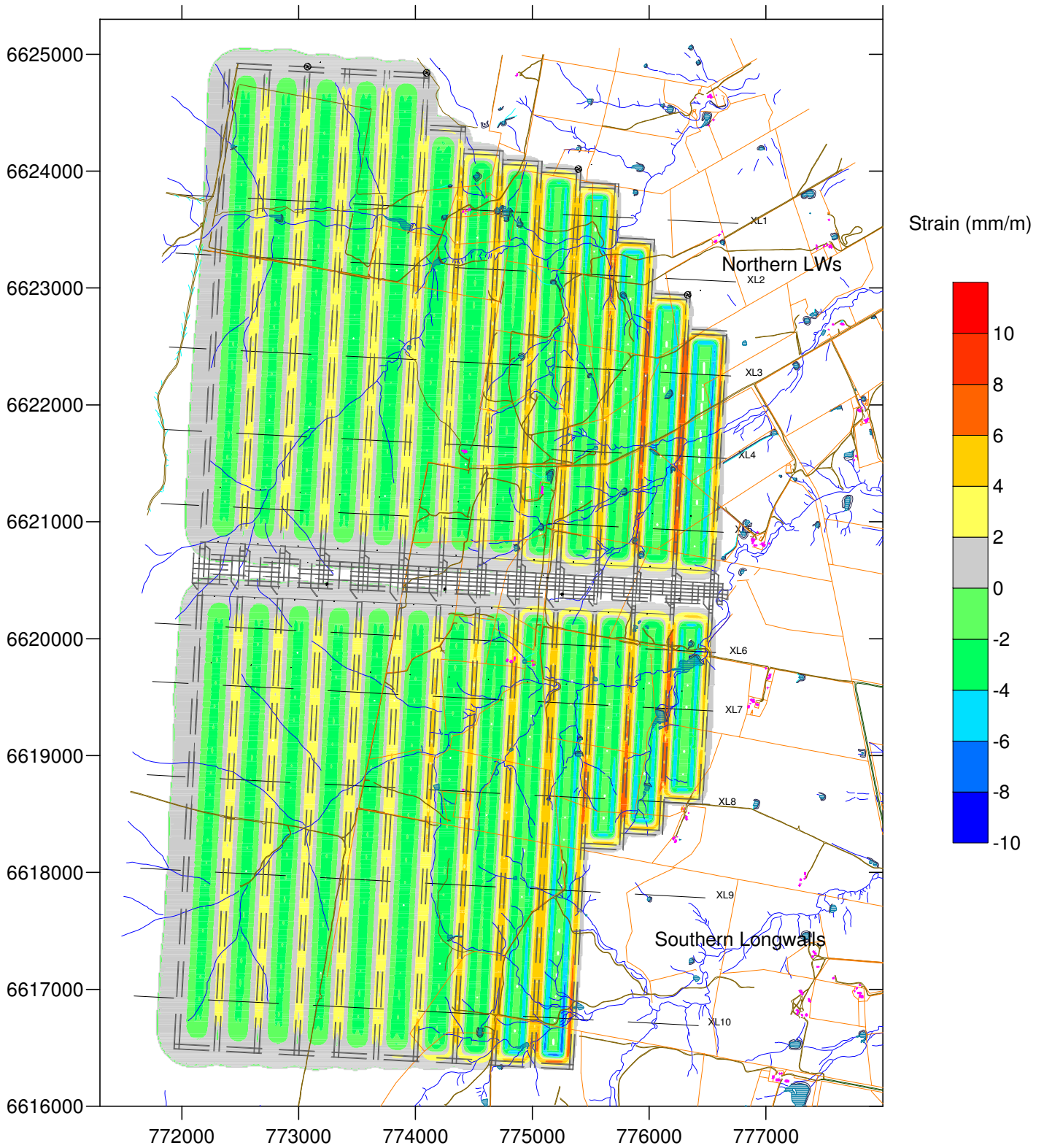


Key:

- tilt contours
- Main Creeks
- Fences
- Unsealed Roads/ Tracks
- ▼ Farm Dams
- Buildings
- Orchards

	Engineer:	S.Ditton	Client:	Narrabri Coal Operations Pty Ltd - Narrabri Coal Mine (Stage 2)	
	Drawn:	S.Ditton		NAR-001/1	
	Date:	12.06.08	Title:	Predicted Principle Tilt Contours above Longwall Layout for Case 3 (No Spanning Garrawilla Volcanics and Minimum Chain Pillar Subsidence) and 4.2m Mining Height	
	Ditton Geotechnical Services Pty Ltd			Scale:	1:60,000



Key:

- Strain contours
- Main Creeks

▼ Farm Dams
- Fences

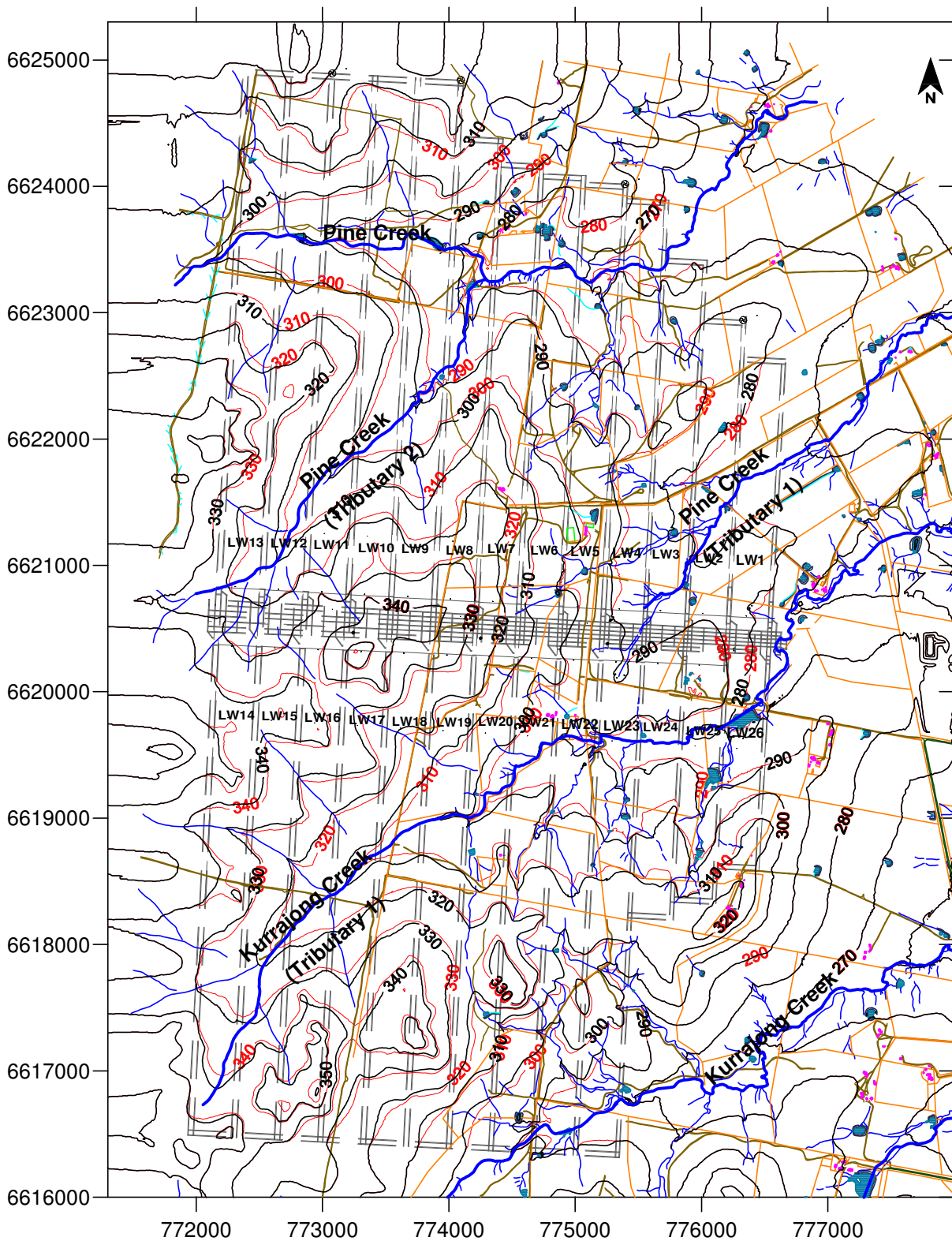
□ Buildings
- Unsealed Roads/ Tracks

□ Orchards

**DgS**

<p>Engineer: S.Ditton</p> <p>Drawn: S.Ditton</p> <p>Date: 12.06.08</p>	<p>Client: Narrabri Coal Operations Pty Ltd - Narrabri Coal Mine (Stage 2) NAR-001/1</p>	<p>Title: Predicted Principle Strain Contours above Longwalls for Case 3 (non-spanning Garrawilla Volcanics and minimum chain pillar subsidence) and 4.2 m Mining Height</p>	
<p>Ditton Geotechnical Services Pty Ltd</p>		<p>Scale: 1:60,000</p>	<p>Figure No: 39</p>

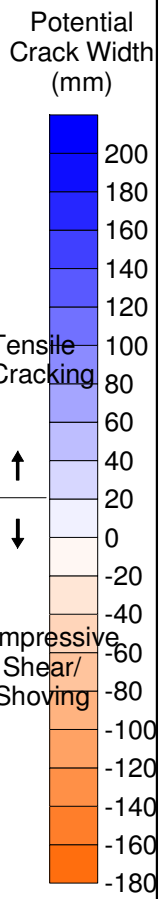
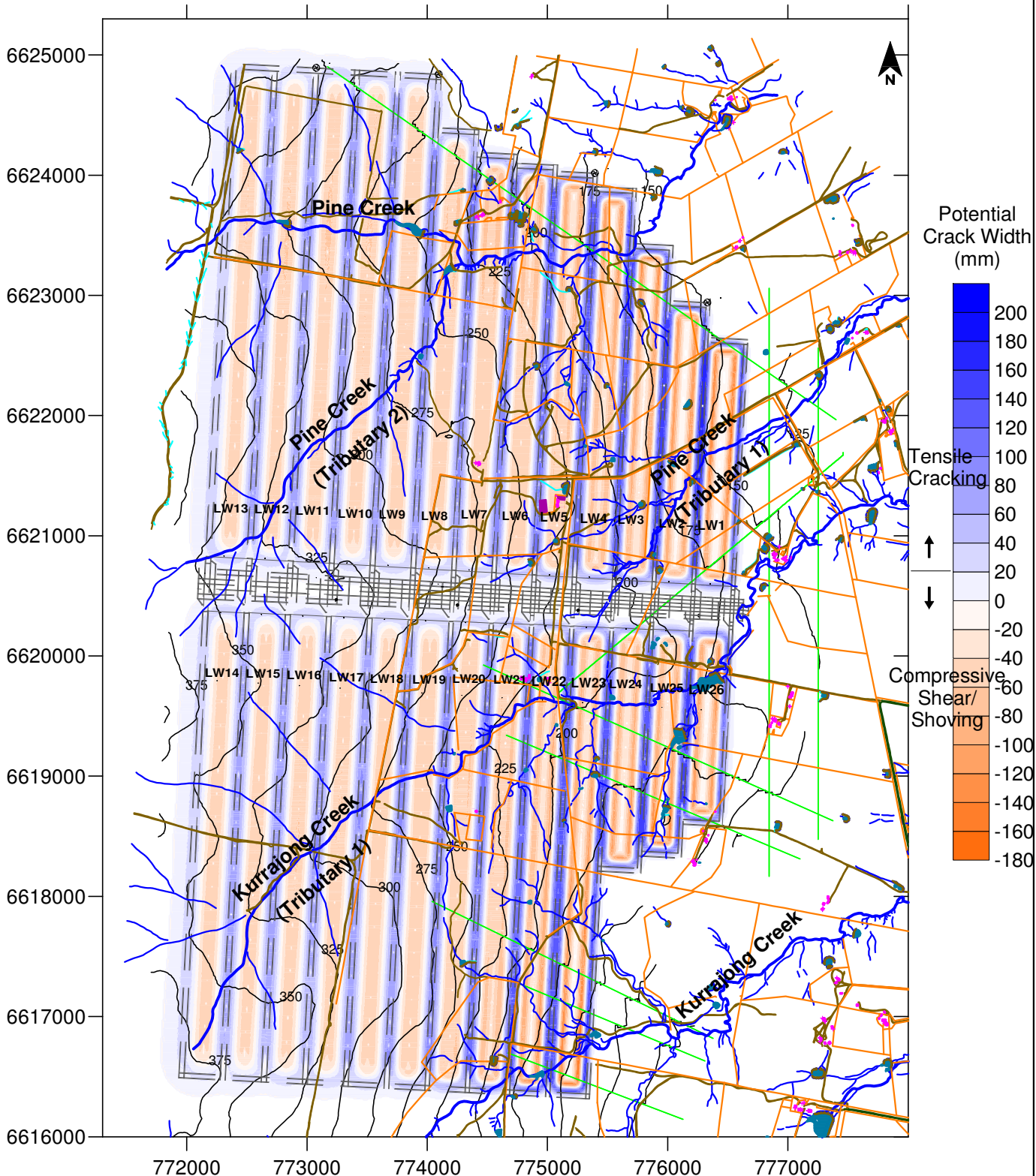




Key:

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

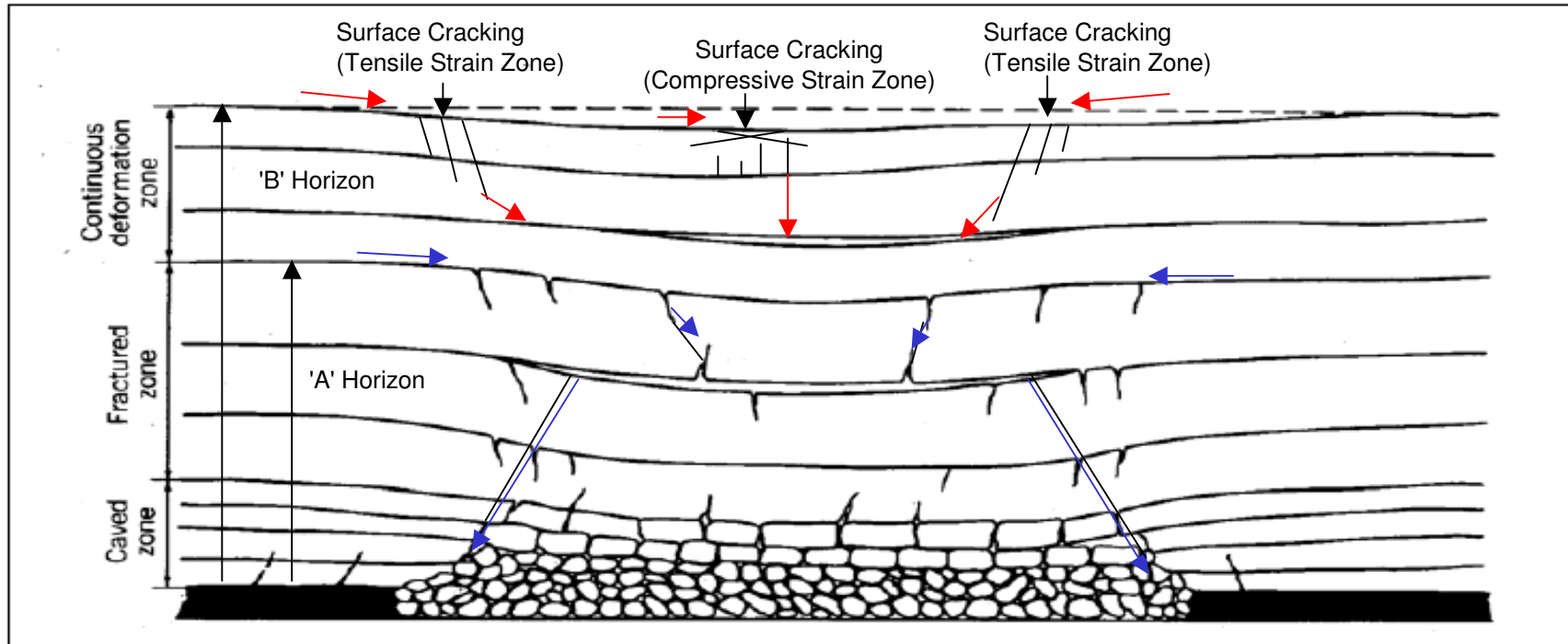
	Engineer:	S.Ditton	Client:	Narrabri Coal Operations - Narrabri Coal Mine (Stage 2) NAR-001/1	
	Drawn:	S.Ditton	Title:	Pre-mining and Predicted Post-Mining Surface Level Contours above Longwall Layout for Case 3 (non-spanning Garrawilla Volcanics and minimum chain pillar subsidence) & 4.2 m Mining Height	
	Date:	25.03.08	Scale:		
	Ditton Geotechnical Services Pty Ltd			Figure No:	40



Key:

- Cover Depth Contours
- Main Creeks
- Fences
- Unsealed Roads/Tracks
- Faults
- ▼ Farm Dams
- Buildings
- Orchards

	Engineer:	S.Ditton	Client:	Narrabri Coal Operations - Narrabri Coal Mine (Stage 2) NAR-001/1		
	Drawn:	S.Ditton	Title:	Post-mining Surface Crack Width Potential above Longwall Layout for Case 3 (non-spanning Garrawilla Volcanics and minimum chain pillar subsidence) and 4.2 m Mining Height		
	Date:	25.03.08	Scale:	1:60,000	Figure No:	41
	Ditton Geotechnical Services Pty Ltd					




