

Advanced Blasting Technology

Ozmine, Bangkok

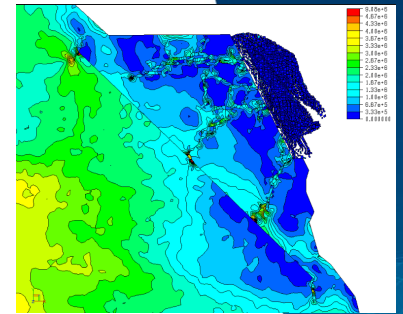
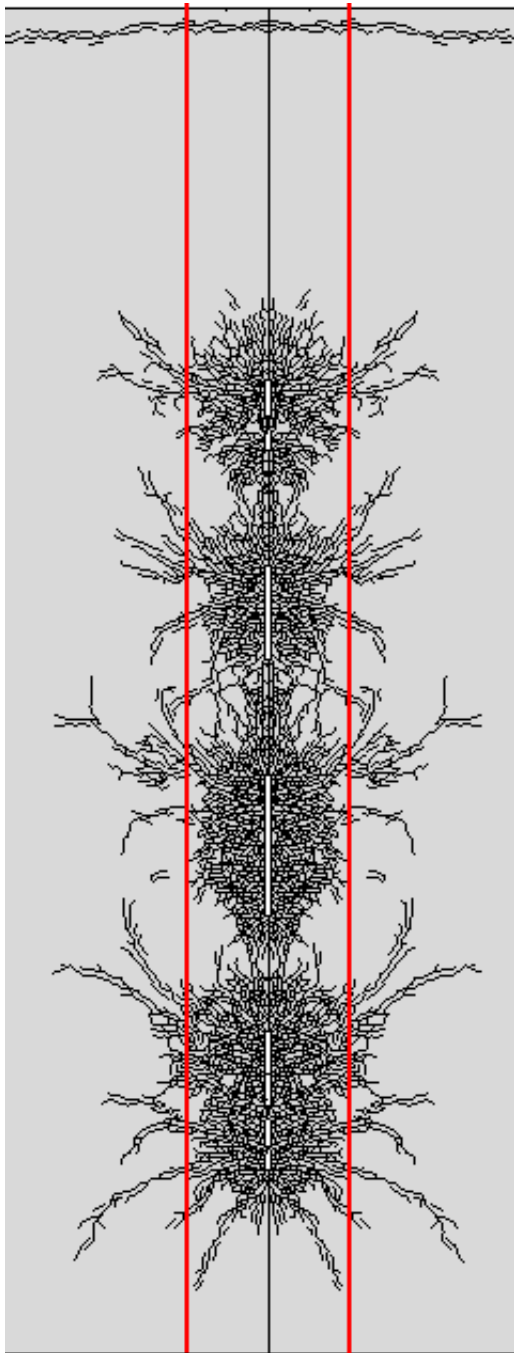
29 April 2011

