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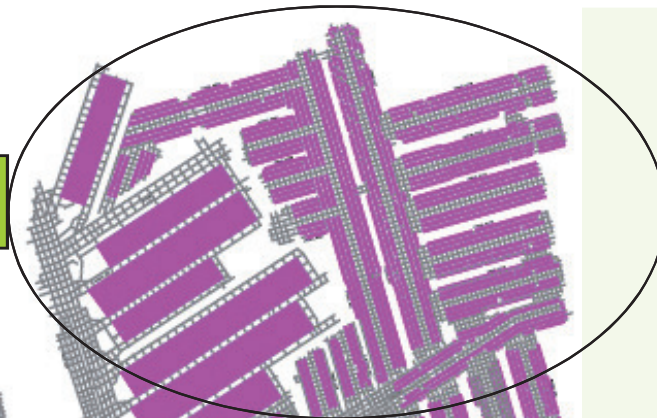
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5 #

## Design Criteria

- **Maximise resource recovery without fracturing the overburden**
- **Mitigate groundwater inflow and disturbance to aquifers**
- **Balance development and partial extraction (retreat) production**
- **Minimise surface subsidence under sensitive features**
  - **Subsidence <100mm**
  - **Tilts <2mm/m**
  - **Strains <1mm/m**
  - **Cliff face protection**

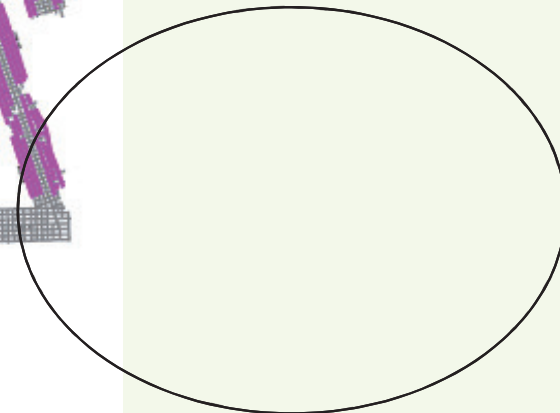
**600 Panels Mining Area**



**700 Panels Mining Area**



**800 Panels Mining Area - Future**



**Drifts and Pit Bottom**





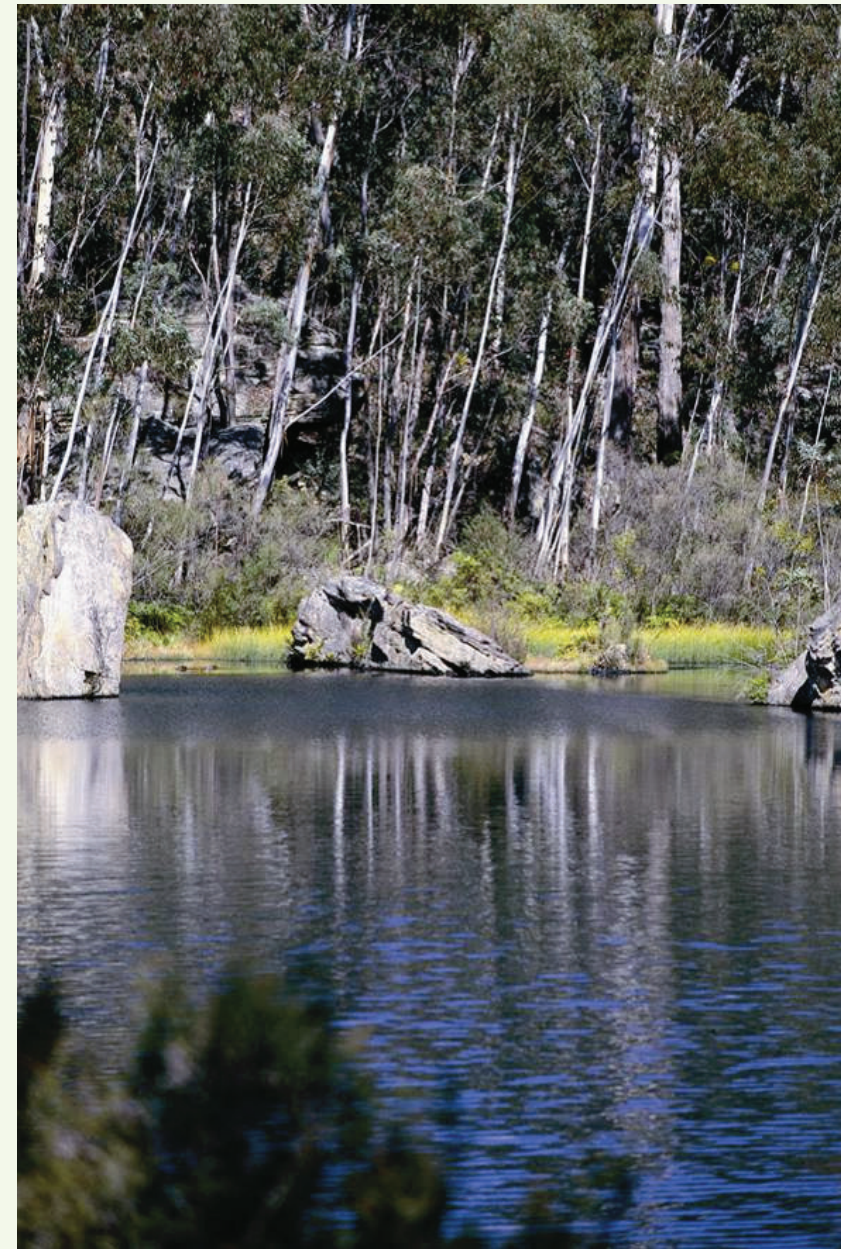
## Roof Support

Good Roof – 4 x 1.8m bolts at 2.0m spacing

Medium Roof – Good + mesh + 2 x 1.8m bolts

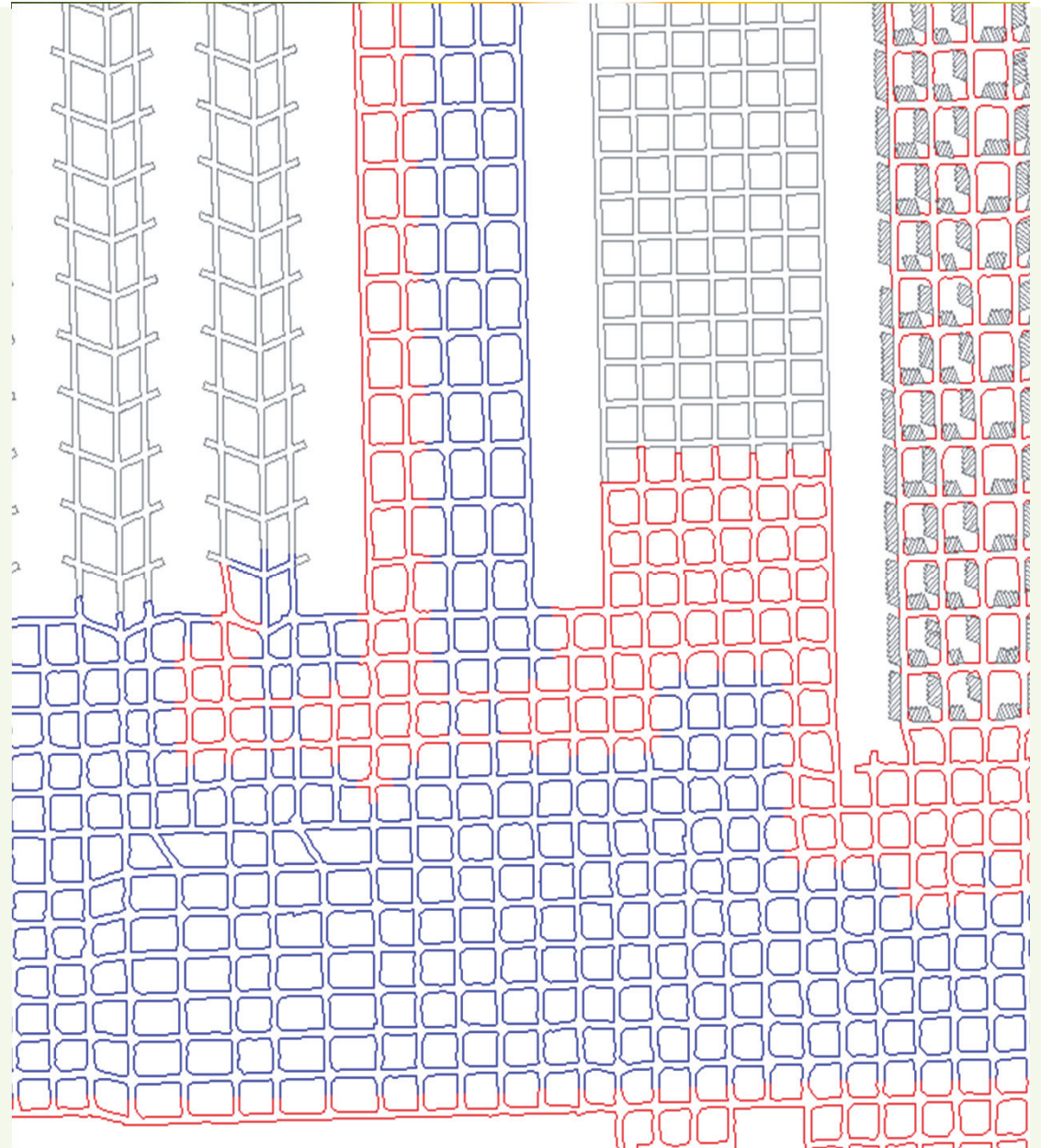
Poor Roof – Mesh + 6 x 1.8m bolts at 1.0m spacing

Rib Support – Typically not required

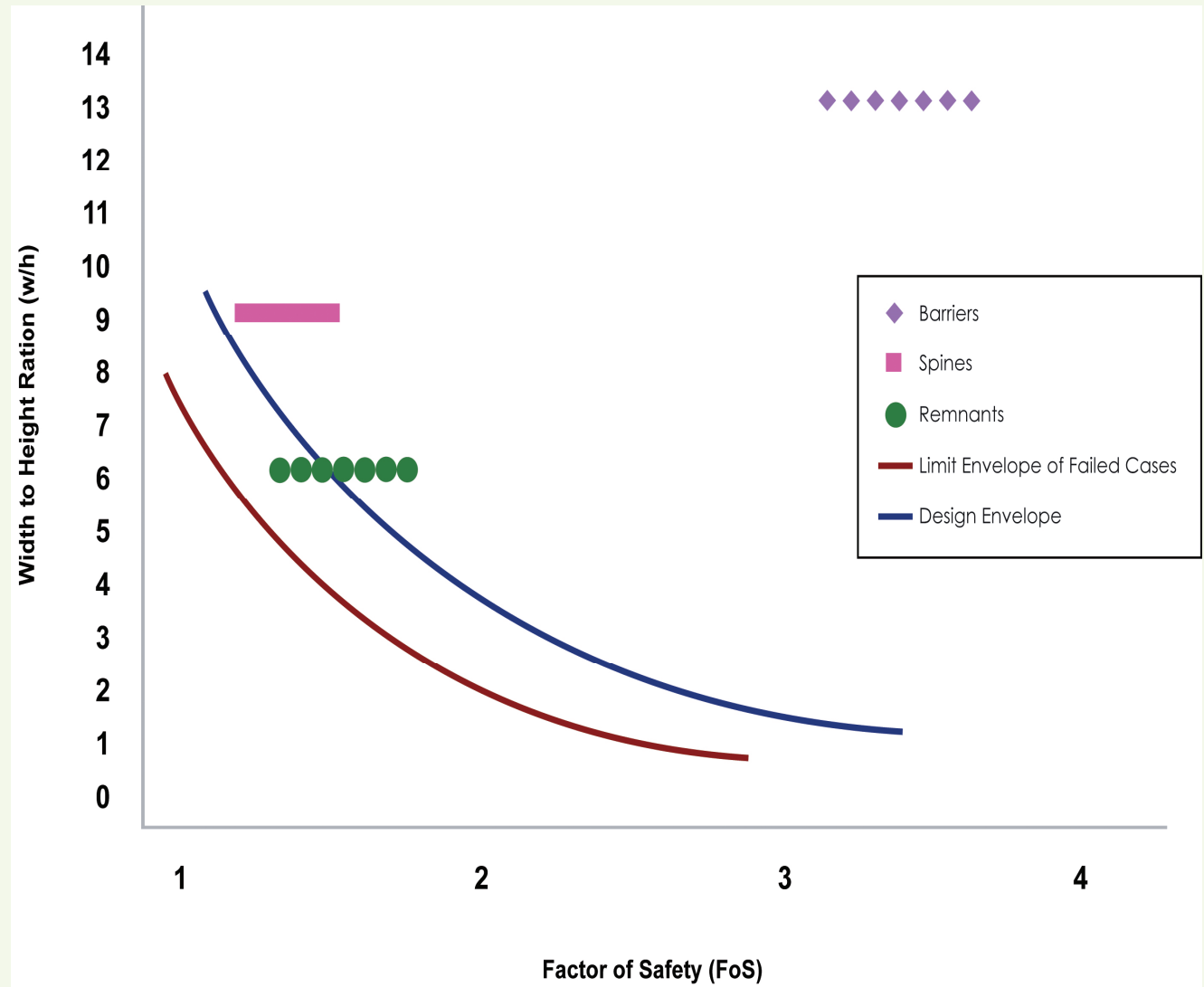




- **Mains development – 7 & 13 headings**
- **Two development panels being worked**
- **700 area has 3,5 and 7 heading panel layouts**

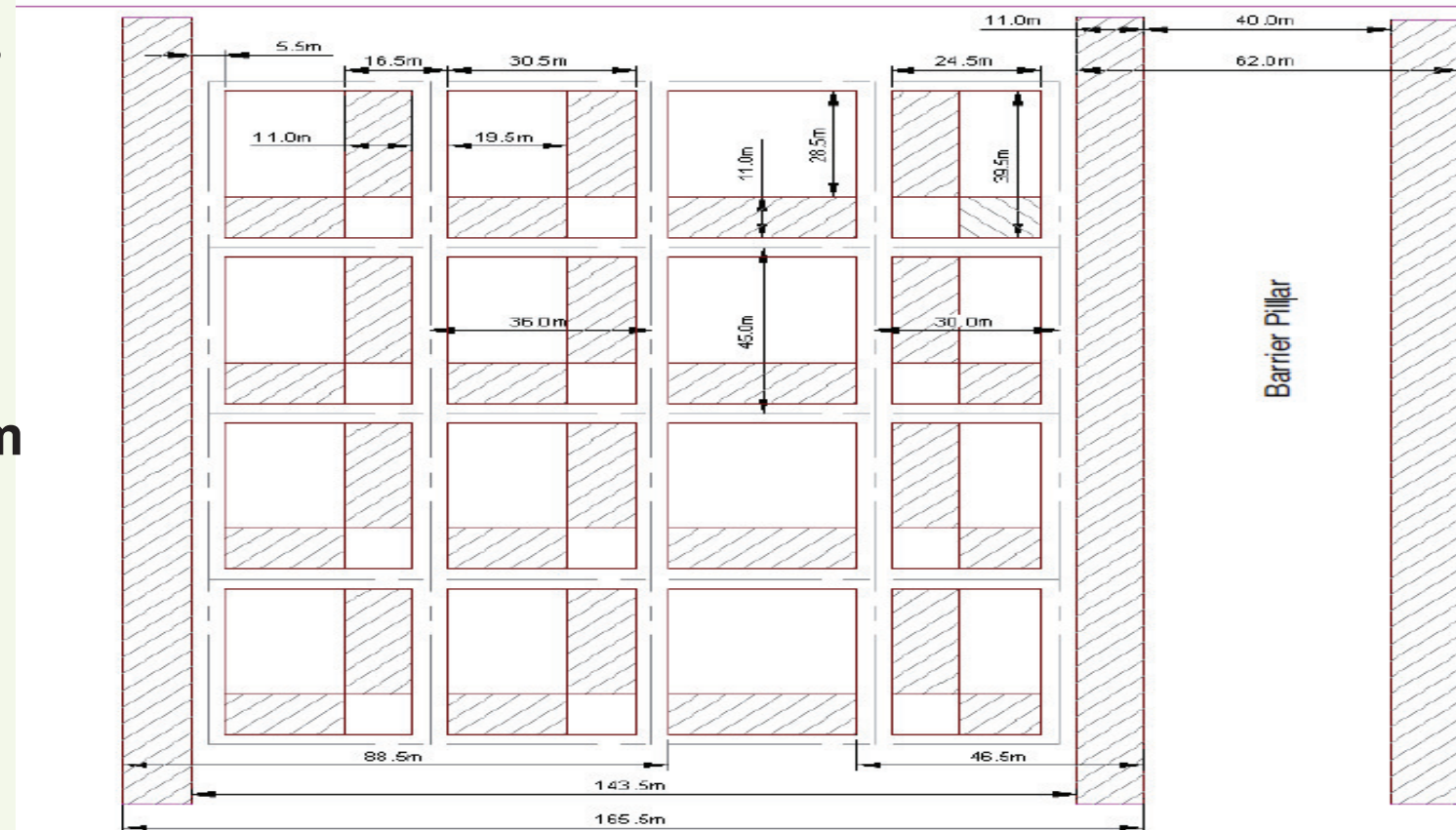


- **Elastic Pillar Compression**
- **Pillar Strength & Load**
- **Potential for bearing failure**
- **Overburden Strata Spanning Capability**
- **Panel Dimensions, Span, Depth**



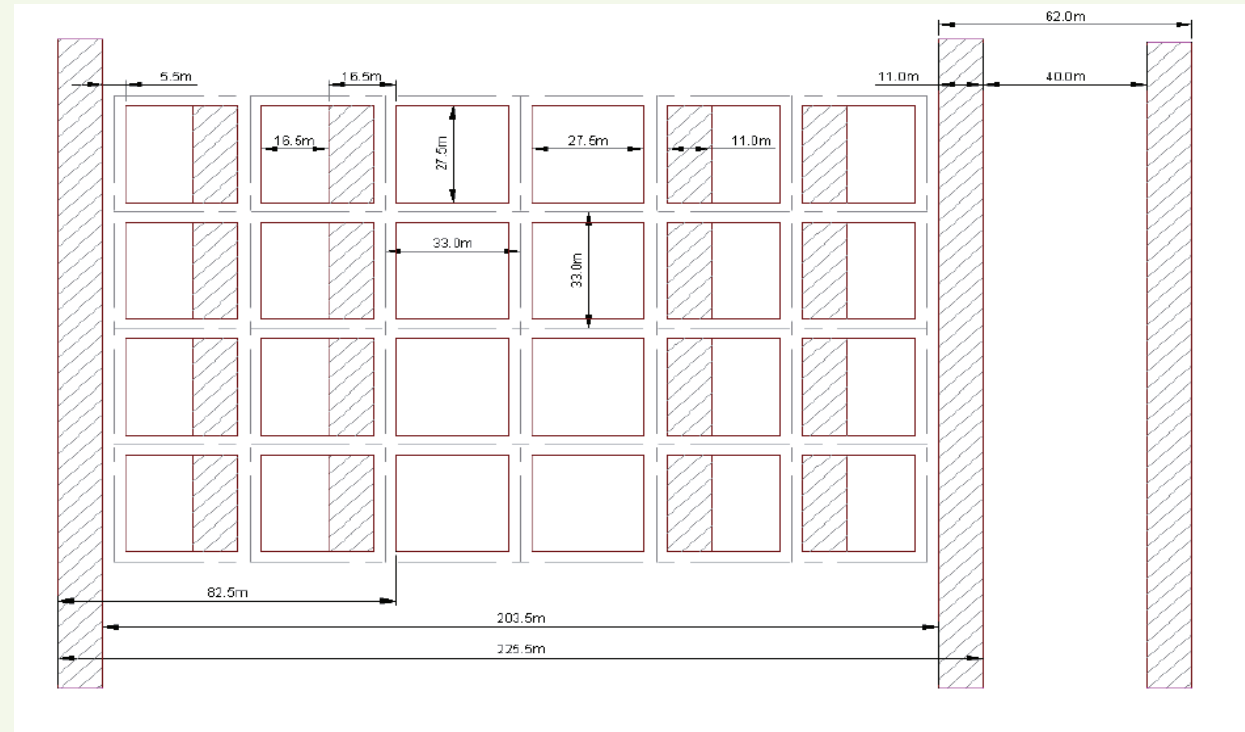
## Pillar Design – 5 Heading Panel

- Same design criteria as 7-heading panel
- Improved ratio of development to extraction of coal
- Pillar size on development 45m x 36m centres
- Extract pillars in 2 directions on the way back
- First panel currently being developed – conservative design
- Factor of Safety after extraction 2.7



## Pillar Design – 7 Entry Panel

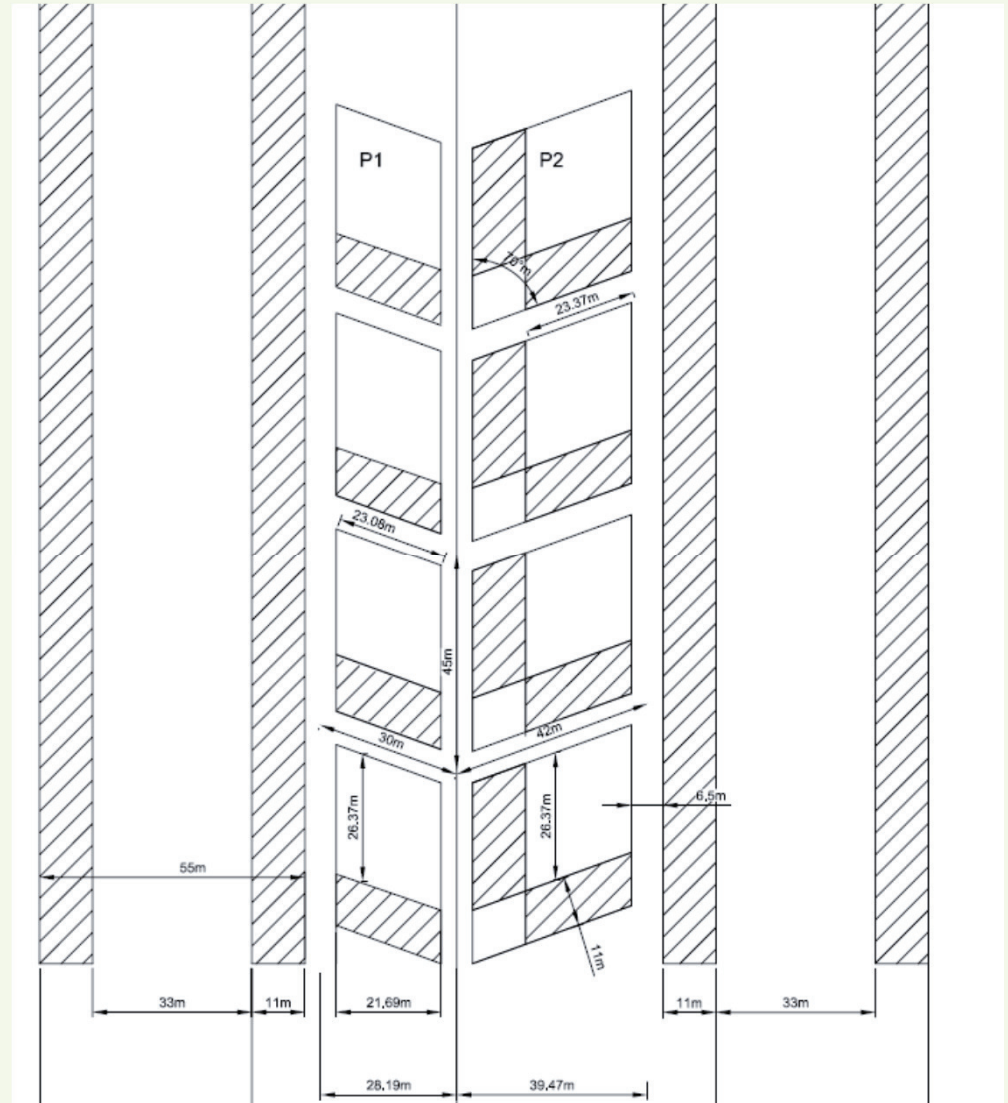
- Pillar stability determines amount of coal taken on extraction
- Develop seven 5.5m x 3m roadways
- Initial inter-panel barriers are 60m wide during development phase
- Two Spine pillars is left intact during extraction
- Factor of Safety after extraction is 2.4
- Stability is achieved through roof spanning between barriers & spine pillars





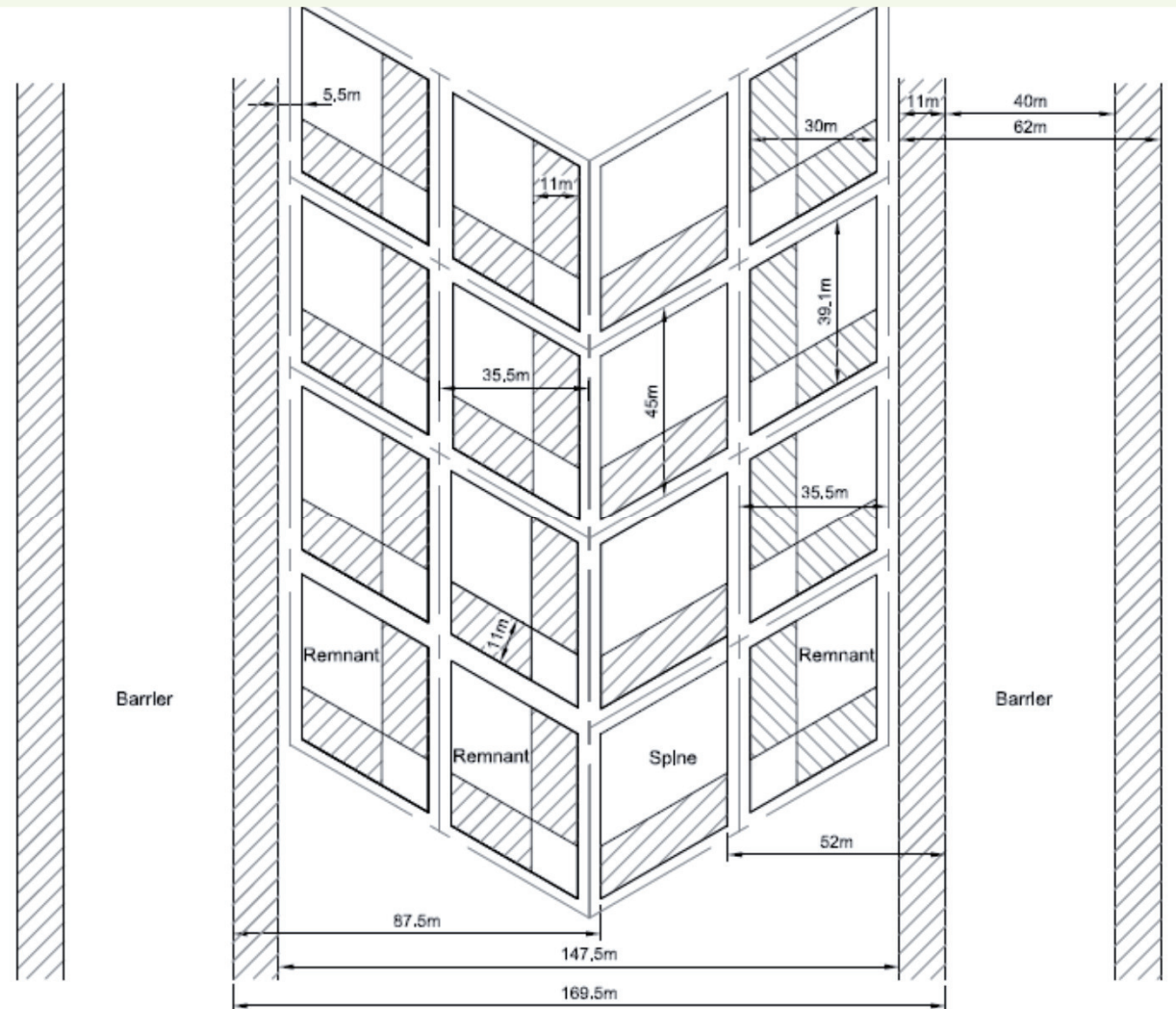
## Pillar Design – 3 Heading Panel

- Same design criteria as 7-heading panel
- Limited number of roads to introduce FCT concept
- Pillar size on development 45m x 39m
- Extract in two directions
- Factor of Safety after extraction 2.3



