

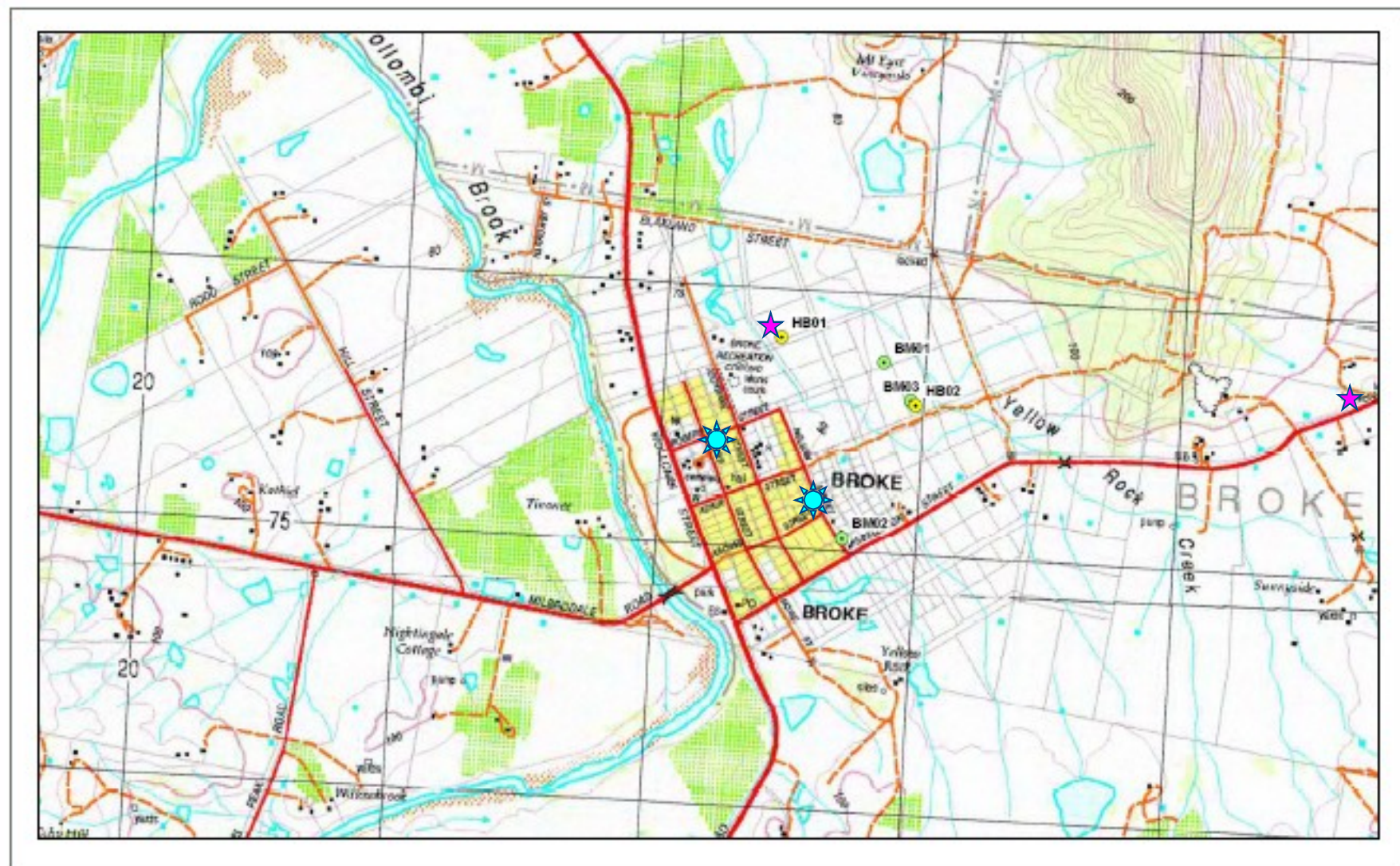
Update on Broke Groundwater Monitoring Program – AGL Hunter Gas Project

Presentation to BCCC – 30 November 2009

PB Scope and Work Program

1. Installation of monitoring bores (alluvium and deeper rock aquifers) and report
2. Baseline groundwater sampling ('wet', intermediate, 'dry' then pumping test and recovery events)
3. Datalogger installation and operation
4. Pumping test of HB02
5. Recovery water levels and sampling
6. Maintain dataloggers at BM01 site
7. Final analysis and reporting

