Blue Mountains – Mine Water Diversion to Mt Piper Power Station

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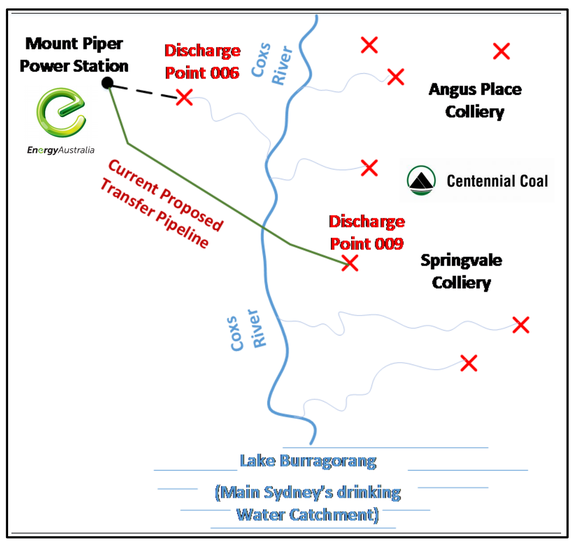
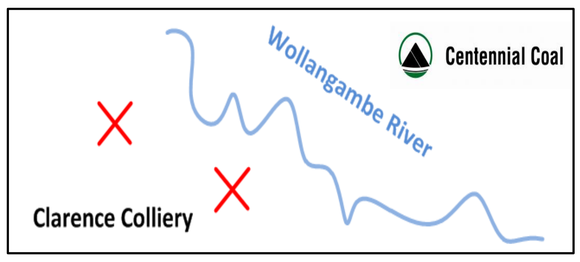
PROJECT BACKGROUND:

- Discharged mine water: high salinity, damage to ecosystem and drinking water quality
- 17 licensed discharge points (LDPs)
- Centennial Coal & Energy Australia joint proposal: Mine water diversion from Springvale colliery to Mt Piper Power station for use as cooling water make-up.

North-West Lithgow



East Lithgow



PROJECT OBJECTIVES:

- Investigate the mine water transfer scheme proposed by Centennial Coal and Energy Australia
- Propose potential options for future expansion of the proposed transfer scheme
- Identify best solution to improve water quality and ecosystems in the Coxs and Wollangambe river

KEY FINDINGS:

Proposed / Requirements	Flow Rate (ML/day)
Proposed Pipeline (LDP-009)	30
Mt. Piper Water Requirements	
Water Access License Coxs River System: 63 ML/day Fish River Water Supply: 22 ML/day	85
Requirements Source: EIS – Springvale Water Treatment Project (2016) Full capacity operation: 54 ML/day	54
Difference	**24 (requirement)** **55 (license)**
Design Flow Rate	**35**

- Inconsistency in water requirement and water access license
- Potential expansion of mine water transfer scheme

PROPOSED SOLUTIONS:

- Option 1: Clarence CL-LDP002
- Option 2: Springvale SV-LDP006
- Option 3: Springvale SV-LDP001 & Clarence CL-LDP002
- Option 4: Springvale SV-LDP006 & Clarence CL-LDP002
- Option 5: Springvale SV-LDP001 & SV-LDP006

SELECTION CRITERIA:

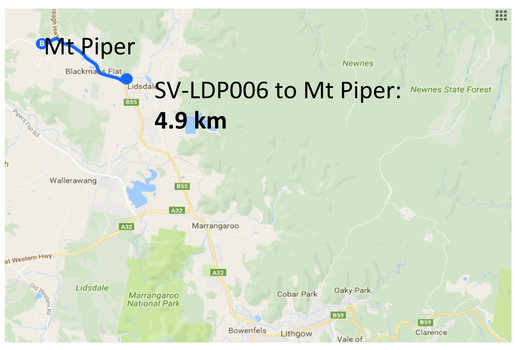
Classification	Criteria	Metric
Environmental	Flow Capacity	% of target flow rate diverted
	Overall TDS removed	Overall TDS removed from the river catchments (normalised 0-1)
	TDS removed from Coxs	% of TDS removed from total TDS in Coxs River
	TDS removed from Wollangambe	% of TDS removed from total TDS in Wollangambe River
Economic	Piping Requirements	Total length of piping required (normalised 0-1)
	Pumping requirements	Pump power based on altitude difference and head loss (normalised 0-1)
	RO Treatment	Concentration of TDS in diverted flow (normalised 0-1)

RESULTS:

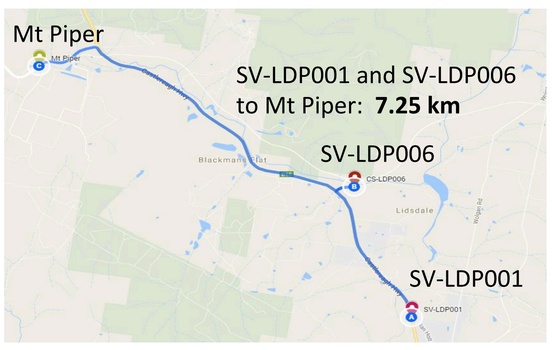
Weighting		Best Option	Option 1	Option 2	Option 3	Option 4	Option 5
Enviro	Eco						
90%	10%	Option 2	0.439	0.677	0.521	0.605	0.591
80%	20%	Option 2	0.449	0.657	0.517	0.578	0.592
70%	30%	Option 2	0.460	0.638	0.513	0.551	0.592
60%	40%	Option 2	0.470	0.618	0.508	0.525	0.592
50%	50%	Option 2	0.481	0.598	0.504	0.498	0.593
40%	60%	Option 5	0.491	0.579	0.500	0.472	0.593
30%	70%	Option 5	0.502	0.559	0.496	0.445	0.594
20%	80%	Option 5	0.512	0.539	0.492	0.419	0.594
10%	90%	Option 5	0.523	0.520	0.487	0.392	0.594

- Sensitivity analysis for environmental and economic weightings (10% to 90%)
- Scores from 0 – 1 for each option (Green = best; Red = worst)

Option 2 (Best Environmental Option)



Option 5 (Best Economic Option)



CONCLUSION AND RECCOMENDATIONS:

- **Gap identified:** 24 – 55 ML/day
- Trade-off between the parties involved
- **Best environmental:** Option 2 - Springvale SV-LDP006
- **Best economic:** Option 5 - Springvale SV-LDP001 & SV-LDP006
- **Limitations:**
  - Weightings were chosen arbitrarily
  - Without a legal or economic incentive, the best economic solution does not result in a profit for Energy Australia and Centennial Coal