

Improving the short term model and other opportunities from drone data at Isibonelo Colliery, South Africa

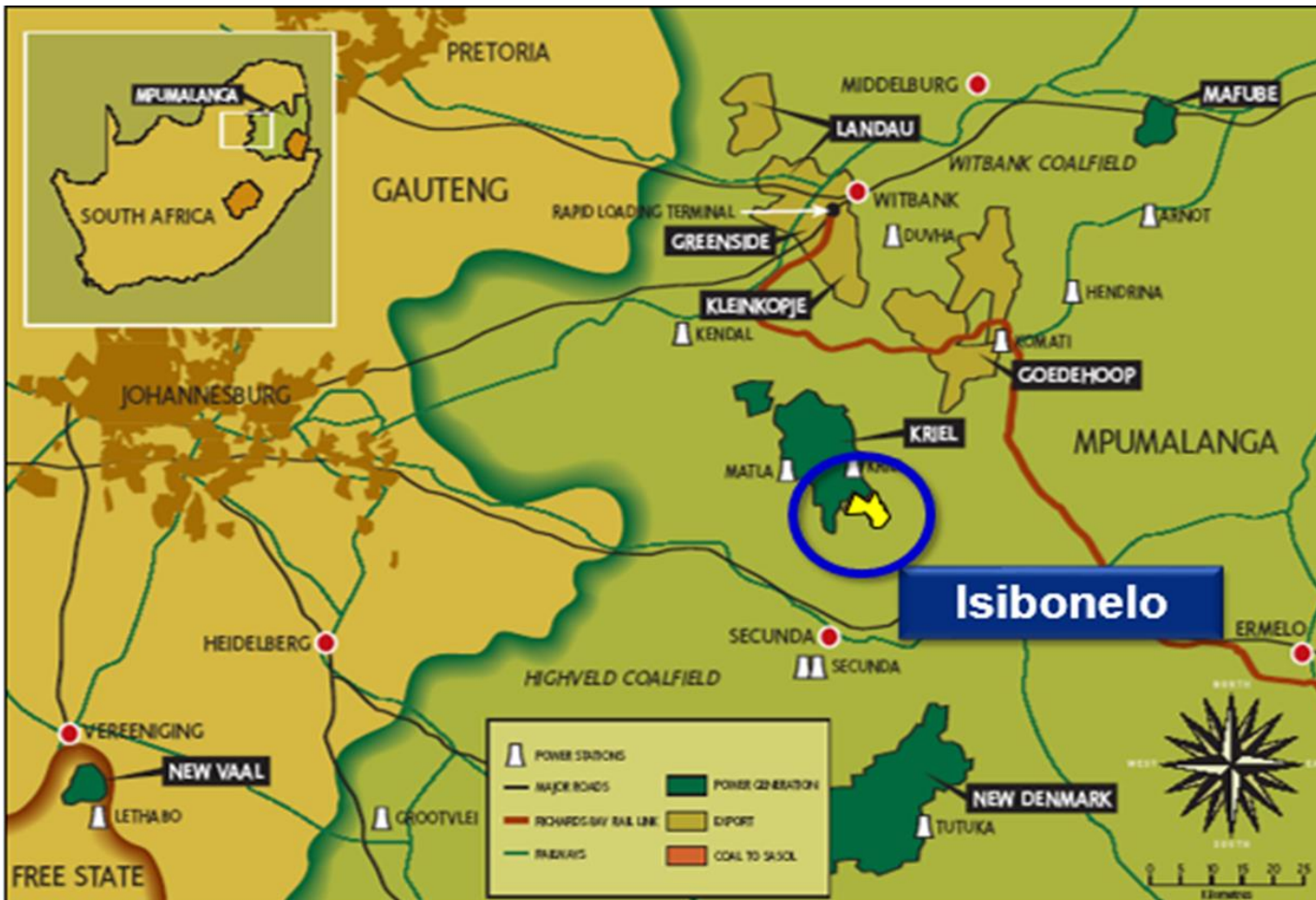
Geoscience Innovation Colloquium, Johannesburg, 2018

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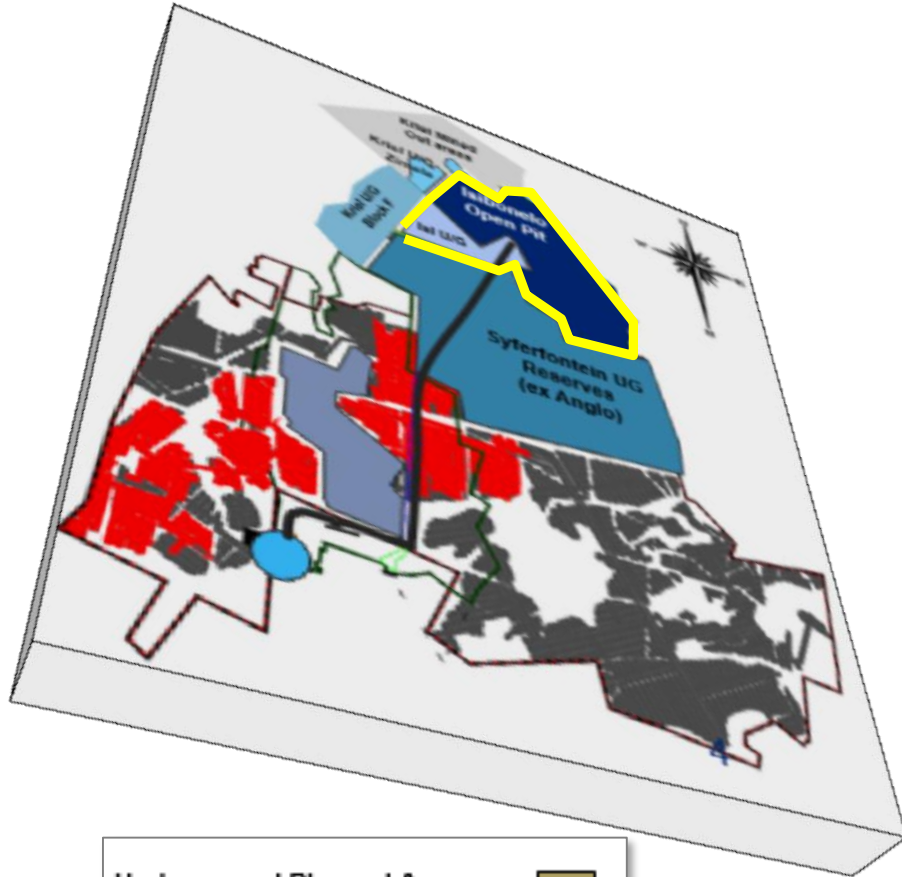
- 1. MINE OVERVIEW**
- 2. CURRENT HIGHWALL MAPPING PROCESS**
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MINE OVERVIEW

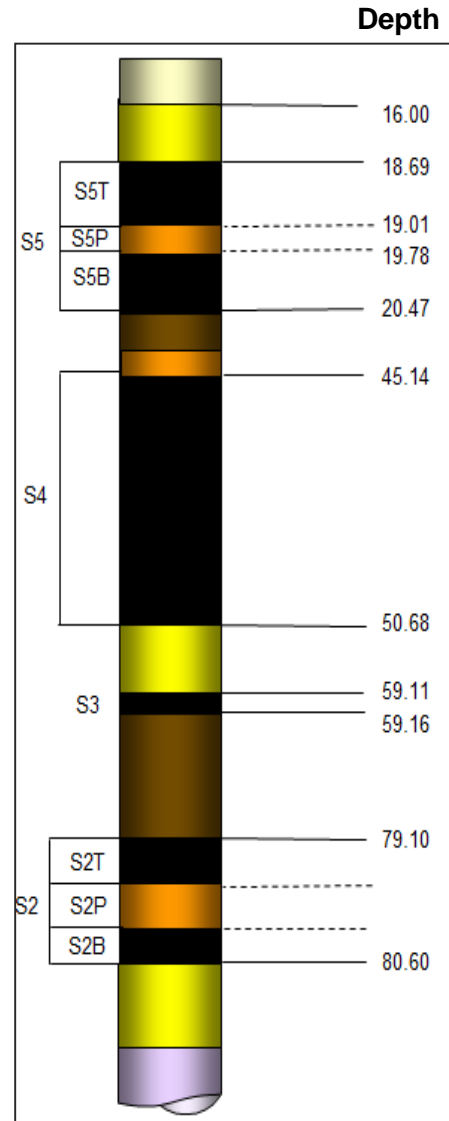


- Syferfontein Open Pit mine operated 1991 to 2003
- Coal Supply Agreement signed in 2003
 - Reserves for market swap agreement
 - Dedicated supply to the Synfuels plant
- Isibonelo acquired the ex-Syferfontein infrastructure
 - Pit is 16km from the workshop & Office area
 - Coal conveyed 14 km to point of sale
 - Further 22km to Synfuels plant
- Mine opened in 2005
- Current Life of Mine is 2026
- Opencast strip -mining method employed

MINE OVERVIEW



- Underground Planned Areas
- Underground Mined out Areas
- Underground Planned Areas
- Open Cut Mined out Areas
- Open Cut Current Mining Areas



5 Seam

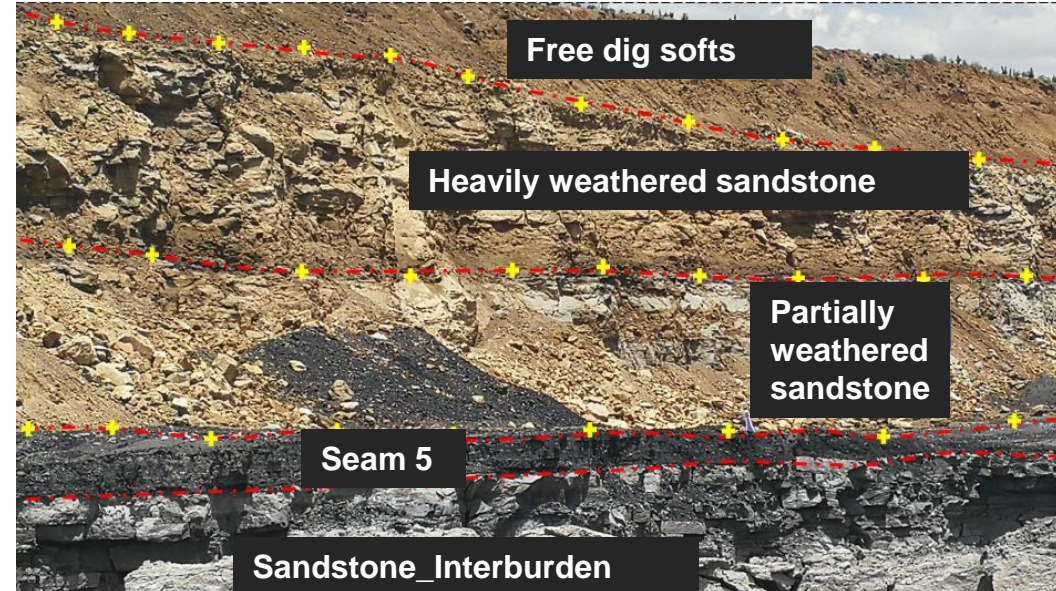


4 Seam



CURRENT HIGHWALL MAPPING PROCESS

- Geologist and Surveyor team
- Survey Total Station
- Time consuming
- Ensure safe distance from HW
- Potential mapping errors
- No revisit of georeferenced system

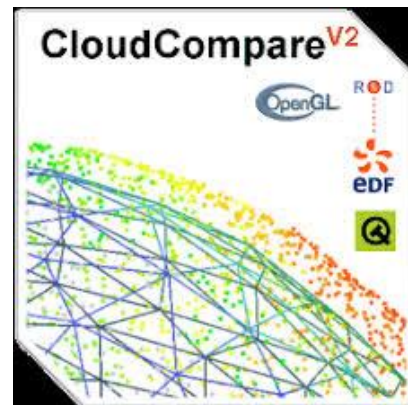


DRONE FLYOVER

- Unmanned Aerial Vehicle (Drone)
- 23 February 2018
- Cloudy conditions
- Cleaning of data
- Drone model capture a moment in time



Phantom 4

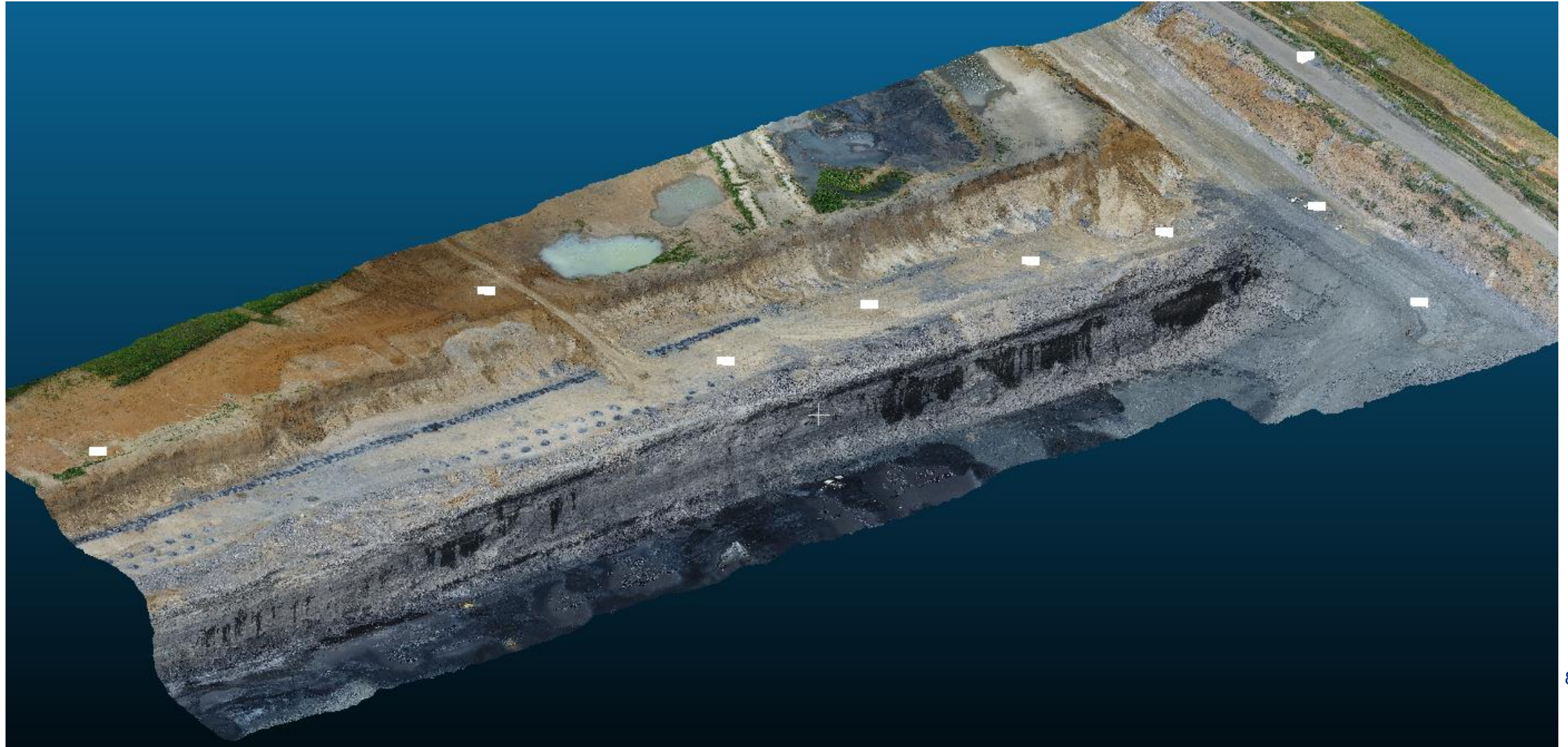


DRONE FLYOVER

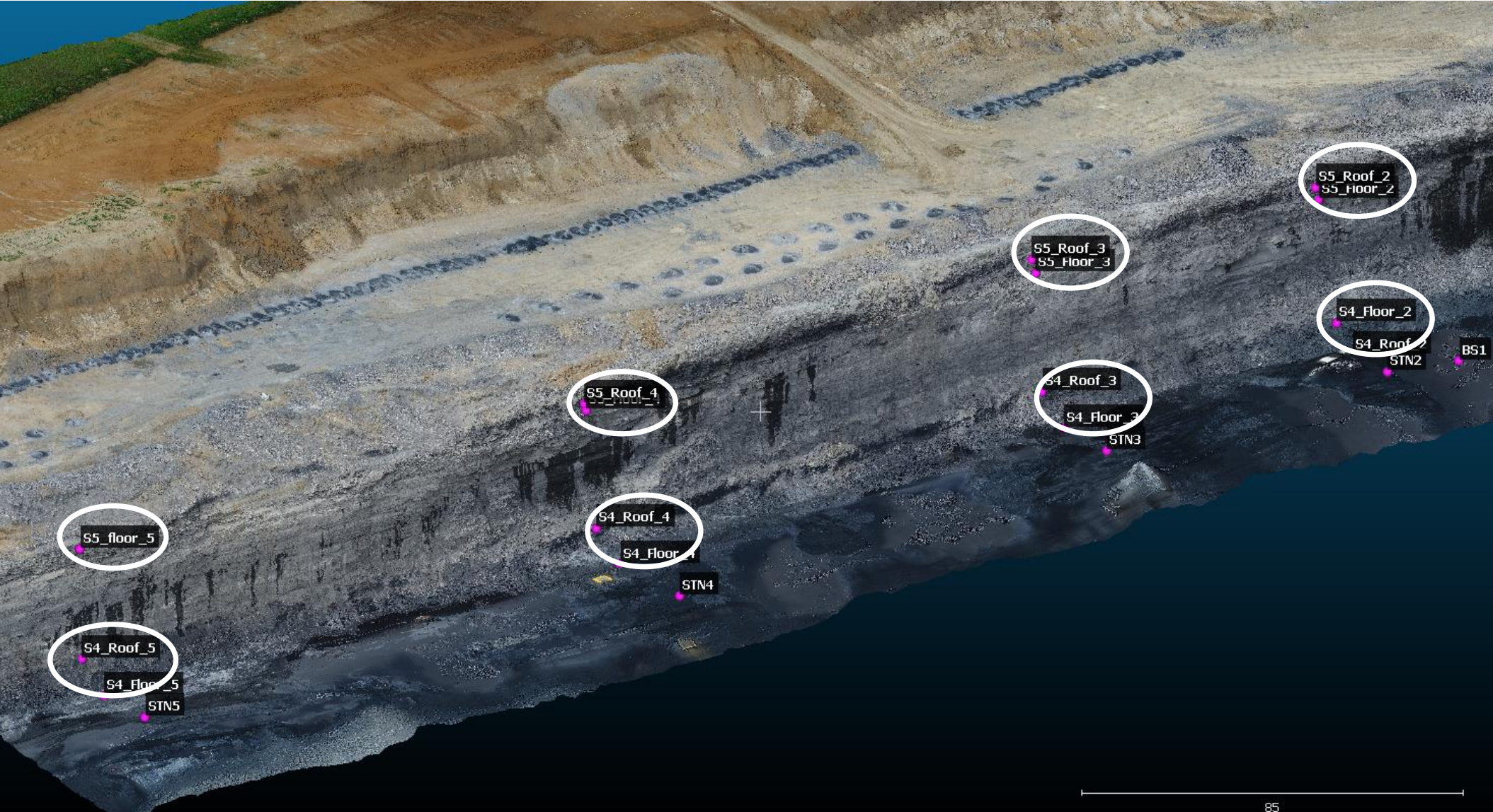


DRONE FLYOVER

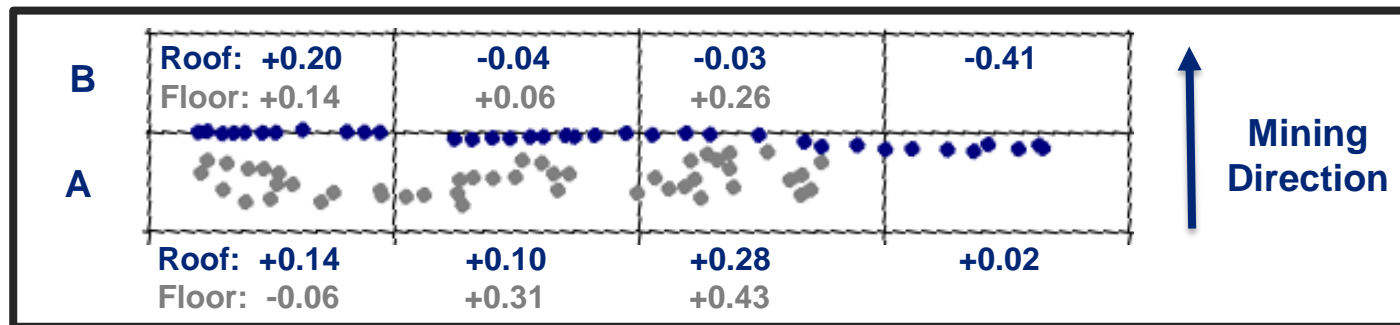
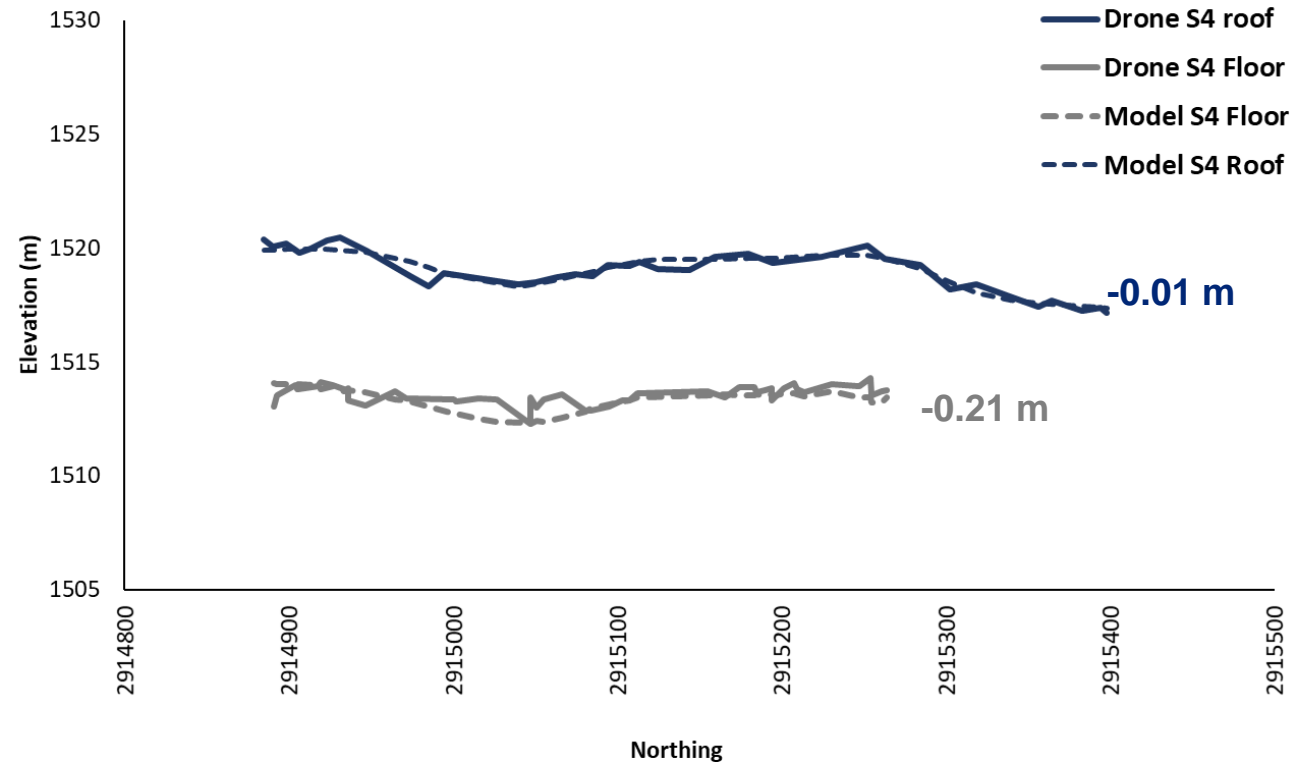
- 9 Control points used in South Pit



DRONE FLYOVER



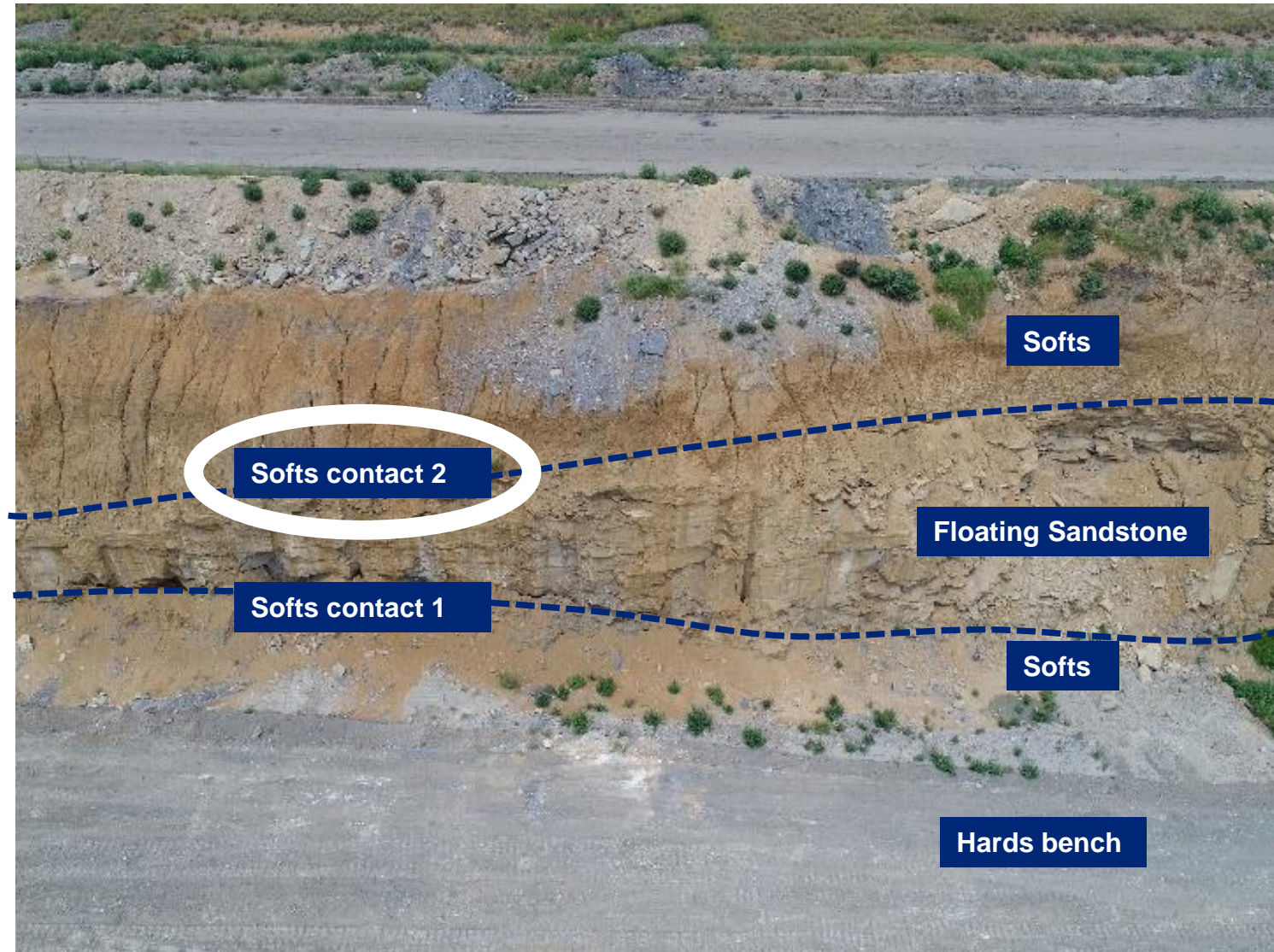
SHORT TERM MODELLING



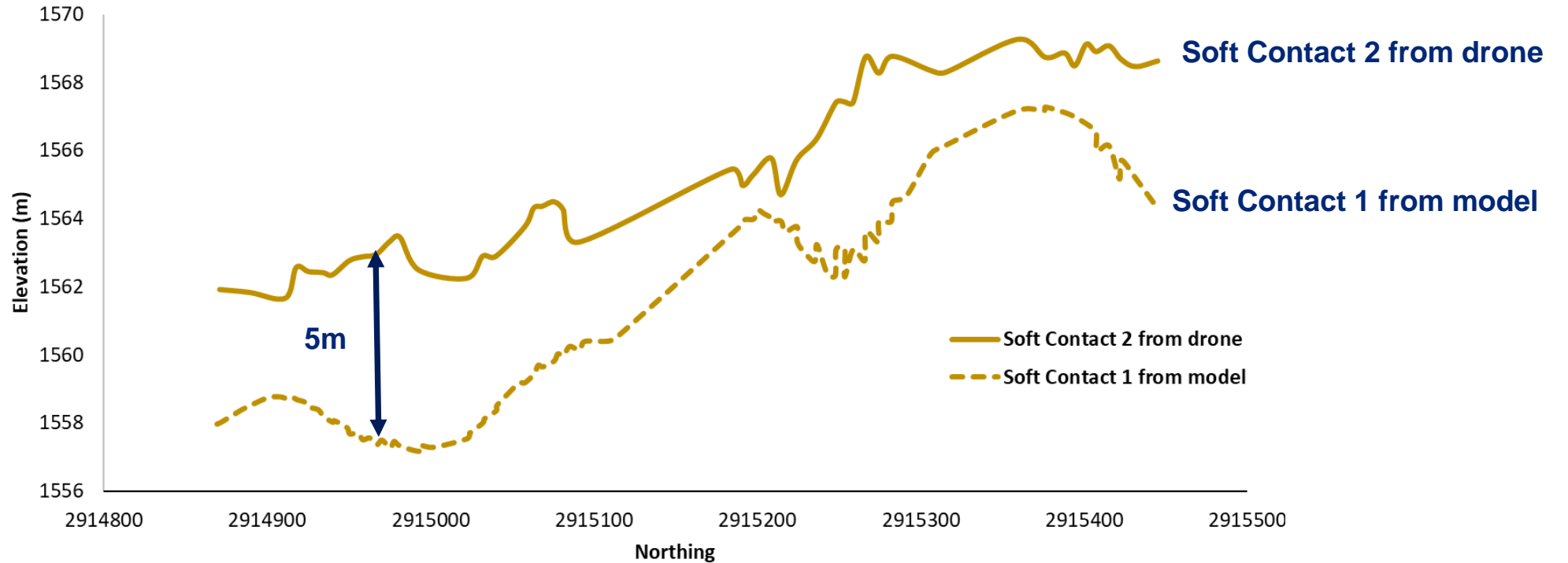
SHORT TERM MODELLING



SHORT TERM MODELLING

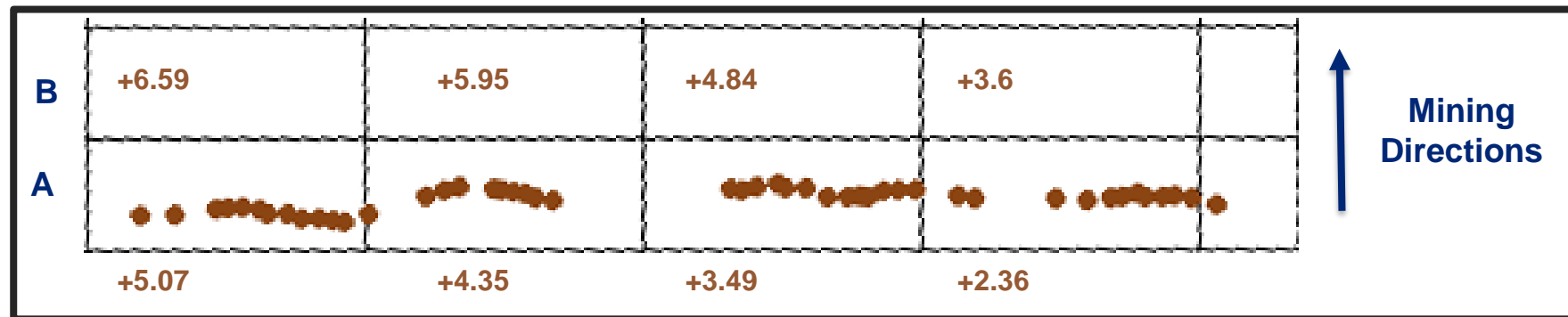


SHORT TERM MODELLING

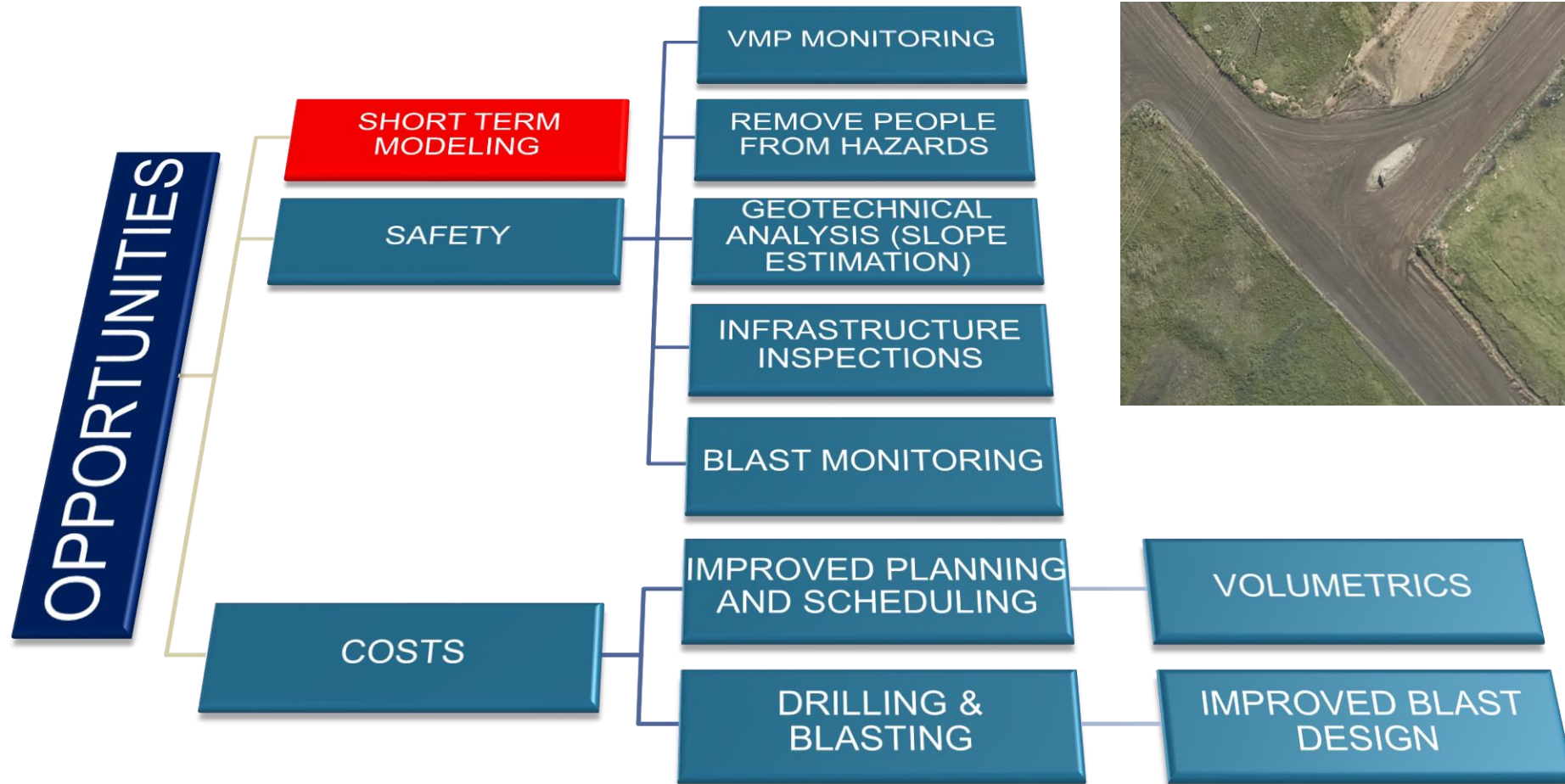


Softs: -53%
Hards: +17%

Softs: -44%
Hards: +13%



OTHER OPPORTUNITIES



CONCLUSIONS

- Inexpensive
- Safety, planning and improved financial analysis
- Future



ACKNOWLEDGEMENTS

- Isibonelo's Survey Department
- P. Roberts Operational Geology Specialist
- E. Carpenter Technical Services manager- Isibonelo Colliery
- E. Winter Strategic Mine Planning Manager
- U. Herrmann Resource Geology Specialist
- A. Opperman Resource Geology Specialist
- Divan Debruyne Resource Geologist
- Jaco Stark Vidblast
- Wikus Mahne Rock Engineering Specialist



THANK YOU.