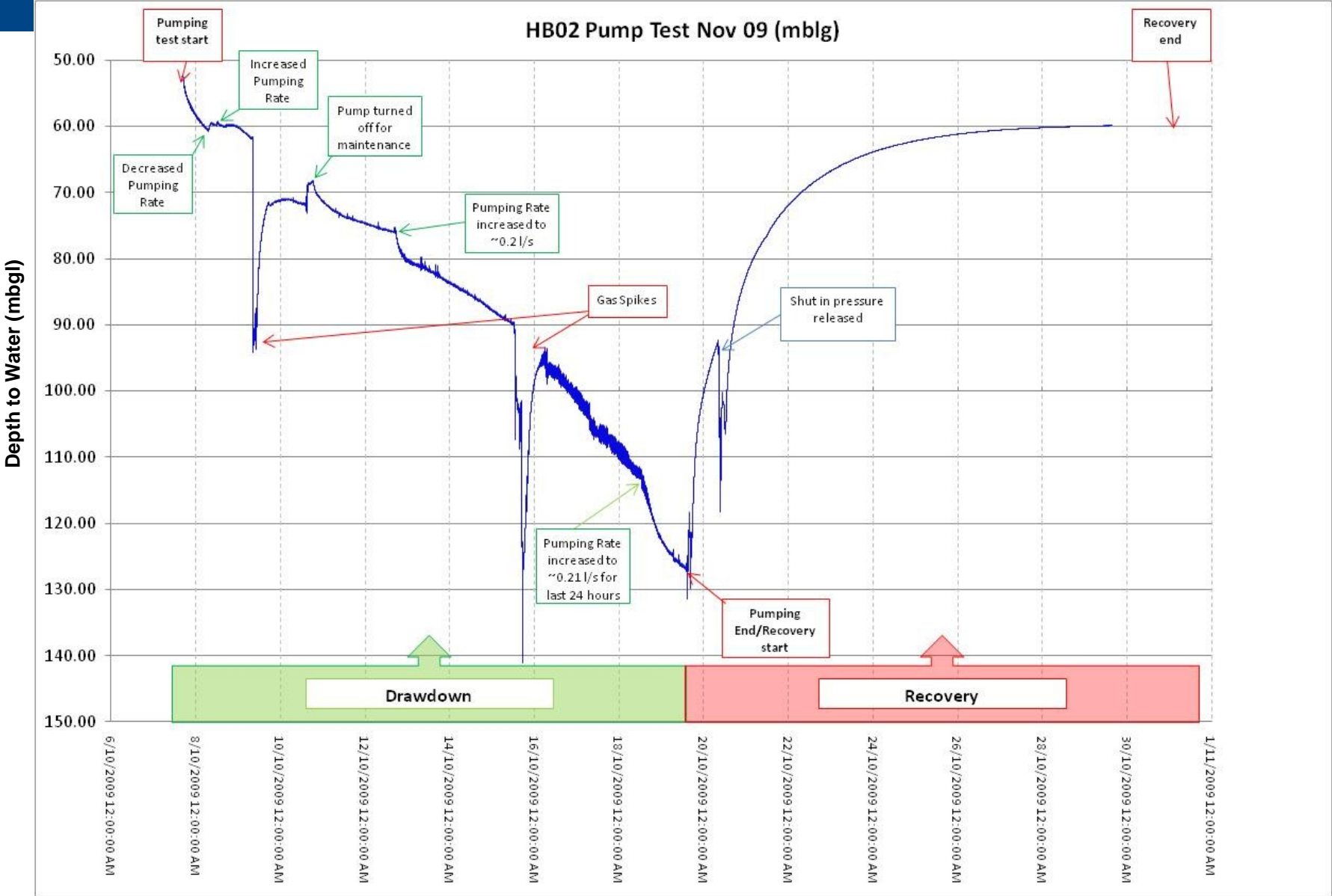
Site Locality Plan



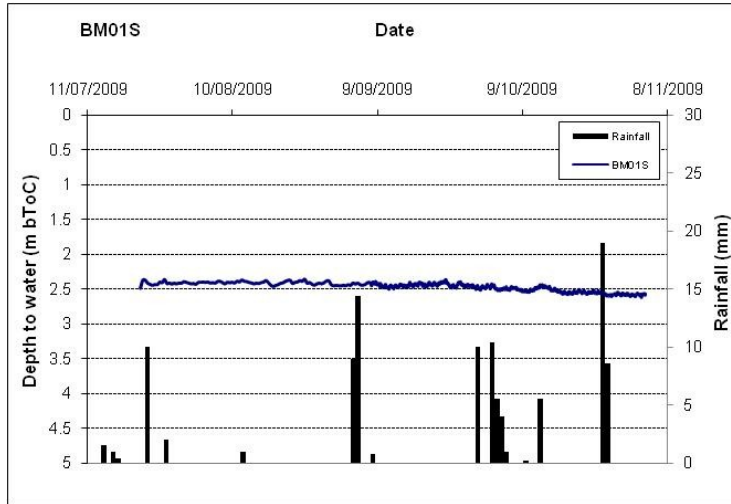
- Legend:
- Yellow circle: Sydney Gas/MGL exploration borehole
- Green circle: Groundwater monitoring location
- Purple star: Xstrata piezometer
- Blue star: Private bore/well



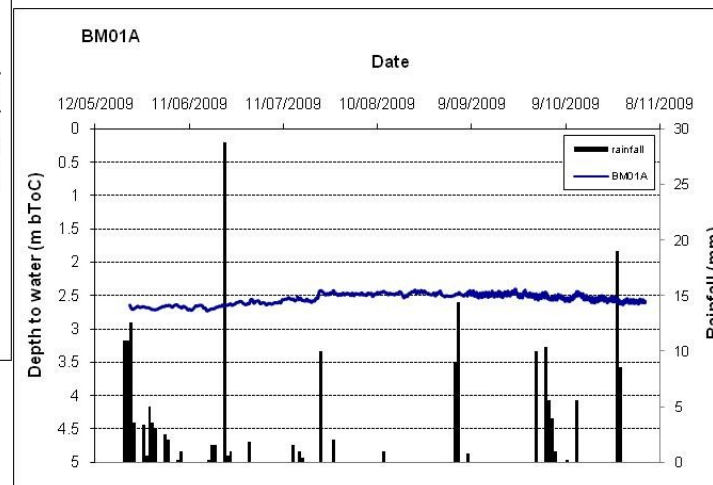
Extraction test results – October HB02 WL trends



Groundwater levels – BM01 monitoring bore traces (100m NW of HB02)

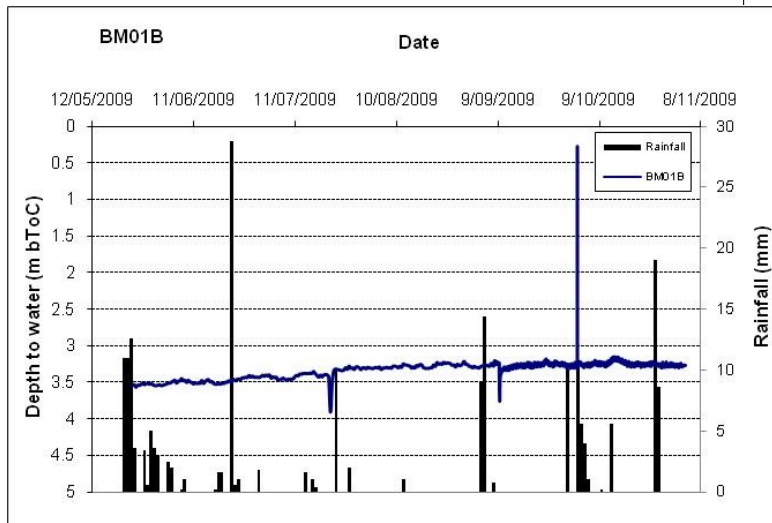


Shallow alluvial WL trace from
mid July
Slotted interval 1.5-6m

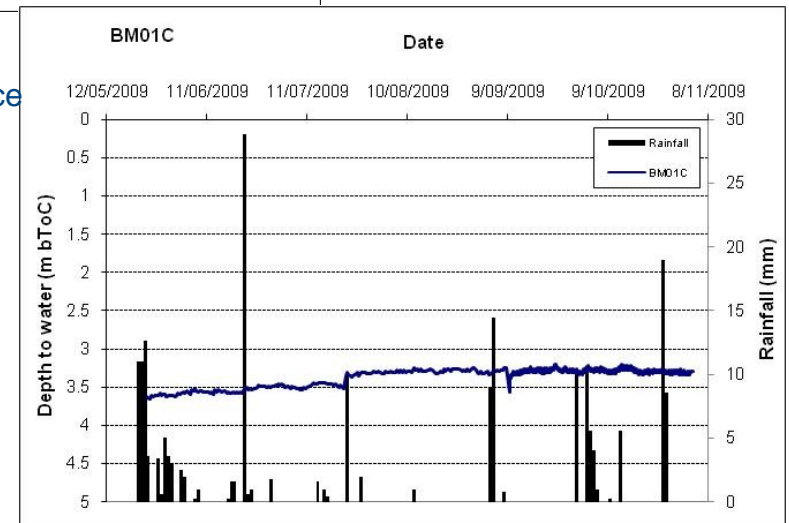


Deeper alluvial WL trace from
mid May
Slotted interval 6-10m

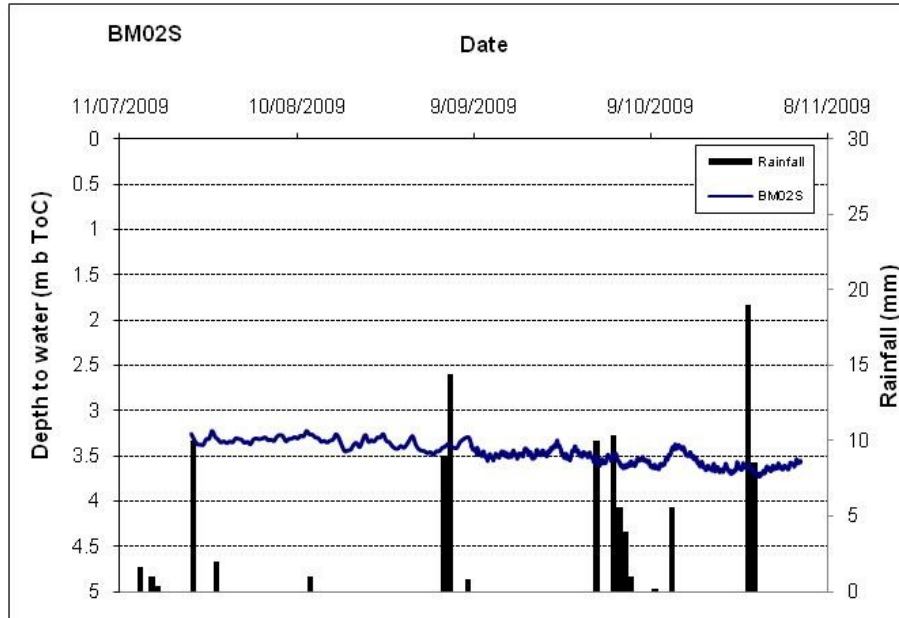
Coal seam WL trace from
mid May
Slotted interval 160-220m



