

# ***Dendrobium Colliery***

***Update on Outburst Issues in the  
Wongawilli Seam***

***28-11-07***

# Aim

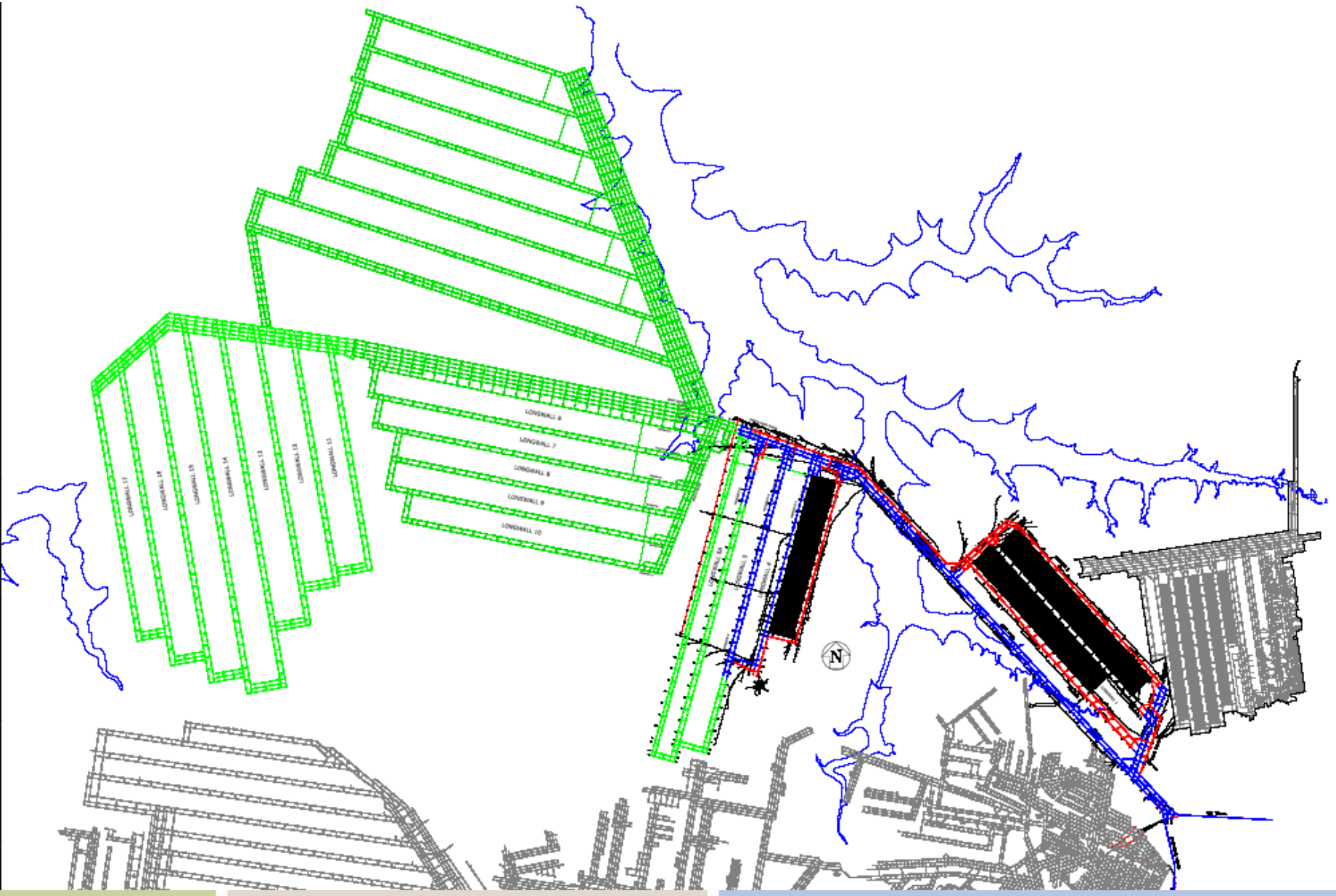
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- Focus on Wongawilli Seam
- Current status of Dendrobiums gas levels and outburst propensity
- Outburst considerations as the mines move towards deeper and higher gas regimes
- Strategies Forward

# Background in the No. 3 Seam

- > 100 years of mining
- Mines close to the escarpment
- Relatively low depth of cover
- Not regarded as “gassy”
- No recorded outburst events