**Zones in the Overburden According to Peng and Chiang (1984)**

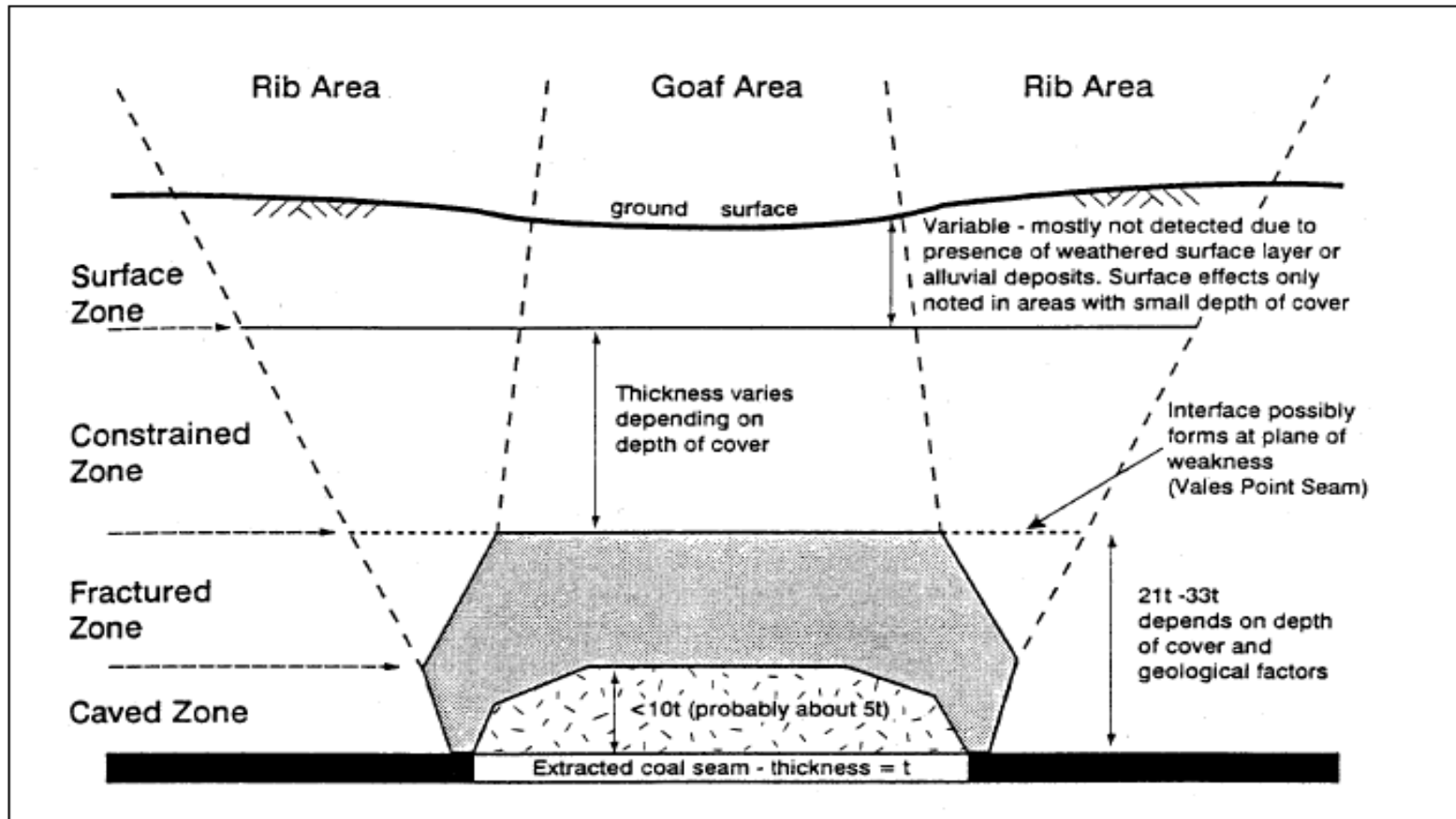
Key

'A' Horizon - Zone of Continuous Crack Connection to Workings (**Whittaker and Reddish, 1989**)


'B' Horizon - Zone Of Discontinuous Crack Connection to Workings (**Whittaker and Reddish, 1989**)

→ Surface water flow path    → Sub-surface water flow path

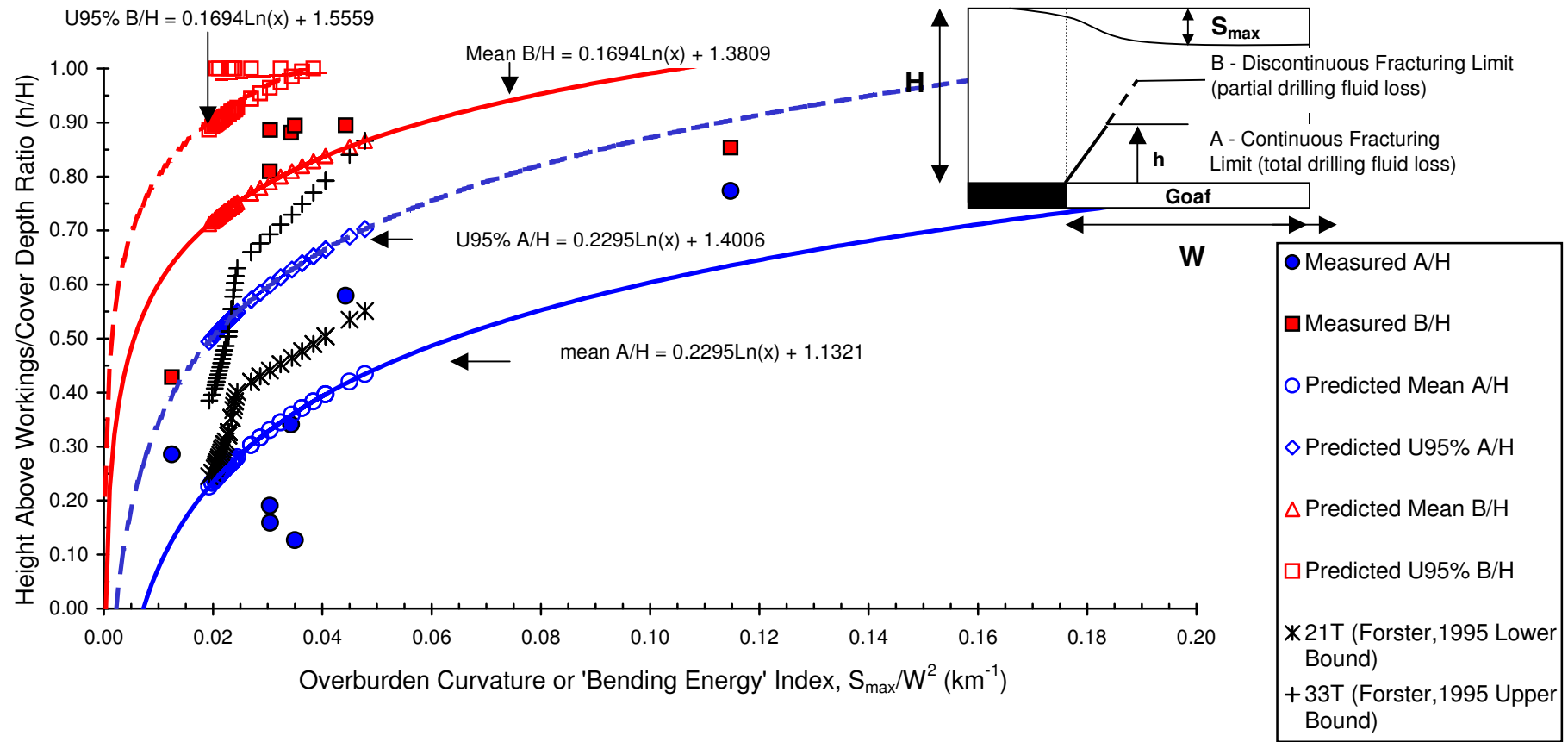
	Engineer:	S.Ditton	Client:	Narrabri Coal Operations Pty Ltd - Narrabri Coal Mine (Stage 2)	
	Drawn:	S.Ditton		NAR-001/1	
	Date:	18.11.08	Title:	Schematic Model of Overburden Fracture Zones by Various Researchers	
	Ditton Geotechnical Services Pty Ltd		Scale:	NTS	Figure No:




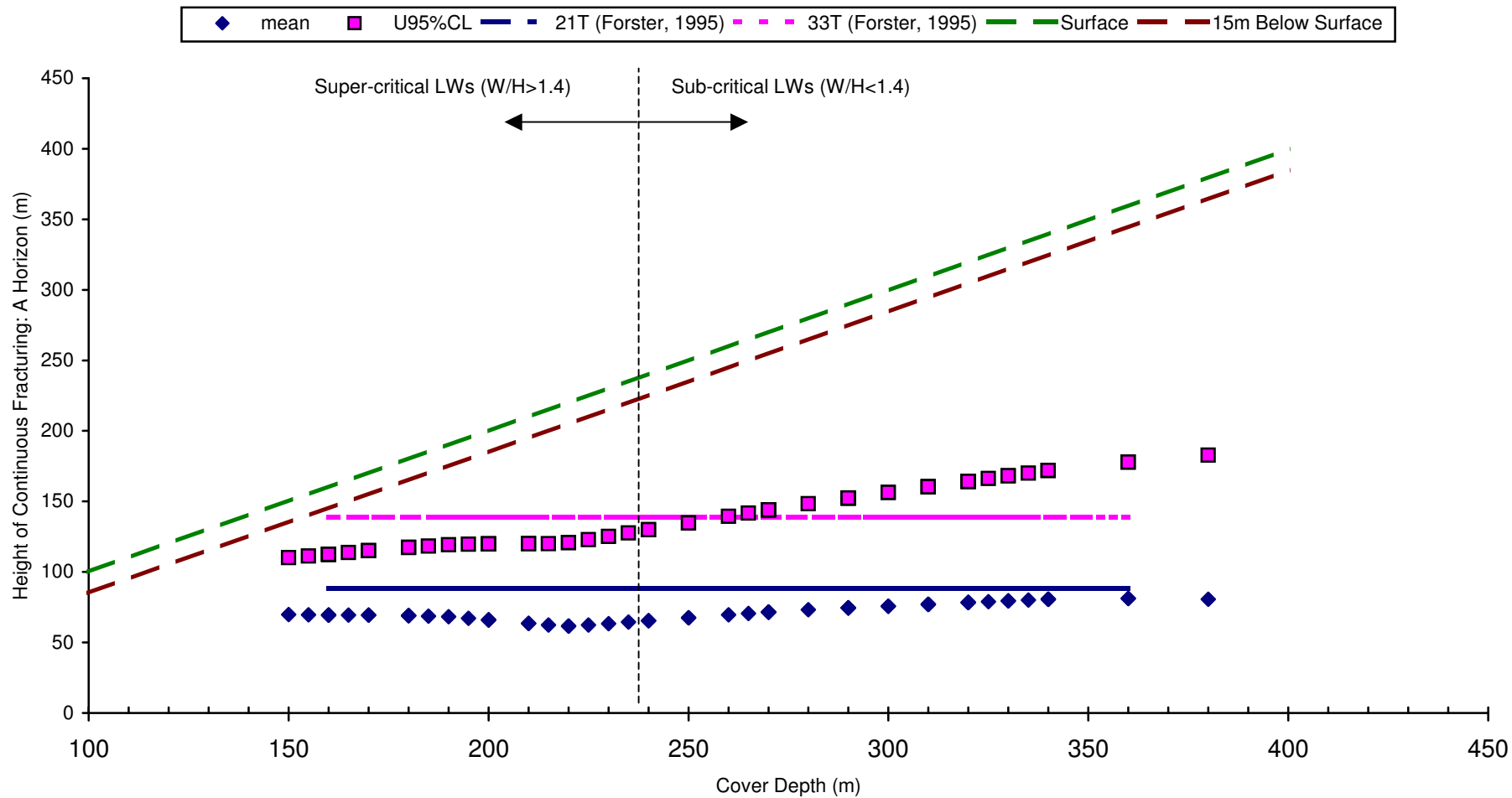
Zones in the Overburden according to Forster (1995)


	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:	Schematic Model of Overburden Fracture Zones in <b>Forster, 1995</b> Model	
	Ditton Geotechnical Services Pty Ltd			Scale:	NTS



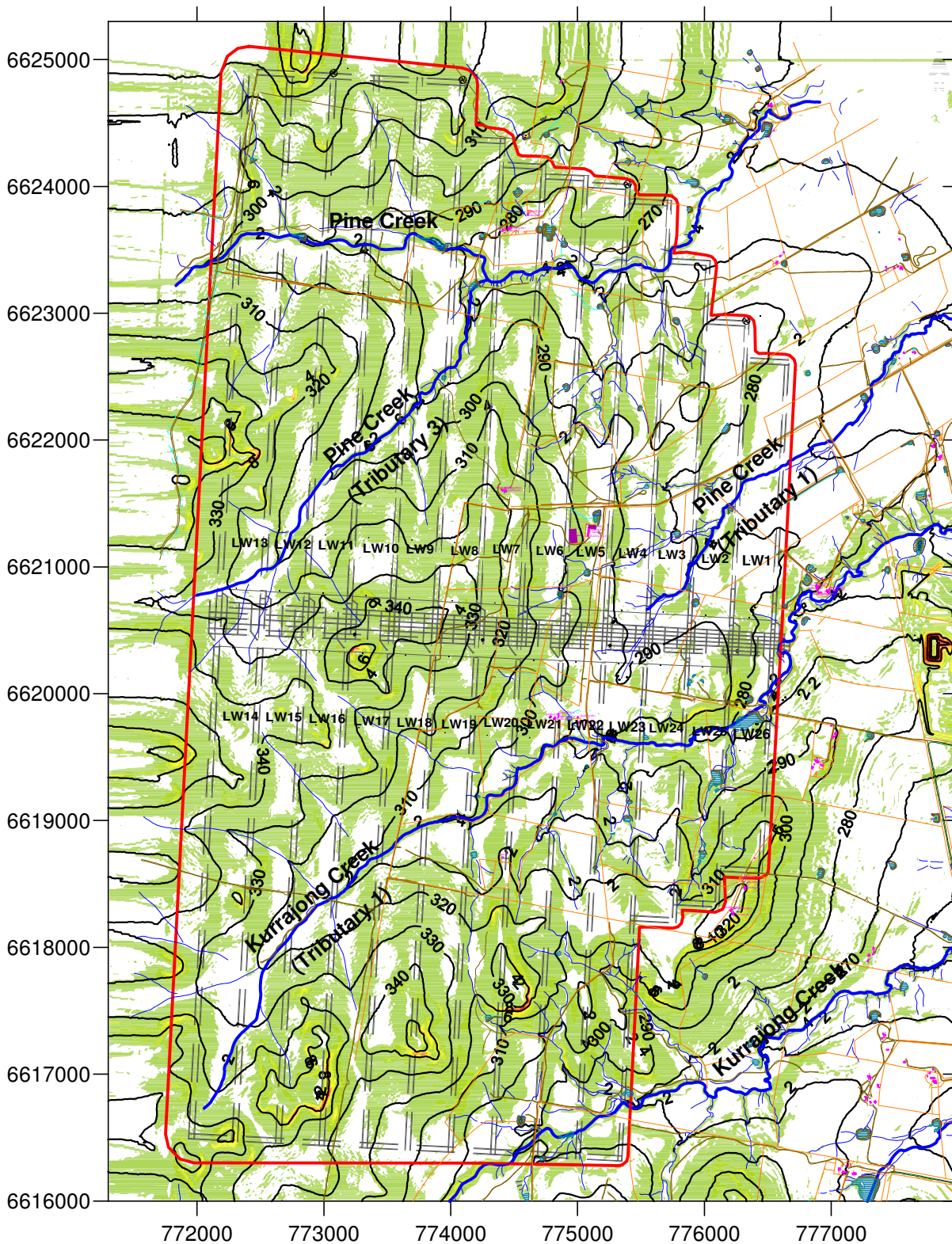


	Engineer:	S.Ditton	Client:	Narrabri Coal Operations Pty Ltd - Narrabri Coal Mine (Stage 2)	
	Drawn:	S.Ditton		NAR-001/1	
	Date:	12.08.08	Title:	Continuous and Discontinuous Sub-Surface Fracture Heights above NCM Longwall Layout for a 4.2 m Mining Height (based on ACARP, 2003 and Forster, 1995)	
	Ditton Geotechnical Services Pty Ltd		Scale:	NTS	Figure No:



	Engineer:	S.Ditton	Client:	Narrabri Coal Operations Pty Ltd
	Drawn:	S.Ditton		NAR-001/1
	Date:	12.08.08	Title:	Sub-surface Fracture Height above the Proposed Layout and 4.2 m Mining Height, based on ACARP, 2003 and Forster, 1995
	Ditton Geotechnical Services Pty Ltd		Scale:	NTS





Key:

- Post-mining Surface Levels
- Main Creeks
- Fences
- Unsealed Roads/Tracks
- Design Angle of Draw
- ▼ Farm Dams
- Buildings/Tanks
- Orchards

**DgS**

Engineer:	S.Ditton	Client:	Narrabri Coal Operations - Narrabri Coal Mine (Stage 2)	
Drawn:	S.Ditton		NAR-001/1	
Date:	25.03.08	Title:	Post-mining Surface Slopes and Surface Features Above Longwalls LW 1-26 for Case 3 (Maximum Panel and Minimum Chain Pillar Subsidence) and 4.2m Mining Height	
Ditton Geotechnical Services Pty Ltd		Scale:	1:60,000	Figure No: 46