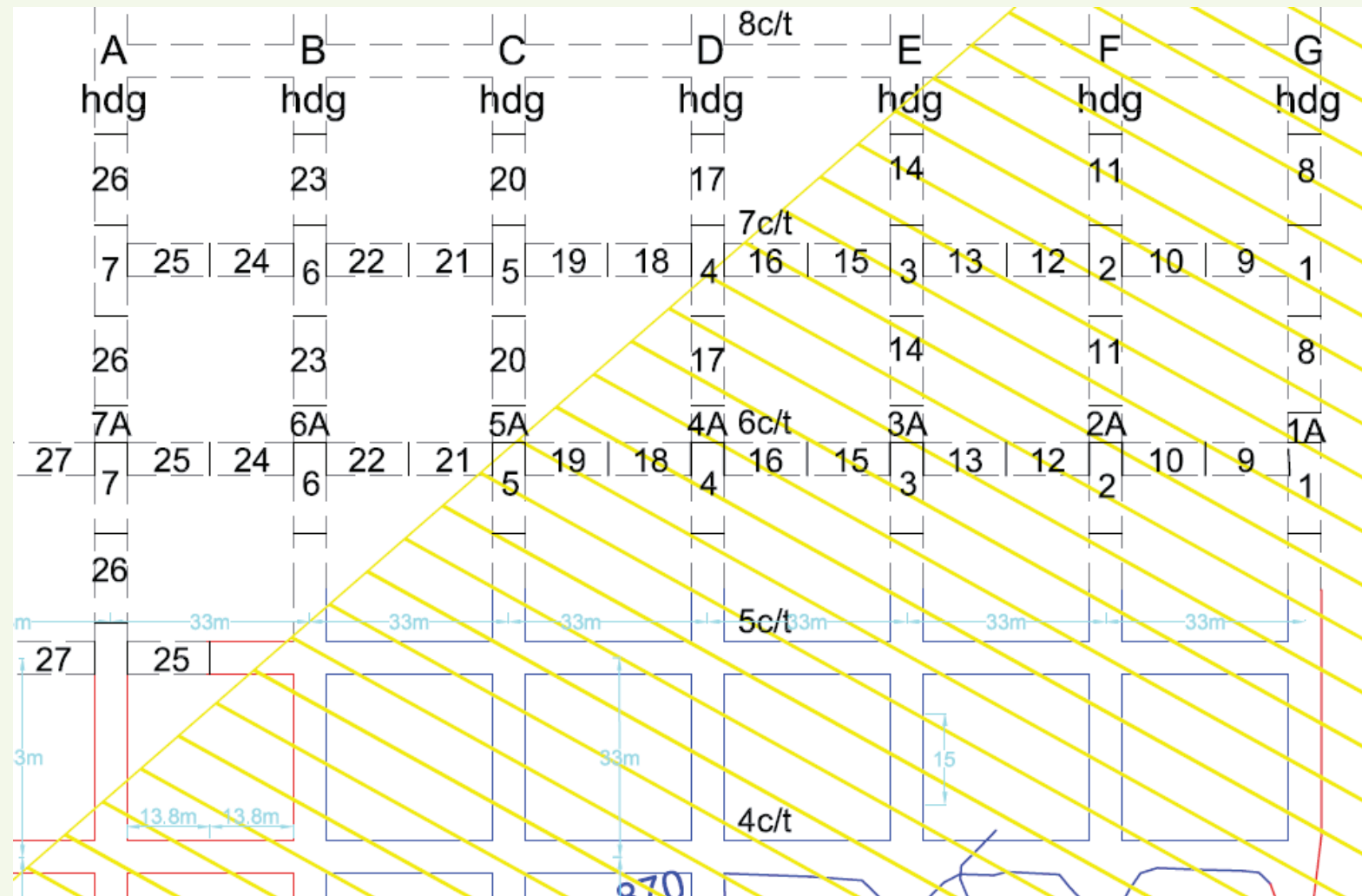
## Pillar Design – 5 Heading Panel

- Same design criteria as 7-heading panel
- Limited number of roads to introduce FCT concept improving ventilation and logistics
- Pillar size on development 45m x 35.5m
- Extract 3 pillar in 2-directions on the way back
- Factor of Safety after extraction 2.7

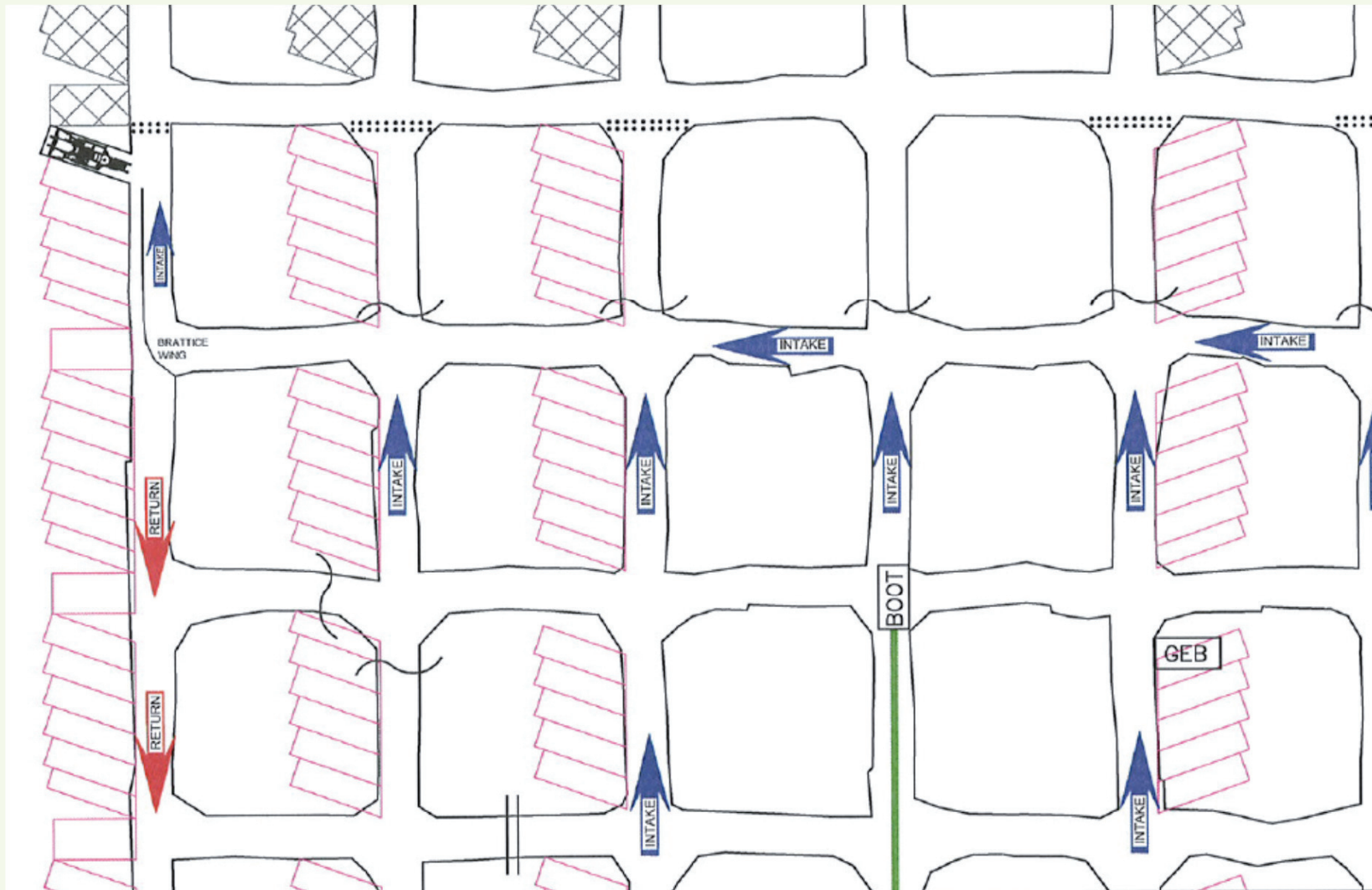


# Mining Sequence 7 Heading Development

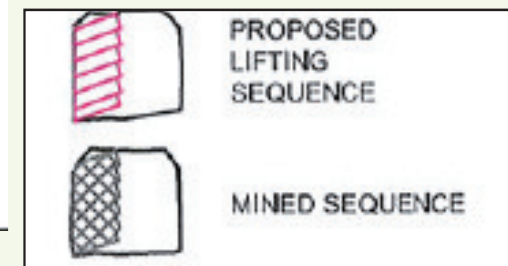
- Cut & Flit – 15m plunges
- 26 Cut Sequences – G-Heading to A-Heading
- Five x 3 Way Sequences



# Extraction Sequence – 7 Heading System



- Lifts from A – B – C then G – F – E
- Centre pillars not mined
- Timber Props
- Stooks left at the inbye / outbye pillar ends







Belmont  
10 & 11 June 2010

Thank You  
Any Questions?