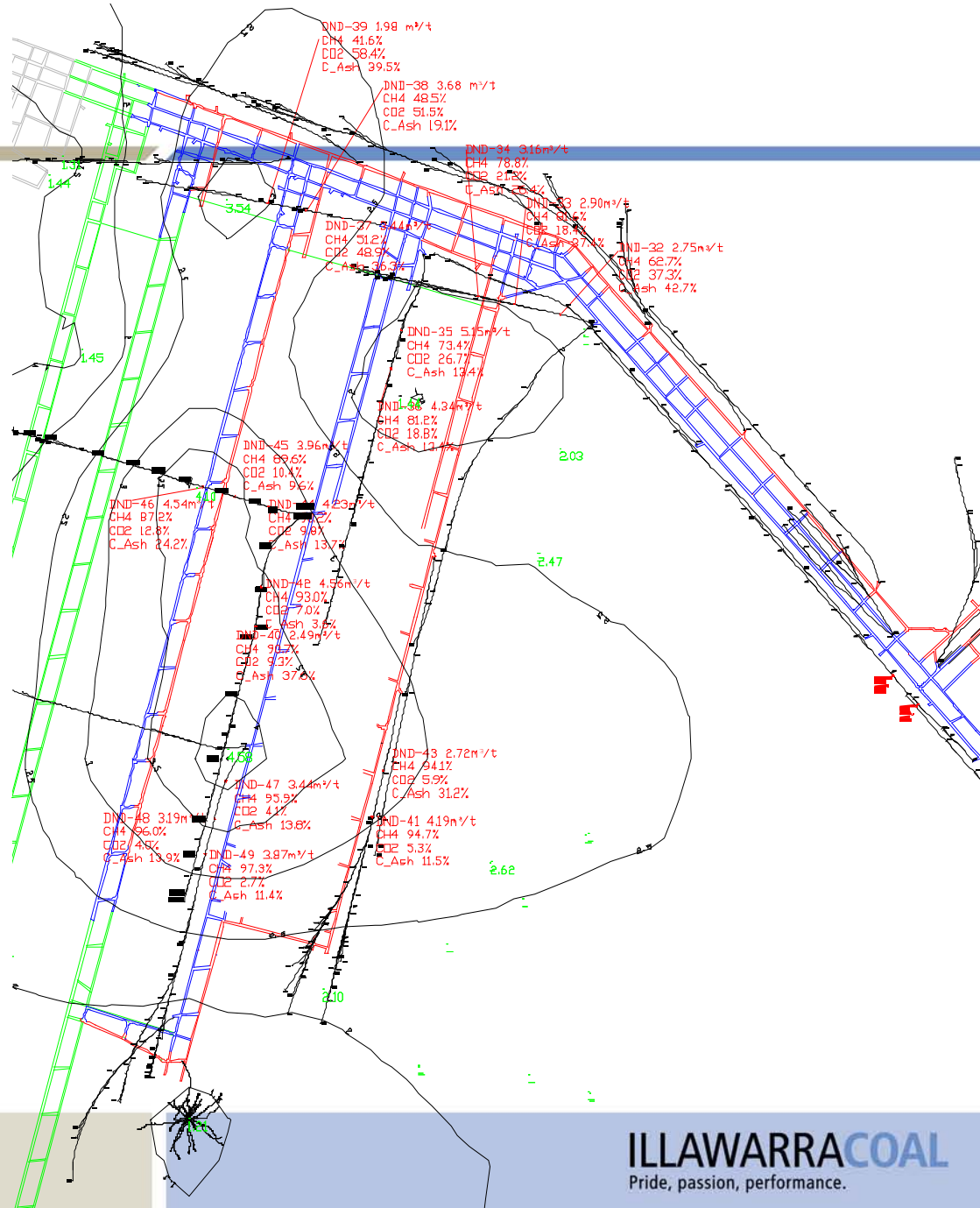
# Dendrobium Mine Plan



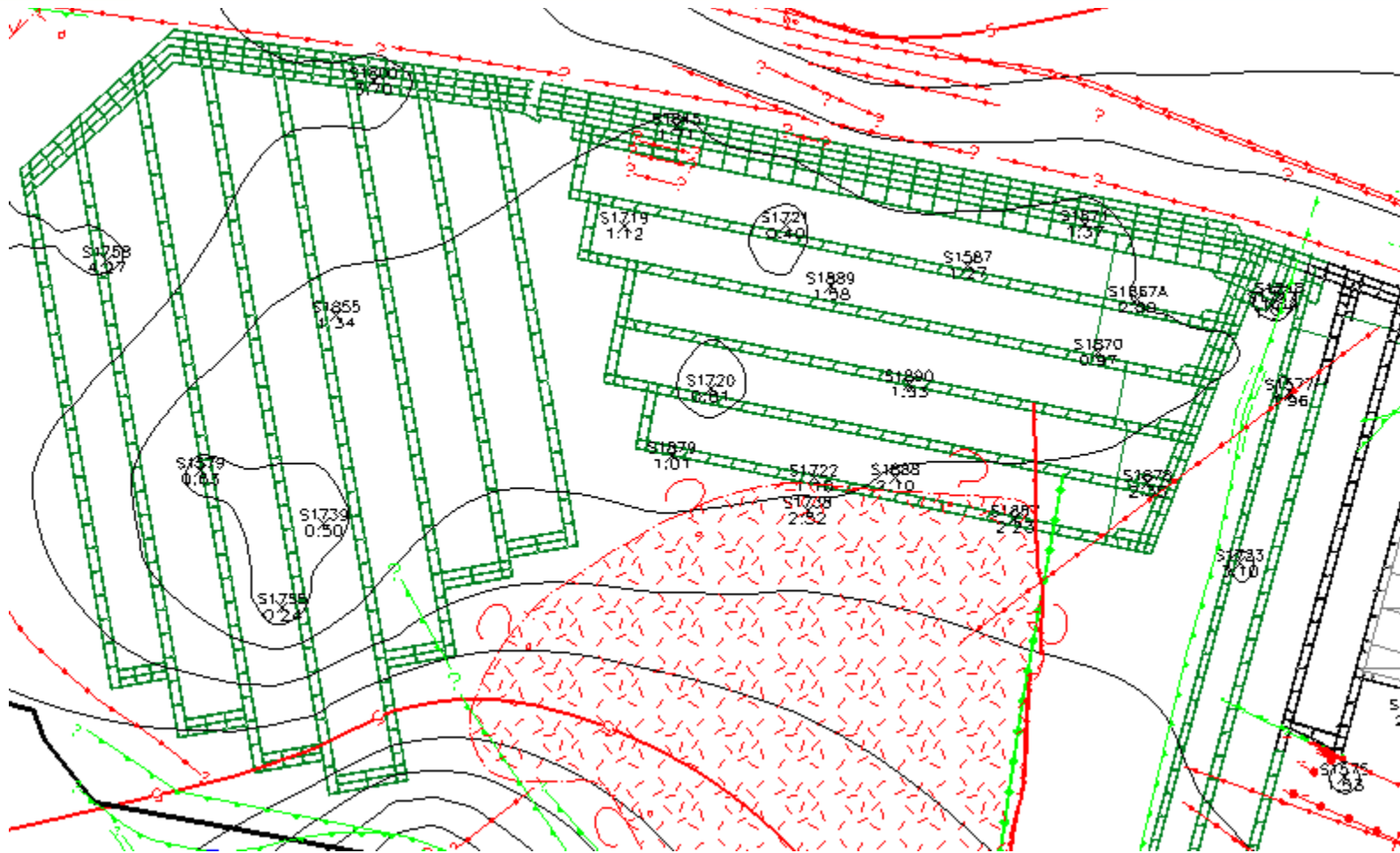
# Dendrobium

- Low gas regime
- Low outburst risk
- Some Co2
- Area 3C first instance of high gas levels
- Don't have an OBMP – to be reviewed for Area 3a
- Geogas currently reviewing the risk.

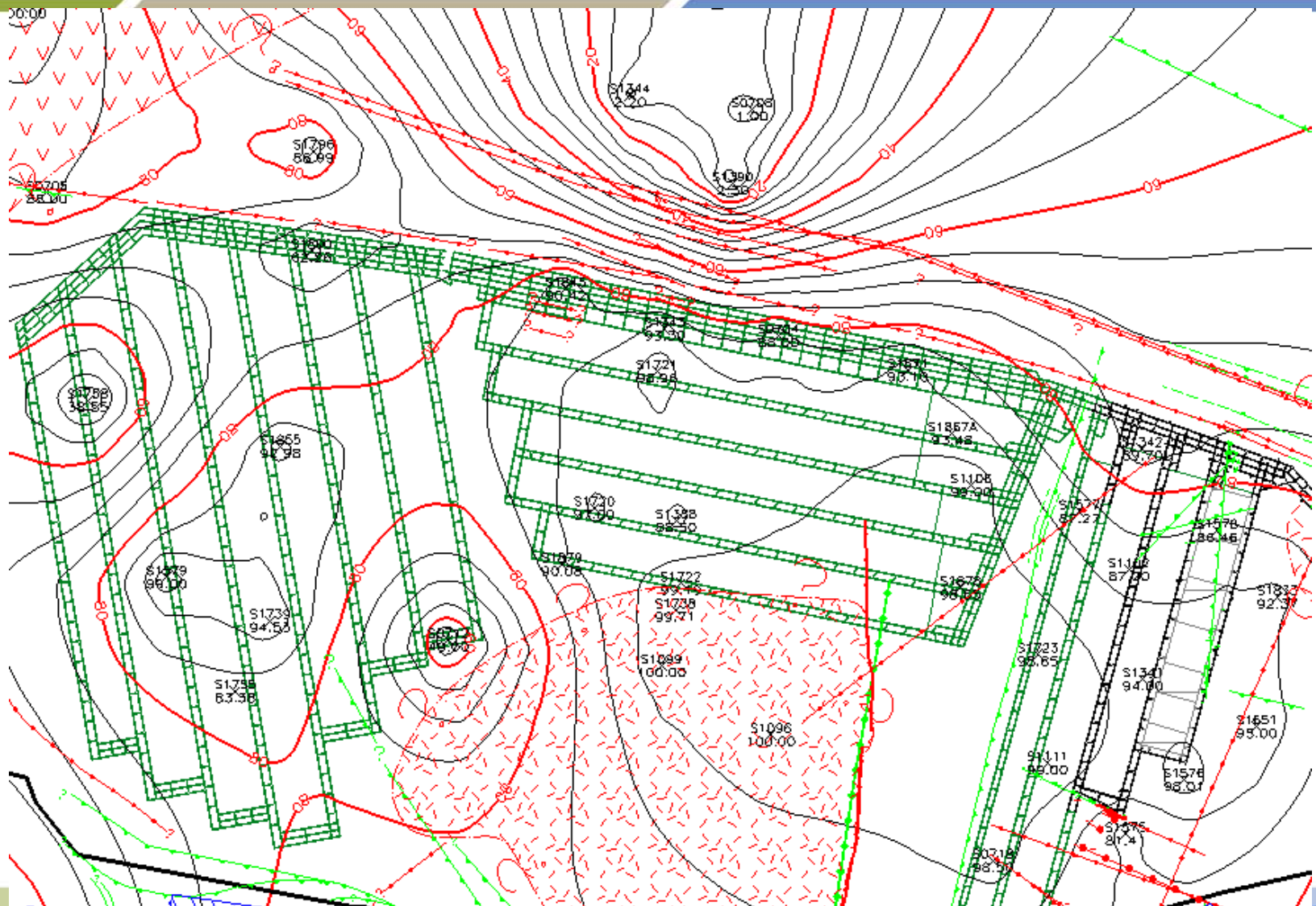
# Area 2 Gas Content



# Area 3a & 3b Gas Content



# Area 3 Gas Composition

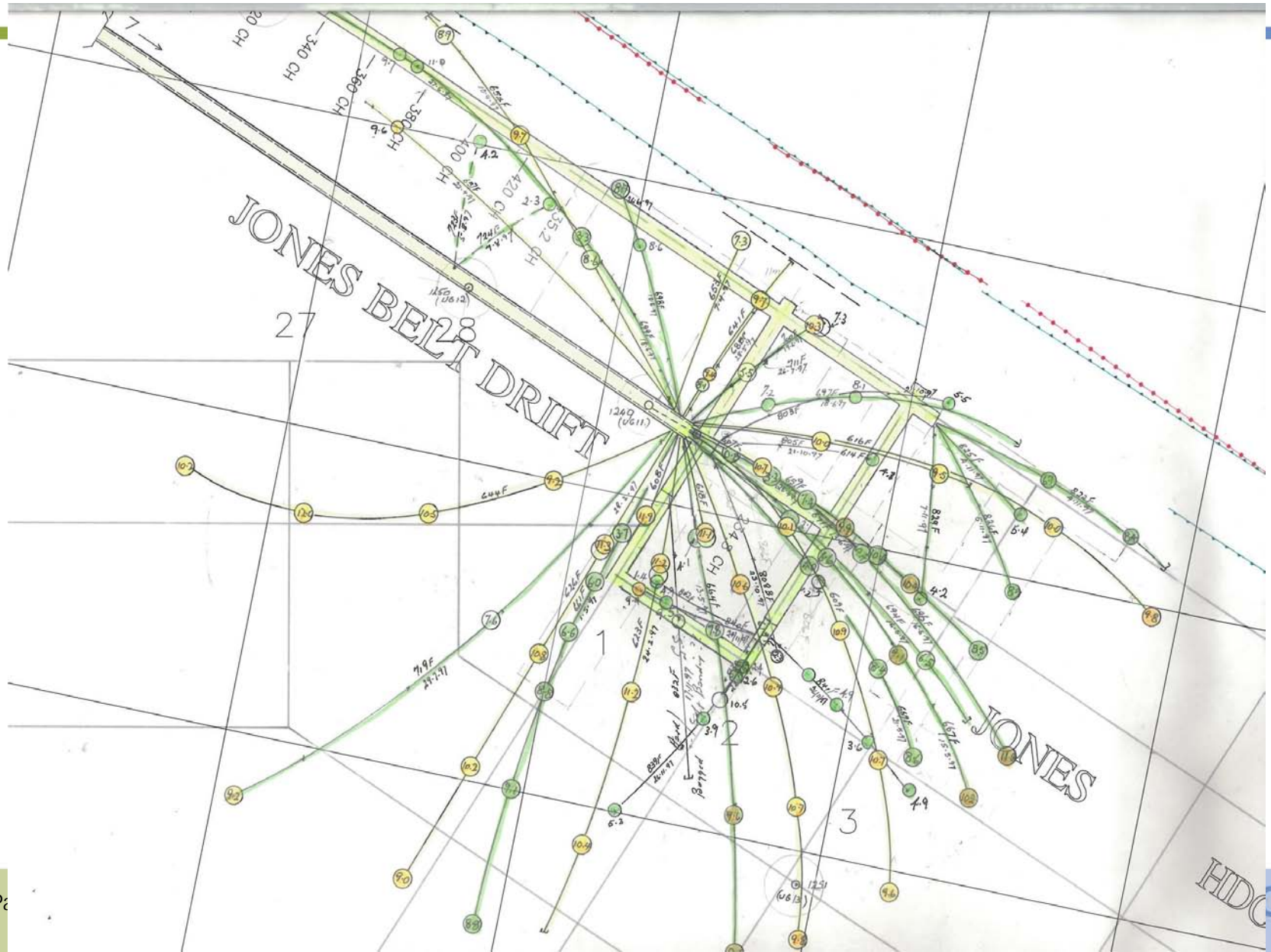




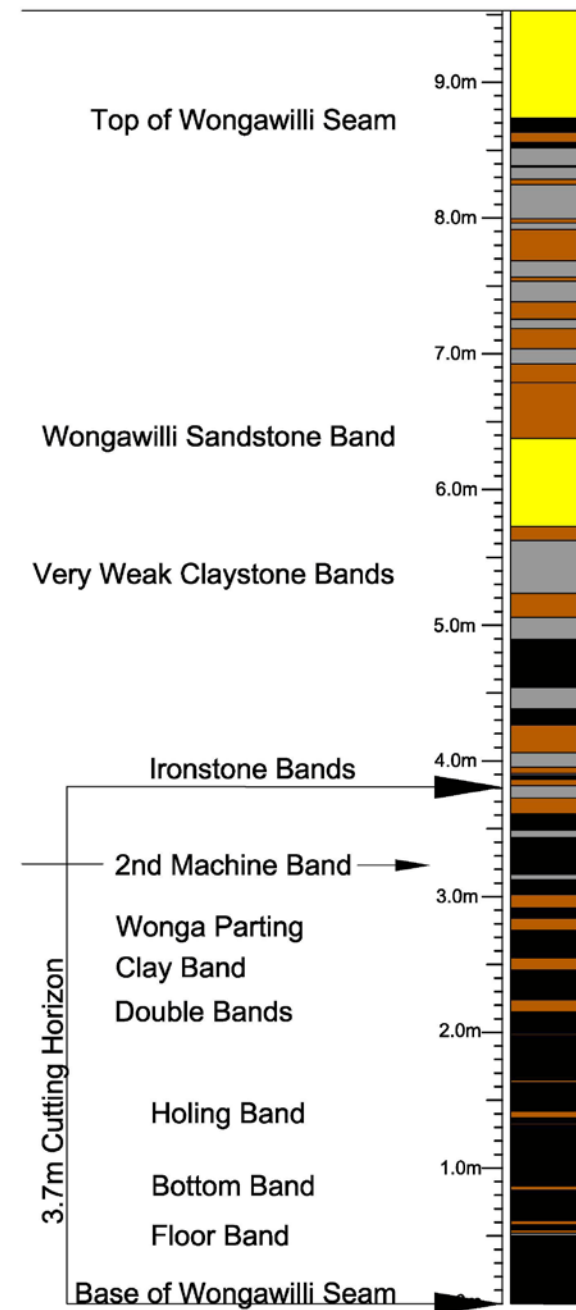
# Cordeaux Colliery

- Mine withdrew from No. 3 Seam in 1996
- Very limited first workings
- Outburst risk issue was recognised
- Issues raised
  - What is the outburst gas limit
  - Impacts of thick seam and various impermeable layers
  - Drainage effectiveness in No. 3 Seam
- Initial recommendations made and OBMP developed
- Mine Closed prior to resolution
  - Limited opportunity to build the No. 3 Seam data base.

# Cx Colliery No. 3 Seam gas core results



# Wongawilli Seam Cross Section



# Variation in Gas Content over Seam Section

- Cx studies into variation in gas content relative to different layers of strata
  - See tables below
- Dendrobium
  - Significant variation in the sample ash levels and the relationship to gas content.

# Cx - Seam Section Gas Contents

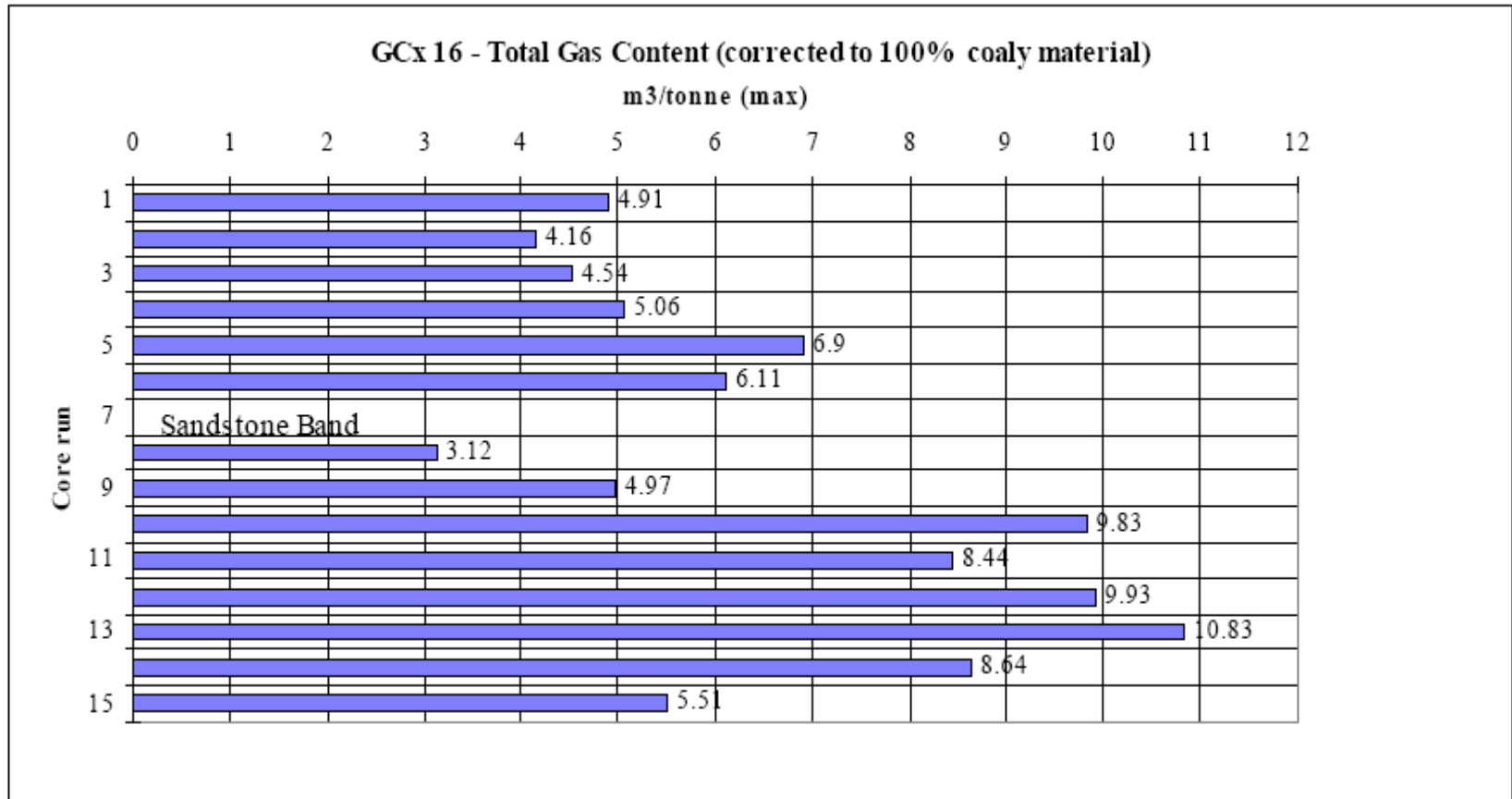
## Ww Sm IN-SITU TOTAL GAS CONTENT

(Corrected to 20 deg. C & 100% coally material)

Location B/H No.	Mack. UCx 7	Mack. UCx 10	Mack. UCx 11	Mack. UCx 12	Mack. UCx 13	Bass UCx 8	Camp/Wiley UCx 17	Mer 1 UCx 14	Mer 1 UCx 9	Shoob. 6 UCx 15	Shoob. 6 UCx 16	Average m3/t	Maximum m3/t
Wonga. Roof													
	9.41		7.04	5.72	6.62	8.08	7.89	5.6	7.97		4.91	6.73	8.08
		6.21	6.04	7.34	9	11.4	7.61	6.58	5.92	8.71	6.9	7.81	9.41
											6.11	7.50	11.4
Sandstone Band													
	8.8		5.39	7.03		7.05	5.85		6.89	6.92	9.83	6.99	9.83
					9.51			5.12			8.44	7.69	9.51
Wonga. Working Roof	7.24		8.26	6.07		10.67	6.08		8.21	11.84	9.93	8.72	11.84
			8.27	9.11	9.89	6.65	10.02	7.57	8.61	9.5	10.83	8.94	10.83
Wongawilli Floor			8.78	8.3	10.78	6.65	<i>10.02</i>	8.64	10.28	9.5	8.64	9.07	10.78

Italics indicate uncertain results - adjacent results used.

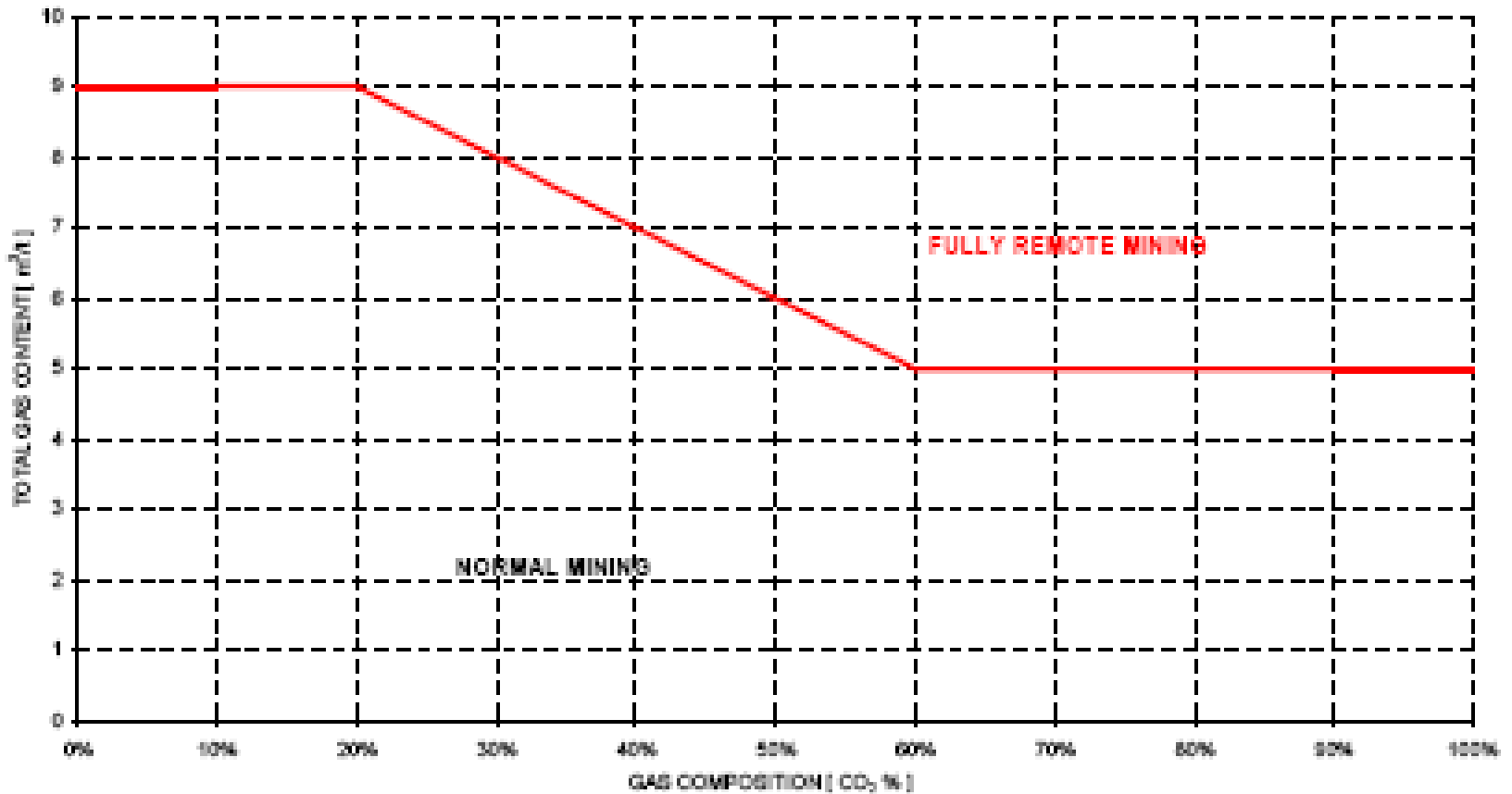
# Cx – Seam Section Gas Contents



# Permeability

- Bulli Seam
  - 1 to 5 milli darcy
- Dendrobium
  - 1 to 5 milli darcy Area 1, 2, 3, 3a, 3b
  - < 1 milli darcy Area 3c

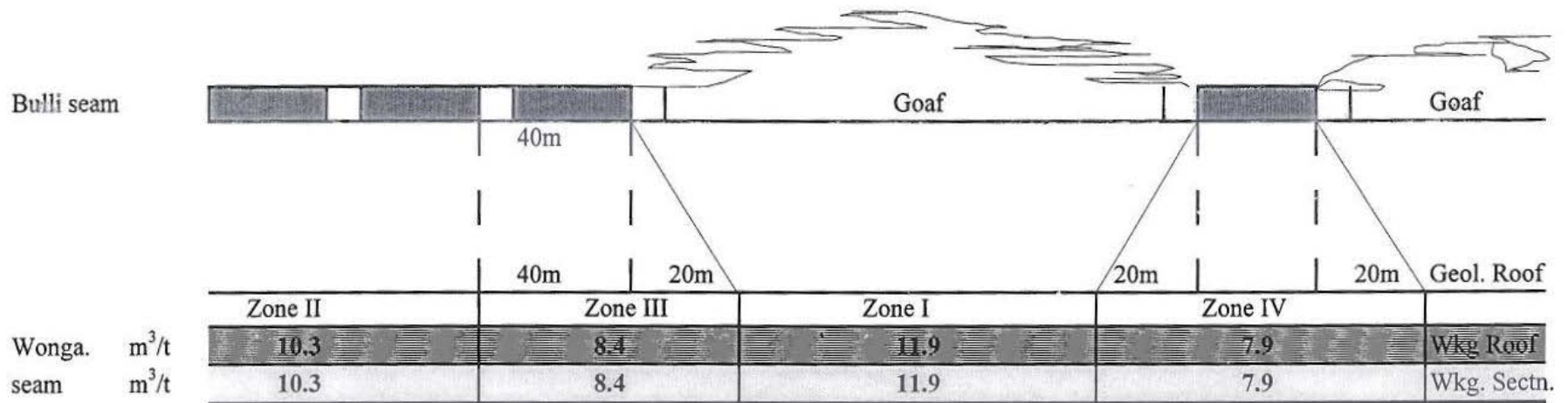
# Appin Colliery Outburst TLV





# Cx proposed TLV

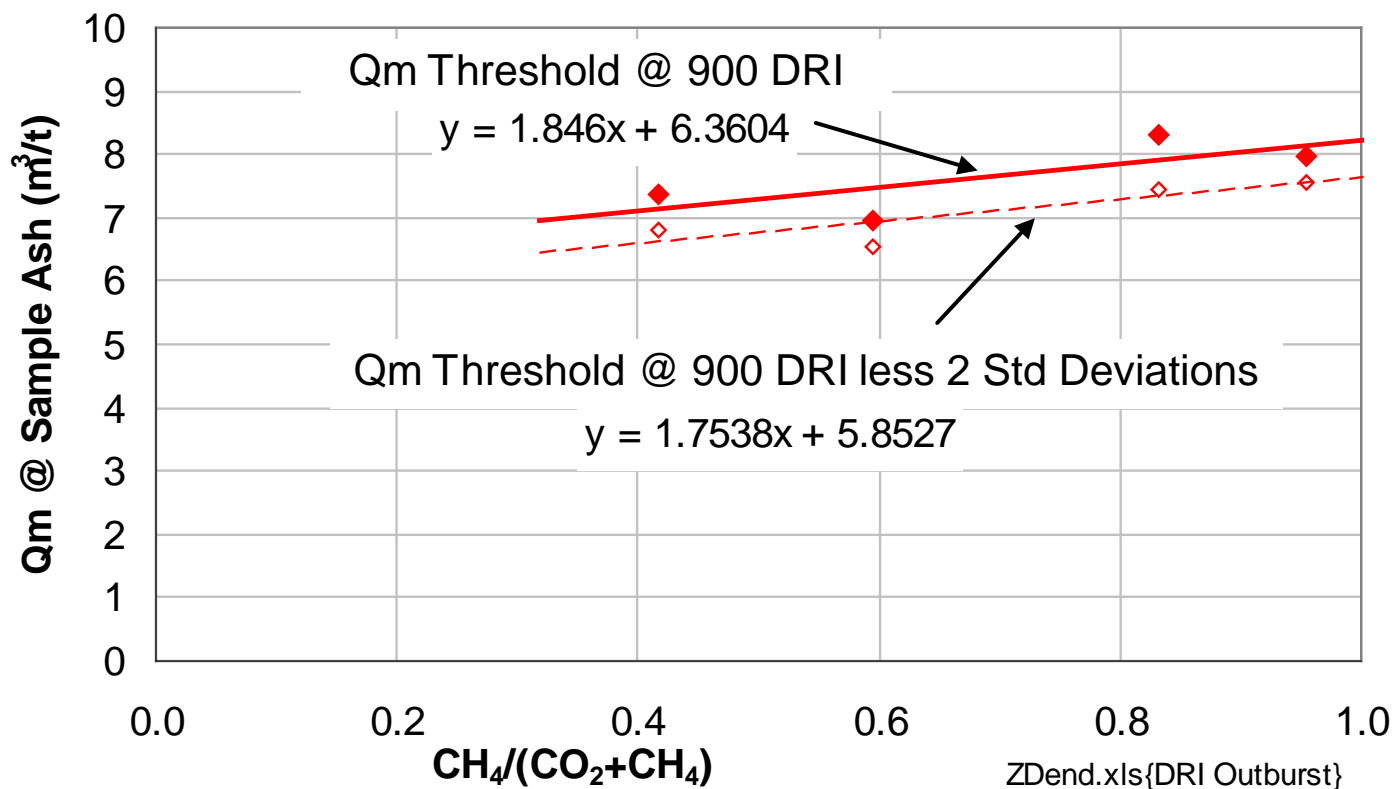
## GAS THRESHOLD LEVELS Wongawilli seam - Cordeaux colliery (TVL, Total NTP, @ 20 deg. C, m<sup>3</sup>/t)



# Geogas – 900 DRI

100% CH<sub>4</sub> – 8.2 m<sup>3</sup>/t

30% CH<sub>4</sub> – 6.9 m<sup>3</sup>/t



## Wongawilli Seam Gas Content Thresholds

# Miscellaneous Items

- Impact of seam structure on outburst risk
  - Well established in the Bulli Seam
- Variability in the seam mineralisation and its impact upon permeability
  - Ie NRE No. 1
- Gas Drainage of the Wongawilli Seam
  - Cx drained readily
  - Appin, WCC – gas flows commence after LW passes
  - Dendrobium – small gas flows only from holes.

# Moving Forward

## Short Term

- Finalise review of Outburst Risk for Dendrobium
- Establish guidelines for the mine
- Continue to gather data base

## Long Term

- Resolve gas sample quality issues (ie factors unique to Wonga Seam).
- Investigate gas reduction techniques
- Gather more samples for Area 3C
- Involve other experts regarding outburst TLV