South Australian Regional Mining and Infrastructure Plan

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Photographs courtesy: Department for Manufacturing, Innovation, Trade, Resources and Energy.
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Ministers’ foreword

South Australia’s economy is more diversified and resilient now than ever before, underpinned by the strong growth of our resources sector in the past decade.

More than $10.6 billion has been spent on expanding our resources sector to 20 mines, leading to a four-fold increase in mineral production in a short space of time.

The resources sector now contributes to nearly 40 per cent of our exports and is creating jobs and opportunities for South Australians. However, there is opportunity for more.

In the Cooper Basin and off the South Australian coast, we are experiencing an energy revolution.

Deloitte Access Economics tells us mining could add an additional $22.5 billion to South Australia’s gross state product in the next two decades, as well as creating an average of more than 5,700 full time equivalent jobs.

These are exciting times but there is more we can do to harness this great potential for the benefit of all South Australians.

The South Australian Government, with funding support from the Australian Government, has created a Regional Mining and Infrastructure Plan to guide investment in the rail, ports, roads, electricity and water needed to realise our State’s significant potential.

The Plan is derived from independent and robust forecasts of future demand which provides a detailed understanding of what our future infrastructure challenges are, and when they need to be resolved.

Importantly, the Plan also gives strong consideration of how this infrastructure maximises benefits to regional communities and other industries, while minimising the impact on our environment.

Critical to the success of the Plan is increased collaboration within the resources and energy sector. The partnership established between industry and the State Government must evolve to meet the challenges of delivering increased growth in our resources sector.

To create a catalyst for change, we will be establishing the Resources Infrastructure Taskforce by re-allocating and sharpening the focus of existing South Australian government efforts.

As well as engaging closely across Federal, State and local governments, the taskforce will be South Australia’s single point of reference for the planning and development of regional infrastructure for the resources sector.

We look forward to the decade ahead when a pipeline of infrastructure projects will deliver jobs and lasting economic activity for all South Australians.

The taskforce’s role will be central to guiding billions of dollars in investment and ensuring the continued expansion of the resources and energy sector initiated by this Government.

HON Tom Koutsantonis MP
Minister for Mineral Resources and Energy

HON Stephen Mullighan MP
Minister for Transport and Infrastructure
Contents

Executive summary ........................................................................ 09
  Mining in South Australia .......................................................... 10
  Mining’s potential economic contribution ...................................... 10
  Infrastructure challenges ............................................................ 10
  Mining infrastructure demand ..................................................... 11
  Planning for Infrastructure .......................................................... 12
  A Taskforce for action ............................................................... 12
  Priority actions of Government .................................................. 12

1 Vision for the future ................................................................... 15
  The Seven Strategic Priorities ...................................................... 16
  Vision for mining ....................................................................... 16
  Mining in South Australia .......................................................... 17
  Phases of mine development ...................................................... 17

2 Strategic framework .................................................................. 19
  Mining considered in this plan .................................................... 20
  How this plan was developed ...................................................... 20
  Mining clusters – A Regional Approach ....................................... 20
  Need for Government action ...................................................... 20
  Regional Mining and Infrastructure Plan clusters ...................... 21
  Infrastructure considered in this plan ........................................ 22
  Infrastructure needs of mining .................................................. 22

3 Mining infrastructure challenges .............................................. 25
  Mining infrastructure demand .................................................... 26
  Locations of infrastructure need ................................................ 28

4 Infrastructure delivery ............................................................. 31
  A Taskforce for Action .............................................................. 32
  Resources Infrastructure Taskforce Terms of Reference .......... 32
  Ports .................................................................................... 32
  Electricity ................................................................................. 35
  Land transport infrastructure .................................................... 36
  Water ..................................................................................... 38
  Further priority actions ............................................................. 39

5 Impact of mining ....................................................................... 43
  Economic and social impacts ...................................................... 44
  Realising the benefits of mining for all ........................................ 44
  Actions to realise the benefits ................................................... 46
Executive summary
Mining in South Australia

The South Australian Government’s vision is for a collaborative and vibrant mining industry to ensure we are able to capitalise on our rich ore deposits to generate real economic benefits for the people of South Australia.

South Australia has experienced a significant expansion in mining exploration activity over the last decade, much of it driven by the South Australian Government’s Plan for Accelerating Exploration (PACE).

Total exploration expenditure from both mineral and petroleum sectors has increased 400 per cent from $123 million in 2002-03 to $617 million in 2012-13. As a proportion, the mineral sector attracted $230.4 million during the 2012-13 period with approximately 21 per cent of this expenditure directed at iron ore and 46 per cent directed at copper discoveries.

Investment in exploration has led to an increasing number of mining prospects which require infrastructure in order to proceed to capital commitment and expenditure. The number of mines approved in South Australia has increased from four to 20 since 2004. The sector is expected to grow over coming years, placing additional pressure on existing infrastructure.

This plan aims to promote development of mining related infrastructure to build on the PACE program and to advance mining exploration into operating mines.

In March 2013 the South Australian Government released an Economic Statement, which highlights the need for a new culture of innovation. A key economic priority in the statement is: “Realising the benefits of the mining boom for all”. The vision for this priority is that:

- The state’s abundant resources have been unlocked by investment in mines and in new technologies
- South Australia is home to a vibrant mining services industry, applying new and locally developed technologies to mines across Australia and beyond
- Regional communities across the state are thriving, with growing populations
- Wealth and prosperity are shared amongst all South Australians and across future generations.

Mining’s potential economic contribution

Further expansion of mining will underpin our future prosperity.

Mineral resources already contribute significantly to South Australia’s economy – 5.7 per cent in 2011-12 of gross state product, and 37 per cent of the state’s exports by value.

Substantial development of the mining industry and its associated economic benefit is dependent on appropriately coordinated infrastructure being in place.

Economic modelling undertaken by Deloitte Access Economics on behalf of the South Australian Government forecasts mining, based on the medium case scenario could add an additional:

- $22.5 billion in gross state product (GSP) between 2013 and 2032
- Average of some 5,750 full-time equivalent jobs between 2013 and 2032
- Nearly 95 million tonnes per annum mineral production.

These estimates do not include the additional employment and contribution to GSP that could arise from the development of the oil and gas sector or if a high growth scenario eventuates.

Beyond the headline numbers, mining will help diversify and sustain our regional communities and drive the development of social infrastructure and thriving mining services hubs.

Forecast mineral production by mining cluster is shown in the map overleaf, for future time periods up to 20 years from now. The forecasts represent a five-fold increase in the volume of total exports from South Australia.

Infrastructure challenges

Mining expansion will require additional freight and logistics, water and electricity infrastructure. Successful collaboration requires all parties to have confidence in the actions of others and in an environment that encourages meaningful cooperation.

Many of South Australia’s ore deposits are more geographically dispersed than other Australian and international deposits. This strengthens the need for collaboration in infrastructure delivery to reduce the cost of developing and operating individual mines.

The South Australian Government believes that the need to collaborate creates greater opportunities for miners to work together to realise outcomes for the benefit of all. This is particularly the case for development of infrastructure associated with iron ore, which relies on economies of scale to deliver services at globally competitive levels and costs.

Due to the long lead times for building infrastructure, early planning is required to enable future potential mining operations to be realised. Such long term planning needs to focus on sustainability of the outcomes being sought from economic, social and environmental perspectives.
Mining infrastructure demand

Source: Deloitte Regional Mining and Infrastructure Contractor Reports

Legend
- Dredged Borrowage
- Other Projects
- Project in west
-ypsy projects
- Other Projects
- Projects in north
- Other Projects
- Projects in south
- Projects in east

South Australian Regional Mining and Infrastructure Plan
Planning for Infrastructure

This plan, with its long term context, has built upon work undertaken by the Resources and Energy Sectors Infrastructure Council (RESIC) and focuses on the three key mining regions of South Australia being:

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

Key stages in the development of this Plan (as detailed in the Contractor Reports) have included:

- Rigorous and independent forecasting of mining volumes and infrastructure demands
- Detailed assessment of existing infrastructure across South Australia to meet forecast demands
- Preparation of and extensive consultation on interim reports
- Identification of potentially unmet infrastructure demand by region
- Priority setting for development of additional infrastructure.

This Plan’s approach to aggregating demand at a cluster level allows identification of a broader range of infrastructure solutions. Such an approach also enables a more holistic consideration of environmental issues in the development of infrastructure solutions as well as providing for a greater emphasis on collaboration between all parties, including miners, infrastructure providers, communities and government.

A Taskforce for action

The South Australian Government believes infrastructure challenges can be overcome by reducing the risk associated with mining infrastructure projects through two core streams:

- Providing greater certainty in relation to South Australian Government policy and regulation
- Creating an environment in which collaboration in infrastructure delivery is supported.

The South Australian Government’s priority is to facilitate delivery of infrastructure to clusters with greatest potential and where the need is most immediate.

The South Australian Government will establish a Resources Infrastructure Taskforce to drive implementation of this Plan. The Taskforce’s role is to:

- Function as South Australia’s single point of reference for the resources sector to achieve significant resources infrastructure projects through regional collaboration
- Maintain close engagement with agencies across government
- Facilitate the commercialisation of regionally significant resource projects
- Work with the private sector to further develop business cases on key infrastructure projects, including identification of innovative capital solutions
- Facilitate the delivery of key infrastructure projects as indicated in this plan, with an initial focus on high capacity ports.

Central to the approach of the Taskforce will be taking a whole of region perspective on infrastructure development that also reflects other government planning initiatives. The Taskforce will focus on developing collaborative, rather than single user solutions. This will facilitate greater consolidation of demand, as well as maximising potential benefits to the community and recognising the needs of other industry sectors.

Priority actions of Government

The priorities for the Taskforce are to build on South Australia’s expeditious approvals process that supports development and investment including:

- Commercially viable ports to be developed that consolidate social and environmental impacts and allow all users to access cost effective shipping solutions
- Supporting the delivery of electricity transmission projects
- Assessing land transport corridors and protecting land holdings and corridors from incompatible uses
- Ensuring our water resources are managed in a sustainable way.

The South Australian Government’s approach to each of these priorities is discussed below.

Ports

The South Australian Government’s desire is for commercially viable ports to be developed which consolidate social and environmental impacts and allow all users to access cost effective shipping solutions.

There are three general approaches for possible consideration in the development of ports to service mining:

- Multiple ports of lower capacities
- A single high capacity port to service the needs of all mining in South Australia
- Up to three high capacity ports to service the consolidated mining demand from across the three identified regions of the State.
The South Australian Government will pursue the development of multi-user high capacity ports by directing the Taskforce in partnership with industry to:

- Develop a framework to establish multi-user ports that serve the consolidated regional needs of mining as identified in this Plan
- Identify commercially viable proposals from the private sector that are consistent with the framework for the development of ports (and related infrastructure)
- Examine ways to share risks with the private sector to ensure solutions that deliver best outcomes for the state
- Case manage the implementation of proposals that are considered to be priorities for achieving the outcomes of this Plan.

Target timelines for high capacity port developments to serve the Eyre and Western region and the Yorke and Mid-North/Braemar region would be by 2018 and 2019 respectively. Given it is likely to take up to five years to develop a high capacity port, there is an imperative to act in the short-term to ensure suitable port capacity exists to meet the future needs of mining.

**Electricity**

The use of transmission lines and on-site generation were considered in the development of the plan. While on-site generation is capable of servicing the needs of some mines it is not the most economically effective means of meeting the needs of mining clusters that have significant energy demand.

Where practical the use of transmission lines is considered the most cost effective means of providing electricity to mining clusters where a significant demand exists. In addition to being cost effective for miners, transmission lines have significant benefits for regional communities and industry as well as reduced environmental impacts.

The South Australian Government will direct the Taskforce to work with industry to promote the following electricity transmission projects as priority initiatives:

- Upgrade of the Eyre Peninsula transmission network
- Development of a transmission link from Belalie to Braemar
- Upgrade of the Yorke Peninsula Transmission network.

The Taskforce’s support of these projects will:

- Contribute a regional perspective to planning associated with electricity supply and demand
- Consider possible transmission line corridors and seek to protect critical sections from incompatible uses.

**Land transport links**

Land transport links are directly connected to the port location which will be used by each mine. The South Australian Government supports a combination of the use of rail, slurry pipelines and road transport across South Australia, which will be guided by the recently released Integrated Transport and Land Use Plan.

The South Australian Government will direct the Taskforce to support the private sector’s successful delivery of land transport links by:

- Considering land transport links in the development of land use plans
- Assessing land transport corridors and protecting critical sections of corridors from incompatible uses
- Considering the critical impact of rail and road safety on the community in planning and approval processes.

**Water**

The water requirements of mining will be met through a combination of sources including groundwater resources, desalination of seawater and existing supplies.

The South Australian Government recognises the use of groundwater will not be suitable for all mines and supports the use of desalination of marine water to meet the bulk of mining needs where it is the most viable source economically and environmentally to meet water demands.

A key objective is that desalination and recycling of water and mine dewatering is undertaken in an environmentally sustainable manner.

To support the ability of mines to access sufficient water the South Australian Government will direct the Taskforce to:

- Facilitate access to groundwater data and interpreted information in areas of mining demand to provide greater information for planning
- Develop a desalination plant/pipeline policy to provide for the development of desalination plants and associated pipelines
- Gather information and knowledge to support innovation in the use and reuse of water for mining operations
- Take into account desalination plants and pipelines in land use planning
- Consider the needs of desalination plants in electricity planning

**Further priority actions**

In addition to the infrastructure-specific actions above, the South Australian Government has identified two further priority actions for the Taskforce:

- Integrate the results of separate Oil and Gas sector infrastructure assessment with this Plan – to maximise the benefits of common use infrastructure
- Identify infrastructure corridors in the land planning system to protect critical sections from incompatible uses and ensure their future availability.
Vision for the future
The Seven Strategic Priorities

The South Australian Government (the SA Government) has developed seven strategic priorities where the greatest difference can be made to the future prosperity of South Australia.

These Seven Strategic Priorities are:

1. Creating a vibrant city
2. An affordable place to live
3. Every chance for every child
4. Growing advanced manufacturing
5. Safe communities, healthy neighbourhoods
6. Realising the benefits of the mining boom for all
7. Premium food and wine from our clean environment

The mining industry can contribute to each of these by driving economic activity generally, and particularly in industries which support mining.

Achieving the Seven Strategic Priorities relies on managing the growth of mining and resources activity to realise the benefits for all South Australians.

This plan details how the SA Government will facilitate the delivery of infrastructure to encourage the socially and economically sustainable growth of the South Australian mining industry.

An important role for the SA Government is to create an environment that provides greater certainty to the private sector by:

- Providing clarity and transparency
- Consolidating demand
- Ensuring a whole of State planning perspective is adopted
- Increasing the knowledge available for decision making, and sharing it with people who make decisions.

South Australia is fortunate to be endowed with valuable natural resources assets. All South Australians should share the benefits of their extraction.

The SA Government will harness this mining activity for the benefit of all South Australians, particularly those in the regions where continued economic activity is crucial to underpinning vibrant communities.

Vision for mining

The SA Government’s vision is for a collaborative and vibrant mining industry to ensure we are able to capitalise on our ore deposits to generate real economic benefits for the people of South Australia.

Mining has been an important part of the South Australian economy virtually since proclamation. In fact, Australia’s first metals mine was established at Glen Osmond in the Adelaide Hills in 1840.

The SA Government recognises the potential of building on our mining history to revitalise the industry’s ability to contribute to South Australia’s economic prosperity.

The expansion of mining in South Australia is just one of the ways the State will be able to benefit from the opportunities created by increased levels of global demand, particularly from China and India.

As detailed in the Economic Statement, mining presents opportunities on a number of fronts including:

- Foundation for developing a world class mining services sector
- Catalyst for economic growth and sustainable regional communities
- Building on the reputation of South Australia’s universities and training organisations offering leading qualifications for mining and resources technologies.

The SA Government recently established the Mining Industry Participation Office (MIPO) to help South Australian manufacturing companies meet the supply demands of the expanding mineral and energy resources industry. MIPO is working with industry to make it ‘resource sector’ ready by assisting in developing capacity and capability.

South Australia’s mining industry faces challenges as a result of the dispersed nature of deposits. This makes developing infrastructure more expensive per tonne of ore produced because infrastructure is able to service a defined geographic area only.

The challenges facing South Australia’s mining sector creates the need for a collaborative approach to infrastructure to reduce costs and remain internationally competitive. This need for collaboration creates a unique opportunity for South Australian miners to work together to achieve outcomes to the benefit of all.
Mining in South Australia

The South Australian mining industry must be considered in the context of the resources sector internationally.

Since the early 2000s unprecedented international demand for raw resources drove considerable increases in prices and a surge in investment by mining companies in an attempt to satisfy this demand and capitalise on high prices.

This period of surging demand and high prices saw the advent of the so-called “mega-projects” in which mining companies invested in huge projects such as those in the Pilbara region of Western Australia.

While still high by historical standards, resources prices have fluctuated in recent times and accordingly mining companies have become less willing to invest in mega-projects which require large amounts of capital in the face of increasing uncertainty. Boards and shareholders have greater expectations around the capital efficiency of projects.

Even in light of recent moderations, the underlying international demand for resources is still strong by historical standards and there is a continued need for additional mining capacity to be developed.

This is an excellent environment for mining in South Australia. Our mining deposits can be developed without requiring the same commitment of capital as the mega-projects and thus are attractive internationally to miners wishing to continue to invest while minimising the requirement to put capital at risk.

Phases of mine development

There are three phases in mine development:

- Exploration in which miners are seeking to identify resources and the means of extracting them in a commercially attractive manner
- Capital expenditure in which miners make the significant investments necessary to access the ore body
- Production in which miners are actually extracting ore for shipment.

The Plan for Accelerating Exploration (PACE) is internationally recognised as an innovative and effective way of supporting mining exploration.

As a result of the PACE program South Australia has experienced a significant expansion in mining exploration activity in South Australia. This mining exploration activity has in turn led to the development of a number of mining prospects which require infrastructure to proceed from the exploration phase to the capital expenditure phase.

This document is the SA Government’s plan to ensure the mining industry has the necessary infrastructure to realise the potential created by the PACE program.

South Australian mining is characterised by a relatively high proportion of miners operating at the cusp of progressing from the exploration to the capital expenditure phase.

The ability of miners to move between these phases will depend on continued favourable minerals prices and affordable access to infrastructure.

Minerals prices are beyond the control of the SA Government, however through this plan the SA Government seeks to increase the efficiency, and thus affordability, of infrastructure delivery.

The SA Government is committed to planning for mining infrastructure to support infrastructure being ready when miners need it. This is the key for the South Australian mining industry to move from the exploration phase, through the capital expenditure phase into the production phase.

Early infrastructure planning will give a clear signal to miners and infrastructure proponents of the progress being made in the South Australian operating environment.
Strategic framework
Mining considered in this plan

This plan addresses the infrastructure needs of mining in South Australia including iron, copper, uranium, heavy mineral sands, silver, gold and zinc.

While iron is not the only ore mined in South Australia, it is the most infrastructure intensive mining activity in terms of power, water and freight needs and is therefore featured heavily in this plan.

Energy related extraction activities including coal, coal to liquids, geothermal, oil and gas projects are not included in this plan.

This plan is focused on three regions of South Australia:
- Eyre and Western
- Far North
- Yorke and Mid-North/Braemar.

These regions encompass the majority of mining and prospective mining activity in the State.

How this plan was developed

This plan was developed based on an independent and rigorous analysis of the mining sector, led by Deloitte.

Of central importance to Government formulating this plan is to have a solid base of evidence on key issues such as likely future demand from the sector, the ability of our infrastructure to facilitate this growth, and an identification of what new infrastructure we might need.

Deloitte undertook a detailed study to assess these issues. This detailed analysis is available in Deloitte’s contractor reports which have been prepared for each region covered by this plan.

Key stages in the development of this plan have included:
- Rigorous and independent forecasting of mining volumes and infrastructure demands.
- Detailed assessment of existing infrastructure across South Australia to meet forecast demand
- Preparation of, and extensive consultation, on interim reports
- Identification of potentially unmet infrastructure demand by region
- Priority setting for development of additional infrastructure.

Mining clusters – A Regional Approach

This plan groups mines into clusters which are likely to have similar infrastructure needs based on:
- Common mineral being extracted (likely to reflect common freight need)
- Common extraction technique (likely to reflect common water and power needs)
- Geographic proximity (to reflect the location in which the infrastructure must be provided).

By considering the infrastructure needs of mining on the basis of clusters rather than mine by mine, aggregated infrastructure solutions can be developed to meet the needs of a group of mines.

The mining clusters considered in this plan are demonstrated in the map overleaf.

This Plan’s approach to aggregating demand at a cluster level allows identification of a broader range of infrastructure solutions. Such an approach also enables a more holistic consideration of environmental issues in the development of infrastructure solutions as well as providing for a greater emphasis on collaboration between all parties, including miners, infrastructure providers, communities and government.

Need for Government action

Governments intervene where necessary in private markets to achieve desirable economic, environmental and social outcomes which would not be achieved in the absence of intervention, a so called market failure.

Address challenging market structures

By its nature, infrastructure investment requires a considerable capital commitment which is then repaid over the life of the asset as it is utilised.

Committing capital for the life of an infrastructure asset creates a risk for infrastructure proponents. Infrastructure proponents will seek to minimise their risk by building infrastructure that meets committed demand only.

Infrastructure proponents seeking to minimise their risk do not have an incentive to invest additional capital to develop strategic infrastructure solutions able to meet the needs of multiple miners and realise the benefits of economies of scale.
Regional Mining and Infrastructure Plan clusters

Source: Deloitte Regional Mining and Infrastructure Contractor Reports
In some cases, this incentive to only meet the immediate needs of an individual proponent will lead to outcomes which are not as efficient for all users as would be a collaborative approach.

Creating incentives to invest in the development of multi-user solutions is particularly important in the case of infrastructure because the capacity is heavily dependent on design when the infrastructure is built and retro-fitting such infrastructure is often highly capital intensive and less efficient than building in such capacity during the initial construction.

Infrastructure considered in this plan

Infrastructure considered in this plan includes the basic physical and organisational structures necessary for mining and communities to thrive.

The infrastructure requirements of miners, and thus the focus of this plan, include:

- Transport and logistics links comprising ports and associated land transport such as road, rail and slurry pipelines
- Installations to collect, treat and, if necessary, transport water to mine sites
- Installations to produce energy and connect it to mine sites.

Infrastructure needs of mining

Freight and logistics

The transport and logistics needs of mining are driven by the need for product to be exported to international markets and to deliver the inputs necessary to support mining activity.

Mining inputs are typically delivered via a combination of import terminals and road/rail freight, although this is typically approximately only five per cent of the total freight task for mining. These inbound freight needs can be accommodated within existing planning frameworks.

Commercially viable export of bulk mining commodities generally requires transport in capesize vessels. While the particular circumstances of individual mines may allow them to be commercially viable while shipping product in smaller vessels, the broader mining activity provided for in this plan requires high capacity ports to support the loading of capesize vessels.

There are no ports in South Australia which are capable of fully loading capesize vessels at the jetty in volumes sufficient for mining in their current configuration.

In addition to the need for a port capable of supporting the loading of capesize vessels, miners also require transport links, typically road, rail, slurry pipeline or a combination thereof, to transport ore from the mine site to the port.

The preferred mode of land transport between mines and the port depends on the particular characteristics of the mineral produced and the capital and operating costs of the transport mode. An assessment of the relative merits of different land transport modes is discussed later in this plan.

Electricity

Mining requires considerable electricity for extraction and processing activities. Much of the infrastructure necessary to support mining activity, such as ports and desalination plants, also requires significant amounts of electricity.

The electricity requirements of mining activities differ based on the mineral being mined and the extraction technique applied.

Electricity can be provided by either centralised generation and transmission to mine sites or through localised generation at individual mine sites.

Water

The water needs of mining include dust suppression, processing techniques, drinkable supplies and, potentially, use in slurry pipelines. Importantly, not all of these needs require that water is at potable standard.

As with electricity, the water intensity of mining is dependent on the mineral being mined and the extraction technique employed.

These water needs can be met by two key sources of water; groundwater extraction, including desalination of saline groundwater and desalination of seawater.
Mining infrastructure challenges
Mining infrastructure demand

The SA Government has engaged Deloitte to undertake an independent analysis of the future infrastructure needs to support growth in the South Australian mining industry. The findings of this study are based on the outcomes of a modelling exercise which forecast likely mining activity over the time periods of 2013-2017, 2018-2022 and 2023-2032.

The forecasts of mining activity were used to develop an understanding of the infrastructure needs of mining in each of these time periods.

The findings of this modelling for each of the identified mining clusters is summarised in the map overleaf and table which follows; the clusters in which demand for infrastructure is most acute are highlighted. Following the table is a discussion of the infrastructure needs of each cluster.

Forecasts of mining activity were produced to reflect high, medium and low global economic growth scenarios. The modelling presented in this plan is the medium or most likely scenario.

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<th>Bulk Freight Task (Mt p.a.)</th>
<th>Peak electricity demand (MW)</th>
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Source: Deloitte Regional Mining and Infrastructure Contractor Reports

N.B.: The red highlighted clusters represent the major infrastructure demand areas identified by the Deloitte Contractor Reports.
Mining infrastructure challenges

Source: Deloitte Regional Mining and Infrastructure Contractor Reports
Locations of infrastructure need

The SA Government is seeking to create an environment in which individual mining proponents work together to develop collaborative solutions that meet infrastructure needs at a regional level.

There will be a need for infrastructure wherever mining proceeds to the production phase. However, the focus of this plan and the SA Government’s activities to support the delivery of infrastructure for the mining industry are in those areas where:

- Infrastructure is a critical factor necessary for the development of mining prospects
- Access to infrastructure by multiple parties will deliver outcomes which best meet the needs of multiple mines and are beneficial to regional communities.

Discussed below are the key concentrations of future infrastructure need for the clusters highlighted above.

Braemar
The forecast demand for infrastructure in the Braemar cluster is driven by iron ore mines beginning production in the middle of the period 2018-2022.

Iron ore production in the Braemar cluster is expected to create the need to move up to 39 mtpa of ore to a high capacity port for shipping to market.

Also associated with the iron ore production is a requirement for peak power capacity of 197 MW and water demand of up to 19 GLpa.

Key challenges
- Access to a high capacity port
- Land links to a high capacity port
- Supply of water
- Supply of electricity.

Central Eyre
Forecast mining production in the Central Eyre cluster is driven primarily by iron ore production beginning production early in the period 2018-2022.

Iron ore production in the Central Eyre cluster is expected to create the need to transport up to 40 mtpa of iron ore to market, again through a high capacity port and associated land transport links.

Key challenges
- Access to a high capacity port
- Land links to a high capacity port
- Supply of water
- Supply of electricity.

In addition to the freight and logistics needs of these mines, peak power demand is expected to be 361 MW and water demand is expected to be 52 GLpa.

Key challenges
- Access to a high capacity port
- Land links to a high capacity port
- Supply of water
- Supply of electricity.

Mount Woods
Mining in the Mount Woods cluster is driven by iron ore production which is expected to decrease from approximately 5.5 mtpa in the period 2013-2017 to approximately 3.3 mtpa in the period 2018-2022 and 0.07 mtpa in the period 2023-2032.

Demand for water and power decrease from the first period in line with decreasing production. Water demand is expected to peak at just less than 7 GLpa and power demand at approximately 50 MW.

The majority of mining infrastructure demand in the Mount Woods cluster is already met by existing infrastructure. There is the possibility that under a high global demand scenario, mining activity in the cluster would increase and that existing infrastructure would not be sufficient. Therefore it is prudent to consider the Mount Woods cluster as one with potential unmet demand.

Key challenges
- Access to a high capacity port
- Land links to a high capacity port
- Supply of water
- Supply of electricity.

South Gawler
The forecast demand for infrastructure in the South Gawler cluster is driven by the expansion of already producing iron ore operations. Iron ore production is expected to increase across the three time periods of this plan.

Iron ore production in the South Gawler cluster is expected to create the need to move up to 11 mtpa of ore to international markets.

Also associated with the iron ore production is a requirement for peak power capacity of approximately 60 MW and water demand of up to 10 GLpa.

The majority of demand in the South Gawler cluster is as a result of iron ore mines which are already operating. While these mines may benefit from improvements in supporting infrastructure, this is not critical for the expansion of mining activity in South Australia.
Torrens West
While relatively small volumes of product are produced in the Torrens West cluster there is a considerable need for electricity and water in this cluster. This demand is driven by BHP Billiton’s Olympic Dam operation which includes processing of ore to markedly increase its value.

The Olympic Dam operation is particularly electricity and water intensive because of on-site processing and value-adding processes such as copper smelting which are located in the area. BHP Billiton has sufficient infrastructure to meet the planned needs of this facility and therefore is not a focus of this plan.

In August 2012 BHP Billiton announced it would not proceed with the planned open-pit expansion of its Olympic Dam operations. In announcing it would not proceed, BHP Billiton noted the impact of “current market conditions, including subdued commodity prices and higher capital costs” as well as “the long term outlook for the copper market remains strong”.

BHP Billiton is investigating other options for the continued development of Olympic Dam. Any expansion of Olympic Dam will almost certainly have a considerable infrastructure requirement. The infrastructure required by Olympic Dam may create opportunities for collaboration with smaller mines.

Yorke
Mining in the Yorke cluster will be concentrated in copper operations. Like the Torrens West cluster, the infrastructure needs of mining in the Yorke cluster are more water and electricity intensive per tonne of product produced than iron ore mining.

The peak electricity demand of the Yorke cluster is expected to grow from approximately 23 MW in the period 2013-2017 to approximately 60 MW in the periods 2018-2022 and 2023-2032. The water demand of the Yorke cluster is expected to be approximately 800 MLpa in the period 2013-2017, 2 GLpa in the period 2018-2022 and 3 GLpa in the period 2023-2032.

Mining in the Yorke cluster is in the advanced stages of planning and infrastructure has been identified which is capable of meeting the identified needs.

The SA Government recognises that there is the potential for mining activity to be enhanced if improved infrastructure is delivered on the Yorke Peninsula. However this is not critical to the development of these mines and therefore there is not a need for SA Government action to underpin the development of mining.
Infrastructure delivery
A Taskforce for Action

Implementing the Plan

The complexity of the actions necessary to implement this plan will require a higher level of portfolio collaboration and focus including in areas associated with planning, transport, environment, finance, mining, energy and social policy. Given the government’s desire for collaborative and regional solutions, a greater degree of cooperation between Government and Industry is also required.

The SA Government will create a Resources Infrastructure Taskforce, which will report directly to the Minister for Mineral Resources and Energy, and the Minister for Transport and Infrastructure.

The taskforce will be the primary mechanism for the SA Government’s interaction with the resources sector and will provide transparency and consistency in the private sector’s engagement with the SA Government.

Central to the approach of the Taskforce will be taking a whole of region perspective on infrastructure development that also reflects other government planning initiatives. The Taskforce will focus on developing collaborative, rather than single user solutions. This will facilitate greater consolidation of demand, as well as maximising potential benefits to the community and recognising the needs of other industry sectors.

Resources Infrastructure Taskforce Terms of Reference

The Taskforce will work with industry to provide the infrastructure to enable mining companies to export the product volumes for the 5 – 10 year period forecast in the RMIP. The Taskforce’s role is to:

- Function as South Australia’s single point of reference for the resources sector to achieve significant resources infrastructure projects through regional collaboration
- Maintain close engagement with agencies across government
- Facilitate the commercialisation of regionally significant resource projects
- Work with the private sector to further develop business cases on key infrastructure projects, including identification of innovative capital solutions
- Facilitate the delivery of key infrastructure projects as indicated in this plan, with an initial focus on high capacity ports and electricity transmission.

The Minister for Mineral Resources and Energy and the Minister for Transport and Infrastructure will have joint responsibility for the Taskforce, which will comprise of staff from existing areas of government. The Ministers will receive advice from an Advisory Committee.

Ports

Key messages

The SA Government’s desire is for miners across South Australia to have access to commercially viable high capacity ports which consolidate social and environmental impacts and allow all users to access cost effective shipping solutions.

The SA Government will pursue this outcome by directing the Taskforce, in partnership with industry, to:

- Develop a framework to establish multi-user ports that serve the consolidated regional needs of mining as identified in this Plan
- Identify commercially viable proposals from the private sector that are consistent with the framework for the development of ports (and related infrastructure)
- Examine ways to share risks with the private sector to ensure solutions that deliver best outcomes for the state.
- Case manage the implementation of proposals that are considered to be priorities for achieving the outcomes of this Plan.

As noted in the previous section, three core locations of unmet demand for a high capacity port are forecast for three clusters in South Australia:

- Central Eyre
- Braemar
- Mount Woods.

In addition to these three clusters of unmet demand, there are existing mining operations which are likely to divert to a lower cost freight and logistics path if one becomes available.

Options for port development

Three options have been identified for the development of ports to service South Australian mining:

- Multiple smaller ports – development on an ad hoc basis in response to applications received from private sector parties or an upgrade of existing ports
- Single port – a single large port could be developed which achieves economies of scale and services the needs of all South Australian mining
Three ports – could be developed to service the needs of mining in each of the three clusters of most acute demand.

Two factors – the economies of scale of larger ports and the increased transportation costs resulting from longer land transport – must be balanced to find the most efficient approach overall.

Analysis by Deloitte and SMEC found that the capital cost of delivering land transport links suitable for iron ore is approximately $4 million per kilometre for rail and approximately $1-2 million for slurry pipelines. Moving product over greater distances to a central port adds to the cost of transporting.

The cost of developing and operating land transport links needs to be balanced against the cost of developing an additional port. The development cost of high capacity port proposals in South Australia ranges from $200 million to $800 million, depending on a range of factors including location.

The benefits of consolidation must be balanced against the need to invest additional capital in a port capable of loading the forecast volumes and the operating costs in transporting ore to a consolidated port further from the mine.

These economic principles have been applied to the proximity of key concentrations of mining demand to suitable port locations across South Australia. The SA Government has identified three regions for port development which balance the benefits to mining of consolidating ports and minimise land transport links:

- East coast of Central Eyre area
- West coast of Northern Yorke Peninsula area
- East coast of Northern Eyre Peninsula area.

Developing multi-user ports

The development of ports which serve the needs of the mining industry broadly require an environment in which miners have the incentive the meaningfully cooperate.

The SA Government has identified three locations for the development of high capacity ports:

- East coast of Central Eyre area
- West coast of Northern Yorke Peninsula area
- East coast of Northern Eyre Peninsula area.

These three port locations have been identified because they are expected to minimise the combined cost to miners of transport to port facilities and loading a capesize vessel.

A trade-off was considered when deciding the number of ports that the SA Government will seek to be developed. A higher capacity port would reduce the capital invested at the port per tonne of ore loaded, however longer land transport links would be needed to transport product from mines to a central location. Multiple ports on the other hand lead to greater total capital investment across the port sites, however the ports could be located close to mines and therefore shorter land transport links would be required.

The focus of the Resources Infrastructure Taskforce’s approach is to find the most cost effective solution that would enable the maximum opportunity for mining production and return on investment.

A small number of ports with larger capacity are more cost effective compared to many ports with lesser capacity. This is because less capital is required to be committed per tonne of ore loaded.

Therefore, economies of scale could be gained through the development of larger ports because the cost of base infrastructure (such as a jetty able to access high capacity) can be allocated across a greater volume of ore. These economies of scale reduce the cost of developing and operating ports, which in turn reduces the cost to miners of using ports.
However, as previously stated, the cost savings gained by developing larger ports must be balanced against the capital and operating costs of land transport links.

The Taskforce will seek to provide greater certainty of demand for port proponents, but will not have an interest in dictating the design of the port or if, for example, the solution may include interim tranship facilities. The port must meet necessary social and environmental considerations and be accessed by all mines in the port catchment area at an acceptable cost.

The Central Eyre port should be the highest priority due to the level of mining activity which would be supported and the timing (mining demand is expected early in the period 2018-2022). The Northern Yorke port should be the next highest priority because it will support a considerable amount of mining activity, however demand is not expected in significant volumes until the middle of the period 2018-2022. The Northern Eyre port is the third priority because the increased production it would support is unlikely to occur in the next 10 years.

Given it is likely to take up to five years to develop a high capacity port, there is an imperative to act in the short-term to ensure suitable port capacity exists to meet the future needs of mining.

Target timelines for high capacity port developments to serve the Eyre and Western region and the Yorke and Mid-North/Braemar region would be by 2018 and 2019 respectively. These timelines will be monitored by the Taskforce.

Port development conditions

It is recognised that, if the number of port options available to mines in each cluster is limited to one, considerable market power will be generated for the owner of the port. This would create the need for conditions to be placed on the entity controlling the port to stop any potential abuse of market power in negotiating access conditions for mines.

The SA Government would require the following conditions to be met to ensure this market power could not be abused:

- The method of calculating the loading fee to be charged at the port
- The conditions under which access to loading at the port will be granted
- Access to associated land facilities as part of the whole supply chain
- The minimum loading capacity through the port, reflecting the expected average demand volumes of the catchment
  - Central Eyre Peninsula - approximately 43 mtpa
  - Northern Yorke Peninsula – approximately 40 mtpa
  - Northern Eyre Peninsula – approximately 13 mtpa
- The conditions under which loading capacity at the port will be staged to meet the final minimum loading capacity:
  - This could include staging at the same location or staging through the use of ports at different locations or loading methods
  - The impact of staging options on the cost to users will be considered
- The port is capable of supporting the loading of a capesize vessel
- The ability of the port to be used to support other industries, including the agricultural and oil and gas sectors
- The environmental impact of the port and associated protections
- The social impact of the port and associated protections
- Commitment to develop the port, including penalties for failing to develop the port
- Ability of the proponent to deliver the port, with reference to the following aspects:
  - Technical
  - Financial
  - Commercial
- Ability of the proponent to manage the port, with reference to the following aspects:
  - Technical
  - Financial
  - Commercial
- The financial and commercial relationship between the proponent and the SA Government.

Meeting these conditions will ensure the port solution developed in each region will suit the needs of miners.

The development of multi-user ports will prevent the unnecessary duplication of capital expenditure by consolidating the number of ports in South Australia.

The most immediate action to be undertaken by the Resources Infrastructure Taskforce is to begin consultation with miners and potential port proponents to gain a firm understanding of the extent and structure of support for the private sector which may be required.

The Taskforce will assess the market place and propose approaches to the government and industry to achieve the target.
Electricity

Key messages
The SA Government supports the use of transmission lines rather than on-site generation to provide electricity to key areas of mining demand.

The Resources Infrastructure Taskforce will:
- Contribute a regional perspective to planning associated with electricity supply and demand
- Assess corridors and ensure that critical sections will be protected from incompatible uses.

Options for electricity
There are essentially two options for the delivery of electricity to mining:
- On-site generation
- Transmission links to the National Electricity Market (NEM).

Transmission lines which would allow miners to access the NEM require a greater capital commitment but are ultimately more cost effective for miners than on-site generation because it allows miners to access relatively cheap electricity generated at central power stations.

With the additional cost of on-site generation also comes the flexibility to scale up or down the electricity needs of miners.

On net balance, the flexibility afforded by on-site generation does not justify the additional cost if it is to be used to support large scale mining.

Electricity transmission lines will also improve security of electricity supply for regional communities and other industries where they can be accessed by these users.

The clear cost, social and broader economic advantages of using transmission lines to provide power to mines means that this is the preferred solution to electricity demand where a significant cluster of mines will exist.

It should be noted that this is not to say that transmission is suitable for all mines. Where demand is relatively low or miners are spread over a large geographical area individual on-site solutions will be more cost effective for miners and should be pursued.

Electricity transmission on Eyre Peninsula
The volume and clustering of demand for electricity which will be created by the processing requirements of iron ore projects on the Eyre Peninsula will be best met through a transmission link to the NEM.

The existing 132kV Eyre Peninsula transmission network is close to its full capacity and will not be able to meet the future needs of mining.

ElectraNet has proposed replacing the existing network on the Eyre Peninsula with a double circuit 275kV transmission line capable of carrying between 600MW and 1,000MW – sufficient to meet the needs of miners and other industries on the Eyre Peninsula.

Additionally, this transmission upgrade will support the expansion of renewables generation on the Eyre Peninsula because it will be capable of transmitting electricity generated to the NEM.

ElectraNet’s proposed upgrade has been designated by the regulator as a ‘contingent project’ which means that the cost of works can be recovered through the regulatory framework if a sufficient demand commitment is made.

The SA Government recognises that miners will not be in a position to make such a demand commitment while they are still developing the feasibility of their mines and it will be difficult to prove the feasibility of their mines in the absence of a confirmed source of electricity.

It is important that works on the Eyre Peninsula transmission upgrade commence in the immediate future as it is expected to take two to three years to complete and must be in place to commence mining. Preliminary engineering works need to be commenced as soon as possible if electricity is able to be delivered when needed.

To support the delivery of the Eyre Peninsula transmission upgrade the Taskforce will:
- Investigate the appetite of, and options to encourage, the private sector to invest in a multi-user unregulated transmission line to meet mining needs on the Eyre Peninsula
- Ensure a whole-of-State perspective is adopted with respect to electricity generation planning.
Electricity transmission for Braemar cluster
As with mining on the Eyre Peninsula, the volume and density of demand for electricity makes a transmission line the most effective way of addressing mining needs in the Braemar cluster.

There is no existing transmission line able to service mines in the Braemar cluster, so the installation of a single phase 275kV line from Belalie to Braemar is the SA Government preferred electricity supply solution.

As with the Eyre Peninsula transmission upgrade, investment in the transmission link to Braemar is contingent on miners being able to make a demand commitment.

Given this will be the installation of a new transmission line, securing an easement will also be required.

To support the delivery of a transmission line to the Braemar cluster the Taskforce will:

- Investigate the appetite of, and options to encourage, the private sector to invest in a multi-user unregulated transmission line to meet the needs of mining in the Braemar cluster
- Ensure a whole-of-State perspective is adopted with respect to electricity generation planning
- Include the need to protect a corridor for the electricity transmission line between Belalie and Braemar in land use planning
- Identify potential electricity transmission corridor alignments and protect critical sections for infrastructure use.

Electricity transmission for Yorke Peninsula
While the supply of electricity is not a critical impediment to the development of mining on the Yorke Peninsula, improved electricity supply would improve the efficiency of mining.

In addition to improving the efficiency of mining operations, improving electricity transmission on the Yorke Peninsula will improve the reliability of supply for regional communities living there.

The SA Government’s preferred project to improve the supply of electricity on the Yorke Peninsula is the development of a 275kV injection point at Hummocks and a 132kV transmission line along the peninsula.

As with other electricity transmission upgrades, commercial viability is reliant on miners being able to commit to a minimum level of demand.

These upgrades are not critical to the development of new mines and are therefore less of a priority than other projects.

To support the delivery of Yorke Peninsula transmission upgrades the Taskforce will:

- Contribute a regional perspective to planning associated with strengthening the northern Yorke Peninsula transmission network
- Include consideration of a transmission corridor in land use planning on the Yorke Peninsula

Land transport infrastructure

Key messages
In the context of the recently released Integrated Transport and Land Use Plan, the Resources Infrastructure Taskforce will:

- Consider land transport links in the development of land use plans
- Assess land transport corridors and ensure critical sections are protected from incompatible uses
- Ensure the critical importance that the community places on rail and road safety is considered in planning and approval processes.

Land transport solutions for mining are intimately linked to the port site. The purpose of land transport is to connect mines to the port for export of product.

The land transport discussed below refers to export of product only and does not give consideration to the need for inbound freight infrastructure. While there will be a need for some augmentation of road infrastructure for the movement of inbound freight, this can be accommodated within the existing road planning framework; the fundamental shift required to move the volumes of outbound freight require special planning consideration.

Modal Choice
In selecting the appropriate mode for land freight transport from mine site to ports, miners and infrastructure proponents need to evaluate the relative benefits and costs of transport by road, rail and pipeline. This is dependent on a range of factors, including:

- Volume of product – in general, road is ideally suited to relatively low volumes. As volume increases, rail and pipeline become more attractive
- Length of haul – over longer distances, rail and pipeline tend to be more economically feasible
- The nature of the product – for example, some minerals are not suited to be transported by pipeline
Capital expenditure versus operating expenditure—road transport tends to have a significantly lower capital expenditure than rail and pipelines, but higher operating costs.

Environmental and social impact—the impacts of the various modes of land transport are specific to each project.

Braemar mines to Northern Yorke Peninsula port

The relatively high operating cost of transporting iron ore from Braemar mines to a northern Yorke Peninsula port by road precludes the use of this mode. The only land transport options which are likely to be commercially viable are:

- Use of existing rail links with some augmentation
- A slurry pipeline capable of servicing multiple mines

The SA Government has considered the merits of transport by either rail or slurry and considers both to be capable of addressing the needs of miners in the Braemar cluster without significant social or environmental cost. Therefore, the SA Government has no interest in encouraging the development of one option over the other. The commercial consideration of mines and infrastructure proponents will ultimately dictate which is the most desirable option at the time of mine development.

The key potential impediment to the delivery of either of the transport solutions will be the ability of infrastructure proponents to secure the necessary corridor. To support infrastructure proponents, the Resources Infrastructure Taskforce will:

- Include potential corridors and consider advice from infrastructure proponents in land use planning
- Assess land transport corridors and protect critical sections from incompatible uses
- Consider use of existing transport corridors as basis for a wider corridor to supply other infrastructure needs
- Monitor negotiations between infrastructure providers and mines in the Braemar cluster to identify the need for and promote collaboration if necessary.

Land transport links for Central Eyre mines

The mines in the Central Eyre cluster are at varying distance from the Central Eyre Peninsula port location and therefore it is likely that a combination of land transport solutions will need to be pursued.

For those mines close to the coast, road links to the port may be cost effective due to the relatively short transport distances required. Mines further from the port will be reliant on the development of a new rail line to cost effectively move product from the mine site to port. Slurry has been considered for transporting ore in the Central Eyre cluster, however it will not be cost effective to crush ore produced in these clusters to a sufficiently fine grade for transport by slurry pipe.

The development of a Central Eyre Peninsula port will also be a port solution that miners in the Southern Eyre cluster will be able to use. The relatively small volumes of ore and short distance from these mines to the port mean that this ore may be cost effectively transported by road. The necessary upgrades and maintenance of roads will need to be considered by the SA Government in the road planning framework.

To support infrastructure proponents, the SA Government will:

- Include rail corridor upgrades in land use planning
- Identify land transport corridors and protect critical sections from incompatible uses
- Develop a mechanism for the assessment of the social impact of additional rail activity on the Eyre Peninsula (particularly in relation to level crossings)
- Ensure approval for rail and road upgrades is granted where the upgrades are capable of meeting the needs of expected future demand
- Consider the needs of Southern Eyre mines in road planning.

Land transport links for Mount Woods mines

Mines in the Mount Woods cluster have the advantage of being close to the existing interstate standard gauge rail network. Utilising the existing rail network will provide mines in the Mount Woods cluster with access to a Northern Eyre Peninsula or Northern Yorke Peninsula high capacity port with relatively low capital expenditure.

The section of rail between Wirrida and Port Augusta currently operates at close to full capacity and would need augmentation works to be capable of meeting the demands of mining. The augmentation of capacity on this line through the addition of passing loops can be staged as required to meet the needs of mining. The existing rail corridor has sufficient width to accommodate the addition of these passing loops.

Because this mine to port solution can be delivered within existing commercial frameworks there is no requirement for significant SA Government action to deliver this infrastructure. The SA Government will continue to monitor the necessity for additional capacity on this section of rail and periodically review its assessment of the need for action.
Water

Key messages
The Resources Infrastructure Taskforce will:

- Build on the studies and research undertaken by the SA Government by consolidating existing data and providing interpreted information at a regional level on groundwater resources. It will facilitate access to groundwater data and interpreted information to provide greater information to facilitate mining developments.
- Develop a desalination plant/pipeline policy to provide for the development of desalination plants and associated pipelines to ensure that they are developed in an environmentally sustainable manner
- Consider Desalination plants and pipelines in land use planning
- Ensure the electricity needs of desalination are incorporated in electricity planning.

Water for mining in South Australia has historically been sourced from groundwater resources. Groundwater has been capable of meeting the needs of mining due to the relatively small size of the mining sector and mines generally located in areas that do not compete with agriculture or other industries for access to groundwater resources.

As mining activity expands in the future, particularly on the Eyre Peninsula and in the Braemar cluster, groundwater resources may be insufficient to meet the needs of both mining and other water users, resulting in potential access conflicts. This would be contributed to by a lack of information on, and understanding of, these resources. The impact of mine dewatering on groundwater, particularly for open cut mining operations, may be a contentious issue where there are existing water users, who will be concerned that the impacts do not affect their ability to access water, and consequently devalue their land.

Noting the uncertainty in the capacity of groundwater to meet mining demand, the only other source of water considered to be capable of supplying the required volumes is the ocean. Groundwater extracted through mine dewatering and co-produced water from the gas and petroleum sector may also be viable water sources, particularly in the Far North region of the State which is further from the coast. Desalination of groundwater from these sources may be needed.

Groundwater investigations
With a focus on natural resources management, including the managed development of mining operations, regional studies have recently been undertaken to consolidate existing data and publish basic interpreted groundwater information on a regional scale and in the areas of groundwater demand. These studies note that the amount and quality of existing data and knowledge varies significantly between regions and recommends that further investigation is required.

Investigations have been commissioned by the Australian Government to collate baseline data and fill key knowledge gaps on the groundwater resources of the coal-bearing Arckaringa and Pedirka Basins in the state’s Far North.

In addition, research through the Goyder Institute for Water Research has developed new techniques to interpret airborne geophysics to complement groundwater data and provide an improved understanding of water resources. However, further studies are needed to give a detailed understanding of the nature, availability and reliability of groundwater resources in areas of mining demand.

Funding investment would be required to undertake more detailed investigations to inform policy and development decisions and provide miners with greater certainty when considering water supply options.

To address this information deficiency, the Taskforce will:

- Investigate options to progress detailed groundwater studies in areas of mining demand to address this information gap and provide greater certainty to miners when considering water supply options
- Facilitate access to groundwater data and interpreted information to provide greater information for planning mining developments.

Desalination plants and pipelines policy
As noted above, desalination will play an important role in meeting the water needs of mining.

There are two main options for the application of desalination in the mining context:

- Desalinating water on the coast and piping to the mine site
- Piping raw sea water to the mine site and desalinating as required for use.

There is no material difference in the ability of each of these options to address mining need and therefore the SA Government does not have an interest in which is chosen by miners.

A third option is the desalination of brackish or saline groundwater for potable or mineral processing supplies. This is currently undertaken at a number of mines, including by BHP Billiton for the copper refinery at Olympic Dam.
The key concern of the SA Government is that the transport of water and disposal of brine is undertaken in an environmentally sustainable manner.

To provide certainty to miners and the community the Resources Infrastructure Taskforce will develop a detailed policy governing the application and conditions for approval of desalination plants and associated pipelines in South Australia. This policy will include:

- The conditions under which third party access should be offered and the capacity which must be met
- Guidelines for accepted marine and terrestrial impact
- Conditions under which communities should be granted access to infrastructure and the associated water quality standard
- Minimum environmental standards of the disposal of brine and other waste
- Minimum environmental standards for intake points
- Minimum standards to ensure the safe transport of saline water
- List of mining uses suitable for saline water
- Guidelines for energy use and greenhouse gas emissions.

Recognising the challenges presented by desalination plants and pipelines, the SA Government will also:

- Include consideration of desalination plants and pipeline corridors in land use planning
- Ensure the power needs of desalination plants are considered in electricity planning
- Work with water industry entities to explore potential for collaboration in the development and use of desalination plants and pipelines.

Further priority actions

In addition to the actions outlined above to support the development of specific types of infrastructure, the SA Government will undertake the reforms discussed in this section to broadly support the delivery of infrastructure required for the development of the mining sector.

Alignment of mining and oil and gas infrastructure

Key messages

The Resources Infrastructure Taskforce will integrate the results of separate Oil and Gas sector infrastructure assessment with this Plan.

Similar to the mining industry, there is a need for significant infrastructure expenditure to develop oil and gas deposits.

The SA Government will incorporate findings and developments from the nation leading Roadmap for Unconventional Gas to develop a broader understanding of the likely infrastructure needs of the oil and gas sector and how best to support the delivery of this infrastructure.

The infrastructure needs of both the mining and oil and gas industries create opportunities to reduce the capital cost of development for both these sectors. Capital cost will be reduced by:

- Identifying synergies which allow the capital cost of infrastructure to be shared
- Effective planning which reduces the risk of unnecessary duplication of infrastructure investment.

The oil and gas infrastructure assessment being undertaken will provide a greater understanding of the infrastructure needs of the industry and develop a plan to strategically meet the identified infrastructure need.

By articulating a plan for the delivery of infrastructure to support the oil and gas industry the SA Government will provide greater transparency and certainty to potential investors. Increasing transparency and certainty will in-turn reduce the risk of investing and increase the likelihood of the development of South Australia’s oil and gas reserves.

The oil and gas infrastructure assessment has similar elements to the Regional Mining and Infrastructure Planning project, namely:

- Review current oil and gas projects
- Review existing infrastructure
- Forecast future infrastructure demand from the oil and gas sector
- Identify future infrastructure gaps
- Identify potential infrastructure solutions
- Develop a list of infrastructure priorities
- Integrate the results of the oil and gas infrastructure assessment with this plan.

There will be integration of the results of the oil and gas infrastructure assessment with this Plan, to ensure there is a consistent, whole-of-State approach to the delivery of infrastructure for the mining and oil and gas sectors.

Infrastructure corridors

Key messages

The SA Government will include infrastructure corridors in land use planning.

The SA Government will assess identified infrastructure corridors to identify critical sections.

Critical sections will be protected from incompatible uses.
The acquisition of land for linear infrastructure (transmission lines, pipelines, roads and rail) can present a unique challenge for infrastructure proponents. Linear infrastructure needs to secure access to land along its entire length and the potential routes for linear infrastructure are often restricted by geological formations or other technical challenges.

The distance which must be traversed by linear infrastructure creates a need for proponents to secure access from many stakeholders.

In addition to considering corridors in land use planning there may be a need for the SA Government to protect land in critical sections of corridors to ensure they are available when needed.

Critical sections of corridors are those sections where geography or other factors mean infrastructure proponents have few alternative infrastructure alignments available to them. For example the alignment of a rail line may be constrained when crossing hilly or otherwise unfavourable terrain.

The Resources Infrastructure Taskforce will assess likely infrastructure corridors to identify sections which will be critical to the installation of infrastructure.

Where critical sections of corridors are identified the SA Government will protect these sections by preventing uses of the corridors that are incompatible with the required infrastructure.

Two options have been identified to protect these critical sections of infrastructure corridors:

- Purchase land so it is under SA Government control and non-infrastructure development does not commence
- Create planning policy to protect those areas of land from incompatible uses.

The two options outlined above would achieve the same outcome of preventing incompatible development at critical sections of identified infrastructure corridors.

The critical difference between the two options above is the former will require the SA Government to commit funds to the purchase of land, while the latter option places the onus on infrastructure proponents to secure land access.

Given both options have the same ability to achieve the outcomes sought by the SA Government, creating planning policy to cover the corridors is the preferred approach as it is the lower cost option.
Impact of mining
Economic and social impacts

Feedback from consultation
Extensive consultation informed the development of this plan. Some key concerns raised in the consultation process were:

- Ensuring mining activity will support local communities
- The impact of additional road and rail traffic on towns and communities
- The potential impact of mining on groundwater, including aquifers
- The impact of ports and additional shipping on other industries, such as fishing and agriculture
- Desire to utilise and support renewable energy generation wherever possible
- The interaction between future mining and existing agricultural activities.

Benefits of mining
Value added to the South Australian economy has almost doubled in the decade to June 2012 from $2.9 billion to $4.3 billion. However, this growth pales in comparison to the future of South Australian mining.

Growth in mining activity has the potential to make a significant contribution to South Australia’s economy and regional communities.

Economic modelling undertaken by Deloitte Access Economics on behalf of the South Australian Government forecasts that economic benefits arising from growth in mining as outlined in this plan, based on the medium case scenario, could add an additional:

- $22.5 billion in gross state product (GSP) between 2013 and 2032
- Average of some 5,750 full-time equivalent jobs between 2013 and 2032
- Nearly 95 million tonnes per annum mineral production.

These estimates do not include the additional employment and contribution to GSP that could arise from the development of the oil and gas sector or if a high growth scenario eventuates.

The economic opportunities generated by mining will only be realised if infrastructure exists to support the industry. Effective planning for infrastructure is needed to ensure infrastructure is cost effective for miners and considers the impact on environment and communities.

The economic benefits of growth in mining have the potential to extend beyond the industry itself. If planned well, this growth could provide job opportunities and regional economic growth that supports retail, recreational and social services for mining workforces.

Opportunities also exist to leverage growth in mining to continue the renewal of South Australia’s manufacturing sector and develop a thriving mining goods and services hub to support mines in South Australia.

The economic opportunities provided by growth in the mining sector will have an impact on the communities in areas where this activity occurs. The nature and extent of these social impacts will depend on the workforce model adopted by each mine.

Attracting highly skilled workers and their families to South Australia and its regional centres is essential to:

- Ensuring that the mining industry is serviced by a highly skilled workforce
- Providing the critical densities required to deliver upgraded social infrastructure to regional communities
- Supporting the vibrancy of these regional communities and centres.

The SA Government has set a target to increase the population in the Upper Spencer Gulf cities of Whyalla, Port Pirie and Port Augusta, and increasing the employment and training opportunities in mining-related fields in this area.

Realising the benefits of mining for all
While the economic benefits offered by growth in mining activity are promising, there are a number of factors which risk the ability of all South Australians being able to enjoy these benefits.

The physical infrastructure outlined in this plan will facilitate growth in mining activity by providing effective supply chain solutions, but will also result in increased demand on existing community services and broader environmental and social impacts.

Accessing social infrastructure
Additional works required to support the increase in mining activity will increase demand for the social infrastructure in communities, but generally on an incremental basis.

The ability of existing infrastructure such as schools, hospitals and recreational facilities to meet increased demand will be monitored carefully to ensure all South Australians can continue to enjoy the social infrastructure which underpins the State’s vibrant communities.
The environment

Mining activities and the infrastructure used to support them can have a significant impact on the surrounding environment.

Improperly managed infrastructure development has the potential to reduce biodiversity, degrade natural habitats and detract from the visual amenity of the natural environment, amongst other impacts.

The risk of mining-related development in producing negative environmental impacts will be assessed and managed through applying high environmental standards to ensure the best use of South Australia’s natural resources.

Appropriate consideration of environmental risks can add benefit to a project through innovative design, reduced costs and on-going sustainability, sound land management and contribution towards the developer’s “social license” to operate.

This plan outlines the SA Government’s vision for the strategic delivery of mining infrastructure in South Australia. A core tenet of strategic infrastructure delivery is consolidation through multi-user installations which avoid unnecessary duplication.

Principles were developed to guide the environmental impact of alternate infrastructure delivery options. These guiding principles were developed for each type of infrastructure considered in this plan.

Consolidating the geographical location of infrastructure also consolidates the impact on the terrestrial and marine environments. Consolidation of environmental impacts will be a better environmental outcome than multiple infrastructure installations to meet the needs of miners when a single installation is capable of meeting the needs of multiple miners.

Communities

Mining and related infrastructure impacts upon the communities in which they operate or are located near. Certain impacts, such as providing access to improved electricity transmission and water supplies, make a positive contribution to communities. Other impacts can result in negative outcomes, such as:

- Increased freight movements through rural townships and level crossings, leading to potential safety concerns
- Easements passing through agricultural land, segregating properties.

To ensure communities affected by these impacts are able to benefit from the mining industry, careful planning and management will address the risks associated with mining and related infrastructure developments.
Actions to realise the benefits

To ensure all South Australians have the opportunity to benefit from forecast growth in the mining sector, it is essential that inhibitors to the realisation of potential benefits are properly addressed.

The SA Government is doing this by ensuring that planning processes for mining and related infrastructure achieve the right balance between supporting growth in the mining industry with the need to protect the natural environment and to develop cohesive and vibrant communities.

Achieving this balance will ensure growth in mining activity supports sustainable regional development, providing communities with access to the necessary infrastructure and providing the environment and communities with appropriate protections from the potential risks attached to mining developments.

Ensuring access to social infrastructure

The current supply of social infrastructure is not capable of meeting the forecast needs of mining.

To ensure demand from the growing mining workforce and their families are met and existing communities do not have to compete for access, the SA Government will include the needs of mining workforces in planning the delivery of housing, police, hospitals and other social infrastructure for the communities impacted by mining.

Unlike other infrastructure necessary to support mining, social infrastructure can be delivered through incremental change and does not require a marked shift in planning.

Mining and the natural environment

South Australia’s natural environment is one of the most important features of the State’s economy, providing a clean environment for our premium food and wine as well as a major drawcard for tourism.

A range of State and Commonwealth legislation already exists to protect our valuable natural environment and guide the assessment of development applications. These legislation and approvals processes require developments to comply with a range of environmental standards to ensure they do not produce unmitigated environmental damage.

The SA Government will continue to ensure development approval processes provide adequate protection for South Australia’s natural environment while also supporting the timely approval of appropriate mining and related developments.

The SA Government is currently undertaking the Planning Improvement Project to review the adequacy of the State’s planning processes. This review will be expanded to include processes and approvals for the mining industry and mining-related infrastructure.

This Planning Improvement Project will ensure mines and mining related infrastructure are developed in accordance with appropriate environmental and social standards.

Mining and communities

Each regional community has its own unique character and set of concerns. Growth in the mining sector is likely to impact these communities, with examples including a population influx as a result of the mining workforce or new developments affecting the character of the community.

While change in itself does not represent an issue, the potential impact of these changes could result in negative outcomes for the community if not planned for appropriately. The SA Government expects miners to engage with local governments and communities to ensure positive interaction with the regions in which they operate.
Disclaimer

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