



Mount Thorley Operations 2014

2

Response to Submissions

Prepared for Mt Thorley Operations Pty Limited | November 2014

VOLUME 2 — Appendices



Appendices A to I

Appendix A	Summary of submissions
Appendix B	Supplementary air quality information for EPA
Appendix C	Social impacts and opportunities from the proposal - perceived and technical studies
Appendix D	Extract from Stubbs affidavit
Appendix E	Response to Albrecht review (Appendix 4 of BMPA submission)
Appendix F	Response to The Australia Institute submission (Appendix 5 of BMPA submission)
Appendix G	Response to the Day Design review (Appendix 3 of BMPA submission)
Appendix H	Social impact assessment interview guide
Appendix I	Revised Statement of Commitments

Appendix A

Summary of submissions



Appendix A — Summary of submissions

A

Table 1 - Location of submissions of support

Respondent type (see note)	No.	Name	Location																										Form Letter?							
			Singleton LGA (Bulga)	Singleton LGA (Broke)	Singleton LGA (Jerrys Plains)	Singleton LGA (Singleton)	Maitland LGA	Marrickville LGA	Cessnock LGA	Muswellbrook LGA	Upper Hunter Shire LGA	Newcastle LGA	Great Lakes LGA	Gosford LGA	Wyong LGA	Lake Macquarie LGA	Uralla Shire LGA	Sydney Metropolitan Area	Ryde LGA	Wollongong LGA	Glenn Innes LGA	Dungog LGA	Walgett LGA	Port Stephens LGA	Lithgow LGA	Warrumbungle Shire LGA	Hawkesbury LGA	Bathurst Regional LGA		Shoalhaven LGA	QLD	VIC	WA	Overseas	Not provided	
I	1	1							.																											
I	2	11													.																					
I	3	12							.																											.
I	4	13							.																											.
I	5	14						.																												
I	6	15						.																												
I	7	16							.																											
I	8	17						.																												
I	9	18						.																												
I	10	19				.																														
I	11	20							.																											
I	12	21				.																														
I	13	22					.																													
I	14	23				.																														
I	15	24							.																											
I	16	25					.																													
I	17	26									.																									
I	18	27															.																			
I	19	28					.																													
I	20	29				.																														
I	21	30															.																			
I	22	31							.																											
I	23	32					.																													
I	24	33						.																												
I	25	34													.																					
I	26	35					.																													
I	27	36												.																						
I	28	37					.																													
I	29	38															.																			
I	30	39															.												.							
I	31	40															.																			
I	32	41				.																														
I	33	42				.																														

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Respondent type (see note)	No.	Name	Location																											Form Letter?				
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I	36	45									*																							
I	37	46				*																												
I	38	47												*																				
I	39	48				*																												
I	40	49				*																												
I	41	50							*																									
I	42	51						*																										
I	43	52							*																					*				
I	44	53																											*					
I	45	Wayne Rooney					*																						*					
I	46	Gerard Gleeson							*																									
I	47	Vanessa TOUGH				*																												
I	48	James Clune					*																											
I	49	Lielah Stevenson				*																												
I	50	Geoffrey Stevenson			*																													
I	51	Melinda Gardiner				*																												
I	52	bayden gardiner				*																												
I	53	Michael Carr						*																										
I	54	wayne rowson				*																												
I	55	barry gore						*																										
I	56	Matthew Dodd					*																											
I	57	tim standen				*																												
I	58	tracey perrin						*																										
I	59	michael perrin						*																										
I	60	Glenn Finch									*																							
I	61	Mark Nolan				*																												
I	62	Michael Priestly																											*					
I	63	Michael Lloyd				*																							*					
I	64	Daniel Macdonald					*																											
I	65	Aleesha Oliphant																											*					
I	66	Nicholas Oliphant																											*					
I	67	Vicki Taylor					*																											
I	68	daniel wall					*																											
I	69	gracie clements																*																
I	70	Mark Mulholland				*															*													

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I	71	Cody Boan				•																													
I	72	Mark Davis															•																		
I	73	Matthew Frew				•																													
I	74	Renea Coolahan													•																				
I	75	Floyd Nikora				•																													
I	76	tony jovcevski													•																				
I	77	Paul Williamson									•																								
I	78	danny heo					•																												
I	79	simon oakes																					•												
I	80	grant east				•																													
I	81	Leah East				•																													
I	82	Marilyn McGrady				•																													
I	83	Damon Buckmaster													•																				
I	84	Tony Bartlett				•																													
I	85	rodney teasdale					•																												
I	86	Joanne Riley							•																										
I	87	grant teasdale					•																												
I	88	Dearne Larsen/Weekes							•																										
I	89	Daniel Solomon				•																													
I	90	Christopher New				•																													
I	91	John Tanner					•																												
I	92	Sarah Speechly				•																													
I	93	Rachael Davies				•																													
I	94	Peter Lockwood				•																													
I	95	Gregory Bright							•																										
I	96	Robert Bush				•																													
I	97	Aaron Ramien									•																								
I	98	linda angel															•																		
I	99	jamie christopherson							•																										
I	100	Karen Little				•																													
I	101	Neil Bridge							•																										
I	102	Kirstie Ling				•																													
I	103	Aaron Cox								•																									
I	104	Drue Richardson							•																										
I	105	Dean Sefton																													•				

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I	106	David Brown				•																														
I	107	Nick Birch																																		
I	108	kane jennings					•																													
I	109	phillip clements																			•															
I	110	Scott Stageman									•																									
I	111	james goodwin					•																													
I	112	Andrew Speechly				•																														
I	113	Julie Gardiner				•																														
I	114	Tracey de Graaf				•																														
I	115	Richard Borham					•																													
I	116	Mark Milburn				•																														
I	117	Trevor corey									•																									
I	118	Trevor corey									•																									
I	119	joshua palmer					•																													
I	120	Daniel Jury									•																									
I	121	Aaron Speering					•																													
I	122	Shannen Black					•																													
I	123	Reginald Gardiner				•																														
I	124	Gregory Black					•																													
I	125	tony sowter					•																													
I	126	clive Robb									•																									
I	127	michael sowter					•																													
I	128	Joshua Kane					•																													
I	129	John Walsh				•																														
I	130	Derek Crameri					•																													
I	131	Anna Mills					•																													
I	132	luke hughes									•																									
I	133	Nathan Hill				•																														
I	134	Matthew Hing				•																														
I	135	Neville Gear				•																														
I	136	Luke Holley																•																		
I	137	Mark Molan									•																									
I	138	Marty Corrigan				•																														
I	139	Chad Reti				•																														
I	140	jason burley				•																														

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I	141	Alan Alderson							•																										
I	142	Tony Martin					•																												
I	143	Simon Marshall							•																										
I	144	Daniel Burns							•																										
I	145	Amy Shiells							•																										
I	146	Ben Graham					•																												
I	147	rick winfield								•																									
I	148	Bruce Blyton					•																												
I	149	Tim McEniry				•																													
I	150	Rodney Moss									•																								
I	151	scott sadaj							•																										
I	152	Micheal Budynek							•																										
I	153	Rohan Kiernan				•																													
I	154	Jay Fullick					•																												
I	155	Brendan Armstrong							•																										
I	156	mick williams					•																												
I	157	Luke Halliday				•																													
I	158	phillip clements													•																				
I	159	Rich Mahony												•																					
I	160	Darren Barrett							•																										
I	161	adam sutherland							•																										
I	162	lee woodward					•																												
I	163	Jessica Foster									•																								
I	164	phillip clements																			•														
I	165	Jack Potter									•																								
I	166	Brian Parkinson												•																					
I	167	Kelly Adamthwaite				•																													
I	168	Jemma Callaghan									•																								
I	169	Glenn Meyn				•																													
I	170	Richard Lawrence					•																												
I	171	mark taylor									•																								
I	172	Brendon James							•																										
I	173	Matthew Kavanagh									•																								
I	174	Paul Vella							•																										
I	175	Edgar Thomas							•																										

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I	211	Richard Lawrence					•																												
I	212	Awie Fourie					•																												
I	213	Elyssa Nichols					•																												
I	214	Graeme Sowter								•																									
I	215	rory wilson				•																													
I	216	darren colreavy													•																				
I	217	Daniel McNamara									•																								
I	218	Neil Dein								•																									
I	219	jaimie boyce					•																												
I	220	Corrie Brooking								•																									
I	221	adrian heinzel								•																									
I	222	David Spruce					•																												
I	223	jason brind					•																												
I	224	SIMON Thomas								•																									
I	225	Todd Barry				•																													
I	226	Charlie Kersley				•																													
I	227	Travis Coote					•																												
I	228	Larry Weathered								•																									
I	229	leonard slater				•																													
I	230	Craig Flaws				•																													
I	231	kyle macey					•																												
I	232	Adam Schneeweiss													•																				
I	233	trisha gardiner				•																													
I	234	luke hahn					•																												
I	235	Jason Brooker																					•												
I	236	Scott McAllister					•																												
I	237	Anna Farrell								•																									
I	238	jay welch				•																													
I	239	Mick Bass								•																									
I	240	James Murphy					•																												
I	241	Christopher Lawrence																						•											
I	242	Stephen Wilton								•																									
I	243	joshua pattison								•																									
I	244	Claudia Bonny																													•				
I	245	Kerry Manning					•																												

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I	246	Luke Manning					*																												
I	247	Craig Corliss					*																												
I	248	Matt Kenny					*																												
I	249	Morgan Costello						*																											
I	250	Zara Boyce					*																												
I	251	Kirstin Macmillan					*																												
I	252	3											*																						
I	253	6					*																												
I	254	10		*																															
I	255	11			*																														
I	256	13			*																														
I	257	14										*																							
I	258	15					*																												
I	259	16					*																												
I	260	17										*																							
I	261	22																														*			
I	262	25													*																		*		
I	263	32					*																												
I	264	33										*																							
I	265	34													*																				
I	266	35					*																												
I	267	36						*																											
I	268	37										*																							
I	269	43						*																											
I	270	46					*																												
I	271	47					*																												
I	272	49					*																												
I	273	50					*																												
I	274	53																															*		
I	275	56										*																							
I	276	59										*																							
I	277	61					*																												
I	278	63					*																												
I	279	64						*																											
I	280	65						*																											

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I	316	122																																		
I	317	124																																		
I	318	126																																		
I	319	127																																		
I	320	James Clune																																		
I	321	Aaron Morris																																		
I	322	Adrian Boyd																																		
I	323	Amanda Dibben																																		
I	324	amanda rivers																																		
I	325	Amber Brace																																		
I	326	Amy Buck																																		
I	327	Andrew Richardson																																		
I	328	Andrew Alcorn																																		
I	329	Andrew Clive																																		
I	330	Andrew Galvin																																		
I	331	Andrew Howard																																		
I	332	Andrew Main																																		
I	333	andrew white																																		
I	334	ange mccormack																																		
I	335	Anthony Goatcher																																		
I	336	Anthony Neill																																		
I	337	Anthony Stuart																																		
I	338	Barry Gray																																		
I	339	Bayerinaa Nmanii																																		
I	340	Brad Austin																																		
I	341	Brenda Walters																																		
I	342	Brendan Armstrong																																		
I	343	Brendon howard																																		
I	344	Brian Parkinson																																		
I	345	Caleb Kelly																																		
I	346	Cameron Fancett																																		
I	347	Candice Carroll																																		
I	348	Candice Pike																																		
I	349	Carolyn Scalabrin																																		
I	350	Cecilie Naess																																		

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I	351	Cheryle Duff							•																											
I	352	Chris New				•																														
I	353	chris walker							•																											
I	354	Corey Clifton				•																														
I	355	Dale Coutts									•																									
I	356	DALE RAMAGE									•																									
I	357	Daniel Brooker							•																											•
I	358	Daniel Parnell				•																														
I	359	Danielle McGuinness					•																													
I	360	Danielle Tarry				•																														
I	361	Darryl stedman																					•													
I	362	David Bennett				•																														
I	363	David Bohatko							•																											
I	364	David Cook					•																													
I	365	dean aulsebrook					•																													
I	366	Dean Campbell							•																											
I	367	Debbie Rolfe				•																														
I	368	Drew KELVIN							•																											
I	369	Dylan Matheson					•																													
I	370	Elyssa Nichols					•																													
I	371	Ernest Martin				•																														
I	372	Fionna Mountain					•																													
I	373	Glen Burns					•																													
I	374	Glen Molloy				•																														
I	375	Glen Pitt				•																														
I	376	glenn harris					•																													
I	377	Graham Goodwin				•																														
I	378	Grant Hawkins					•																													
I	379	Greg Fean					•																													
I	380	Guy Hall					•																													
I	381	Harry Hobden								•																										
I	382	Harvey Mason									•																									
I	383	Ian Mansfield														•																				
I	384	Ian Innes				•																														
I	385	Jagdish Shinde																													•					

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I	386	Jake Mitchell					•																													
I	387	James Davison																																		
I	388	Jamie Blewitt		•																																
I	389	Jamie Cruickshanks				•																														
I	390	jamie edmonds									•																									
I	391	Jannie Diep																															•			
I	392	Jeffrey Gumbleton									•																									
I	393	Joel Rosler					•																													
I	394	John Capsanis				•																														
I	395	John Rivers													•																					
I	396	John Najor				•																														
I	397	John Rodden																																•		
I	398	John Spanos						•																												
I	399	Jonathon Walsh									•																									
I	400	Julie Upward				•																														
I	401	Karen Peters				•																														
I	402	Karen Scarfe									•																									
I	403	Karen Walker																																		
I	404	Kelley Boscassi				•																														
I	405	Leanne Whibley																																•		
I	406	Lee Aubin						•																												
I	407	Liz Goodwin				•																														
I	408	Lucas Moke									•																									
I	409	Iuke wouters		•																																
I	410	Luke Horadam									•																									
I	411	Luke Smith				•																														
I	412	Margaret Spinks				•																														
I	413	Mark Bassett				•																														
I	414	Mark Geerssen																																•		
I	415	Mark Vidler				•																														
I	416	matthew pike													•																					
I	417	Megan Gray						•																												
I	418	Megan Price						•																												
I	419	melissa matthews									•																									
I	420	Melissa Venter				•																														

Table 1 - Location of submissions of support

Respondent type (see note)	No.	Name	Location																										Form Letter?																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
			Singleton LGA(Bulga)	Singleton LGA (Broke)	Singleton LGA (Jerrys Plains)	Singleton LGA (Singleton)	Maitland LGA	Marrickville LGA	Cessnock LGA	Muswellbrook LGA	Upper Hunter Shire LGA	Newcastle LGA	Great Lakes LGA	Gosford LGA	Wyong LGA	Lake Macquarie LGA	Uralla Shire LGA	Sydney Metropolitan Area	Ryde LGA	Wollongong LGA	Glenn Innes LGA	Dungog LGA	Walgett LGA	Port Stephens LGA	Lithgow LGA	Warrumbungle Shire LGA	Hawkesbury LGA	Bathurst Regional LGA		Shoalhaven LGA	QLD	VIC	WA	Overseas	Not provided																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
I	421	Mike taylor																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									

Table 1 - Location of submissions of support

[illegible]

Table 1 - Location of submissions of support

Respondent type (see note)	No.	Name	Location																								Form Letter?									
			Singleton LGA(Bulga)	Singleton LGA (Broke)	Singleton LGA (Jerrys Plains)	Singleton LGA (Singleton)	Maitland LGA	Marrickville LGA	Cessnock LGA	Muswellbrook LGA	Upper Hunter Shire LGA	Newcastle LGA	Great Lakes LGA	Gosford LGA	Wyong LGA	Lake Macquarie LGA	Uralla Shire LGA	Sydney Metropolitan Area	Ryde LGA	Wollongong LGA	Glenn Innes LGA	Dungog LGA	Walgett LGA	Port Stephens LGA	Lithgow LGA	Warrumbungle Shire LGA		Hawkesbury LGA	Bathurst Regional LGA	Shoalhaven LGA	QLD	VIC	WA	Overseas	Not provided	
I	491	179					•																													
I	492	186																																		
I	493	188				•																													•	
I	494	191																																		
I	495	193																																		
I	496	194																																		
I	497	195				•																														
I	498	197																																		
I	499	198																																		
I	500	199																																		
I	501	200																																		
I	502	202				•																														
I	503	203					•																													
I	504	205				•																														
I	505	206					•																													
I	506	209																																		
I	507	210				•																														
I	508	Alex cahill							•																											
I	509	darren ingold				•																														
I	510	Gabrielle Bourke				•																														
I	511	Damian O'Shea				•																														
I	512	Stuart Robinson																				•														
I	513	Vicki Taylor					•																													
I	514	Adam Dever					•																													
I	515	simon merrick				•																														
I	516	Awie Fourie					•																													
I	517	Barbara Kostava											•																							
I	518	Chris Giles				•																														
I	519	Chris Golledge													•																					•
I	520	Craig Garlick							•																											
I	521	Daniel Halsey				•																														
I	522	Daniel Kostava				•																														
I	523	Darren Drury				•																														
I	524	Glenn Munro				•																														
I	525	Jasmine Rai												•																						

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I	526	jonathan wright					•																													
I	527	Kurt Rieck								•																										
I	528	Leanne Milburn				•																														
I	529	Leo Kostava											•																							
I	530	Matilda Quist				•																														
I	531	Melissa Buller								•																										
I	532	Michael Anlezark								•																										
I	533	Mick Dunn				•																														
I	534	MIKE KELLY								•																										
I	535	Mohammad Zabed Anwar											•																							
I	536	Richard Francis																																		
I	537	Rodney Napper														•																				•
I	538	Shelley Jensen					•																													
I	539	Simon Coleman				•																														
I	540	Tamman Sahu-Khan														•																				
I	541	Trent Goddard								•																										
I	542	clinton windle								•																										
I	543	Janelle Sargent				•																														
I	544	Jason Brooker																					•													
I	545	John Cameron					•																													
I	546	Karen Walker																	•																	
I	547	Melissa Upward					•																													
I	548	Michael Sargent					•																													
I	549	Peta Hunter								•																										
I	550	Scott Dunn				•																														
I	551	Simon Bodensteiner				•																														
I	552	Brett Bondfield				•																														
I	553	Emily Gregory					•																													
I	554	Gary Ferguson					•																													
I	555	Justin Garrett				•																														
I	556	leonard slater				•																														
I	557	Mathew Hedges					•																													
I	558	Mick Belcher					•																													
I	559	Montina Bettinsoli							•																											
I	560	Allaster Duff					•																													

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Respondent type (see note)	No.	Name	Location																									Form Letter?								
			Singleton LGA(Bulga)	Singleton LGA (Broke)	Singleton LGA (Jerrys Plains)	Singleton LGA (Singleton)	Maitland LGA	Marrickville LGA	Cessnock LGA	Muswellbrook LGA	Upper Hunter Shire LGA	Newcastle LGA	Great Lakes LGA	Gosford LGA	Wyong LGA	Lake Macquarie LGA	Uralla Shire LGA	Sydney Metropolitan Area	Ryde LGA	Wollongong LGA	Glenn Innes LGA	Dungog LGA	Walgett LGA	Port Stephens LGA	Lithgow LGA	Warrumbungle Shire LGA	Hawkesbury LGA		Bathurst Regional LGA	Shoalhaven LGA	QLD	VIC	WA	Overseas	Not provided	
I	561	Anthony Bennett					•																													
I	562	Barry Sonter					•																													
I	563	Brendan O'Brien					•																													
I	564	cameron vickers					•																													
I	565	Carly Peterson						•																												
I	566	Chris Collier					•																													
I	567	Denise Thomson					•																													
I	568	Geoff Jones									•																									
I	569	greg collison										•																								
I	570	kate sadaj						•																												
I	571	Mick Brooks					•																													
I	572	Mick Brown																															•			
I	573	Neil Peterson						•																												
I	574	Peter Sadaj						•																												
I	575	Peter Thompson									•																									
I	576	Rod Tait					•																													
I	577	Ryan Thomson																																	•	
I	578	Ryan Howells									•																									
I	579	Stuart Inglis						•																												
I	580	Tim Skinner						•																												
I	581	Will McGuinness						•																												
I	582	Aaron Hantler																																	•	
I	583	adam Hulbert										•																								
I	584	Andrew Walshe						•																												
I	585	Christopher Power																																	•	
I	586	James Black																																•		
I	587	Katherine McInnes									•																									
I	588	Neil Jacobs					•																													
I	589	Ritesh Kumar Tyagi																																•		
I	590	Timothy Smith						•																												
I	591	Aleena Paulsen																		•																
I	592	Anna Farrell									•																									
I	593	Craig Robinson																																		
I	594	Eddie Moa-Faalua									•																									
I	595	Shane Clakre									•																									

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I	596	Adrian Edwards																											•							
I	597	Angela Kent																												•						
I	598	Claudia Bonny																												•						
I	599	Darrell Joyce																												•						
I	600	Ikhsan Fachruddin																												•						
I	601	Joel Pappalardo			•																															
I	602	Kerry Grundy			•																															
I	603	Nathan Keen				•																														
I	604	Paddy O'Sullivan				•																														
I	605	Scott Ellis					•																													
I	606	Stefanie Nutt									•																									
I	607	Stephen Clapham									•																									•
I	608	Tim Dunn				•																														
I	609	William McEwan																															•			
I	610	Gavin White				•																														
I	611	David Rabe				•																														
I	612	Phillipa Marshll									•																									
I	613	Andrew Ernst					•																													
I	614	Martin Phillips			•																															
I	615	Troy Dubbelde									•																									
I	616	Deanna Shaw				•																														
I	617	Daniel Coleman																													•					
I	618	Cooper Brown				•																														
I	619	Craig McCamley																														•				
I	620	ariki moanaroa														•																				
I	621	Chris Wand														•																				
I	622	kylie Mackay																														•				
I	623	Marc Hum					•																													
I	624	Aaron Wright																														•				
I	625	Phil Ayre																														•				
I	626	Anna Googe									•																									
I	627	jason brind					•																													
I	628	damon russell				•																														
I	629	Todd Barry				•																														
I	630	luke hahn					•																													

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I	631	kyle macey					•																												
I	632	trisha gardiner				•																													
I	633	Scott McAllister					•																												
I	634	James Murphy					•																												
I	635	PAUL MILLS				•																													
I	636	joshua pattison							•																										
I	637	Andrew Bailey																			•														
I	638	Debra Neuss				•																													
I	639	John Noyes							•																										
I	640	Todd Geddes				•																													
I	641	bhargav pavuluri				•																													
I	642	Robert Bampton				•																													
I	643	jonythan mapstone							•																										
I	644	tim burlinson				•																													
I	645	michael williams									•																								
I	646	michael williams									•																								
I	647	Shawn Burley				•																													
I	648	David Wadsworth				•																													
I	649	Alex cahill							•																										
I	650	Ryan Donnan							•																										
I	651	Amanda Murphy					•																												
I	652	Eric Bayley					•																												
I	653	darren drayton							•																										
I	654	john bayley								•																									
I	655	Brian Hogan													•																				
I	656	darrell mcintyre																					•												
I	657	Cameron Carmody							•																										
I	658	Chris McNamara							•																										
I	659	Eden Matiaha							•																										
I	660	Anna Slater							•																										
I	661	Ray Kennedy							•																										
I	662	andrew seers							•																										
I	663	Stuart Chapman				•																													
I	664	Richard Lawrence					•																												
I	665	Tai Dennis					•																												

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I	666	Matthew Turnbull							•																										
I	667	Jeremy Duncan					•																												
I	668	Ian Bullivant								•																									
I	669	Vicki Craft							•																										
I	670	Nicholas Robertson							•																										
I	671	Belinda Trotter				•																													
I	672	ben ingram								•																									
I	673	Chris Rundell								•																									
I	674	kristina walker					•																												
I	675	Robert Matthews																					•												
I	676	nichole young	•																																
I	677	Les Crebert							•																										
I	678	Graeme Sowter								•																									
I	679	Caitlin Armstrong														•	•																		
I	680	darren colreavy													•																				
I	681	Corrie Brooking							•																										
I	682	Carly Peterson					•																												
I	683	Jackson Roe							•																										
I	684	Gavin Townley							•																										
I	685	kate garland					•																												
I	686	Ashlie Murphy					•																												
I	687	Jemma Callaghan									•																								
I	688	Mick Puslednik					•																												
I	689	Matthew Kavanagh													•																				
I	690	Paul Vella							•																										
I	691	Scott Baird							•																										
I	692	Craig Sheedy					•																												
I	693	Grant Wunderwald					•																												
I	694	Victoria Nyman							•																										
I	695	Dan Hill				•																													
I	696	Andrew Hallam					•																												
I	697	Mark Cooper																					•												
I	698	Andrew Drinkwater					•																												
I	699	Darren Haig				•																													
I	700	Adrian Cody							•																										

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I	701	Jesse Graham				•																													
I	702	Leanne Worcester							•																										
I	703	Dennis Roff				•																													
I	704	brad harrison							•																										
I	705	Les Kiss						•																											
I	706	Darren Thow						•																											
I	707	Matthew Blanch						•																											
I	708	Jay Huxtable							•																										
I	709	Darren Gardiner				•																													
I	710	john dodd							•																										
I	711	Shane Turner				•																													
I	712	Steven Whitehead				•																													
I	713	wendy vanlawick				•																													
I	714	clinton windle							•																										
I	715	melinda Windle							•																										
I	716	Graham Hawkins						•																											
I	717	Chris Sullings							•																										
I	718	Micheal Budynek							•																										
I	719	Sonja Luscombe		•																															
I	720	mick williams						•																											
I	721	Luke Halliday				•																													
I	722	phillip clements																			•														
I	723	dan baker																							•										
I	724	Kelly Birch									•																								
I	725	Sharon Lawrence				•																													
I	726	Ian Lawrence				•																													
I	727	grahame robson							•																										
I	728	Bruce Blyton						•																											
I	729	Mitchell Cook						•																											
I	730	281				•																													
I	731	283				•																													
I	732	288																						•											
I	733	289				•																													
I	734	290						•																											
I	735	291				•																													

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I	736	292															•																			
I	737	Allan Jenner					•																													
I	738	Amy Sheills							•																											
I	739	Ben Graham					•																													
I	740	Dean Job					•																													
I	741	John Gruber					•																													
I	742	Karne Gleeson									•																									
I	743	Mark Wills															•																			
I	744	simon oakes																					•													
I	745	DAMIAN WELLS											•																							
I	746	Daniel Burns							•																											
I	747	jason burley				•																														
I	748	Marty Corrigan				•																														
I	749	Nigel Moore					•																													
I	750	Simon Marshall							•																											
I	751	Chelsea Newton													•																					
I	752	clive Robb							•																											
I	753	Derek Crameri					•																													
I	754	jasobn white					•																													
I	755	John Walsh				•																														
I	756	Joshua Kane					•																													
I	757	luke hughes							•																											
I	758	Matthew Hing				•																														
I	759	sean lindsell					•																													
I	760	Simon Chambers					•																													
I	761	Stuart Renehan					•																													
I	762	Amanda Murrell																			•															
I	763	Daniel Jury							•																											
I	764	Jessica Blair-Saxton				•																														
I	765	Reginald Gardiner				•																														
I	766	Shannen Black					•																													
I	767	Steve Salter									•																									
I	768	. Hughes							•																											
I	769	Andrew Speechly				•																														
I	770	Craig Hughes							•																											

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I	771	Julie Gardiner				•																													
I	772	Richard Borham					•																												
I	773	Steve Sruhan						•																											
I	774	Tracey de Graaf				•																													
I	775	jesse allen								•																									
I	776	Mark Oliphant							•																										
I	777	james goodwin					•																												
I	778	293																												•					
I	779	296						•																											
I	780	303						•																											
I	781	307				•																													
I	782	308																												•					
I	783	309				•																													
I	784	315						•																											
I	785	316						•																											
I	786	317									•																								
I	787	322				•																													
I	788	326							•																										
I	789	332						•																											
I	790	333				•																													
I	791	335									•																								
I	792	340				•																													
I	793	342													•																				
I	794	344						•																											
I	795	347						•																											
I	796	353																													•				
I	797	354																												•					
I	798	355						•																											
I	799	356						•																											
I	800	357						•																											
I	801	361								•																									
I	802	362								•																									
I	803	363									•																								
I	804	Glenda Hunt							•																										
I	805	kane jennings						•																											

Table 1 - Location of submissions of support

Respondent type (see note)	No.	Name	Location																										Form Letter?						
			Singleton LGA(Bulga)	Singleton LGA (Broke)	Singleton LGA (Jerrys Plains)	Singleton LGA (Singleton)	Maitland LGA	Marrickville LGA	Cessnock LGA	Muswellbrook LGA	Upper Hunter Shire LGA	Newcastle LGA	Great Lakes LGA	Gosford LGA	Wyong LGA	Lake Macquarie LGA	Uralla Shire LGA	Sydney Metropolitan Area	Ryde LGA	Wollongong LGA	Glenn Innes LGA	Dungog LGA	Walgett LGA	Port Stephens LGA	Lithgow LGA	Warrumbungle Shire LGA	Hawkesbury LGA	Bathurst Regional LGA		Shoalhaven LGA	QLD	VIC	WA	Overseas	Not provided
I	806	Scott Stageman							*																										
I	807	aaron webb							*																										
I	808	adam matthews																			*														
I	809	Bert Keyser																														*			
I	810	Brad Swann							*																										
I	811	Bruce Wilson		*																															
I	812	Daniel Wright							*																										
I	813	Darrin Stewart				*																													
I	814	DAVID Brown				*																													
I	815	matthew zysek							*																										
I	816	Sarah McAllister					*																												
I	817	Shannon Jobson							*																										
I	818	Tanya Phillips				*																													
I	819	Aaron Ramien									*																								
I	820	Alex Roderick									*																								
I	821	barrie plumber					*																												
I	822	Callen Moore					*																												
I	823	Dale Bowen					*																												
I	824	Danielle Wooden										*																							
I	825	Dave Vickery				*																													
I	826	Doug Allgood							*																										
I	827	Edward Bowen																												*					
I	828	jamie christopherson							*																										
I	829	Johanna Heness				*																													
I	830	Leanne Moore					*																												
I	831	Linda Stevens				*																													
I	832	Matt Cutbush									*																								
I	833	Melissa Hogg							*																										
I	834	mittchell flannery							*																										
I	835	Robert Bush				*																													
I	836	robert wayte				*																													
I	837	Ross Roderick									*																								
I	838	Ryan Mcdonald																					*												
I	839	Shaun Aitken							*																										
I	840	Simon Nicol									*																								

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			Singleton LGA (Bulga)	Singleton LGA (Broke)	Singleton LGA (Jerrys Plains)	Singleton LGA (Singleton)	Maitland LGA	Marrickville LGA	Cessnock LGA	Muswellbrook LGA	Upper Hunter Shire LGA	Newcastle LGA	Great Lakes LGA	Gosford LGA	Wyong LGA	Lake Macquarie LGA	Uralla Shire LGA	Sydney Metropolitan Area	Ryde LGA	Wollongong LGA	Glenn Innes LGA	Dungog LGA	Walgett LGA	Port Stephens LGA	Lithgow LGA	Warrumbungle Shire LGA	Hawkesbury LGA	Bathurst Regional LGA	Shoalhaven LGA		QLD	VIC	WA	Overseas
I	841	Yurn Gehrlach																					•											
I	842	Amy Dodd																					•											
I	843	Chris Lorraway																											•					
I	844	Ella Janssen				•																												
I	845	Emma Carey				•																												
I	846	Gemma Franklin				•																												
I	847	Grahame Vernon									•																							
I	848	Gregory Bright									•																							
I	849	Haydn Luly									•																							
I	850	Jean Lane													•																			
I	851	John Greentree																					•											
I	852	John Tanner					•																											
I	853	m Hoult					•																											
I	854	Mark Farrell								•																								
I	855	Matt Anderson									•																							
I	856	Mitchell Burrows					•																											
I	857	Mitchell Weekes																														•		
I	858	Nathan Evans								•																								
I	859	Nick Ehlers				•																												
I	860	Nigel Barry				•																												
I	861	Pam Melville		•																														
I	862	paul johansen								•																								
I	863	Peter Lockwood				•																												
I	864	Peter Arnold				•																												
I	865	Rachael Davies				•																												
I	866	ross whitten											•																					
I	867	Roxanne Frohloff				•								•																				
I	868	Sarah Speechly				•																												
I	869	Simone Marskell				•																												
I	870	Ben Haigh									•																							
I	871	Carol Duff								•																								
I	872	Cindy Baker					•																											
I	873	crystle crossley								•																								
I	874	Damien Aitken													•																			
I	875	Elana Sanderson													•																			

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Respondent type (see note)	No.	Name	Location																										Form Letter?						
			Singleton LGA (Bulga)	Singleton LGA (Broke)	Singleton LGA (Jerrys Plains)	Singleton LGA (Singleton)	Maitland LGA	Marrickville LGA	Cessnock LGA	Muswellbrook LGA	Upper Hunter Shire LGA	Newcastle LGA	Great Lakes LGA	Gosford LGA	Wyong LGA	Lake Macquarie LGA	Uralla Shire LGA	Sydney Metropolitan Area	Ryde LGA	Wollongong LGA	Glenn Innes LGA	Dungog LGA	Walgett LGA	Port Stephens LGA	Lithgow LGA	Warrumbungle Shire LGA	Hawkesbury LGA	Bathurst Regional LGA		Shoalhaven LGA	QLD	VIC	WA	Overseas	Not provided
I	876	johan torlind				•																													
I	877	Lindsay Meyn							•																										
I	878	Nathan wells																			•														
I	879	Toby Prince					•																												
I	880	William Duff							•																										
I	881	Anthony Longworth							•																										
I	882	Damon Buckmaster													•																				
I	883	Daniel Hewitt				•																													
I	884	Daniel Lee																					•												
I	885	Darren Murrell																			•														
I	886	greg eaton				•																													
I	887	Joanne-Lea Chirgwin							•																										
I	888	Marilyn McGrady				•																													
I	889	nathan finch													•																				
I	890	Paul Wilcher							•																										
I	891	rodney teasdale					•																												
I	892	Allison Russ					•																												
I	893	Andrew Russ					•																												
I	894	Brett Murrell					•																												
I	895	Courtney Page				•																													
I	896	Daniel Repacholi							•																										
I	897	Daniel Sitters					•																												
I	898	david ernst							•																										
I	899	Deborah Burns				•																													
I	900	Greg Preece																			•														
I	901	Josh Duffield							•																										
I	902	Lucas Torr													•																				
I	903	Mark Rodgers							•																										
I	904	Michael Mumford							•																										
I	905	Sarah Cumberland					•																												
I	906	364							•																										
I	907	368					•																												
I	908	370															•																		
I	909	373					•																												
I	910	380							•																										

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Respondent type (see note)	No.	Name	Location																											Form Letter?					
			Singleton LGA(Bulga)	Singleton LGA (Broke)	Singleton LGA (Jerrys Plains)	Singleton LGA (Singleton)	Maitland LGA	Marrickville LGA	Cessnock LGA	Muswellbrook LGA	Upper Hunter Shire LGA	Newcastle LGA	Great Lakes LGA	Gosford LGA	Wyong LGA	Lake Macquarie LGA	Uralla Shire LGA	Sydney Metropolitan Area	Ryde LGA	Wollongong LGA	Glenn Innes LGA	Dungog LGA	Walgett LGA	Port Stephens LGA	Lithgow LGA	Warrumbungle Shire LGA	Hawkesbury LGA	Bathurst Regional LGA	Shoalhaven LGA		QLD	VIC	WA	Overseas	Not provided
I	911	410					*																												
I	912	412													*																				
I	913	414								*																									
I	914	415							*																										
I	915	423				*																													
I	916	425							*																										
I	917	426					*																												
I	918	427									*																								
I	919	432							*																										
I	920	433							*																										
I	921	435					*																												
I	922	436					*																												
I	923	437							*																										
I	924	439							*																										
I	925	443							*																										
I	926	445				*																													
I	927	446							*																										
I	928	449					*																												
I	929	453					*																												
I	930	455														*																			
I	931	456						*																											
I	932	460				*																													
I	933	461																											*						
I	934	462						*																											
I	935	464					*																												*
I	936	465						*																											*
I	937	466						*																											*
I	938	470				*																													
I	939	473				*																													
I	940	475				*																													
I	941	512								*																									
I	942	513																																	
I	943	514				*																													
I	944	515					*																												
I	945	516				*																													

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Respondent type (see note)	No.	Name	Location																											Form Letter?					
			Singleton LGA (Bulga)	Singleton LGA (Broke)	Singleton LGA (Jerrys Plains)	Singleton LGA (Singleton)	Maitland LGA	Marrickville LGA	Cessnock LGA	Muswellbrook LGA	Upper Hunter Shire LGA	Newcastle LGA	Great Lakes LGA	Gosford LGA	Wyong LGA	Lake Macquarie LGA	Uralla Shire LGA	Sydney Metropolitan Area	Ryde LGA	Wollongong LGA	Glenn Innes LGA	Dungog LGA	Walgett LGA	Port Stephens LGA	Lithgow LGA	Warrumbungle Shire LGA	Hawkesbury LGA	Bathurst Regional LGA	Shoalhaven LGA		QLD	VIC	WA	Overseas	Not provided
I	946	517									.																								
I	947	518									.																								
I	948	519										.																							
I	949	520					.																												
I	950	521						.																											
I	951	522													.																				
I	952	523		.												.																			
I	953	524														.																			
I	954	526								.																									
I	955	527										.																							
I	956	528									.																								
I	957	530								.																									
I	958	532								.																									
I	959	533										.																							
I	960	535					.			.																									
I	961	537								.																									
I	962	538					.			.																									
I	963	539				.																													
I	964	540					.																												
I	965	541								.																									
I	966	542													.																				
I	967	543								.																									
I	968	544								.																									
I	969	545		.																															
I	970	547				.																													
I	971	548				.																													
I	972	549								.																									
I	973	551					.			.																									
I	974	552				.																													
I	975	555					.			.																									
I	976	556						.																											
I	977	559													.																				
I	978	560				.																													
I	979	561				.																													
I	980	562							.																										

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I	981	564				•																													
I	982	565				•																													
I	983	565																																	
I	984	Amy ROBINSON																																	
I	985	Benjamin Lizdenis																																	
I	986	Blake Murrell																																	
I	987	brenton mitchell																																	
I	988	brian donehue				•																													
I	989	Brooke Harmston				•																													
I	990	Bruce Hay																																	
I	991	Bruce Thornton																																	
I	992	Chris Walters																																	
I	993	Christie Gall				•																													
I	994	David O'Shannessy																																	
I	995	Glenn Finch																																	
I	996	Graham Robson																																	
I	997	Jason Baker																																	
I	998	john burgess																																	
I	999	John Hartnett				•																													
I	1000	Katy Lovell				•																													
I	1001	lee dennis				•																													
I	1002	Leslie Crosby				•																													
I	1003	Luke O'Donnell																																	
I	1004	Maureen Flaws				•																													
I	1005	Neil Walker																																	
I	1006	Nicola Craig				•																													
I	1007	Ryan Campbell																																	
I	1008	Scott Robson																																	
I	1009	Stephen Duff																																	
I	1010	Stewart Duff																																	
I	1011	Stuart Davies				•																													
I	1012	T James																																	
I	1013	Thomas Holz																																	

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Respondent type (see note)	No.	Name	Location																									Form Letter?								
			Singleton LGA(Bulga)	Singleton LGA (Broke)	Singleton LGA (Jerrys Plains)	Singleton LGA (Singleton)	Maitland LGA	Marrickville LGA	Cessnock LGA	Muswellbrook LGA	Upper Hunter Shire LGA	Newcastle LGA	Great Lakes LGA	Gosford LGA	Wyong LGA	Lake Macquarie LGA	Uralla Shire LGA	Sydney Metropolitan Area	Ryde LGA	Wollongong LGA	Glenn Innes LGA	Dungog LGA	Walgett LGA	Port Stephens LGA	Lithgow LGA	Warrumbungle Shire LGA	Hawkesbury LGA		Bathurst Regional LGA	Shoalhaven LGA	QLD	VIC	WA	Overseas	Not provided	
I	1016	Brett Morgan																																		
I	1017	Brett Pike																																		
I	1018	Chad Pike																																		
I	1019	Chris Lye																																		
I	1020	Craig Afflick																																		
I	1021	dale longbottom																																		
I	1022	Daniel Cherry																																		
I	1023	David Peck																																		
I	1024	David DEHN																																		
I	1025	Geoffrey Stevenson																																		
I	1026	Glen Meehan																																		
I	1027	Hank Hochfaerber																																		
I	1028	Harry Kenyon-Slaney																																		
I	1029	Jamie Heit																																		
I	1030	Jessica Wichman																																		
I	1031	Justin Harris																																		
I	1032	Katie Brassil																																		
I	1033	Kelly Renshaw																																		
I	1034	Ken Thompson																																		
I	1035	Lisa Duhig																																		
I	1036	Lorna Murrell																																		
I	1037	Marg Spinks																																		
I	1038	Matthew Dodd																																		
I	1039	matthew harmston																																		
I	1040	Melinda Gardiner																																		
I	1041	Michael Carr																																		
I	1042	Mitchell Pike																																		
I	1043	Morgan Creagh																																		
I	1044	Neil Grigg																																		
I	1045	Nicola Williams																																		
I	1046	Ryan Wright																																		
I	1047	Scott Clements																																		
I	1048	Shane Jones																																		
I	1049	Simon Ellinor																																		
I	1050	tayla gardiner																																		

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I	1051	William Lambkin				•																													
I	1052	David Bennett															•																		
I	1053	Glen Pitt				•																													
I	1054	Trudie Larnach				•																													
I	1055	Karen Jones																															•		
I	1056	Nigel Coles																														•			
I	1057	Tahlae Ball											•																						
I	1058	Matthew McLellan									•																								
I	1059	Craig Beckett									•																								
I	1060	MIKE KELLY										•																							
I	1061	Darren Pearson						•																											
I	1062	Matthew Duff				•																													
I	1063	Tim Stamp																																	
I	1064	Jamie Atkins						•																											
I	1065	Cameron Bromfield						•																											
I	1066	Greg Butler				•																													
I	1067	Thomas Dillon																				•													
I	1068	Russel Dave							•																										
I	1069	Lachlan Crombie															•																		
I	1070	Steven Howard															•																		
I	1071	Jason Galvin				•																													
I	1072	212				•																													
I	1073	216															•																		
I	1074	219						•																											
I	1075	222				•																													
I	1076	223				•																													
I	1077	225				•																													
I	1078	226																														•			
I	1079	227						•																											
I	1080	229																														•			
I	1081	237								•																									
I	1082	238						•																											
I	1083	239				•																													

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Respondent type (see note)	No.	Name	Location																										Form Letter?					
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I	1086	245				•																												
I	1087	246					•																											
I	1088	249							•																									
I	1089	255								•																								
I	1090	256													•																			
I	1091	257					•																											
I	1092	258								•																								
I	1093	260				•																												
I	1094	265				•																												
I	1095	269							•																									
I	1096	270					•																											
I	1097	271					•																											
I	1098	276							•																									
SP	1099	Orica							•																									
SP	1100	Monadelphous																														•		
SP	1101	Legra Singleton				•																												
SP	1102	Legra Engineering																													•			
SP	1103	CFMEU							•																									
SP	1104	GE																												•				
SP	1105	Singleton Shire Healthy Environment Group				•																												

Table 2 - Location of submissions of objection

[illegible]

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[illegible]

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Name			Location																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
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I	96	490						•																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	

Table 2 - Location of submissions of objection

Name			Location																																											
Respondent type (see note)	No.		Singleton LGA (Bulga)	Singleton LGA (Broke)	Singleton LGA (Singleton)	Maitland LGA	Cessnock LGA	Muswellbrook LGA	Upper Hunter Shire LGA	Newcastle LGA	Great Lakes LGA	Gosford LGA	Wyong LGA	Lake Macquarie LGA	Uralla Shire LGA	Greater Taree LGA	Lismore LGA	Blue Mountains LGA	Sydney Metropolitan Area	Wingecarribee LGA	Dungog Shire LGA	City of Lithgow LGA	Shoalhaven LGA	Mid-Western Regional LGA	Clarence Valley LGA	Port Stephens LGA	Eurobodalla LGA	Nambucca Shire LGA	Narrabri Shire LGA	Tweed LGA	Armidale Dumaresq LGA	Coffs Harbour LGA	Gloucester LGA	Byron Shire LGA	Wollongong LGA	Waggett LGA	QLD	VIC	SA	WA	Overseas	Not provided	Form Letter?			
I	137	Desiree Marshall								•																																			•	
I	138	Dorit Herrmann																	•																										•	
I	139	Dwane Whitmore																	•																										•	
I	140	Elizabeth Cameron																	•																										•	
I	141	Fee Mozeley								•																																				
I	142	Gai Anderson																																												
I	143	Garry Hodgins																									•																			
I	144	Gregory Moeliker																																											•	
I	145	Guy Ellis										•																																	•	
I	146	Ian / Robyn Moore																																											•	
I	147	Ifeanna Tooth																	•																										•	
I	148	Jaala Malcolm										•																																	•	
I	149	Jan O'Leary																•																											•	
I	150	Jason Green																																											•	
I	151	Jason Kolatchew	•																																											•
I	152	Jennifer Schoelpple															•																													•
I	153	Jenny Whitlock																																											•	
I	154	Jeremy Tager																																											•	
I	155	Jessica Tam																	•																										•	
I	156	Jill Green																																											•	
I	157	Judy de Groot																																											•	
I	158	Julia Imrie																							•																					
I	159	Julia Wokes									•																																			
I	160	Justine Suthers										•																																		•
I	161	Keelah Lam																																												
I	162	Ken Brown														•																														•
I	163	Kirsty Kelly																																											•	
I	164	Laura Billing																•																											•	
I	165	Lesley Killen																•																											•	
I	166	Libby Blackburn																•																												
I	167	Linda Atkinson																																											•	
I	168	Lorraine Yudaeff																									•																			•
I	169	Lynda-Maree Currey																									•																			•
I	170	M Mari-Dale																	•								•																			•
I	171	Maeve Dunnett																•																											•	
I	172	Marg McLean			•																																									•
I	173	Margaret Hilder																				•																							•	
I	174	Margaret Woodley																																											•	
I	175	Marie Bliss																																											•	
I	176	Meg Nielsen																																												

Table 2 - Location of submissions of objection

Name			Location																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
Respondent type (see note)	No.		Singleton LGA (Bulga)	Singleton LGA (Broke)	Singleton LGA (Singleton)	Maitland LGA	Cessnock LGA	Muswellbrook LGA	Upper Hunter Shire LGA	Newcastle LGA	Great Lakes LGA	Gosford LGA	Wyong LGA	Lake Macquarie LGA	Uralla Shire LGA	Greater Taree LGA	Lismore LGA	Blue Mountains LGA	Sydney Metropolitan Area	Wingecarribee LGA	Dungog Shire LGA	City of Lithgow LGA	Shoalhaven LGA	Mid-Western Regional LGA	Clarence Valley LGA	Port Stephens LGA	Eurobodalla LGA	Nambucca Shire LGA	Narrabri Shire LGA	Tweed LGA	Armidale Dumaresq LGA	Coffs Harbour LGA	Gloucester LGA	Byron Shire LGA	Wollongong LGA	Walgett LGA	QLD	VIC	SA	WA	Overseas	Not provided	Form Letter?																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
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Table 2 - Location of submissions of objection

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Table 3 - Summary of submissions support

Summary of matters raised (support)																																						
Respondent type (SP - special interest, I - individual)	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I				
No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
Matter																																						
Employment																																						
Critical impact of direct job losses on individuals, families and the broader community	•		•	•	•	•	•	•	•	•						•	•	•	•	•	•	•			•	•	•	•	•	•	•	•	•	•		•	•	
Adverse impact on suppliers, local businesses and other industries								•	•					•			•						•						•									
Career opportunities for young people, scholarships for local Aboriginal people and vacation students																													•					•				
Economic contributions																																						
Economic significance of the resource and importance of royalties to the State, flow-on effects and the Australian economy									•												•														•			
Scale and importance of MTW and the proposal to local and regional economies			•	•			•								•								•												•		•	
Importance of benefits from coal mining to be realised in Australia																																						
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Social impacts																																						
Adverse impacts on community morale							•								•								•									•	•	•	•			
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Financial distress																																						
Community																																						
Community contributions and participation					•																•																	
Depopulation, family separation, loss of community and support networks			•	•						•				•											•								•		•	•		
Viability of community services, including health services, and community and educational facilities																																						
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No.	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76
Matter																																						
Employment																																						
Critical impact of direct job losses on individuals, families and the broader community		•	•		•	•					•			•			•	•		•		•			•	•	•	•	•		•	•		•		•		
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Scale and importance of MTW and the proposal to local and regional economies									•				•	•			•	•				•	•			•					•	•			•	•		
Importance of benefits from coal mining to be realised in Australia																																						
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No.	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114
Matter																																						
Employment																																						
Critical impact of direct job losses on individuals, families and the broader community	•	•	•	•	•	•	•		•	•	•	•	•	•	•		•	•	•	•	•	•					•			•	•			•				
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Career opportunities for young people, scholarships for local Aboriginal people and vacation students																																						
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No.	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190
Matter																																						
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Financial distress	•		•	•	•		•				•		•			•		•	•	•		•	•	•	•	•		•	•	•	•		•			•	•	•
Community																																						
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No.	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	
Matter																																							
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Health and wellbeing impacts, such as stress related illnesses							•	•		•		•				•	•			•	•	•	•	•		•			•	•	•	•	•	•	•			•	
Financial distress							•	•		•		•					•	•			•	•	•	•	•		•			•	•	•	•	•	•			•	
Community																																							
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No.	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266
Matter																																						
Employment																																						
Critical impact of direct job losses on individuals, families and the broader community						•	•	•					•			•	•	•		•		•												•	•	•	•	
Adverse impact on suppliers, local businesses and other industries									•											•						•												
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Scale and importance of MTW and the proposal to local and regional economies		•	•	•	•		•			•				•	•				•				•	•		•		•			•	•	•					
Importance of benefits from coal mining to be realised in Australia																						•																
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Social impacts																																						
Adverse impacts on community morale			•																									•				•						
Health and wellbeing impacts, such as stress related illnesses		•	•	•	•		•			•				•	•				•				•	•		•	•		•		•	•	•					
Financial distress		•		•	•		•			•				•	•				•				•	•		•	•		•		•	•	•					
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No.	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342		
Matter																																								
Employment																																								
Critical impact of direct job losses on individuals, families and the broader community			•		•	•	•	•		•		•	•	•	•			•				•			•	•	•							•						
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Financial distress				•						•							•	•		•		•		•	•			•	•	•		•	•			•		•		
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No.	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418
Matter																																						
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Critical impact of direct job losses on individuals, families and the broader community			•		•	•	•		•	•				•		•				•										•				•			•	
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Economic significance of the resource and importance of royalties to the State, flow-on effects and the Australian economy																																						
Scale and importance of MTW and the proposal to local and regional economies	•	•						•						•	•		•				•	•	•		•	•	•	•			•		•		•			•
Importance of benefits from coal mining to be realised in Australia																																						
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Social impacts																																						
Adverse impacts on community morale				•																																		
Health and wellbeing impacts, such as stress related illnesses	•	•						•					•	•		•					•	•	•		•	•	•	•			•		•		•			•
Financial distress	•	•						•					•	•		•					•	•	•		•	•	•	•			•		•		•			•
Community																																						
Community contributions and participation								•					•											•													•	
Depopulation, family separation, loss of community and support networks								•											•																	•	•	
Viability of community services, including health services, and community and educational facilities																	•																					
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No.	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456
Matter																																						
Employment																																						
Critical impact of direct job losses on individuals, families and the broader community	•		•			•												•	•		•	•							•	•			•			•		
Adverse impact on suppliers, local businesses and other industries																																						
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Economic significance of the resource and importance of royalties to the State, flow-on effects and the Australian economy																				•						•												
Scale and importance of MTW and the proposal to local and regional economies					•	•		•		•	•	•	•				•						•		•		•	•			•		•					•
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Importance of economic contributions from MTW, its employees and suppliers to schools, community and other organisations		•															•	•																				
Social impacts																																						
Adverse impacts on community morale		•												•	•																•				•		•	
Health and wellbeing impacts, such as stress related illnesses				•	•		•		•	•	•	•					•						•		•		•	•			•		•		•			•
Financial distress				•	•		•		•	•	•	•					•						•		•		•	•			•		•					•
Community																																						
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No.	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494
Matter																																						
Employment																																						
Critical impact of direct job losses on individuals, families and the broader community	•			•		•					•				•			•							•	•		•				•					•	
Adverse impact on suppliers, local businesses and other industries																•			•								•						•					
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Adverse impacts on community morale								•		•																												
Health and wellbeing impacts, such as stress related illnesses		•	•		•	•					•		•		•						•		•	•				•	•	•			•					
Financial distress		•	•		•	•					•		•		•						•		•	•				•	•	•			•					
Community																																						
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No.	495	496	497	498	499	500	501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	524	525	526	527	528	529	530	531	532		
Matter																																								
Employment																																								
Critical impact of direct job losses on individuals, families and the broader community				•												•			•								•	•			•	•				•	•	•		
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Health and wellbeing impacts, such as stress related illnesses	•				•		•		•		•	•	•					•			•	•	•	•	•		•						•	•	•	•		•		
Financial distress	•				•		•		•		•	•	•				•				•	•	•	•	•		•						•	•	•	•		•		
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No.	571	572	573	574	575	576	577	578	579	580	581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600	601	602	603	604	605	606	607	608
Matter																																						
Employment																																						
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Adverse impact on suppliers, local businesses and other industries	•		•							•			•				•			•		•				•	•			•						•		
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Financial distress		•		•	•					•	•					•	•						•				•				•			•	•			
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No.	609	610	611	612	613	614	615	616	617	618	619	620	621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640	641	642	643	644	645	646
Matter																																						
Employment																																						
Critical impact of direct job losses on individuals, families and the broader community	•	•	•		•				•			•										•			•													
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Health and wellbeing impacts, such as stress related illnesses		•	•				•		•		•		•				•	•	•	•	•		•	•			•	•	•		•	•	•	•		•	•	
Financial distress		•	•				•		•		•		•				•	•	•	•	•		•	•			•	•	•		•	•	•	•		•	•	
Community																																						
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No.	647	648	649	650	651	652	653	654	655	656	657	658	659	660	661	662	663	664	665	666	667	668	669	670	671	672	673	674	675	676	677	678	679	680	681	682	683	684
Matter																																						
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Financial distress					•			•	•		•	•	•	•	•	•		•	•	•	•	•		•	•	•	•	•	•	•		•		•	•		•	
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No.	875	876	877	878	879	880	881	882	883	884	885	886	887	888	889	890	891	892	893	894	895	896	897	898	899	900	901	902	903	904	905	906	907	908	909	910	911	912
Matter																																						
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Critical impact of direct job losses on individuals, families and the broader community	•						•	•	•	•	•	•		•	•	•	•	•	•	•		•	•		•	•				•				•	•	•		
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No.	913	914	915	916	917	918	919	920	921	922	923	924	925	926	927	928	929	930	931	932	933	934	935	936	937	938	939	940	941	942	943	944	945	946	947	948	949	950
Matter																																						
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Table 3 - Summary of submissions support

Summary of matters raised (support)																																						
Respondent type (SP - special interest, I - individual)	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I			
No.	951	952	953	954	955	956	957	958	959	960	961	962	963	964	965	966	967	968	969	970	971	972	973	974	975	976	977	978	979	980	981	982	983	984	985	986	987	988
Matter																																						
Employment																																						
Critical impact of direct job losses on individuals, families and the broader community	•	•	•					•											•															•	•		•	
Adverse impact on suppliers, local businesses and other industries																																						
Career opportunities for young people, scholarships for local Aboriginal people and vacation students																																				•		
Economic contributions																																						
Economic significance of the resource and importance of royalties to the State, flow-on effects and the Australian economy																																						
Scale and importance of MTW and the proposal to local and regional economies	•								•	•															•				•	•				•	•		•	
Importance of benefits from coal mining to be realised in Australia																																						
Proposal is critical to the economic viability of mine																																						
Importance of economic contributions from MTW, its employees and suppliers to schools, community and other organisations																																				•		
Social impacts																																						
Adverse impacts on community morale		•																										•			•				•			
Health and wellbeing impacts, such as stress related illnesses																																•						
Financial distress																																				•		
Community																																						
Community contributions and participation																																						
Depopulation, family separation, loss of community and support networks																																•						
Viability of community services, including health services, and community and educational facilities																																						
Importance of coal mining to the general community																									•													
Environmental management																																						
Demonstrated ability to be environmentally sustainable with strong compliance record									•																											•		
Best practice environmental management efforts not appreciated by some stakeholders																																						
Continued commitment to best practice noise and dust																																						
Other matters																																						
General support				•	•	•	•			•	•	•	•	•	•	•	•	•		•	•	•	•			•	•					•						
The Hunter region has a rich, multi-generational history of mining that may be lost should the proposal be refused																																						
The mining company has a right to mine its own land																												•	•									
The proposal has limited environmental impacts as the continuation of existing operations is preferable to the development of a greenfield site																								•														
The proposal achieves an appropriate balance of the economy and the environment and should be approved																																						
The environmental assessment meets all statutory and policy requirements and should therefore be approved			•																																			
WML has been an integral part of the community for over 30 years.																																						
Recognition that coal mines and neighbouring communities, whether they be vineyards, farms, horse studs or small community towns, can and will continue to successfully co-exist																																						

Mount Thorley Operations 2014 - Response to Submissions

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Mount Thorley Operations 2014 - Response to Submissions

Mount Thorley Operations 2014 - Response to Submissions

Mount Thorley Operations 2014 - Response to Submissions

Mount Thorley Operations 2014 - Response to Submissions

Summary of matters raised (objections)																																			
	Respondent type (SP - special interest, I - individual)	No.	I 124	I 125	I 126	I 127	I 128	I 129	I 130	I 131	I 132	I 133	I 134	I 135	I 136	I 137	I 138	I 139	I 140	I 141	I 142	I 143	I 144	I 145	I 146	I 147	I 148	I 149	I 150	I 151	I 152	I 153	I 154	I 155	
Matter																																			
Economics																																			
Broad methodology and assumptions (eg mining profits directed overseas and tax liabilities)																																			
Cost benefit analysis (eg externalities not quantified and assessed)																																			
Cost benefit analysis (eg incorrect assumptions regarding employment generation)																																			
Regional economic impact assessment (eg economic benefits overstated)																																			
Broad methodology and assumptions (eg errors regarding employee origin statistics)																																			
Other matters - Viability of MTD CPP																																			
Cost benefit analysis (eg economic facts must not outweigh environmental values)										*							*																		
Noise and vibration																																			
L&E Court and the Industrial Noise Policy																																			
Background noise levels and criteria																																			
Modelling accuracy & assessment scenarios																																			
Noise results																	*																		
Current and proposed operational noise controls and procedures																	*																		
Sleep disturbance																																			
Animal health																																			
Air quality																																			
Background dust																																			
Results		*	*							*			*	*			*							*							*				
Health																	*																		
Compliance																	*																		
Greenhouse gas and climate change		*	*							*			*	*									*								*				
Loders TSF																																			
Ecology																																			
Assessment methodology and acceptability of impacts		*	*							*			*	*			*						*								*			*	
Biodiversity Certification and offset strategy																																			
Re-establishment of WSW from WSG as an offset																	*																		
Green Offsets																																			
Cumulative impacts to EECs in the Hunter Valley																																			
Final landform and rehabilitation																																			
Rehabilitation performance																	*																		
Final landform																																			
Final land use/final void																																			
Mining of rehabilitated Abbey Green North																																			
Visual																																			
Visual and lighting impacts										*							*																		
Removal of Saddleback Ridge										*							*																		
Overburden emplacement areas										*																									
Water																																			
Reduction in water catchment																																			
Use of the HRSTs																																			
Downstream impacts																	*																		
Loders TSF leakage																																			
Final void recovery																																			
Identification and acceptability of water impacts		*	*							*			*	*			*						*								*			*	
Impacts on groundwater users																																			
Heritage																																			
Impacts to Great North Road																	*																		
General impacts to heritage																	*																		
Impacts on known sites																	*																		
Impacts to Aboriginal cultural heritage		*	*							*			*	*			*						*								*				
Traffic and transport																																			
Rural Fire Service response time								*									*																		
Closure of Wallaby Scrub Road (increased travel time)																																			
Impacts on the road network																																			
Social																																			
Property devaluation																																			
NDAL, including Saddleback Ridge																																			
Property acquisition																																			
Health impacts		*	*					*		*		*	*	*		*	*		*	*	*	*	*	*			*		*	*	*	*	*	*	*
Future of Bulga village				*				*		*	*	*	*	*	*	*		*	*	*	*	*	*			*		*	*	*	*	*	*	*	*
Solastalgia								*																											
Reduced quality of life																																			
Community engagement																																			
Social impact assessment																	*																		
Government assessment processes								*	*								*																*		
Exec summary states very few issues of non-compliance, ignoring call logs of complaints																																			
Proposals place the economic needs of many above the rights of a few																																			
RTCA actively looking to reduce its workforce through automation of services inc driverless trucks								*																											
Core values of the residents of Bulga are not being respected																																			
Project alternatives																																			
Mine should go underground to reduce impacts																																			
The claim that the additional time is needed to complete mining in Loder's Pit cannot be justified																																			
The extension of mining for 21 years is not justified and does not correspond with the remaining 5 years of the mine																																			
No alternatives to tailings dam (Loders TSF) being built on a hill due to potential for leakage																																			
L&E Court matters																																			
The proposal represents contempt of court and an abuse of process				*			*	*		*					*	*	*	*	*																

Mount Thorley Operations 2014 - Response to Submissions

Mount Thorley Operations 2014 - Response to Submissions

Mount Thorley Operations 2014 - Response to Submissions

Summary of matters raised (objections)		Respondent type (SP - special interest, I - individual)																							
	No.	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	
Matter																									
Economics																									
Broad methodology and assumptions (eg mining profits directed overseas and tax liabilities)																									
Cost benefit analysis (eg externalities not quantified and assessed)																									
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Background noise levels and criteria																									
Modelling accuracy & assessment scenarios																									
Noise results																									
Current and proposed operational noise controls and procedures																									
Sleep disturbance																									
Animal health																									
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L&E Court matters																									
The proposal represents contempt of court and an abuse of process																									
Proposal is in violation of previous commitments and court ruling.																									
2012 ruling found the proposal had no economic merit.																									
The project is the same project that was rejected by the court																									
Other matters																									
Approval timeframe																									
Futile nature of the resource																									
Voluntary property acquisition should form part of the proposals																									
Government subsidisation																									
Adequacy of assessment																									
General objection																									
Cumulative impacts with other mining operations																									
Relationship with Workworth Mine																									
Concurrent applications																									

Appendix B

Supplementary air quality information for EPA



Appendix B — Supplementary air quality information for EPA

B

Appendix B1

MTO CPP 18Mtpa throughput assessment

18 September 2014

Duncan Peake
Associate Director–NSW Regional Manager
EMGA Mitchell McLennan
Via email: dpeake@emgamm.com

RE: Addendum Report – Mount Thorley Operations 2014

Dear Duncan,

This letter report provides an assessment of further air quality modelling arising from additional information requirements for the NSW EPA regarding the Mount Thorley Operations 2014 Project.

The specific requirements focus on an assessment of the proposed maximum throughput of the Mount Thorley Operations (MTO) coal preparation plant (CPP) of 18 million tonnes per annum (Mtpa) as outlined in the quoted text below.

1. Modelled Scenarios

The future years included in the air dispersion modelling were year 3, 9 and 14. The assessment does not provide justification for the selection of future scenarios for modelling. Factors that are generally taken into account for selection of modelling scenarios representative of potential worst-case impacts include overburden movement, coal movement, mine layout, proximity of active mining to receptors and capacity of overburden and coal handled.

Mount Thorley Operations (MTO) propose to increase the throughput at the coal preparation plant (CPP) from 10 Mtpa to 18 Mtpa. It is noted in the emissions inventories for the three future mining years modelled, the throughput at the MTO CPP ranges from approximately 6 to 7.5 Mtpa of ROM coal. The proposed maximum capacity of 18 Mtpa has not been modelled in any of the scenarios presented.

It is also noted that the quantity of ROM coal extracted from the MTO active pits in Year 3 is only 3.6 Mtpa, well below the approved capacity of 10 Mtpa. The EIS states that mining will be undertaken at a maximum rate of 10 Mtpa until 2022.

The EPA recommends that the proponent provides details of selection process for the future years modelled including justification for how the selected modelling scenarios represent potential worst-case.

Dispersion modelling has been conducted to assess the potential for any air quality impacts associated with the proposed increase to the throughput capacity of the MTO CPP. The scenarios modelled are consistent with the indicative mine plan years assessed in the Air Quality Assessment (AQA) (**Todoroski Air Sciences, 2014**) to allow for a direct comparison.

The estimated dust emissions generated from the proposal and with the additional throughput capacity of the CPP are presented in **Table 1**. The additional throughput of the CPP would generate approximately 8 per cent to 60 per cent more dust (from MTO overall) depending on the scenario assessed.

Table 1: Comparison of estimated emissions for the proposal (kg of TSP)

	10Mtpa Scenario	18Mtpa Scenario
Year 3	3,533,619	3,811,462
Year 9	3,525,498	3,827,105
Year 14	501,011	801,712

The modelling approach is similar to that used in the AQA, utilising the same meteorological data and model setup. Specific details regarding the modelling methodology can be found in the AQA.

Figure 1 to **Figure 3** present the predicted maximum 24-hour average PM₁₀ concentrations for each of the indicative mine plan years. The original contour levels for the 10Mtpa scenario (shown in RED) are overlaid with the contour levels for the 18Mtpa scenario (shown in YELLOW) to allow for a direct comparison. The results clearly indicate that there is potential for additional dust effects associated with additional throughput of the CPP. The additional effects associated with the increased activity at the CPP would be confined to the area immediately around the CPP and generally have negligible effects at other locations around the proposal.

An assessment of the potential maximum (cumulative) 24-hour average PM₁₀ impacts for the proposal has been made for the area surrounding the CPP at the MTIE monitoring station.

The results of the analysis are presented in **Table 2** and indicate that the increased activity would lead to an additional two days above criteria, above the three days already predicted to occur in Year 9, giving a total of 5 days of additional impact above the criteria. There are no additional days of impact predicted for the other assessed years.

Table 2: NSW EPA contemporaneous assessment – maximum number of additional days above 24-hour average criterion depending on background level at monitoring site

Location	Year 3	Year 9	Year 14
MTIE	0	5	0

Table 3 presents the full set of contemporaneous PM₁₀ impact assessment results for the MTIE monitor during Year 9 where the additional impact is predicted.

Table 3: MTIE – Year 9 (18Mtpa Scenario)

Date	Background	Predicted increment	Total	Date	Background	Highest predicted increment	Total
2/11/2012	77.0	6.9	83.9	-	-	-	-
14/09/2012	76.0	-0.7	75.3	-	-	-	-
6/10/2012	73.0	0.5	73.5	-	-	-	-
27/10/2012	72.0	3.1	75.1	-	-	-	-

Date	Background	Predicted increment	Total	Date	Background	Highest predicted increment	Total
18/08/2012	68.0	-4.5	63.5	-	-	-	-
31/08/2012	65.0	-3.6	61.4	-	-	-	-
5/10/2012	63.0	-9.0	54.0	-	-	-	-
4/09/2012	62.0	1.9	63.9	-	-	-	-
23/08/2012	59.0	-7.4	51.6	-	-	-	-
6/09/2012	59.0	-14.1	44.9	-	-	-	-
17/08/2012	57.0	-4.4	52.6	-	-	-	-
8/09/2012	56.0	-6.5	49.5	-	-	-	-
13/05/2012	55.0	-14.8	40.2	-	-	-	-
25/05/2012	54.0	-4.8	49.2	-	-	-	-
28/10/2012	54.0	-0.1	53.9	-	-	-	-
7/09/2012	53.0	-16.5	36.5	-	-	-	-
25/09/2012	52.0	0.6	52.6	-	-	-	-
16/09/2012	51.0	-1.5	49.5	-	-	-	-
29/09/2012	51.0	-10.0	41.0	-	-	-	-
3/11/2012	51.0	-0.1	50.9	-	-	-	-
21/10/2012	49.0	-2.7	46.3	26/07/2012	18.0	15.1	33.1
16/08/2012	48.0	-7.1	40.9	24/05/2012	47.0	13.7	60.7
11/05/2012	47.0	-4.9	42.1	22/09/2012	45.0	12.8	57.8
14/05/2012	47.0	-1.6	45.4	5/05/2012	18.0	12.8	30.8
24/05/2012	47.0	13.7	60.7	30/07/2012	17.0	12.6	29.6
1/09/2012	47.0	7.7	54.7	31/07/2012	36.0	12.4	48.4
5/09/2012	47.0	-0.7	46.3	13/09/2012	42.0	11.1	53.1
6/12/2012	47.0	3.6	50.6	10/03/2012	21.0	10.7	31.7
12/05/2012	46.0	-2.8	43.2	28/02/2012	18.0	10.3	28.3
12/01/2012	45.0	2.0	47.0	24/03/2012	30.0	9.5	39.5
22/09/2012	45.0	12.8	57.8	12/07/2012	12.0	8.5	20.5
11/08/2012	44.0	2.4	46.4	14/06/2012	10.0	8.4	18.4
21/01/2012	43.0	0.0	43.0	13/08/2012	18.0	8.4	26.4
20/05/2012	43.0	-2.2	40.8	17/09/2012	26.0	8.3	34.3
13/09/2012	42.0	11.1	53.1	1/09/2012	47.0	7.7	54.7

Overall, the dispersion model predictions for each of the indicative mine plan years indicate that no additional privately-owned assessment location is predicted to experience levels above the relevant criterion for the assessed dust metrics.

The modelling results present a likely conservative estimate of the potential dust impact associated with the additional throughput of the CPP at 18Mtpa. As the plant and stockpiles are in fixed locations, emissions associated with the CPP itself can be effectively managed through appropriate dust control practices and strategies.

Please feel free to contact us if you need to discuss (or require clarification on) any aspect of this work.

Yours faithfully,

Todoroski Air Sciences

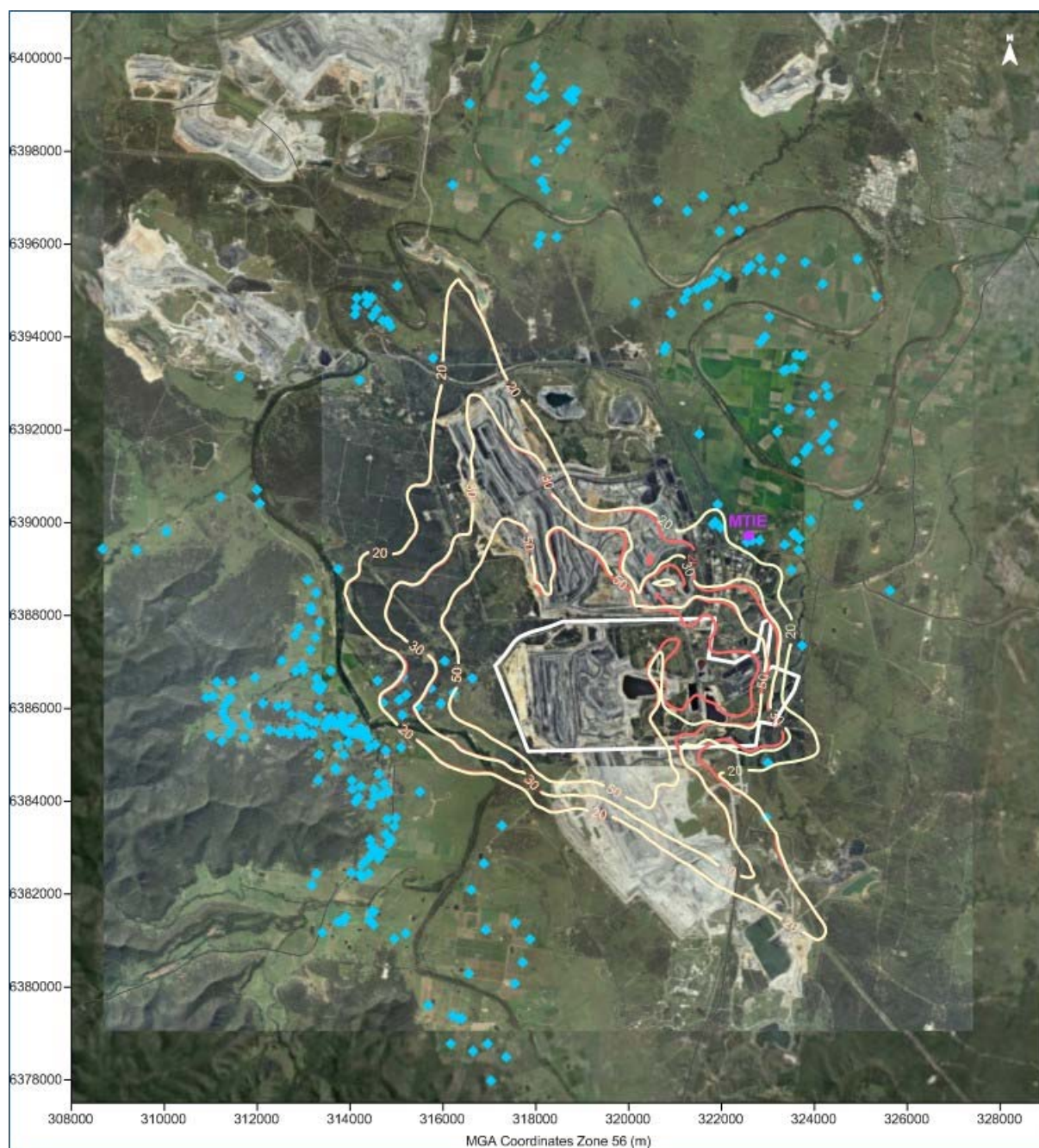




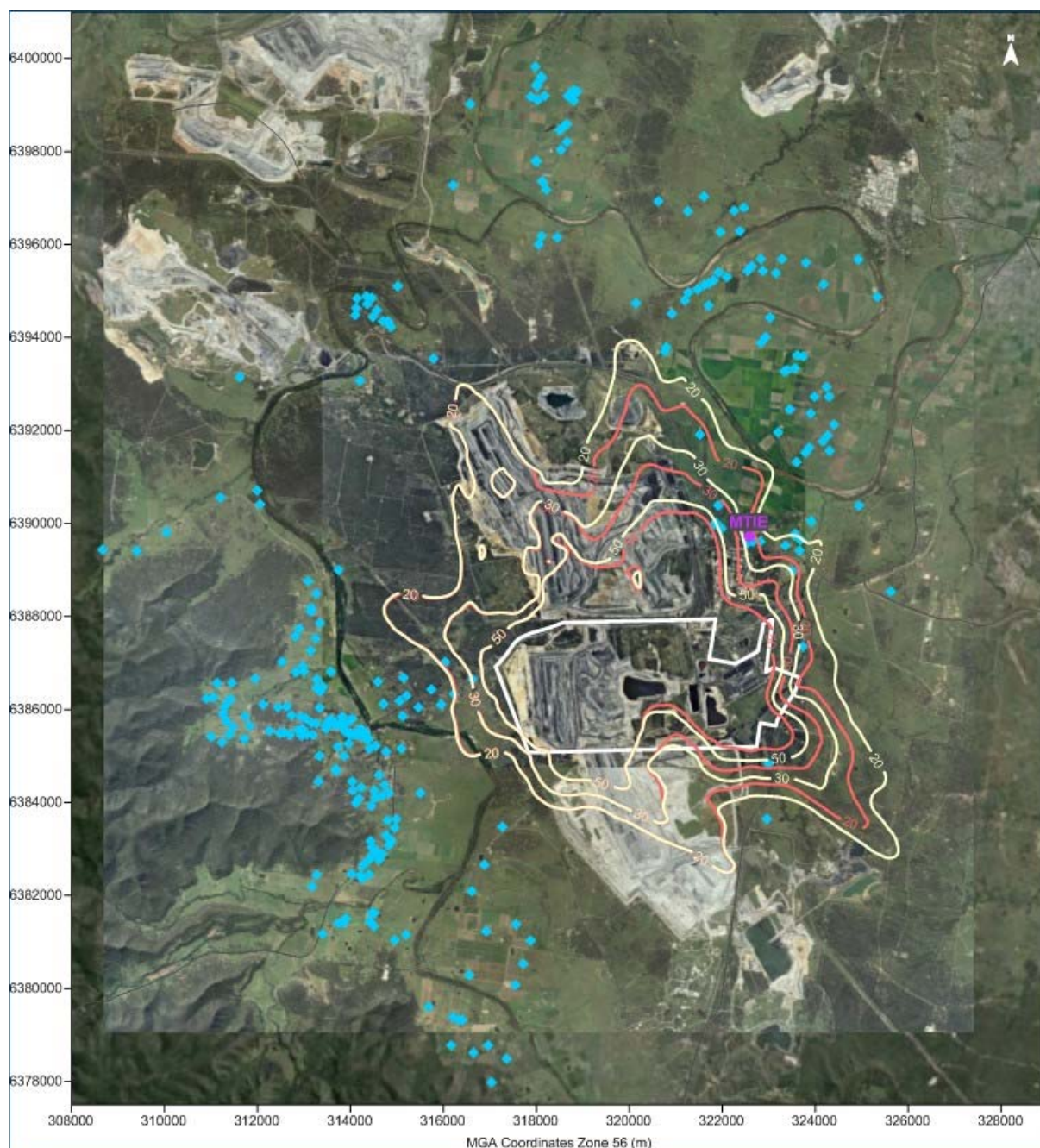
Aleks Todoroski

Philip Henschke

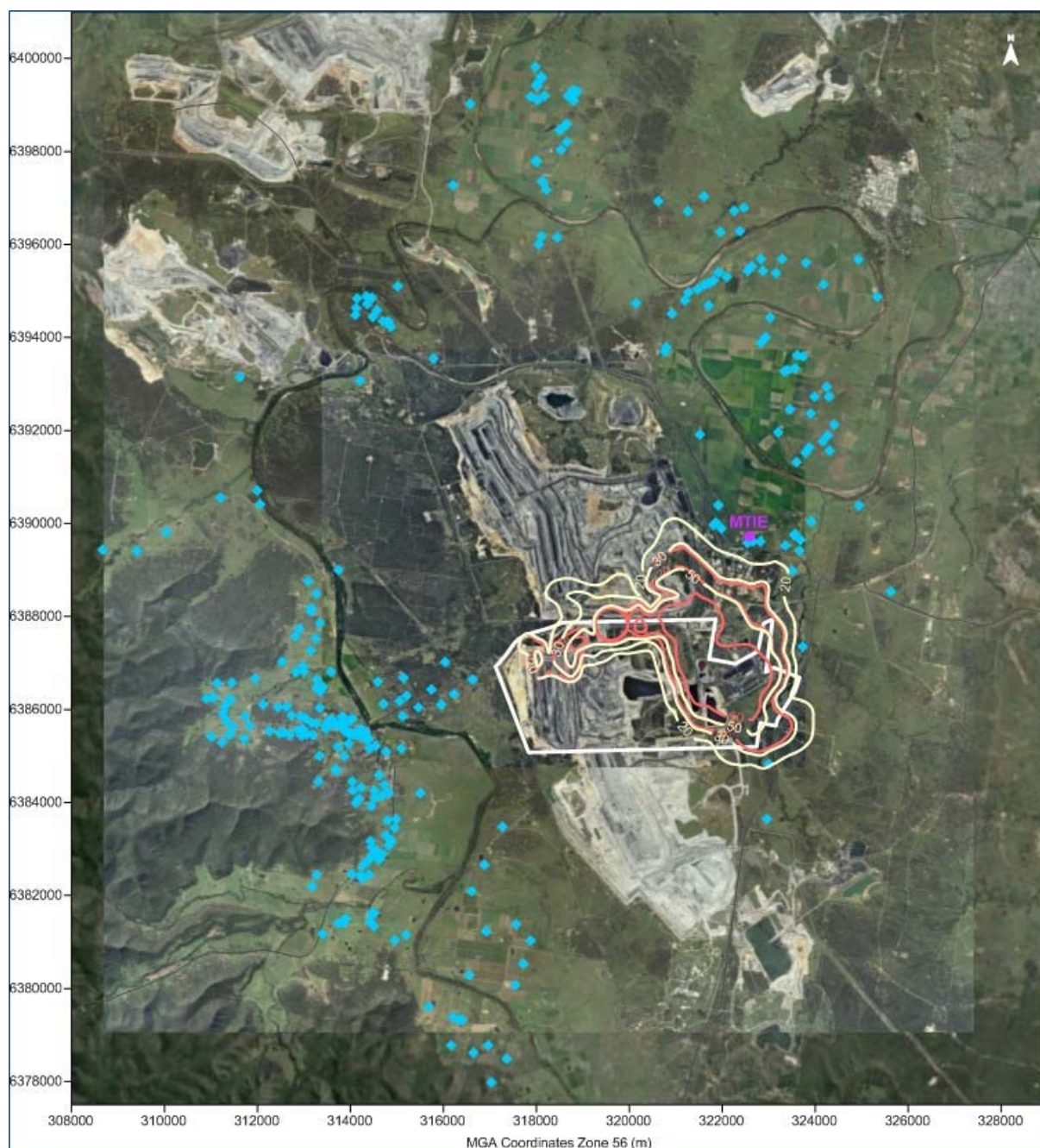




**Figure 1: Comparison of predicted maximum 24-hour average PM₁₀ concentrations due to emissions from the proposal in Year 3 ($\mu\text{g}/\text{m}^3$)
10Mtpa scenario (RED) and 18Mtpa scenario (YELLOW)**



**Figure 2: Comparison of predicted maximum 24-hour average PM₁₀ concentrations due to emissions from the proposal in Year 9 ($\mu\text{g}/\text{m}^3$)
10Mtpa scenario (RED) and 18Mtpa scenario (YELLOW)**



**Figure 3: Comparison of predicted maximum 24-hour average PM₁₀ concentrations due to emissions from the proposal in Year 14 (µg/m³)
10Mtpa scenario (RED) and 18Mtpa scenario (YELLOW)**

Appendix B2

Contemporaneous 24-hour PM10 cumulative impact assessment

Table 1: Bulga – Year 3

Date	Background	Predicted increment	Total	Date	Background	Highest predicted increment	Total
27/11/2012	56.1	-0.7	55.4	-	-	-	-
7/10/2012	40.9	-4.1	36.8	14/06/2012	ND	5.2	5.2
29/09/2012	39.2	0.0	39.2	4/03/2012	9.8	4.3	14.2
8/11/2012	38.7	0.3	39.0	16/03/2012	ND	3.0	3.0
2/12/2012	37.4	-1.9	35.6	22/04/2012	9.1	2.9	12.1
22/10/2012	34.5	0.0	34.5	15/10/2012	11.4	2.6	14.0
9/01/2012	33.7	1.4	35.0	21/03/2012	8.3	2.0	10.3
6/01/2012	33.4	0.0	33.4	17/05/2012	13.7	1.9	15.5
18/08/2012	32.8	0.0	32.8	14/04/2012	12.1	1.8	13.9
19/12/2012	32.6	-0.9	31.6	2/05/2012	15.3	1.7	17.0
25/10/2012	32.2	-0.6	31.5	25/05/2012	14.0	1.7	15.7

Table 2: Wallaby Scrub Road – Year 3

Date	Background	Predicted increment	Total	Date	Background	Highest predicted increment	Total
18/10/2012	46.0	-7.0	39.0	8/06/2012	ND	7.9	7.9
7/09/2012	45.0	0.0	45.0	14/06/2012	ND	7.0	7.0
29/09/2012	44.0	0.0	44.0	1/04/2012	14.0	5.1	19.1
7/10/2012	41.0	0.5	41.5	8/07/2012	8.0	4.2	12.2
2/12/2012	41.0	1.2	42.2	22/04/2012	13.0	3.8	16.8
6/09/2012	37.0	0.0	37.0	3/09/2012	19.0	3.8	22.8
25/08/2012	36.0	0.1	36.1	22/02/2012	8.0	3.8	11.8
18/08/2012	35.0	0.0	35.0	3/04/2012	13.0	3.4	16.4
27/11/2012	34.0	-3.9	30.1	4/05/2012	10.0	3.0	13.0
19/12/2012	34.0	-2.0	32.0	8/04/2012	27.0	2.9	29.9

Table 3: Warkworth – Year 3

Date	Background	Predicted increment	Total	Date	Background	Highest predicted increment	Total
19/12/2012	41.2	2.1	43.3	10/12/2012	31.7	19.0	50.7
7/11/2012	40.0	-0.4	39.6	11/12/2012	ND	11.4	11.4
7/09/2012	38.0	0.0	38.0	28/03/2012	15.9	11.3	27.2
23/10/2012	37.8	3.1	40.9	1/02/2012	12.9	11.3	24.2
27/10/2012	37.6	-0.8	36.8	13/06/2012	6.7	10.7	17.4
29/09/2012	37.3	0.0	37.3	2/06/2012	12.2	10.2	22.4
7/10/2012	36.3	1.2	37.5	5/01/2012	21.2	9.9	31.1
18/10/2012	35.9	-1.5	34.4	2/01/2012	17.8	9.2	27.0
8/11/2012	35.3	0.9	36.2	13/01/2012	ND	9.2	9.2
2/11/2012	34.7	0.5	35.2	3/01/2012	19.5	9.1	28.6

Table 4: Knodlers Lane – Year 3

Date	Background	Predicted increment	Total	Date	Background	Highest predicted increment	Total
29/09/2012	56.3	0.0	56.3	-	-	-	-
2/11/2012	54.5	0.0	54.5	-	-	-	-

26/10/2012	49.7	0.1	49.8	2/06/2012	6.7	4.4	11.1
27/10/2012	48.7	0.4	49.0	1/03/2012	ND	3.1	3.1
17/10/2012	47.7	0.0	47.7	18/04/2012	16.0	3.0	19.0
6/10/2012	47.1	0.4	47.4	11/03/2012	14.0	3.0	17.0
18/10/2012	43.6	0.2	43.8	7/01/2012	10.5	3.0	13.5
5/10/2012	42.8	0.0	42.8	11/11/2012	14.9	2.5	17.4
6/09/2012	42.3	0.0	42.3	9/02/2012	ND	2.4	2.4
21/10/2012	41.1	0.4	41.5	14/11/2012	31.0	2.4	33.3
23/10/2012	40.8	-0.5	40.3	24/01/2012	ND	2.3	2.3
12/09/2012	39.6	0.6	40.2	3/01/2012	12.0	2.2	14.2

Table 5: MTIE – Year 3 (18Mtpa Scenario)

Date	Background	Predicted increment	Total	Date	Background	Highest predicted increment	Total
2/11/2012	77.0	2.8	79.8	-	-	-	-
14/09/2012	76.0	-3.1	72.9	-	-	-	-
6/10/2012	73.0	0.0	73.0	-	-	-	-
27/10/2012	72.0	2.0	74.0	-	-	-	-
18/08/2012	68.0	-2.7	65.3	-	-	-	-
31/08/2012	65.0	-4.7	60.3	-	-	-	-
5/10/2012	63.0	-4.1	58.9	-	-	-	-
4/09/2012	62.0	-3.2	58.8	-	-	-	-
23/08/2012	59.0	-5.7	53.3	-	-	-	-
6/09/2012	59.0	-13.3	45.7	-	-	-	-
17/08/2012	57.0	-2.8	54.2	-	-	-	-
8/09/2012	56.0	-5.0	51.0	-	-	-	-
13/05/2012	55.0	-5.1	49.9	-	-	-	-
25/05/2012	54.0	-4.3	49.7	-	-	-	-
28/10/2012	54.0	0.3	54.3	-	-	-	-
7/09/2012	53.0	-10.4	42.6	-	-	-	-
25/09/2012	52.0	0.9	52.9	-	-	-	-
16/09/2012	51.0	3.9	54.9	-	-	-	-
29/09/2012	51.0	-4.2	46.8	-	-	-	-
3/11/2012	51.0	1.1	52.1	-	-	-	-
21/10/2012	49.0	-3.9	45.1	28/05/2012	27.0	7.3	34.3
16/08/2012	48.0	-8.5	39.5	8/07/2012	10.0	6.5	16.5
11/05/2012	47.0	-5.8	41.2	5/02/2012	15.0	5.9	20.9
14/05/2012	47.0	-2.2	44.8	10/07/2012	20.0	5.8	25.8
24/05/2012	47.0	2.8	49.8	31/07/2012	36.0	5.6	41.6
1/09/2012	47.0	0.3	47.3	31/03/2012	21.0	5.5	26.5
5/09/2012	47.0	-2.5	44.5	27/03/2012	13.0	5.1	18.1
6/12/2012	47.0	-0.7	46.3	15/03/2012	24.0	5.1	29.1
12/05/2012	46.0	-5.1	40.9	26/06/2012	22.0	4.9	26.9
12/01/2012	45.0	1.8	46.8	2/06/2012	19.0	4.9	23.9

Table 5: Bulga – Year 9

Date	Background	Predicted increment	Total	Date	Background	Highest predicted increment	Total
27/11/2012	56.1	-1.7	54.4	-	-	-	-
7/10/2012	40.9	-6.0	34.9	14/06/2012	ND	14.8	14.8
29/09/2012	39.2	0.0	39.2	8/06/2012	5.9	12.8	18.7
8/11/2012	38.7	2.8	41.5	22/04/2012	9.1	12.3	21.5
2/12/2012	37.4	-1.9	35.5	4/03/2012	9.8	11.8	21.6
22/10/2012	34.5	0.0	34.5	16/03/2012	ND	10.8	10.8
9/01/2012	33.7	-0.4	33.3	3/04/2012	11.9	9.2	21.1
6/01/2012	33.4	0.3	33.7	17/05/2012	13.7	9.1	22.8

18/08/2012	32.8	0.0	32.8	14/04/2012	12.1	8.9	21.0
19/12/2012	32.6	-3.8	28.8	30/10/2012	16.3	8.2	24.5
25/10/2012	32.2	-1.2	31.0	15/10/2012	11.4	8.0	19.4

Table 6: Wallaby Scrub Road – Year 9

Date	Background	Predicted increment	Total	Date	Background	Highest predicted increment	Total
18/10/2012	46.0	-4.8	41.2	8/06/2012	ND	16.9	16.9
7/09/2012	45.0	0.0	45.0	3/09/2012	19.0	16.7	35.7
29/09/2012	44.0	0.0	44.0	8/07/2012	8.0	11.3	19.3
7/10/2012	41.0	3.8	44.8	22/04/2012	13.0	11.1	24.1
2/12/2012	41.0	3.3	44.3	1/04/2012	14.0	10.2	24.2
6/09/2012	37.0	0.0	37.0	4/05/2012	10.0	10.0	20.0
25/08/2012	36.0	0.0	36.0	13/01/2012	18.0	9.7	27.7
18/08/2012	35.0	0.0	35.0	19/02/2012	22.0	8.6	30.6
27/11/2012	34.0	-0.6	33.4	20/04/2012	9.0	8.3	17.3
19/12/2012	34.0	1.1	35.1	6/10/2012	20.0	7.6	27.6

Table 7: Warkworth – Year 9

Date	Background	Predicted increment	Total	Date	Background	Highest predicted increment	Total
19/12/2012	41.2	-11.5	29.7	10/12/2012	31.7	56.3	88.0
7/11/2012	40.0	0.2	40.2	11/12/2012	ND	50.1	50.1
7/09/2012	38.0	0.0	38.0	12/06/2012	6.6	45.7	52.3
23/10/2012	37.8	14.9	52.7	17/04/2012	23.7	44.6	68.3
27/10/2012	37.6	-2.2	35.4	12/08/2012	10.6	41.9	52.5
29/09/2012	37.3	0.0	37.3	11/06/2012	11.5	38.5	50.0
7/10/2012	36.3	-1.7	34.6	10/07/2012	12.0	38.0	50.0
18/10/2012	35.9	-15.5	20.4	21/07/2012	10.5	35.5	46.0
8/11/2012	35.3	-0.6	34.7	6/07/2012	11.0	34.5	45.5
2/11/2012	34.7	0.8	35.5	7/03/2012	17.1	34.0	51.1
21/10/2012	34.1	1.5	35.6	22/07/2012	12.8	30.9	43.7
6/09/2012	32.9	0.0	32.9	18/03/2012	11.0	30.7	41.7
23/11/2012	32.7	1.0	33.7	29/05/2012	16.1	29.3	45.4
18/08/2012	31.7	0.0	31.7	5/01/2012	21.2	29.1	50.3
10/12/2012	31.7	56.3	88.0	10/06/2012	9.6	26.8	36.4
25/11/2012	31.5	2.7	34.2	13/06/2012	6.7	26.1	32.8
2/12/2012	30.8	7.7	38.5	19/11/2012	22.5	25.1	47.6
18/09/2012	30.7	3.6	34.3	21/02/2012	13.7	23.6	37.3
20/10/2012	30.5	-2.1	28.4	29/02/2012	18.8	22.8	41.6
13/09/2012	30.3	0.6	30.9	6/06/2012	6.9	22.2	29.1
26/10/2012	29.8	4.0	33.8	26/06/2012	9.1	21.0	30.1
14/09/2012	29.5	0.8	30.3	23/07/2012	10.0	20.9	30.9
14/11/2012	29.0	6.2	35.2	5/07/2012	9.8	20.8	30.6

Table 8: Knodlers Lane – Year 9

Date	Background	Predicted increment	Total	Date	Background	Highest predicted increment	Total
29/09/2012	56.3	0.0	56.3	-	-	-	-
2/11/2012	54.5	0.8	55.3	-	-	-	-
26/10/2012	49.7	0.9	50.6	1/05/2012	17.1	3.2	20.3
27/10/2012	48.7	3.2	51.8	9/06/2012	8.6	3.2	11.8

17/10/2012	47.7	0.0	47.7	27/10/2012	48.7	3.2	51.8
6/10/2012	47.1	0.1	47.2	28/05/2012	12.6	2.9	15.5
18/10/2012	43.6	-0.1	43.5	30/04/2012	18.1	2.7	20.9
5/10/2012	42.8	0.1	42.8	24/09/2012	24.3	2.2	26.4
6/09/2012	42.3	0.0	42.3	26/06/2012	10.0	2.2	12.2
21/10/2012	41.1	0.3	41.4	9/07/2012	15.9	2.2	18.1
23/10/2012	40.8	-0.3	40.5	31/07/2012	6.0	2.1	8.1
12/09/2012	39.6	0.6	40.2	30/03/2012	16.1	2.0	18.1

Table 10: MTIE – Year 9 (18Mtpa Scenario)

Date	Background	Predicted increment	Total	Date	Background	Highest predicted increment	Total
2/11/2012	77.0	6.9	83.9	-	-	-	-
14/09/2012	76.0	-0.7	75.3	-	-	-	-
6/10/2012	73.0	0.5	73.5	-	-	-	-
27/10/2012	72.0	3.1	75.1	-	-	-	-
18/08/2012	68.0	-4.5	63.5	-	-	-	-
31/08/2012	65.0	-3.6	61.4	-	-	-	-
5/10/2012	63.0	-9.0	54.0	-	-	-	-
4/09/2012	62.0	1.9	63.9	-	-	-	-
23/08/2012	59.0	-7.4	51.6	-	-	-	-
6/09/2012	59.0	-14.1	44.9	-	-	-	-
17/08/2012	57.0	-4.4	52.6	-	-	-	-
8/09/2012	56.0	-6.5	49.5	-	-	-	-
13/05/2012	55.0	-14.8	40.2	-	-	-	-
25/05/2012	54.0	-4.8	49.2	-	-	-	-
28/10/2012	54.0	-0.1	53.9	-	-	-	-
7/09/2012	53.0	-16.5	36.5	-	-	-	-
25/09/2012	52.0	0.6	52.6	-	-	-	-
16/09/2012	51.0	-1.5	49.5	-	-	-	-
29/09/2012	51.0	-10.0	41.0	-	-	-	-
3/11/2012	51.0	-0.1	50.9	-	-	-	-
21/10/2012	49.0	-2.7	46.3	26/07/2012	18.0	15.1	33.1
16/08/2012	48.0	-7.1	40.9	24/05/2012	47.0	13.7	60.7
11/05/2012	47.0	-4.9	42.1	22/09/2012	45.0	12.8	57.8
14/05/2012	47.0	-1.6	45.4	5/05/2012	18.0	12.8	30.8
24/05/2012	47.0	13.7	60.7	30/07/2012	17.0	12.6	29.6
1/09/2012	47.0	7.7	54.7	31/07/2012	36.0	12.4	48.4
5/09/2012	47.0	-0.7	46.3	13/09/2012	42.0	11.1	53.1
6/12/2012	47.0	3.6	50.6	10/03/2012	21.0	10.7	31.7
12/05/2012	46.0	-2.8	43.2	28/02/2012	18.0	10.3	28.3
12/01/2012	45.0	2.0	47.0	24/03/2012	30.0	9.5	39.5
22/09/2012	45.0	12.8	57.8	12/07/2012	12.0	8.5	20.5
11/08/2012	44.0	2.4	46.4	14/06/2012	10.0	8.4	18.4
21/01/2012	43.0	0.0	43.0	13/08/2012	18.0	8.4	26.4
20/05/2012	43.0	-2.2	40.8	17/09/2012	26.0	8.3	34.3
13/09/2012	42.0	11.1	53.1	1/09/2012	47.0	7.7	54.7

Table 9: Bulga – Year 14

Date	Background	Predicted increment	Total	Date	Background	Highest predicted increment	Total
27/11/2012	56.1	-3.0	53.1	-	-	-	-
7/10/2012	40.9	-10.7	30.1	4/03/2012	9.8	18.9	28.7
29/09/2012	39.2	0.0	39.2	14/06/2012	ND	18.9	18.9
8/11/2012	38.7	3.3	42.0	8/06/2012	5.9	17.0	22.9

2/12/2012	37.4	-5.6	31.8	30/10/2012	16.3	16.6	32.8
22/10/2012	34.5	0.0	34.4	20/09/2012	10.8	15.3	26.1
9/01/2012	33.7	-3.2	30.4	17/05/2012	13.7	14.8	28.5
6/01/2012	33.4	0.3	33.7	16/03/2012	ND	14.7	14.7
18/08/2012	32.8	0.0	32.8	22/04/2012	9.1	14.2	23.3
19/12/2012	32.6	-8.3	24.2	3/04/2012	11.9	11.1	23.0
25/10/2012	32.2	-2.0	30.2	20/04/2012	ND	10.9	10.9

Table 10: Wallaby Scrub Road – Year 14

Date	Background	Predicted increment	Total	Date	Background	Highest predicted increment	Total
18/10/2012	46.0	-13.4	32.6	8/06/2012	ND	23.3	23.3
7/09/2012	45.0	0.0	45.0	22/04/2012	13.0	18.5	31.5
29/09/2012	44.0	0.0	44.0	3/09/2012	19.0	17.7	36.7
7/10/2012	41.0	4.9	45.9	4/05/2012	10.0	16.1	26.1
2/12/2012	41.0	4.6	45.6	8/07/2012	8.0	15.2	23.2
6/09/2012	37.0	0.0	37.0	20/04/2012	9.0	13.2	22.2
25/08/2012	36.0	0.0	36.0	13/01/2012	18.0	12.5	30.5
18/08/2012	35.0	0.0	35.0	1/04/2012	14.0	12.3	26.3
27/11/2012	34.0	-4.3	29.7	30/10/2012	17.0	11.9	28.9
19/12/2012	34.0	-1.8	32.2	27/04/2012	13.0	10.7	23.7

Table 11: Warkworth – Year 14

Date	Background	Predicted increment	Total	Date	Background	Highest predicted increment	Total
19/12/2012	41.2	-12.4	28.8	6/06/2012	6.9	65.4	72.3
7/11/2012	40.0	-1.1	38.9	10/12/2012	31.7	57.3	89.0
7/09/2012	38.0	0.0	38.0	11/12/2012	ND	45.0	45.0
23/10/2012	37.8	-1.4	36.4	26/06/2012	9.1	37.2	46.3
27/10/2012	37.6	-2.2	35.4	5/07/2012	9.8	37.1	46.9
29/09/2012	37.3	0.0	37.3	21/07/2012	10.5	35.1	45.6
7/10/2012	36.3	-0.8	35.5	11/06/2012	11.5	34.1	45.6
18/10/2012	35.9	-17.1	18.8	21/02/2012	13.7	33.1	46.8
8/11/2012	35.3	-0.9	34.4	12/08/2012	10.6	32.5	43.1
2/11/2012	34.7	2.8	37.5	11/04/2012	12.3	31.9	44.2
21/10/2012	34.1	0.6	34.7	17/04/2012	23.7	31.3	55.0
6/09/2012	32.9	0.0	32.9	29/05/2012	16.1	31.0	47.1
23/11/2012	32.7	-5.8	26.9	11/08/2012	11.7	30.8	42.5
18/08/2012	31.7	0.0	31.7	6/07/2012	11.0	28.6	39.6
10/12/2012	31.7	57.3	89.0	10/07/2012	12.0	28.0	40.0
25/11/2012	31.5	0.7	32.2	7/03/2012	17.1	27.7	44.8
2/12/2012	30.8	2.8	33.6	22/07/2012	12.8	26.9	39.7
18/09/2012	30.7	4.5	35.2	26/12/2012	ND	26.7	26.7
20/10/2012	30.5	-2.0	28.5	7/06/2012	9.3	24.4	33.7
13/09/2012	30.3	0.3	30.6	28/05/2012	7.1	24.4	31.5
26/10/2012	29.8	6.9	36.7	30/03/2012	16.4	23.3	39.7
14/09/2012	29.5	0.5	30.0	24/07/2012	9.5	21.2	30.7
14/11/2012	29.0	-5.8	23.2	5/01/2012	21.2	20.9	42.1

Table 12: Knodlers Lane – Year 14

Date	Background	Predicted increment	Total	Date	Background	Highest predicted increment	Total
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29/09/2012	56.3	0.0	56.4	-	-	-	-
2/11/2012	54.5	0.3	54.8	-	-	-	-
26/10/2012	49.7	0.3	50.0	27/10/2012	48.7	4.1	52.8
27/10/2012	48.7	4.1	52.8	20/07/2012	12.1	3.5	15.6
17/10/2012	47.7	0.0	47.7	31/07/2012	6.0	1.4	7.4
6/10/2012	47.1	0.2	47.3	7/10/2012	27.3	1.1	28.5
18/10/2012	43.6	-0.1	43.5	1/11/2012	28.9	1.0	29.9
5/10/2012	42.8	0.1	42.9	10/01/2012	ND	0.9	0.9
6/09/2012	42.3	0.0	42.3	28/05/2012	12.6	0.9	13.5
21/10/2012	41.1	-0.1	41.0	20/05/2012	25.0	0.9	25.9
23/10/2012	40.8	-1.8	39.0	15/09/2012	11.6	0.7	12.4
12/09/2012	39.6	-3.4	36.2	6/12/2012	24.7	0.6	25.3

Table 15: MTIE – Year 14 (18Mtpa Scenario)

Date	Background	Predicted increment	Total	Date	Background	Highest predicted increment	Total
2/11/2012	77.0	1.4	78.4	-	-	-	-
14/09/2012	76.0	-8.3	67.7	-	-	-	-
6/10/2012	73.0	0.0	73.0	-	-	-	-
27/10/2012	72.0	1.4	73.4	-	-	-	-
18/08/2012	68.0	-5.0	63.0	-	-	-	-
31/08/2012	65.0	-10.9	54.1	-	-	-	-
5/10/2012	63.0	-9.9	53.1	-	-	-	-
4/09/2012	62.0	-6.0	56.0	-	-	-	-
23/08/2012	59.0	-9.0	50.0	-	-	-	-
6/09/2012	59.0	-16.8	42.2	-	-	-	-
17/08/2012	57.0	-8.4	48.6	-	-	-	-
8/09/2012	56.0	-9.5	46.5	-	-	-	-
13/05/2012	55.0	-16.6	38.4	-	-	-	-
25/05/2012	54.0	-5.1	48.9	-	-	-	-
28/10/2012	54.0	-0.1	53.9	-	-	-	-
7/09/2012	53.0	-21.0	32.0	-	-	-	-
25/09/2012	52.0	1.1	53.1	-	-	-	-
16/09/2012	51.0	3.8	54.8	-	-	-	-
29/09/2012	51.0	-14.0	37.0	-	-	-	-
3/11/2012	51.0	0.6	51.6	-	-	-	-
21/10/2012	49.0	-6.6	42.4	28/05/2012	27.0	5.7	32.7
16/08/2012	48.0	-17.5	30.5	13/04/2012	15.0	4.6	19.6
11/05/2012	47.0	-6.8	40.2	12/02/2012	16.0	4.0	20.0
14/05/2012	47.0	-2.4	44.6	7/07/2012	11.0	3.9	14.9
24/05/2012	47.0	-1.9	45.1	31/07/2012	36.0	3.8	39.8
1/09/2012	47.0	-5.9	41.1	16/09/2012	51.0	3.8	54.8
5/09/2012	47.0	-5.3	41.7	14/06/2012	10.0	3.8	13.8
6/12/2012	47.0	-0.8	46.2	1/05/2012	24.0	3.8	27.8
12/05/2012	46.0	-14.7	31.3	23/02/2012	15.0	3.7	18.7
12/01/2012	45.0	1.8	46.8	4/02/2012	5.0	3.6	8.6

Appendix B3

Further detail regarding 24-hour PM₁₀ analysis

Table 1: Assessment Location 81 – Year 3

Date	Background	Predicted increment	Total	Date	Background	Highest predicted increment	Total
27/11/2012	56.1	-0.1	56.0	-	-	-	-
6/10/2012	40.9	-3.0	37.9	13/06/2012	ND	6.5	6.5
28/09/2012	39.2	0.0	39.2	4/03/2012	9.8	5.9	15.7
8/11/2012	38.7	0.4	39.1	21/04/2012	9.1	4.4	13.5
2/12/2012	37.4	-1.6	35.9	2/04/2012	11.9	3.6	15.5
22/10/2012	34.5	0.0	34.4	30/10/2012	16.3	3.1	19.4
9/01/2012	33.7	-1.3	32.4	13/04/2012	12.1	2.9	15.0
6/01/2012	33.4	-0.6	32.8	1/04/2012	10.3	2.7	13.0
17/08/2012	32.8	0.0	32.8	16/03/2012	ND	2.7	2.7
19/12/2012	32.6	-1.3	31.2	13/01/2012	16.9	2.6	19.5
25/10/2012	32.2	-0.8	31.4	16/05/2012	13.7	2.5	16.2

Table 2: Assessment Location 118 – Year 3

Date	Background	Predicted increment	Total	Date	Background	Highest predicted increment	Total
28/09/2012	56.3	0.0	56.3	-	-	-	-
2/11/2012	54.5	0.2	54.7	-	-	-	-
26/10/2012	49.7	0.3	50.0	19/07/2012	12.1	2.6	14.7
27/10/2012	48.7	1.4	50.1	26/04/2012	16.8	2.0	18.7
17/10/2012	47.7	0.0	47.7	10/01/2012	ND	1.9	1.9
5/10/2012	47.1	0.2	47.3	31/08/2012	17.4	1.6	19.0
18/10/2012	43.6	0.0	43.6	7/06/2012	7.4	1.5	8.9
4/10/2012	42.8	0.0	42.8	27/10/2012	48.7	1.4	50.1
5/09/2012	42.3	0.0	42.3	20/04/2012	ND	1.4	1.4
21/10/2012	41.1	0.1	41.2	8/06/2012	8.6	1.4	10.1
23/10/2012	40.8	-0.4	40.5	15/05/2012	20.7	1.2	21.9
11/09/2012	39.6	-0.7	38.9	11/03/2012	14.0	1.2	15.2

Table 3: Assessment Location 259 – Year 3

Date	Background	Predicted increment	Total	Date	Background	Highest predicted increment	Total
28/09/2012	56.3	0.0	56.3	-	-	-	-
2/11/2012	54.5	0.3	54.8	-	-	-	-
26/10/2012	49.7	0.4	50.1	19/07/2012	12.1	2.8	14.9
27/10/2012	48.7	1.9	50.5	10/01/2012	ND	2.1	2.1
17/10/2012	47.7	0.0	47.7	26/04/2012	16.8	2.0	18.8
5/10/2012	47.1	0.2	47.3	27/10/2012	48.7	1.9	50.5
18/10/2012	43.6	0.0	43.6	31/08/2012	17.4	1.5	19.0
4/10/2012	42.8	0.0	42.8	7/06/2012	7.4	1.5	8.9
5/09/2012	42.3	0.0	42.3	8/06/2012	8.6	1.4	10.1
21/10/2012	41.1	0.1	41.2	20/04/2012	ND	1.4	1.4
23/10/2012	40.8	-0.3	40.5	11/03/2012	14.0	1.2	15.2
11/09/2012	39.6	-0.9	38.7	15/05/2012	20.7	1.2	21.9

Table 4: Assessment Location 126 – Year 3

Date	Background	Predicted increment	Total	Date	Background	Highest predicted increment	Total
2/11/2012	77.0	1.0	78.0	-	-	-	-
13/09/2012	76.0	4.6	80.6	-	-	-	-
5/10/2012	73.0	0.2	73.2	-	-	-	-
27/10/2012	72.0	3.9	75.9	-	-	-	-
17/08/2012	68.0	0.0	68.0	-	-	-	-
30/08/2012	65.0	-0.5	64.5	-	-	-	-
4/10/2012	63.0	-0.2	62.8	-	-	-	-
3/09/2012	62.0	2.1	64.1	-	-	-	-
22/08/2012	59.0	-0.8	58.2	-	-	-	-
5/09/2012	59.0	0.0	59.0	-	-	-	-
16/08/2012	57.0	-0.3	56.7	-	-	-	-
7/09/2012	56.0	-0.5	55.5	-	-	-	-
12/05/2012	55.0	-0.6	54.4	-	-	-	-
24/05/2012	54.0	0.0	54.0	-	-	-	-
28/10/2012	54.0	1.3	55.3	-	-	-	-
6/09/2012	53.0	-0.7	52.3	-	-	-	-
24/09/2012	52.0	2.9	54.9	-	-	-	-
15/09/2012	51.0	4.4	55.4	-	-	-	-
28/09/2012	51.0	4.3	55.3	-	-	-	-
3/11/2012	51.0	2.9	53.9	-	-	-	-
21/10/2012	49.0	0.7	49.7	29/07/2012	17.0	6.7	23.7
15/08/2012	48.0	-0.9	47.1	28/05/2012	ND	6.4	6.4
10/05/2012	47.0	0.1	47.1	25/06/2012	22.0	6.3	28.3
13/05/2012	47.0	1.8	48.8	9/07/2012	20.0	6.0	26.0
23/05/2012	47.0	1.9	48.9	19/09/2012	ND	5.5	5.5
31/08/2012	47.0	0.7	47.7	18/02/2012	22.0	5.2	27.2
4/09/2012	47.0	0.1	47.1	1/06/2012	19.0	5.2	24.2
6/12/2012	47.0	1.2	48.2	11/01/2012	25.0	5.1	30.1
11/05/2012	46.0	0.0	46.0	8/06/2012	11.0	5.0	16.0
12/01/2012	45.0	-1.0	44.0	12/09/2012	42.0	5.0	47.0

Table 5: Assessment Location 262 – Year 3

Date	Background	Predicted increment	Total	Date	Background	Highest predicted increment	Total
2/11/2012	77.0	1.2	78.2	-	-	-	-
13/09/2012	76.0	4.1	80.1	-	-	-	-
5/10/2012	73.0	0.2	73.2	-	-	-	-
27/10/2012	72.0	4.2	76.2	-	-	-	-
17/08/2012	68.0	0.0	68.0	-	-	-	-
30/08/2012	65.0	-0.6	64.4	-	-	-	-
4/10/2012	63.0	-0.1	62.9	-	-	-	-
3/09/2012	62.0	1.8	63.8	-	-	-	-
22/08/2012	59.0	-0.8	58.2	-	-	-	-
5/09/2012	59.0	0.0	59.0	-	-	-	-
16/08/2012	57.0	-0.2	56.8	-	-	-	-
7/09/2012	56.0	-0.6	55.4	-	-	-	-
12/05/2012	55.0	-0.9	54.1	-	-	-	-
24/05/2012	54.0	0.0	54.0	-	-	-	-
28/10/2012	54.0	1.0	55.0	-	-	-	-

Date	Background	Predicted increment	Total	Date	Background	Highest predicted increment	Total
6/09/2012	53.0	-0.5	52.5	-	-	-	-
24/09/2012	52.0	2.8	54.8	-	-	-	-
15/09/2012	51.0	4.2	55.2	-	-	-	-
28/09/2012	51.0	3.8	54.8	-	-	-	-
3/11/2012	51.0	2.3	53.3	-	-	-	-
21/10/2012	49.0	0.6	49.6	29/07/2012	17.0	6.7	23.7
15/08/2012	48.0	-0.8	47.2	28/05/2012	ND	6.2	6.2
10/05/2012	47.0	0.1	47.1	25/06/2012	22.0	6.0	28.0
13/05/2012	47.0	1.8	48.8	9/07/2012	20.0	5.6	25.6
23/05/2012	47.0	1.6	48.6	19/09/2012	ND	5.1	5.1
31/08/2012	47.0	0.6	47.6	8/06/2012	11.0	5.0	16.0
4/09/2012	47.0	0.1	47.1	29/05/2012	12.0	4.9	16.9
6/12/2012	47.0	1.1	48.1	31/05/2012	14.0	4.9	18.9
11/05/2012	46.0	0.1	46.1	12/09/2012	42.0	4.8	46.8
12/01/2012	45.0	-1.0	44.0	11/01/2012	25.0	4.8	29.8

Table 6: Assessment Location 102 – Year 3

Date	Background	Predicted increment	Total	Date	Background	Highest predicted increment	Total
19/12/2012	41.2	2.9	44.1	10/12/2012	31.7	33.4	65.1
7/11/2012	40.0	-1.1	38.9	11/12/2012	ND	22.2	22.2
6/09/2012	38.0	0.0	38.0	12/06/2012	6.7	20.1	26.8
23/10/2012	37.8	6.1	43.9	1/06/2012	12.2	19.3	31.5
27/10/2012	37.6	-0.4	37.2	5/01/2012	21.2	18.6	39.8
28/09/2012	37.3	0.0	37.3	28/05/2012	16.1	18.4	34.5
6/10/2012	36.3	2.5	38.8	1/02/2012	12.9	17.0	29.9
18/10/2012	35.9	0.4	36.3	13/01/2012	ND	16.6	16.6
8/11/2012	35.3	2.4	37.7	9/07/2012	12.0	16.5	28.5
2/11/2012	34.7	0.6	35.3	18/03/2012	11.0	16.4	27.4
21/10/2012	34.1	3.7	37.8	18/04/2012	10.8	16.3	27.1
5/09/2012	32.9	0.0	32.9	25/06/2012	9.1	15.2	24.3

Table 7: Assessment Location 264 – Year 3

Date	Background	Predicted increment	Total	Date	Background	Highest predicted increment	Total
19/12/2012	41.2	3.1	44.3	10/12/2012	31.7	36.1	67.8
7/11/2012	40.0	-1.0	39.0	11/12/2012	ND	24.0	24.0
6/09/2012	38.0	0.0	38.0	12/06/2012	6.7	22.2	28.9
23/10/2012	37.8	6.9	44.7	1/06/2012	12.2	21.8	34.0
27/10/2012	37.6	-0.2	37.4	28/05/2012	16.1	20.7	36.8
28/09/2012	37.3	0.0	37.3	5/01/2012	21.2	20.0	41.2
6/10/2012	36.3	3.1	39.4	18/04/2012	10.8	18.6	29.4
18/10/2012	35.9	1.6	37.5	13/01/2012	ND	18.2	18.2
8/11/2012	35.3	2.7	38.0	1/02/2012	12.9	18.0	30.9
2/11/2012	34.7	0.8	35.5	18/03/2012	11.0	18.0	29.0
21/10/2012	34.1	4.1	38.2	9/07/2012	12.0	17.8	29.8
5/09/2012	32.9	0.0	32.9	31/05/2012	16.1	17.1	33.2

Table 8: Assessment Location 81 – Year 9

Date	Background	Predicted increment	Total	Date	Background	Highest predicted increment	Total
27/11/2012	56.1	-1.3	54.8	-	-	-	-
6/10/2012	40.9	-5.8	35.1	7/06/2012	5.9	16.6	22.5
28/09/2012	39.2	0.0	39.2	13/06/2012	ND	14.9	14.9
8/11/2012	38.7	1.5	40.2	21/04/2012	9.1	11.6	20.7
2/12/2012	37.4	-1.4	36.1	4/03/2012	9.8	11.3	21.2
22/10/2012	34.5	-0.1	34.4	13/04/2012	12.1	11.1	23.2
9/01/2012	33.7	1.1	34.8	2/09/2012	12.1	11.1	23.2
6/01/2012	33.4	-0.6	32.8	2/04/2012	11.9	9.9	21.8
17/08/2012	32.8	0.0	32.8	22/02/2012	7.8	9.7	17.5
19/12/2012	32.6	-3.3	29.3	26/04/2012	12.3	9.2	21.5
25/10/2012	32.2	-2.1	30.1	1/04/2012	10.3	8.8	19.1

Table 9: Assessment Location 118 – Year 9

Date	Background	Predicted increment	Total	Date	Background	Highest predicted increment	Total
28/09/2012	56.3	0.0	56.3	-	-	-	-
2/11/2012	54.5	1.1	55.6	-	-	-	-
26/10/2012	49.7	1.0	50.8	27/10/2012	48.7	4.8	53.4
27/10/2012	48.7	4.8	53.4	30/04/2012	17.1	4.1	21.2
17/10/2012	47.7	0.0	47.7	8/06/2012	8.6	3.9	12.5
5/10/2012	47.1	0.1	47.2	25/06/2012	10.0	3.4	13.5
18/10/2012	43.6	-0.1	43.5	27/05/2012	12.6	3.4	16.0
4/10/2012	42.8	0.1	42.8	19/07/2012	12.1	3.1	15.2
5/09/2012	42.3	0.0	42.3	4/05/2012	14.6	2.8	17.5
21/10/2012	41.1	0.3	41.4	30/07/2012	6.0	2.8	8.7
23/10/2012	40.8	-0.3	40.5	8/07/2012	15.9	2.5	18.4
11/09/2012	39.6	0.6	40.2	29/04/2012	18.1	2.4	20.6

Table 10: Assessment Location 259 – Year 9

Date	Background	Predicted increment	Total	Date	Background	Highest predicted increment	Total
28/09/2012	56.3	0.0	56.3	-	-	-	-
2/11/2012	54.5	1.2	55.7	-	-	-	-
26/10/2012	49.7	1.1	50.8	27/10/2012	48.7	5.0	53.6
27/10/2012	48.7	5.0	53.6	30/04/2012	17.1	4.1	21.2
17/10/2012	47.7	0.0	47.7	8/06/2012	8.6	4.0	12.6
5/10/2012	47.1	0.1	47.2	25/06/2012	10.0	3.4	13.5
18/10/2012	43.6	-0.1	43.5	19/07/2012	12.1	3.2	15.3
4/10/2012	42.8	0.1	42.8	4/05/2012	14.6	3.1	17.8
5/09/2012	42.3	0.0	42.3	27/05/2012	12.6	3.0	15.5
21/10/2012	41.1	0.3	41.4	30/07/2012	6.0	2.9	8.9
23/10/2012	40.8	-0.3	40.6	8/07/2012	15.9	2.4	18.3
11/09/2012	39.6	0.3	39.9	20/05/2012	28.2	2.3	30.5

Table 11: Assessment Location 126 – Year 9

Date	Background	Predicted increment	Total	Date	Background	Highest predicted increment	Total
2/11/2012	77.0	-2.0	75.0	-	-	-	-
13/09/2012	76.0	7.6	83.6	-	-	-	-
5/10/2012	73.0	0.4	73.4	-	-	-	-
27/10/2012	72.0	0.1	72.1	-	-	-	-
17/08/2012	68.0	0.0	68.0	-	-	-	-
30/08/2012	65.0	-0.4	64.6	-	-	-	-
4/10/2012	63.0	0.0	63.0	-	-	-	-
3/09/2012	62.0	0.0	62.0	-	-	-	-
22/08/2012	59.0	-0.3	58.7	-	-	-	-
5/09/2012	59.0	0.0	59.0	-	-	-	-
16/08/2012	57.0	-0.2	56.8	-	-	-	-
7/09/2012	56.0	1.8	57.8	-	-	-	-
12/05/2012	55.0	0.3	55.3	-	-	-	-
24/05/2012	54.0	0.0	54.0	-	-	-	-
28/10/2012	54.0	0.9	54.9	-	-	-	-
6/09/2012	53.0	0.1	53.1	-	-	-	-
24/09/2012	52.0	-0.1	51.9	-	-	-	-
15/09/2012	51.0	-1.3	49.7	-	-	-	-
28/09/2012	51.0	9.2	60.2	-	-	-	-
3/11/2012	51.0	1.8	52.8	-	-	-	-
21/10/2012	49.0	1.2	50.2	5/12/2012	27.0	12.8	39.8
15/08/2012	48.0	0.4	48.4	8/08/2012	33.0	10.3	43.3
10/05/2012	47.0	0.1	47.1	1/06/2012	19.0	9.5	28.5
13/05/2012	47.0	1.0	48.0	28/09/2012	51.0	9.2	60.2
23/05/2012	47.0	-1.0	46.0	13/09/2012	76.0	7.6	83.6
31/08/2012	47.0	1.0	48.0	18/06/2012	ND	7.0	7.0
4/09/2012	47.0	-0.3	46.7	27/06/2012	10.0	6.8	16.8
6/12/2012	47.0	1.0	48.0	29/07/2012	17.0	6.3	23.3
11/05/2012	46.0	1.5	47.5	30/05/2012	13.0	6.3	19.3
12/01/2012	45.0	-5.2	39.8	31/05/2012	14.0	6.0	20.0
21/09/2012	45.0	5.0	50.0	7/04/2012	33.0	5.4	38.4
10/08/2012	44.0	-3.8	40.2	21/09/2012	45.0	5.0	50.0

Table 12: Assessment Location 262 – Year 9

Date	Background	Predicted increment	Total	Date	Background	Highest predicted increment	Total
2/11/2012	77.0	-1.8	75.2	-	-	-	-
13/09/2012	76.0	7.5	83.5	-	-	-	-
5/10/2012	73.0	0.4	73.4	-	-	-	-
27/10/2012	72.0	0.6	72.6	-	-	-	-
17/08/2012	68.0	0.0	68.0	-	-	-	-
30/08/2012	65.0	-0.4	64.6	-	-	-	-
4/10/2012	63.0	0.0	63.0	-	-	-	-
3/09/2012	62.0	-0.1	61.9	-	-	-	-
22/08/2012	59.0	-0.4	58.6	-	-	-	-
5/09/2012	59.0	0.0	59.0	-	-	-	-
16/08/2012	57.0	-0.2	56.8	-	-	-	-
7/09/2012	56.0	1.5	57.5	-	-	-	-
12/05/2012	55.0	0.0	55.0	-	-	-	-

Date	Background	Predicted increment	Total	Date	Background	Highest predicted increment	Total
24/05/2012	54.0	0.0	54.0	-	-	-	-
28/10/2012	54.0	0.7	54.7	-	-	-	-
6/09/2012	53.0	0.1	53.1	-	-	-	-
24/09/2012	52.0	-0.2	51.8	-	-	-	-
15/09/2012	51.0	-1.4	49.6	-	-	-	-
28/09/2012	51.0	9.2	60.2	-	-	-	-
3/11/2012	51.0	1.3	52.3	-	-	-	-
21/10/2012	49.0	1.1	50.1	5/12/2012	27.0	12.6	39.6
15/08/2012	48.0	0.3	48.3	8/08/2012	33.0	9.8	42.8
10/05/2012	47.0	0.1	47.1	28/09/2012	51.0	9.2	60.2
13/05/2012	47.0	1.2	48.2	1/06/2012	19.0	8.5	27.5
23/05/2012	47.0	-0.9	46.1	13/09/2012	76.0	7.5	83.5
31/08/2012	47.0	0.8	47.8	29/07/2012	17.0	6.7	23.7
4/09/2012	47.0	-0.3	46.7	18/06/2012	ND	6.7	6.7
6/12/2012	47.0	1.1	48.1	27/06/2012	10.0	6.1	16.1
11/05/2012	46.0	1.4	47.4	31/05/2012	14.0	6.0	20.0
12/01/2012	45.0	-5.1	39.9	30/05/2012	13.0	6.0	19.0
21/09/2012	45.0	4.8	49.8	7/04/2012	33.0	5.6	38.6
10/08/2012	44.0	-4.0	40.0	21/09/2012	45.0	4.8	49.8

Table 13: Assessment Location 102 – Year 9

Date	Background	Predicted increment	Total	Date	Background	Highest predicted increment	Total
19/12/2012	41.2	-13.7	27.5	10/12/2012	31.7	73.3	105.0
7/11/2012	40.0	-0.9	39.1	11/12/2012	ND	64.3	64.3
6/09/2012	38.0	0.0	38.0	11/08/2012	10.6	59.5	70.1
23/10/2012	37.8	12.1	49.9	16/04/2012	23.7	59.1	82.8
27/10/2012	37.6	-1.1	36.5	10/06/2012	11.5	58.9	70.4
28/09/2012	37.3	0.0	37.3	11/06/2012	6.6	58.0	64.6
6/10/2012	36.3	-1.7	34.6	5/07/2012	11.0	49.3	60.3
18/10/2012	35.9	-17.9	18.0	7/03/2012	17.1	48.3	65.4
8/11/2012	35.3	-1.1	34.2	20/07/2012	10.5	47.7	58.2
2/11/2012	34.7	0.9	35.6	9/07/2012	12.0	42.0	54.0
21/10/2012	34.1	2.1	36.2	28/05/2012	16.1	42.0	58.1
5/09/2012	32.9	0.0	32.9	21/07/2012	12.8	37.8	50.6
23/11/2012	32.7	-0.8	31.9	9/06/2012	9.6	37.2	46.8
17/08/2012	31.7	0.0	31.7	12/06/2012	6.7	36.1	42.8
10/12/2012	31.7	73.3	105.0	5/06/2012	6.9	35.3	42.2
25/11/2012	31.5	3.1	34.6	21/02/2012	13.7	34.1	47.8
2/12/2012	30.8	10.4	41.2	5/01/2012	21.2	33.3	54.5
17/09/2012	30.7	6.6	37.3	19/11/2012	22.5	31.9	54.4
20/10/2012	30.5	-1.3	29.2	6/06/2012	9.3	31.7	41.0
12/09/2012	30.3	2.0	32.3	10/08/2012	11.7	31.6	43.3
26/10/2012	29.8	6.0	35.8	25/06/2012	9.1	31.6	40.7
13/09/2012	29.5	2.6	32.1	18/03/2012	11.0	31.0	42.0
14/11/2012	29.0	5.7	34.7	29/02/2012	18.8	28.4	47.2
7/12/2012	28.8	4.6	33.4	11/09/2012	ND	28.1	28.1
5/10/2012	28.6	-11.2	17.4	22/07/2012	10.0	26.5	36.5
9/12/2012	28.5	7.9	36.4	13/02/2012	11.2	26.4	37.6
16/11/2012	28.4	10.8	39.2	7/02/2012	21.7	25.8	47.5
18/12/2012	28.3	-9.8	18.5	29/05/2012	9.8	25.0	34.8
15/11/2012	27.8	-6.2	21.6	9/04/2012	12.7	24.7	37.4
17/10/2012	27.4	-4.5	22.9	4/07/2012	9.8	24.6	34.4
15/12/2012	27.3	-2.5	24.8	27/06/2012	8.9	23.8	32.7
17/12/2012	27.3	22.7	50.0	14/10/2012	11.5	22.9	34.4
27/09/2012	27.1	0.0	27.1	17/12/2012	27.3	22.7	50.0

Table 14: Assessment Location 264 – Year 9

Date	Background	Predicted increment	Total	Date	Background	Highest predicted increment	Total
19/12/2012	41.2	-14.5	26.7	10/12/2012	31.7	77.3	109.0
7/11/2012	40.0	-1.2	38.8	11/12/2012	ND	66.9	66.9
6/09/2012	38.0	0.0	38.0	10/06/2012	11.5	62.7	74.2
23/10/2012	37.8	11.7	49.5	11/08/2012	10.6	62.3	72.9
27/10/2012	37.6	-1.1	36.5	16/04/2012	23.7	61.8	85.5
28/09/2012	37.3	0.0	37.3	11/06/2012	6.6	59.5	66.1
6/10/2012	36.3	-1.6	34.7	5/07/2012	11.0	52.3	63.3
18/10/2012	35.9	-18.5	17.4	7/03/2012	17.1	50.8	67.9
8/11/2012	35.3	-1.2	34.1	20/07/2012	10.5	49.7	60.2
2/11/2012	34.7	1.0	35.7	28/05/2012	16.1	45.4	61.5
21/10/2012	34.1	2.4	36.5	9/07/2012	12.0	43.7	55.7
5/09/2012	32.9	0.0	32.9	21/07/2012	12.8	39.5	52.3
23/11/2012	32.7	-1.2	31.5	9/06/2012	9.6	38.8	48.4
17/08/2012	31.7	0.0	31.7	12/06/2012	6.7	38.7	45.4
10/12/2012	31.7	77.3	109.0	5/06/2012	6.9	38.5	45.4
25/11/2012	31.5	3.4	34.9	21/02/2012	13.7	35.8	49.5
2/12/2012	30.8	10.8	41.6	25/06/2012	9.1	35.0	44.1
17/09/2012	30.7	7.4	38.1	10/08/2012	11.7	34.8	46.5
20/10/2012	30.5	-1.0	29.5	5/01/2012	21.2	34.4	55.6
12/09/2012	30.3	2.3	32.6	6/06/2012	9.3	34.1	43.4
26/10/2012	29.8	6.6	36.4	19/11/2012	22.5	33.4	55.9
13/09/2012	29.5	2.9	32.4	18/03/2012	11.0	31.4	42.4
14/11/2012	29.0	5.7	34.7	11/09/2012	ND	29.8	29.8
7/12/2012	28.8	4.5	33.3	29/02/2012	18.8	29.5	48.3
5/10/2012	28.6	-12.2	16.4	13/02/2012	11.2	28.1	39.3
9/12/2012	28.5	8.3	36.8	22/07/2012	10.0	27.5	37.5
16/11/2012	28.4	11.4	39.8	29/05/2012	9.8	27.1	36.9
18/12/2012	28.3	-10.2	18.1	7/02/2012	21.7	26.7	48.4
15/11/2012	27.8	-6.4	21.4	4/07/2012	9.8	26.3	36.1
17/10/2012	27.4	-4.6	22.8	9/04/2012	12.7	25.8	38.5
15/12/2012	27.3	-2.5	24.8	27/06/2012	8.9	25.3	34.2
17/12/2012	27.3	23.1	50.4	14/10/2012	11.5	24.5	36.0
27/09/2012	27.1	0.0	27.1	17/12/2012	27.3	23.1	50.4
8/12/2012	27.1	5.0	32.1	27/05/2012	7.1	22.6	29.7

Table 15: Assessment Location 81 – Year 14

Date	Background	Predicted increment	Total	Date	Background	Highest predicted increment	Total
27/11/2012	56.1	-3.5	52.6	-	-	-	-
6/10/2012	40.9	-11.3	29.6	7/06/2012	5.9	20.8	26.7
28/09/2012	39.2	0.0	39.2	13/06/2012	ND	17.6	17.6
8/11/2012	38.7	2.1	40.8	30/10/2012	16.3	17.2	33.5
2/12/2012	37.4	-5.5	31.9	4/03/2012	9.8	17.0	26.8
22/10/2012	34.5	-0.2	34.3	21/04/2012	9.1	14.6	23.8
9/01/2012	33.7	-1.3	32.3	19/04/2012	ND	13.2	13.2
6/01/2012	33.4	-0.9	32.5	2/09/2012	12.1	12.7	24.8
17/08/2012	32.8	0.0	32.8	2/04/2012	11.9	12.4	24.3
19/12/2012	32.6	-9.3	23.2	13/04/2012	12.1	12.2	24.3
25/10/2012	32.2	-2.8	29.3	30/04/2012	14.4	11.8	26.2

Table 16: Assessment Location 118 – Year 14

Date	Background	Predicted increment	Total	Date	Background	Highest predicted increment	Total
28/09/2012	56.3	0.2	56.5	-	-	-	-
2/11/2012	54.5	0.2	54.7	-	-	-	-
26/10/2012	49.7	0.3	50.0	19/07/2012	12.1	4.2	16.3
27/10/2012	48.7	3.4	52.0	27/10/2012	48.7	3.4	52.0
17/10/2012	47.7	0.0	47.7	15/07/2012	6.7	1.3	7.9
5/10/2012	47.1	0.1	47.2	30/08/2012	25.4	1.3	26.7
18/10/2012	43.6	-0.1	43.5	30/07/2012	6.0	1.3	7.3
4/10/2012	42.8	0.1	42.8	10/01/2012	ND	1.0	1.0
5/09/2012	42.3	0.0	42.3	19/05/2012	25.0	0.9	25.9
21/10/2012	41.1	-0.1	41.0	12/09/2012	35.4	0.9	36.3
23/10/2012	40.8	-1.8	39.0	11/01/2012	ND	0.9	0.9
11/09/2012	39.6	-3.8	35.8	30/04/2012	17.1	0.7	17.8

Table 17: Assessment Location 259 – Year 14

Date	Background	Predicted increment	Total	Date	Background	Highest predicted increment	Total
28/09/2012	56.3	0.2	56.6	-	-	-	-
2/11/2012	54.5	0.1	54.6	-	-	-	-
26/10/2012	49.7	0.3	50.0	19/07/2012	12.1	3.9	16.0
27/10/2012	48.7	2.8	51.5	27/10/2012	48.7	2.8	51.5
17/10/2012	47.7	0.0	47.7	30/08/2012	25.4	1.6	27.0
5/10/2012	47.1	0.1	47.1	15/07/2012	6.7	1.6	8.2
18/10/2012	43.6	-0.1	43.5	11/01/2012	ND	1.3	1.3
4/10/2012	42.8	0.1	42.8	10/01/2012	ND	1.0	1.0
5/09/2012	42.3	0.0	42.3	19/05/2012	25.0	0.9	25.9
21/10/2012	41.1	-0.1	41.0	30/07/2012	6.0	0.9	6.9
23/10/2012	40.8	-1.8	39.1	12/09/2012	35.4	0.9	36.3
11/09/2012	39.6	-3.9	35.7	30/04/2012	17.1	0.6	17.7

Table 18: Assessment Location 126 – Year 14

Date	Background	Predicted increment	Total	Date	Background	Highest predicted increment	Total
2/11/2012	77.0	-3.1	73.9	-	-	-	-
13/09/2012	76.0	6.0	82.0	-	-	-	-
5/10/2012	73.0	0.2	73.2	-	-	-	-
27/10/2012	72.0	-1.9	70.1	-	-	-	-
17/08/2012	68.0	0.0	68.0	-	-	-	-
30/08/2012	65.0	-3.3	61.7	-	-	-	-
4/10/2012	63.0	-0.1	62.9	-	-	-	-
3/09/2012	62.0	-3.1	58.9	-	-	-	-
22/08/2012	59.0	-0.8	58.2	-	-	-	-
5/09/2012	59.0	0.0	59.0	-	-	-	-
16/08/2012	57.0	-0.3	56.7	-	-	-	-
7/09/2012	56.0	0.5	56.5	-	-	-	-
12/05/2012	55.0	-0.7	54.3	-	-	-	-
24/05/2012	54.0	0.0	54.0	-	-	-	-
28/10/2012	54.0	1.0	55.0	-	-	-	-
6/09/2012	53.0	-0.3	52.7	-	-	-	-
24/09/2012	52.0	-7.8	44.2	-	-	-	-
15/09/2012	51.0	-7.9	43.1	-	-	-	-
28/09/2012	51.0	8.3	59.3	-	-	-	-
3/11/2012	51.0	1.4	52.4	-	-	-	-
21/10/2012	49.0	-0.1	48.9	5/12/2012	27.0	10.0	37.0
15/08/2012	48.0	-1.0	47.0	8/08/2012	33.0	9.0	42.0
10/05/2012	47.0	-0.1	46.9	28/09/2012	51.0	8.3	59.3
13/05/2012	47.0	-3.0	44.0	1/06/2012	19.0	7.2	26.2
23/05/2012	47.0	-5.5	41.5	13/09/2012	76.0	6.0	82.0
31/08/2012	47.0	-1.5	45.5	11/01/2012	25.0	5.2	30.2
4/09/2012	47.0	-0.6	46.4	27/07/2012	25.0	4.1	29.1
6/12/2012	47.0	-2.5	44.5	29/07/2012	17.0	3.7	20.7
11/05/2012	46.0	-1.8	44.2	26/06/2012	18.0	3.3	21.3
12/01/2012	45.0	-8.6	36.4	27/06/2012	10.0	3.2	13.2

Table 19: Assessment Location 262 – Year 14

Date	Background	Predicted increment	Total	Date	Background	Highest predicted increment	Total
2/11/2012	77.0	-2.8	74.2	-	-	-	-
13/09/2012	76.0	6.0	82.0	-	-	-	-
5/10/2012	73.0	0.2	73.2	-	-	-	-
27/10/2012	72.0	-1.5	70.5	-	-	-	-
17/08/2012	68.0	0.0	68.0	-	-	-	-
30/08/2012	65.0	-3.2	61.8	-	-	-	-
4/10/2012	63.0	-0.1	62.9	-	-	-	-
3/09/2012	62.0	-3.1	58.9	-	-	-	-
22/08/2012	59.0	-0.7	58.3	-	-	-	-
5/09/2012	59.0	0.0	59.0	-	-	-	-
16/08/2012	57.0	-0.2	56.8	-	-	-	-
7/09/2012	56.0	0.1	56.1	-	-	-	-
12/05/2012	55.0	-1.0	54.0	-	-	-	-
24/05/2012	54.0	0.0	54.0	-	-	-	-
28/10/2012	54.0	0.8	54.8	-	-	-	-

Date	Background	Predicted increment	Total	Date	Background	Highest predicted increment	Total
6/09/2012	53.0	-0.2	52.8	-	-	-	-
24/09/2012	52.0	-7.6	44.4	-	-	-	-
15/09/2012	51.0	-7.8	43.2	-	-	-	-
28/09/2012	51.0	8.2	59.2	-	-	-	-
3/11/2012	51.0	1.1	52.1	-	-	-	-
21/10/2012	49.0	-0.1	48.9	5/12/2012	27.0	9.7	36.7
15/08/2012	48.0	-0.9	47.1	28/09/2012	51.0	8.2	59.2
10/05/2012	47.0	-0.1	46.9	8/08/2012	33.0	8.1	41.1
13/05/2012	47.0	-2.9	44.1	1/06/2012	19.0	6.5	25.5
23/05/2012	47.0	-5.3	41.7	13/09/2012	76.0	6.0	82.0
31/08/2012	47.0	-1.6	45.4	11/01/2012	25.0	5.1	30.1
4/09/2012	47.0	-0.5	46.5	29/07/2012	17.0	4.1	21.1
6/12/2012	47.0	-2.5	44.5	27/07/2012	25.0	4.1	29.1
11/05/2012	46.0	-1.6	44.4	31/05/2012	14.0	3.4	17.4
12/01/2012	45.0	-8.5	36.5	27/06/2012	10.0	2.9	12.9

Table 20: Assessment Location 102 – Year 14

Date	Background	Predicted increment	Total	Date	Background	Highest predicted increment	Total
19/12/2012	41.2	-14.9	26.3	5/06/2012	6.9	92.1	99.0
7/11/2012	40.0	-5.6	34.4	10/12/2012	31.7	56.4	88.1
6/09/2012	38.0	0.0	38.0	4/07/2012	9.8	45.8	55.6
23/10/2012	37.8	-4.6	33.2	20/07/2012	10.5	43.0	53.5
27/10/2012	37.6	1.0	38.6	10/04/2012	12.3	39.1	51.4
28/09/2012	37.3	0.2	37.5	11/12/2012	ND	37.3	37.3
6/10/2012	36.3	4.3	40.6	10/08/2012	11.7	34.9	46.6
18/10/2012	35.9	-18.8	17.1	21/02/2012	13.7	34.6	48.3
8/11/2012	35.3	-1.4	33.9	25/06/2012	9.1	32.7	41.8
2/11/2012	34.7	6.9	41.6	28/05/2012	16.1	31.1	47.2
21/10/2012	34.1	1.2	35.3	26/12/2012	ND	29.7	29.7
5/09/2012	32.9	0.0	32.9	9/04/2012	12.7	28.8	41.5
23/11/2012	32.7	-8.2	24.5	6/06/2012	9.3	28.8	38.1
17/08/2012	31.7	0.0	31.7	27/05/2012	7.1	27.8	34.9
10/12/2012	31.7	56.4	88.1	11/08/2012	10.6	25.6	36.2
25/11/2012	31.5	1.4	32.9	29/07/2012	8.3	24.9	33.2
2/12/2012	30.8	1.4	32.2	7/03/2012	17.1	23.8	40.9
17/09/2012	30.7	7.0	37.7	24/09/2012	17.9	23.8	41.7
20/10/2012	30.5	-1.3	29.2	23/09/2012	13.2	23.2	36.4
12/09/2012	30.3	4.6	34.9	5/07/2012	11.0	22.7	33.7
26/10/2012	29.8	11.4	41.2	16/04/2012	23.7	22.1	45.8
13/09/2012	29.5	3.9	33.4	10/06/2012	11.5	21.8	33.3
14/11/2012	29.0	-9.7	19.3	9/08/2012	13.2	21.3	34.5
7/12/2012	28.8	-8.9	19.9	30/03/2012	16.4	21.0	37.4

Table 21: Assessment Location 264 – Year 14

Date	Background	Predicted increment	Total	Date	Background	Highest predicted increment	Total
19/12/2012	41.2	-15.7	25.5	5/06/2012	6.9	94.3	101.2
7/11/2012	40.0	-6.4	33.6	10/12/2012	31.7	57.5	89.2
6/09/2012	38.0	0.0	38.0	4/07/2012	9.8	46.1	55.9
23/10/2012	37.8	-5.0	32.8	20/07/2012	10.5	43.7	54.2
27/10/2012	37.6	1.1	38.7	10/04/2012	12.3	38.6	50.9
28/09/2012	37.3	0.6	37.9	11/12/2012	ND	37.0	37.0

Date	Background	Predicted increment	Total	Date	Background	Highest predicted increment	Total
6/10/2012	36.3	5.5	41.8	21/02/2012	13.7	35.3	49.0
18/10/2012	35.9	-19.1	16.8	10/08/2012	11.7	35.0	46.7
8/11/2012	35.3	-1.4	33.9	25/06/2012	9.1	31.1	40.2
2/11/2012	34.7	7.5	42.2	28/05/2012	16.1	30.5	46.6
21/10/2012	34.1	1.4	35.5	26/12/2012	ND	30.0	30.0
5/09/2012	32.9	0.0	32.9	6/06/2012	9.3	29.6	38.9
23/11/2012	32.7	-8.9	23.8	9/04/2012	12.7	29.3	42.0
17/08/2012	31.7	0.0	31.7	27/05/2012	7.1	28.0	35.1
10/12/2012	31.7	57.5	89.2	11/08/2012	10.6	25.4	36.0
25/11/2012	31.5	1.6	33.1	23/09/2012	13.2	25.1	38.3
2/12/2012	30.8	1.5	32.3	29/07/2012	8.3	25.0	33.3
17/09/2012	30.7	7.3	38.0	9/08/2012	13.2	23.3	36.5
20/10/2012	30.5	-1.0	29.5	7/03/2012	17.1	23.2	40.3
12/09/2012	30.3	6.6	36.9	24/09/2012	17.9	23.0	40.9
26/10/2012	29.8	12.6	42.4	5/07/2012	11.0	22.4	33.4
13/09/2012	29.5	4.6	34.1	4/05/2012	13.7	22.0	35.7
14/11/2012	29.0	-10.3	18.7	16/04/2012	23.7	21.6	45.3
7/12/2012	28.8	-9.3	19.5	30/07/2012	11.2	21.5	32.7
5/10/2012	28.6	-18.0	10.6	10/06/2012	11.5	20.8	32.3

Appendix B4

Isopleths diagrams – Blast emissions

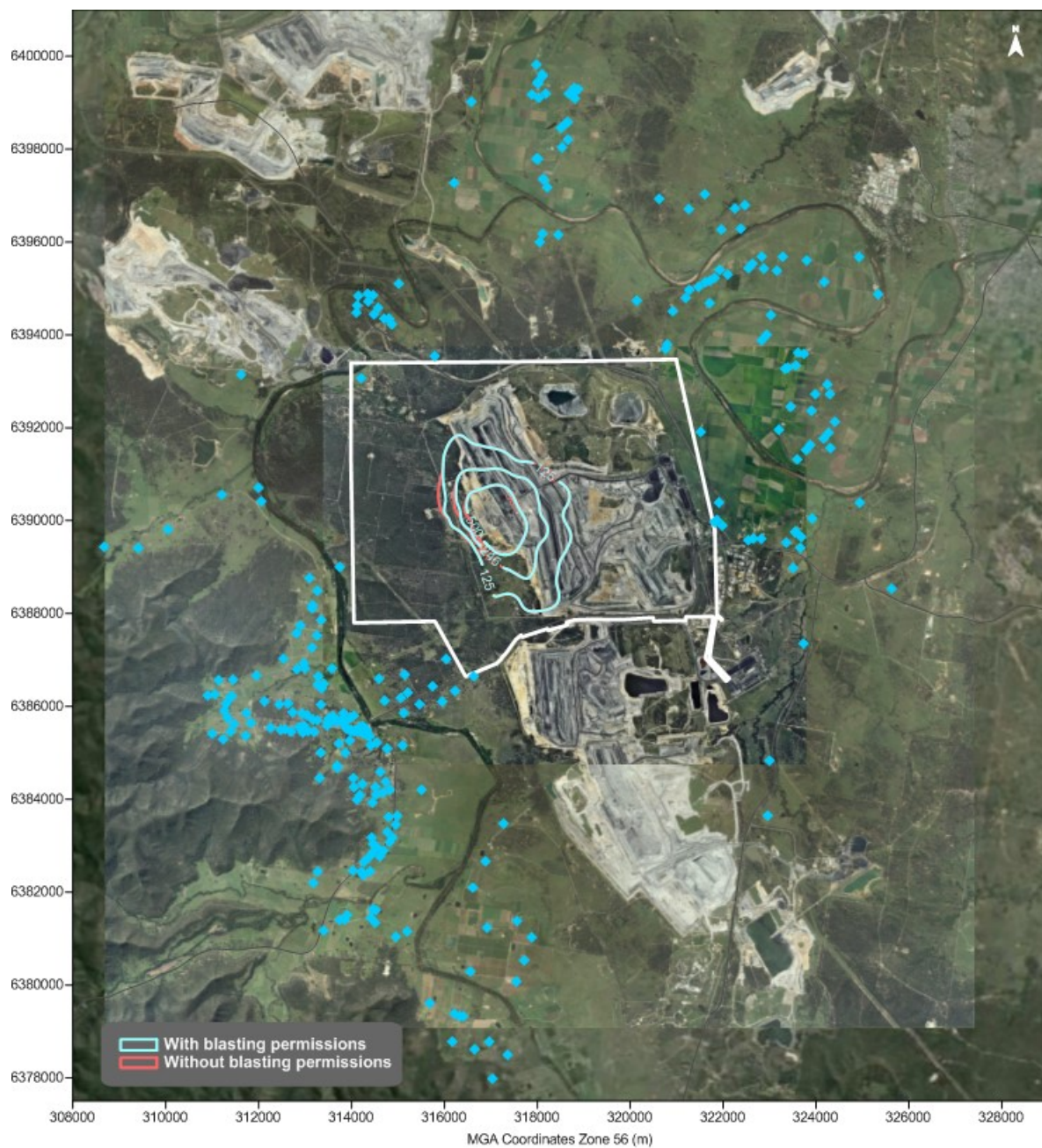


Figure 2: Predicted maximum 1-hour average blast emissions from the proposal in Year 3 – 08:00
(NO₂ concentrations µg/m³)

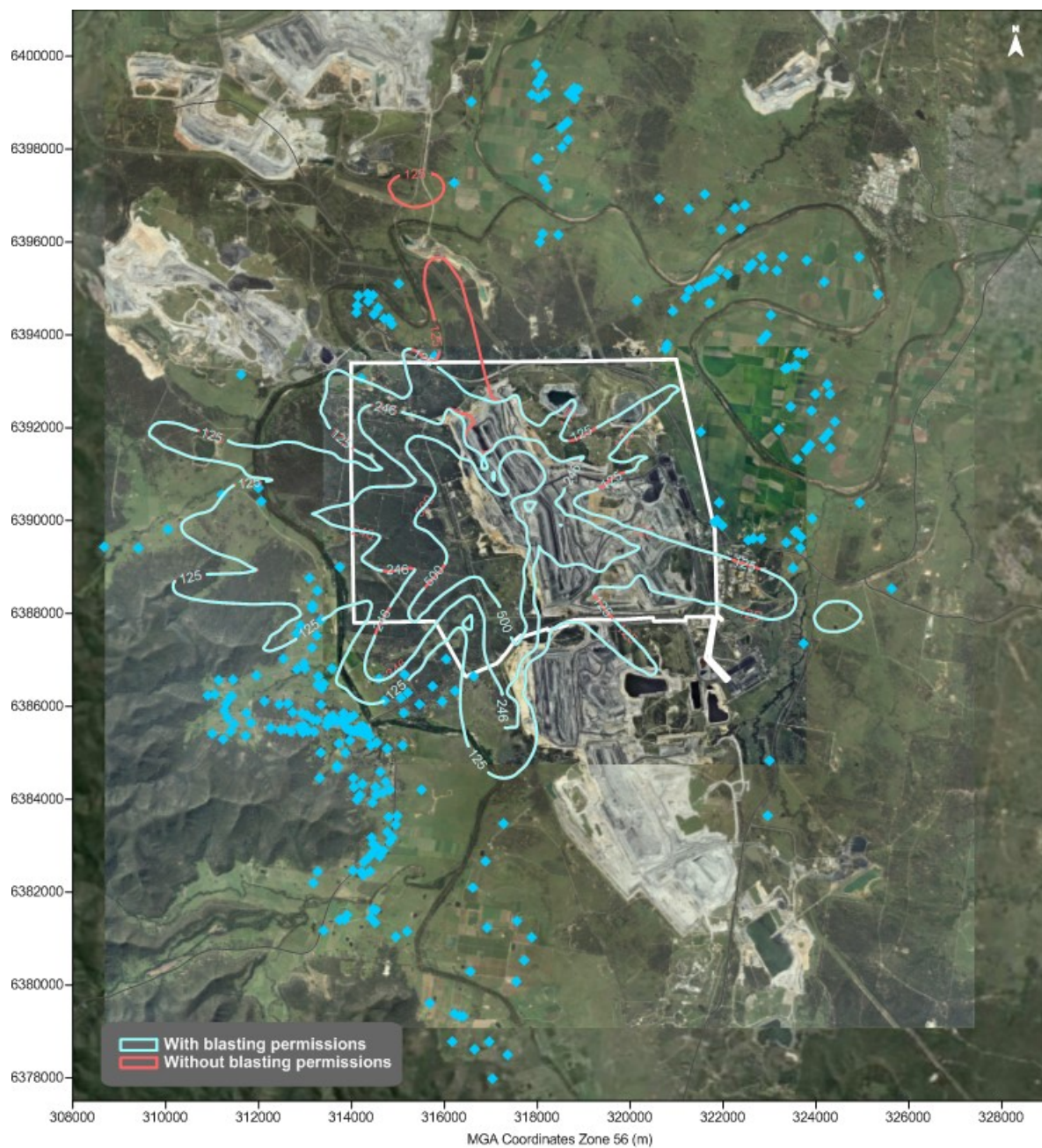


Figure 3: Predicted maximum 1-hour average blast emissions from the proposal in Year 3 – 18:00 (NO₂ concentrations µg/m³)

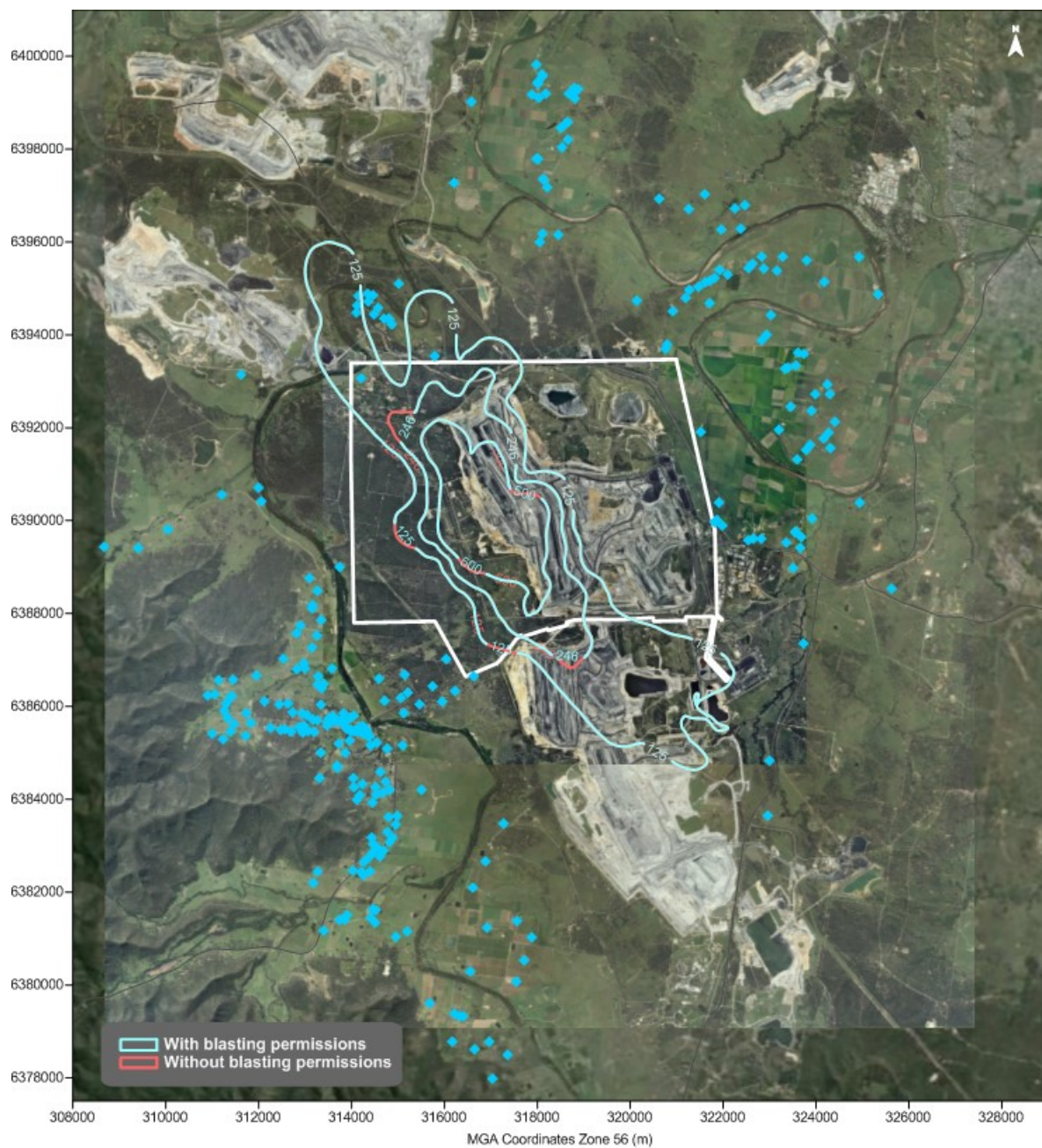
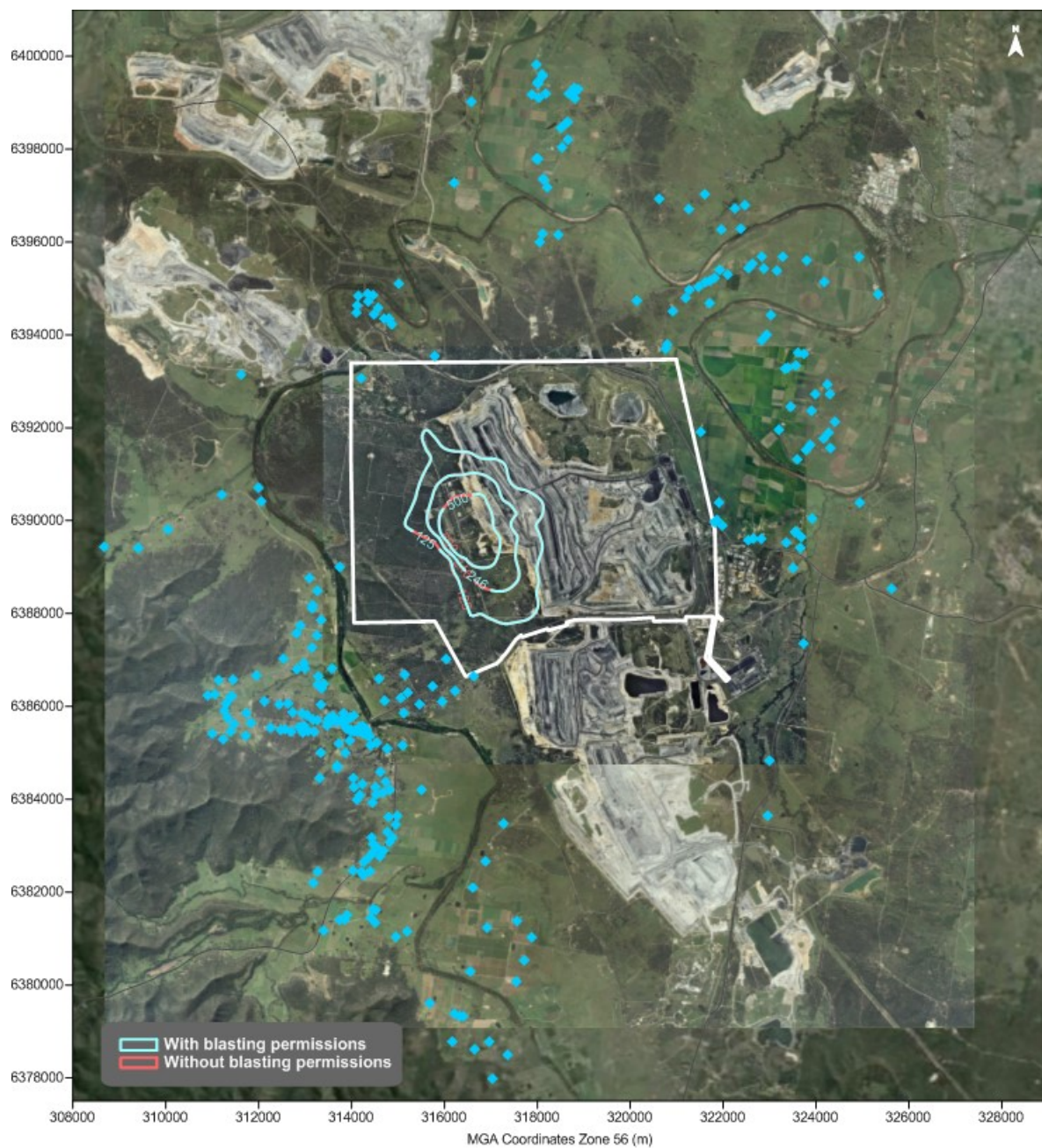
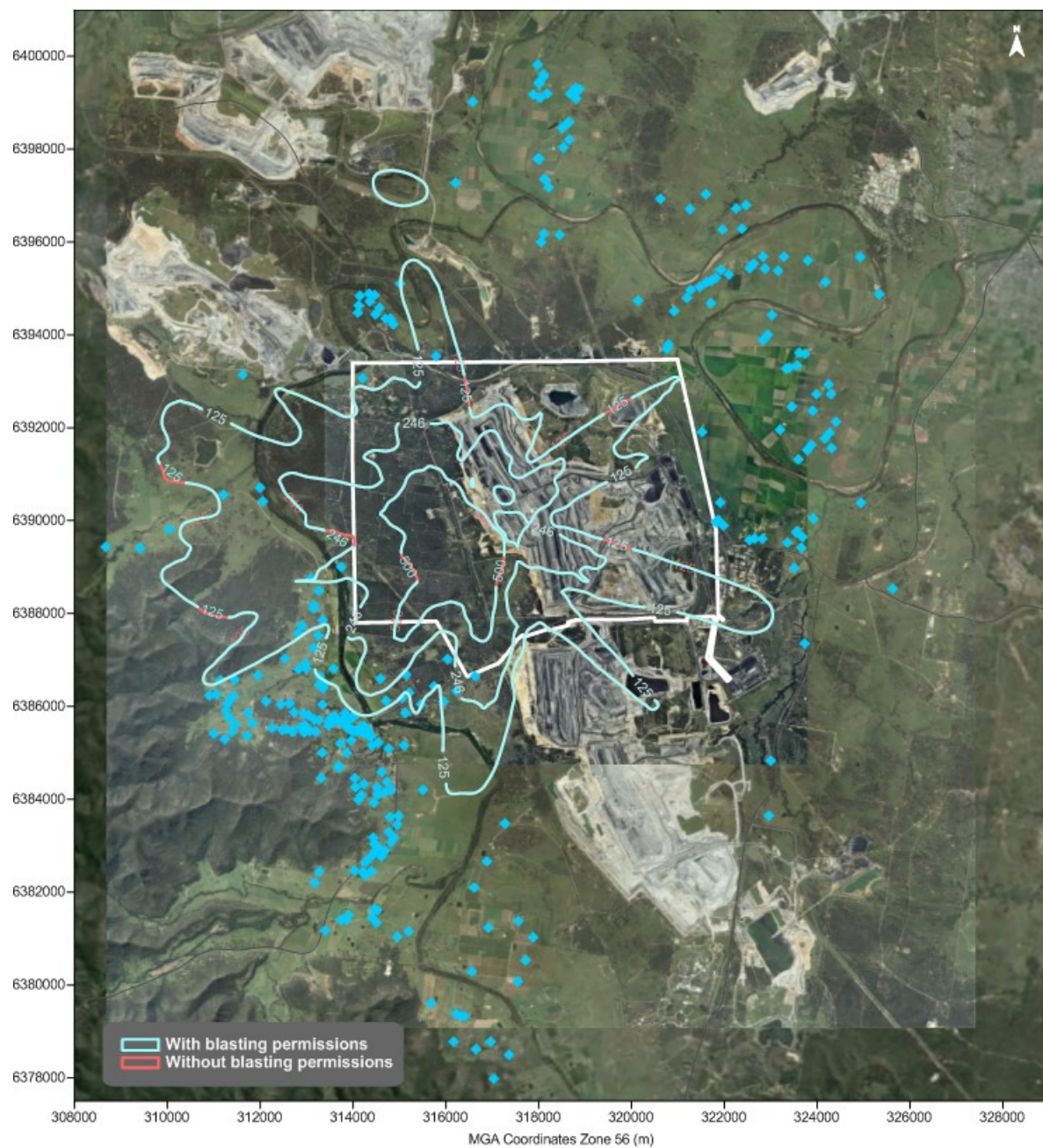


Figure 4: Predicted maximum 1-hour average blast emissions from the proposal in Year 9 – 07:00 (NO₂ concentrations µg/m³)



**Figure 5: Predicted maximum 1-hour average blast emissions from the proposal in Year 9 – 08:00
(NO₂ concentrations µg/m³)**



**Figure 6: Predicted maximum 1-hour average blast emissions from the proposal in Year 9 – 18:00
(NO₂ concentrations µg/m³)**

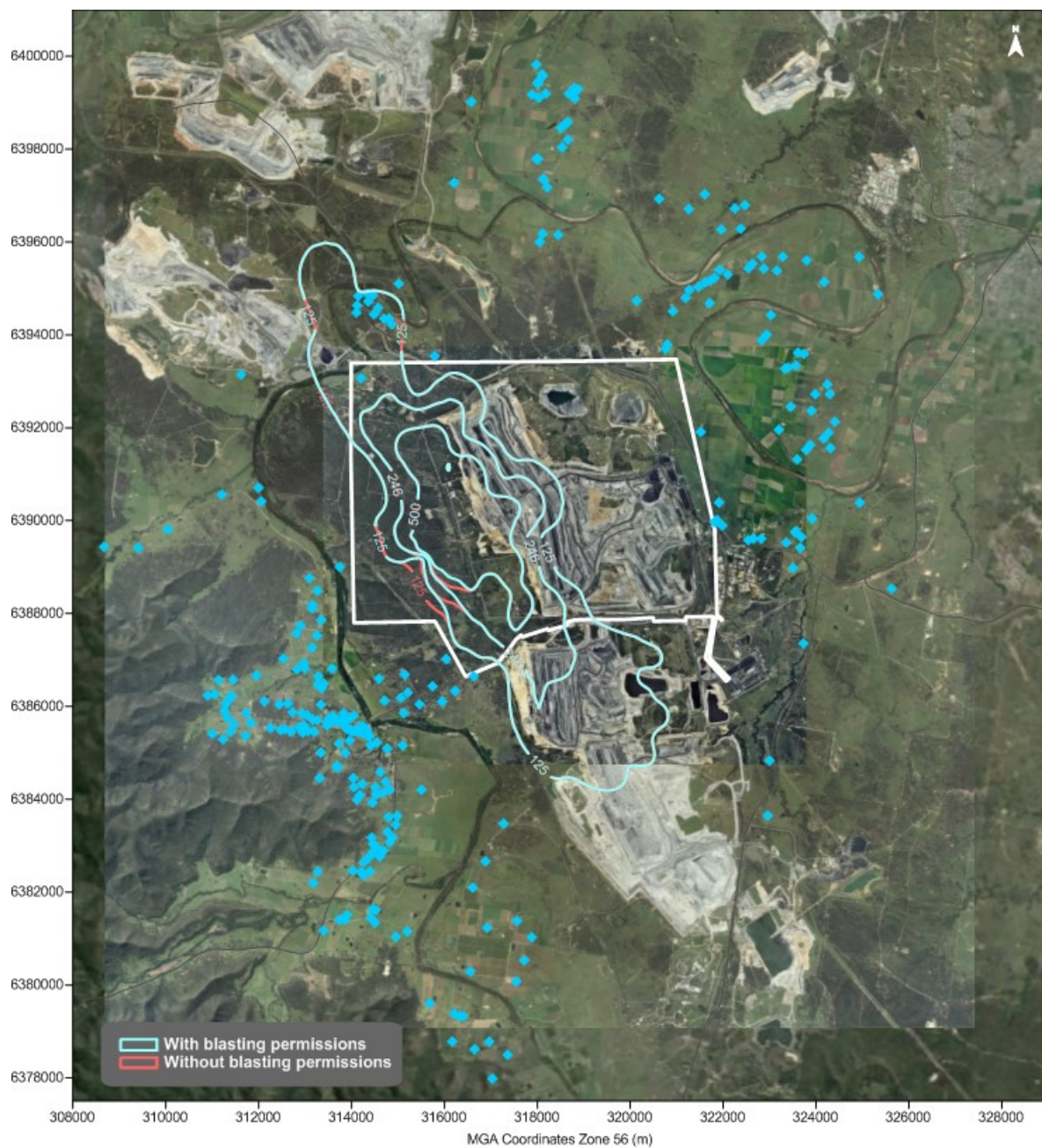
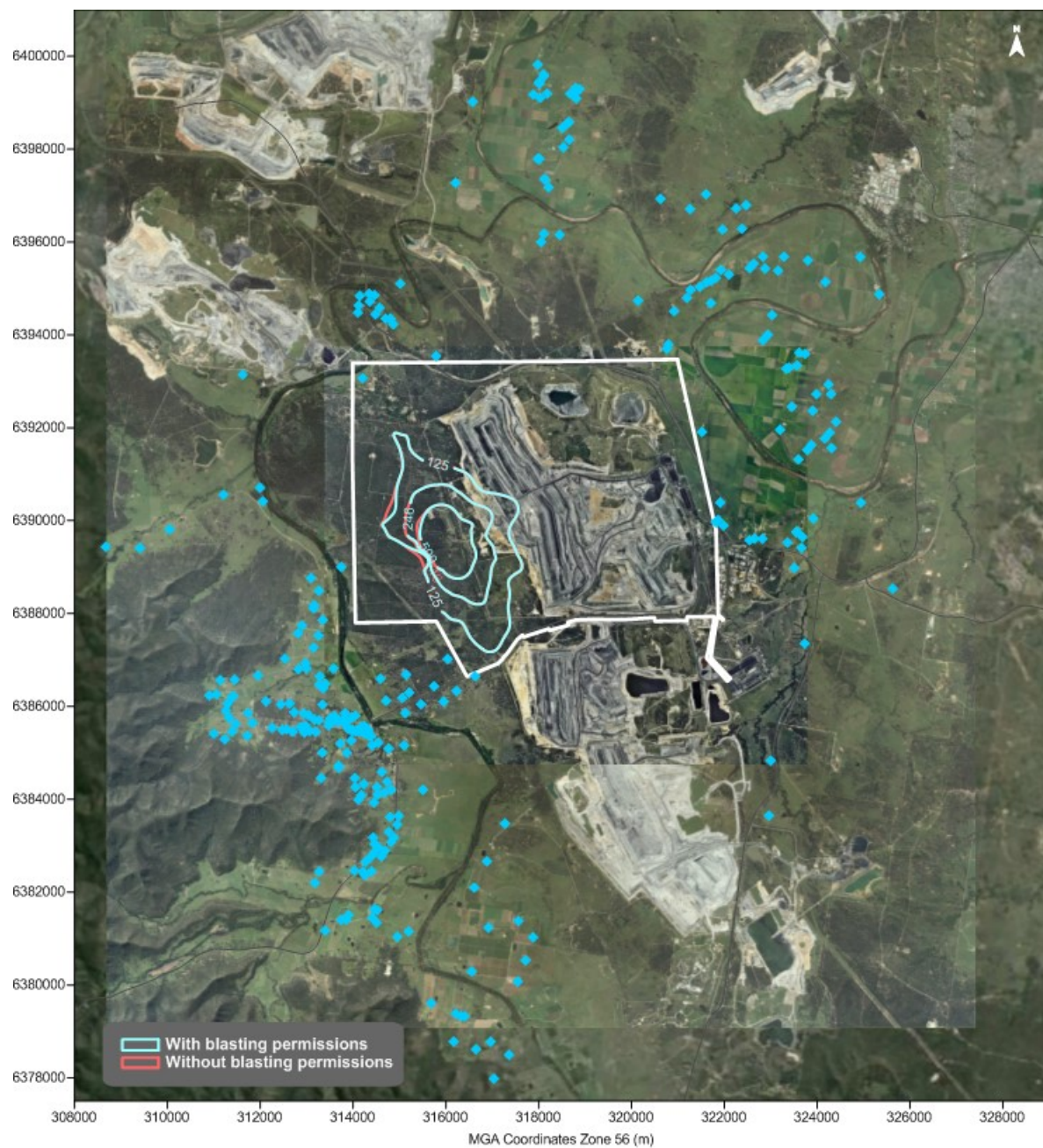


Figure 7: Predicted maximum 1-hour average blast emissions from the proposal in Year 14 – 07:00 (NO₂ concentrations $\mu\text{g}/\text{m}^3$)



**Figure 8: Predicted maximum 1-hour average blast emissions from the proposal in Year 14 – 08:00
(NO₂ concentrations µg/m³)**

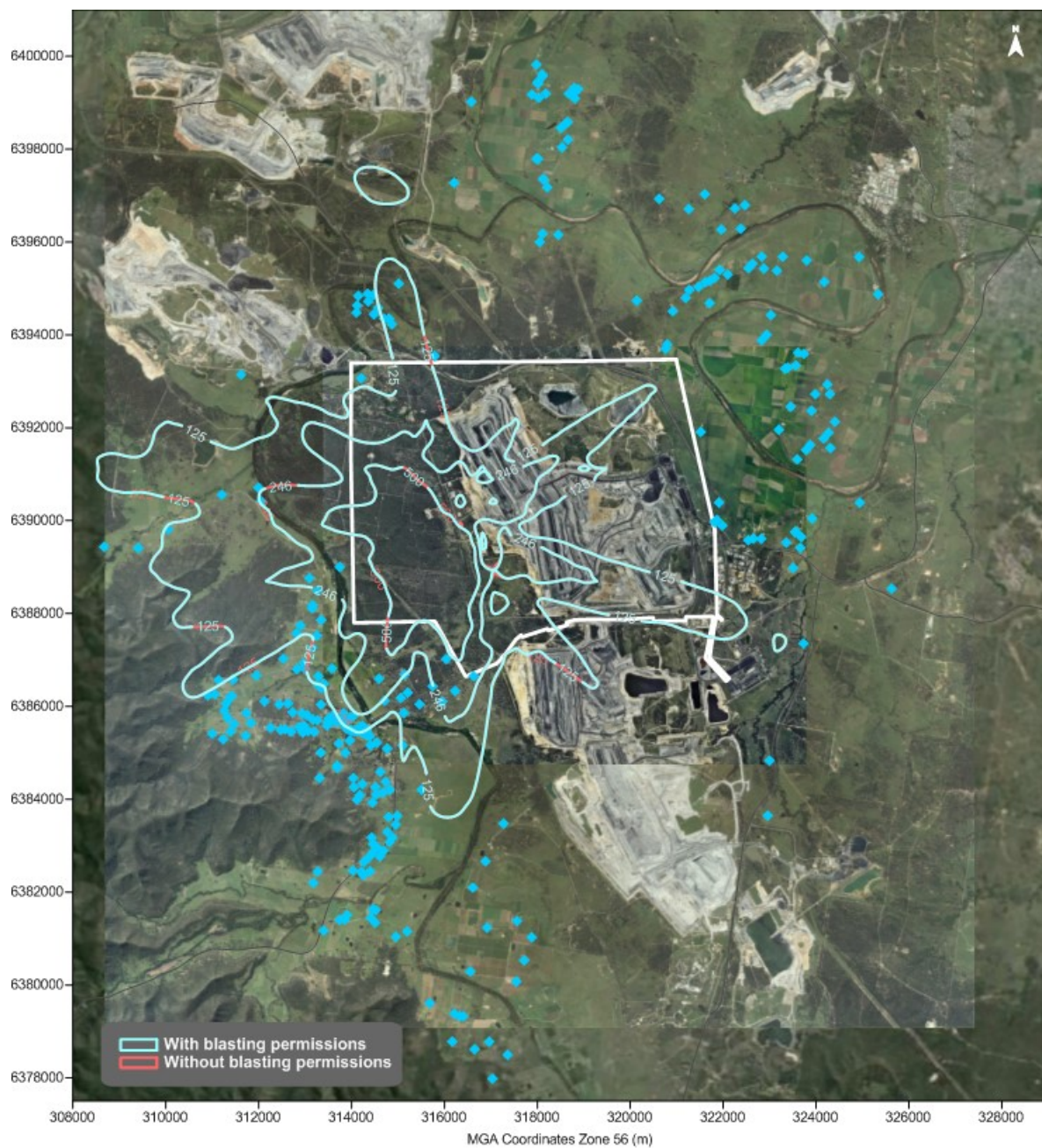


Figure 9: Predicted maximum 1-hour average blast emissions from the proposal in Year 14 – 18:00 (NO₂ concentrations µg/m³)

Appendix C

Social impacts and opportunities from the proposal - perceived and technical studies



Appendix C — Social impacts and opportunities from the proposal - perceived and technical studies

C

Table C.1 Social impacts and opportunities from the proposal – perceived and technical studies

Impact/opportunities		
	Perceived	Technical assessment
Amenity		
Noise	Noise levels and impacts on amenity, health and well-being Noise was the most frequently identified perceived impact. Near neighbours (that is, residents living in proximity to the mine with potential noise exposure) perceive that the proposal is very likely to contribute to noise (including low frequency noise), impacting on the amenity, health and well-being of residents in Bulga, Long Point and Gouldsville. The majority of responses relating to noise levels were related to the Warkworth Continuation 2014, as opposed to the proposal.	Noise management The applicant has committed to implementing best practice sound suppression on all major plant. Further, the applicant is in final stages of developing a pre-emptive real time noise modelling interface (a first in the NSW mining industry) and is using best practice real time noise monitoring and management techniques. This constitutes all reasonable and feasible mitigation that has and would be adopted under the proposal. Assessment criteria The Mining SEPP's non-discretionary standard for cumulative amenity noise levels at privately-owned residential dwellings is met for Bulga village, and noise impacts are predicted to be below the acceptable noise levels, and amenity of the village should not be reduced. Further, the Mining SEPP's non-discretionary standard for cumulative amenity noise levels is also met at other surrounding localities such as Gouldsville and Long Point. The L&E Court judgement (par. 64), notes that experience of noise levels from current mine operations is more than an expression of subjective fear or concern. However, while noise levels may be perceived differently by different stakeholders, the noise assessment used objective INP noise criteria designed to protect at least 90 per cent of the population living in the vicinity of industrial noise sources from the adverse effects of noise for at least 90 per cent of the time. Project specific noise levels The determining factor for the project specific noise levels (PSNLs) for all residences is the intrusiveness criteria. Background levels have been set at appropriate levels to determine these. A significant exceedance (>5dB(A)) of the PSNL is predicted to occur at one assessment location at Mount Thorley Industrial Estate (149) which is currently afforded acquisition rights from MTO under the development consent. It is noted that operational noise levels from the proposal are not expected to be materially different from current noise levels for locations east of the mine given relatively no changes to current activities in the eastern parts of the Site. Noise levels would be within 1 or 2dB(A) of the PSNLs for the majority of the residences at Bulga. As noted in Section 9.2.2, changes of 1 to 2dB are imperceptible. Low frequency noise Noise levels are predicted to meet relevant Broner criteria for low frequency noise and INP criteria for sleep disturbance at representative assessment locations.

Table C.1 Social impacts and opportunities from the proposal – perceived and technical studies

	Impact/opportunities	
	Perceived	Technical assessment
		Cumulative noise Cumulative noise levels would satisfy the INP (and Mining SEPP) night time criterion at all but two representative assessment locations in Warkworth village (77) and Mount Thorley (146). As these are representative locations, the criterion is also likely to be exceeded at two neighbouring locations in Warkworth village (102 and 264) and two neighbouring locations in Mount Thorley Industrial Estate (144 and 915). It should be noted that these assessment locations are currently afforded acquisition rights from MTO or Wambo Mine with the exception of 264, which is inferred to have acquisition rights from Wambo Mine but is not currently included in its approval.
<i>Assessment of impacts</i>	Noise criteria are established by government to protect at least 90 per cent of the population living in the vicinity of industrial noise sources from the adverse effects of noise for at least 90 per cent of the time. Stakeholders perceived that the proposal would contribute to noise, especially low frequency noise and that this may impact on the amenity, health and well being of near neighbours. All reasonable and feasible measures have been applied to control noise from MTO. MTO would implement operational, noise and blasting management strategies and monitoring as detailed in Chapter 9 of the EIS. Specifically for Bulga, this includes measures such as a trigger action response process (TARP), whereby noise level triggers from the MTW real time noise monitoring network initiate a series of management measures to reduce offsite noise levels. All residences in Bulga are predicted to satisfy the Mining SEPP's cumulative noise limit from all industrial noise sources. Compliance with the Mining SEPP's cumulative noise limit is accepted as providing significant protection against noise impacts. This means that the total impact from all mines in the locality would achieve amenity level recommendations of the INP. Overall, no additional properties are predicted to be entitled to acquisition rights under the proposal. The noise and vibration study predicts a significant exceedance of the PSNL at one assessment location north-east of MTO at the Mount Thorley Industrial Estate, which is already currently afforded acquisition rights from MTO under the existing development consent. Furthermore, given that the cumulative noise levels have been met at the majority of assessment locations, and it is unlikely there would be additional noise sources nearby in the future, the residences at Bulga generally have a rural level of amenity as defined in the INP. On this basis, and subject to the implementation of all reasonable and feasible mitigation, it is concluded that social impacts from noise on amenity, health and well-being are acceptable and meet Government guidelines.	
Air quality	Air quality impacts Near neighbours expressed concern that the proposal is likely to contribute to air quality impacts from dust mainly associated with the placement of overburden from Warkworth Mine at MTO. Impacts of air quality on health and well-being	Air quality management Air quality goals are benchmarks set to protect the general health and amenity of the community in relation to air quality. Air quality impacts are currently managed through an existing integrated management system which involves the implementation of a monitoring network, best practice mitigation measures, and operational control strategies and measures with the objective of continuous improvement (see Section 10.5). Recent air quality

Table C.1 Social impacts and opportunities from the proposal – perceived and technical studies

Impact/opportunities	
Perceived	Technical assessment
Some stakeholders perceive that air quality impacts on amenity, health and well-being of affected residents are likely. Some stakeholders feel that they have little capacity of these affected residents to cope with air quality impacts.	monitoring results for 2012 and 2013 have shown that the MTO is complying with the relevant air quality criteria. Assessment criteria The Mining SEPP's non-discretionary standard for cumulative air quality is met at all but two privately-owned residential dwellings (assessment locations 77 and 264) which are in Warkworth village. These assessment locations, and one non-residence (102 – Warkworth Hall), may experience concentrations above the relevant air quality goals for 24-hour average and annual average PM₁₀ (particulate matter with a diameter of 10µm or less). Assessment location 77 is currently afforded acquisition rights from a neighbouring mine. Assessment location 264 is inferred to have acquisition rights from a neighbouring mine but is not currently included in its approval. The Mining SEPP's non-discretionary standard for cumulative air quality at privately-owned residential dwellings is met for Bulga village and air quality impacts are predicted to be below the acceptable air quality concentrations and amenity of the village should not be reduced. Particulate matter Fifteen mine-owned assessment locations are predicted to experience concentrations above the relevant air quality goals for 24-hour average and annual average PM₁₀. A subset of these assessment locations may also experience concentrations above the relevant air quality goals for annual average total suspended particulate matter (TSP) and incremental and total annual average dust deposition. Dust from mining is generally coarse in fraction (> PM_{2.5}) whereas the fine fraction dust (< PM_{2.5}) of concern to human health typically originates from combustion sources. Cumulative PM_{2.5} (particulate matter with a diameter of 2.5µm or less) concentrations would be below the National Environment Protection Measure (NEPC 2003) advisory reporting standards at all of the assessment locations where the concentrations of other pollutants are below the relevant air quality goals. Diesel emissions and blast fume emissions No air quality impacts are predicted to result from diesel emissions (NO₂ and CO) and blast fume emissions.

Table C.1 Social impacts and opportunities from the proposal – perceived and technical studies

	Impact/opportunities	
	Perceived	Technical assessment
<i>Assessment of impacts</i>	Air quality goals are benchmarks set to protect the general health and amenity of the community in relation to air quality. Recent MTW air quality monitoring results for 2012 and 2013 have shown that MTO is complying with the relevant air quality criteria. Near neighbours expressed concern that the proposal would contribute to air quality impacts from dust, diesel emissions and blast fumes with a resulting impact on amenity, health and well-being. As noted above, the Mining SEPP's non-discretionary standard for cumulative air quality is met at all but two privately-owned residential dwellings in Warkworth village and one non-residential building. One of these locations is currently afforded acquisition rights, while the other is inferred to have acquisition rights, from a neighbouring mine. The Mining SEPP's non-discretionary standard for cumulative air quality at privately-owned residential dwellings is met for Bulga village. This means that amenity of the village would be maintained. Cumulative PM_{2.5} concentrations would be below the NEPC (2003) advisory reporting standards at all of the assessment locations where the concentrations of other pollutants are below the relevant air quality goals. This means that the current standards of air quality would be maintained. No air quality impacts are predicted to result from diesel emissions (NO₂ and CO) and blast fume emissions. On this basis and subject to the implementation of all reasonable and feasible mitigation, it is concluded that air quality impacts are a low risk to social amenity and are acceptable given Government criteria guidelines are met for privately-owned residences.	
Blasting and vibrations	Blasting and vibration impacts Near neighbours perceived concerns relating to blasting and vibration impacts principally relate to the Warkworth Continuation 2014.	Blasting and vibration impacts The proposal is for continuation of mining operations which would remain within the current approved boundaries. Blasting impacts would therefore remain as previously assessed in past noise and vibration impact assessments for the proposal.
<i>Assessment of impacts</i>	Near neighbours perceived that blasting from the proposal may contribute to vibration and amenity impacts on properties as the proposal continues mining. The proposal does not seek to extend the approved spatial limits of extraction. The proposal seeks to extend the time for approved mining that has occurred slower than anticipated beyond 2017, due to mining in Loders Pit being delayed for approximately three years due to a significant rain event in June 2007. An assessment of blasting impacts on sensitive structures in the vicinity (Bulga Bridge and St Phillips Church in Warkworth) indicated that it is highly unlikely that these structures would be impacted by blasting. As noted above, a predictive modelling system is being implemented at MTW. It will continue to use spatially and time varying weather and terrain data to predict the most appropriate time of day to complete blasting activities. Subject to the implementation of the protocols outlined in the MTW blast management plan no impacts are predicted to result from blast fume emissions. On this basis, and subject to the implementation of all reasonable and feasible mitigation, the potential social impacts on property and amenity from blasting or vibration are considered acceptable and meet Government guidelines.	

Table C.1 Social impacts and opportunities from the proposal – perceived and technical studies

Impact/opportunities		
	Perceived	Technical assessment
Visual amenity	Visual amenity impacts Near neighbours perceived concerns relating to visual impacts principally related to the Warkworth Continuation 2014. However, given the proposal to emplace overburden from Warkworth Mine at MTO, consideration is given to potential visual impacts.	Visual amenity impacts Existing topography and vegetation would continue to provide screening to MTO as mining within Loders Pit continues and overburden is emplaced within the Site. Some residences west of the Site, such as elevated residences around Bulga village, may experience high visual amenity impacts. Progressive rehabilitation of disturbed areas and implementation of visual impact mitigation measures would be undertaken to minimise impacts on visual amenity. Visual impact mitigation measures Visual impact mitigation measures would be put in place to mitigate the potential impacts on the overall surrounding landscape. This would include vegetation and bund screening to the boundaries of the Site. In addition, site-specific visual assessments (SSVAs) would be available to individual landowners of potentially impacted properties. These SSVAs would prescribe specific mitigation measures, if the proposal is determined to have high or high/moderate visual impact at the property. The L&E Court judgement (par. 434) found that being able to see overburden emplacements are a constant reminder of the mine and that lights from the mine are intrusive and annoying. Implementation of the mitigation measures prescribed in SSVAs at impacted properties will be important to substantially reduce these amenity impacts. Progressive rehabilitation of the Site would further reduce the level of contrast in the viewing landscape and, ultimately, result in a higher level of visual integration.
Assessment of impacts	Open cut mines and associated infrastructure has long been a dominant feature of the local area's visual character, as would follow with mining being the highest employer in the region. This includes MTO which was established over 30 years ago. Near neighbours expressed concerns generally in relation to the Warkworth Continuation 2014 although consideration was given to visual impacts at MTO given the proposal to emplace overburden from Warkworth Mine at MTO. Mining in Loders Pt is at its western most point and would continue within the same approved footprint (already cleared) mining the deeper seams. The proposal will result in the continuation of some negative visual impacts for residences to the west, although existing topography and vegetation would continue to provide screening at MTO as mining within Loders Pit continues and overburden is emplaced within the Site. Progressive rehabilitation of disturbed areas and implementation of visual impact mitigation measures would be undertaken to minimise impacts on visual amenity. Where high or high/moderate visual impacts occur, site-specific mitigation measures (eg SSVAs) would be available to individual landowners. In addition, visual impact mitigation measures would be put in place to mitigate the potential impacts on the overall surrounding landscape including vegetation and bund screening to the boundaries of the Site.	

Table C.1 Social impacts and opportunities from the proposal – perceived and technical studies

Impact/opportunities	
Perceived	Technical assessment
The proposal does not seek to extend the approved spatial limits of extraction. As the proposal seeks to extend the time for approved mining that has occurred slower than anticipated beyond 2017 (due to mining in Loders Pit being delayed for approximately three years due to a significant rain event in June 2007) and subject to the implementation of management measures committed to under the proposal, it is concluded that social impacts from changes to visual amenity under the proposal are acceptable as the viewshed is already dominated by mining developments. The increased impact from the proposal is not considered to significantly alter the viewshed from what it is at present. In addition, mining impacts are short term and the long term rehabilitated landscape will have a low visual impact.	
Environmental	
Groundwater and surface water	Groundwater impacts Stakeholders perceived concerns regarding groundwater impacts related to the Warkworth Continuation 2014. Surface water impacts Stakeholders perceived that there would be impacts on surface water, particularly the potential continued deterioration of the Wollombi Brook which is considered to be an important environmental, social and community attribute, with several stakeholders citing its long-standing importance to Bulga for agricultural production and recreational activities.
Assessment of impacts	Groundwater Given that stakeholders perceived concerns regarding groundwater impacts related to the Warkworth Continuation 2014, they are not assessed here. Surface water The results of the surface water study indicate that the impacts of the proposal on surface water resources are unlikely to be significantly different to the existing approved operations and would not have a significant impact on surface water quality of the adjacent water features. Surface water would continue to be managed under the MTW WMP and the existing MTW surface water monitoring programme. No additional mitigation measures, to those already implemented, are required for the proposal.
	Water related legislation provides for the sustainable and integrated management of the water sources of the State for the benefit of both present and future generations. The NSW Aquifer Interference Policy (AIP) defines the regime for protecting and managing the impacts of aquifer interference activities on NSW's water resources and strikes a balance between the water needs of towns, farmers, industry and the environment. It is concluded that the social impact from proposal's interaction with surface and groundwater is acceptable given Government policy (eg AIP) and legislative licensing requirements will be met.

Table C.1 Social impacts and opportunities from the proposal – perceived and technical studies

	Impact/opportunities	
	Perceived	Technical assessment
Rehabilitation and future land use planning	Ineffective rehabilitation Near neighbours and interested stakeholders perceived that past and present rehabilitation practices at MTW and at other mining sites throughout the Hunter Valley have been ineffective/unsuccessful and that little change in these practices is included as part of the proposal. Several stakeholders suggested that evidence is yet to emerge of open-cut coal mine rehabilitation leading to positive environmental and land use outcomes.	Rehabilitation achieved and proposed Rehabilitation at MTW is undertaken in a series of stages as mining progresses. Much of the rehabilitation to date has been in the north of the site predominately away from the public views and is consistent with the progression of mining. The 2013 Annual Environmental Review for MTW illustrates that the rehabilitation completed in 2013 exceeded the commitment outlined in the Mining Operations Plan (MOP). The cumulative rehabilitation undertaken during the MOP period of 126.2ha has also exceeded that committed to in the MOP (121.9ha) at this point in the mine life. The proposal includes commitments (see Chapter 12) to leading practice rehabilitation and future innovations in rehabilitation to achieve improved outcomes. Given this is the case, it is unlikely that ineffective rehabilitation would lead to social impacts.
Assessment of impacts	Rehabilitation at MTW is undertaken in a series of stages as mining progresses. Near neighbours generally perceived that rehabilitation practices throughout the Hunter Valley are ineffective. The 2013 Annual Environmental Review for MTW illustrates that the rehabilitation completed in 2013 exceeded the commitment outlined in the MOP. The cumulative rehabilitation undertaken during the MOP period of 126.2ha has also exceeded that committed to in the MOP (121.9ha) at this point in the mine life. On this basis, and subject to the implementation of all reasonable and feasible rehabilitation measures, it is concluded that rehabilitation will not result in a negative social impact given that it meets Government requirements through the MOP. In addition, mining impacts are short term and the long term rehabilitated landscape will have an acceptable visual impact.	
Community		
Community and family cohesion	Loss of population, community members and leaders The residents of Bulga, Long Point and Gouldsville perceive there may be loss of population, community members and leaders as a result of acquisition and relocation, leading to the gradual decline of community (both facilities/services and existing community connections and village life) and disconnections between and within communities and families.	Population The proposal is required to enable continuation of operations at MTO beyond 2017, and so contribute to maintaining the current and the regional population in the medium-term. The decline of smaller rural communities is a broad concern across Australia including in parts of the middle and upper Hunter region that are experiencing decline. A wide range of factors are contributing to this such as improved communications which is encouraging migration to cities and centralisation of services, restructuring of rural industries and reduced employment opportunities, and population aging and non-replacement leading to towns falling below the critical threshold needed to maintain essential services. In contrast, Bulga has a number of significant attributes including retail and community facilities (service station, general store, tavern, community hall, sports ground and fire brigade) and it is well located to service the tourist trade being proximal to attractions like wineries and is on the Putty Road tourist route. Consequently,

Table C.1 Social impacts and opportunities from the proposal – perceived and technical studies

Impact/opportunities	
Perceived	Technical assessment
	Bulga has experienced both a growth in population and housing prices, has a relatively robust age structure and relatively low rates of population turnover. Predicted impacts from the proposal will not necessitate property acquisitions in Bulga village. It is also important to note that in contrast to perceptions any property acquisition rights included in an approval are upon the request of the landowner and are not compulsory. If a landowner does not wish to take up their acquisition rights they are not required to. Any landowner with acquisition rights under an approval can also choose when they might like to have their property acquired, if at all, during the life of the development. For example, if the landowner is happy at the start of the project to stay but 10 years later choose to take up their acquisition rights, the rights will still exist and can be validly processed under the approval. The Bulga population has increased 11.5 per cent or 37 persons between the 2006 and 2011 census. However, it is acknowledged that local stakeholders reflect on gradual population decline in nearby villages such as Warkworth, Camberwell and Ravensworth. Even with the replacement of population that may occur with leasing any acquired properties, or with the new owners living or leasing properties sold by owners voluntarily relocating, concern remains regarding the loss of existing community connections, activity and village life. ABS data shows that Bulga SSC's population increased by 11.5 per cent from 321 to 358 persons between 2006 and 2011, which is double the NSW rate of 5.6 per cent for the same period. In this period, Singleton's population declined by 4.7 per cent. While the proposal would contribute to maintaining the current and the regional population, individual community members would continue to make decisions based on individual circumstances about whether to stay in the area. ABS data has shown that Bulga has a lower population turnover rate than the NSW average: in 2011, 71 per cent of people in the Bulga SSC were recorded at the same address they were five years earlier (compared to 57 per cent for both Singleton and NSW). This suggests that community connections would be relatively strong. It also suggests that the majority of residents consider Bulga to be an attractive place to live and, assuming an acceptable level of amenity can be maintained by the proposal, will continue to be so.

Table C.1 Social impacts and opportunities from the proposal – perceived and technical studies

	Impact/opportunities	
	Perceived	Technical assessment
<i>Assessment of impacts</i>	Residents of Bulga, Long Point and Gouldsville villages perceive population decline may result from acquisition and relocation which in turn may lead to the decline of community and loss of connections between and within communities and families. Conversely, other community members perceive that job losses from disapproval would lead to breakdown of family and support networks, family separation and community depopulation. Predicted impacts from the proposal would not necessitate property acquisitions in Bulga village. The proposal would contribute to maintaining the current and regional population by continuing to provide employment opportunities. Data from the ABS in regards to population trends has shown an increase in the population of Bulga SSC by 11.5 per cent between 2006 and 2011, which is double the NSW rate of 5.6 per cent. Population data also showed Bulga as having a lower population turnover when compared to the NSW average, suggesting that Bulga is considered an attractive place to live and, assuming an acceptable level of amenity can be maintained by the proposal, would continue to be so. As noted above, however, individual community members would continue to make decisions based on individual circumstances about whether to stay in the area. Subject to the implementation of management commitments made under the proposals, it is considered that the potential for loss of population, community members and leaders will remain relatively unchanged and, on balance, there will be limited social impact.	
Places of community value and sense of place	Loss of sense of place Near neighbours are worried by the loss of the places of community value and uncertainty regarding the future of the Bulga community. These worries are more related to the Warkworth Continuation 2014 than the proposal. Loss of sense of place has been associated with ‘solastalgia’, which is defined as the distress that is produced by environmental change impacting on people while they are directly connected to their home environment. People exposed to environmental change can experience negative effects that are exacerbated by a sense of powerlessness or lack of control over the unfolding change process.	Loss of sense of place A ‘loss of sense of place’ is a concern of some Bulga residents. Bulga experiences low population turnover and residents have relatively positive health, employment, crime rate and property ownership characteristics that are illustrative of a stable and cohesive community. The reference case would have a subsequent ‘loss of sense of place’ for a different set of stakeholders if viable mining could not be maintained. These would include employees, particularly those that reside in the Singleton LGA (35 per cent of the workforce) and others where the present level of social services could not be maintained (for example student numbers and school closure).

Table C.1 Social impacts and opportunities from the proposal – perceived and technical studies

	Impact/opportunities	
	Perceived	Technical assessment
<i>Assessment of impacts</i>	Near neighbours raised concerns in regards to loss of places of community value and a sense of place as a result of the proposal. The predicted impacts are below the amenity criteria for a rural area and suggest that the mine and village can co-exist. Additionally, if the proposal did not proceed, stakeholders including employees, particularly those residing in the Singleton LGA, and others where the present level of social services could not be maintained (for example student numbers and school closure) may experience a loss of sense of place. ABS data shows that unemployment has increased dramatically in the Hunter Valley from 5.8 per cent in May last year to 9.2 per cent currently. This includes approximately 1,500 direct mining jobs lost in the Hunter Valley over the past 18 months (NSW Mining 2014). As noted above, predicted impacts from the proposal would not necessitate property acquisitions in Bulga village and individual community members would continue to make decisions based on individual circumstances about whether to stay in the area. On this basis, the potential for loss of sense of place under the proposal is considered to remain acceptable.	
MTW workforce and their families	Retention of MTW workforce and their families A range of stakeholders identified positive opportunities for the community from the proposal. These opportunities were largely identified for the broader Singleton LGA as a result of the retention of the MTW workforce and their families as a result of the proposal. It was described that the workforce and their families contribute to the community, not only economically (through local spending and support for local business), but also through community participation (attendance at local schools, participation in sporting and other community events and community volunteering).	Indirect contributions of the proposal on the community The local community is experiencing impacts from the recent downturn in the coal industry including a decline in population and the loss of mine workers and their families. Approximately 35 per cent of the MTW workforce lives in Singleton LGA, 56 per cent of the workforce have children who attend educational facilities in their local LGA and approximately 33 per cent participate in volunteering in their local LGA. The MTW workforce and their families contribute to the local and regional economy and community through high levels of local spend and through the continuing use of community facilities and participation in the community, such as through volunteering. The employee and supplier survey results indicate that there would be benefits to small to medium sized enterprises (SMEs) from the retention of the workforce. The proposal would ameliorate some of uncertainty in the community resulting from the recent downturn in the coal industry.
<i>Assessment of impacts</i>	Stakeholders identified positive opportunities for the community from the proposal including the retention of the MTW workforce and their families and thus the retention of their positive contributions to the community through support for local businesses, community groups and community participation. The MTW workforce and their families contribute to the local and regional economy and community through high levels of local spend and through the continuing use of community facilities and participation in the community, such as through volunteering. The proposal would ameliorate some uncertainty in the community resulting from the recent downturn in the coal industry. On this basis, the proposal will have a positive social impact on resulting from the retention of the MTW workforce and their families and retaining their contribution to the local community.	

Table C.1 Social impacts and opportunities from the proposal – perceived and technical studies

	Impact/opportunities	
	Perceived	Technical assessment
Intergenerational and intra-generational equity	Rural sustainability and intergenerational equity Some stakeholders perceived that there would be impacts on rural sustainability and intergenerational equity as a result of loss of family and community heritage and the loss of rural villages, environment, community and other associated livelihoods (for example, local business and agriculture). These impacts were perceived as potentially permanent and significant due to the perceived inability to replace the heritage, community and land values of the area post-mining.	Final landform and land uses Following the completion of mining and rehabilitation, a final landform will remain that is safe, stable, free draining, and non-polluting. This will be integrated with the surrounding landscape. The final landform will support final land uses including for the conservation of native vegetation and for agriculture for existing and future generations. The impacts the proposal on heritage and land-values are described above and below, respectively. Direct and indirect employment The proposal contributes to social equity by providing direct and indirect employment. It would result in the transformation of a geological resource into physical and human capital through investment in infrastructure and workforce training, and, indirectly, through contributions to governments which would enable greater investments in public infrastructure and services.
<i>Assessment of impacts</i>	Stakeholders perceived potential impacts on rural sustainability and intergenerational equity from the proposal. The ability to transfer overburden from Warkworth Mine to MTO avoids the need for a final void and allows for the design of a more natural looking landform which would integrate better with the final landform of Warkworth Mine and Bulga Coal Complex. The final landform will be safe, stable, free draining, and non-polluting which is consistent with leading practice and will support land uses including the conservation of native vegetation and agriculture for existing and future generations. On this basis, and subject to the implementation of all reasonable and feasible mitigation, the potential social impacts on rural sustainability and intergenerational equity are considered to be acceptable.	

Table C.1 Social impacts and opportunities from the proposal – perceived and technical studies

Impact/opportunities		
	Perceived	Technical assessment
Health and well-being		
Health and well-being– community uncertainty	Health impacts Stakeholders, particularly near neighbours, raised concerns regarding health impacts from the proposal. Perceived health impacts related to stress as a result of uncertainty for the future; and concerns about the health impacts of poor air/water quality. Stress and uncertainty Some stakeholders were concerned about health impacts from stress and uncertainty – for themselves, their family and the community. This uncertainty was most often related to: the acquisition process; the future of Bulga and its community; potential decline of community and fracturing of families; a mistrust of the proposal assessment process; uncertainty regarding ability to sell properties, property values, and related impacts on investments/assets and their future.	Stress-related health impacts Health and well-being impacts need to be considered at a community level. In a study of the health of Hunter Valley communities in proximity to coal mining and power generation, Merritt et al. (2013) found that: There were no significant differences in management rates of mental health conditions in the Hunter Valley region compared with the rest of rural NSW. Management rates of depression and anxiety were not higher, nor were prescription rates of antidepressants. This indicates that similar levels of anxiety are experienced in Hunter Valley region compared to rural NSW as a whole although the causes of anxiety may vary between regions. Health impacts of dust The air quality and greenhouse gas study was completed in accordance with the applicable NSW and Commonwealth guidelines, standards and impact assessment criteria which take into account the known health effects of particulates on sufferers of asthma, lung conditions and heart disease. Air quality assessment criteria are designed to protect urban communities. Compared to the urban environment, there are less fine particulates in dust from mining and these particulates do not contain combustion products. Therefore, the assessment criteria provide a high level of conservatism when used to determine the acceptable levels of dust from mining projects in rural settings. The assessment results based on these criteria are described in above in ‘Impacts on air quality’. Health impacts of blast fumes The impacts of blast fumes have been assessed based on guidelines, standards and impact assessment criteria. With the implementation of blast restrictions when required, blasts would not result in assessment criteria being exceeded. The assessment results based on these criteria are described in above in ‘Impacts from blasting/vibration’. Impacts on rainwater tanks Lucas et al. (2009) investigated the potential for health impacts from coal dust deposited on rooftops and washed into water tanks. With the exception of two mine-owned residences, the incremental dust deposition predicted for the proposal at private and mine-owned residences is less than the 2g/m²/month incremental criterion in all modelling years. Taking the predicted dust deposition levels, the spatial separation of residences from the mine and the findings of Lucas et al. (2009) into account, the potential for adverse impacts to rainwater tanks from the deposition of coal dust is low, even at the closest residences.

Table C.1 **Social impacts and opportunities from the proposal – perceived and technical studies**

Impact/opportunities	
Perceived	Technical assessment
	Impacts of mining on health Merritt et al. (2013) conducted an analysis of general practice data for rural communities in close proximity to coal mining and coal-fired power generation in the Hunter Valley to identify unusual patterns of illness. The study in the NSW Public Health Bulletin concluded that: There was no evidence of a significant difference in problems managed or medications prescribed by [general practitioners] GPs for residents of communities potentially affected by heavy industrial activity (coal mining and power generation) in the Hunter Valley region of NSW compared with residents in the remainder of rural NSW during the period 1998–2010. The diverging trend for respiratory problem management over time is worthy of further exploration. The 'diverging trend' refers to a comparison of the management rates of respiratory problems (as a group) during the period 2005–2010 with those for 1998–2004. This indicated that there was no significant change in the Hunter Valley region despite a significant decrease for the remainder of rural NSW over this period. However, the statistical significance of this difference could not be determined due to the sample size. Other Particular areas of concern to stakeholders regarding community uncertainty are addressed elsewhere in this chapter in the following sections: • uncertainty surrounding the acquisition process; • the future of Bulga and its community; • potential decline of community and fracturing of families; • a mistrust of the proposal assessment process; and • uncertainty regarding the ability to sell properties, property values, and related impacts on investments/assets and their future.

Table C.1 Social impacts and opportunities from the proposal – perceived and technical studies

Impact/opportunities	
Perceived	Technical assessment
<i>Assessment of impacts</i>	Government policies and guidelines are in place to protect the health of communities. Applicable NSW and Commonwealth guidelines, standards and impact assessment criteria are designed to take into account the known health effects of particulates on sufferers of asthma, lung conditions and heart disease. Stakeholders raised concerns in regards to the impacts of the proposal on health and wellbeing, particularly in the areas of stress, uncertainty and poor air or water quality. Submissions from employees of the mine and supporting businesses commonly referenced health impacts, such as stress related illnesses, due to the uncertainty regarding the mine's future and job security. The primary or only earner supporting a family working at the mine and employment vulnerability should the proposal not proceed was commonly raised. Fear and uncertainty associated with potential job loss were expressed in these submissions. This was often linked to the inability to find alternative employment in the region, necessitating the relocation of families and leaving social support networks. Air quality, water and blasting studies completed for this proposal were completed using the applicable NSW and Commonwealth guidelines. The assessment results based on these criteria are described above in relevant sections. Merritt et al. (2013) found that similar levels of anxiety are experienced in Hunter Valley region compared to rural NSW as a whole although the causes of anxiety may vary between regions. Particular areas of concern to stakeholders regarding community uncertainty are addressed elsewhere in this table in the following sections: • uncertainty surrounding the acquisition process; • the future of Bulga and its community; • potential decline of community and fracturing of families; • a mistrust of the proposal assessment process; and • uncertainty regarding the ability to sell properties, property values, and related impacts on investments/assets and their future. On this basis, and subject to the implementation of all reasonable and feasible mitigation, the potential social impacts on health and wellbeing are considered to be acceptable and meet Government policies and guidelines.

Table C.1 Social impacts and opportunities from the proposal – perceived and technical studies

Impact/opportunities		
	Perceived	Technical assessment
Vulnerable groups	Impacts to vulnerable groups Some stakeholders expressed concern that some vulnerable groups would be exposed to impacts on: their health from the amenity impacts; their economic and asset base due to a perceived inability to sell properties/assets; and indirectly through the potential loss of community services and facilities in light of a perceived decline in community.	Vulnerable groups Particular areas of concern to stakeholders regarding vulnerable groups are addressed elsewhere in this chapter: • potential amenity impacts of the proposal (from noise, dust and vibration); • health matters related to mining; • potential impacts on property values and ability to sell; and • the potential for fracturing of the community. Mitigation measures Notwithstanding this, it is recognised that vulnerable groups, including older members of the community, may not adapt to change and can be more susceptible to impacts, perceived or otherwise. In recognition of this concern, Coal & Allied propose to contribute to a Bulga and Near Neighbour Amenity Resource which would provide services such as property maintenance to residents surrounding the operation. Vulnerable near neighbour residents would have access to this resource.
<i>Assessment of impacts</i>	Stakeholders expressed concerns that vulnerable groups may be exposed to health and economic impacts and a loss of community services. It is recognised that that vulnerable groups, including older members of the community, may not adapt to change and can be more susceptible to impacts, perceived or otherwise. Coal & Allied propose to contribute to a Bulga and Near Neighbour Amenity Resource which would provide services such as property maintenance to residents surrounding the operation. Vulnerable near neighbour residents would have access to this resource. Other areas of concern to stakeholders regarding vulnerable groups are addressed elsewhere in this chapter. On this basis, and subject to the implementation of all reasonable and feasible mitigation, the potential social impacts on vulnerable groups are considered to be acceptable.	

Table C.1 Social impacts and opportunities from the proposal – perceived and technical studies

Impact/opportunities		
	Perceived	Technical assessment
Economic		
Properties value, saleability and investor confidence	Negative impacts on property values and saleability Near neighbours raised concern that the proposals would have a negative impact on property values and ability to sell in line with current and historical trends. Positive impacts on property values and saleability Stakeholders living in Singleton perceived favourable property market opportunities as maintenance of the current workforce would help to stabilise the property market after recent decreases in sales results and rental returns. Some stakeholders (including Singleton residents, businesses and real estate agents) suggested that the recent contraction of the coal industry had contributed to the weakening of the property market through decreased demand. Local business stakeholders (Singleton-based real estate agents) suggested that the market was ‘over-heated’ during the coal mining boom, and that current soft property market figures may reflect a recalibration of the market towards a more realistic and stable trend.	Recent property market trends Recent property market data for the Singleton LGA show a decline in sales results and a dramatic fall in rental returns for Singleton LGA. Median sales prices fell consistently in 2013 (almost 9 per cent annual decline for all properties) and rental returns fell by approximately 25 per cent on average in the 12 months to December 2013. The issue of devaluation of properties was considered by Stubbs (2012) who examined the purchase price of properties within Bulga during the lodgement and determination of the application for the Warkworth Extension Project in 2010 and 2011 and early 2012. The application was lodged on 1 March 2010 and the EA was placed on exhibition from 30 April to 15 June 2010. The matter was considered by the PAC and an approval granted on 3 February 2012. The approval was subsequently appealed in the L&E Court. Stubbs (2012) examined the sale price of all properties sold in Bulga between 1 April 2008 and 23 May 2012. She noted that the purchase price of properties did not appear to have been affected by the lodgement and assessment of the application, with median property values in Bulga and surrounds increasingly considerably since that time (\$282,500 median sale price in the two years prior to lodgement, and \$450,000 median sale price since the lodgement) (Stubbs 2012). Property market stabilisation The proposal would aim to maintain current workforce levels across MTW operations, which should contribute to population levels in the Singleton LGA (with 35 per cent of MTW employees residing in Singleton LGA) and, subsequently, partly assist in stabilising the property market. Coal & Allied would continue to manage residential properties via the open market. Coal & Allied utilises the services of local real estate agents to manage its properties to a high standard of maintenance and management.

Table C.1 Social impacts and opportunities from the proposal – perceived and technical studies

	Impact/opportunities	
	Perceived	Technical assessment
<i>Assessment of impacts</i>	Stakeholders identified both positive and negative impacts from the proposal on property value and investor confidence. Some stakeholders were concerned that the proposal would have a negative impact on property values and their ability to sell properties. Other stakeholders perceived favourable property market opportunities through the maintenance of the current workforce. Property market data from Stubbs (2012) in regards to devaluation of property values noted that the purchase price of properties did not appear to have been affected by the lodgement and assessment of the Warkworth Extension 2010 application with median property values in Bulga and surrounds increasingly considerably since that time (\$282,500 median sale price in the two years prior to lodgement, and \$450,000 median sale price since the lodgement). The maintenance of the current workforce should contribute to population levels in the Singleton LGA (with over 35 per cent of MTW employees residing in Singleton LGA) and, subsequently, partly assist in stabilising the property market. On this basis, the potential social impacts on property values are considered to be acceptable.	
Property maintenance and impact management costs	Property maintenance and impact management costs Near neighbours perceived that the impacts of current operations, particularly dust and vibration impacts, have a direct and ongoing economic cost and that the proposals would intensify those impacts. Near neighbour communities are not generally connected to mains water supply, so properties are reliant on tank water.	Assessment of impacts Air quality studies indicate that dust would be within the relevant guidelines. No additional blasting (to that currently approved) as proposed as part of the proposal. Water tanks Regardless of proximity to mining water tanks generally require routine maintenance to ensure that water quality is maintained. The impacts of the proposal on rainwater tanks are summarised in ‘Health and wellbeing impacts’. While there would be no significant impacts to private residences directly attributable to the proposal, Coal & Allied propose contribution to a Bulga and Near Neighbour Amenity Resource to provide services to residents surrounding the operation.
<i>Assessment of impacts</i>	Near neighbours raised concerns that the proposal would have a negative impact on property maintenance and management. Air quality and noise and vibration studies indicate that dust and vibration levels would be within the relevant Government prescribed criteria and guidelines. Regardless of proximity to mining, water tanks generally require routine maintenance to ensure that water quality is maintained. The impacts of the proposal on rainwater tanks are summarised in ‘Health and wellbeing impacts’. On this basis, and subject to the implementation of all reasonable and feasible mitigation, the potential social impacts of the proposal on property maintenance and management is considered to be acceptable and meets Government criteria and guidelines.	

Table C.1 Social impacts and opportunities from the proposal – perceived and technical studies

Impact/opportunities		
	Perceived	Technical assessment
Employment and training	Employment and training opportunities Stakeholders identified employment, expenditure on suppliers' services and associated opportunities for skills development and scholarships as primary benefit of both the proposal and the Warkworth Continuation 2014. Contribution to economic growth Experience with the growth of the coal industry since the late 1990s gave some stakeholders confidence that the proposal would significantly contribute to employment and economic growth in the Singleton LGA. Local business stakeholders were confident that the proposal would deliver employment and skills development opportunities across the Singleton LGA. Many stated that small downturns in coal industry activity were immediately felt by local suppliers and that the proposal would stabilise supplier workforce numbers and supporting revenues.	Ongoing workforce and suppliers MTW currently employs a workforce of approximately 1,300 persons on average. Although Warkworth Mine and MTO are integrated operations and workforce numbers are difficult to assign to the respective development consents, an estimate of 63 per cent (819 persons on average) could be attributed to activities on the Warkworth Mine development application and 37 per cent (481 persons on average) to the MTO development application. The proposal aims to maintain current workforce levels across MTW operations, bringing with them employment and training opportunities and are expected to contribute employment and supplier revenue benefits into the medium-term, with economic opportunities for the region extending over the proposal life-cycle.
Assessment of impacts	Stakeholders identified the positive contribution that the proposal may make to expenditure in the region, employment and training opportunities, and economic growth in the local area. The proposal aims to maintain current workforce levels across MTW operations, bringing with them employment and training opportunities and are expected to contribute employment and supplier revenue benefits into the medium-term, with economic opportunities for the region extending over the proposal life-cycle. On this basis, it is considered that the proposal will have a positive impact on the employment and training opportunities.	

Table C.1 Social impacts and opportunities from the proposal – perceived and technical studies

	Impact/opportunities	
	Perceived	Technical assessment
Representation of local residents, near neighbours, women, and Aboriginal and Torres Strait Islanders in the MTW workforce	Representation of local residents, near neighbours, women, and Aboriginal and Torres Strait Islanders in the MTW workforce Many near neighbour residents from Bulga, Milbrodale, Long Point/Gouldsville contended that few near neighbours were employed at MTW and that no new targets for lifting employment rates for near neighbour communities or local employment are included in the proposal and the Warkworth Continuation 2014. Some stakeholders perceive that women, and Aboriginal and Torres Strait Islanders are underrepresented in the workforce compared to mining industry averages. It was perceived that there are no new targets in the proposal for increasing female or Aboriginal and Torres Strait Islander workforce participation rates. Consequently, it is perceived that these groups would continue to be underrepresented.	Locals in the workforce As described in the EIS, almost three quarters of MTW employees and long-term contractors live in the Mid and Upper Hunter region: Singleton LGA (35 per cent), Cessnock (19 per cent) and Maitland LGA (17 per cent). In January 2014, MTW employed 24 people from direct near neighbour communities (for example, Bulga, Milbrodale, Warkworth and Maison Dieu) which equates to approximately 7 per cent of the labour force from those communities. Coal & Allied maintains a continued preference for employees and contractors to reside locally. Women and Aboriginal people in the MTW workforce About 12 per cent of the current workforce (both employees and contractors) are women. Rio Tinto Coal Australia's goal is to achieve 15 per cent female employment across its operations (RTCA 2014) which is the average proportion of female employees in the mining Australian industry (WGEA 2013). The Indigenous workforce (both employees and contractors) represent about two per cent of the total MTW workforce. Rio Tinto Coal Australia's goal is to achieve five per cent Indigenous employment across its operations (RTCA 2014). The proportion of Indigenous people in the Australian mining industry is four per cent. The MTW Diversity Action Plan has a focus on increasing Indigenous and female employment. Coal & Allied would continue to implement the MTW Apprenticeship and Graduate programme, drawing on local candidates, and consisting of: • five new apprenticeship positions each year; • Aboriginal scholarship programme in partnership with University of Newcastle, supporting two Aboriginal students per annum with a scholarship programme and vacation employment to complete their degrees; • two graduate positions per annum on a two year programme; and • two vacation student positions each year.

Table C.1 Social impacts and opportunities from the proposal – perceived and technical studies

	Impact/opportunities	
	Perceived	Technical assessment
<i>Assessment of impacts</i>	Near neighbours raised concerns that the proposal did not provide enough opportunities for near neighbours, women or Aboriginal and Torres Straight Islanders. Data from employee surveys show that almost three quarters of MTW employees and long-term contractors live in the Mid and Upper Hunter region and approximately 7 per cent of the labour force from near neighbour communities. About 12 per cent of the current workforce (both employees and contractors) are women. Rio Tinto Coal Australia's goal is to achieve 15 per cent female employment across its operations which is the average proportion of female employees in the mining Australian industry (WGEA 2013). The Indigenous workforce (both employees and contractors) represent about two per cent of the total MTW workforce. Rio Tinto Coal Australia's goal is to achieve 5 per cent Indigenous employment across its operations (RTCA 2014). On this basis, and subject to the implementation of all reasonable and feasible mitigation, the potential social impacts from the proposal on local representation are acceptable.	
Local and regional businesses and industry	Opportunities for local businesses Local businesses generally speculated that the economic contribution of the proposal and the Warkworth Continuation 2014 would be the most significant opportunity, with continuity of work and the implications that continuity has for workforce planning and maintenance being cited as the most critical benefits for suppliers.	Hunter Valley labour market outlook The HVRF's measure of employment intentions suggest that further weakness in the Hunter Valley labour market can be anticipated. Employment intentions have declined since December 2011 with HVRF's most recent measures lower than those during the Global Financial Crisis of 2008. Similar trends are also evident in the HVRF's (2013b) Household Survey, which suggests that consumer confidence and purchasing intentions in the Hunter Valley remain negative. Overall, HVRF (2013b) conclude that the economic outlook for the Hunter Valley reflects the end of the previous expansion phase combined with a drive to achieve efficiencies, the effects of which are now being felt by local suppliers, contractors and operational employees. Continued MTW operations would assist in maintaining a proportion of supplier revenues. Coal & Allied would continue: • to engage with Singleton Council on key areas of common interest including attraction and retention of residents and long-term planning; • the preference for employees and contractors to reside locally; and • the development of the Coal & Allied Local Procurement Strategy incorporating the MTW operation.

Table C.1 **Social impacts and opportunities from the proposal – perceived and technical studies**

	Impact/opportunities	
	Perceived	Technical assessment
<i>Assessment of impacts</i>	Local businesses identified the proposal's positive economic impact from continuity of work to workforce planning and maintenance. The HVRF's measure of employment intentions suggest that further weakness in the Hunter Valley labour market can be anticipated. ABS data shows that unemployment has increased in the Hunter Valley from 5.8 per cent in May last year to 9.2 per cent currently. Continued MTW operations would assist in maintaining a proportion of supplier revenues. On this basis, it is considered that the proposal would have a positive social impact on continuity of work and workforce planning and maintenance.	
Corporate community investment and sponsorship	Continued contribution to, and investment in, local communities Stakeholders reflected on the potential for continued contribution to, and investment in, local communities through the proposals, including: Aboriginal and Torres Strait Islander employment, education and training opportunities; direct contributions to community service providers; and, contributions made to training and life-skills programmes at Singleton High School.	Continued contribution to, and investment in, local communities Existing direct community contributions and investment from MTW operations would continue under the proposal. Employees and suppliers make financial and non-financial contributions to the regional community and participated significantly in community activities, which in turn, contribute to community way of life. The proposal would continue to provide employment and economic benefits to suppliers, allowing employees and suppliers to continue to contribute to the community. A proportion of the MTW Site Donation Committee annual funding would be dedicated for projects which contribute to near neighbour communities, including the Bulga community, and which are in accordance with the funding guidelines of the Committee.
<i>Assessment of impacts</i>	Stakeholders identified the positive contribution the proposal could make to investment in, local communities including school groups, Aboriginal and Torres Strait Islander employment and contributions to community service providers. MTW employees and suppliers make financial and non-financial contributions to the regional community and participated significantly in community activities, which in turn, contribute to community way of life. The proposal would continue to provide employment and economic benefits to suppliers, allowing employees and suppliers to continue to contribute to the community. On this basis, it is considered that the proposal would have a positive social impact on corporate and community investment and sponsorship.	

Table C.1 Social impacts and opportunities from the proposal – perceived and technical studies

	Impact/opportunities	
	Perceived	Technical assessment
Other industries and diversification	Retention of skilled employees Local business stakeholders perceived that it was difficult to retain skilled employees given their migration to mining jobs for higher salaries. Two-speed economy Several stakeholders commented on the mining industry's contribution to the creation of a 'two-speed economy', where those employed by or who contract to the industry enjoy substantial financial benefits whilst others deal with the inflationary effects on cost of living generated by spending of these benefits. Diversification Local government stakeholders perceived that there is insufficient planning regarding structural diversification of the Singleton LGA economy.	Requirement for skilled employees The proposal would continue current requirements for skilled workers and would continue to be a focus of planning in the Singleton LGA, generating potential for continued skills migration from other industries in the region and potential for maintenance of the status quo when it comes to structural diversification planning. Structural diversification required The imperative for structural diversification has become even more apparent since the end of the mining boom, with the HVRF (2014) noting that the medium-term outlook for increased non-mining productivity in the region would depend on business capacity to invest in innovation and skills to adapt to, and develop, new products, services and markets as the resources boom fades.
Assessment of impacts	Stakeholders identified their inability to retain skilled employees due to the higher salaries in the mining industry. The proposal would continue current requirements for skilled workers and would continue to be a focus of planning in the Singleton LGA, generating potential for continued skills migration from other industries in the region. On this basis, it is considered that the impact of the proposal on the retention of skilled employees will be acceptable.	

Table C.1 Social impacts and opportunities from the proposal – perceived and technical studies

Impact/opportunities		
	Perceived	Technical assessment
Infrastructure and services		
Infrastructure, services and local community facilities	Pressure on local infrastructure and services Local government stakeholders perceived that maintenance of MTW workforce numbers would continue to place pressure on local infrastructure, particularly through the frequency of heavy vehicle movements on local roads. However, local government representatives also noted the positive benefits of retention of MTW workforce on community infrastructure and services. A health professional suggested that maintenance of the MTW workforce would continue to place pressure on health and allied services, emergency services and emergency departments. Near neighbours perceived that the medium to long-term viability of community facilities and services in Bulga, including the Bulga Hall, tavern and store, would be impacted by proposal-related acquisitions and associated relocation of Bulga residents. Near neighbour stakeholders perceived a failure to adequately plan for lease holdings at the tavern and store following acquisition. It was perceived that changes to these facilities would impact the way of life in the village and access to services, particularly for the elderly, ill and disabled. Local government stakeholder's identified the potential opportunity to stabilise population levels across the Singleton LGA. Subsequently, the contribution of MTW employees to council land rates would be maintained, helping to support the viability of current council services.	Demand for local infrastructure and services There would be no increase in the use of local infrastructure and demand for health and allied services, emergency services and emergency departments under the proposal, as the intention is to retain the current level of employment. Traffic would remain similar to current levels and safety levels would be unaffected. The proposal would contribute to the maintenance of the current average workforce levels across MTW operations, helping to stabilise population levels across the Singleton LGA. Subsequently, the contribution of MTW employees to council land rates would be maintained, helping to support the viability of current council services. The continued MTW workforce and their families would also help maintain the use of local businesses and services, particularly shops, services, schools and childcare facilities. A Voluntary Planning Agreement (VPA) would be negotiated with Singleton Council. The VPA presents an opportunity to ensure a proportion of the funds are dedicated to maintaining and/or improving facilities and services in Bulga village, other local neighbouring communities, and the Singleton LGA as a whole. As described in the noise section of this table, no residences in Bulga would be afforded acquisition rights under the proposal due the predicted noise levels not being in exceedance of relevant regulatory criteria. Therefore, proposal related acquisitions would not impact the medium to long-term viability of community facilities and services in Bulga, including the Bulga Hall, tavern and store. The maintenance of the current workforce under the proposal, however, may contribute to the viability of the community facilities and services.

Table C.1 Social impacts and opportunities from the proposal – perceived and technical studies

Impact/opportunities	
Perceived	Technical assessment
<i>Assessment of impacts</i>	Stakeholders identified positive and negative impacts on infrastructure, services and local facilities. Stakeholders were concerned with the potential pressure from the MTW workforce on local infrastructure and that acquisition of properties would result in the loss of community facilities. Stakeholders also identified the opportunities presented by a stable MTW workforce including helping to support local services, contribution to council land rates and assistance in retaining local community services. As described in the noise section of this table, no residences in Bulga village would be afforded acquisition rights under the proposal due the predicted noise levels not being in exceedance of relevant regulatory criteria. Therefore, proposal related acquisitions would not impact the medium to long-term viability of community facilities and services in Bulga. The maintenance of the current workforce under the proposal, however, may contribute to the viability of the community facilities and services. On this basis, and subject to the implementation of all reasonable and feasible mitigation, the potential social impacts from the proposal on infrastructure and local community facilities is considered to be acceptable.
Community engagement/relationships and governance	
Company and community relationships	Opportunities to improve historic community relations Some stakeholders perceived that there were opportunities to improve historic community relations and management of the mine's current impacts. This perception has impacted community trust. Positive community relations Some stakeholders from local business and local government described positive interactions with individual staff at MTW but perceived a general history of relations with scope for improvement with the mine and a lack of ability to openly discuss, negotiate and engage as part of the local business and resident community. Opportunities to improve community relations Since 2010, based on feedback received from a range of stakeholders, a suite of ongoing and proposal specific strategies have been developed by Coal & Allied for communications generally and to manage/ mitigate or enhance these proposal-related impacts and opportunities. These are provided in Sections 20.5.1 and 20.5.2.
<i>Assessment of impacts</i>	Stakeholders have identified positive and negative aspects of the relationship between Rio Tinto Coal Australia and the community. Some stakeholders have identified impacts to community trust and a lack of ability to openly engage with the local community. Other local stakeholders have described positive relationships. A suite of ongoing and proposal specific strategies have been developed by Coal & Allied for communications generally and to manage/ mitigate or enhance these proposal-related impacts and opportunities. These are described in detail in the EIS. It is acknowledged, however, that for some parts of the community further work will be required to restore trust and this will be a function of MTO delivering on its commitments. On this basis, the potential social impacts from the proposal on company and community relations are considered to be acceptable.

Table C.1 Social impacts and opportunities from the proposal – perceived and technical studies

	Impact/opportunities	
	Perceived	Technical assessment
Understanding of community and social impacts	Opportunity to improve understanding of relationships Some stakeholders perceived the opportunity to improve understanding of relationships with the community through the assessment process.	Opportunity to improve understanding of relationships The assessment of the proposal and the Warkworth Continuation 2014 provides an opportunity to build understanding of community and social impacts and to improve company-community relations. Stakeholder feedback also suggested some satisfaction with the consultation process itself, and the ability to ‘be heard’.
<i>Assessment of impacts</i>	Stakeholders have identified that the assessment process may provide an opportunity to improve understanding of the relationship through the assessment process. The process of consultation through the assessment has provided an opportunity to build understanding of community and social impacts and to improve company-community relations. Stakeholder feedback also suggested some satisfaction with the consultation process itself, and the ability to ‘be heard’. On this basis, the potential social impacts from the proposal on company and community relations are considered to be acceptable.	
Government major project assessment process, regulation, monitoring and public representation	Confidence in government assessment processes Stakeholders, including near neighbours, local businesses and council, and other interested stakeholders, perceived that the changes encompassed in the Mining SEPP have resulted in a loss of confidence in the NSW Government to adequately assess major mining projects, including this proposal, and to provide protection to, and representation of, the public. Stakeholders pointed to current allegations before the Independent Commission Against Corruption (ICAC) (during early-mid 2014) and the demonstrated connections between some mining companies and the NSW government (for example, improper donations). Stakeholders also discussed the impact on the ability to undertake a merits-based appeal on a project as an impairment of democratic rights. This proposal is seen by stakeholders to be relevant to the Mining SEPP amendments due to the timing and history of the proposal.	Government assessment processes Coal & Allied conduct its operations in accordance with NSW and Commonwealth legislation and internal high standards of conduct, including The Way We Work, its statement of business practice. As described in Chapter 6, the proposal will be considered by the NSW Government under the EP&A Act and a range of other legislation, regulations, policies and guidelines. These documents are frequently updated to ensure their ongoing relevancy. This EIS was prepared in accordance with current legislation and government policy and used the most recent and accurate scientific data relevant to the proposal. Feedback received from community and government stakeholder engagement together with the Secretary’s requirements and the L&E Court judgement, provided guidance to the assessment approach, ensuring that all potential matters of relevance associated with the proposal were assessed.

Table C.1 **Social impacts and opportunities from the proposal – perceived and technical studies**

	Impact/opportunities	
	Perceived	Technical assessment
<i>Assessment of impacts</i>	Coal & Allied conducts its operations in accordance with NSW and Commonwealth legislation and internal high standards of conduct, including The Way We Work, its statement of business practice. Stakeholders have communicated that the changes in the Mining SEPP and allegations of government corruption have resulted in a lack of confidence in the NSW Government to provide protection for and representation to the public. The proposal will be considered by the NSW Government under the EP&A Act and a range of other legislation, regulations, policies and guidelines. These documents are frequently updated to ensure their ongoing relevancy. This EIS was prepared in accordance with current legislation and government policy and used the most recent and accurate scientific data relevant to the proposal. On this basis, and subject to the implementation of all reasonable and feasible mitigation, the social impact of the proposal on the government major project assessment process is considered to be limited and meets Government laws and guidelines.	

Appendix D

Extract from Stubbs affidavit



Appendix D — Extract from Stubbs affidavit

D

This and the following 1 pages comprise the Annexure
marked " K " referred to in the Affidavit of Judith Paris Stubby

affirmed before me on the 1st day of August 2012

Appendix K: Property sales for Bulga May 2008 to May 2012

Draft

Address	Suburb	Postcode	Sale Date	Price	Median	Bedrooms	Bathrooms	Area (ha)
58 The Inlet Rd	BULGA	2330	23/05/2012	475000				2.05
11 Turnbull Rd	BULGA	2330	15/03/2012	450000				1.56
30 The Inlet	BULGA	2330	17/02/2012	320000				0.4
2401 Putty Rd	BULGA	2330	20/10/2011	4500000				56.8
60 The Inlet Rd	BULGA	2330	20/06/2011	455000				1.98
2307 Putty Rd	BULGA	2330	10/05/2011	245000				0.7
179 Wambo Rd	BULGA	2330	3/05/2011	1225000		5	2	110
Putty Rd	BULGA	2330	24/03/2011	595000				0.67
2038 Putty Rd	BULGA	2330	24/03/2011	595000				0.34
343 The Inlet	BULGA	2330	24/03/2011	377500				1.701
147 The Inlet	BULGA	2330	17/09/2010	185000				1.32
18 The Inlet	BULGA	2330	24/08/2010	280000				0.2
19 Turnbull Rd	BULGA	2330	21/06/2010	346000	450000			8065
345 The Inlet	BULGA	2330	27/01/2010	235000				0.065
1010 Noses Peak Rd	BULGA	2330	30/11/2009	499000		4	2	4.212
Noses Peak Rd	BULGA	2330	14/10/2009	212500				4.283
15 Wambo Rd	BULGA	2330	16/09/2009	380000		3	2	1.9
12 Turnbull Rd	BULGA	2330	7/08/2009	260000		0	0	1.56
192 Thompsons Rd	BULGA	2330	20/07/2009	345000				11.08
Thompsons Rd	BULGA	2330	22/06/2009	280000				13.41
5B Noses Peak Rd	BULGA	2330	11/06/2009	205000				2.782
1946 Putty Rd	BULGA	2330	22/05/2009	1575000				61.38
2338 Putty Rd	BULGA	2330	26/08/2008	285000				0.89
The Inlet	BULGA	2330	31/05/2008	32000				0.094
2046 Putty Rd	BULGA	2330	21/05/2008	350000	282500	4	2	0.8

Source: EAC Redsquare Data Base:

Search of all properties sold since 1 April 2008 in the Suburb of Bulga

Appendix E

Response to Albrecht review (Appendix 4 of BMPA submission)



Appendix E — Response to Albrecht review (Appendix 4 of BMPA submission)

E

15 September 2014

Re: Response to submission on social impact assessment prepared by Glenn A. Albrecht

1 Introduction

Professor Albrecht's submission on behalf of the Bulga Milbrodale Progress Association Inc (the **BMPA**) provides an overview of his concept of solastalgia and advocates for how it may apply to the residents of Bulga.

Before turning to a detailed review of Professor Albrecht's submission it is important to place his submission in the appropriate context:

1. Professor Albrecht's submission does not provide any additional social impact analysis beyond the application of his concept of solastalgia or "loss of sense of place" to residents of Bulga.
2. While the concept of solastalgia or "loss of sense of place" is of utility in a SIA, despite Professor Albrecht's assertions to the contrary, it is not the only or pre-eminent consideration. Preston CJ made this clear in his judgment in the Warkworth Extension 2010 L&E Court. Paragraph 408, states that "....consideration of both the objective data for the broader community, and the experiential evidence from residents of the impacts at the local level, is required to have a complete picture of the likely social impacts of the Project."
3. It is clear from his submission that Professor Albrecht has not undertaken any new research with the residents of Bulga and how the concept of solastalgia may apply to them or more generally. This is consistent with the criticism Preston CJ provided on the 'research' Professor Albrecht used to support his affidavit in the Warkworth Extension 2010 L&E Court. This is further discussed in Section 2.10 below.
4. Despite this criticism, Professor Albrecht places great weight on the judgment of Preston CJ, but it is fundamentally misaligned with how Preston CJ recommends a social impact assessment be undertaken.
5. Professor Albrecht does not believe that his concept of "a loss of sense of place" can extend to the 'loss' or 'impacts' that MTW employees and potentially others in the Singleton LGA may feel if the proposal does not proceed. Not considering the potential impacts on people outside of Bulga leads to the very imbalance in the Professor's submission that he claims the applicant's social impact assessment suffers from.

6. Also, while Professor Albrecht is correct in stating concepts like ‘loss of sense of place’ are non-empirical and therefore cannot be measured, there is still however a threshold test required at law for these impacts to be given weight in an SIA. That test is given in *New Century Developments Pty Ltd v Baulkham Hills Shire Council* [2003] L&E Court 154 at 62:

“A fear or concern without rational or justified foundation is not a matter, by itself, that can be considered as an amenity or social impact”.

This is why in the SIA these non-empirical impacts are assessed by some objective measure, in an attempt to determine if they are ‘rational and justifiable’.

7. Lastly, Professor Albrecht’s submission suffers from his use of emotive rhetoric (eg. the ‘mega-mine’, ‘under direct contemporary threat’, ‘chronic desolation’, ‘Orwellian definition of balance’). While these words and phrases may assist Professor Albrecht to paint the picture he wishes the reader to adopt, this rhetoric does nothing to further a rational debate as to whether the impacts of the proposal at large are so great that the proposal should not proceed.

A response to the key aspects of Professor Albrecht’s submission is provided below.

2 Detailed Analysis

2.1 Paragraph 2.2

The contrast between ‘subjective concerns’ and ‘objective evidence’ is not one that is logically sound.

Response

While Professor Albrecht may believe that the contrast between ‘subjective concerns’ and ‘objective evidence’ is not logically sound, this is exactly the analysis that Preston CJ advocated for in the Warkworth Extension 2010 L&E Court. Specifically, in paragraph 408 of his judgment Preston CJ stated:

“In my view, neither Dr Stubbs nor Professor Albrecht provide a comprehensive assessment of the full range of likely social impacts, and consideration of both the objective data for the broader community and the experiential evidence from residents of the impacts at the local level is required to have the complete picture of the likely social impacts of the Project.” (emphasis added)

In this light, Professor Albrecht’s further claims in paragraph 2.2, that the applicant’s social impact assessment has an empirical bias is not consistent with what Preston CJ is seeking from applicants’ in a social impact assessment.

It is also clear from the above paragraph that Preston CJ, like the applicant, does not believe that Professor Albrecht’s social analysis provides a fulsome picture of the social impacts of the proposal and is useful only in understanding the concept of “loss of sense of place” as it may be applicable to certain residents of Bulga.

2.2 Paragraph 2.3

The enduring 'social' value of the Warkworth Extension 2010 L&E Court decision with respect to the Warkworth Extension 2010 was that it gave legal credence to loss of sense of place and other subjective indicators of community well-being.

Response

The applicant, does not dispute that the Professor Albrecht's concept of "loss of sense of place" was a concept that Preston CJ placed some credence on in his judgement. However, from Professor Albrecht's submission, he appears to be claiming that the concept of "loss of sense of place" should be given pre-eminence in the social impact assessment of large-scale mining proposals going forward. As noted in the response to paragraph 2.2, it is clear that Preston CJ believed both experts were limited in the utility of their evidence and that greater analysis of the "objective data for the broader community and the experiential evidence from residents" is required to form a view as to the social impacts of a development and this is what the applicant has sought to achieve in its SIA.

2.3 Paragraph 2.4

The 2010 Planning Assessment Commission (PAC) in their statement on the Warkworth Extension application indicated just how important this point about social impacts was for guiding future mining applications. They argued that the extension would bring open cut coal mining and the threat of extinction closer to the village of Bulga.

Response

It is important to remember that the 2010 PAC approved the Warkworth Extension 2010 project, having clearly given due consideration to its potential social impacts as evidenced by the remainder of paragraph 2.4 of Professor Albrecht's submission.

2.4 Paragraph 2.6

The NSW Government has now mandated, via the State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) Amendment (Resource Significance) 2013, that the assessment authorities must place a higher value on the instrumental values of a development (e.g., its wealth or job generating capacity) than any other consideration.....Indeed, what could only be an Orwellian definition of balance, the Mining SEPP eliminates the concept of any reasonable meaning of the word and replaces it with a pro-development fiat based solely on instrumental value.

Response

Professor Albrecht's assertion that the 'wealth or job creating capacity' or 'instrumental value' of a project is now the pre-eminent consideration for the consent authority as a result of the Mining SEPP is incorrect. As stated in Section 7.2.3 of the EIS the consent authority is still required to consider all of the heads of consideration within section 79C of the EP&A Act. It is under section 79C(1)(A)(i), where the consent authority is to have consideration for the provisions of any environmental planning instrument (i.e. the Mining SEPP), that the economic benefits of the proposal are to be considered.

2.5 Paragraph 3.2

The overt bias in the EMM Report is clear from the outset as they have eliminated the very possibility of greater negative impacts to the existing community, as Justice Preston argued, namely, to its sense of place and sense of community and instead, focused impacts to the ‘socio-economic environment’ and ‘community services’.

Response

Professor Albrecht’s claims in paragraph 3.2 are not clear. He begins with a charge of ‘overt bias’ as against EMM, despite the fact that EMM have undertaken the SIA in accordance with the requirements outlined by Preston CJ in paragraph 408 of the Warkworth Extension 2010 L&E Court – namely that:

“consideration of both the objective data for the broader community (i.e. the socio-economic environment’ and ‘community services’) and the experiential evidence from residents of the impacts at the local level is required to have the complete picture of the likely social impacts of the Project” (emphasis and words in parentheses added).

Professor Albrecht then goes on to acknowledge that the elements included in EMM’s assessment form part of a ‘genuine social impact assessment’, but then says that ‘they by no means exhaust the list of those things important to consider as social impacts’. The applicant does not claim that these additional elements are the exhaustive list of things to consider in an SIA or are more important than other matters in an SIA, rather, including those elements helps to provide a more fulsome view of the social impacts of a proposal.

It appears from Professor Albrecht’s submission that unless the concept of solastalgia is given the greatest regard in the social impact assessment, he believes there is a fundamental imbalance with the assessment. Instead, the applicant argues that to get a fulsome view of the social impacts, as required by Preston CJ, both those social impacts applicable to the residents of Bulga and those applicable to the wider community need to be assessed, which is what the SIA has provided for.

2.6 Paragraph 3.3

The bulk of the EMM report focuses on the key empirically verifiable social indicators with the Upper Hunter and Singleton Local Government areas and presents the case that the economic contribution of mining has been a major positive for the region.....Bulga is not Singleton and it is erroneous in the extreme to make generalisations from the Upper Hunter-Muswellbrook-Singleton LGA data to characterise the Bulga village and its people. In other words, there is a large amount of largely irrelevant to Bulga ‘stuffing’ in the EMM report.

Response

In addition to assessing the social impacts applicable to Bulga, the EMM report sets out the potential impacts for the wider community if the reference case (i.e. the proposal not being approved) were to occur. While Professor Albrecht may consider that reporting on social impacts applicable to the wider community, to be ‘stuffing’ and irrelevant to Bulga, this is entirely consistent with the approach advocated for by Preston CJ, namely consideration of the objective data of the broader community, as against the experiential evidence of residents of Bulga.

As noted through-out the EIS document, the applicant readily acknowledges that certain impacts will be more directly felt by those closer to the mine. If one is following the clear guidance set down by Preston CJ, then these impacts are to be weighed against the broader community impacts in coming to a decision on the social impacts of a proposal.

2.7 Paragraph 3.4

....within one or two generations, the economic gains produced by the coal industry will have dried up and what remains will be highly degraded land (with enormous highly saline and toxic voids) that cannot sustain rural livelihoods or local villages and towns ever again.

Response

It is not entirely clear what Professor Albrecht's charge in this paragraph is against the proposal specifically, but it appears to be that Professor Albrecht has a belief that no mines should be approved in the future as this will inevitably lead to "highly degraded land (with enormous highly saline and toxic voids) that cannot sustain rural livelihoods or local villages and towns ever again".

The highly emotive words are not considered constructive for further a rational debate as to the social impacts of the proposal.

From Professor Albrecht's CV it is clear that he holds a PhD in Philosophy and an undergraduate degree in social science, but nowhere in his CV is there any reference to experience as an environmental engineer, hydrogeologist, soil scientist or a rehabilitation specialist. Therefore, any claims adduced by Professor Albrecht as to the rehabilitated nature of a mining site must be treated cautiously. Further, Professor Albrecht does not cite any examples of such a site, nor does he cite any reference articles to support his personal opinion.

Similar assertions made by Professor Albrecht in paragraph 3.4 regarding the economic viability of coal mining in the Upper Hunter generally, are again without any apparent evidential basis or personal expertise in economics and therefore these assertions should be given no weight.

2.8 Paragraph 3.5

What the EMM report does not do is focus on Bulga and the non-empirical (hence non-measurable) impacts of the mine extension will have on this particular village.....The elephant in the room, an existing megamining, the mine expansion proposal, and the two court cases have had a significant impact on issues like community cohesion and sense of place and belonging. The EMM SIA has failed to acknowledge the importance of these critically issues (sic).

Response

From the above, it appears Professor Albrecht's claim is that there is not a sufficient focus in the SIA on Bulga and the non-empirical impacts of the proposal.

As outlined in several of the preceding responses, following the clear direction set out by Preston CJ with regards to what an SIA should include, the non-empirical impacts (or using Preston CJ's wording, experiential evidence) are assessed as against the objective data of the broader community. That this analysis does not give these non-empirical issues the pre-eminence that Professor Albrecht believes they are due, again turns on the balance that the SIA is trying to achieve as set out by Preston CJ.

Further, for Professor Albrecht to claim that these non-empirical impacts are not reported is would be interpreted misleading – Figure 21.6 of the EIS (as well as in numerous other places in the EIS) clearly set out the non-empirical impacts that stakeholders identified, namely "decline/fracturing of community and families", "reduced sense of place", "impacts on rural sustainability/intergenerational equality", "uncertainty about the future", "impacts on company-community relationship/engagement", "mistrust of mining industry and project assessment process".

It is important to note that near neighbours made up 44% of the stakeholders reporting these non-empirical impacts. The Bulga community was strongly represented with 20 per cent of Bulga residents participating. That residents of Bulga have not reported these non-empirical issues in perhaps the numbers that Professor Albrecht was expecting, should not be held against the applicant and perhaps reflects the importance those residents place on those issues.

2.9 Paragraph 3.7

I note that these impacts are not seen as 'negative' and to be avoided, they are conceptualised as "opportunities" and to be part of "designing appropriate social management, mitigation or enhancement strategies".

Response

This is another example of Professor Albrecht's misunderstanding of an SIA. At a simple level, not all impacts from a development are 'negative' and so as to distinguish these matters from the actual impacts of a proposal such as visual or noise etc, they are termed 'opportunities'.

2.10 Paragraph 3.8

However, to disaggregate all these responses and treat them separately is again an indication that EMM consultants do not understand the cumulative nature of all these impacts.....To me this suggest an avoidance of intensely local issues that locals are known to be sensitive about. Such cherry picking of 'the issues' is neither 'balanced' nor good research.

Response

What Professor Albrecht's misses in making the above claim, is that in order for his 'holistic view' to be adopted those individual impacts must first pass a threshold as to whether they can be considered "rational or justified". This can only be done with some measure of objectiveness of that impact. This is not a threshold that the applicant or the Department has set, but rather it is set by the Land and Environment Court in the matter of *New Century Developments Pty Ltd v Baulkham Hills Shire Council* [2003] L&E Court 154. This well-cited and accepted decision makes it clear that:

"in forming an opinion on the probable impact of a proposed development on the amenity of an area, tangible or otherwise, a court would prefer views from residents which are based upon specific, concrete, likely effects of the proposed development" (emphasis added).

There is no other way of determining whether a probable impact such as solastalgia is rational or justified and therefore applicable for consideration, without some objective analysis. This is all the SIA attempts to do.

There is no assertion in the SIA that these impacts should only be viewed in isolation – it is obvious that a person who is suffering from a loss of sense of place is likely to do so as a result of other potential impacts they may be experiencing.

As to Professor Albrecht's assertion that EMM have 'cherry picked' issues which in turn he considers poor research, this is a completely baseless assertion, as the responses are taken directly from the stakeholder engagements. In fact, as is set out below (see response 4.0-4.3), it is the methodology adopted by Professor Albrecht's in his 'research' of solastalgia that underpinned his affidavit in the Warkworth 2010 Extension appeal which really raises concerns as to what constitutes acceptable or academic research.

2.11 Paragraphs 3.11 – 3.14

....However, I argue that the reference case (mining would not proceed) will not significantly affect the sense of place of the majority of workforce ‘stakeholders’ because very few, if any, actually live in Bulga and those that do are likely to be single men who have no particular attachment to place (they go wherever work takes them).

Response

That Professor Albrecht is so dismissive of his concept of “a loss of sense of place” being applied to the MTW residents of the Singleton LGA and other Upper Hunter LGA’s who would be impacted should the proposal not proceed, seriously brings into question either the utility of the concept itself to social impact assessments or Professor Albrecht’s ‘balance’ in applying the concept to those he hasn’t been engaged to advocate on behalf of.

It should be very clear from the SIA, that the applicant is not dismissing that certain residents of Bulga are or may experience a loss of sense of place. However, in considering the reference case, it became clear that there were likely to be many MTW employees that suffered a similar “loss of sense of place” should the proposal not proceed as they are required to relocate from their community to obtain future work. Just because not all of MTW’s employees reside in Bulga, should not preclude them from suffering a similar “loss of sense of place” with regards to their own community.

In another example of Professor Albrecht’s use of emotive words, by making the comment that single men are unlikely to have any particular attachment to place, Professor Albrecht minimises the engagement and involvement that MTW employees have with their community. In considering Professor Albrecht’s comments, it is important to realise that almost one quarter of employees have worked at MTW for longer than 10 years. Further, 77.4% of respondents in the employee survey developed as part of the SIA stated they have mortgages or own their property and are therefore clearly intending to remain in the community long term. However, according to Professor Albrecht these people do not have the same intrinsic values of place or place attachment to their community (be it the Singleton LGA or elsewhere in the Hunter Valley) that the residents of Bulga do. To so blatantly dismiss the potential impacts or “loss of sense of place” these people may suffer should the proposal not proceed is disappointing from an academic who widely promotes the utility of his concept of “loss of sense of place” to wider demographics than villages, such as Bulga.

2.12 Paragraphs 4.1 – 4.3

4.1. I stated in the context of research conducted by me and the EDO on the then project.....

4.3. However, with the promulgation of the Mining SEPP matters have got even worse for the people of Bulga.....Moreover, as solastalgia is not even ‘in principle’ a reportable biomedical condition, useless data on the physical and psychological ‘health’ of the people of Bulga and the Singleton LGA des (sic) not help the cause of the proponent....such data is ‘report stuffing’.... The EMM SIA has not even acknowledged this further burden on the people of Bulga.

Response

In paragraphs 4.1 and 4.2 of his submission, Professor Albrecht makes much of the study that he and the EDO conducted with certain members of the Bulga community. However, what is overlooked by Professor Albrecht is the significant criticism that this ‘research’ received in the Warkworth Extension 2010 case. While it is true that Preston CJ did accept that the concept of “loss of sense of place” was a worthy consideration in the social impacts associated with a proposal, he was far less accepting of Professor Albrecht’s research methodology.

In short, Professor Albrecht's 'research' into the effects of solastalgia on Bulga residents involved the following:

- a questionnaire which included prompted answers for respondents to use language suggested by Professor Albrecht;
- was responded to by only 17 people (largely members of the BMPA); and
- was sent out to respondents by the secretary of the BMPA with a cover email suggesting that responding would assist their position in the court case.

For Professor Albrecht to now try and cast this in the light of academic research is both dangerous and disingenuous, especially given the claims Professor Albrecht has made as to the balance and quality of EMM's research.

As noted in earlier responses, Professor Albrecht's comments in paragraph 4.3 around the importance of the Mining SEPP again shows a lack of understanding with regards to the importance of matters to be considered by the consent authority.

The final point to note here concerns Professor Albrecht's comments in paragraph 4.3 that the SIA does not consider the burden the MTW continuation process is having on the residents of Bulga and their sense of place. Again, Professor Albrecht's comments appear to reflect a misunderstanding of the SIA process and how stakeholder responses are addressed. It is clear from figure 21.6 and in particular the stakeholder response "uncertainty for the future" which by any reasonable measure must include the Bulga resident's angst associated with the proposal. It appears from Professor Albrecht's comment that despite arguing elsewhere in his submission that impacts must be considered on an interrelated basis, he dismisses the possibility that the Bulga residents have factored the impact of the proposal into the responses that they provided in the stakeholder engagement.

Appendix F

Response to The Australia Institute submission (Appendix 5 of BMPA submission)



Appendix F — Response to The Australia Institute submission (Appendix 5 of BMPA submission)

F

MTW economic analysis – a rejoinder to comments by the Australia Institute

BAEconomics was commissioned by Rio Tinto Coal Australia (Rio Tinto) to identify the direct and flow-on economic benefits from the continued operations at Mount Thorley Warkworth (MTW) to satisfy the Secretary's Environmental Assessment Requirements for environmental impact statements to support development applications for Warkworth Continuation 2014 and Mount Thorley Operations 2014 proposals (the MTW proposals).

This rejoinder responds to the submission prepared by The Australia Institute (TAI) on behalf of the Bulga Milbrodale Progress Association Inc. of BAEconomics' 'Economic Impact Assessment for Warkworth Continuation 2014 and Mount Thorley Operations 2014' (June 2014, 'the BAEconomics report').

1 Executive Summary

TAI's assessment of BAEconomics' analysis is characterised by inconsistencies and misconceptions. The most notable of these is the claim, on the one hand, that MTW and 'many other' NSW coal mines are operating at a loss. TAI accordingly suggests that NSW policy makers should ignore the fact that MTW will employ around, on average, about 1,300 workers and pay substantial royalties; according to TAI, these jobs and royalties will not materialise. On the other hand, TAI suggests that NSW policy makers should not be concerned about MTW's existing workforce of around 1,300 workers who are expected to be made redundant if the proposals are not approved; according to TAI, these workers would easily find equally well paid jobs in mining and elsewhere. These claims cannot both be true: either NSW coal mining is in a slump and well-paid coal mining jobs are hard to come by, or NSW coal mining is prospering and there are many mining jobs.

TAI's claim that MTW is not viable underpins its central claim that the employment and royalty benefits of the proposals are questionable. However, TAI fails to consider that MTW is an established mining operation that has a long track record of providing highly paid jobs to the NSW community. Presumably Rio Tinto would not go to the trouble of applying for development consents and engaging in the associated stakeholder consultation processes if it did not believe that the proposals would generate a positive return.

Furthermore, TAI's claim that MTW is not viable is an artefact of two (incorrect) assumptions made by TAI:

- that it is appropriate to use *today's* coal prices and exchange rates to evaluate the economics of a 21-year coal project; and
- TAI's decision to substitute the operating costs of a *different* mine for those of MTW.

TAI also suggests that there are major uncertainties around the costs and benefits of the proposals, while the negative environmental and social impacts of the proposals are up-front and certain. This contention is disputed. The EISs show that there will be both benefits and impacts of the proposals, with the CBA concluding that, on balance, the benefits far outweigh the costs. Any costs are ongoing over the life of the proposals, as are the benefits.

TAI asserts that redundancies caused by the closure of MTW should be discounted since these workers would easily find similarly well-paid employment in mining or other industries. This claim is at odds with the views of well-respected commentators, as well as the reality being experienced in the mining industry:

- Professor Garnaut is one of a number of commentators who have argued forcefully that Australia's resources boom ended in 2011 and as a consequence, incomes, spending and living standards will fall. TAI itself cites a 2013 report to the effect that nationally about 9,000 jobs have been cut in the Australian coal sector since 2012.
- In addition to the evidence cited in the BAEconomics report, there are more recent indications of ongoing job losses in the Hunter Valley. They include a rising unemployment rate in the Hunter Valley, and announcements of significant job losses in coal mining, including 250 at Muswellbrook (July 2014) and 500 at Singleton (May 2014).

TAI raises a number of questions about the assumptions underpinning BAEconomics' estimates of the employment benefits of the proposals. In part, TAI appears to misinterpret the scope of these assumptions. For instance, the assumption that 30 per cent of workers made redundant if the proposals are not approved would leave the *NSW labour force* is not the same as saying that these 30 per cent would leave the *Australian labour force*. Hence, the claim that BAEconomics' labour market participation assumptions are overly pessimistic appears misdirected.

Furthermore, an additional sensitivity analysis undertaken by BAEconomics to test TAI's higher 'alternative wage' assumption shows that the net benefits of the proposals would still be substantial, and range from almost \$900 million to more than \$1.8 billion, depending on what is assumed about the share of MTW workers that would be re-employed in NSW at a higher alternative wage after having been made redundant.

TAI identifies various alleged shortcomings of BAEconomics' valuation of external effects, such as noise, air and ecological impacts on the basis of market-based valuations. In particular, TAI criticises BAEconomics' reliance on NSW Government guidelines, as they relate to acceptable environmental impacts and the suitability of ecological offsets, as a basis for valuing external effects. However, such guidelines constitute a common, agreed standard as to what is acceptable to 'make good' environmental and other damages. Specifically where ecological impacts are concerned, the offsets offered by Rio Tinto for identified ecological impacts would be deemed as being as 'as good or better' than the status quo by the relevant NSW authorities and under current legislation. That legislation, and the associated regulations, has been adopted by a democratically elected government acting on behalf of NSW's society.

Finally, TAI criticises BAEconomics' use of input-output multipliers to undertake the regional impact analysis (REIA). TAI suggests that this analysis should have been done using a Computable General Equilibrium (CGE) model. However, CGE models are complex and require detailed regional/state information that is not available in Australia in sufficient quality to provide appropriately robust assessments for projects in smaller regions, such as these proposals. TAI has recognised the issues

with CGE modelling elsewhere, including in a recent article, in which TAI describes CGE models as 'complex' and 'bizarre'.¹ BAEconomics notes that CGE models are useful tools if data of sufficiently high quality are available and the models are used appropriately as is the case with any analytical technique.

¹ Dennis, R., 2014. 'Economic models often biased by vested interests', Canberra Times, 1 August; <http://www.canberratimes.com.au/comment/economic-models-often-biased-by-vested-interests-20140731-zyumj.html#ixzz39UXrjeZy>.

2 TAI's counterfactual

The fundamental premise of TAI's critique of BAEconomics' findings is based on two contradictory arguments. In order to understand the premise of TAI's critique these two contradictory arguments are addressed upfront:

- TAI say that MTW, like many other mines in NSW, is not financially viable. TAI therefore states that NSW policy makers cannot assume that MTW will continue to generate employment and pay significant royalties.
- Notwithstanding the claim that neither MTW, nor 'many other coal mines' are financially viable, TAI says that, in the event that the proposals are not approved, MTW employees and contractors would have no difficulty in finding similarly well paid employment in mining or related sectors.

These statements are inconsistent and are based on flawed reasoning as is shown below.

2.1 Whether MTW is financially viable

TAI's recommendation that the proposals should be rejected relies on their assessment that MTW would not be financially viable, and would therefore deliver no economic benefits to the NSW community (p.1):

What BAEconomics omit to tell readers is that under these price assumptions, the project would lose money in every year of its 21 year life. They ignore the fact that no project would continue paying hundreds of millions in royalties and wages each year while indefinitely losing money for its largely foreign shareholders.

In other words, TAI suggests that policy makers should discount the employment and royalty benefits of the project, because they are unlikely to materialise given the project is not financially viable.

TAI's characterisation of MTW's profitability is based on their own analysis of MTW's profits, and is described on pp. 5-9. At the end of that analysis, TAI concludes (p.9):

We see that at current prices and exchange rates the project has a net value of negative \$805 million – it is not financially viable. ...

TAI's findings are somewhat surprising. Presumably Rio Tinto would not go to the trouble of applying for development consents and engaging in the associated stakeholder consultation processes if it did not believe that the proposals would generate a positive return.

As we set out in the following sections, TAI's findings are flawed in a number of respects.

- 1) TAI mischaracterise the purpose of the cost benefit analysis (CBA) prepared by BAEconomics.

Furthermore, TAI's assessment that MTW is not financially viable is an artefact of two *key* assumptions:

- 2) that it is appropriate to use *today's* coal prices and exchange rates to evaluate future revenues and the economics of a long-term project; and
- 3) the decision to substitute the operating costs of a *different* mine for those of MTW.

1) Difference between a cost benefit analysis and a financial analysis

TAI state (p.1) that:

BAEconomics ignore this financial pressure in their assessment, by focusing not on the overall finances of the project, but on benefits to NSW – mainly royalties and employment.

TAI appears to misunderstand the purpose of an economic impact assessment within the broader NSW planning and assessment framework. NSW guidelines require the economic impact assessment to take the form of a CBA. First, a CBA differs in material respects from the financial analysis that TAI has attempted. For instance, a financial analysis incorporates financing costs, depreciation, and taxation items. Second, the purpose of the cost benefit analysis within the NSW planning and assessment framework is to identify the *public* benefits of the proposals for NSW, rather than assessing the *private* benefits (profits) of the proposals for Rio Tinto. This is because what matters from a public policy perspective are not Rio Tinto's profits, but the benefits of the proposals to the NSW community.

2) MTW's future revenues

TAI explains (pp. 5-6) that while BAEconomics' coal price and exchange rate assumptions are '*in line with some analysts' forecasts*', they differ from today's coal prices and exchange rates. TAI accordingly uses *today's* coal prices and exchange rates to estimate MTW's future revenues over the life of the mine. As a result, TAI's estimate of the net present value (NPV) of MTW's coal production, as shown in Table 2, is \$6,232 million, compared to the \$7,527 million estimated by BAEconomics.

However, TAI's approach to determining MTW's future revenues is not appropriate. In evaluating the net benefits of a long-lived project such as MTW, which would operate until 2035 if approved, today's coal prices and exchange rates are not important. What matters instead, are coal price and exchange rate expectations over the term of the investment, that is, long-term forecasts for a proposed 21 year continuation of operations in the case of the MTW proposals.

This distinction has also been recognised by the Bureau of Resources and Energy Economics (BREE 2014, p.12):

New South Wales has 10 coal projects at the Feasibility Stage; however, as these are mainly expansions to existing mines they are generally lower in cost than the greenfield developments in Queensland. While current market conditions are not supportive of these projects being approved, it should be noted that most of them have very long operating lives and decisions to commence will be based more on long term assessments of market conditions rather than today's prevailing market prices. [emphasis added]

3) MTW's operating costs

To derive the results shown in Table 2, TAI has made a second important assumption: to replace BAEconomics' estimate of MTW operating costs (which reflect the figures provided to BAEconomics by Rio Tinto) with an alternative operating cost figure (p.8):

In Table 2 below, we compare BAEconomics estimates with revenues under current market conditions and operating costs similar to [sic] neighbouring Bulga mine

In other words, TAI determines that MTW is not financially viable by substituting Rio Tinto's actual estimate of operating costs, with those of a different mine – namely the neighbouring Bulga mine.

No clear justification is provided for this substitution.

What is clear, is that TAI replaces its own estimate of MTW's operating costs, with the operating costs of a different mine. In summary, and as Table 2 of the submission shows, TAI's finding that MTW is not viable and would make a loss of \$805 million in NPV terms depends on TAI having made two material changes to BAEconomics' calculations:²

- by substituting long-term coal prices and exchange rates with today's coal prices and exchange rates TAI claim that the NPV of MTW's projected revenues over the life of the mine is *reduced* by \$1,295 million; and
- by substituting MTW's operating costs with those of its neighbouring mine, the NPV of MTW's operating costs over the life of the mine is *increased* by \$1,017 million.

By assuming that costs from one mine can be applied to another mine, TAI shows very limited understanding of the coal mining industry. Other than noting that the Bulga Coal Complex is a 'neighbouring mine', TAI provides no indication why they elected to substitute the costs of a different mine for those of MTW. MTW and Bulga Coal Complex are different mines and, as such, would have different operating costs. For instance, strip ratio (ratio of waste to coal) is a key driver of cost. MTO has a different strip ratio to Warkworth Mine, so the strip ratio would likely be different again at Bulga Coal. In addition each mine has different equipment (eg. MTW has 3 draglines, Bulga has one), MTW has 2 coal handling and preparation plants (Bulga has one), Bulga is an integrated open-cut and underground complex while MTW is entirely open-cut, each will have different mine plans and while the geology of the two mines will be similar, it is not identical. As a result, substituting the operating costs of one for the other is simply not appropriate.

It also appears that TAI has made a mistake in their estimate of Bulga mine's operating costs. TAI refers to a Deloitte Access Economics report (DAE, 2013) to derive an operating cost estimate for Bulga mine of \$78 per tonne, to which they add an additional \$6 per tonne to account for royalties. However, the \$78 per tonne figure in the DAE report seems to be a typographical error, given that it is said to be comprised of the cost of mining (\$57.07 per tonne) plus the cost of transport to port (\$11.40 per tonne), making a total of \$68.5 per tonne. That error is then carried over into TAI's analysis, where it results in an overestimate of Bulga's operating costs of around \$716 million.³

2.2 Employment in economic assessment

MTW currently employs around 1,300 workers who are expected to be made redundant if the proposals are not approved. In order to assess the eventual employment outcomes in the event that the proposals do not proceed, assumptions need to be made about what proportion of these workers would be re-employed in NSW and at what 'alternative' wage. TAI describes BAEconomics' assumptions in this regard as 'highly pessimistic' (p.2), suggesting that they serve to overstate the employment benefits of the proposal.

TAI mischaracterise BAEconomics' re-employment assumptions; these are discussed in greater detail in Section 3.4.5 of this rejoinder. However, TAI's comments highlight a more fundamental inconsistency in their commentary.

² We also note that while TAI claims that 'the project would lose money in every year of its 21 year life' (p.1), Table 2 does not show this. Table 2 only shows that using TAI's assumptions results in a negative NPV over the life of the project.

³ Furthermore, DAE's figures are themselves very uncertain, given that they are sourced from a 2009 (now out of date) econometric analysis by Shafiee et al. (2009). Shafiee et al. note that their cost estimates fall within a +/- 20 per cent range of accuracy.

On the one hand, TAI makes a general claim that the NSW mining sector is experiencing a prolonged downturn, for instance in the context of the discussion of MTW's (claimed) lack of profitability (p.9):

This will not come as a surprise to observers of the Australian coal industry, with many mines operating at a loss for prolonged periods.

Similarly TAI says at p.5:

.. the Warkworth project, along with many Hunter coal projects, is under considerable financial pressure. This is no secret; these issues are widely discussed in the press.

If it is the case that few coal projects are viable, as TAI says, the prospects that MTW's current workforce will be re-employed in the mining sector, in NSW, and at anything like their current wages are presumably questionable at best. Yet TAI discounts the employment consequences if the proposals are not approved (p.16):

.. workers in the Warkworth project will be able to find employment either within the mining industry or other industries they have come from, to a degree that workers in few other industries can.

Accordingly, (p.17):

.. it is likely that minimal costs of unemployment would be experienced by workers due to the nature of industry worker turnover, robust mining employment and a generally strong Hunter and NSW economy.

In summary, notwithstanding their own statements that the NSW coal mining sector is in a pronounced downturn, TAI's assessment is that, upon becoming unemployed, MTW workers would have no difficulty in soon finding equally high-paid jobs reflecting their (mining) qualifications.

This view is at odds with that of many economic commentators, including those cited by TAI as set out below.

Trends in the broader resources sector

From an economy-wide perspective, Ross Garnaut argues in his book *Dog Days, Australia after the Boom* (2013) that the resources boom in Australia effectively ended in 2011, and will cut incomes, spending and living standards. At an Australian Agricultural and Resource Economics society conference in Sydney, Professor Garnaut warned of a 'very big and painful' adjustment as Chinese demand for Australia's coal, iron ore and gas drops, causing an economic downturn to rival that experienced by the US and Europe in the past five years, and resulting in a long period without income growth (Neales 2013). Professor Garnaut's assessment is consistent with that of BREE, which first identified a sharp fall in the value of committed resources investment projects in 2013 (Daily 2013). As of April 2014, BREE noted that the number of publicly announced coal projects has been further cut by six, with an associated reduction in investment of \$1.9 to \$2.9 billion, and that six coal projects were removed from the major projects list (Barber et al. 2014).

Trends in the Hunter Valley

Specifically where the Hunter Valley is concerned:

- TAI cites a May 2013 report that highlights 9,000 lost jobs in the Australian coal sector (Heber 2013);

- Australian Bureau of Statistics (ABS, 2014) figures show that unemployment in the Hunter Valley has increased noticeably over the past two years, rising from 3.2 per cent in July 2012 to 6.7 per cent in July 2014 (having risen to 9.2 per cent in May of this year);
- the President of the Singleton Chamber of Commerce is quoted as saying that hundreds of laid-off mineworkers are nervous about the future, and that economic activity in towns such as Singleton and Muswellbrook has slowed down markedly (ABC News 2014); and
- significant additional job losses have been announced in recent months that were not referenced in the BAEconomics Report, including:
 - additional redundancies of 163 at the Mount Arthur open cut mine (Muswellbrook), bringing the total to 250 (Pritchard 2014); and
 - 500 redundancies at the Glennies Creek and Camberwell mines (Singleton, ABC News 2014a).

In summary, notwithstanding their own statements that the NSW coal mining sector is in a pronounced downturn, TAI's assessment is that, upon becoming unemployed, MTW employees would have no difficulty in soon finding equally high-paid jobs reflecting their (mining) qualifications.

3 Q&A of TAI's detailed comments

This section reviews in detail other comments made by TAI.

3.1 Overview of BAEconomics' analysis

TAI variously describes BAEconomics' analysis as 'unorthodox' (p.2, 5) or 'brave' (p.12). TAI's concerns appear to relate to the economic framework applied in BAEconomics' CBA, namely that the fact that MTW would employ a significant number of NSW residents constitutes a benefit to the NSW community.⁴

A number of economic impact analyses of coal projects, including TAI's analysis (Table 2) are based on the mistaken supposition that the 'net value of production' or profit of a coal mine constitutes a *public* benefit. This is not the case: the profit of a coal mine is a *private* benefit; the NSW community benefits only indirectly, and to a limited extent if, say, Rio Tinto's profits are high.

As set out in the BAEconomics report, whether a project such as continuation of mining at MTW contributes to the welfare of a State such as NSW is instead measured with reference to 'value added' (ABS 2013). Value added is a concept that is used in Australia's (and all countries') national accounts, and which refers to wealth creating activities: value added is the increase in the value of goods or services as a result of the production process. Summed across all industries, (gross) value added equals gross domestic product (GDP) or gross state product (GSP). In other words, from an (economic) public policy perspective, activities that increase NSW GSP improve the welfare of the community of NSW.

The calculation of GSP is governed by strict, internationally accepted accounting standards; in Australia these are referred to as the Australian System of National Accounts (ASNA). BAEconomics strictly adhered to the ASNA standards; this is in contrast to other economic impact evaluations where *private* and *public* benefits are often confused. The ASNA standards establish a clear framework within which the wage and salary incomes received by a State's residents, as well as royalty payments received by the State and various other smaller items increase GSP and therefore constitute a benefit.

In the case of the CBA conducted by BAEconomics, the incremental wages and salaries earned by MTW workers (which BAEconomics termed 'employment benefits') have additionally been estimated conservatively, namely by:

- incorporating only the additional *disposable income* earned by MTW workers;
- assuming that most MTW workers who would be made redundant would be re-employed elsewhere in NSW; and
- assuming that the majority of any additional workers that MTW might hire would have previously worked in NSW, so that only their additional disposable income (when employed by MTW) would be counted as a benefit to NSW.

⁴ To be precise, the extent to which MTW would employ people at a higher wage than they would earn elsewhere in NSW is considered a benefit.

3.2 Comparison with previous assessments

In the Introduction to their submission (pp. 4-5), TAI suggests that BAEconomics' 2014 assessment of MTW to the NSW community differs from that derived by Gillespie Economics (2012), and that there are therefore either '*serious errors*' in Gillespie Economics' work or '*major uncertainties*' around BAEconomics' work.

BAEconomics' analysis differs from the previous assessment in many ways, which means that the numbers are not comparable:

- different methodology - the focus of BAEconomics' analysis is on the benefits that would accrue to the NSW community. From an economic perspective, the *public* benefit of a project is measured with reference to value added: the additional value of goods and services that are newly created in an economy. In contrast, the net value of production, which is also estimated by TAI (Table 2) includes a private benefit; only a share of this benefit accrues to NSW;
- different proposals – the Gillespie Economics' assessment related considered a different production scenario for MTW, with up to 21Mtpa of ROM coal to be extracted up to 2017 when MTO's development consent expired. Extraction rates were then assumed to reduce to 18Mtpa of ROM coal to 2031;
- different levels of assessment - the cost benefit analysis done by Gillespie (2012) was for Australia, whereas the focus of the BAEconomics analysis is NSW; and
- different timeframe – BAEconomics' analysis was based on the most recent (2014) data available for MTW, whereas the Gillespie Economics' 2012 analysis referred to by TAI reproduces their earlier 2009 analysis. Over the 2009 to 2014 timeframe, Rio Tinto has revised its mine plan and operational approach, as reflected in the operating and capital expenditure estimates provided to BAEconomics. Market conditions have also changed substantially over this period.

3.3 Certainty and timing of estimated outcomes

TAI suggests that there are major uncertainties around the costs and benefits of the proposals, while the negative environmental and social impacts of the proposals are up-front and certain (p.5):

The impacts on Bulga and rare woodlands are up-front and certain, while payments to NSW are spread over many years and dependent on market conditions.

This contention is disputed. The EISs show that there will be both benefits and impacts of the proposals, with the cost benefit analysis concluding that, on balance, the benefits far outweigh the costs. Any costs are ongoing over the life of the proposals as are the benefits.

MTW is an existing operation with a long track record of providing highly paid jobs to the NSW community. What is certain is that if the proposals are not approved, around 1,300 people are expected to lose their current jobs. It is also certain that if the proposals are not approved, MTW will not pay royalties to the NSW Government, for the benefit of the NSW community. In addition, and as discussed in Section 2, TAI's analysis of the finances of the project is flawed and cannot be supported.

- It is also not the case that any negative environmental and social impacts of the proposals would be up front and certain: the ecological impacts of the project will be mitigated by a

biodiversity offset strategy prepared and certified in accordance with contemporary government policy (ie the Framework for Biodiversity Assessment) with land-based offsets quantified by the NSW Biodiversity Certification Assessment Methodology (BCAM), in accordance with the Upper Hunter Strategic Assessment (UHSA), and as required by the NSW Office of Environment and Heritage. Rio Tinto has committed itself to ensuring that the offsets will result in a 'maintain or improve' outcome for the relevant ecological communities, as required under the policy.

- Rio Tinto has committed to operational procedures and significant expenditures to mitigate the environmental and social impacts over the life of the proposals. They include progressive rehabilitation, fitting noise attenuation equipment to its heavy vehicle fleet, measures to mitigate visual impacts at affected third party sites and around the mine site, as well as a suite of management strategies to manage Aboriginal and European cultural heritage impacts.

3.4 Financial aspects of the project

TAI suggests at various points in its submission that MTW is not financially viable, and has undertaken its own analysis to attempt to demonstrate that this is the case. TAI's analysis is discussed in detail in Section 2.1. In the following additional points of detail that arise from TAI's analysis are discussed.

3.4.1 Price of coal and exchange rate

TAI is critical of the coal price and exchange rate assumptions used by BAEconomics, saying that (p.6):

- 1) BAEconomics' coal price and exchange rate assumptions are higher than today's coal prices and exchange rates;
- 2) these coal price and exchange rate assumptions are higher than those referred to by Rio Tinto elsewhere; and
- 3) BAEconomics does not discuss the impact of lower coal prices on the overall finances of MTW, in particular on MTW's gross operating surplus.

1) Relevance of today's coal prices and exchange rates

BAEconomics' coal price and exchange rates reflect long-term forecasts by independent brokers. Information was sourced from four broker commodity reports published in January and February 2014 (Goldman Sachs, Deutsche Bank, Macquarie Bank, UBS).

As discussed in Section 2.1, for the purpose of an economic evaluation of an infrastructure project with an approval length of 21 years, it is appropriate to apply coal price and exchange rate expectations over the term of the investment, that is, long-term forecasts.

We also note that NSW Government budget estimates are based on a thermal coal price of US\$90 per tonne, higher than the long-term figure of US\$85 per tonne assumed by BAEconomics based on broker forecasts (NSW Government 2014-15, pp. 6-28).

2) Rio Tinto's coal and exchange rate forecasts

BAEconomics was commissioned to undertake an independent economic evaluation of the MTW proposals. We did not have access to, nor would it have been appropriate, to apply Rio Tinto's internal coal price and exchange rate forecast for this purpose. As noted above, the forecasts used by BAEconomics instead reflect those published by independent brokers.

We also note that the reference to Rio Tinto using 'a far lower coal price in its own work' refers to a Rio Tinto document produced for the purposes of reporting exploration results and coal resources⁵. What TAI fail to mention in relation to the study in this document is that:

- the study was completed in 2010 and, therefore, would represent 2010 dollars rather than dollars of today. As such the US\$72.58 per tonne estimate is not comparable to prices used in the BAEconomics analysis;
- the study essentially conducts analysis using the prevailing average analyst forecast prices at the time. The BAEconomics analysis of the proposals is similarly in line with current prevailing average analyst forecast prices. As stated above, Rio Tinto's internal pricing forecasts are commercially sensitive and are not disclosed. This was made clear in the document referred to by TAI (p. 9):⁶

Rio Tinto applies a common process to the generation of commodity prices across the group. This involves generation of long-term price curves based on current sales contracts, industry capacity analysis, global commodity consumption and economic growth trends. In this process, a price curve rather than a single price point is used to develop estimates of mine returns over the life of the project. The detail of this process and of the price point curves is commercially sensitive and is not disclosed. [emphasis added]

3) Impact of lower coal prices

BAEconomics was commissioned to undertake an economic impact assessment of the proposals. As discussed in Section 2.1, a cost benefit analysis differs in material respects from a financial analysis.

We also note that the impacts of different (including lower) coal prices and various exchange rates on the net benefits of the proposals to the NSW community are explored in depth in Tables 3-5 and 3-6 in BAEconomics' report:

- Table 3-5 shows that the incremental royalty and tax benefits accruing to NSW are substantial, irrespective of the coal price and exchange rate assumptions used. These benefits range from \$549 million to \$852 million, depending on the coal price and exchange rate assumptions.
- Table 3-6 shows that the overall benefits accruing to NSW are also substantial, irrespective of the coal price and exchange rate assumptions used. These benefits range from \$1,235 million to \$1,839 million, depending on the coal price and exchange rate assumptions.

⁵ The Australasian Code for the Reporting of Exploration Results, Mineral Resources and Ore Reserves (The JORC Code, 2012 Edition).

⁶ http://www.riotinto.com/documents/RT_Table1_HVO_ORSC_2013.pdf

3.4.2 Project revenue

Royalties

TAI suggests that BAEconomics did not consider royalty deductions and that BAEconomics' royalty estimates therefore '*serves to overstate the value of royalties*' accruing to NSW (Footnote 10, p.7).

The above statement is not correct. The royalties figures used by BAEconomics reflect the outcome of a full financial model. Royalty calculations in both the expansion and reference cases include allowable deductions for beneficiation and levies.

3.4.3 Operating costs

Per tonne operating costs

TAI suggests that BAEconomics should have estimated MTW's operating cost per tonne, given that this is said to be a "*key statistic*" (p.7) for a (financial) mine analysis.

BAEconomics was commissioned to undertake an economic impact assessment. NSW guidelines require the assessment to take the form of a CBA. As noted in Section 3.1, a CBA designed to determine the net benefit of a project to a state or region differs in material respects from a financial analysis of the private net benefits that accrue to the project proponent. The purpose of the cost benefit analysis undertaken by BAEconomics was to identify the *public* benefits of the proposals to NSW, rather than assessing the *private* benefits of the proposals to Rio Tinto, which is the focus of TAI's analysis. Whether or not a proposal is *privately profitable* and worth pursuing in the first place is a matter for its proponent, that is in this case, Rio Tinto.

Future operating cost trends

TAI derives its own estimates of MTW's operating costs per tonne, which are said to be relatively low (p.8). TAI asserts that, in future, operating costs per tonne would increase, and that BAEconomics failed to discuss this "*likely cost increase*" (p.8).

The following comments can be made in respect of TAI's assessment of MTW's operating costs and future trends:

- TAI's own view that MTW's operating costs are low would seem to contradict the claim that MTW is not viable. It also raises questions as to why TAI elected to substitute the operating costs of a *different* mine to estimate MTW's production-related profits.
- BAEconomics' figures for MTW's operating costs reflect the data provided to BAEconomics by Rio Tinto; these cost estimates are, in turn, a function of Rio Tinto's long-term mine plan.
- The nature and timing of operating and capital expenditures over the life of a mine depends on the long-term mine plan, which is highly specific to a particular project. TAI is not privy to the MTW long-term mine plan. TAI therefore has no basis for any claims about how MTW's operating costs may evolve in the future.

3.4.4 Capital costs

In relation to the capital costs of the proposals, TAI claims that (p.8):

- 1) BAEconomics' estimate of gross operating surplus does not consider the capital costs of the project, which, it is suggested, would overstate the profitability of the project; and

2) BAEconomics characterises capital costs as an 'incremental benefit'.

1) Gross operating surplus

TAI's reference to the 'gross operating surplus' reflects a misunderstanding of basic national accounting concepts. As explained in the BAEconomics report, the gross operating surplus (GOS) should not be confused with a 'profit' or similar concept, as TAI seems to do (p.8).

Only a subset of the items that make up MTW's GOS constitute a benefit to NSW in the BAEconomics Report, namely payments that will accrue to different levels of NSW government. These are:

- coal royalty payments;
- the estimated share of MTW's corporate income taxes attributable to NSW;
- the estimated share of personal income taxes and Medicare payments attributable to NSW;
- payroll taxes;
- land taxes; and
- council / shire rates.

Capital costs play no role in deriving any of the above items, so that it is not the case that the net benefits of the proposals have somehow been overstated.

2) Capital costs as an incremental benefit

Table 1-1, which is cited by TAI, does not constitute a part of the net benefits calculation undertaken by BAEconomics. As is highlighted in the text, Table 1-1 has been included to meet the requirements of Section 12AA of the State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007 (Mining SEPP). The Mining SEPP requires proponents of a project to identify the project-related benefits, in particular: employment generation; expenditures, including capital investment; and the payment of royalties to the State.

3.4.5 Sensitivity analysis

TAI dismisses the sensitivity analysis undertaken by BAEconomics not on the basis of the methodology used but on the presumption that MTW is not a viable project in the long term based on their own analysis. As already noted, the financial viability of a long term project such as the continuation of MTW is assessed on the basis of expectations of long term commodity prices and exchange rates and not on the basis of today's prices (whether they be low or high).

3.5 Employment assumptions and benefits

TAI discusses BAEconomics' findings in respect of the employment benefits of the proposals on pp. 10 -20.

3.5.1 Rio Tinto's statements on employment

TAI quotes various statements by Rio Tinto management to the effect that reducing staffing costs is an objective of the business (pp. 10-11). It would seem that these reflect general company statements and do not refer specifically to MTW.

TAI then suggests that BAEconomics claims that maintaining jobs is 'a key objective of the project', and that (p.11):

The economic assessment is wrong to assume, contrary to the statements of their clients, that staffing levels would be maintained throughout the life of the project and that no effort will be made to increase the productivity of the workforce.

We note that:

- BAEconomics has made no statements to the effect that maintaining jobs is a key objective of the proposals and has not based its assessment on such an objective;
- future employment projections at MTW reflect MTW's planned production profile, which in turn reflects the long-term mine plan, and were provided to BAEconomics by Rio Tinto; and
- as TAI may be aware, productivity improvements in mining typically arise from a combination of factor inputs. For instance, 'multifactor productivity', an indicator used by the Productivity Commission (PC) is the ratio of output to a combination of inputs, such as labour and capital or capital, labour, energy, materials, and intermediate inputs (Topp et al. 2008). Staffing levels therefore provide only a limited indication of the productivity of a mining enterprise.

3.5.2 Re-employment prospects of MTW workers

As outlined in Section 2, TAI makes contradictory statements about the economic prospects of the Australian coal mining industry. On one hand, TAI argues that MTW and many other mines are not financially viable, so that the employment benefits of these proposals cannot be expected to materialise. On the other hand, TAI suggests that the workers who would be made redundant if the proposals are not accepted would have no difficulty finding new employment, because (p.12-14):

- 1) employment in Australian coal mining has increased over the past two years, and under-employment in the Australian mining sector is low;
- 2) BAEconomics' source for data on coal employment is said to be an article in Section 2 of the BAEconomics Report that, according to TAI, was indirectly sourced by the Minerals Council of Australia (and should therefore be discounted); and
- 3) references to lay-offs in particular coal projects are anecdotal and should not be given any weight.

TAI's assessment of the employment prospects for miners in the Hunter Valley is discussed in Section 2.2. Section 2.2 highlights that the negative local and regional unemployment trends described in the BAEconomics report are ongoing. In addition, we note the following in relation to the points referred to above.

1) Employment in Australian coal mining

BAEconomics' economic assessment of the proposals refers to their specific impacts on the local and NSW economy. Australia-wide employment statistics are not relevant for discovering employment trends in a local and regional context.

2) Coal employment

Section 2 of the BAEconomics report provides an overview of the current and medium term employment perspective in the Mid and Upper Hunter region of NSW. The section sets out the

economic context for the proposals. BAEconomics did not rely on the background material presented in Section 2 of the report to derive the re-employment and redeployment assumptions used for the cost benefit analysis. As discussed in the BAEconomics Report, these assumptions are instead based on a literature review of employment outcomes in circumstances where workers are made redundant, and which is summarised in Appendix A of the BAEconomics Report.

3) 'Anecdotal' evidence

It is also not the case that the background material presented in Section 2 of the BAEconomics relied on a single (and supposedly biased) source. BAEconomics referred to numerous publications, including:

- a number of 2013 and 2014 publications by the Hunter Valley Research Foundation;
- data from the Australian Bureau of Statistics (ABS) in relation to NSW mining investment, and local employment trends, respectively;
- 2013 and 2014 publications from the Australian Journal of Mining; as well as
- two articles from the Australian newspaper, one of which is referred to by TAI.

In addition, two references cited by TAI ('Ten thousand coal mining jobs gone in two years', and 'Thin margins, job losses: Coal sector troubles') appear to confirm the contents of the article that TAI says is 'biased'.

3.5.3 Re-employment assumptions

In the event that the proposals are not approved, around 1,300 workers are expected to be made redundant. BAEconomics made a number of assumptions about the re-employment prospects of these workers in NSW.

NSW vs. Australian labour market effects

In the 'reference case', BAEconomics assumed that 30 per cent of MTW workers would immediately be re-employed *in NSW*, 40 per cent of workers would be re-employed *in NSW* in the next financial year, and 30 per cent would leave the NSW labour force, either by retiring or by moving interstate. Table 3-7 in the BAEconomics report shows the results of a range of additional sensitivities to explore the implications of these assumptions, including the assumption that *all* MTW workers who are made redundant are immediately re-employed in NSW. Table 3-7 shows that the employment benefits to NSW are robust to changes in these assumptions.

BAEconomics' labour market assumptions are the subject of a number of comments by TAI, which are discussed in the following. However, it would appear that there is a key misconception that underlies a number of TAI's comments, namely, that it is appropriate to apply Australia-wide figures to estimate the share of workers that would be re-employed in NSW.

