

GEOHART is a Mining, Geotechnical, Civil and Structural mid-tier multidisciplinary consultancy with strong experience in the following:

- I-Site structural geological mapping
- Spatial integration of mapped structural geological features
- Development of 3D structural geological models
- Numerical stress and stability analyses (2D and 3D)
- Principal hazard management plans (PHMP) – all aspects
- Mine site services – exploration, hazard plans, monitoring and testing, technical support and training for all levels and project management
- Slope stability assessments (high and low walls, waste dumps)

3D STRUCTURAL GEOLOGICAL MODEL

GEOHART Consultants have developed a robust multi-tiered capability to create 3D structural geological models for open-cut mines. This methodology comprises the following:

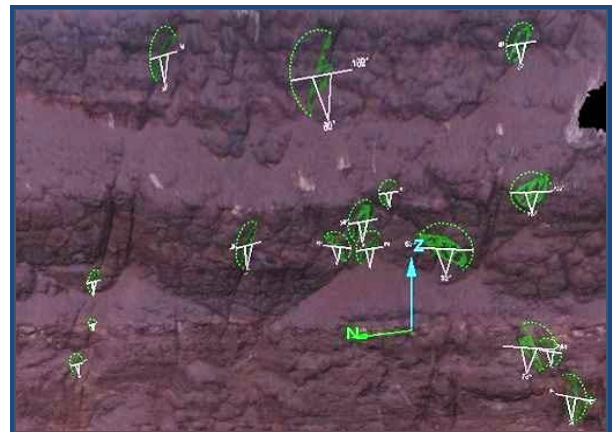
- 1) Utilising MAPTEK I-Site scanner to capture structural discontinuities within the inaccessible open-cut pit walls.



- 2) Three dimensional referenced open pit wall surfaces are produced from the raw scan data

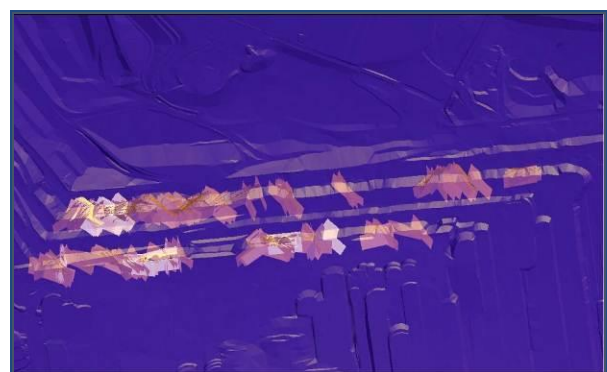
via I-Studio software.

- 3) Overlaying of high quality image on the spatially referenced 3D surfaces.
- 4) Orientation of structural discontinuities is extracted using the geotechnical module of I-Studio.

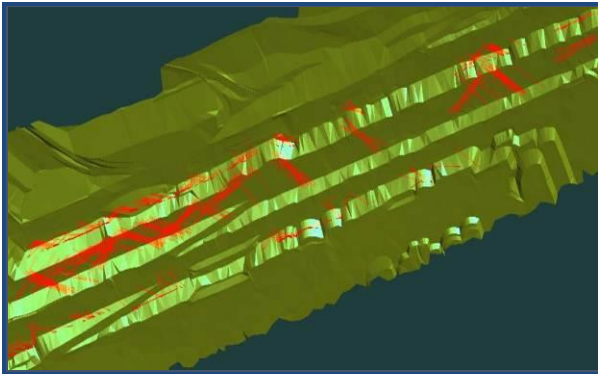


Joint orientation measurements with the help of I-Site Studio software.

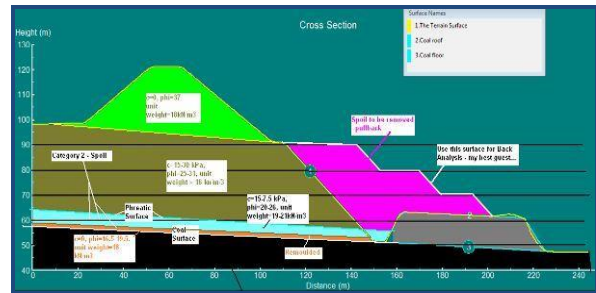
Geohart Consultants are capable of creating 3D structural geological models with the utilisation of Surpac software. Development of 3D models includes the extrapolation of the joint planes mapped across the mine.



3D mine DTM. model with extrapolated joint planes.



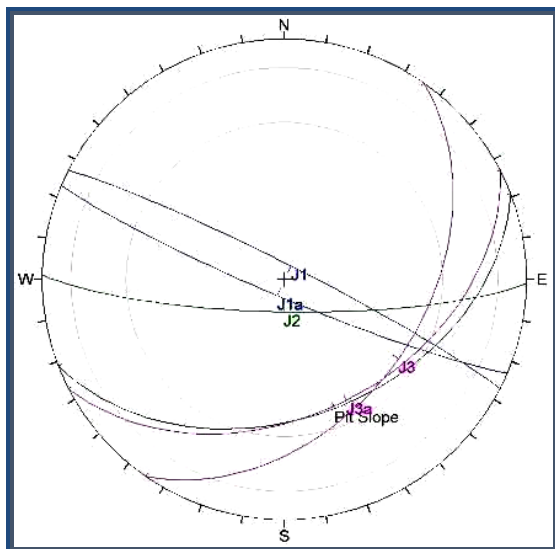
Horizontal sections through the open cut batters showing mapped joints.



Slope Stability limit equilibrium 2D model.

KINEMATIC ANALYSIS

Unfavourable orientations of structural discontinuities would initiate different types of failure in open pit walls. GEOHART Consultants implement specialised software like DIPS and Swedge to carry out interactive analysis of orientation based discontinuity data. With the help of these software discontinuity data would be visualised using stereonet and analysed for toppling, planar and wedge failures.



Stereonet showing wedge failure analysis.

SLOPE STABILITY ANALYSIS

GEOHART Consultants is capable of assessing a variety of problems using limit equilibrium analysis software such as Slide.

IMPLEMENTED SOFTWARE

I-Site Studio, Surpac, Map3D, Phase², Slide, Swedge, Dips, Unwedge, Cad, Blastware, Seismic Analysis Software Trace (JMST) and JDi.

GEOHART also provides a wide range of pit services including;

- Inspections, investigation and reports
- Instrumentation, monitoring and mapping
- Risk management and principle hazard management plans - risk analysis, related procedures, hazard plans and TARP's
- Geotechnical training

