

1 INTRODUCTION

1.1 PURPOSE OF THE SUPPLEMENTARY EIS AND SUMMARY OF THE SUBMISSIONS RECEIVED

The Draft Environmental Impact Statement (hereafter the Draft EIS) for the proposed expansion of Olympic Dam was placed on public exhibition for a 14-week period between 1 May and 7 August 2009. During this time and beyond, it was available for viewing electronically via the websites of the Australian Government, South Australian Government, Northern Territory Government and BHP Billiton. Hard copies of the Draft EIS were available for purchase from BHP Billiton, with all monies raised donated to the Royal Flying Doctor Service.

Hard copies were also available for viewing at:

- Australian Capital Territory: the Department of Environment, Water, Heritage and the Arts Central Library in Canberra
- South Australia: the Department of Planning and Local Government, the Conservation Council of South Australia, four council chambers and eight public libraries
- Northern Territory: three government departments, the Environment Centre of the Northern Territory, the Environment Hub, and 11 public libraries.

Submissions on the Draft EIS were sought through the print and radio media, and through direct contact with members of the public and stakeholders via:

- six public meetings held over a 10-day period
- 17 meetings conducted with special interest groups
- a launch to the media on 1 May 2009
- 45 notices placed in local and state newspapers.

A total of 4,197 written submissions were received by the South Australian Government and provided to BHP Billiton for review and response. Of these, 391 were 'unique submissions' and 3,806 were 'form letters'. Form letters duplicated the submissions from the same base letter (and therefore raised identical issues). If a form letter also raised an additional issue/s, then that submission and the additional issue/s have been included as a unique submission in the Supplementary Environmental Impact Statement (hereafter the Supplementary EIS).

The purpose of the Supplementary EIS is principally to finalise the Draft EIS but, as an important step in that process, to take account of the comments received during the public exhibition period. Table 1.1 lists each of the unique submissions received, allocates each an identification number and identifies the chapter in which each issue from the submission has been addressed. The identification numbers are used throughout this document to show which submission/s raised the issue being addressed (see Section 1.2 for details).

Appendix A1 lists each person and/or organisation that provided a form letter submission. Appendix A2 provides a complete copy of all submissions received.

Figure 1.1 illustrates the global source of those submissions for which a location could be identified (i.e. of the total 4,197 submissions received, a location could be identified for 2,957; and for the 391 unique submissions, a location could be identified for 268). Figure 1.2 shows the postcode location from where Australian submissions were received, and the Australian location from which the unique submissions were received. Submissions from Australia accounted for 79% of the total submissions, and 99% of the unique submissions.

The term 'issue' is used throughout this document to collectively reference the questions, concerns, comments and suggestions raised within the submissions. From all submissions, a total of 753 issues pertaining to the proposed expansion of Olympic Dam were raised and have been addressed in this document.

With regard to the 753 issues:

- Figure 1.3 shows the number of issues raised per chapter of the Supplementary EIS
- Figure 1.4 shows the number of issues raised against the various major components of the proposed expansion.

Table 1.1 Submissions received and the chapter in which the issues raised have been addressed

Submission Number	Name / Organisation	Introduction	Project justification	Project alternatives	Description of the proposed expansion	Legislative framework	Stakeholder consultation and engagement	Mining-induced seismicity	Land use
1	Australian Government			✓	✓		✓		✓
2	South Australian Government			✓	✓	✓	✓	✓	✓
3	Northern Territory Government					✓			
4	Amateur Fishermen's Association Northern Territory								
5	Andamooka Progress and Opal Miners Association			✓					
6	Andamooka Progress and Opal Miners Association – second submission	✓					✓		
7	Anti-Nuclear Alliance of Western Australia			✓		✓			
8	Arid Lands Environment Centre			✓	✓	✓			
9	Australian and New Zealand Solar Energy Society, SA Branch			✓					
10	Australian Conservation Foundation			✓		✓			
11	Australian Conservation Foundation – form letter			✓		✓			
12	Australian Democrats			✓	✓	✓			
13	Australian Greens			✓	✓	✓			
14	Australian Student Environmental Network – form letter								
15	Australian Veterinary Association (SA Branch) Veterinary Wildlife Committee						✓		✓
16	BHP Shareholders for Social Responsibility					✓			
17	Bird Observation and Conservation Australia								
18	Birds Australia								
19	Birds SA The Ornithological Association of South Australia								
20	Caritas College						✓		
21	Centro Atómico Constituyentes	✓							
22	City of Port Adelaide Enfield								
23	Connor Holmes			✓					
24	Conservation Council of South Australia			✓	✓	✓			
25	Consultants in Quality Pty Ltd			✓					
26	Cultana Jenkins Shackowners Association			✓	✓				
27	Cuttlefish Coast Coalition			✓	✓		✓		

With regard to the 391 unique submissions:

- Figure 1.5 shows the number of submissions that raised an issue within each chapter of the Supplementary EIS
- Figure 1.6 shows the number of submissions that raised an issue about the various major components of the proposed expansion
- Table 1.2 shows the 10 most commonly raised issues from the 391 unique submissions.

Topography and soils	Surface water	Groundwater	Greenhouse gas	Air quality	Noise and vibration	Terrestrial ecology	Marine environment	Aboriginal cultural heritage	Non-Aboriginal cultural heritage	NT Transport option	Social environment	Traffic	Visual amenity	Economic assessment	Health and safety	Radiation	Product stewardship and the nuclear fuel cycle	Rehabilitation and closure	Environmental management framework	Cumulative effects	Hazard and risk	Submissions on commitments
✓	✓	✓		✓		✓	✓	✓		✓	✓			✓		✓					✓	✓
✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓
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✓	✓	✓		✓	✓	✓	✓								✓	✓					✓	

Table 1.1 Submissions received and the chapter in which the issues raised have been addressed

Submission Number	Name / Organisation	Introduction	Project justification	Project alternatives	Description of the proposed expansion	Legislative framework	Stakeholder consultation and engagement	Mining-induced seismicity	Land use
28	Cuttlefish Coast Coalition – Rodgers Family			✓					
29	Cuttlefish Coast Coalition (Appendix)			✓					
30	Darwin Harbour Advisory Committee Northern Territory								
31	Department of Earth Sciences, University of London			✓					
32	Desert Dirt Kart Club	✓							
33	Doctors for the Environment Australia								
34	Enersalt Pty Ltd			✓					
35	Environment Centre NT		✓	✓	✓	✓			
36	Environment Resources and Development Committee			✓					
37	Environment Tasmania Inc.			✓	✓	✓			
38	Environmental Defenders Office (SA) Inc.					✓			
39	Eyre Peninsula Natural Resources Management Board				✓				
40	Field Naturalists Society of SA			✓	✓	✓			
41	Flinders and Outback Water Cruises			✓	✓	✓			
42	Friends of the Earth	✓		✓		✓			
43	Friends of the Earth – form letter			✓	✓	✓			
44	Friends of the Earth Adelaide			✓		✓			
45	Frontline Films								
46	Hastings Area Nuclear Free Alliance	✓		✓		✓			
47	Hornridge Sporting Club	✓							
48	Hornridge Sporting Club – second submission	✓							
49	JLKT Pty Ltd			✓		✓			
50	Just Peace			✓		✓			
51	Laguna Holdings Pty Ltd						✓		
52	Medical Association for Prevention of War Australia			✓					
53	Murray Darling Association			✓					
54	Museum Victoria			✓					
55	National Farmers’ Association			✓					
56	Native Vegetation Council								
57	Nature Conservation Society of South Australia			✓					
58	No Mines SA	✓							
59	Northern and Yorke Natural Resources Management Board					✓			
60	Nutt Bros Nominees Pty Ltd			✓					
61	Olympic Dam Football Club						✓		

Topography and soils	Surface water	Groundwater	Greenhouse gas	Air quality	Noise and vibration	Terrestrial ecology	Marine environment	Aboriginal cultural heritage	Non-Aboriginal cultural heritage	NT Transport option	Social environment	Traffic	Visual amenity	Economic assessment	Health and safety	Radiation	Product stewardship and the nuclear fuel cycle	Rehabilitation and closure	Environmental management framework	Cumulative effects	Hazard and risk	Submissions on commitments		
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Table 1.1 Submissions received and the chapter in which the issues raised have been addressed

Submission Number	Name / Organisation	Introduction	Project justification	Project alternatives	Description of the proposed expansion	Legislative framework	Stakeholder consultation and engagement	Mining-induced seismicity	Land use
62	Outback Areas Community Development Trust			✓	✓	✓			
63	Outback Consultative Committee			✓	✓		✓		
64	Paul Laris and Associates			✓					
65	People for Nuclear Disarmament			✓	✓	✓			
66	Port Adelaide Residents' Environment Protection Group				✓				
67	Port Augusta City Council			✓	✓	✓			
68	Port Augusta Coastal Homes Association			✓	✓	✓	✓		
69	Roxby Districts Sporting Club	✓							
70	Roxby Downs Bowling Club	✓							
71	Roxby Downs Community Board						✓		
72	Roxby Downs Council			✓	✓	✓			
73	Roxby Downs Riding Club Inc.	✓							
74	Roxby Downs Swimming Club								
75	Roxby Downs Tennis Club	✓							
76	Roxby Rogues Cricket Club	✓							
77	Roxstop Action			✓					
78	SA Unions			✓			✓		
79	Save Point Lowly			✓			✓		
80	School of Biological Sciences, Flinders University			✓					
81	South Australian Recreational Fishing Advisory Council			✓					
82	South Australian Tourism Commission								
83	Spencer Gulf and West Coast Prawn Fishermen's Association			✓		✓			
84	The Elliston Concept			✓	✓				
85	The Macleay Nuclear Free Alliance			✓		✓			
86	The University of Adelaide			✓					
87	Toowoomba and Region Environmental Council				✓				
88	United Nations Association of Australia, South Australia			✓	✓	✓			
89	University of Melbourne								
90	Whyalla Economic Development Board			✓	✓				
91	Whyalla Lab Gribbles			✓					
92	Women's International League for Peace and Freedom			✓		✓			
93	Wilderness Society – form letter			✓					
94	Woomera and Districts Football League	✓							
95	Worms SA			✓			✓		

Topography and soils	Surface water	Groundwater	Greenhouse gas	Air quality	Noise and vibration	Terrestrial ecology	Marine environment	Aboriginal cultural heritage	Non-Aboriginal cultural heritage	NT Transport option	Social environment	Traffic	Visual amenity	Economic assessment	Health and safety	Radiation	Product stewardship and the nuclear fuel cycle	Rehabilitation and closure	Environmental management framework	Cumulative effects	Hazard and risk	Submissions on commitments
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Submission Number	Name / Organisation	Introduction	Project justification	Project alternatives	Description of the proposed expansion	Legislative framework	Stakeholder consultation and engagement	Mining-induced seismicity	Land use
96	Abayasekara			✓					
97	Abrahams			✓		✓			
98	Allen			✓					
99	Amery-Gale			✓					
100	Anderson			✓					
101	Andrew			✓					
102	Arnold			✓	✓		✓		
103	Ashton								
104	Auhl								
105	Badger			✓					
106	Baker			✓	✓				
107	Bambridge			✓					
108	Banfield			✓					
109	Bannon			✓					
110	Beare			✓					
111	Beinke			✓					
112	Belder			✓		✓			
113	Bell								
114	Bentley			✓					
115	Bishop			✓					
116	Blakey			✓	✓	✓			
117	Bohlin			✓	✓				
118	Bonner			✓					
119	Borlace			✓	✓				
120	Bowley			✓			✓		
121	Bowshire			✓		✓			
122	Bowshire			✓	✓		✓		
123	Bramley								
124	Breuer			✓					
125	Brideson			✓		✓			
126	Burrows								
127	Burt			✓					
128	Cameron			✓					
129	Carn			✓					

Topography and soils	Surface water	Groundwater	Greenhouse gas	Air quality	Noise and vibration	Terrestrial ecology	Marine environment	Aboriginal cultural heritage	Non-Aboriginal cultural heritage	NT Transport option	Social environment	Traffic	Visual amenity	Economic assessment	Health and safety	Radiation	Product stewardship and the nuclear fuel cycle	Rehabilitation and closure	Environmental management framework	Cumulative effects	Hazard and risk	Submissions on commitments
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Table 1.1 Submissions received and the chapter in which the issues raised have been addressed

Submission Number	Name / Organisation	Introduction	Project justification	Project alternatives	Description of the proposed expansion	Legislative framework	Stakeholder consultation and engagement	Mining-induced seismicity	Land use
130	Chen					✓			
131	Christa			✓		✓			
132	Coffield-Feith					✓			
133	Connellan								
134	Costello			✓					
135	Coutts			✓			✓		
136	Cox			✓					
137	Cranswick							✓	
138	Crawford			✓	✓	✓			
139	Cross								
140	Curnow			✓					
141	Cusack			✓		✓			
142	M Cutting	✓		✓					
143	S Cutting								
144	Davies					✓			
145	Day			✓					
146	Denlay			✓					
147	Derrick			✓		✓			
148	Desmond			✓					
149	Dingle			✓					
150	Ditmore	✓							
151	Dittmann			✓					
152	Dodd					✓			
153	Dorward			✓					
154	Drisel and Bates			✓					
155	Duncan			✓					
156	Dyer			✓					
157	Dyson			✓					
158	Elliot			✓	✓		✓		
159	Engl			✓					
160	Eygenraam								
161	Alford Fisher			✓		✓			
162	Flaxman			✓					
163	Forsyth				✓				

Topography and soils	Surface water	Groundwater	Greenhouse gas	Air quality	Noise and vibration	Terrestrial ecology	Marine environment	Aboriginal cultural heritage	Non-Aboriginal cultural heritage	NT Transport option	Social environment	Traffic	Visual amenity	Economic assessment	Health and safety	Radiation	Product stewardship and the nuclear fuel cycle	Rehabilitation and closure	Environmental management framework	Cumulative effects	Hazard and risk	Submissions on commitments	
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Table 1.1 Submissions received and the chapter in which the issues raised have been addressed

Submission Number	Name / Organisation	Introduction	Project justification	Project alternatives	Description of the proposed expansion	Legislative framework	Stakeholder consultation and engagement	Mining-induced seismicity	Land use
164	Foyster								
165	D Freeman			✓					
166	P Freeman								
167	Furmage								
168	Galbraith						✓		
169	Garde			✓					
170	C Garrett			✓					
171	M Garrett			✓					
172	C Garrett			✓		✓			
173	Gerschwitz			✓			✓		
174	Gilbey								
175	Giles					✓			
176	Gillen			✓					
177	Gillis			✓	✓	✓			
178	Goodall					✓			
179	Grandison			✓					
180	S Green			✓		✓			
181	M Green			✓					
182	Grillo			✓		✓			
183	Groth			✓	✓				
184	Gustard								
185	Hack			✓	✓	✓			
186	Haines								
187	Hales								
188	Leonie Hall								
189	Lisa Hall			✓					
190	Leonie Hall – second submission								
191	Halyburton								
192	Hardman			✓					
193	Havercroft			✓					
194	Hayward			✓			✓		
195	Haywood	✓							
196	Henderson			✓		✓			
197	Henwood					✓			

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Submission Number	Name / Organisation	Introduction	Project justification	Project alternatives	Description of the proposed expansion	Legislative framework	Stakeholder consultation and engagement	Mining-induced seismicity	Land use
198	Hewett								
199	Higginbottom			✓					
200	Hodza								
201	S Hollingworth-Hughes			✓					
202	C Hollingworth-Hughes			✓					
203	L Hollingworth-Hughes			✓					
204	Hovey			✓		✓			
205	Howe			✓					
206	Hudson			✓	✓	✓			
207	Hughes			✓					
208	P Hunt	✓			✓	✓			
209	P Hunt – second submission			✓					
210	Hunter			✓		✓			
211	P Huxtable	✓		✓	✓	✓	✓		✓
212	A Huxtable			✓	✓	✓	✓		✓
213	Ireland			✓	✓	✓	✓		✓
214	Irvine								
215	Isis			✓					
216	Jecks			✓	✓	✓			
217	Johnson			✓		✓			
218	Joshi								
219	Keil			✓	✓				
220	Kelleher								
221	A Kelly			✓					
222	T Kelly								
223	Kemp	✓							
224	Keyes		✓	✓	✓		✓		
225	Kidner			✓					
226	Kinnear			✓					✓
227	Kirby			✓	✓				
228	Kirkham			✓					
229	Koser								
230	Koukourou			✓			✓		
231	Kranz								

Topography and soils	Surface water	Groundwater	Greenhouse gas	Air quality	Noise and vibration	Terrestrial ecology	Marine environment	Aboriginal cultural heritage	Non-Aboriginal cultural heritage	NT Transport option	Social environment	Traffic	Visual amenity	Economic assessment	Health and safety	Radiation	Product stewardship and the nuclear fuel cycle	Rehabilitation and closure	Environmental management framework	Cumulative effects	Hazard and risk	Submissions on commitments
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Submission Number	Name / Organisation	Introduction	Project justification	Project alternatives	Description of the proposed expansion	Legislative framework	Stakeholder consultation and engagement	Mining-induced seismicity	Land use
232	Kunnel								
233	Lad			✓	✓				
234	Lambrechtsen	✓							
235	P Langley	✓							
236	P Langley – second submission								
237	P Langley – third submission								
238	Lapans			✓	✓				
239	Leaf								
240	Lerc			✓			✓		
241	Lewis			✓		✓			
242	B Lock			✓					
243	J Lock			✓					
244	Luesby			✓					
245	MacDonald					✓			
246	Mackinnon								
247	Madigan			✓		✓			
248	Maizey			✓		✓	✓		
249	Major			✓	✓				
250	Marlow			✓					
251	Marsh					✓	✓		
252	Marshall			✓					
253	Maxwell			✓					
254	Mayer			✓		✓			
255	McBride			✓	✓	✓			
256	McCabe			✓	✓				
257	McGovern						✓		
258	McKinley			✓		✓			
259	Megget	✓							
260	Mildren								
261	Millbank			✓	✓		✓		
262	Moore								
263	Morgan			✓	✓	✓	✓		✓
264	Moten			✓					
265	Mudd			✓		✓			

Topography and soils	Surface water	Groundwater	Greenhouse gas	Air quality	Noise and vibration	Terrestrial ecology	Marine environment	Aboriginal cultural heritage	Non-Aboriginal cultural heritage	NT Transport option	Social environment	Traffic	Visual amenity	Economic assessment	Health and safety	Radiation	Product stewardship and the nuclear fuel cycle	Rehabilitation and closure	Environmental management framework	Cumulative effects	Hazard and risk	Submissions on commitments
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Table 1.1 Submissions received and the chapter in which the issues raised have been addressed

Submission Number	Name / Organisation	Introduction	Project justification	Project alternatives	Description of the proposed expansion	Legislative framework	Stakeholder consultation and engagement	Mining-induced seismicity	Land use
266	Murphy			✓	✓	✓			
267	Mushalik			✓	✓				
268	Mylius								
269	Nicholls			✓					
270	Nicholson								
271	Nield			✓					
272	Nistico			✓	✓	✓	✓		
273	P Noble				✓	✓			
274	J Noble				✓		✓		
275	Nuss			✓					
276	O'Riley						✓		
277	Organ			✓					
278	Owen				✓	✓			
279	Owers								
280	Paris								
281	Parker						✓		
282	Paterson			✓					
283	Pavey			✓					
284	Payton			✓					
285	D Pearce			✓					
286	G Pearce								
287	Pearson			✓	✓	✓			
288	Hon Liz Penfold			✓					
289	Philippa			✓		✓			
290	Pidun			✓	✓				
291	Poole			✓					
292	Pope			✓					
293	Power								
294	Prenzel			✓					
295	Priede			✓					
296	Priest					✓			
297	Quilty			✓					
298	Quinn			✓					
299	Rainow			✓		✓			

Topography and soils	Surface water	Groundwater	Greenhouse gas	Air quality	Noise and vibration	Terrestrial ecology	Marine environment	Aboriginal cultural heritage	Non-Aboriginal cultural heritage	NT Transport option	Social environment	Traffic	Visual amenity	Economic assessment	Health and safety	Radiation	Product stewardship and the nuclear fuel cycle	Rehabilitation and closure	Environmental management framework	Cumulative effects	Hazard and risk	Submissions on commitments
			✓	✓													✓					
											✓			✓							✓	
							✓				✓	✓										
					✓		✓				✓	✓				✓				✓		
					✓		✓				✓	✓										
							✓			✓												
		✓					✓				✓											
						✓											✓					
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							✓				✓											
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			✓				✓							✓			✓					✓
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						✓																
			✓																			
														✓	✓		✓					

Table 1.1 Submissions received and the chapter in which the issues raised have been addressed

Submission Number	Name / Organisation	Introduction	Project justification	Project alternatives	Description of the proposed expansion	Legislative framework	Stakeholder consultation and engagement	Mining-induced seismicity	Land use
300	Rankine								
301	Read			✓					
302	Redman			✓	✓				
303	Rich								
304	Roberts			✓					
305	Rosewarne			✓					
306	Rowe			✓		✓			
307	A Rowlands								
308	T Rowlands			✓					
309	Rozali			✓		✓			
310	Rozee			✓	✓				
311	Saint					✓			
312	Satchell			✓					
313	G Scarman			✓		✓			
314	T Scarman								
315	R Scarman			✓		✓			
316	Schaar								
317	Schild			✓					
318	Schnelboegl	✓		✓		✓			✓
319	Schultz			✓					
320	Sherwen			✓					
321	Simpson								
322	Skepper			✓	✓				
323	Skoog-Smith	✓							
324	Sleep			✓					
325	L Smith								
326	R Smith			✓		✓			
327	Spangenberg			✓					
328	Spencer			✓					
329	Starr			✓					
330	Steele			✓					
331	Stevens			✓	✓	✓	✓		
332	Stone			✓					
333	R and B Strongman				✓		✓		

Topography and soils	Surface water	Groundwater	Greenhouse gas	Air quality	Noise and vibration	Terrestrial ecology	Marine environment	Aboriginal cultural heritage	Non-Aboriginal cultural heritage	NT Transport option	Social environment	Traffic	Visual amenity	Economic assessment	Health and safety	Radiation	Product stewardship and the nuclear fuel cycle	Rehabilitation and closure	Environmental management framework	Cumulative effects	Hazard and risk	Submissions on commitments
																	✓					
						✓										✓					✓	
					✓	✓	✓	✓		✓	✓					✓	✓					✓
			✓					✓								✓	✓					
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		✓	✓			✓				✓							✓					
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							✓															✓
				✓			✓				✓											

Table 1.1 Submissions received and the chapter in which the issues raised have been addressed

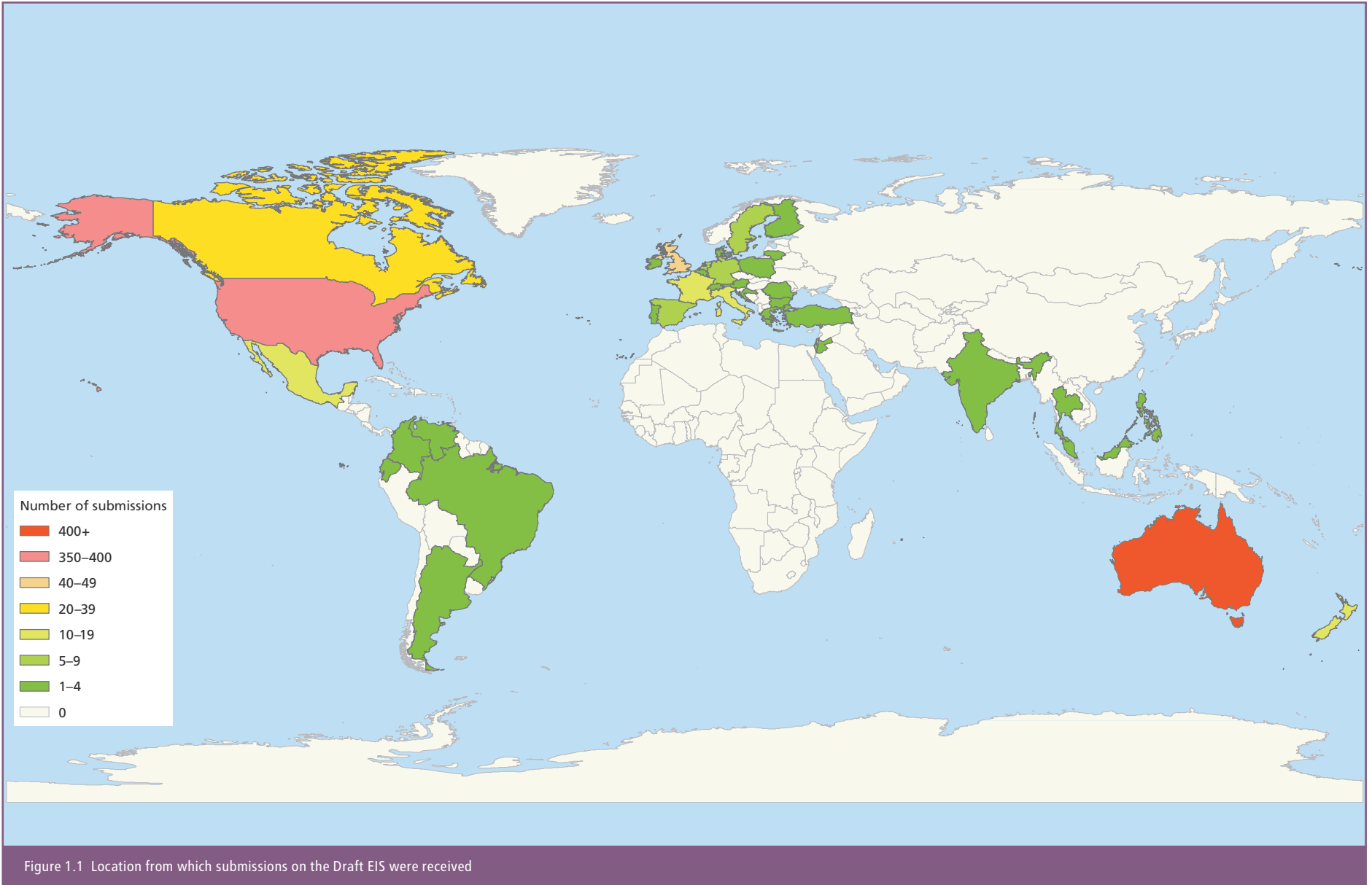
Submission Number	Name / Organisation	Introduction	Project justification	Project alternatives	Description of the proposed expansion	Legislative framework	Stakeholder consultation and engagement	Mining-induced seismicity	Land use
334	D Strongman			✓			✓		
335	Sunners			✓	✓	✓			
336	A Taylor			✓					
337	R Taylor			✓					
338	K Taylor			✓					
339	Tedi								
340	Thomas			✓					
341	Thompson, Dudley and Smith				✓	✓			
342	Thwaites			✓					
343	Tonkin			✓					
344	Toomer			✓					
345	Tschirner			✓					
346	T Turner			✓	✓	✓	✓		
347	T Turner – second submission								
348	D Turner	✓		✓	✓	✓			
349	M Turner			✓					
350	Vander Giessen			✓					
351	Veitch			✓		✓			
352	Walker			✓		✓			
353	Walsh			✓					
354	Walters			✓			✓		
355	E and J Ward				✓				
356	J Ward			✓					
357	Warner				✓		✓		✓
358	Waters			✓					
359	M Webb								
360	M Webb – second submission								
361	Weedall								
362	J Wells	✓							
363	J Wells – second submission			✓	✓	✓			
364	Welsh			✓					
365	A White								
366	A White – second submission								
367	A White – third submission								

Topography and soils	Surface water	Groundwater	Greenhouse gas	Air quality	Noise and vibration	Terrestrial ecology	Marine environment	Aboriginal cultural heritage	Non-Aboriginal cultural heritage	NT Transport option	Social environment	Traffic	Visual amenity	Economic assessment	Health and safety	Radiation	Product stewardship and the nuclear fuel cycle	Rehabilitation and closure	Environmental management framework	Cumulative effects	Hazard and risk	Submissions on commitments
							✓															
		✓	✓														✓					
			✓																			
			✓							✓							✓					
						✓																
						✓	✓															
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											✓											
											✓											
											✓											

Table 1.1 Submissions received and the chapter in which the issues raised have been addressed

Submission Number	Name / Organisation	Introduction	Project justification	Project alternatives	Description of the proposed expansion	Legislative framework	Stakeholder consultation and engagement	Mining-induced seismicity	Land use
368	P White								
369	Philippa Williams								
370	Pamela Williams								
371	D Williams								
372	J Wilson			✓					
373	K Wilson								
374	A Wilson			✓					
375	Wise			✓					
376	Wittwer			✓					
377	Woodworth				✓				
378	Yelland			✓					
379	Yetzotis								
380	York								
381	Young								
382	Zidarich								
383	Mr Henry								
384	Mr Pedro	✓							
385	Concerned Shack Owner			✓	✓	✓	✓		
386	Confidential			✓	✓	✓			
387	Confidential			✓					
388	Confidential			✓		✓			
389	Confidential			✓	✓	✓			
390	Confidential								
391	Confidential	✓		✓	✓				

Topography and soils	Surface water	Groundwater	Greenhouse gas	Air quality	Noise and vibration	Terrestrial ecology	Marine environment	Aboriginal cultural heritage	Non-Aboriginal cultural heritage	NT Transport option	Social environment	Traffic	Visual amenity	Economic assessment	Health and safety	Radiation	Product stewardship and the nuclear fuel cycle	Rehabilitation and closure	Environmental management framework	Cumulative effects	Hazard and risk	Submissions on commitments
							✓															
		✓	✓											✓								
			✓														✓					
																	✓					
							✓															
		✓	✓											✓			✓	✓				
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																		✓				



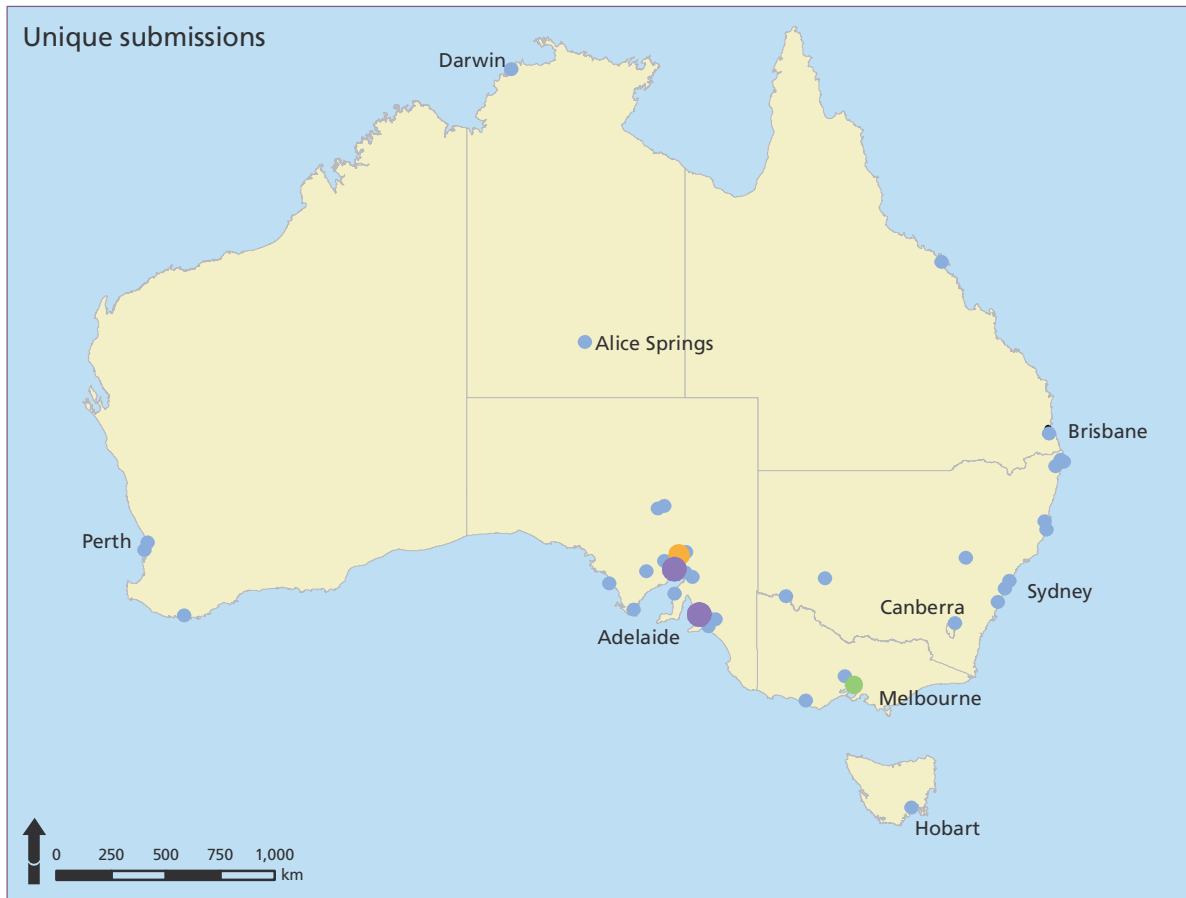
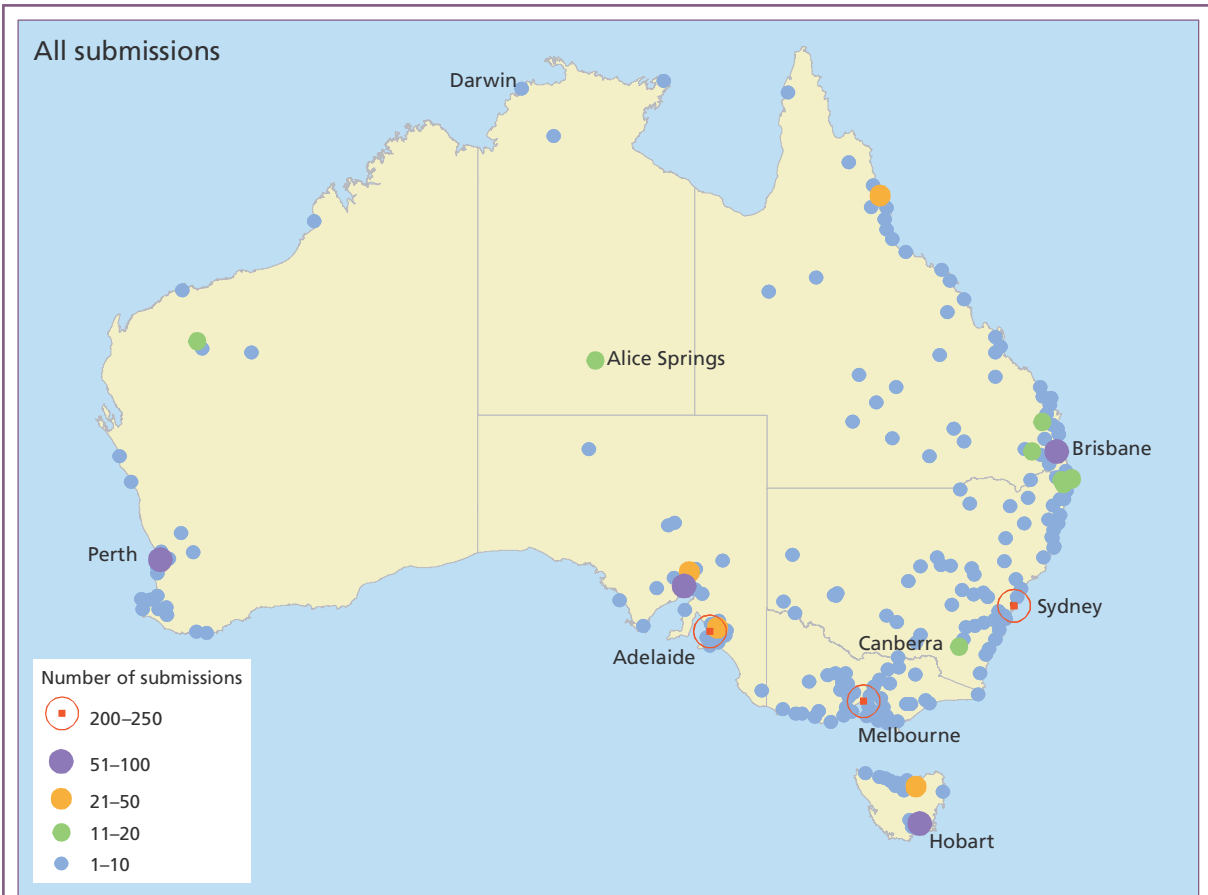


Figure 1.2 Location from which Australian submissions were received (all and unique)

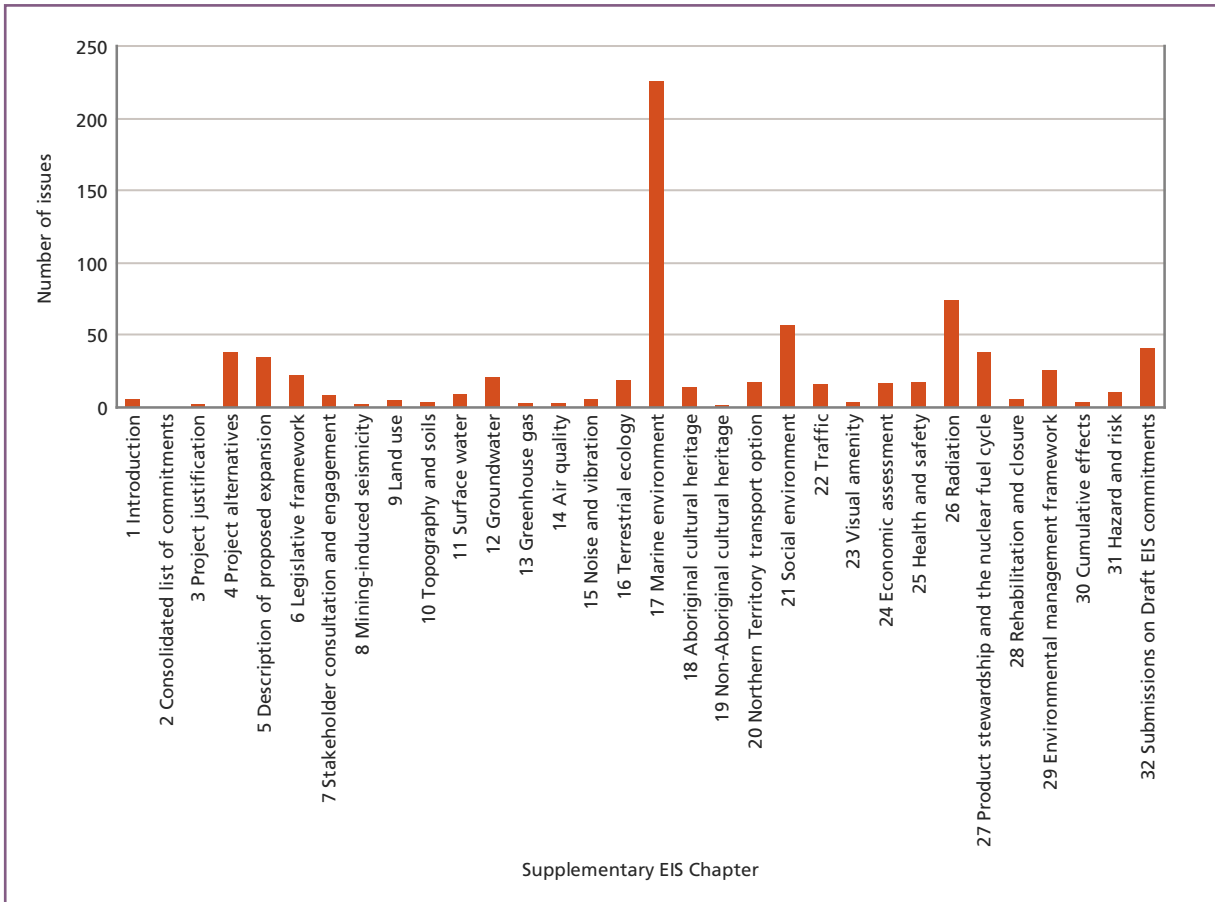


Figure 1.3 Number of issues raised for each Supplementary EIS chapter

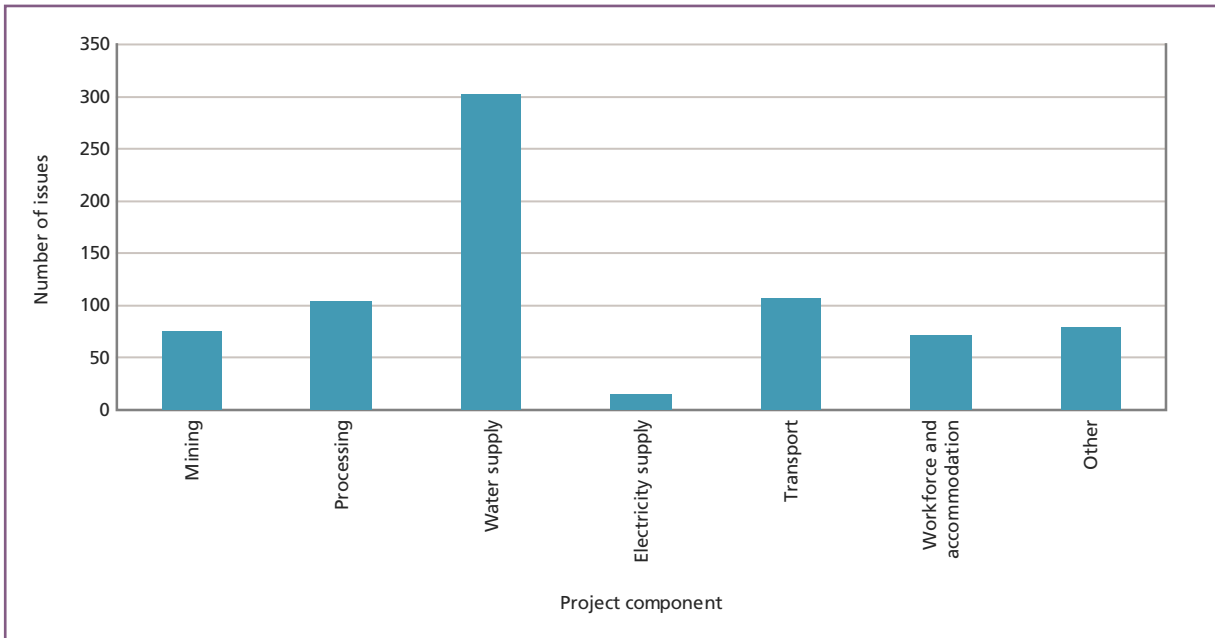


Figure 1.4 Number of issues raised against various major project components

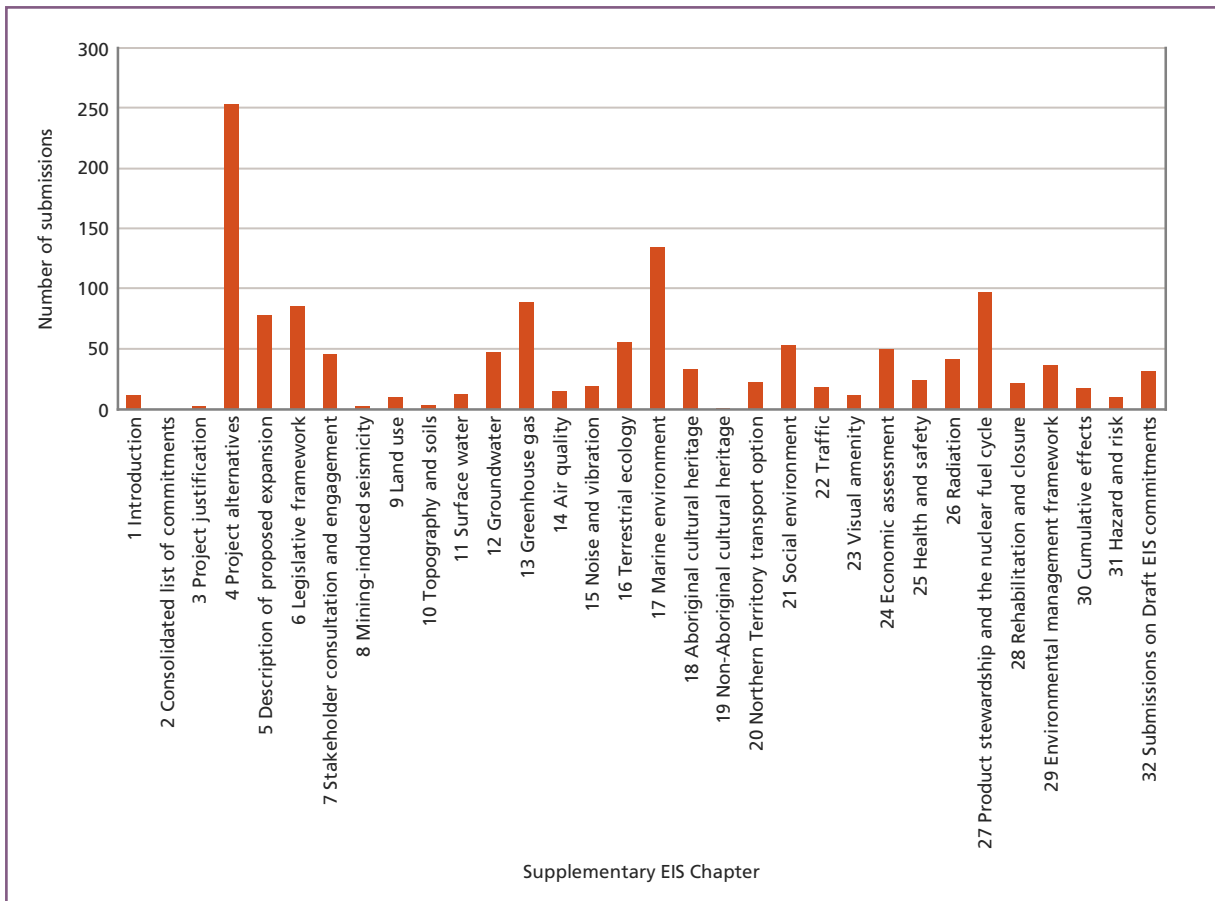


Figure 1.5 Number of submissions that raised an issue within each Supplementary EIS chapter

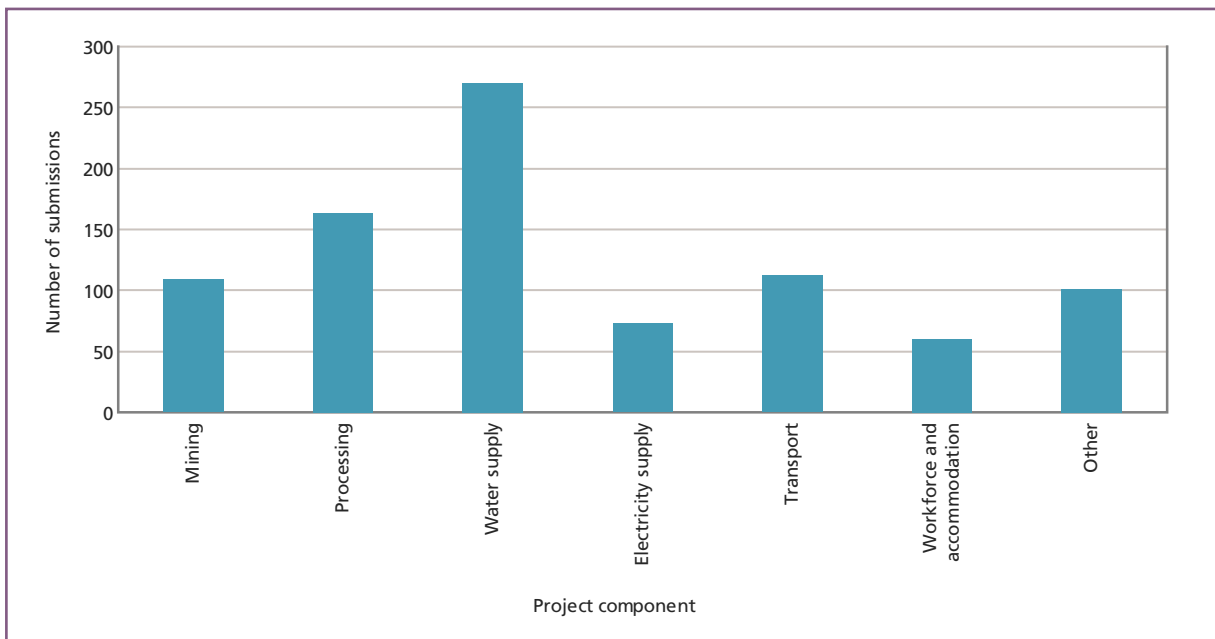


Figure 1.6 Number of submissions that raised an issue about various major project components

Table 1.2 Ten most commonly raised issues

Number of unique submissions that raised the issue	Section of Supplementary EIS issue is addressed	Summary of the issue	Issue paraphrased from the submissions received
154	4.3	Location of the desalination plant	Further justification was sought for locating the proposed desalination plant at Point Lowly, rather than on the west coast of Eyre Peninsula and the Far West Coast. A common reason for seeking justification and preferring such a location was that return water could be discharged directly into the ocean and that additional water could be made available for public consumption by local communities to supplement the existing SA Water supply.
88	13.2	Life cycle greenhouse gas implications	Further information was requested regarding the life cycle GHG implications of producing uranium and the life cycle costs of nuclear energy versus traditional fossil fuel and renewable energy sources. In addition, concerns were raised regarding the ability of state and federal emissions reduction targets to be met in the context of the increased emissions associated with the proposed expansion. Clarification was sought regarding the potential impacts of the proposed emissions trading scheme (ETS), carbon pollution reduction scheme (CPRS) and the mandatory renewable energy target (MRET) on GHG emissions from an expanded Olympic Dam.
72	6.4	Roxby Downs Indenture	<i>The Roxby Downs (Indenture Ratification) Act 1982</i> is said to provide BHP Billiton with legal privileges under South Australian legislation. Respondents asked that the indenture be repealed and that the proposed expansion of Olympic Dam be subject to all relevant Acts and standards.
70	4.3	Great Artesian Basin (GAB) water supply	It was requested that BHP Billiton phase out extraction of water from the GAB rather than increase it from the current average of 37 ML/d to the proposed 42 ML/d.
47	4.4	Renewable energy	In the context that the proposed expansion would increase the operation's greenhouse gas emissions from 1.2 to 5.9 Mt per annum, representing 14% of SA's total emissions and 1% of Australia's emissions, BHP Billiton was asked to obtain all of its electricity requirements from renewable energy sources, such as solar, wind and geothermal.
44	12.3	Reducing seepage from the TSF	Information was sought on the potential impact of seepage from the tailings storage facility (TSF), and how this impact may be reduced.
40	24.2	Diesel rebates	With the proposed increase in the use of diesel fuel, concern was raised about the monetary value of rebates BHP Billiton would receive from the Australian Government over the life of the proposed expansion. It was questioned whether the proposed expansion would be financially sustainable if these rebates were reduced or removed.
39	12.3	Effects of seepage from the TSF	Clarification was sought on several aspects of the design of the TSF, which impact on potential seepage from the TSF.
34	16.5	Bird interactions with the TSF	Further information was requested on several aspects of the interaction between the TSF and birds.
30	5.3	Design and operation of the TSF	Clarification was requested regarding some aspects of the design and operation of the proposed TSF.

1.2 HOW THE SUPPLEMENTARY EIS HAS BEEN PREPARED

Each submission received on the Draft EIS was reviewed, and questions, concerns, comments or suggestions about the proposed expansion were extracted and termed collectively an 'issue'. This document provides a response to each of the issues extracted from the submissions received.

Many of the submissions raised the same, or similar, issue/s. As such, issues have been grouped into categories and addressed under relevant chapter headings and sub-headings.

The bulk of the chapter headings in the Supplementary EIS match those that were presented in the Draft EIS. However, for clarity, six new chapters have been provided: Consolidated List of Commitments (Chapter 2), Greenhouse Gas (Chapter 13), NT Transport Option (Chapter 20), Traffic (Chapter 22), Radiation (Chapter 26), and Product Stewardship and the Nuclear Fuel Cycle (Chapter 27).

The structure of each chapter notes the issue raised, identifies the submission/s that raised the issue by means of the unique identification number listed in Table 1.1, and then provides a response to the issue. This question and answer approach is repeated throughout the document under grouped headings and sub-headings.

Where relevant, the response to the issue clarifies information already provided in the Draft EIS. However, in most cases the response includes findings from additional studies undertaken following the publication of the Draft EIS. These studies were undertaken either as a natural part of a progressing development project, or as a direct result of the submissions received.

In some cases, the response to an issue has led BHP Billiton to provide a commitment that is additional to those provided in the Draft EIS. The complete list of commitments for the proposed Olympic Dam expansion, and therefore those identified in the Draft EIS and those generated as a result of addressing issues for the Supplementary EIS, is provided in Chapter 2. Chapter 32, Submissions on Commitments, specifically addresses the issues that were raised in submissions about the commitments provided in the Draft EIS. Appendix A3 provides a consolidated list of the management measures, monitoring programs and contingency measures proposed in the Draft EIS and Supplementary EIS.

The above process ensured that all comments received in response to the Draft EIS were subject to careful deliberation and were taken into account in finalising the Draft EIS.

The form of the finalised environmental impact statement is therefore made up of the Draft EIS together with the Supplementary EIS.

Where reference is made to submitting applications to agencies of the South Australian Government for approval, BHP Billiton intends making those submissions under clause 7 of the indenture scheduled to the *Roxby Downs (Indenture Ratification) Act 1982*.

The study team that contributed to the development of the Supplementary EIS and the accompanying appendices is listed in Appendix A4.

1.3 ISSUES OUTSIDE THE SCOPE OF THE SUPPLEMENTARY EIS

Some submissions provided commentary on issues that was specifically addressed to government, rather than to BHP Billiton or the proposed expansion of Olympic Dam. These issues are outside the scope of the Supplementary EIS. Some submissions (numbers 58, 150, 195, 223, 234, 235, 362 and 384 as per Table 1.1) raised an objection to the proposed expansion but provided no direct reason or question to be addressed in the Supplementary EIS.

Appendix F4 of the Draft EIS provided the complete Roxby Downs Draft Master Plan.

BHP Billiton prepared the Draft Plan on behalf of, and in close collaboration with, the South Australian Government and the Roxby Downs Council. The Draft Plan provided a framework for how Roxby Downs may grow as a result of the proposed expansion of the Olympic Dam mining and processing operation. The planning approval process for the Draft Plan is being led by the South Australian Government. The release of the Draft Plan for the 14-week community consultation period coincided with the release of the Draft EIS community consultation period. Nine submissions (numbers 32, 47, 48, 69, 70, 73, 75, 76 and 94 as per Table 1.1) raised questions specific to the revision of the Draft Plan (and the development of the Final Plan). These have been provided to the South Australian Government to address and respond to as part of the development planning process. Questions raised in submissions that are relevant to the impact assessment of the expanded Olympic Dam operation only have been included in the Supplementary EIS. All other issues specific to the finalisation of the Roxby Downs Master Plan are outside the scope of the Supplementary EIS.

1.4 ALTERATIONS, CLARIFICATIONS, CHANGES AND ADDITIONS

1.4.1 ALTERATIONS AND CLARIFICATIONS TO THE DRAFT EIS

Several minor alterations are to be made to information provided in the Draft EIS. These are listed in Appendix A5.

As noted in the Draft EIS, China is the preferred export destination, however final decisions on any export destinations are yet to be made and approvals obtained.

Appendix A3 to the Draft EIS also provided, for example, discussion on contractual arrangements and reporting structures in the event of copper concentrate export to China. In this regard, the following clarifying statements are made for the Supplementary EIS:

- Finalising the structure of arrangements for potential copper concentrate exports would be scheduled to align with on-site expansion activities.
- A Joint Venture structure for any export of copper concentrate is yet to be agreed.
- Appropriate safeguards would be applied as outlined throughout the Draft and Supplementary EIS for any export of copper concentrate.

All of the alterations listed in Appendix A5 and clarification statements noted above are considered minor and should not have affected the ability of an interested party to assess the merits of the proposed expansion as presented in the Draft EIS.

1.4.2 PROJECT CONFIGURATION CHANGES

Chapter 5 of the Draft EIS described in detail the scope of the proposed expansion of Olympic Dam, and chapters 9 through to 23 presented the assessment of the likely environmental, social and economic impacts and benefits arising from the construction, operation and closure of the expansion project. As noted in the Draft EIS, the expansion project is currently in what is termed for BHP Billiton internal purposes the Selection Phase, and therefore will continue to be refined through the definition phase prior to construction and operation. Parts of the expansion project may progress to definition and construction and operation at a faster rate than other parts of the project.

Either as a natural part of a progressing development project, or as a result of a response by BHP Billiton to submissions received on the Draft EIS, some changes to the project configuration are proposed, although not so as to materially alter the character of the project as originally proposed. Specifically, those changes are:

- a change to the proposed installation method for the outfall pipe associated with the desalination plant, with a tunnelling method now proposed rather than the trenching method described and assessed in the Draft EIS
- minor changes to the number and location of the proposed cells for the expanded tailings storage facility (TSF) to accommodate an additional TSF cell recently approved for the existing operation
- a realignment to the proposed access corridor linking the new landing facility on Shacks Road to the pre-assembly yard at Port Augusta West
- introducing a second access road into Olympic Dam to provide a dedicated access to the mine site from the proposed Hiltaba Village. The introduction of this new road has also presented the opportunity to duplicate or relocate some of the proposed facilities on the Special Mining Lease to take advantage of shorter travelling distances
- a revised mode of transport for ammonium nitrate to Olympic Dam.

The following provides a summary of the design concept outlined in the Draft EIS, the proposed revision to this concept and the implications of the change for each of the above-mentioned project configuration changes. The assessment of implications focuses on changes beyond that described and assessed in the Draft EIS.

Proposed desalination plant outfall pipeline installation method

Concept outlined in the Draft EIS

Section 5.7.4 of the Draft EIS proposed that the outfall pipe would be either buried for its full length, or buried in the land-based sections and laid on the seabed in the deeper waters. The method of burial was proposed to be either wheel or dredge trenching, potentially in combination with blasting where the strength of the underlying rock necessitated, followed by backfilling.

Proposed revision

Several submissions to the Draft EIS raised concerns about the use of marine blasting to install the water pipes for the proposed Point Lowly desalination plant. In response to these submissions, further geotechnical and engineering investigations have been undertaken to determine the practicality of installing these pipes by means of tunnelling rather than trenching. Findings to date have shown that the quartzite and sandstone underlying Point Lowly are of a high strength (200 to 300 MPa), and thus likely to be suitable for a tunnelling installation method.

The assessment of the intake pipe, which is aligned through a small 'beach' area rather than the rocky reef, suggests that marine blasting to install this pipe should be minimal if required at all. Therefore, trenching for the intake pipe remains the preferred installation method, and BHP Billiton has committed to tunnelling the outfall pipe. The proposed outfall pipe tunnel would originate from a launch shaft about 87 m below ground level at the desalination plant, and would follow closely the same alignment as that provided in the Draft EIS, remaining between 87 m and 35 m below ground (there are some restrictions on the angle of tunnel



Figure 1.7 Revised outfall pipe tunnelling alignment

bends and therefore some modification to the alignment may be required). The indicative alignment and extent of the proposed outfall and intake pipelines are shown on Figure 1.7. The total length of the outfall pipe has also been extended by approximately 200 m beyond that shown in the Draft EIS.

This extension is to further reduce potential impacts of return water discharge to a regionally significant sponge community (see Chapter 17, Marine Environment, for details).

Implications

There are several methods by which tunnelling of the outfall pipe could occur (e.g. horizontal directional drilling, micro-tunnelling and pipe-jacking, use of a tunnel boring machine), and more detailed geotechnical studies are required and would be undertaken prior to finalising the installation method. However, in terms of potential environmental impacts and benefits, the choice of the tunnelling method makes little difference. The main environmental implications of tunnelling versus trenching are common to each, these being:

- tunnelling would avoid the need for land-based and marine blasting for the outfall pipe
- in the high current speeds off Point Lowly in the area of the outfall pipe alignment, tunnelling would reduce sediment loads created during the installation of the pipe over a trenching method
- tunnelling would not require any surface disturbance in the Point Lowly Lighthouse Complex
- tunnelling would have less interaction with the marine ecosystems, and therefore is likely to be a lower-risk installation method in terms of potential vibration and concussion effects
- tunnelling and excavation of the launch shaft would generate up to 53,000 tonnes of spoil and some excess water at the site of the desalination plant. The spoil would be either reused on or in close proximity to the site (as it would be competent and uncontaminated material and thus of considerable use) and/or disposed of. For the purpose of the impact assessment, a worst-case approach has been assessed, which would require all of the spoil to be transported by road to Olympic Dam (see below for further discussion). Water is used as a medium to remove the spoil from the head of the tunnel and would be stored temporarily, treated to within applicable compliance limits and reused for tunnelling before it was ultimately discharged to Spencer Gulf (see Appendix A6 for details)
- tunnelling is likely to be a faster pipe installation method than trenching, however tunnelling would have a higher capital cost for installation.

As outlined above, the change to the tunnelling installation method would have less impact than that previously assessed for trenching in the Draft EIS. The exception is the generation of spoil and its disposal. As discussed in the Draft EIS, the construction of the desalination plant and associated pipelines would occur some years after open pit mining had commenced. As such, a local reuse option for the spoil would be investigated at the appropriate time in the future.

For the purpose of the Supplementary EIS, the disposal of up to 53,000 tonnes of spoil would require between 16 and 27 vehicle movements per day to be added to the existing road network. The number of vehicles (mostly B-double trucks) per day depends on the tunnel advance rate, with a faster advance rate (1.2 m/h) generating spoil more quickly and therefore more vehicles, but over a shorter timeframe (estimated to be about three months). The slower advance rate (0.6 m/h) would require fewer vehicles but over a longer period (estimated to be about six months). Including a provision for maintenance to the tunnelling equipment, the total construction time for the launch shaft and tunnel is estimated at eight months.

The assessment of increased traffic volumes, taking into account the 27 vehicles per day and thus the upper end of the predicted range, found that no road closures would be required and the level of service along major roads between the desalination plant and Olympic Dam would not change from the current level of service (see Appendix A6 for details). It was also identified that the existing intersection on Port Bonython Road and the Lincoln Highway would continue to operate at the same level of service (LoS 'B'). The minor increase in traffic volumes at this intersection indicates that the average delay for vehicles undertaking a right turn from Port Bonython Road onto the Lincoln Highway would increase from 12.2 to 14.2 seconds during peak movements. Therefore, while local reuse of the material would be investigated, the worst-case proposal to truck all of the spoil back to Olympic Dam would increase road movements but this would have a negligible effect on the existing road network.

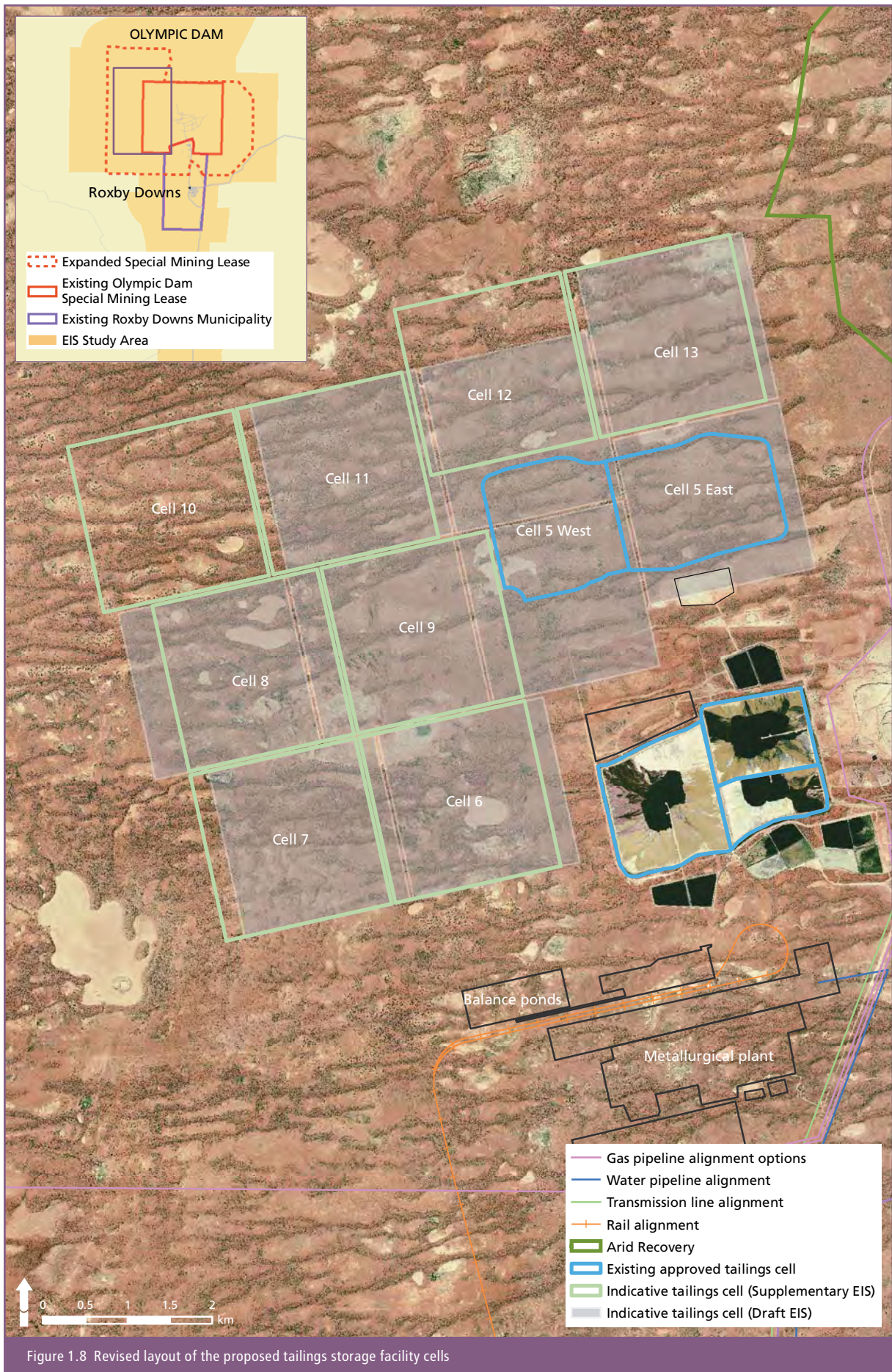
Tailings storage facility – relocation of cells

Concept outlined in the Draft EIS

Section 5.5.6 of the Draft EIS discussed the proposed construction and operation of the eight main tailings cells and the additional contingency cell. The proposed location of these cells was illustrated in Figure 5.8 of the Draft EIS.

Proposed revision

Since the publication of the Draft EIS, the existing Olympic Dam operation has received approval for the construction of an additional TSF cell (Cell 5, about 480 ha in area). This new cell is proposed to replace the existing TSF Cells 1 to 4 (totalling about 400 ha) as they reached their final design height and were decommissioned and rehabilitated. Cell 5 is also of sufficient size to avoid the need for a ninth contingency cell as described and assessed in the Draft EIS. Figure 1.8 of the Supplementary EIS illustrates the original and revised location of the TSF cells.



Implications

The relocation of the TSF cells does not constitute a material change to the environmental assessment presented in the Draft EIS. In particular, it does not affect the project's air quality or noise predictions, potential impacts on sites of cultural heritage significance or radiation dose estimates.

Groundwater modelling of the revised TSF layout has been undertaken, taking into account both the revised location of the proposed TSF cells and the revised seepage rates associated with the addition of TSF Cell 5 and the removal of the ninth contingency cell. The results of the revised groundwater model are provided in Section 12.2 of the Supplementary EIS and demonstrate that seepage rates and groundwater mounding beneath the TSF continue to be within the range of effects presented in the Draft EIS.

The fate and transport of seepage from the proposed TSF cells are discussed in Sections 12.3 and 11.4 of the Supplementary EIS, and this confirms that seepage would continue to be attenuated in the calcareous clays and limestone underlying the TSF cells and would continue to move, over time, into the open pit void post-closure.

Also, as shown on Figure 1.9, the relocated cells do not impact known locations of threatened fauna. The removal of the ninth contingency cell reduces the extent of vegetation clearance for the expansion project by 400 ha. However, the total disturbance area for the combined existing and expansion project increases by 80 ha (Cell 5, 480 ha; see Figure 1.9). This additional clearance occurs within well-represented and widely distributed vegetation associations and, as such, the cumulative impact remains unchanged from that presented in the Draft EIS (i.e. a moderate impact reflecting an effect but within compliance limits/standards).

Access corridor – proposed realignment

Concept outlined in the Draft EIS

A description of the access corridor linking the proposed landing facility to the Port Augusta pre-assembly yard was provided in Section 5.9.4 of the Draft EIS, with the proposed alignment illustrated on Figure 5.48.

Proposed revision

The alignment of the proposed access corridor from the landing facility to the pre-assembly yard has been relocated to be nearer to the Port Augusta airport and on a revised route around the proposed airport housing estate in line with community and South Australian Government requests. The original and revised alignments are shown in Figure 1.10 and discussed in further detail in Section 5.7.3 of the Supplementary EIS.

Implications

Other than noise, there are no changes to that assessed in the Draft EIS.

The revised alignment would reduce the potential noise impacts at eight residences by increasing the distance between them and the proposed access corridor and eight residences. The revised alignment would also increase the distance between the access corridor and an area proposed for future residential development.

New mine access road and on-site facilities

Concept outlined in the Draft EIS

Sections 5.9.4 and 19.5.6 of the Draft EIS discussed the proposed new access road from the northern intersection of the heavy vehicle bypass and Olympic Way to a new main gate at Olympic Dam (see Figure 1.11). The new western access road would be two lanes in both directions, separated by a median strip, and would therefore provide for the safe movement of traffic to the existing and expanded metallurgical processing section of the operation. The western access road would be a private road, although it would be open to the public for access to the Olympic Dam main gate.

At the time of publishing the Draft EIS, it was envisaged that the workforce accommodated at Hiltaba Village would be bussed to Olympic Dam along Andamooka Road, the heavy vehicle bypass, Olympic Way and the new western access road.

Proposed revision

A second entry gate and eastern access road providing a direct link between Hiltaba Village and Olympic Dam is now proposed. Figure 1.11 shows the location of the newly proposed eastern access road linking Hiltaba Village to the open pit mining area of the expanded operation. This road, together with a second entry gate as shown on Figure 1.11, would provide a second point of access to Olympic Dam. It is proposed that the mining-related workforce would be bussed to Olympic Dam along the eastern access road, while the processing-related and administrative workforce would be bussed along Andamooka Road and the western access road as described in the Draft EIS.

The addition of the eastern access road also creates the opportunity to provide additional on-site facilities, or relocate proposed facilities, to improve access to these facilities and reduce on-site travel times. The relevant facilities are shown in Figure 1.11 and include the on-site desalination plant, an additional mine maintenance area, and an additional laydown area for mining equipment.

Implications

The main implications of this change are (see Appendix A6 for details):

- Noise: The eastern access road would be constructed in the early stages of the expanded project, likely to be concurrent with the construction of the first stage of Hiltaba Village. As such, noise generated from the construction of the new road would

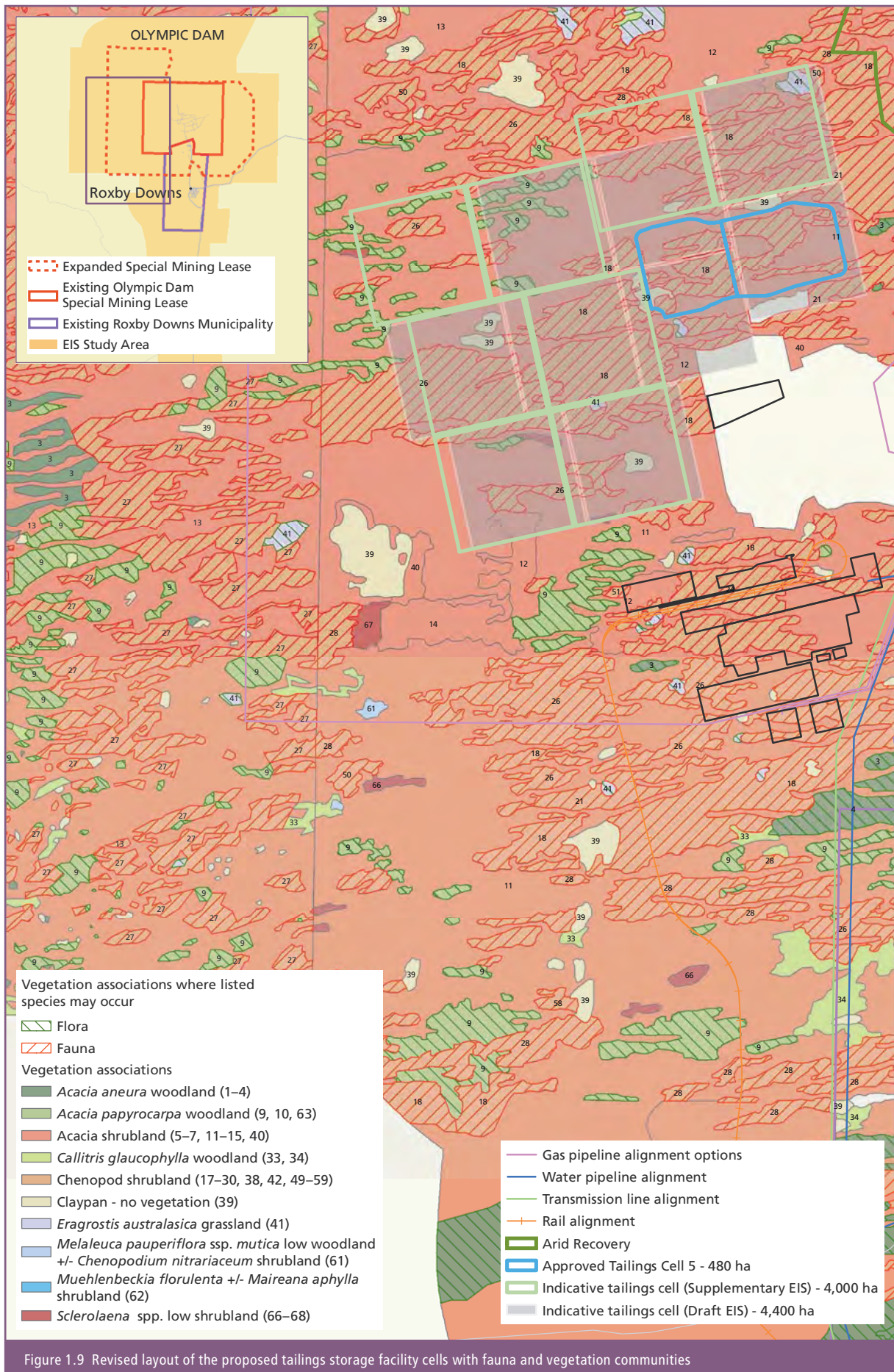




Figure 1.10 Revised access corridor route

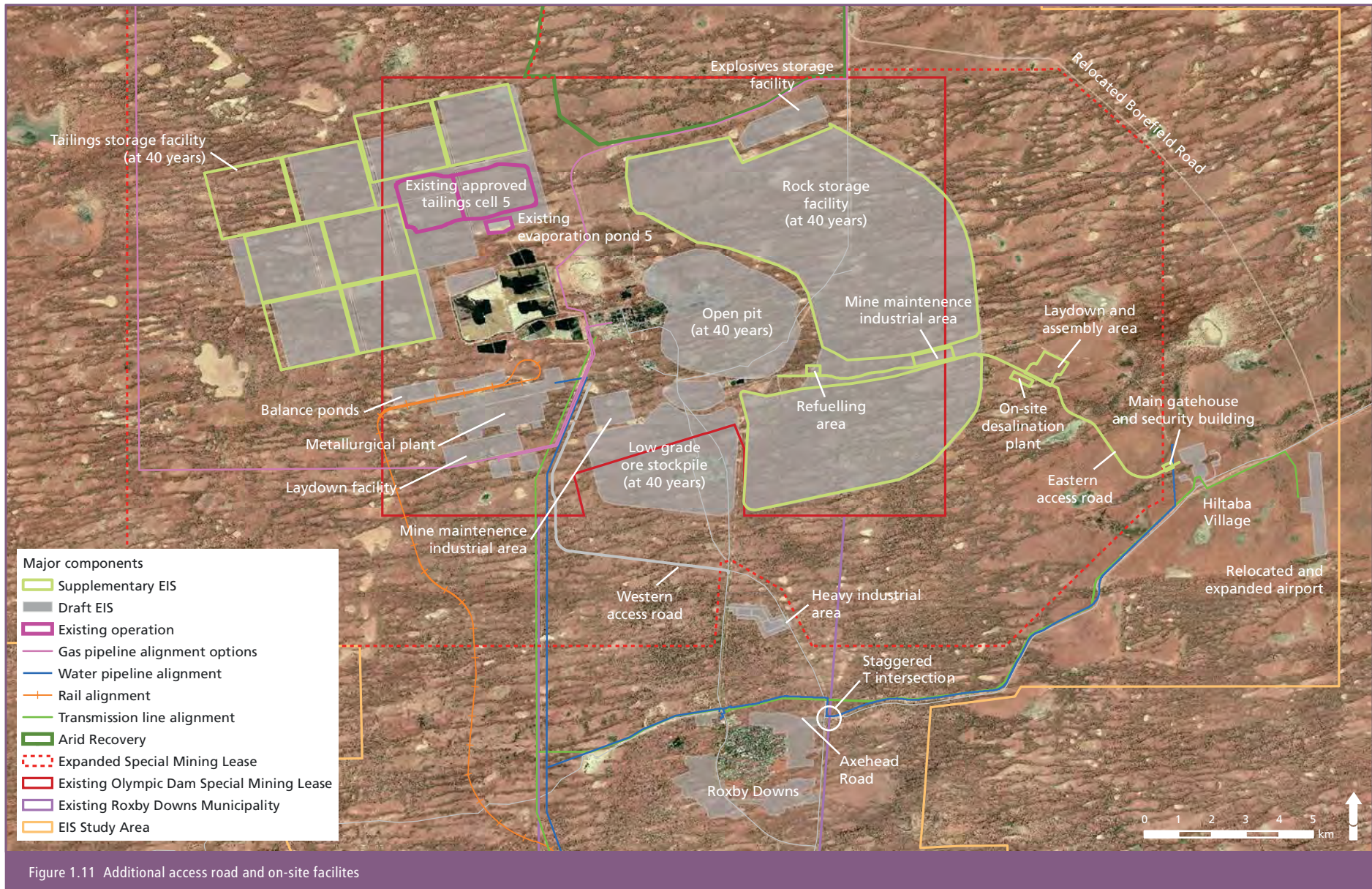


Figure 1.11 Additional access road and on-site facilities

not impact residents at Hiltaba Village. In terms of the operational phase, the most significant source of noise would be from the additional mine maintenance and industrial area located adjacent to the new road and close to the rock storage facility (see Figure 1.11). Noise modelling of anticipated activities from this facility, unmitigated, predict that under worst-case meteorological conditions (i.e. winds blowing towards sensitive receptors and/or temperature inversions) noise levels at the most northern residential areas of Roxby Downs and at Hiltaba Village would increase by 1 dB and 7 dB respectively above that reported in the Draft EIS (see Appendix A6 for details). These levels are within compliance limits for Roxby Downs, but exceed night-time compliance limits for Hiltaba Village. As such, management measures would be applied to ensure compliance. Noise modelling has shown that compliance with night-time noise limits can be achieved by avoiding the use and/or testing of haul truck air horns while at the facility, or if this activity was necessary, by enclosing an area with acoustic shielding for the use and/or testing of the air horns (see Appendix A6 for details).

- **Fauna and flora:** The new road and additional facilities would require the clearing of an additional 130 ha of vegetation. The vegetation communities to be cleared are widespread throughout the Olympic Dam region and have not been found to support flora or fauna species listed under Australian or state government legislation (see Appendix A6 for details).
- **Aboriginal cultural heritage:** While disturbance beyond that described in the Draft EIS would be required to accommodate the newly proposed road and additional facilities, this clearing would occur in the expanded Special Mining Lease. The Olympic Dam Agreement signed between BHP Billiton and the Aboriginal groups with a native title interest in this area provides an agreed procedure for managing potential impacts associated with these newly proposed activities.
- **Social:** Potential social impacts are essentially associated with traffic. The Draft EIS assessed all traffic entering Olympic Dam via the western access road, whereas traffic volumes will now be split between the western and eastern access roads. This has the effect of reducing traffic numbers along Olympic Way and the western access road, but increasing traffic numbers along Axehead Road and Andamooka Road (see Appendix A6 for details). The main implication of this traffic increase would be a reduction in the level of service and operating capacity of the staggered 'T' intersection of Axehead Road, the heavy vehicle bypass and Andamooka Road (see Figure 1.12). The level of service for the Axehead Road/ heavy vehicle bypass intersection during the peak of the construction phase would reduce from a level A to a level B, whereas the heavy vehicle bypass intersection during peak construction traffic would reduce from a level C to a level D (noting that LoS is a measure of delay for an intersection and a LoS of 'D' is considered within acceptable limits although a LoS of 'C' is preferred and more comfortable for drivers). The operating capacity of any given intersection can be measured by the 'degree of saturation' (DoS) of turning movements, with a DoS lower than 0.85 typically being an intersection operating within a safe capacity (i.e. operating at less than 85% of its capacity). Based on traffic volume predictions for the expanded operation, the DoS for the staggered 'T' intersection at times of peak traffic flows would increase from 0.1 to 0.2. As such, the proposed traffic volumes would operate well within the design capacity of the intersection. However, neither the intersection nor Andamooka Road is an approved network route for the safe movement of Restricted Access Vehicles (RAVs) such as B-doubles, double and triple road trains. As such, BHP Billiton would collaborate with the South Australian Department of Transport, Energy and Infrastructure (DTEI) to develop an appropriate strategy for the intersection and Andamooka Road to allow the movement of RAVs to the proposed eastern access gate.
- **Health and safety:** The mine maintenance industrial area would be a designated radiation work area, with workers in this facility declared as radiation workers and therefore subject to the Olympic Dam radiological protection program as described in the Draft EIS (e.g. routine monitoring and a requirement that at the beginning of shift workers change into work clothes, and at the end of shift they shower and change into street clothes). As a designated radiation area, any material leaving the area to go off-site would require radiation clearances. The area would be designed for ease of clean-up, including washdown facilities. It is expected that radiation doses to full-time workers in the area would be similar to the metallurgical plant workers (i.e. up to 3 mSv/y). Further to radiological issues, this project configuration change would see a controlled interaction of the mining fleet and buses transporting the workforce from Hiltaba Village to the mine site. This interaction would be managed via grade separated roads (e.g. underpasses) and active traffic management controls (e.g. signalised crossing points for at-grade intersections). The management of potential rock fall from dumping at the RSF outer face would be managed via standard engineering controls (e.g. catch banks, fences).

Transport of ammonium nitrate

Concept outlined in the Draft EIS

The transport of ammonium nitrate was initially to be via rail to the Pimba intermodal facility, followed by road transport to Olympic Dam. Once the rail spur from Pimba to Olympic Dam was constructed and operational, the transport of ammonium nitrate was to be by rail from the point of origin to Olympic Dam.

It is noted that ammonium nitrate supplied to the existing Olympic Dam operation is a dry prill type, which is delivered in one tonne bulk bags via road transport from Newcastle, New South Wales.

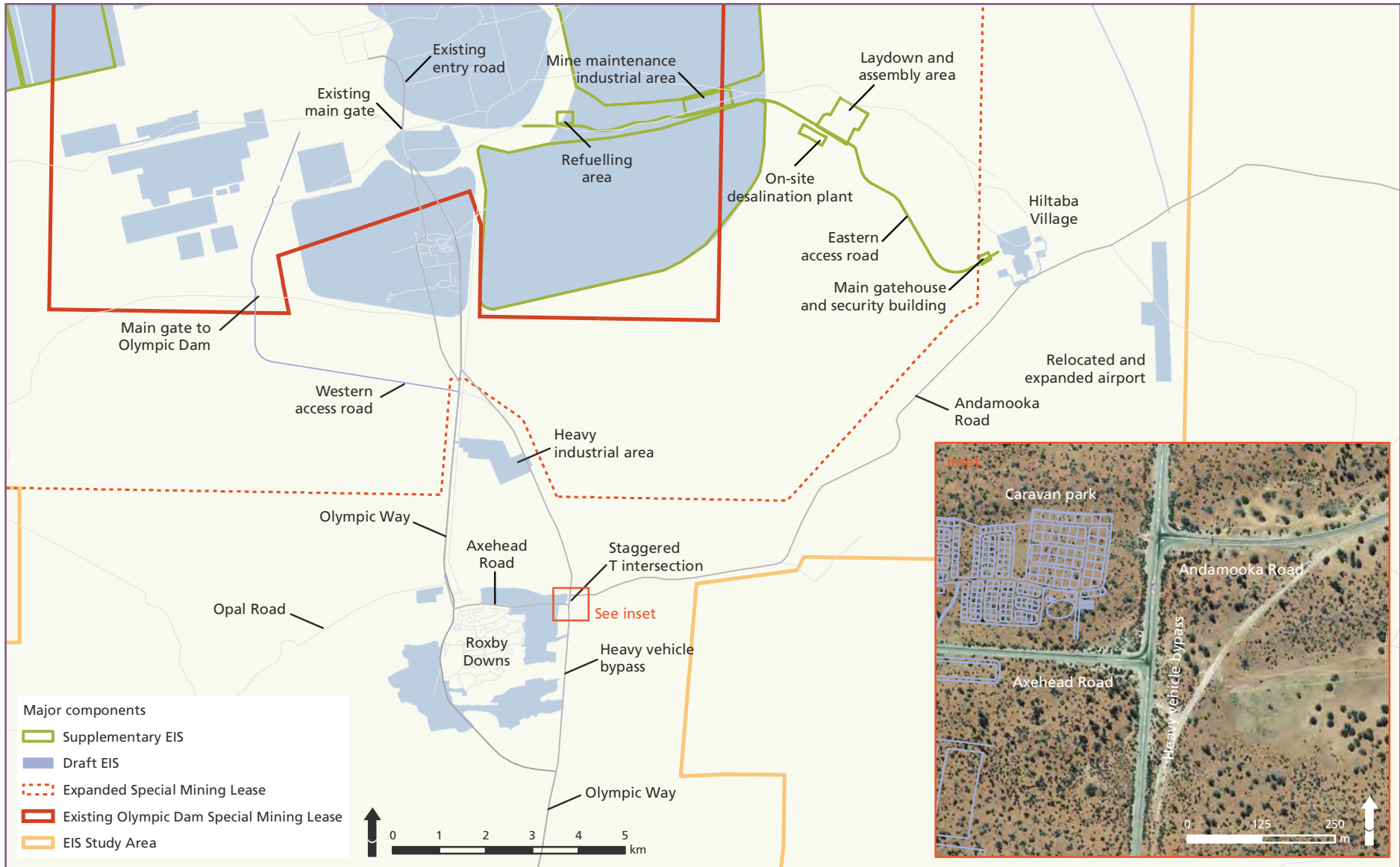


Figure 1.12 Proposed mine access roads and staggered 'T' intersection

Proposed revision

Following discussions with the South Australian Government, the transport of ammonium nitrate is to be by road from its point of origin to Olympic Dam. Similar to the existing deliveries to Olympic Dam, the expansion is proposing to retain a road-based solution of ammonium nitrate in the initial years while working in co-operation with the SA Government authorities to further assess other options.

Once the rail spur was constructed and operational, BHP Billiton would hold further discussions with the government to identify a rail-based solution for the material that could be approved by the South Australian Government and was operationally sustainable over the project life.

For context, ammonium nitrate is classified as Security Sensitive Ammonium Nitrate (SSAN) under South Australian legislation and is regulated as a special sub-set of explosive materials. Whether transported by road or rail, it is considered an oxidising agent with strict handling and security arrangements required, in addition to specified separation distances to account for the potential explosive nature of the material.

Implications

Other than traffic volumes and the associated risk profile of transporting ammonium nitrate by road, there are no changes to that assessed in the Draft EIS. The issues of traffic volumes and risk are discussed below.

Ammonium nitrate for the existing Olympic Dam operation is sourced from Newcastle and it is assumed that ammonium nitrate for the expanded operation would also be sourced from Newcastle. As with the existing operation, the transport of this material would take the most direct route, being along the Barrier Highway, the Princes Highway, Stuart Highway and the Olympic Dam – Pimba Road.

The anticipated volumes of ammonium nitrate and the resultant vehicle numbers for the first five years of the operation (i.e. until the rail spur to Olympic Dam was operational) are shown in Table 1.3. As noted above, once the rail spur was constructed and operational BHP Billiton would hold further discussions with the government to identify a rail-based solution for the material that could be approved by the South Australian Government and was operationally sustainable over the project life.

Table 1.3 Transport of ammonium nitrate

Description	Units	Year 1	Year 2	Year 3	Year 4	Year 5
Ammonium nitrate	tonnes	860	25,300	59,400	76,800	74,500
Number of containers	20 ft container	43	1,265	2,970	3,840	3,725
Number of trucks required	B-double	22	633	1,485	1,920	1,863
AADT ¹		0.1	4	8	11	11

¹ Annual average daily traffic assuming 350 days of active transport.

The key implications of this change in transport for ammonium nitrate are:

- the number of additional trucks per day is very low and this would not effect the level of service for any of the roads to be used
- the proposed route is currently used for the transport of ammonium nitrate for the existing operation
- the proposed route is an approved route for double road trains as would be used to transport ammonium nitrate for the expansion project.

1.4.3 ADDITIONS TO THE DRAFT EIS

The Supplementary EIS presents the outcomes of many studies undertaken in addition to those provided in the Draft EIS. Most of these additional studies were undertaken to address a specific issue raised in a submission/s. One exception is a study undertaken to address the status of the expansion of Olympic Dam being in the Selection Phase, and more specifically to provide an additional assessment for possible changes to schedule.

The proposed expansion is BHP Billiton's response to predicted global increases in the demand for copper, uranium oxide, gold and silver. However, it is not uncommon for large-scale, long-life projects to be impacted by an array of factors that may result in either an accelerated program or a slow-down in schedule due to changes in global economic conditions over the life of the project. The Global Financial Crisis (GFC) of 2008 is a recent example where numerous projects the world over were impacted by the dramatic downturn in the world's economy. Therefore it is only prudent that these possibilities are captured in the SEIS project schedule by expressing the schedule across a range of timelines.

It is important to note that the scale and longevity of the project would continue to realise significant economic and social benefits even if a slowing in demand occurred. The main outcomes of the additional assessment are (see Appendix A6 for details):

- **Economics:** An economic sensitivity analysis has been undertaken which shows significant economic and social benefits from this project across a range of construction periods. The key outcomes of the range analysis are provided in Table 1.4 (see Appendix A6 for details).
- **Noise:** the time taken to construct any particular project component would not change from that described in the Draft EIS and as such noise levels associated with construction activities would be as per those assessed. The Draft EIS noted that the landing facility west of Port Augusta would accommodate about 280 vessels over a seven-year period, with intermittent use during the 40-year project period. In the event of a slower ramp-up in metal production, the facility would have fewer vessels during that time, with the total number of vessels extended over a longer period. As such, the noise levels predicted from activities associated with berthing and unloading a vessel would not change, but they would occur less frequently and over a longer time. If the project schedule was to change and the plan for use of the landing facility, access corridor and pre-assembly yard was to be different to that outlined in the Draft EIS, the company would seek to discuss this with those members of the community who may be impacted. BHP Billiton would ensure that necessary measures are implemented to maintain operating noise levels for the proposed landing facility within applicable limits (see Chapter 15 and Appendix A7 for details).
- **Social:** an extended construction phase would have the implication of 'stretching' the timeframe over which social impacts were felt and social benefits realised.

The categorisation of impacts and benefits, however, would not change from that presented in the Draft EIS.

- **Health and safety:** the Draft EIS noted that the construction phase is the period when workers, tasks and circumstances are typically new, and the safety risks are correspondingly higher than in the operational phase. It is possible that an extended construction timeframe for mining and processing at Olympic Dam would result in a greater number of individuals being exposed to these conditions (presuming that staff turnover remained at predicted levels). However, an extended construction period would reduce the intensity and overall interactions, thus reducing the risk of incident. Also, the systematic approach to health and safety embedded in the culture of BHP Billiton suggests that safety throughout an extended construction phase would remain a focus of management attention and the potential impacts as described in the Draft EIS would remain unchanged.

Table 1.4 Results of economic sensitivity analysis

Economic measure	Draft EIS case (\$2008 terms)	Draft EIS case (\$2010 terms)	Extended construction scenario ¹
Gross Domestic Product (NPV_{7%}, Year 0-Year 30)²			
Australia	\$18,721m	\$18,399m	\$13,768m
Gross State Product (NPV_{7%}, Year 0-Year 30)²			
South Australia	\$45,701m	\$48,397m	\$34,192m
Northern Territory	\$936m	\$915m	\$607m
Gross Regional Product (NPV_{7%}, Year 0-Year 30)²			
Northern Statistical Division	\$22,627m	\$22,048m	\$14,904m
Adelaide Statistical Division	\$24,223m	\$27,577m	\$20,259m
Consumption/economic welfare (NPV)			
Australia	\$21,754m	\$23,088m	\$16,625m
South Australia	\$19,822m	\$21,346m	\$15,157m
Northern Territory	\$1,088m	\$1,000m	\$674m
Government revenues (NPV)			
Australian Government ³	\$2,599m	\$2,780m	\$1,949m
South Australian Government ⁴	\$3,422m	\$3,515m	\$2,460m
Northern Territory Government	\$47m	\$46m	\$30m

¹ Assumes that processing of 20 Mtpa is delayed by three years and processing at full operating capacity at 72 Mtpa is delayed by five years to that presented in the Draft EIS.

² All NPV_{7%} calculations are taken over a Year 0 to Year 30 period, which includes the two construction phases and the full operational phase, discounted at a conservative real social discount rate of 7%.

³ This includes all GST collected (including from South Australia), company tax, income tax, and excise taxes.

⁴ This includes payroll, other local taxes, and royalties but excludes GST revenue collected in South Australia.

1.5 PROJECT CONFIGURATION FOR WHICH GOVERNMENT APPROVAL IS SOUGHT

To provide clarification and ensure understanding of the project configuration for which government approval is sought, a summary of the key elements of the proposed expansion is provided below.

Again, as a natural part of a progressing development project, some changes to schedule are inevitable and the results of a sensitivity analysis that considered such issues is provided in Section 1.4.3.

Mining and processing

- a new open pit mine to operate with the existing underground mine to extract a combined annual average of 72 Mt of ore for processing
- a facility in which mine rock would be placed (mine rock being a combination of non-mineralised rock and low-grade or non-economic ore)
- an expansion to all four major components of the existing metallurgical plant (being the concentrator, hydrometallurgical plant, smelter and refinery) to enable an average annual on-site production of 350,000 tonnes of refined copper plus associated products (being uranium oxide, gold and silver)
- a further expansion of the concentrator to produce about 1.6 Mtpa of concentrate for export via the Port of Darwin and a new hydrometallurgical plant to produce additional uranium oxide for export
- an expanded tailings storage facility (TSF) at the revised location shown in Figure 1.8.

Water supply

- a 280 megalitre per day (ML/d) desalination plant at Point Lowly and water supply pipeline to Olympic Dam, comprising 200 ML/d for Olympic Dam and 80 ML/d for the South Australian Government should it wish to use this potential water resource at some time in the future
- the installation of the proposed intake pipe via a trenching method and the installation of the proposed outfall pipe via a tunnelling method
- saline wellfields (in close proximity to Olympic Dam, not in the Great Artesian Basin) providing up to 50 ML/d of water suitable for dust suppression.

Electricity supply

- the option to build either an electricity transmission line from Port Augusta, or an on-site combined cycle gas turbine (CCGT) power station and gas supply pipeline from Moomba, or to build a combination of these facilities to meet an additional maximum electricity demand of 550 MW.

Transport

- a 105 km rail spur to join Olympic Dam to the national rail network near Pimba
- a rail/road intermodal freight terminal at Pimba to be used as a means of reducing construction-related road traffic prior to the construction and operation of the rail line
- the relocation and expansion of the existing Olympic Dam airport
- a barge landing facility and quarantine area located about 10 km south of Port Augusta, required to offload pre-assembled modules and prefabricated materials for road transport along a private access corridor to a pre-assembly yard on the north-western outskirts of Port Augusta, prior to subsequent road transport of the materials to Olympic Dam via the Stuart Highway and Olympic Way
- the access corridor from the proposed landing facility to the pre-assembly yard being constructed on the revised alignment as shown on Figure 1.10
- two new access roads and entry gates to the Olympic Dam operation, being a western access road extending from the heavy vehicle bypass, and an eastern access road and entry via the proposed Hiltaba Village.

Workforce and accommodation

- the expansion of Roxby Downs to support an increase from the current 4,500 people up to an estimated 10,000 people
- the relocation of the existing construction workers' village from 6 km south of Olympic Dam (i.e. Olympic Village) to 17 km east of Roxby Downs on the Andamooka Road, and expanding its capacity from 1,500 people to a peak capacity of up to 10,000.

Based on the current technologies and operating efficiencies, the extraction and processing of the additional 60 Mtpa of ore remain as stated in the Draft EIS and would add an average annual production of about 515,000 tpa of copper, 14,500 tpa of uranium oxide, 700,000 oz/a of gold and 2,100,000 oz/a of silver (see Table 1.5 of the Supplementary EIS for details).

As noted in the Draft EIS, these production rates are likely to increase over time as a result of technological advances and improved operating efficiencies. As such, the impact assessment and request for government approval is based on the impacts and benefits of constructing and operating the above-mentioned project configuration, rather than the resulting metal production rates.

Table 1.5 summarises the production rates and resource requirements for the current operation, the proposed expansion and the combination of the existing and proposed operation (termed the combined operations). These rates and resource requirements are identical to those provided in Table 1.2 of the Draft EIS.

Table 1.5 Summary of anticipated production rates and resource requirements

Project component	Current operation (post-optimisation)	Proposed expansion	Combined operations
Total ore mined (Mtpa)	12	60	72
Copper concentrate produced (tpa)	600,000	1,800,000	2,400,000
Nominal production rate (per annum) ¹			
Refined copper (t)	235,000	515,000	750,000
Uranium oxide (t)	4,500	14,500	19,000
Gold (ounces)	100,000	700,000	800,000
Silver (ounces)	800,000	2,100,000	2,900,000
Process and potable water requirement (average ML/d)	37	191	228
Electricity demand and annual consumption (MW: GWh)	125:870	650:4,400	775:5,270
Transport volumes (Mtpa) (in and out per annum)	1	3.8	4.8
Exports	via the ports of Adelaide and Darwin	via the ports of Adelaide and Darwin	via the ports of Adelaide and Darwin
Permanent Olympic Dam workforce (BHP Billiton employees and long-term contractors)	3,000	4,000	7,000
Short-term contractor workforce (peak)	1,000	6,000 (average 4,000)	1,000 (post-construction)
Shutdown maintenance temporary contractors	1,250	between 450 and 1,400	up to 1,400
Associated full-time equivalent (FTE) statewide jobs	9,200	13,100	n.a. ²

¹ Totals indicated for the proposed expansion are equivalents based on the Olympic Dam processing efficiencies, as some of this product would not be produced on-site.

² It is not appropriate to add current FTE estimates to the proposed expansion estimates because over time, activities in the current operation would reduce relative to the activity undertaken today, therefore an addition would overestimate the predicted direct and indirect jobs created.

1.6 ISSUES RAISED ON HOW THE DRAFT EIS WAS PREPARED

This section, and Section 1.7, address issues that were raised in submissions with respect to the introductory chapter of the Draft EIS.

1.6.1 ASSESSMENT PROCESS

Issue:

It was suggested that BHP Billiton undertook technical and financial feasibility studies prior to the environmental assessment, and that this 'hurdle' approach means that EIS assessments are postponed for as long as possible, rather than being considered as part of the overall project.

Submission: 211

Response:

This suggestion does not accurately reflect the process followed in the environmental assessment undertaken for the proposed Olympic Dam expansion. The environmental assessment for the Draft EIS commenced in earnest in March 2005, several years before the preferred options for any of the project components were chosen, and even before BHP Billiton acquired WMC and the Olympic Dam operation in June 2005.

The iterative process of environmental assessment and project modification, as documented in Section 1.6.2 of the Draft EIS, accurately reflects the process undertaken for the Olympic Dam expansion.

Issue:

It was suggested that any EIS undertaken by a proponent, or consultant acting on behalf of a proponent, would be biased.

Submissions: 21, 42, 46, 208, 259 and 318

Response:

Development projects within Australia are required under Commonwealth, state and territory legislation to undertake environmental impact assessment prior to approval. It is the responsibility of the proponent (in this case BHP Billiton) to undertake the relevant studies and prepare the required documentation for assessment by the approving authority (in this case the Australian, South Australian and Northern Territory governments).

Given the size and complexity of the proposed expansion, the assessments undertaken for the proposed Olympic Dam expansion were world's best practice, and included:

- a core EIS Team of up to 20 environmental, social, economic and cultural specialists from 13 different companies working full-time for several years on the Draft EIS
- more than 250 specialists from 75 consultancy firms completing specialised studies
- 21 internationally recognised experts conducting peer reviews of the studies undertaken, and presenting letters of testimony as to the quality of the studies undertaken in the high-risk areas of the project (e.g. return water dispersion modelling, air quality modelling, hydrodynamic modelling, hydrogeological modelling, radiation, marine ecology and desalination plants, hazard and risk processes and ecotoxicology)
- more than 200 staff from BHP Billiton providing the necessary planning and design information for input to the impact assessment
- study methods, findings and draft chapters being presented to the relevant government agencies, and their nominated independent specialist/s, for prior review
- the Draft EIS presenting credible ranges of project requirements and assessing worst-case conditions or maximum requirements to facilitate robust studies of the potential impacts and benefits.

Furthermore, the stakeholder consultation and engagement process implemented throughout the Draft EIS provided project information to 37,090 visitors to the Olympic Dam expansion web site and 8,300 people through direct face-to-face engagement events. Community concerns raised throughout this process were reported in Chapter 7 of the Draft EIS and included in the impact and risk assessments documented in the Draft EIS.

Issue:

A request was made for the Supplementary EIS to provide a table that shows a comparison between current environmental impacts for the existing operation and the predicted impacts of the proposed expansion.

Submission: 391

Response:

This request is not possible to address in a single table. The environmental impacts associated with the existing operation are publicly reported on an annual basis (see BHP Billiton 2009 for the latest report). The predicted impacts for the proposed expansion were presented in detail across 18 chapters and 19 appendices in the Draft EIS (which equated to 755 pages for the Draft EIS and about 4,500 pages for the accompanying appendices).

Chapter 25 of the Draft EIS, Cumulative Effects, also assessed the combined impacts and benefits for the existing Olympic Dam operation and proposed expansion.

1.6.2 ABILITY TO ACCESS INFORMATION

Issue:

It was suggested that information was dispersed throughout the Draft EIS, making it difficult to find and that this was compounded by not having an index or a search function to the electronic documents.

Submission: 318

Response:

The structure of the Draft EIS was developed to be generally consistent with that provided in Section 5 of the joint government EIS Guidelines for the development of an EIS for the proposed expansion of Olympic Dam.

An index to the document was considered unnecessary because:

- the Draft EIS provided a detailed table of contents
- Table 1.7 of the Draft EIS provided a detailed cross-referencing tool for the key requirements of the government's EIS Guidelines and the section number in the Draft EIS that addressed that guideline
- The Draft EIS was widely, and freely, available in electronic format. The search function for the electronic document was available via the standard search function provided on the main menu in Adobe Acrobat, being *Edit*, *Find*, and typing in the required word or phrase.

1.6.3 EIS STUDY AREA

Issue:

It was requested that Andamooka be formally recognised as a part of the 'EIS Study Area', as having unique requirements, and as providing a range of 'host' township functions.

Submission: 6

Response:

Andamooka was included where relevant in the assessment of impacts and benefits as described in the Draft EIS and its accompanying appendices.

The shaded area presented in figures of the Draft EIS, and termed the 'EIS Study Area', was a 10 km wide ecological assessment zone, which was centered on the preferred alignment of proposed linear infrastructure and/or extending 10 km beyond the boundary of the expanded Special Mining Lease. This EIS Study Area was considered sufficient to place in context the direct disturbance footprint of the proposed expansion.

1.7 BHP BILLITON'S ENVIRONMENTAL RECORD

Issue:

Concern was raised over BHP Billiton's previous environmental record, with no specific issue other than the sudden closing of the Ravensthorpe mine being identified.

Submissions: 142 and 348

Response:

Section 1.2.3 of the Draft EIS explained BHP Billiton's environmental performance at Olympic Dam, noting several achievements:

- certification to AS/NZS ISO 14001:2004 *Environmental management systems*
- management of radiation exposures to the public and Olympic Dam employees, which has remained well below legislative limits throughout the 20 years of operation
- compliance with Environment Protection (Air Quality) Policy 1994, demonstrated through monitoring point emission sources at the metallurgical plant
- the establishment of a water efficiency projects group to identify and implement improvement initiatives
- the creation and continued support of the environmental initiative, Arid Recovery
- funding of several hundred thousand dollars a year towards environmental projects, which has resulted in more than 200 research programs and 84 published research papers since the year 2000.

Section 1.2.3 of the Draft EIS also established that there has been no successful litigation against BHP Billiton on environment-related issues under Commonwealth, state or territory law, and that over the life-of-mine operation, minor operational notices have been issued by the South Australian Government and addressed.

With regard to Ravensthorpe, while no details were provided within the submissions, it has been assumed here that the submissions are referring to the premature closing of the operation and the potential environmental effect that may have had. BHP Billiton has sold Ravensthorpe and the new owner intends to operate the facility built by BHP Billiton.