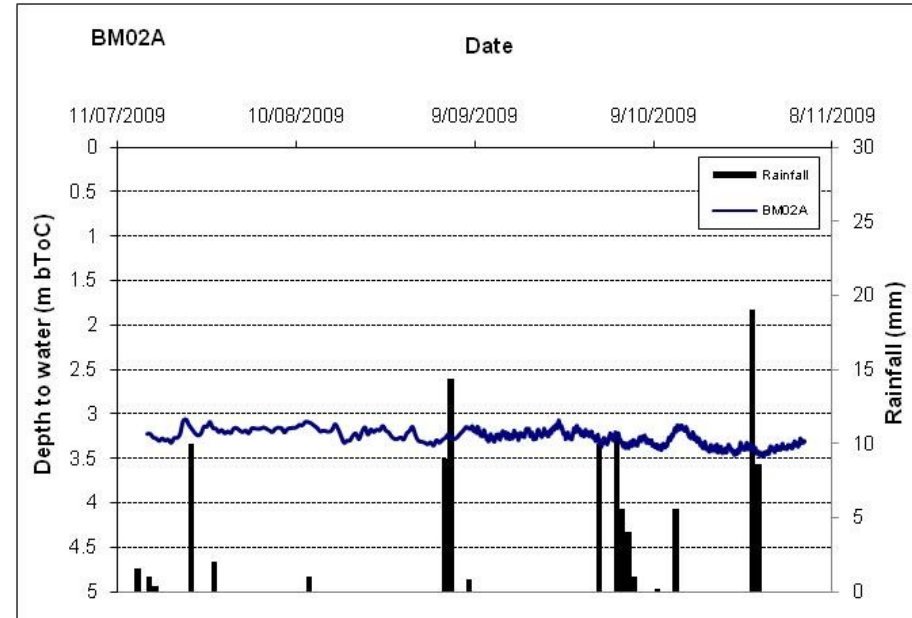
Shale/sandstone WL trace
from mid May
Slotted interval 56-68m



Groundwater levels – BM02 monitoring bore traces (500m + S of HB02)

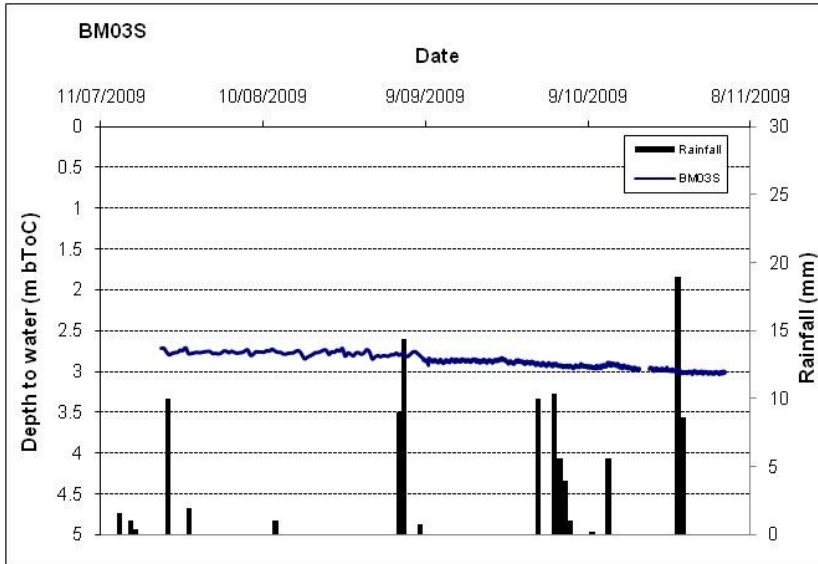


Shallow alluvial WL trace from
mid July
Slotted interval 1.5-6m



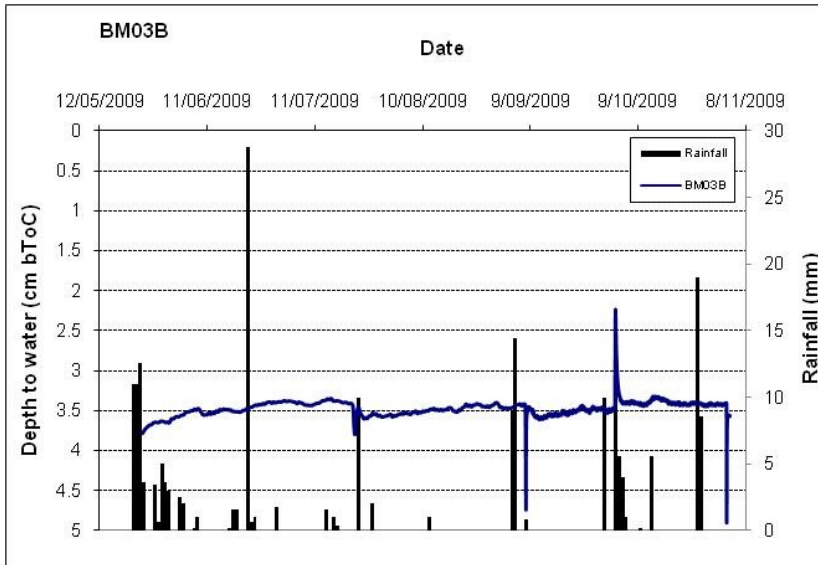
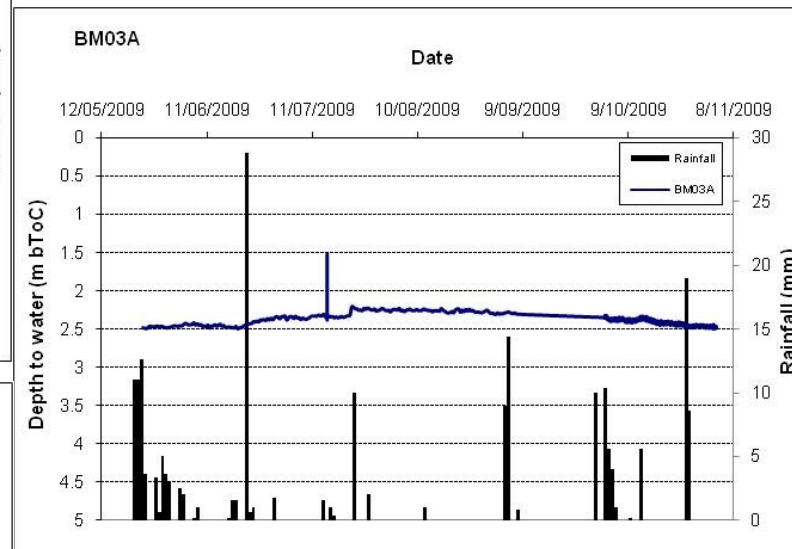
Deeper alluvial WL trace from
mid May
Slotted interval 7-13m

Groundwater levels – BM03 monitoring bore traces (adjacent to (and NW of) HB02)



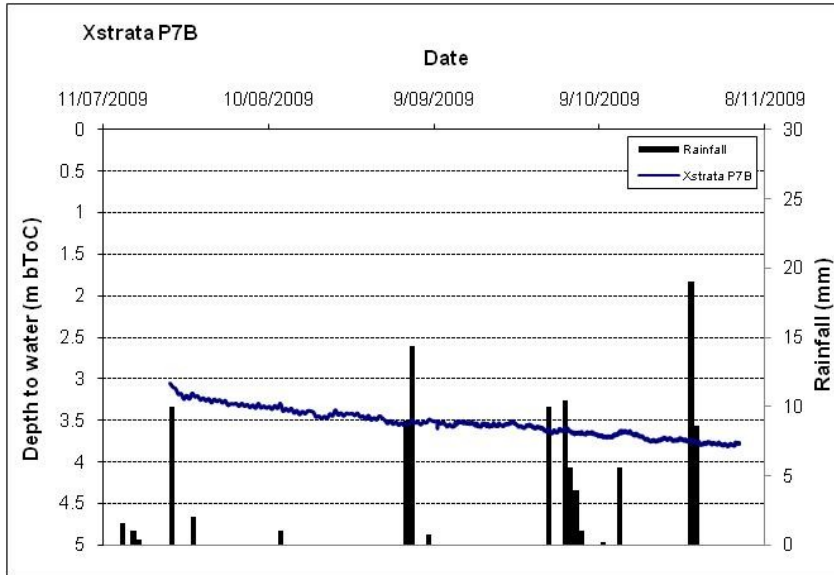
Shallow alluvial WL trace from
mid July
Slotted interval 1.5-5m

Deeper alluvial WL trace from
mid May
Slotted interval 4.5-10m

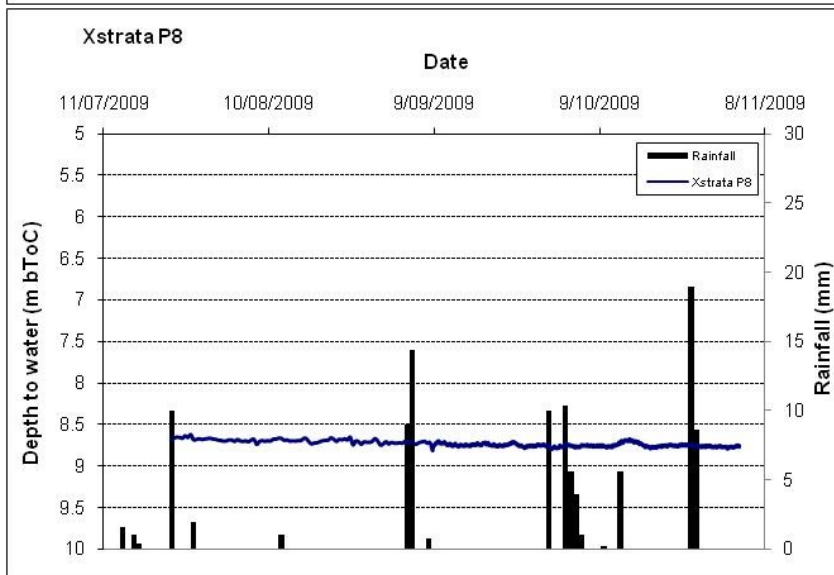


Shale/sandstone WL trace from
mid May
Slotted interval 68-74m

Groundwater levels – Xstrata monitoring bore traces



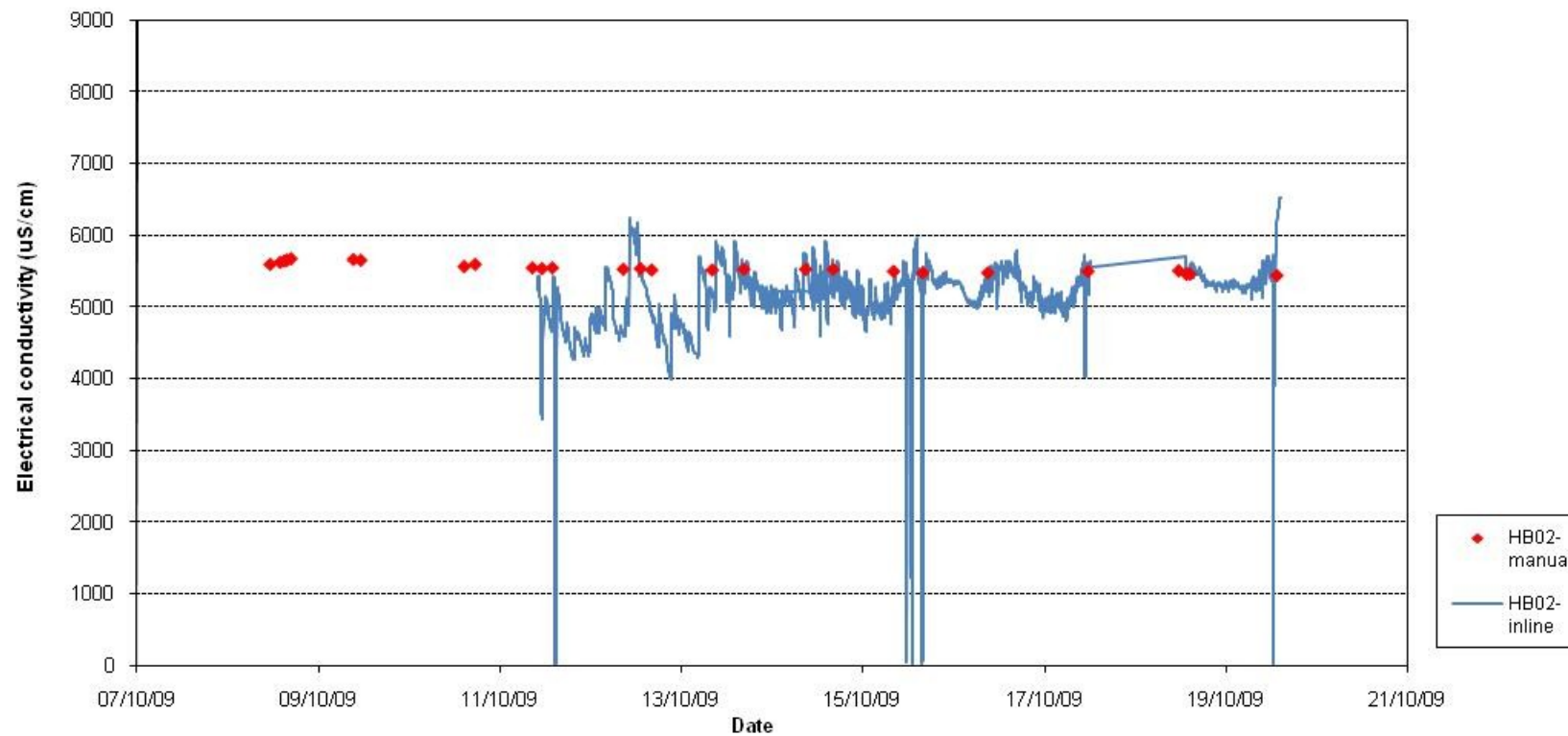
Located beside HB01 and 700m NW of HB02
Screened at 244m in the Whybrow Coal seam



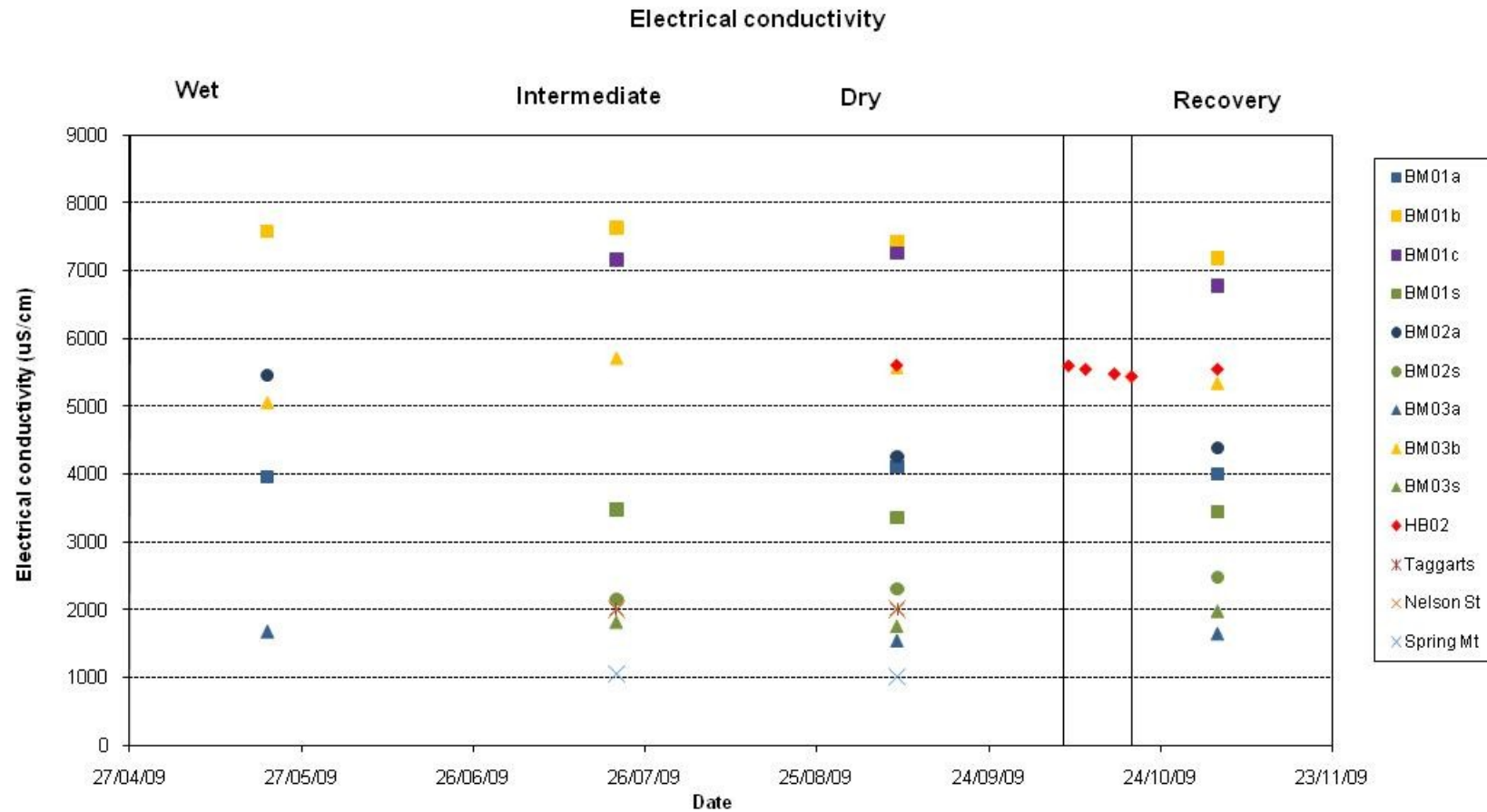
Located 2 km NE of HB02 on Broke Rd
Screened interval unknown but in the
Whybrow Coal seam

Water Quality results at HB02 (In line and manual WQ)

Electrical conductivity



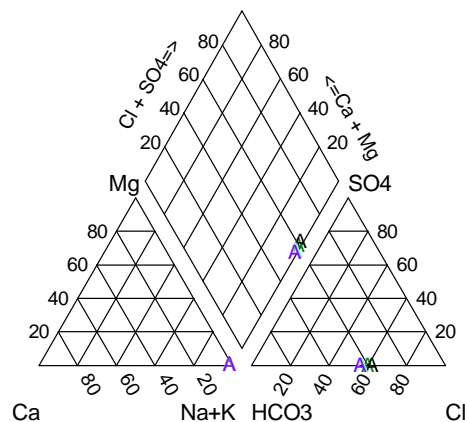
Water Quality results - all sites - Salinity



Water Quality results – HB02 – Pumping Test

Other Field Data		BM01s	BM01a	BM01b	BM01c	BM02s	BM02a	BM03s	BM03a	BM03b	HB02	HB02	HB02	HB02
Depth	metres	6.6	10	68	220	7.5	13	5.92	9.1	74	525	525	525	525
Water Level	metres										?	?	?	?
Water Quality Parameters		BM01S	BM01A	BM01B	BM01C	BM02S	BM02A	BM03S	BM03A	BM03B	HB02 Day 1	HB02 Day 4	HB02 Day 8	HB02 Day 12
Temperature	oC										23.06	23.25	24.15	25.63
Conductivity	µS/cm										5590	5540	5470	5430
Dissolved Oxygen	%										8.3	8.8	19.1	41.5
Dissolved Oxygen	mg/L										0.64	0.75	1.6	1.1
pH											8.1	8.8	9.1	8.97
TDS	g/L										3.6			
Redox	mV										-49	-93	-86	-46
CO2 titration	mg/L										25	45	68	65
Water Type		BM01s	BM01a	BM01b	BM01c	BM02s	BM02a	BM03s	BM03a	BM03b	HB02	HB02	HB02	HB02
											Na-Cl-HCO3	Na-Cl-HCO3	Na-Cl-HCO3	Na-Cl-HCO3

Piper Plot

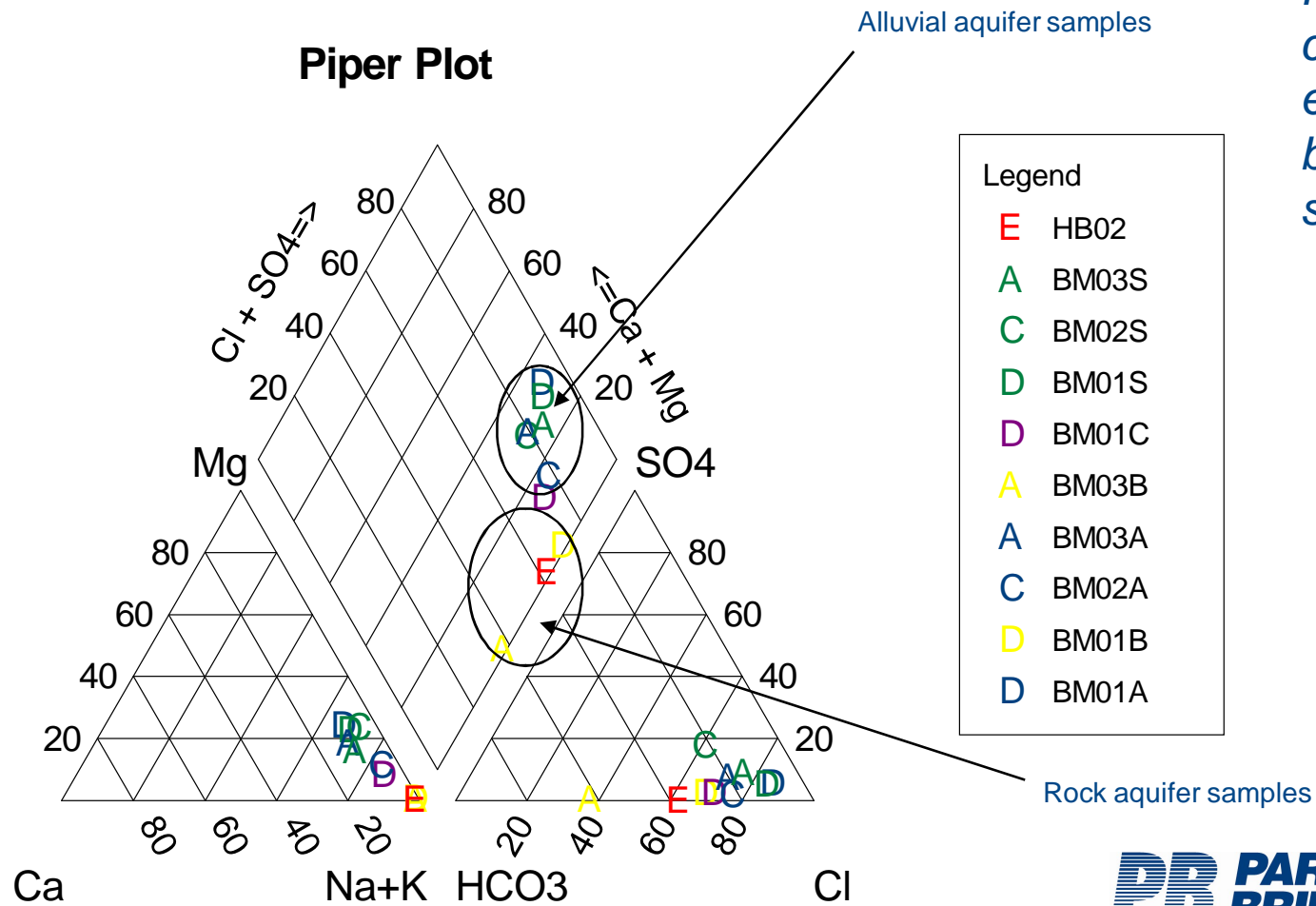


Legend	
▲	HB02-S1
▲	HB02-S4
▲	HB02-S8
▲	HB02-S10
▲	HB02-Sep
▲	HB02-Nov

All water samples plot together indicating no change in water quality or source



Water Quality results - all sites - Recovery



Results consistent with earlier baseline sample results

Conclusions

- Drawdown plot of water levels from HB02 suggests low permeability, water from within coal seam, negligible recharge
- Nothing in the monitoring water level data to suggest that there is any drainage or connectivity with deep (coal seam) aquifers during pumping test
- Nothing in the latest water quality data from HB02 to suggest that there is water draining from upper aquifers
- Appears that the Conceptual Model is sound and that aquifers are disconnected