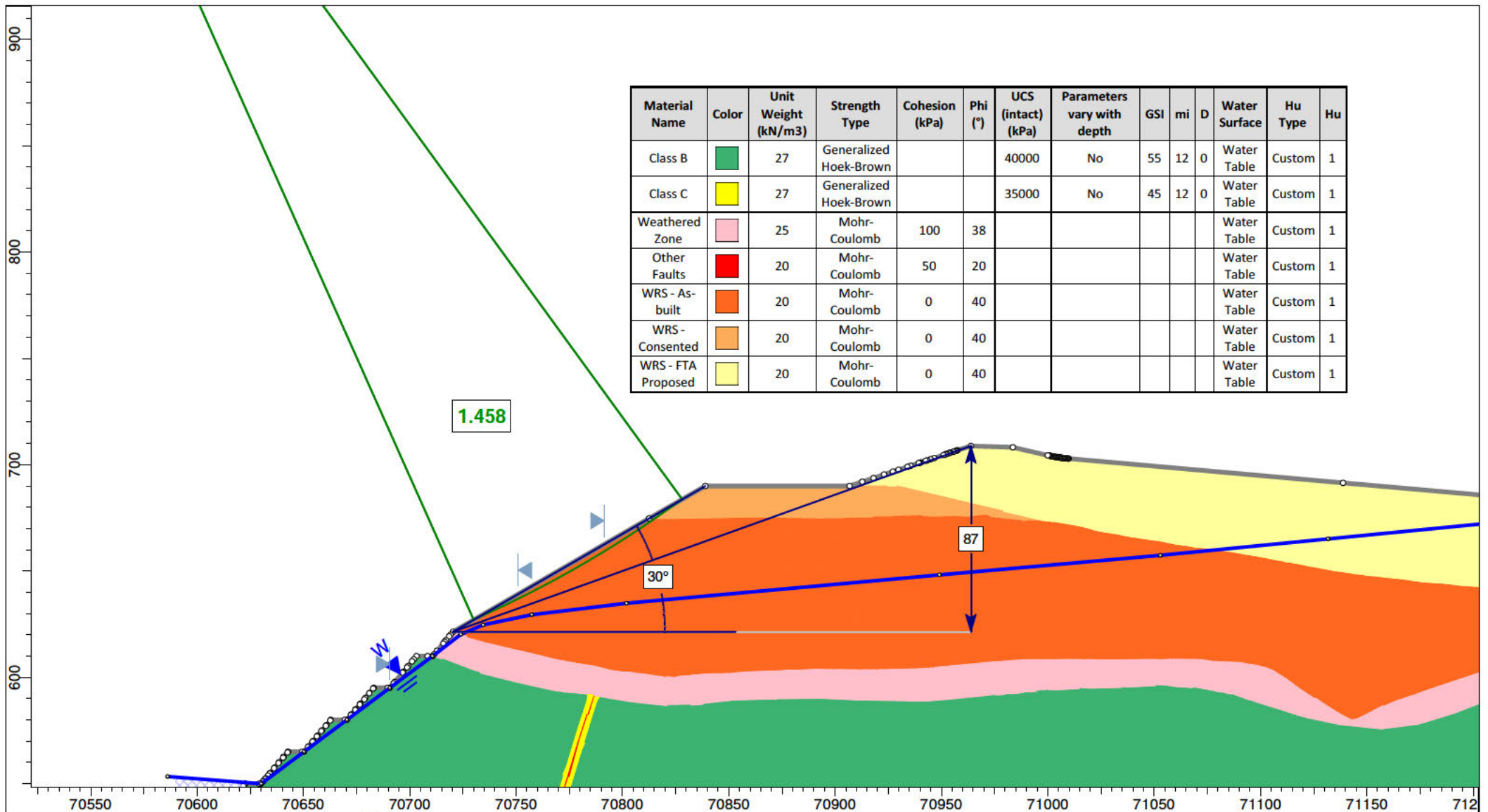
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Project:	Macraes Phase 4 - FTAA	
Section:	TWRS_Section_3	
Case:	Case 2 - MDE, Global, Optimised (30 deg), Non-Circular (Auto-Refine) - Base Case - Kh	
Date:	18/05/2026	GLE / Morgenstern-Price



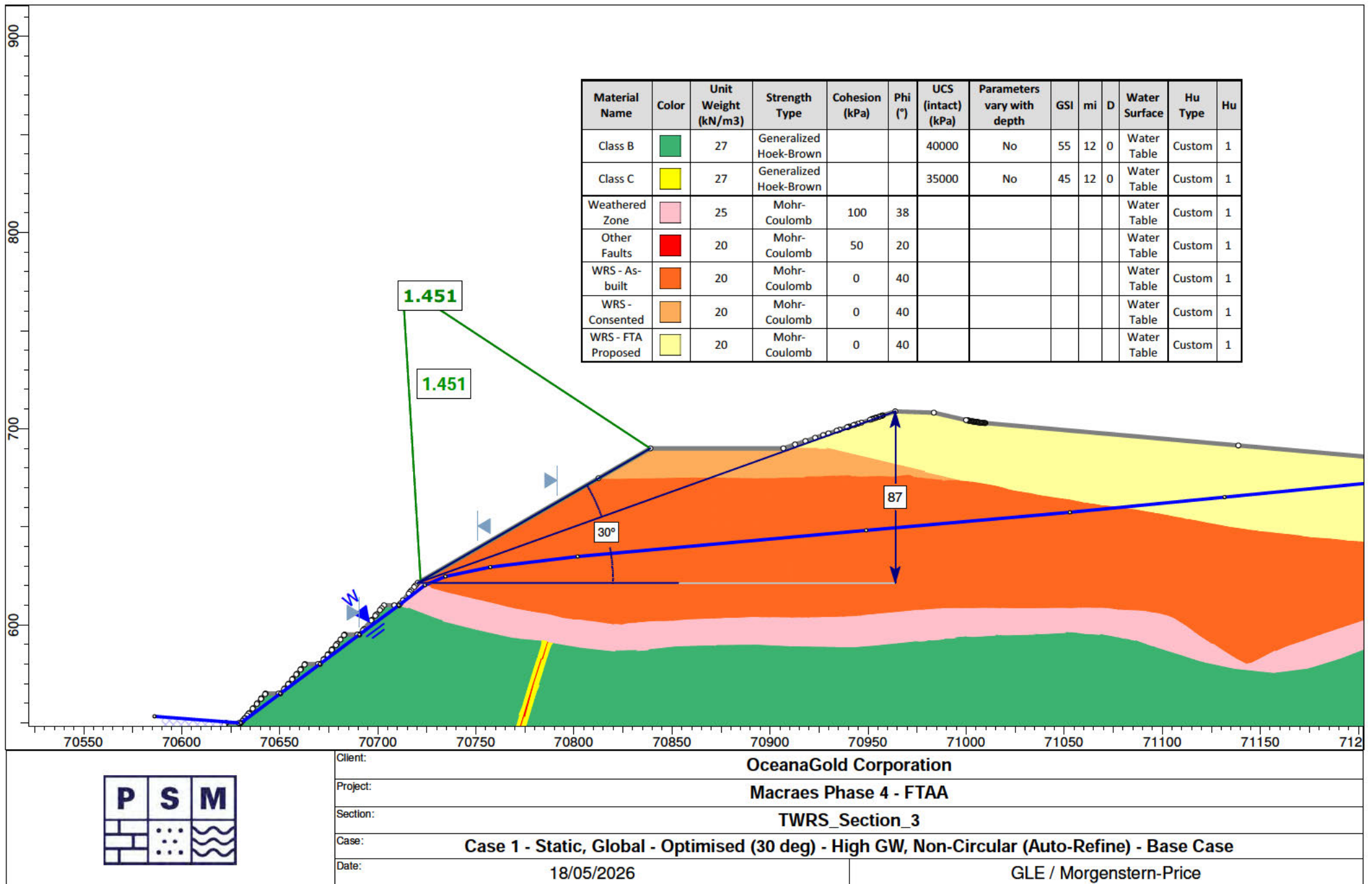
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	UCS (intact) (kPa)	Parameters vary with depth	GSI	mi	D	Water Surface	Hu Type	Hu
Class B		27	Generalized Hoek-Brown			40000	No	55	12	0	Water Table	Custom	1
Class C		27	Generalized Hoek-Brown			35000	No	45	12	0	Water Table	Custom	1
Weathered Zone		25	Mohr-Coulomb	100	38						Water Table	Custom	1
Other Faults		20	Mohr-Coulomb	50	20						Water Table	Custom	1
WRS - As-built		20	Mohr-Coulomb	0	40						Water Table	Custom	1
WRS - Consented		20	Mohr-Coulomb	0	40						Water Table	Custom	1
WRS - FTA Proposed		20	Mohr-Coulomb	0	40						Water Table	Custom	1

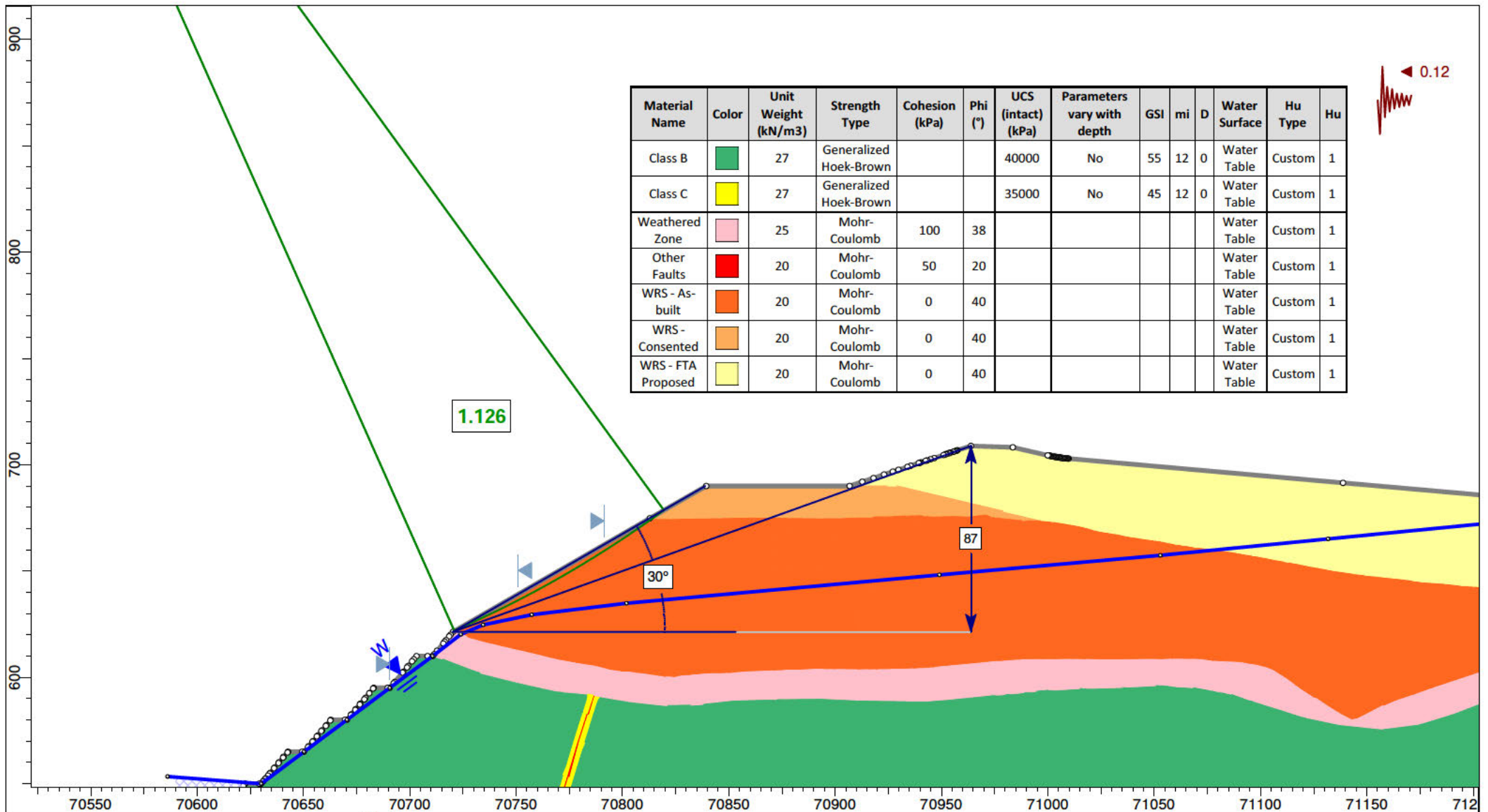


Client:	OceanaGold Corporation	
Project:	Macraes Phase 4 - FTAA	
Section:	TWRS_Section_3	
Case:	Case 2 - MDE, Global, Optimised (30 deg), Circular- Base Case - Kh	
Date:	18/05/2026	GLE / Morgenstern-Price



Client:	OceanaGold Corporation		
Project:	Macraes Phase 4 - FTAA		
Section:	TWRS_Section_3		
Case:	Case 1 - Static, Global - Optimised (30 deg) - High GW, Circular- Base Case		
Date:	18/05/2026	GLE / Morgenstern-Price	

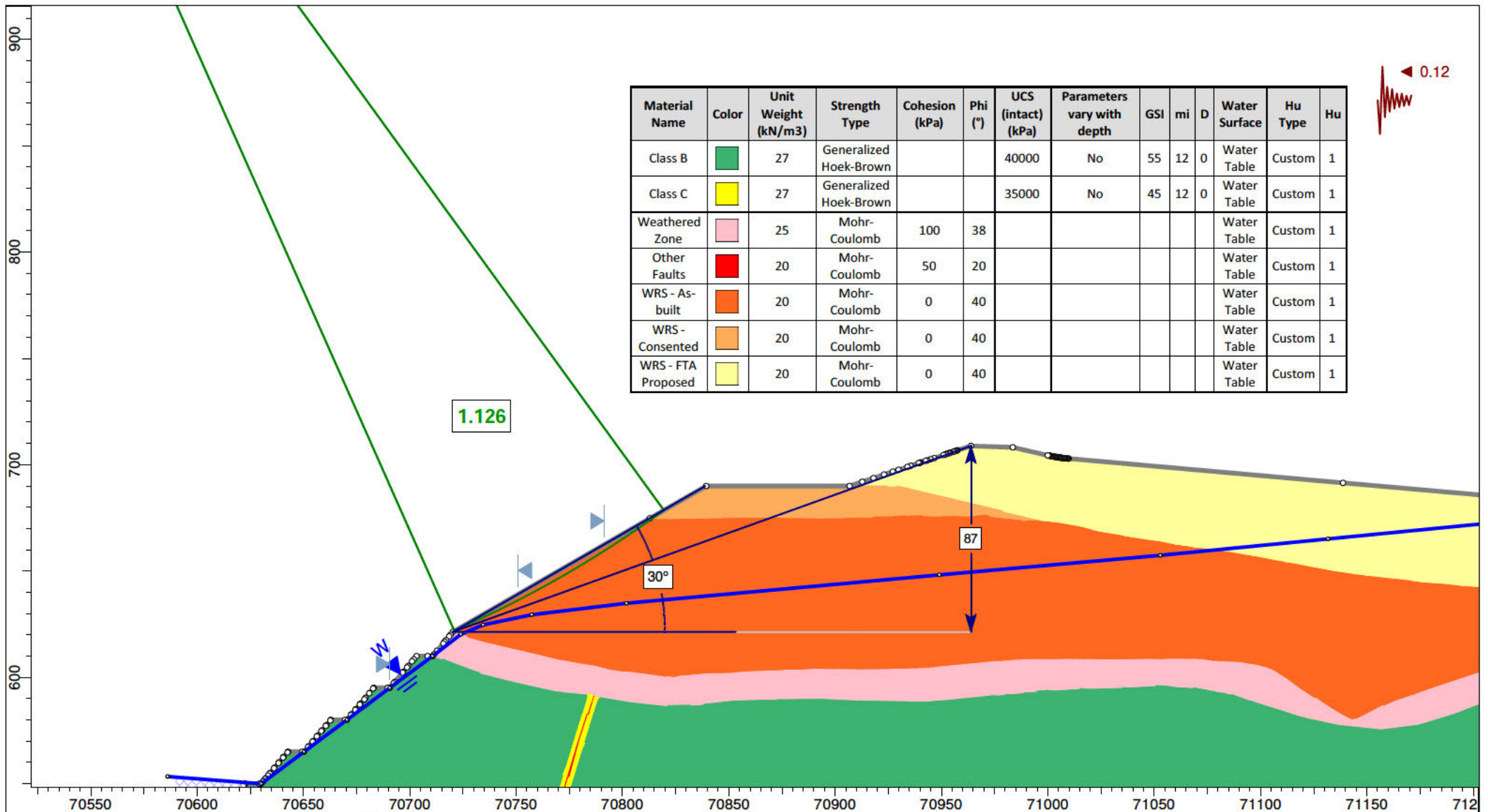




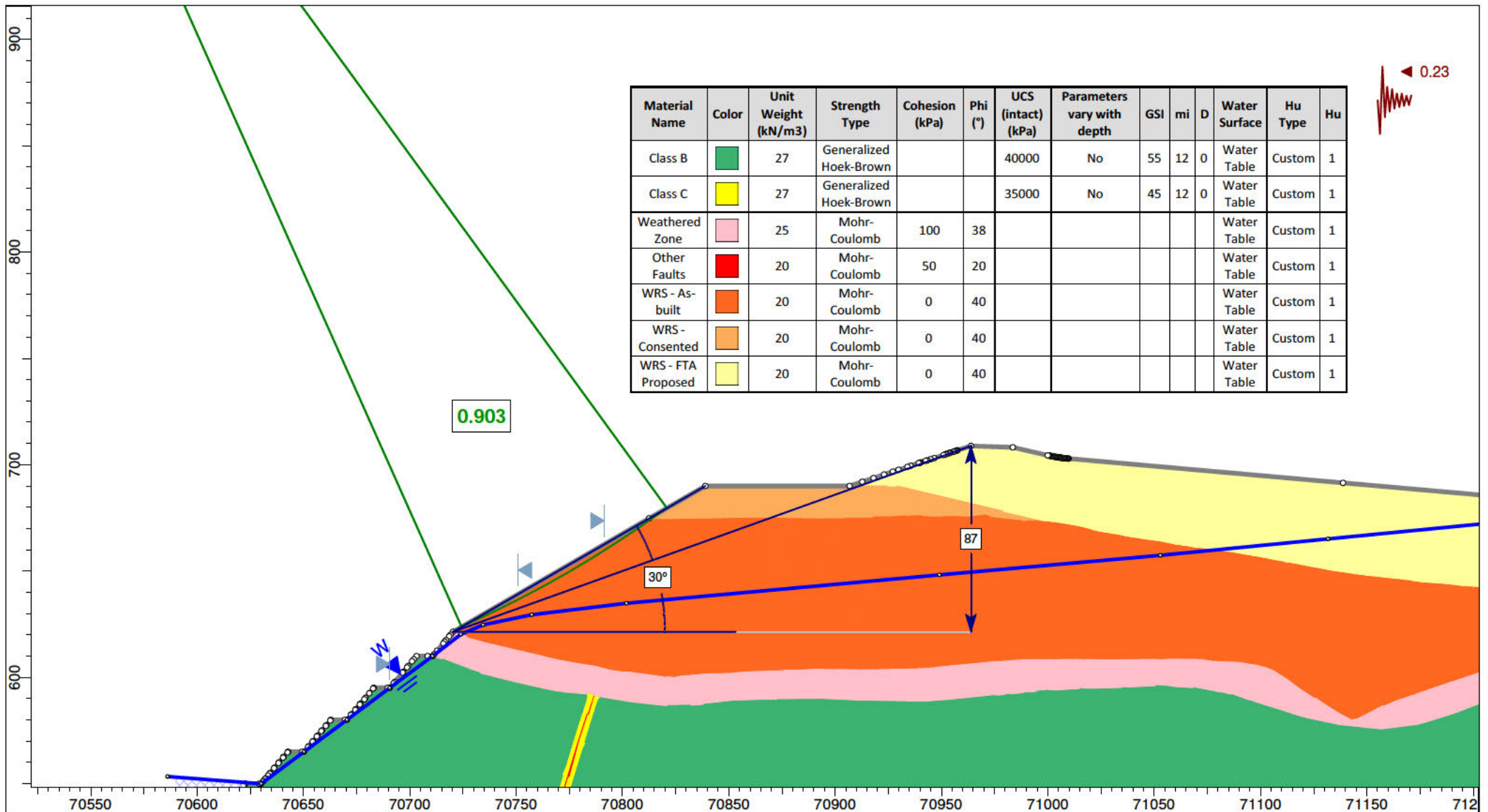
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	UCS (intact) (kPa)	Parameters vary with depth	GSI	mi	D	Water Surface	Hu Type	Hu
Class B		27	Generalized Hoek-Brown			40000	No	55	12	0	Water Table	Custom	1
Class C		27	Generalized Hoek-Brown			35000	No	45	12	0	Water Table	Custom	1
Weathered Zone		25	Mohr-Coulomb	100	38						Water Table	Custom	1
Other Faults		20	Mohr-Coulomb	50	20						Water Table	Custom	1
WRS - As-built		20	Mohr-Coulomb	0	40						Water Table	Custom	1
WRS - Consented		20	Mohr-Coulomb	0	40						Water Table	Custom	1
WRS - FTA Proposed		20	Mohr-Coulomb	0	40						Water Table	Custom	1



Client:	OceanaGold Corporation		
Project:	Macraes Phase 4 - FTAA		
Section:	TWRS_Section_3		
Case:	Case 2 - OBE, Global, Optimised (30 deg) - High GW, Circular- Base Case		
Date:	18/05/2026	GLE / Morgenstern-Price	



Client:	OceanaGold Corporation	
Project:	Macraes Phase 4 - FTAA	
Section:	TWRS_Section_3	
Case:	Case 2 - OBE, Global, Optimised (30 deg) - High GW, Non-Circular (Auto-Refine) - Base Case	
Date:	18/05/2026	GLE / Morgenstern-Price



Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	UCS (intact) (kPa)	Parameters vary with depth	GSI	mi	D	Water Surface	Hu Type	Hu
Class B		27	Generalized Hoek-Brown			40000	No	55	12	0	Water Table	Custom	1
Class C		27	Generalized Hoek-Brown			35000	No	45	12	0	Water Table	Custom	1
Weathered Zone		25	Mohr-Coulomb	100	38						Water Table	Custom	1
Other Faults		20	Mohr-Coulomb	50	20						Water Table	Custom	1
WRS - As-built		20	Mohr-Coulomb	0	40						Water Table	Custom	1
WRS - Consented		20	Mohr-Coulomb	0	40						Water Table	Custom	1
WRS - FTA Proposed		20	Mohr-Coulomb	0	40						Water Table	Custom	1

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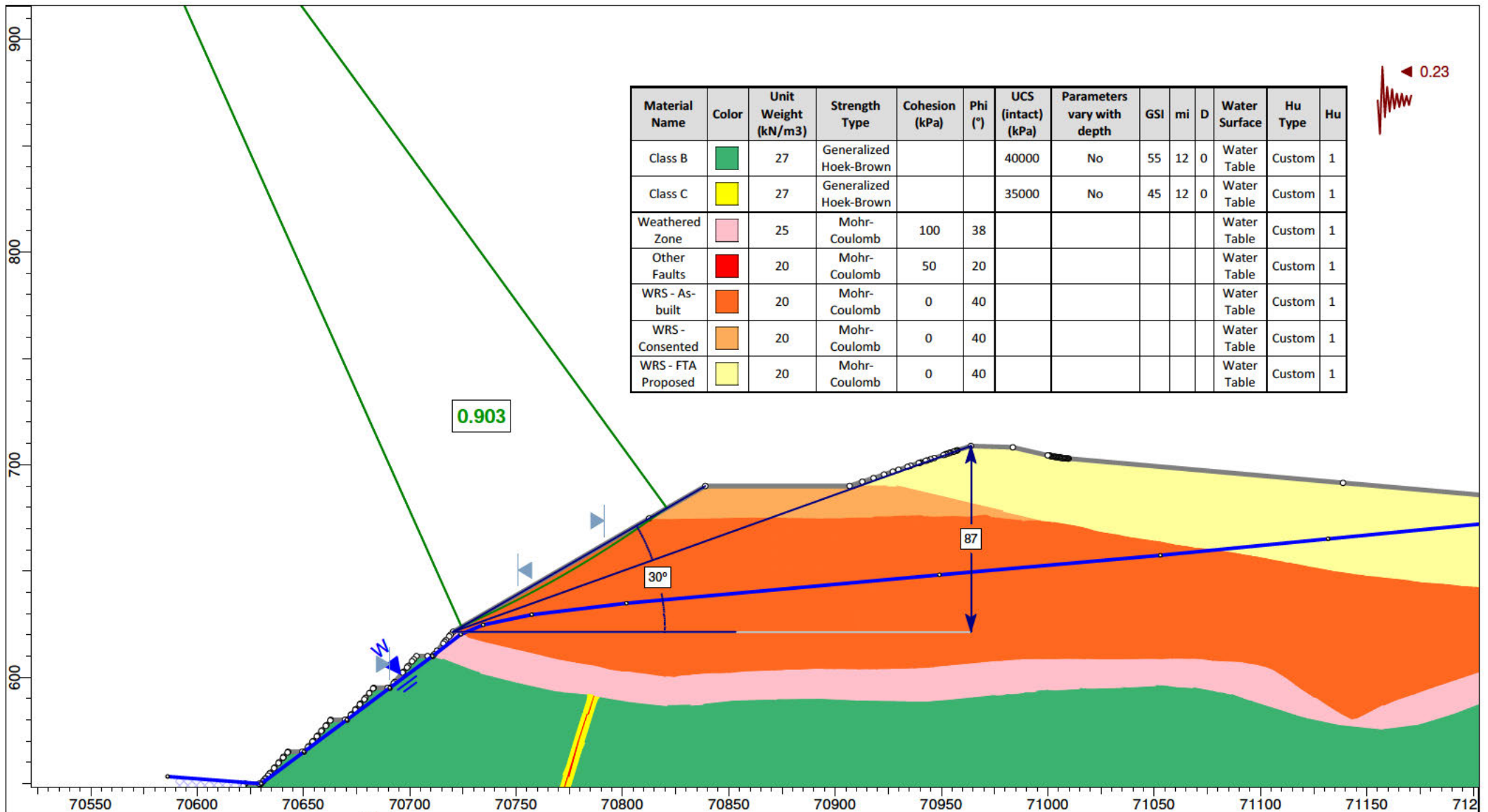
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Client:	OceanaGold Corporation		
Project:	Macraes Phase 4 - FTAA		
Section:	TWRS_Section_3		
Case:	Case 2 - MDE, Global, Optimised (30 deg) - High GW, Circular- Base Case		
Date:	18/05/2026	GLE / Morgenstern-Price	



Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	UCS (intact) (kPa)	Parameters vary with depth	GSI	mi	D	Water Surface	Hu Type	Hu
Class B		27	Generalized Hoek-Brown			40000	No	55	12	0	Water Table	Custom	1
Class C		27	Generalized Hoek-Brown			35000	No	45	12	0	Water Table	Custom	1
Weathered Zone		25	Mohr-Coulomb	100	38						Water Table	Custom	1
Other Faults		20	Mohr-Coulomb	50	20						Water Table	Custom	1
WRS - As-built		20	Mohr-Coulomb	0	40						Water Table	Custom	1
WRS - Consented		20	Mohr-Coulomb	0	40						Water Table	Custom	1
WRS - FTA Proposed		20	Mohr-Coulomb	0	40						Water Table	Custom	1

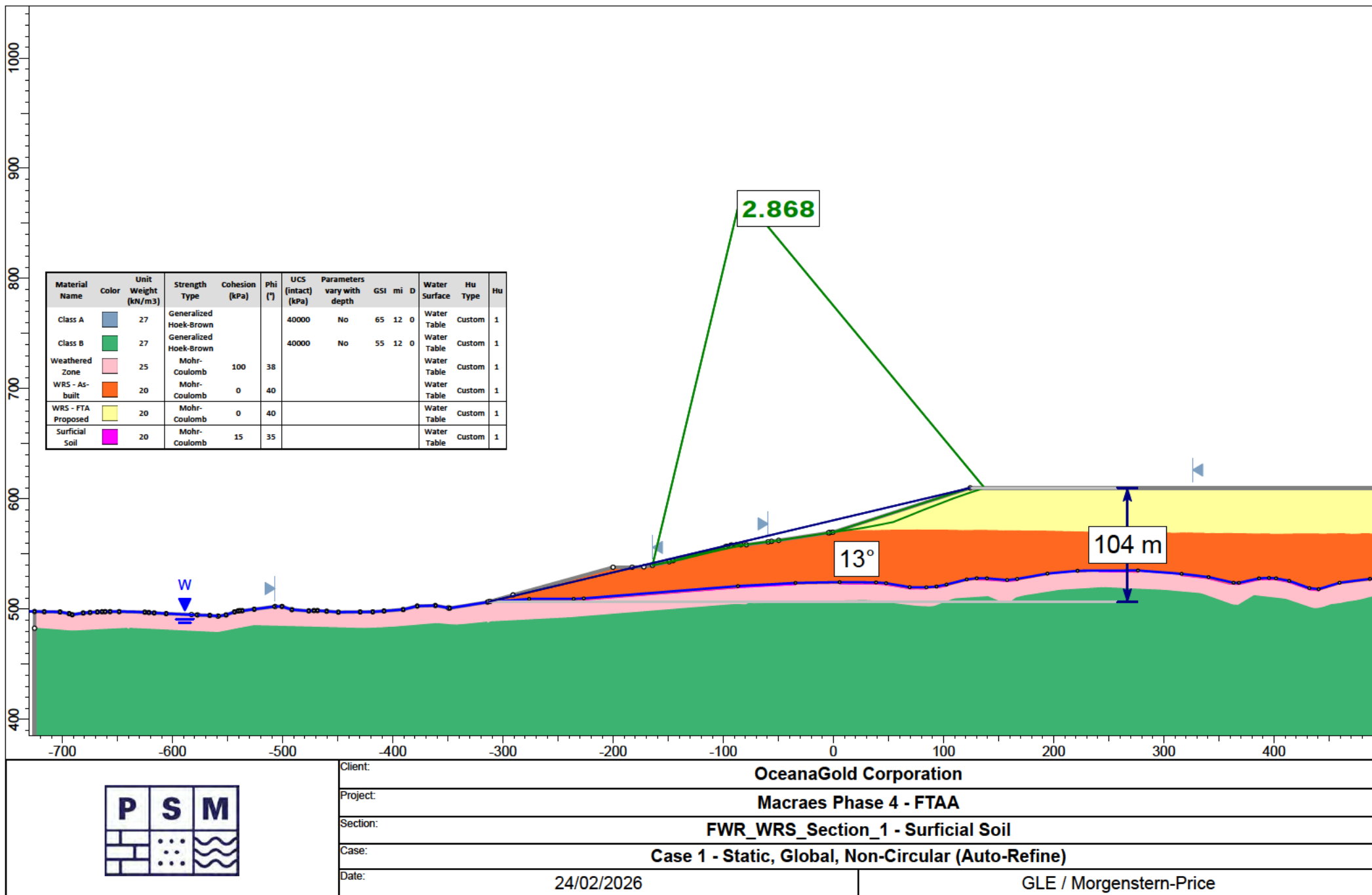


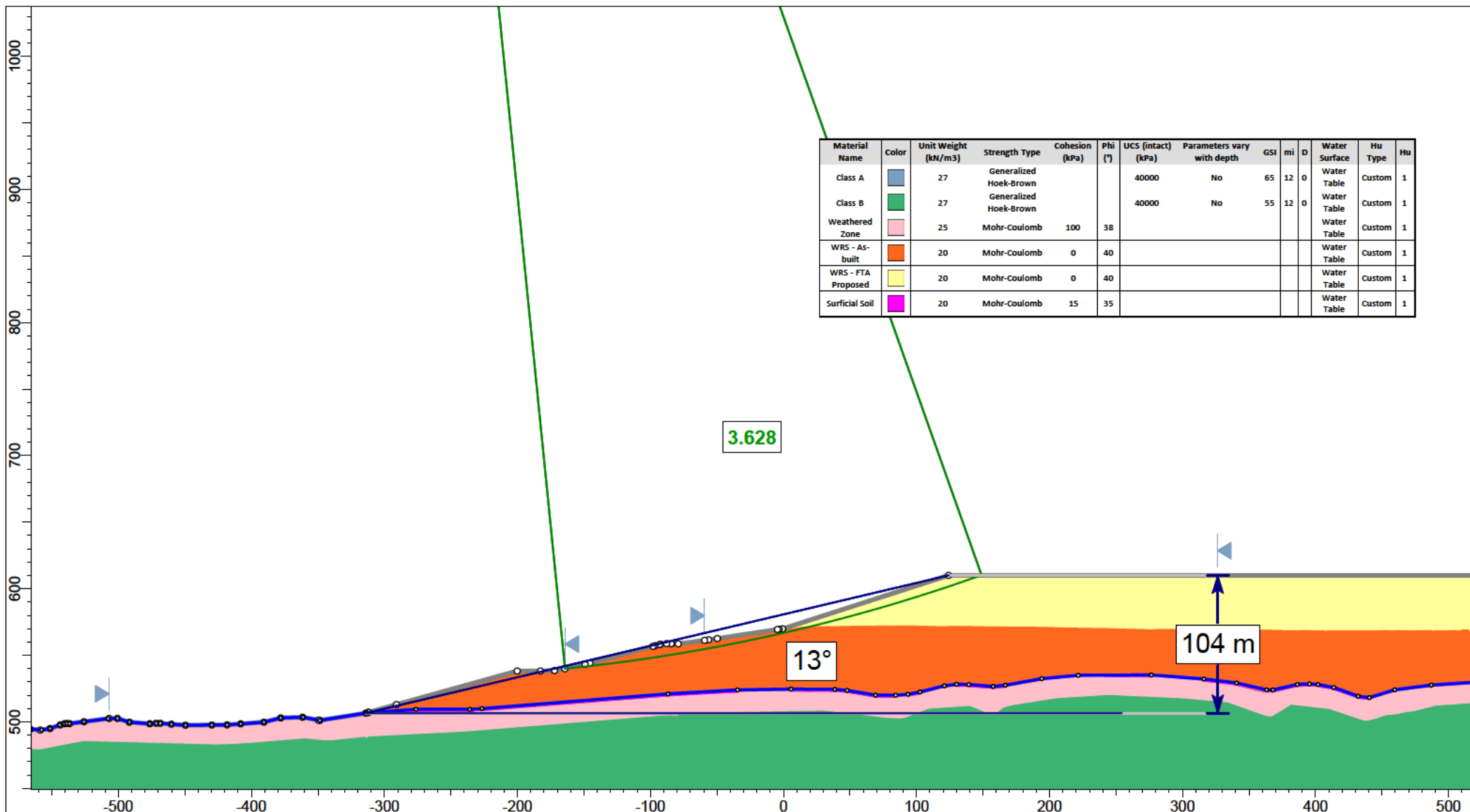
Client:	OceanaGold Corporation		
Project:	Macraes Phase 4 - FTA		
Section:	TWRS_Section_3		
Case:	Case 2 - MDE, Global, Optimised (30 deg) - High GW, Non-Circular (Auto-Refine) - Base Case		
Date:	18/05/2026	GLE / Morgenstern-Price	

Frasers West WRS

Limit Equilibrium Analysis Outputs



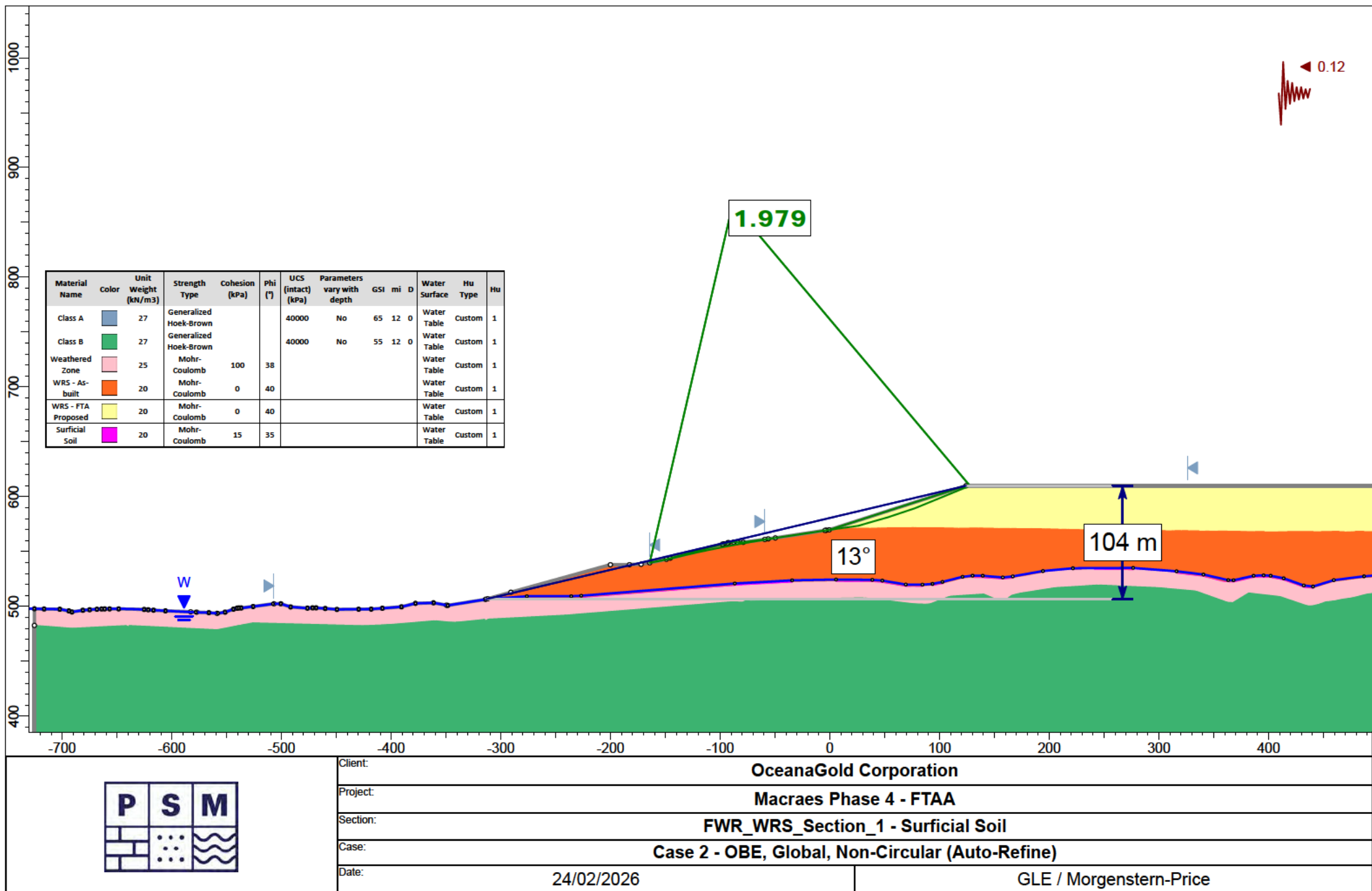


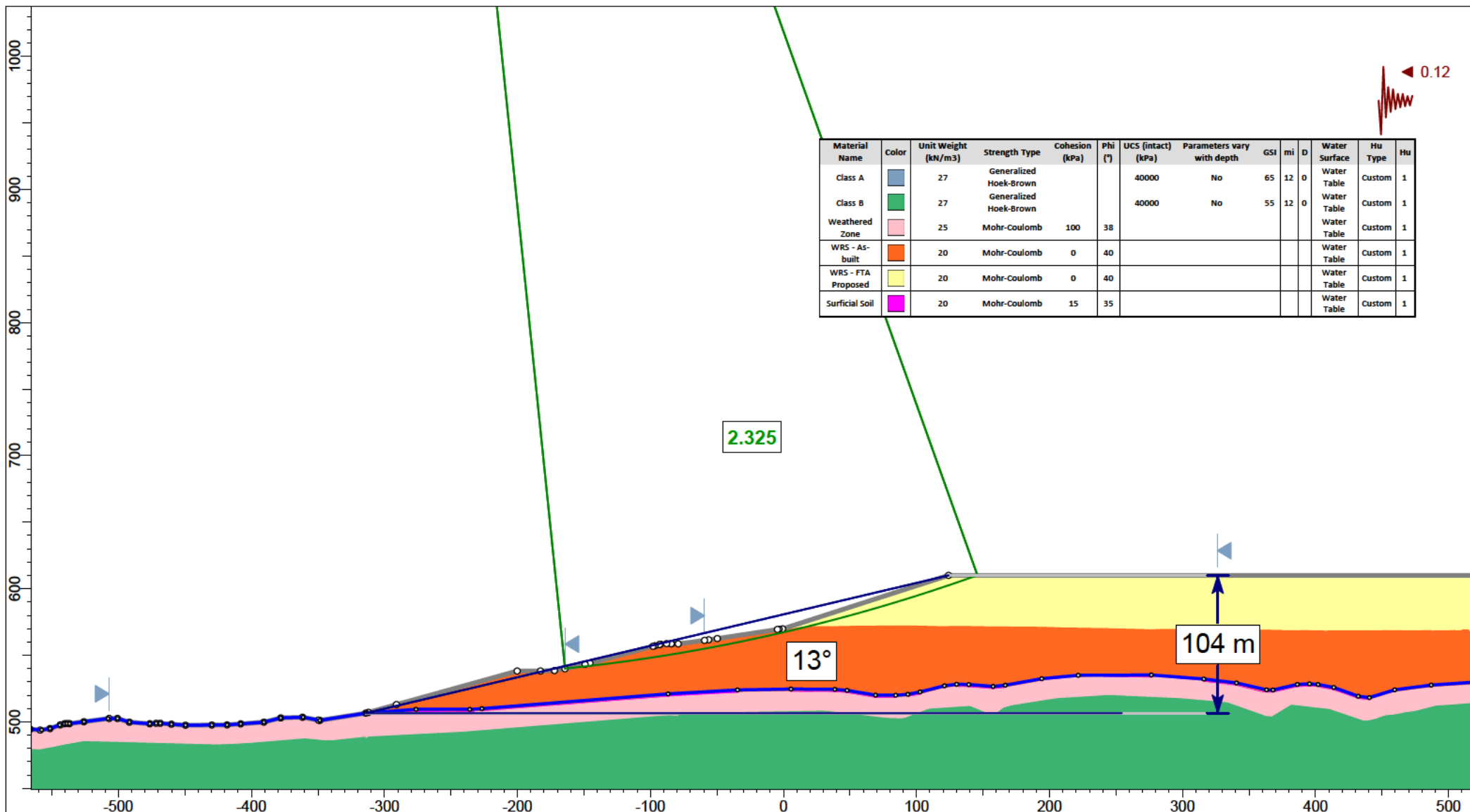


Material Name	Color	Unit Weight (kN/m ³)	Strength Type	Cohesion (kPa)	Phi (°)	UCS (intact) (kPa)	Parameters vary with depth	GSI	mi	D	Water Surface	Hu Type	Hu
Class A		27	Generalized Hoek-Brown			40000	No	65	12	0	Water Table	Custom	1
Class B		27	Generalized Hoek-Brown			40000	No	55	12	0	Water Table	Custom	1
Weathered Zone		25	Mohr-Coulomb	100	38						Water Table	Custom	1
WRS - As-built		20	Mohr-Coulomb	0	40						Water Table	Custom	1
WRS - FTA Proposed		20	Mohr-Coulomb	0	40						Water Table	Custom	1
Surficial Soil		20	Mohr-Coulomb	15	35						Water Table	Custom	1



Client:	OceanaGold Corporation	
Project:	Macraes Phase 4 - FTA	
Section:	FWR_WRS_Section_1 - Surficial Soil	
Case:	Case 1 - Static, Global, Circular	
Date:	11/02/2026	GLE / Morgenstern-Price

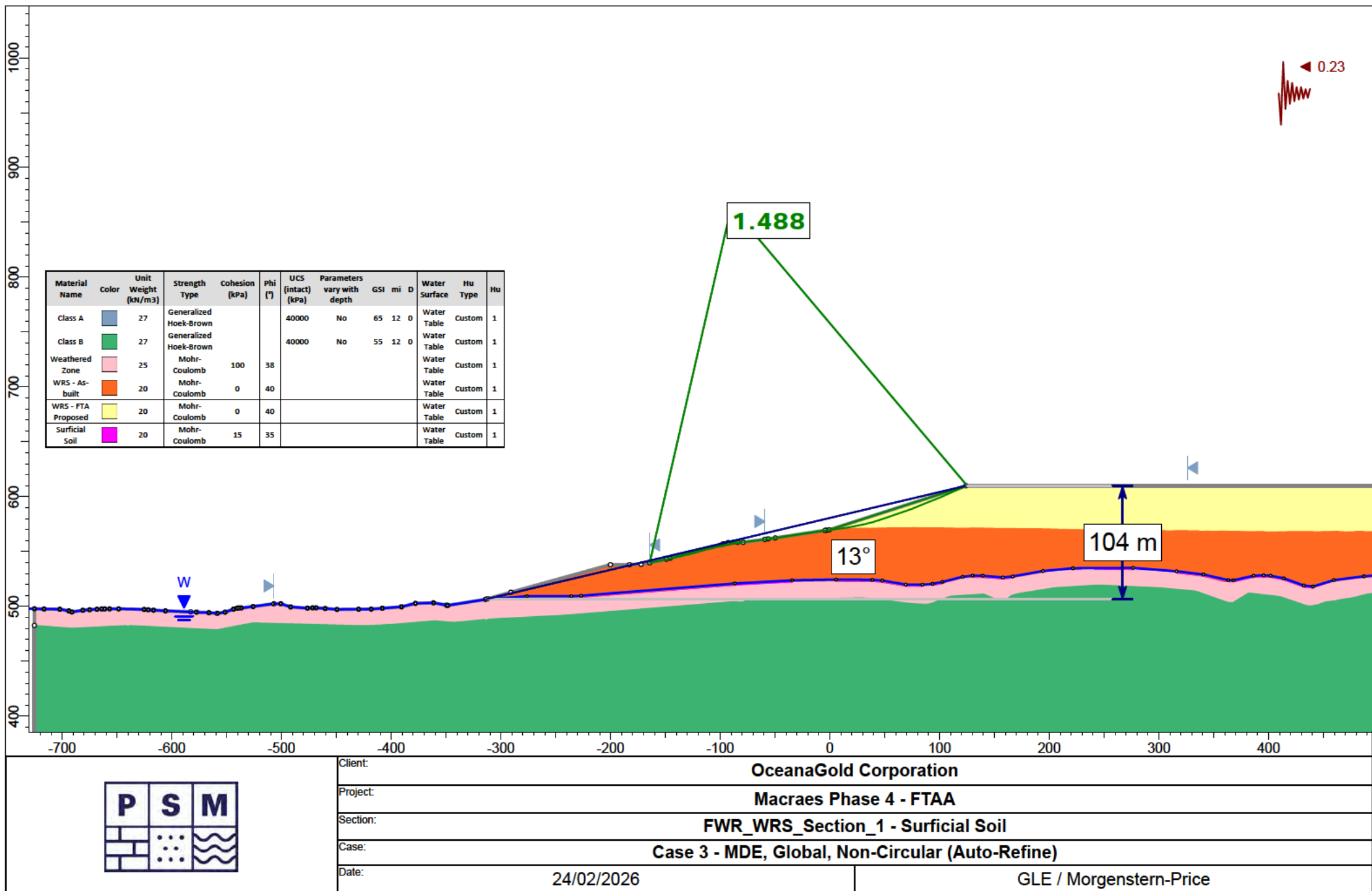


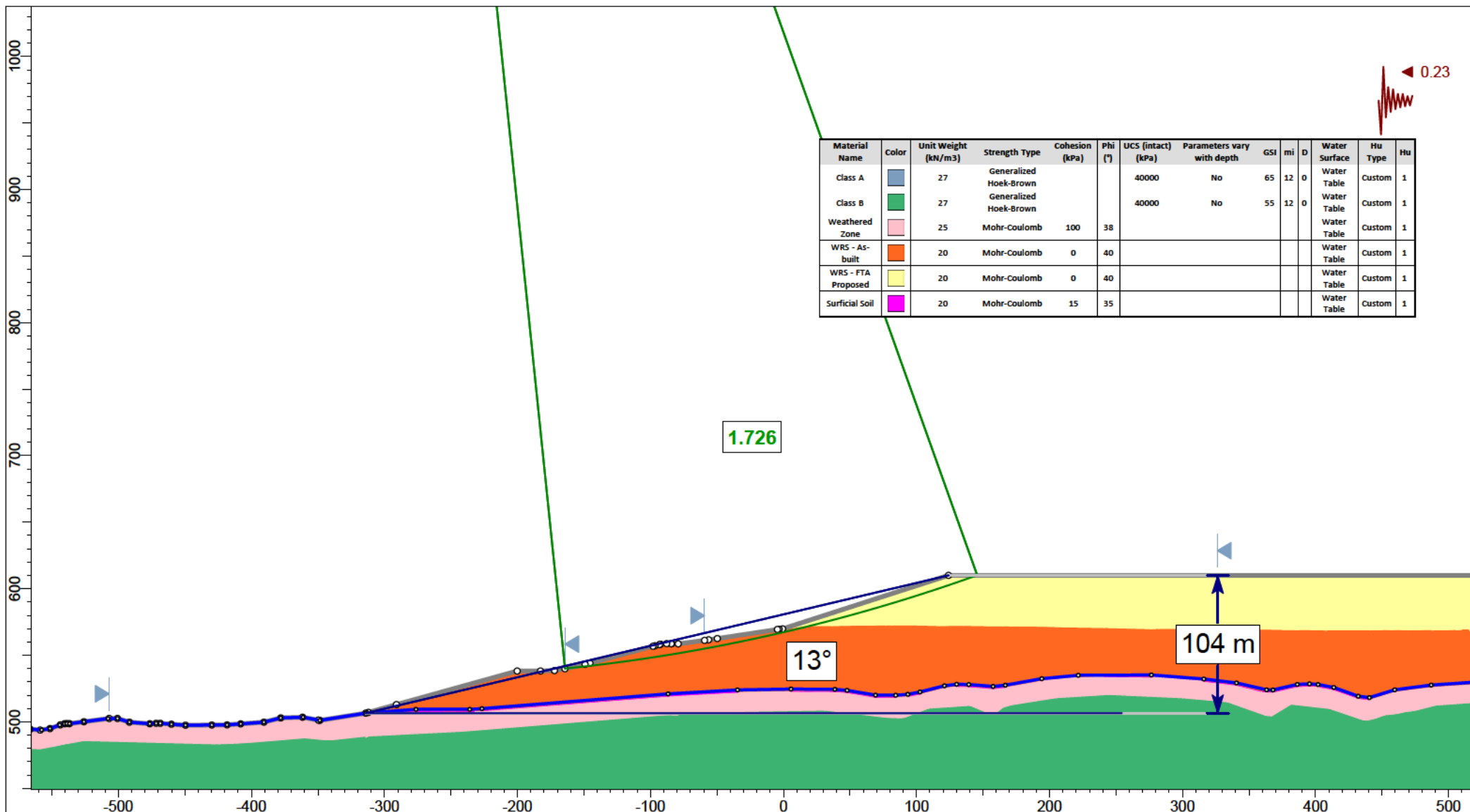


Material Name	Color	Unit Weight (kN/m ³)	Strength Type	Cohesion (kPa)	Phi (°)	UCS (intact) (kPa)	Parameters vary with depth	GSI	mi	D	Water Surface	Hu Type	Hu
Class A		27	Generalized Hoek-Brown			40000	No	65	12	0	Water Table	Custom	1
Class B		27	Generalized Hoek-Brown			40000	No	55	12	0	Water Table	Custom	1
Weathered Zone		25	Mohr-Coulomb	100	38						Water Table	Custom	1
WRS - As-built		20	Mohr-Coulomb	0	40						Water Table	Custom	1
WRS - FTA Proposed		20	Mohr-Coulomb	0	40						Water Table	Custom	1
Surficial Soil		20	Mohr-Coulomb	15	35						Water Table	Custom	1



Client:	OceanaGold Corporation	
Project:	Macraes Phase 4 - FTAA	
Section:	FWR_WRS_Section_1 - Surficial Soil	
Case:	Case 2 - OBE, Global, Circular	
Date:	11/02/2026	GLE / Morgenstern-Price

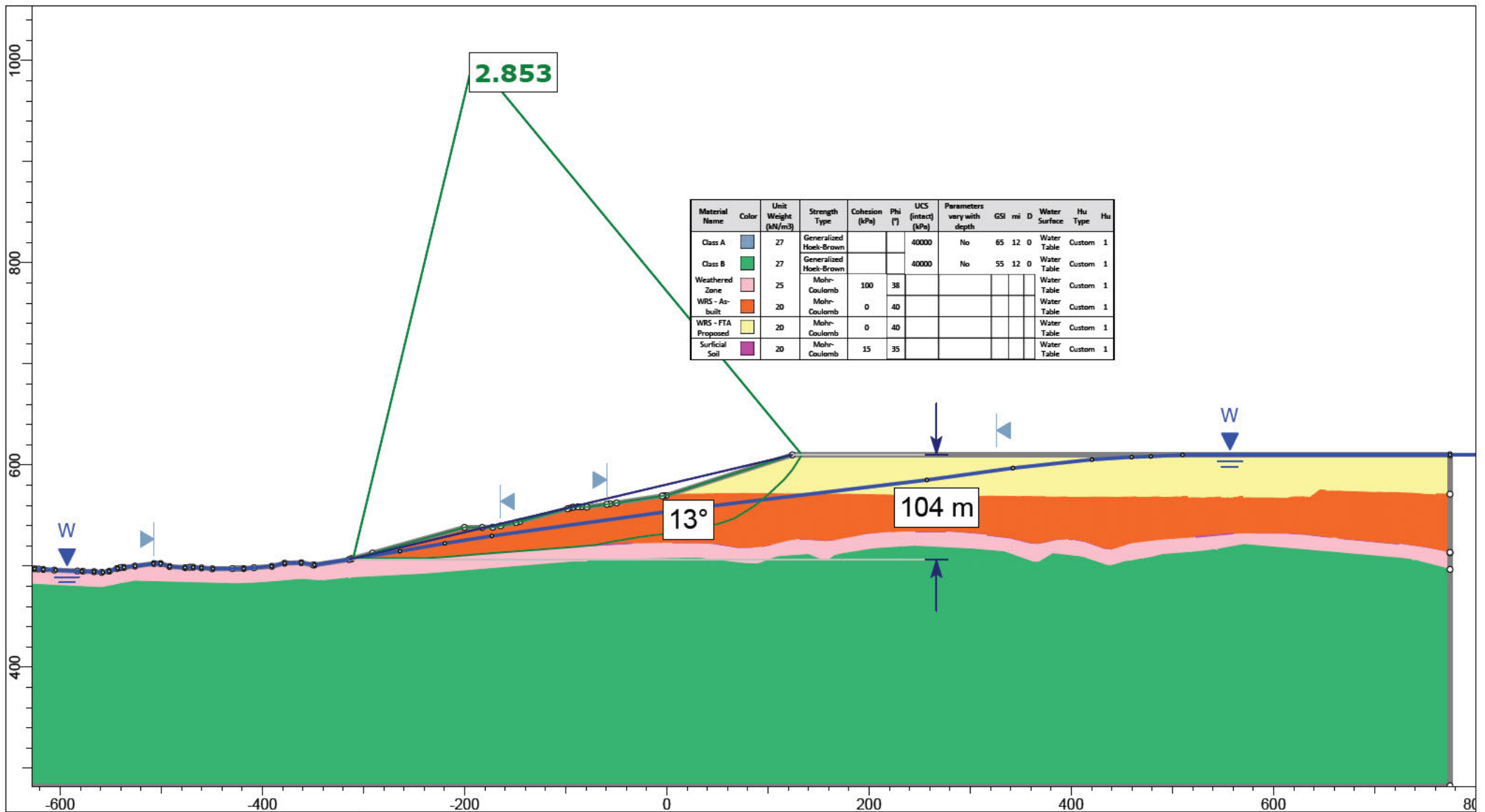




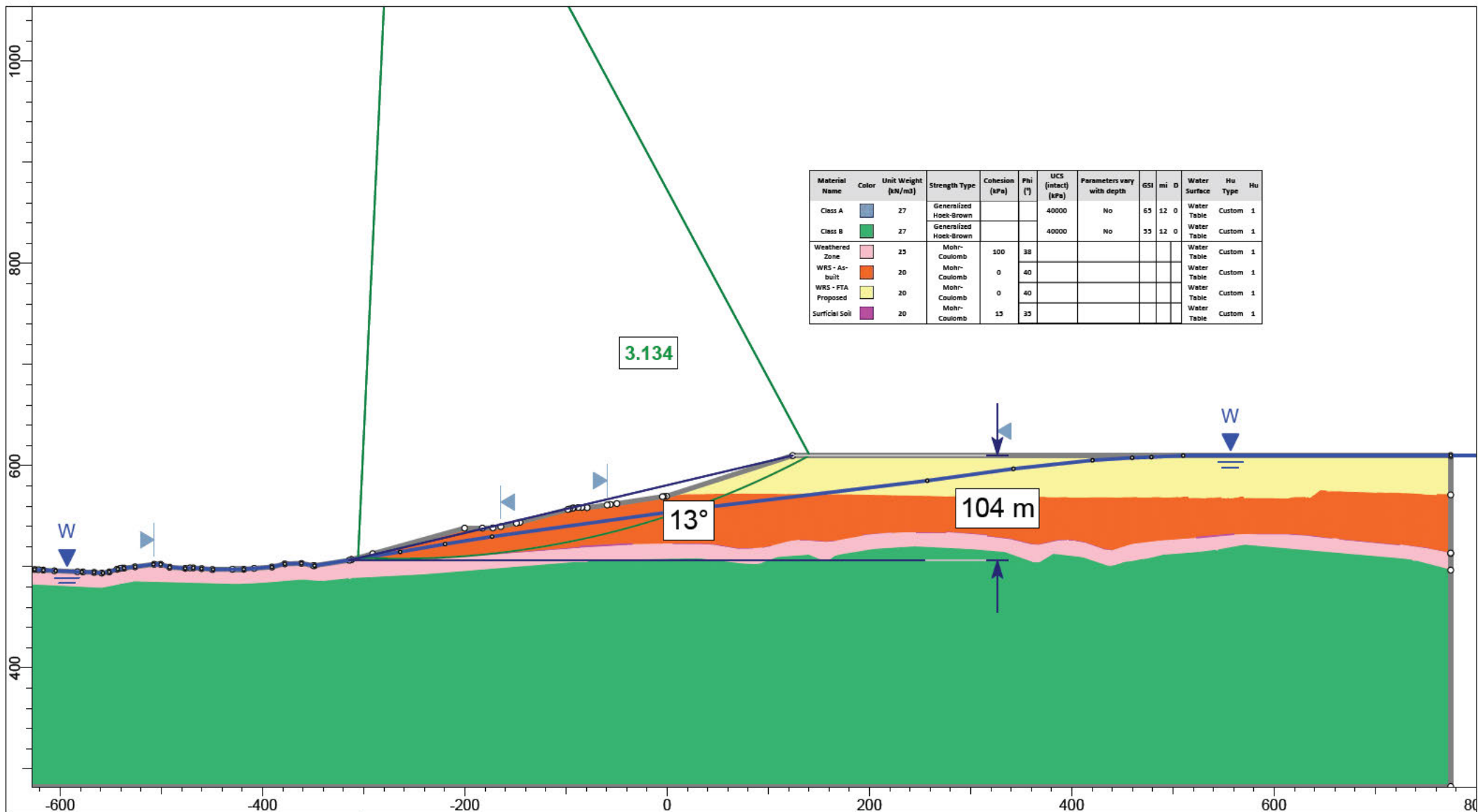
Material Name	Color	Unit Weight (kN/m ³)	Strength Type	Cohesion (kPa)	Phi (°)	UCS (intact) (kPa)	Parameters vary with depth	GSI	mi	D	Water Surface	Hu Type	Hu
Class A		27	Generalized Hoek-Brown			40000	No	65	12	0	Water Table	Custom	1
Class B		27	Generalized Hoek-Brown			40000	No	55	12	0	Water Table	Custom	1
Weathered Zone		25	Mohr-Coulomb	100	38						Water Table	Custom	1
WRS - As-built		20	Mohr-Coulomb	0	40						Water Table	Custom	1
WRS - FTA Proposed		20	Mohr-Coulomb	0	40						Water Table	Custom	1
Surficial Soil		20	Mohr-Coulomb	15	35						Water Table	Custom	1



Client:	OceanaGold Corporation	
Project:	Macraes Phase 4 - FTA	
Section:	FWR_WRS_Section_1 - Surficial Soil	
Case:	Case 3 - MDE, Global, Circular	
Date:	11/02/2026	GLE / Morgenstern-Price



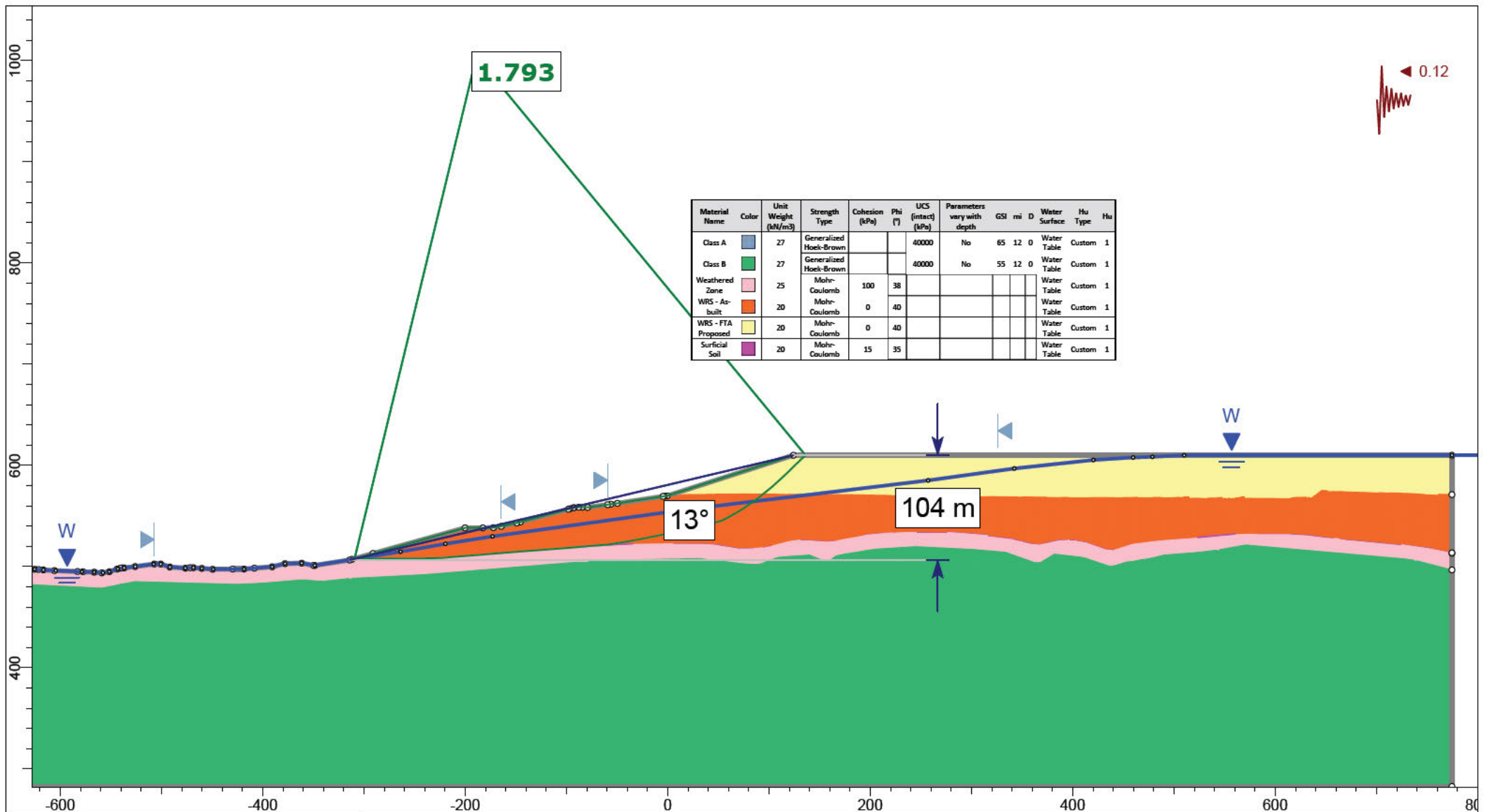
Client:	OceanaGold Corporation	
Project:	Macraes Phase 4 - FTAA	
Section:	FWR_WRS_Section_1 - Surficial Soil & Partially Saturated	
Case:	Case 1 - Static, Global, Non-Circular (Auto-Refine)	
Date:	24/03/2026	GLE / Morgenstern-Price



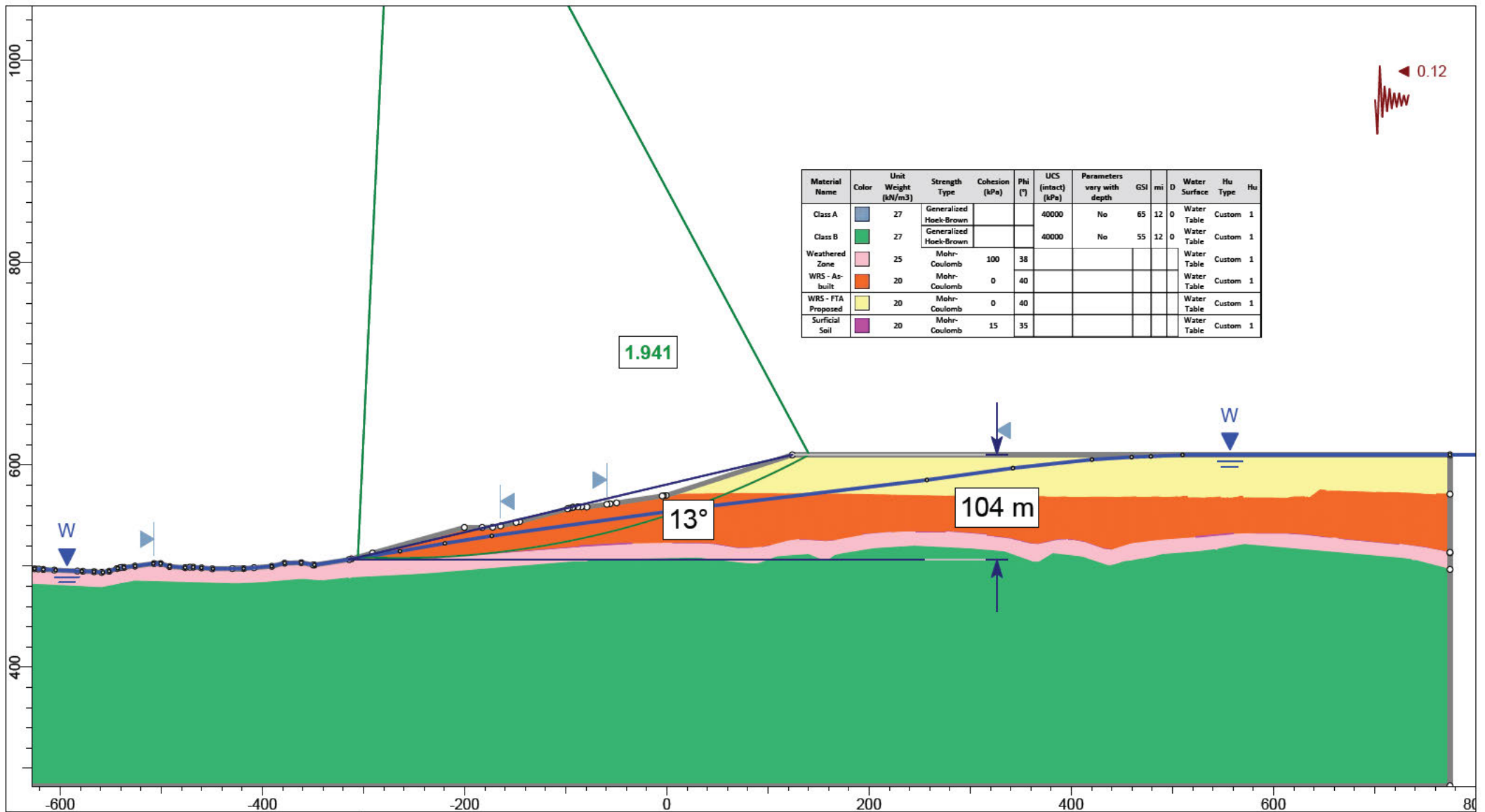
Material Name	Color	Unit Weight (kN/m ³)	Strength Type	Cohesion (kPa)	Phi (°)	UCS (intact) (kPa)	Parameters vary with depth	GSI	mi	D	Water Surface	Hu Type	Hu
Class A		27	Generalized Hoek-Brown			40000	No	65	12	0	Water Table	Custom	1
Class B		27	Generalized Hoek-Brown			40000	No	55	12	0	Water Table	Custom	1
Weathered Zone		25	Mohr-Coulomb	100	38						Water Table	Custom	1
WRS - As-built		20	Mohr-Coulomb	0	40						Water Table	Custom	1
WRS - FTA Proposed		20	Mohr-Coulomb	0	40						Water Table	Custom	1
Surficial Soil		20	Mohr-Coulomb	15	33						Water Table	Custom	1



Client:	OceanaGold Corporation		
Project:	Macraes Phase 4 - FTAA		
Section:	FWR_WRS_Section_1 - Surficial Soil & Partially Saturated		
Case:	Case 1 - Static, Global, Circular		
Date:	24/03/2026	GLE / Morgenstern-Price	



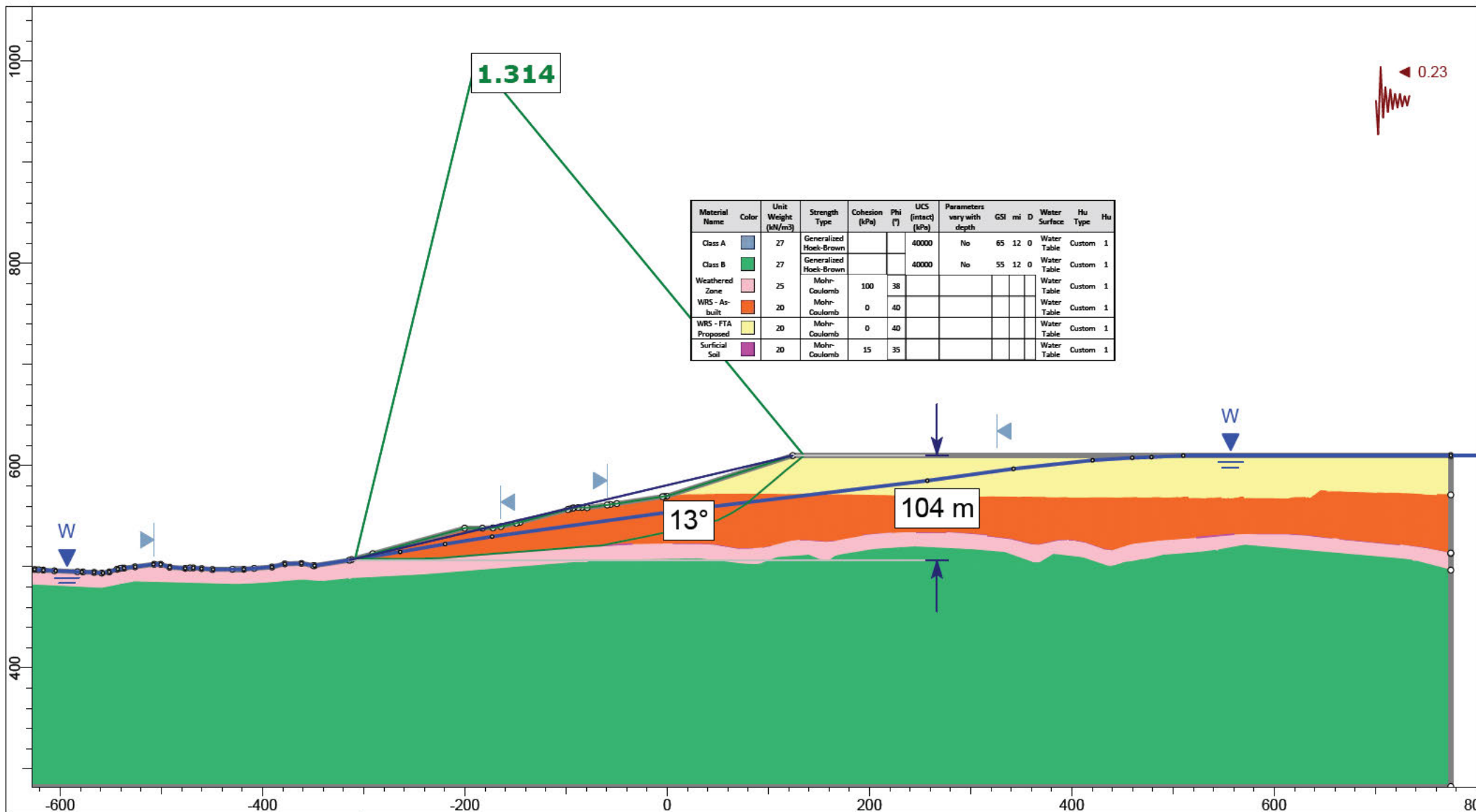
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Project:	Macraes Phase 4 - FTAA	
Section:	FWR_WRS_Section_1 - Surficial Soil & Partially Saturated	
Case:	Case 2 - OBE, Global, Non-Circular (Auto-Refine)	
Date:	24/03/2026	GLE / Morgenstern-Price



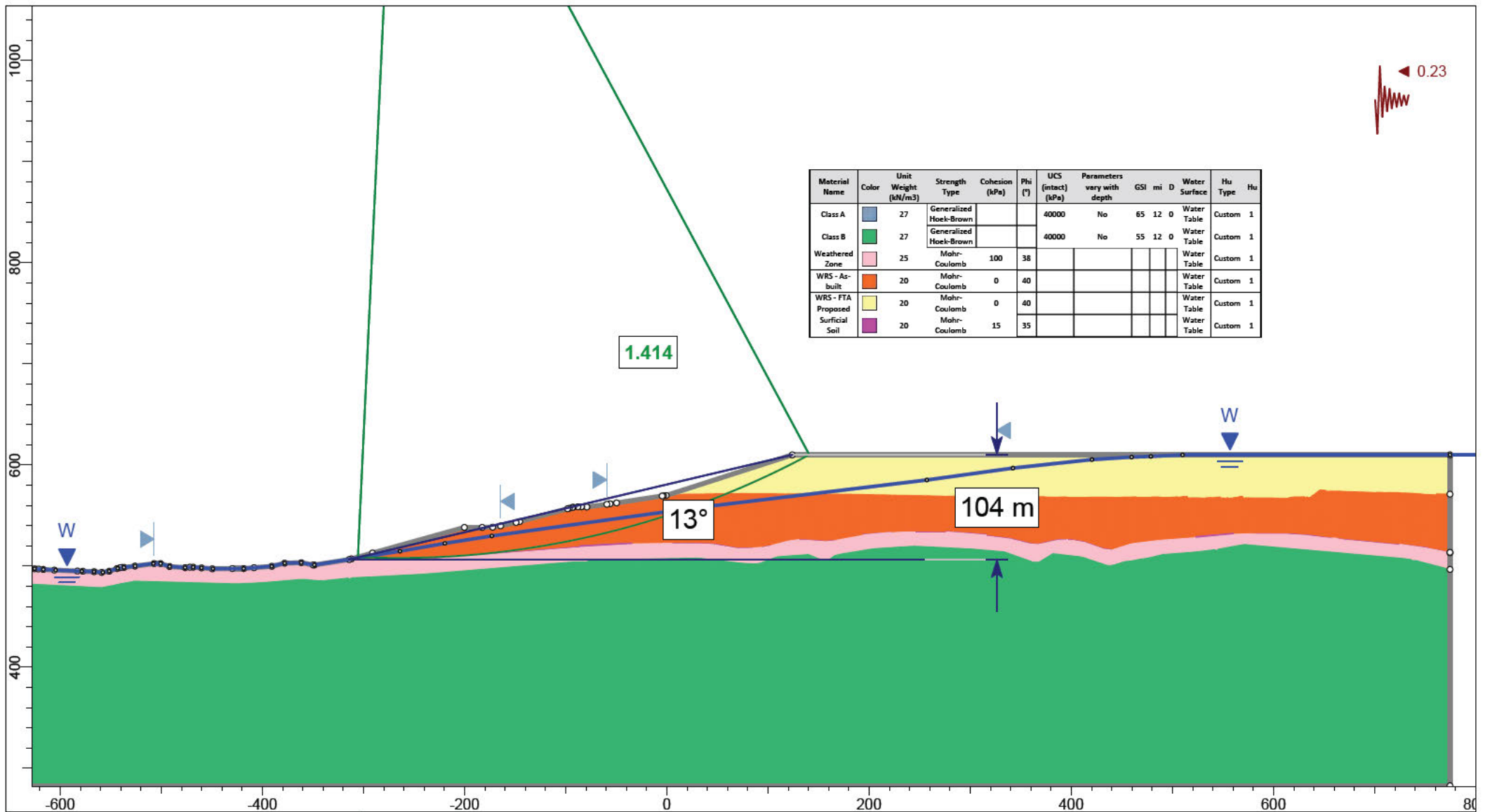
Material Name	Color	Unit Weight (kN/m ³)	Strength Type	Cohesion (kPa)	Phi (°)	UCS (intact) (kPa)	Parameters vary with depth	GSI	mi	D	Water Surface	Hu Type	Hu
Class A		27	Generalized Hoek-Brown			40000	No	65	12	0	Water Table	Custom	1
Class B		27	Generalized Hoek-Brown			40000	No	55	12	0	Water Table	Custom	1
Weathered Zone		25	Mohr-Coulomb	100	38						Water Table	Custom	1
WRS - As-built		20	Mohr-Coulomb	0	40						Water Table	Custom	1
WRS - FTA Proposed		20	Mohr-Coulomb	0	40						Water Table	Custom	1
Surficial Soil		20	Mohr-Coulomb	15	35						Water Table	Custom	1



Client:	OceanaGold Corporation		
Project:	Macraes Phase 4 - FTAA		
Section:	FWR_WRS_Section_1 - Surficial Soil & Partially Saturated		
Case:	Case 2 - OBE, Global, Circular		
Date:	24/03/2026	GLE / Morgenstern-Price	



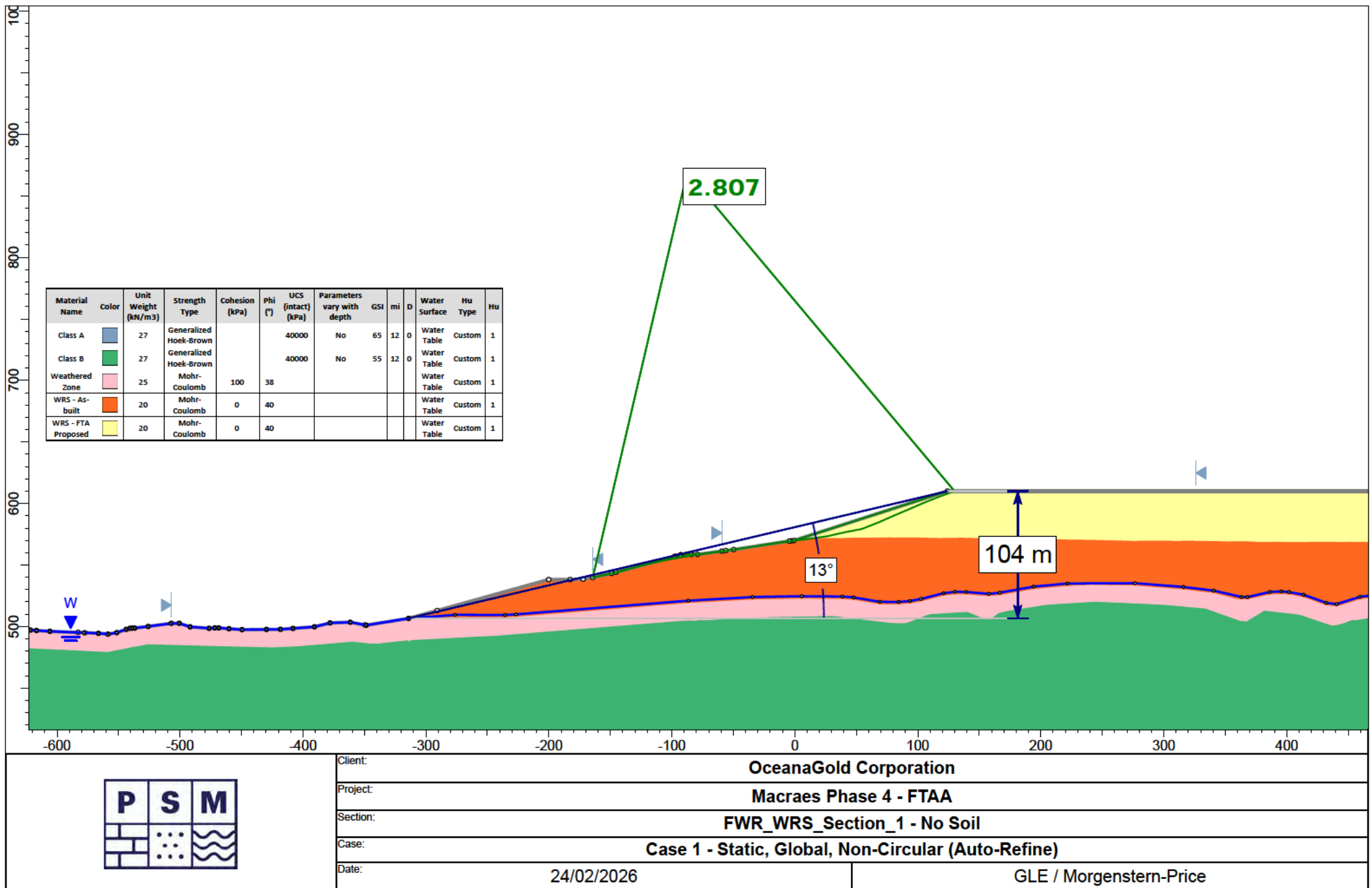
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Project:	Macraes Phase 4 - FTAA	
Section:	FWR_WRS_Section_1 - Surficial Soil & Partially Saturated	
Case:	Case 3 - MDE, Global, Non-Circular (Auto-Refine)	
Date:	24/03/2026	GLE / Morgenstern-Price

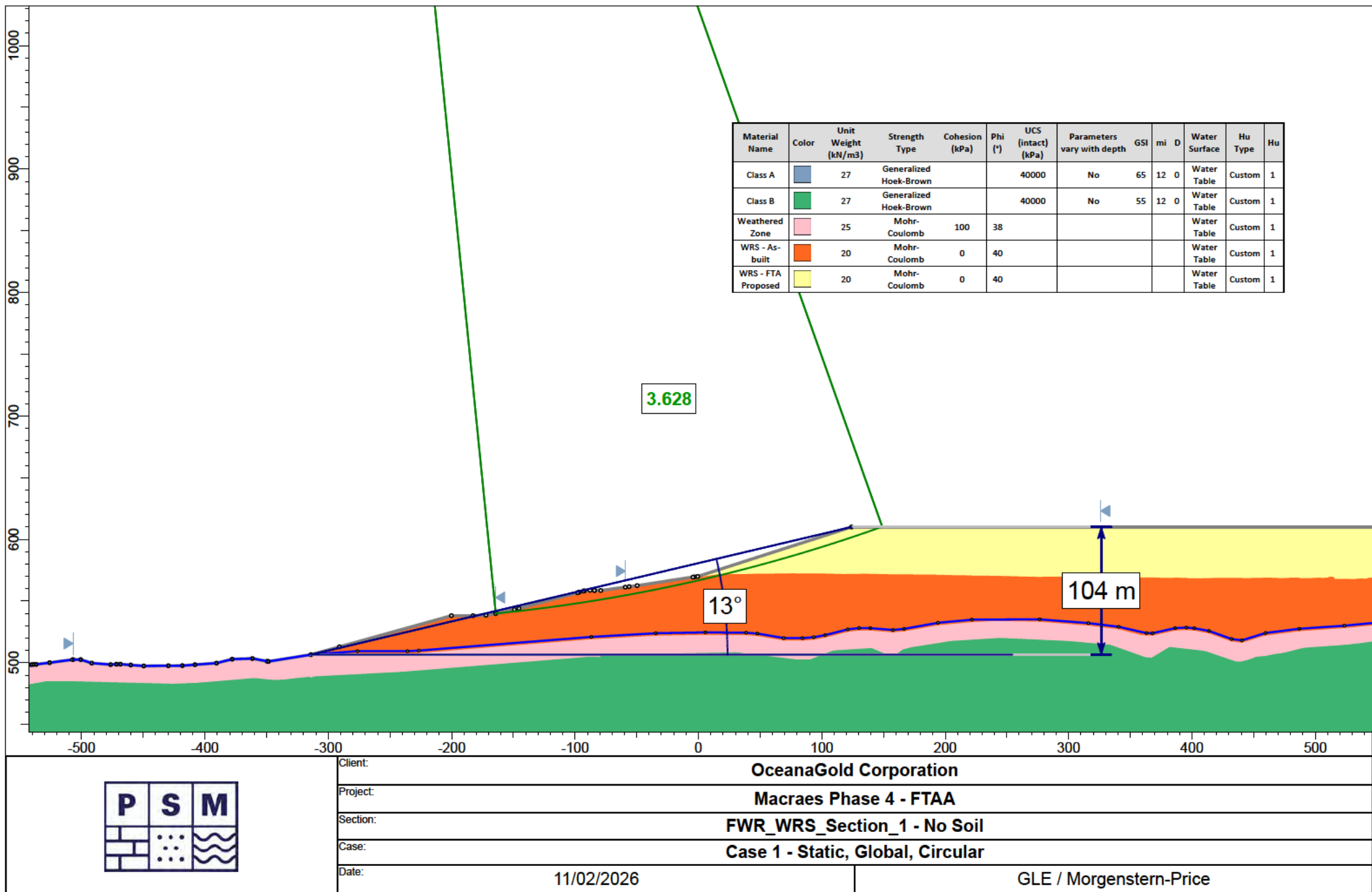


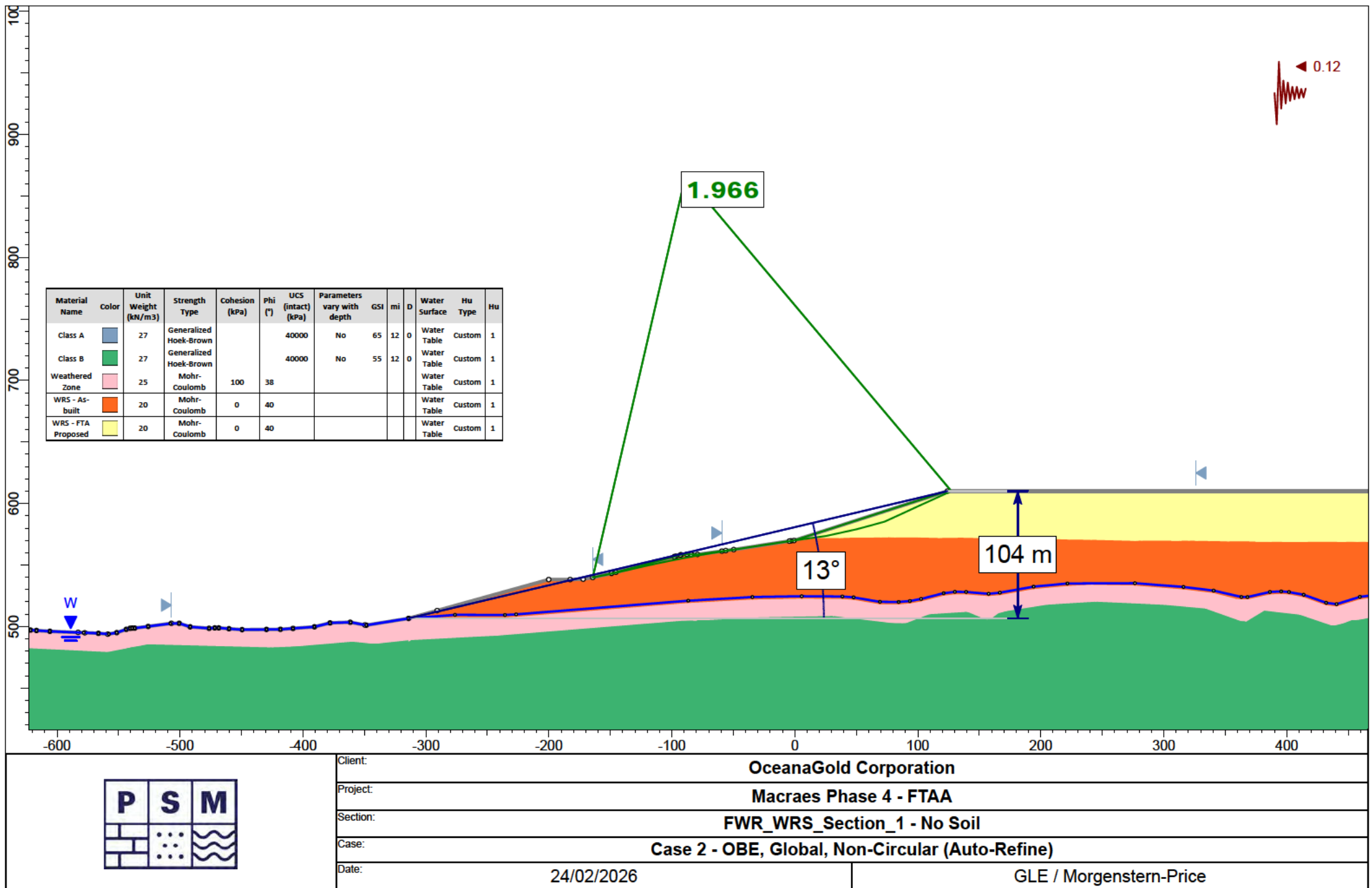
Material Name	Color	Unit Weight (kN/m ³)	Strength Type	Cohesion (kPa)	Phi (°)	UCS (intact) (kPa)	Parameters vary with depth	GSI	mi	D	Water Surface	Hu Type	Hu
Class A		27	Generalized Hoek-Brown			40000	No	65	12	0	Water Table	Custom	1
Class B		27	Generalized Hoek-Brown			40000	No	55	12	0	Water Table	Custom	1
Weathered Zone		25	Mohr-Coulomb	100	38						Water Table	Custom	1
WRS - As-built		20	Mohr-Coulomb	0	40						Water Table	Custom	1
WRS - FTA		20	Mohr-Coulomb	0	40						Water Table	Custom	1
Proposed Surficial Soil		20	Mohr-Coulomb	15	35						Water Table	Custom	1

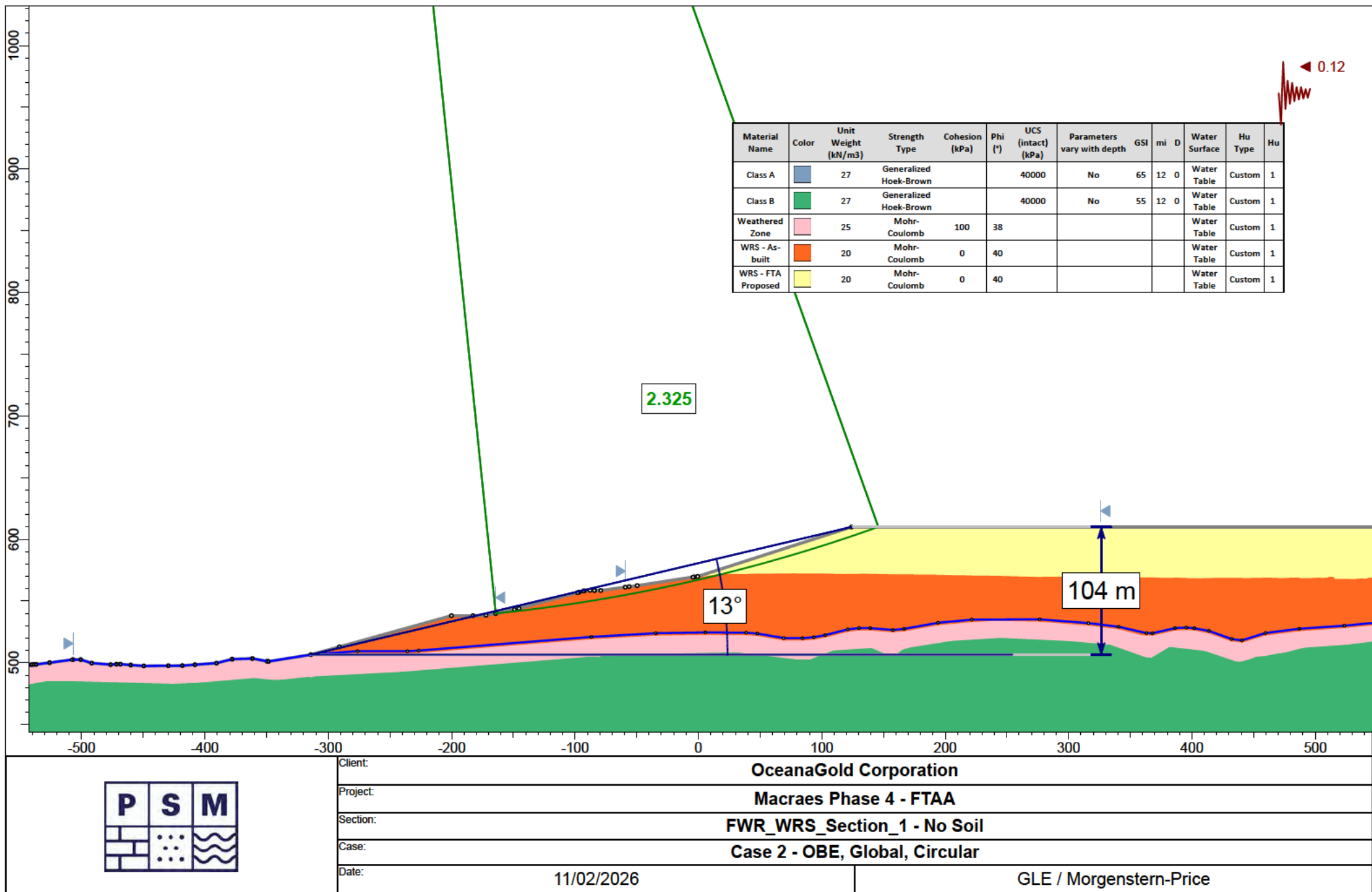


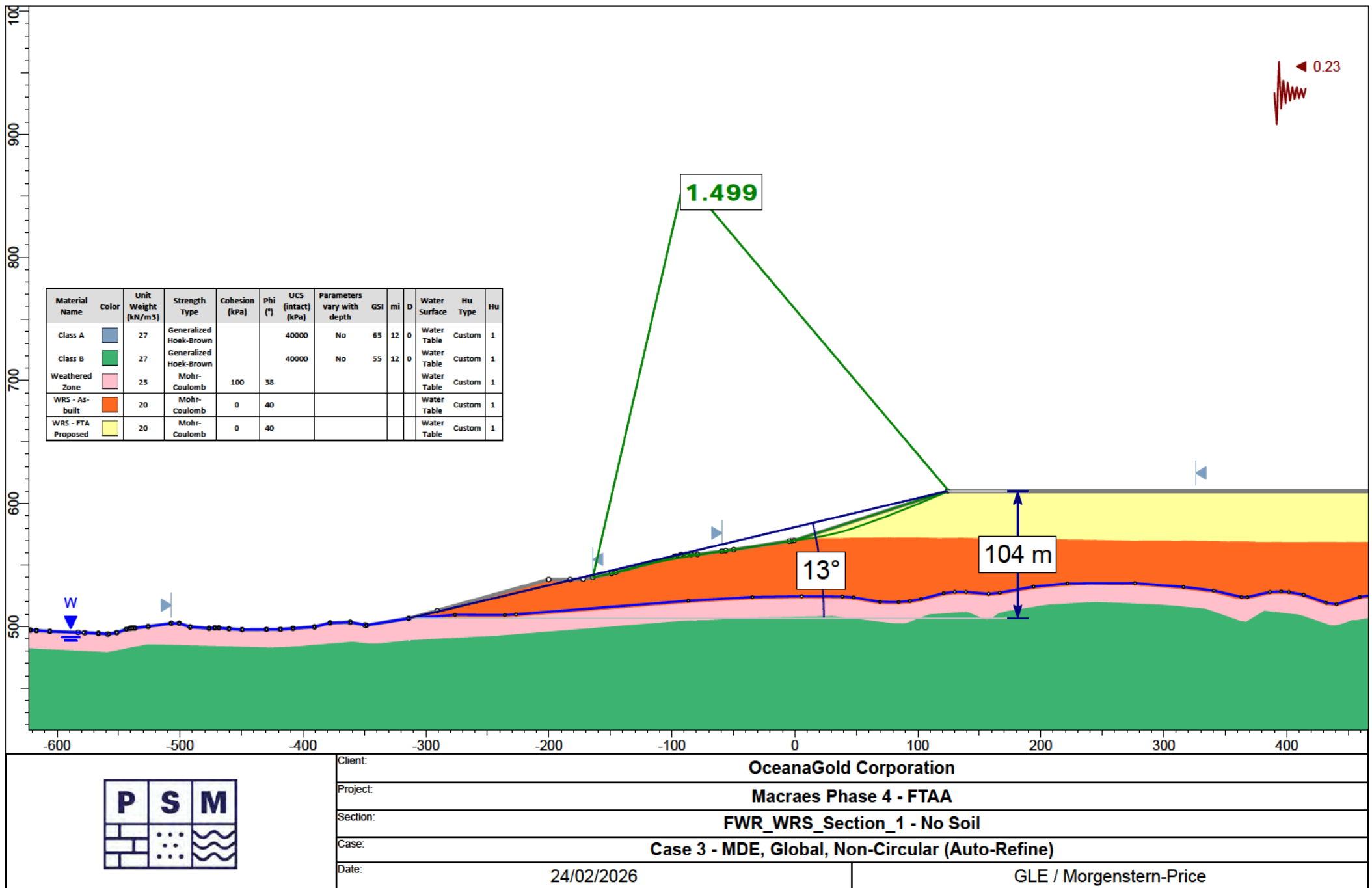
Client:	OceanaGold Corporation		
Project:	Macraes Phase 4 - FTAA		
Section:	FWR_WRS_Section_1 - Surficial Soil & Partially Saturated		
Case:	Case 3 - MDE, Global, Circular		
Date:	24/03/2026	GLE / Morgenstern-Price	

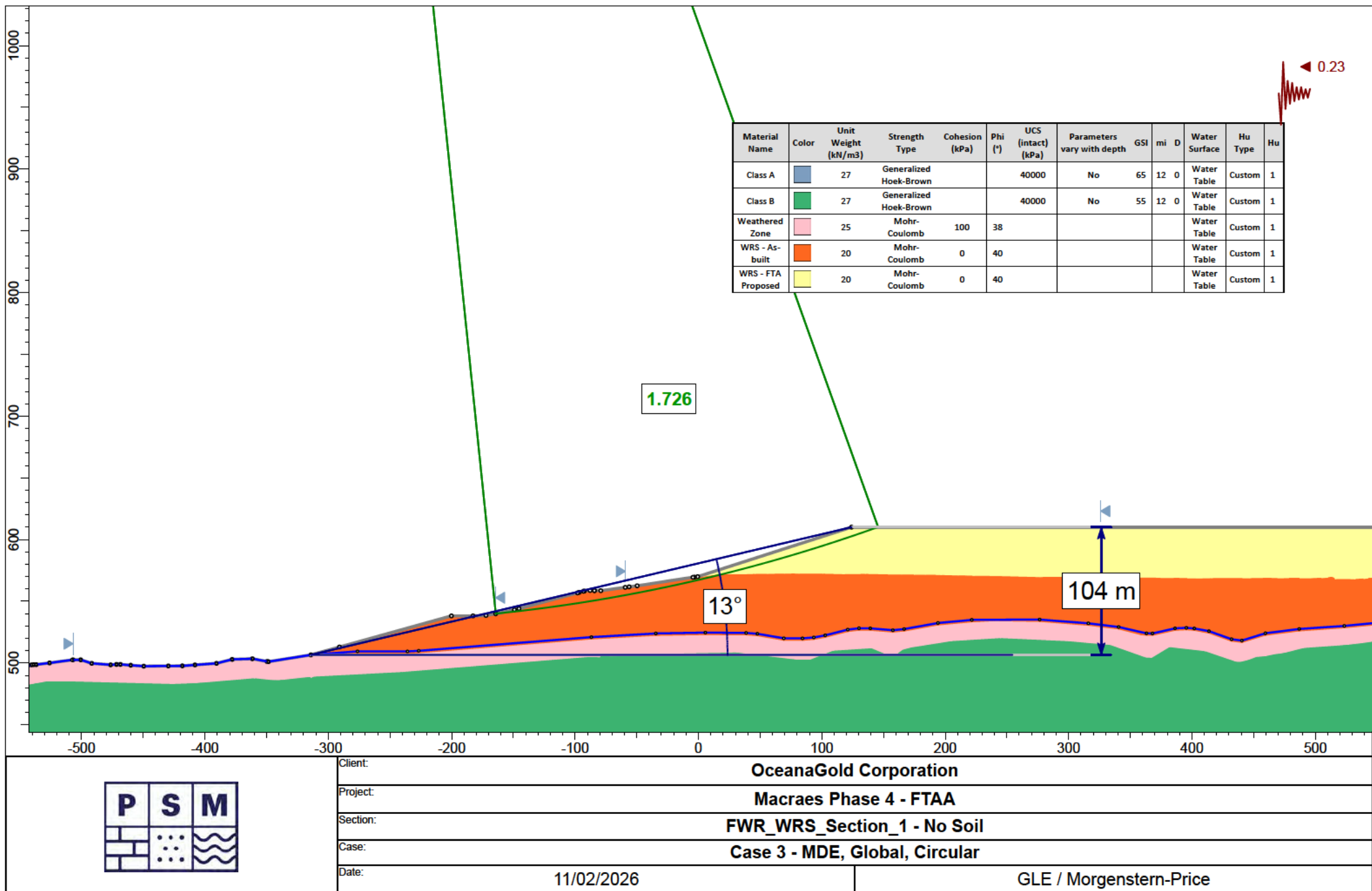


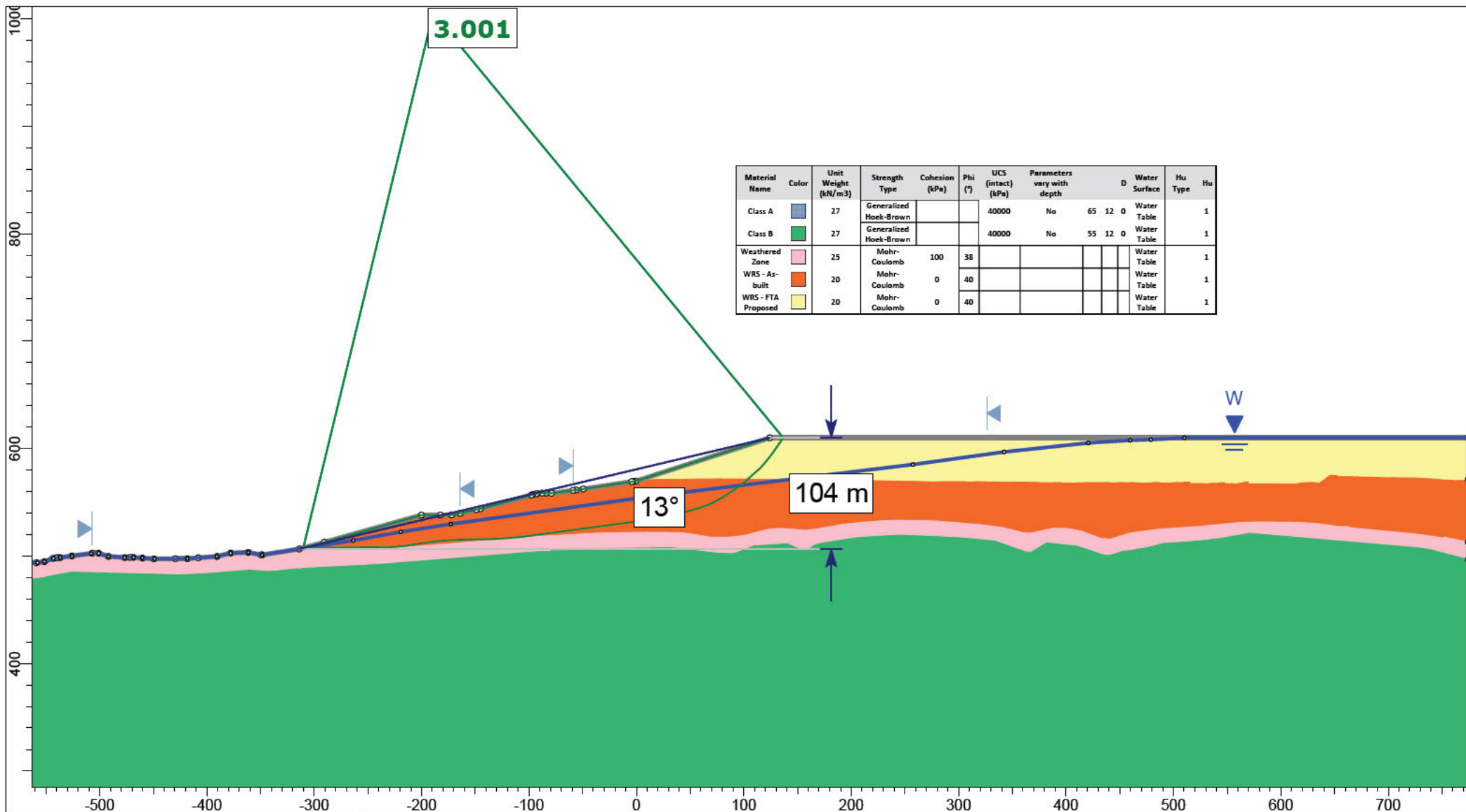








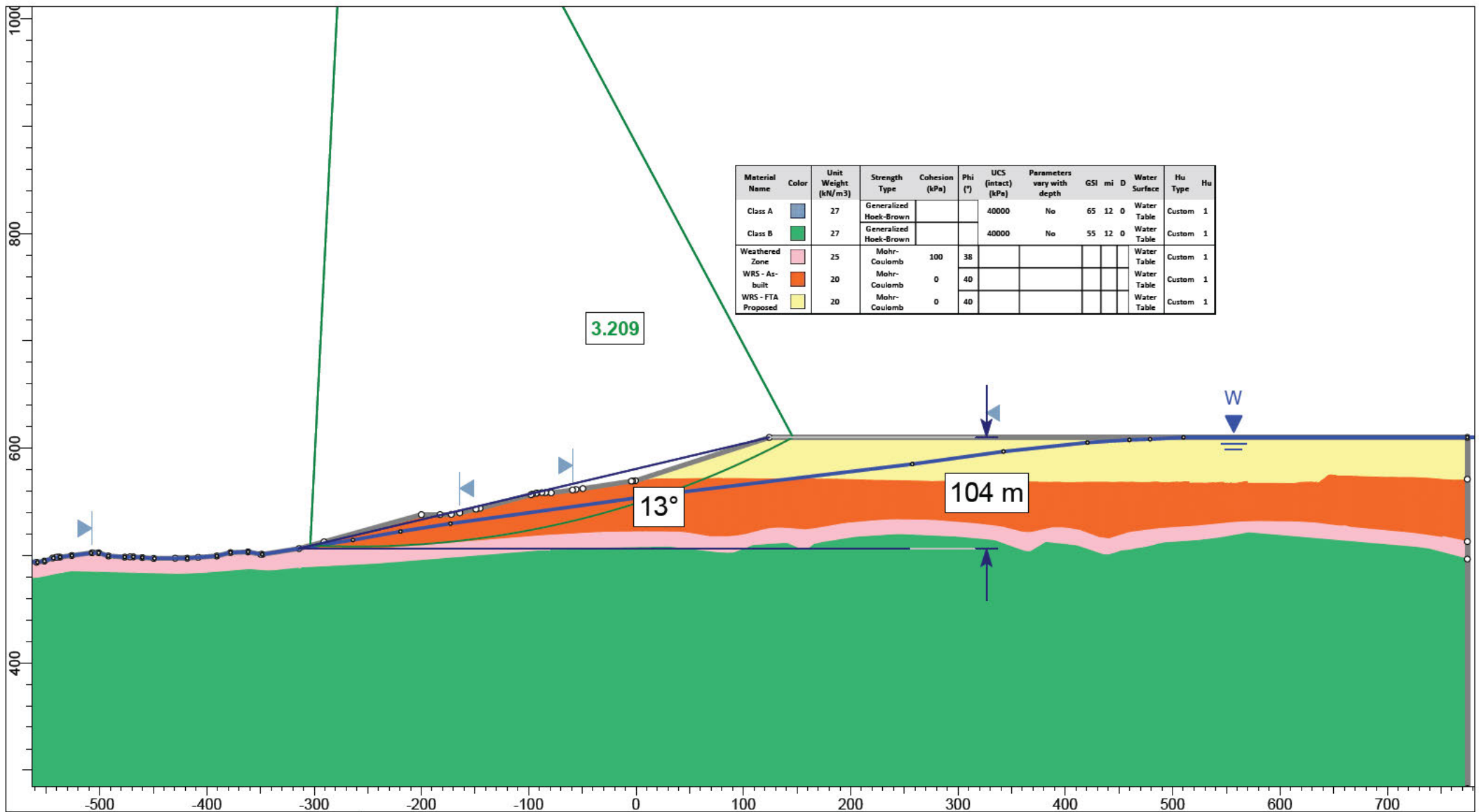




Material Name	Color	Unit Weight (kN/m ³)	Strength Type	Cohesion (kPa)	Phi (°)	UCS (intact) (kPa)	Parameters vary with depth	D	Water Surface	Hu Type	Hu
Class A		27	Generalized Hoek-Brown			40000	No	65	12	0	1
Class B		27	Generalized Hoek-Brown			40000	No	55	12	0	1
Weathered Zone		25	Mohr-Coulomb	100	38						1
WRS - As-built		20	Mohr-Coulomb	0	40						1
WRS - FTA Proposed		20	Mohr-Coulomb	0	40						1



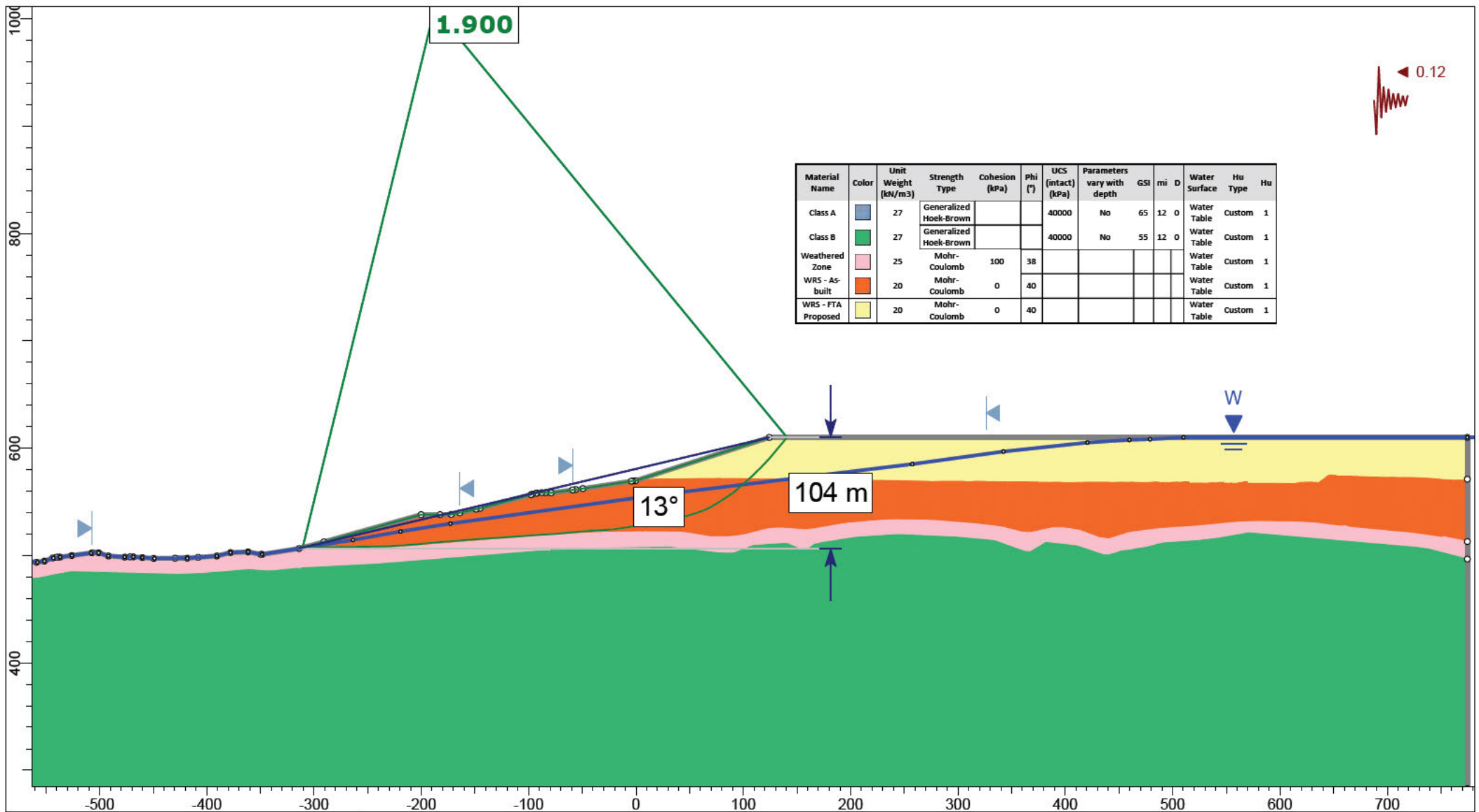
Client:	OceanaGold Corporation	
Project:	Macraes Phase 4 - FTA	
Section:	FWR_WRS_Section_1 - No Soil & Partially Saturated	
Case:	Case 1 - Static, Global, Non-Circular (Auto-Refine)	
Date:	24/03/2026	GLE / Morgenstern-Price



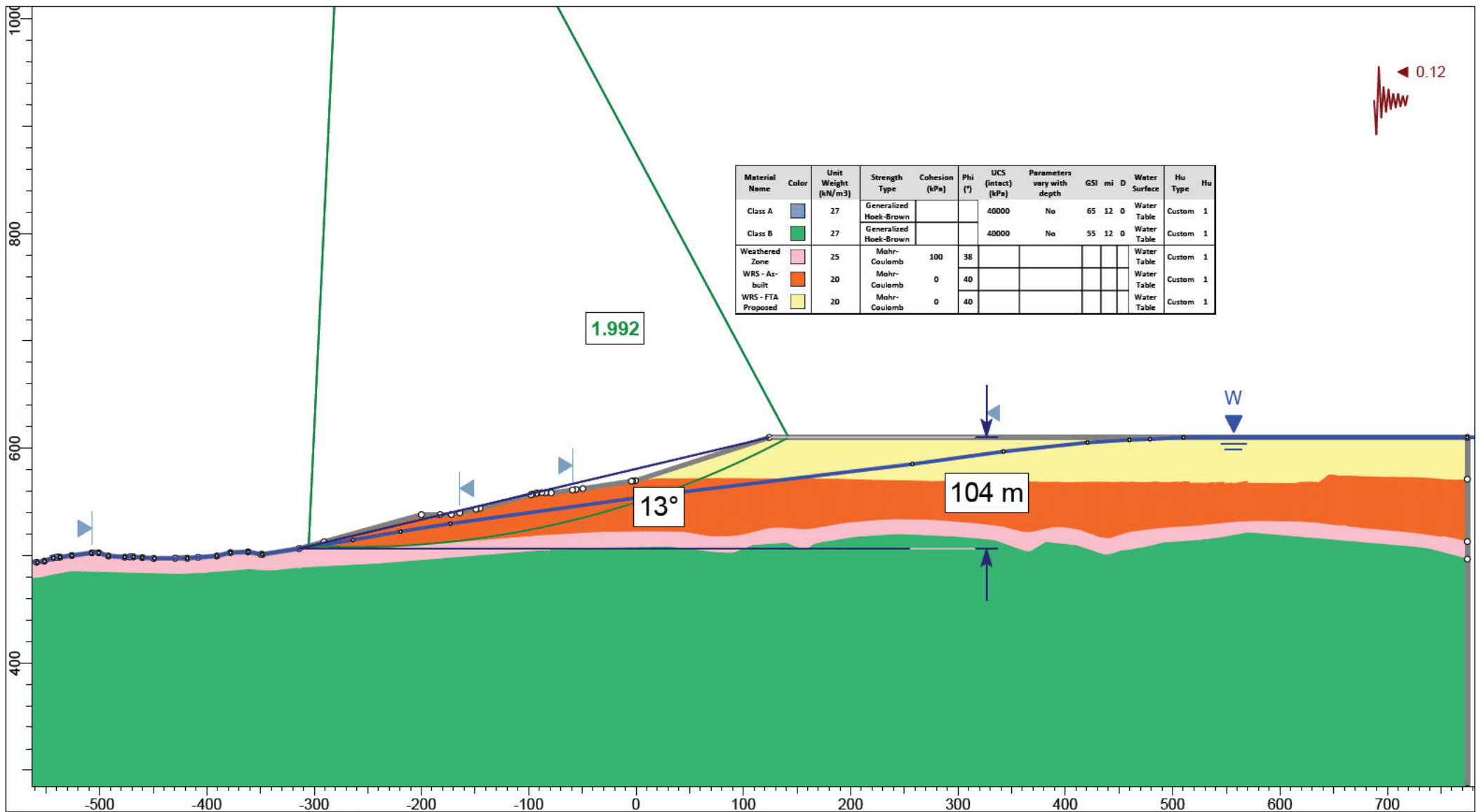
Material Name	Color	Unit Weight (kN/m ³)	Strength Type	Cohesion (kPa)	Phi (°)	UCS (intact) (kPa)	Parameters vary with depth	GSI	mi	D	Water Surface	Hu Type	Hu
Class A		27	Generalized Hoek-Brown			40000	No	65	12	0	Water Table	Custom	1
Class B		27	Generalized Hoek-Brown			40000	No	55	12	0	Water Table	Custom	1
Weathered Zone		25	Mohr-Coulomb	100	38						Water Table	Custom	1
WRS - As-built		20	Mohr-Coulomb	0	40						Water Table	Custom	1
WRS - FTA Proposed		20	Mohr-Coulomb	0	40						Water Table	Custom	1



Client:	OceanaGold Corporation		
Project:	Macraes Phase 4 - FTAA		
Section:	FWR_WRS_Section_1 - No Soil & Partially Saturated		
Case:	Case 1 - Static, Global, Circular		
Date:	24/03/2026	GLE / Morgenstern-Price	



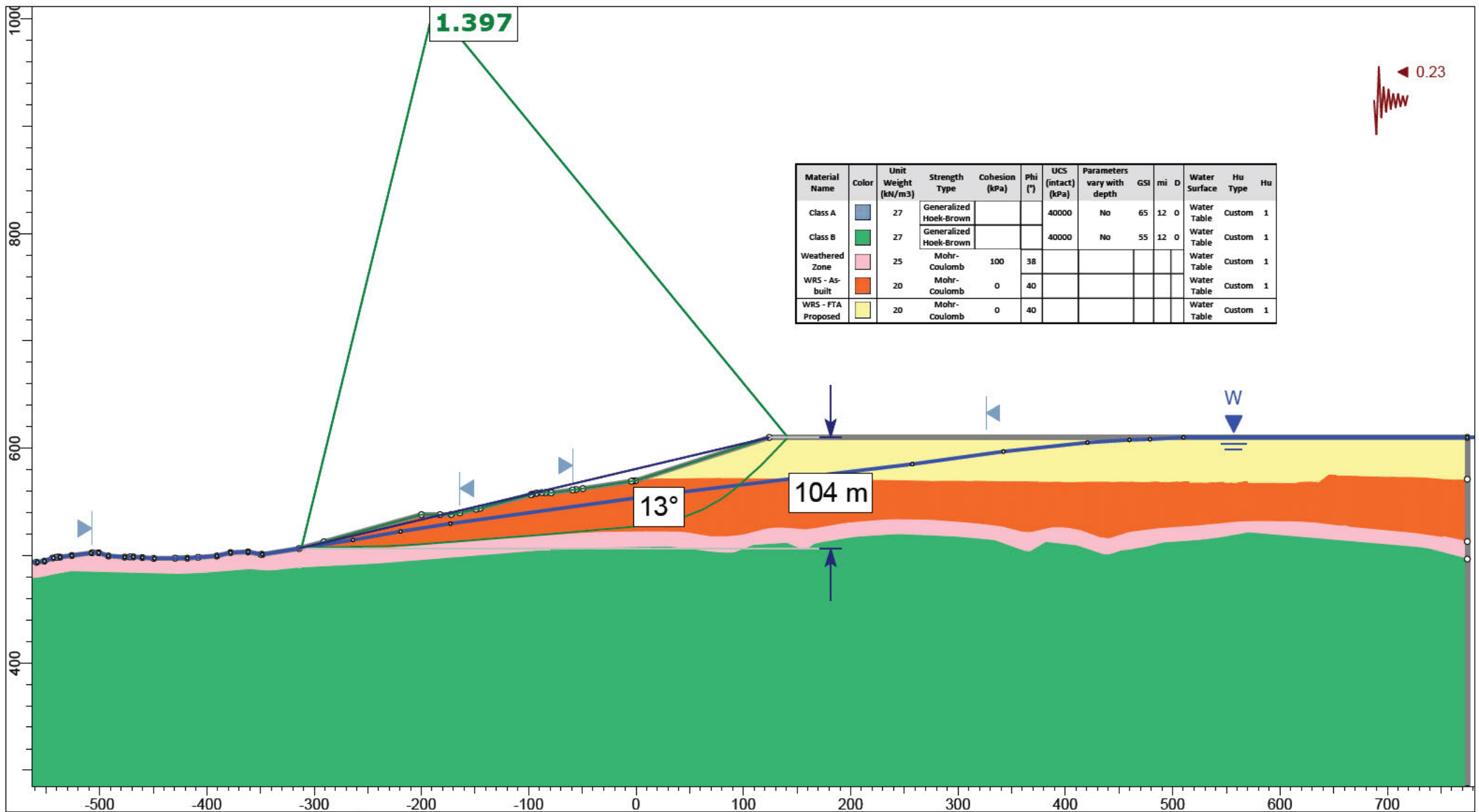
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Project:	Macraes Phase 4 - FTAA		
Section:	FWR_WRS_Section_1 - No Soil & Partially Saturated		
Case:	Case 2 - OBE, Global, Non-Circular (Auto-Refine)		
Date:	24/03/2026	GLE / Morgenstern-Price	



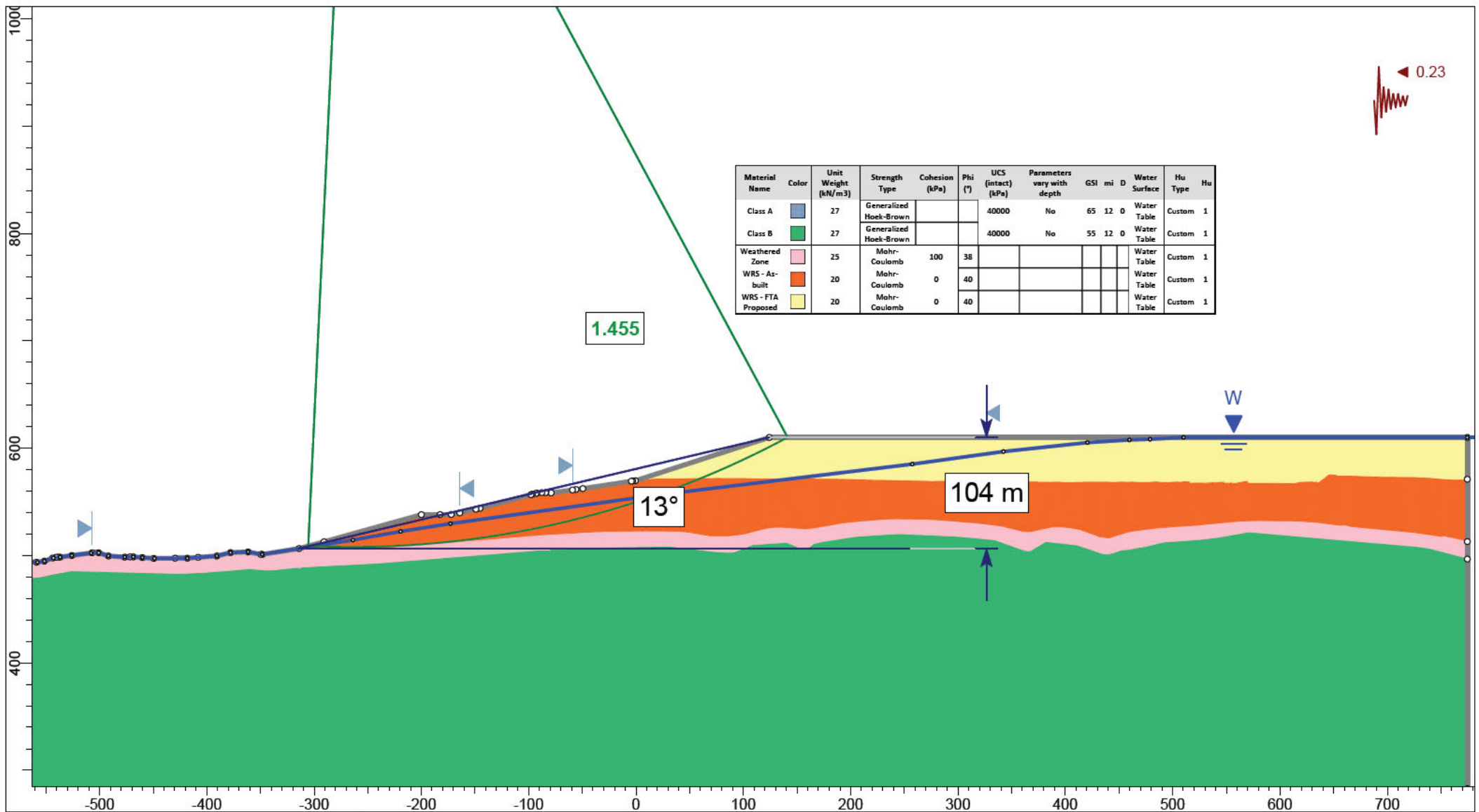
Material Name	Color	Unit Weight (kN/m ³)	Strength Type	Cohesion (kPa)	Phi (°)	UCS (intact) (kPa)	Parameters vary with depth	GSI	mi	D	Water Surface	Hu Type	Hu
Class A		27	Generalized Hoek-Brown			40000	No	65	12	0	Water Table	Custom	1
Class B		27	Generalized Hoek-Brown			40000	No	55	12	0	Water Table	Custom	1
Weathered Zone		25	Mohr-Coulomb	100	38						Water Table	Custom	1
WRS - As-built		20	Mohr-Coulomb	0	40						Water Table	Custom	1
WRS - FTA Proposed		20	Mohr-Coulomb	0	40						Water Table	Custom	1



Client:	OceanaGold Corporation		
Project:	Macraes Phase 4 - FTAA		
Section:	FWR_WRS_Section_1 - No Soil & Partially Saturated		
Case:	Case 2 - OBE, Global, Circular		
Date:	24/03/2026	GLE / Morgenstern-Price	



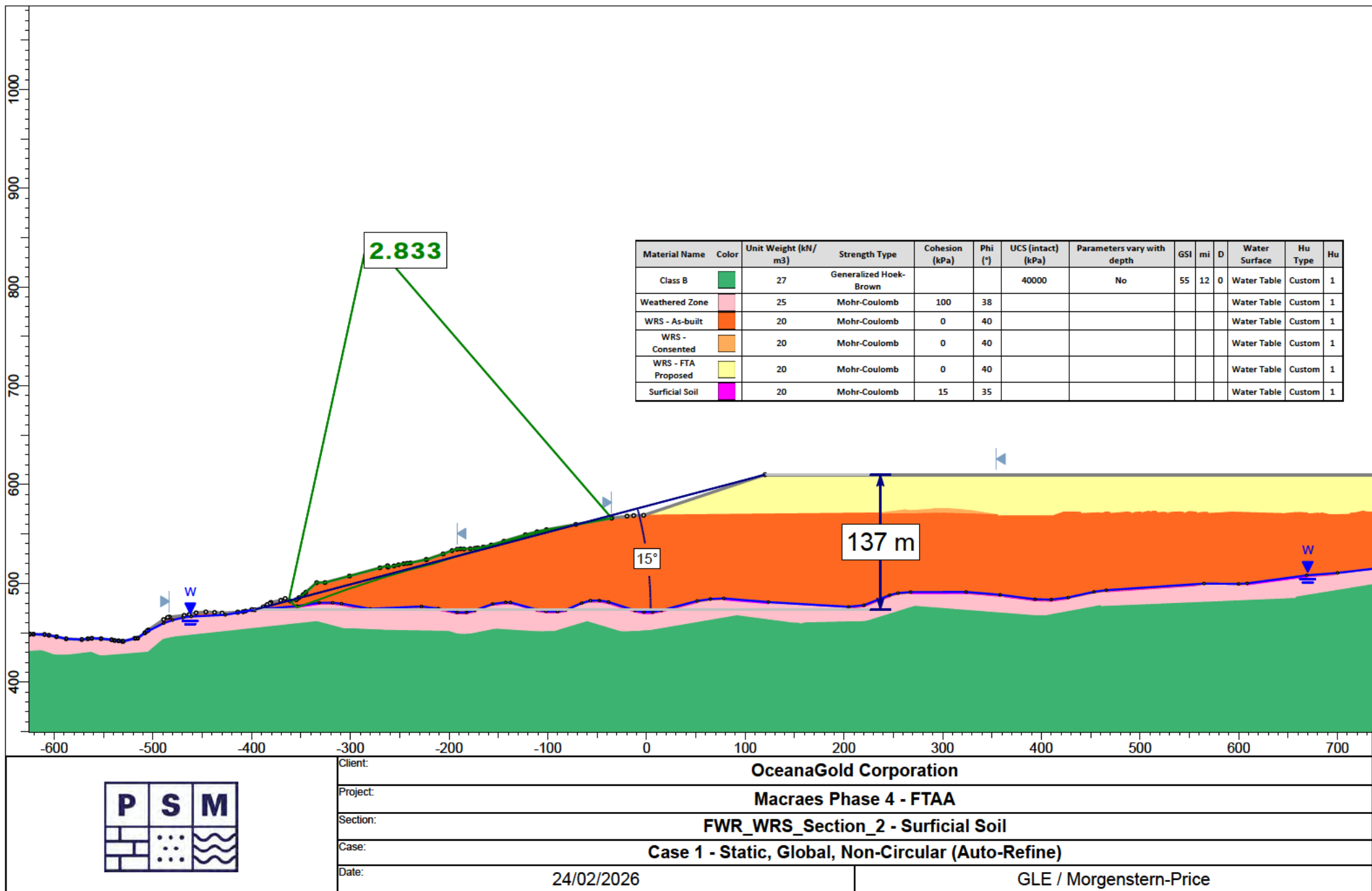
Client:	OceanaGold Corporation	
Project:	Macraes Phase 4 - FTAA	
Section:	FWR_WRS_Section_1 - No Soil & Partially Saturated	
Case:	Case 3 - MDE, Global, Non-Circular (Auto-Refine)	
Date:	24/03/2026	GLE / Morgenstern-Price

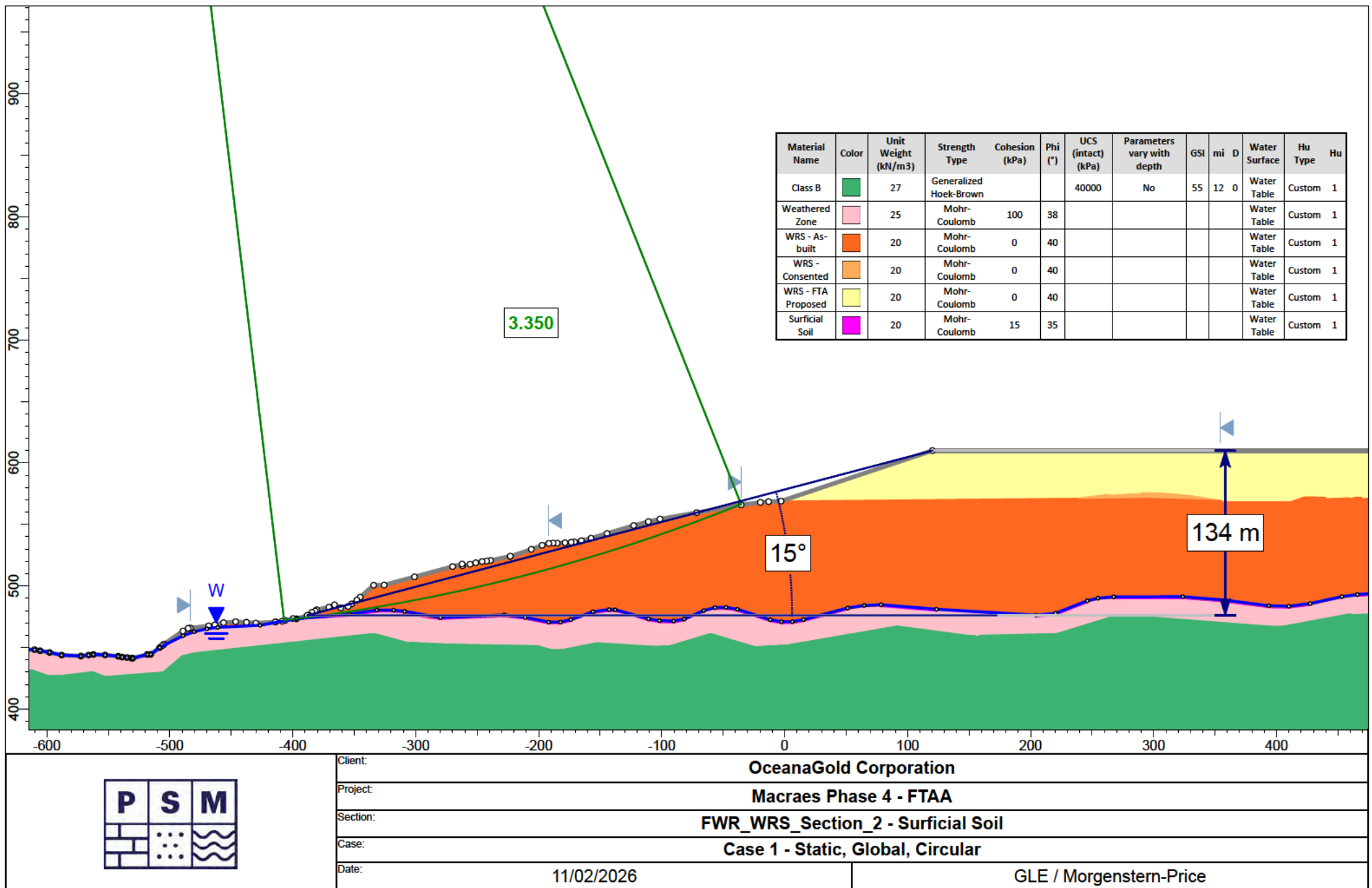


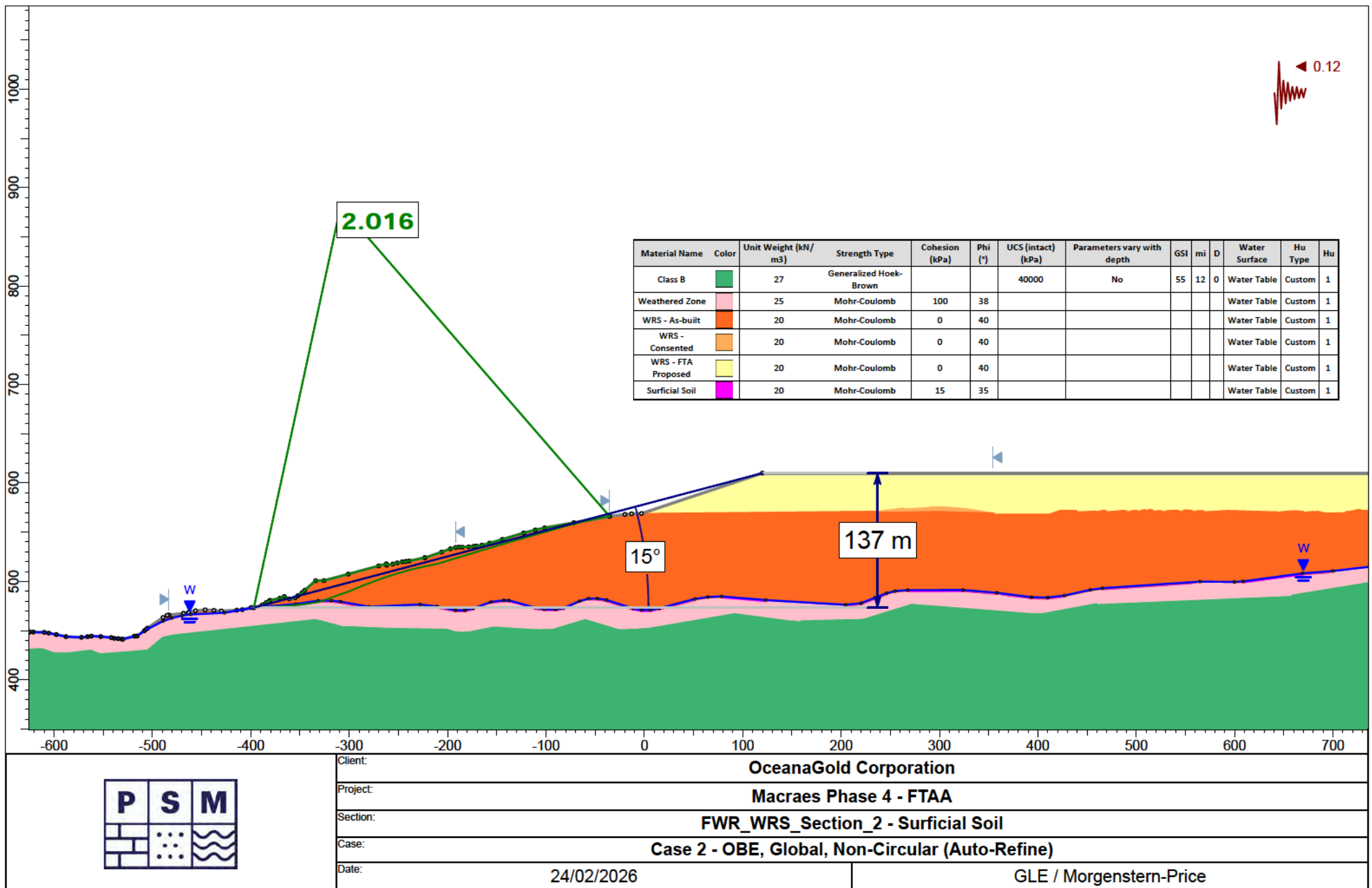
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Class A		27	Generalized Hoek-Brown			40000	No	65	12	0	Water Table	Custom	1
Class B		27	Generalized Hoek-Brown			40000	No	55	12	0	Water Table	Custom	1
Weathered Zone		25	Mohr-Coulomb	100	38						Water Table	Custom	1
WRS - As-built		20	Mohr-Coulomb	0	40						Water Table	Custom	1
WRS - FTA Proposed		20	Mohr-Coulomb	0	40						Water Table	Custom	1

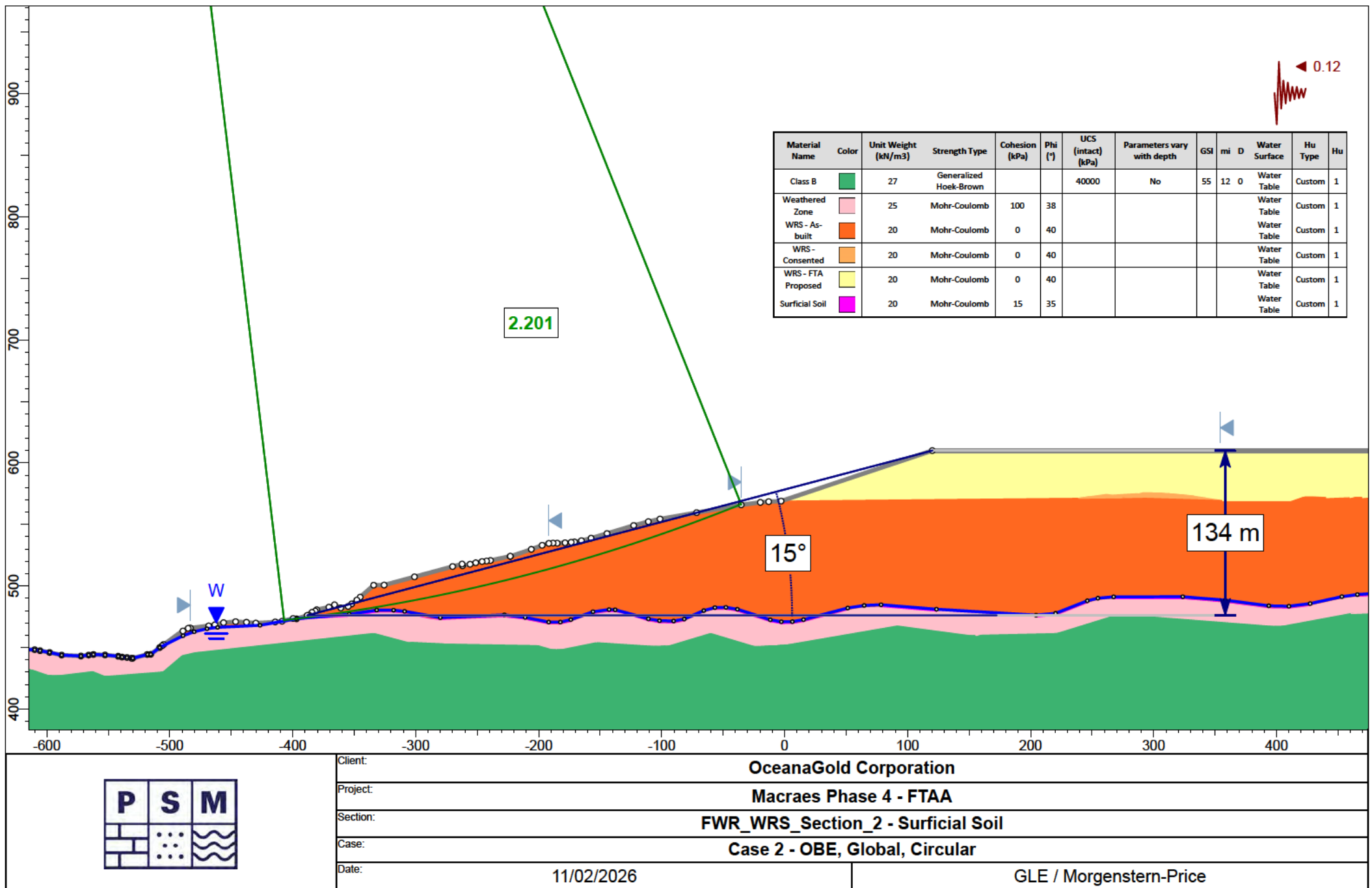


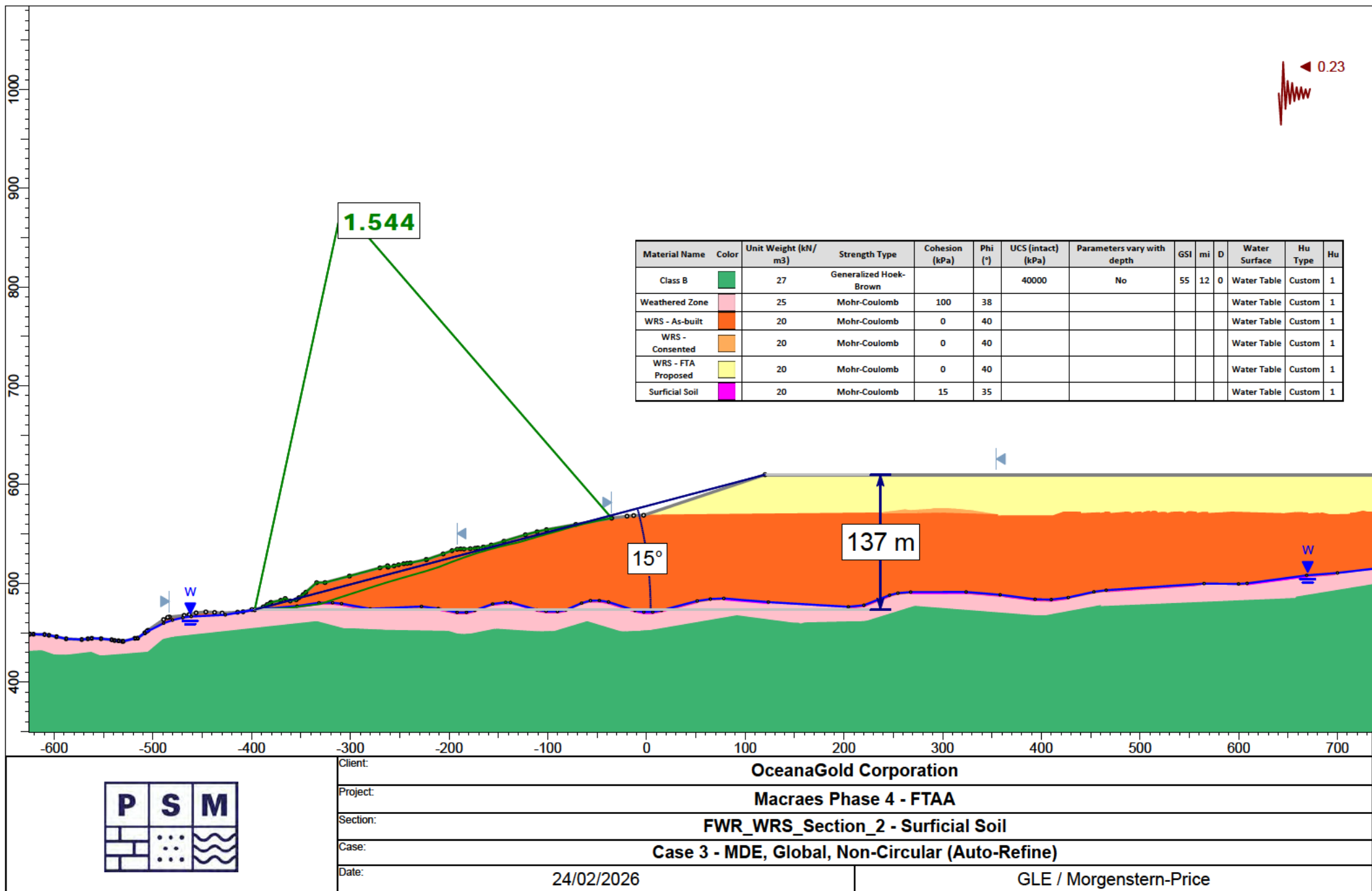
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Project:	Macraes Phase 4 - FTAA		
Section:	FWR_WRS_Section_1 - No Soil & Partially Saturated		
Case:	Case 3 - MDE, Global, Circular		
Date:	24/03/2026	GLE / Morgenstern-Price	

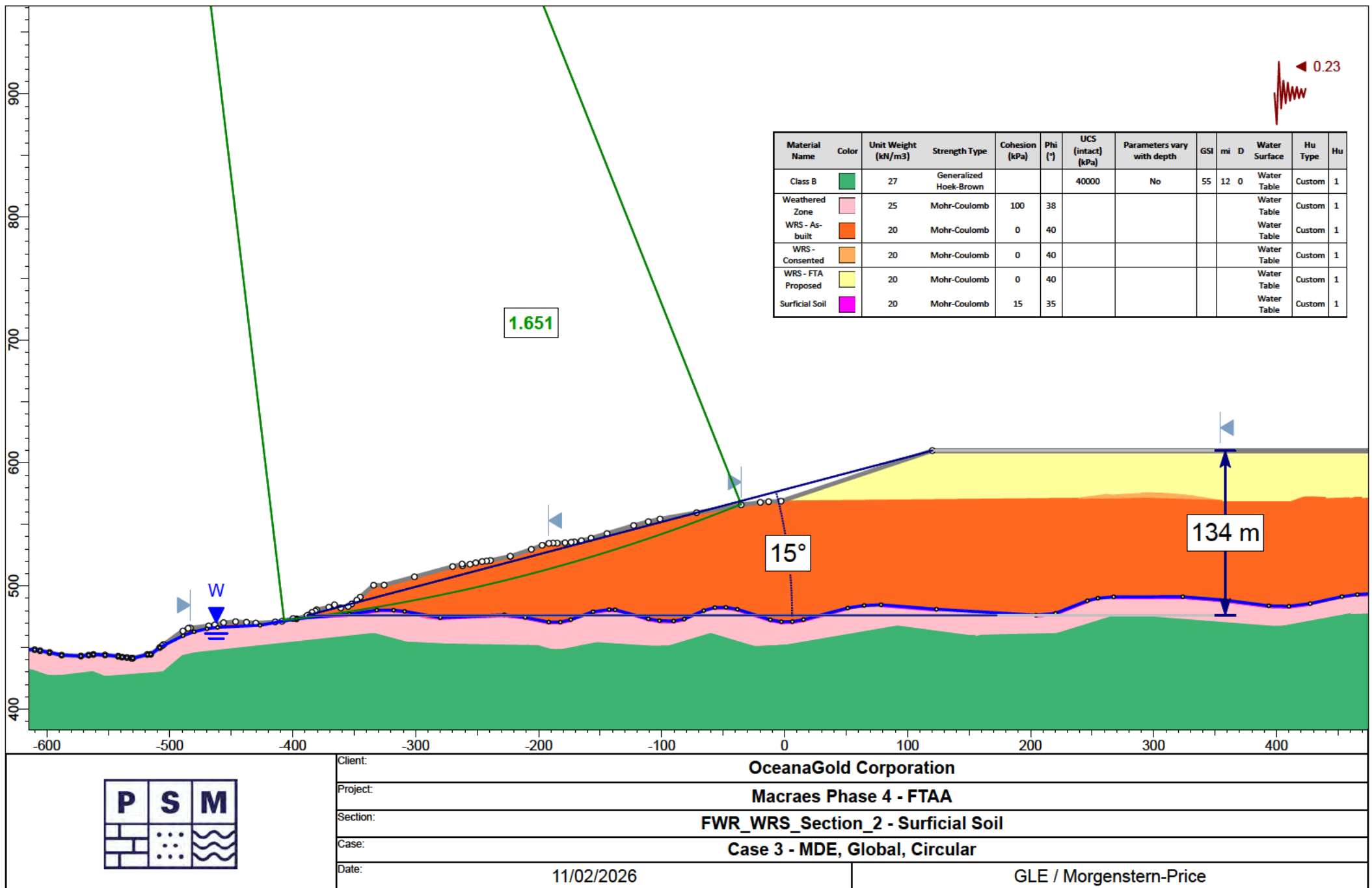


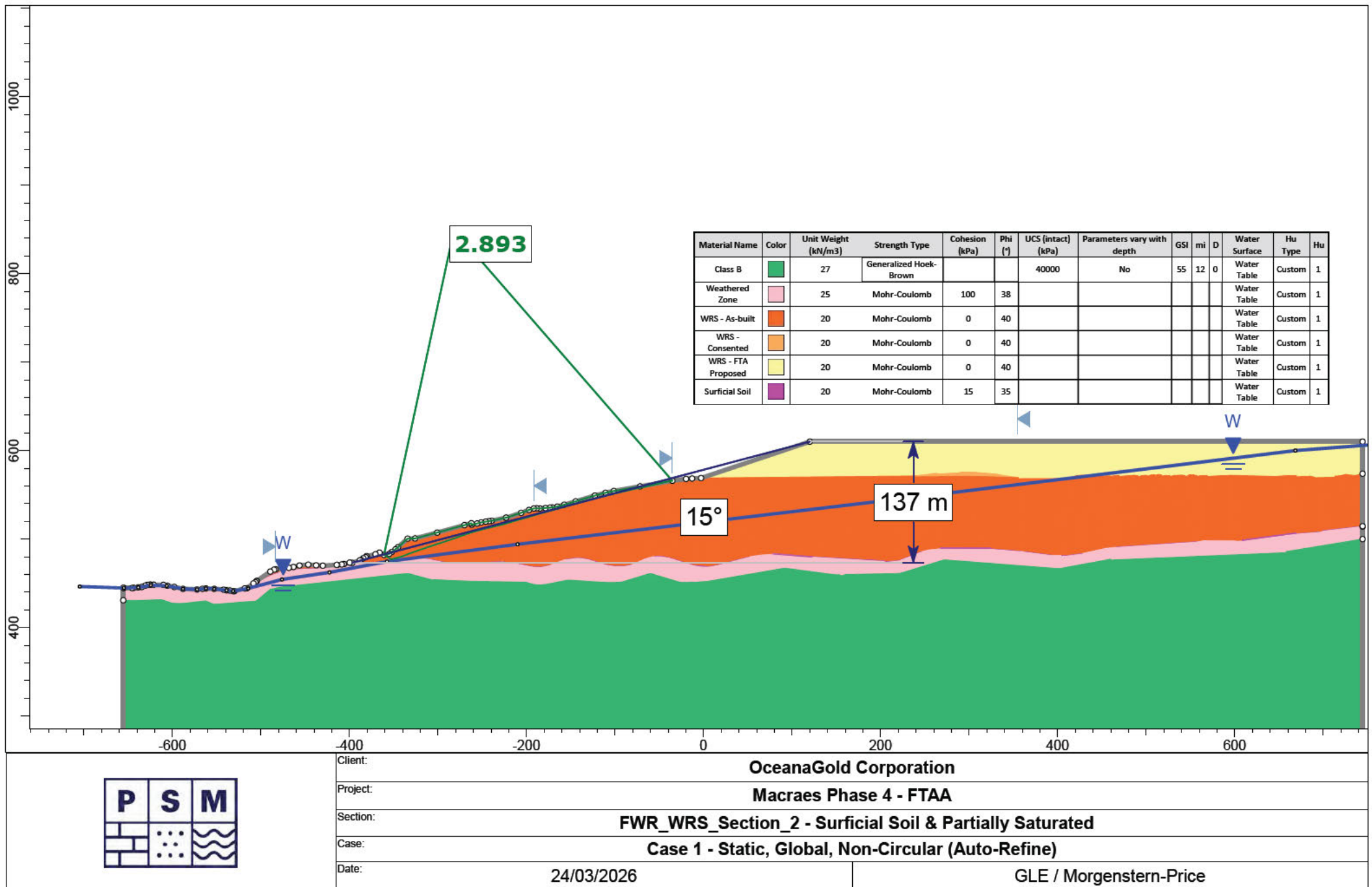


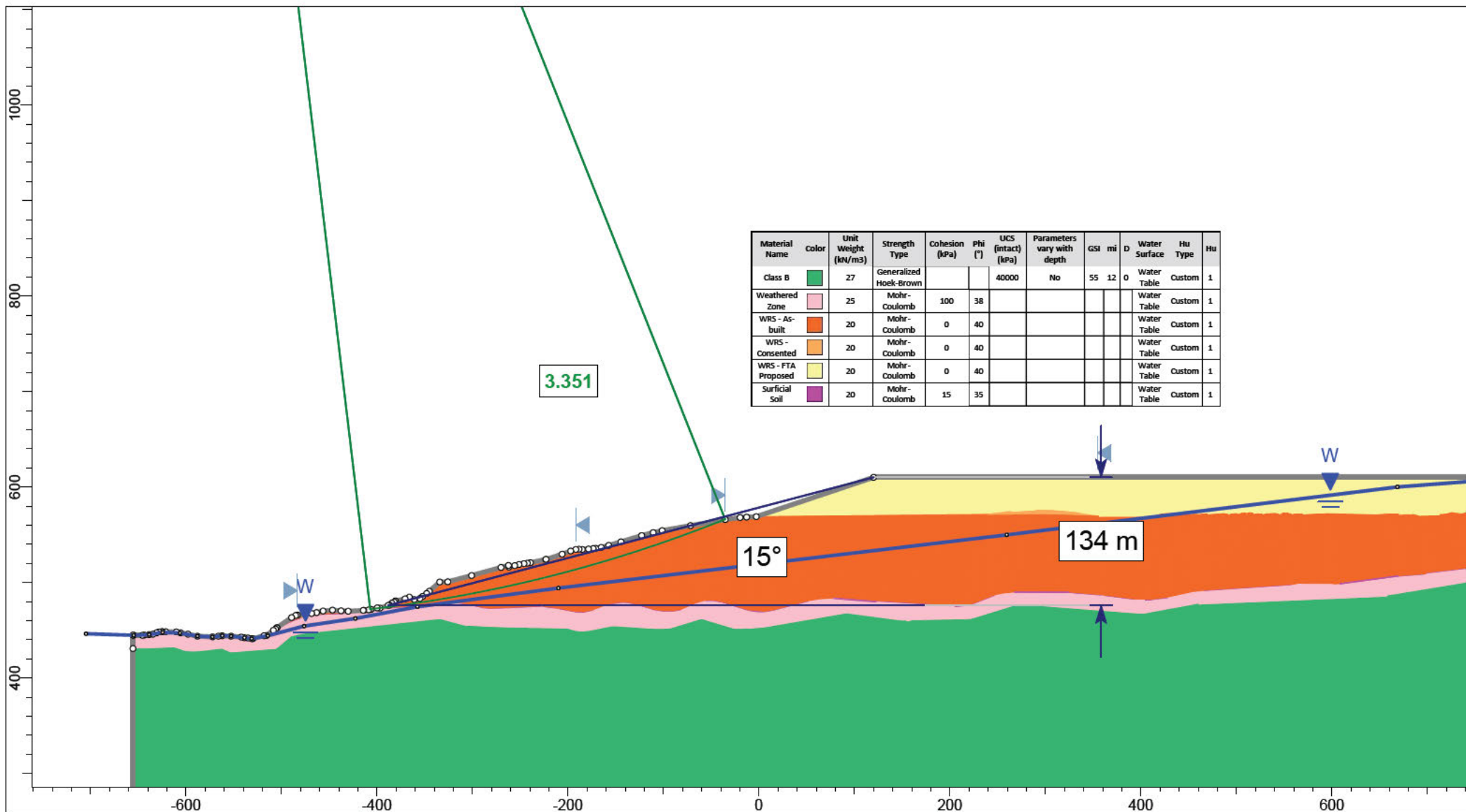




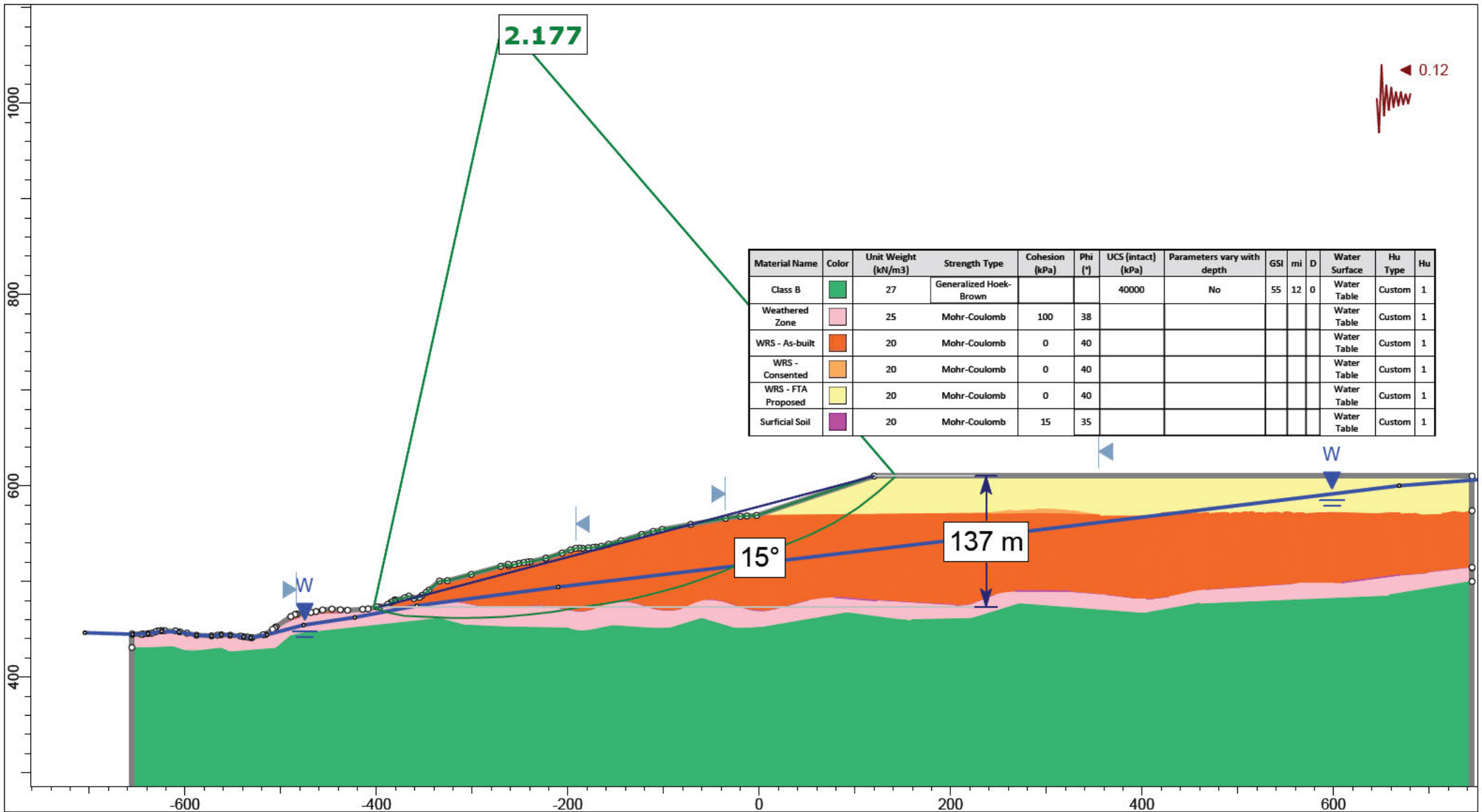




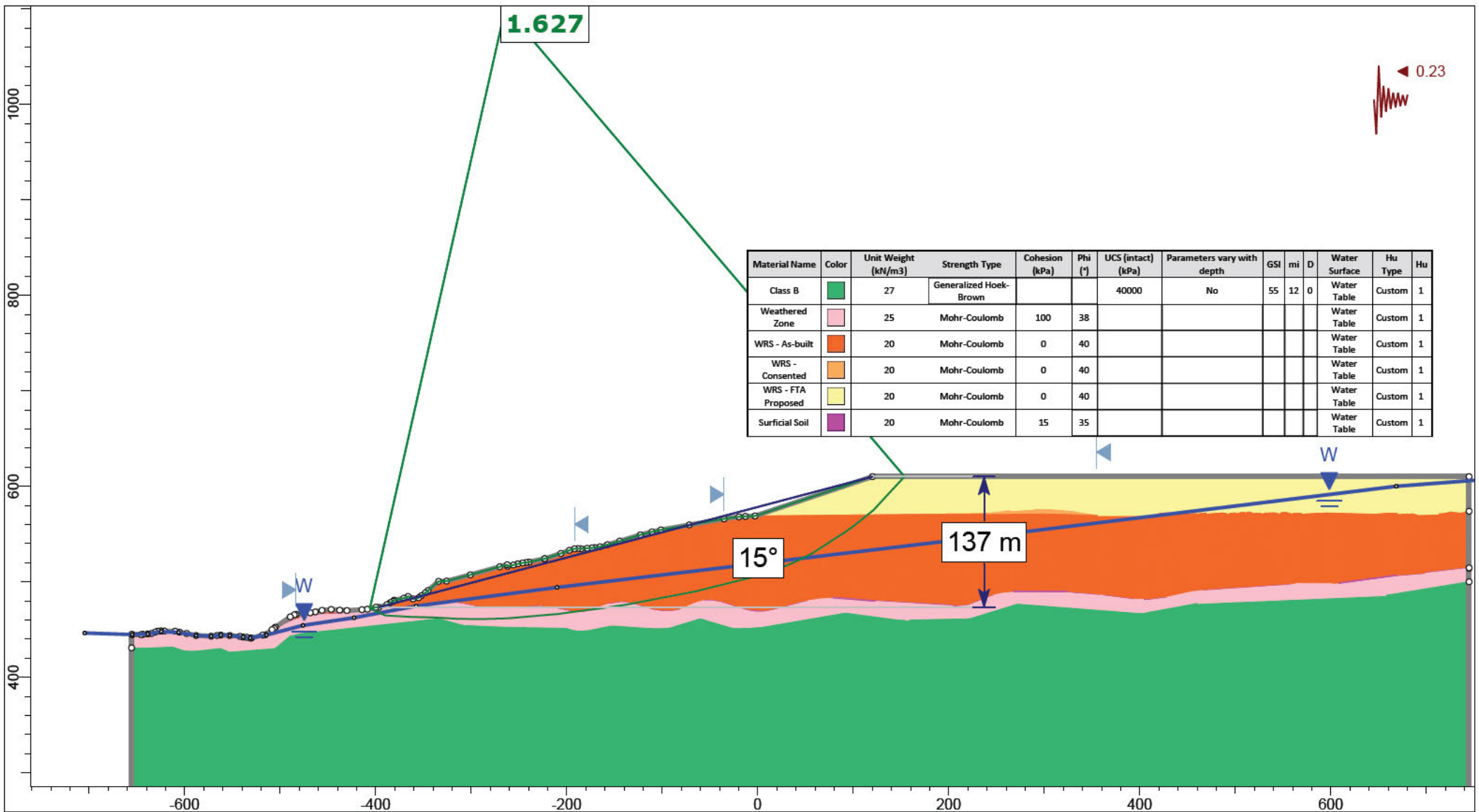




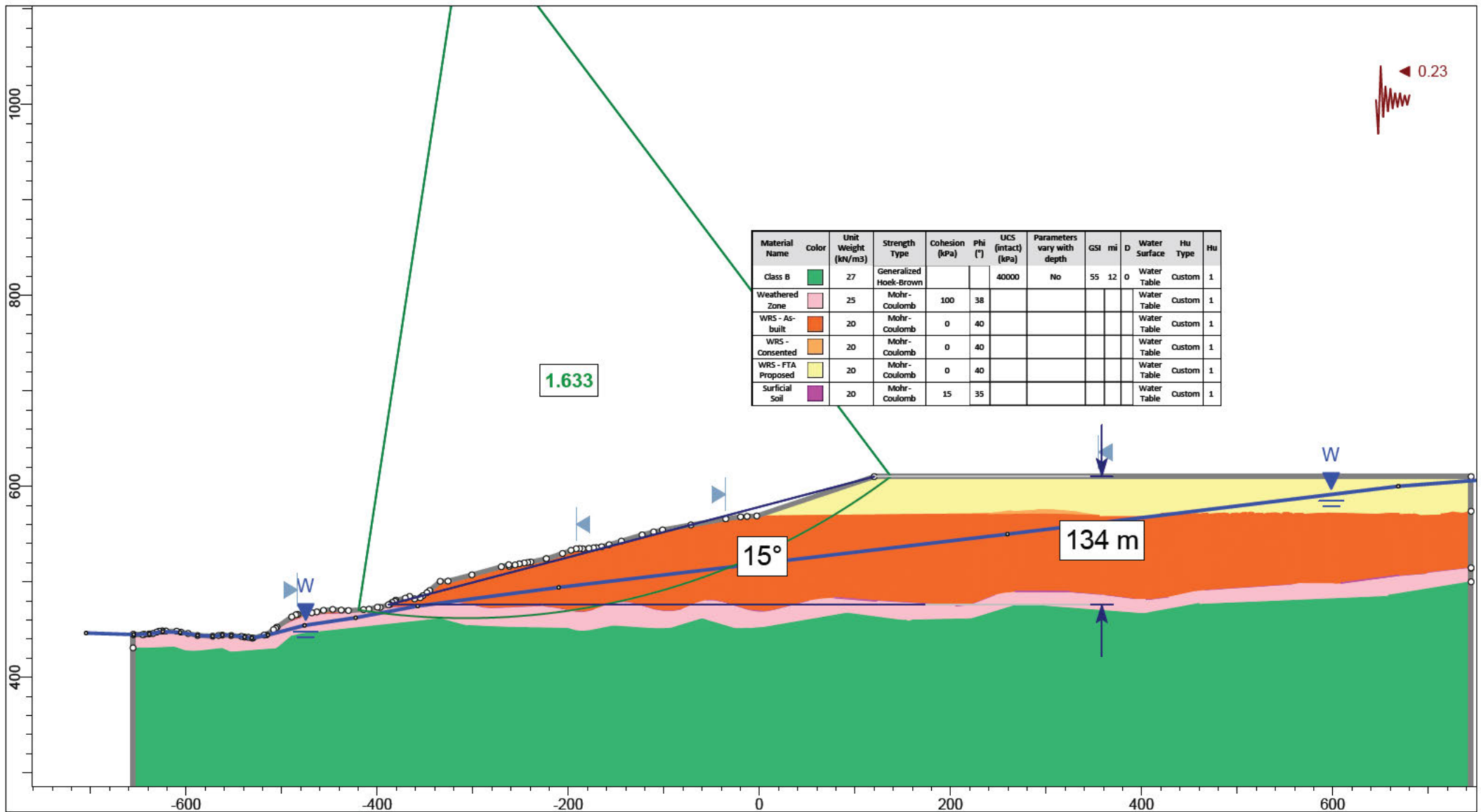
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Project:	Macraes Phase 4 - FTAA	
Section:	FWR_WRS_Section_2 - Surficial Soil & Partially Saturated	
Case:	Case 1 - Static, Global, Circular	
Date:	24/03/2026	GLE / Morgenstern-Price



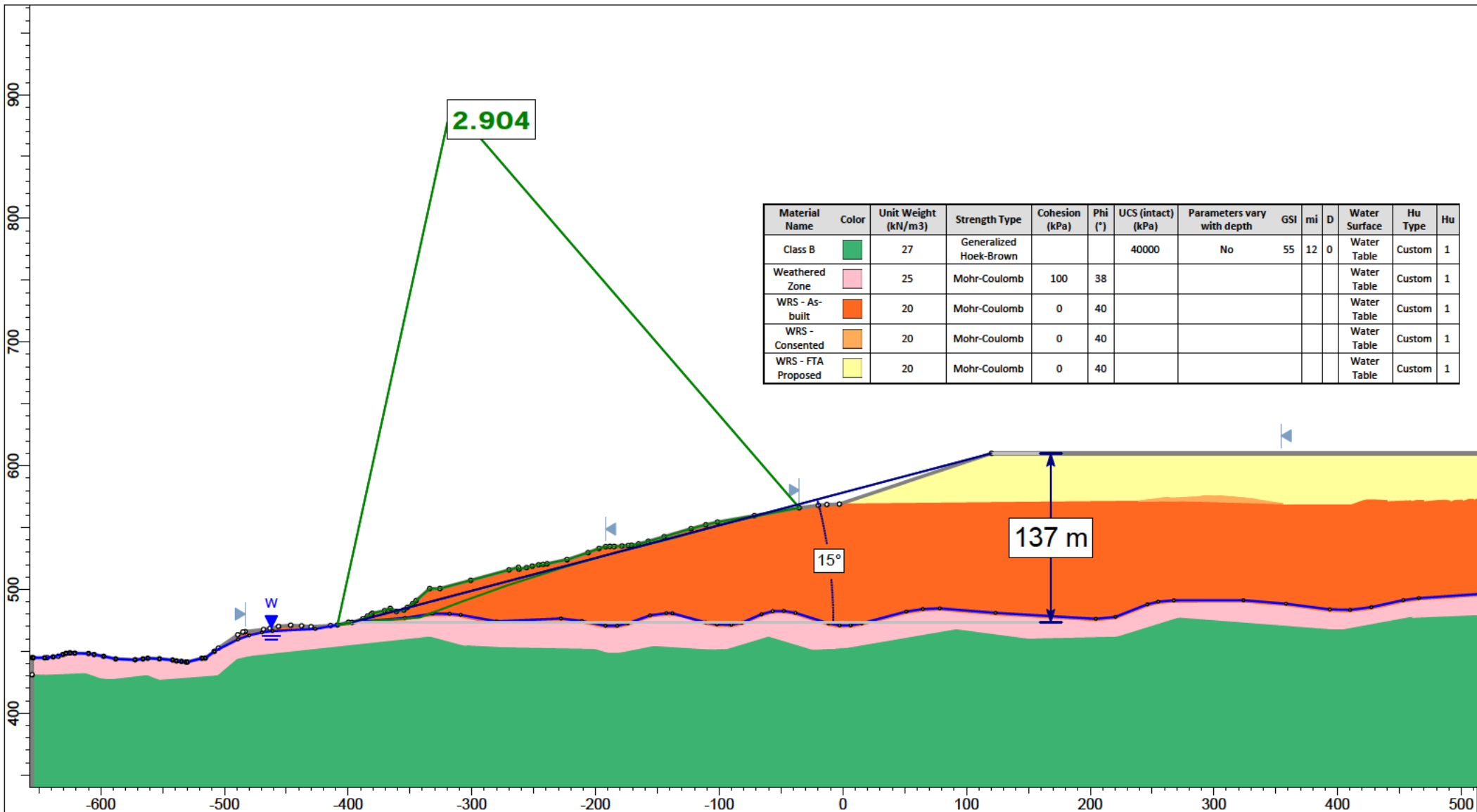
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Project:	Macraes Phase 4 - FTAA	
Section:	FWR_WRS_Section_2 - Surficial Soil & Partially Saturated	
Case:	Case 2 - OBE, Global, Non-Circular (Auto-Refine)	
Date:	24/03/2026	GLE / Morgenstern-Price



Client:	OceanaGold Corporation	
Project:	Macraes Phase 4 - FTAA	
Section:	FWR_WRS_Section_2 - Surficial Soil & Partially Saturated	
Case:	Case 3 - MDE, Global, Non-Circular (Auto-Refine)	
Date:	24/03/2026	GLE / Morgenstern-Price



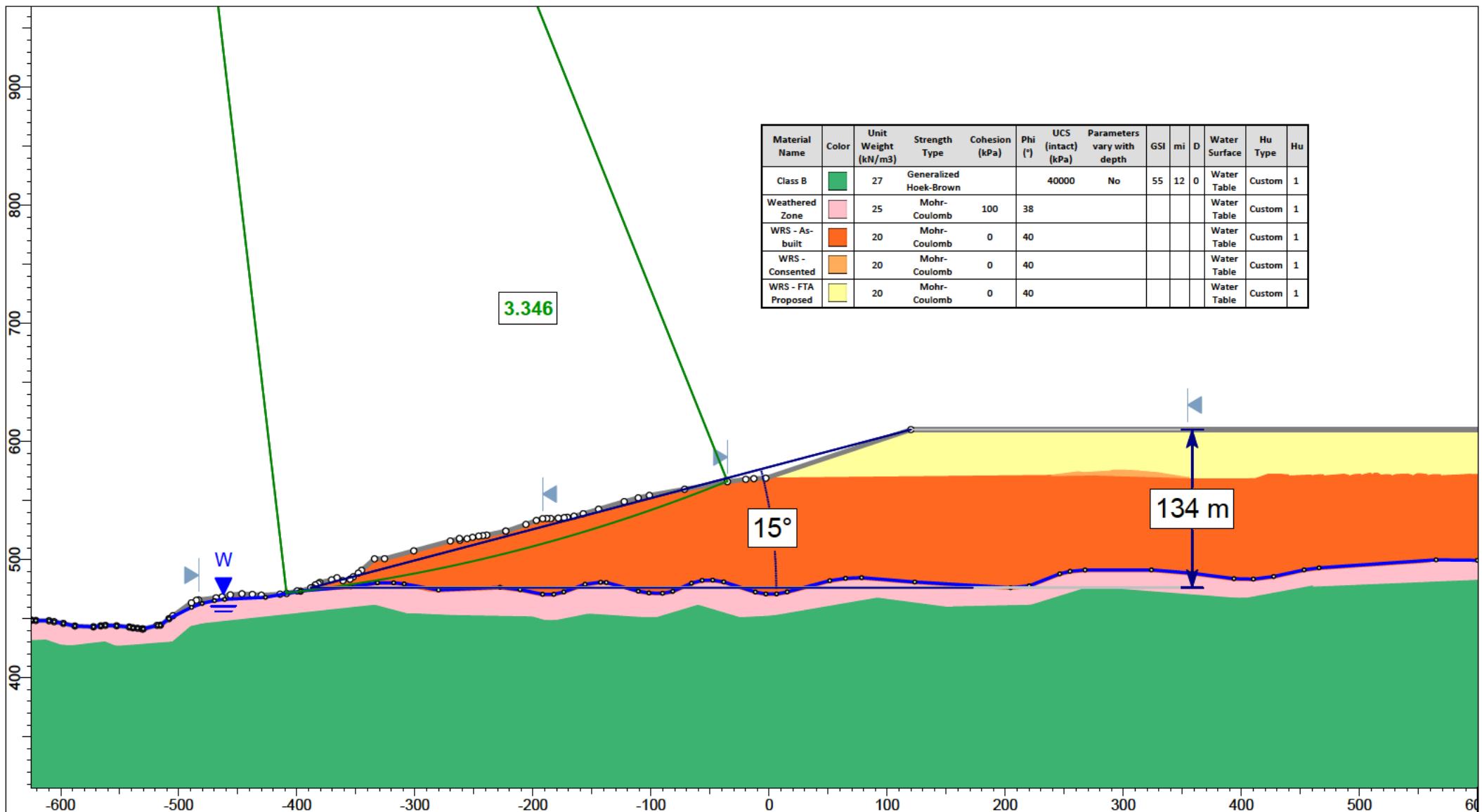
Client:	OceanaGold Corporation	
Project:	Macraes Phase 4 - FTAA	
Section:	FWR_WRS_Section_2 - Surficial Soil & Partially Saturated	
Case:	Case 3 - MDE, Global, Circular	
Date:	24/03/2026	GLE / Morgenstern-Price



Material Name	Color	Unit Weight (kN/m ³)	Strength Type	Cohesion (kPa)	Phi (°)	UCS (intact) (kPa)	Parameters vary with depth	GSI	mi	D	Water Surface	Hu Type	Hu
Class B		27	Generalized Hoek-Brown			40000	No	55	12	0	Water Table	Custom	1
Weathered Zone		25	Mohr-Coulomb	100	38						Water Table	Custom	1
WRS - As-built		20	Mohr-Coulomb	0	40						Water Table	Custom	1
WRS - Consented		20	Mohr-Coulomb	0	40						Water Table	Custom	1
WRS - FTA Proposed		20	Mohr-Coulomb	0	40						Water Table	Custom	1



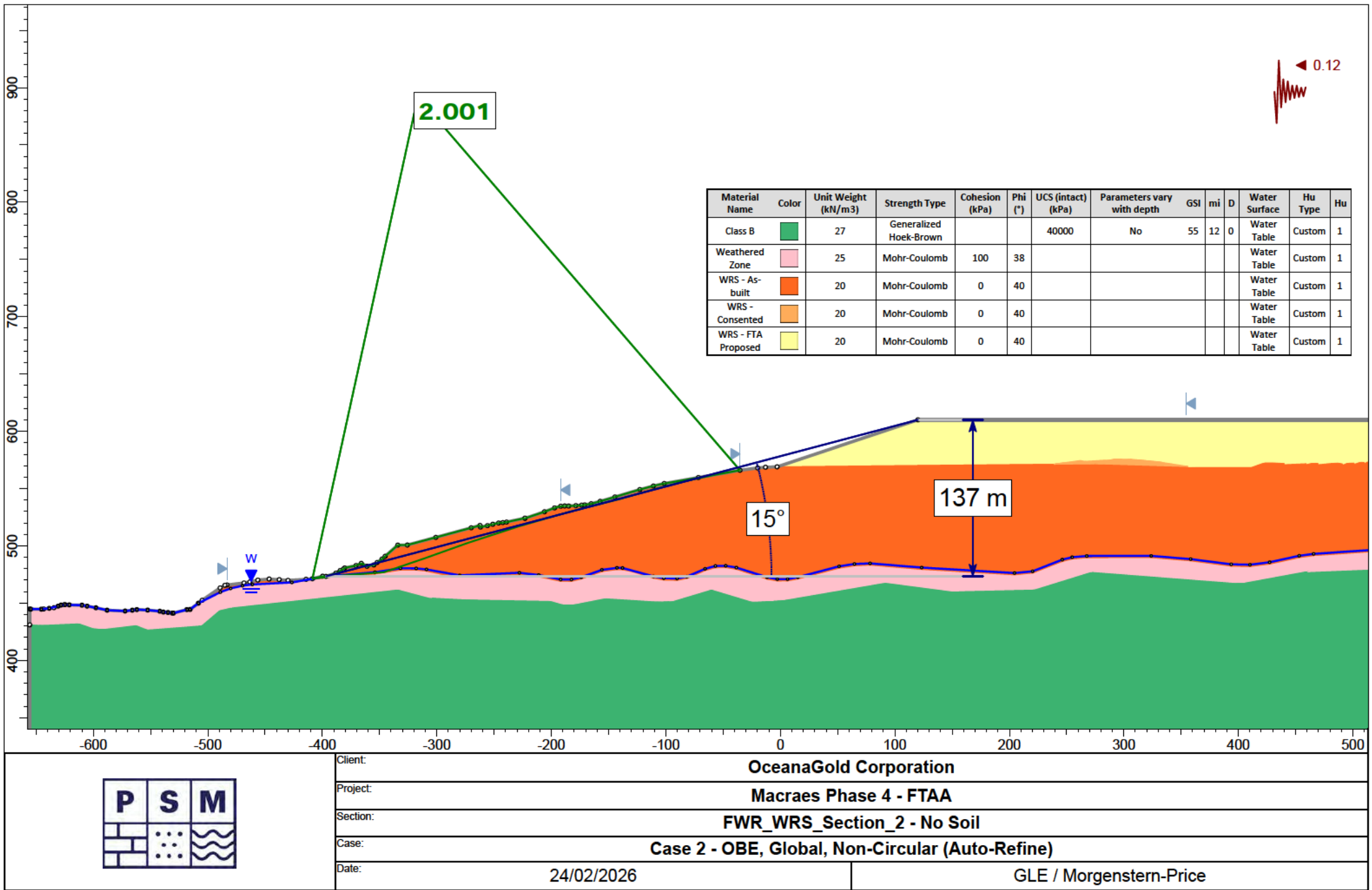
Client:	OceanaGold Corporation		
Project:	Macraes Phase 4 - FTA		
Section:	FWR_WRS_Section_2 - No Soil		
Case:	Case 1 - Static, Global, Non-Circular (Auto-Refine)		
Date:	24/02/2026	GLE / Morgenstern-Price	



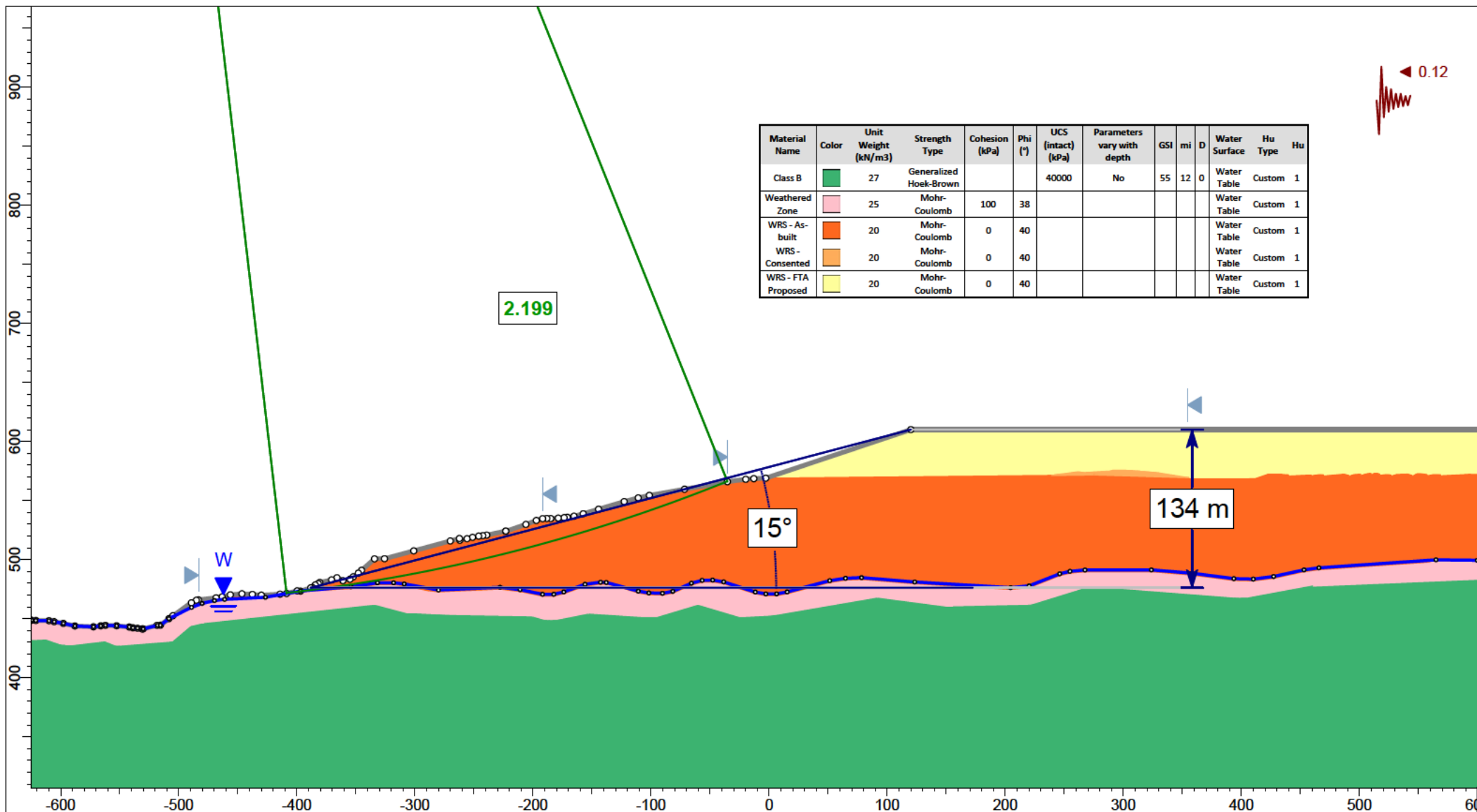
Material Name	Color	Unit Weight (kN/m ³)	Strength Type	Cohesion (kPa)	Phi (°)	UCS (intact) (kPa)	Parameters vary with depth	GSI	mi	D	Water Surface	Hu Type	Hu
Class B		27	Generalized Hoek-Brown			40000	No	55	12	0	Water Table	Custom	1
Weathered Zone		25	Mohr-Coulomb	100	38						Water Table	Custom	1
WRS - As-built		20	Mohr-Coulomb	0	40						Water Table	Custom	1
WRS - Consented		20	Mohr-Coulomb	0	40						Water Table	Custom	1
WRS - FTA Proposed		20	Mohr-Coulomb	0	40						Water Table	Custom	1



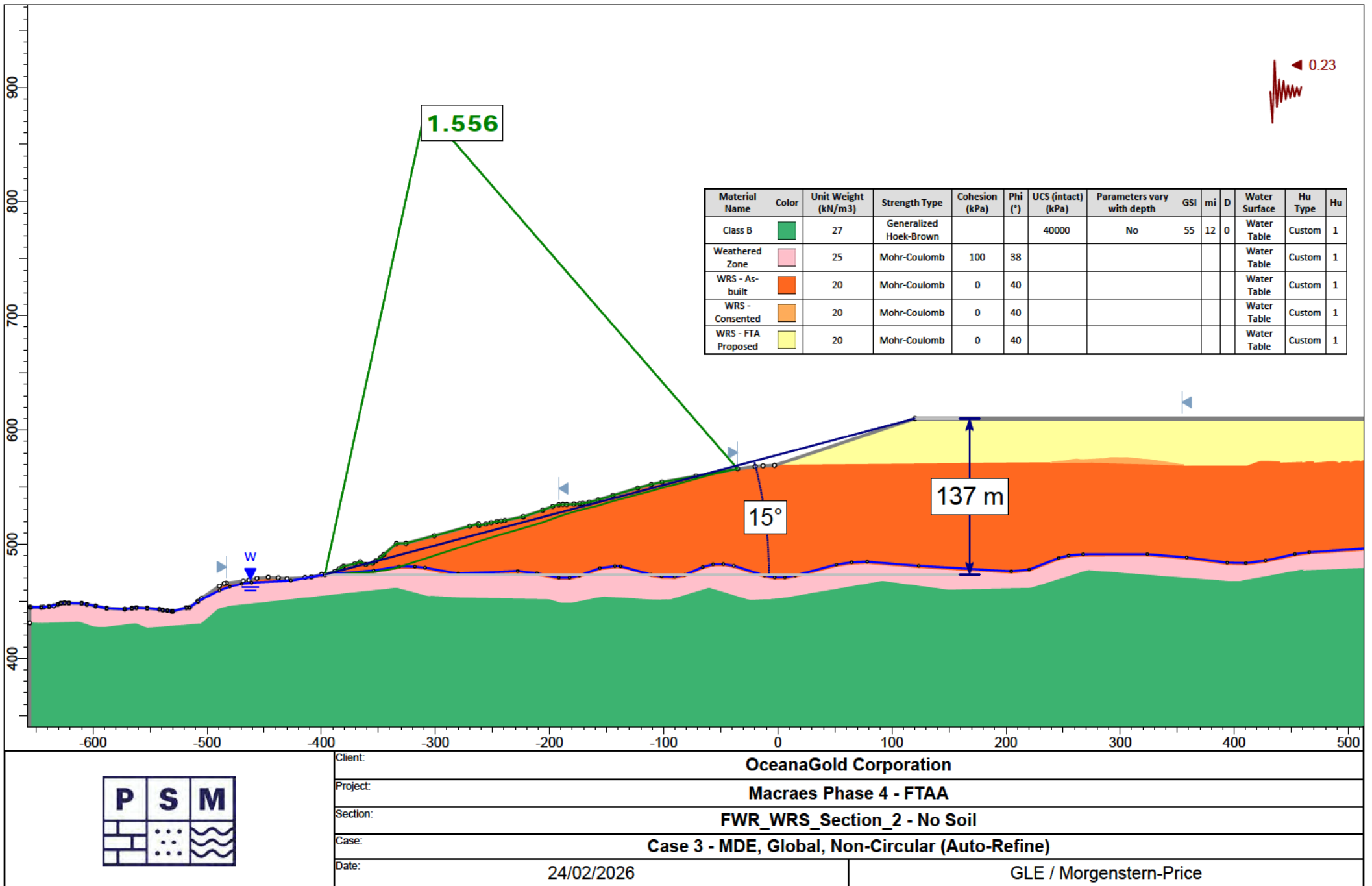
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Project:	Macraes Phase 4 - FTAA		
Section:	FWR_WRS_Section_2 - No Soil		
Case:	Case 1 - Static, Global, Circular		
Date:	11/02/2026	GLE / Morgenstern-Price	

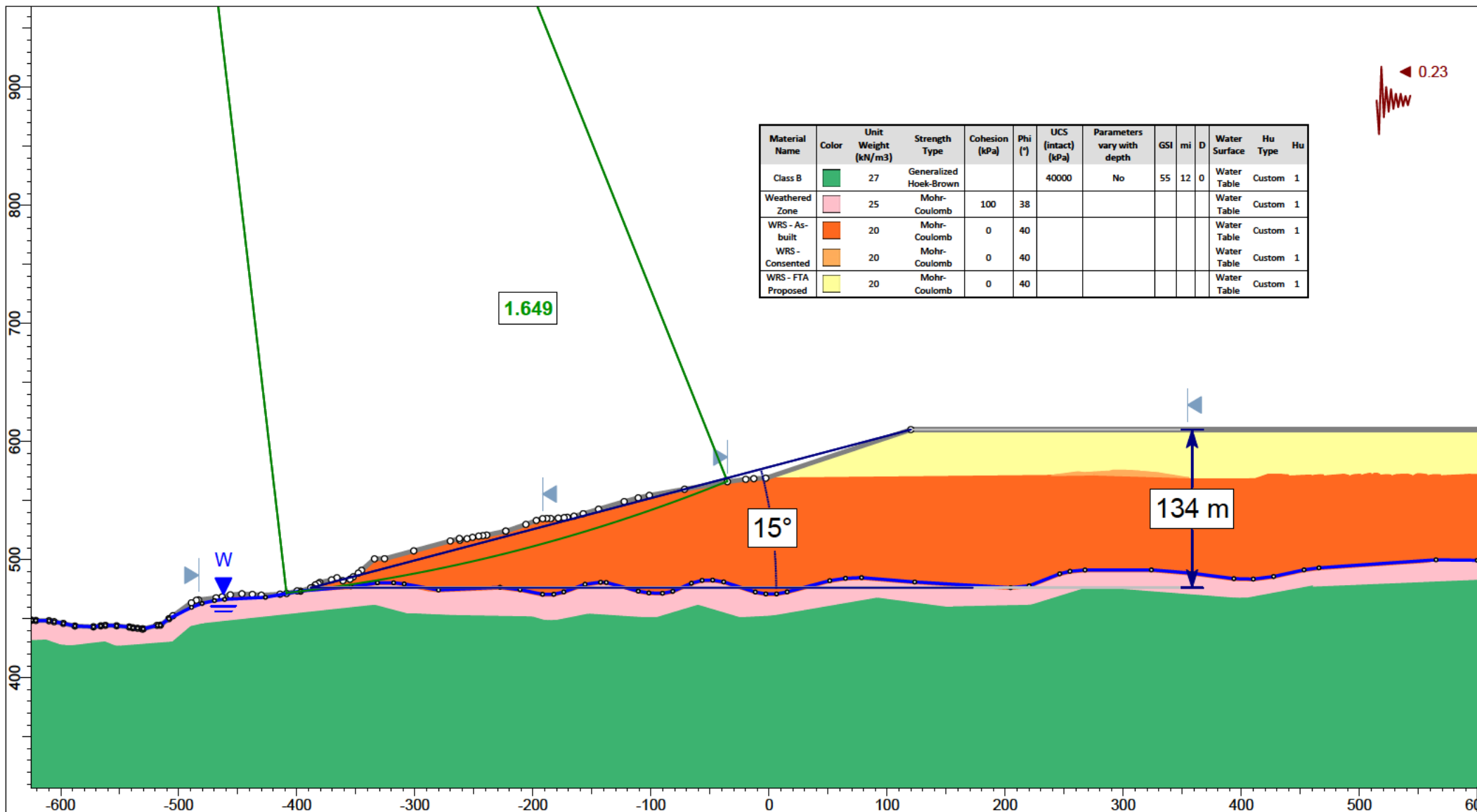


Client:	OceanaGold Corporation		
Project:	Macraes Phase 4 - FTA		
Section:	FWR_WRS_Section_2 - No Soil		
Case:	Case 2 - OBE, Global, Non-Circular (Auto-Refine)		
Date:	24/02/2026	GLE / Morgenstern-Price	



Client:	OceanaGold Corporation	
Project:	Macraes Phase 4 - FTAA	
Section:	FWR_WRS_Section_2 - No Soil	
Case:	Case 2 - OBE, Global, Circular	
Date:	11/02/2026	GLE / Morgenstern-Price

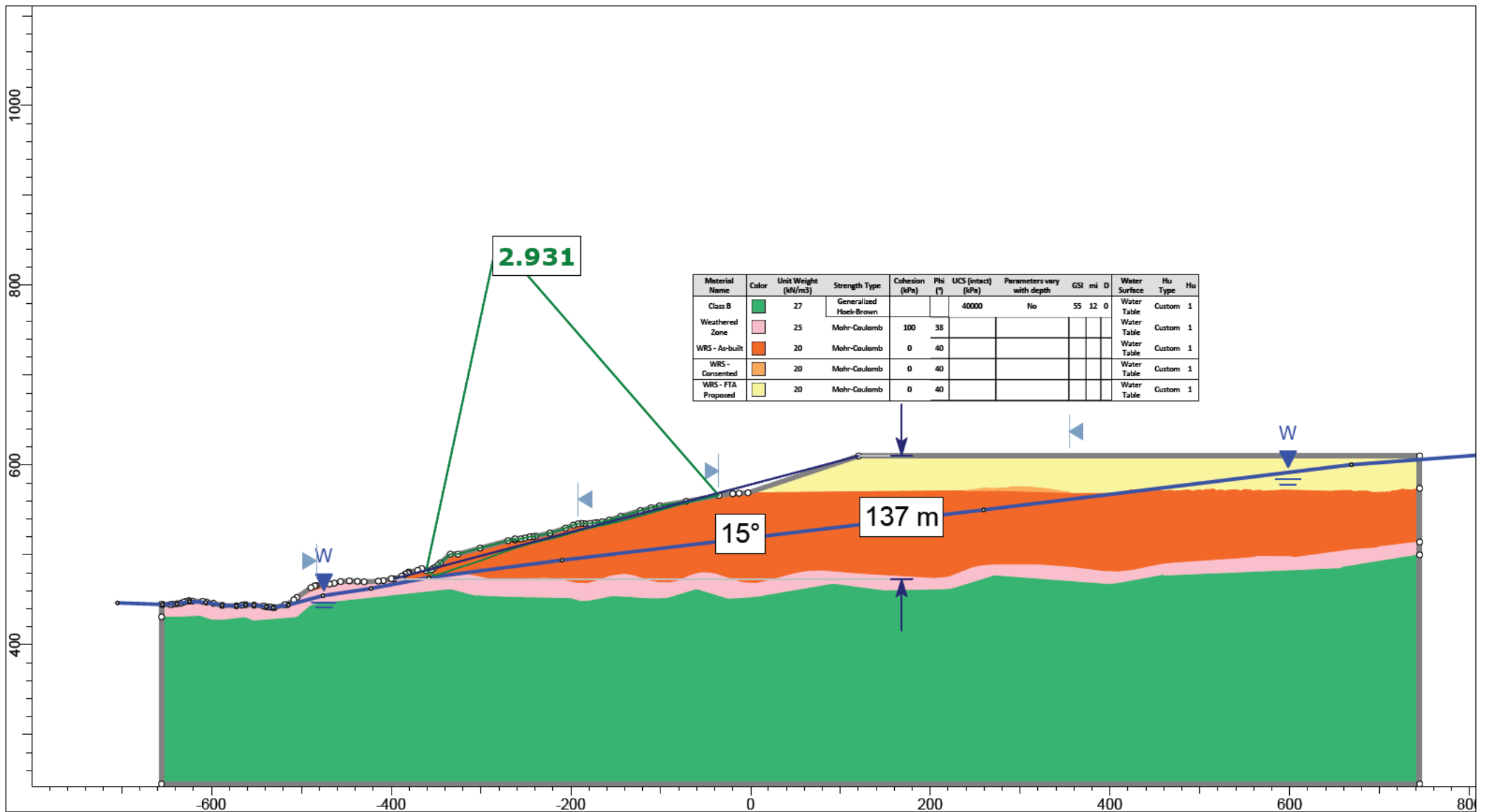




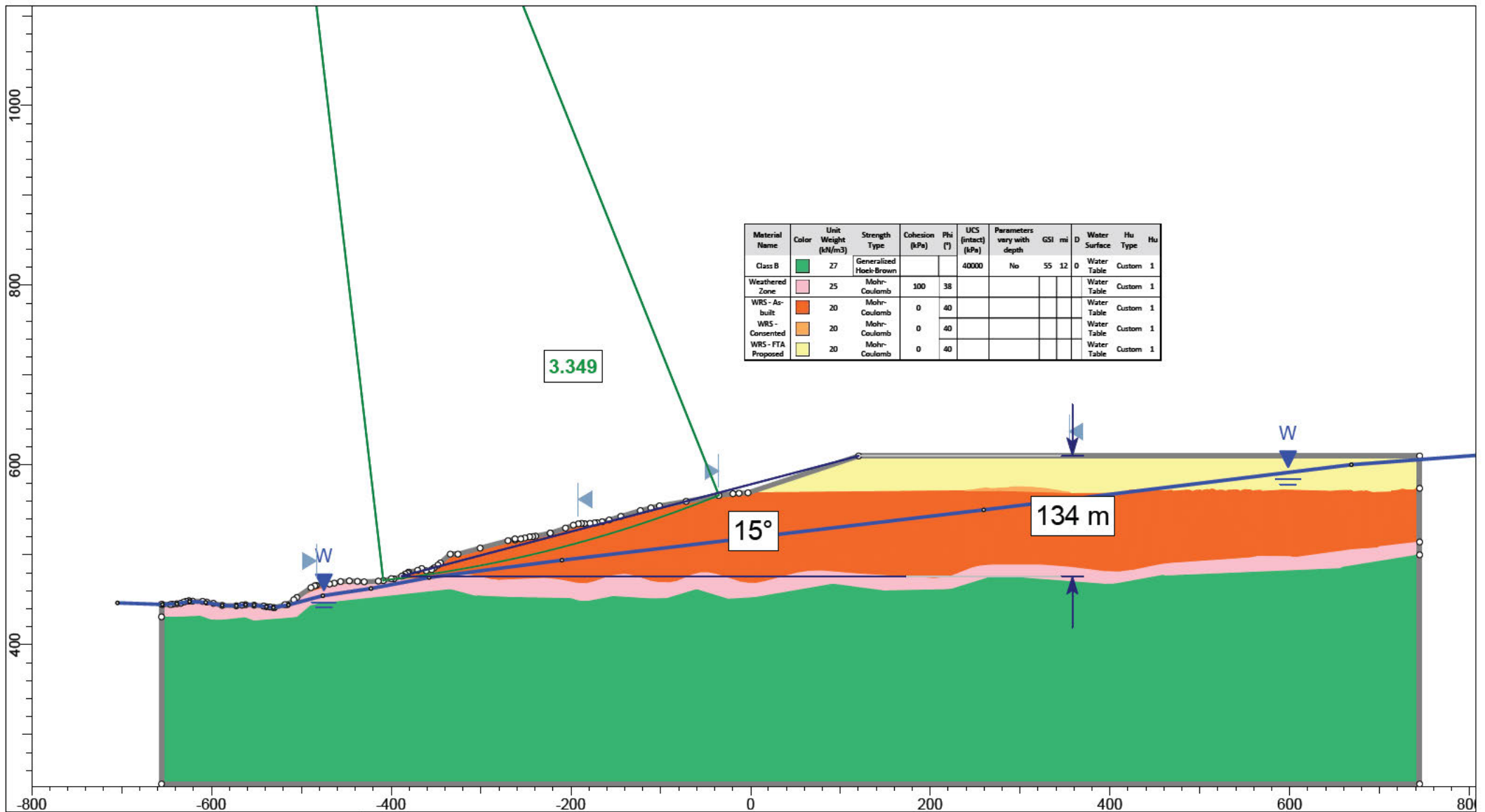
Material Name	Color	Unit Weight (kN/m ³)	Strength Type	Cohesion (kPa)	Phi (°)	UCS (intact) (kPa)	Parameters vary with depth	GSI	mi	D	Water Surface	Hu Type	Hu
Class B		27	Generalized Hoek-Brown			40000	No	55	12	0	Water Table	Custom	1
Weathered Zone		25	Mohr-Coulomb	100	38						Water Table	Custom	1
WRS - As-built		20	Mohr-Coulomb	0	40						Water Table	Custom	1
WRS - Consented		20	Mohr-Coulomb	0	40						Water Table	Custom	1
WRS - FTA Proposed		20	Mohr-Coulomb	0	40						Water Table	Custom	1



Client:	OceanaGold Corporation		
Project:	Macraes Phase 4 - FTAA		
Section:	FWR_WRS_Section_2 - No Soil		
Case:	Case 3 - MDE, Global, Circular		
Date:	11/02/2026	GLE / Morgenstern-Price	



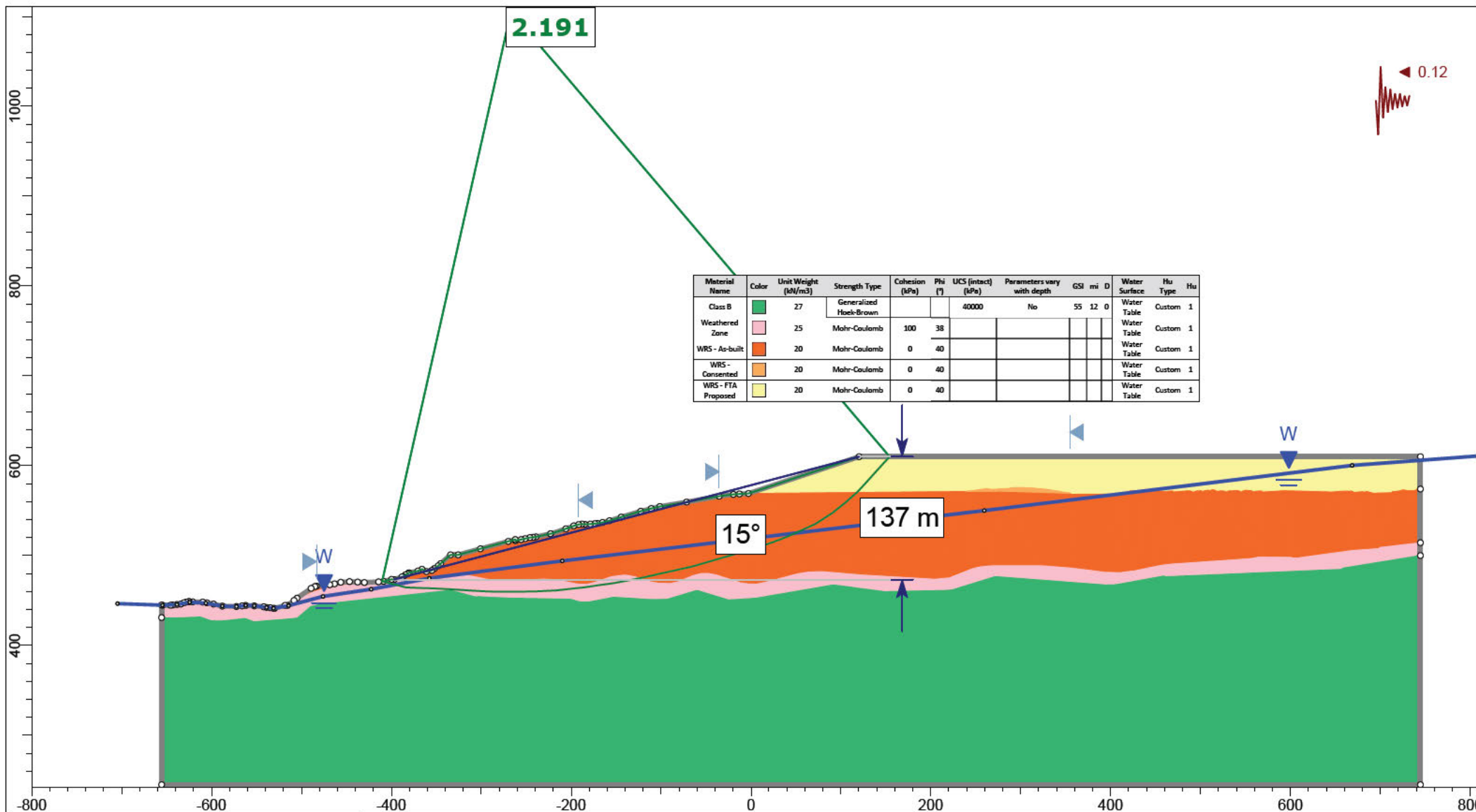
Client:	OceanaGold Corporation	
Project:	Macraes Phase 4 - FTAA	
Section:	FWR_WRS_Section_2 - No Soil & Partially Saturated	
Case:	Case 1 - Static, Global, Non-Circular (Auto-Refine)	
Date:	24/03/2026	GLE / Morgenstern-Price



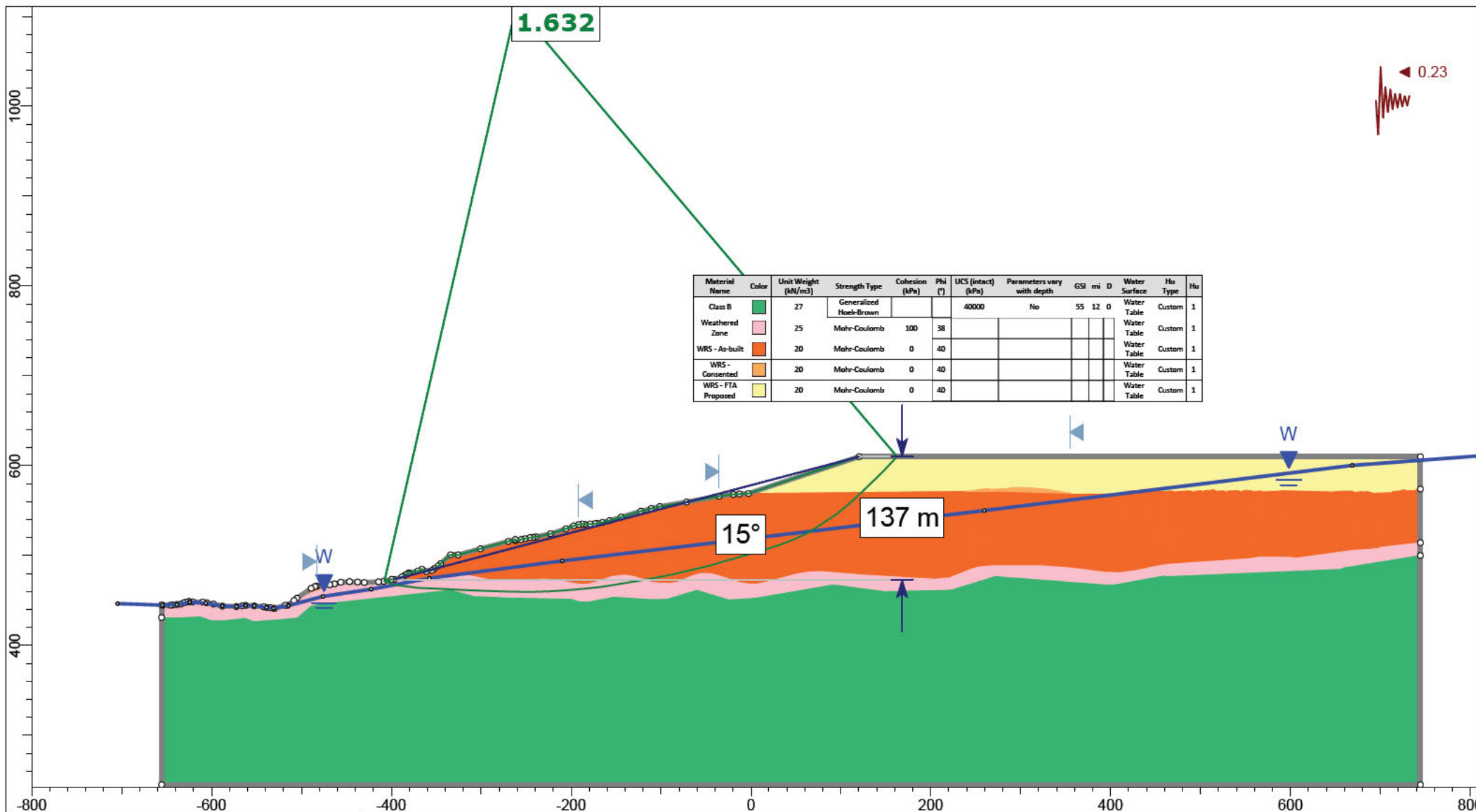
Material Name	Color	Unit Weight (kN/m ³)	Strength Type	Cohesion (kPa)	Phi (°)	UCS (intact) (kPa)	Parameters vary with depth	GSI	mi	D	Water Surface	Hu Type	Hu
Class B	Green	27	Generalized Hoek-Brown			40000	No	55	12	0	Water Table	Custom	1
Weathered Zone	Pink	25	Mohr-Coulomb	100	38						Water Table	Custom	1
WRS - As-built	Orange	20	Mohr-Coulomb	0	40						Water Table	Custom	1
WRS - Consented	Orange	20	Mohr-Coulomb	0	40						Water Table	Custom	1
WRS - FTA Proposed	Yellow	20	Mohr-Coulomb	0	40						Water Table	Custom	1



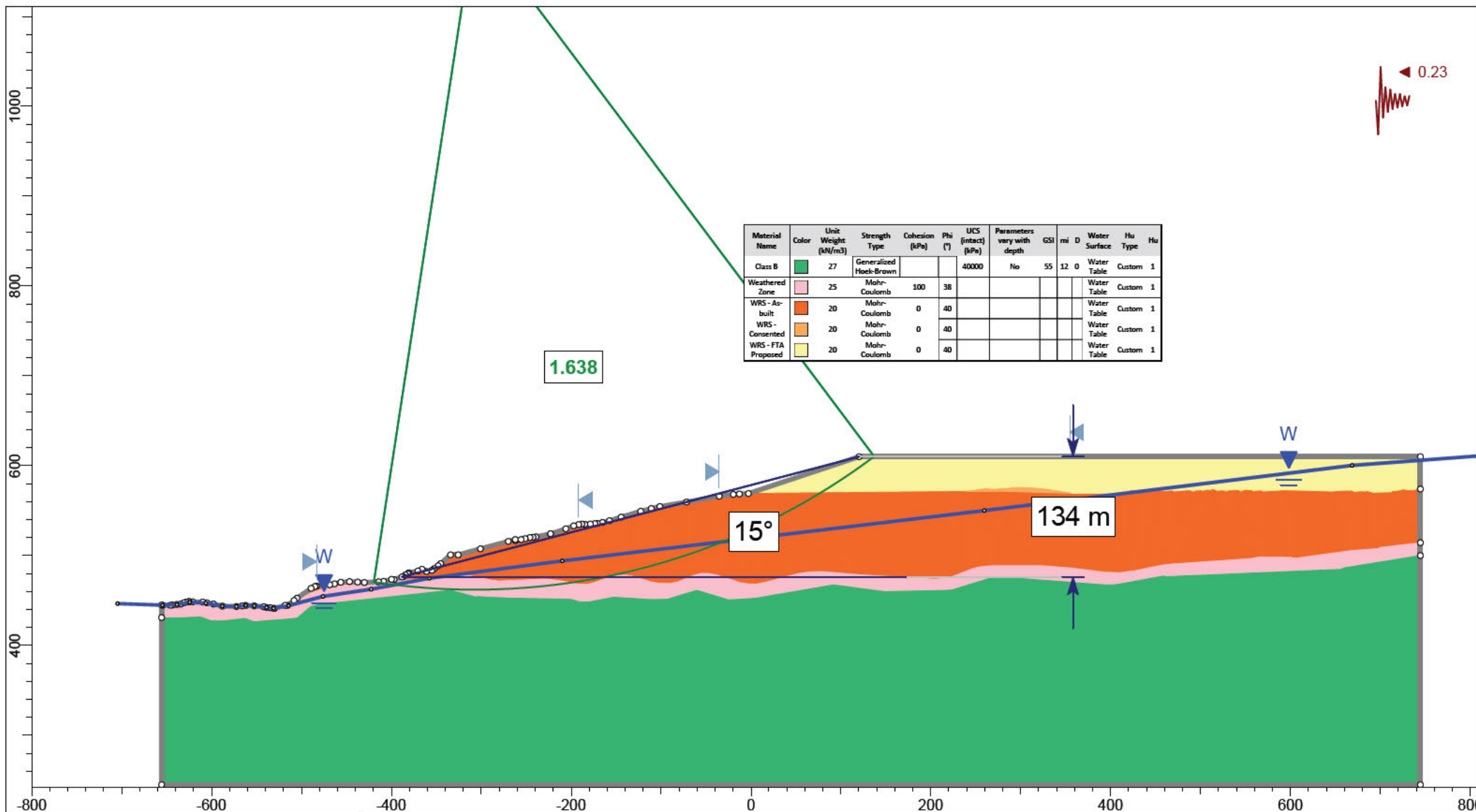
Client:	OceanaGold Corporation		
Project:	Macraes Phase 4 - FTAA		
Section:	FWR_WRS_Section_2 - No Soil & Partially Saturated		
Case:	Case 1 - Static, Global, Circular		
Date:	24/03/2026	GLE / Morgenstern-Price	



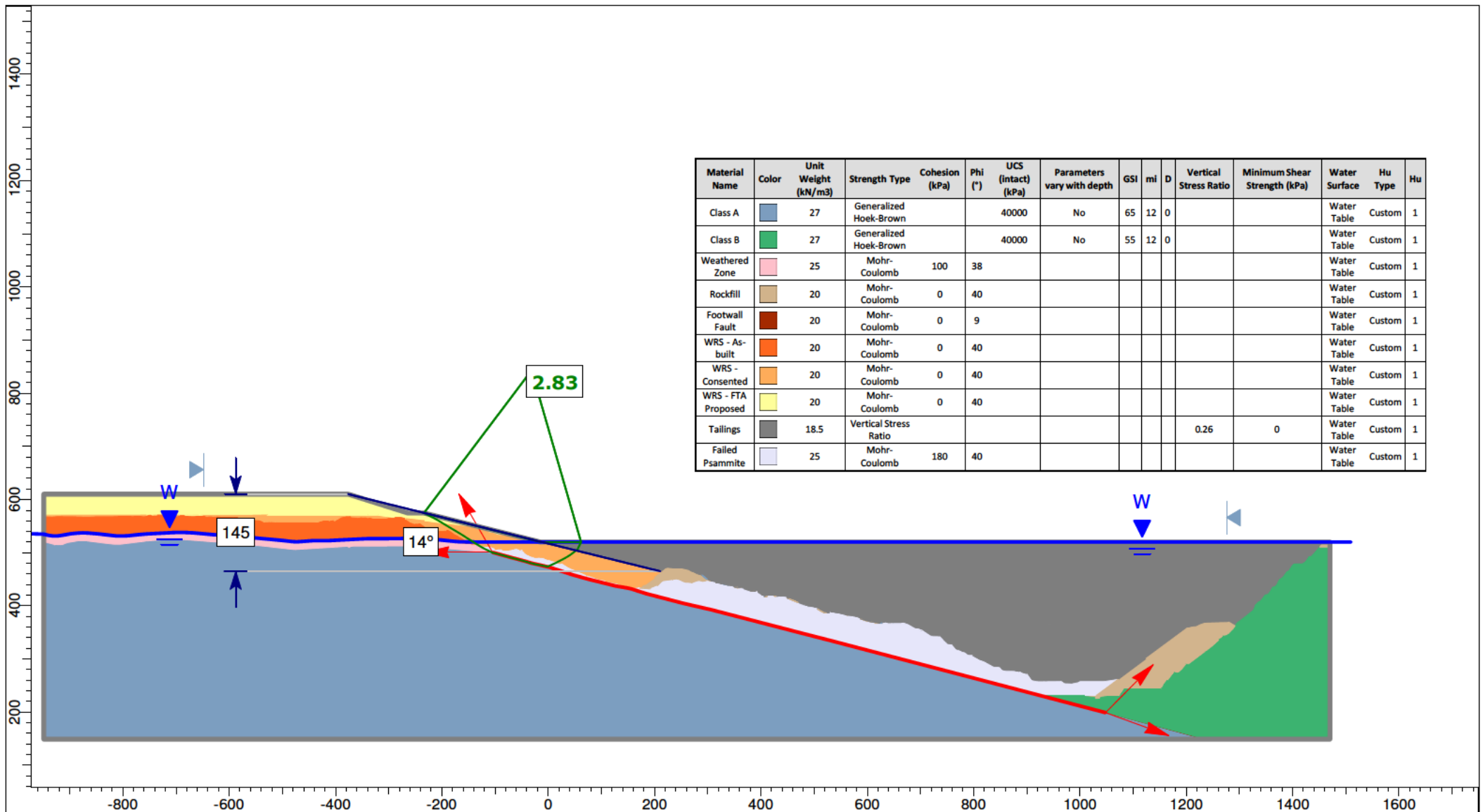
Client:	OceanaGold Corporation	
Project:	Macraes Phase 4 - FTAA	
Section:	FWR_WRS_Section_2 - No Soil & Partially Saturated	
Case:	Case 2 - OBE, Global, Non-Circular (Auto-Refine)	
Date:	24/03/2026	GLE / Morgenstern-Price