David Miller

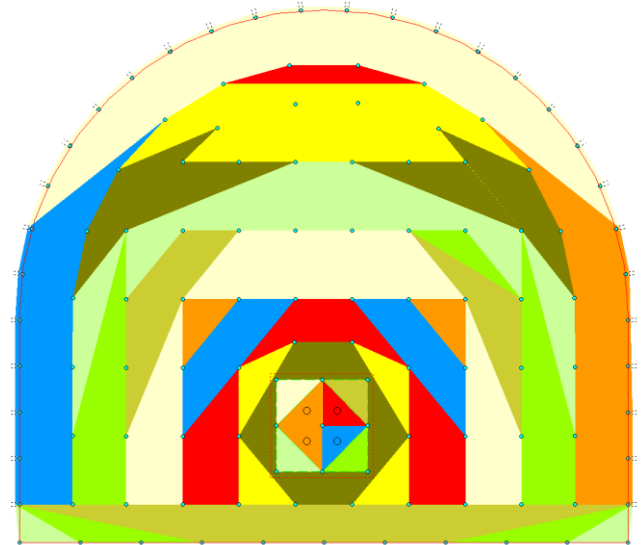
Blast Based Services Manager

Orica Mining Services



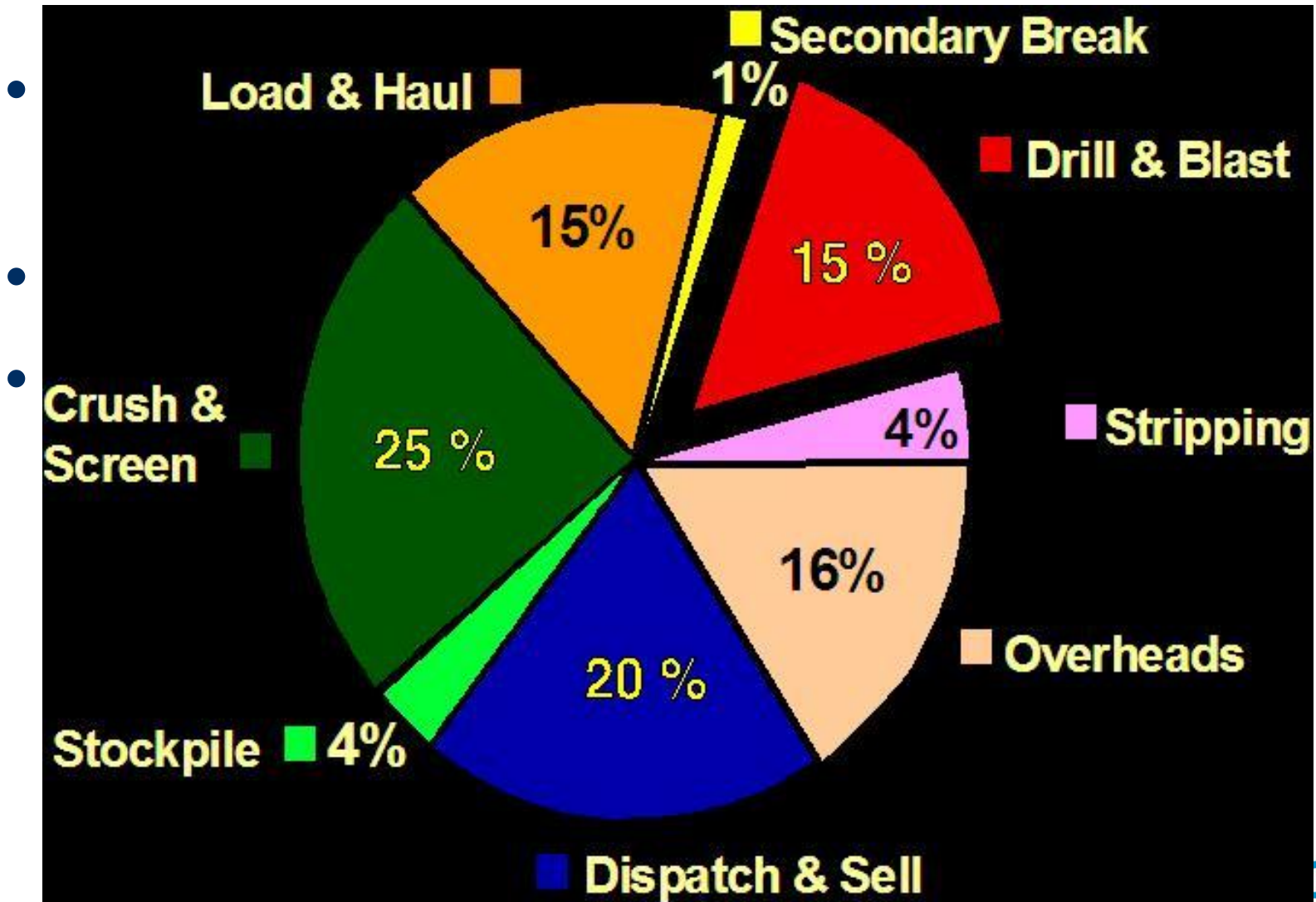


DIP Plus™



services

But...



Orica in Asia



Global Mining Services
HQ in Singapore



Agenda

- Electronic Detonators
- How are Orica's Customers using Electronic Detonators in Blast Based Services projects
 - Open Cut Coal
 - Open Cut Gold
 - Underground Gold

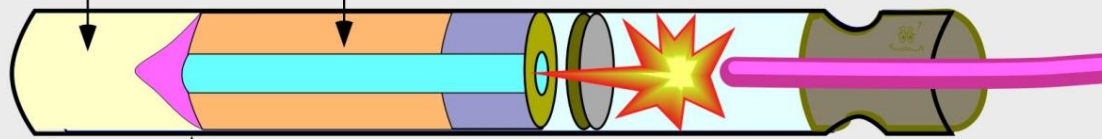
Electronic Detonators



Electronic
element

crimp

Nonelectric Pyro Det



Priming charge

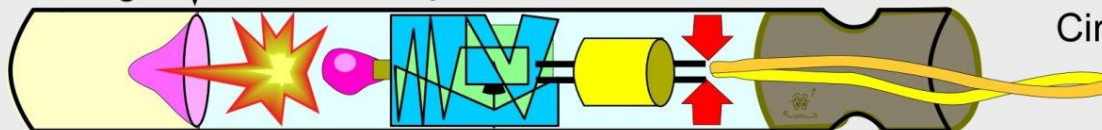
Base
charge

Delay circuit

Safety
block

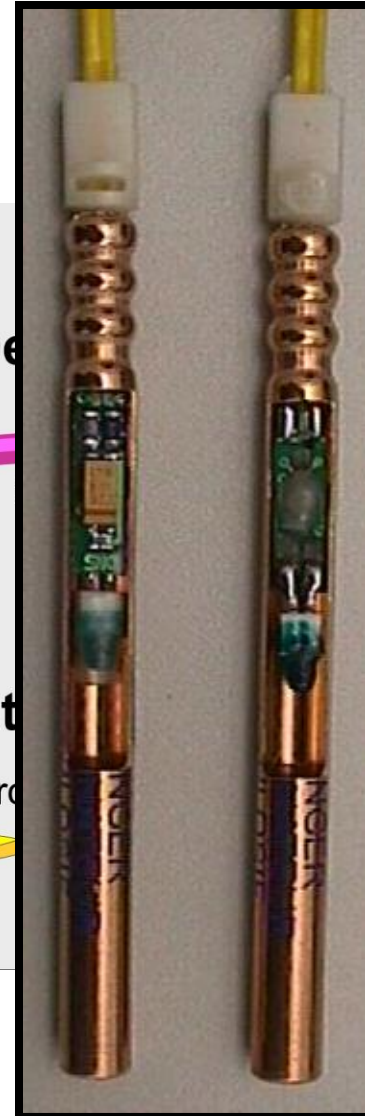
Digital Det

Circ



Fusehead

Capacitor

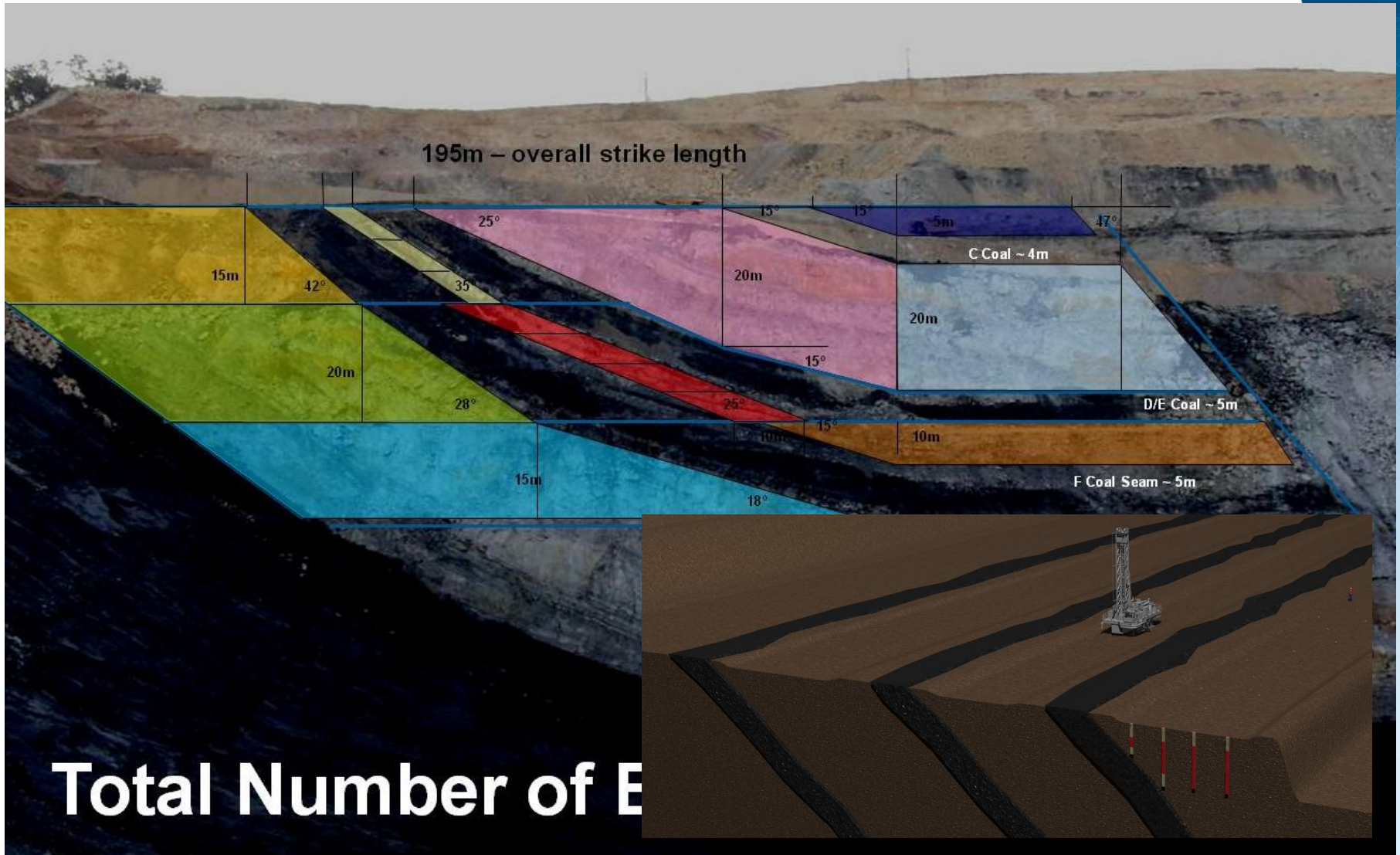


Open cut coal

- Thru seam blasting

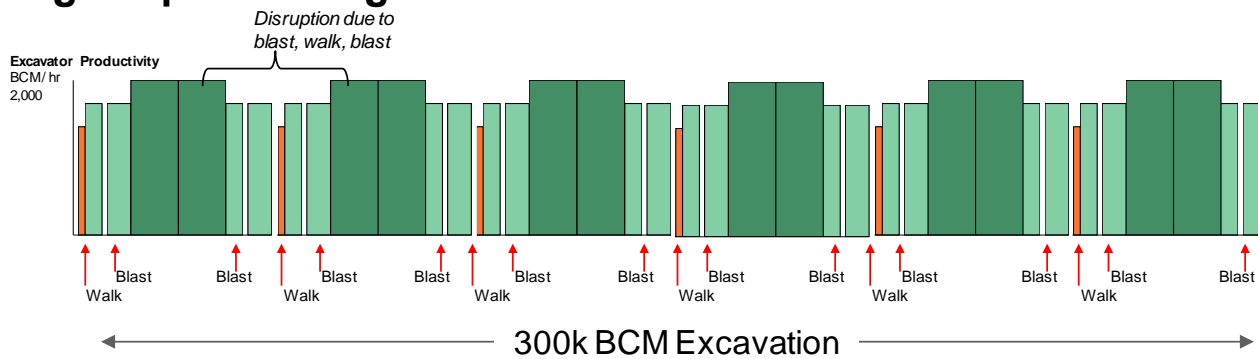


Open cut coal

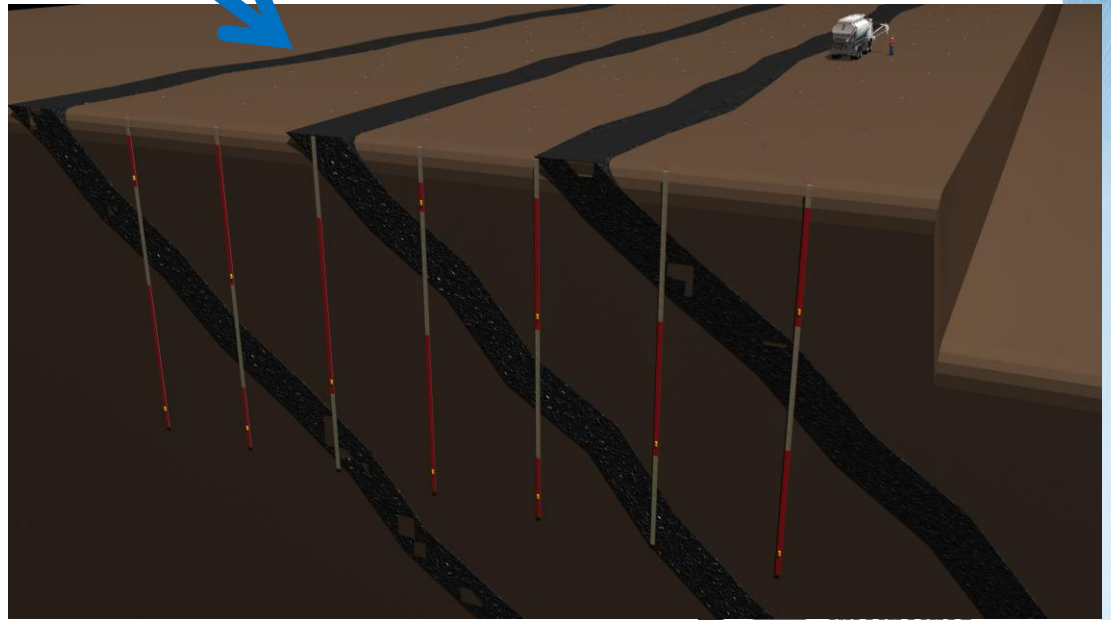
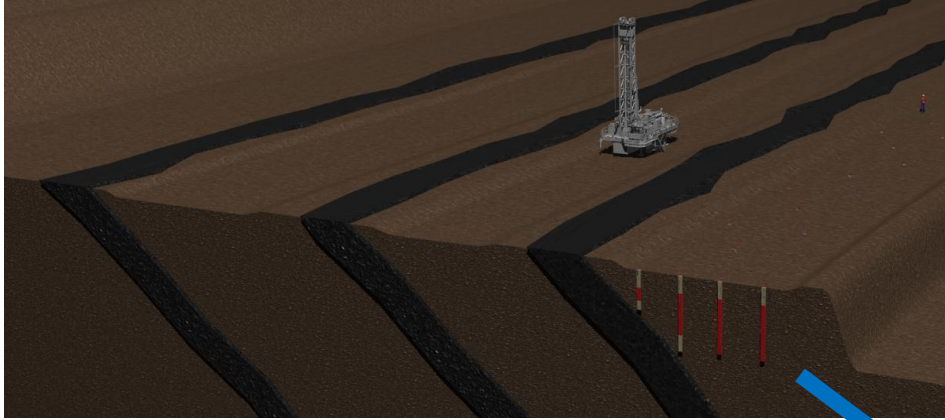


Open cut coal

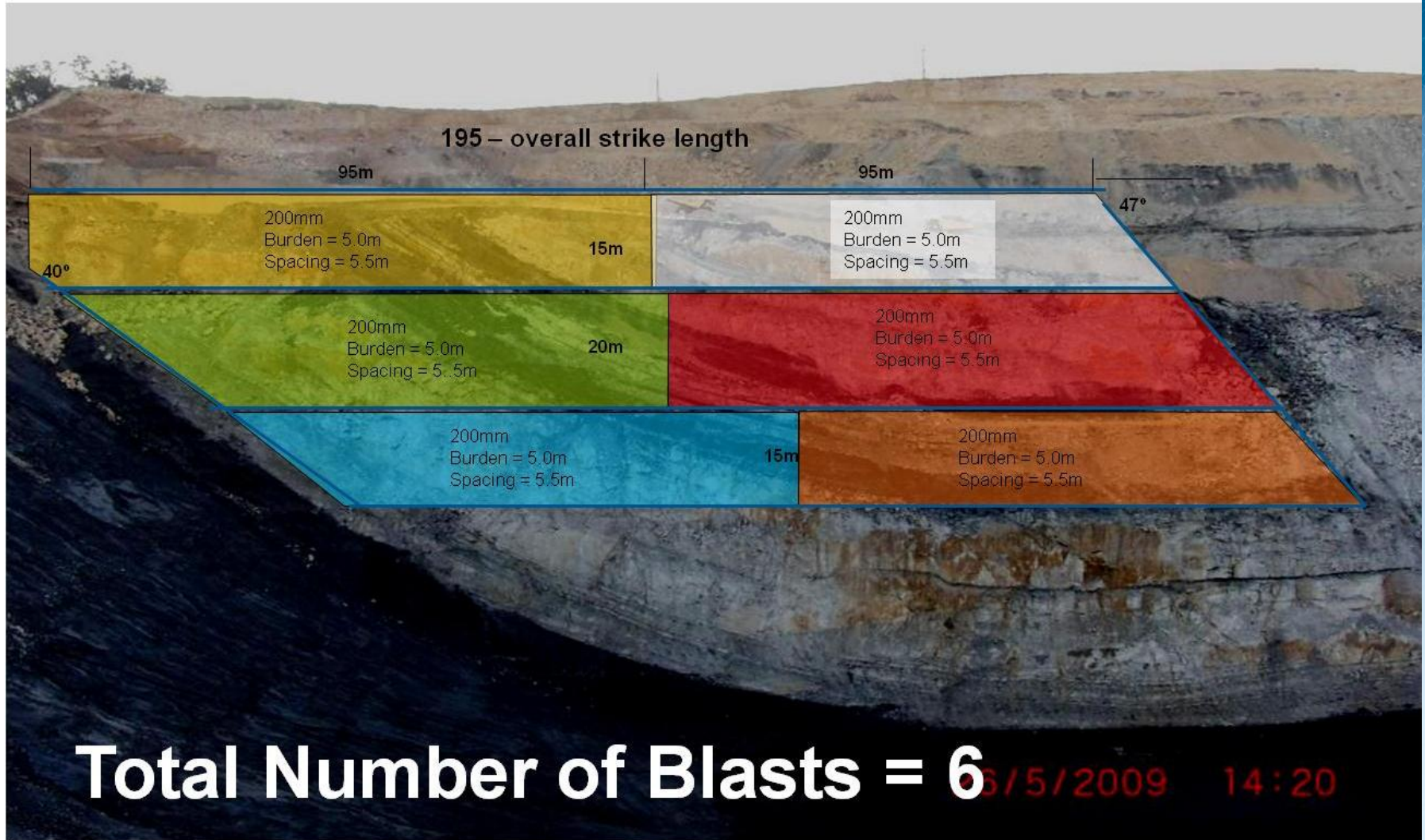
Dig:Stop:Move:Dig:Blast:Start:Move..... = Inefficient



Open cut coal

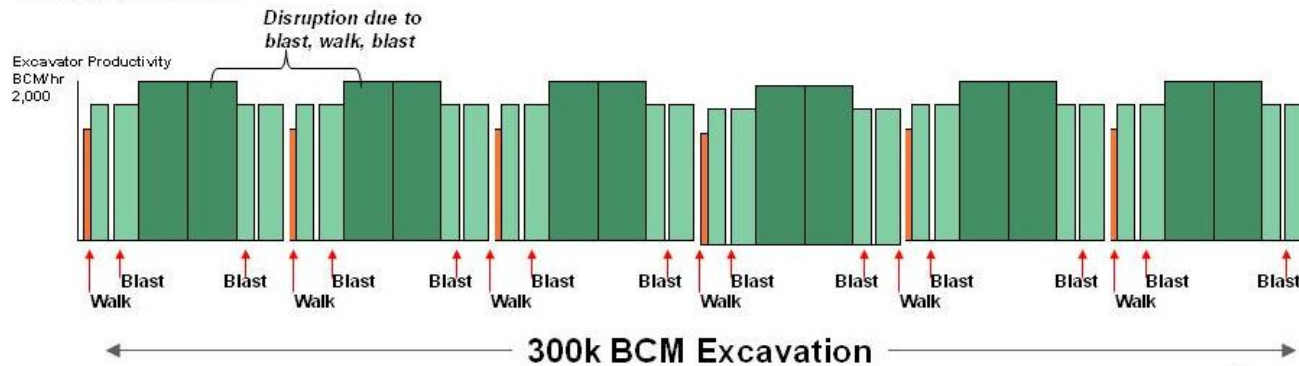


Open cut coal

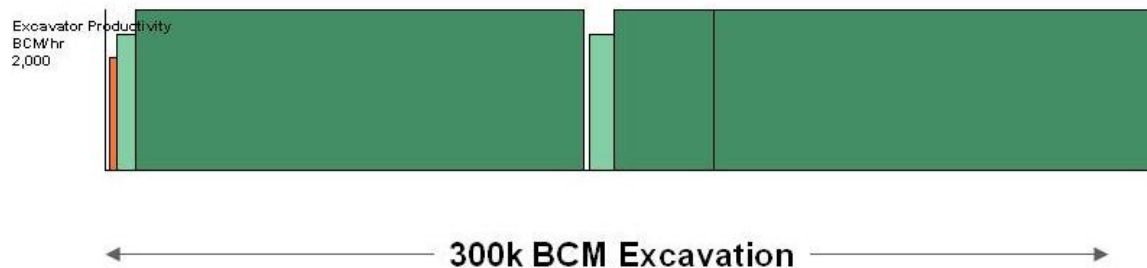


Open cut coal

Traditional:



Thru-seam:

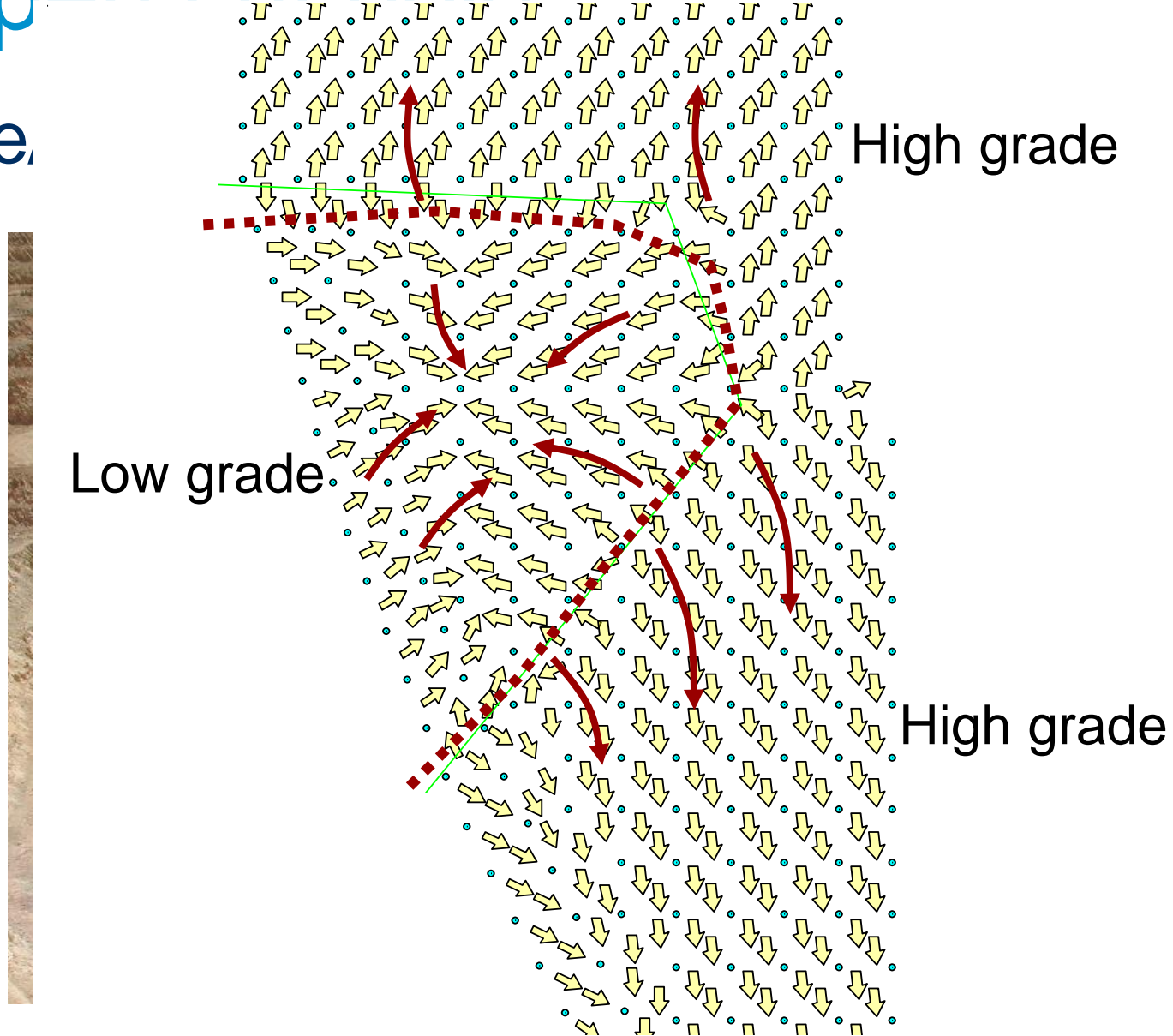


Open cut coal

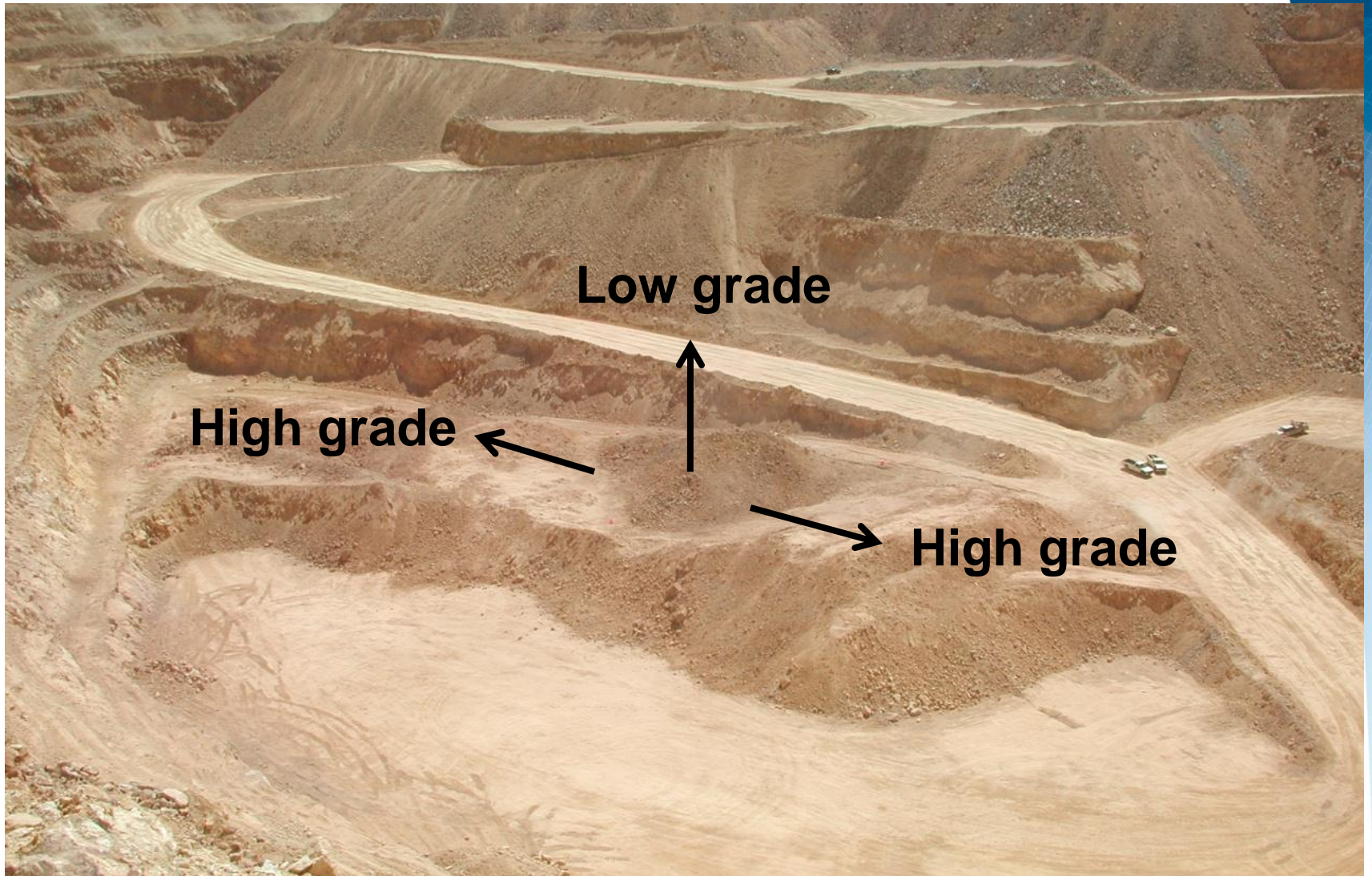
- Minimise environmental impacts
- Minimum coal height down to 200mm
- Develop accurate coal model
- Increase % of resource recovered
- Increase capitalisation of coal reserves
- Eliminate capital requirement for wash plants

Open cut gold

- Ore

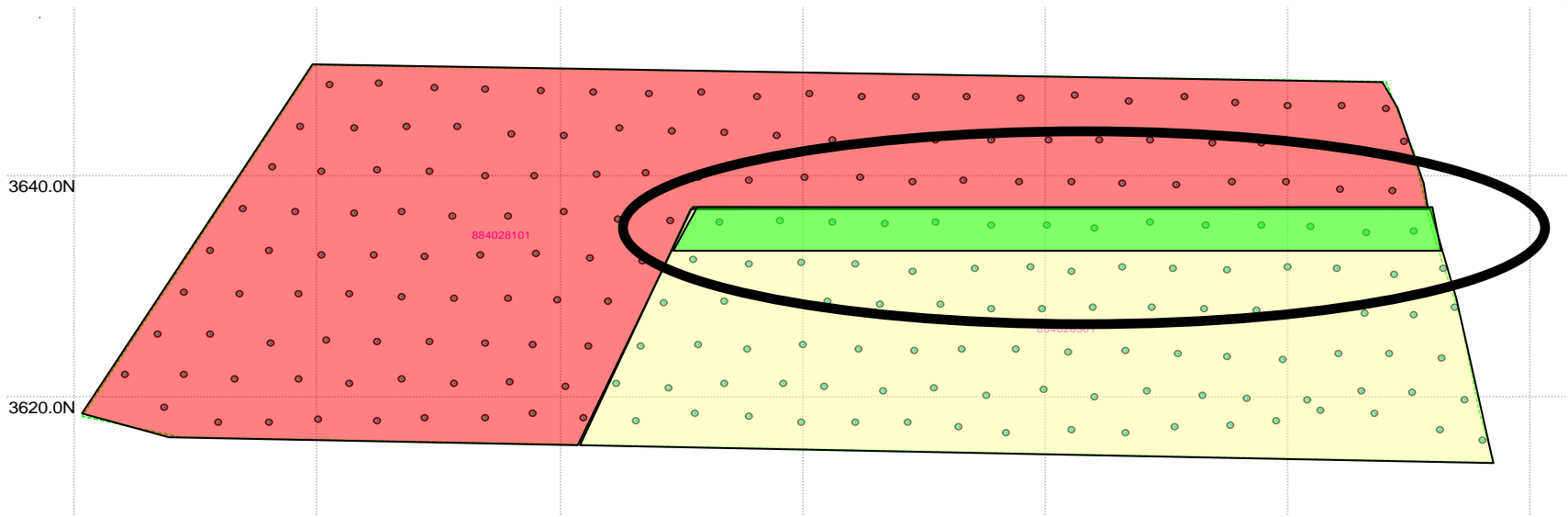


Open cut gold



Open cut gold

- Consider the following example;

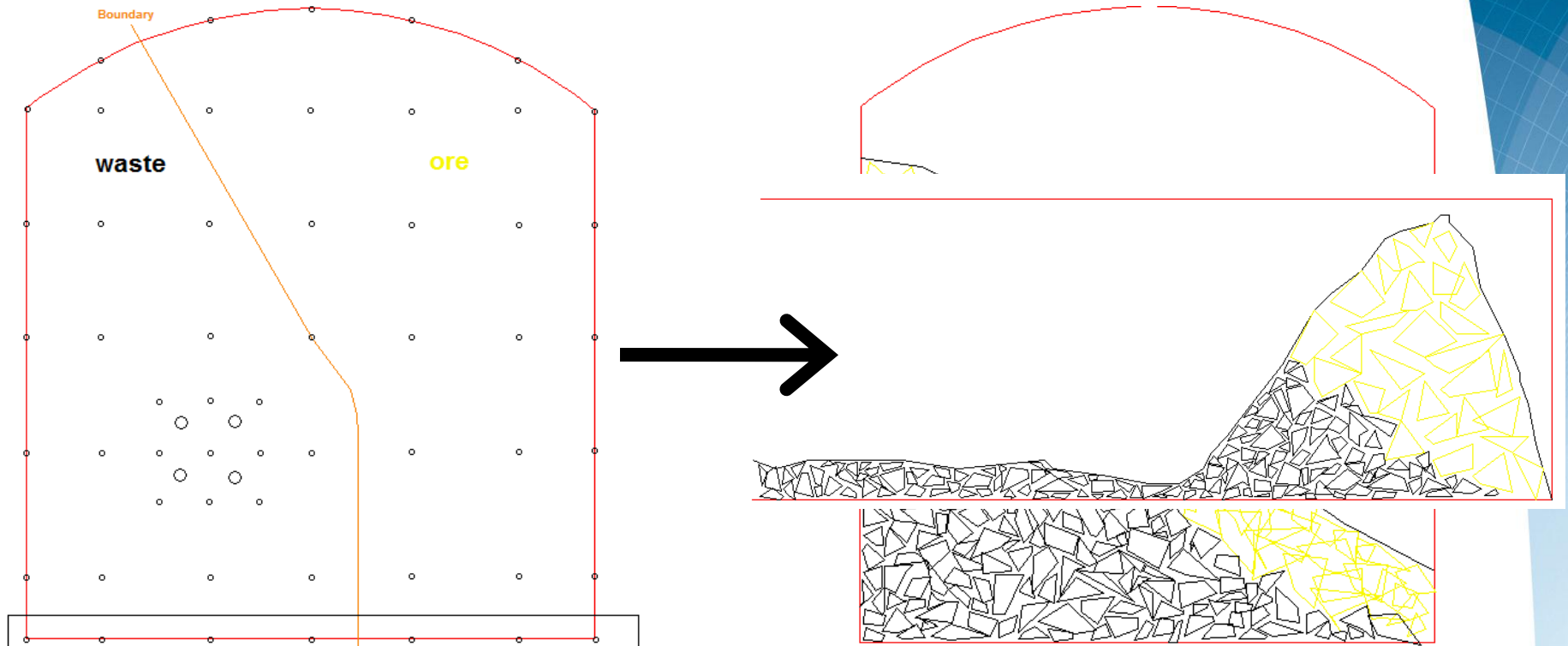


- Typical gold mine blast
- 3m x 3m pattern, 6m bench height

Open cut gold

- 14 holes
- 3m x 3m x 6m x 14 holes
 - 760 BCMs
 - 1,800t
- @ 3 g/t
 - 5,400g
 - 180 oz
- @ 1500 USD/oz
 - **\$270,000 USD per blast**

Underground gold



Conclusion

- Electronic detonators are just one tool in an expanding tool box
- Apart from the right tools you also need,
 - The right people to operate the tools; the “knowledge”
 - A willingness to look past the drill and blast process to realise the value of using these tools