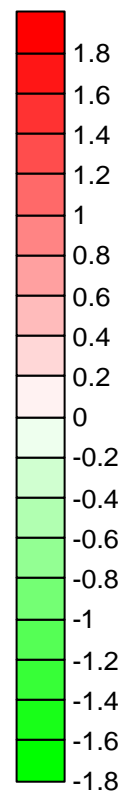


Gradient Change (degrees)



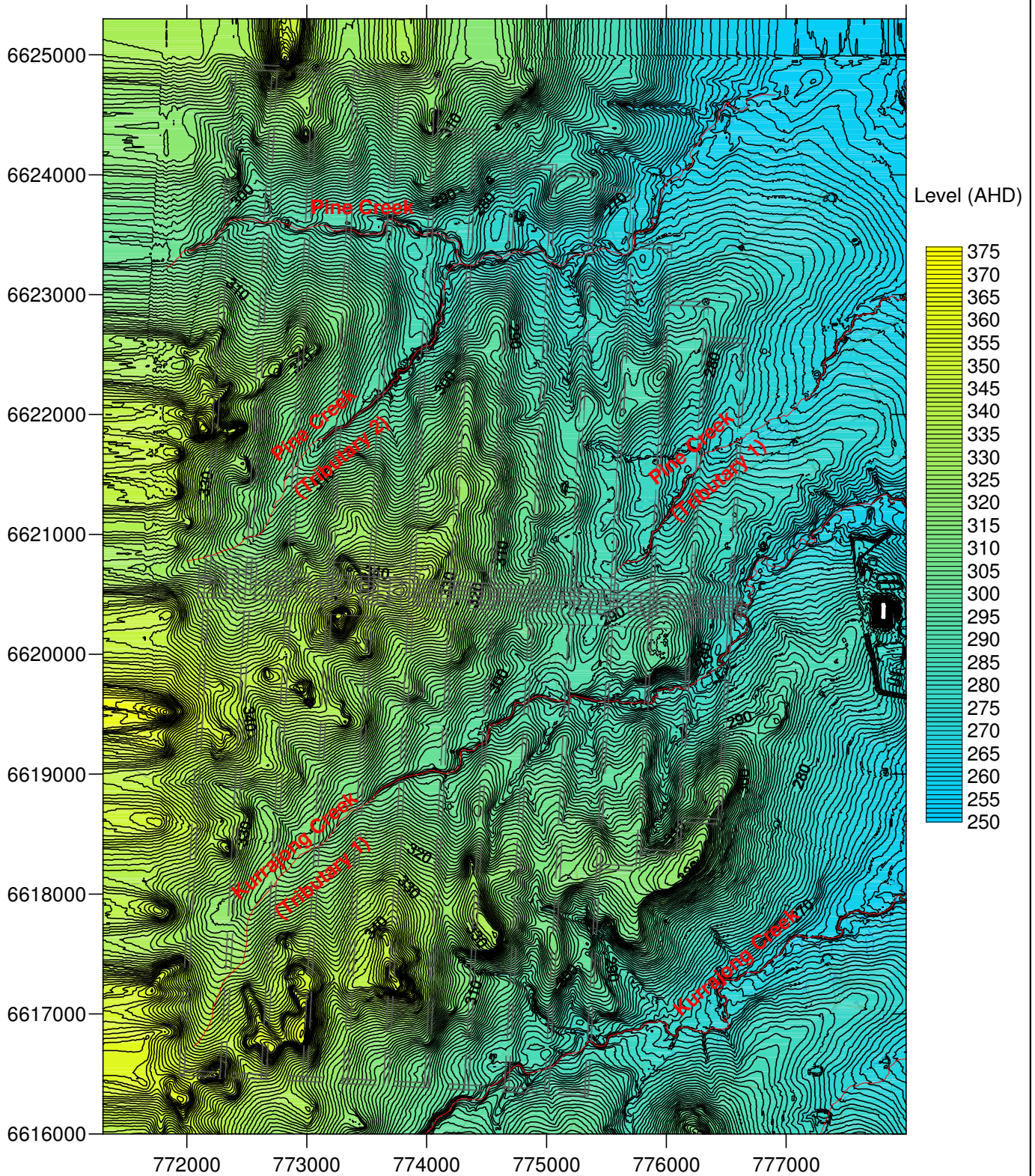
Key:

- Post-mining Levels
- Main Creeks
- Fences
- Unsealed Roads/ Tracks
- ▼ Farm Dams
- Buildings
- Orchards

DgS

Engineer: S.Ditton
 Drawn: S.Ditton
 Date: 25.03.08
 Ditton Geotechnical Services Pty Ltd

