Overview

• Isn’t geotechnical engineering an operational issue?
• When do we start geotechnical investigations?
• What do we do?
• Why should we care?
• The Northparkes approach
Geotechnical Engineering – short or long term focus?

- Applies across all project stages:
  - Early stage – data and model focused
  - Late stage – optimising designs and adapting to changing environment
- High level, long-term perspective to short-term, event focused perspective.
- Maintain holistic view across all project stages
- Operational feedback
- Multi-disciplinary approach

Northparkes Mines
A century of mining together
Timeline – when do we start?

Scoping | Pre-feasibility | Feasibility | Commitment and Execution | Operations
---|---|---|---|---
Case A | Case B | Case C | Case D | Best case
What could it be? | What should it be? | What will it be? | Investment in the decision and project delivery | $$$$ 

Geotechnical Timeline

Google

https://www.ausimmbulletin.com/feature/divergent-thinking/

Northparkes Mines
A century of mining together
Data acquisition – what do we do?

• Drilling
  • Logging of core
    • Interval data – weathering, alteration, lithology, RQD
    • Point data - structural
    • Downhole geophysics (ATV/OTV/FWS)

• Sampling
  • Geotechnical index testing (UCS, DS, triaxial etc.)
  • Abrasivity, toughness, mill work index

• Interpretation
  • Structural model
  • Weathering/alteration model
  • Fracture density
  • Fragmentation assessments
  • Support requirements
  • Etc.
Impacts of geotechnical data – why do we care?

- Safety
  - Zero Harm to people, equipment and environment
  - Legislative and regulatory requirements
- Cost
  - Optimise the cost for mining whilst maintaining commitment to safety
    - Ground support designs
    - Material handling options
- Productivity
  - Cycle times for development headings (cable installation, support requirements, seismic re-entry)
Geotechnical Exploration at Northparkes

- Near mine vs. far field
- Project requirements & timeline
- Collaboration with exploration geo’s on hole design and sampling
- Geotechnical logging
  - RQD
  - Structural
  - GSI
  - Infill characteristics
  - Fault characterisation
- Data management – AcQuire
- Model generation
  - Structural
  - Geotechnical block model
Geotechnical Exploration at Northparkes – L1N
Thank you for listening

Any questions?