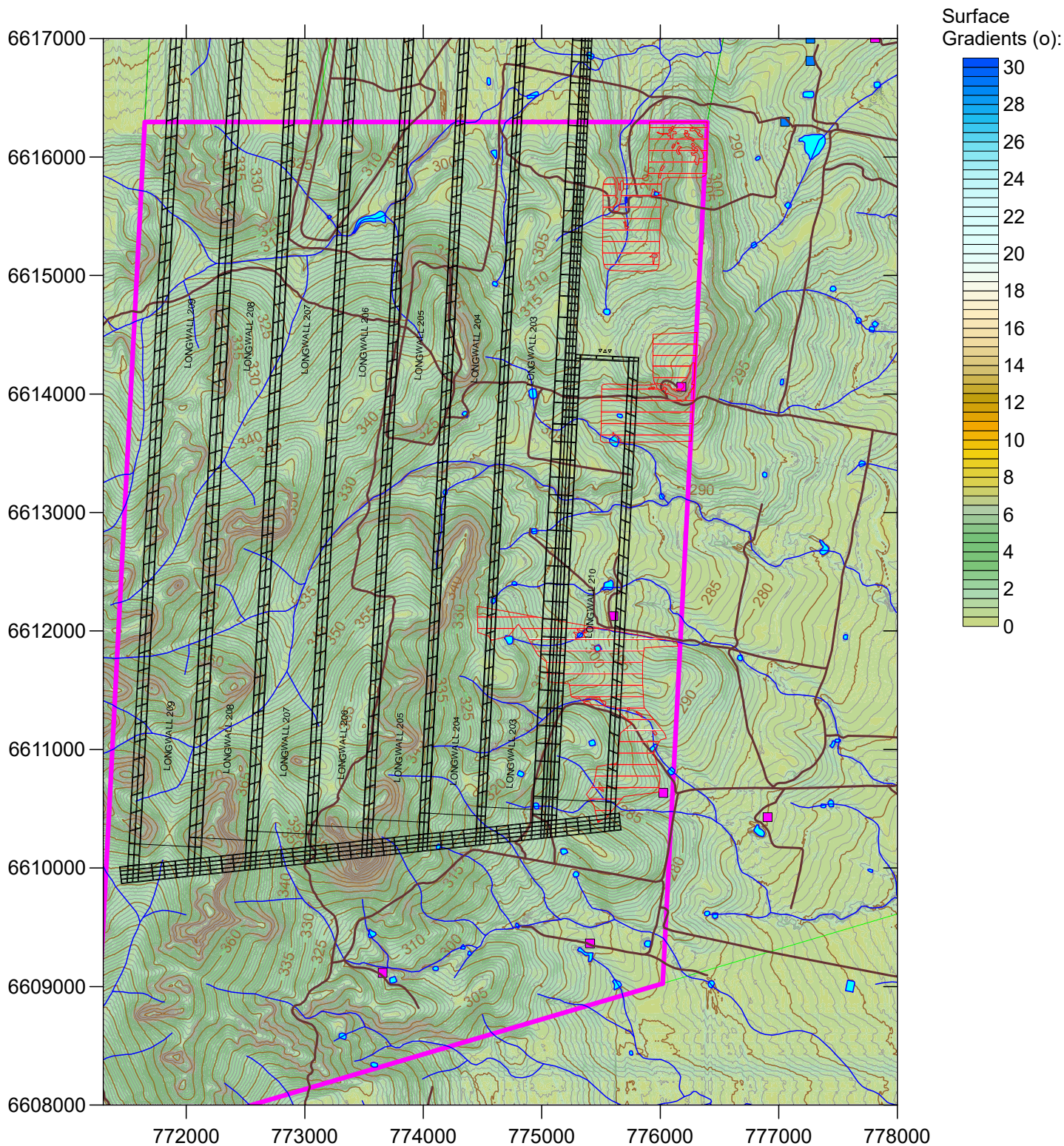




DgS

Engineer: S.Ditton

Drawn: S.Ditton

Date: 20.11.18

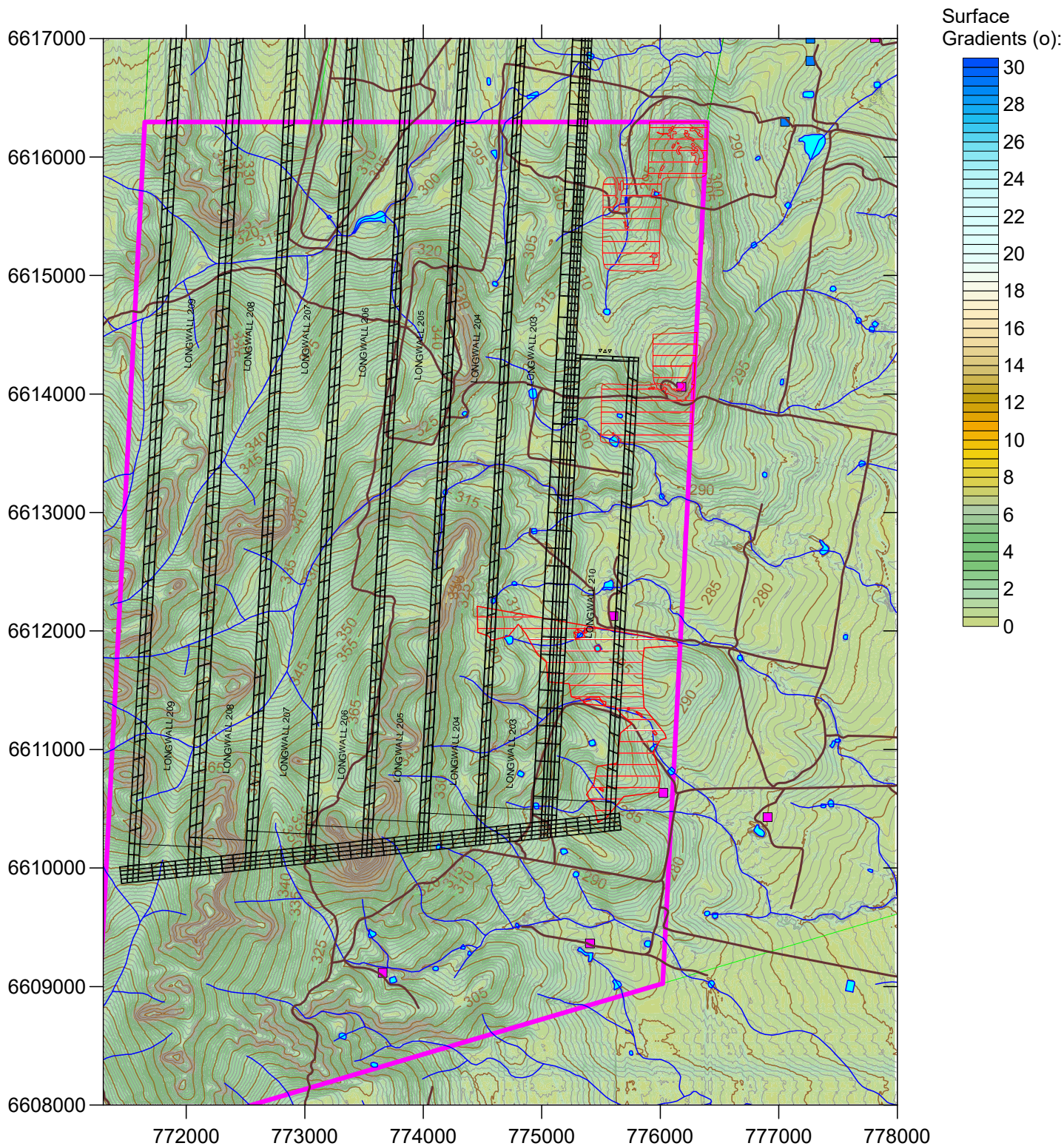
Ditton Geotechnical
Services Pty Ltd

Client: Narrabri Mine
NAR-005/1

Title: Surface Level Contours (Pre-Mining) above the Proposed
LW203 to 210 in the Application Area

Scale: 1:60,000

Figure No: 14a



Key:

- | | | |
|--|--------------------------|-------------------------------|
| Surface Level contours (m) | Proposed Longwall Panels | Creeks/Ephemeral Watercourses |
| Existing Dwellings (Private/NCO-Owned) | BSAL | Farm Dams |
| Gateway Certificate Application Boundary | Access Roads (unsealed) | |

DgS

Engineer: S.Ditton

Drawn: S.Ditton

Date: 18.08.17

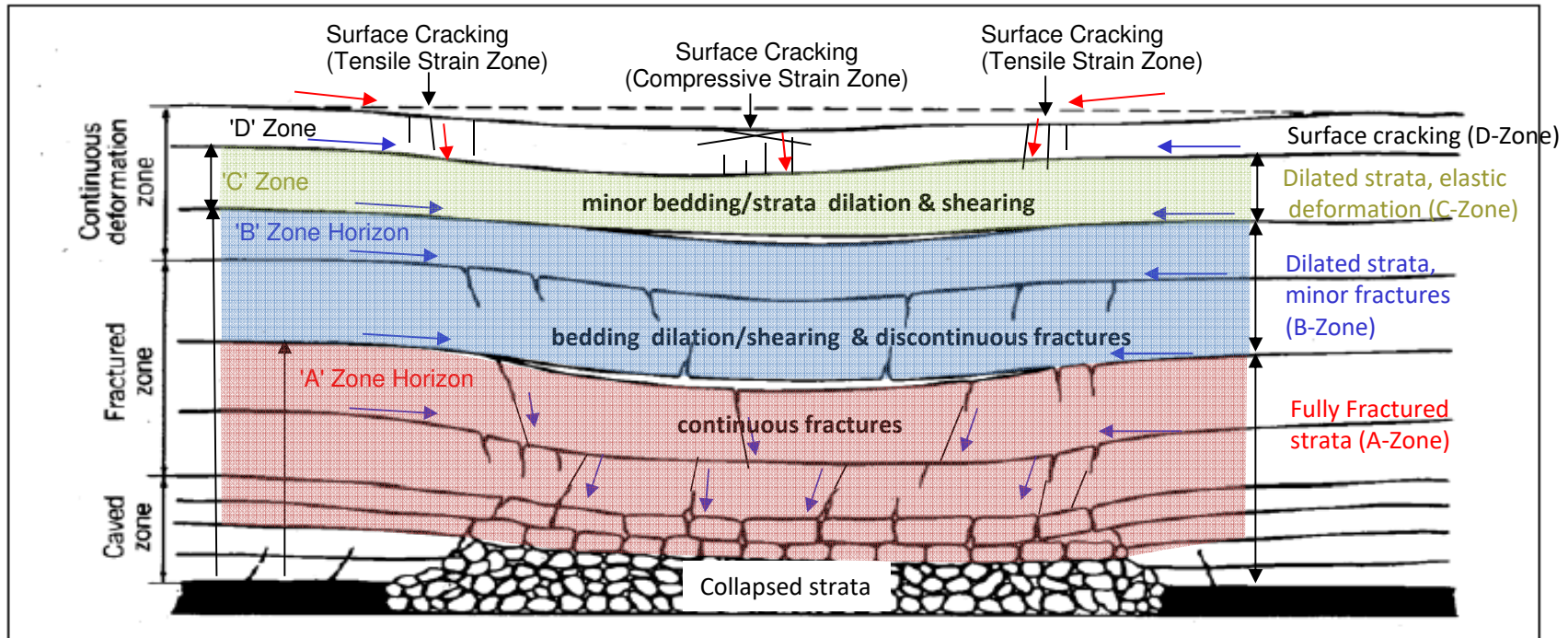
Ditton Geotechnical
Services Pty Ltd

Client: Narrabri Mine
NAR-005/1

Title: Predicted Post-Mining Surface Level Contours above the Proposed
LW203 to 210 in the Application Area

Scale: 1:60,000

Figure No: 14b



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

DgS



Engineer: S.Ditton

Drawn: S.Ditton

Date: 15.08.17

Ditton Geotechnical

Services Pty Ltd

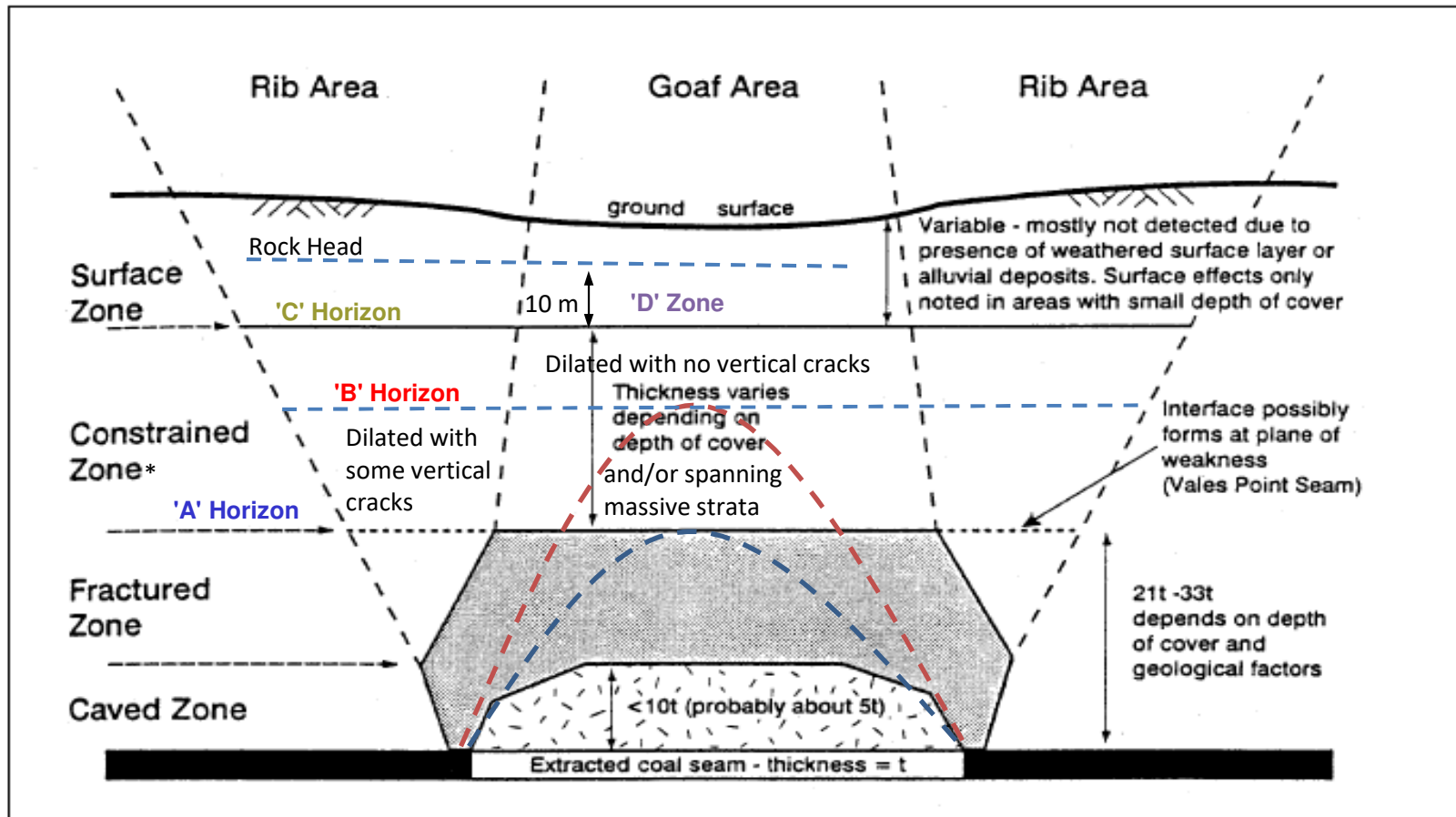
Client: Narrabri Mine

NAR-005/1

Title: Schematic Model of Overburden Fracture Zones Above Longwall Panels

Scale: NTS

Figure No: 15a



Zones in the Overburden according to Forster (1995)

* - Constrained Zone generally means B-Zone, but may include C-Zone, depending on W/H ratio and geology

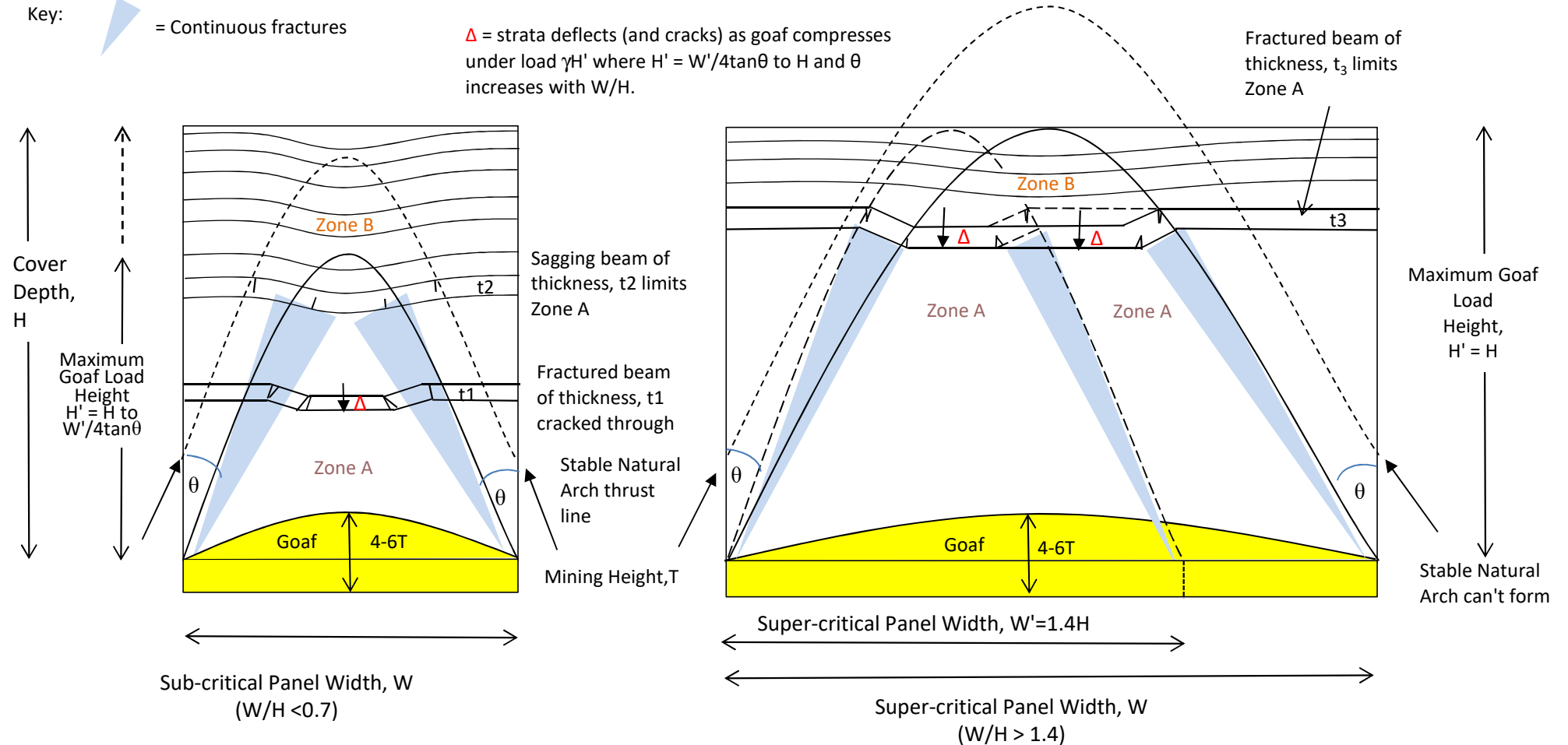
	Engineer:	S.Ditton	Client:	Narrabri Mine	
	Drawn:	S.Ditton		NAR-005/1	
	Date:	20.11.18	Title:	Schematic Model of Overburden Fracture Zones in Forster, 1995 Model (based on Piezometric Data Above High Extraction Panels in the Newcastle Coalfield)	
	Ditton Geotechnical Services Pty Ltd		Scale:	NTS	Figure No: 15b

Key:



= Continuous fractures

Δ = strata deflects (and cracks) as goaf compresses under load $\gamma H'$ where $H' = W'/4\tan\theta$ to H and θ increases with W/H .



DgS



Engineer: S.Ditton

Drawn: S.Ditton

Date: 15.08.17

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Services Pty Ltd

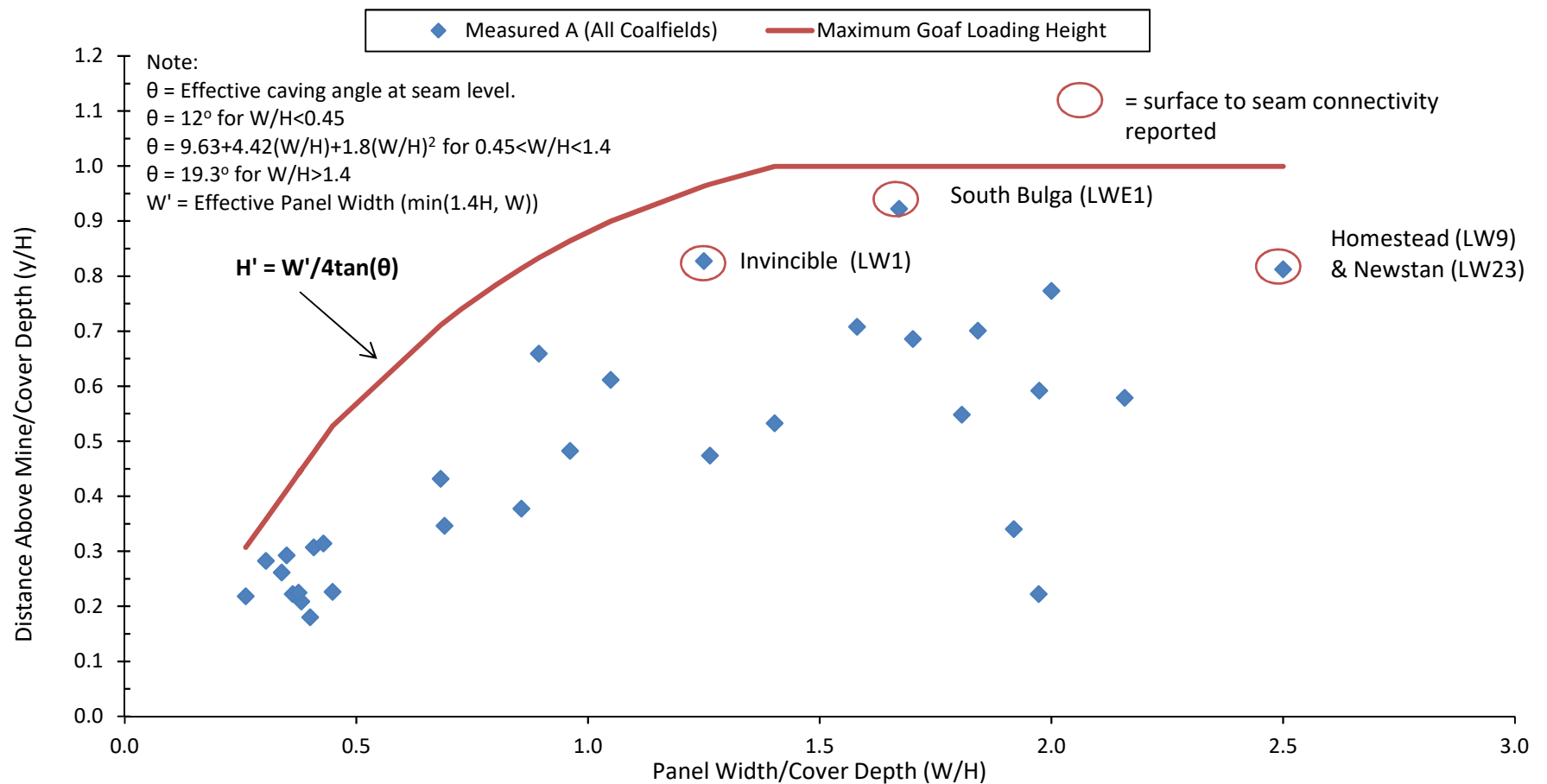
Client: Narrabri Mine

NAR-005/1

Title: Conceptual Model for Development of Height of Continuous Fracturing Zone for a range of Longwall Panel Geometries

Scale: NTS

Figure No: 15c



DgS



Engineer: S.Ditton

Drawn: S.Ditton

Date: 15.08.17

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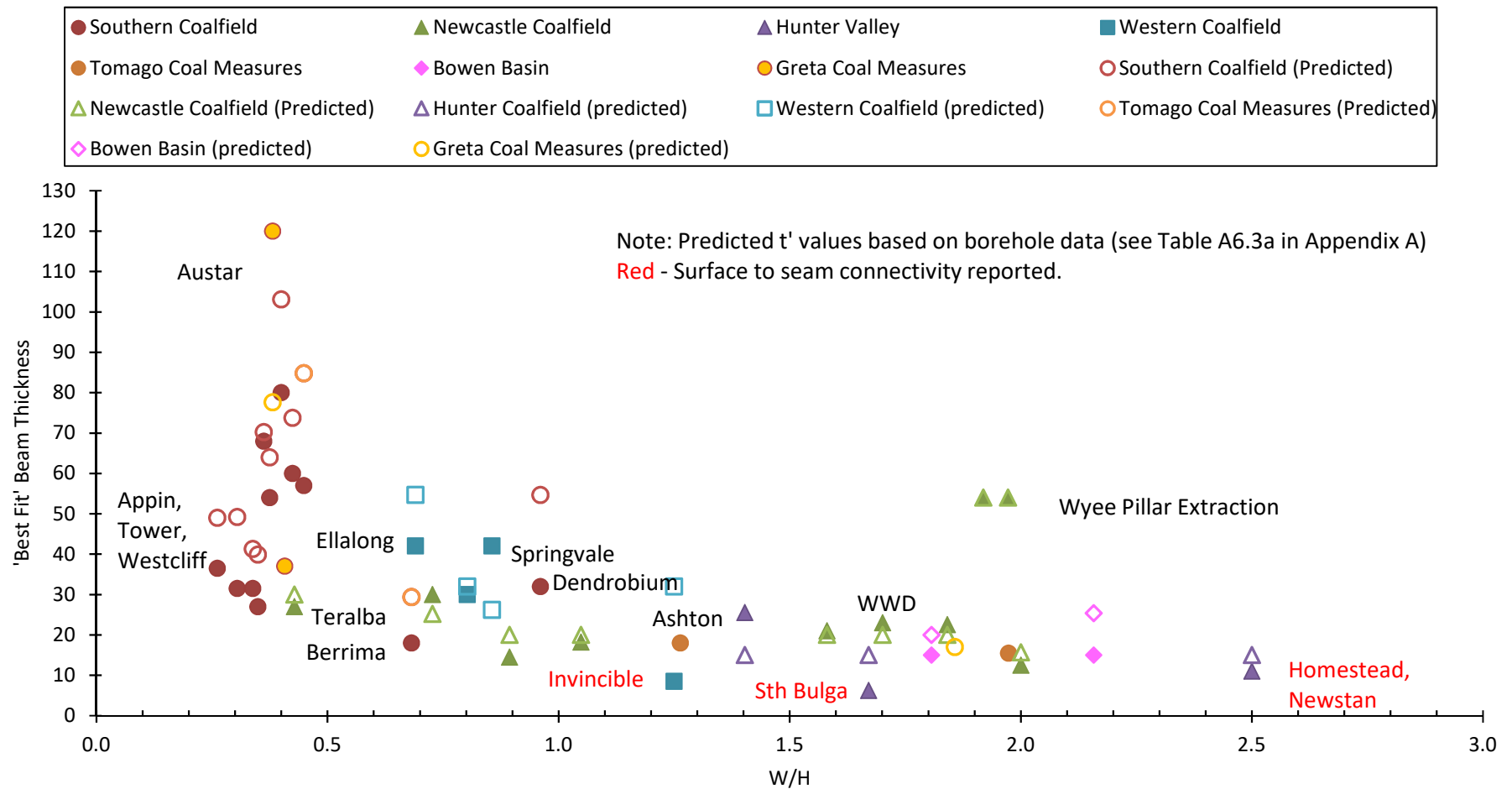
Client: Narrabri Mine

NAR-005/1

Title: Measured Heights of Continuous Fracturing in NSW and QLD Coalfields with Reported
Surface to Seam Connectivity Cases, caving angles and theoretical Goaf Loading Height

Scale: NTS

Figure No: 15d



	Engineer:	S.Ditton	Client:	Narrabri Mine		
	Drawn:	S.Ditton		NAR-005/1		
	Date:	10.09.16	Title:	Results of Back-analysis of Effective Strata Units required to Match the Observed		
	Ditton Geotechnical			A-Zone Heights above Longwall Panel Goafs using the Geology Pi-Term Model		
	Services Pty Ltd		Scale:	NTS		Figure No: