



Blasting Optimisation

Through GPS and MWD Drilling

Introduction



- **Drill and blast technology**
- **GPS Drilling Benefits**
 - GPS machine control
 - Accuracy/efficiency
- **Blasting optimisation**
 - Design flexibility
 - MWD derived hardness
 - Proactive / leading indicator
- **Value add - Mine to Mill**
 - Correlation / collaboration
 - Benefits delivered (case study)
- **Project examples**
 - Infrastructure/construction



Shifts in Technology

Bench survey /
Computer design

Vibration
Modelling and
Management

Electronic
Initiation

Boretrak /
Accuracy
Verification

Smart
Drilling Rigs



GPS Drilling Benefits



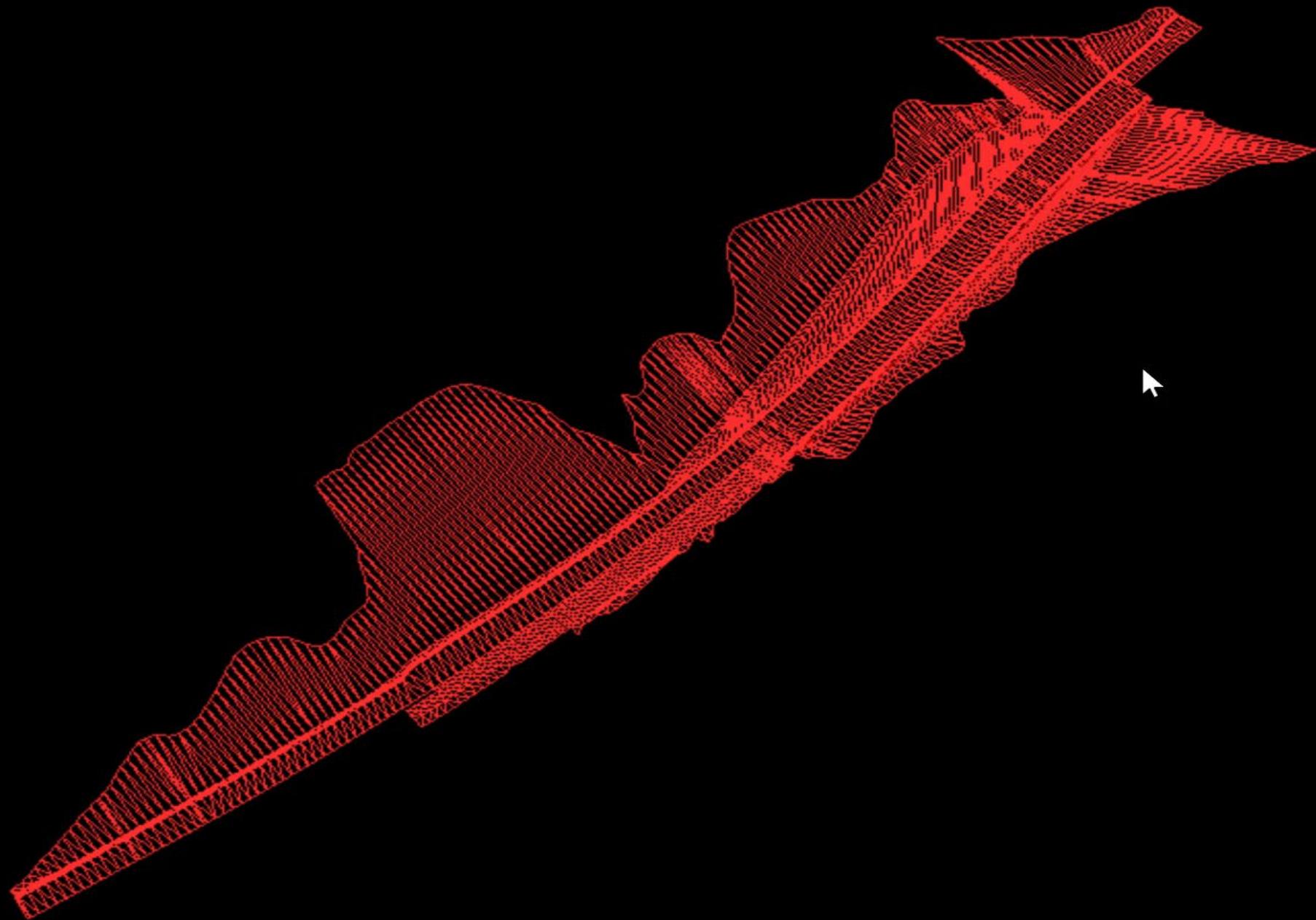
Accuracy

Efficiency

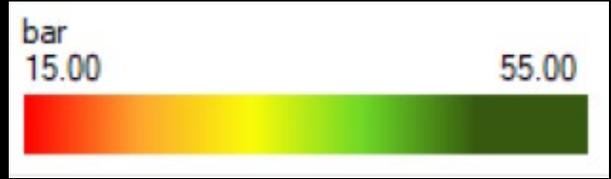
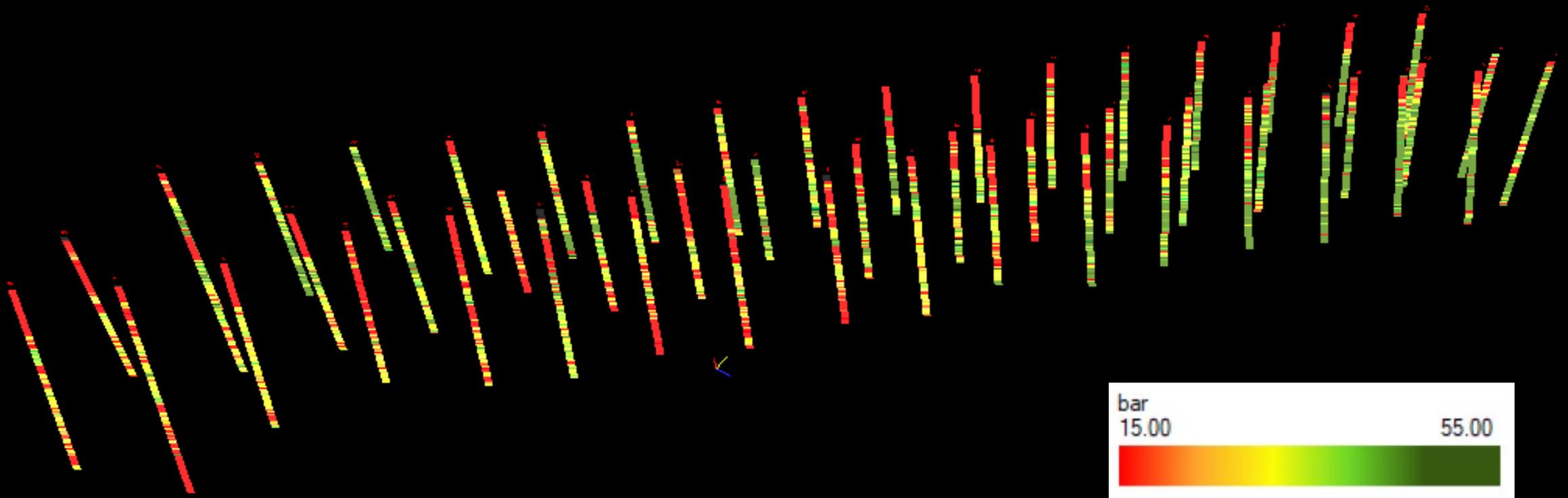
Flexibility
in Design and
Operations

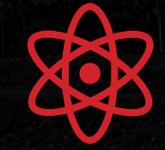
Functionality





MWD Colourisation



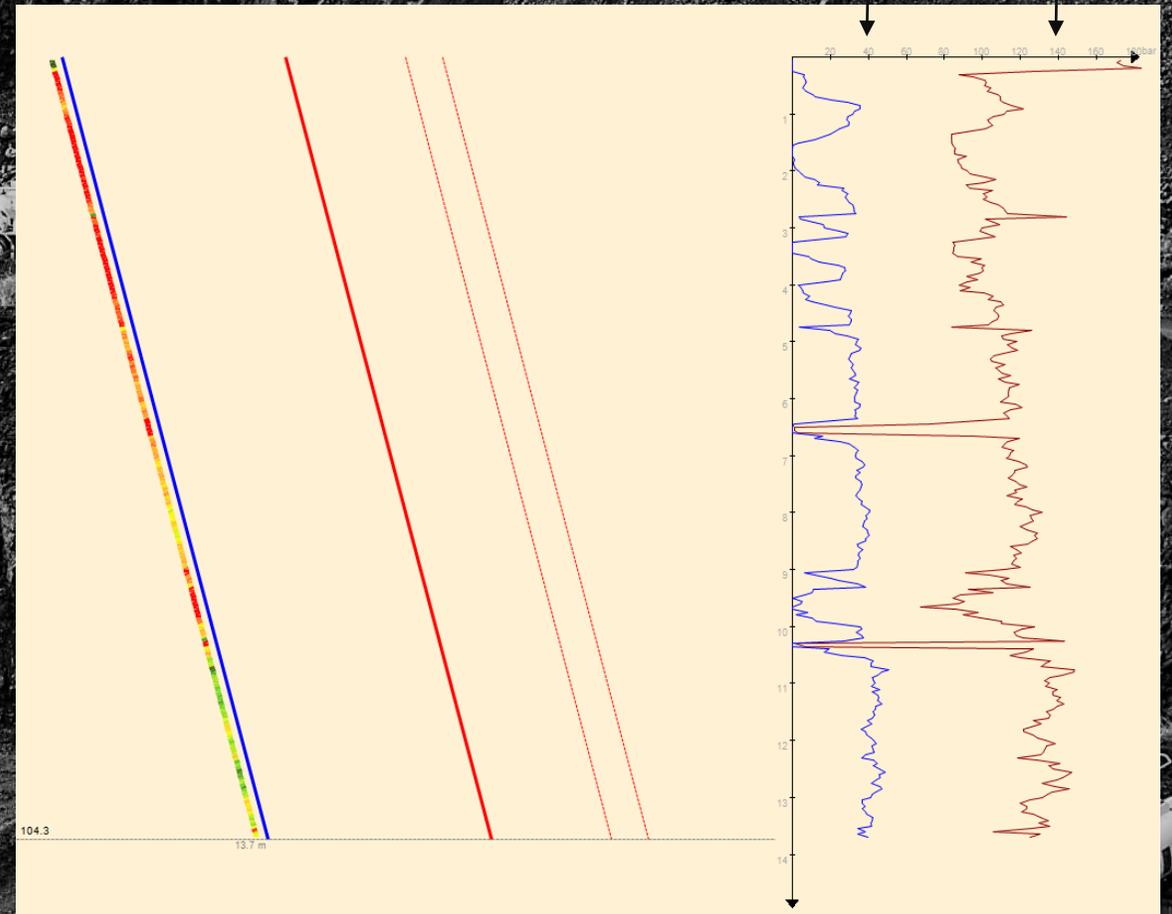
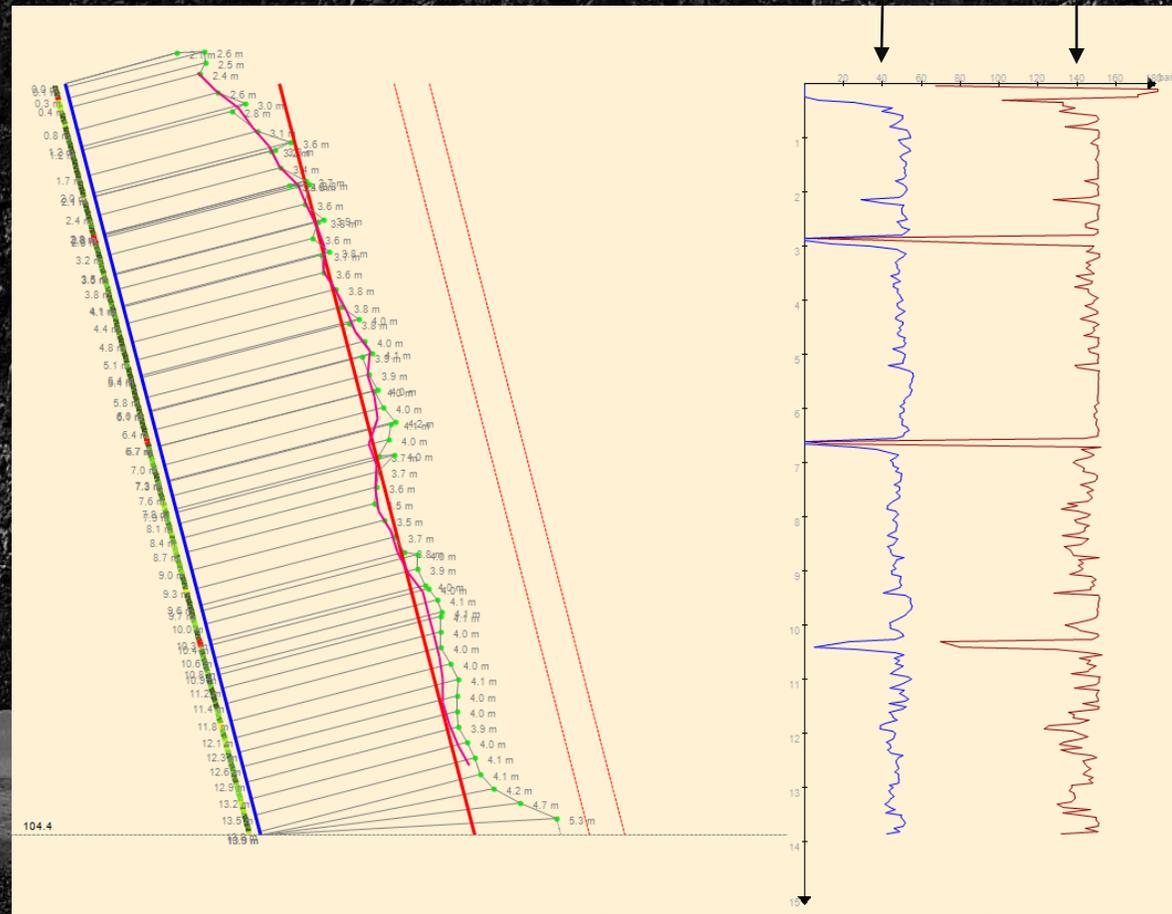


MWD Derived Hardness



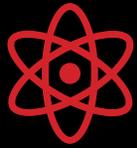
40 bar 140 bar

40 bar 140 bar

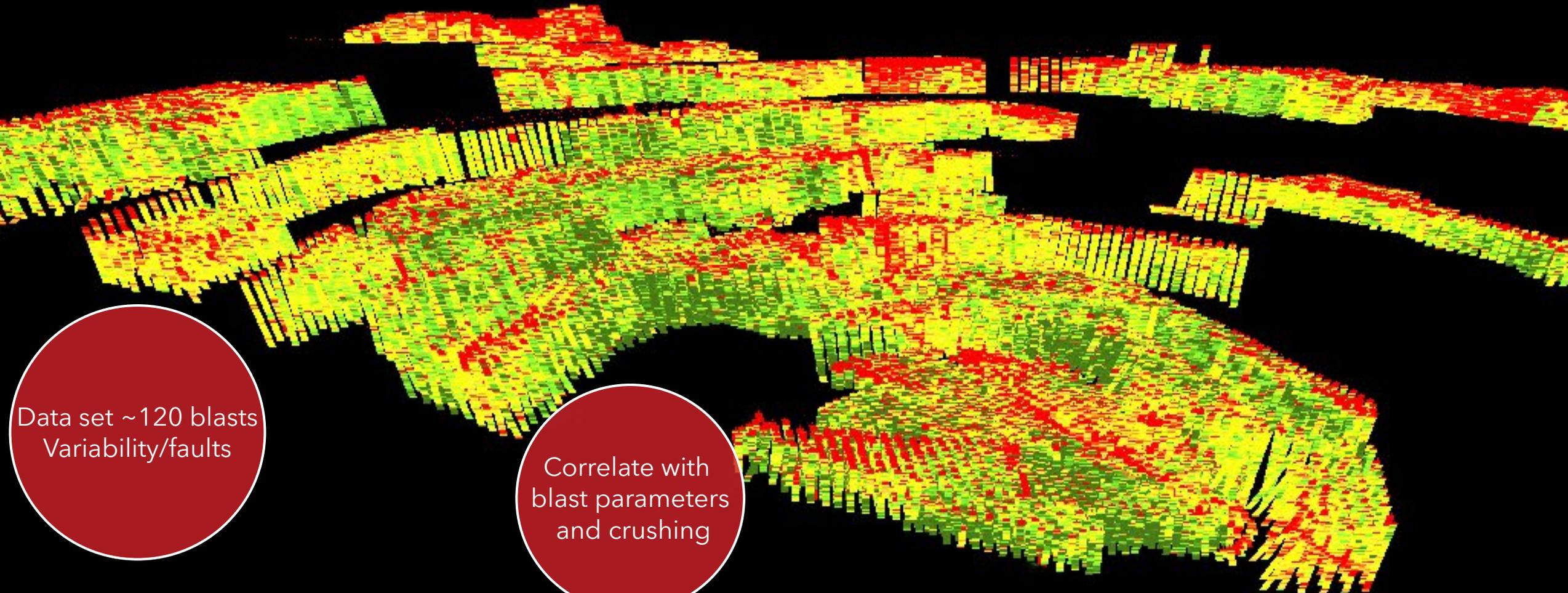


 Proactive / leading indicator





Blasting Optimisation



Data set ~120 blasts
Variability/faults

Correlate with
blast parameters
and crushing



Mine to Mill – Benefits Delivered

New plant -
High fines/waste
product
Low throughput

Basic blasting
No survey
Nonel

Fines loss &
Oversize
reduced to
1/3 of
baseline

Collaborative
approach

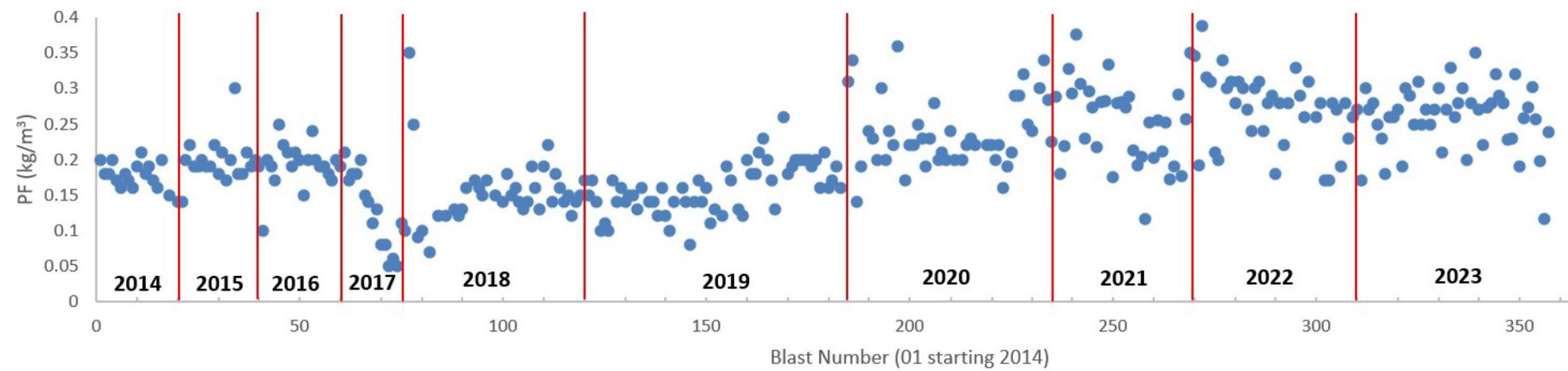
Throughput up 45%+
(15% directly attributed
to D&B)



Targeted Powder Factor



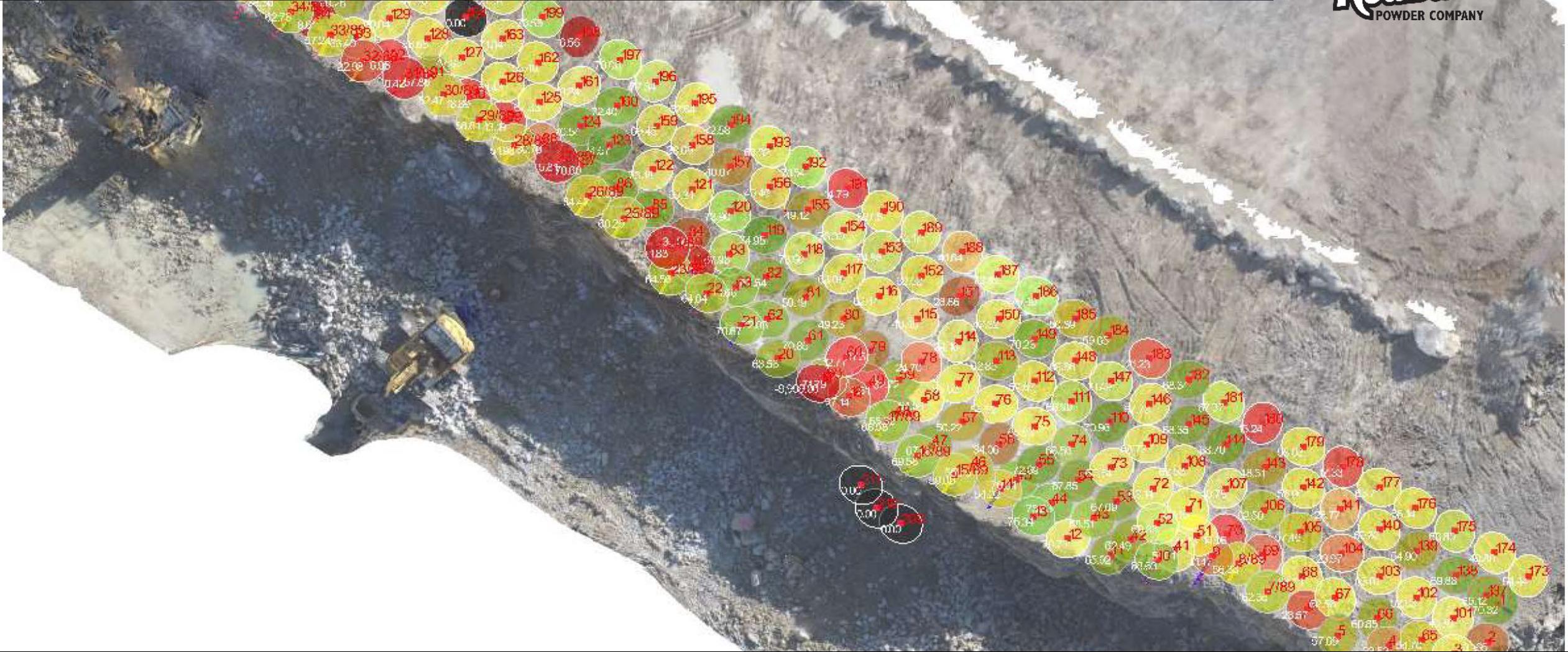
Study Site Powder Factor by Blast (2014-current)



Credit: Kyle Lang

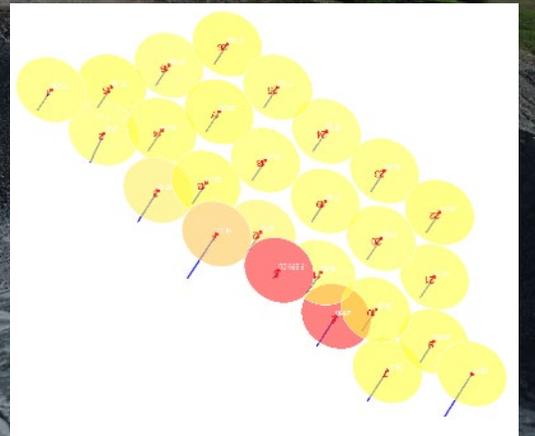
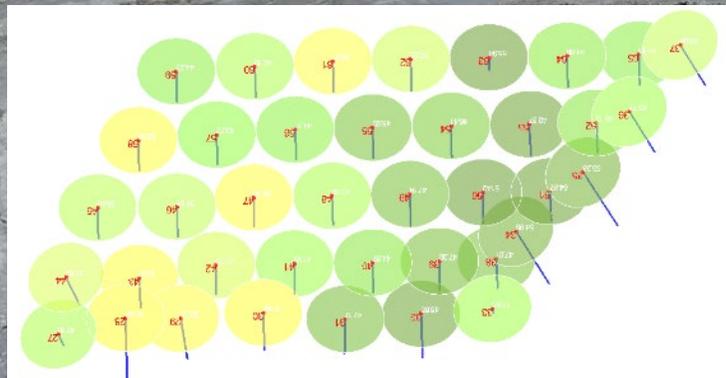


Data Driven Loading





Different Geologies, Site Specific Correlation







Construction Drilling



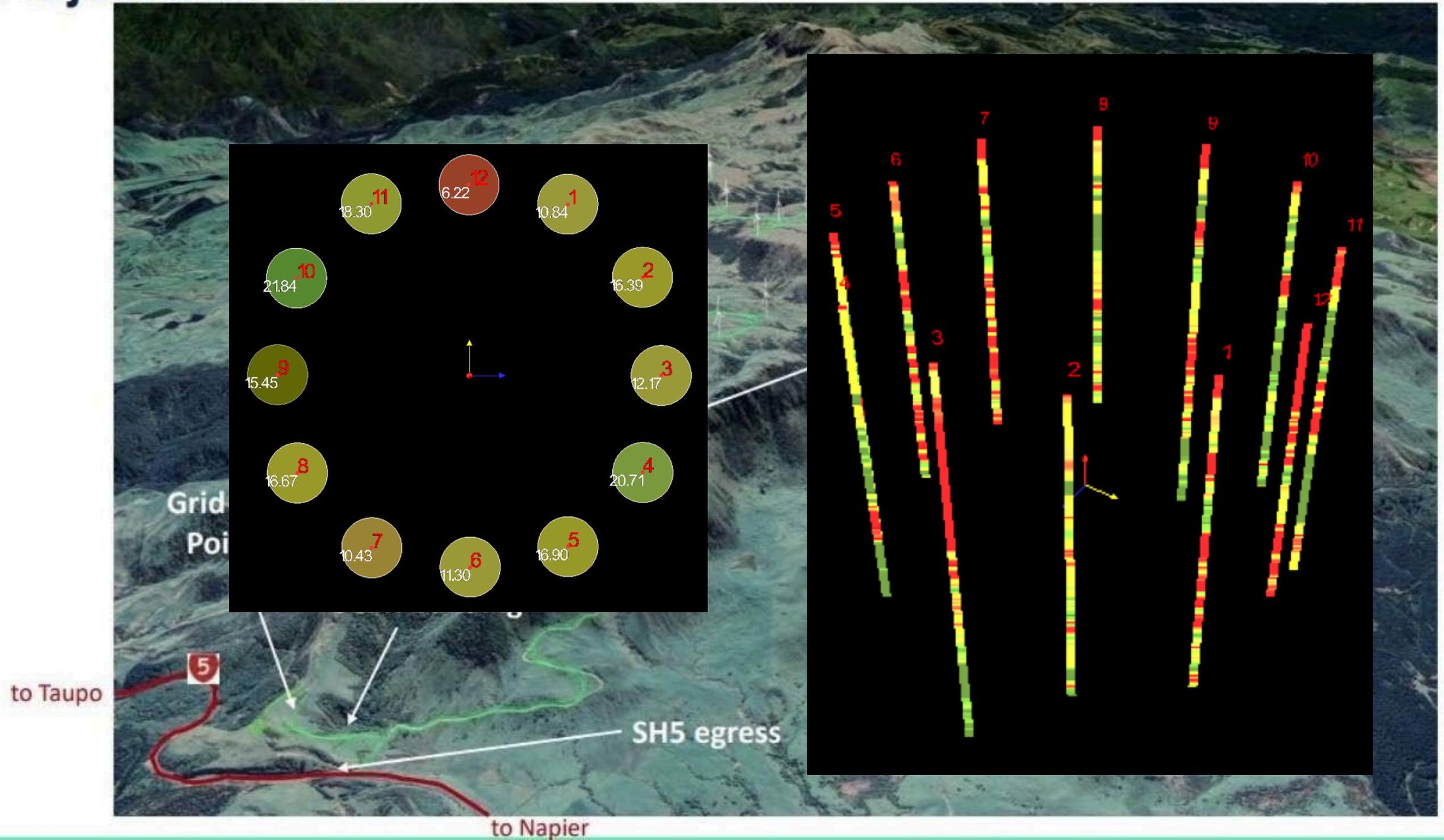
Determining Rock Depths

High Productivity

High resolution data
(every 50mm drilled)



Project overview





Thank you