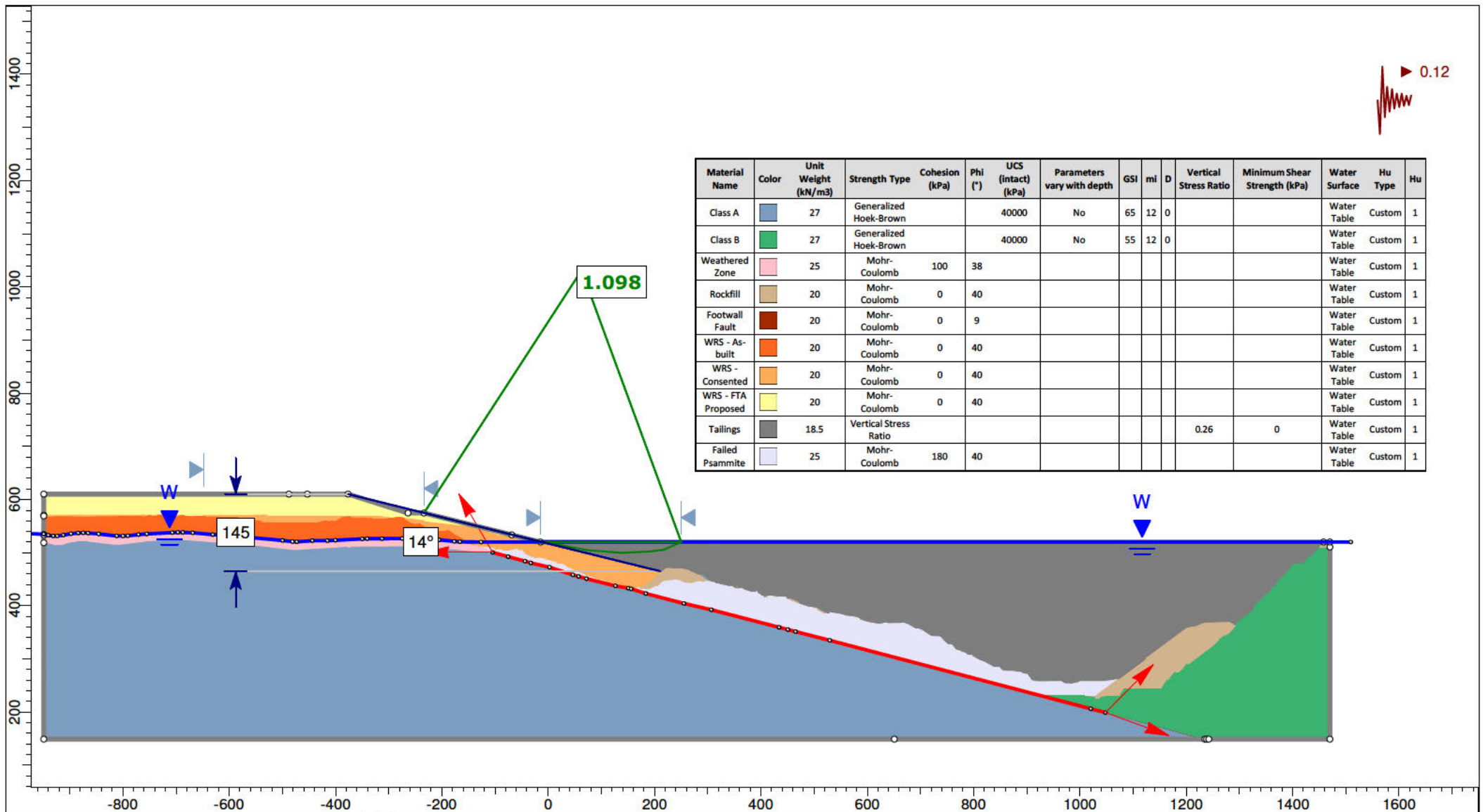
Client:	OceanaGold Corporation	
Project:	Macraes Phase 4 - FTAA	
Section:	FWR_WRS_Section_2 - No Soil & Partially Saturated	
Case:	Case 3 - MDE, Global, Non-Circular (Auto-Refine)	
Date:	24/03/2026	GLE / Morgenstern-Price



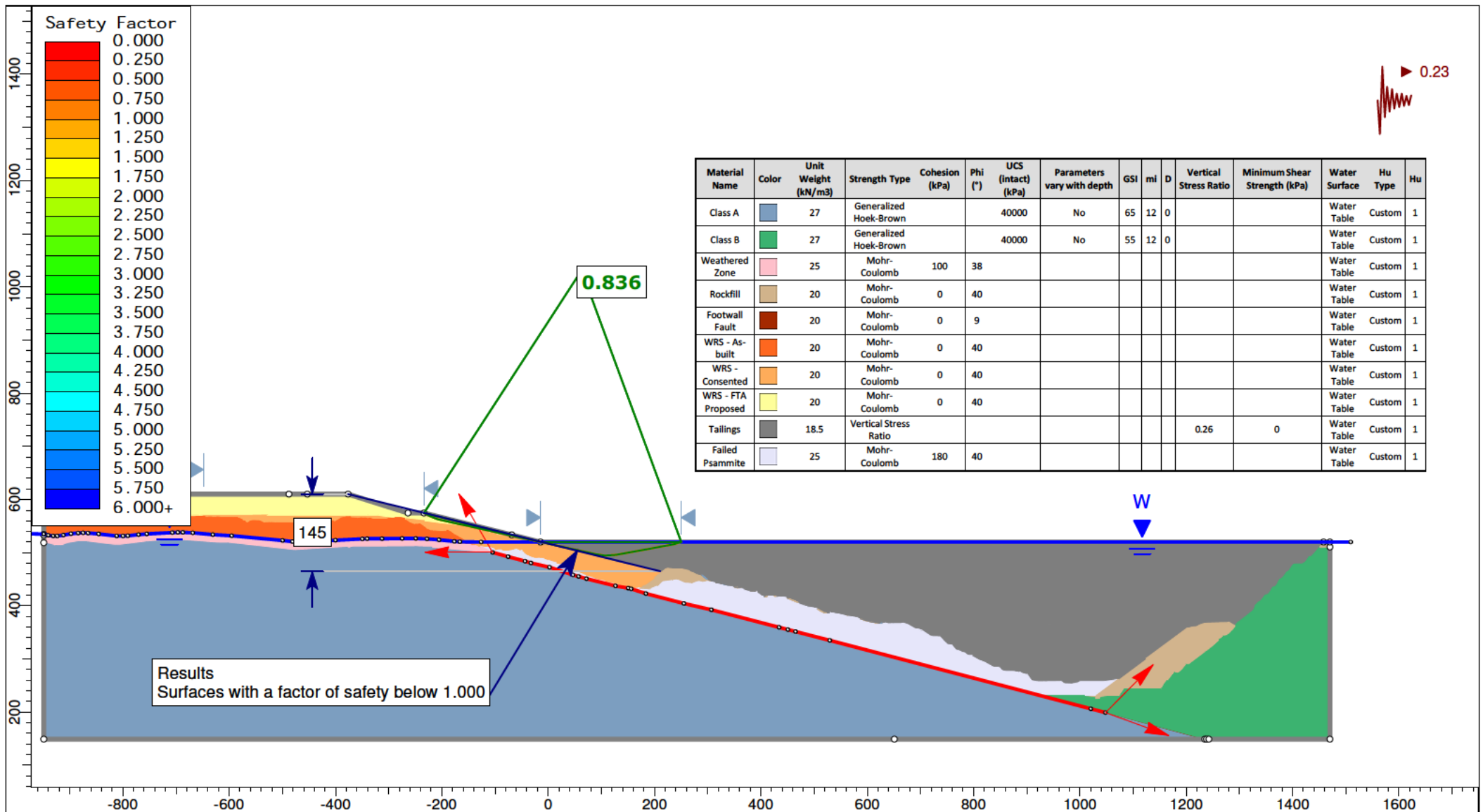
Client:	OceanaGold Corporation	
Project:	Macraes Phase 4 - FTAA	
Section:	FWR_WRS_Section_2 - No Soil & Partially Saturated	
Case:	Case 3 - MDE, Global, Circular	
Date:	24/03/2026	GLE / Morgenstern-Price



Client:	OceanaGold Corporation	
Project:	Macraes Phase 4 - FTAA	
Section:	FWR_WRS_Section_3 - No Soil	
Case:	Case 1 - Static, Global - FTSF Tailings 520 mRL, Non-Circular (Line Search)	
Date:	18/05/2026	GLE / Morgenstern-Price



Client:	OceanaGold Corporation	
Project:	Macraes Phase 4 - FTAA	
Section:	FWR_WRS_Section_3 - No Soil	
Case:	Case 2 - OBE, Global, FTSF Tailing 520mRL, Non-Circular (Line Search)	
Date:	18/05/2026	GLE / Morgenstern-Price

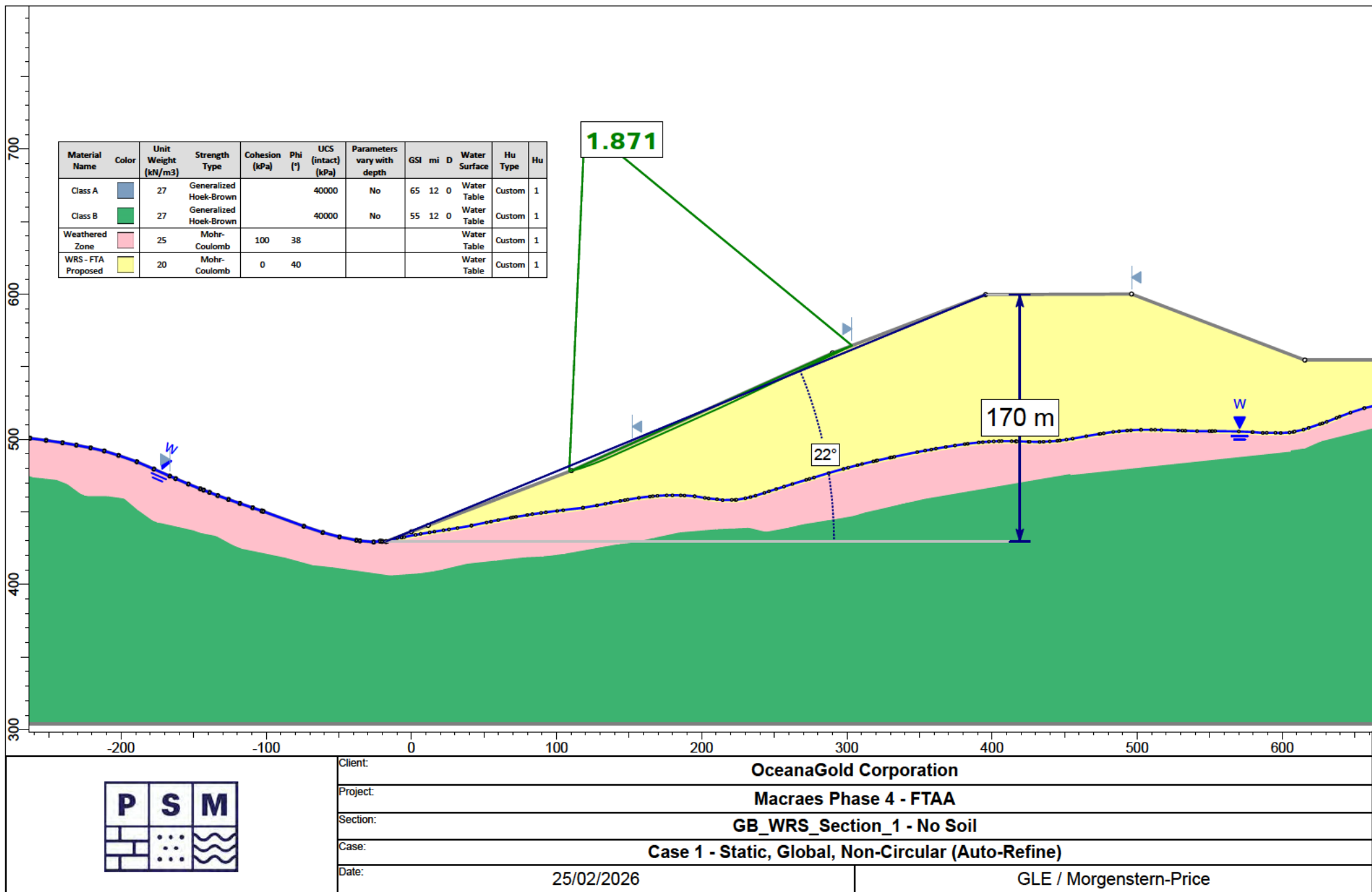


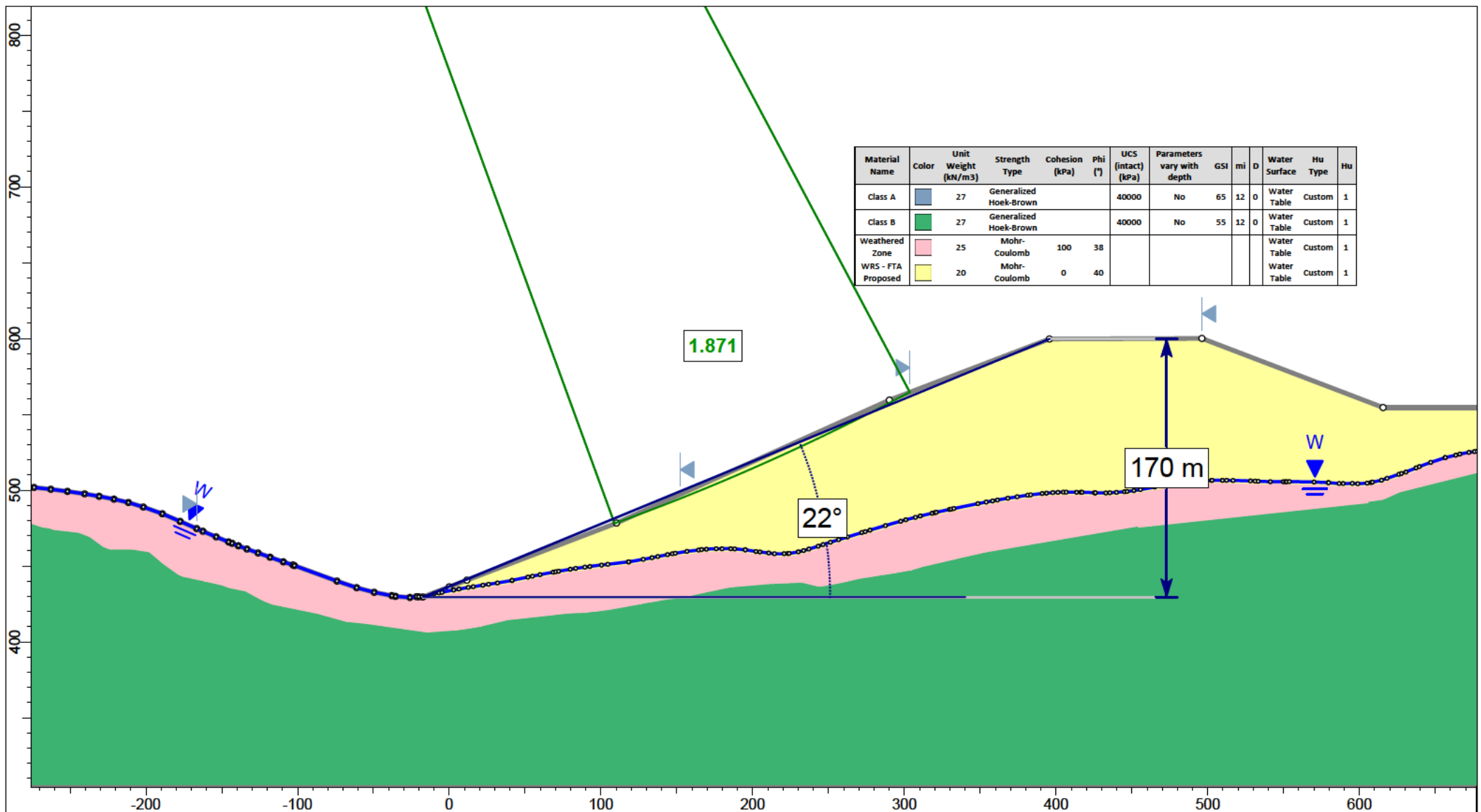
Client:	OceanaGold Corporation	
Project:	Macraes Phase 4 - FTAA	
Section:	FWR_WRS_Section_3 - No Soil	
Case:	Case 3 - MDE, Global, FTSF Tailing 520mRL, Non-Circular (Line Search)	
Date:	18/05/2026	GLE / Morgenstern-Price

Golden Bar WRS

Limit Equilibrium Analysis Outputs



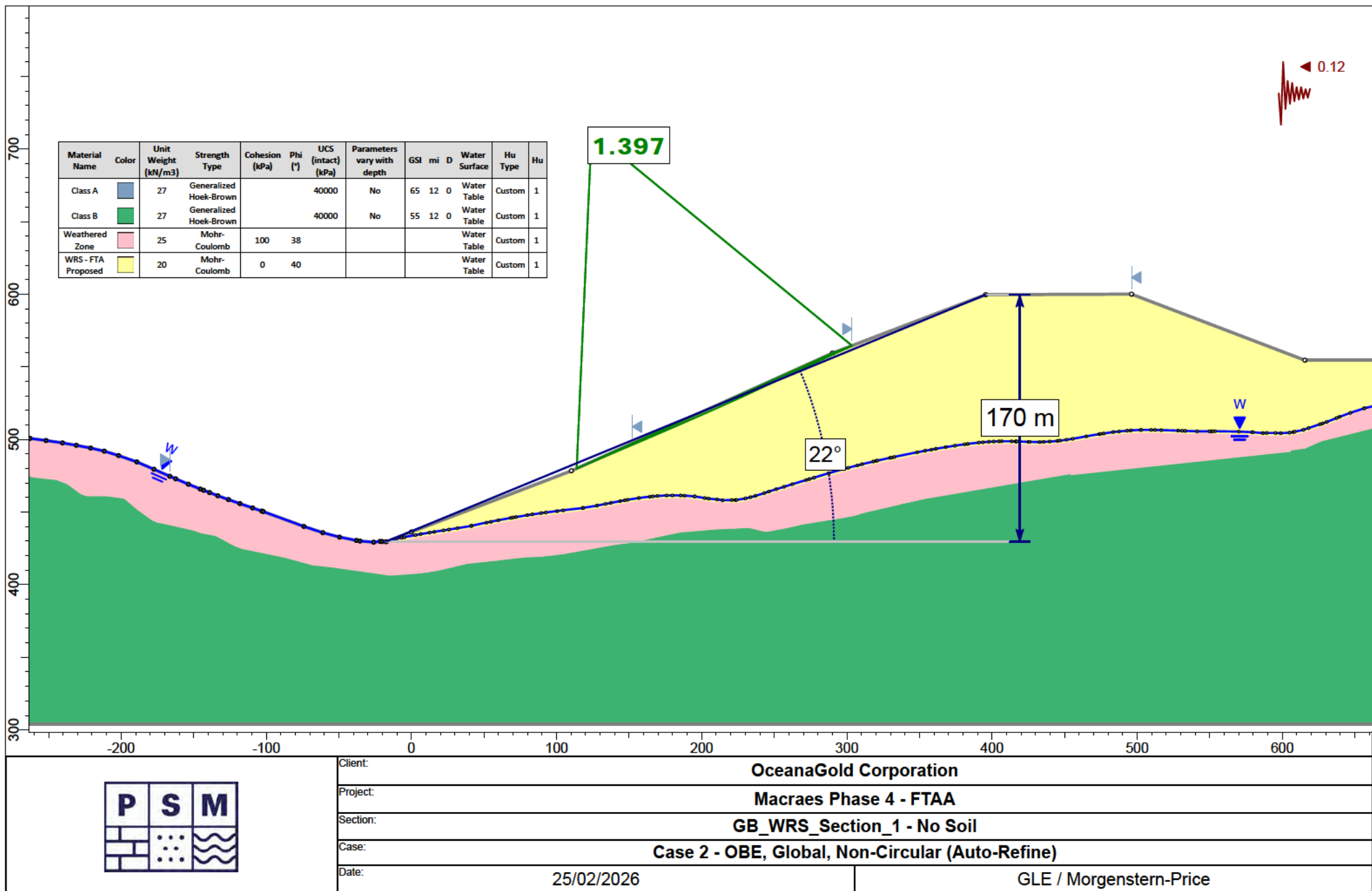


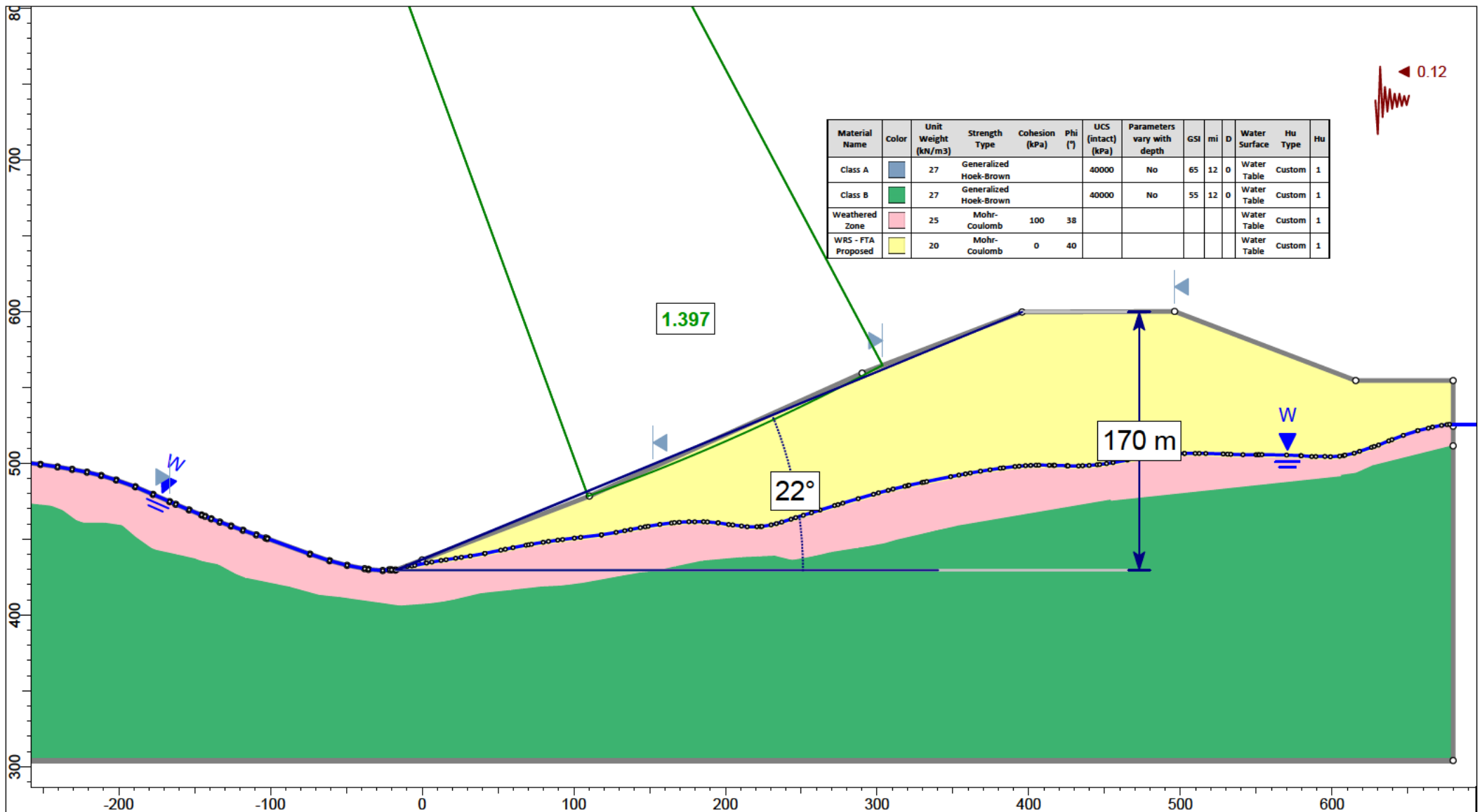


Material Name	Color	Unit Weight (kN/m ³)	Strength Type	Cohesion (kPa)	Phi (°)	UCS (intact) (kPa)	Parameters vary with depth	GSI	mi	D	Water Surface	Hu Type	Hu
Class A	Blue	27	Generalized Hoek-Brown			40000	No	65	12	0	Water Table	Custom	1
Class B	Green	27	Generalized Hoek-Brown			40000	No	55	12	0	Water Table	Custom	1
Weathered Zone	Pink	25	Mohr-Coulomb	100	38						Water Table	Custom	1
WRS - FTA Proposed	Yellow	20	Mohr-Coulomb	0	40						Water Table	Custom	1

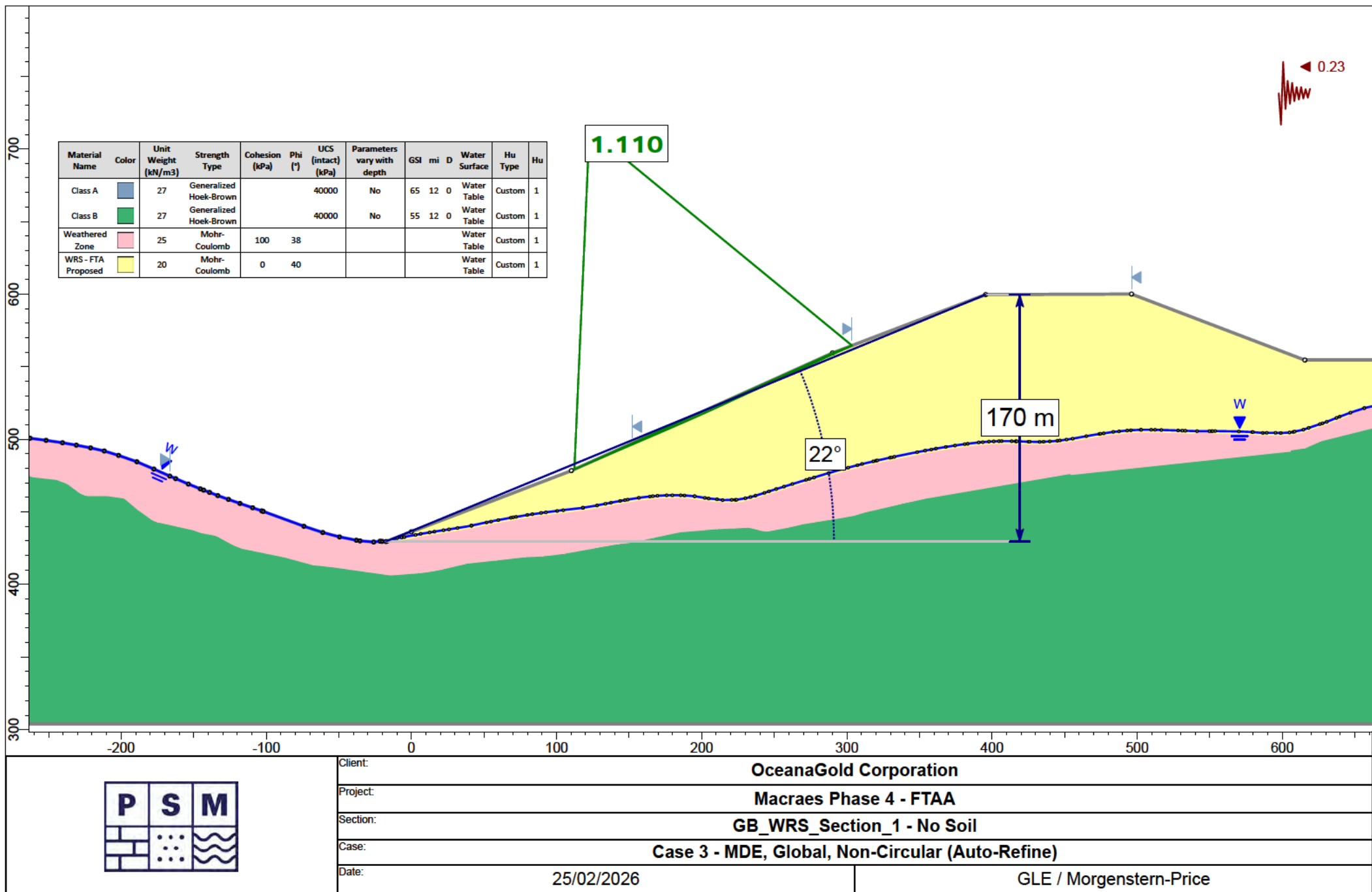


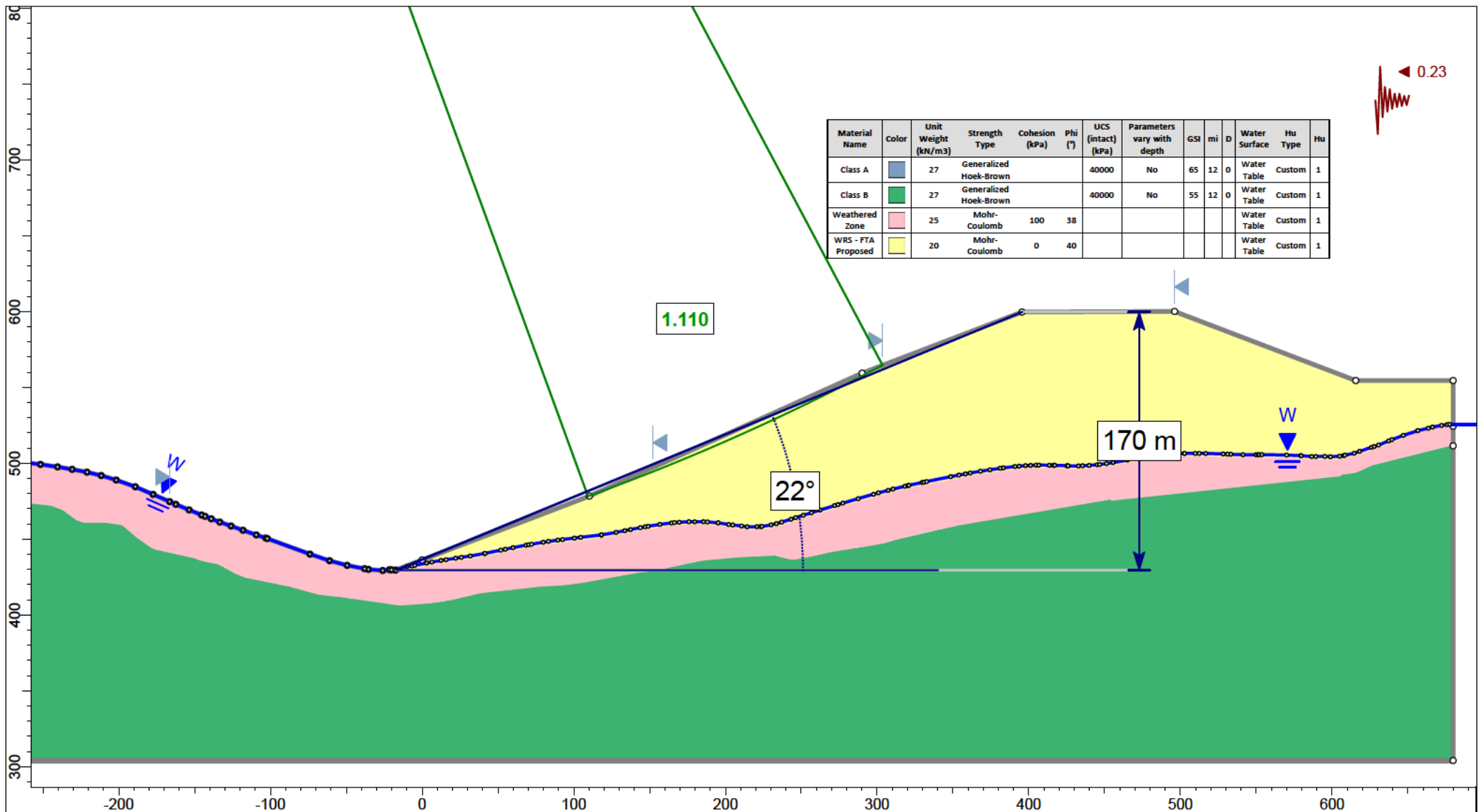
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Project:	Macraes Phase 4 - FTA		
Section:	GB_WRS_Section_1 - No Soil		
Case:	Case 1 - Static, Global, Circular		
Date:	12/02/2026	GLE / Morgenstern-Price	





Client:	OceanaGold Corporation	
Project:	Macraes Phase 4 - FTAA	
Section:	GB_WRS_Section_1 - No Soil	
Case:	Case 2 - OBE, Global, Circular	
Date:	12/02/2026	GLE / Morgenstern-Price





Client:	OceanaGold Corporation	
Project:	Macraes Phase 4 - FTAA	
Section:	GB_WRS_Section_1 - No Soil	
Case:	Case 3 - MDE, Global, Circular	
Date:	12/02/2026	GLE / Morgenstern-Price