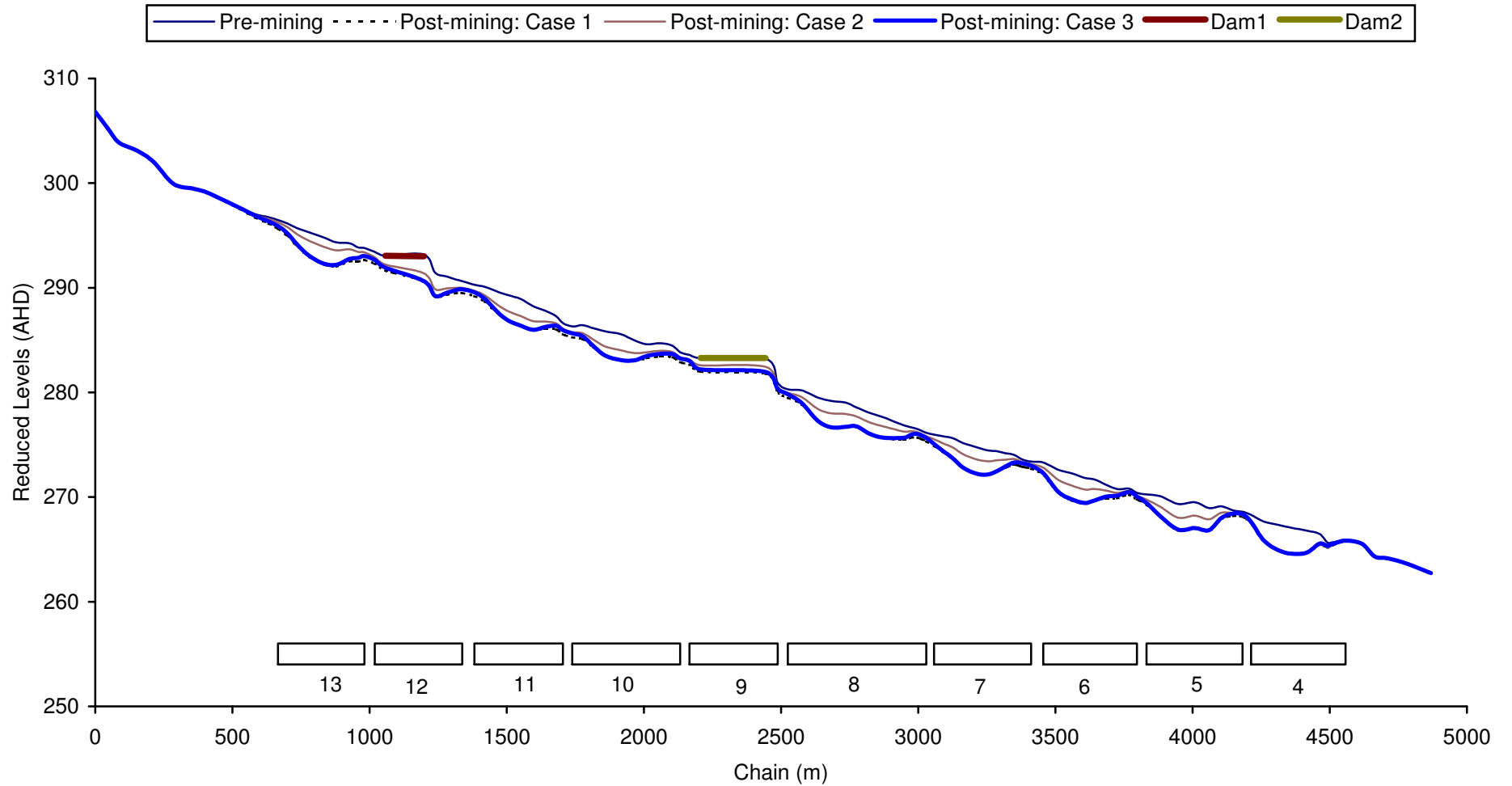
Client: Narrabri Coal Operations - Narrabri Coal Mine (Stage 2) NAR-001/1
 Title: Post-mining Surface Levels and Gradient Changes above Longwalls LW1-26 for Case 3 (Non-Spanning Garrawilla Volcanics and Minimum Chain Pillar Subsidence) and 4.2m Mining Height
 Scale: 1:60,000
 Figure No: 47




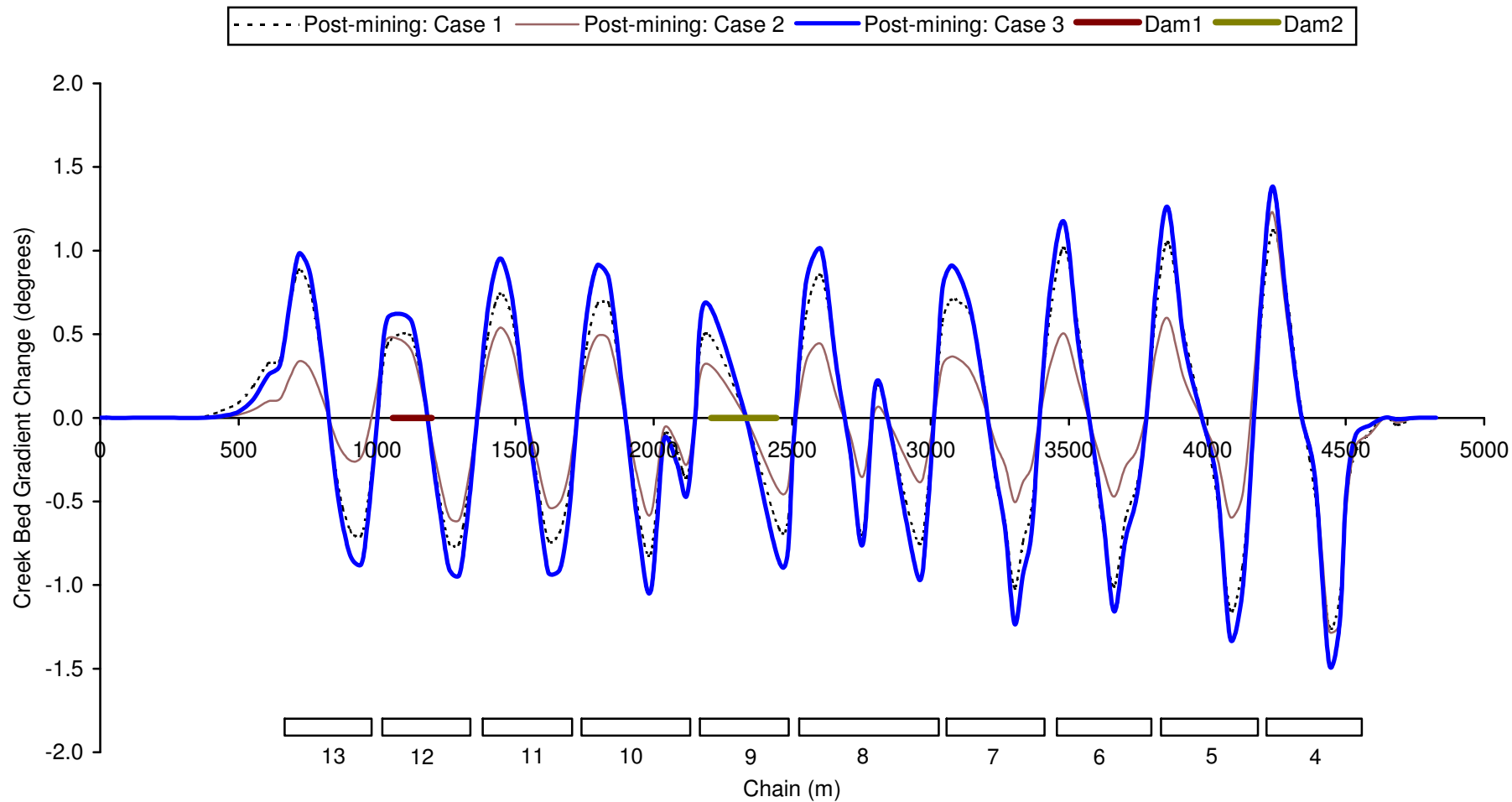
Key:


- Post-mining Levels
- Main Creeks
- Fences
- Unsealed Roads/ Tracks
- ▼ Farm Dams
- Buildings
- Orchards

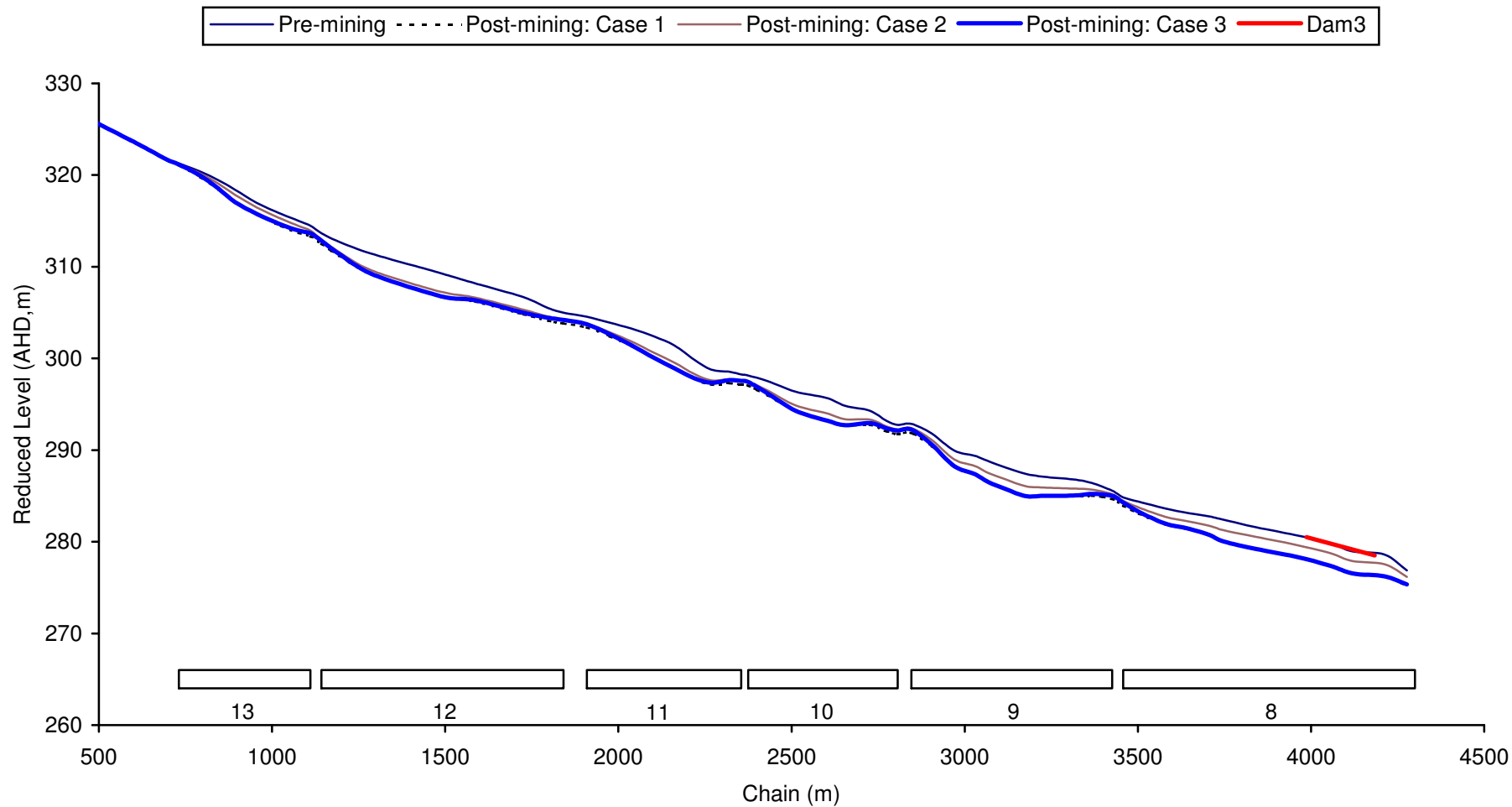
	Engineer: S.Ditton	Client: Narrabri Coal Operations - Narrabri Coal Mine (Stage 2) NAR-001/1
	Drawn: S.Ditton	
	Date: 25.03.08	Title: Post-mining Surface Levels (1 m contours) above Longwall Layout B for Case 3 Potential Ponding Location Analysis and 4.2 m Mining Height
	Ditton Geotechnical Services Pty Ltd	
Scale: 1:60,000	Figure No: 48	




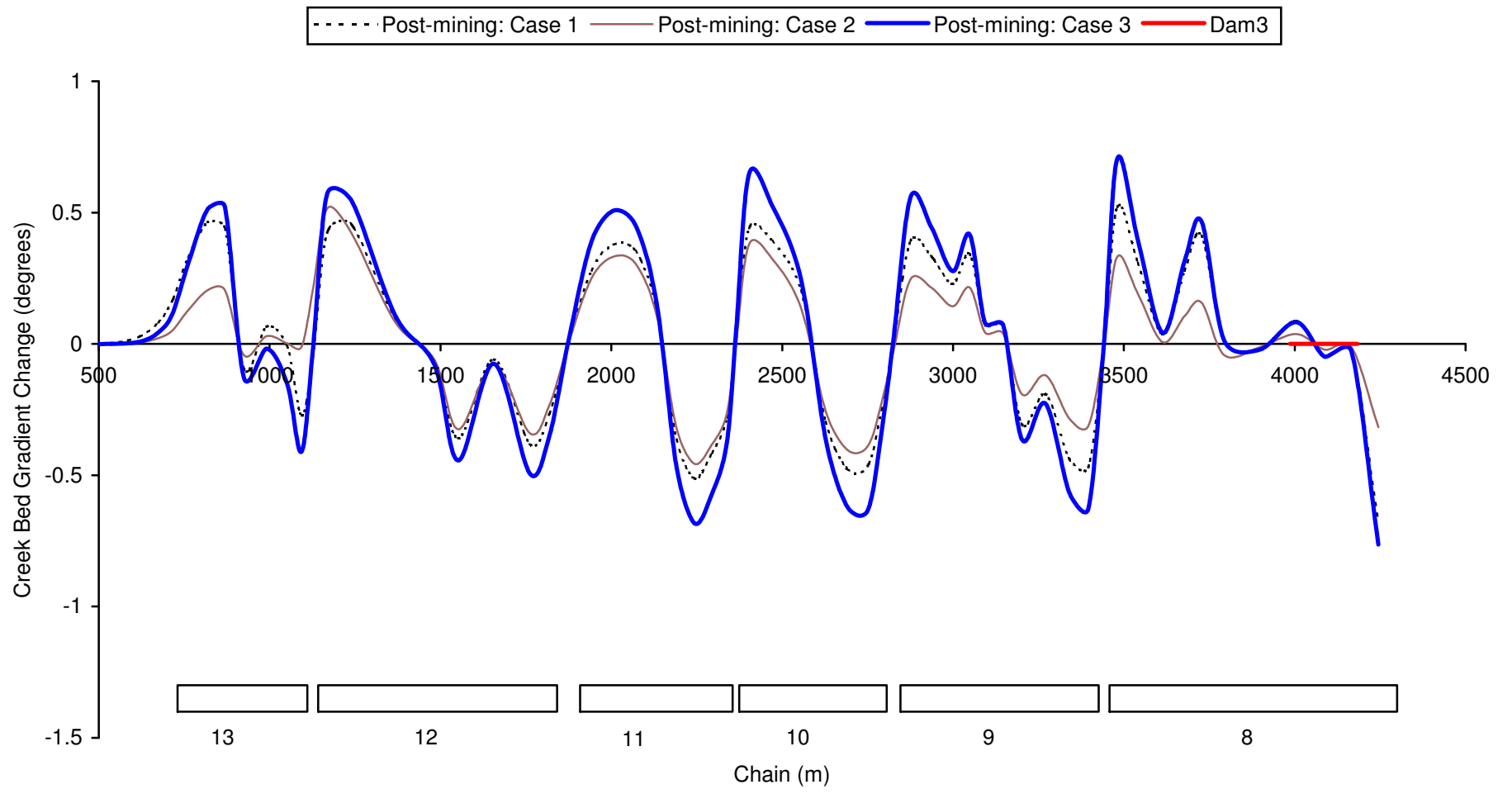
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	Drawn:	S.Ditton		NAR-001/1	
	Date:	16.03.09	Title:	Pre-mining and Predicted Post-Mining Surface Profiles Along Pine Creek above Longwall LWs 1 to 13 due to Mine Subsidence Cases 1 to 3	
	Ditton Geotechnical Services Pty Ltd		Scale:	NTS	Figure No:




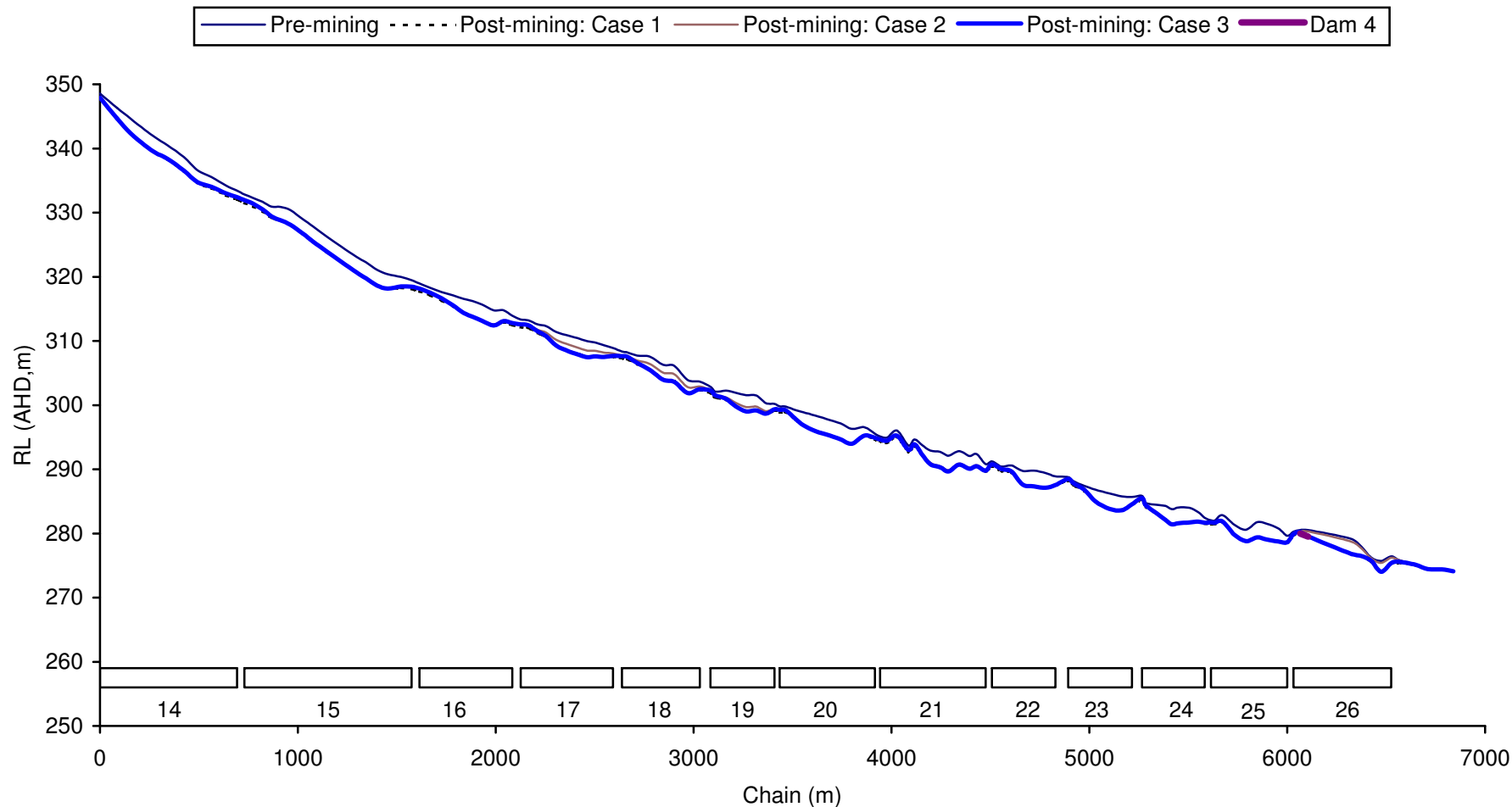
	Engineer:	S.Ditton	Client:	Narrabri Coal Operations Pty Ltd - Narrabri Coal Mine (Stage 2)	
	Drawn:	S.Ditton		NAR-001/1	
	Date:	16.03.09	Title:	Pre-mining and Predicted Post-Mining Surface Gradients Along Pine Creek above Longwall LWs 1 to 13 due to Mine Subsidence Cases 1 to 3	
	Ditton Geotechnical Services Pty Ltd		Scale:	NTS	Figure No:




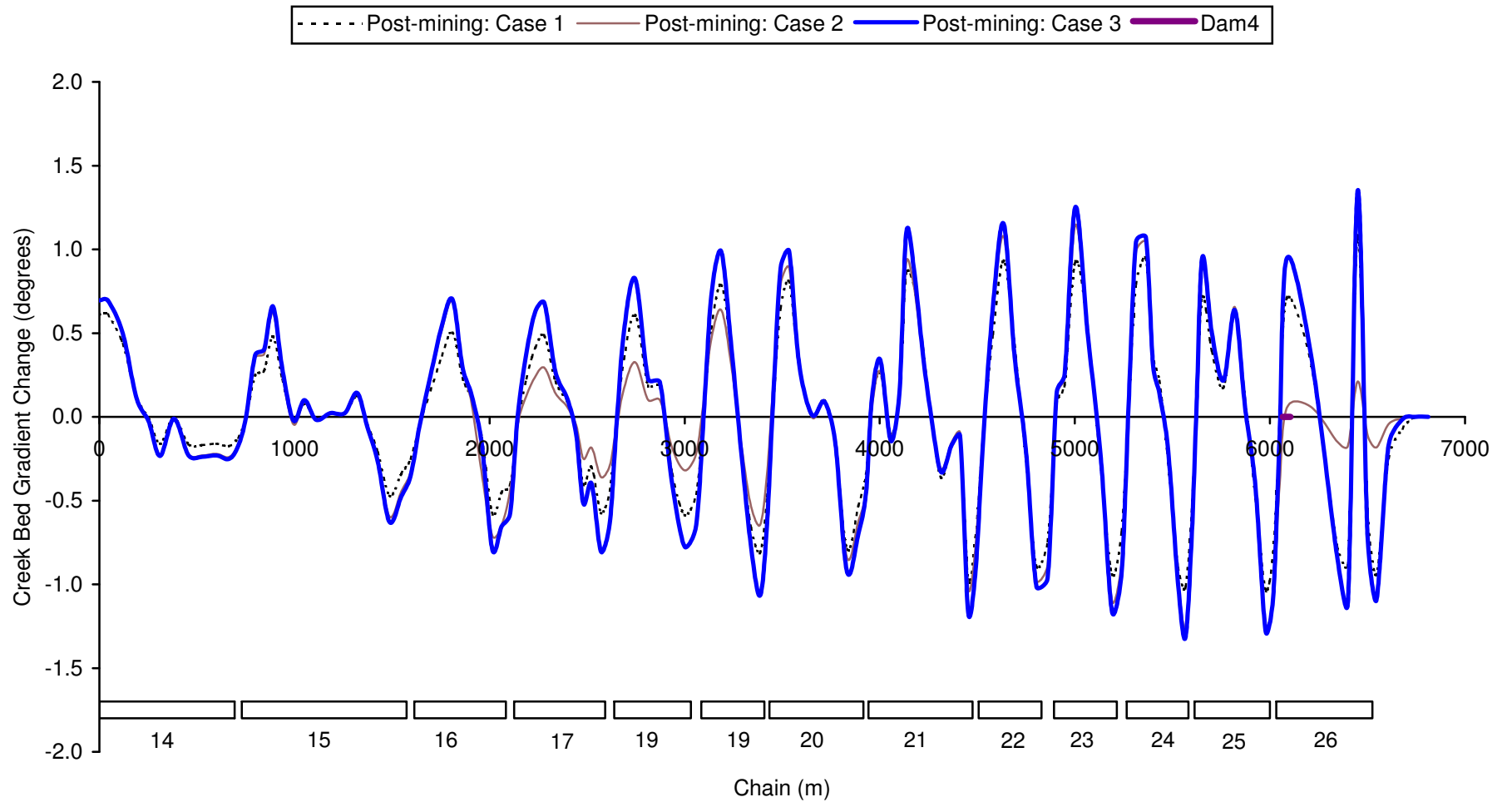
	Engineer:	S.Ditton	Client:	Narrabri Coal Operations Pty Ltd - Narrabri Coal Mine (Stage 2)	
	Drawn:	S.Ditton		NAR-001/1	
	Date:	16.03.09	Title:	Pre-mining and Predicted Post-Mining Surface Profiles Along Pine Creek Tributary 3 above Longwalls LW 1 to 13 due to Mine Subsidence Cases 1 to 3	
	Ditton Geotechnical Services Pty Ltd		Scale:	NTS	Figure No:




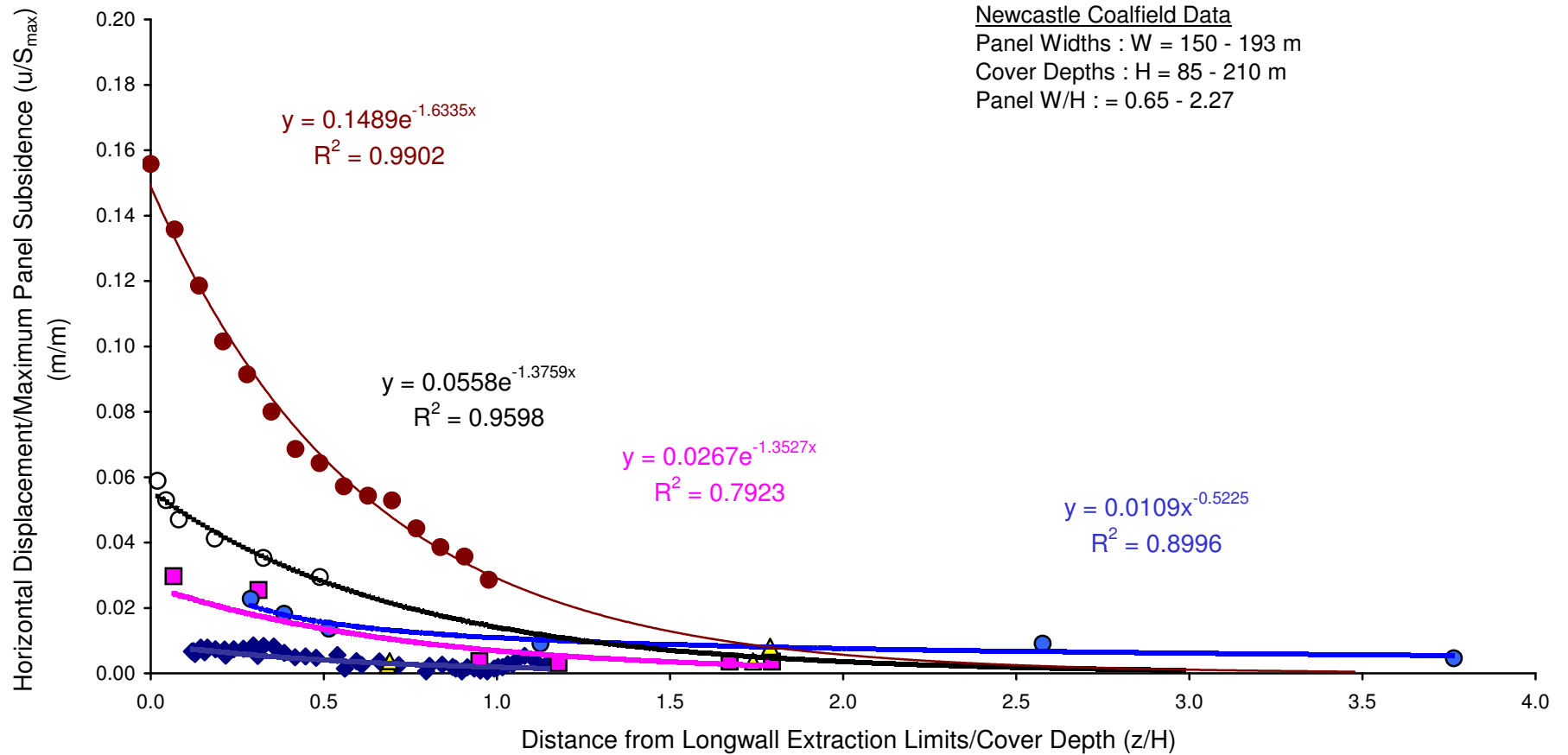
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	Drawn:	S.Ditton		NAR-001/1	
	Date:	16.03.09	Title:	Pre-mining and Predicted Post-Mining Surface Gradients Along Pine Creek Tributary 3 above LWs 1 to 13 due to Mine Subsidence Cases 1 to 3	
	Ditton Geotechnical Services Pty Ltd		Scale:	NTS	Figure No:




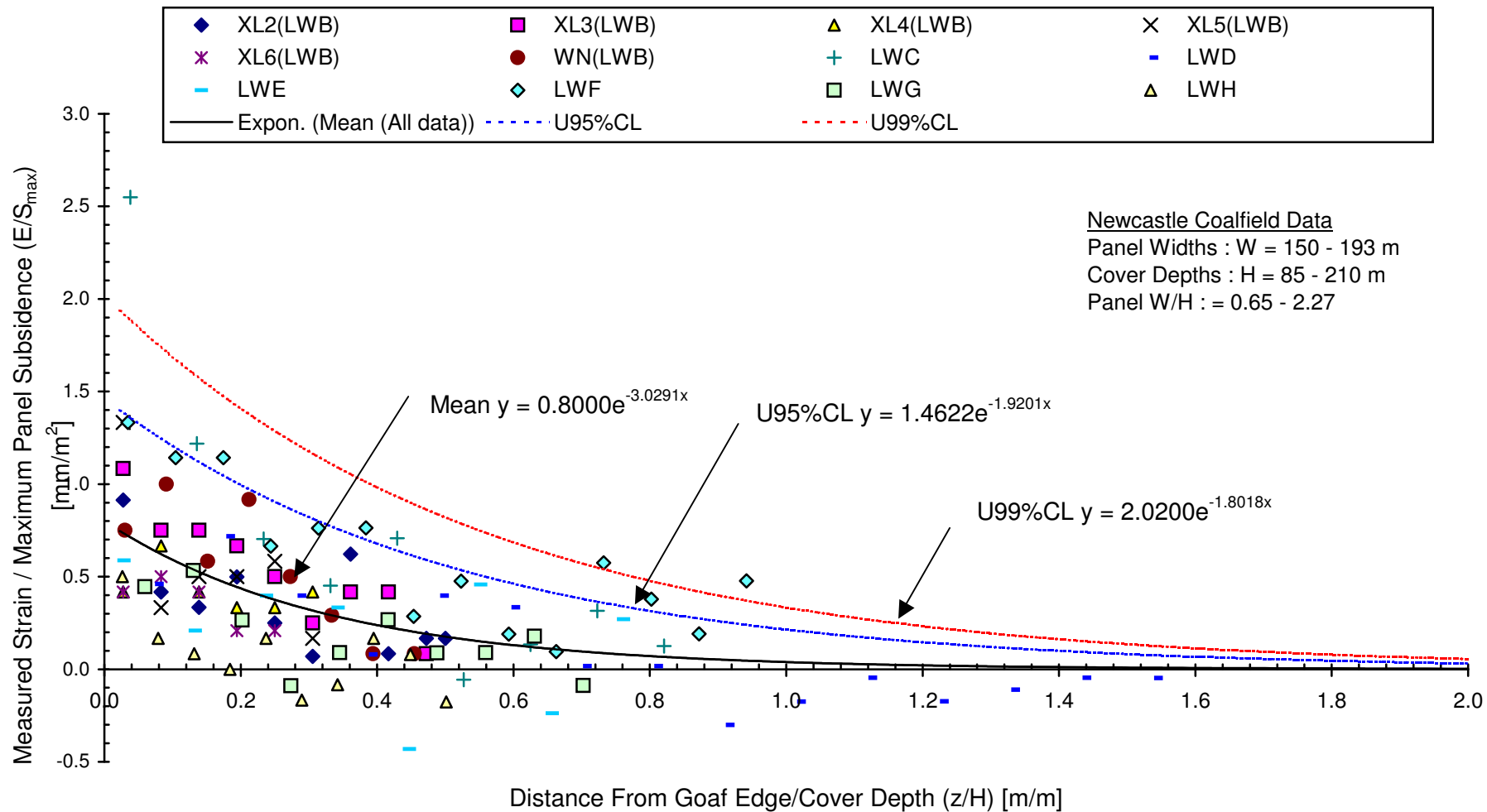
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	Drawn:	S.Ditton		NAR-001/1	
	Date:	08.08.08	Title:	Pre-mining and Predicted Post-Mining Surface Profiles Along Kurrajong Creek above Longwalls LW 14 to 26 due to Mine Subsidence Cases 1 to 3	
	Ditton Geotechnical Services Pty Ltd		Scale:	NTS	Figure No:




	Engineer:	S.Ditton	Client:	Narrabri Coal Operations Pty Ltd - Narrabri Coal Mine (Stage 2)	
	Drawn:	S.Ditton		NAR-001/1	
	Date:	16.03.09	Title:	Pre-mining and Predicted Post-Mining Surface Gradients Along Kurrajong Creek	
	Ditton Geotechnical Services Pty Ltd			above Longwalls LW 14 to 26 due to Mine Subsidence Cases 1 to 3	
Scale:	NTS		Figure No:	51b	

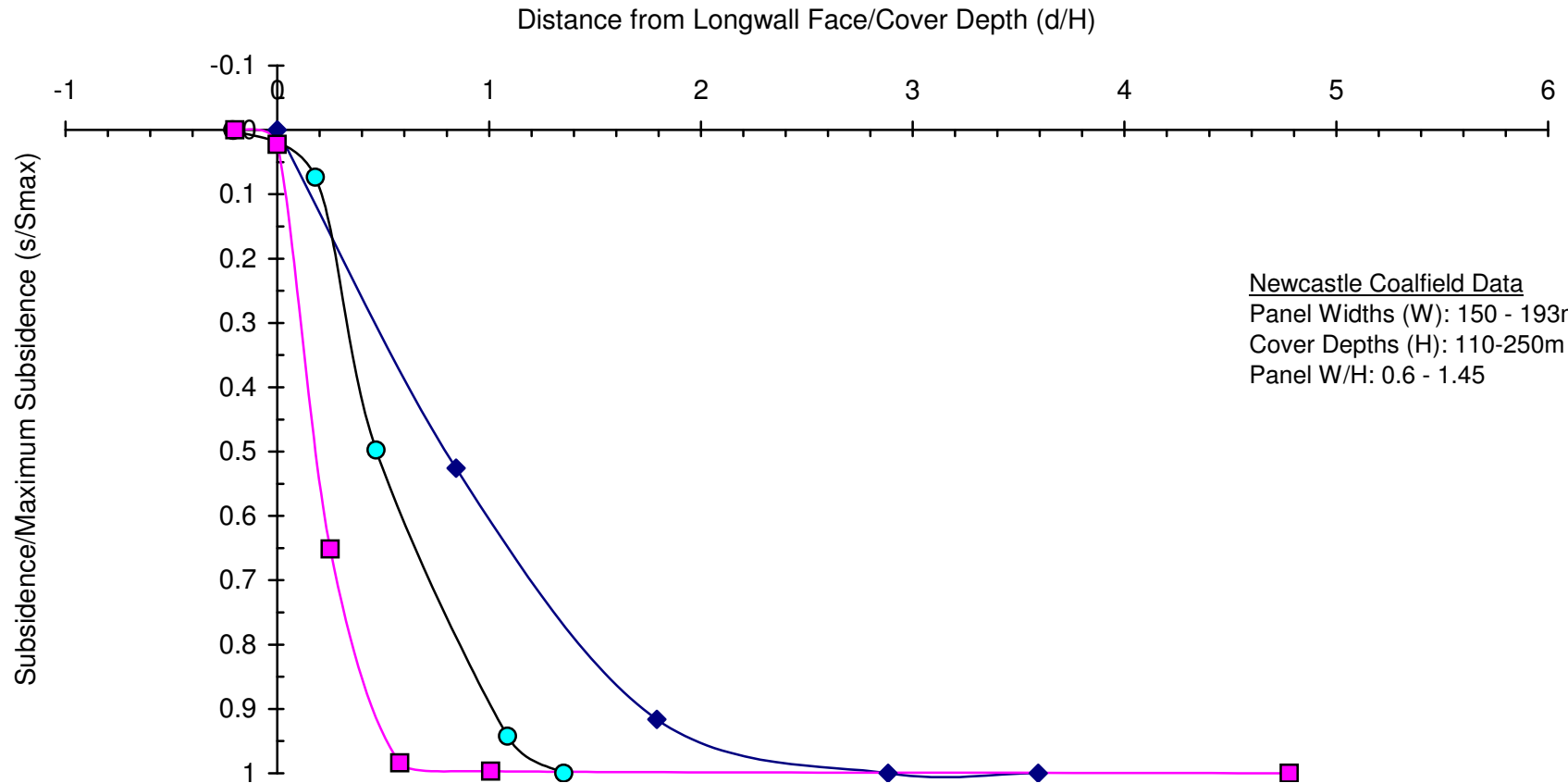


	Engineer:	S.Ditton	Client:	Narrabri Coal Operations Pty Ltd - Narrabri Coal Mine (Stage 2)	
	Drawn:	S.Ditton		NAR-001/1	
	Date:	08.08.08	Title:	Combined Empirical Far-Field Displacement Prediction Models for Longwall Panel Sides, Ends and Corners.	
	Ditton Geotechnical Services Pty Ltd		Scale:	NTS	Figure No:



	Engineer:	S.Ditton	Client:	Narrabri Coal Operations Pty Ltd - Narrabri Coal Mine (Stage 2)	
	Drawn:	S.Ditton		NAR-001/1	
	Date:	08.08.08	Title:	Empirical Far-Field Strain Prediction Model Using Cummulative Steel Tape Measurements from Longwall Sides in the Newcastle Coalfield	
	Ditton Geotechnical Services Pty Ltd		Scale:	NTS	Figure No:

◆ WW16 (W/H=0.6: W=150m, H= 250m) ● N15 (W/H=1.29: W=193m, H= 150m) ■ N16 (W/H= 1.38: W=193, H=140m)



Newcastle Coalfield Data
 Panel Widths (W): 150 - 193m
 Cover Depths (H): 110-250m
 Panel W/H: 0.6 - 1.45

	Engineer:	S.Ditton	Client:	Narrabri Coal Operations Pty Ltd - Narrabri Coal Mine (Stage 2)	
	Drawn:	S.Ditton		NAR-001/1	
	Date:	08.08.08	Title:	Empirical Single Longwall Centreline Subsidence Development Prediction Model (based on Newcastle Coalfield Measurements)	
	Ditton Geotechnical Services Pty Ltd		Scale:	NTS	Figure No: