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Regional Mining and Infrastructure Planning project interim report summary

Prepared for the South Australian Department of Planning, Transport and Infrastructure and the Commonwealth Department of Infrastructure and Transport

Contents

Glossary

Term	Definition
ARTC	Australian Rail Track Corporation
Axle load	Weight felt by road or rail surface for all wheels connected to a given axle
Beneficiation	Processing of raw ore to increase mineral concentration prior to export
Bulk commodities	Commodities shipped unpackaged in large commodities
Concentrate	Processed ore with increased mineral concentration
DIRN	Defined Interstate Rail Network
DSO	Direct Shipping Ore
Easement	Right to use land for a specified purpose
GL	Gigalitre
GWh	Gigawatt Hours
IDS	Infrastructure Demand Study
kV	Kilovolt
MAPS	Moomba to Adelaide pipeline system
MCA	Multi-Criteria Analysis
Mtpa	Million Tonnes per annum
MW	Megawatt
Ore	A metal bearing mineral or rock
PACE	Plan for accelerating exploration
Potable	Water of quality to be safe for human consumption
RESIC	Resources and Energy Sector Infrastructure Council
RMIP	Regional Mining and Infrastructure Plans
TJ	Terajoules
Transmission network	Network of high voltage electricity lines and transformer assets

1. Purpose and intent

Purpose and intent of the Regional Mining and Infrastructure Planning project

The Regional Mining and Infrastructure Planning (RMIP) project has been tasked with articulating a plan for the delivery of infrastructure to support the development of mining in South Australia.

The objective of the RMIP is to identify infrastructure solutions that maximise the net benefits to South Australia by improving connectivity from existing mines and reducing infrastructure related risks for new mines.

The RMIP will deliver a roadmap, including the respective role of governments and the private sector in facilitating the delivery of long-term infrastructure solutions which are sensitive to the diverse economic, social and environmental requirements of all stakeholders in each of the regions.

This summary is a synopsis of the content of the interim reports which have been prepared for each of the three regions considered by the RMIP project:

- Eyre and Western
- Far North
- Yorke and Mid-North/Braemar

This summary does not contain much of the detail in the interim reports; stakeholders with an interest in the RMIP project are encouraged to read the reports prepared for the three regions if they wish to gain a more detailed appreciation of the growth of the minerals and resource sector and its implications in each region.

Previous work undertaken

The Resources and Energy Sector Infrastructure Council (RESIC) commissioned the 2011 Infrastructure Demand Study (IDS) which surveyed resource and energy project proponents in South Australia to develop a dataset of mining proponents' expectations for future infrastructure requirements for their projects.

The RESIC commissioned study collated proponents' infrastructure requirements in the event projects proceeded. The study did not undertake economic assessment to determine the likelihood or timing of these projects proceeding. The RESIC study identified a project-weighted outbound resource task of 120 million tonnes per annum from 2017 and beyond.

Building upon the findings of the RESIC study, further information gathering from prospective miners and infrastructure proponents, industry experts and economic forecasts, the RMIP project has assessed the future infrastructure requirements of mining in South Australia. The assessment in this project considers the drivers and impediments to mining project development to develop realistic mining infrastructure demand scenarios as underpinned by key macroeconomic drivers.

The South Australian Government's response to the RESIC IDS noted two actions which are to be included in the RMIP project:

- Consider the infrastructure requirements of the sector, including progressing the corridor and utility hub concepts. This will help planners and the private sector to determine their location, purpose and function
- Investigate the need for and location of capesize port capability.

Purpose and intent of the interim reports

The purpose and intent of the interim reports is to seek broad stakeholder feedback on the identified market need and analysis, along with the identified possible solutions ahead of detailed prioritisation.

However, for the final plans to meet the intent of the RMIP, they must meet community and industry needs; this can only be achieved by consulting with regional communities to gain their feedback, particularly to identify likely environmental and social impacts. This paper will therefore form the foundation on which this next stage of the consultation process will take place. Feedback from the affected communities will inform the prioritisation of solutions when detailed in the final RMIP.

The interim reports present the findings of our work to date with respect to:

- The current state of mining and resultant infrastructure demand
- The forecast future state of mining and resultant infrastructure demand
- The state of current and committed infrastructure
- The gap between forecast infrastructure demand and provision, and
- The solutions which have been proposed to meet the forecast infrastructure gap.

2. Approach

Mining considered in the RMIP project

There is a significant range of mining activity in South Australia including iron ore, copper, uranium, heavy mineral sands, silver, gold and zinc.

For the purposes of this project, the mining industry is taken to include the exploration and extraction of minerals with a significant or potentially significant demand for freight, water, power and/or gas infrastructure.

It is recognised that iron ore is the most infrastructure-intensive commodity in terms of power, water, freight and other infrastructure, and is therefore the primary focus of this project.

Energy projects, including coal, coal to liquids, geothermal, conventional and gas projects, have not been addressed in this study, however may be referenced from time to time where opportunities or impacts in relation to mineral projects are identified.

Infrastructure considered in the RMIP project

Infrastructure is a broad term which refers to the basic physical and organisational structures, planning regimes and government policies required for business and community functions to operate. This includes the network of roads, highways, railways and ports that underpins the transportation into and out of and within a region, the water and sewage systems that ensure an adequate supply of clean water as well as the disposal of waste, the power and gas grids that fuel enterprise, the networks that support communication and commercial exchange between parties and the structures and institutions that underpin the delivery of social services such as health, education and justice.

The infrastructure requirements of miners are considered from two dimensions; the extraction of the resources and the transportation of the resources. Subsequently, the infrastructure considered in this plan includes:

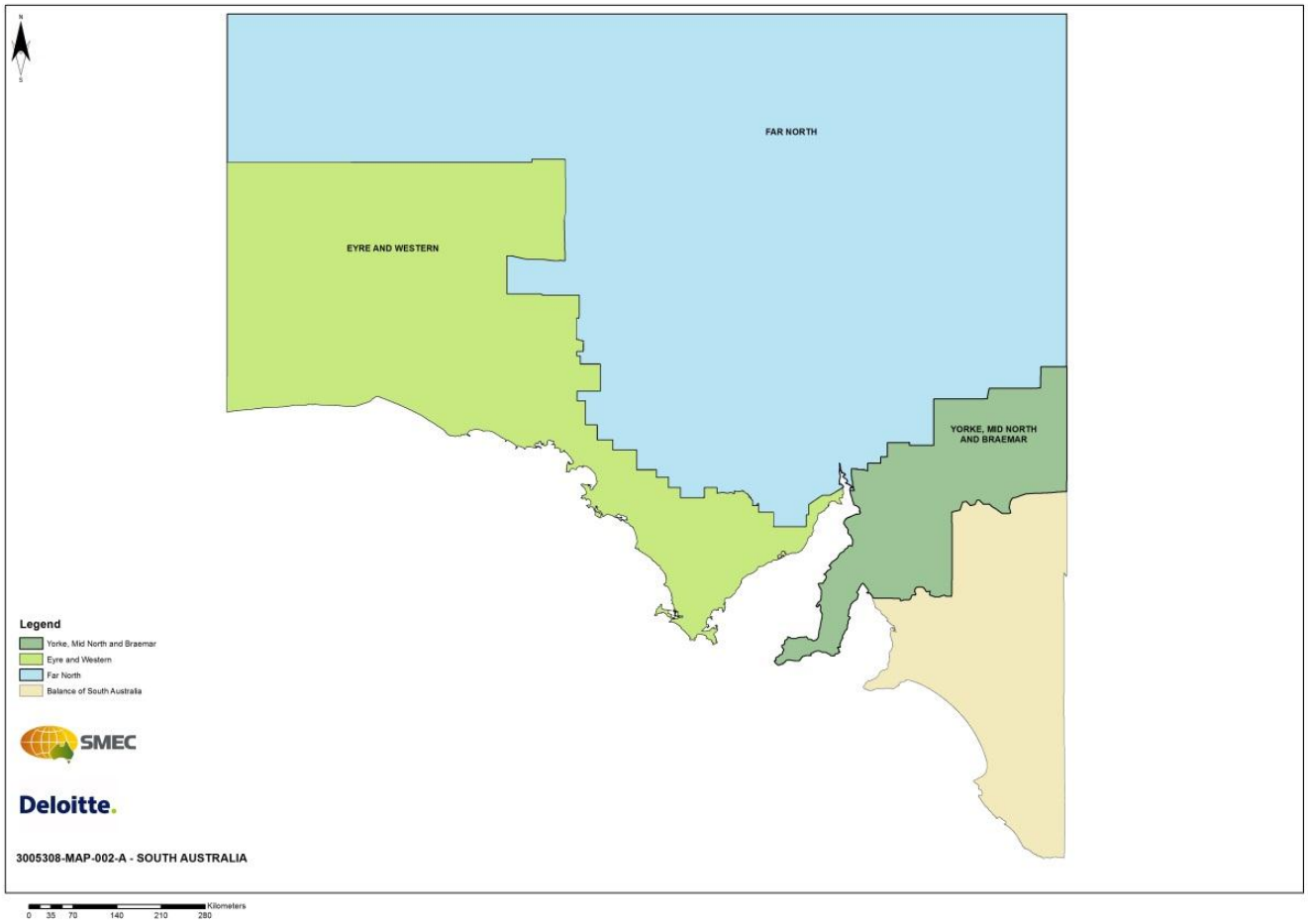
- Transport and logistics infrastructure, comprising:
    - Port facilities for import of goods required by the mine and export of product produced by the mine. This includes landside port facilities as well as marine facilities
    - Freight route infrastructure between the mine site and the port. This comprises road, rail, conveyor systems and slurry pipelines or a combination of these
- Water infrastructure to collect, treat as necessary and transport water to mine sites

- Electricity infrastructure to produce and/or supply gas and/or electricity to support mine sites processes as well as processes for transport and water infrastructure above.

Regions considered in the RMIP project

The map below shows the three regions which are considered in the RMIP project.

Figure 2.1: RMIP project regions



Mining clusters

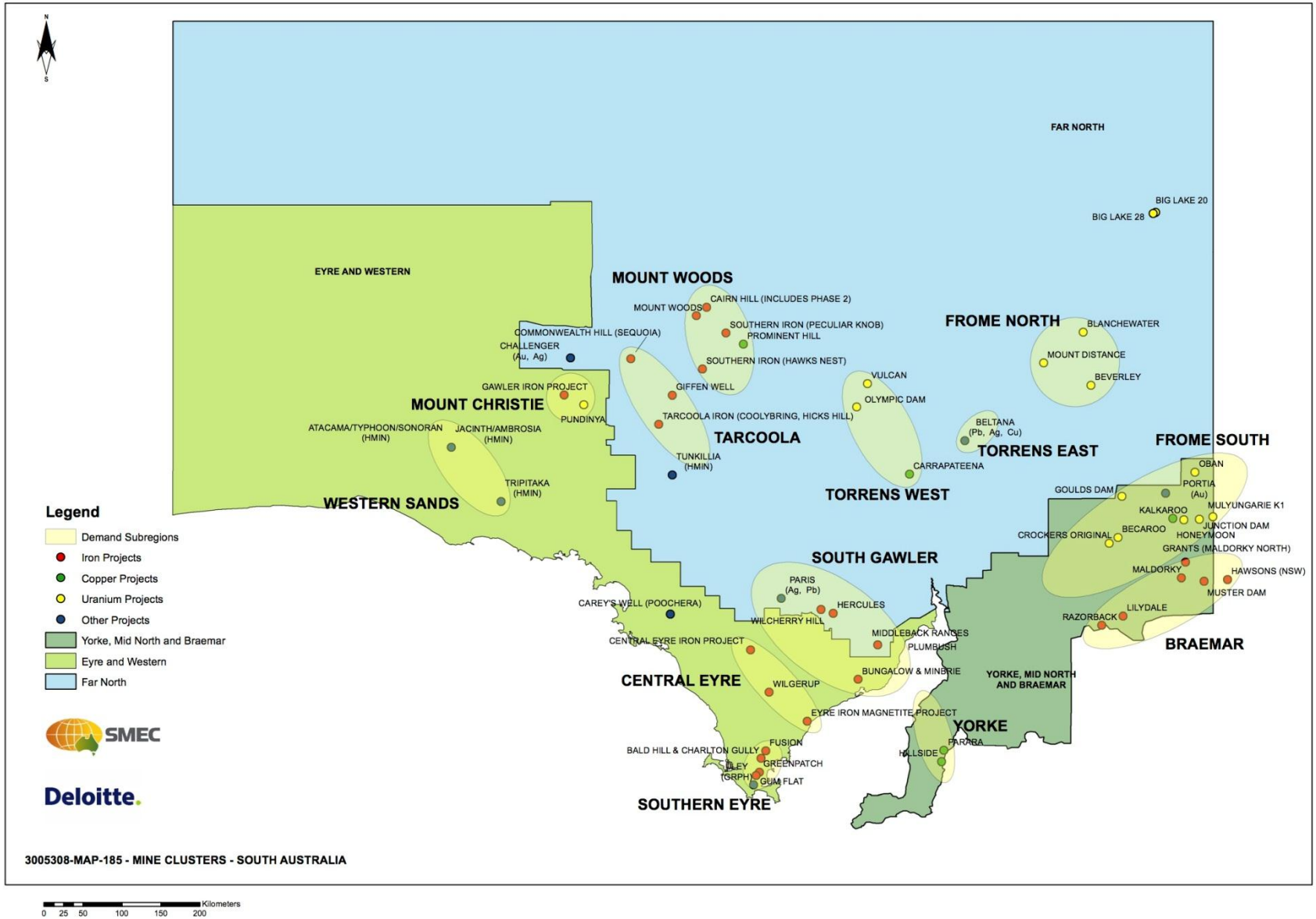
To aid in the identification of concentrations of mining activity in South Australia and the associated requirement for supporting infrastructure, mineral deposits have been grouped into clusters of mines.

The intention of the development of clusters is to identify those operating and prospective mines which are likely to have similar infrastructure needs. Therefore, three factors determined whether or not mines would be clustered together:

- Common mineral being extracted (likely to reflect common freight needs)
- Common extraction technique (likely to reflect common water and power needs)
- Geographic proximity (to reflect the location in which the infrastructure must be provided).

A key advantage of the development of clusters is the ability it provides to analyse infrastructure demand and facilitates solutions on an aggregated basis, as opposed to mine-by-mine solutions. Further, the consideration of clusters rather than individual mines means identified infrastructure demand, and thus the viability of solutions, is not reliant on circumstances impacting individual operations. The mining clusters identified for the purpose of the RMIP project are shown in the figure overleaf.

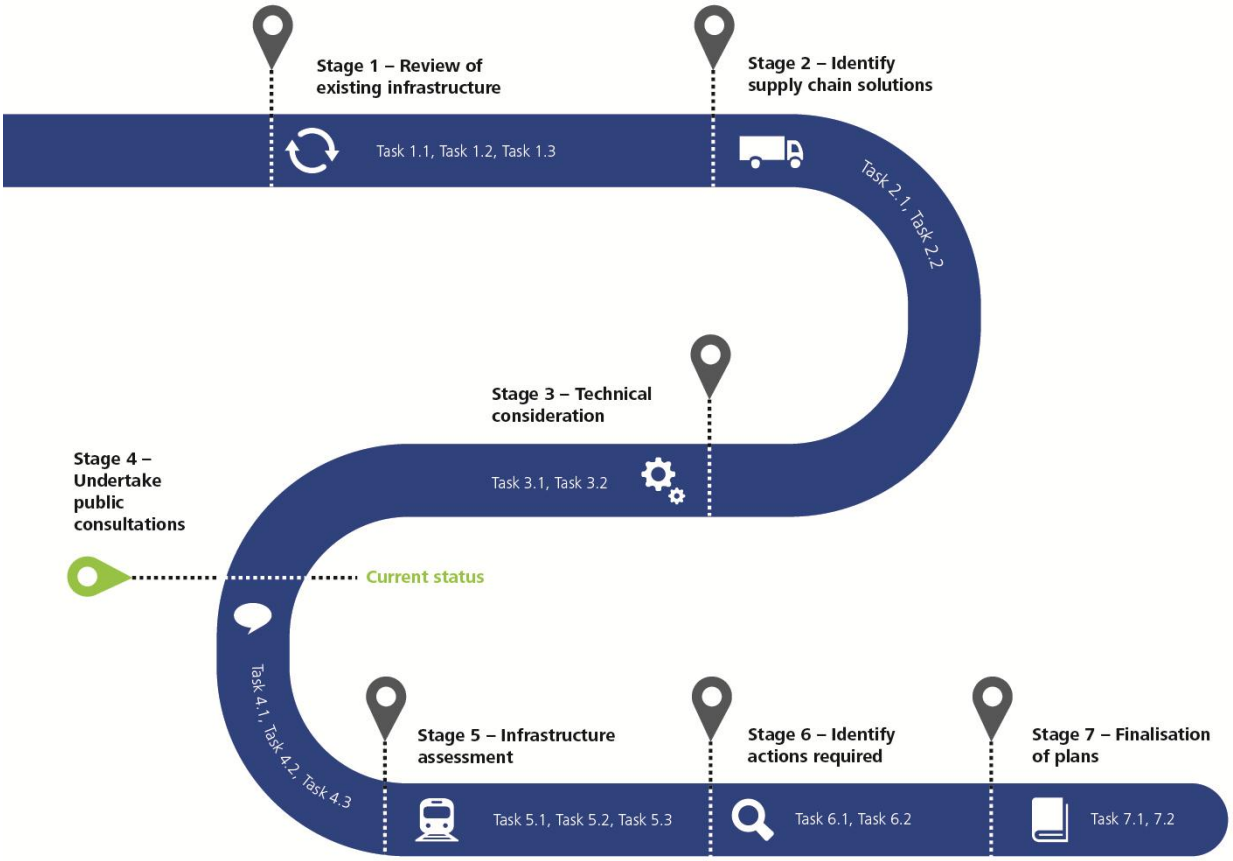
Figure 2.1: RMIP project mining clusters



Methodology

The methodology which will be applied in the development of the RMIP for each region is summarised in the figure below and is discussed in detail in Appendix A of each report.

Figure 2.1: Methodology applied for the development of the RMIP's



3. Future mining demand

A core element of the RMIP project was forecasting the future level of mining activity in South Australia and the infrastructure demand which would result from this.

Analysis presented in chapter 5 of the interim reports summarises the adequacy of existing infrastructure to support existing mining operations. The table overleaf presents forecasts of future mining activity, and resultant infrastructure demand, under high, medium and low global economic growth scenarios across South Australia.

Chapter 4 of this summary presents our analysis of the extent to which the existing infrastructure is able to accommodate the future demands discussed in this chapter. Investigating ways to address the gap between the state of current infrastructure and demands of future mining is at the core of the RMIP project.

Future infrastructure needs will be driven by the mining production activity and freight and logistics task expected to take place in the region. Separate from the availability of infrastructure, the progression of mines from prospects to developments and developments to major mines will be based on the underlying profitability of each mine. Establishing an objective, transparent and robust forecast for this future mining activity is central to understanding what are and will be the pressing and emerging infrastructure needs for the region.

Low case scenario

Table 3.1: Low case forecast infrastructure demand

Cluster	Annual Mineral/ Concentrate Production (Mt p.a.)			Bulk Freight Task (Mt p.a.)			Peak electricity Demand (MW)			Electricity Consumption (GWh p.a.)			Water Consumption (ML p.a.)		
	2013-2017	2018-2022	2023-2032	2013-2017	2018-2022	2023-2032	2013-2017	2018-2022	2023-2032	2013-2017	2018-2022	2023-2032	2013-2017	2018-2022	2023-2032
Braemar	0	6.02	10	0	6.62	11	0	23.2	74.8	0	401	734	0	2,224	7,000
Central Eyre	0.24	1.52	0.04	0.26	1.67	0.04	0.5	3	0.1	2	12	0	48	304	7
Frome North	0	0	0	0.01	0.01	0.02	6	8.8	11.4	167	243	316	150	219	285
Frome South	0	0	0	1.63	0.66	0.14	2.6	4.9	7.2	68	123	200	76	156	180
Mount Christie	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mount Woods	5.44	3.26	0.07	5.98	3.59	0.08	10.5	10.5	4.4	13	7	0	828	496	11
South Gawler	6	6	6	6.6	6.6	6.6	19.6	19.6	19.6	65	65	65	3,900	3,900	3,900
Southern Eyre	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tarcoola	0	0	0	0	0	0.16	0	0.4	0.3	0	4	1	0	0	0
Torrens East	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Torrens West	0.2	0.2	0.2	1	1	1	129.5	129.5	129.5	898	898	898	10,363	10,363	10,363
Western Sands	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Yorke	0.48	1.2	1.2	0.96	2.4	2.4	23.2	58.1	58.1	139	348	348	798	1,996	1,996
Other - E&W	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other - Far North	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other – Y&MN/B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	**12.36**	**18.2**	**17.51**	**16.44**	**22.55**	**21.44**	**191.9**	**258**	**305.4**	**1,352**	**2,101**	**2,562**	**1,6163**	**19,658**	**23,742**

Medium case scenario

Table 3.2: Medium case forecast infrastructure demand

Cluster	Annual Mineral/ Concentrate Production (Mt p.a.)			Bulk Freight Task (Mt p.a.)			Peak electricity Demand (MW)			Electricity Consumption (GWh p.a.)			Water Consumption (ML p.a.)		
	2013-2017	2018-2022	2023-2032	2013-2017	2018-2022	2023-2032	2013-2017	2018-2022	2023-2032	2013-2017	2018-2022	2023-2032	2013-2017	2018-2022	2023-2032
Braemar	1	25.64	39.25	1.10	28.20	43.18	0.0	33.6	197.4	0	468	1,525	2,400	14,224	19,000
Central Eyre	0.24	31.34	40.04	0.26	34.47	44.04	0.5	270.9	361.2	2	1,375	1,828	48	39,052	52,007
Frome North	0	0	0	0.01	0.01	0.02	6.0	8.8	11.4	167	243	316	150	219	285
Frome South	0	0	0	0	0.01	0.01	2.4	4.3	7.2	67	120	200	60	108	180
Mount Christie	0	0	0	0	0	0	0.0	0.5	1.2	0	13	33	0	12	30
Mount Woods	8.02	12.22	9.35	9	13.48	10.29	326.5	478.5	464.4	380	475	434	9,704	12,404	11,149
South Gawler	6	9	11	6.60	9.90	12.10	19.6	43.6	59.6	65	205	299	3,900	7,500	9,900
Southern Eyre	0.12	3.14	2.79	0.13	3.45	3.07	0.1	11.1	16.4	10	238	155	144	3,768	3,349
Tarcoola	0	0.32	0.22	0	0.35	0.40	0.0	2.8	1.9	0	17	11	0	384	262
Torrens East	0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0
Torrens West	0.20	0.32	0.35	1	1.24	1.30	129.5	219.5	242.0	898	1,129	1,186	10,363	10,471	10,498
Western Sands	0.82	0.33	0	1.63	0.65	0	9.4	3.8	0.0	24	10	0	176	70	0
Yorke	0.48	1.20	1.20	0.96	2.40	2.40	23.2	58.1	62.8	139	348	381	798	1,996	2,996
Other - E&W	0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0
Other - Far North	0	0	0	0	0	0	3.2	0.5	1.2	20	13	33	308	12	30
Other – Y&MN/B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	**16.88**	**83.51**	**104.21**	**20.70**	**94.18**	**116.82**	**520.4**	**1,135.8**	**1,426.7**	**1,772**	**4,655**	**6,402**	**28,051**	**90,220**	**109,686**

High case scenario

Table 3.3: High case forecast infrastructure demand

Cluster	Annual Mineral/ Concentrate Production (Mt p.a.)			Bulk Freight Task (Mt p.a.)			Peak electricity Demand (MW)			Electricity Consumption (GWh p.a.)			Water Consumption (ML p.a.)		
	2013-2017	2018-2022	2023-2032	2013-2017	2018-2022	2023-2032	2013-2017	2018-2022	2023-2032	2013-2017	2018-2022	2023-2032	2013-2017	2018-2022	2023-2032
Braemar	3.00	41.64	59.25	3.30	45.80	65.18	51.00	312.40	492.20	234	2,321	3,835	4,800	42,424	58,000
Central Eyre	0.68	38.12	45.04	0.75	41.93	49.54	6.60	365.80	431.20	27	1,767	2,118	576	47,188	58,007
Frome North	0.00	0.00	0.00	0.01	0.01	0.02	6.00	8.80	11.40	167	243	316	150	219	285
Frome South	0.00	0.00	0.00	0.00	0.01	0.01	2.40	4.30	7.20	67	120	200	60	108	180
Mount Christie	0.00	1.60	0.36	0.00	1.76	0.40	0.00	3.70	1.90	0	76	48	0	412	121
Mount Woods	8.02	14.62	12.35	9.00	16.12	13.59	326.50	496.50	486.90	380	580	566	9,704	15,284	14,749
South Gawler	8.34	10.65	11.00	9.17	11.80	12.20	66.40	76.00	59.80	89	224	301	5,181	8,416	9,927
Southern Eyre	0.12	4.16	7.83	0.13	4.60	8.64	0.10	25.60	87.20	10	313	522	144	5,436	16,856
Tarcoola	0.00	5.62	7.27	0.00	6.18	8.15	0.00	95.10	120.40	0	267	342	0	6,744	8,722
Torrens East	0.01	0.04	0.04	0.02	0.08	0.08	6.00	30.00	30.00	48	238	238	241	1,204	1,204
Torrens West[1]	0.20	0.32	2.88	1.00	127.24	291.30	129.5	351.5	551.8	898	2,885	5,279	10,363	43,471	75,498
Western Sands	1.42	0.85	0.07	2.83	1.69	0.14	11.80	6.20	0.80	42	27	4	1,992	1,533	15
Yorke	0.48	1.20	1.20	0.96	2.40	2.40	23.20	58.10	62.80	139	348	381	798	1,996	2,996
Other - E&W	0.00	0.04	0.10	0.00	0.05	0.07	0.00	0.20	0.40	0	16	40	0	124	207
Other - Far North	0.00	0.00	0.00	0.00	0.00	0.00	3.20	0.50	1.20	20	13	33	308	12	30
Other – Y&MN/B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	**22.26**	**118.86**	**147.40**	**27.18**	**259.68**	**451.73**	**632.8**	**1,834.5**	**2,345.3**	**2,120**	**9,439**	**14,224**	**34,317**	**174,570**	**246,797**

[1] It is assumed the expansion of BHP Billiton's Olympic Dam operation, as detailed in the environmental impact statement released in 2009, is viable in this scenario can commences in the second time period.

4. Future infrastructure demands

The mining industry activity forecasting presented in the previous chapter was analysed with reference to the current state of infrastructure in South Australia. The analysis was undertaken to identify the critical infrastructure deficiencies that are likely to hinder the development of South Australia's mining sector in the region.

The ability of current infrastructure to meet the forecast demand from the mining sector is presented in the below tables. The analysis, based on the medium case forecast demand, considers the infrastructure's condition, capacity and capability to meet this demand over the 0-5 year, 6-10 year and 11-20 year time periods from 2013 to give an appreciation of how adequacy of infrastructure changes over time.

The second half of this chapter distils identified infrastructure deficiencies into critical infrastructure issues which must be addressed to facilitate the development of the mining sector. Again, these issues are presented with reference to the time periods in which they manifest.

Legend

Symbol	Rating	Description
	**Good**	• Infrastructure presents a low risk to mining operations/performance • Infrastructure considered adequate to meet current requirements • No immediate action required
	**Moderate**	• Infrastructure presents a moderate risk to mining operations/performance • Moderate risk that emerging issues will impact infrastructures ability to meet current requirement • Short to medium term action likely
	**Poor**	• Infrastructure presents a high risk to operations, threatening overall performance • Significant risk that infrastructure will be unable to meet current demand requirements • Immediate action required
	**Not Applicable**	• No infrastructure required, alternative infrastructure solution(s) are sufficient at this time • No current mining demand in area requiring infrastructure • No immediate action required

↑	Adequacy of infrastructure to meet identified need improved compared to previous period
↓	Adequacy of infrastructure to meet identified need reduced compared to previous period
–	Adequacy of infrastructure to meet identified need the same previous period
*	New infrastructure demand in current period

Table 4.1: Assessment of existing infrastructure to meet 0- 5 year demand

Mine Cluster	Ports			Rail			Roads			Power			Water		
	Condition	Capacity	Capability	Condition	Capacity	Capability	Condition	Capacity	Capability	Condition	Capacity	Capability	Condition	Capacity	Capability
Braemar	✳	✳	✳	—	—	—	—	—	—	—	—	—	—	—	—
Central Eyre	—	—	—	—	—	—	✳	✳	✳	✳	✳	✳	✳	✳	✳
Frome North	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Frome South	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mount Christie	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mount Woods	—	↓	↓	—	↓	↓	—	—	—	↓	↓	↓	—	—	—
South Gawler	✳	✳	✳	—	—	—	↓	↓	↓	↓	↓	↓	↓	↓	↓
Southern Eyre	—	—	—	—	—	—	✳	✳	✳	✳	✳	✳	✳	✳	✳
Tarcoola	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Torrens East	✳	✳	✳	—	—	—	✳	✳	✳	✳	✳	✳	✳	✳	✳
Torrens West	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Western Sands	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Yorke	✳	✳	✳	—	—	—	—	—	—	—	—	—	—	—	—

Source: Deloitte and SMEC (2013)

Table 4.2: Assessment of existing infrastructure to meet 6- 10 year demand

Mine Cluster	Ports			Rail			Roads			Power			Water		
	Condition	Capacity	Capability	Condition	Capacity	Capability	Condition	Capacity	Capability	Condition	Capacity	Capability	Condition	Capacity	Capability
Braemar	↓	↓	↓	✳	✳	✳	↓	↓	↓	↓	↓	↓	↓	↓	↓
Central Eyre	✳	✳	✳	✳	✳	✳	↓	↓	↓	↓	↓	↓	↓	↓	↓
Frome North	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Frome South	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mount Christie	✳	✳	✳	✳	✳	✳	✳	✳	✳	✳	✳	✳	✳	✳	✳
Mount Woods	✳	↓	↓	—	—	—	—	—	—	↓	↓	↓	—	—	—
South Gawler	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Southern Eyre	✳	✳	✳	✳	✳	✳	—	—	—	—	—	—	—	—	—
Tarcoola	✳	✳	✳	✳	✳	✳	✳	✳	✳	✳	✳	✳	✳	✳	✳
Torrens East	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Torrens West	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Western Sands	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Yorke	—	—	—	—	—	—	✳	✳	✳	↓	↓	↓	↓	↓	↓

Source: Deloitte and SMEC (2013)

Table 4.3: Assessment of existing infrastructure to meet 10 - 20 year demand

Mine Cluster	Ports			Rail			Roads			Power			Water		
	Condition	Capacity	Capability	Condition	Capacity	Capability	Condition	Capacity	Capability	Condition	Capacity	Capability	Condition	Capacity	Capability
Braemar	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖
Central Eyre	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖
Frome North	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖
Frome South	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖
Mount Christie	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖
Mount Woods	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖
South Gawler	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖
Southern Eyre	⊖	⊖	⊖	⊖	⊖	⊖	↓	↓	↓	↓	↓	↓	↓	↓	↓
Tarcoola	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	↓	↓	↓
Torrens East	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖
Torrens West	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖
Western Sands	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	↑	↑	↑	↑	↑	↑
Yorke	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖

Source: Deloitte and SMEC (2013)

Table 4.4: Key emerging mining infrastructure issues for south Australian mining (2013 – 2032)

2013-2017	2018-2022	2023-2032
Lack of suitable bulk commodities export port accessible by South Gawler mines	Lack of suitable bulk commodities export port accessible by South Gawler, Central Eyre, Southern Eyre mines and Mount Woods	Lack of suitable bulk commodities export port accessible by South Gawler, Central Eyre, Southern Eyre mines and Mount Woods
Inadequate electricity transmission links to South Gawler mines	Inadequate electricity transmission links to South Gawler and Central Eyre mines	Inadequate power electricity links to South Gawler, Central Eyre and Southern Eyre mines
Inadequate electricity transmission links to South Gawler mines	Inadequate electricity transmission links to South Gawler and Central Eyre mines	Inadequate electricity links to South Gawler, Central Eyre and Southern Eyre mines
No identified suitable source of water for South Gawler mines	No identified suitable source of water for Central Eyre and South Gawler mines	No identified suitable source of water for Central Eyre, Southern Eyre and South Gawler mines
Inadequate mine to port bulk transport links connecting Mount Woods cluster	Inadequate mine to port bulk transport links connecting Mount Woods cluster	Inadequate mine to port bulk transport links connecting Mount Woods cluster
No exiting electricity transmission links to South Gawler mines	No exiting electricity transmission links to South Gawler mines	No exiting electricity transmission links to South Gawler mines
	Lack of adequate electricity transmission to north western Far North mines (Tarcoola and Mount Woods)	Lack of adequate electricity transmission to north western Far North mines (Tarcoola and Mount Woods)
	Lack of access to bulk commodity export port for Braemar mines	Lack of access to bulk commodity export port for Braemar mines
	Lack of suitable mine to port bulk transport links to Braemar mines	Lack of suitable mine to port bulk transport links to Braemar mines
	Insufficient electricity transmission capacity to Braemar mines	Insufficient power transmission capacity to Braemar mines
	Insufficient electricity transmission to Yorke mines	Insufficient power transmission to Yorke mines
	No identified water source for Braemar mines	No identified water source for Braemar mines

5. Potential infrastructure solutions

The RMIP project identified a range of infrastructure projects which are able to practically address the issues summarised at the end of chapter 4. Projects were identified through consultation with infrastructure proponents, mining proponents and peak bodies. A summary of each of the projects is presented in the interim reports to provide an understanding of their underlying technical attributes.

The relative merits of each of these projects are not discussed in the interim reports. Identified potential projects will be assessed as part of a detailed prioritisation process which will be informed by the feedback received on the interim reports.

The detailed prioritisation process will identify:

- Groups of projects which have the ability to support mining in South Australia
- Interdependencies between projects
- Timing for how these projects may be staged
- Potential role for government in supporting the delivery of these projects
- An assessment of the implications of the implications of the identified projects for social infrastructure
- The economic benefits of these projects.

The prioritisation process is discussed in greater detail in Chapter 9 in each of the interim reports.

Path to market

Identified freight projects have been grouped into paths to market which integrate potential ports with land transport infrastructure able to deliver product the port. It is necessary to group freight projects focused around the port for export because of the dependency between the port and landside infrastructure.

- The projects below have the potential to facilitate mines being able to transport product to international markets.Northern Eyre Peninsula port
- Northern Eyre Peninsula port and new slurry link from Central Eyre cluster
- Northern Eyre Peninsula port and rail link from Eyre Peninsula
- Northern Eyre Peninsula port and new slurry link from Braemar
- Northern Eyre Peninsula port with rail connection via Whyalla
- Northern Eyre Peninsula port with upgrade of rail from Wirrida
- Northern Eyre Peninsula port with road upgrades from South Gawler
- Central Eyre port
- Central Eyre port and rail link from Central Eyre cluster
- Central Eyre port and upgrade of existing rail corridors
- Central Eyre port and slurry link to Central Eyre cluster

- Northern Yorke Peninsula port and rail connection to Snowtown
- Northern Yorke Peninsula port and slurry pipeline from Braemar
- Port Lincoln port and upgraded rail links
- Port Pirie and associated rail upgrades
- Export through Port of Darwin with rail upgrades for Tarcoola and Mount Woods clusters

Electricity

The projects below have the potential to addresses issues related to the supply of electricity to mines.

- Eyre transmission upgrade
- Spencer Gulf undersea link
- Gas line to on-site generation from Whyalla branch line
- On-site diesel generation
- Transmission link from Cultana
- On-site LPG power station to service individual sites
- Renewable Generation to support Mining loads
- Yorke Peninsula transmission upgrade
- New transmission link from Port Augusta to Braemar
- Gas line to on-site generation from Moomba – Adelaide pipeline
- Transmission link from Davenport

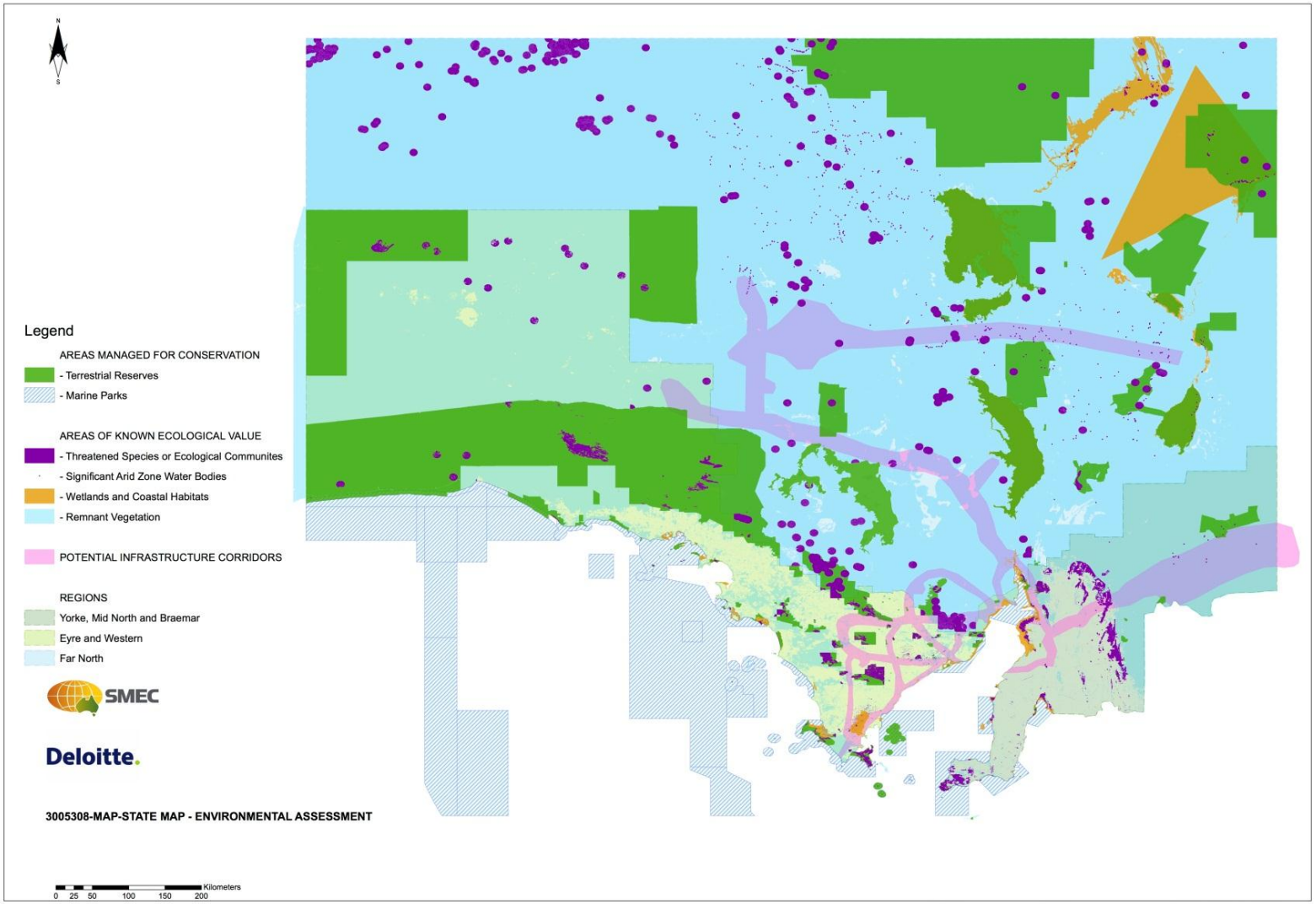
Water

The projects below have the potential to addresses issues related to the supply of water to mines.

- Groundwater investigations
- On-coast desalination plant and transmission to Central Eyre
- On-coast desalination plant and transmission network across Eyre Peninsula
- Southern Eyre Peninsula on-coast desalination plant with SA Water integration
- Transmission of raw seawater and on-site desalination plant/s
- Morgan-Whyalla pipeline to storage points
- On-coast desalination plant and transmission main to Braemar cluster
- Transmission of raw seawater and on-site desalination
- Mains water from Mannum
- Groundwater investigations
- On-site groundwater extraction and Desalination Plant/s
- On-coast Desalination plant and Transmission main
- On-site Desalination plants with seawater transmission

Regional solutions

The figure below is provided to give an understanding of the geographic alignment of the identified infrastructure projects relative to sensitive environmental areas.



6. Next steps

Stakeholder consultations

The consultation process is open to all those who have an interest in the content of the final RMIP plans.

Consultation is expected to include a diverse cross section of government, industry and the community, including:

- Regional Development Australia
- Peak industry bodies
- Councils
- Mining interests
- Environmental groups
- Existing and potential infrastructure owners and developers
- Regulators
- Industries with an interest in mining
- Other impacted industries
- Community groups and individuals.

Prioritisation

The prioritisation process will seek to identify those projects which have the greatest ability to deliver wide-ranging benefits to South Australia and when they will ideally be delivered.

Clearly, the approach to the assessment and prioritisation of potential infrastructure projects is central to determining the relative merits of each project. A prioritisation framework was developed for the RMIP project which is based on the published strategic priorities of the South Australian and Commonwealth Governments.

The prioritisation framework assesses each infrastructure project for alignment to against two sets of objectives:

- The **strategic objective** is a reflection of the extent to which the project aligns to the strategic objectives of government
- The **deliverability objective** is a reflection of the extent to which the project exhibits or lacks barriers to implementation.

Assessment against each of the objectives above will be undertaken separately. While it is ultimately the hope of the RMIP to identify projects with strong strategic and deliverability merit, separate scoring permits the identification of projects with strong strategic merit, but require further investigation and planning.

One of three classifications will be assigned to each potential solution based on its position in the chart. Table 6.1 provides a description of how categorisation of initiatives or solutions in each of the three classifications may be interpreted.

Table 6.1: Assigned Classifications

Assigned Classification	Interpretation
Highest Priority	High level of confidence that an initiative or solution is of high strategic value with a high level of confidence that there are limited barriers to its development.
Moderate Priority	An initiative or solution may be of strategic value but require more planning, analysis and design to confirm.
Lowest Priority	Given the long lead times for delivering infrastructure projects, this window will include many of the most important major investments for South Australia that are still at a formative stage – these initiatives and solutions may still have a game changing impact on South Australian mining industry and economy.

Further information in relation to the prioritisation process is provided in the interim reports

The role for government

The role for government in facilitating the delivery of the preferred infrastructure solutions will be determined following the identification of a suite of prioritised projects.

The potential role for government in the delivery of the prioritised projects will be classified into the categories below:

- Regulation reform to better facilitate private sector investment
- Policy reform to better facilitate private sector investment
- Intervention to reduce the level of risk borne by one or multiple private sector parties.

In addition to the factors listed above, a role for government will also be identified where market structures do not exist that would otherwise facilitate a desirable South Australia-wide investment.

Each prioritised project will be assessed to determine if it will proceed in the absence of government action, and if it will not, the appropriate course of action to facilitate development.

At the completion of this process the preferred roles of government and the private sector will be clearly articulated.

Economic modelling

Following the identification of prioritised infrastructure projects an assessment of the expected economic implications of these projects will be undertaken. The economic assessment will be undertaken using the Deloitte Access Economics-Regional General Equilibrium Model (DAE-RGEM). The model is sensitive to the linkages between different industry sectors in the three regions considered in this study and the rest of South Australia. The DAE-RGEM is a practical way of tracing the myriad of economic effects that follow the implementation of the projects which will be prioritised. These effects will be aggregated to form an economy-wide understanding of the impact of the plans.

The outputs of the economic modelling will be a series of macroeconomic indicators which give a clear understanding of the economic benefits of prioritised projects for the region, South Australia and Australia. Outputs of the economic modelling will include forecasts of:

- Gross state product (GSP)
- Industry shares of GSP
- Investment activity
- Employment levels
- Wage levels
- Intrastate, interstate and international trade.

Social assessment

The economic modelling will be complemented by an assessment of the social implications of the infrastructure prioritised and associated mining developments.

The starting point for the social assessment will be the regional profiles in chapter three of this document which detail the prevailing socio-economic conditions in the region. The experience of similar communities which have experienced considerable change as a result of mining development will inform the types of impacts expected to manifest.

7. How you can provide feedback

Feedback from stakeholders will be a critical to ensuring the final plan is sensitive to the interests of a wide range of community members.

Feedback is sought in relation to the questions below for each of the three types of infrastructure (freight, water and electricity):

- Are the future infrastructure gaps and/or issues adequately identified?
- Have all feasible potential infrastructure solutions been identified?
- When assessing potential solutions, what are the key issues which should be considered (e.g. economic, environmental and social implications)?
- Are barriers to the development of priority infrastructure solutions government may seek to address adequately identified?
- Are there any other issues in relation to the RMIP project you with to raise?

Interested stakeholders are invited to submit their responses electronically at the link on the website of the relevant RDA which are provided below. If you wish to make a hard copy submission, please contact your RDA to receive a copy of the feedback form.

Whyalla and Eyre Peninsula RDA: www.eyreregion.com.au
Far North RDA: www.rdafn.com.au
Yorke and Mid North RDA: www.yorkeandmidnorth.com.au