The purpose of the economic impact assessment, and therefore the labour market assumptions incorporated in the cost benefit analysis, is to identify the benefits that would accrue to NSW. Saying that 30 per cent of workers that are made redundant would leave the *NSW labour force* is therefore not the same as saying that 30 per cent of redundant workers would leave *the Australian labour force*. Indeed, it would seem likely that some share of MTW workers who are made redundant would move interstate to seek employment elsewhere. Nonetheless, and for the purpose of the economic impact assessment, MTW workers who are made redundant and who

move to, say, Western Australia to find employment, have left the NSW labour force. The disposable income of these workers no longer counts as a benefit to NSW.

Specific comments

BAEconomics referred to a Reserve Bank of Australia (RBA) publication to derive the labour market assumptions, which, TAI suggests, are inappropriate:

- the mining sector has a high rate of worker turnover, suggesting that workers who have been made redundant would have no trouble finding new employment (p.16);⁷ and
- the RBA statistics referenced by BAEconomics relate to 'involuntary separations', which, TAI suggests, is not appropriate since MTW workers would have plenty of notice of the need to find new employment (p.17).

First, as noted above, TAI is correct in saying that mining employees are generally highly mobile. However, for the purpose of the economic impact assessment, MTW workers who are made redundant and who move interstate no longer contribute to NSW gross state product (GSP). The assumption that 30 per cent of MTW workers made redundant leave the NSW labour force means just that: they may either retire or they may move interstate.

Second, BAEconomics undertook a complete literature review of employment outcomes in circumstances where workers are made redundant. As is stated in discussion of these assumptions in Appendix A in the BAEconomics report, there is very little information about the eventual labour market outcomes relating to workers who are made redundant at some stage during their working lives. To our knowledge, the only study of these labour market outcomes undertaken during the past ten years is the RBA (2012) study referenced by BAEconomics.⁸

Third, the RBA study groups unemployment situations into three types – involuntary unemployment, voluntary unemployment in the form of 'job sorting' and voluntary unemployment for life-cycle and personal reasons. It would be very difficult to argue that the closure of MTW and subsequent redundancy of MTW workers constitutes any form of voluntary unemployment.

Finally, the MTW labour force has some characteristics that would additionally suggest that MTW workers would be less likely to seek new employment, either elsewhere in NSW or interstate. Specifically:

- more than a quarter of MTW employees are 50 years old and older; and
- almost a quarter (23 per cent) of MTW employees have been employed by MTW for 10 years or more, and 16 per cent of employees for 20 years or more.

These workers would receive a redundancy benefit when the mine closes, and may be less likely to move or take other measures to find alternative employment in the mining industry.

⁷ At Page 16, TAI say: "... more than any other industry, mining has recruited skilled workers from other sectors. This suggests that workers in the Warkworth project will be able to find employment either within the mining industry or other industries they have come from, to a degree that workers in few other industries can."

⁸ BAEconomics additionally cited data from the most recent Household, Income and Labour Dynamics in Australia (HILDA) survey conducted by the Melbourne Institute of Applied Economic and Social Research (Melbourne Institute 2013).

3.5.4 Alternative wages assumption

BAEconomics assumed that the majority of any MTW workers made redundant would find alternative employment in NSW, albeit at a lower wage. BAEconomics also assumed that any additional workers hired by MTW if the proposals are approved would not reflect 'new' jobs, but would move from jobs in other sectors of the economy to work at MTW.

TAI points out that:

- 1) BAEconomics appears to have assumed a wage figure of \$168,543 per annum (p.17); and
- 2) the assumption that re-employed workers would earn the average Mid and Upper Hunter region wage of \$58,853 is not appropriate (p. 18). TAI instead suggests that MTW employees are experienced mine workers who would not have to take lower paying jobs, and who would find work in the mining or other skilled industries (p.18).

1) MTW wages & salaries

We note that all MTW wage and employment figures have been verified with Rio Tinto, and do not rely on BAEconomics assumptions, as TAI suggests.

2) Alternative wage

We note that TAI's statement that MTW workers would be re-employed at high wages in the NSW mining industry is not consistent with their opposing claim that MTW and many other mines are not viable. As set out in Section 2 and in the BAEconomics report, there have been multiple coal mine closures in the Hunter Valley and in NSW. MTW workers who would be made redundant with no mine continuation and are highly skilled may indeed find new employment in mining, but, given recent employment conditions, this is unlikely to be in NSW and also unlikely to be at their current level of remuneration.

TAI suggests that an annual wage figure of \$133,000 would be more appropriate for assessing the employment benefits of MTW. As set out in Table 3-1 over, this sensitivity does not change the fundamental conclusions of BAEconomics' analysis. Table 3-1 reproduces Table 3-7 in the BAEconomics report, but assumes a significantly higher alternative wage. Even under the most optimistic assumption put forward by TAI, namely that all MTW would immediately find alternative high-paid employment in NSW, the net benefits to the NSW community of the proposal would still equate to almost \$900 million in NPV terms, of which \$220 million would consist of the additional disposable income earned by MTW workers. As discussed in this rejoinder, we do not believe that this assumption is credible, nor is it consistent with TAI's statement that multiple Hunter Valley coal mines are operating at a loss.

Table 3-1. Re-employment sensitivity – High alternative wage calculation

Re-employment assumptions	Incremental benefits of the proposals to NSW (NPV A\$ m 2014)	
	Net employment benefits (disposable income) (NPV A\$2014 m)	Net production-related benefits to NSW (NPV A\$2014 m)
0%	\$861	\$1,825
30% Year 1, 40% Year 2	\$361	\$1,094
50% Year 1, none thereafter	\$541	\$1,356
70% Year 1, none thereafter	\$412	\$1,169
100% Year 1	\$220	\$888

Notes: Average alternative wage and salary income is assumed to be \$133,000 (A\$2014).
NPVs have been derived using a discount rate of 7 per cent.

3.5.5 Sensitivity analysis of labour assumptions

On pp. 2 and 19, TAI comments that BAEconomics' analysis is '*counterintuitive*', with reference to Table 3-8 in the BAEconomics Report. Table 3-8 shows the effect of varying assumptions in relation to any additional workers that MTW may hire ('redeployment' assumptions). TAI questions the result that a higher share of additional workers hired by MTW that come from NSW results in lower employment benefits to NSW.

TAI does not recognise that there is a distinction between benefits that accrue to NSW and those that accrue to the broader Australian economy. NSW GSP increases either if, on net, additional jobs are created in NSW, and/or if workers that are already employed in NSW earn higher incomes if they move to (are employed by) MTW. If MTW were to employ only workers who are already employed elsewhere in NSW, then NSW GSP only increases by the additional disposable income that these workers would receive as a result of being employed by MTW *relative to their previous salaries*. On the other hand, if MTW were to hire additional workers from interstate, NSW GSP would unambiguously increase.

3.6 External effects

3.6.1 Noise, air quality and visual amenity

On pp. 20-21, TAI states that:

- 1) BAEconomics has not valued noise and other effects on the basis of market instruments (p.20);
- 2) BAEconomics assumes that compliance with government guidelines implies that there are no economic costs (p.20);
- 3) while BAEconomics suggests that properties within the zone of acquisition would be purchased at above-market rates, anecdotal evidence suggests that property prices in a mine-affected area (Gloucester) have fallen (p.21); and

- 4) BAEconomics has assumed that the proposals will comply with all government criteria, which, TAI suggests is not correct, given that the Bulga Milbrodale Progress Association has documented 'many instances of non-compliance' (p.21).

1) Whether a market-based valuation approach has been used

TAI does not correctly characterise the concept of a market-based valuation. As explained in the BAEconomics Report, market-based (also referred to as direct revealed preference) valuation techniques refer to consumer behaviour and/or prices in a similar or related market (Department of Treasury and Finance 2013). These valuation approaches include:

- defensive expenditures: the costs incurred by individuals to mitigate the impact of changes and/or to recreate a situation that existed before a change, for instance by investing in noise insulation; and
- replacement costs: the cost of replacing or repairing a damage, for instance, to restore the environment to its previous condition.

BAEconomics used defensive and replacement expenditures – a form of market-based valuation - to value the noise, air quality and visual amenity impacts of the proposals.

2) Whether BAEconomics assumes that compliance with guidelines implies that there is no economic cost

The BAEconomics Report is explicit in saying that government guidelines as they relate to noise, dust or other impacts represent a 'line in the sand', which may be acceptable to some affected parties but not to others.⁹ Nonetheless, and imperfect as they may be viewed by some, government guidelines in respect of these effects reflect a common, agreed standard as to what constitutes a permissible degree of disturbance from economic activity.

If TAI's apparent position, that such guidelines should play no role were to be accepted, then this is tantamount to saying that the democratically elected government has no right to determine environmental standards. That is clearly an untenable position.

3) Whether properties would be acquired at depressed market values

BAEconomics does not make any claim in its report that the value of properties in the vicinity of a mine would likely increase. The point made in the BAEconomics Report is that it is common practice – and it is Rio Tinto's practice – to acquire residents' properties within a zone of acquisition, at prices that are substantially above market value, should the landowner exercise their right to have their property acquired.

4) Whether MTW will comply with all relevant criteria

The EIS provided details regarding the operational performance of MTW with respect to prescribed environmental criteria for noise and dust. An assessment of monitoring data (publically available via the Rio Tinto Coal Australia website (www.riotintocoalaustralia.com.au)) demonstrates that a high level of compliance with noise criteria has been achieved throughout the life of the mine. Non-

⁹ For instance, at p.24, the BAEconomics Report states: "Irrespective of the criteria that may be set down in statutes or regulations, peoples' personal preferences may also vary, so that what may be an acceptable disturbance to some, may be considered distressing by others. While these variations in perceived impacts should be acknowledged, there is no way in which they could be measured or assessed in a reliable manner, and we have not attempted to do so here."

compliant noise measurements account for only 0.37 per cent of the monitoring dataset (10 non-compliances measured from 2,689 individual assessments undertaken from 2004 to September 2014).

Similarly, analysis of air quality monitoring results in the most recent (2012 and 2013) annual reviews for MTW show that there was 100 per cent compliance during this period: there were no non-compliances. This is despite dust generation recorded in 2012 being generally higher than for previous years, attributed to lower rainfall.

To ensure continued compliance with prescribed criteria for the proposal, the EISs were prepared in accordance with current legislation and government policy and used the most recent and accurate scientific data relevant to the proposal. Feedback received from the community and government stakeholder engagement together with the Secretary's requirements and the L&E Court judgement, provided guidance to the assessment approach, ensuring that all potential matters of relevance associated with the proposal were assessed.

Technical studies adopted conservative assumptions to enable the upper limit of potential environmental impacts to be determined. Noise and vibration and groundwater studies were independently reviewed. The proposal complies with all of the non-discretionary standards of the Mining SEPP, including standards relating to cumulative noise, airblast overpressures, ground vibration and aquifer interference with the exception of air quality where two properties already within the acquisition zone of neighbouring mines exceed cumulative annual average air quality criteria.

The applicant has committed to proposal specific management measures where adverse impacts were assessed irrespective of the implementation of existing best practice environmental management safeguards. Residual impacts were identified to noise, dust, Aboriginal cultural heritage and ecology. Compensation measures have been developed in consultation with the relevant stakeholders to ensure residual impacts are fully offset and the proposal provides a net environmental benefit.

3.6.2 Ecology

Where ecological impacts are concerned, TAI states that:

- 1) BAEconomics have not used a market-based valuation approach, since (p.21) "*the project will not be making purchases on a well-traded ecological offset market*". TAI suggests instead that the value of ecological impacts should be established on the basis of (p.21) "*.. the value that the community places on the existence of parts of the environment such as the Warkworth Sands Woodland*".
- 2) The cost of establishing offsets is not relevant to valuing ecological impacts, since it (p.22) "*.. depends not on the value of the environment, but on the government regulations*".

1) Whether a market-based valuation approach has been used

As noted in Section 3.6.1, TAI does not correctly characterise the concept of a market-based valuation. A market-based valuation does not require 'ecological offset' markets. In the context of ecological impacts, and as is set out in the BAEconomics Report, a market-based valuation refers to those expenditures required to 'make good' any damages or other impacts.

TAI's comments are questionable in other respects. First, there are no 'well-traded' markets for ecological offset relating to Warkworth Sands Woodlands (WSW). The recommendation that this ecological resource should be valued on that basis is therefore specious.

Second, attempts to establish '*the value that the community places on the existence of parts of the environment such as the Warkworth Sands Woodland*' would (rightly) be criticised for being unreliable and subjective. Such valuations can only be established with reference to 'stated preference' (survey) methods. As discussed in the BAEconomics Report, stated survey methods have a number of limitations, including (Pearce et al. 2006, Commonwealth 2006):

- the presence of hypothetical bias, since the situations described to respondents is not a real-world decision, and is therefore difficult to assess for respondents;
- susceptibility to strategic behaviour, whereby the respondent may, for one reason or another, give an exaggerated response;
- scope problems, whereby responses are insensitive to the size or coverage of the good being valued;
- anchoring bias, if the valuation given depends on prior options being presented; and
- information bias, whereby how the question is framed unduly influences the answer.

Finally, a cost benefit analysis relies on the 'opportunity cost' principle (NSW Treasury 2007; Commonwealth 2006). Opportunity costs are determined with reference to the next best option. In the case of the Warkworth Sands Woodlands (WSW), the next best option available is to re-establish and preserve these ecological communities in a different suitable location. This is the approach that has been adopted in the BAEconomics report.

2) Whether or not offsets, as determined by government regulations, compensate for ecological impacts

BAEconomics does not purport to have any expertise in assessing the qualitative aspects of different ecological offsets.

However, as noted above, government guidelines in respect of these effects reflect a common and agreed standard as to what is acceptable to 'make good' environmental and other damages. As is set out in the BAEconomics Report, the offsets offered by Rio Tinto for identified ecological impacts would be deemed as being as 'as good or better' than the status quo by the relevant NSW authorities and under current legislation.

3.7 Regional Economic Impact Assessment

The regional impact assessment (REIA) undertaken by BAEconomics is both transparent and conservative: regional adjustments are made explicit and only Type 1A multipliers are reported in the results.

Nonetheless, and where the REIA undertaken by BAEconomics is concerned, TAI claims that the estimated impacts identified by BAEconomics are overestimated. Specifically, TAI states that (pp. 23-24):

- 1) BAEconomics does not give adequate consideration to fixed price assumptions in the REIA (p.23);

- 2) Computable General Equilibrium (CGE) modelling would overcome the shortcomings of BAEconomics' input-output modelling (p.23); and
- 3) BAEconomics' modelling approach is rejected by, among others, the ABS and the PC (pp.23-24).

1) Fixed price assumption

The BAEconomics Report sets out that the accounting conventions that form the basis of input-output models impose a number of restrictive assumptions (pp. 41-42), including that relative prices do not change as a result of a project, and discusses these in the context of the proposals. Specifically, the assumption that relative prices, in particular wages, do not change as a result of the proposals is appropriate, since the proposals relate to the *continuation of existing* mining operations. In the event that the proposals are approved, MTW's existing employees and contractors would be retained. If the proposals are approved, MTW would continue operating, and there would be no effect on relative wages in the Mid and Upper Hunter region.

2) Whether GCE modelling would have been more appropriate

As set out in the BAEconomics Report, the principal advantage of the impact multiplier method is its simplicity and transparency, particularly given the limited statistical information that is available about regional and state economies in Australia.

In contrast, CGE models are complex. CGE models additionally require information that is not generally available at a regional or state level in Australia, namely:

- detailed regional input and output, and trade data; and
- information about price induced substitution of inputs and outputs within and between regions, for which there are few, if any, empirical foundations.

TAI is also aware of these issues, and TAI's critique of BAEconomics' approach contradicts statements recently made by TAI. In an interview with the Canberra Times in August 2014, Richard Dennis, one of the co-authors of the TAI submission said:¹⁰

CGE models attempt to take some of these macroeconomic linkages between sectors into account, but their complexity serves primarily to conceal the key assumptions that drive the results of the model. For example, the models typically assume that when factories close down, employees are easily re-employed. Bizarrely, they also usually assume that there are no economies of scale, which raises the question of why factories would have been built in the first place.

We now question why TAI believe it would, however, be appropriate to use CGE modelling in respect of the proposals.

¹⁰ Dennis, R., 2014. 'Economic models often biased by vested interests', Canberra Times, 1 August; <http://www.canberratimes.com.au/comment/economic-models-often-biased-by-vested-interests-20140731-zyumj.html#ixzz39UXrjeZy>.

3) Whether BAEconomics' modelling approach is rejected by the ABS and the Productivity Commission

BAEconomics does not wish to comment on the economic modelling qualifications of either Mr Jerome Fahrer of ACIL Allan or Preston CJ of the NSW Land and Environment Court. We note, instead that:

- the input-output modelling approach adopted by BAEconomics reflects the recommended 'best practice' approach to regional input-output modelling advocated by the U.S. Bureau of Economic Analysis, as referenced in the BAEconomics Report (Bess and Ambargis 2011);
- the input-output modelling approach adopted by BAEconomics is furthermore consistent with the use, as recommended in the ABS Information Paper (Australian National Accounts: Introduction to Input-Output Multipliers); and
- while the Productivity Commission paper referenced by TAI points out a number of 'misuses' of input-output multipliers, it also highlights the circumstances where input-output analysis is a valuable research tool (Gretton 2013, pp. 12-13):

While there are clear concerns about input-output multipliers and their misuse, the input-output tables on which multipliers are based provide a rich source of information about the structure of economies that is not available from other frameworks.

- *Input-output tables provide key information for analysing linkages between activities.*
- *The tables also provide the underlying core database used in a range of economic models. While these models can overcome many of the limitations of input-output multipliers, they too, rely on restrictive assumptions, which need to be tested before the models are applied.*
[emphasis added]

It should also be noted that in any event, input output tables form part of the building blocks generally used in the construction of CGE models.

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Appendix G

Response to the Day Design review (Appendix 3 of BMPA submission)



Appendix G — Response to the Day Design review (Appendix 3 of BMPA submission)

G

24 October 2014

Re: Warkworth Continuation 2014 and Mount Thorley Operations 2014 - Day Design submission on acoustic studies

Bulga Milbrodale Progress Association Inc (BMPA) engaged Day Design Pty Ltd to review the acoustic studies for the proposals on its behalf to accompany its submission. This letter provides responses to matters raised in the review, where relevant to the Mount Thorley Operations 2014 proposal.

The headings and paragraph numbering reflect those in the Day Design review.

1 Introduction (para 1 to 6) and About the author (para 17 to 21)

Mr Stephen Gauld describes the process under which he has been engaged, ie as instructed by the Environment Defenders Office NSW (EDO) on behalf of the BMPA. He references a site visit completed on 18 July 2014 and acknowledges the code of conduct for expert witness and civil procedures rules 2005. Mr Gauld also states at para 21 "My evidence in this statement is within my area of expertise ...".

It should be noted that from review of Mr Gauld's CV (attached as Appendix A to the Day Design report) it is evident his experience is limited to relatively small scale noise impact assessment and does not include any major industrial site noise experience, for example mining developments such as the proposal.

2 Executive summary (para 7 to 16)

Points made in this section are addressed in response to matters raised in the following sections of this document.

3 Description of the site and surrounding area (para 22 to 24)

Matters raised in this section are notes only and do not require a response.

4 Background noise levels (para 25 to 32)

Paragraph 25, Table 1 is purported to show the RBL values from both the Warkworth Mine and MTO studies. This is not the case. The presented data reflects the RBL values in the MTO study only. The RBL values in the MTO study are lower for the night period at three of the presented locations. Nonetheless, the final adopted RBL values are correctly quoted as being between 30dB(A) to 33dB(A). It should be noted that variances in noise levels of 3dB are equal to the threshold of human perception and hence such a range in RBL values is marginal.

It is stated that an Infobyte iM4 Type 2 noise logger was used alongside the applicant's device (BarnOwl monitoring Location A in the EISs) at 98 Wollemi Peak Road in Bulga NSW. This was installed by Mr Gauld on 18 July 2014, measured noise for seven days and was returned by the property owner Mr John Krey on 30 July 2014.

It is assumed that reference to Type 2 relates to Class 2 as per Australian Standard AS IEC 61672.1 Electroacoustics - Sound level meters. This instrumentation is inferior to Class 1 hardware, used by the applicant (BarnOwl). The BarnOwl statistical data (ie $L_{90,15\text{minute}}$, the metric used to calculate background noise) is captured by one of the three microphones and in this configuration the BarnOwl satisfies a Class 1 sound level meter in accordance with AS IEC 61672.1. This implies a measurement tolerance limit difference between the two devices of generally $\pm 1\text{dB}$ for the frequency range relevant to environmental noise and used to derive RBL values as per AS IEC61672.1 Table 2. That is, the BarnOwl has a superior tolerance limit as compared with the Class 2 device used by Mr Gauld.

It is unclear why only seven days of data is provided and analysed if the device was in place for 12 days (18 to 30 July 2014 as stated). The security of the data could be compromised in that time and it is unclear whether calibration of the unit was completed at the commencement and conclusion of monitoring as is required practice for mobile devices to ensure the data is valid.

At paragraph 27 it is stated that an RBL was calculated to be 30dB(A) for the day, evening and night period, with charts presented in Appendix D. It is not apparent how this result was derived. It is normal practice to provide the daily Assessment Background Levels (ABLs) used to define the RBL. The RBL is the median value of at least seven valid ABL values (refer to the EPA's INP for definitions). The ABLs have not been provided and, as such, the RBL cannot be verified. It is therefore concluded that Mr Gauld has not applied the EPA's INP methods to determine the RBL. Similarly, there is no mention of effects of weather on the data set in accordance with the INP.

To provide further information on the period in question EMM analysed the same period Mr Gauld addressed (18 to 25 July 2014) and beyond (to 11 August 2014) using the applicant's BarnOwl data. This is attached in daily ABL tabular form derived in accordance with the INP and in daily charts. Weather data from the applicant's Charlton Ridge meteorological station was assessed in conjunction to filter out rain or excess wind effects on the monitor in accordance with the INP. Due to these effects, the RBL derivation had to be extended beyond Mr Gauld's monitoring period to obtain seven valid daytime ABL samples as required by the INP. It follows that had Mr Gauld analysed his data in accordance with the INP, he too would discover that at least one of the days in his monitoring period (25 July 2014) does not satisfy the INP's weather exclusion rules and, therefore, must be removed and monitoring extended.

The BarnOwl data shows that ABL levels (used to calculate RBL) rarely drops below 30dB(A), in the period 18 to 25 July 2014 (Day Design sampling period). Further, only 10 single 15 minute L_{90} samples (used to calculate ABL) drop below 30dB(A) from a total of 768 samples (ie approximately 1%). For the Day Design seven day period (18 to 25 July 2014), the applicant's BarnOwl data was analysed in accordance with the INP and shows RBL values of 33dB(A), 36dB(A) and 37dB(A) for the day, evening and night, respectively. That is, a minimum RBL of 33dB(A) and not 30dB(A) as suggested by Mr Gauld's analysis that has not been appropriately disclosed in his submission. Refer to Appendix A for ABL, RBL and chart data.

At paragraph 30 Mr Gauld suggests that the BarnOwl logger has been located at 98 Wollemi Peak Road for more than two years and therefore must be outside of the two year NATA calibration period. EMM confirms that this is not the case. The applicant has advised the BarnOwl was only deployed to this location on 21 June 2013 (ie just over one year from the date of the Day Design report). Mr Gauld states that the BarnOwls are not appropriately calibrated. EMM has been provided with field calibration certificates conducted by Benchmark Monitoring on behalf of the applicant. For the 98 Wollemi Peak Road BarnOwl, the relevant calibration events for the analysed monitoring period (18 July to 11 August 2014) were performed on 23 April 2014 and again on 29 July 2014. Both calibration tests show strong agreement with the reference level (94.0dB) and present drifts of 0.1dB to 0.4dB. These are considered acceptable levels of calibration drifts.

The calibration of all BarnOwl units throughout the period of sampling used to establish RBL values for the MTO and Warkworth Mine acoustic studies have also been provided. EMM considers these field calibration reports to confirm strong agreement with reference levels with minimal drift between calibration tests, demonstrating a strong commitment to data availability and integrity. Refer to attached calibration reports by Benchmark Monitoring for BarnOwl locations adopted in the EIS acoustic studies that resulted in RBL values higher than 30dB(A) - ie 98 Wollemi Peak Road (Location A), 128 Wambo Road (Location C) and Scout Hall (Location F)).

In addition, historic data presented by others also support RBL values greater than 30dB(A) for some areas in Bulga. These include the EIS for the Extension of Warkworth Coal Mine (August 2002) as described in Section 8.1 of the noise and vibration report. Also the independent review by SKM prepared on behalf of the NSW Department of Planning & Infrastructure (April 2012), whilst not specifically commissioned to review background noise, does at Appendix C provide 134 L_{A90} 15-minute samples at various locations in Bulga between 2 December 2011 and 30 January 2012 that are all greater than 30dB(A).

In conclusion, the reported and adopted RBL values in the EISs are supported by an overwhelming dataset as shown in the acoustic studies for both proposals and these are further supported by data collected by others.

5 Past judgements (para 33 to 38)

Matters raised in this section are predominantly notes or are addressed in other sections of this document.

6 Noise monitoring (para 39 to 45)

This section describes the management tools used to assist MTW with achieving noise limits in real time. It is important to distinguish this process from compliance monitoring.

At paragraph 42, Mr Gauld interprets the BarnOwl alarms as a demonstration of exceedances of noise criteria. This is not the case as triggers are set below the criteria as described in Section 3.2.1 of the noise and vibration report. Further, such alarms ignore weather conditions and therefore do not represent a non-compliance for times when atypical weather means noise criteria do not apply. The statement by Mr Gauld "*that further expansion of the mines is likely to intensify the noise impact with more exceedances more often*" is therefore based on a lack of understanding of such alarms and real time management systems. This statement also ignores the plant attenuation program that will reduce emission levels of all major noise sources. Section 6 of the noise and vibration study in the Mount Thorley Operations 2014 EIS states that MTO is predominantly compliant with noise criteria throughout the life of the mine.

MTO has a strong compliance record with a total of 154 attended noise measurements taken for MTO in 2014 (up until end of September 2014) with zero exceedances and zero non-compliances recorded. This further demonstrates that complaints received do not equate to non-compliance with government conditions of approval.

Routine compliance assessment has been undertaken from 2004 to the present and in more recent years, monitoring has included low frequency noise assessment.

MTO's monitoring data is publically available via the Rio Tinto Coal Australia website. This data can be found at the following link www.riotinto.com/coalaustralia.

At paragraph 45 Mr Gauld states "*the mine should be installing acoustic kits on all plant that contribute to the overall noise level at residences, to reduce the occurrence of acoustic non-compliance.*" This is being proposed and the installation of attenuation packages are well advanced on the truck fleet and advancing for all major plant as described in the EIS. All drill, truck, dozer and excavator fleet would continue to be sound attenuated with completion expected by the end of 2016 calendar year.

7 Saddleback Ridge (para 46 to 50)

This matter is specific to the Warkworth Mine and, therefore, has been considered in the response to the Day Design review presented in Appendix G of the Warkworth RTS.

8 Low frequency noise criteria (para 51 to 70)

Paragraphs 55 and 56 imply the assessment of low frequency noise was only done against the Broner and DEFRA methods. This is not correct. The INP LFN method was applied to the assessment of low frequency noise as described in Section 9.7.1 and 10.9.1 of the noise and vibration study for the proposal.

The EPA's submission on the current EISs acknowledges the limitations in the INP's LFN method.

Section 9.4.4 of the EIS specifically addresses LFN and despite the INP standard for LFN not being applied to existing operations, the EPA has advised in its submission that it will apply to the proposal, unless further information is provided. Low frequency noise is discussed further in Section 4.3.1 of the main RTS.

The INP defines LFN as noise with major components in the range 20Hz to 250Hz. The majority of the noise energy of mining noise sources is at frequencies up to and including 630Hz based on EMM's experience and available published monitoring data. The amount of noise energy at or below 250Hz needs to be significant in relative terms to other frequencies for LFN to become prominent. Of note, human hearing diminishes with reducing frequency and, therefore, there needs to be more energy at the lower frequencies for it to be perceptible.

The INP definition of LFN does not presently align with the community's perception of LFN. LFN is often perceived as noise energy that is heard or discerned of 'lower' frequency than the surrounding noise climate. For example, comparison may be made between domestic or natural sounds and mining noise, with the latter more 'obvious' and of lower frequency content than the non-mining sounds. This point of view is valid and demonstrated through observations by EMM acoustic specialists at MTO and other mining operations. That is, the community's definition of LFN obtained via observation does not necessarily align with the INP's technical definition.

Wind induced LFN is very common in the natural environment and EMM has measured dB(C) minus dB(A) level differences that are greater than the INP's 15dB criteria for example even though mining noise was not audible or present.

The INP's LFN criteria 15dB threshold is being reviewed in light of challenges in its practical application at large distances from sources. For example, sounds that do not pose low frequency dominated spectra at close range, would by virtue of enough distance loss factors, inappropriately attract the INP penalty for low frequency as higher frequencies in their spectra are considerably more abated than the lower frequencies. The INP LFN criteria were originally intended for testing sources at relatively close range. In comparison, the German standard DIN45680 (1997) uses a differential of 20dB as a screening tool for LFN.

The proposal will enable the extraction of a resource already approved for mining that is unable to be extracted under the current consent timeframe due to pit inundation in 2007. The proposal does not seek to extend the spatial limits of currently approved operations. Noise emissions associated with the proposal are likely to be similar to current approved activities with improvement over time as fleet attenuation progresses and mitigation measures are applied.

9 Best practice noise controls - attenuate whole of fleet (para 71 to 72)

Mr Gauld acknowledges *"It would appear that the best way to reduce the noise emission from the site would be to attenuate the whole of the fleet"*. This approach is one of the mitigation measures being adopted at MTW as described earlier in response to Mr Gauld's paragraph 45 (See Section 3).

10 Best practice noise controls - relocation of plant (para 77 to 80)

Mr Gauld implies that meeting PSNL at all assessment locations in Bulga is reasonable *"...at a reported cost of \$100million over the life of the mine."*

Chapters 3 to 6 of the noise and vibration study for the proposal are dedicated to reasonable and feasible management. They describe the existing and proposed noise management system, controls implemented, engineering measures, elimination measures, continual improvement practices and compliance history. "Feasible and reasonable" measures are a term defined in the INP as follows:

Feasibility relates to engineering considerations and what is practical to build; reasonableness relates to the application of judgement in arriving at a decision, taking into account the following factors:

- noise mitigation benefits (amount of noise reduction provided, number of people protected);
- cost of mitigation (cost of mitigation versus benefit provided);
- community views (aesthetic impacts and community wishes); and
- noise levels for affected land uses (existing and future levels, and changes in noise levels)."

The above INP notes are considered in Chapter 10 of the noise and vibration study (EIS Appendix F). The application of the terms 'reasonable and feasible' are consistent with the INP and, therefore, appropriate.

11 Predicted non-compliance (para 80 to 83)

As discussed in Section 5, application of the LFN modifying factor penalty of 5dB to predicted levels is inappropriate based on predicted dB(C) minus dB(A) values.

Attachment: A. ABL, RBL data and charts

Attachment B. BarnOwl calibration reports

Attachment A

ABL, RBL data and charts - 98 Wollemi Peak Rd 16 July to 11 August 2014

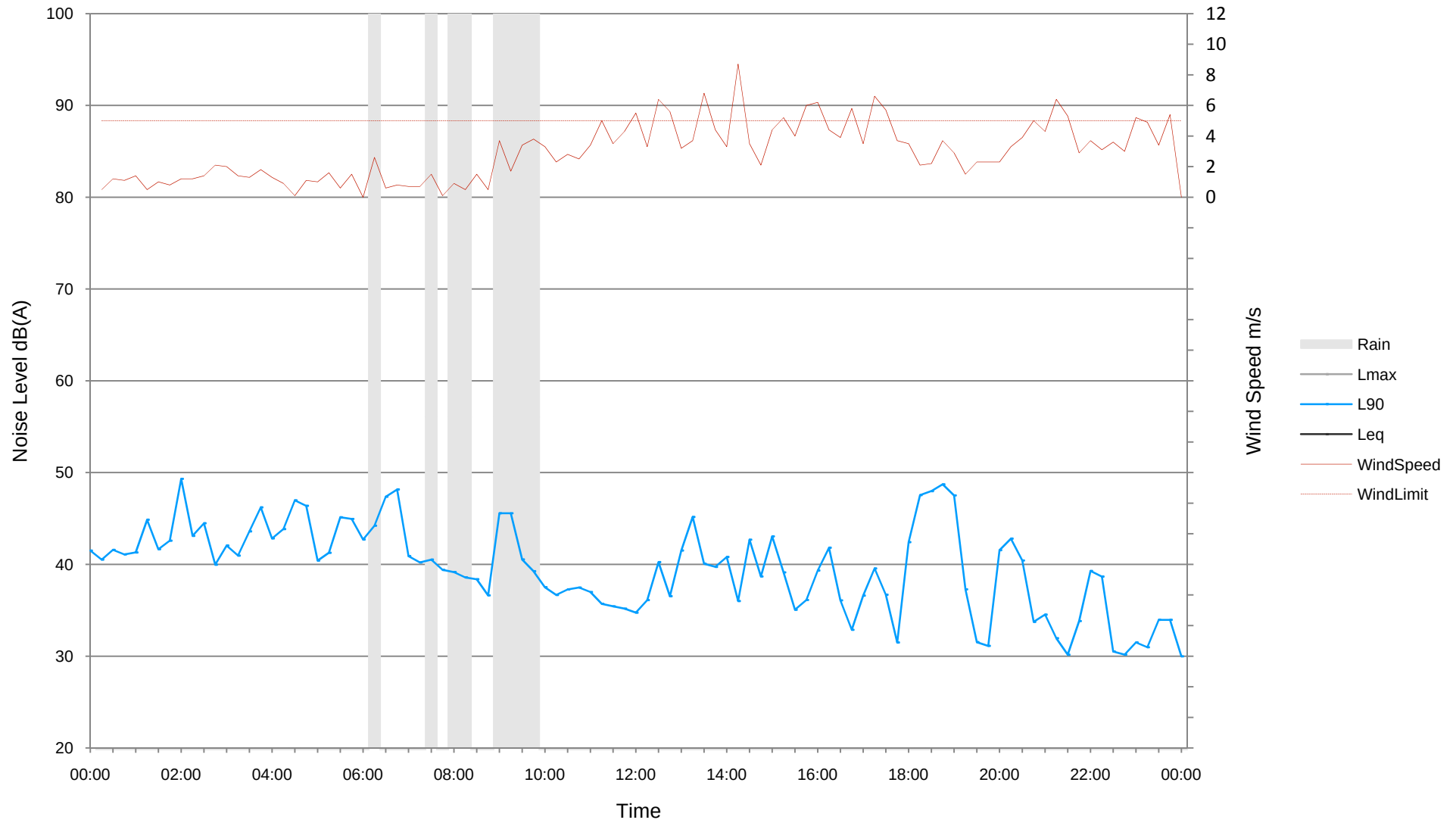
Table A.1 98 Wollemi Peak Rd BarnOwl - Background data

Date	ABL Day	ABL Evening	ABL Night
Wednesday, 16-07-14	-	31.1	31
Thursday, 17-07-14	32.7	30.8	31.9
Friday, 18-07-14	34.9	30.6	27.5
Saturday, 19-07-14	33.8	31.1	34.4
Sunday, 20-07-14	32	32.3	36.8
Monday, 21-07-14	31.5	35.6	38.9
Tuesday, 22-07-14	-	40.1	36.6
Wednesday, 23-07-14	33	41.2	37.1
Thursday, 24-07-14	35	41.7	38.9
Friday, 25-07-14	-	35.7	-
Saturday, 26-07-14	-	43.1	38.2
Sunday, 27-07-14	34.3	32.9	31.6
Monday, 28-07-14	31.2	30.1	31.1
Tuesday, 29-07-14	34.9	31.8	32
Wednesday, 30-07-14	33.8	32.3	33.8
Thursday, 31-07-14	38	37.5	33.6
Friday, 01-08-14	36	-	-
Saturday, 02-08-14	-	-	-
Sunday, 03-08-14	-	-	-
Monday, 04-08-14	-	38.9	36
Tuesday, 05-08-14	30	35.3	38.2
Wednesday, 06-08-14	35.2	29.4	30
Thursday, 07-08-14		39.4	37.2
Friday, 08-08-14	33.4	39.6	37.6
Saturday, 09-08-14	34.7	35.8	33
Sunday, 10-08-14	33.1	27.8	26.6
Monday, 11-08-14	32.8	34.6	-
RBL Values			
Day Design period (18 to 25 July 2014)	33.4	35.65	36.8
Whole period (16/7/14 to 11/8/14)	33.8	34.95	34.1

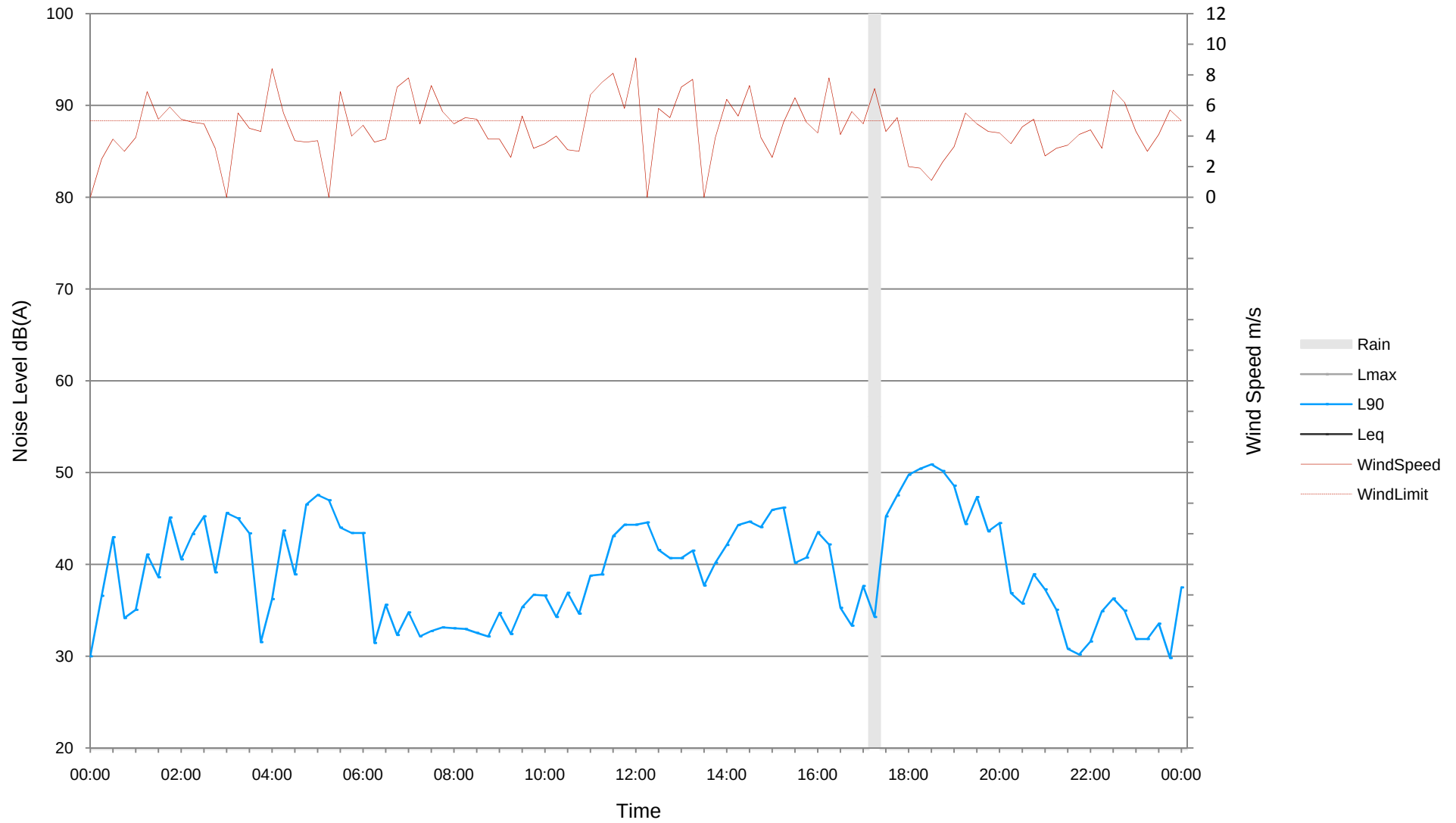
Notes: "-" indicates periods with too few valid samples due to weather or logger operation.

Wind speed at microphone was calculated based on height corrections of 10m (met station position) to 1.5m (microphone position) in accordance with AS1170.2. Wind speed in charts that follow are the raw 10m above ground from the met station.

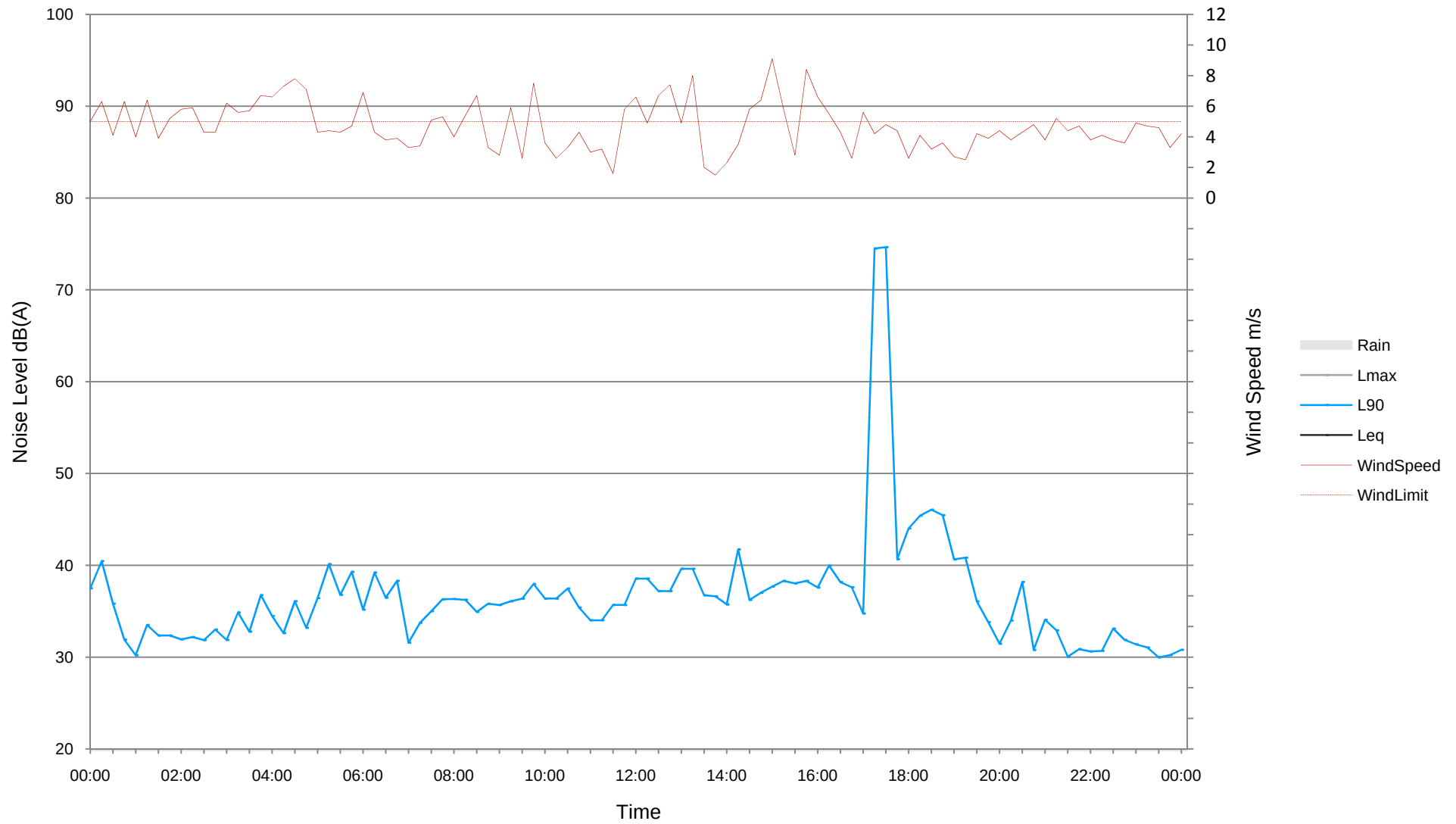
Measured Ambient Noise Levels
Wollemi Peak Road
Wednesday, 16-07-14



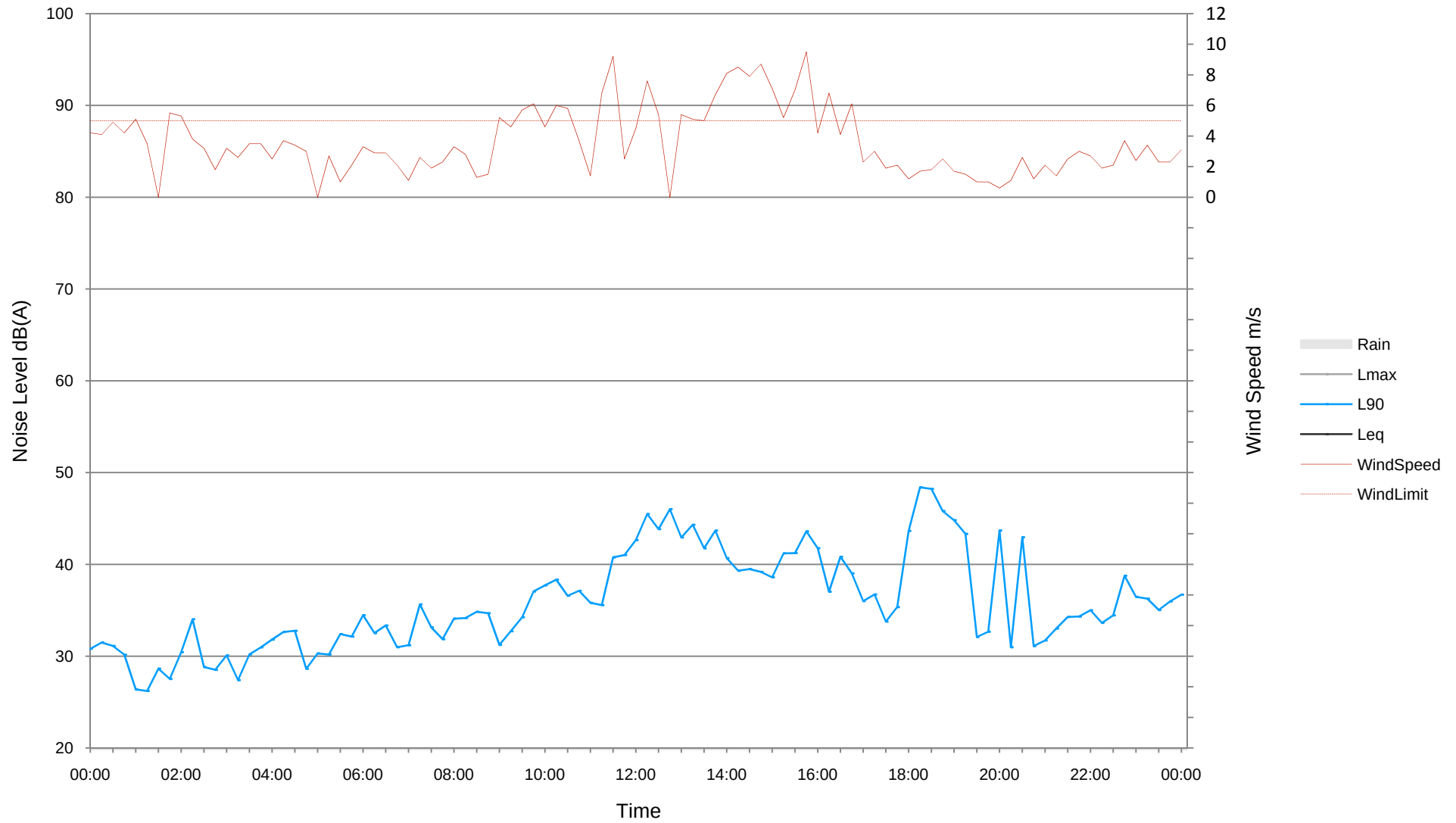
Measured Ambient Noise Levels
Wollemi Peak Road
Thursday, 17-07-14



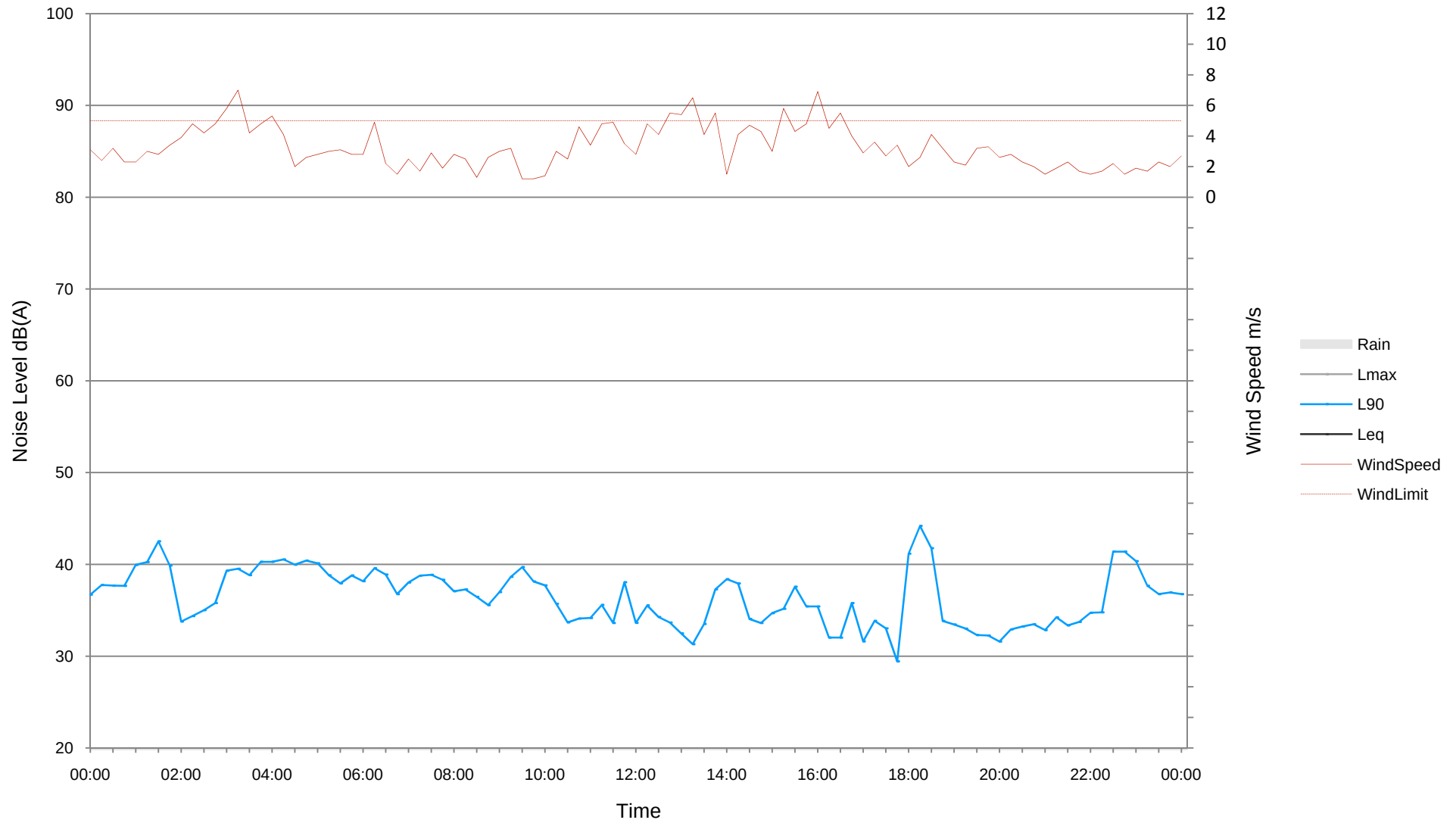
Measured Ambient Noise Levels
Wollemi Peak Road
Friday, 18-07-14



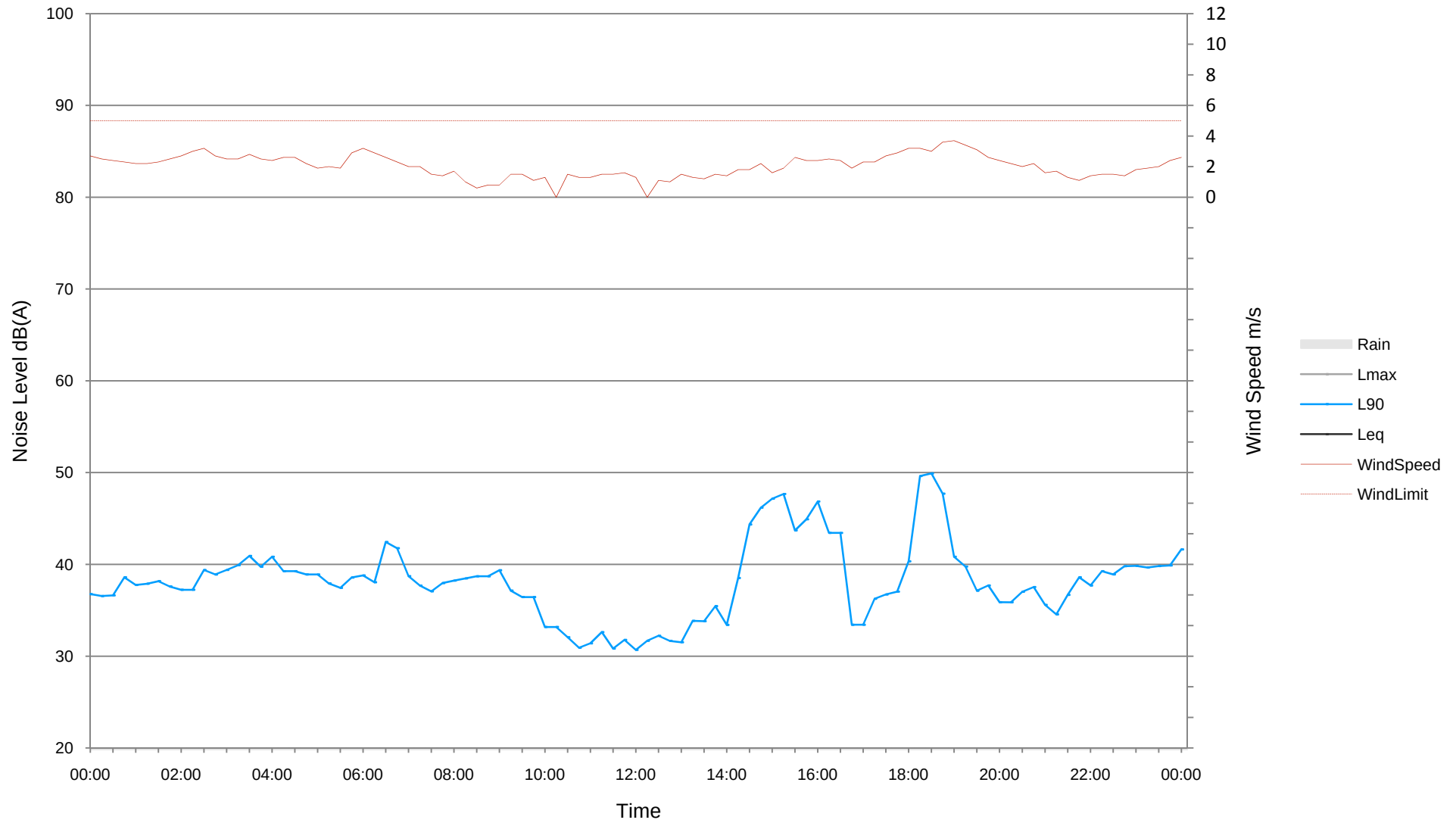
Measured Ambient Noise Levels
Wollemi Peak Road
Saturday, 19-07-14



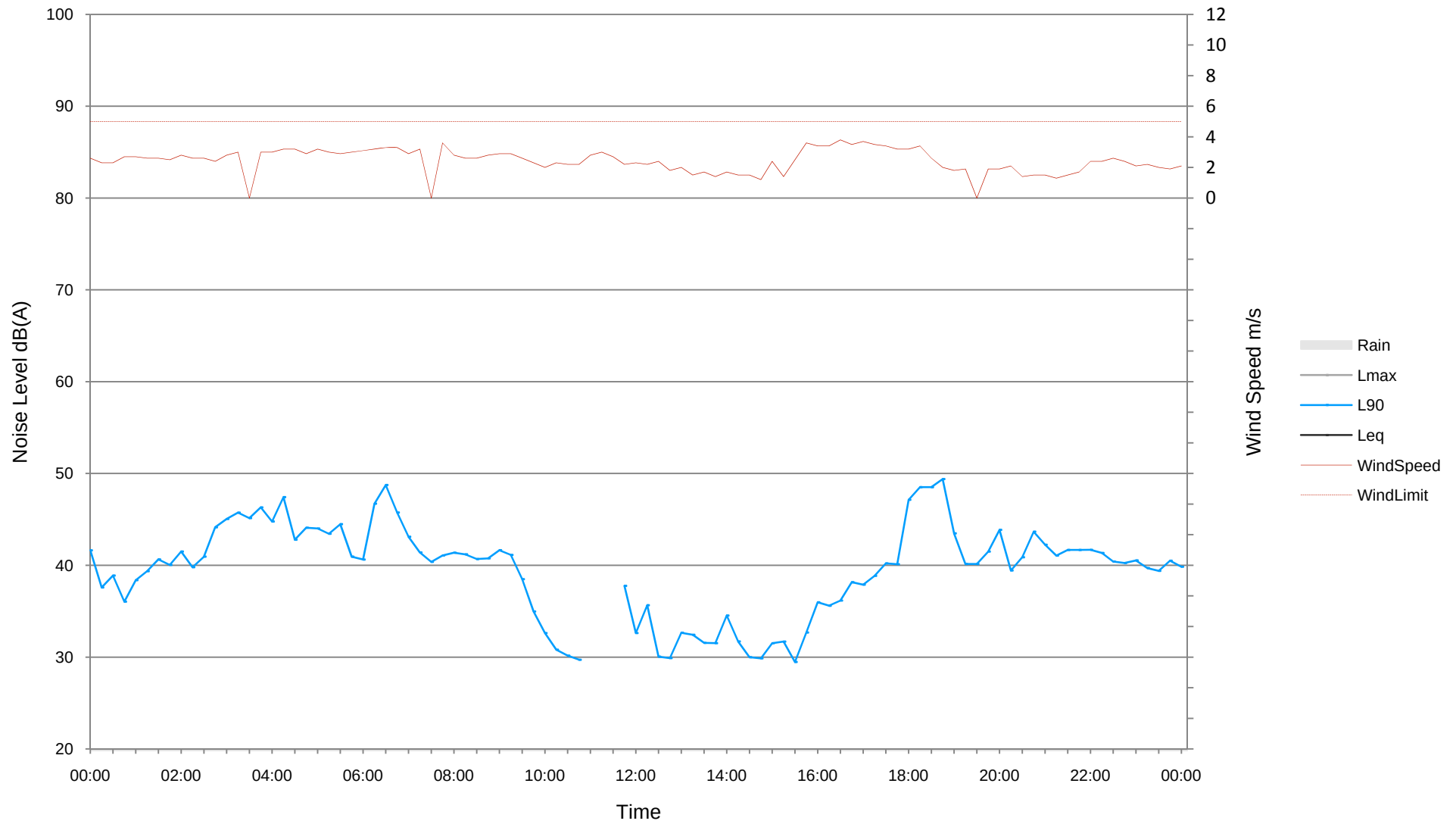
Measured Ambient Noise Levels
Wollemi Peak Road
Sunday, 20-07-14



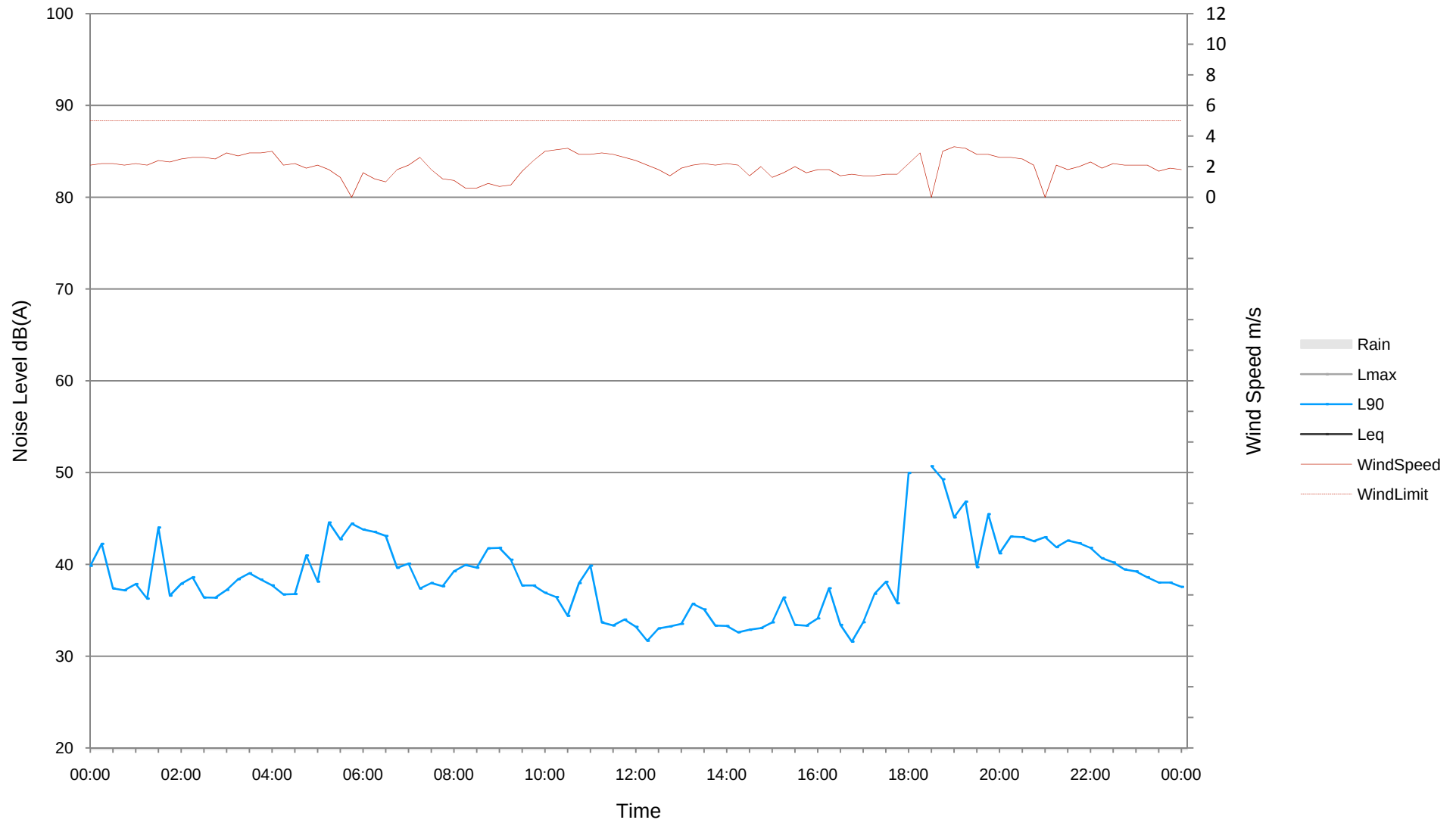
Measured Ambient Noise Levels
Wollemi Peak Road
Monday, 21-07-14



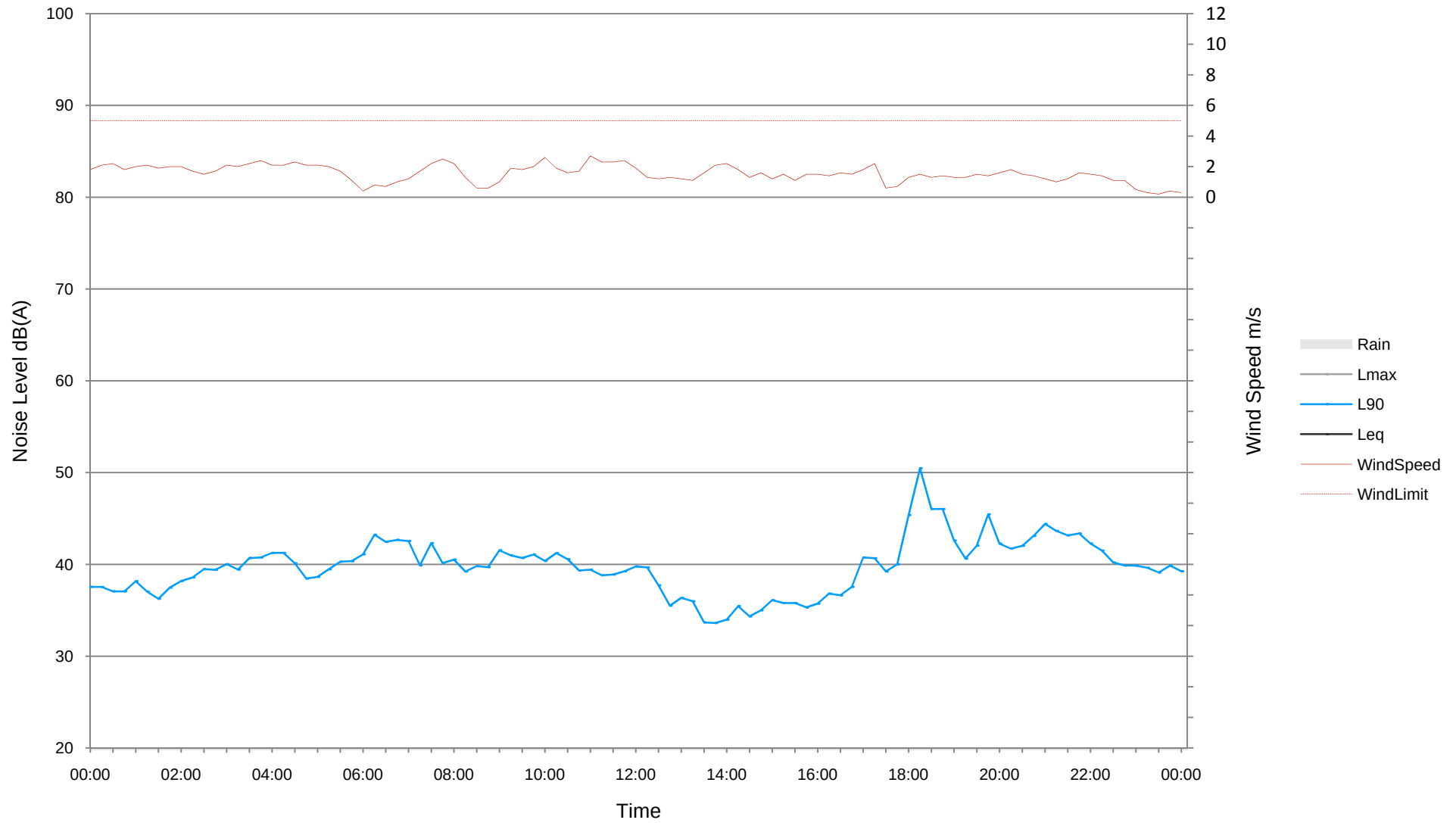
Measured Ambient Noise Levels
Wollemi Peak Road
Tuesday, 22-07-14



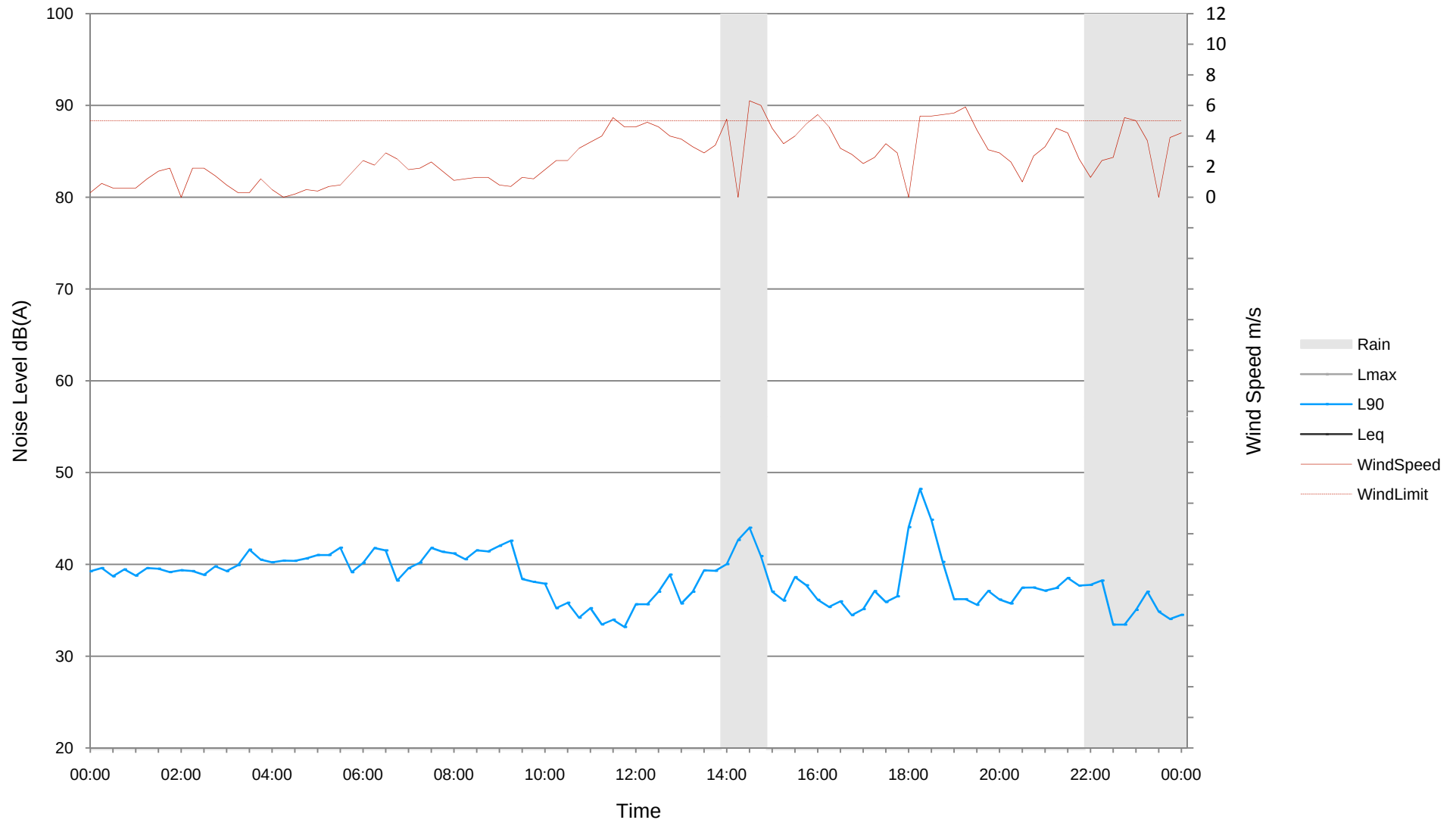
Measured Ambient Noise Levels
Wollemi Peak Road
Wednesday, 23-07-14



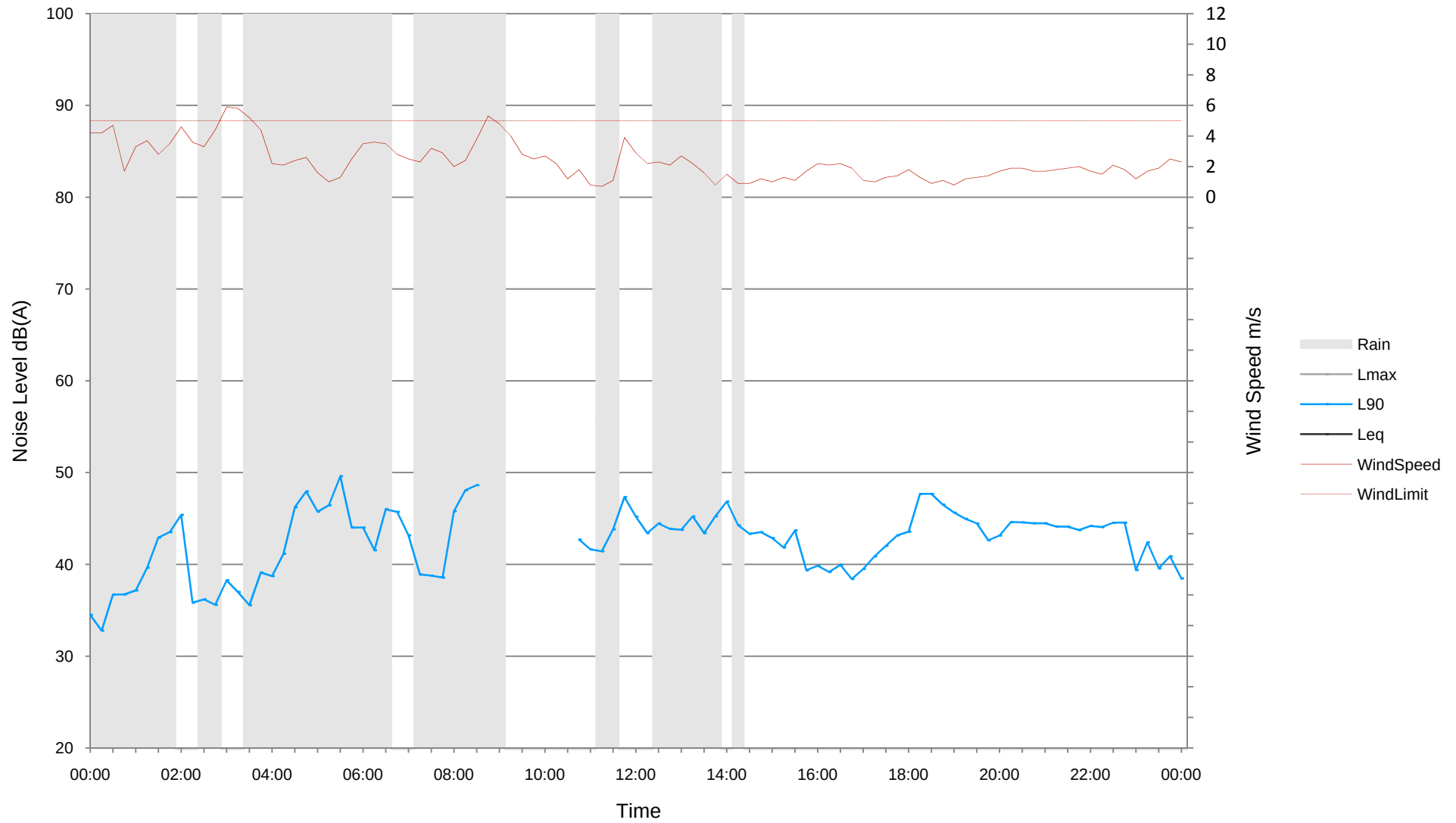
Measured Ambient Noise Levels
Wollemi Peak Road
Thursday, 24-07-14



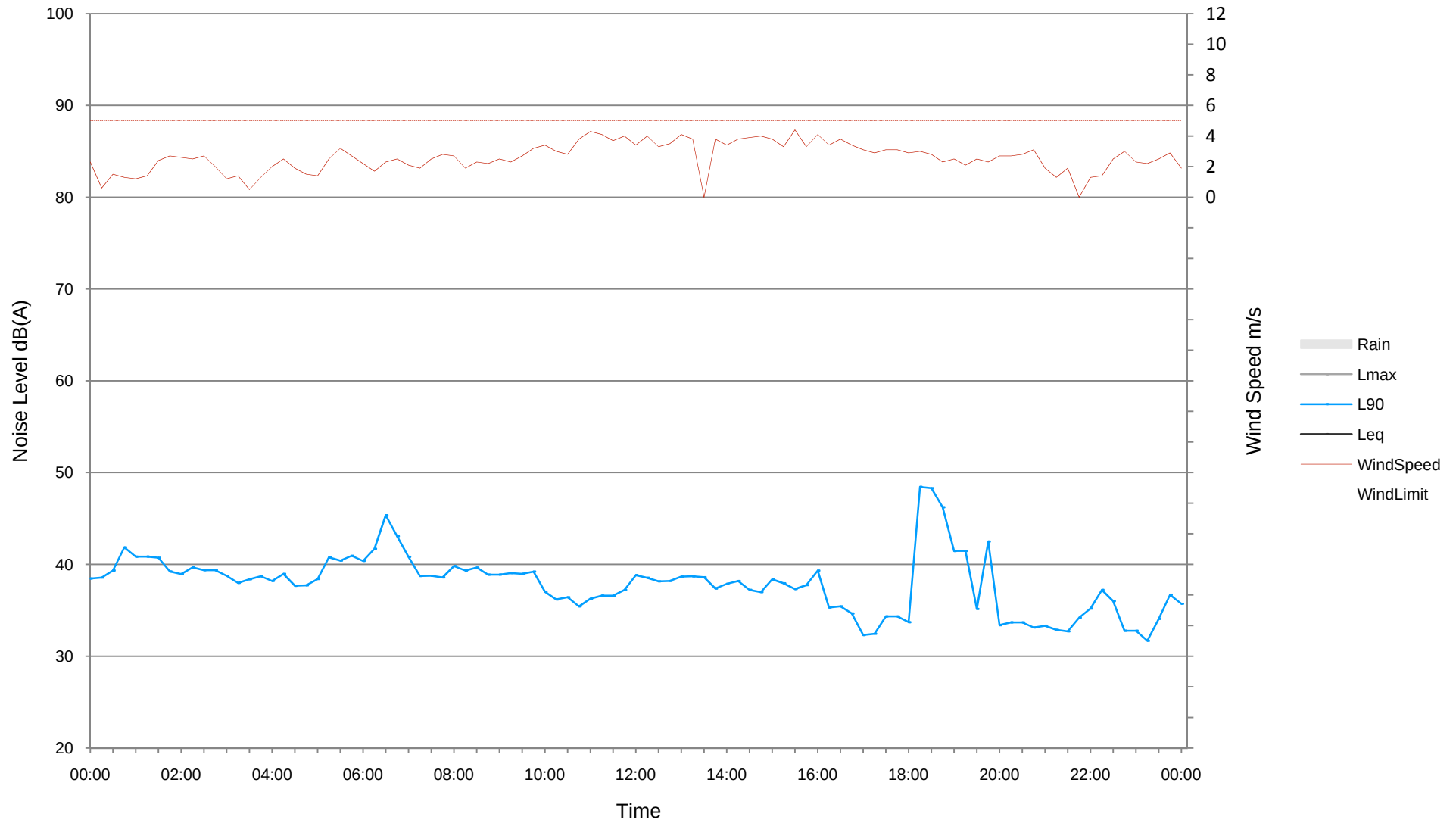
Measured Ambient Noise Levels
Wollemi Peak Road
Friday, 25-07-14



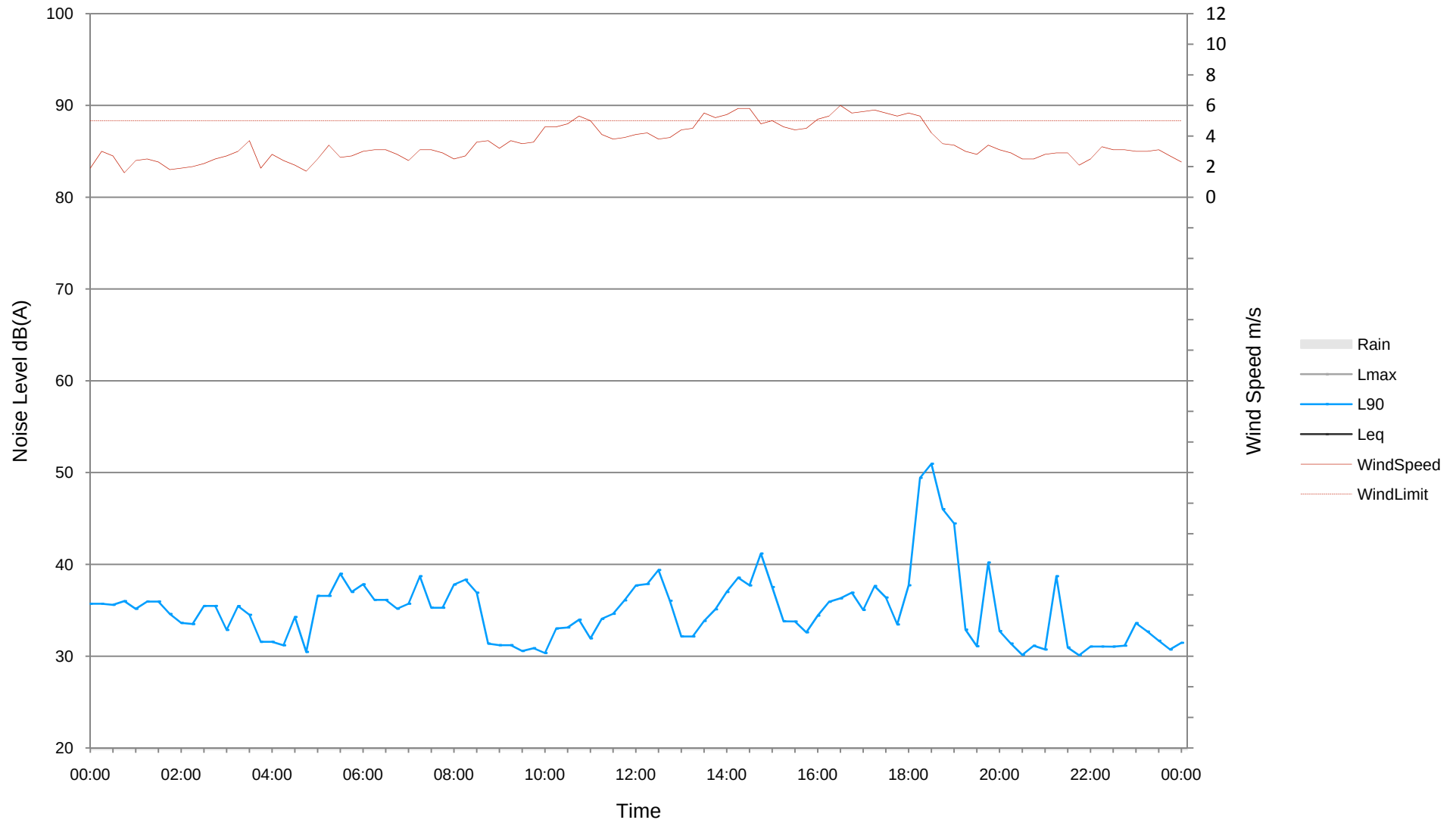
Measured Ambient Noise Levels
Wollemi Peak Road
Saturday, 26-07-14



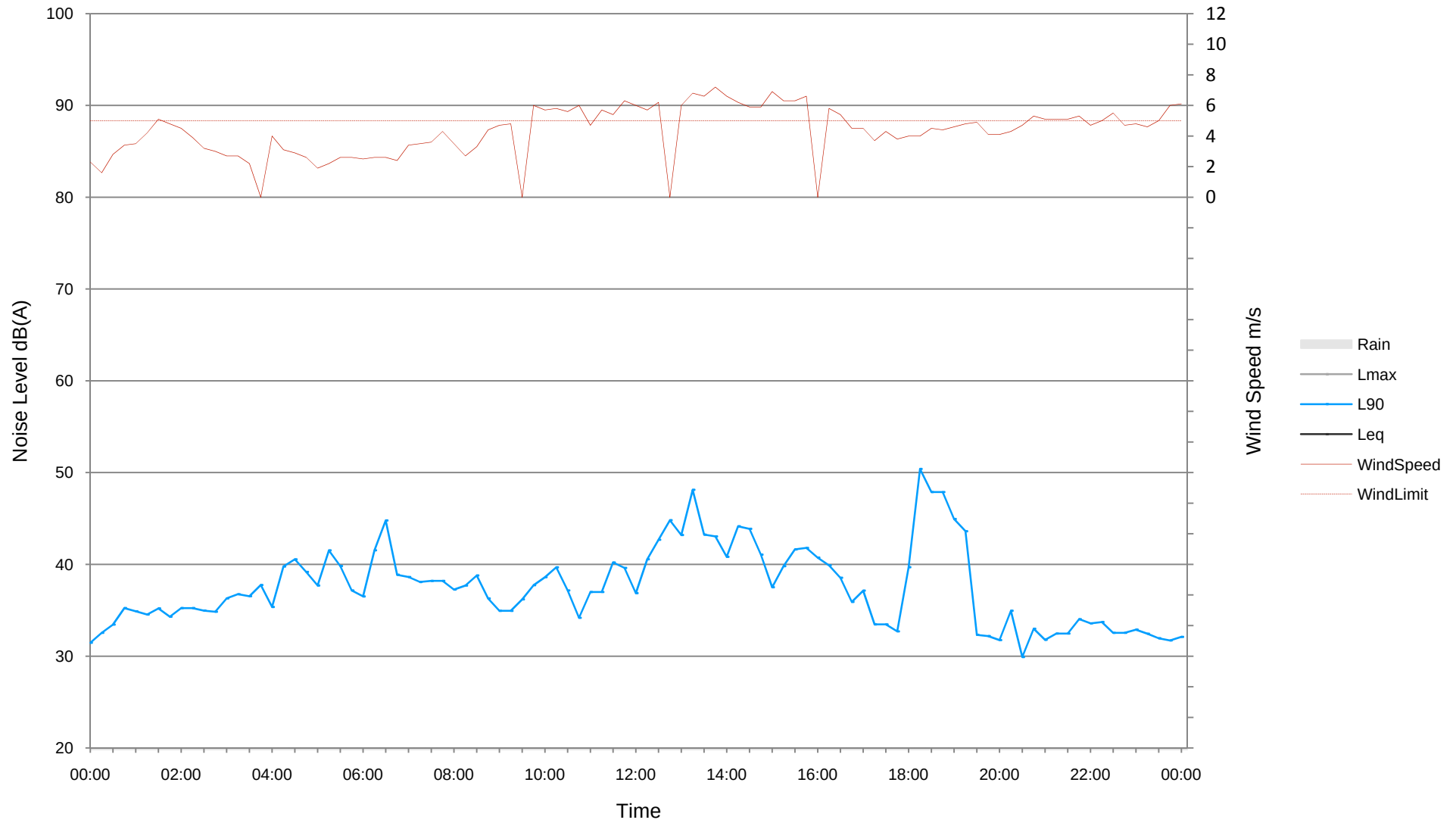
Measured Ambient Noise Levels
Wollemi Peak Road
Sunday, 27-07-14



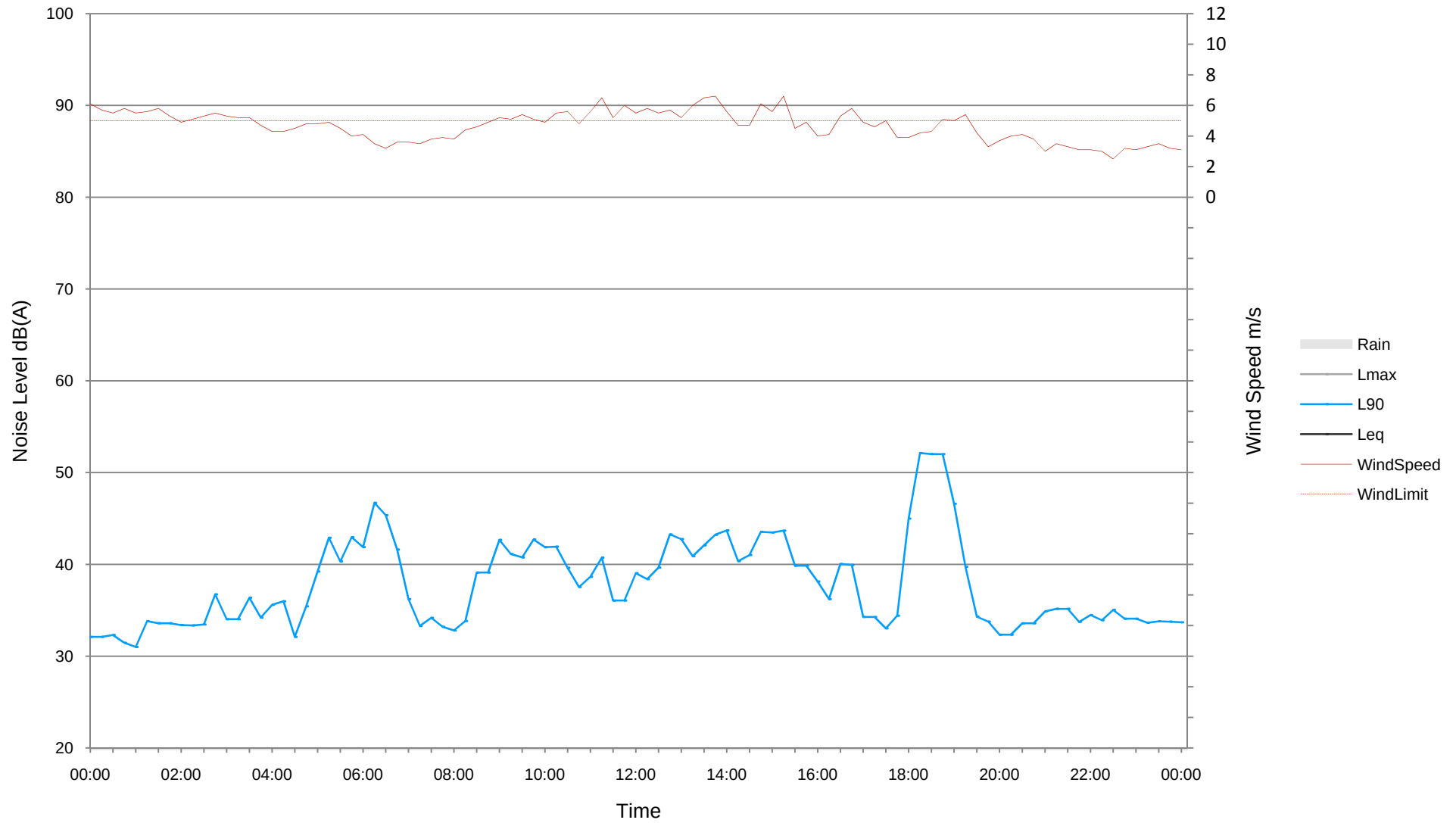
Measured Ambient Noise Levels
Wollemi Peak Road
Monday, 28-07-14



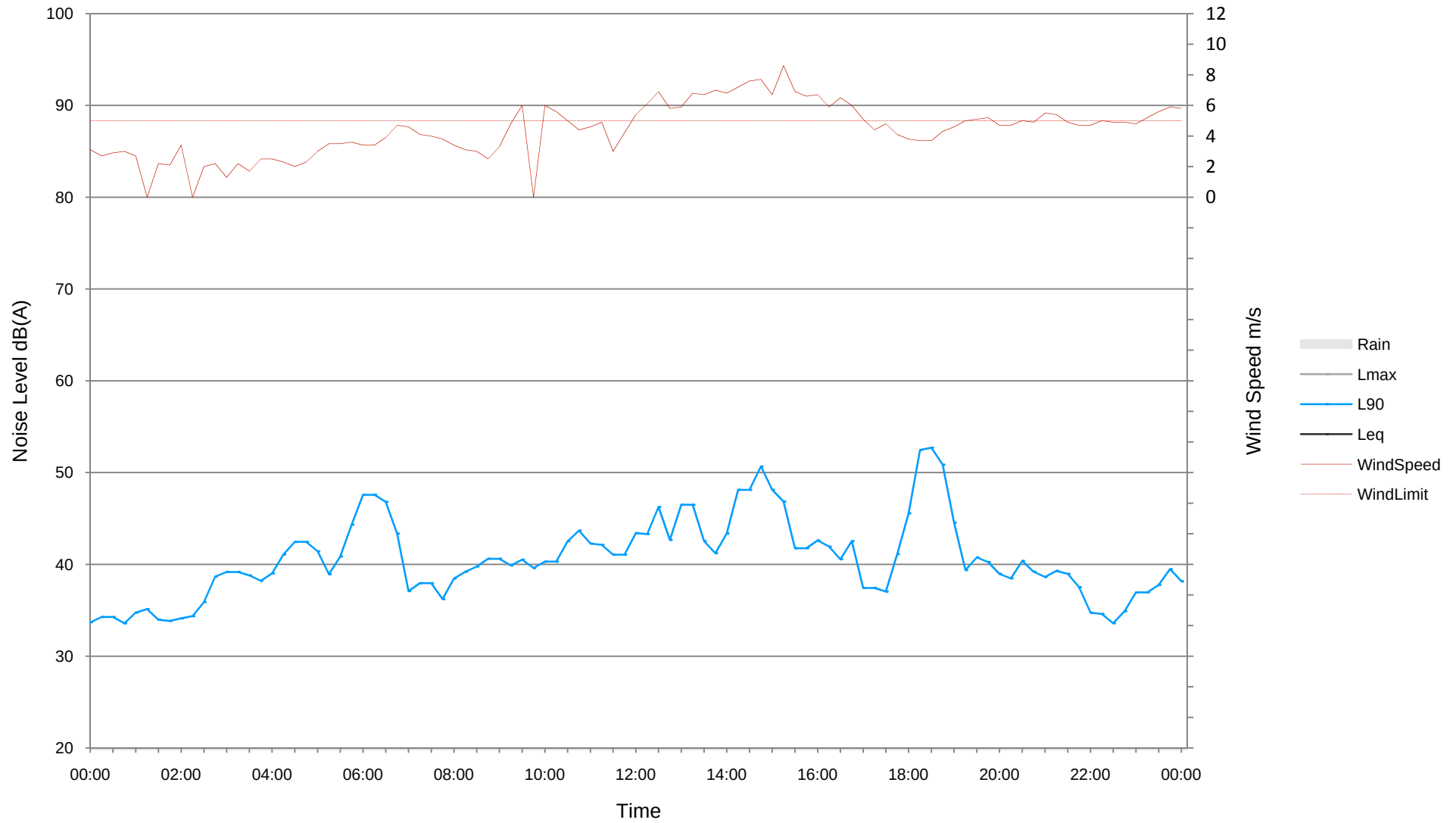
Measured Ambient Noise Levels
Wollemi Peak Road
Tuesday, 29-07-14



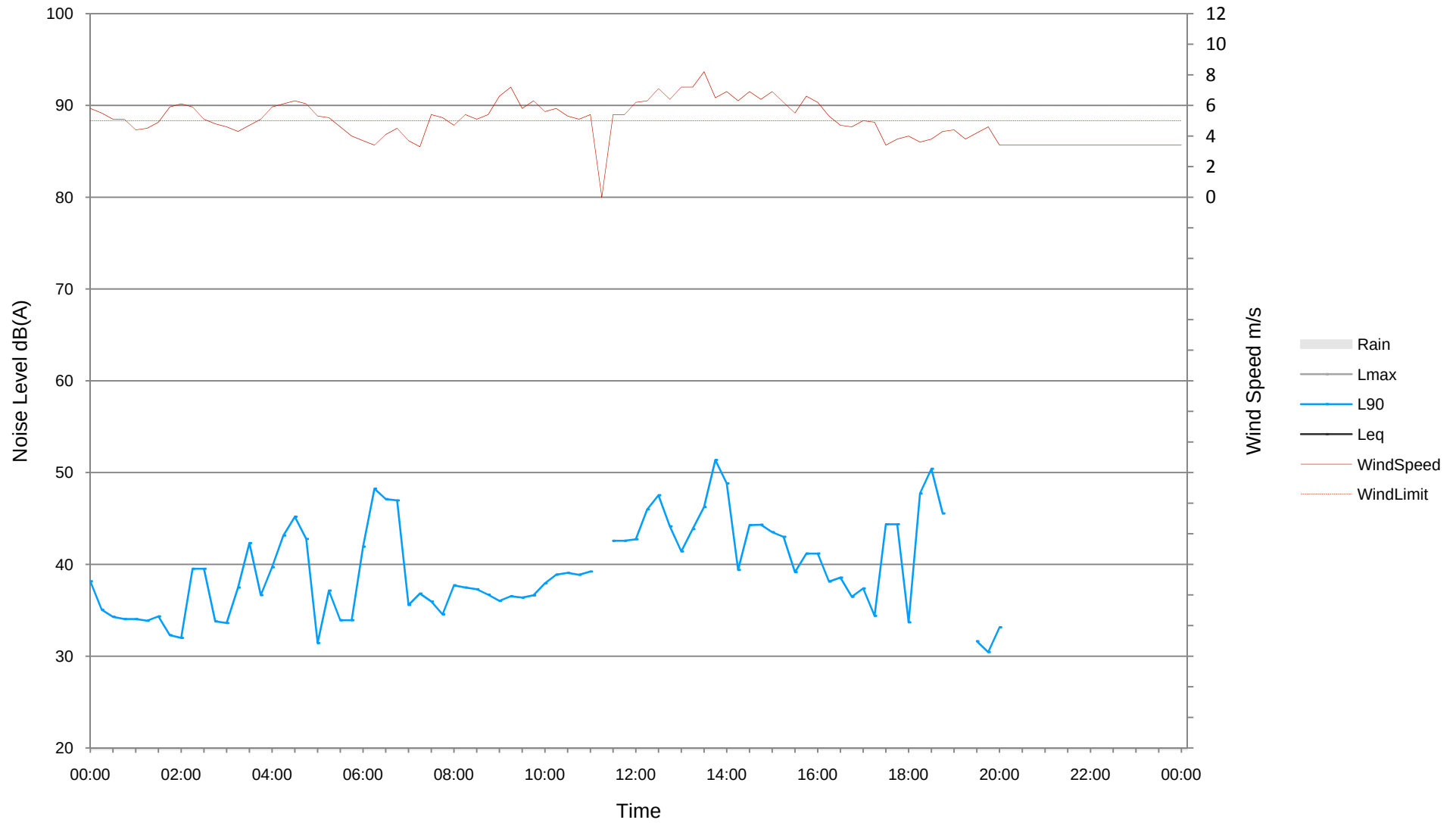
Measured Ambient Noise Levels
Wollemi Peak Road
Wednesday, 30-07-14



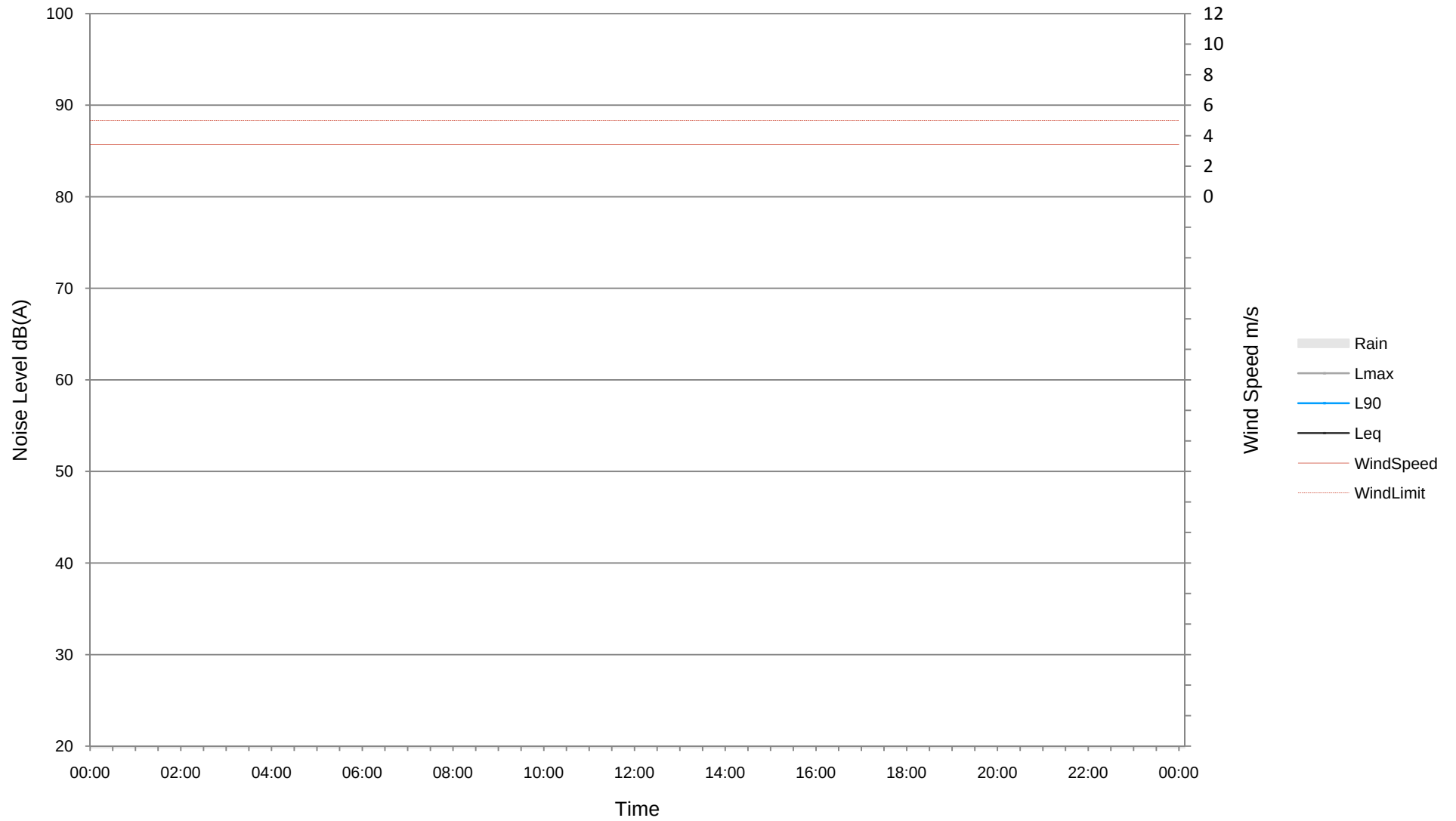
Measured Ambient Noise Levels
Wollemi Peak Road
Thursday, 31-07-14



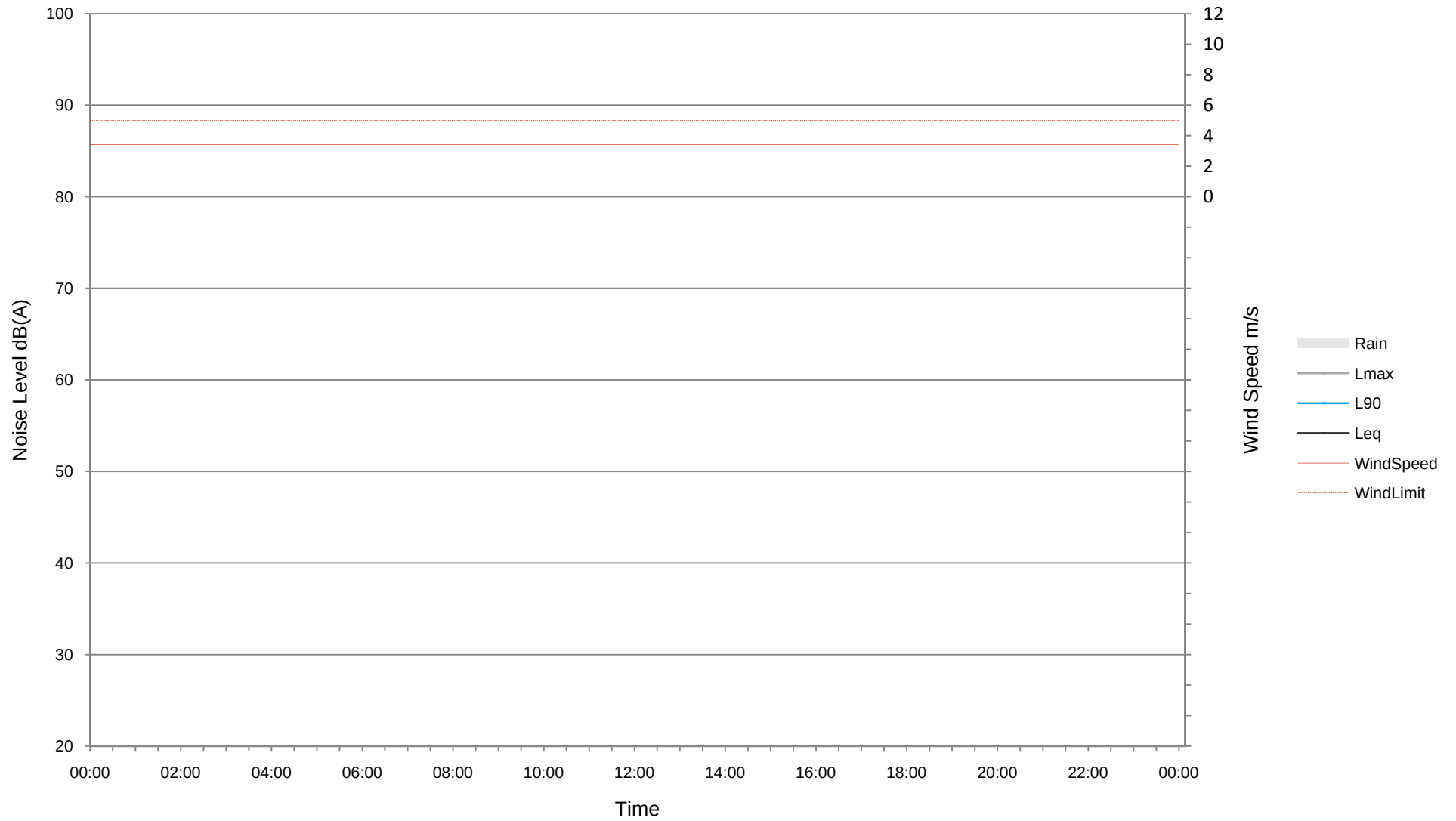
Measured Ambient Noise Levels
Wollemi Peak Road
Friday, 01-08-14



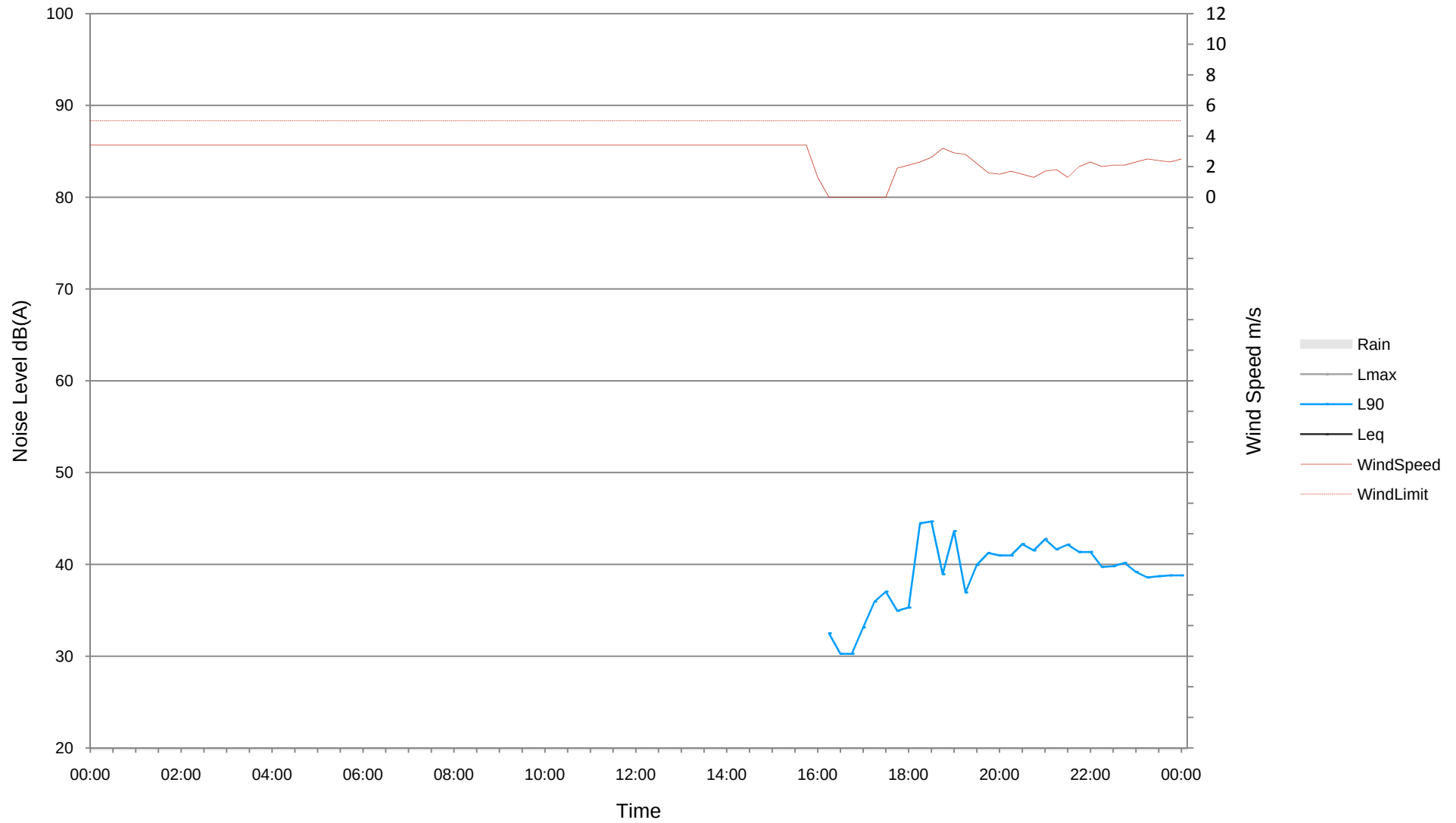
Measured Ambient Noise Levels
Wollemi Peak Road
Saturday, 02-08-14



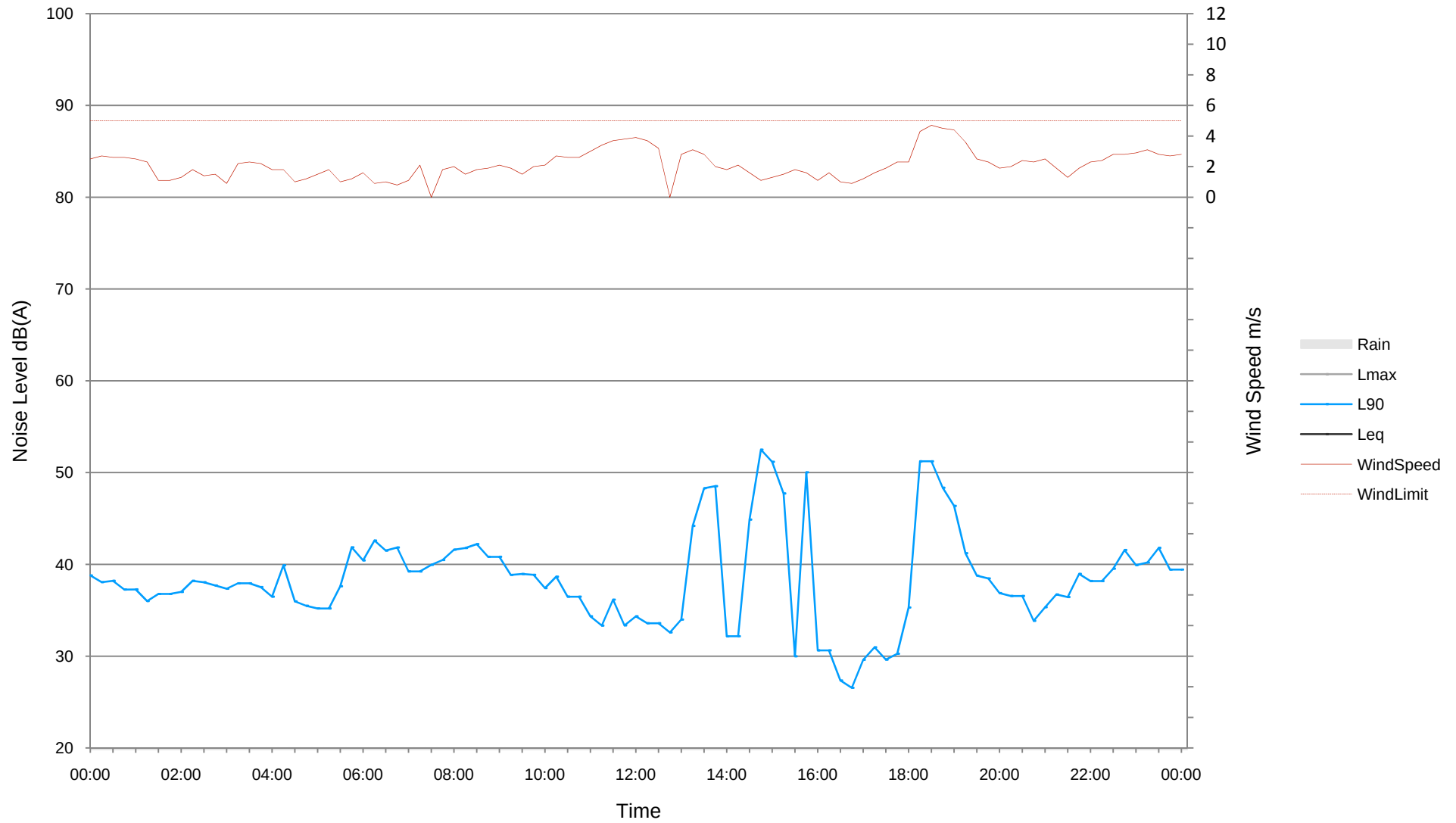
Measured Ambient Noise Levels
Wollemi Peak Road
Sunday, 03-08-14



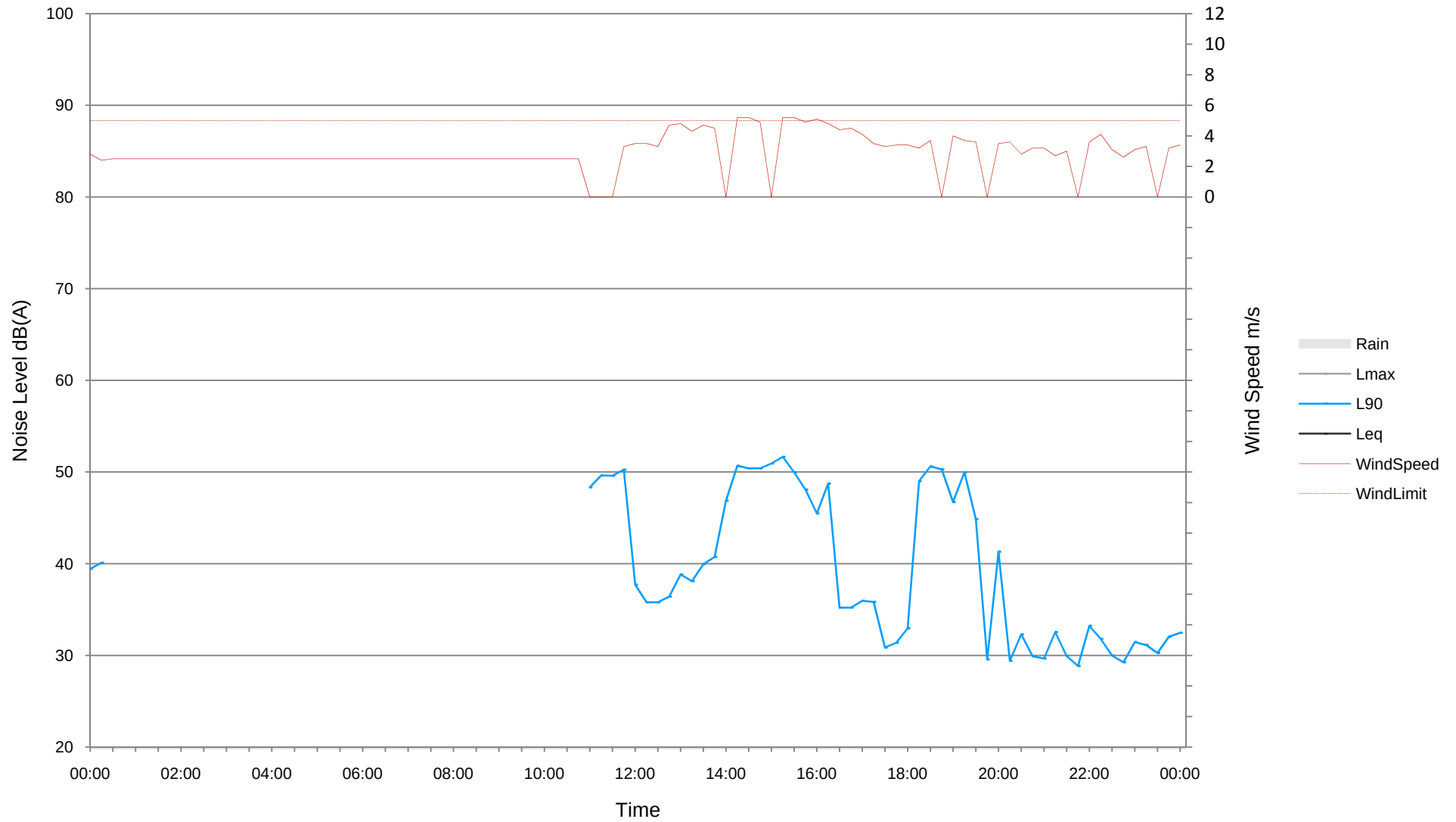
Measured Ambient Noise Levels
Wollemi Peak Road
Monday, 04-08-14



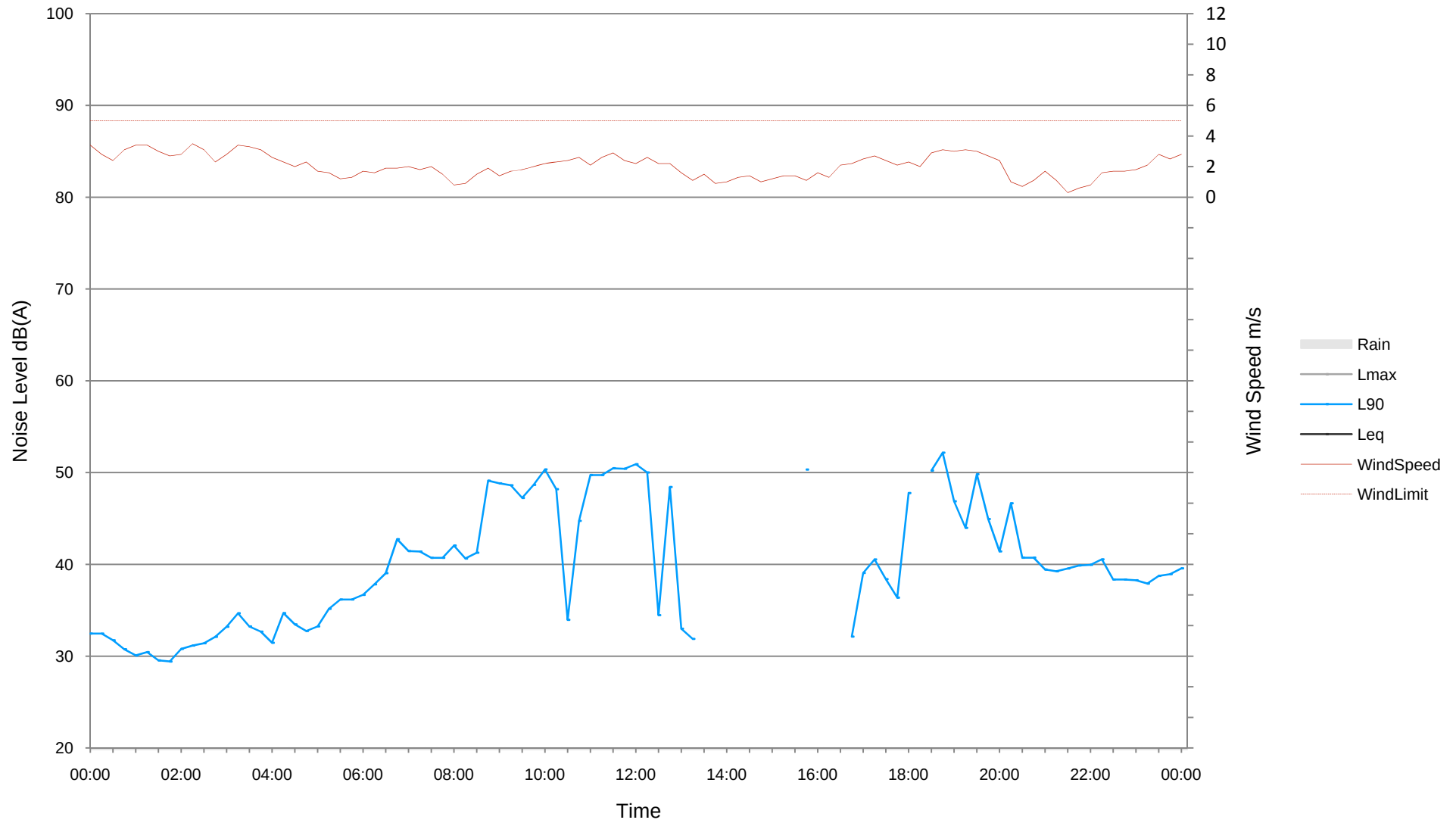
Measured Ambient Noise Levels
Wollemi Peak Road
Tuesday, 05-08-14



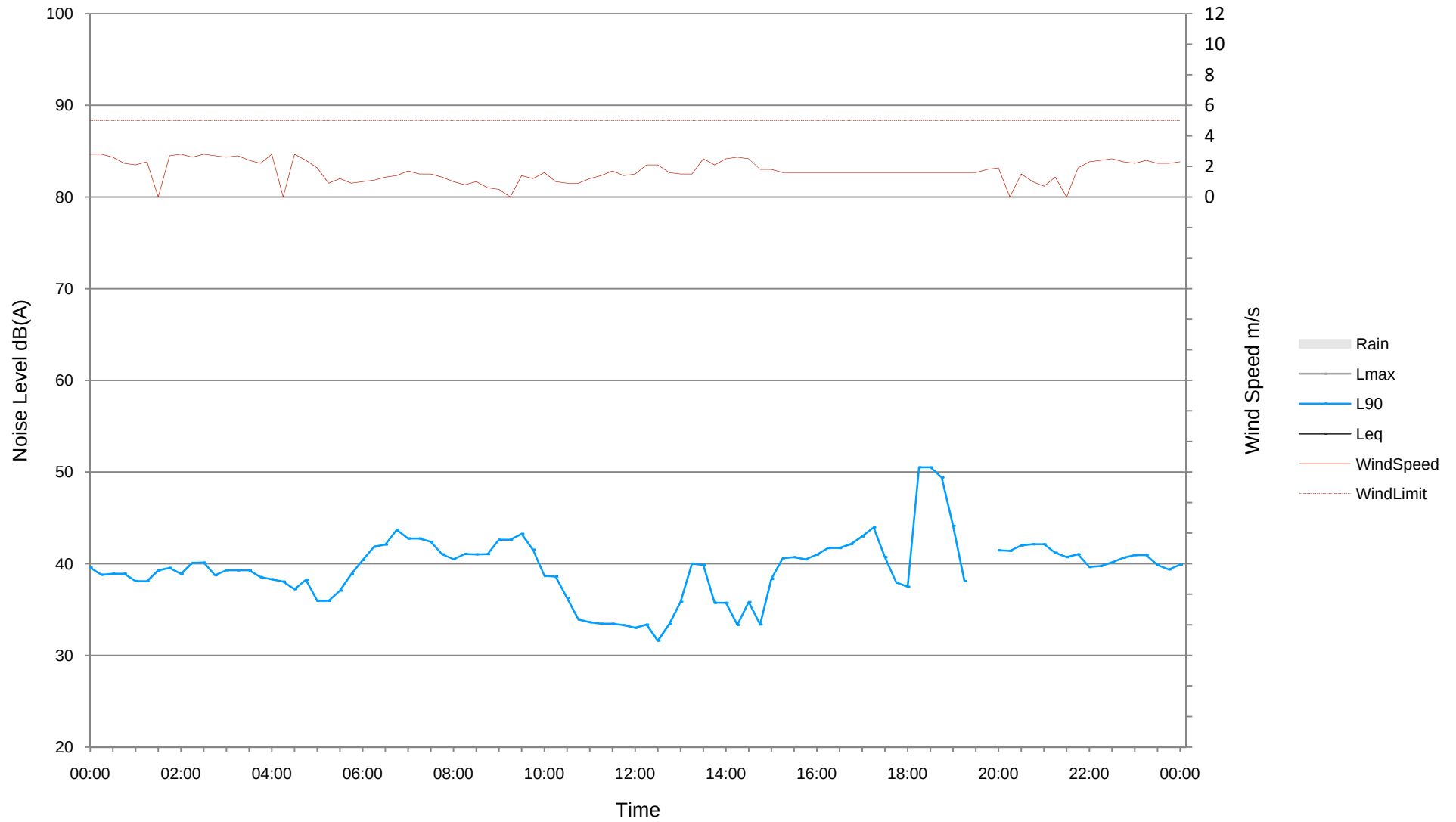
Measured Ambient Noise Levels
Wollemi Peak Road
Wednesday, 06-08-14



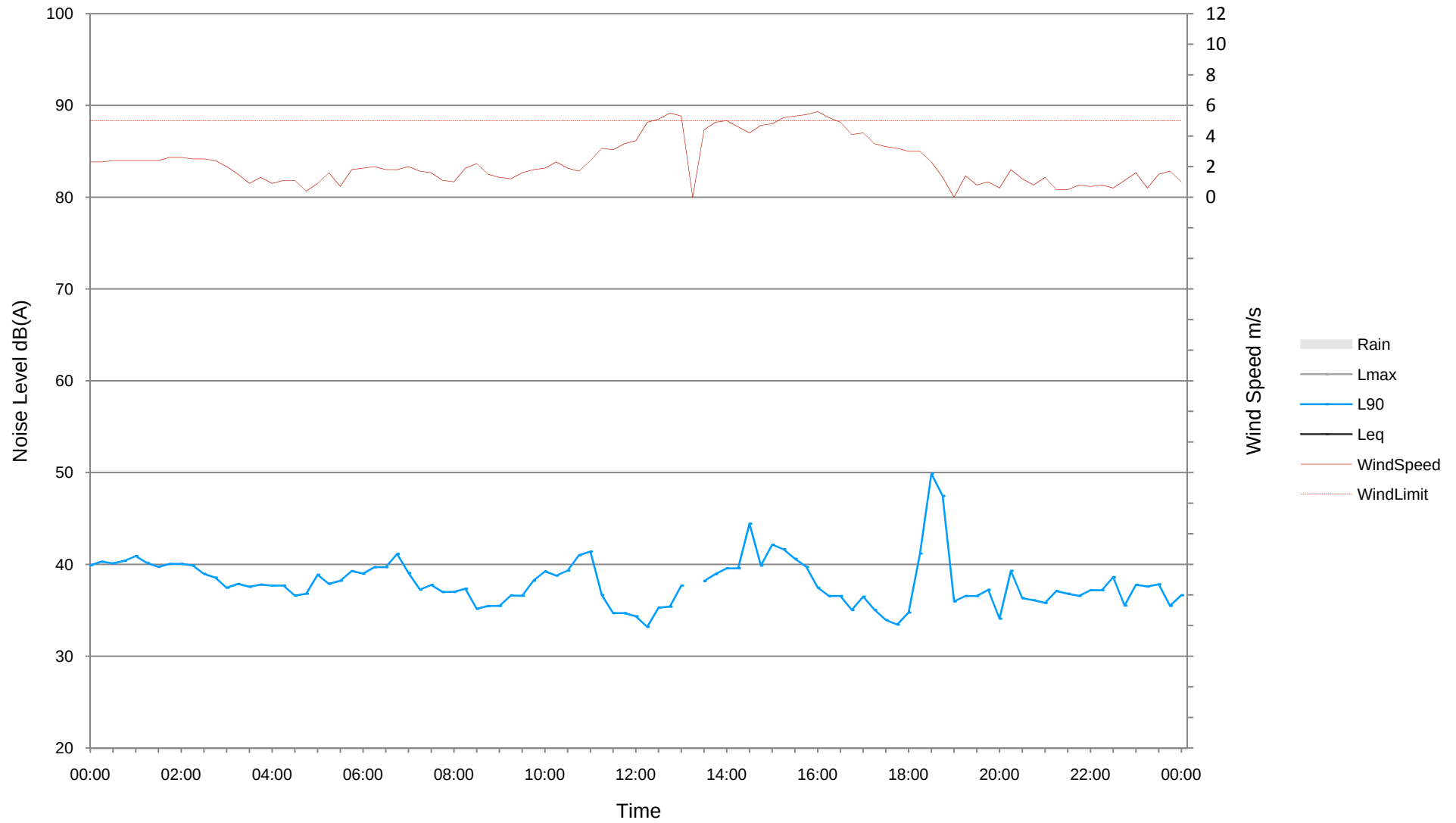
Measured Ambient Noise Levels
Wollemi Peak Road
Thursday, 07-08-14



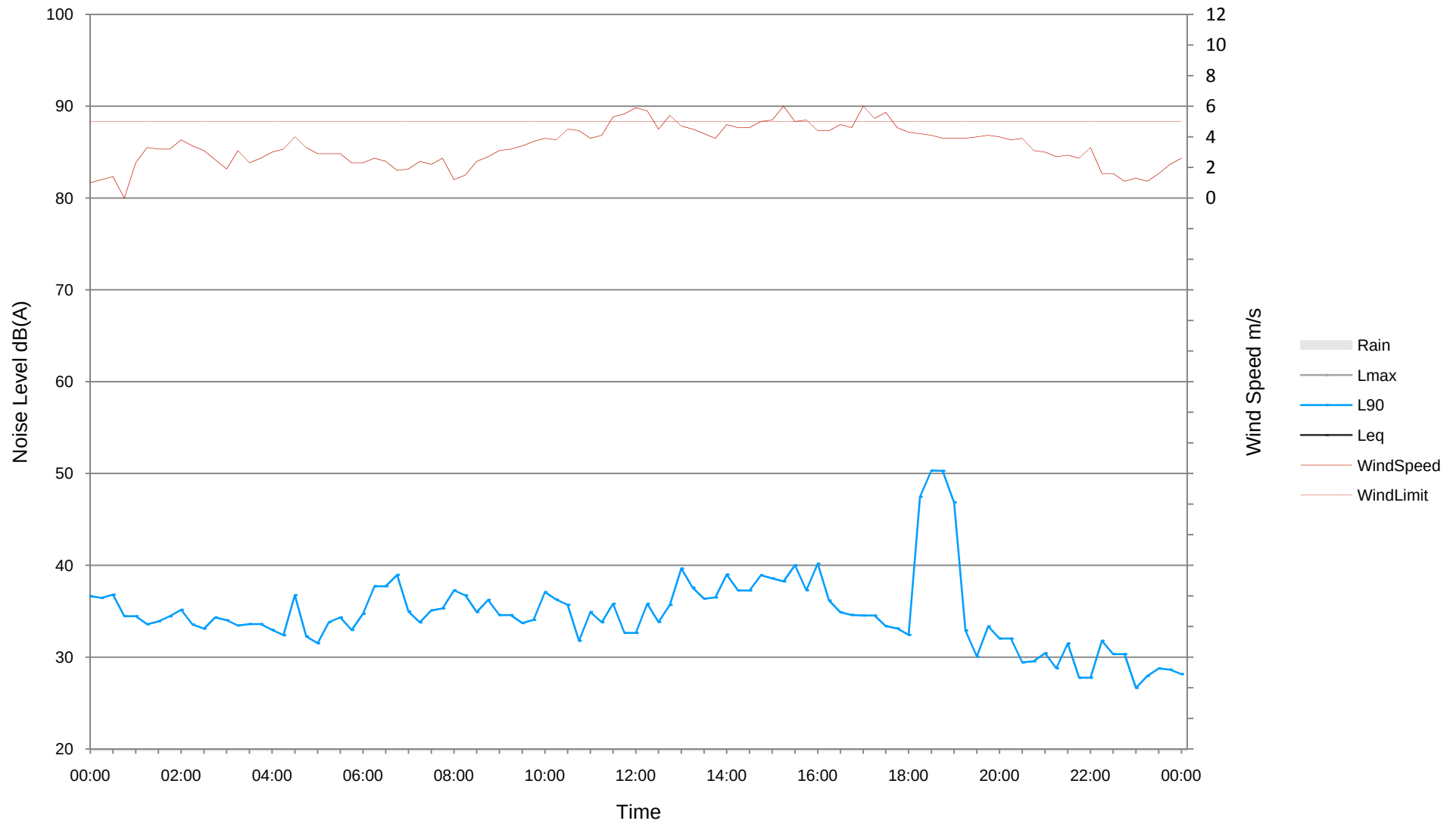
Measured Ambient Noise Levels
Wollemi Peak Road
Friday, 08-08-14



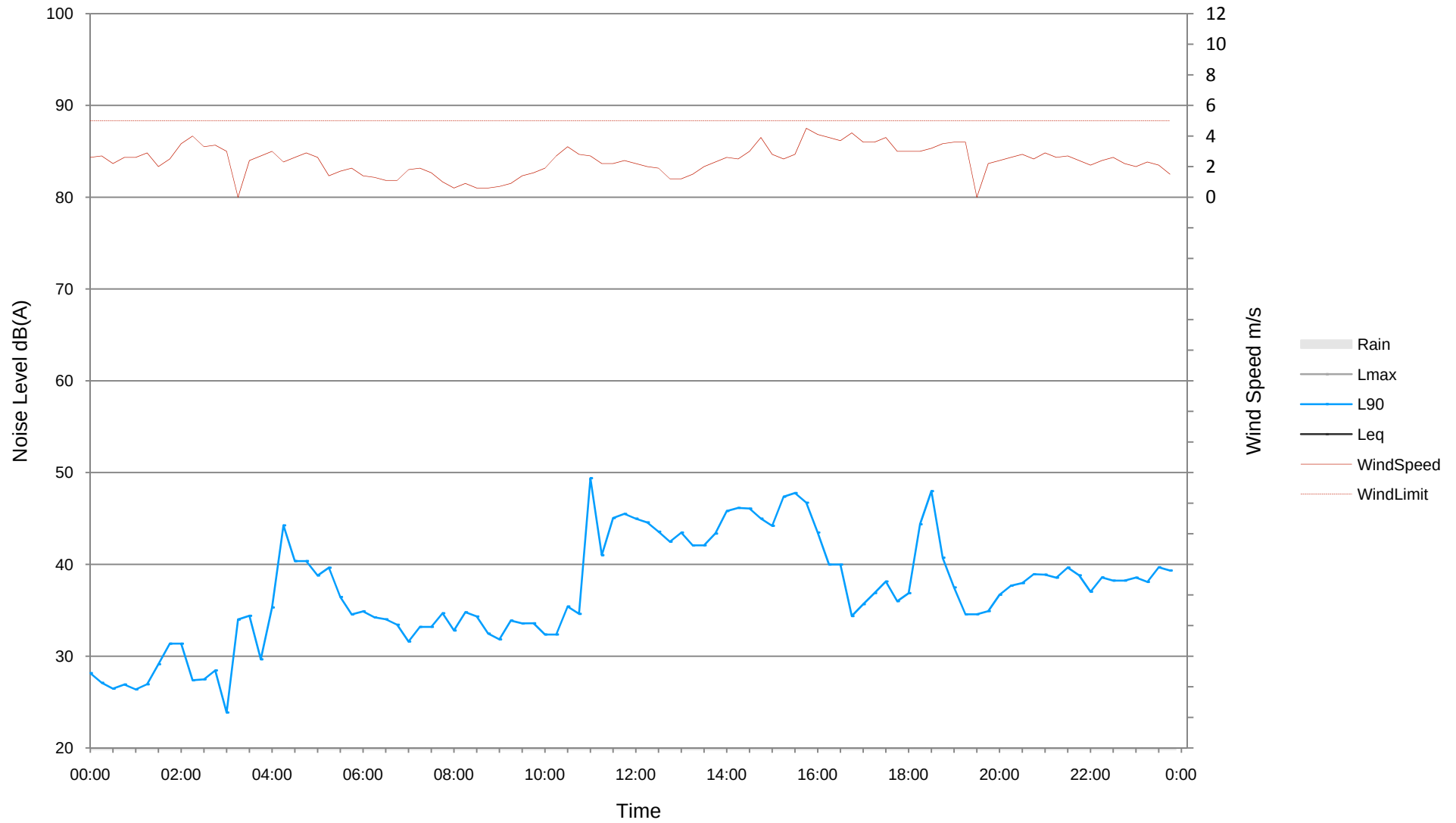
Measured Ambient Noise Levels
Wollemi Peak Road
Saturday, 09-08-14



Measured Ambient Noise Levels
Wollemi Peak Road
Sunday, 10-08-14



Measured Ambient Noise Levels
Wollemi Peak Road
Monday, 11-08-14



Attachment B

BarnOwl Calibration Certificates



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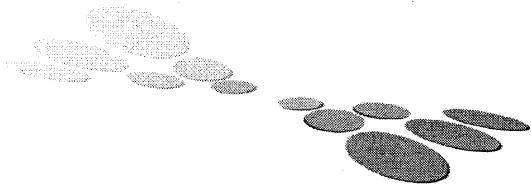
Customer	Coal and Allied
Instrument	Barnowl
Model	NA
ID No.	NA

Calibration Performed by	BTC
Date	20-Jun-13
Location	Noses Rd
System/Job No.	NA

Calibration Results

Microphone 1	Test 1	Test 2	Test 3
Recorded Output with Tone test (dB) pre	94.4	94.1	94.1
Recorded Output with Tone test (dB) post	94.0	94.0	94.0
Microphone 2	Test 1	Test 2	Test 3
Recorded Output with Tone test (dB) pre	94.3	94.0	94.0
Recorded Output with Tone test (dB) post	94.0	94.0	94.0
Microphone 3	Test 1	Test 2	Test 3
Recorded Output with Tone test (dB) pre	94.0	94.0	94.0
Recorded Output with Tone test (dB) post	94.0	94.0	94.0
	Microphone 1-2	Microphone 2-3	Microphone 3-1
Distance Between Microphones (500mm)	500.0	500.0	500.0

Technicians Signature: Ben Clydsdale	Date: 20/6/2013
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Customer	Coal and Allied
Instrument	Barnowl
Model	NA
ID No.	NA

Calibration Performed by	BTC
Date	10-Sep-13
Location	Noses Rd
System/Job No.	NA

Calibration Results

Microphone 1	Test 1	Test 2	Test 3
Recorded Output with Tone test (dB) pre	94.1	93.8	94.1
Recorded Output with Tone test (dB) post	94.0	94.0	94.0
Microphone 2	Test 1	Test 2	Test 3
Recorded Output with Tone test (dB) pre	94.0	94.0	94.0
Recorded Output with Tone test (dB) post	94.0	94.0	94.0
Microphone 3	Test 1	Test 2	Test 3
Recorded Output with Tone test (dB) pre	94.0	94.0	94.0
Recorded Output with Tone test (dB) post	94.0	94.0	94.0
	Microphone 1-2	Microphone 2-3	Microphone 3-1
Distance Between Microphones (500mm)	500.0	500.0	500.0

Technicians Signature: Ben Clydsdale	Date: 10/9/2013
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Template Document Number:
Template Document Location:

Calibration Report: BarnOwl

Customer	RTCA
Location	Noses Road
Instrument type	Barn Owl
Model	-
Serial Number	-

PASS

Date	23/04/2014
Technician	Matt
Time in	12:00
Time out	12:30
Maintenance cycle	3 Monthly

Note: Only fill in white cells. All white must be filled in or calibration will result in MISSING DATA

Status :	PASS
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Test Equipment

Equipment	Serial	Date of Expiry	Status
Svantek Calibrator	BMAS-0007	24/05/2014	PASS

Calibration

	Microphone 1	Microphone 2	Microphone 3
Recorded Output on Arrival (dB)	41	44	42

Point Check 94dB

Microphone 1	Test 1	Status
Tone Test Pre Adjust (dB)	94.3	PASS
Tone Test Post Adjust (dB)	94	PASS

Microphone 2	Test 1	Status
Tone Test Pre Adjust (dB)	94.3	PASS
Tone Test Post Adjust (dB)	94	PASS

Microphone 3	Test 1	Status
Tone Test Pre Adjust (dB)	94.1	PASS
Tone Test Post Adjust (dB)	94	PASS

	Microphone 1	Microphone 2	Microphone 3
Recorded Output on Arrival (dB)	40	43	43

Technician:	Matt Anderson
Date:	23/04/2014



Template Document Number:
Template Document Location:

Calibration Report: BarnOwl

Customer: RTCA
Location: Noses Road

Instrument type: BarnOwl
Model: -
Serial Number: -

PASS

Date: 30/10/2013
Technician: Matt
Time in: -
Time out: -
Maintenance cycle: 3 Monthly

Note: Only fill in white cells. All white must be filled in or calibration will result in MISSING DATA

Status: **PASS**

Test Equipment

Equipment	Serial	Date of Expiry	Status
Svantek Calibrator	BMAS-0007	24/05/2014	PASS

Calibration

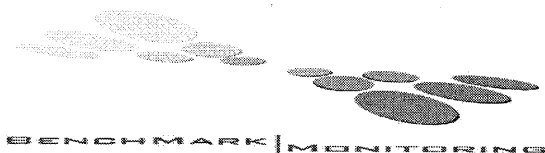
	Microphone 1	Microphone 2	Microphone 3
Recorded Output on Arival (dB)	45	43	43

Point Check 94dB

Microphone 1	Test 1	Status
Tone Test Pre Adjust (dB)	93.7	PASS
Tone Test Post Adjust (dB)	94	PASS
Microphone 2	Test 1	Status
Tone Test Pre Adjust (dB)	93.5	PASS
Tone Test Post Adjust (dB)	94	PASS
Microphone 3	Test 1	Status
Tone Test Pre Adjust (dB)	93.1	PASS
Tone Test Post Adjust (dB)	94	PASS

	Microphone 1	Microphone 2	Microphone 3
Recorded Output on Arival (dB)	44	44	47

Technician: Matt Anderson
Date: 30/10/2013



Template Document Number:
Template Document Location:

Calibration Report: BarnOwl

Customer	RTCA
Location	Noses Road
Instrument type	Barn Owl
Model	-
Serial Number	-

PASS

Date	25/02/2014
Technician	Matt
Time in	13:00
Time out	13:30
Maintenance cycle	3 Monthly

Note: Only fill in white cells. All white must be filled in or calibration will result in MISSING DATA

Status :	PASS
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Test Equipment

Equipment	Serial	Date of Expiry	Status
Svantek Calibrator	BMAS-0007	24/05/2014	PASS

Calibration

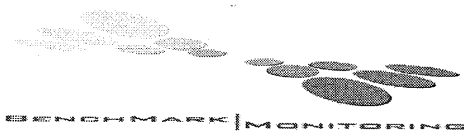
	Microphone 1	Microphone 2	Microphone 3
Recorded Output on Arrival (dB)	37	39	39

Point Check 94dB

Microphone 1	Test 1	Status
Tone Test Pre Adjust (dB)	93.7	PASS
Tone Test Post Adjust (dB)	94	PASS
Microphone 2	Test 1	Status
Tone Test Pre Adjust (dB)	93.9	PASS
Tone Test Post Adjust (dB)	94	PASS
Microphone 3	Test 1	Status
Tone Test Pre Adjust (dB)	93.6	PASS
Tone Test Post Adjust (dB)	94	PASS

	Microphone 1	Microphone 2	Microphone 3
Recorded Output on Arrival (dB)	41	43	43

Technician:	Matt Anderson
Date:	25/02/2014



Calibration Report: BarnOwl

Customer	RTCA
Location	Noses Road

Instrument type	Barn Owl
Model	Barn Owl
Serial Number	-

PASS

Date	29/07/2014
Technician	Matt
Time in	11:00
Time out	11:30
Maintenance cycle	3 Monthly

Note: Only fill in white cells. All white must be filled in or calibration will result in MISSING DATA

Status :	PASS
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Test Equipment

Equipment	Serial	Date of Expiry	Status
Svantek Calibrator	BMAS-0007	31/12/2014	PASS

Calibration

	Microphone 1	Microphone 2	Microphone 3
Recorded Output on Arrival (dB)	39	43	40

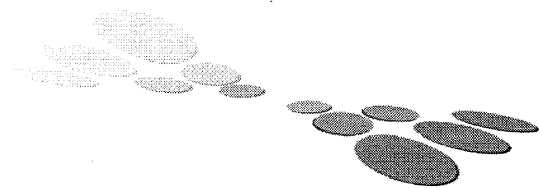
Microphone 1	Test 1	Status
Tone Test Pre Adjust (dB)	93.7	PASS
Tone Test Post Adjust (dB)	94	PASS

Microphone 2	Test 1	Status
Tone Test Pre Adjust (dB)	93.9	PASS
Tone Test Post Adjust (dB)	94	PASS

Microphone 3	Test 1	Status
Tone Test Pre Adjust (dB)	94.1	PASS
Tone Test Post Adjust (dB)	94	PASS

	Microphone 1	Microphone 2	Microphone 3
Recorded Output on Arrival (dB)	44	41	42

Technician:	Matt Anderson
Date:	29/07/2014



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Customer	Coal and Allied
Instrument	Barnowl
Model	NA
ID No.	NA

Calibration Performed by	BTC
Date	22-Dec-11
Location	Scout Hall
System/Job No.	NA

Calibration Results

Microphone 1	Test 1	Test 2	Test 3
Recorded Output with Tone test (dB) pre	94.3	94.3	94.1
Recorded Output with Tone test (dB) post	94.0	94.0	94.0
Microphone 2	Test 1	Test 2	Test 3
Recorded Output with Tone test (dB) pre	94.0	94.0	94.0
Recorded Output with Tone test (dB) post	94.0	94.0	94.0
Microphone 3	Test 1	Test 2	Test 3
Recorded Output with Tone test (dB) pre	94.0	94.0	94.0
Recorded Output with Tone test (dB) post	94.0	94.0	94.0
	Microphone 1-2	Microphone 2-3	Microphone 3-1
Distance Between Microphones (500mm)	500.0	500.0	500.0

Technicians Signature: Ben Clydsdale	Date: 22/12/2011
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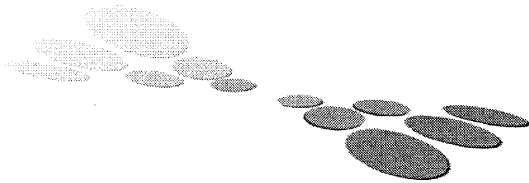
Customer	Coal and Allied
Instrument	Barnowl
Model	NA
ID No.	NA

Calibration Performed by	LG
Date	14-Mar-12
Location	Scout Hall
System/Job No.	NA

Calibration Results

Microphone 1	Test 1	Test 2	Test 3
Recorded Output with Tone test (dB) pre	94.0	93.8	93.7
Recorded Output with Tone test (dB) post	94.0	94.0	94.0
Microphone 2	Test 1	Test 2	Test 3
Recorded Output with Tone test (dB) pre	94.0	94.0	94.0
Recorded Output with Tone test (dB) post	94.0	94.0	94.0
Microphone 3	Test 1	Test 2	Test 3
Recorded Output with Tone test (dB) pre	94.0	94.0	94.0
Recorded Output with Tone test (dB) post	94.0	94.0	94.0
	Microphone 1-2	Microphone 2-3	Microphone 3-1
Distance Between Microphones (500mm)	500.0	500.0	500.0

Technicians Signature: Luis Gonzalez	Date: 14/3/2012
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(Barn Owl) Acoustic Sensor
Operational Check

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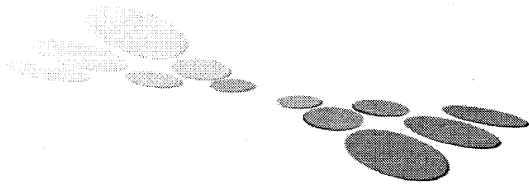
Customer	Coal and Allied
Instrument	Barnowl
Model	NA
ID No.	NA

Calibration Performed by	LG
Date	6-Jun-12
Location	Scout Hall
System/Job No.	NA

Calibration Results

Microphone 1	Test 1	Test 2	Test 3
Recorded Output with Tone test (dB) pre	94.4	94.0	94.4
Recorded Output with Tone test (dB) post	94.0	94.0	94.0
Microphone 2	Test 1	Test 2	Test 3
Recorded Output with Tone test (dB) pre	94.0	94.0	94.0
Recorded Output with Tone test (dB) post	94.0	94.0	94.0
Microphone 3	Test 1	Test 2	Test 3
Recorded Output with Tone test (dB) pre	94.0	94.0	94.0
Recorded Output with Tone test (dB) post	94.0	94.0	94.0
	Microphone 1-2	Microphone 2-3	Microphone 3-1
Distance Between Microphones (500mm)	500.0	500.0	500.0

Technicians Signature: Luis Gonzalez	Date: 6/6/2012
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(Barn Owl) Acoustic Sensor
Operational Check

BENCHMARK | MONITORING

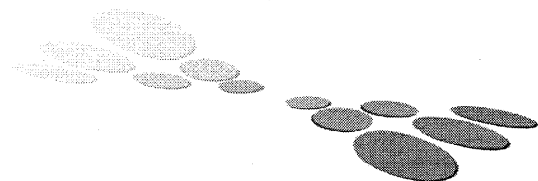
Customer	Coal and Allied
Instrument	Barnowl
Model	NA
ID No.	NA

Calibration Performed by	LG
Date	4-Sep-12
Location	Scout Hall
System/Job No.	NA

Calibration Results

Microphone 1	Test 1	Test 2	Test 3
Recorded Output with Tone test (dB) pre	93.7	93.8	94.2
Recorded Output with Tone test (dB) post	94.0	94.0	94.0
Microphone 2	Test 1	Test 2	Test 3
Recorded Output with Tone test (dB) pre	94.0	94.0	94.0
Recorded Output with Tone test (dB) post	94.0	94.0	94.0
Microphone 3	Test 1	Test 2	Test 3
Recorded Output with Tone test (dB) pre	94.0	94.0	94.0
Recorded Output with Tone test (dB) post	94.0	94.0	94.0
	Microphone 1-2	Microphone 2-3	Microphone 3-1
Distance Between Microphones (500mm)	500.0	500.0	500.0

Technicians Signature: Luis Gonzalez	Date: 4/9/2012
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**(Barn Owl) Acoustic Sensor
Operational Check**

BENCHMARK | MONITORING

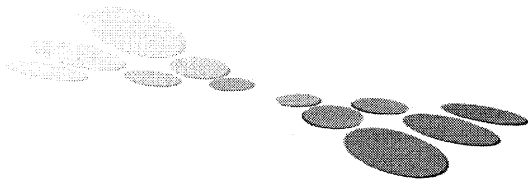
Customer	Coal and Allied
Instrument	Barnowl
Model	NA
ID No.	NA

Calibration Performed by	BTC
Date	1-Dec-12
Location	Caban
System/Job No.	NA

Calibration Results

Microphone 1	Test 1	Test 2	Test 3
Recorded Output with Tone test (dB) pre	93.8	94.1	94.4
Recorded Output with Tone test (dB) post	94.0	94.0	94.0
Microphone 2	Test 1	Test 2	Test 3
Recorded Output with Tone test (dB) pre	94.0	94.0	94.0
Recorded Output with Tone test (dB) post	94.0	94.0	94.0
Microphone 3	Test 1	Test 2	Test 3
Recorded Output with Tone test (dB) pre	94.0	94.0	94.0
Recorded Output with Tone test (dB) post	94.0	94.0	94.0
	Microphone 1-2	Microphone 2-3	Microphone 3-1
Distance Between Microphones (500mm)	500.0	500.0	500.0

Technicians Signature: Ben Clydsdale	Date: 1/12/2012
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**(Barn Owl) Acoustic Sensor
Operational Check**

BENCHMARK | MONITORING

Customer	Coal and Allied
Instrument	Barnowl
Model	NA
ID No.	NA

Calibration Performed by	LG
Date	15-Feb-13
Location	Caban
System/Job No.	NA

Calibration Results

Microphone 1	Test 1	Test 2	Test 3
Recorded Output with Tone test (dB) pre	93.3	93.9	94.1
Recorded Output with Tone test (dB) post	94.0	94.0	94.0
Microphone 2	Test 1	Test 2	Test 3
Recorded Output with Tone test (dB) pre	94.0	94.0	94.0
Recorded Output with Tone test (dB) post	94.0	94.0	94.0
Microphone 3	Test 1	Test 2	Test 3
Recorded Output with Tone test (dB) pre	94.0	94.0	94.0
Recorded Output with Tone test (dB) post	94.0	94.0	94.0
	Microphone 1-2	Microphone 2-3	Microphone 3-1
Distance Between Microphones (500mm)	500.0	500.0	500.0

Technicians Signature: Luis Gonzalez

Date: 15/2/2013



**(Barn Owl) Acoustic Sensor
Operational Check**

BENCHMARK | MONITORING

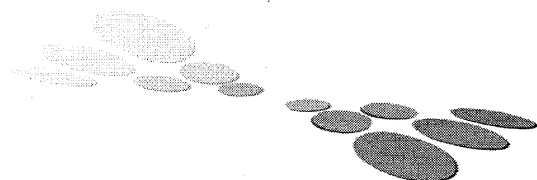
Customer	Coal and Allied
Instrument	Barnowl
Model	NA
ID No.	NA

Calibration Performed by	JP
Date	20-May-13
Location	Caban
System/Job No.	NA

Calibration Results

Microphone 1	Test 1	Test 2	Test 3
Recorded Output with Tone test (dB) pre	94.4	94.0	94.3
Recorded Output with Tone test (dB) post	94.0	94.0	94.0
Microphone 2	Test 1	Test 2	Test 3
Recorded Output with Tone test (dB) pre	94.0	94.0	94.0
Recorded Output with Tone test (dB) post	94.0	94.0	94.0
Microphone 3	Test 1	Test 2	Test 3
Recorded Output with Tone test (dB) pre	94.0	94.0	94.0
Recorded Output with Tone test (dB) post	94.0	94.0	94.0
	Microphone 1-2	Microphone 2-3	Microphone 3-1
Distance Between Microphones (500mm)	500.0	500.0	500.0

Technicians Signature: Jason Potts	Date: 20/5/2013
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(Barn Owl) Acoustic Sensor
Operational Check

BENCHMARK | MONITORING

Customer	Coal and Allied
Instrument	Barnowl
Model	NA
ID No.	NA

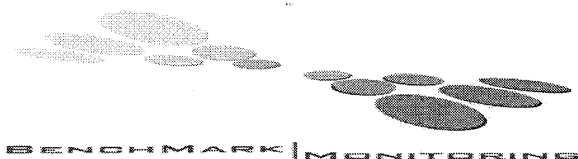
Calibration Performed by	JP
Date	9-Aug-13
Location	Caban
System/Job No.	NA

Calibration Results

Microphone 1	Test 1	Test 2	Test 3
Recorded Output with Tone test (dB) pre	94.1	93.8	93.8
Recorded Output with Tone test (dB) post	94.0	94.0	94.0
Microphone 2	Test 1	Test 2	Test 3
Recorded Output with Tone test (dB) pre	94.0	94.0	94.0
Recorded Output with Tone test (dB) post	94.0	94.0	94.0
Microphone 3	Test 1	Test 2	Test 3
Recorded Output with Tone test (dB) pre	94.0	94.0	94.0
Recorded Output with Tone test (dB) post	94.0	94.0	94.0
	Microphone 1-2	Microphone 2-3	Microphone 3-1
Distance Between Microphones (500mm)	500.0	500.0	500.0

Technicians Signature: Jason Potts

Date: 9/8/2013



Template Document Number:
Template Document Location:

Calibration Report: BarnOwl

Customer	RTCA
Location	Wombo Road

Instrument type	BarnOwl
Model	-
Serial Number	-

PASS

Date	30/10/2013
Technican	Matt
Time in	-
Time out	-
Maintenance cycle	3 Montlhy

Note: Only fill in white cells. All white must be filled in or calibration will result in MISSING DATA

Status :	PASS
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Test Equipment

Equipment	Serial	Date of Expiry	Status
Svantek Calibrator	BMAS-0007	24/05/2014	PASS

Calibration

	Microphone 1	Microphone 2	Microphone 3
Recorded Output on Arival (dB)	51	49	50

Point Check 94dB

Microphone 1	Test 1	Status
Tone Test Pre Adjust (dB)	94	PASS
Tone Test Post Adjust (dB)	94	PASS
Microphone 2	Test 1	Status
Tone Test Pre Adjust (dB)	94	PASS
Tone Test Post Adjust (dB)	94	PASS
Microphone 3	Test 1	Status
Tone Test Pre Adjust (dB)	94	PASS
Tone Test Post Adjust (dB)	94	PASS

	Microphone 1	Microphone 2	Microphone 3
Recorded Output on Arival (dB)	53	49	51

Technican:	Matt Anderson
Date:	30/10/2013



Template Document Number:
Template Document Location:

Calibration Report: BarnOwl

Customer: RTCA
Location: Wambo Road

Instrument type: Barn Owl
Model: -
Serial Number: -

PASS

Date: 25/02/2014
Technician: Matt
Time in: 12:00
Time out: 12:30
Maintenance cycle: 3 Monthly

Note: Only fill in white cells. All white must be filled in or calibration will result in MISSING DATA

Status: PASS

Test Equipment

Equipment	Serial	Date of Expiry	Status
Svantek Calibrator	BMAS-0007	24/05/2014	PASS

Calibration

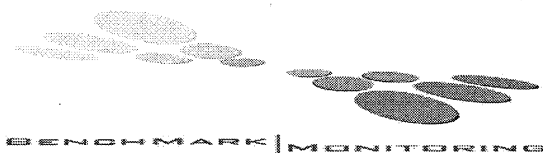
	Microphone 1	Microphone 2	Microphone 3
Recorded Output on Arival (dB)	41	41	43

Point Check 94dB

Microphone 1	Test 1	Status
Tone Test Pre Adjust (dB)	94	PASS
Tone Test Post Adjust (dB)	94	PASS
Microphone 2	Test 1	Status
Tone Test Pre Adjust (dB)	94	PASS
Tone Test Post Adjust (dB)	94	PASS
Microphone 3	Test 1	Status
Tone Test Pre Adjust (dB)	94	PASS
Tone Test Post Adjust (dB)	94	PASS

	Microphone 1	Microphone 2	Microphone 3
Recorded Output on Arival (dB)	40	38	38

Technican: Matt Anderson
Date: 25/02/2014



Template Document Number:
Template Document Location:

Calibration Report: BarnOwl

Customer: RTCA
Location: Wambo Road

Instrument type: Barn Owl
Model: -
Serial Number: -

PASS

Date: 2/04/2014
Technician: Matt
Time in: 14:00
Time out: 16:00
Maintenance cycle: 3 Monthly

Note: Only fill in white cells. All white must be filled in or calibration will result in MISSING DATA

Status : PASS

Test Equipment

Equipment	Serial	Date of Expiry	Status
Svantek Calibrator	BMAS-0007	24/05/2014	PASS

Calibration

	Microphone 1	Microphone 2	Microphone 3
Recorded Output on Arival (dB)	45	43	43

Point Check 94dB

Microphone 1	Test 1	Status
Tone Test Pre Adjust (dB)	94.8	PASS
Tone Test Post Adjust (dB)	94	PASS

Microphone 2	Test 1	Status
Tone Test Pre Adjust (dB)	94.4	PASS
Tone Test Post Adjust (dB)	94	PASS

Microphone 3	Test 1	Status
Tone Test Pre Adjust (dB)	94.4	PASS
Tone Test Post Adjust (dB)	94	PASS

	Microphone 1	Microphone 2	Microphone 3
Recorded Output on Arival (dB)	38	40	37

Technican:	Matt Anderson
Date:	2/04/2014



Calibration Report: BarnOwl	
Customer	RTCA
Location	Wambo Road

Instrument type	Barn Owl
Model	Barn Owl
Serial Number	-

PASS

Date	29/07/2014
Technician	Matt
Time in	12:00
Time out	12:30
Maintenance cycle	3 Monthly

Note: Only fill in white cells. All white must be filled in or calibration will result in MISSING DATA

Status :	PASS
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Test Equipment

Equipment	Serial	Date of Expiry	Status
Svantek Calibrator	BMAS-0007	31/12/2014	PASS

Calibration

	Microphone 1	Microphone 2	Microphone 3
Recorded Output on Arrival (dB)	45	43	45

Microphone 1	Test 1	Status
Tone Test Pre Adjust (dB)	94.3	PASS
Tone Test Post Adjust (dB)	94	PASS

Microphone 2	Test 1	Status
Tone Test Pre Adjust (dB)	94.3	PASS
Tone Test Post Adjust (dB)	94	PASS

Microphone 3	Test 1	Status
Tone Test Pre Adjust (dB)	94.2	PASS
Tone Test Post Adjust (dB)	94	PASS

	Microphone 1	Microphone 2	Microphone 3
Recorded Output on Arrival (dB)	45	43	44

Technician:	Matt Anderson
Date:	29/07/2014

Appendix H

Social impact assessment interview guide



Appendix H — Social impact assessment interview guide

H

H.1 MTW Interview Guide

Introduction: EMGA Mitchell McLennan (EMM) has been contracted by Coal & Allied to undertake the Social Impact Assessment (SIA) for the proposed projects at Mount Thorley Warkworth (MTW) as part of the environmental assessment process. We are conducting an independent assessment of the social impacts of the projects and therefore it is important that we consider the perspectives of key stakeholders regarding current and future impacts of the proposed project that they are concerned about and any management strategies that may help to alleviate these impacts. Any information or concerns you have regarding the project will be assessed and reported on as part of this process.

Confidentiality Statement: All information you provided will be kept confidential and will not be linked to you in any way.

H.1.1 The Project

Section introduction: We will be asking a series of questions related to the project specifically, and also about MTW operations more generally. Firstly, we will be discussing the proposed project.

1. Having heard the project description, what impacts do you think will occur as a result of the project? (main issues/impacts; description – eg why do you think the impacts will occur, will it impact you directly, how...; severity of impact - low, moderate, high)
2. Do you think these impacts can be appropriately managed or mitigated (yes, no, unsure)?
 - a) If yes, how can they be managed? How do you think these management strategies could be monitored and reported on?
 - b) If no/unsure, why?
3. What opportunities do you think will occur as a result of the project?
4. What do you think would be the impacts if the project did not go ahead?
5. Do you think the benefits of the project outweigh the impacts/costs (yes, no, unsure/don't know)? Why?

H.1.2 MTW Operations

Section introduction: we also want to ask you a number of questions about MTW operations more generally.

i Opinion of the company/operation

6. How would you describe your relationship with the company / MTW operation to date (very negative; negative; neither positive/negative; positive; very positive)?

ii Issues and Management

7. What have been your main issues with / impacts from MTW operations to date? (main issues/impacts; description – eg why do you think the impacts will occur, will it impact you directly, how...; severity of impact - low, moderate, high)

8. How satisfied are you with the company's response and management of these issues/impacts (very satisfied; satisfied; neither satisfied/unsatisfied; somewhat unsatisfied; very unsatisfied)?
9. What do you think the company has been doing well in relation to managing its impacts?
10. What needs improvement? How?

iii Cost/benefit

11. What do you see as the key benefits / contributions of mining in the area? (Interviewer: please list key benefit items rather than describe in detail)
12. What do you see as the key costs/impacts of mining in the area? (Interviewer: please list key cost items rather than describe in detail)
13. Do you consider the disadvantages of mining outweigh the advantages of the presence of mining in the area (yes; no; unsure/don't know)?

iv Opportunities

14. What do you see as the key needs of the community? How could the company provide expertise/resources (time/money) to address these needs?
15. How would you describe the aspirations of the community? How do you see/envisage the community in the future?
16. How could the company support these aspirations? Do you think the project fits within the community's vision for the future?

v Information and engagement

17. What are some of the better ways for Coal & Allied to provide information to you about the project moving forward (ie throughout the assessment process)?
18. Is there any specific information about the project you would like to receive?
19. Do you have anything else you would like to add?

Thank you for your time today.

If you would like any further information on the project, please contact Andrew Turner in the Community Relation Team via the Community Information Line 1800 727 745.

Appendix I

Revised Statement of Commitments



Appendix I — Revised Statement of Commitments



Table I.1 **Commitments**

Item	Commitments
General	Upon receipt of development consent, all management plans relevant to the proposal will be updated with requirements as specified in this EIS and any subsequent response to submissions report.
Noise	Management and monitoring of noise will continue to be undertaken in accordance with the MTW Noise Management Plan. The noise management plan will be reviewed and updated to incorporate the proposal.
Air quality and GHG	Management and monitoring of air quality will continue to be undertaken in accordance with the MTW AQMP. The MTW AQMP will be reviewed and updated to incorporate the proposal.
Ecology	Management and monitoring measures to be implemented for ecology relate exclusively to rehabilitation and comprise: • progressive rehabilitation in accordance with the MOP; • rehabilitation of approximately 483ha of mined land rehabilitated to locally occurring ecological communities (including EEC), with an additional 97.5ha rehabilitated to trees over grass; • fauna habitat enhancement, such as the placement of logs, woody debris and other features to support fauna re-colonisation of rehabilitated areas; • implementation of a seed collection programme to ensure species abundance and diversity is available for planting out of the rehabilitation areas; • development of performance indicators and ongoing monitoring and reporting to track the progress of rehabilitation; and • final landform development with recognition of the pre-mining landform and incorporating existing rehabilitation areas consistent with adjacent vegetation communities.
Final landform and rehabilitation	Rehabilitation will continue to be undertaken in accordance with the MTW Rehabilitation Management Plan. Should the proposal and the Warkworth Continuation 2014 be approved, the plan will be updated to include objectives for combined MTW rehabilitation as described below. • closure strategy: - prepare a closure strategy in accordance with Rio Tinto's Closure Standard to evaluate and document closure and post closure options. • prepare a closure management plan for MTO prior to completion of mining which would: - develop and document a description of specific technical solutions related to infrastructure and facilities for the preferred closure option(s); - develop and maintain auditable details of closure cost; - develop a detailed communication plan; - develop and maintain a socio-economic mitigation programme; and - develop a full decommissioning plan five years prior to the estimated date of ceasing production at MTO. The decommissioning plan will contain specific details of how closure will be achieved.

Table I.1 **Commitments**

Item	Commitments
	• Final land use: - integration of final land use with the rehabilitation undertaken by the surrounding mining operations, existing agricultural land and areas containing remnant vegetation, ultimately providing sustainable land uses agreed by a range of stakeholders; and - progressive incorporation of erosion and sediment control and water management structures into the final landform.
Visual	Management and monitoring of visual impacts will continue to be undertaken in accordance with the draft MTW VIMP which will be updated to include the following additional measures: • Site-specific visual assessment (SSVA): - a process will be developed to enable any landowner in Bulga village who perceives a significant visual impact from the proposal to receive an SSVA. The assessment will recommend appropriate mitigation if required for high impacts which will be implemented in consultation and agreement with the landowner.
Groundwater	Management and monitoring of groundwater will continue to be undertaken in accordance with the MTW WMP. The WMP will be reviewed and updated to include the additional management measures prescribed below. • Installation of three additional piezometers in the Wollombi Brook alluvium adjacent to Loders Pit. • A site specific investigation into trigger level exceedance would be undertaken if: - professional judgement determines that the single deviation or a developing trend could result in environmental harm; or - three consecutive measurements exceed trigger values. • Data management and reporting: - establishment of trigger levels; - quarterly review of groundwater levels and field water quality against trigger levels, with site specific investigations initiated; and - all groundwater data being stored in a database customised for MTW with suitable QA/QC controls. • Licensing: - retain and obtain appropriate water licences, as required, to account for modelled take.
Surface water	Management and monitoring of surface water will continue to be undertaken in accordance with the MTW WMP. The WMP will be reviewed and updated to include the following additional management measures: • Licensing: - retain and obtain appropriate water licences, as required, to meet operational requirements. • Surface water monitoring programme: - Update to include locations of new dams as they are constructed (eg Sediment Dam A) with EC, pH and TSS monitored monthly and a comprehensive analysis six monthly.

Table I.1 **Commitments**

Item	Commitments
Aboriginal and cultural heritage	Management and monitoring to be implemented for Aboriginal and cultural heritage comprise: • Preparation of an integrated HMP. • Management of Aboriginal cultural heritage at the Site: - completion of reassessment surveys for the remaining undisturbed portion of the Site to the south-east of Loders Creek with a view to finalising the area to be included in the proposed Loders Creek ACHCA; - all Aboriginal cultural heritage within the area (both as currently known and as may be identified from the completion of the reassessment surveys) will continue to be managed in accordance with the provisions of the CHMS and the ACHMP (or HMP); - places assessed as vulnerable to unintended harm, owing to the proximity of roads or tracks or other operational infrastructure, will be appropriately buffered and barricaded in accordance with existing protection procedures and protocols as outlined within the provisions of the CHMS and the ACHMP (or HMP); and - all Aboriginal cultural heritage places within these areas will be monitored in accordance with such procedures and protocols as outlined within the provisions of the CHMS and the ACHMP (or HMP). • Management of Aboriginal cultural heritage within Loders Creek ACHCA: - the Loders Creek ACHCA will be established for the long-term conservation and management of Aboriginal cultural heritage places and values. In particular, it will provide for the protective management and cultural maintenance of the remaining undisturbed portion of Loders Creek within the Site; - the Loders Creek ACHCA will be protected permanently from future mining, exploration drilling and associated development disturbance; - the Loders Creek ACHCA will be managed in accordance with a specific management plan developed in consultation with the CHWG and other stakeholders including DP&E and OEH. This plan will include the following matters: ▪ the establishment of strictly controlled non-access zones and protocols around culturally sensitive areas as determined in consultation with the CHWG; ▪ the establishment of areas for use by the Aboriginal community for cultural and community purposes; ▪ the establishment of areas for active Aboriginal cultural heritage and landscape management, including vegetation rehabilitation; ▪ the processes and protocols by which ongoing Aboriginal community access to the Loders Creek ACHCA can be facilitated; and ▪ the plan would be integrated with the MTW HMP; - the Aboriginal community, through a Coal & Allied ACHCA management committee, will oversee the implementation of the management plan; and - Coal & Allied will continue to ensure an active Aboriginal community role in both Aboriginal cultural heritage and environmental management activities for the Loders Creek ACHCA.

Table I.1 **Commitments**

Item	Commitments
Historic heritage	Management and monitoring to be implemented for historic heritage comprise: • implement a Chance Finds Procedure should sites of potential historic heritage value be encountered or uncovered unexpectedly during operation.
Social	Socio-economic initiatives to be implemented under the proposal comprise: • the development of a Social Impact Management Plan (SIMP) to manage and monitor the implementation of strategies to reduce identified social impacts and enhance social opportunities. The SIMP would detail implementation responsibilities; timing; performance indicators and targets; and monitoring measures. The SIMP would be prepared in consultation with key stakeholders, following the EIS public exhibition and submissions process. The key aims of the SIMP would be to: - reflect the findings and recommendations of the SIA and provide a short summary of findings; - summarise for all stakeholders the potential positive and negative impacts of the proposal, proposed mitigation and management strategies, and implementation actions; - be developed for the life of the proposal; and - promote an active and ongoing role for communities, local authorities and all levels of government through construction, operation and decommissioning of a proposal. • the negotiation of a VPA with Singleton Council. The VPA would present an opportunity to ensure a proportion of the funds are dedicated to maintaining and/or improving facilities and services in Bulga, other local neighbouring communities, and the Singleton LGA as a whole. • the contribution to the establishment of a Near Neighbour Amenity Resource to provide support to residents surrounding the operation.



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