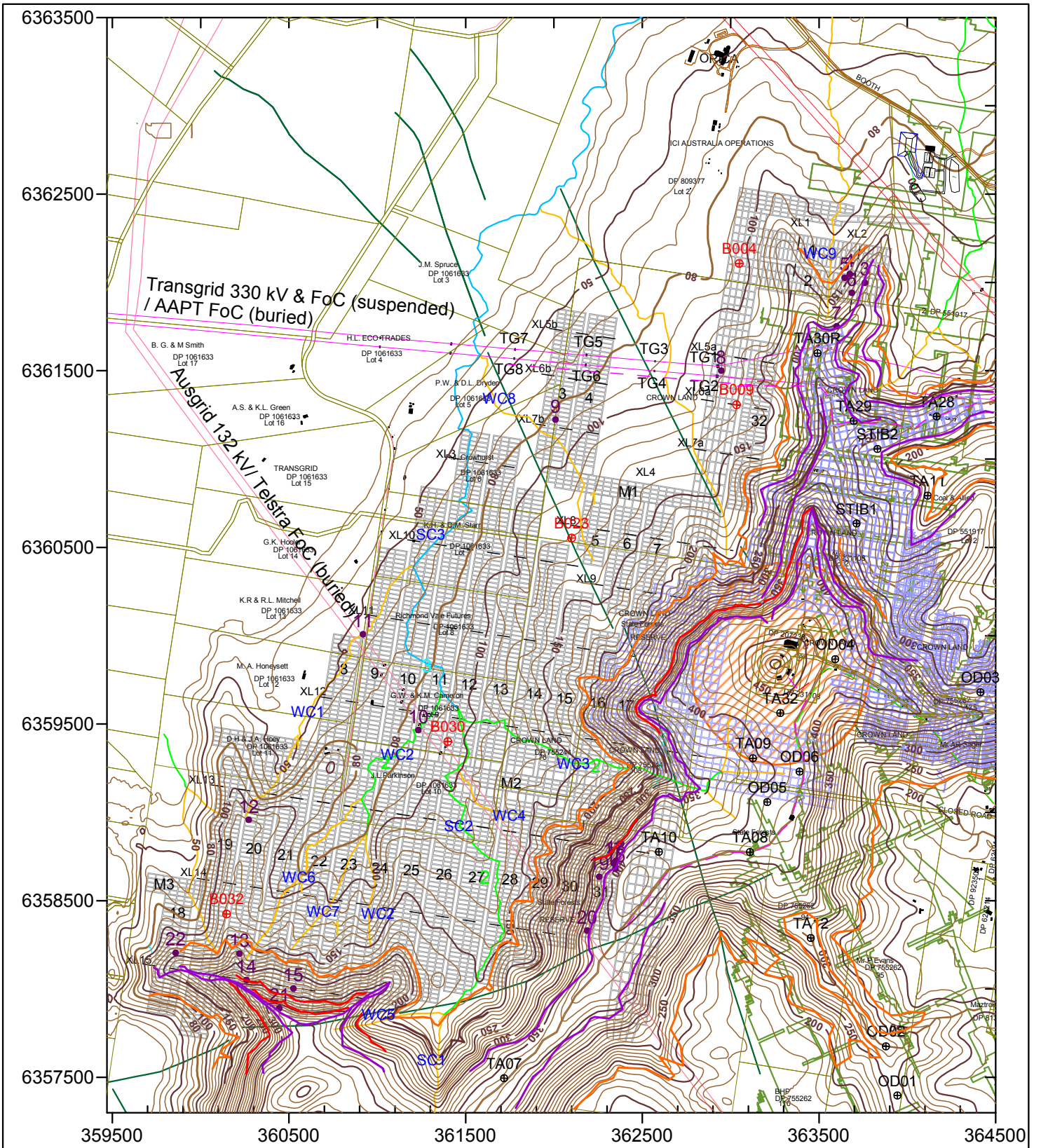


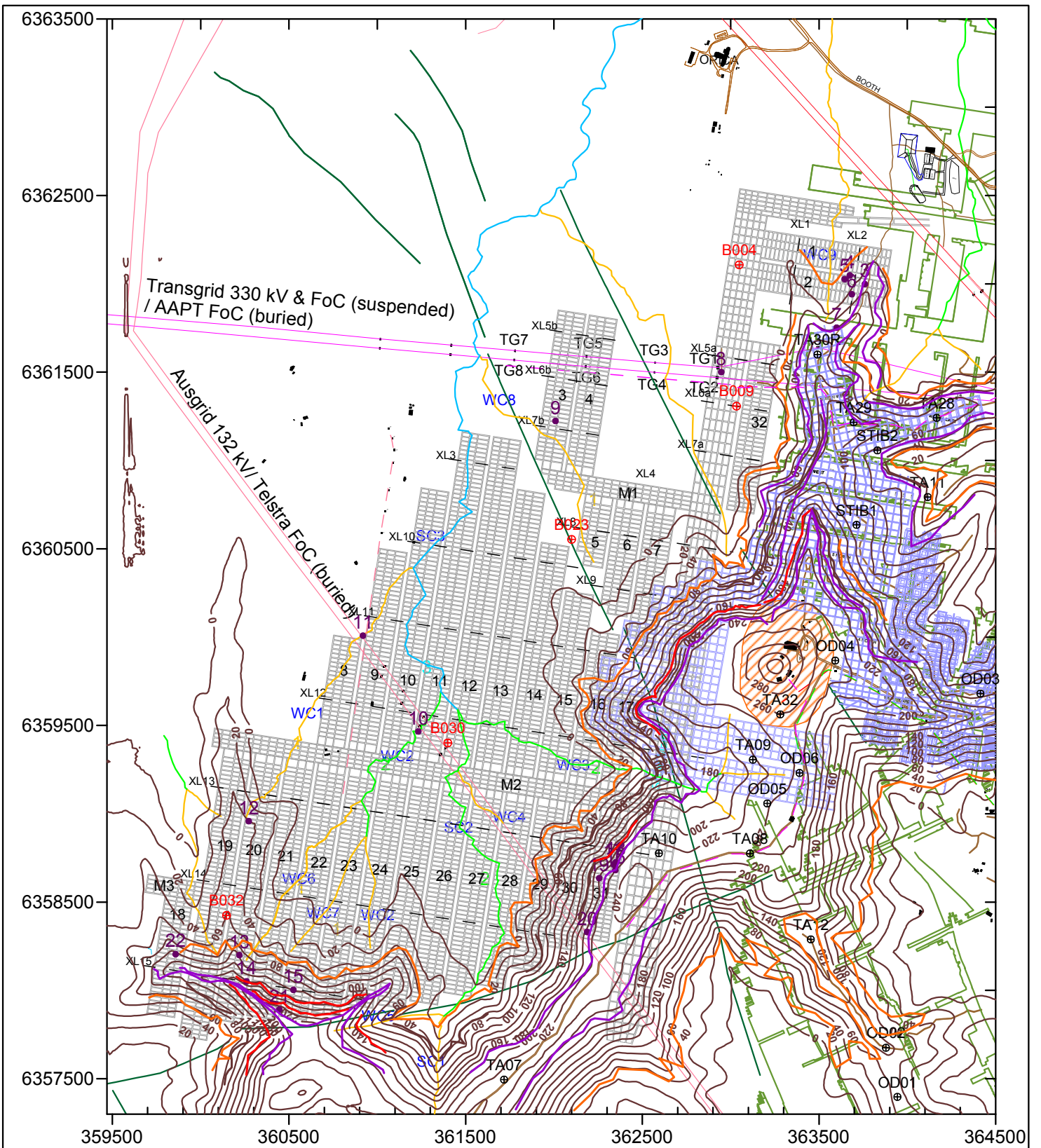


## Figures



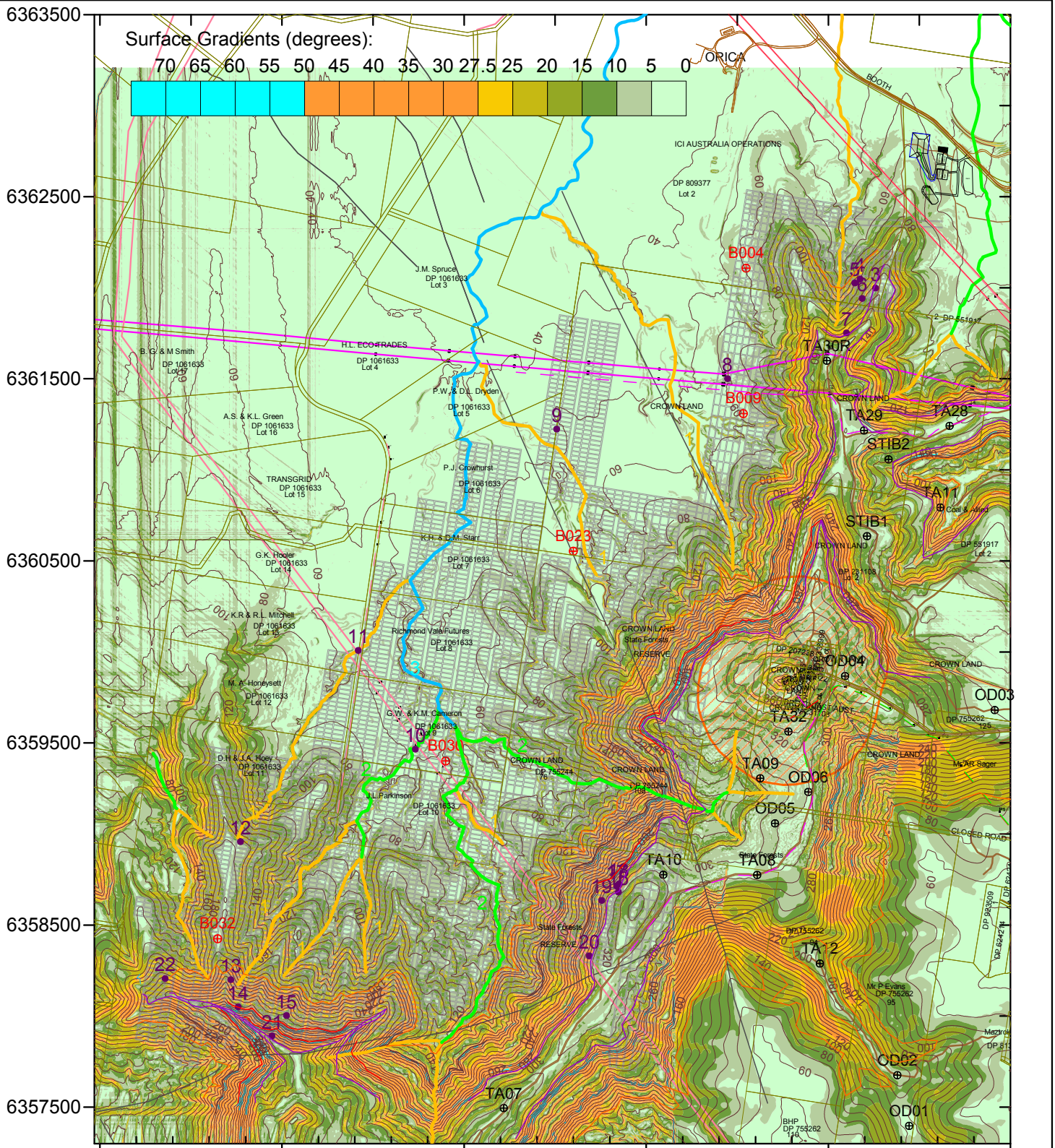
- Key:
- Surface Level Contours (m)
  - Water Courses (in Stream Order)
  - Geological Structure
  - Cadastral Boundaries
  - Prediction Cross Lines
  - GPS Location during Site Inspection
  - Crest of Steep Slope (>26o)
  - Toe of Steep Slopes (>26o)
  - Cliff > 20 m High
  - Minor cliff (10-20 m High)
  - Transgrid 330 kV Easement
  - Buildings
  - 11 kV Ausgrid
  - Fibre Optic Cable
  - Public Access Roads
  - Ausgrid 132 kV Easement
  - Borehole Location
  - Proposed Workings in WBH Seam
  - Old Workings in WBH Seam
  - Tasman Mine Workings in FAS Seam (First & 2nd Workings)
  - WBH Mining Exclusion Zone

	Engineer:	S.Ditton	Client:	Donaldson Coal - Tasman Extension Project	
	Drawn:	S.Ditton	Title:	TAS-005/1	
	Date:	04.12.11	Proposed Pillar Extraction Panels and Surface Features with Cover Depth Contours to WBH Seam		
Ditton Geotechnical Services Pty Ltd			Scale:	1:30,000 (A4)	Figure No: 1a



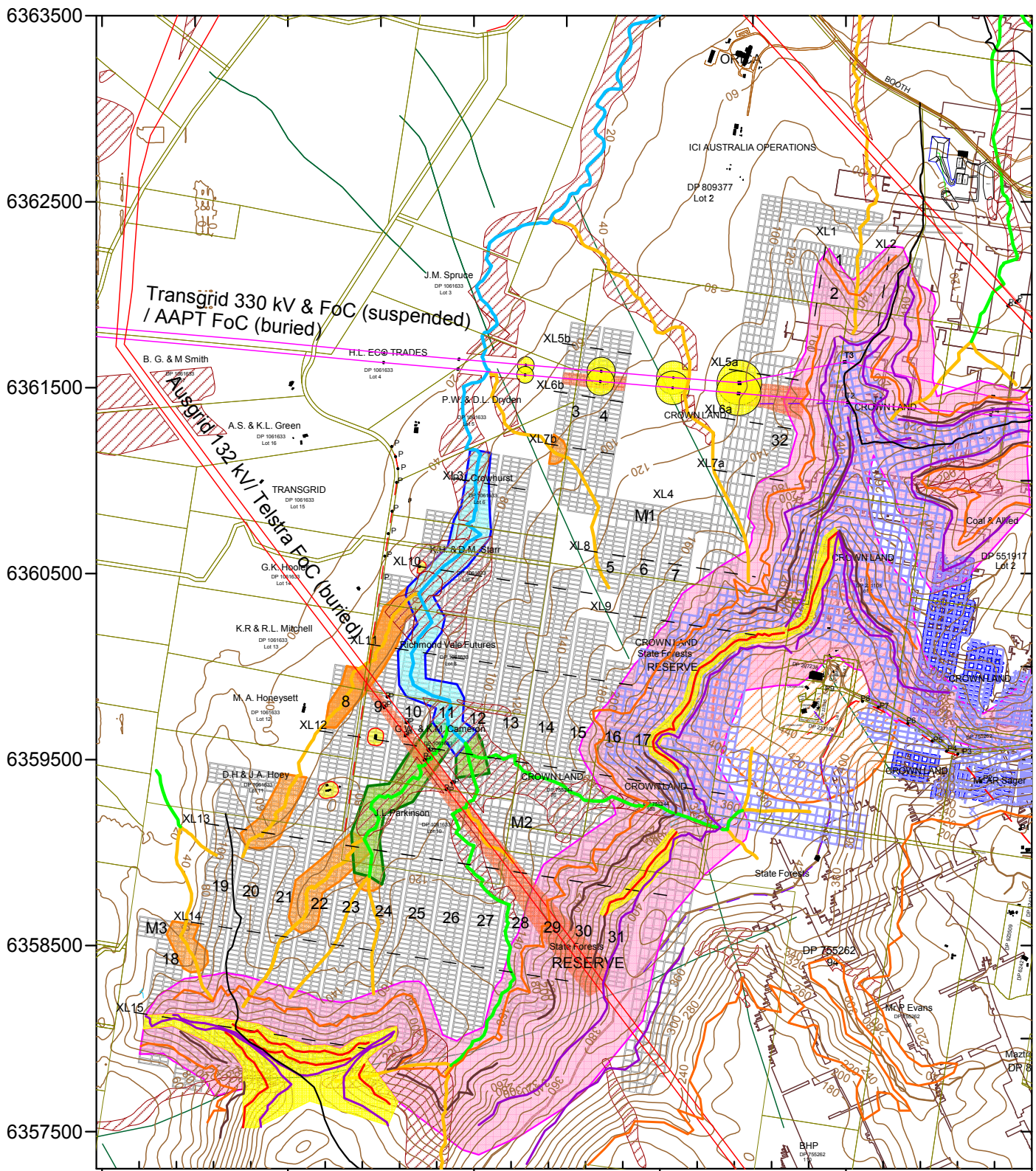
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- Surface Level Contours (m)
  - WC1 Water Courses (in Stream Order)
  - Geological Structure
  - Cadastral Boundaries
  - XL1 - Prediction Cross Lines
  - GPS Location during Site Inspection
  - Crest of Steep Slope (>26o)
  - Toe of Steep Slopes (>26o)
  - Cliff > 20 m High
  - Minor cliff (10-20 m High)
  - Transgrid 330 kV Easement
  - Buildings
  - 11 kV Ausgrid
  - Fibre Optic Cable
  - Public Access Roads
  - Ausgrid 132 kV Easement
  - Borehole Location
  - Proposed Workings in WBH Seam
  - Old Workings in WBH Seam
  - Tasman Mine Workings in FAS Seam (First & 2nd Workings)
  - WBH Mining Exclusion Zone

	Engineer:	S.Ditton	<b>Client:</b> Donaldson Coal - Tasman Extension Project
	Drawn:	S.Ditton	
	Date:	04.12.11	
<b>Ditton Geotechnical Services Pty Ltd</b>		<b>Title:</b> Proposed Pillar Extraction Panels and Surface Features with Cover Depth Contours to FAS Seam	
<b>Scale:</b> 1:30,000 (A4)		<b>Figure No:</b> 1b	



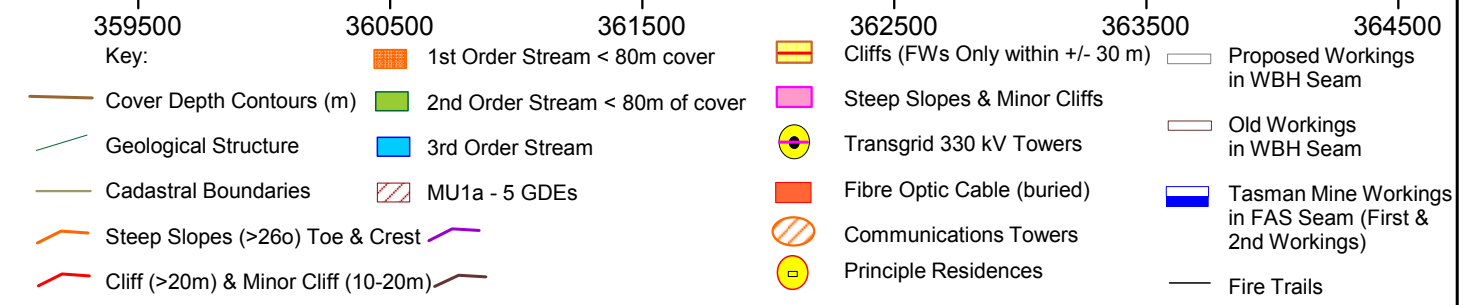
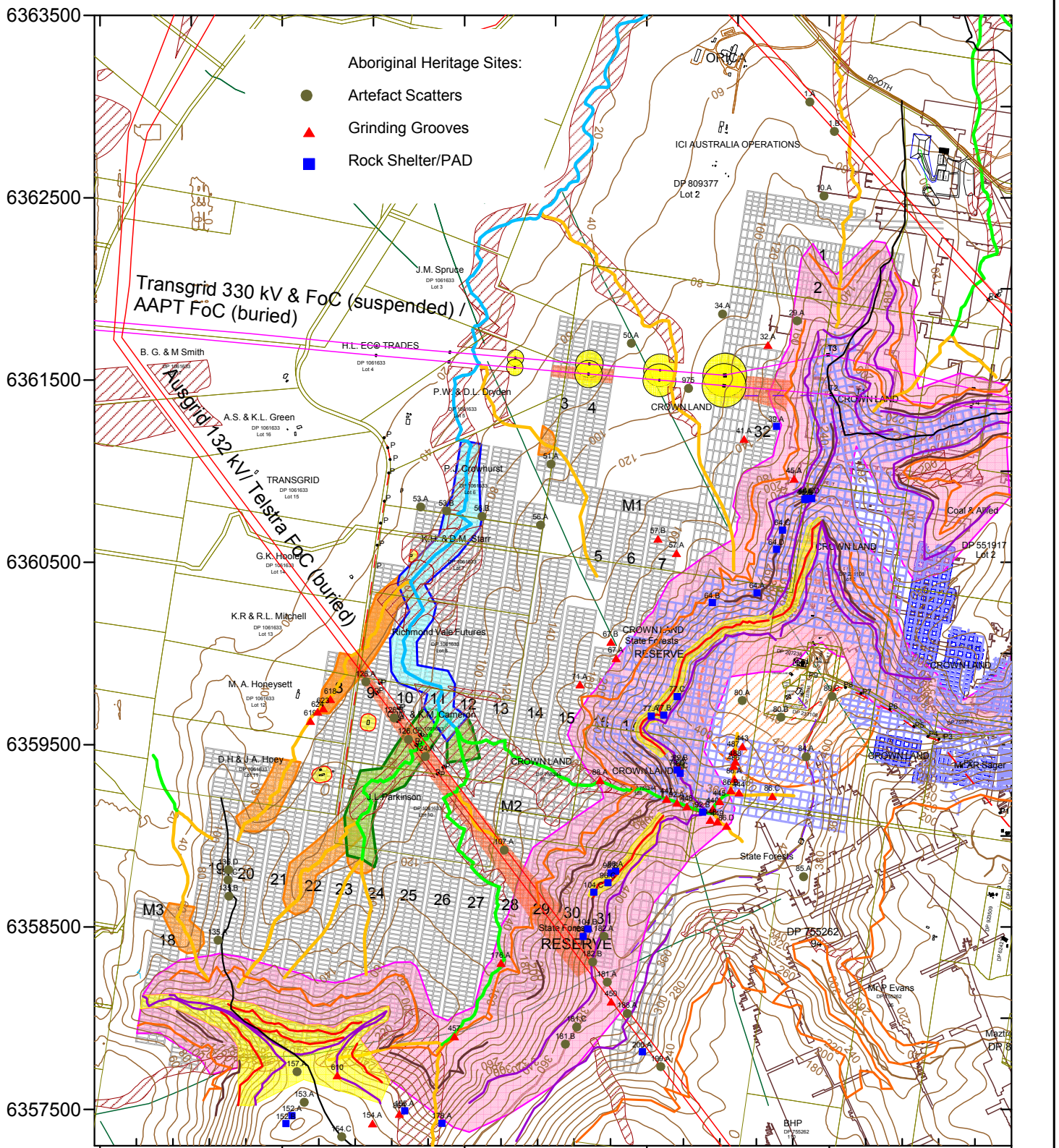
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  - Water Courses (in Stream Order)
  - Geological Structure
  - Cadastral Boundaries
  - XL1 — Prediction Cross Lines
  - GPS Location during Site Inspection
  - Crest of Steep Slope (>26°)
  - Toe of Steep Slopes (>26°)
  - Cliff > 20 m High
  - Minor cliff (10-20 m High)
  - Transgrid 330 kV Easement
  - Ausgrid 132 kV Easement
  - Buildings
  - 11 kV Ausgrid
  - Fibre Optic Cable
  - Public Access Roads
  - ⊕ Borehole Location
  - ▭ Proposed Workings in WBH Seam
  - ⊘ WBH Mining Exclusion Zone

	Engineer:	S.Ditton	Client:	Donaldson Coal - Tasman Extension Project	
	Drawn:	S.Ditton		TAS-005/1	
	Date:	04.08.11	Title:	Proposed Pillar Extraction Panels with Surface Levels and Features	
	Ditton Geotechnical Services Pty Ltd			Scale:	1:30,000 (A4)

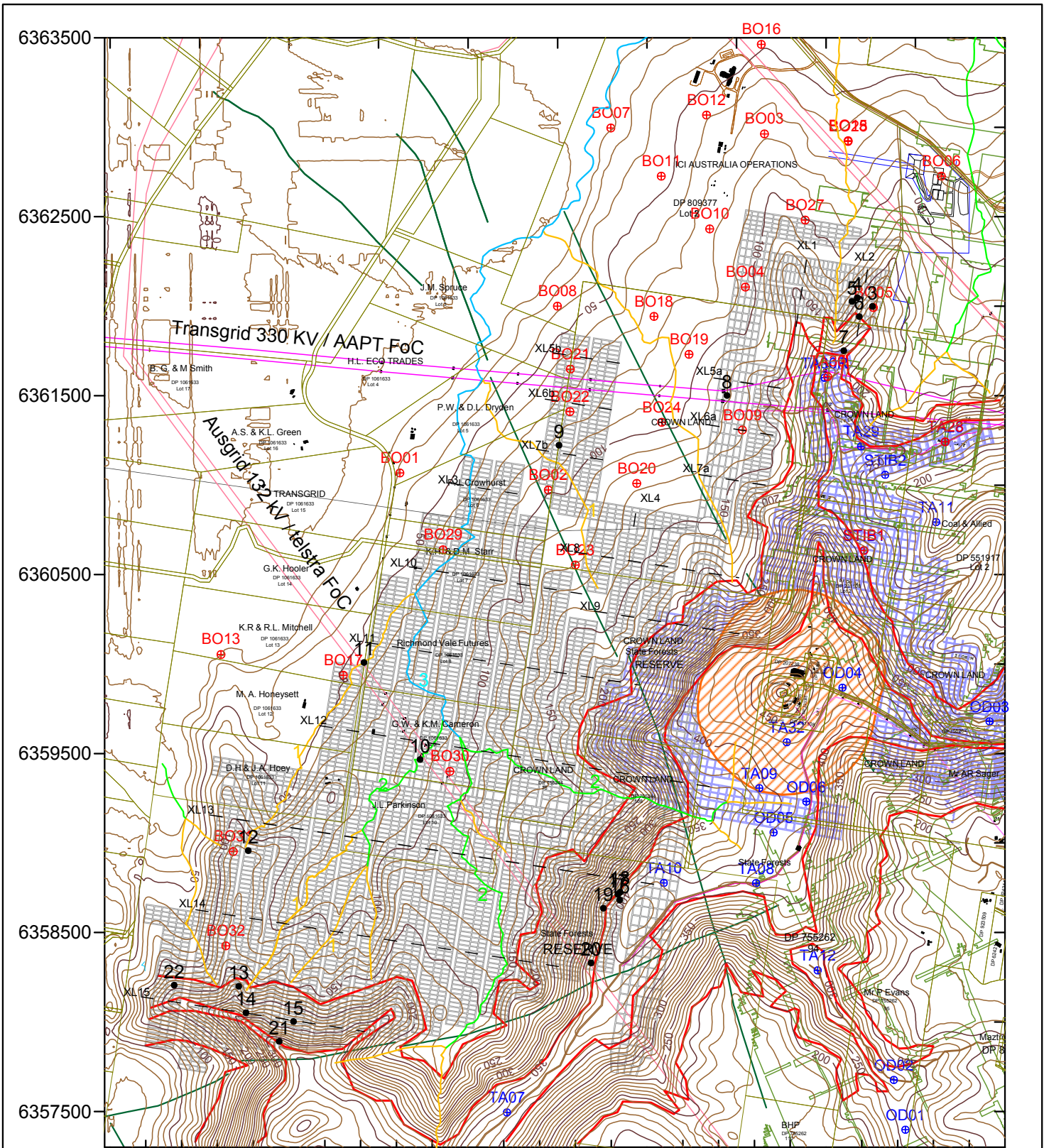


359500	360500	361500	362500	363500	364500
Key:					
	1st Order Stream < 80m cover		Cliffs (FWs Only within +/- 30 m)		Proposed Workings in WBH Seam
	Cover Depth Contours (m)		2nd Order Stream < 80m of cover		Steep Slopes & Minor Cliffs
	Geological Structure		3rd Order Stream		Transgrid 330 kV Towers
	Cadastral Boundaries		MU1a - 5 GDEs		Fibre Optic Cable (buried)
	Steep Slopes (>26o) Toe & Crest				Principle Residences
	Cliff (>20m) & Minor Cliff (10-20m)				Tasman Mine Workings in FAS Seam (First & 2nd Workings)
					Fire Trails

	Engineer:	S.Ditton	Client:	Donaldson Coal - Tasman Extension Project	
	Drawn:	S.Ditton		TAS-005/1	
	Date:	16/11/11	Title:	Proposed Pillar Extraction Panels with Subsidence Control Zones for Cliffs, Steep Talus Slopes, Creeks with Cover Depths < 100 m, Sensitive Infrastructure & Principle Residences	
	Ditton Geotechnical Services Pty Ltd			Scale:	1:30,000 (A4)

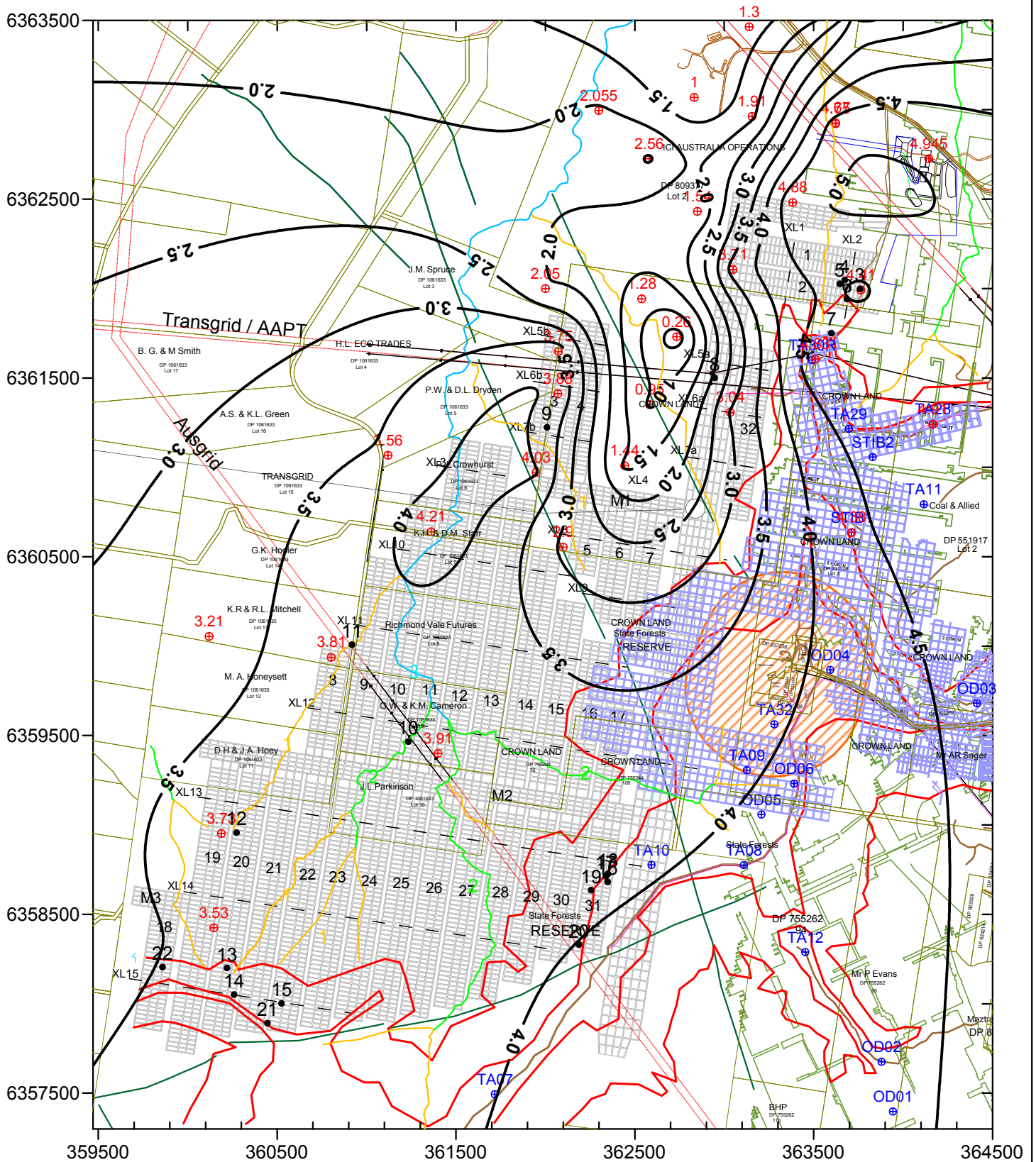


	Engineer:	S.Ditton	Client:	Donaldson Coal - Tasman Extension Project	
	Drawn:	S.Ditton		TAS-005/1	
	Date:	16/11/11	Title:	Aboriginal Heritage Sites shown with Proposed Subsidence Control Zones	
	Ditton Geotechnical Services Pty Ltd		Scale:	1:30,000 (A4)	Figure No:



Key:		● GPS Location during Site Inspection	■ Buildings	□ Proposed Workings in WBH Seam
— Cover Depth Contours (m)	⊕ Borehole Location	— 11 kV Enerserve	— ATTP Fibre Optic Cable	□ Old Workings in WBH Seam
— Water Courses (in Stream Order)	— Cliff Line and Steep Slopes	— Transgrid 330 kV Easement	— Public Access Roads	□ Tasman Mine Workings in FAS Seam
— Geological Structure	— Ausgrid 132 kV Easement	○ NBN Mining Exclusion Zone		
— Cadastral Boundaries				
XL1— Prediction Cross Lines				

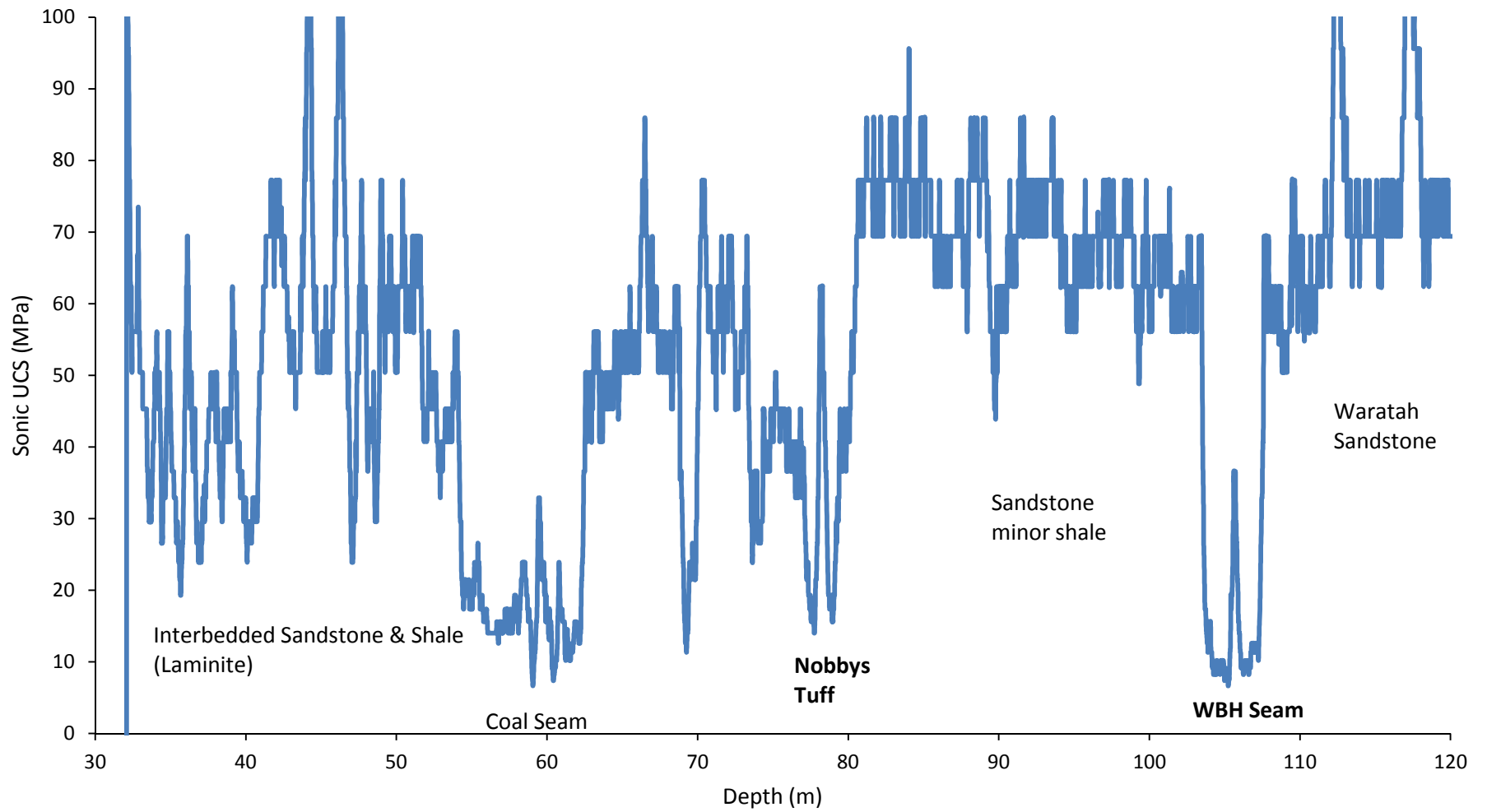
	Engineer:	S.Ditton	Client:	Donaldson Coal - Tasman Extension Project	
	Drawn:	S.Ditton		TAS-005/1	
	Date:	04.08.11	Title:	Proposed Pillar Extraction Panels with Available Borehole and Cover Depth Contours to WBH Seam	
	Ditton Geotechnical Services Pty Ltd			Scale:	1:30,000 (A4)




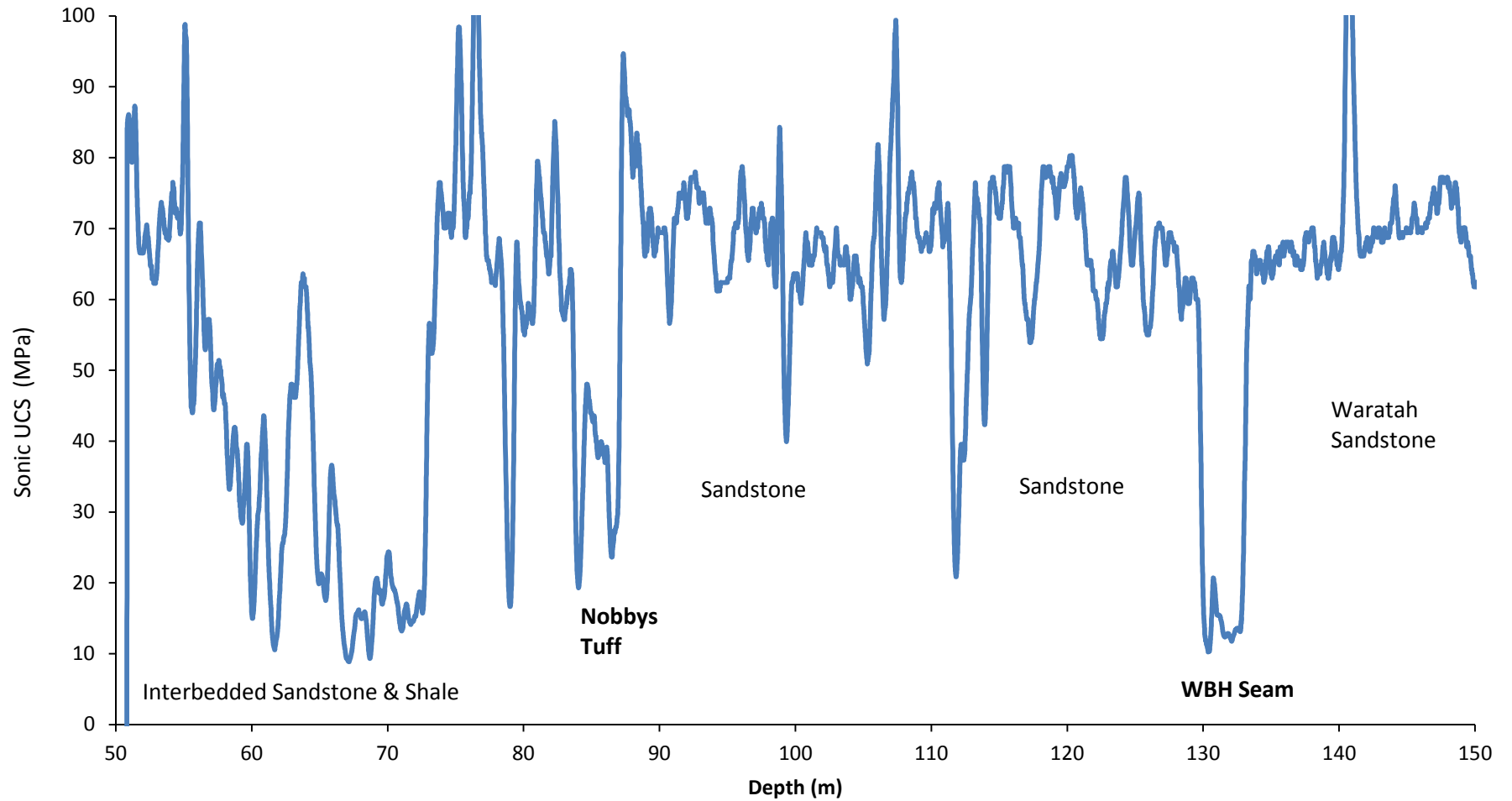
- Key:
- Cover Depth Contours (m)
  - Water Courses (in Stream Order)
  - Geological Structure
  - Cadastral Boundaries
  - XL1 — Prediction Cross Lines
  - GPS Location during Site Inspection
  - ⊕ Borehole Location
  - Cliff Line and Steep Slopes
  - Transgrid 330 kV Easement
  - Ausgrid 132 kV Easement
  - Buildings
  - 11 kV Enerserve
  - ATTP Fibre Optic Cable
  - Public Access Roads
  - ⊘ NBN Mining Exclusion Zone
  - Proposed Workings in WBH Seam
  - Old Workings in WBH Seam
  - Tasman Mine Workings in FAS Seam


	Engineer: S.Ditton	<b>Client:</b> Donaldson Coal - Tasman Extension Project <b>TAS-005/1</b>  <b>Title:</b> Proposed Pillar Extraction Panels with WBH Seam Thickness Contours  <b>Scale:</b> 1:30,000 (A4)	<b>Figure No:</b> 5
	Drawn: S.Ditton		
	Date: 04.08.11		
	<b>Ditton Geotechnical Services Pty Ltd</b>		

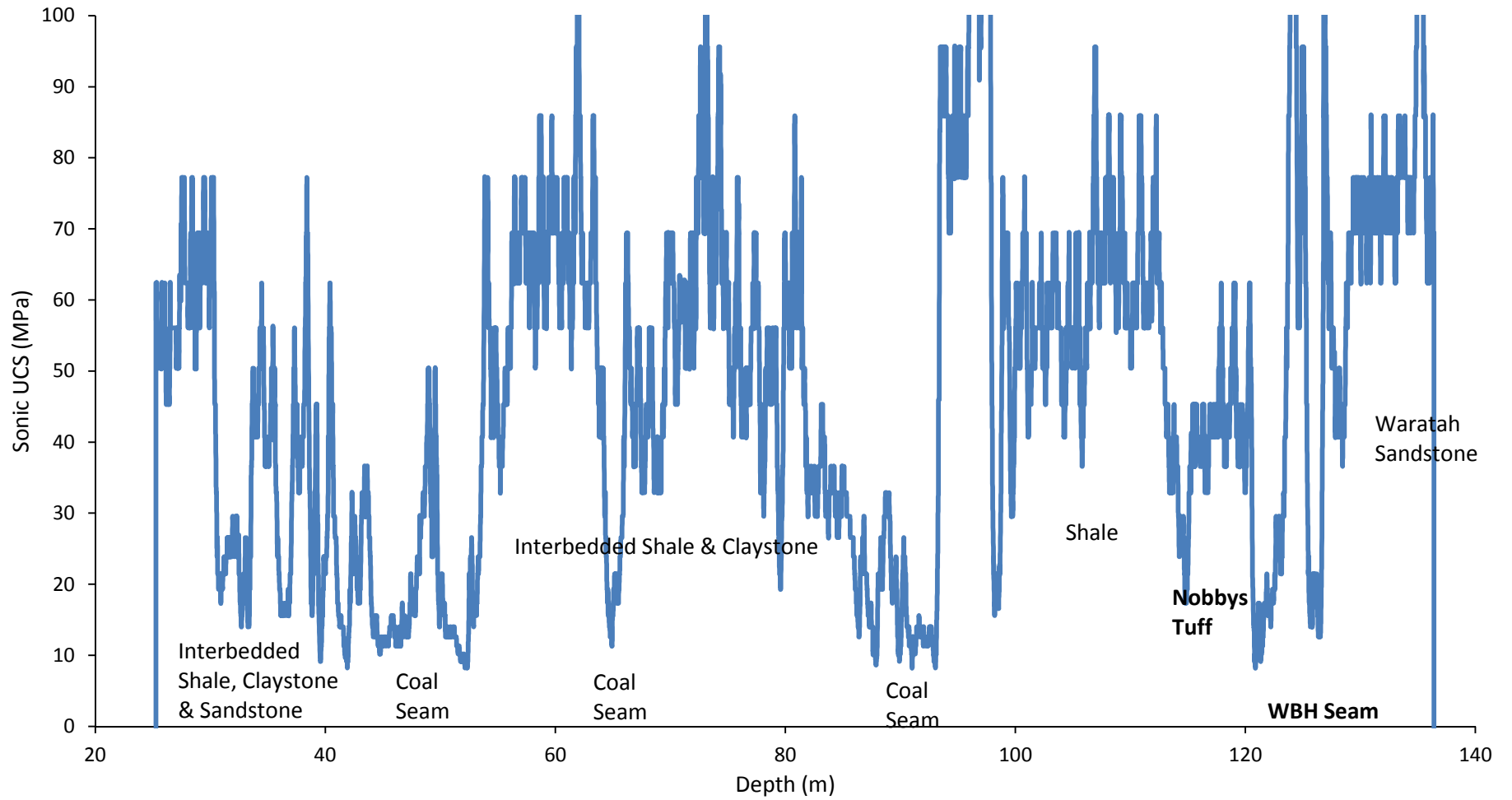





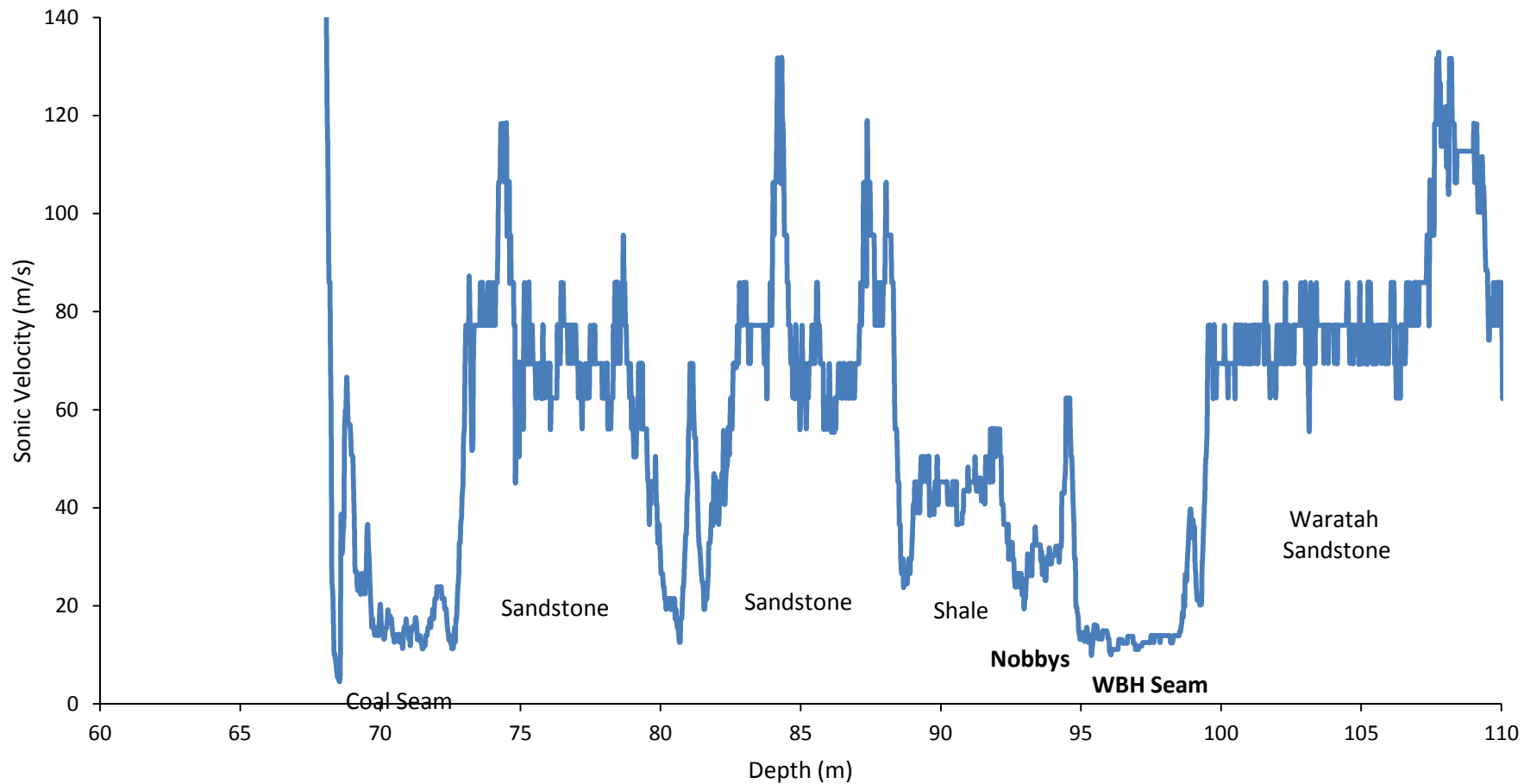
	Engineer:	S.Ditton	Client:	Donaldson Coal - Tasman Extension Project	
	Drawn:	S.Ditton		TAS-005/1	
	Date:	21.09.11	Title:	In-situ Sonic Velocity UCS Profiles for Borehole BO04 (based on McNally, 1989)	
	Ditton Geotechnical Services Pty Ltd		Scale:	NTS	Figure No:




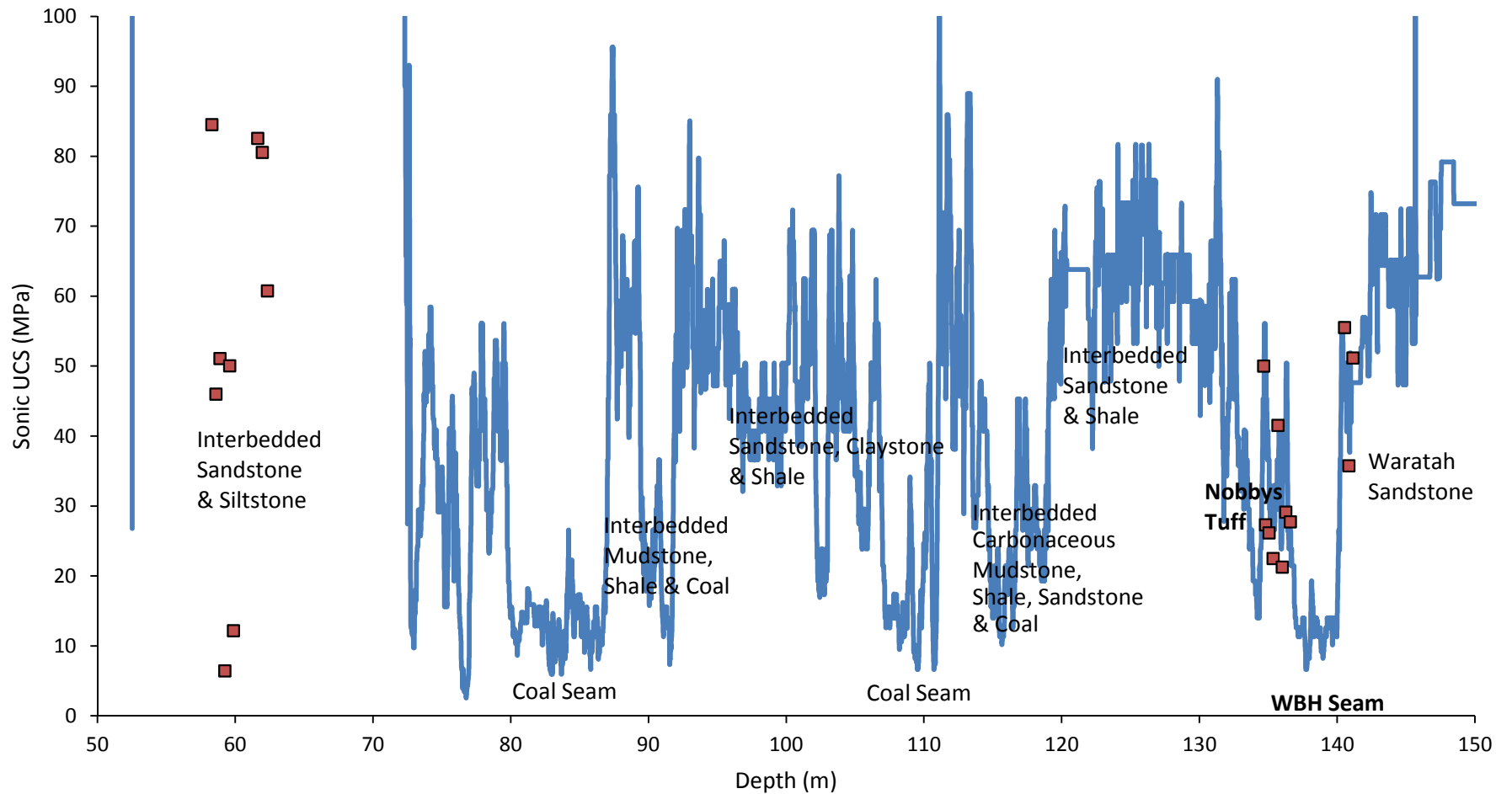
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	Drawn:	S.Ditton		TAS-005/1	
	Date:	21.09.11	Title:	In-situ Sonic Velocity UCS Profiles for Borehole BO09 (based on McNally, 1989)	
	Ditton Geotechnical Services Pty Ltd		Scale:	NTS	Figure No:




	Engineer:	S.Ditton	Client:	Donaldson Coal - Tasman Extension Project	
	Drawn:	S.Ditton		TAS-005/1	
	Date:	21.09.11	Title:	In-situ Sonic Velocity UCS Profiles for Borehole BO23 (based on McNally, 1989)	
	Ditton Geotechnical Services Pty Ltd			Scale:	NTS



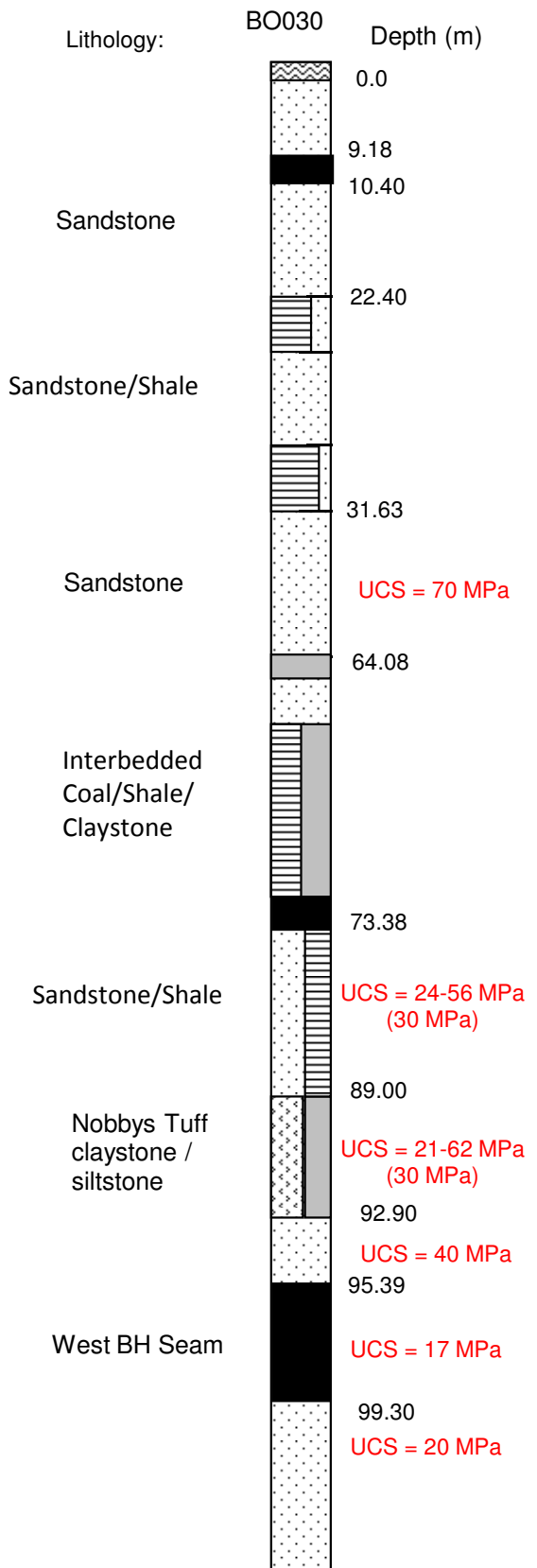
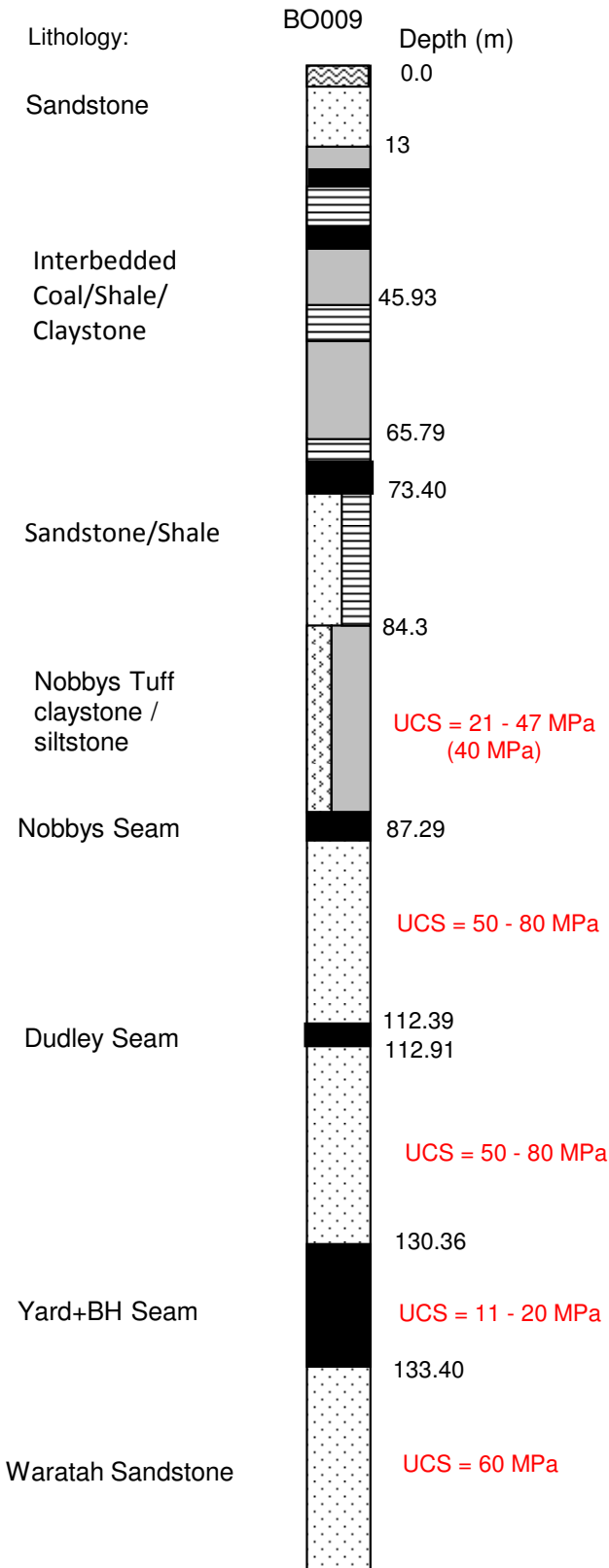
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	Date:	21.09.11	Title:	In-situ Sonic Velocity UCS Profiles for Borehole BO30 (based on McNally, 1989)	
	Ditton Geotechnical Services Pty Ltd		Scale:	NTS	Figure No:




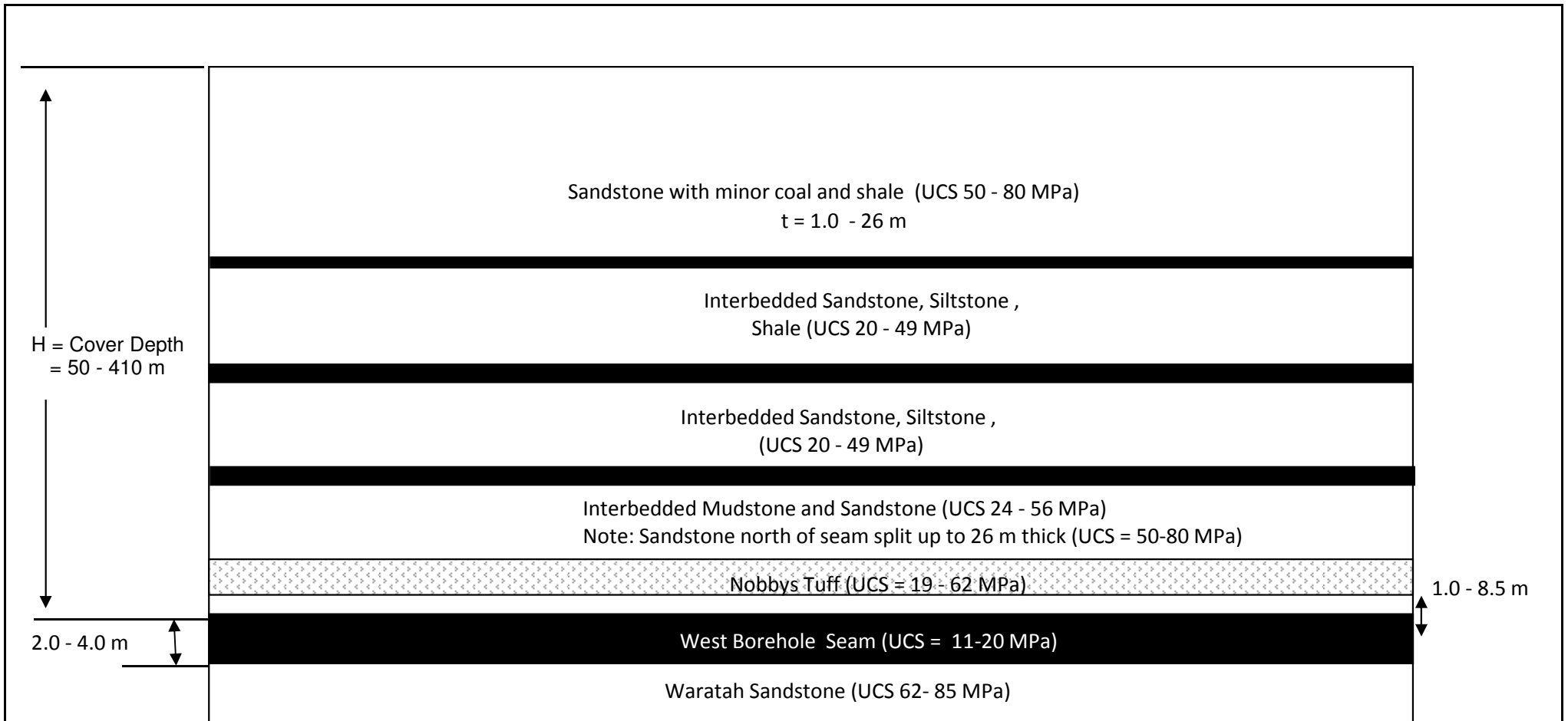
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	Drawn:	S.Ditton		TAS-005/1	
	Date:	21.09.11	Title:	In-situ Sonic Velocity UCS Profiles for Borehole BO32 (based on McNally, 1989)	
	Ditton Geotechnical Services Pty Ltd		Scale:	NTS	Figure No:


**Strata Profile for Panel Areas North of Seam Split**

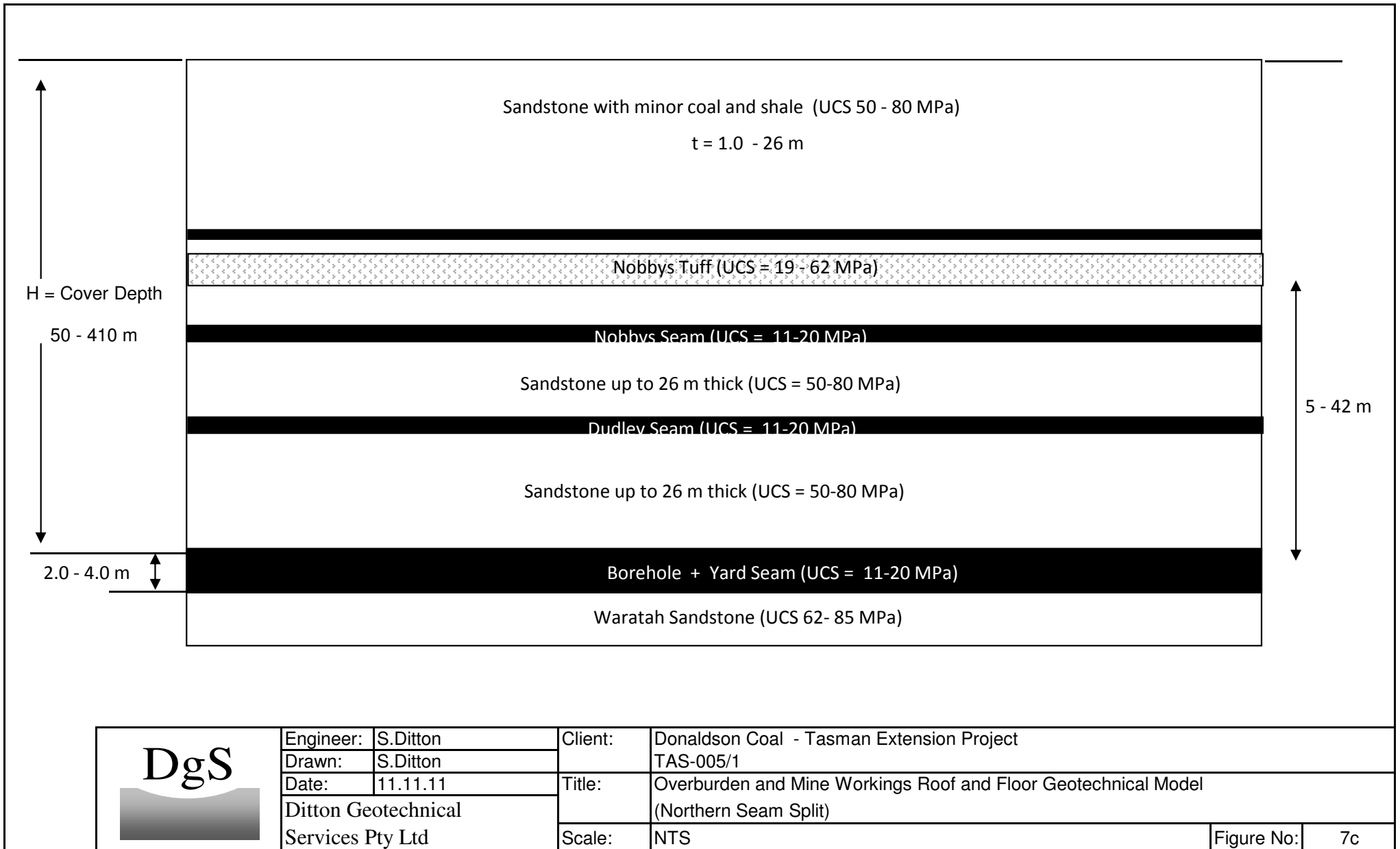
**Strata Profile for Panels South of Seam Split**



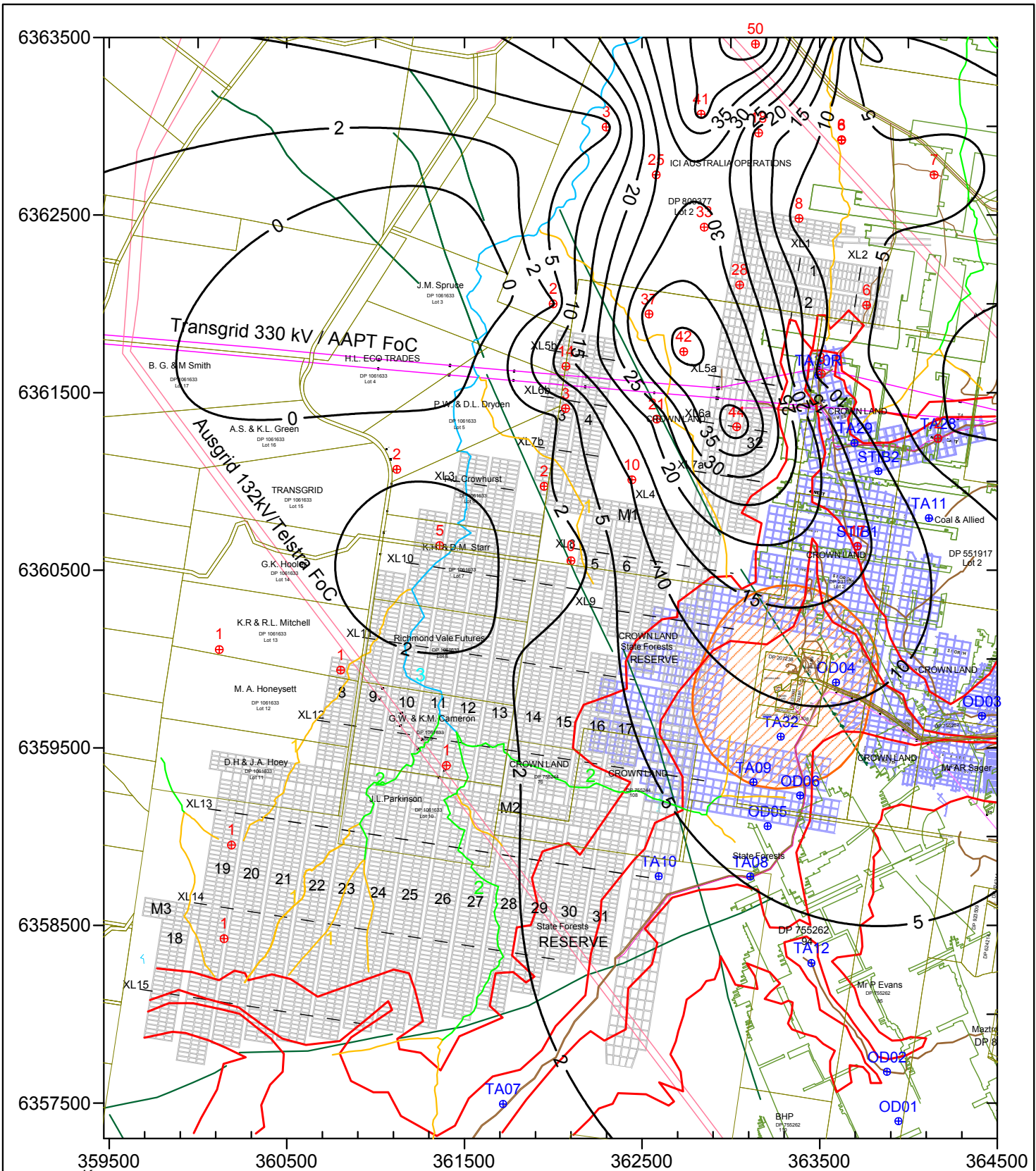
	Engineer:	S.Ditton	Client:	Donaldson Coal - Tasman Extension Project	
	Drawn:	S.Ditton		TAS-005/1	
	Date:	11.11.11	Title:	Representative Lithological Profiles & Measured Strengths in the Tasman Extension Area	
	Ditton Geotechnical Services Pty Ltd		Scale:	NTS	Figure No:



	Engineer:	S.Ditton	Client:	Donaldson Coal - Tasman Extension Project	
	Drawn:	S.Ditton		TAS-005/1	
	Date:	11.11.11	Title:	Overburden and Mine Workings Roof and Floor Geotechnical Model (South of Seam Split)	
	Ditton Geotechnical Services Pty Ltd		Scale:	NTS	Figure No:

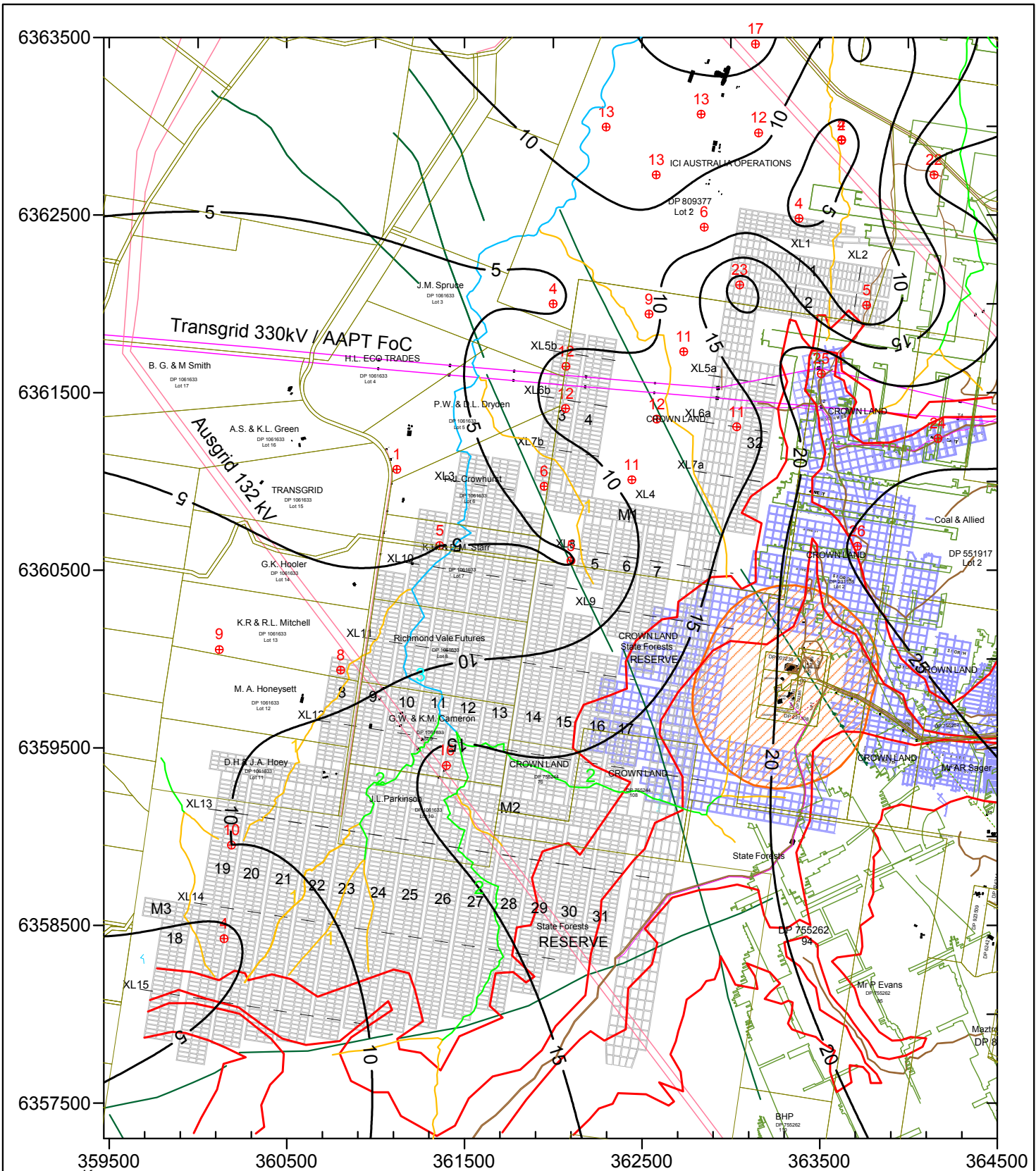






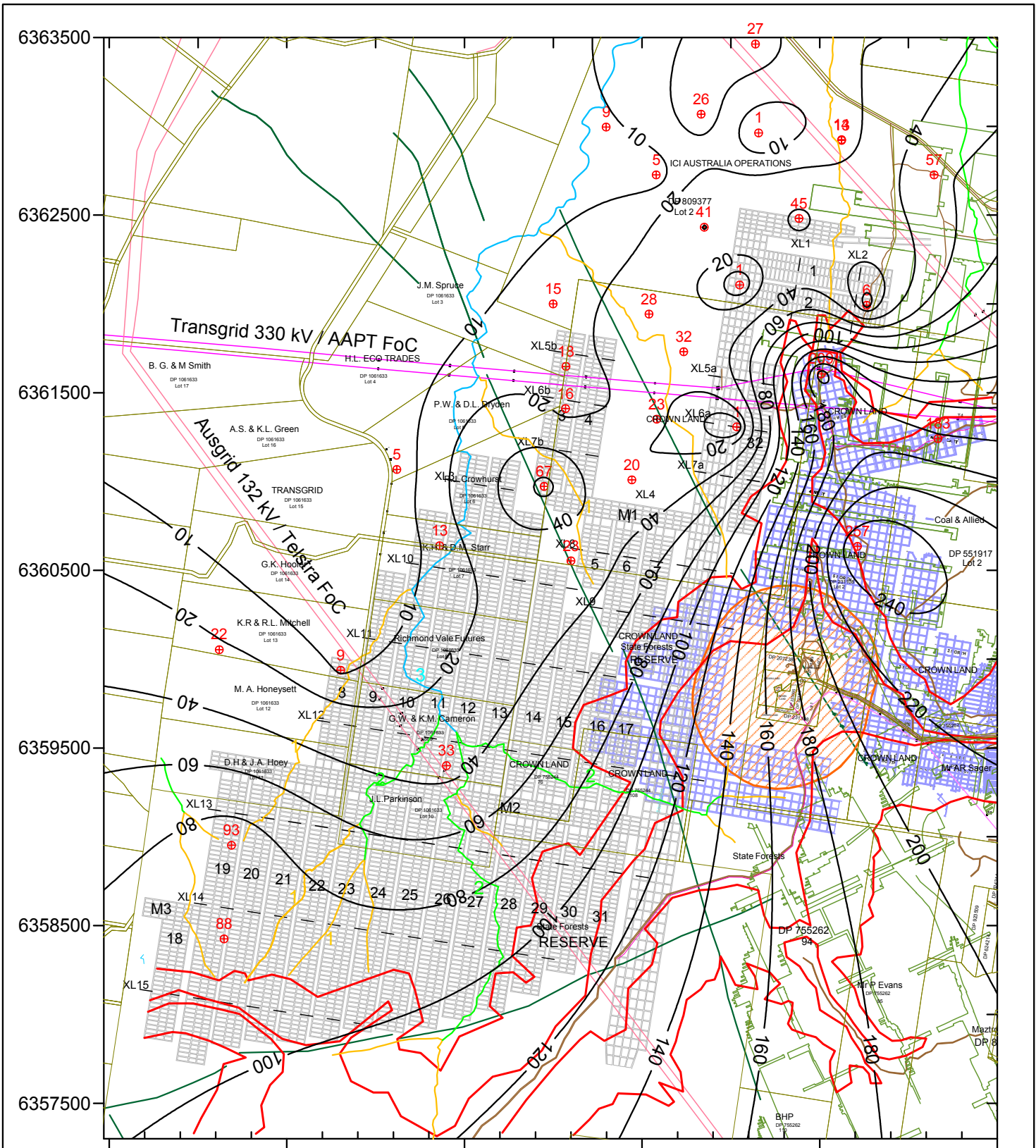
- Key:
- Seam Split Contours (m)
  - Water Courses (in Stream Order)
  - Geological Structure
  - Cadastral Boundaries
  - XL1 — Prediction Cross Lines
  - ⊕ Borehole Location
  - Cliff Line and Steep Slopes
  - Transgrid 330 kV Easement
  - Ausgrid 132 kV Easement
  - Buildings
  - 11 kV Enerserve
  - AATP Fibre Optic Cable
  - Public Access Roads
  - ⊘ NBN Mining Exclusion Zone
  - ▭ Proposed Workings in WBH Seam
  - ▭ Old Workings in WBH Seam
  - ▭ Tasman Mine Workings in FAS Seam

	Engineer:	S.Ditton	Client:	Donaldson Coal - Tasman Extension Project	
	Drawn:	S.Ditton		TAS-005/1	
	Date:	04.08.11	Title:	Proposed Pillar Extraction Panels with WBH Seam Split Thickness Contours	
	Ditton Geotechnical Services Pty Ltd			Scale:	1:30,000 (A4)



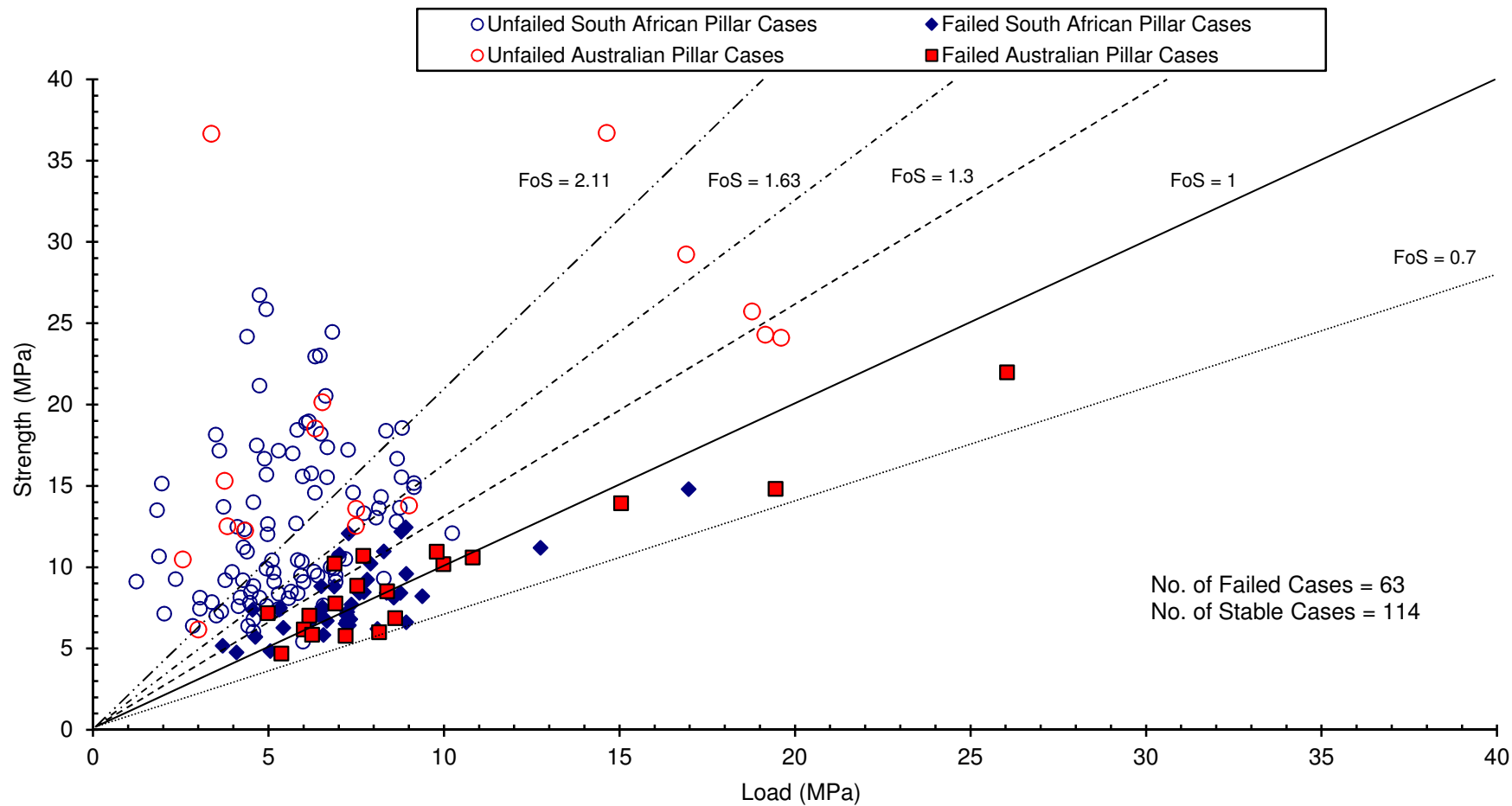
- Key:
- Sandstone Thickness Contours (m)
  - Water Courses (in Stream Order)
  - Geological Structure
  - Cadastral Boundaries
  - XL1 — Prediction Cross Lines
  - ⊕ Borehole Location
  - Cliff Line and Steep Slopes
  - Transgrid 330 kV Easement
  - Ausgrid 132 kV Easement
  - Buildings
  - 11 kV Enerserve
  - AATP Fibre Optic Cable
  - Public Access Roads
  - NBN Mining Exclusion Zone
  - Proposed Workings in WBH Seam
  - Old Workings in WBH Seam
  - Tasman Mine Workings in FAS Seam

	Engineer:	S.Ditton	Client:	Donaldson Coal - Tasman Extension Project TAS-005/1	
	Drawn:	S.Ditton			
	Date:	04.08.11	Title:	Proposed Pillar Extraction Panels with Maximum Sandstone Unit Thickness Contours above WBH Seam	
	Ditton Geotechnical Services Pty Ltd				
Scale:		1:30,000 (A4)	Figure No:		8b




- Key:
- Sandstone Distance Contours (m)
  - Water Courses (in Stream Order)
  - Geological Structure
  - Cadastral Boundaries
  - XL1 — Prediction Cross Lines
  - ⊕ Borehole Location
  - Cliff Line and Steep Slopes
  - Transgrid 330 kV Easement
  - Ausgrid 132 kV Easement
  - Buildings
  - 11 kV Enerserve
  - AATP Fibre Optic Cable
  - Public Access Roads
  - ⊘ NBN Mining Exclusion Zone
  - Proposed Workings in WBH Seam
  - Old Workings in WBH Seam
  - Tasman Mine Workings in FAS Seam

	Engineer:	S.Ditton	Client:	Donaldson Coal - Tasman Extension Project TAS-005/1			
	Drawn:	S.Ditton		Title:	Proposed Pillar Extraction Panels with Distance to Maximum Sandstone Unit above WBH Seam Workings		
	Date:	04.08.11	Scale:		1:30,000 (A4)	Figure No:	8c
	Ditton Geotechnical Services Pty Ltd						



Data extracted from Salamon, *et al* 1996.

	Engineer:	S.Ditton	Client:	Donaldson Coal - Tasman Extension Project	
	Drawn:	S.Ditton		TAS-005/1	
	Date:	05.05.11	Title:	Database of Failed and Stable Bord and Pillar Panels from Australian and South African Coal Mines	
	Ditton Geotechnical Services Pty Ltd		Scale:	NTS	Figure No:

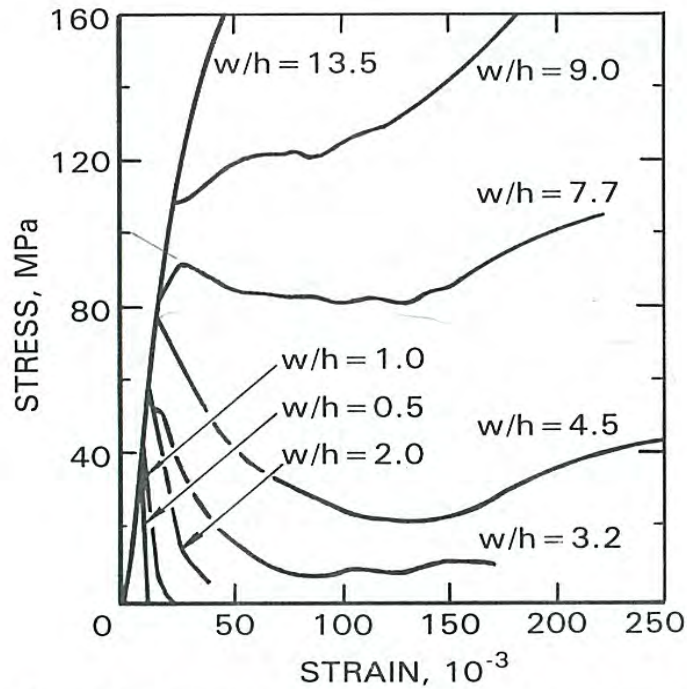


Figure 4.—Complete stress-strain curves for Indian coal specimens showing increasing residual strength and postfailure modulus with increasing w/h (after Das [1986]).

Ref: Das, 1996

**POSTFAILURE MODULUS VERSUS PILLAR WIDTH-TO-HEIGHT RATIO**

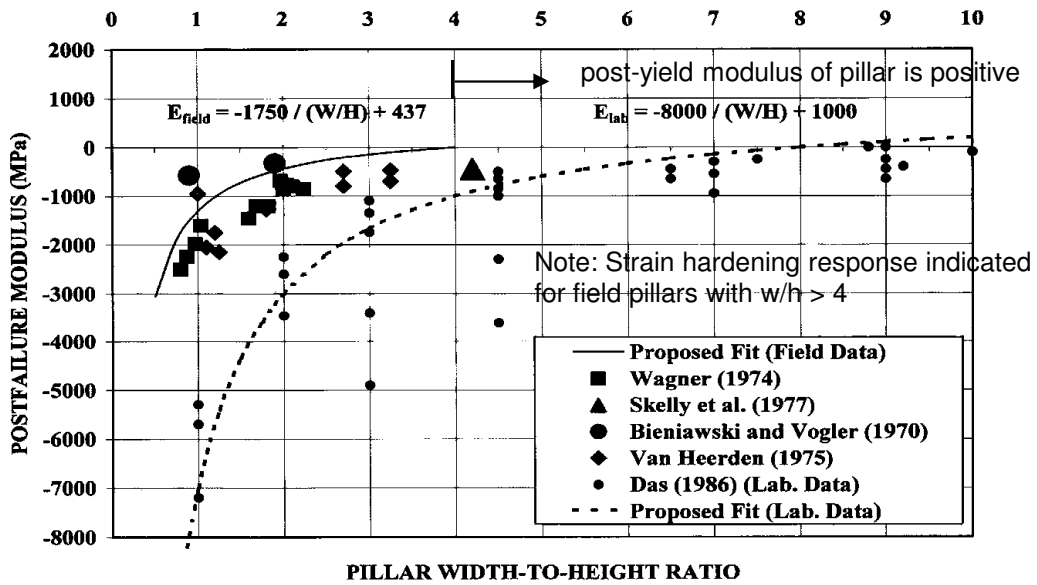
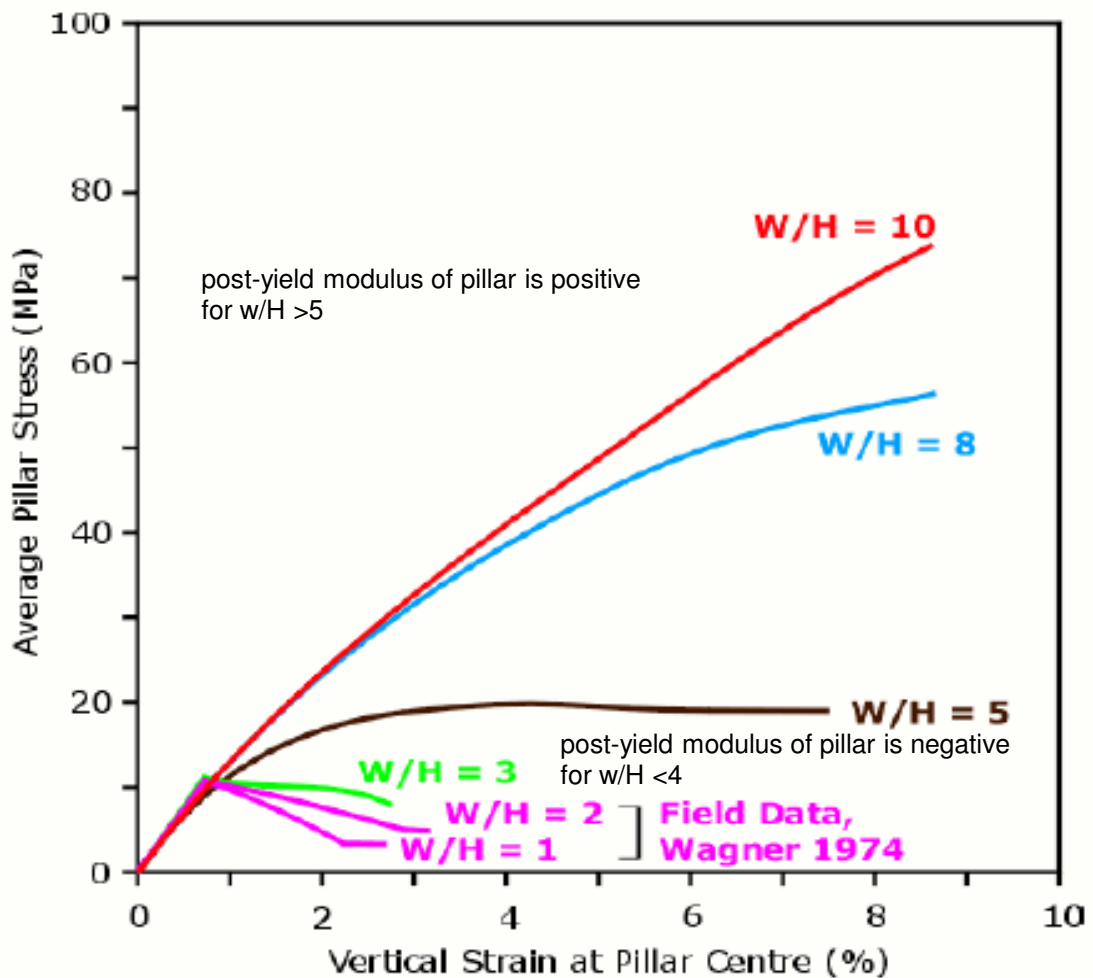


Figure 5.—Summary of postfailure modulus data for full-scale coal pillars and laboratory specimens. Also shown is proposed approximate equation for  $E_p$ .

Ref: Zipf, 1999



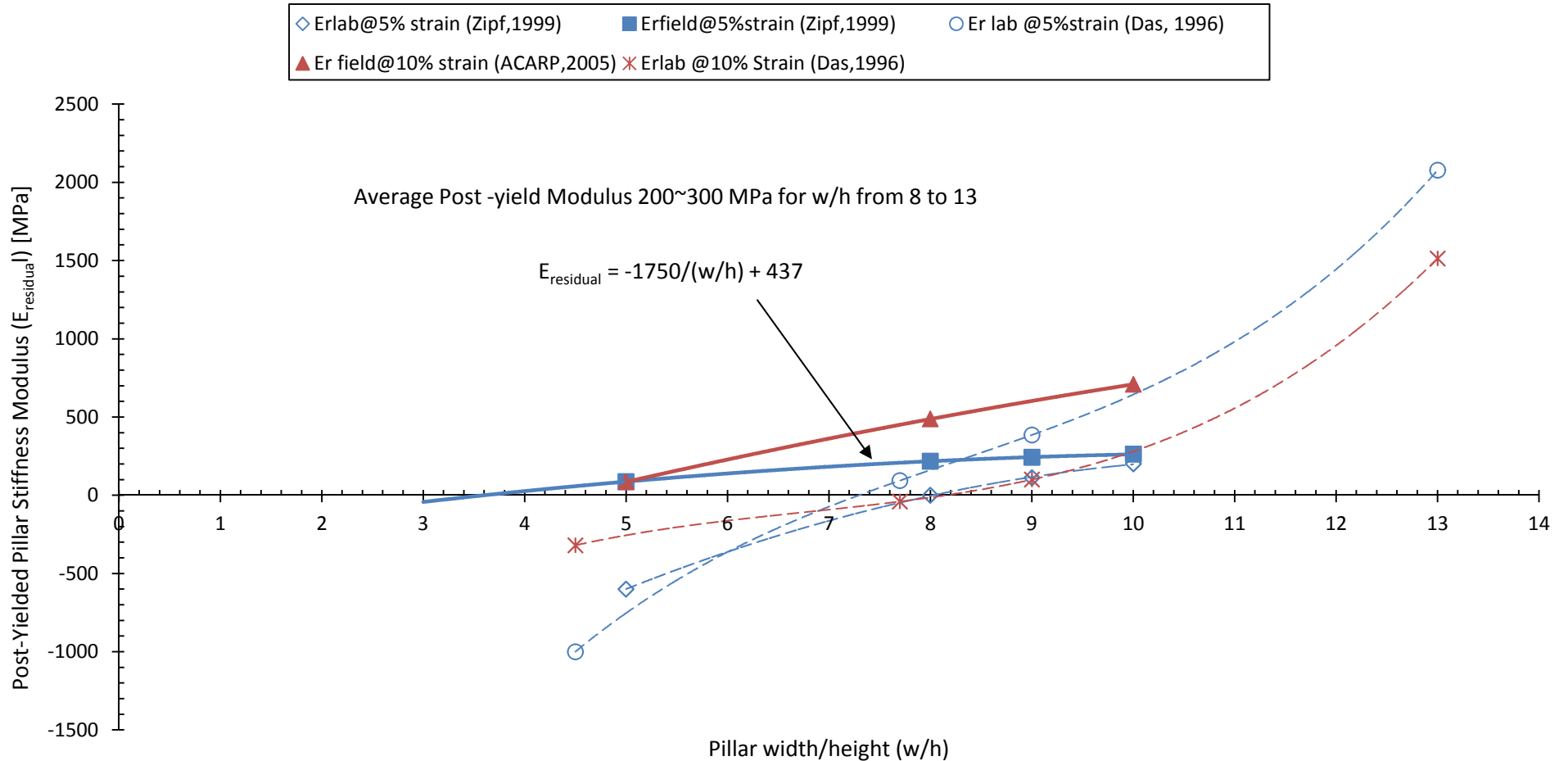
Engineer:	S.Ditton	Client:	Donaldson Coal - Tasman Extension Project	
Drawn:	S.Ditton		TAS-005/1	
Date:	05.05.11	Title:	Post-yielded Modulus & Laboratory Stress - Strain Curves for a range of pillar w/h Ratios	
Ditton Geotechnical Services Pty Ltd		Scale:	NTS	Figure No: 9b




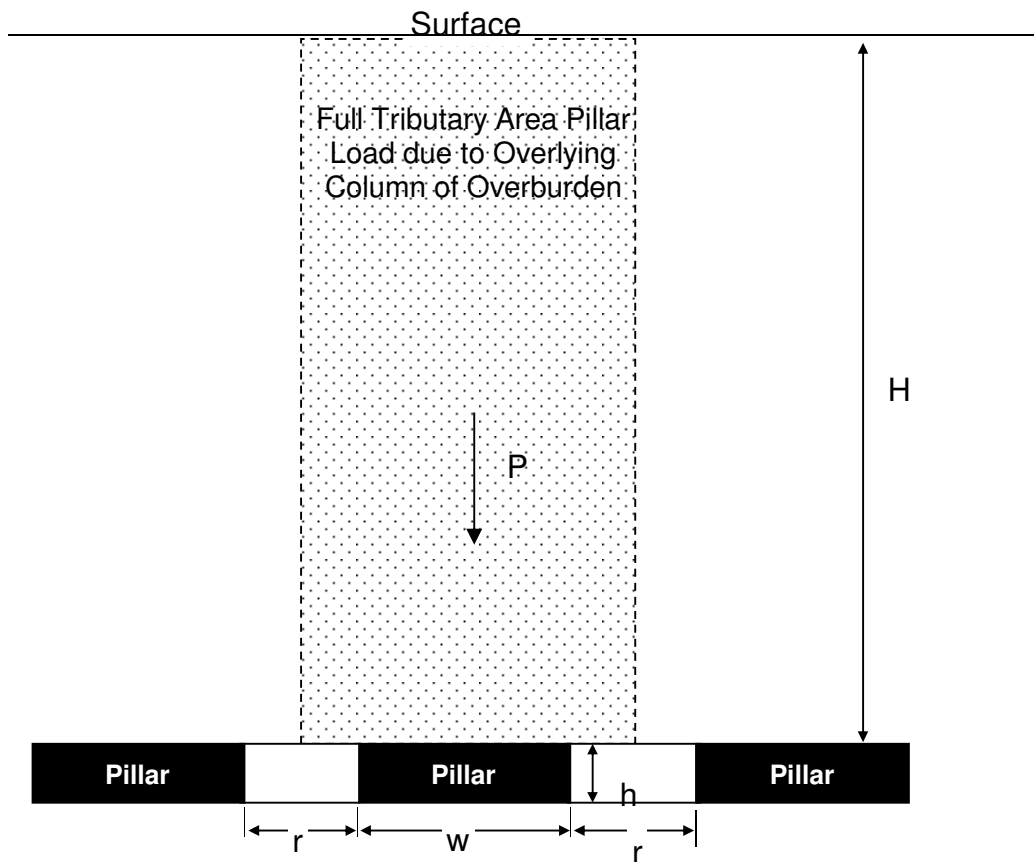
Ref: ACARP, 2005



Engineer:	S.Ditton	Client:	Donaldson Coal - Tasman Extension Project	
Drawn:	S.Ditton		TAS-005/1	
Date:	05.05.11	Title:	In-situ Pillar Stress v. Strain Behaviour for a Range of Pillar Width/Height Ratios	
Ditton Geotechnical Services Pty Ltd		Scale:	NTS	Figure No: 9c



	Engineer:	S.Ditton	Client:	Donaldson Coal - Tasman Extension Project	
	Drawn:	S.Ditton		TAS-005/1	
	Date:	21.09.11	Title:	In-situ and Laboratory Post-yielded Moduli for a Range of Pillar Width/Height Ratios according to Zipf, 1999; Das, 1996 and ACARP, 2005	
	Ditton Geotechnical Services Pty Ltd		Scale:	NTS	Figure No:



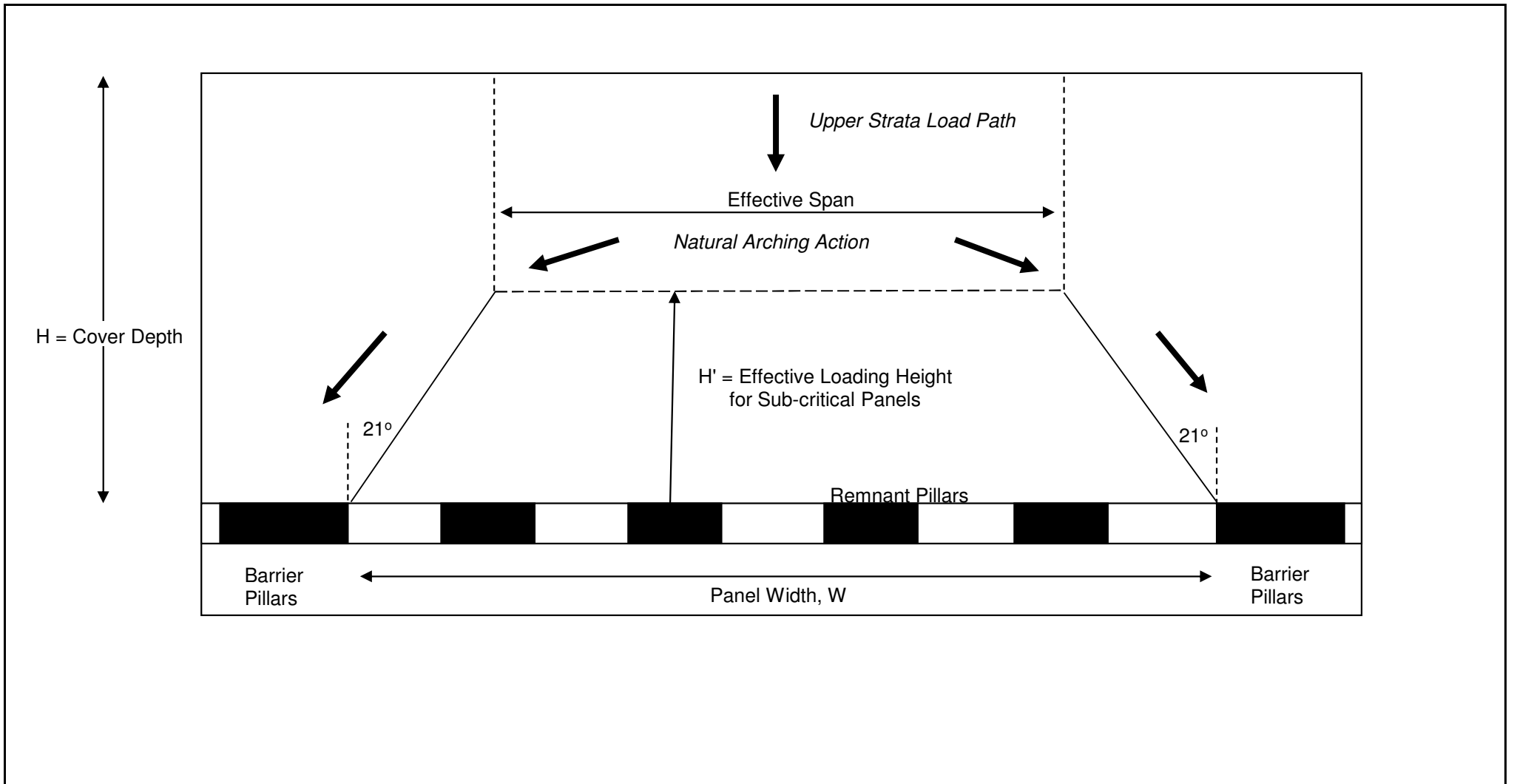
Notes:


- r = roadway width (m)
- w = pillar width (m)
- l = pillar length (m)
- h = mining height (m)
- H = depth of cover (m)
- e = extraction ratio =  $1 - [wr/(w+r)(l+r)]$
- P = Pillar Load =  $0.025H/(1-e)$  (MPa)

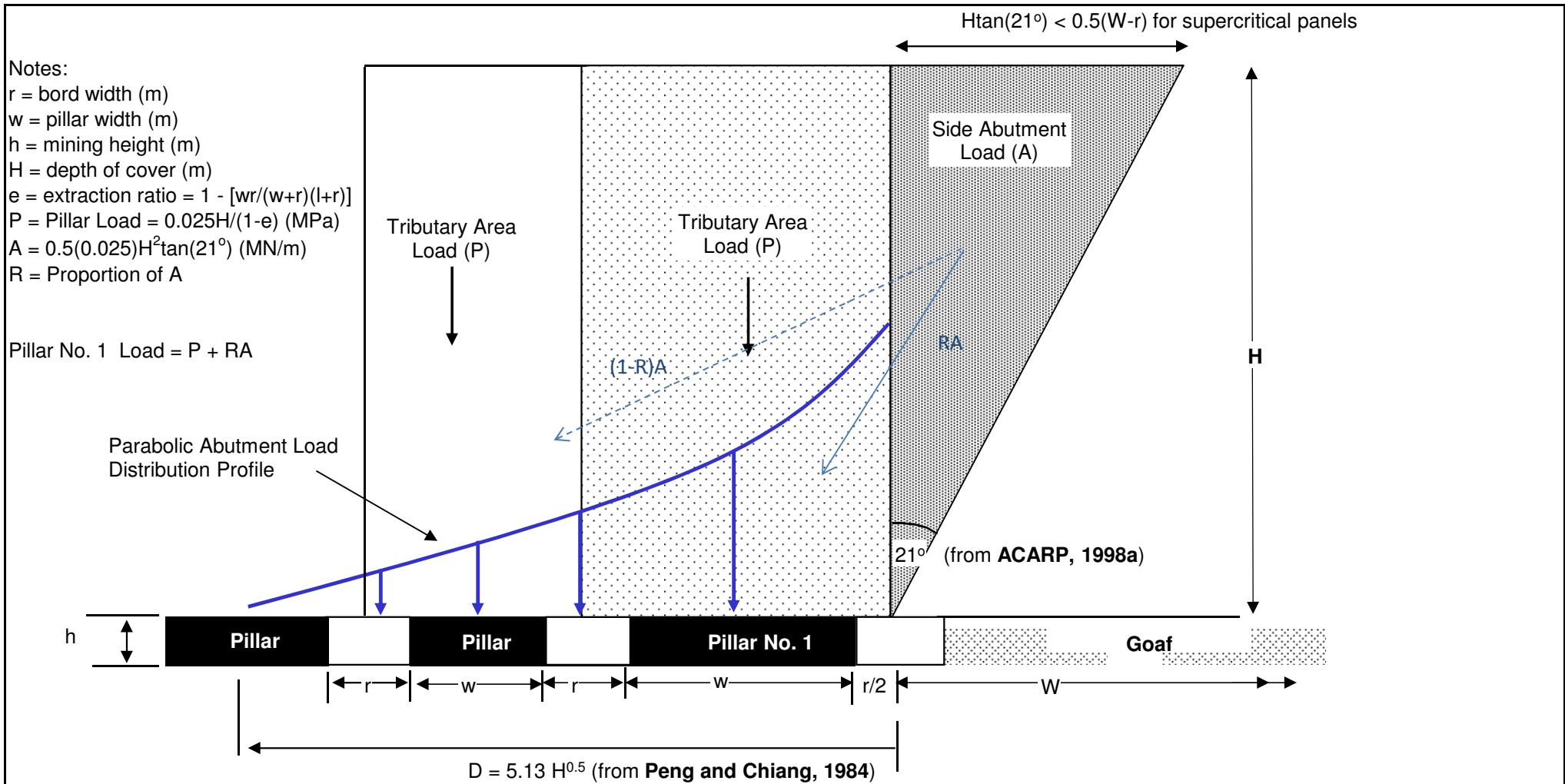



Engineer:	S.Ditton	Client:	Donaldson Coal - Tasman Extension Project
Drawn:	S.Ditton		TAS-005/1
Date:	06.11.11	Title:	Analytical Model for Calculating Full Tributary Area Loads on Pillars
Ditton Geotechnical Services Pty Ltd		Scale:	NTS
		Figure No:	10a

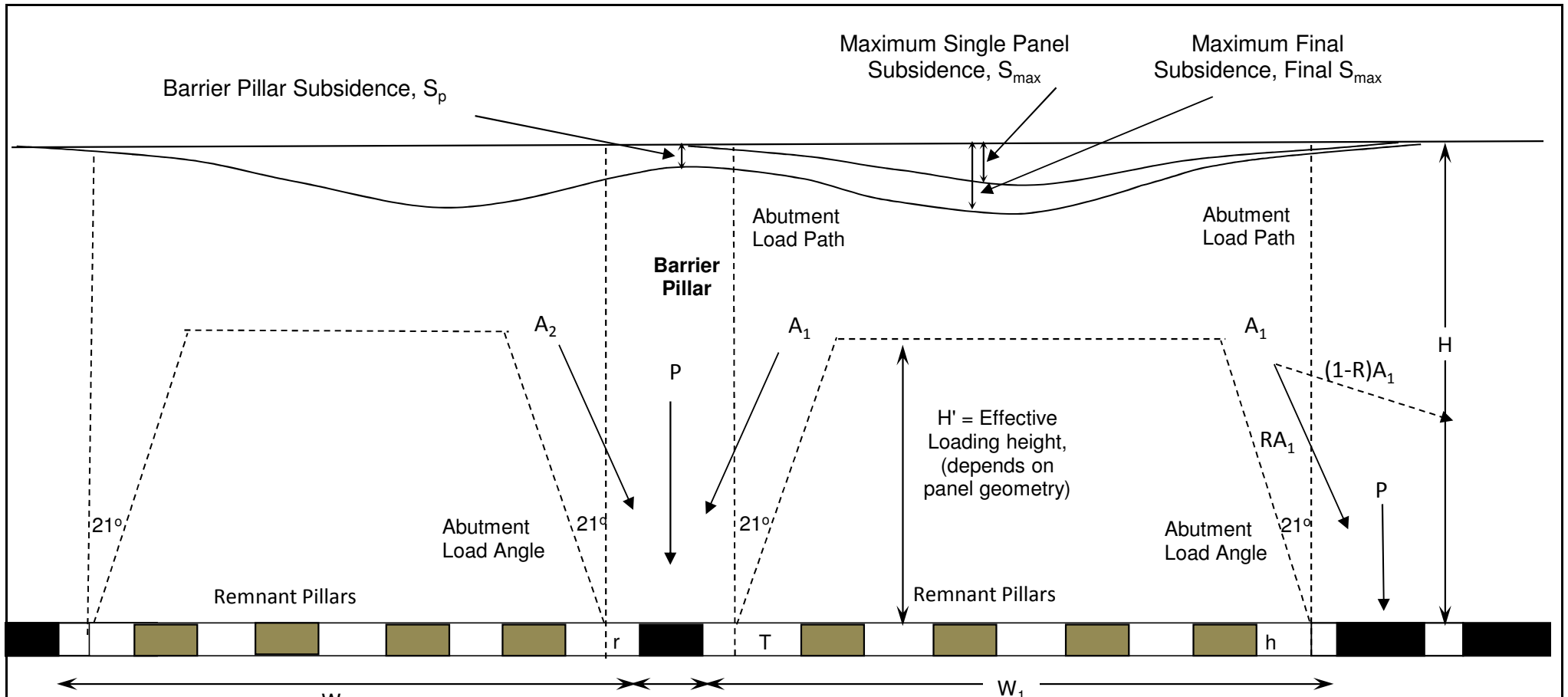




	Engineer:	S.Ditton	Client:	Donaldson Coal - Tasman Extension Project
	Drawn:	S.Ditton		TAS-005/1
	Date:	06.11.11	Title:	Conceptual Strata Spanning Model for Sub-Critical Panels
	Ditton Geotechnical Services Pty Ltd		Scale:	NTS




	Engineer:	S.Ditton	Client:	Donaldson Coal - Tasman Extension Project
	Drawn:	S.Ditton		TAS-005/1
	Date:	1.11.10	Title:	Analytical Model for Calculating Abutment Load Acting on SPZ Pillars adjacent to a Total Extraction Panel
	Ditton Geotechnical Services Pty Ltd		Scale:	NTS
				Figure No: 10c

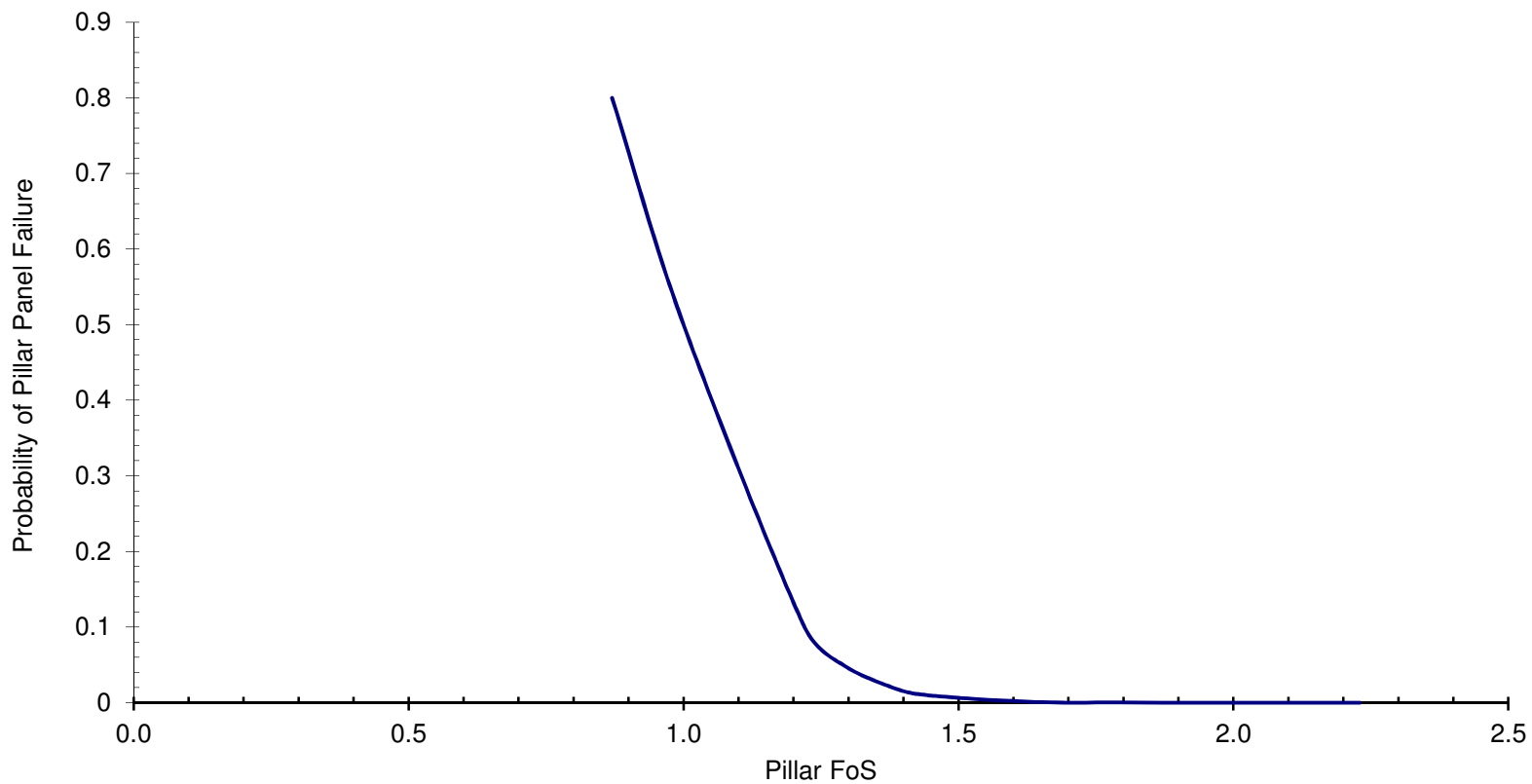



**Legend**

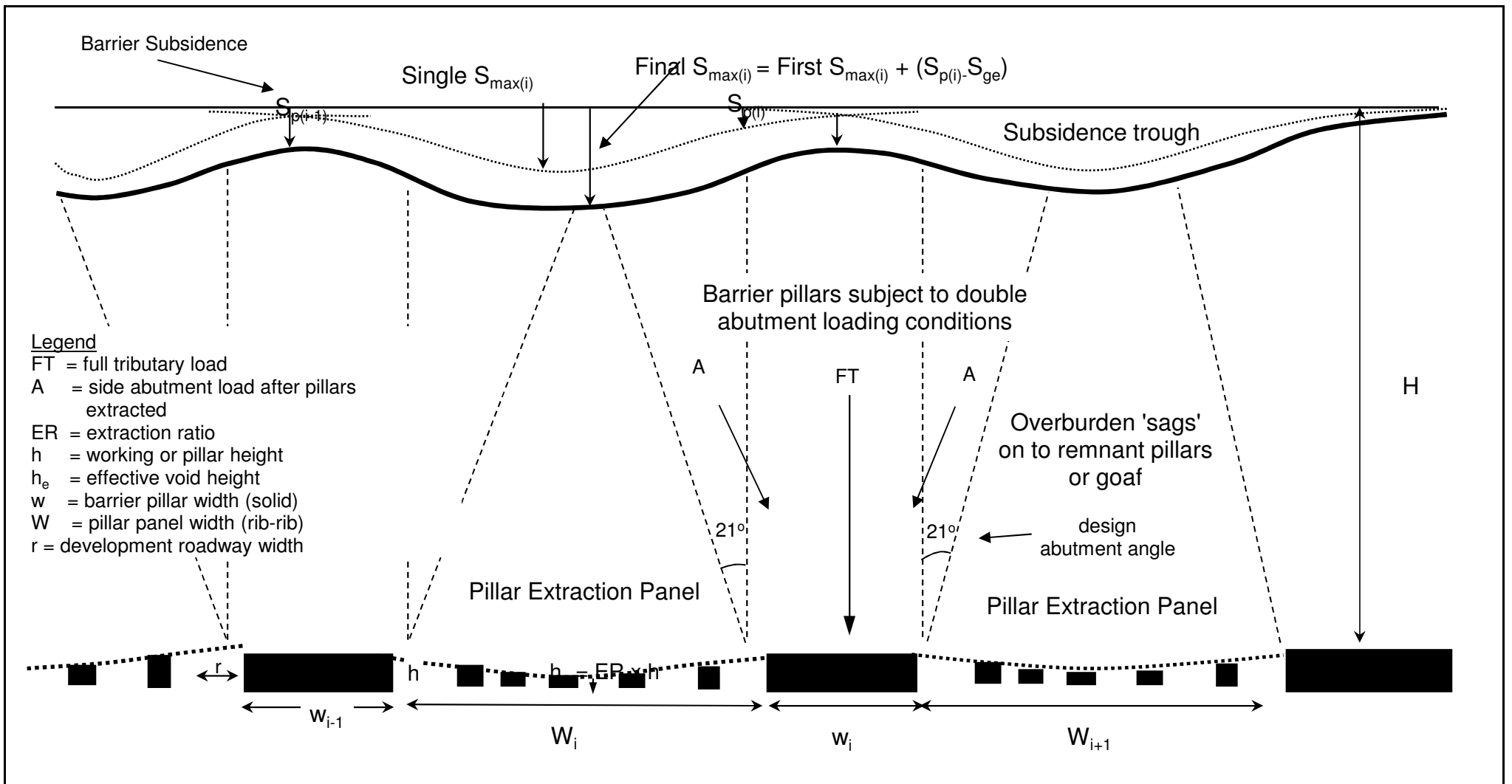
W = Panel Width; H = Cover Depth; T = Seam Thickness ; h = Development Road Height; r=roadway width; P = FTA Loading; A= Abutment Loading; R= Load Factor


	Engineer:	S.Ditton	Client:	Donaldson Coal - Tasman Extension Project	
	Drawn:	S.Ditton		TAS-005/1	
	Date:	05.11.11	Title:	Conceptual Model for Assessing Maximum Abutment Loads on Barrier Pillars	
	Ditton Geotechnical Services Pty Ltd		Scale:	NTS	Figure No:

Reference : **ACARP, 2005 " Systems Approach to Pillar Design"**



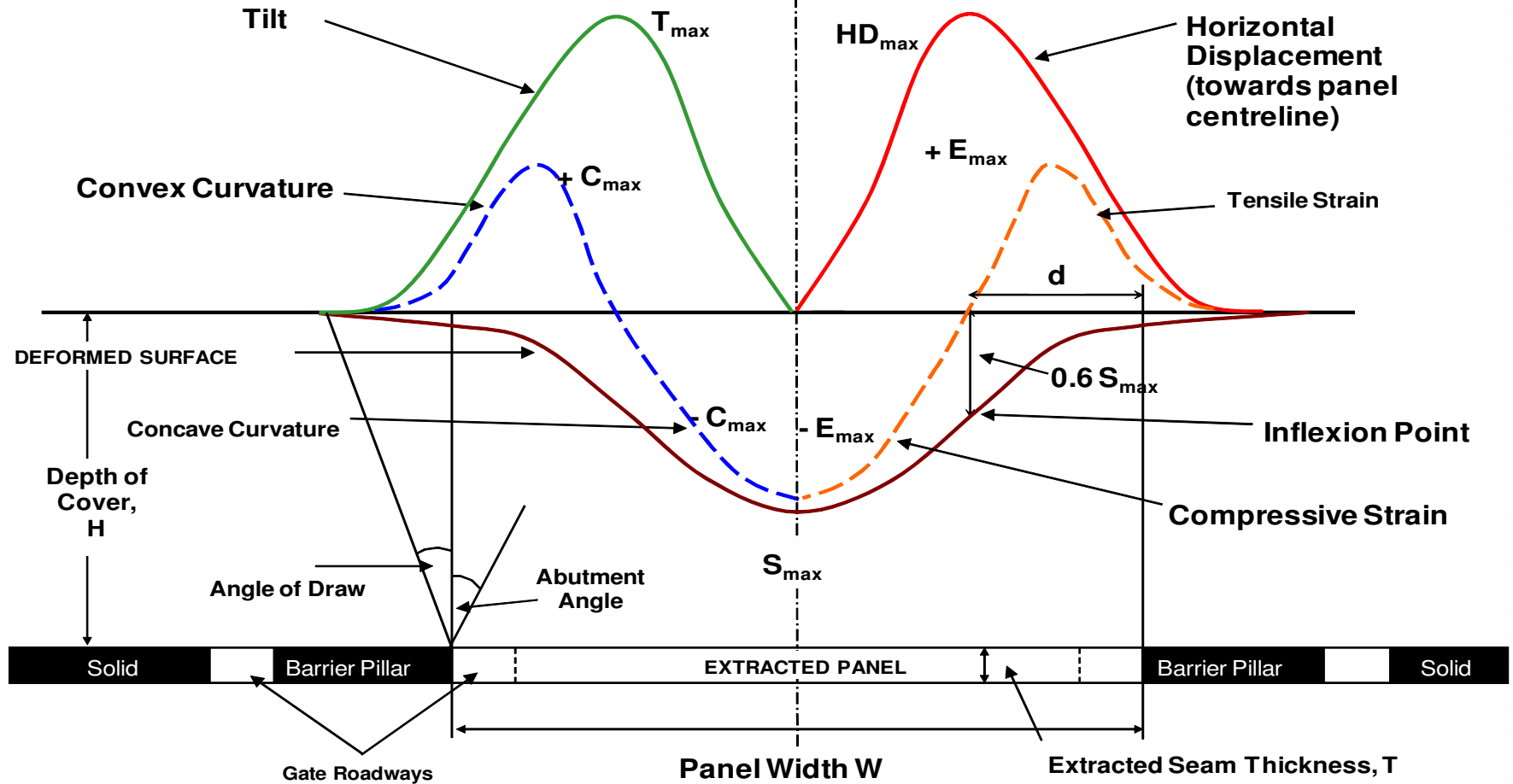
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	Drawn:	S.Ditton		TAS-005/1	
	Date:	21.11.11	Title:	Probability of Pillar Panel Failure v. Pillar Factor of Safety under Design Loading	
	Ditton Geotechnical Services Pty Ltd			Scale:	NTS




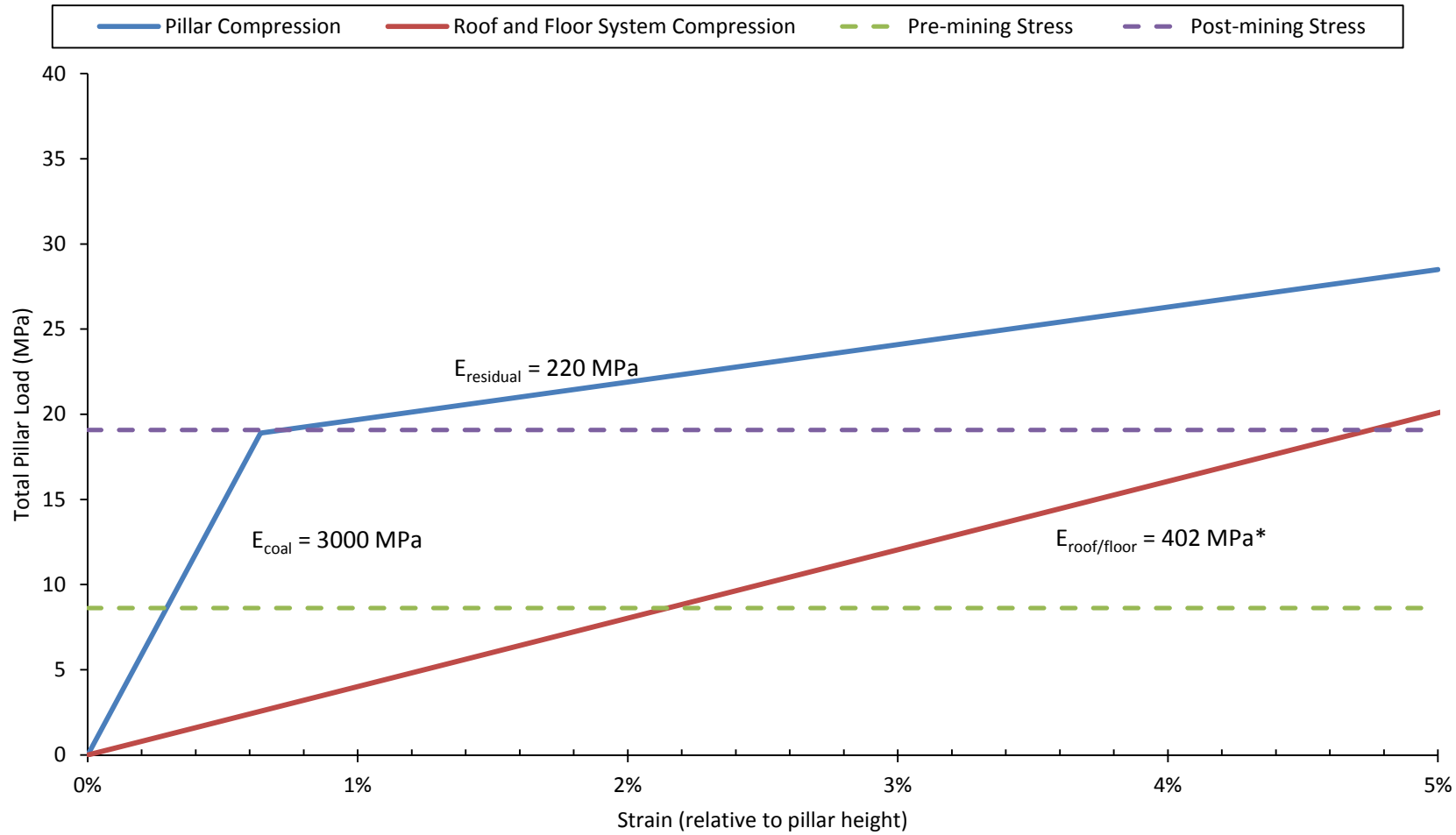
	Engineer:	S.Ditton	Client:	Donaldson Coal - Tasman Extension Project
	Drawn:	S.Ditton		TAS-005/1
	Date:	1.11.11	Title:	Conceptual Model of Multiple Pillar Extraction Panels and Barrier Pillar System Interaction at the Proposed Tasman Extended Mine
	Ditton Geotechnical Services Pty Ltd		Scale:	NTS
				Figure No: 12a

**VERTICAL DISPLACEMENT PARAMETER PROFILES**


**HORIZONTAL DISPLACEMENT PARAMETER PROFILES**

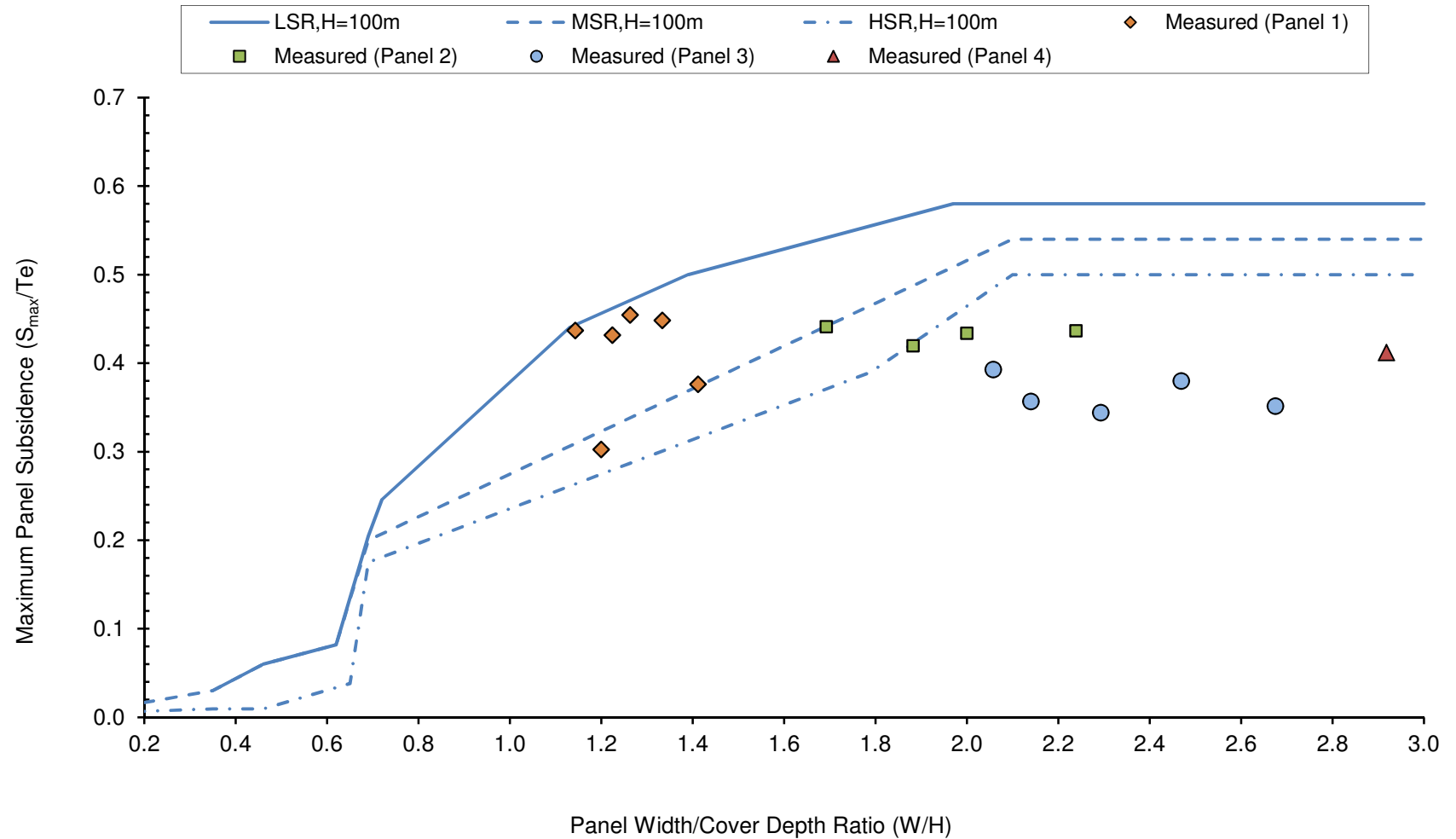



	Engineer:	S.Ditton	Client:	Donaldson Coal - Tasman Extension Project	
	Drawn:	S.Ditton		TAS-005/1	
	Date:	1.11.11	Title:	Mine Subsidence Trough Deformation Parameters (adapted from Holla, 1987)	
	Ditton Geotechnical Services Pty Ltd		Scale:	NTS	Figure No:



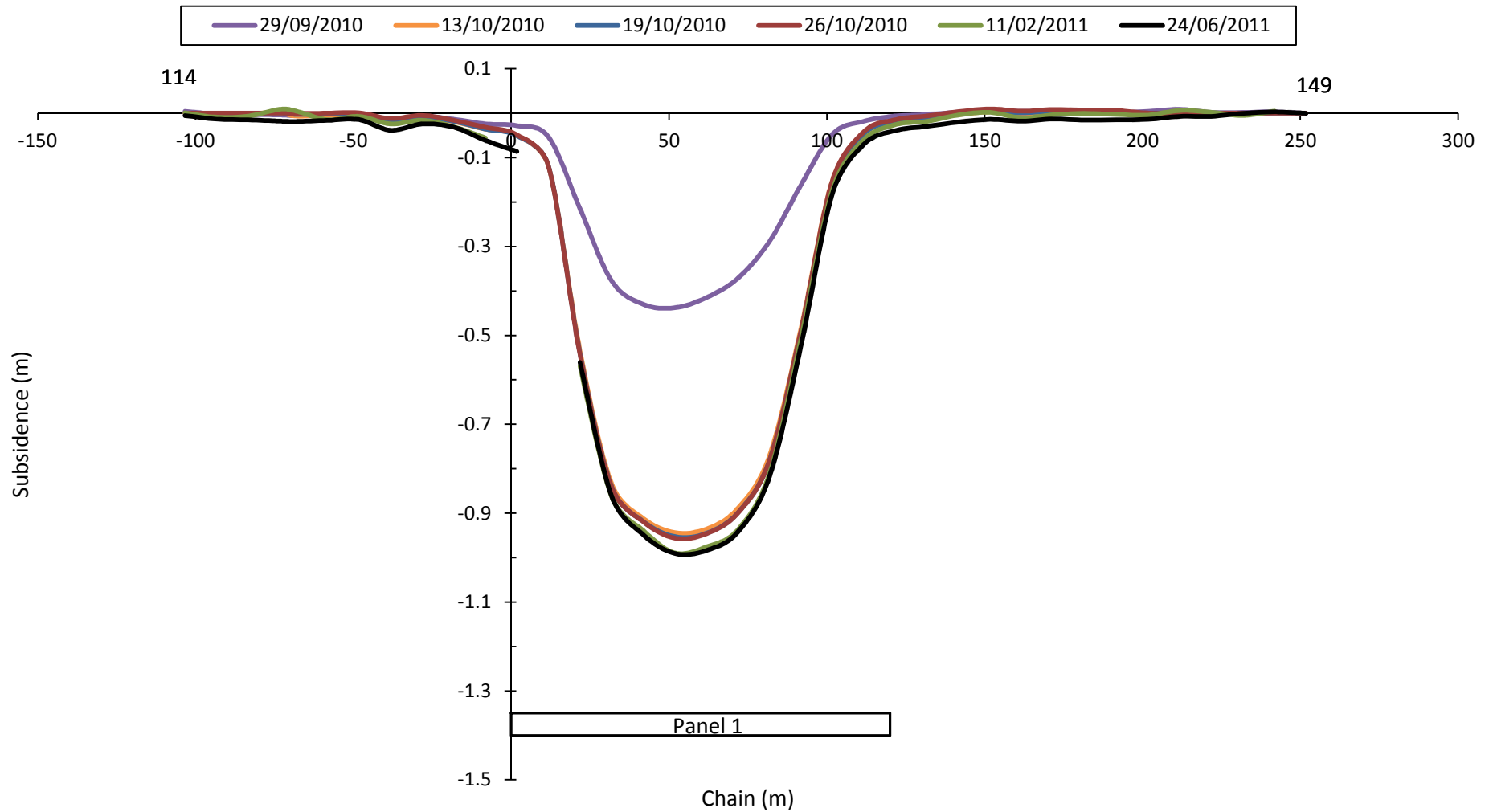
\* - Stiffness of roof/floor system is an inverse function of pillar width

	Engineer:	S.Ditton	Client:	Donaldson Coal - Tasman Extension Project	
	Drawn:	S.Ditton		TAS-005/1	
	Date:	21.11.11	Title:	Example of Idealised Non-Linear Pillar and Roof/Floor System Behaviour Models for Making Subsidence Predictions above Proposed Partial Pillar Extraction Panels	
	Ditton Geotechnical Services Pty Ltd		Scale:	NTS	Figure No:




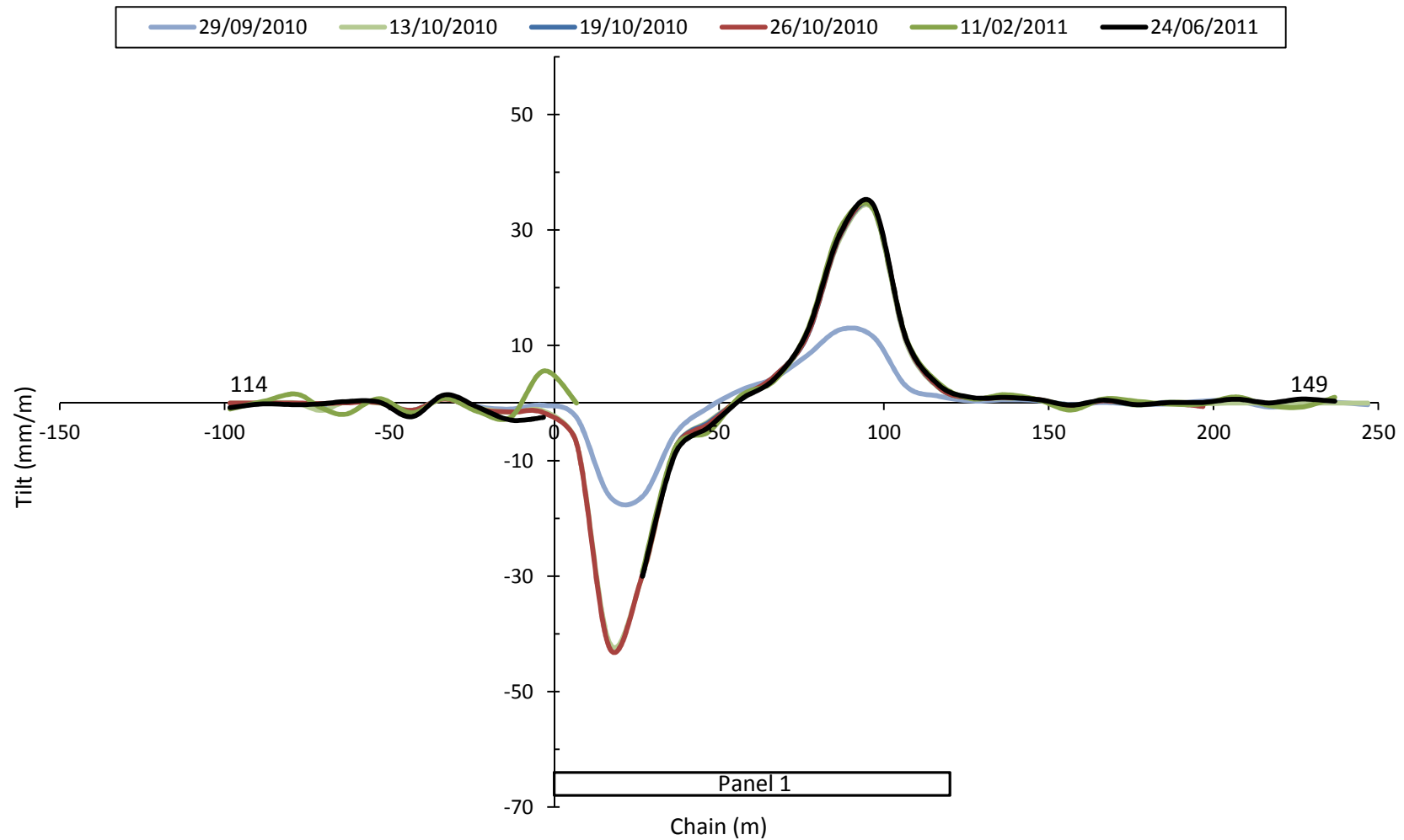
	Engineer:	S.Ditton	Client:	Donaldson Coal - Tasman Extension Project	
	Drawn:	S.Ditton		TAS-005/1	
	Date:	01.12.11	Title:	Measured Maximum Subsidence for Panels 1 - 4 at the Abel Mine, Black Hill	
	Ditton Geotechnical Services Pty Ltd			Scale:	NTS






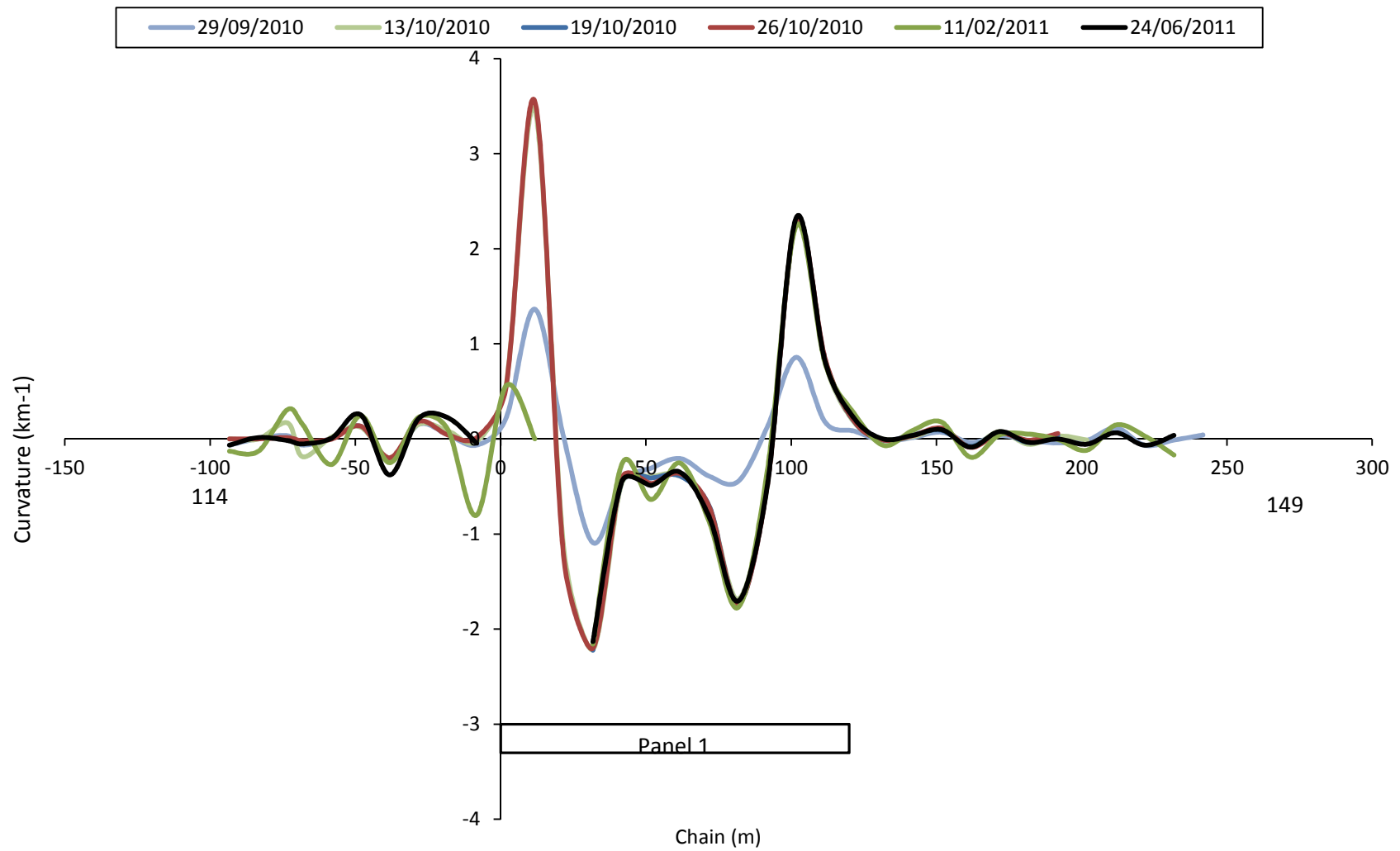
Chainage from start of panel : 285 m

	Engineer:	S.Ditton	Client:	Donaldson Coal - Tasman Extension Project	
	Drawn:	S.Ditton		TAS-005/1	
	Date:	08.02.2012	Title:	Measured Crossline Subsidence for Panel 1 (Pegs 114 - 149)	
	Ditton Geotechnical Services Pty Ltd		Scale:	NTS	Figure No:




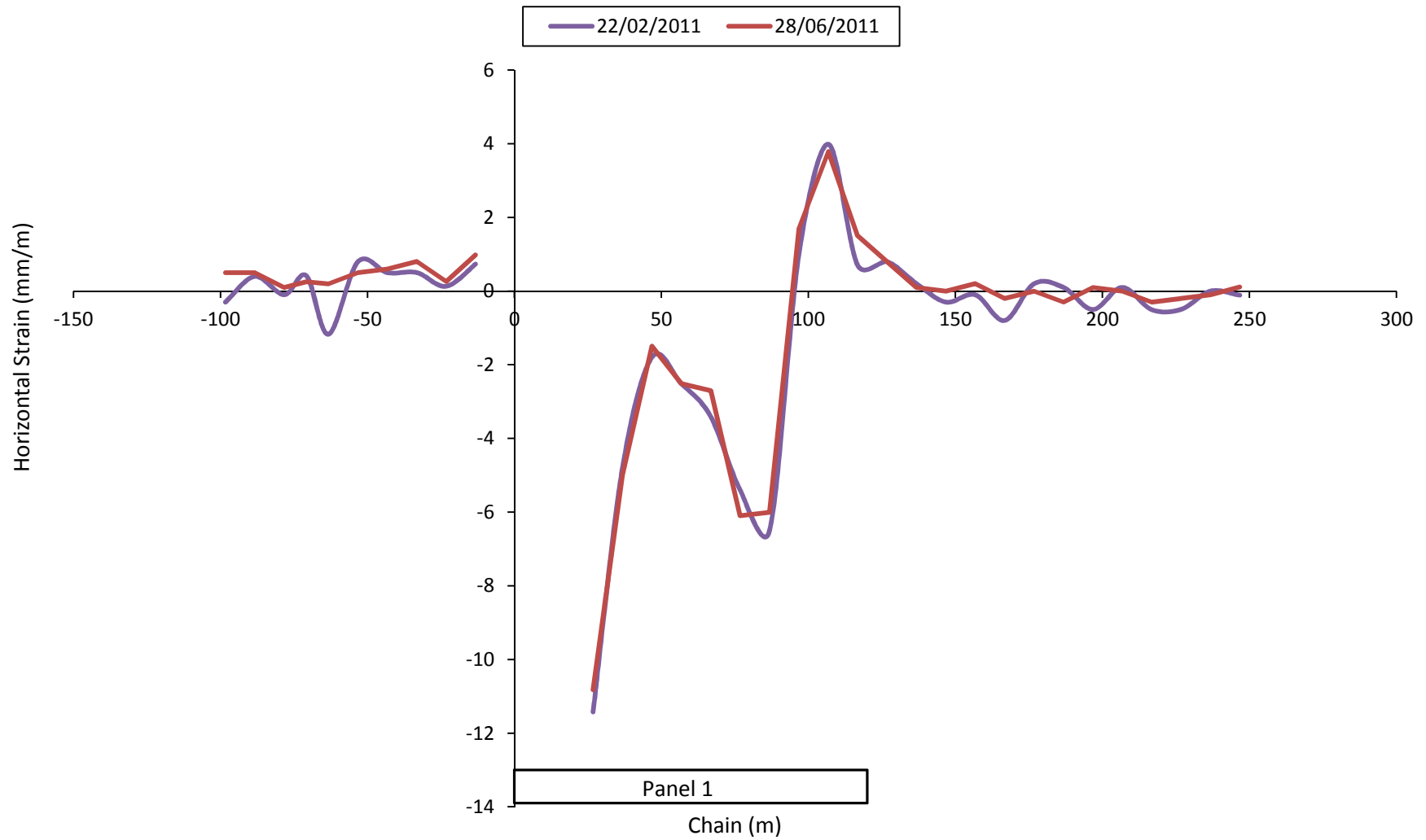
Chainage from start of panel : 285 m

	Engineer:	S.Ditton	Client:	Donaldson Coal - Tasman Extension Project	
	Drawn:	S.Ditton		TAS-005/1	
	Date:	08.02.2012	Title:	Measured Crossline Tilt for Panel 1	
	Ditton Geotechnical Services Pty Ltd		Scale:	NTS	Figure No:




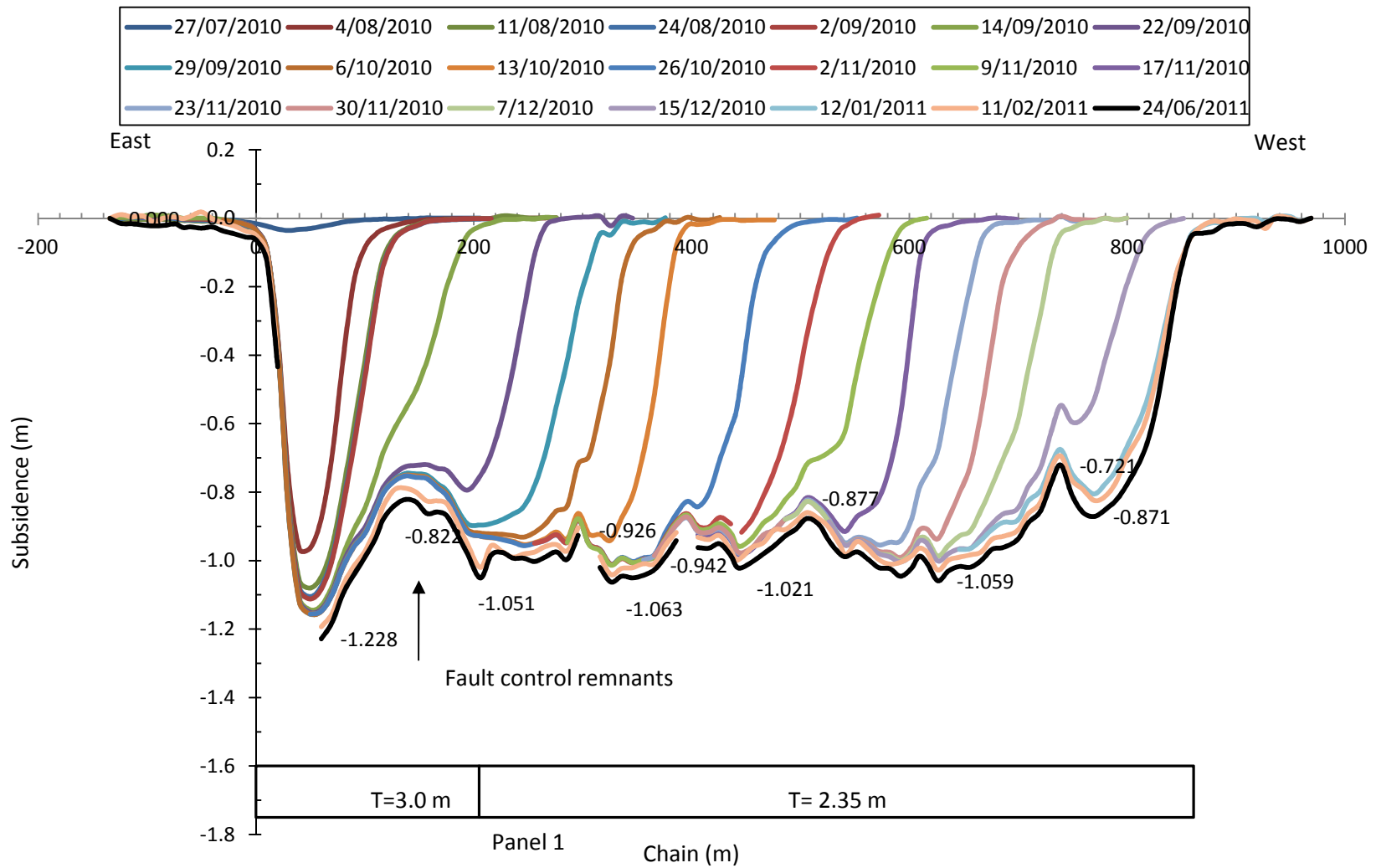
Change in curvature of panel 1 = 200 m


	Engineer:	S.Ditton	Client:	Donaldson Coal - Tasman Extension Project	
	Drawn:	S.Ditton		TAS-005/1	
	Date:	08.02.2012	Title:	Measured Crossline Curvature for Panel 1	
	Ditton Geotechnical Services Pty Ltd		Scale:	NTS	
			Figure No:	14d	

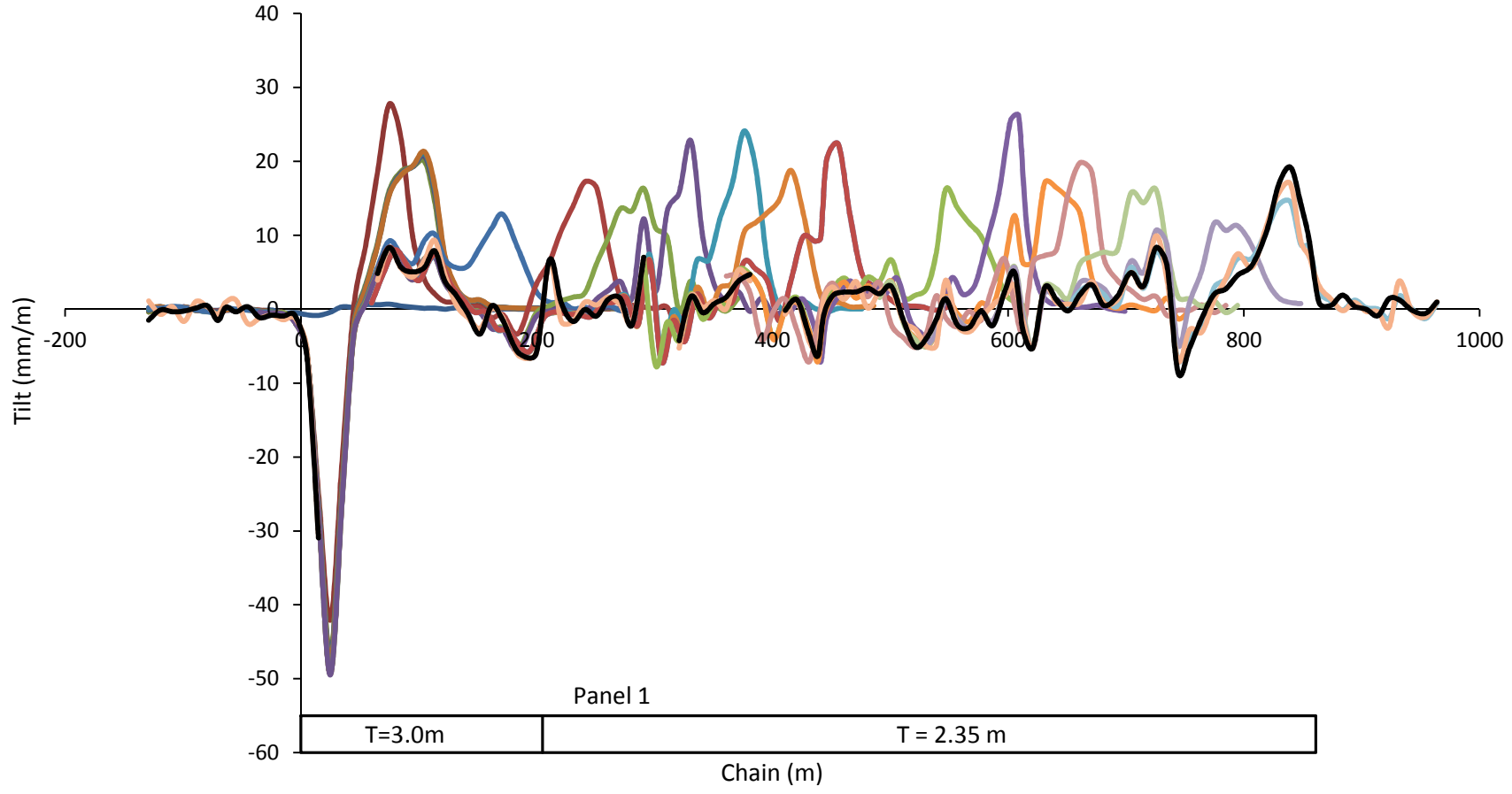


Chainage increment of panel = 200 m

	Engineer:	S.Ditton	Client:	Donaldson Coal - Tasman Extension Project	
	Drawn:	S.Ditton		TAS-005/1	
	Date:	08.02.2012	Title:	Measured Crossline Strain for Panel 1	
	Ditton Geotechnical Services Pty Ltd		Scale:	NTS	Figure No:

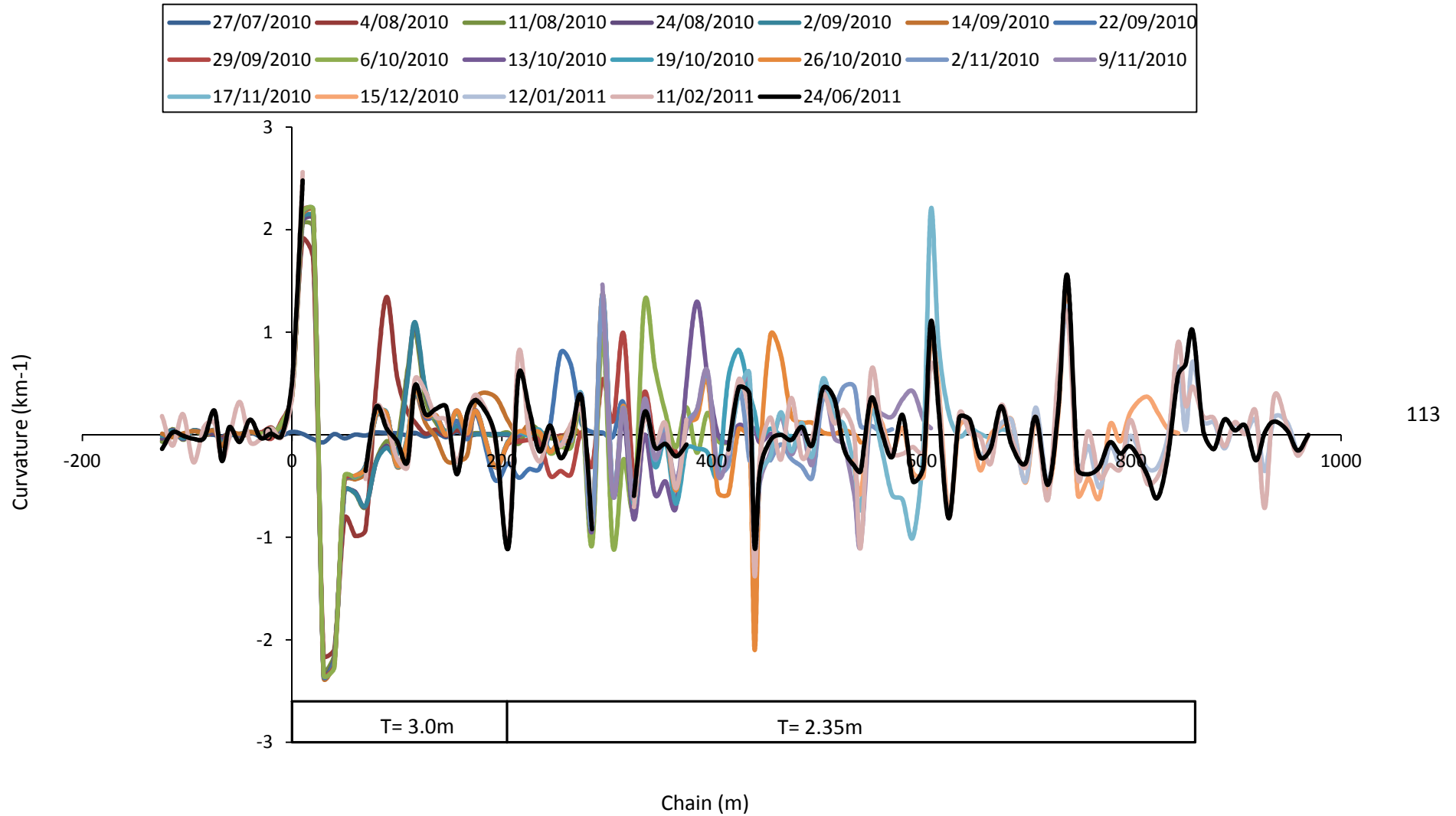



	Engineer:	S.Ditton	Client:	Donaldson Coal - Tasman Extension Project	
	Drawn:	S.Ditton		TAS-005/1	
	Date:	08.02.12	Title:	Measured Centreline Subsidence for Panel 1 (Pegs 1 - 113)	
	Ditton Geotechnical Services Pty Ltd		Scale:	NTS	Figure No:

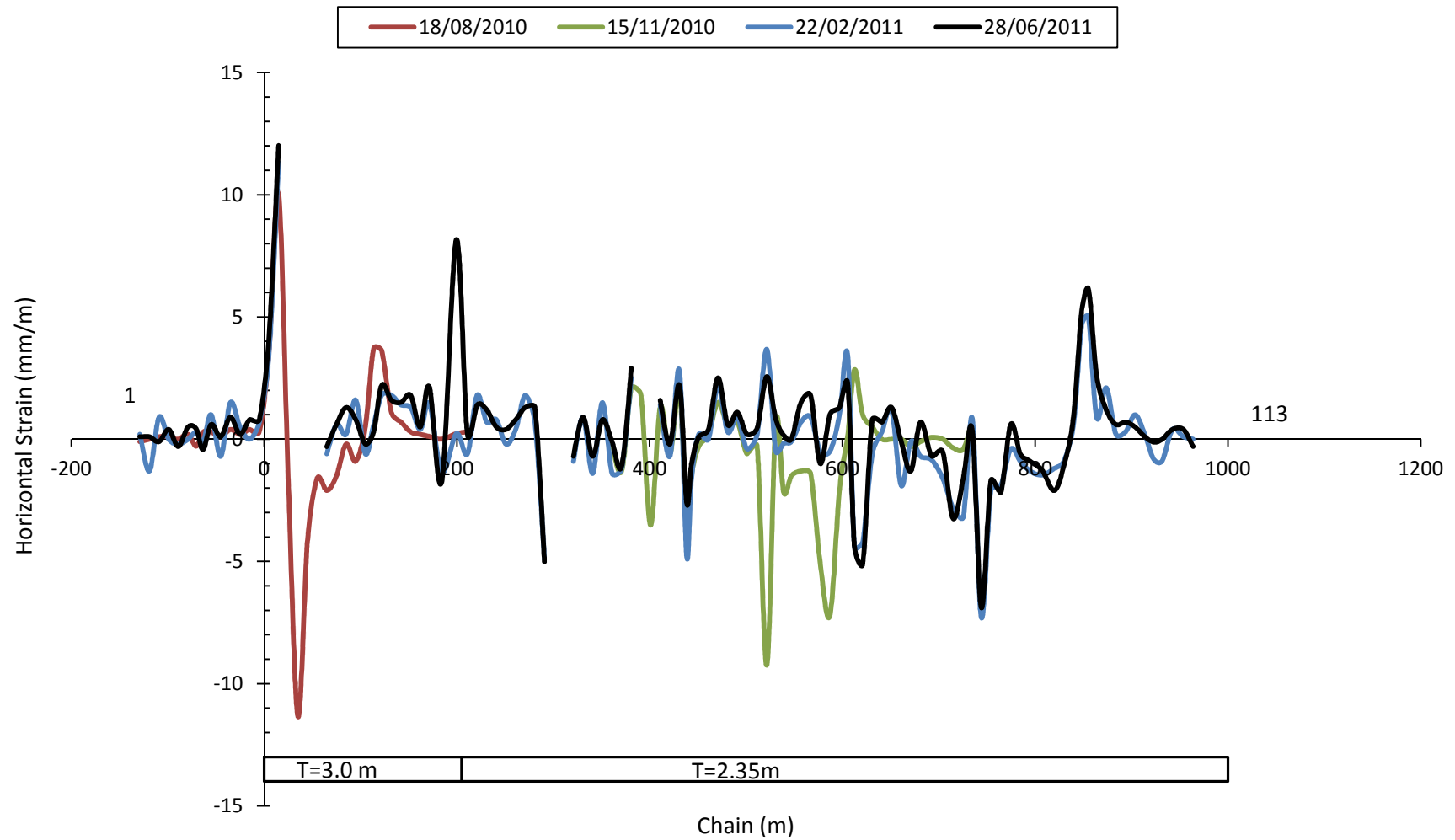



Engineer:	S.Ditton
Drawn:	S.Ditton
Date:	08.02.12
Ditton Geotechnical Services Pty Ltd	

Client:	Donaldson Coal - Tasman Extension Project		
	TAS-005/1		
Title:	Measured Centreline Tilt for Panel 1		
Scale:	NTS		Figure No: 15b

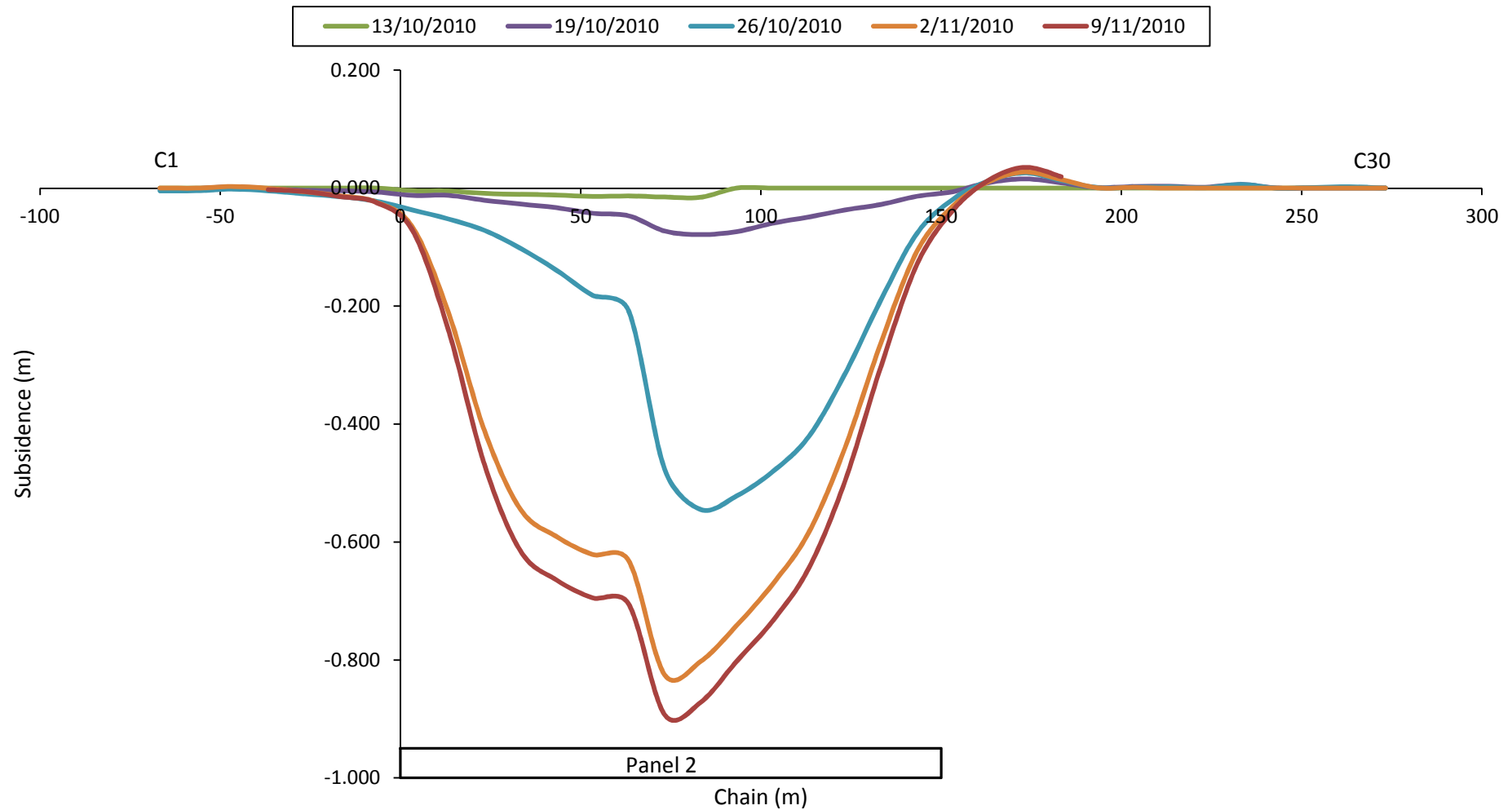


	Engineer:	S.Ditton	Client:	Donaldson Coal - Tasman Extension Project	
	Drawn:	S.Ditton		TAS-005/1	
	Date:	08.02.12	Title:	Measured Centreline Curvature for Panel 1	
	Ditton Geotechnical Services Pty Ltd		Scale:	NTS	
			Figure No:	15c	




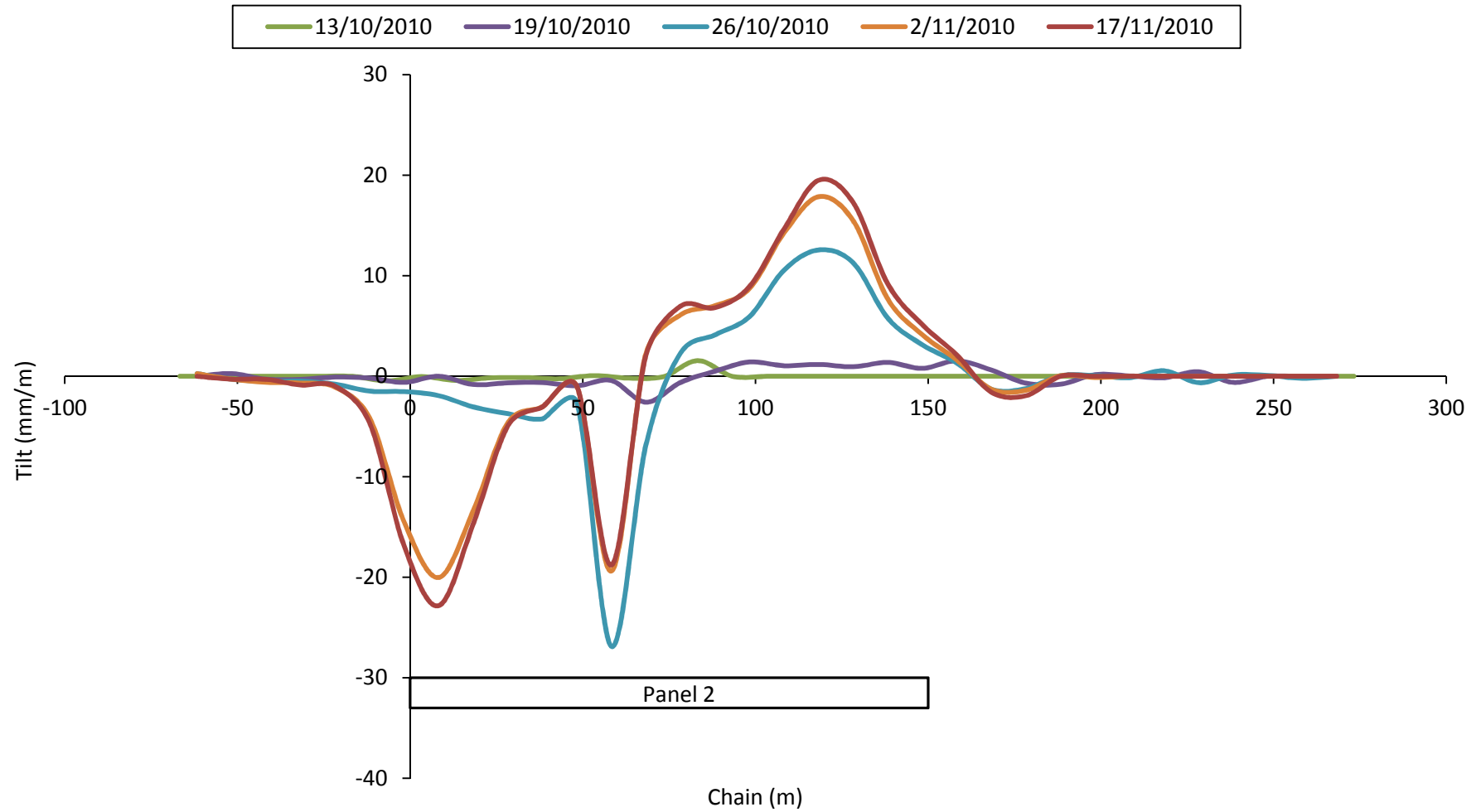
	Engineer:	S.Ditton	Client:	Donaldson Coal - Tasman Extension Project	
	Drawn:	S.Ditton		TAS-005/1	
	Date:	08.02.12	Title:	Measured Centreline Strain for Panel 1	
	Ditton Geotechnical Services Pty Ltd		Scale:	NTS	Figure No:






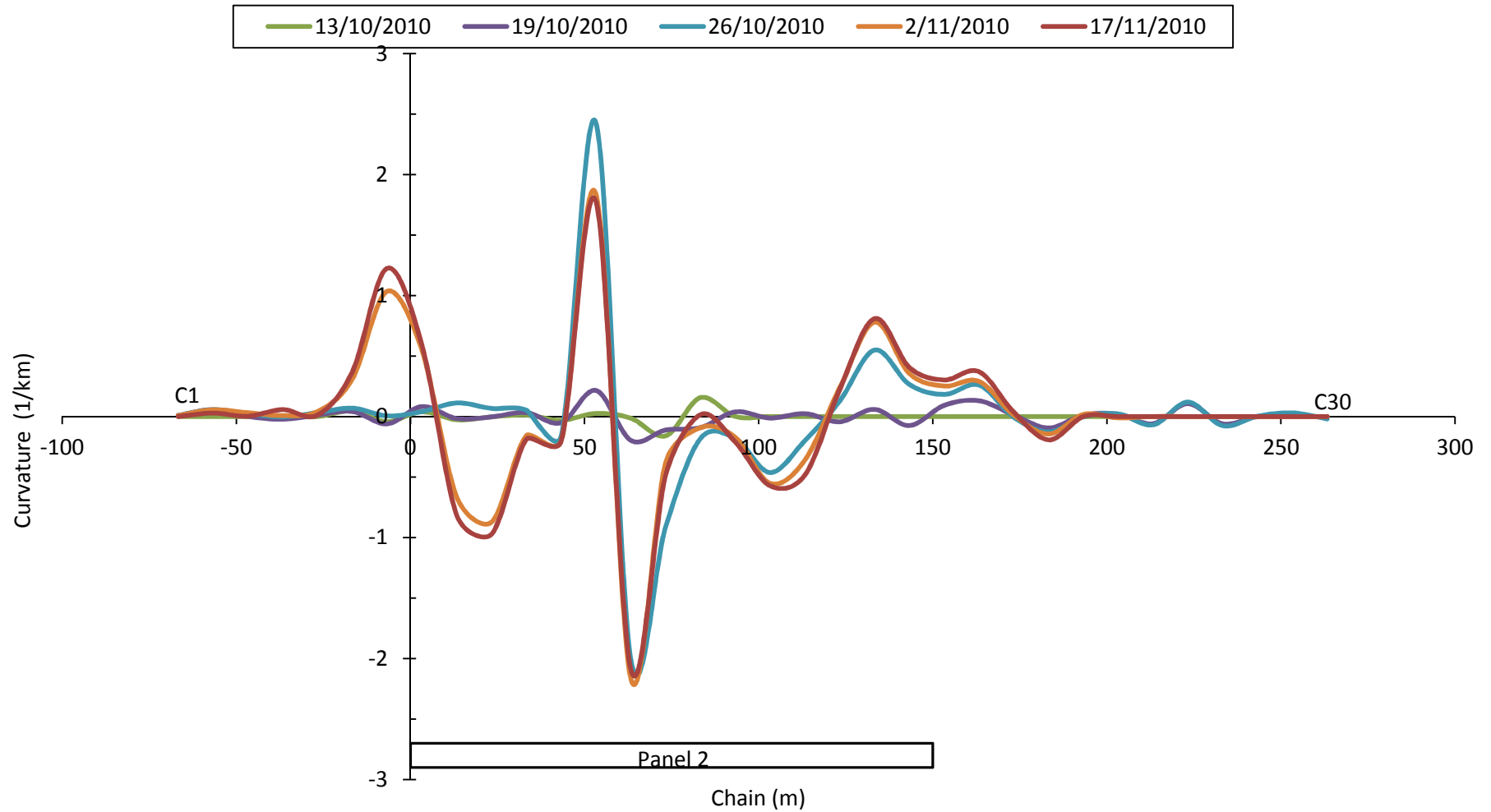
Chainage from start of panel : 150 m

	Engineer:	S.Ditton	Client:	Donaldson Coal - Tasman Extension Panel	
	Drawn:	S.Ditton		TAS-005/1	
	Date:	08.02.2012	Title:	Measured Crossline Subsidence for Panel 2 at Abel Mine, Black Hill	
	Ditton Geotechnical Services Pty Ltd		Scale:	NTS	Figure No:




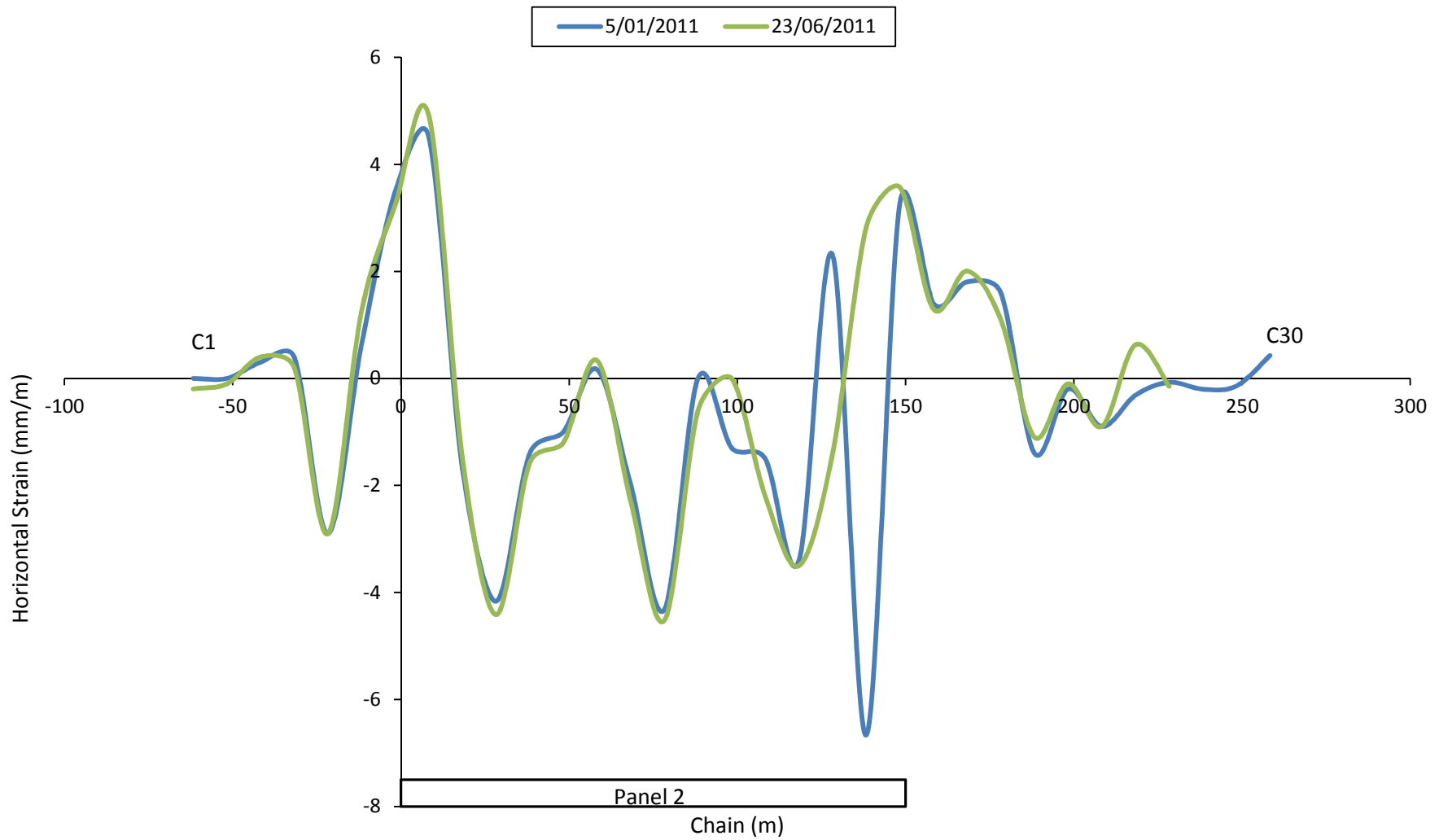
Chainage from start of panel : 150 m

	Engineer:	S.Ditton	Client:	Donaldson Coal - Tasman Extension Panel	
	Drawn:	S.Ditton		TAS-005/1	
	Date:	08.02.2012	Title:	Measured Crossline Tilt for Panel 2 at Abel Mine, Black Hill	
	Ditton Geotechnical Services Pty Ltd		Scale:	NTS	Figure No:




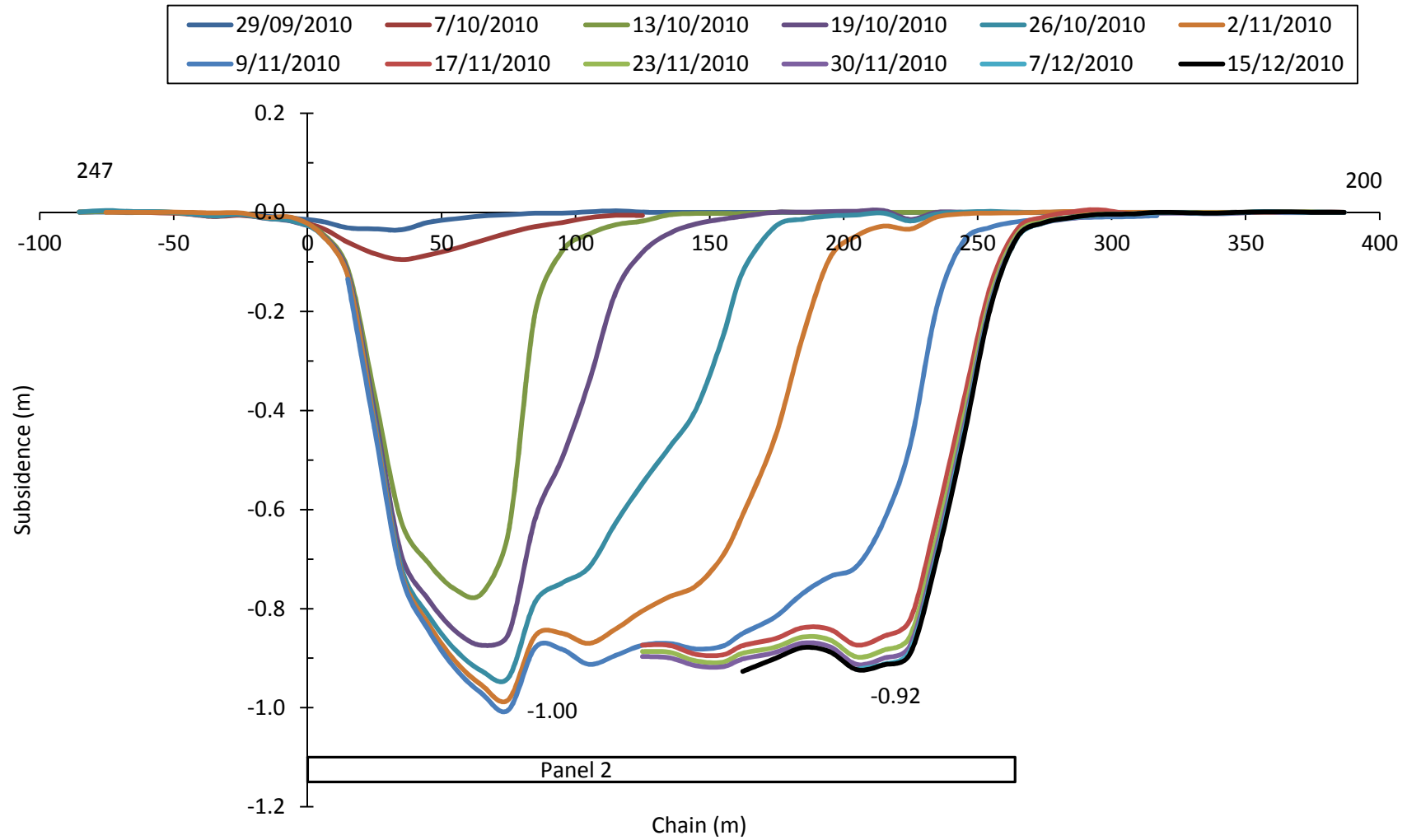
Chainage from start of panel : 150 m


	Engineer:	S.Ditton	Client:	Donaldson Coal - Tasman Extension Panel	
	Drawn:	S.Ditton		TAS-005/1	
	Date:	08.02.2012	Title:	Measured Crossline Curvature for Panel 2 at Abel Mine, Black Hill	
	Ditton Geotechnical Services Pty Ltd		Scale:	NTS	Figure No:

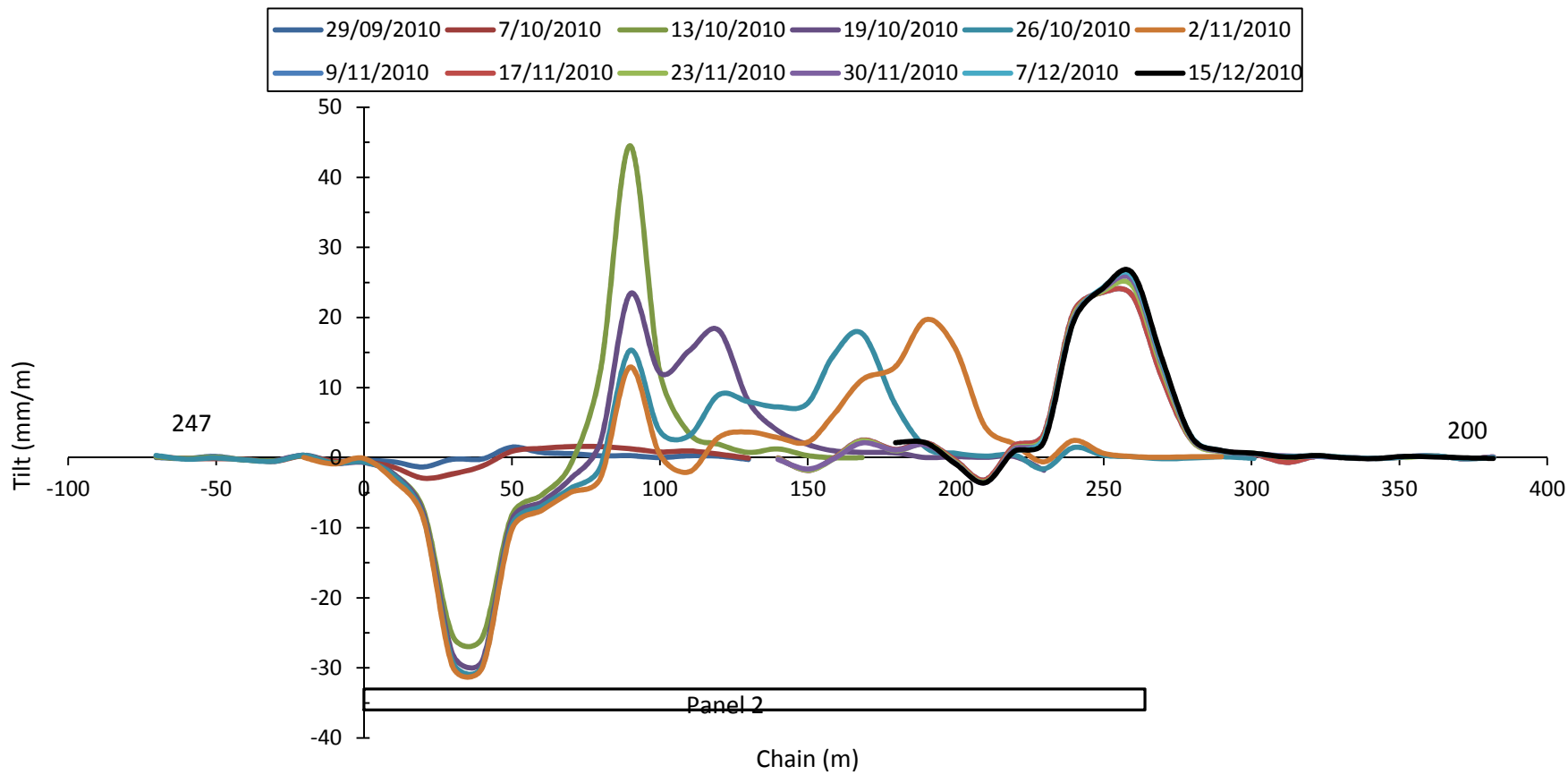



Chainage from start of panel : 150 m

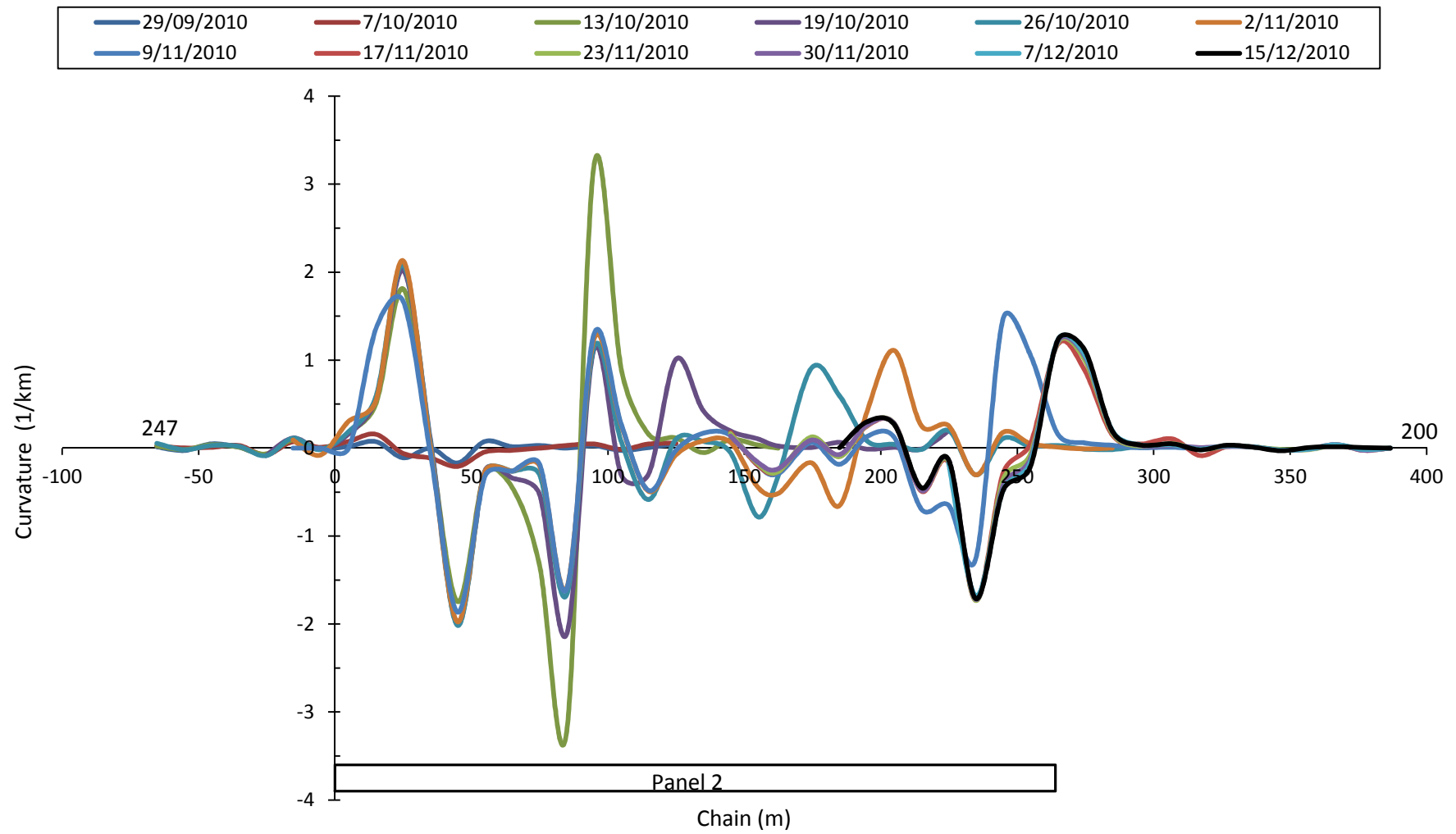
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	Date:	08.02.2012	Title:	Measured Crossline Strain for Panel 2 at Abel Mine, Black Hill	
	Ditton Geotechnical Services Pty Ltd		Scale:	NTS	Figure No:



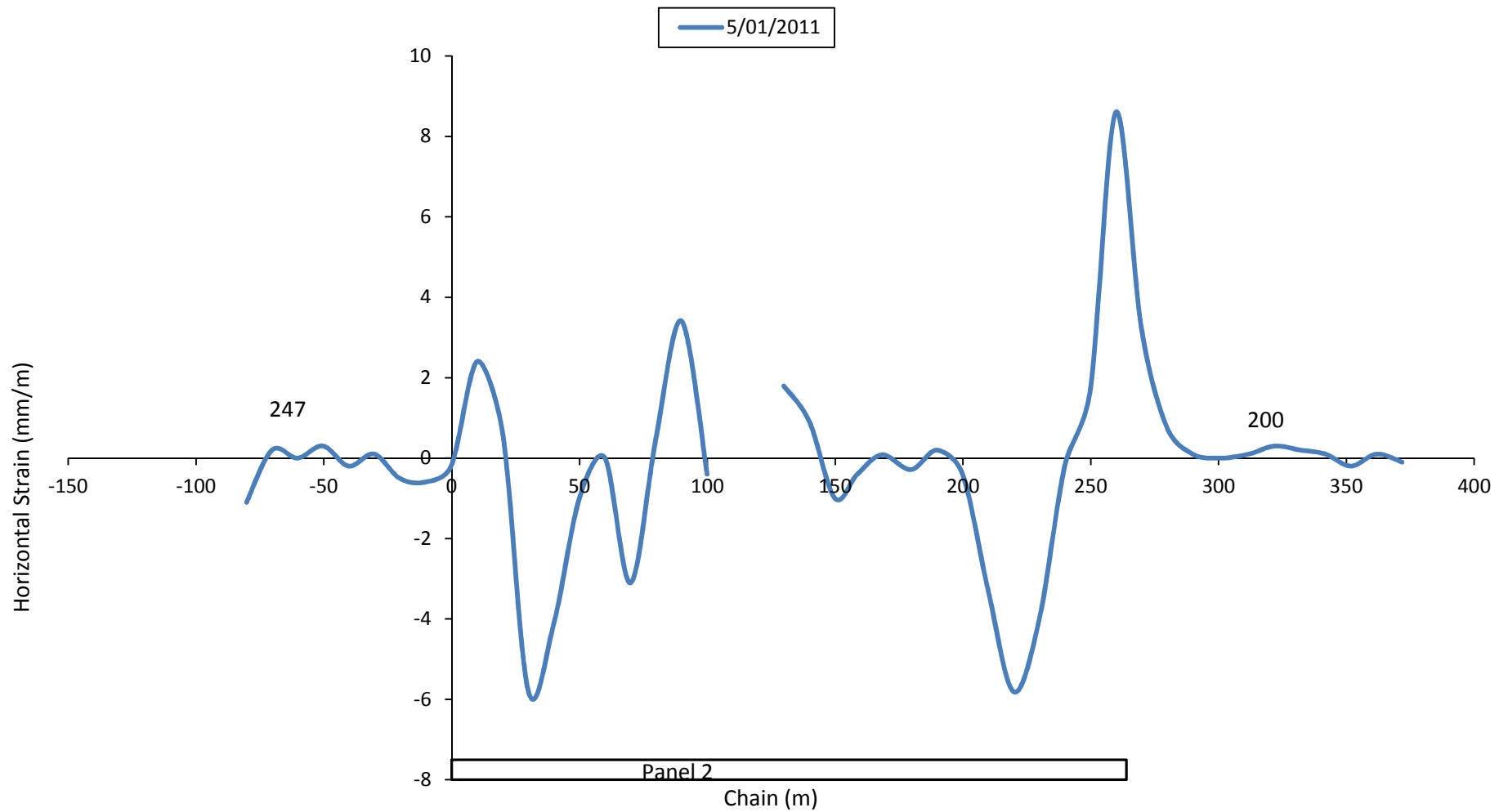
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	Drawn:	S.Ditton		TAS-005/1	
	Date:	08.02.12	Title:	Measured Centreline Subsidence for Panel 2 at Abel Mine, Black Hill	
	Ditton Geotechnical Services Pty Ltd		Scale:	NTS	Figure No:




	Engineer:	S.Ditton	Client:	Donaldson Coal - Tasman Extension Project	
	Drawn:	S.Ditton		TAS-005/1	
	Date:	08.02.12	Title:	Measured Centreline Tilt for Panel 2 at Abel Mine, Black Hill	
	Ditton Geotechnical Services Pty Ltd		Scale:	NTS	Figure No:

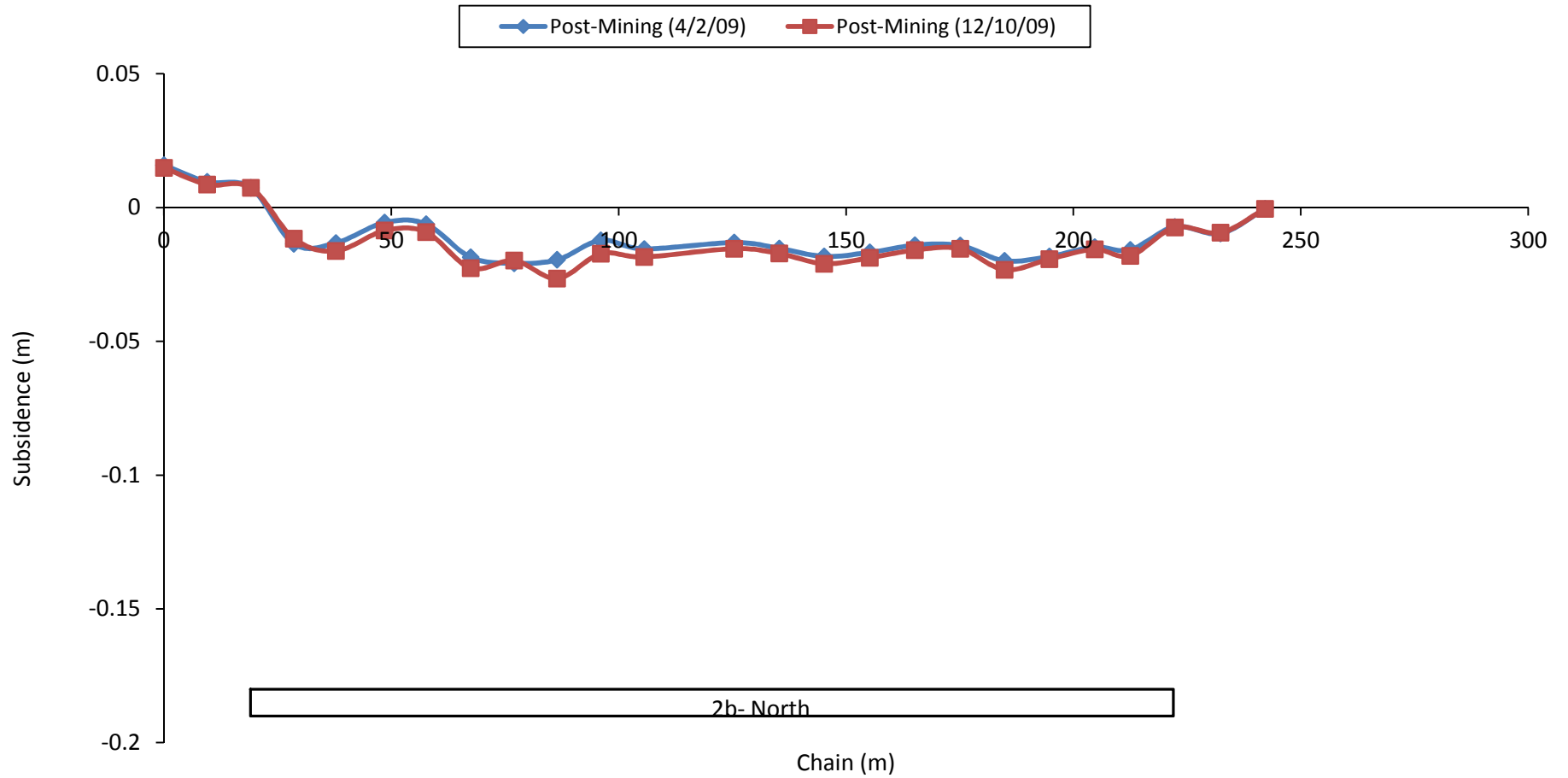



Engineer:	S.Ditton	Client:	Donaldson Coal - Tasman Extension Project
Drawn:	S.Ditton		TAS-005/1
Date:	08.02.12	Title:	Measured Centreline Curvature for Panel 2 at Abel Mine, Black Hill
Ditton Geotechnical Services Pty Ltd		Scale:	NTS
			Figure No: 17c

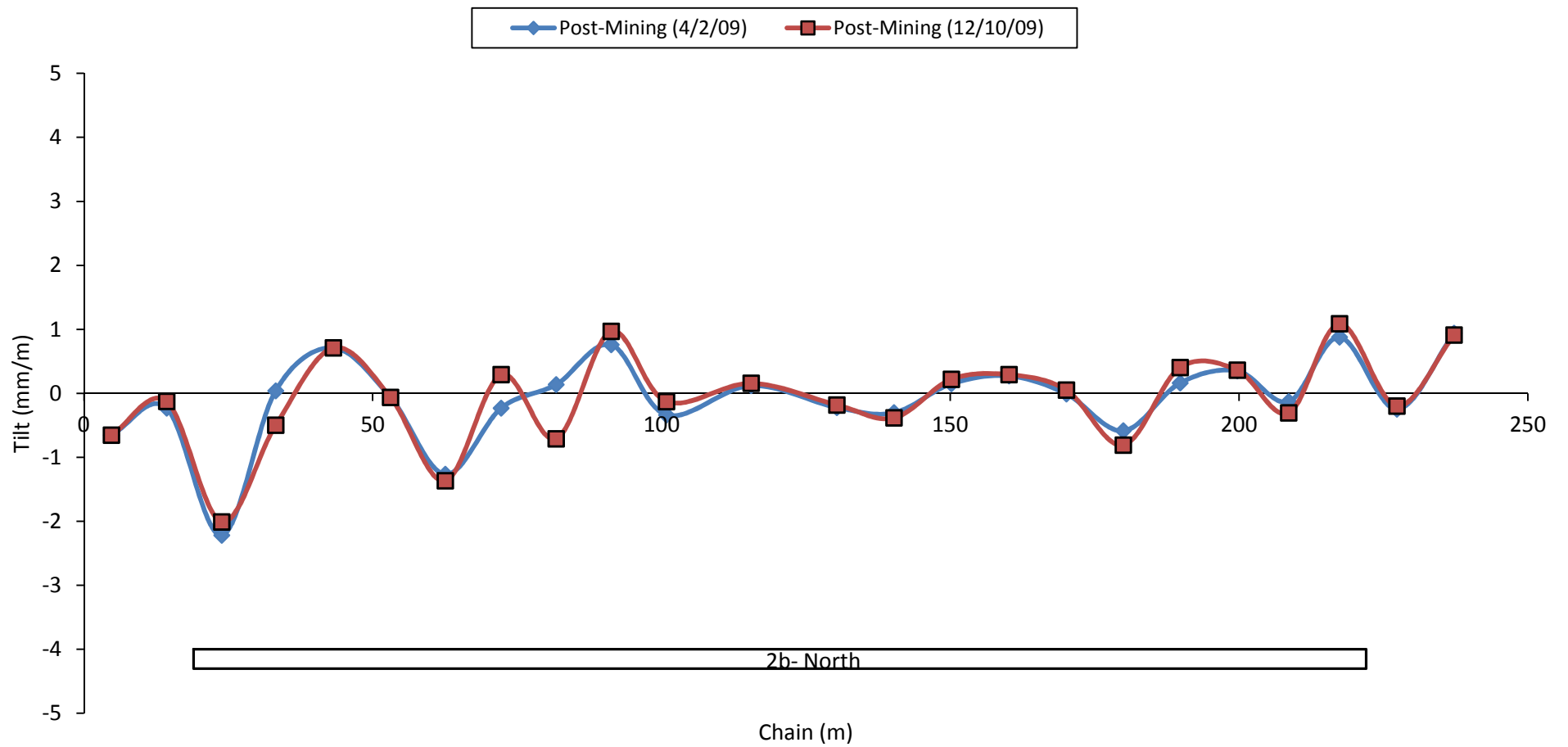



	Engineer: S.Ditton	Client: Donaldson Coal - Tasman Extension Project TAS-005/1
	Drawn: S.Ditton	
	Date: 08.02.12	Title: Measured Centreline Strain for Panel 2 at Abel Mine, Black Hill
	Ditton Geotechnical Services Pty Ltd	
Scale: NTS	Figure No: 17d	

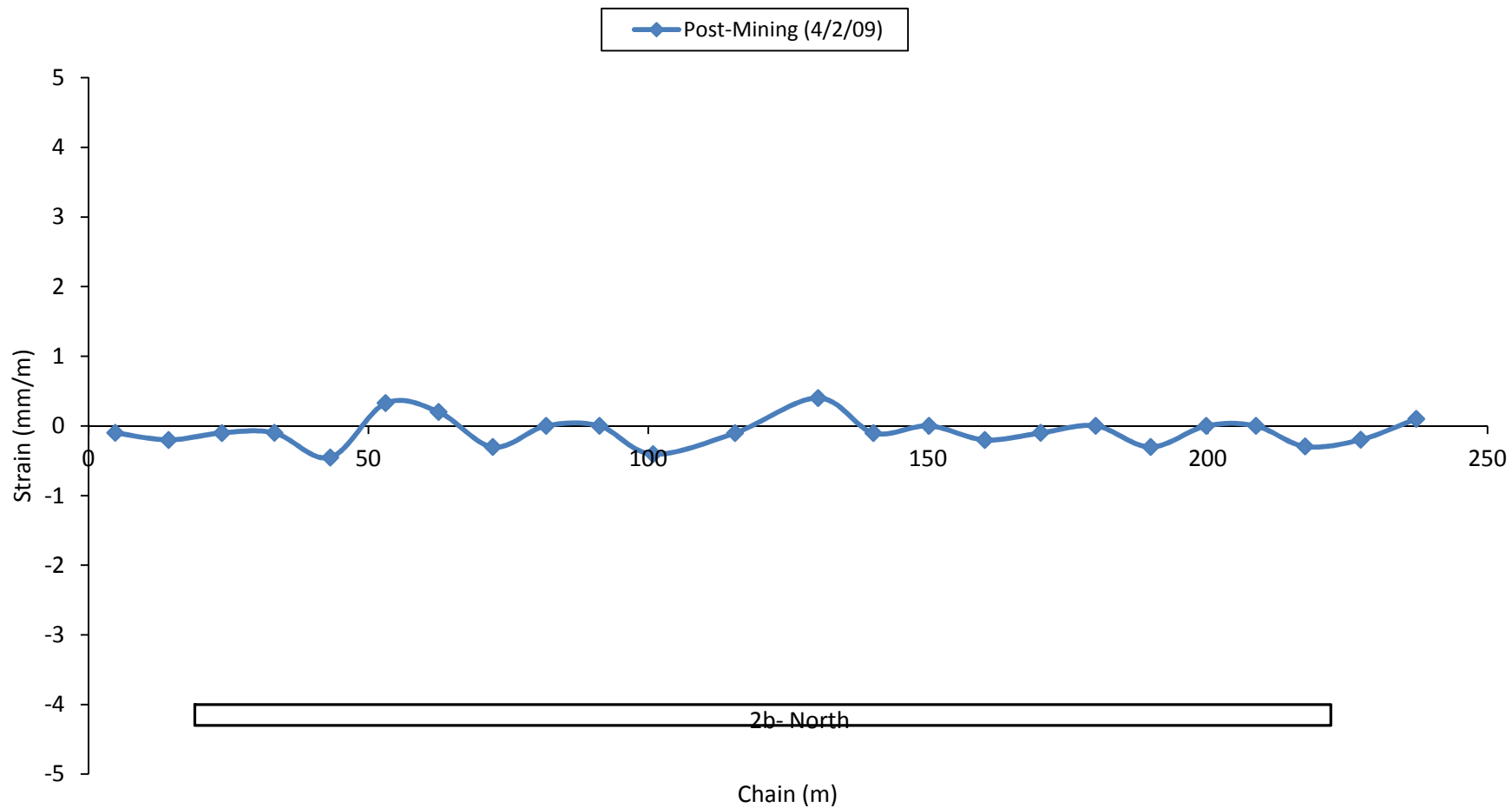





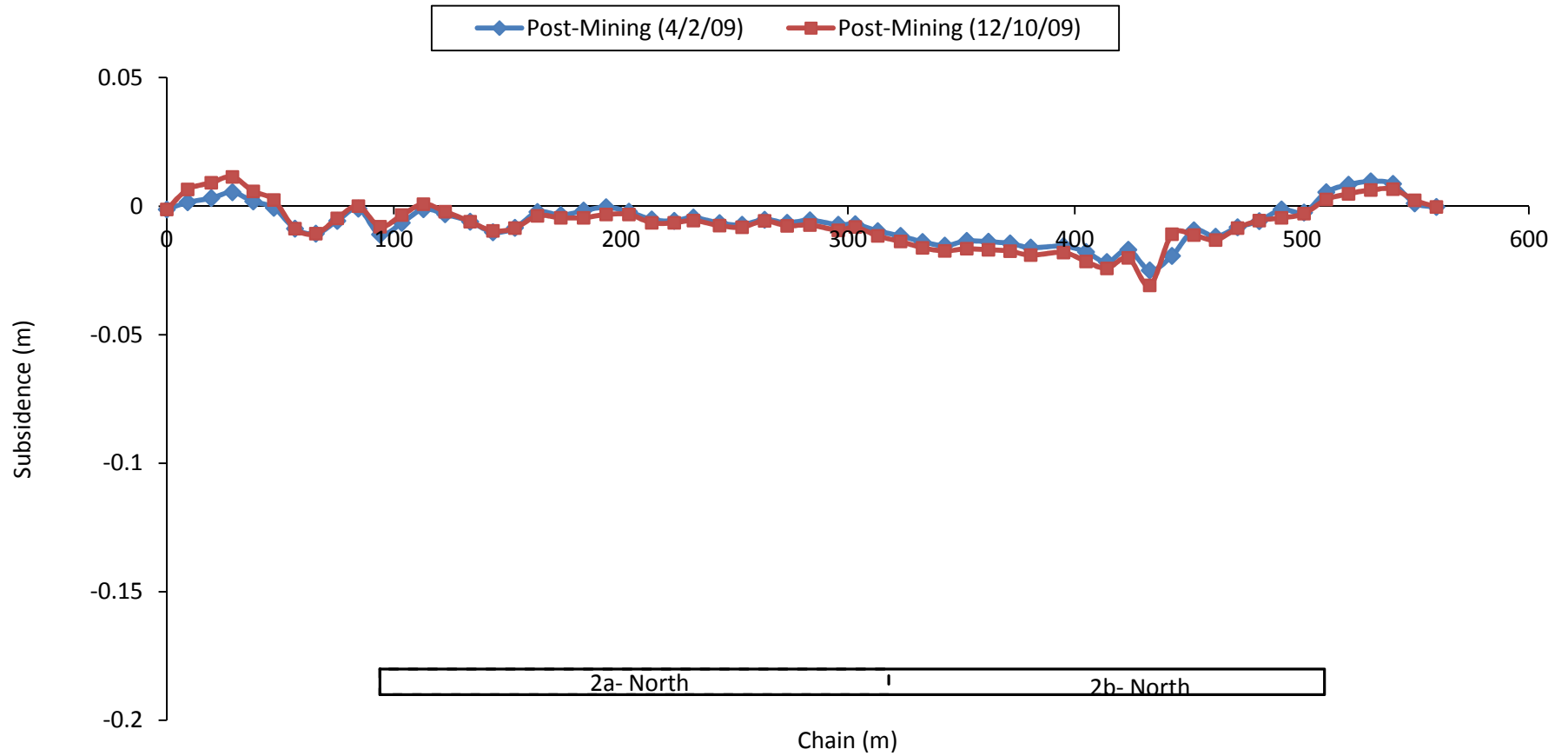
	Engineer:	S.Ditton	Client:	Donaldson Coal - Tasman Extension Project	
	Drawn:	S.Ditton		TAS-005/1	
	Date:	23.08.10	Title:	Measured Subsidence Profiles over 2b-North Panel Along 2N58-80 (Cross Line)	
	Ditton Geotechnical Services Pty Ltd			Scale:	NTS




	Engineer:	S.Ditton	Client:	Donaldson Coal - Tasman Extension Project	
	Drawn:	S.Ditton		TAS-005/1	
	Date:	23.08.10	Title:	Measured Tilt Profiles over 2b-North Panel Along 2N58-80 (Cross Line)	
	Ditton Geotechnical Services Pty Ltd		Scale:	NTS	Figure No:

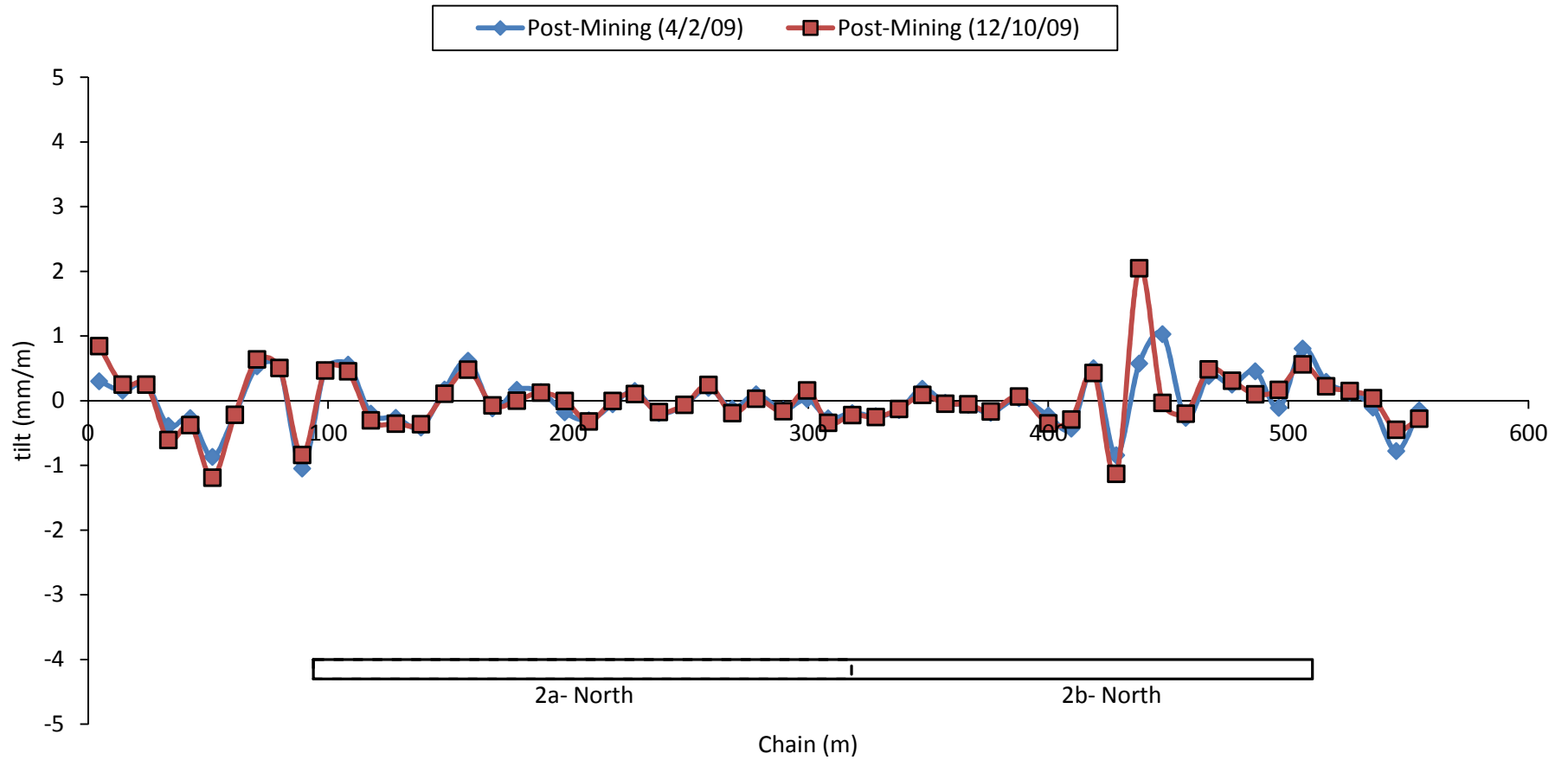



	Engineer:	S.Ditton	Client:	Donaldson Coal - Tasman Extension Project	
	Drawn:	S.Ditton		TAS-005/1	
	Date:	23.08.10	Title:	Measured Strain Profiles over 2b-North Panel Along 2N58-80 (Cross Line)	
	Ditton Geotechnical Services Pty Ltd			Scale:	NTS

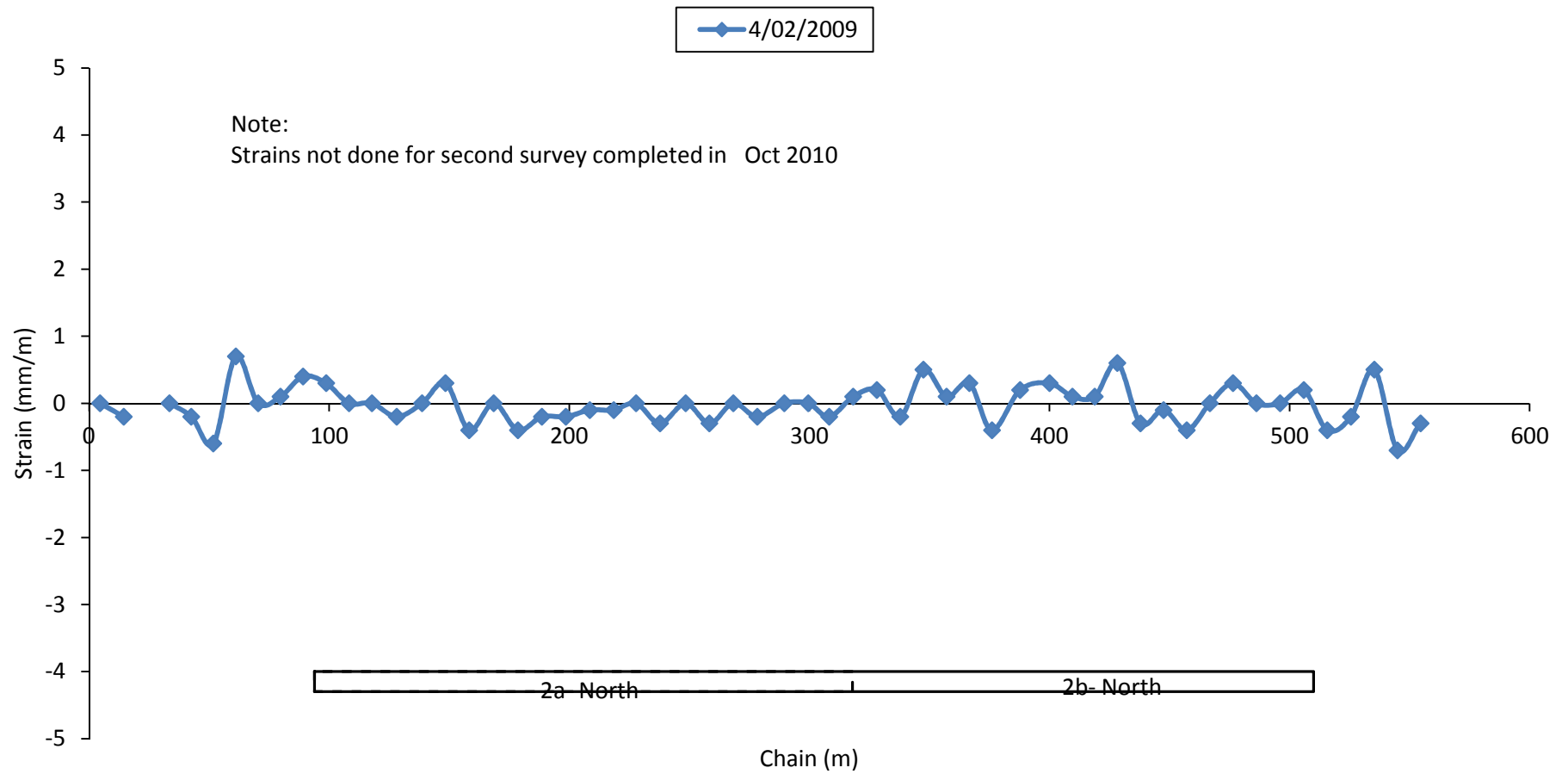



2a- North | 2b- North

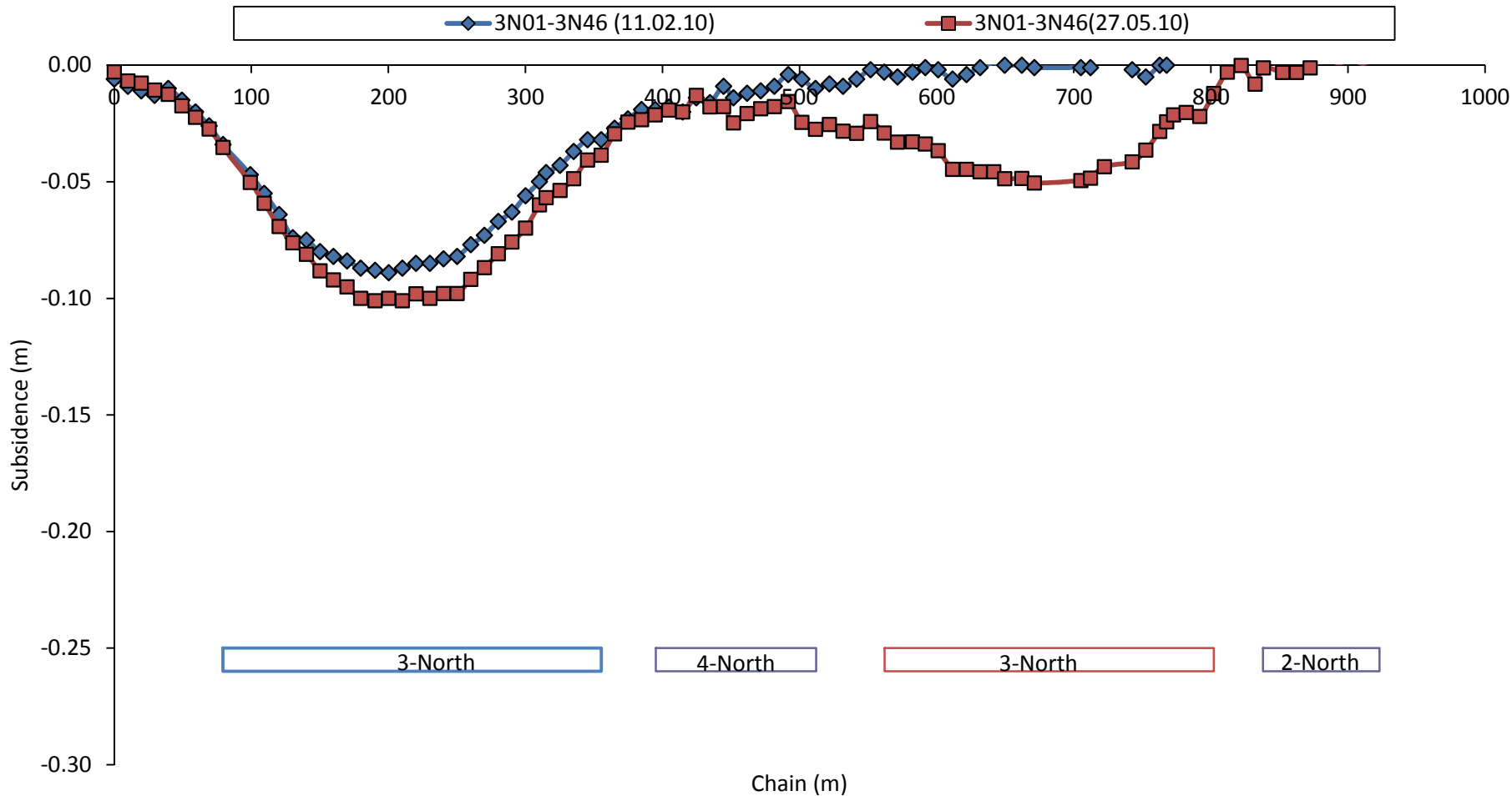
	Engineer:	S.Ditton	Client:	Donaldson Coal - Tasman Extension Project	
	Drawn:	S.Ditton		TAS-005/1	
	Date:	23.08.10	Title:	Measured Subsidence Profiles over 2b-North Panel Along 2N30-91 (Centre Line)	
	Ditton Geotechnical Services Pty Ltd			Scale:	NTS




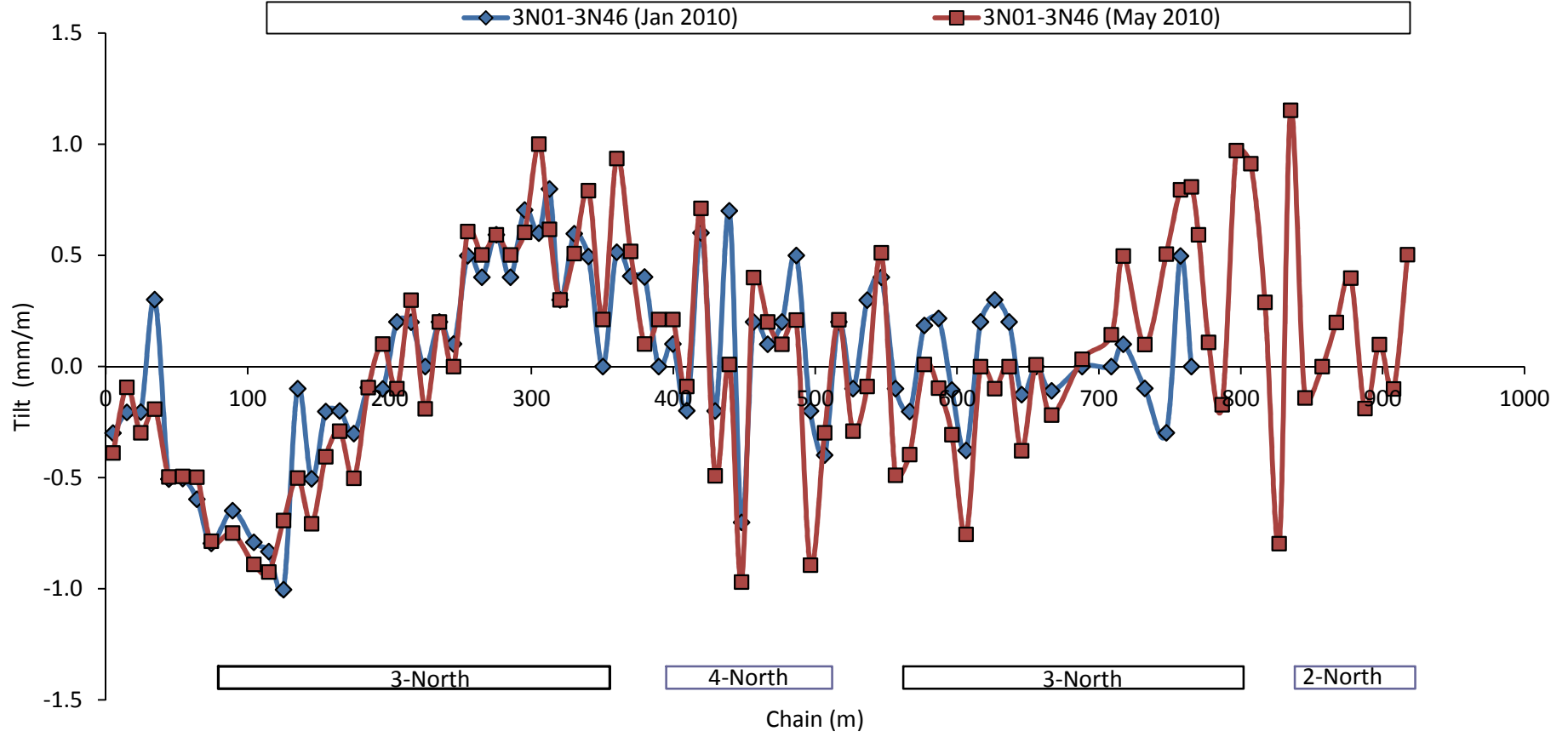
	Engineer:	S.Ditton	Client:	Donaldson Coal - Tasman Extension Project	
	Drawn:	S.Ditton		TAS-005/1	
	Date:	23.08.10	Title:	Measured Tilt Profiles over 2b-North Panel Along 2N30-91 (Centre Line)	
	Ditton Geotechnical Services Pty Ltd		Scale:	NTS	
				Figure No:	19b




	Engineer:	S.Ditton	Client:	Donaldson Coal - Tasman Extension Project	
	Drawn:	S.Ditton		TAS-005/1	
	Date:	23.08.10	Title:	Measured Strain Profiles over 2b-North Panel Along 2N30-91 (Centre Line)	
	Ditton Geotechnical Services Pty Ltd		Scale:	NTS	Figure No:

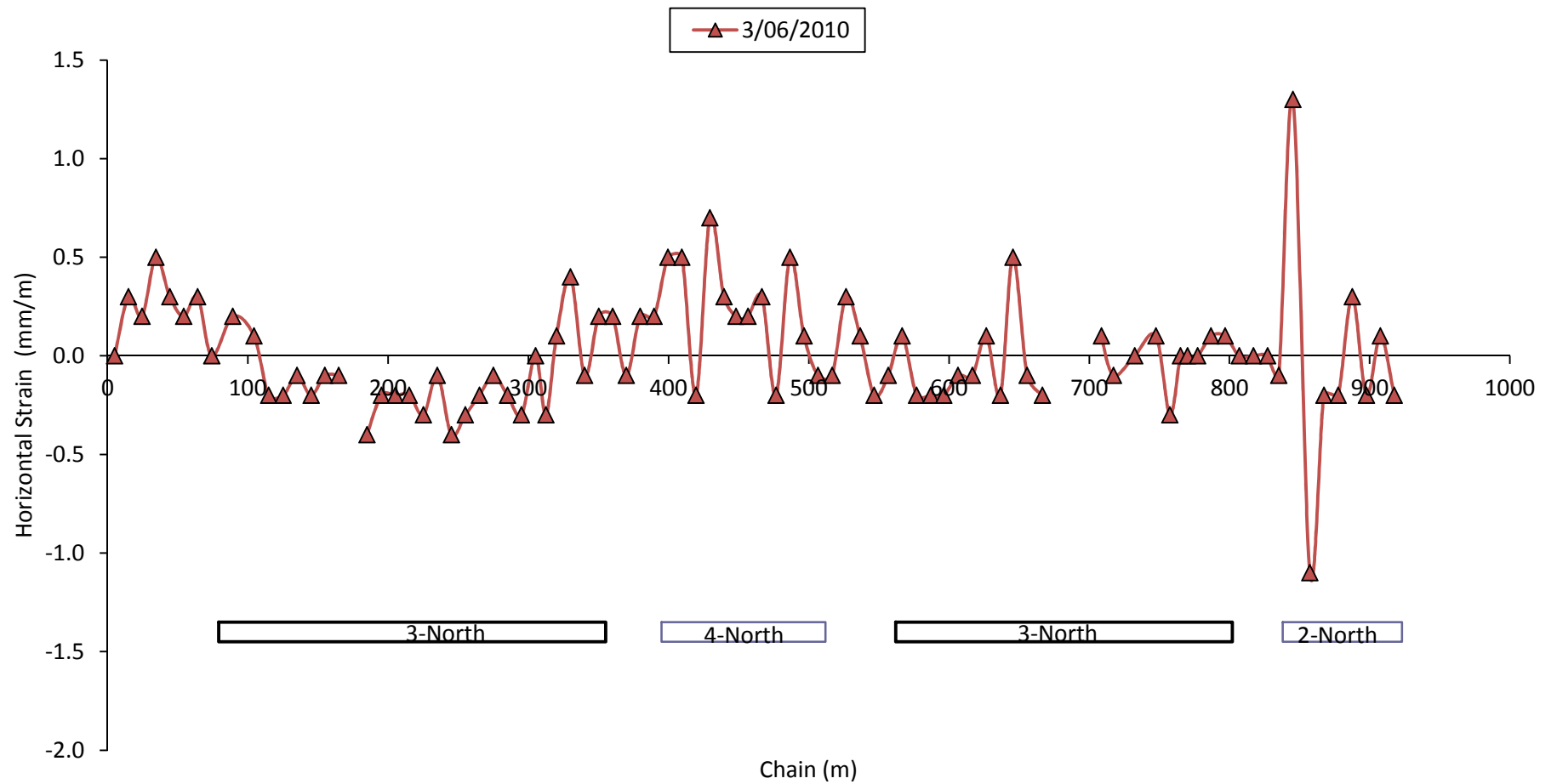



	Engineer:	S.Ditton	Client:	Donaldson Coal - Tasman Extension Project	
	Drawn:	S.Ditton		TAS-005/1	
	Date:	08.02.12	Title:	Measured v. Predicted Subsidence Profiles over 3-North Panel Along 3N01-107	
	Ditton Geotechnical Services Pty Ltd		Scale:	NTS	Figure No:

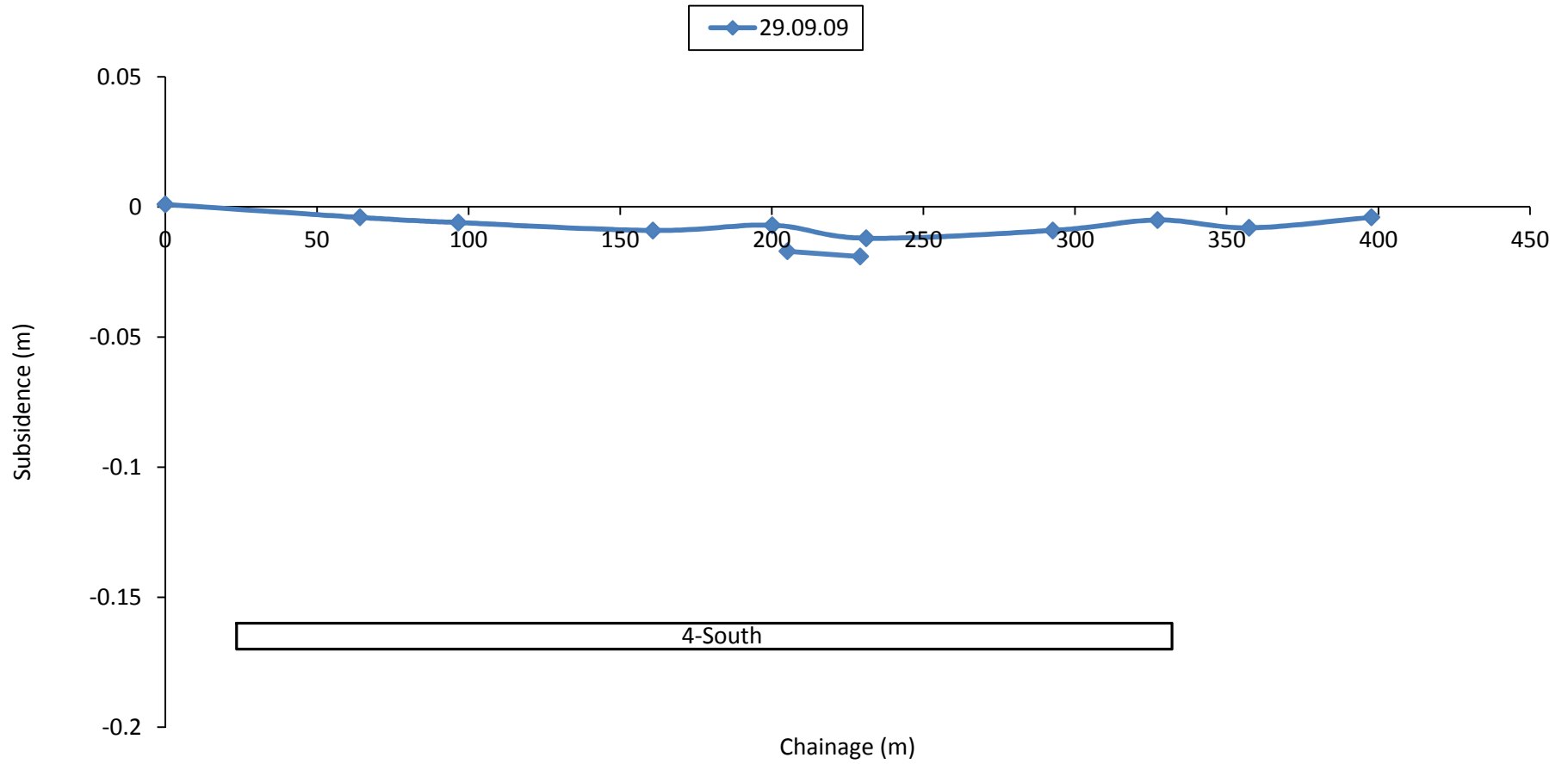



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	Drawn:	S.Ditton		TAS-005/1	
	Date:	08.02.12	Title:	Measured v. Predicted Tilt Profiles over 3-North Panel Along 3N01-107	
	Ditton Geotechnical Services Pty Ltd		Scale:	NTS	
				Figure No:	20b

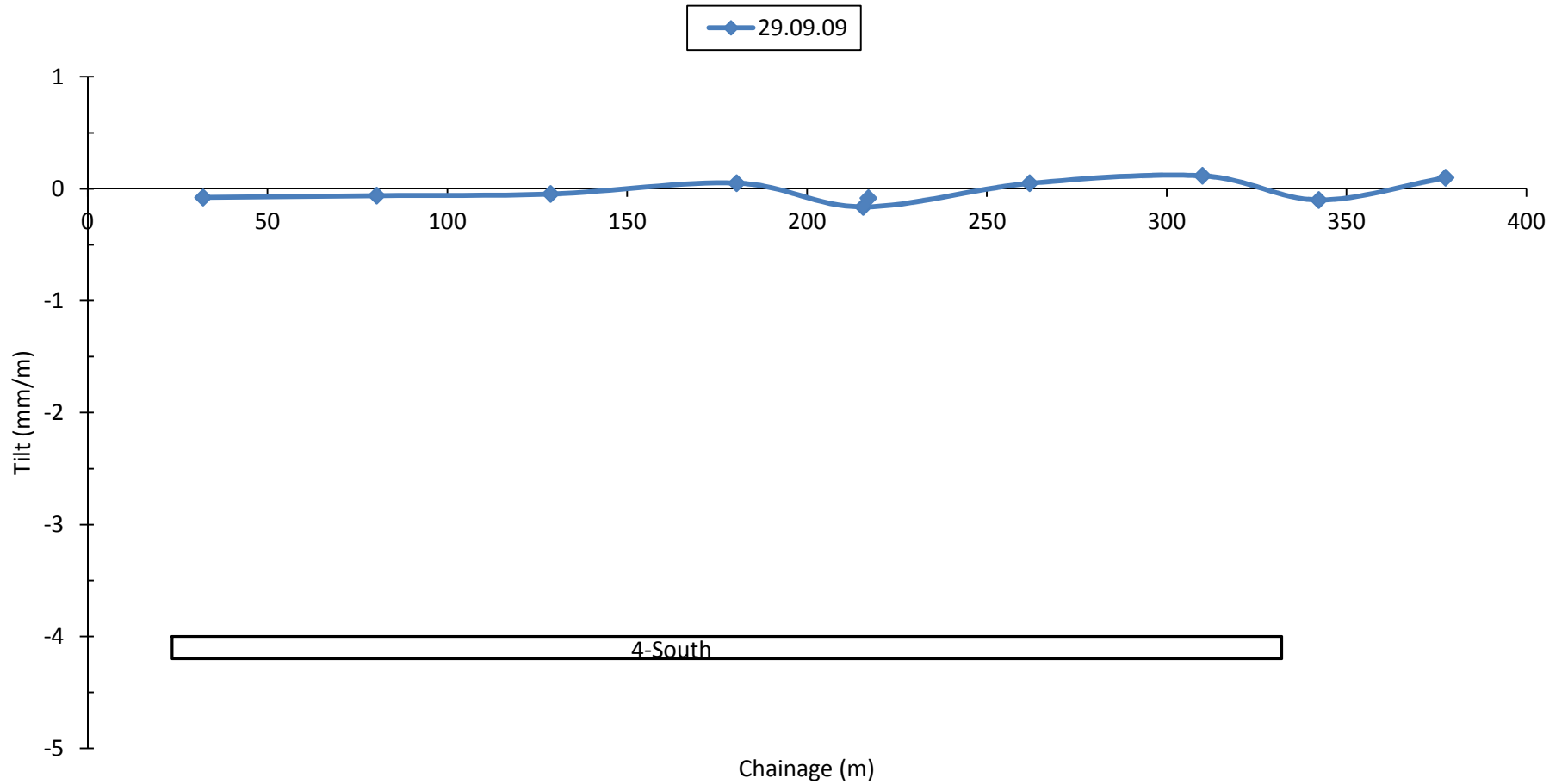





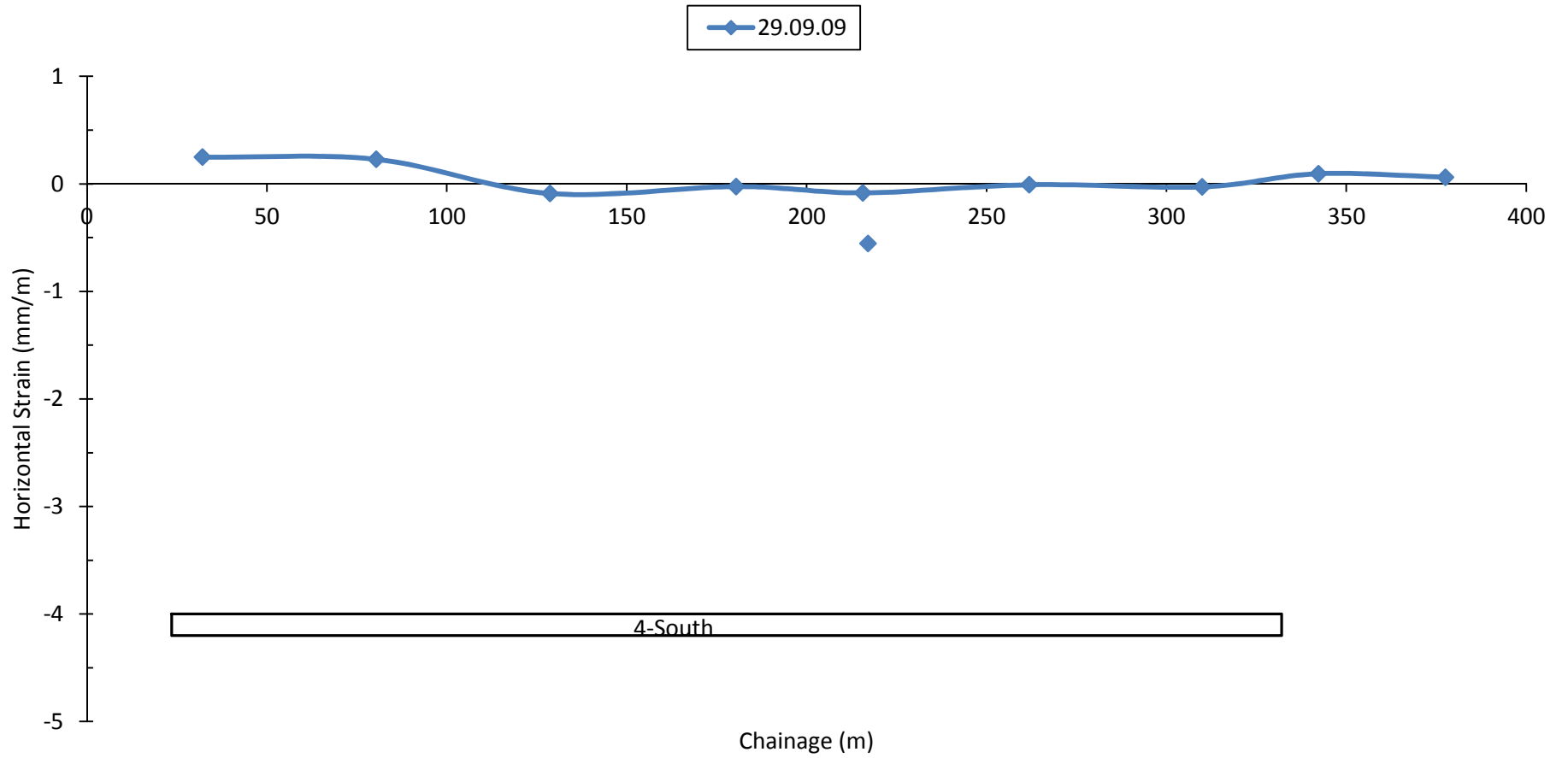
	Engineer:	S.Ditton	Client:	Donaldson Coal - Tasman Extension Project	
	Drawn:	S.Ditton		TAS-005/1	
	Date:	08.02.12	Title:	Measured v. Predicted Strain Profiles over 3-North Panel Along 3N01-107	
	Ditton Geotechnical Services Pty Ltd		Scale:	NTS	Figure No:




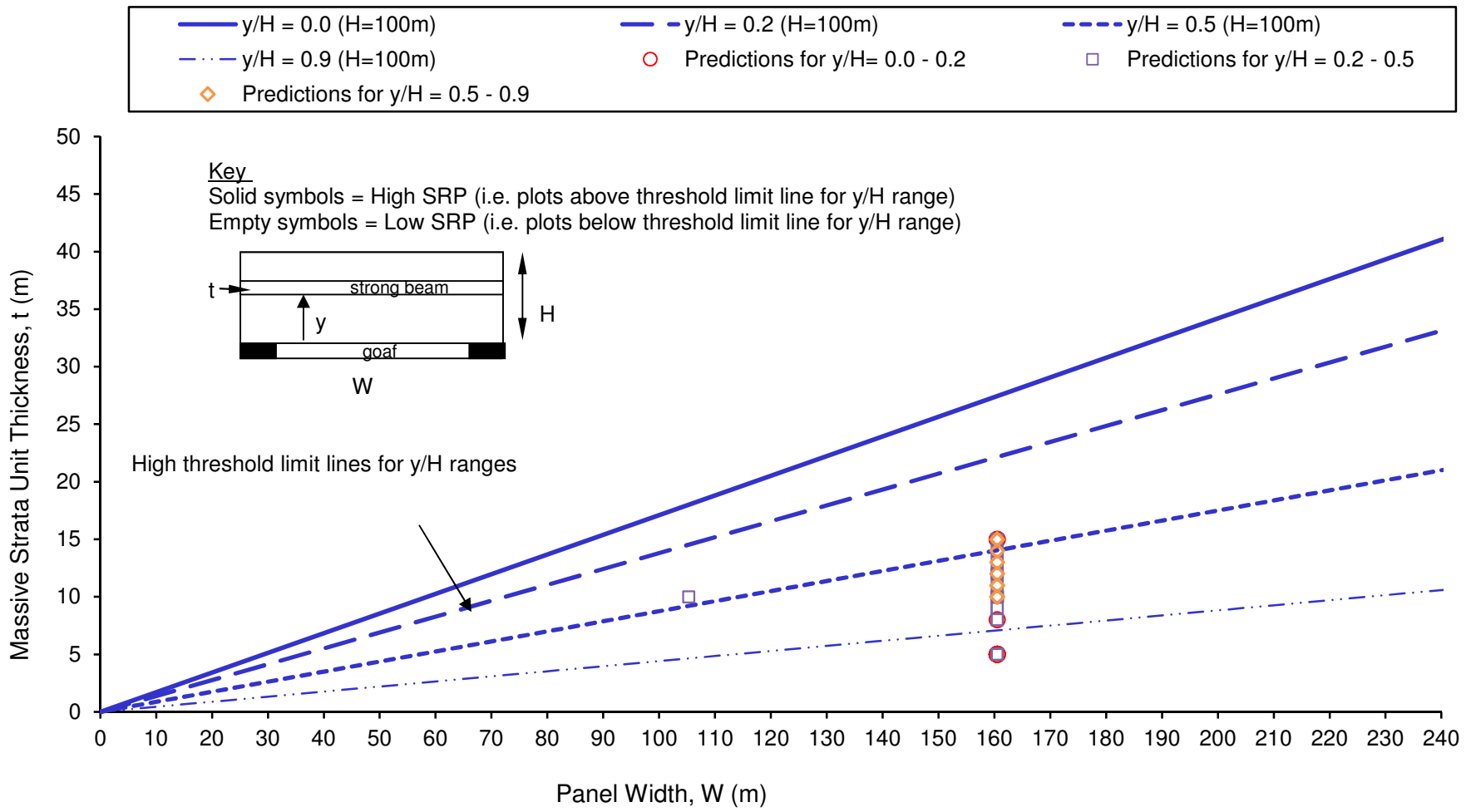
	Engineer:	S.Ditton	Client:	Donaldson Coal - Tasman Extension Project	
	Drawn:	S.Ditton		TAS-004/7	
	Date:	23.08.10	Title:	Measured Subsidence Profiles over 4-South Panel Along 4S01-13	
	Ditton Geotechnical Services Pty Ltd			Scale:	NTS




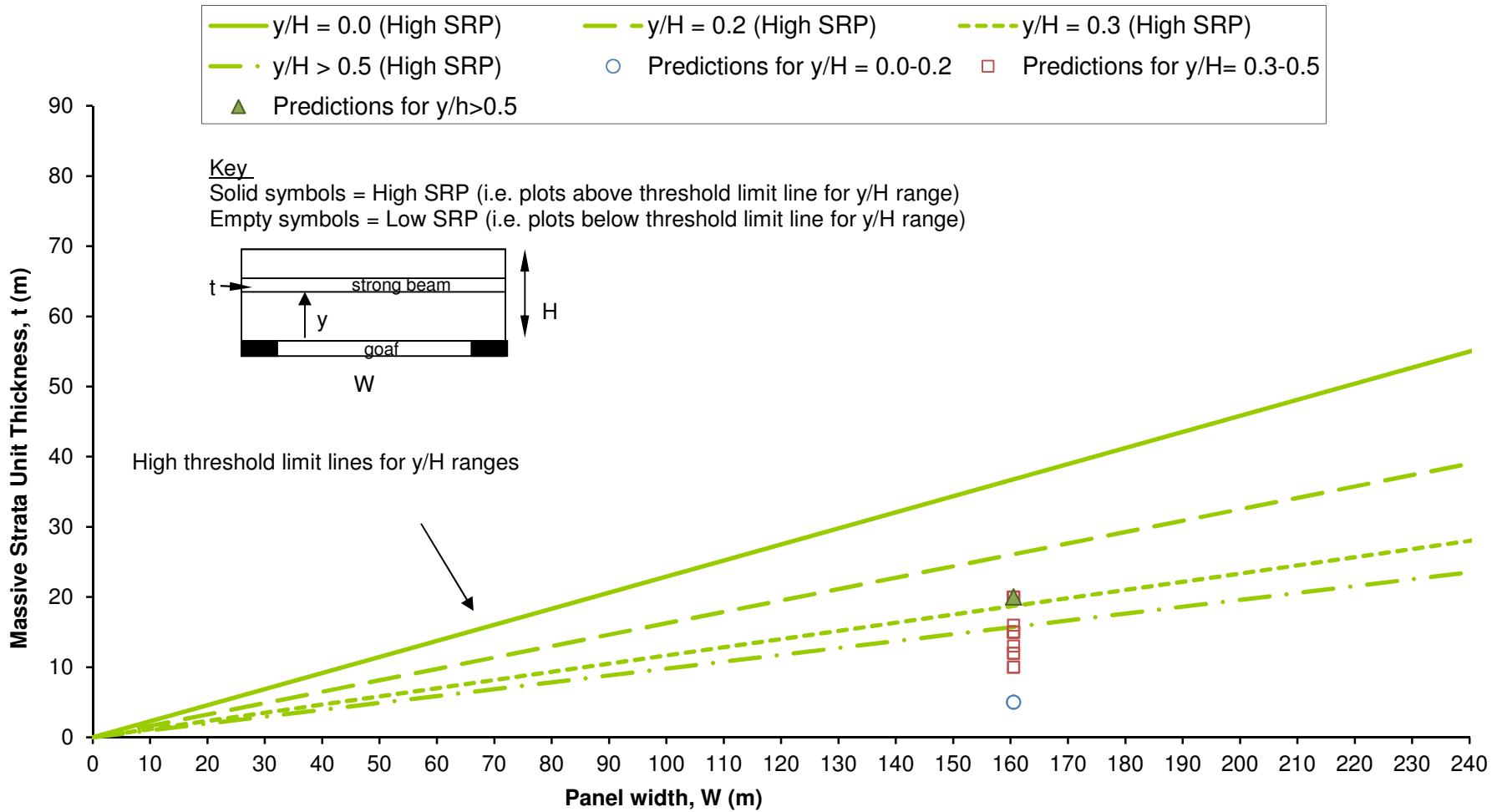
	Engineer:	S.Ditton	Client:	Donaldson Coal - Tasman Extension Project	
	Drawn:	S.Ditton		TAS-005/1	
	Date:	23.08.10	Title:	Measured Tilt Profiles over 4-South Panel Along 4S01-13	
	Ditton Geotechnical Services Pty Ltd			Scale:	NTS




	Engineer:	S.Ditton	Client:	Donaldson Coal - Tasman Extension Project	
	Drawn:	S.Ditton		TAS-005/1	
	Date:	23.08.10	Title:	Measured Strain Profiles over 4-South Panel Along 4S01-13	
	Ditton Geotechnical Services Pty Ltd			Scale:	NTS

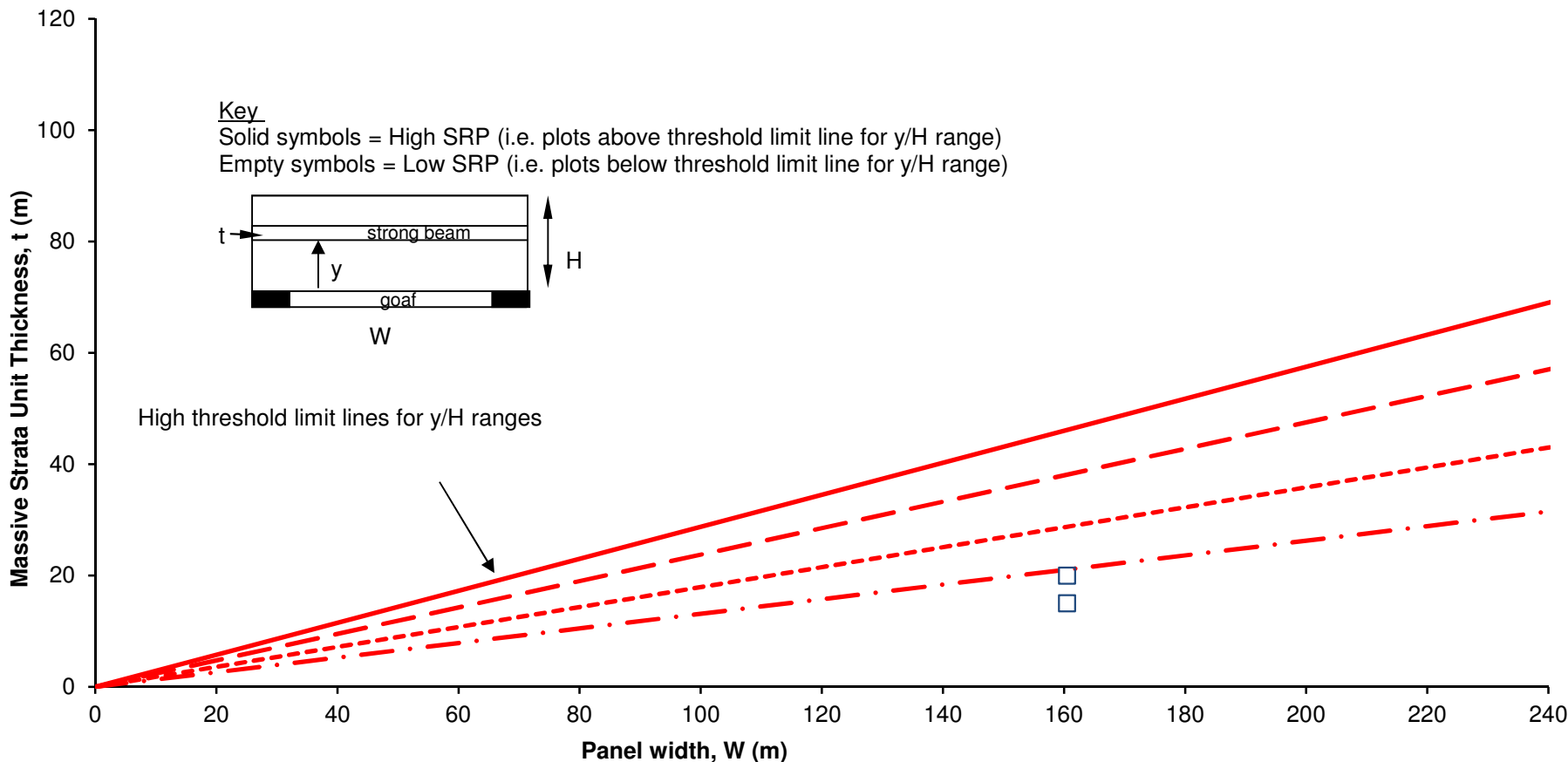



	Engineer:	S.Ditton	Client:	Donaldson Coal - Tasman Extension Project	
	Drawn:	S.Ditton		TAS-005/1	
	Date:	01.12.11	Title:	Predicted Subsidence Reduction Potential of Sandstone Units Above Proposed Tasman Extended Mine SMP Mine Layout for Cover Depths from 60 m to 150 m	
	Ditton Geotechnical Services Pty Ltd		Scale:	NTS	Figure No:

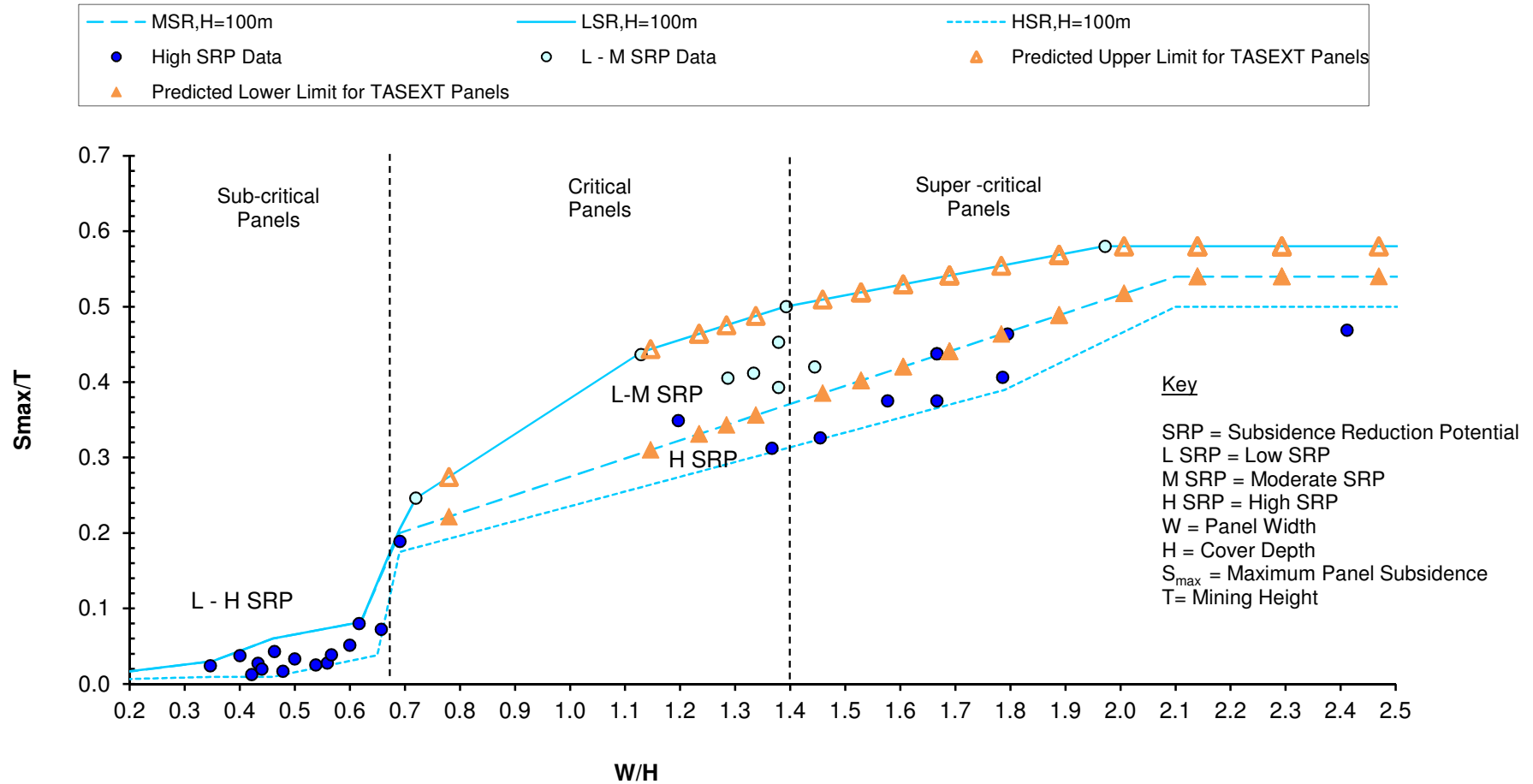


	Engineer:	S.Ditton	Client:	Donaldson Coal - Tasman Extension Project	
	Drawn:	S.Ditton		TAS-005/1	
	Date:	01.12.11	Title:	Predicted Subsidence Reduction Potential of Sandstone Units Above Proposed Tasman Extended Mine Layout for Cover Depths from 150m to 250m	
	Ditton Geotechnical Services Pty Ltd		Scale:	NTS	Figure No:


— y/H = 0.0 (High SRP)  
 - - y/H = 0.2 (High SRP)  
 - · - y/H = 0.3 (High SRP)  
 · - · - y/H = 0.8 (High SRP)  
 □ Predictions for y/H=0.2-0.3



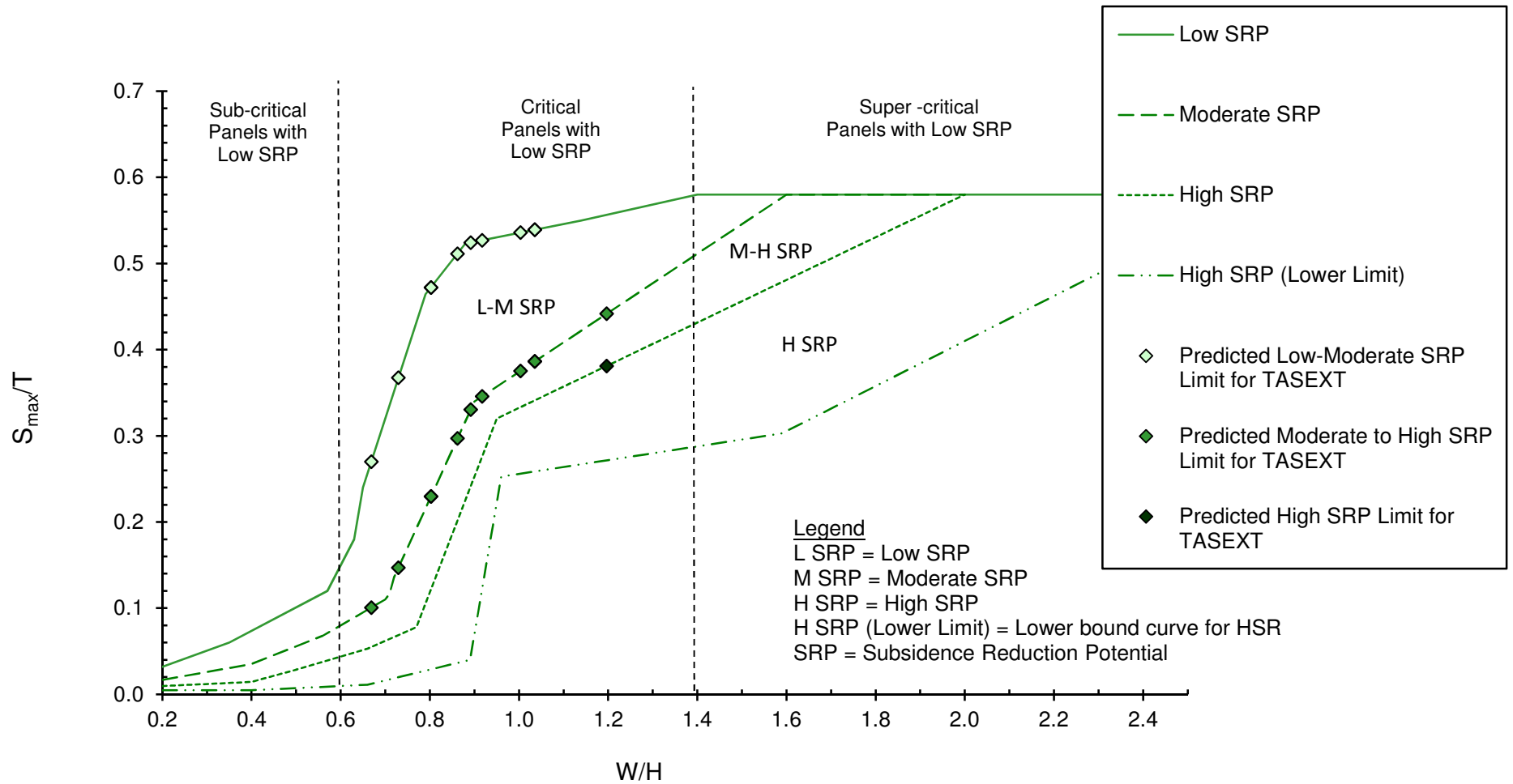
	Engineer:	S.Ditton	Client:	Donaldson Coal - Tasman Extension Project	
	Drawn:	S.Ditton		TAS-005/1	
	Date:	01.12.11	Title:	Predicted Subsidence Reduction Potential of Sandstone Units Above Proposed Tasman Extended Mine Layout for Cover Depths from 250m to 350m	
	Ditton Geotechnical Services Pty Ltd		Scale:	NTS	Figure No:




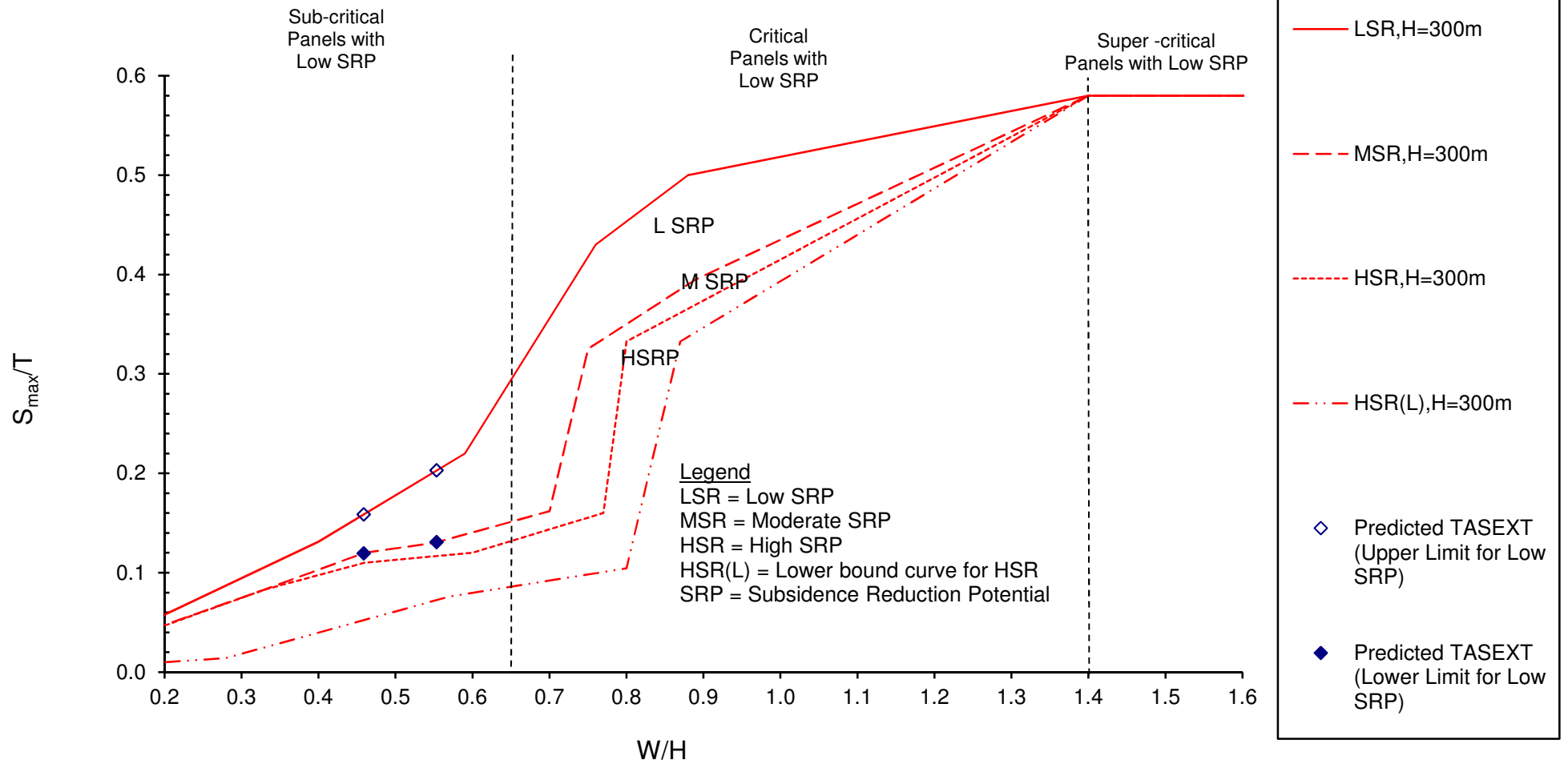
Note: No SRP distinguishment for panels with W/H < 0.65


	Engineer:	S.Ditton	Client:	Donaldson Coal - Tasman Extension Project	
	Drawn:	S.Ditton		TAS-005/1	
	Date:	01.12.11	Title:	Predicted Maximum Single Panel Subsidence for Total Extraction Panels in the West Borehole Seam with Cover Depths between 50 m and 150 m	
	Ditton Geotechnical Services Pty Ltd		Scale:	NTS	Figure No:

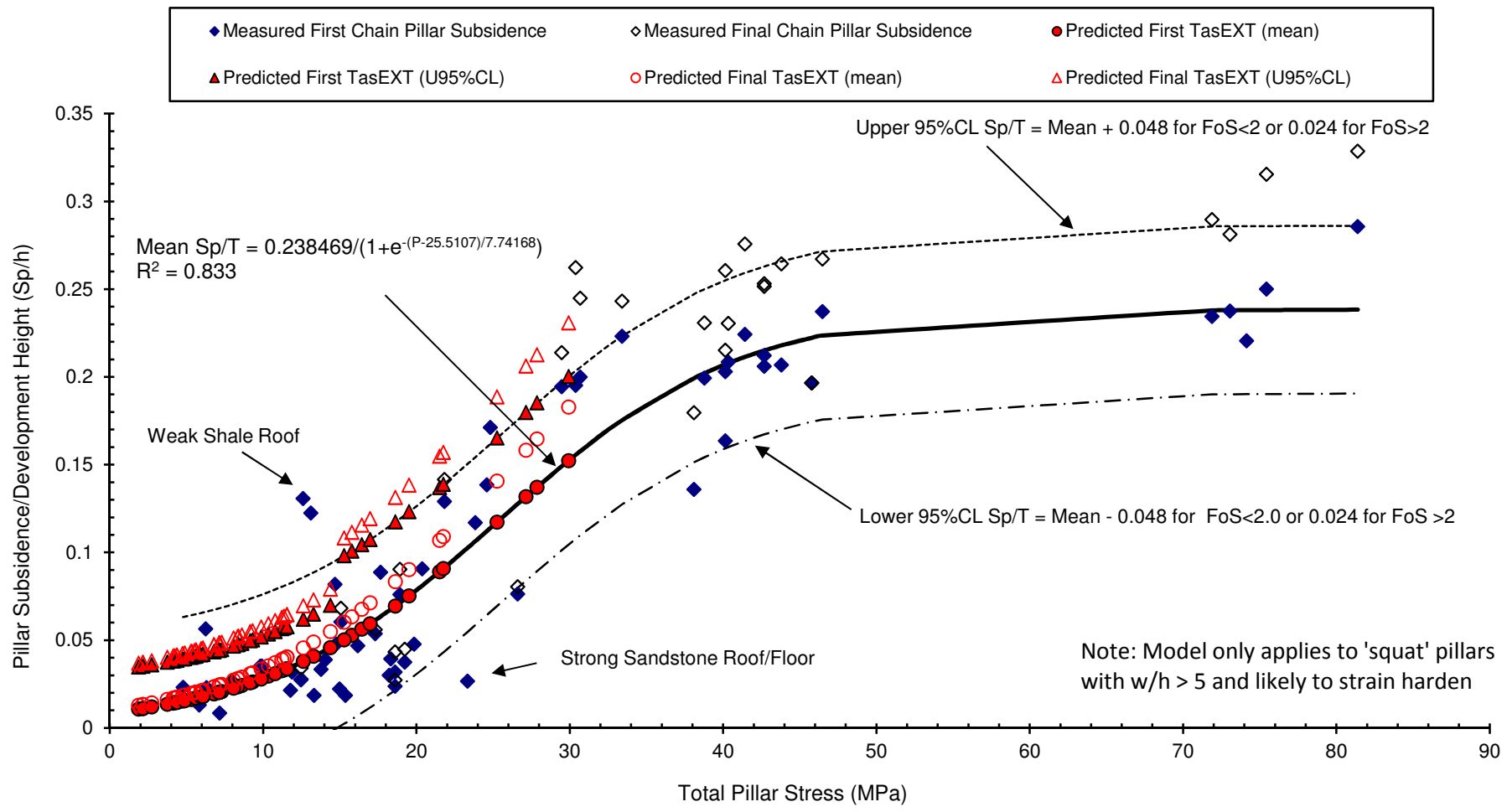





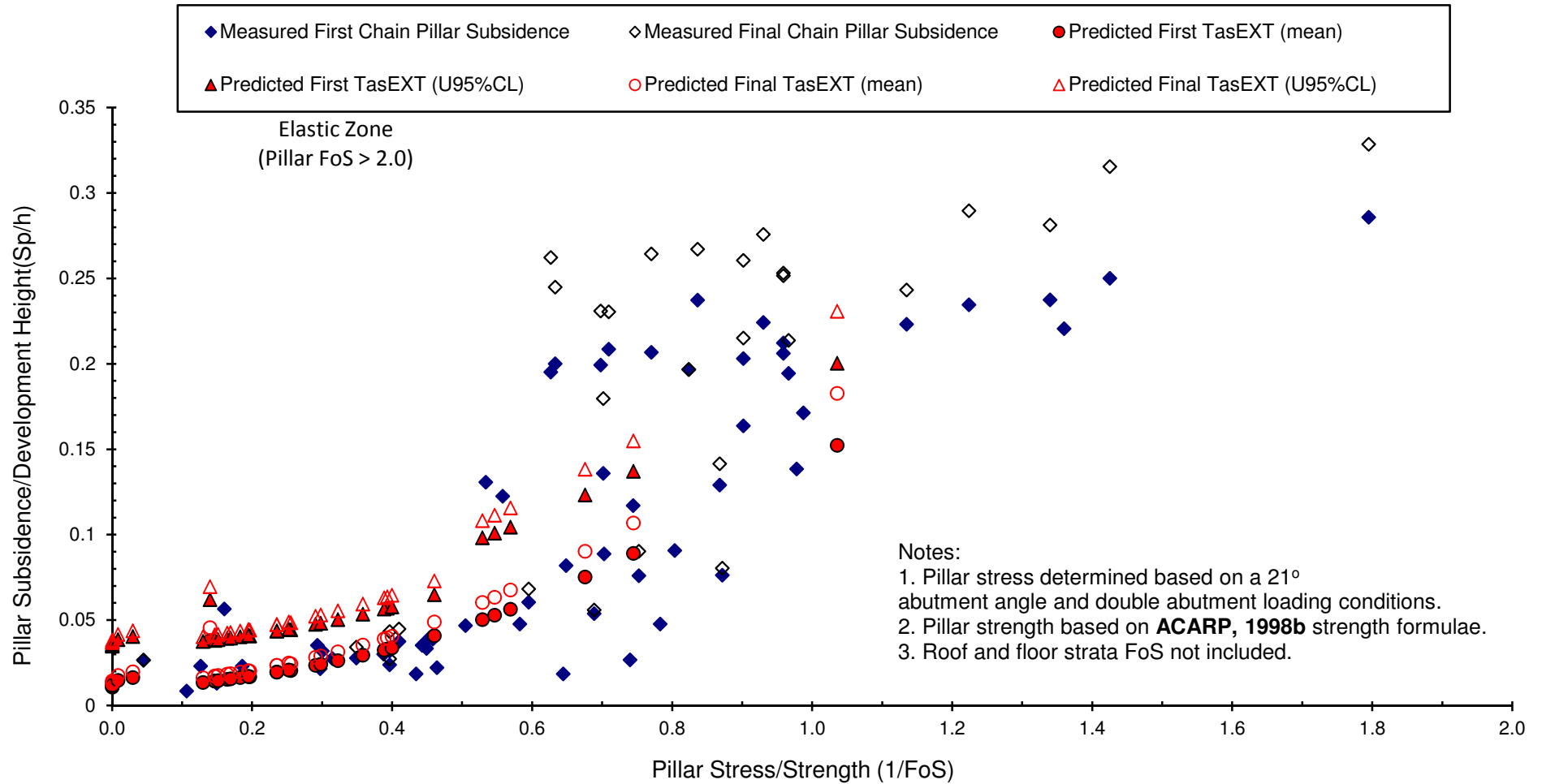
	Engineer:	S.Ditton	Client:	Donaldson Coal - Tasman Extension Project	
	Drawn:	S.Ditton		TAS-005/1	
	Date:	01.12.11	Title:	Predicted Maximum Single Panel Subsidence for Total Extraction Panels in the West Borehole Seam with Cover Depths from 150 m to 250 m	
	Ditton Geotechnical Services Pty Ltd		Scale:	NTS	Figure No:




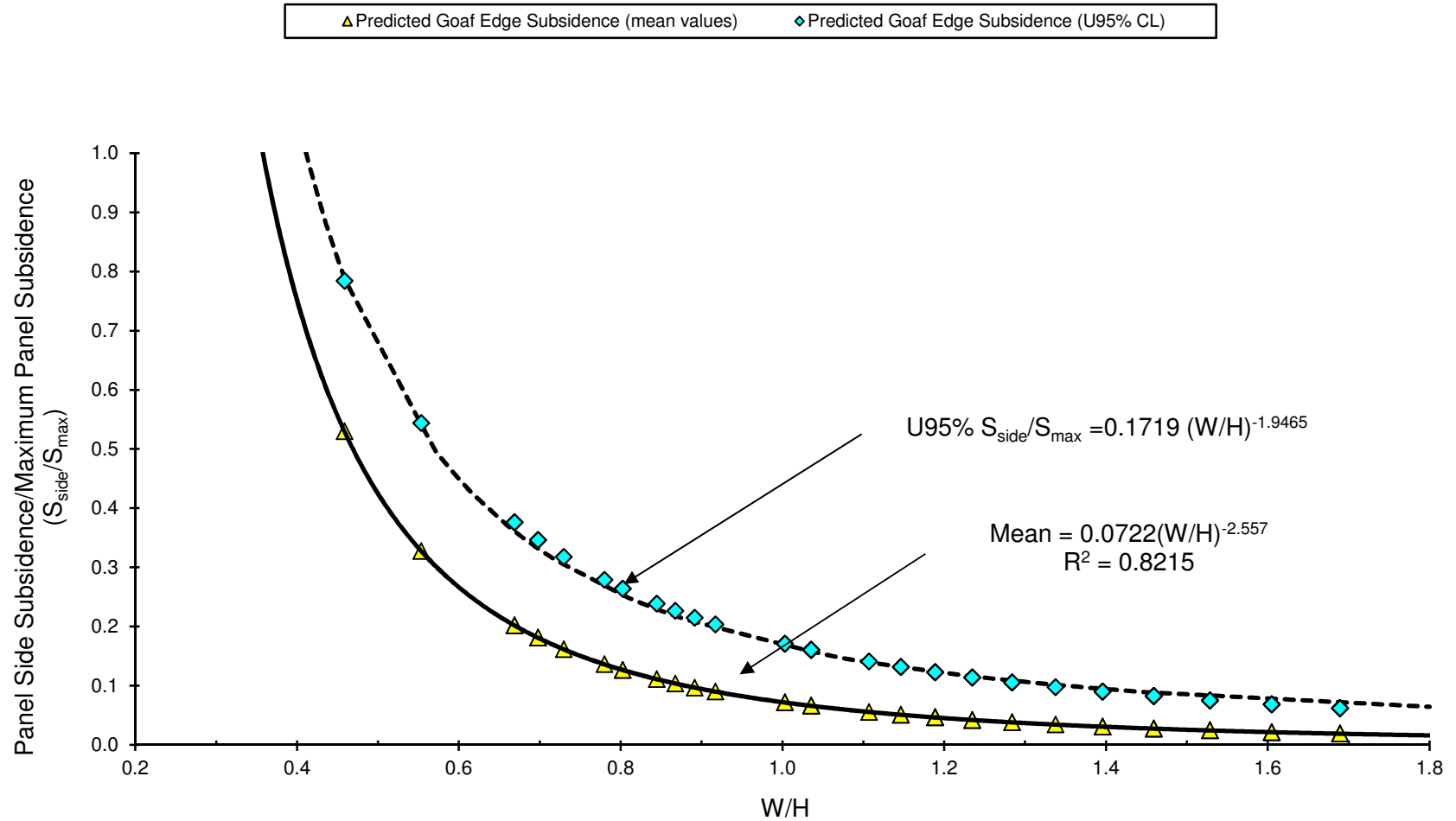
	Engineer:	S.Ditton	Client:	Donaldson Coal - Tasman Extension Project	
	Drawn:	S.Ditton		TAS-005/1	
	Date:	01.12.11	Title:	Predicted Maximum Single Panel Subsidence for Total Extraction Panels in the West Borehole Seam with Cover Depths between 250 m and 350 m	
	Ditton Geotechnical Services Pty Ltd		Scale:	NTS	Figure No:




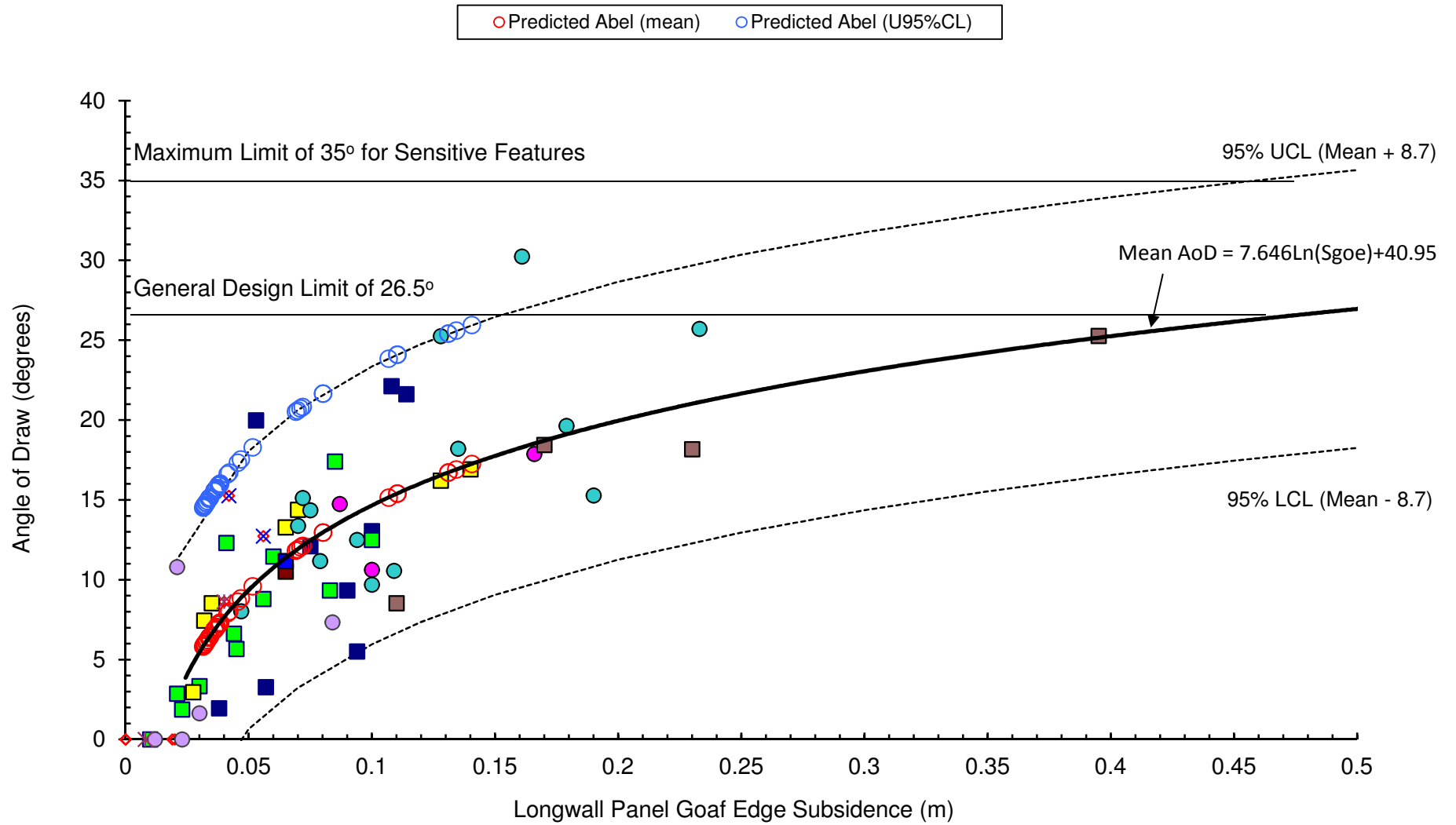
	Engineer:	S.Ditton	Client:	Donaldson Coal - Tasman Extension Project	
	Drawn:	S.Ditton		TAS-005/1	
	Date:	01.12.11	Title:	Barrier Pillar Subsidence Prediction Model based on the ACARP, 2003 and the Predicted Outcomes for the Proposed Tasman Extended Mine Layout	
	Ditton Geotechnical Services Pty Ltd		Scale:	NTS	Figure No:




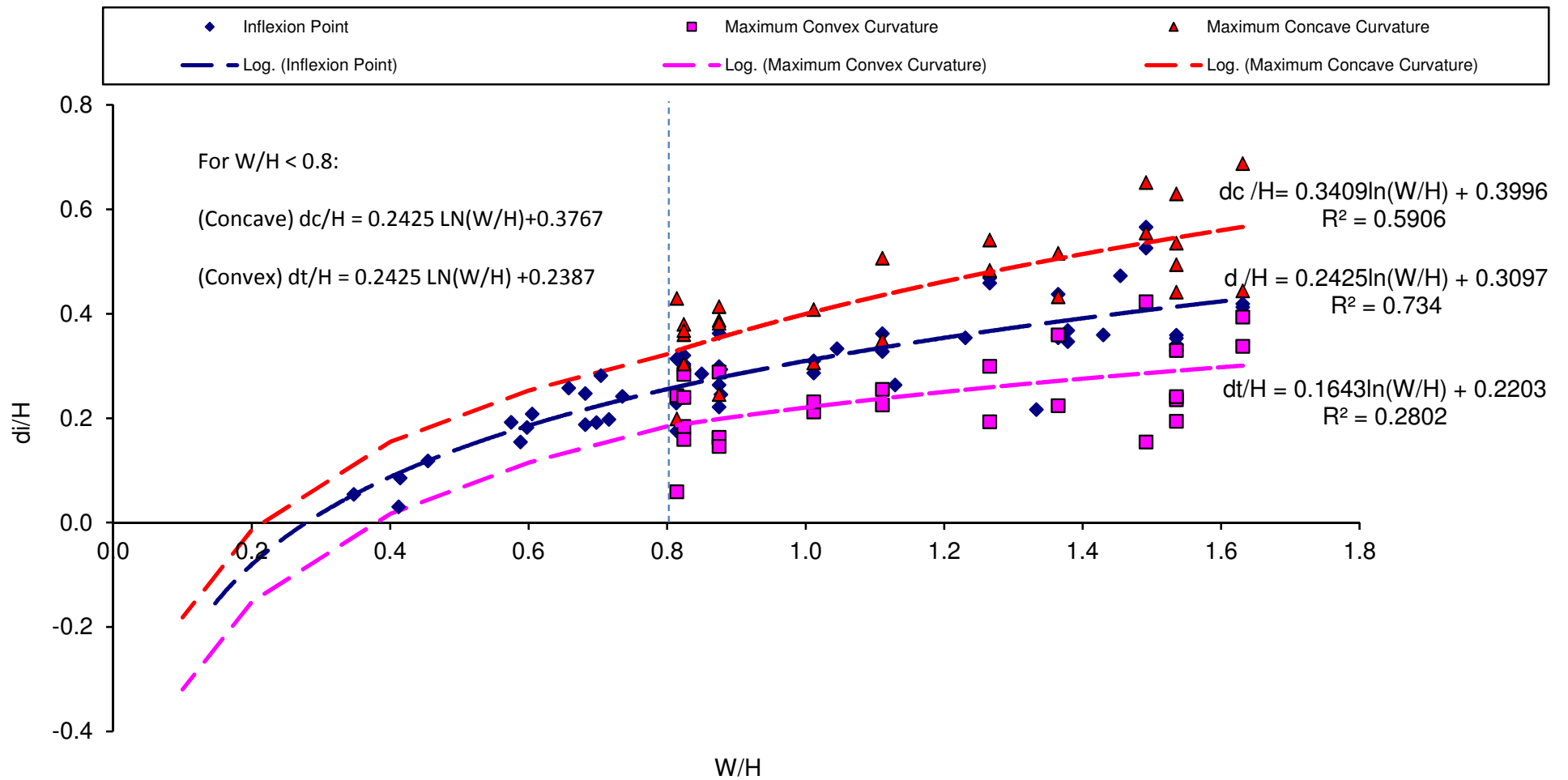
	Engineer:	S.Ditton	Client:	Donaldson Coal - Tasman Extension Project	
	Drawn:	S.Ditton		TAS-005/1	
	Date:	01.12.11	Title:	Barrier Pillar Subsidence/Development Height v. Pillar Stress over Strength Model (derived from the Modified ACARP, 2003) & Outcomes for Tasman Ext. Mine Layout	
	Ditton Geotechnical Services Pty Ltd		Scale:	NTS	Figure No:




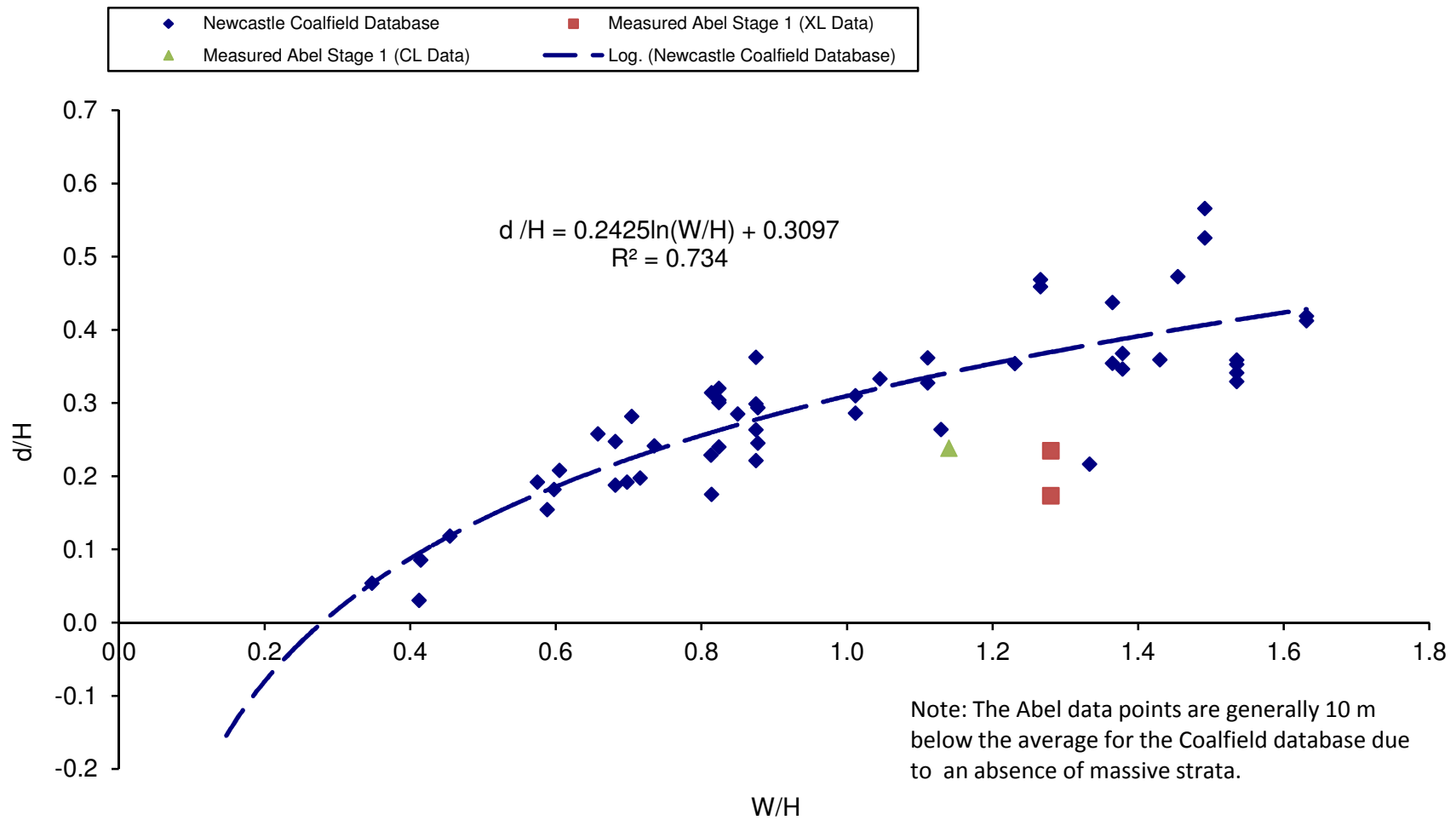
	Engineer:	S.Ditton	Client:	Donaldson Coal - Tasman Extension Project
	Drawn:	S.Ditton		TAS-005/1
	Date:	1.11.11	Title:	Empirical Model for Goaf Edge Subsidence Prediction Above Longwall Panels in the Newcastle Coalfield with Predicted Outcomes for the Proposed Tasman Extended Mine
	Ditton Geotechnical Services Pty Ltd		Scale:	NTS
				Figure No: 25




	Engineer:	S.Ditton	Client:	Donaldson Coal - Tasman Extension Project	
	Drawn:	S.Ditton		TAS-005/1	
	Date:	1.11.11	Title:	Empirical Model for Predicting the Angle of Draw from Longwall Panel Limits in the Newcastle Coalfield (ACARP, 2003) and Proposed Tasman Extension Project Outcomes	
	Ditton Geotechnical Services Pty Ltd		Scale:	NTS	Figure No:

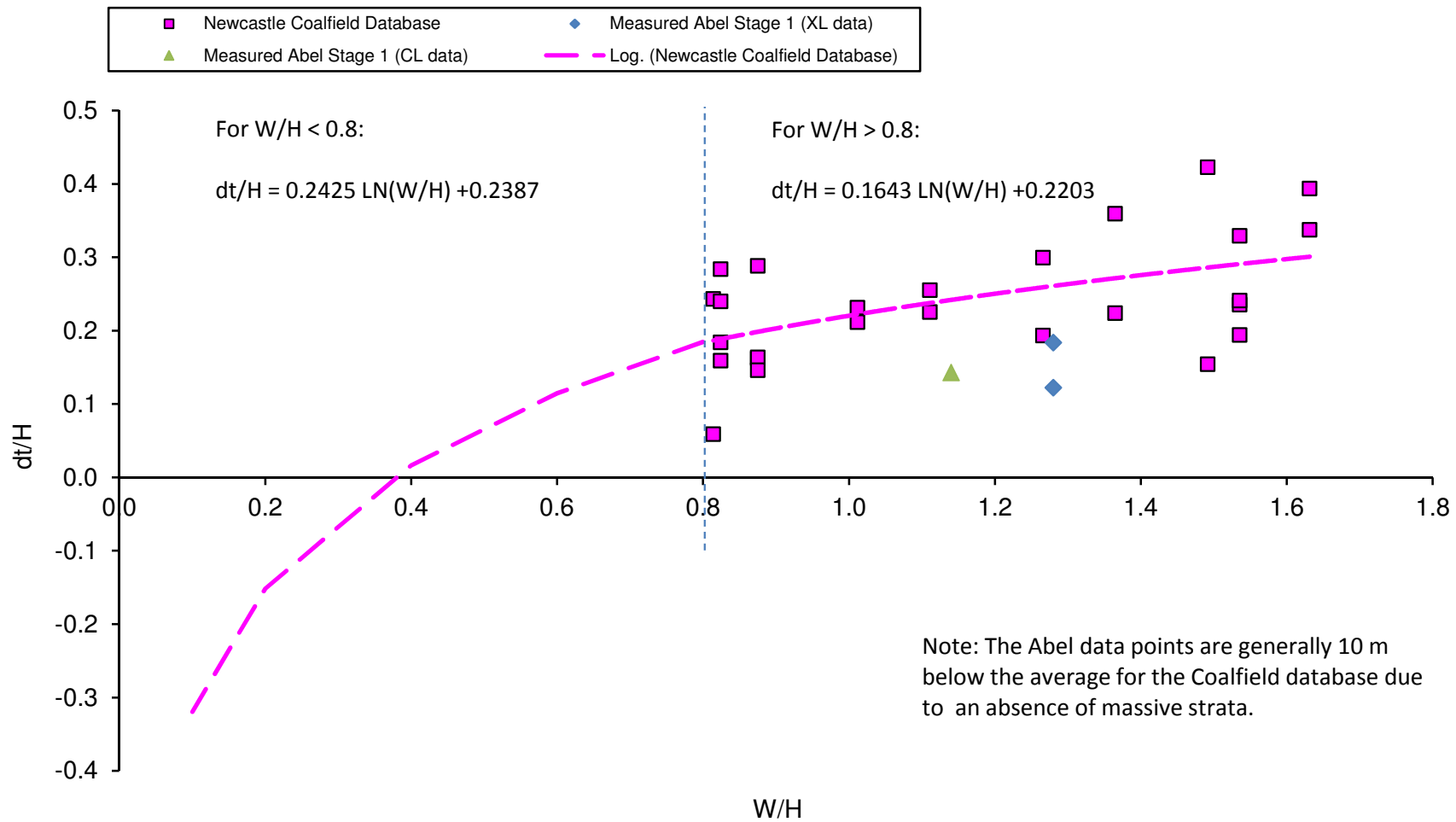



	Engineer:	S.Ditton	Client:	Donaldson Coal - Tasman Extension Project	
	Drawn:	S.Ditton		TAS-005/1	
	Date:	1.11.10	Title:	Empirical Model for Predicting the Location of Inflexion Point, Maximum Tensile and Compressive Strain Peaks due to Longwall Panel Subsidence in the Newcastle Coalfield	
	Ditton Geotechnical Services Pty Ltd		Scale:	NTS	Figure No:

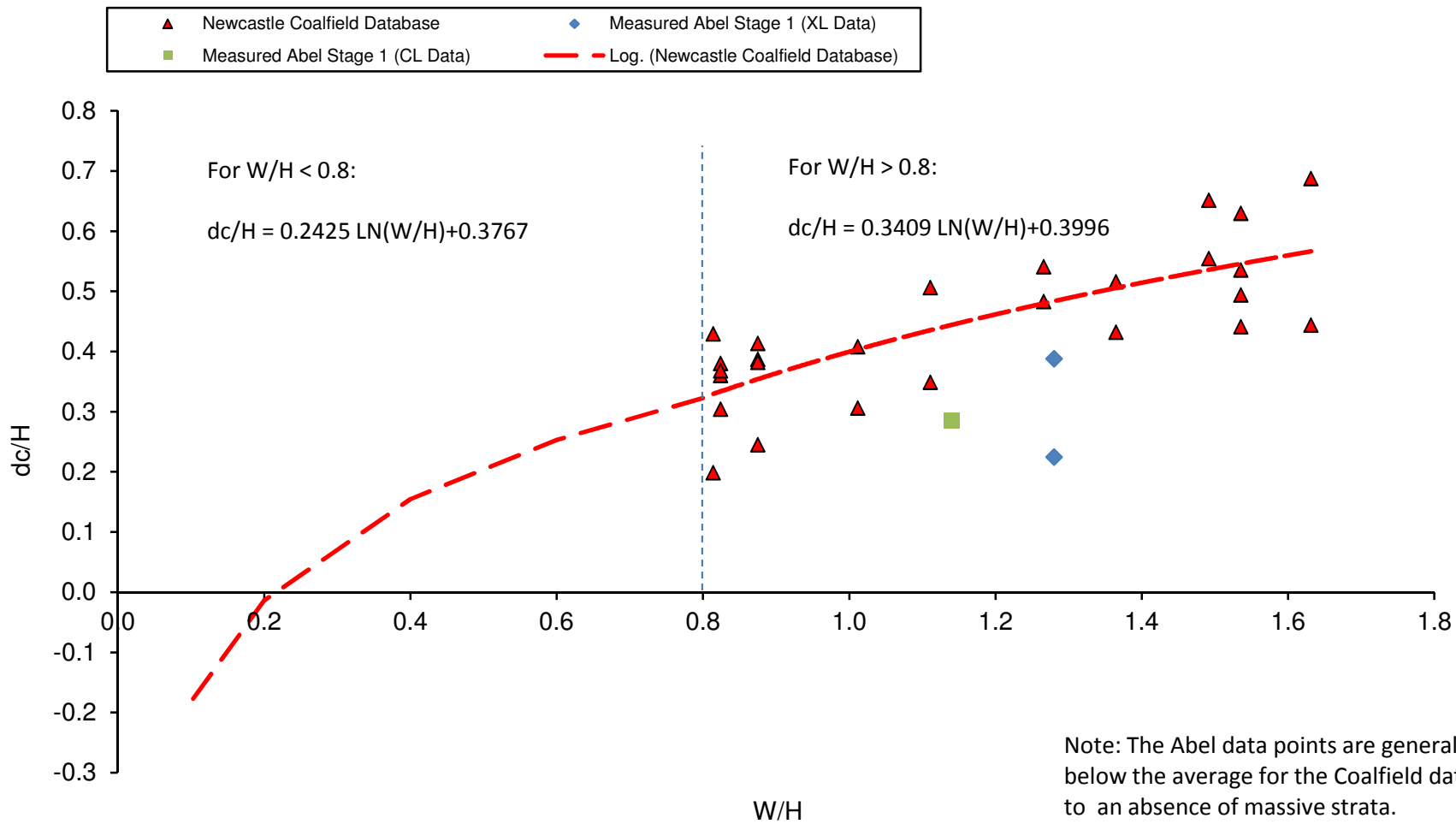



	Engineer:	S.Ditton	Client:	Donaldson Coal - Tasman Extension Project	
	Drawn:	S.Ditton		TAS-005/1	
	Date:	1.11.10	Title:	Empirical Newcastle Database Model for Predicting the Location of Inflexion Point v. Measured Values for Stage 1 Panels at the Abel Mine	
	Ditton Geotechnical Services Pty Ltd		Scale:	NTS	Figure No:

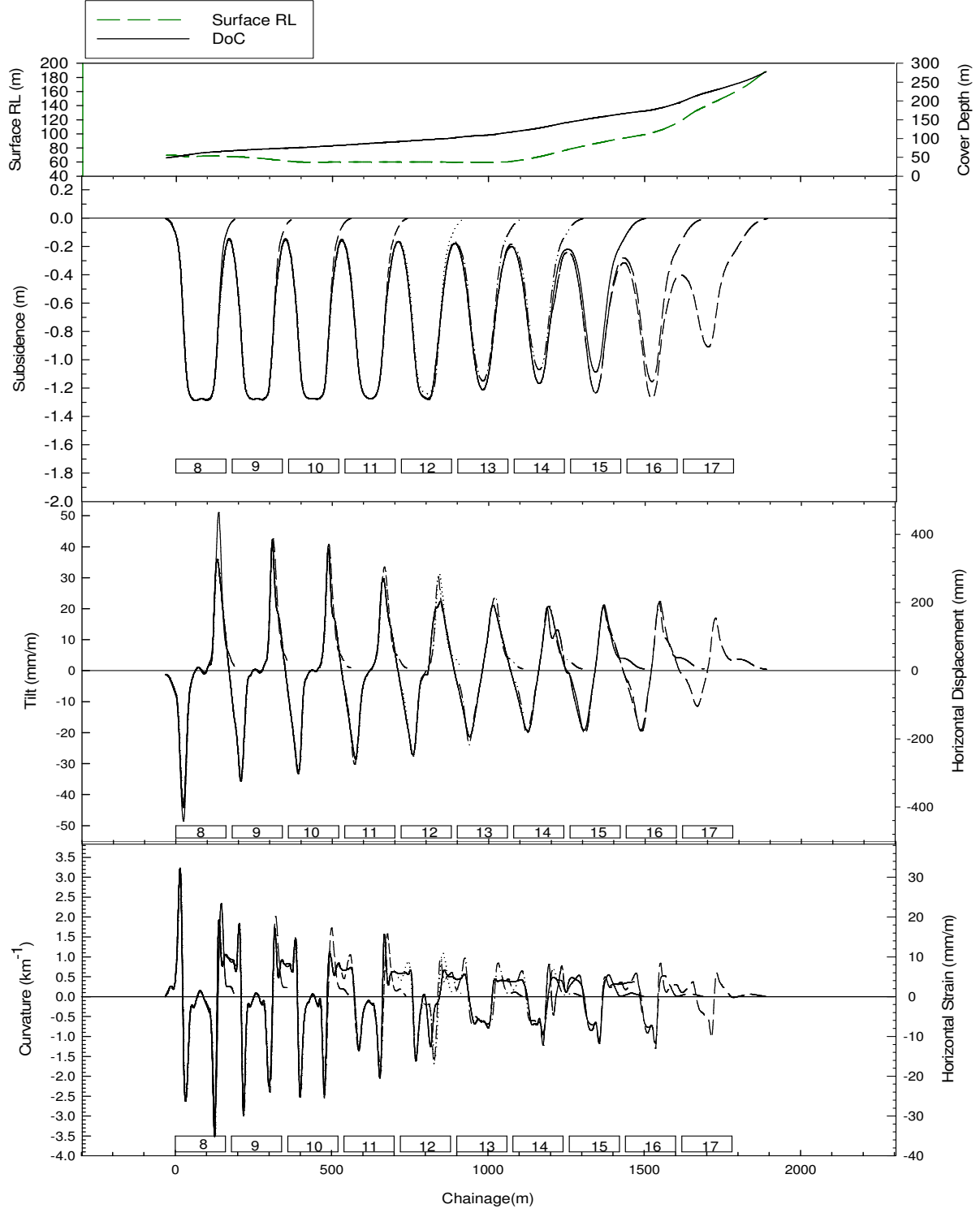




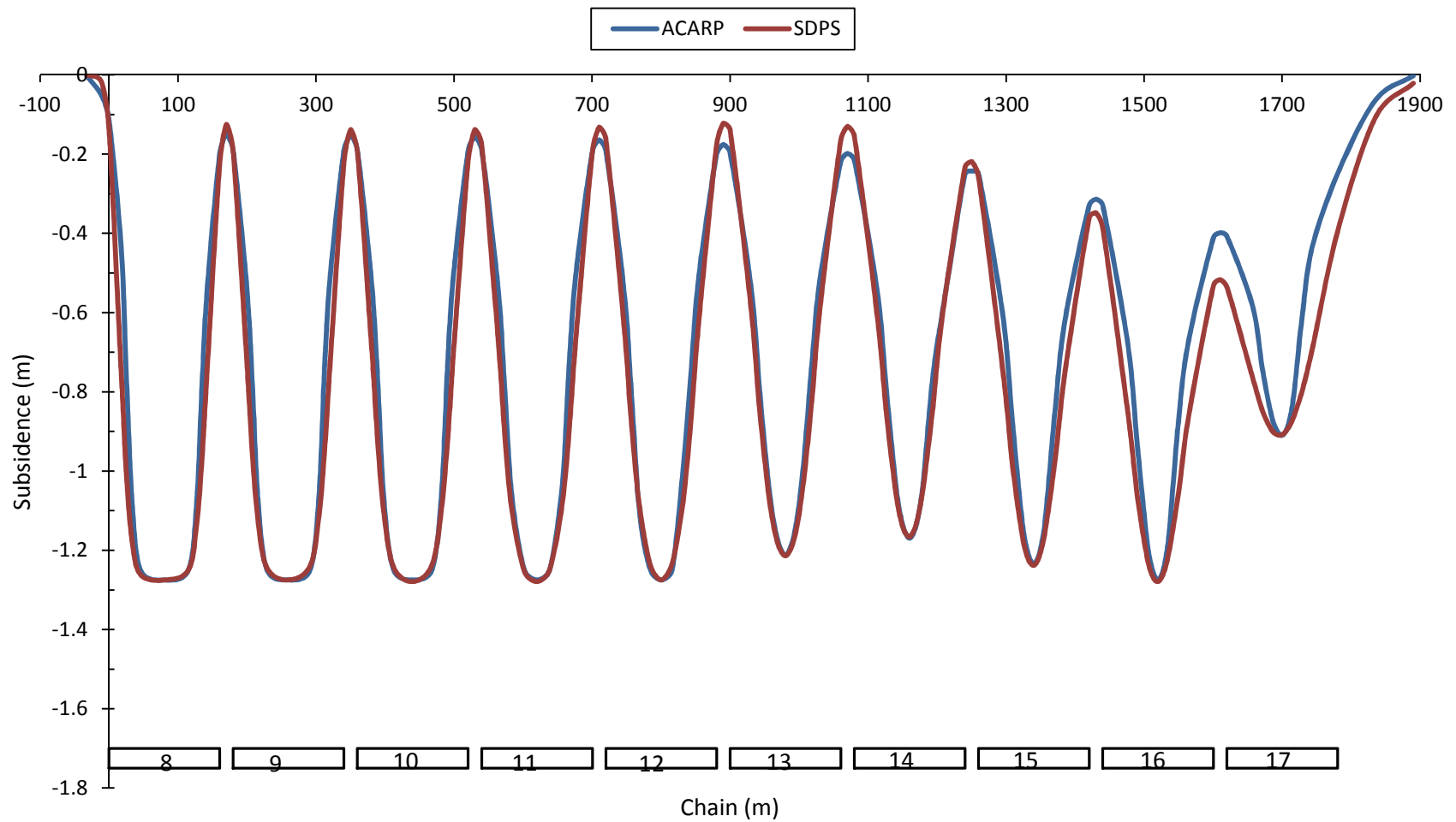
	Engineer:	S.Ditton	Client:	Donaldson Coal - Tasman Extension Project	
	Drawn:	S.Ditton		TAS-005/1	
	Date:	1.11.10	Title:	Empirical Newcastle Coalfield Database Model for Predicting the Location of Tensile Strain Peaks v. Measured Values for Stage 1 Panels at the Abel Mine	
	Ditton Geotechnical Services Pty Ltd		Scale:	NTS	Figure No:




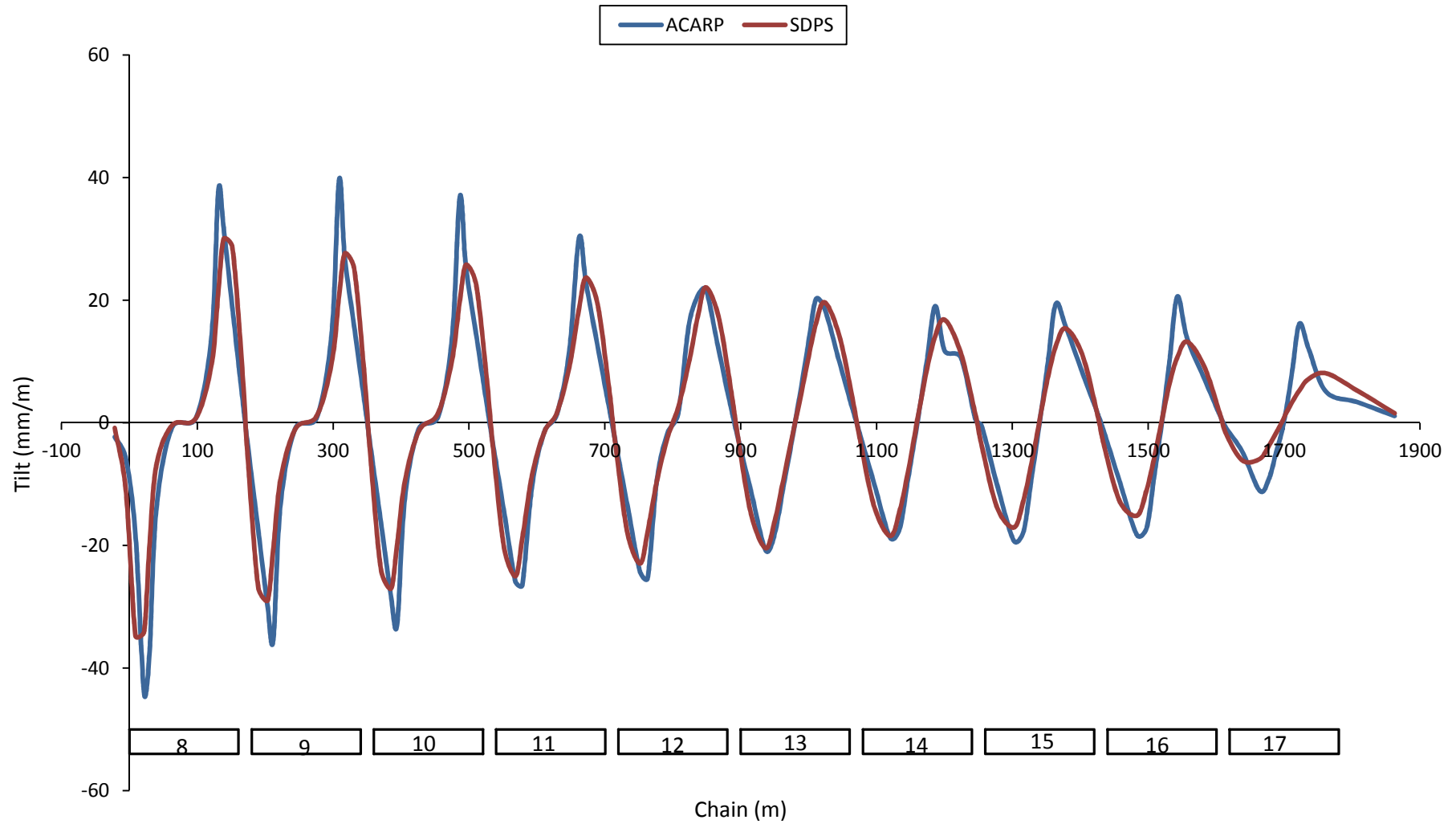
	Engineer:	S.Ditton	Client:	Donaldson Coal - Tasman Extension Project	
	Drawn:	S.Ditton		TAS-005/1	
	Date:	1.11.10	Title:	Empirical Newcastle Coalfield Model for Predicting the Location of Compressive Strain Peaks v. Measured Values for Stage 1 Panels at the Abel Mine	
	Ditton Geotechnical Services Pty Ltd		Scale:	NTS	Figure No:




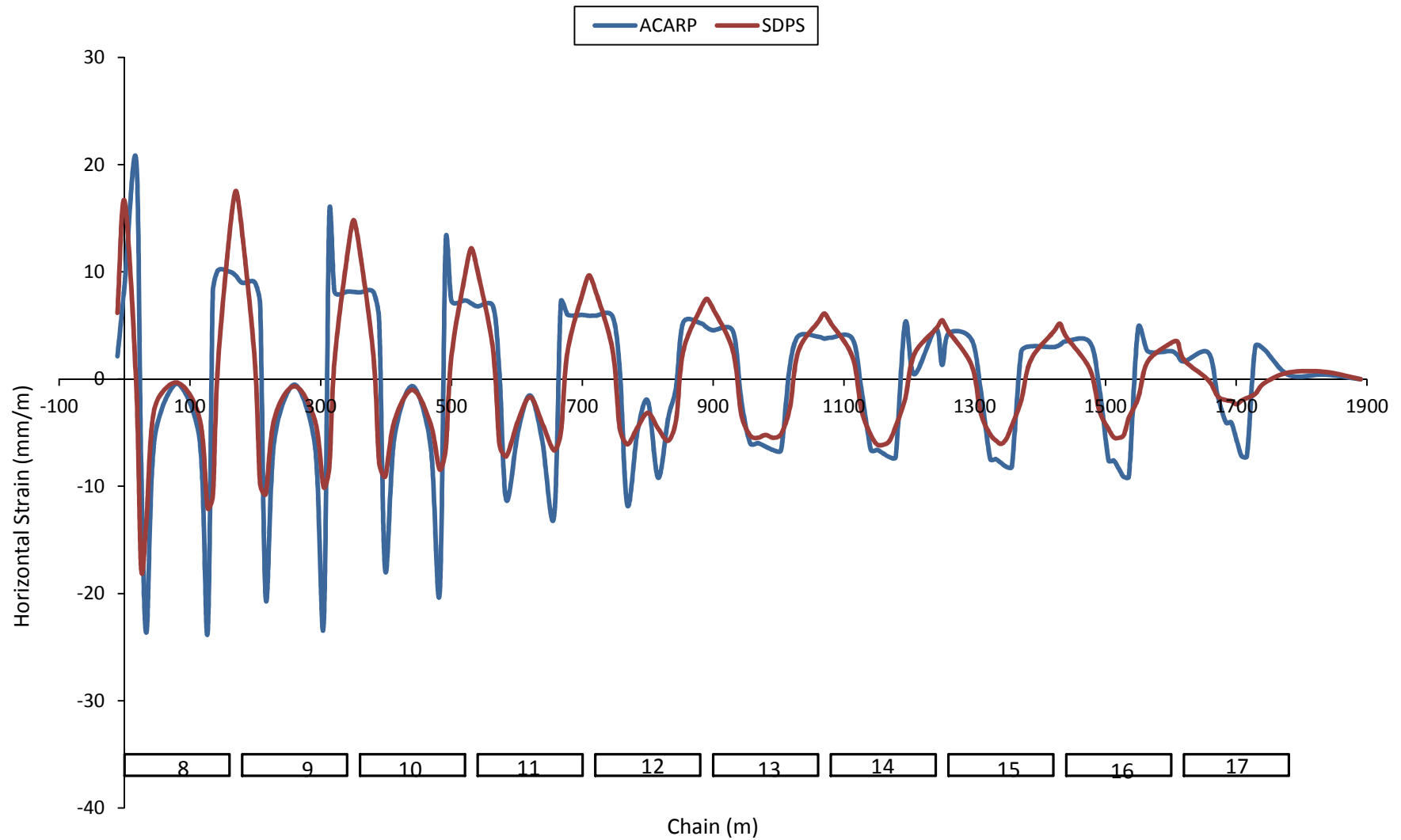
Engineer:	S.Ditton	Client:	Donaldson Coal - Tasman Extension Project
Drawn:	S.Ditton		TAS-005/1
Date:	01.12.11	Title:	Predicted U95%CL Subsidence Effect Profiles Along XL12 without Subsidence Control Zones
Ditton Geotechnical Services Pty Ltd		Scale:	NTS
			Figure No: 28




	Engineer:	S.Ditton	Client:	Donaldson Coal - Tasman Extension Project	
	Drawn:	S.Ditton		TAS-005/1	
	Date:	14.03.11	Title:	Calibrated SDPS Model to ACARP, 2003 Model's U95%CL Subsidence Profile along XL12	
	Ditton Geotechnical Services Pty Ltd		Scale:	NTS	Figure No:



	Engineer:	S.Ditton	Client:	Donaldson Coal - Tasman Extension Project	
	Drawn:	S.Ditton		TAS-005/1	
	Date:	14.03.11	Title:	Calibrated SDPS Model to ACARP, 2003 Model's Tilt Profile along XL12	
	Ditton Geotechnical Services Pty Ltd		Scale:	NTS	Figure No:



	Engineer:	S.Ditton	Client:	Donaldson Coal - Tasman Extension Project	
	Drawn:	S.Ditton		TAS-005/1	
	Date:	14.03.11	Title:	Calibrated SDPS Model to ACARP, 2003 Model's Horizontal Strain Profile along XL12	
	Ditton Geotechnical Services Pty Ltd		Scale:	NTS	Figure No: