South Australian Productivity Commission

Final Report

Extractives Industry Supply Chain Review

28 August 2020

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About the South Australian Productivity Commission

The Commission provides the South Australian Government with independent advice on facilitating productivity growth, unlocking new economic opportunities, supporting job creation and removing existing regulatory barriers.

Premier and Cabinet Circular PC046 sets out the objectives and functions of the Commission; how inquiries are referred to the Commission, undertaken and reported on; and how the Commission and public sector agencies work together.

The Commission was established to assist the government to:

- improve the rate of economic growth and the productivity of the South Australian economy in order to achieve higher living standards for South Australians;
- improve the accessibility, efficiency and quality of services delivered or funded by government;
- improve South Australia's competitiveness for private sector investment;
- reduce the cost of regulation;
- facilitate structural economic changes while minimising the social and economic hardship that may result from those changes;
- take into account the interests of industries, employees, consumers and the community;
- increase employment;
- promote regional development; and
- develop South Australia in a way that is ecologically sustainable.

The Commission is supported by the Office of the South Australian Productivity Commission (OSAPC) which is an attached office of the Department of the Premier and Cabinet. The Chair of the Commission also serves as the Chief Executive of the OSAPC.

For more information on the Commission, including Circular PC046, visit the website at www.sapc.sa.gov.au.

Disclosure

The Commissioners have declared to the South Australian Government all personal interests that could have a bearing on current and future work. The Commissioners confirm their belief that they have no personal conflicts in regard to this review.

Terms of reference

SOUTH AUSTRALIAN PRODUCTIVITY COMMISSION REVIEW INTO INSTITUTIONAL ARRANGEMENTS TO MANAGE REGULATORY BURDEN – EXTRACTIVES SUPPLY CHAIN

I, Steven Marshall, Premier, hereby request that the South Australian Productivity Commission (the Commission) undertake a review into institutional arrangements to manage regulatory burden focussing on the extractives supply chain.

Background

The construction sector is a significant employer and economic driver the state.
The construction sector employed 74,700 people (or 8.8% of total employment in the state) as at August 2019, and in 2018-19 the construction sector accounted for 7.9% of the state's total industry gross value - the third highest contributor to the state's economy. The South Australian government is investing $11.9 billion in infrastructure spending over the next four years, which will provide valuable community assets, drive economic growth and provide jobs for South Australians.
The extractives industry is a vital component to the provision of construction and heavy construction materials to infrastructure and building projects across South Australia.
The sector includes hard rock, sand and gravel extraction operations and secondary processing.

The ability to develop extractive resources close to infrastructure and construction projects across South Australia in a strategic manner significantly contributes to:

- cost and time efficiencies and improved tender mobilisation for major construction and infrastructure projects
- reducing transport costs
- improving the ability of quarry companies to tender with greater confidence, and to mobilise more effectively to respond to demand.

Terms of Reference

The Commission is to evaluate the effectiveness and efficiency of State and local government regulation, policies and practices for the extractives supply chain and identify reform options to improve the efficiency of regulation on the extractives industry – and broader construction industry to enhance output and employment.

The Commission is asked to consider and report on the following matters:

1. The current regulatory framework for quarry and extractive industry development in South Australia, including:
   a. processes for determining/approving location, and any restrictions that may exist
   b. timeframes for current processes
   c. costs for businesses
   d. closure arrangements and post closure land use.

2. Regulatory, planning and other barriers to strategic development of quarries located near significant infrastructure opportunities.

And make recommendations on:

3. Actions to improve the efficiency and effectiveness of supply of extractives-based inputs into strategic infrastructure and construction projects, and the efficient and effective establishment of related quarries across South Australia.

4. Better regulatory and non-regulatory options for more expedited assessment and approvals for high performing members of the sector thereby creating a more competitive environment.

5. Any other relevant matters.

Scope

The Commission should have regard to relevant local, state and federal legislation and regulation.

Process

The Commission is to consult with stakeholders, including: businesses operating in South Australia; relevant business associations and industry groups (such as Cement, Concrete and Aggregates Australia and the Institute of Quarrying Australia); the Department of Planning, Transport and Infrastructure; the Department of Energy and Mining; the Industry Advocate; Local Government Association; and the State Procurement Board.

The Commission is to issue a draft report outlining recommendations for consultative purposes. A final report is to be provided to me as soon as possible, but not later than six months after receipt of these terms of reference.

Hon Steven Marshall MP

PREMIER OF SOUTH AUSTRALIA

3 /2 / 2020

Transmittal letter

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Dear Premier

Extractives Industry Supply Chain Review

In accordance with the terms of reference received by the Commission on 3 February 2020 and the amended submission date of 28 August 2020, we are pleased to submit the South Australian Productivity Commission's final report on the review of the regulatory arrangements for the extractives supply chain.

This final report has been prepared after consultation with industry, government agencies and other stakeholders as well as careful deliberation of the submissions they made.

We acknowledge and thank them for their support, together with the Office of the South Australian Productivity Commission staff for their work in preparing this Final Report.

We note that in accordance with the *Premier and Cabinet Circular PC046* "The Commission must ensure that the report is available on its website within ninety days of delivering the report…", unless you specify a shorter period.

Yours sincerely

Dr Matthew Butlin
CHAIR

Professor Christopher Findlay
COMMISSIONER

28 / 8 / 2020

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Key messages

The extractive minerals industry provides essential materials for the construction industry and for state infrastructure. The Commission's task has been to evaluate and identify streamlining opportunities in the approvals process for quarries, and in the use of their outputs in construction and elsewhere, without compromising other government objectives.

The regulatory framework for the extractives industry combines a lead regulator framework for pre-operational approvals, led by the Department for Energy and Mining (DEM), and a co-regulation framework during the operational stage of quarries. Significant improvements can be made in both frameworks without changing legislation. Other recommendations build on existing reforms, namely the implementation of discrete aspects of state planning reforms and the delayed explosives regulation reform. This review has also help establish some principles for reform in other sectors that would lift employment, investment and productivity, particularly for those industries subject to co-regulation.

The distance that extractives outputs must be transported greatly affects their price at the point of use and the cost of infrastructure. Adelaide's highest-production quarries are located within the greater metropolitan area. This proximity to other sensitive land uses also creates tensions with neighbourhood effects such as noise, air quality and truck movements.

Current regulatory processes pay insufficient regard to the state's ownership of extractives resources and the optimum location of quarries. Whilst other more distant extractives resources may be available, their use incurs higher transport costs and impacts on roads. The Commission sees scope to strengthen the state's interests in regulatory processes.

DEM is generally well-regarded as a regulator by industry, which also identified improvement possibilities. The Commission concluded there are opportunities for improvement in:

- strengthening and streamlining DEM's lead role in approvals including by further risk-based triage, allocating the relevant resources and broadening the scope of existing defined impact assessment processes for lower risk quarry operations; and
- improving the lead regulator/co-regulator model applicable to the operational phase, by aligning contemporary co-regulator environmental standards with DEM's criteria for the operation of quarries, providing operators with greater consistency among regulators.

The Commission concluded strategic extractive mineral areas in the state's planning system need to be protected for the benefit of all South Australians. State planning reforms are addressing these issues to some degree but the new concepts of a Resource Extraction Zone and a Resource Extraction Protection Overlay may not be applied around urban quarries during the implementation of the Planning and Design Code.

There are opportunities to reduce the cost of some public infrastructure by better locating quarries, especially outside the metropolitan area, using more flexible approaches to pre-qualify outputs (materials) and earlier notification of infrastructure plans and funding. Regulatory arrangements for ongoing rehabilitation, eventual closure and subsequent land use can also be improved.

The approach to tackling regulatory reform in the report's final chapter provides the principles and broad action plan to give effect to specific improvements and increased efficiencies in the state's extractives industry supply chain.

Executive summary

The Commission's task was to consider the existing regulatory framework in terms of quarry approvals processes, costs to business, improving opportunities to strategically locate quarries proximate to infrastructure sites, and rehabilitation and post-closure land use. Understanding the issues affecting the regulation, policies and practices impacting on the extractives industry supply chain and identifying barriers and potential improvements and efficiencies in these areas were the focus of this review.

The Commission has engaged with the extractives industry in South Australia (SA), key regulatory authorities, and other stakeholders in two rounds of consultation. In the first round the Commission met with 32 different organisations, held 43 separate meetings, and received 10 public submissions. The second round was tightly focused on issues and draft recommendations. Four round tables were held, involving industry associations, businesses and regulators, and several meetings with business and regulators. The Commission thanks all participating people and organisations for their contribution, which has materially improved the Commission's understanding and the quality and precision of the final recommendations.

Notwithstanding the review's confined scope, it illustrated wider issues about how the state approaches regulation, particularly in areas where industry is governed by several regulators and highly interdependent regulation. These issues generally relate to the perspective and practices adopted by regulators and how they coordinate and pursue their mandates. Regulatory design could be improved in some cases.

The South Australian extractives industry

Extractive minerals are quarried across South Australia, with most of the strategically significant sites located in and around the greater metropolitan area of Adelaide. Other major quarry clusters are found on the northern coasts of the two gulfs, Fleurieu Peninsula and in the far south-east of the state. Around one-quarter of existing mineral tenements are extractive mineral leases.

The extractive minerals industry across Australia is largely made up of smaller operators, with relatively few companies employing over 200 employees. Industry has indicated that the larger companies account for most of SA's production of extractives.

Life cycle and supply chain

The development and exploitation of a quarry goes through defined stages of a life cycle: discovery; development and investment approval; planning, building and operation; and rehabilitation and closure. Investment decisions occur at each stage. The level of risk to the business tends to fall as the quarry moves through the stages. The supply chain involves the extraction of raw materials and various degrees of processing followed by delivery to customers. The materials tend to have low unit values, so that transport costs are a significant proportion of the delivered cost.

Government decisions

Extractives activity involves three areas of high-level decisions by the state's regulatory system:

- deciding the initial land use – extractives production or an alternative use – having regard to the various public interests, for example, in using geographically fixed resources to build infrastructure and in housing an expanding population;
- deciding the subsequent operating conditions for an approved quarry, having regard to the local impact on its neighbours and other state-level objectives; and
- deciding the subsequent land use post-mining, which affects the quality of the closure in the final stages of the operating phase, while ensuring the state's exposure to the legacy of poor decisions is limited to an acceptable level.

The regulatory process and its performance

While there is a one-door-to-government arrangement for extractives, there are in practice two systems. The Department for Energy and Mining (DEM) is the lead agency for extractives and is responsible for mining approvals and some performance measures. In the operational phase, the regulatory model becomes co-regulation, in which several regulators must discharge statutorily established mandates and powers covering quarry operations and supply chain activity. Where mandates overlap, unnecessary inefficiencies such as delays, excessive complexity, additional cost and inefficient approaches to risk are prone to occur.

A better balance is required to maintain environmental and safety standards while minimising delays in processing applications that can otherwise lead to lost commercial opportunities and investment in SA. Industry raised several issues about the time it takes to obtain the necessary approval to quarry. Achieving target timeframes only around half the time is unsatisfactory and indicates the need for actions to improve performance. The timeframes to obtain mining approval and quarry pre-qualification and to participate in tendering opportunities tend to favour established quarries, setting significant barriers to entry for new entrants and reducing agility.

The origins of these issues lie at several levels: different decision-making systems; staff skills; approaches to risk; managing expectations; and cultures. Opportunities for improvement include clarifying competing interests and the principles for reconciling them, improved interrelationships between regulators and coordinating their interests in the extractives industry, and aligning regulatory processes to achieve a result that best represents the state's interests overall.

The Commission evaluated the most prominent issues in the mining assessment process raised by industry and quarry operators, which relate to:

- the extent and proportionality of information regulators require from applicants to support the assessment process;
- inconsistency in the treatment of applications;
- public consultation requirements and balancing social licence with quarry significance; and
- process or procedural delays in progressing applications.

With respect to operations, following the assessment phase, the Commission identified several opportunities to improve the regulation of quarry operations and supply chain activity. They mainly pertain to the interplay between the co-regulators – DEM and other regulators responsible for environmental regulation and licensing of quarry activities –

access to the road network, water, the productivity of transporting construction materials, and storing and deploying explosives. There are also issues concerning the pre-qualification of proposed or new quarries for tenders related to government infrastructure projects.

Quarrying and other neighbourhood interests in extractives operations

Quarry operations and supply chain activity are governed by several regulators to address the various public interests associated with the neighbourhood effects (e.g. noise and air quality, truck movements, etc.). These effects can have an impact on the well-being of members of the local community and are not measured as part of the costs of production. Regulations, policies and other instruments are applied to ensure these effects are considered.

State interests in the location of extractives activities

The Commission heard Adelaide is uniquely placed compared to other Australian capital cities as most of its highest-production quarries are located within the greater metropolitan area. This proximity to metropolitan infrastructure projects is a competitive advantage as it minimises the highest proportion of construction material costs – transport. Over time urban sprawl has seen other interests taking up land and the creation of tensions where these interests occupy land adjacent to quarries. Pressure from competing interests and regulatory processes could result in the closure of a quarry earlier than would otherwise be the case. Whilst other extractives resources are available, they are more distant, increasing transport costs and therefore the costs of infrastructure. Conversely, if the quarry is not closed, housing and other infrastructure (e.g. pipelines) must occupy less preferable locations.

There have been several inquiries and policy and other responses over the last six years in response to issues of proximity, incompatible land use and quarries in South Australia. The new Planning and Design Code being progressively implemented under the state's planning reforms includes a new referral to DEM for development applications proposing development adjacent to mining tenements. Further, a Resource Extraction Zone and a Resource Extraction Protection Overlay are being introduced to protect current and future state significant extractives resources and activities. The limited application of these protections in urban areas will undermine their intended outcomes.

Quarry closure and post-completion land use: achieving fit-for-purpose outcomes

The level of prescription required in rehabilitation plans forming part of the mining approval may be disproportionate. Operators have expressed concern about the amount of information and specificity required in quarry operating plans regarding rehabilitation, particularly for large metropolitan quarries with very long operational lives. This can also create compliance issues. Whilst the operational advantages and the cost savings of rehabilitating a quarry progressively are generally accepted, the information requirements are said to disproportionately increase the cost of operations and unnecessarily delay an approval.

There is a clear state and community interest in ensuring quarry land post-closure is appropriate for future use. The failure to rehabilitate imposes legacy costs on the adjacent community and the state, creating barriers to constructive land use after closure. That use is dependent on the extent and quality of rehabilitation that has occurred, and where it has not occurred the costs are borne by the state. A fund has been established to indemnify the state against that risk and associated costs. The Commission observed obvious differences

between the perceptions of industry and the regulator on the purpose of the fund and how these arrangements are discharged. Successive changes in rehabilitation policy over the past two decades, and an indirect link between rehabilitation and indemnification, has further compounded those differences.

Towards a better regulatory framework

The quarry sector involves the interests of many parties, including quarry companies and their private and public customers, such as infrastructure providers, and their users. Other transport network users, local residents and taxpayers all have interests in the establishment and operations of quarries. If the value received and perceived to be associated with this sector is to be maximised, all the interests involved have to be taken into account and reconciled. This involves a complex set of regulatory processes, the structure and operations of which vary between stages along the value chain of the extractives industry.

The answer is not an addition to the agencies, regulators and regulation responsible for maintaining the state's interest, but to:

- clarify the interests of proponents, opponents and the people of South Australia and the principles for reconciling them;
- establish mechanisms for the interaction of the existing set of agencies and the interests on which they are focused, as a market would do;
- simplify and clarify the regulatory task of each agency; and
- viewed through the lens of the state's interests, align the regulatory processes to achieve the best result in the shortest time.

The Commission's recommendations are directed to these goals.

**Explanatory Note: at the time of writing machinery of government changes were occurring and planning functions had been made the responsibility of the Attorney-General, with the planning function remaining in the Department for Infrastructure and Transport (DIT). Any reference or recommendation made by the Commission in this report to the planning function of DIT continues to apply notwithstanding any subsequent departmental changes to the location of that function.*

Summary of recommendations

Recommendation 4.1: Regulatory guidance for industry

To promote transparency, improve compliance and reduce unnecessary red tape, Department for Energy and Mining (DEM), in consultation with industry and government stakeholders:

- simplify, update and streamline DEM's regulatory and process-related guidance material and information for quarry operators applicable to obtaining a mineral claim, extractive mineral lease and program for environment protection and rehabilitation/mine operations plan under the *Mining Act 1971*;
- identify and publish links on the DEM website to co-regulator legislation, regulation, and guidance material applicable to extractive minerals supply chain activity not covered by the *Mining Act 1971*;
- support the one-door-to-government model and facilitate ease of access for industry by identifying gaps in existing guidance material and locating all DEM documentation and co-regulator links on an updated single 'extractive minerals supply chain' web page; and
- communicate the changes widely to industry, quarry operators, the wider extractive minerals supply chain, and relevant government agencies.

Recommendation 4.2: Pre-lodgement review

To support efficiencies in the quarry impact assessment process, minimise rework and provide greater transparency and accountability, the Department for Energy and Mining (DEM) to establish an optional pre-lodgement process for all quarry EML, PEPR and MOP applications modelled on the arrangements for fast-track pre-lodgement approvals in the state planning system, noting, among other requirements, the need for:

- early and reliable identification of critical issues by DEM and referral authorities at the start of the process;
- a standard of no more than one further request for information;
- timeframes for assessment and response to be met by DEM and referral authorities; and
- proportionality in the requirements identified in the pre-lodgement meeting.

The extent of a pre-lodgement process may be minimal for low-risk, simple applications or comprehensive and involve co-regulators where complex. The size of the pre-lodgement undertaking to be determined mutually between proponent and DEM.

DEM to ensure the pre-lodgement review is advertised on its website and is widely communicated to the extractives industry in South Australia.

The performance of the pre-lodgement review process be measured and reported on to determine the extent of net benefit over time, identify opportunities for improvements, and establish appropriate performance targets. Performance measurement to include measuring and comparing the time taken for applications with and without pre-lodgement review, and

measurement and analysis of total time taken to obtain final approvals (inclusive of time taken with applicants as well as regulators, and time taken for all regulatory processes and activities).

Recommendation 4.3: Develop and broaden the application of the defined impact template assessment process

To reduce timeframes associated with defined impact template applications and PEPRs, the Department for Energy and Mining (DEM) develop a specific assessment process for defined impact template assessments that includes but is not limited to:

- improving pre-lodgement processes (see also Recommendation 4.2) with the aim of applications requiring minimal assessment once lodged, enabling early public consultation;
- adopting the 14-day minimum period for publication of a notice of a proposed mining lease;
- only referring applications to referral agencies where there is a statutory requirement;
- making internal endorsements and the DEM business process proportionate to the reduced risk profile; and
- improving IT systems and interfaces to support transparency and enable online applications, assessment, real-time tracking and reporting.

Recommendation 4.4: Formalising referral arrangements between regulators

To increase regulatory efficiency for extractive mineral impact assessments and minimise the risks associated with a duplication of responsibility, the Department for Energy and Mining and all relevant referral agencies put in place formal administrative arrangements, authorised by relevant agency Chief Executives, that:

- clarify each agency's regulatory mandate and areas of responsibility;
- specify how areas of joint responsibility and interdependent regulatory functions will be managed by each regulator;
- specify the decision required from each regulator, with the principle of requiring no more information from a proponent than is necessary to reach that decision;
- provide timeframes for completing referrals, after which if there is no response then the proposal is deemed to comply;
- provide a procedure to escalate matters quickly to the final decision maker where regulator delegates are unable to resolve any tensions in areas of responsibility impacting on the progress of an impact assessment application; and
- specify the frequency of reviewing and updating the administrative arrangement.

A key underpinning principle of the arrangements is to balance a proportionate level of prescription to support practical and expedited referral activity with retaining delegates' ability to meet their regulatory role under their respective mandates.

Recommendation 4.5: Set and report new extractives target timelines for approval and publicly report performance against those targets

In order to raise the productivity of the extractives regulatory process, the Department for Energy and Mining (DEM) adopt a new target setting and reporting process for timelines for approvals and reviews in the DEM-led process that:

- starts with the current targets but adopts goals for further reductions over three years, including to reflect specific issues or conditions associated with extractives related processes;
- considers appropriate internal organisational arrangements and structures to support these goals;
- consults with industry on proposed revised timeframes and supporting organisational arrangements, including on the underpinning principles and performance improvements to support those timeframes; and
- publishes explanatory information and regular progress reports on the performance against the targets.

Recommendation 4.6: Reassess quarry product pre-qualification to support competitive material supply

To enable regional businesses capable of developing low-risk campaign quarries to supply competitive construction materials in close proximity to regional projects, the Department for Infrastructure and Transport (DIT) in collaboration with the Department for Energy and Mining (DEM) within six months of this recommendation being supported:

- identify specific testing and other pre-qualification assessment processes that, without compromising DIT's capacity to manage related risk in construction projects, will enable the pre-qualification of, and therefore the supply of construction materials by, new quarries located close to regional construction sites;
- identify changes to DEM's mineral claim and any other applicable mining authority that is required to align with and support amended DIT pre-qualification processes;
- consult with select industry participants on the implications for the proposals for both established suppliers and potential new entrants, including a focus on managing risks arising from the supply of poor-quality materials; and
- implement these changes.

Recommendation 5.1: Strengthening the lead regulator model - updating environmental programs

In order to support a lead regulator model and to improve environmental outcomes through a more uniform and consistent approach, the Department for Energy and Mining in collaboration with co-regulators audit existing environmental programs (programs for environment protection and rehabilitation (PEPRs) and mine operation plans (MOPs)). That work to:

- identify where there are gaps between the existing objectives and measurement criteria in environmental programs and applicable co-regulator contemporary environmental standards;
- communicate those gaps to quarry operators; and
- support, in collaboration with quarry operators, updates to PEPRs and MOPs to align their objectives and measurement criteria with the contemporary environmental standards of applicable co-regulators.

To manage the impact on the regulator's resources, and in consideration of the potential impact on industry, the audits be prioritised on a risk-based approach with attention to quarries identified as Strategic Resource Areas, those programs with obsolescent environmental criteria, and sites with existing proximity issues.

Recommendation 5.2: Alignment of co-regulator standards with quarry environmental program objectives and criteria

To clarify the application of co-regulator mandates applicable to quarry activity, administrative arrangements are to be developed between the Department for Mining and Energy and relevant co-regulators, or revise and improve them where they are already in place.

The administrative arrangements are to strengthen the lead regulator model, minimise duplication of regulator effort and provide for an ongoing systemic approach to align relevant co-regulator standards with environmental program (program for environment protection and rehabilitation and mine operation plan) objectives and criteria under the *Mining Act 1971*.

Recommendation 5.3: Modified road network access for transporting extractive materials to specified infrastructure projects

To support increased infrastructure project efficiencies, decrease costs and create employment opportunities for regional road and other projects requiring extractives inputs, the Department for Energy and Mining and the Department for Infrastructure and Transport jointly evaluate the feasibility of a modified road network access regime for the transport of extractive materials.

The project to focus on but not be limited to the net productivity gains arising from the transport of extractive materials to regional infrastructure projects by more efficient vehicles accessing the road network.

In addition to consultation with the National Heavy Vehicle Regulator, the project is to seek feedback from the South Australian Freight Council, Cement Concrete and Aggregates Australia, quarry operators and regional communities.

The project report to be published on both public sector agencies' websites no later than 1 July 2021.

Recommendation 5.4: First and last mile access improvements

To support productivity gains by using more efficient heavy vehicles to transport construction materials on parts of the road network where their access is not currently authorised, the Minister for Energy and Mining and the Minister for Transport establish a joint industry–

government partnership, in the spirit of the Improving Road Transport for Primary Production project, to:

- identify first and last mile road access locations used to transport extractive minerals on a prioritised basis, including access to/from established and proposed metropolitan and regional quarries, and fixed end-user locations such as batch plants;
- determine the extent to which the State Planning Policy and the current transport-related Planning and Design Code overlay proposals address those identified first and last mile issues; and
- consult quarry operators, transport industry, local government, community and other regulators with relevant mandates, such as the Environment Protection Authority.

The project is to recommend by 1 July 2021 proposed road network access reforms, based on a cost–benefit analysis, for action by the state.

Recommendation 5.5: Prioritising road network upgrades to optimise the extractive minerals supply chain

To create opportunities for state infrastructure project cost savings to government, the Department for Infrastructure and Transport are to incorporate the efficiencies that can be delivered in relation to the transport of extractive materials in their business cases for prioritising road network development and upgrades (e.g. road network access improvements and first and last mile projects).

Recommendation 5.6: Reform of explosives regulation in South Australia

In support of stronger industry engagement and improved sourcing and deployment of explosives across the South Australian extractive minerals industry, the Treasurer and SafeWork SA:

- evaluate SafeWork SA's existing standards, practices and administrative arrangements consequent on, and to the extent possible concurrently with, the existing South Australian explosives regulation reform process; and
- consult with industry representatives, quarry operators, state and national regulators and other stakeholders on these matters and publish the outcomes of those consultations, and policy and administrative reforms, on SafeWork SA's website.

Recommendation 5.7: Managing current and future proximity issues

To mitigate existing proximity issues, the Department for Infrastructure and Transport (DIT), in conjunction with the Department for Energy and Mining (DEM) design and implement a methodology for applying the Resource Extraction Zone and Resource Extraction Protection Area Overlay to those existing quarries that will not be covered by those arrangements on implementation of the Planning and Design Code, beginning with SRA quarries in the Greater Adelaide area.

To avoid future proximity issues and mitigate the risk of premature sterilisation of strategic resources, the Geological Survey of South Australia update and publish the extractives Strategic Resource Areas of the state to inform the application, by DIT, of the Resource

Extraction Zone and Resource Extraction Protection Area Overlays required to protect extractives resources capable of being exploited in the future.

To respond to the key outcomes proposed by the Resource Area Management and Planning Project, DIT and DEM establish a joint project to design and implement processes that will align quarry lease and operating approvals under the *Mining Act 1971* with zoning arrangements under the *Planning Development and Infrastructure Act 2016* to ensure that the Resource Extraction Zone and Resource Extraction Protection Area Overlay are applied in the course of the process of establishing a quarry.

Recommendation 5.8: Planning for closure

The Department for Energy and Mining implement a flexible and transparent approach to planning for final land use post-quarry closure, and associated rehabilitation obligations, by incorporating pre-approved 'triggers' into the regulatory framework that will result in a review of expected final land forms and associated rehabilitation requirements. Consideration to be given to incorporating the following as lease conditions and/or environmental program (program for environment protection and rehabilitation, and mine operation plans) criteria:

- time-based triggers particularly for quarries with a long life cycle;
- environmental obligation triggers – for example native vegetation offset requirements that impact on the commercial value of land;
- geological triggers given the lack of up-front exploration undertaken by most quarry operators which can lead to unforeseen discoveries down the track; and
- financial triggers that impact on a company's ability to access capital including price fluctuations and levels of infrastructure activity.

Recommendation 5.9: Review of extractives financial indemnification model

The Department for Energy and Mining (DEM) lead a joint review with representatives from industry and key co-regulators to investigate and identify opportunities to reform the current extractives rehabilitation indemnification model. The review will:

- have regard to the Council of Australian Governments Energy Council's 'National Principles for Managing Rehabilitation Financial Risks';
- consider different financial assurance models (including bonds and insurance funds), regulatory tools and complementary approaches applied in other jurisdictions to identify approaches that could be adopted to improve the efficiency and effectiveness of extractives rehabilitation indemnification in South Australia;
- review the results of an actuarial analysis of extractives sites undertaken by DEM to provide a more complete understanding of the potential rehabilitation liability – including impacts arising through the application of progressive rehabilitation practices;
- increase the transparency of, and accountability for, extractives indemnification funding arrangements, including criteria that determine who can access, and grounds for expenditure of, funds;

- clearly identify the link between the type of rehabilitation liability (incomplete or insufficient, or outright default) and how indemnification funding is to be applied;
- publish and seek comment on the review findings prior to finalising a preferred approach; and
- develop implementation and communication plans to support and promote a shared understanding between regulators and the extractives industry on the purpose and application of the preferred approach.

Definitions

The following list of definitions apply for the purposes of this review.

Closure	A whole-of-mine process culminating in lease surrender (mine completion). Includes all activities (studies, modelling, field trials) involved with the development and implementation of closure strategies (decommissioning and rehabilitation).[1]
Co-regulator	Those South Australian Government agencies that hold mandates to regulate activities or externalities that arise from quarry operations and supply chain activities.[2]
Environment	The *Mining Act 1971* provides two definitions for 'environment': • s 6(4) defines environment as including: land, air, water, organisms, ecosystem, native fauna and other natural environment features; buildings, structures and other forms of infrastructure; cultural artefacts; existing or permissible land use; public health, safety or amenity; geological heritage values of an area; and the aesthetic or cultural values of an area; and • s 73C(1) defines environment for the purposes of private mines as land, air, water, organisms and ecosystems, and includes human-made or modified structures or areas.[3]
Environmental program	A reference used by the Commission to refer collectively to Programs for Environment Protection and Rehabilitation and mine operation plans.
Extractive minerals	Sand, gravel, stone, shell, shale or clay, when used generally for construction purposes but excluding those materials if they are used for industrial, agricultural and ornamental purposes. Some types of clay (fireclay, bentonite or kaolin) are excluded from the definition of extractive minerals.[4]
Extractive mineral lease	A class of mining lease under the *Mining Act 1971* that must be obtained before the holder has the exclusive right to mine for, and sell, extractive minerals as given on the SA Mineral Commodity List.
Extractive minerals industry supply chain	The series of steps involved in the discovery and delivery of extractive mineral commodities to infrastructure projects – from exploration to production to rehabilitation and closure, and inclusive of key activities, commercial investment decisions and regulatory approval gateways.

[1] Department for Energy and Mining, *Development of Environmental Outcomes for Quarrying and Mining, Minerals Regulatory Guidelines MG30* (2020) 21 (MG30).
[2] An agency can be both a referral agency and a co-regulator agency depending on whether their involvement is captured as part of the referral process led by DEM (referral agency) or is outside of that process but still necessary for a quarry operator to establish, operate, supply and close a quarry (co-regulator agency).
[3] The *Statutes Amendment (Mineral Resources) Act 2019* amends the definition of environment that applies to private mines to be more consistent with the general definition except for aesthetic or cultural value.
[4] *Mining Act 1971* s 6(1) (*Mining Act*).

Mine operation plan	Section 73G(1) of the *Mining Act 1971* prescribes that, unless otherwise approved, a person must not carry out mining operations at a private mine unless a mine operations plan that relates to the operations and complies with requirements of section 73G is in place following assessment by the Department for Energy and Mining (DEM).
Mineral claim	Provides an exclusive right to prospect for minerals within the claim area for 12 months, and to apply for a mining lease over all or a portion of the claim.
Mining proposal	Must be included to support an application for an extractive mineral lease (EML) and must be prepared in accordance with the relevant ministerial determinations and regulatory guidelines.
Mining tenement (tenement)	A claim, lease or licence under the *Mining Act 1971* including: mineral claim; exploration licence; mining lease; retention lease; miscellaneous purposes licence.[5]
Ministerial determination	Enforceable determinations issued by the relevant minister in accordance with the *Mining Regulations 2011*, regs 30(3) and 49(3), which specify the mandatory minimum information requirements for an application or assessment to be deemed valid.
Private mine	An area that met certain conditions and was proclaimed by the Governor of South Australia to be a private mine following the commencement of the *Mining Act 1971*. Private mines are subject to the provisions of part 11B and exempt from the rest of the Act.
Program for environment protection and rehabilitation	The operational approval that a tenement holder must obtain from DEM in order to carry out mining operations. The PEPR must comply with the requirements set out in part 10A of the *Mining Act 1971*.
Proponent	For the purposes of this review, the proponent is the individual or company who is seeking approval to operate a quarry at a potential site (i.e. seeking approval for a mining lease and extractive mineral lease), or is operating a quarry at a quarry site (i.e. applying for a PEPR or mine operation plan, applying to seek pre-qualification, etc.).
Quarry/quarrying	A quarry is a cutting, pit or mine site from which extractive minerals for construction purposes are removed. Quarrying is the process of removing rock, sand, gravel and other minerals from the ground to produce products used in the construction industry. Quarrying operations include activities to explore and rehabilitate the mined land.

[5] DEM, *Establishing and Registering a Mineral Claim in South Australia, Minerals Regulatory Guidelines, MG24* (2017) 30 (MG24).

Referral agency	Those SA Government agencies that provide expert advice as part of the DEM-led extractive mining application and assessment processes (see also Co-regulator).
Rehabilitation	The return of disturbed land to a state agreed by relevant stakeholders and defined in the PEPR.[6]
Royalty	Section 17(1) prescribes that, subject to the *Mining Act 1971*, a royalty is payable to the Crown on all minerals recovered from mineral land and: are sold or intended for sale; or utilised, or to be utilised, for any commercial or industrial purpose.
Significant environment benefit	The scheme that gives effect to biodiversity offsetting principles requiring an action resulting in a net environmental benefit following the clearance of native vegetation.[7]
Social licence to operate	The development and maintenance of ongoing acceptance of a project by the community and other important stakeholders.[8]
Strategic Resource Area	An area identified in the Greater Adelaide region as being an area of key economic value to SA due to the quantity or quality of construction materials or mineral resources that are extracted or contained within the area.[9]

[6] MG30 (n 1) 24.
[7] Department for Environment and Water, *Offsetting* (Web Page, 28 May 2020) <https://www.environment.sa.gov.au/topics/native-vegetation/offsetting> (DEW Offsetting).
[8] Australian Productivity Commission, *Resources Sector Regulation Draft Report* (2020) 4 (Australian Productivity Commission).
[9] Department of State Development, *Identification of Strategic Mineral Resource Areas in South Australia – Greater Adelaide Region and Major Regional Centres* (Report, 2015) 10 (SRA Report).

Acronyms

AAR	Aboriginal Affairs and Reconciliation
ABS	Australian Bureau of Statistics
AEISG	Australasian Explosives Industry Safety Group
CCAA	Cement Concrete and Aggregates Australia
COAG	Council of Australian Governments
CPI	Consumer Price Index
DEM	Department for Energy and Mining
DEW	Department for Environment and Water
DIT	Department for Infrastructure and Transport
EARF	Extractive Areas Rehabilitation Fund
EML	Extractive mineral lease
EPA	Environment Protection Authority (SA)
EPBC	Environment Protection and Biodiversity Conservation
FTE	Full-time equivalent
HVNL	Heavy Vehicle National Law
IT	Information technology
LPMA	Leading Practice Mining Acts
MC	Mineral claim
MOP	Mine operation plan
MOU	Memorandum of understanding
MRD	Minerals Resource Division (in DEM)
NHVR	National Heavy Vehicle Regulator
PDI	Planning, Development and Infrastructure
PEPR	Program for environment protection and rehabilitation
PM	Private mine
RAMP	Resource Area Management and Planning
RAV	Restricted Access Vehicles
RFI	Request for information
SA	South Australia
SAFC	South Australian Freight Council

SAPC	South Australian Productivity Commission
SARIG	South Australian Resources Industry Geoserver
SEB	Significant environmental benefit
SPP	State Planning Policy
SRA	Strategic Resource Area
SWSA	SafeWork SA

1. The extractives industry supply chain

1.1 Introduction

This inquiry evaluates the effectiveness and efficiency of state and local government regulation, policies and practices for the extractives supply chain and recommends reforms that will improve the regulation of the extractives industry and the efficiency of its customer construction industry. The broad purpose is to lift output, jobs and productivity in South Australia (SA), without compromising other government objectives.

The narrow focus of this review notwithstanding, the extractives industry and its regulation illustrate some key wider issues for the state regarding the underlying principles of and approach to regulation (especially the efficient and effective synthesis of a range of apparently opposing public interests), efficient regulatory design and highly productive regulatory services. Few of the conclusions the Commission has reached call for any change to regulation, let alone legislation. Compared with some other Australian jurisdictions, SA has – according to contributors to the review – a well-respected lead regulator in the Department for Energy and Mining (DEM), supported by arrangements with other regulators that together provide a robust regulatory environment.

That said, this report concludes:

- There are significant opportunities to improve the operating efficiency of this regulatory framework to the benefit of South Australians, importantly in simplifying interdependencies among co-regulators. This is mainly a matter of how regulators work together to discharge their mandates having regard to the broad public interest in jobs, growth and productivity without compromising other public interests.
- An important matter is the currently poor articulation between the planning system and the mining/extractives regulatory regime, which will be addressed to some extent by imminent reforms to the planning system.
- There is a major gap in the foundations of the current arrangements leading to South Australians not being compensated for the risk of premature sterilisation of location-specific extractives resources that are used by the construction industry. As a result, the state and its citizens may forego such unused resources without compensation for the foregone royalties and for the higher costs of state infrastructure because more distant, more costly resources are substituted.

This introductory chapter sets out:

- a summary of the industry in terms of its value, economic contribution and distribution across the state (Section 1.2);
- a synopsis of the interaction between the life cycle, value chain and regulatory framework governing the industry, including intersections with other regulatory systems – state, local government and Commonwealth (Section 1.3.1);
- a perspective on the key public interests that the regulatory framework is addressing, including what economists describe as a missing market that mediates between the interests of South Australians as a whole, communities and a range of private interests (Sections 1.3.2–1.3.4).

1.2 The South Australian extractives industry

This section provides a brief overview of the extractive minerals industry in SA. Extractive minerals comprise sand, gravel, stone, shell, shale or clay, when used generally for construction purposes but excludes those materials if they are used for industrial, agricultural and ornamental purposes. Some types of clay (fireclay, bentonite or kaolin) are excluded from the definition of extractive minerals.[10]

The classification of dimension stone as a mineral mined for a prescribed purpose, rather than an extractive mineral as it was before 2011, may, according to some contributors to this review, inhibit investment in some granite quarries. It was indicated that this stone is mined in South Australia for construction purposes, not as ornamental stone, and that its classification as a prescribed mineral attracting a 3.5% royalty is impacting on the margins of these granite producers.[11] Whilst this view raises valid questions, they are outside the terms of reference of this review.

In South Australia, the *Mining Act 1971* (the Mining Act) is the main legislation to regulate and control mining operations. When the Mining Act came into effect, it provided a process whereby landowners who were divested of their right to minerals could, under certain circumstances, apply to retain their rights to the minerals. For those applications that were successful, the Governor proclaimed the landowner's area to be a private mine (PM). Mining that is undertaken on a PM is regulated by part 11B of the Mining Act and regulation 80, but is exempt from the other parts of the Mining Act. Consequently, there are two interrelated regulatory frameworks that govern the mining of extractive minerals in SA depending on whether the quarry is, or will be, located on a PM or not. Under the Mining Act:

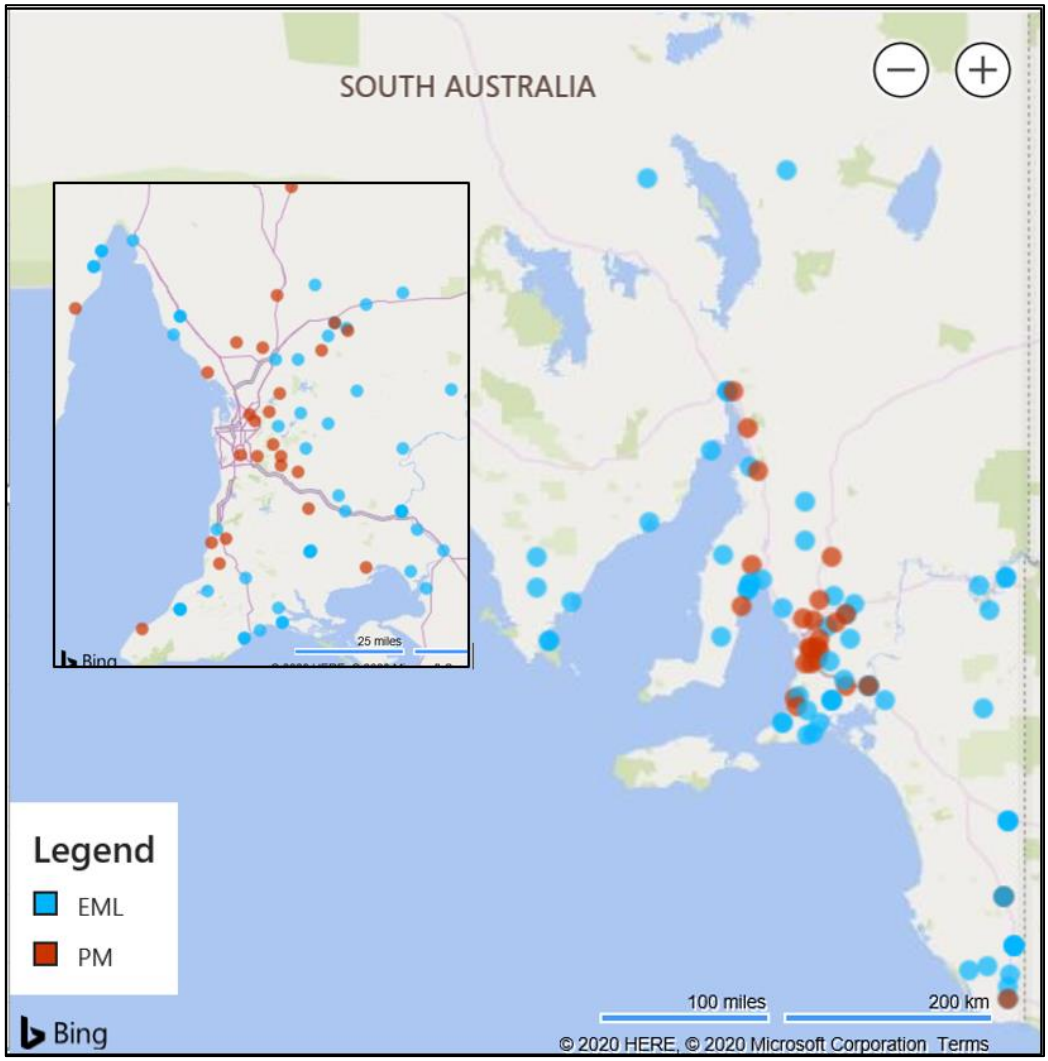
- proponents of quarries not located within or on a PM are required to obtain and hold an approved extractive mineral lease (EML) which provides the holder the exclusive right to mine for, and sell, extractive minerals;
- proponents of quarries located on or within a PM are not required to obtain an EML prior to seeking approval for mining operations (but cannot commence mining until a mine operation plan (MOP) has been approved).[12]

According to the most recent mineral resource statistics published by DEM,[13] there were 2,191 mineral tenements and 220 private mines in South Australia as at 30 June 2019. Of the mineral tenements, 24 per cent were EMLs. Given the regulatory framework, DEM records and reports statistical information for extractives according to whether the mineral lease site is an EML or a PM.

Map 1.1 below shows the location of the top 50 PM sites and top 50 EML sites by production volumes reported to the DEM for 2019.

[10] *Mining Act* (n 4) s 6(1).
[11] AustralAsia, Submission FR1 to South Australian Productivity Commission, *Extractives Supply Chain Review* (23 July 2020).
[12] *Mining Act* (n 4) pt 11B, s 73D(1).
[13] DEM, *South Australia Mineral Resources Regulation Report for 1 January 2018 to 30 June 2019* (2020) (Mineral Resources Regulation Report).

Map 1.1: Location of larger operational extractive mineral sites by production in SA (EMLs and PMs)



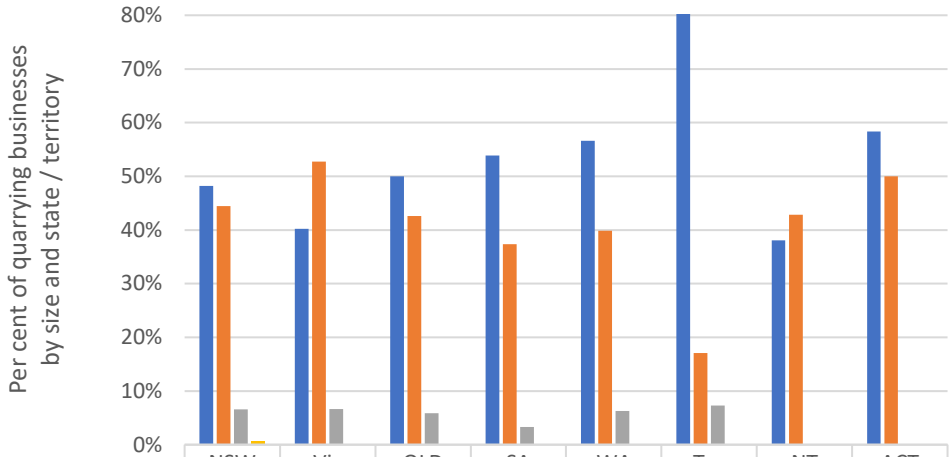
Source: DEM data for tenement returns for period June 2019 to December 2019[14]

As indicated in Map 1.1, extractive minerals are quarried across the state although most sites are located in the vicinity of the greater metropolitan area of Adelaide. Other major quarry clusters are found on the northern coasts of the two gulfs, on the Fleurieu Peninsula and in the far south-east of the state. Of those quarries that provided a royalty report for DEM in 2019, the largest 100 quarries (by production volume) produced 95 per cent of total output reported for 2019. Of those quarries, 32 per cent were private mines which accounted for 52 per cent of the output of that group.

Figure 1.1 provides statistical information on those businesses that are classified as working in the quarrying and construction material mining industry sector at June 2019. It indicates that most businesses in that sector across Australia are smaller operators. Despite the high proportion of smaller businesses, industry members advised the Commission that larger companies are responsible for the majority of production.

[14] Data based on top 100 EML tenements and PMs by reported production for 2019 (as reported to DEM). Excludes tenements with nil production reported or nil location provided.

Figure 1.1: Proportion of mining businesses classified as quarrying and construction material mining (ANZSIC classifications) by business size (based on number of employees) for each state and territory operating at June 2019

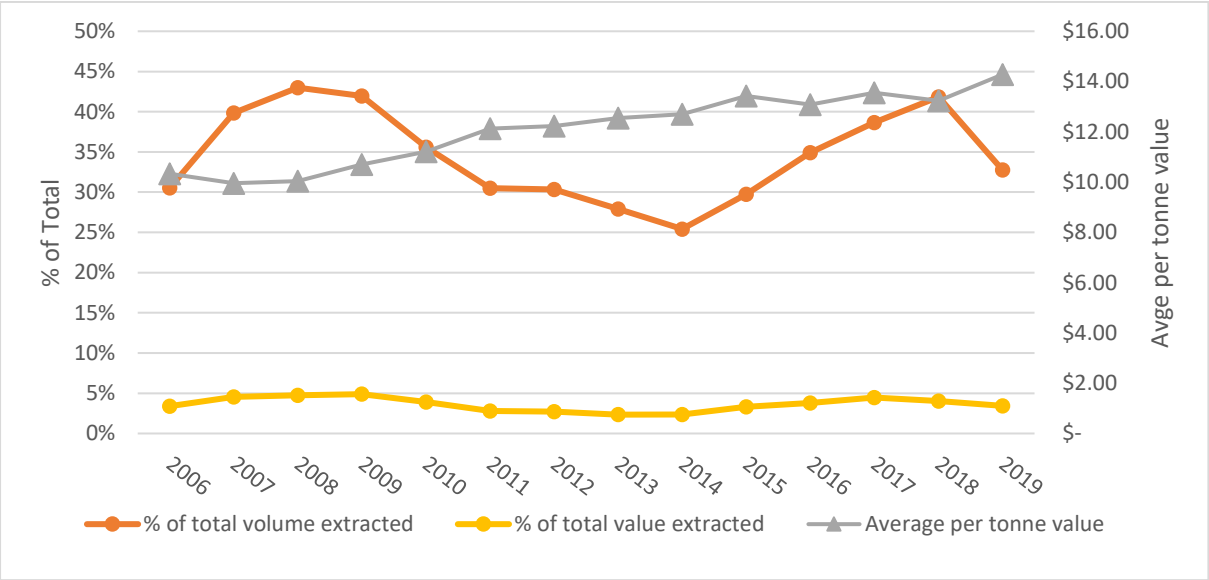


	NSW	Vic	QLD	SA	WA	Tas	NT	ACT
Non employing	48	40	50	54	57	80	38	58
Small business (1-19 employees)	44	53	43	37	40	17	43	50
SME business (20-199 employees)	7	7	6	3	6	7	0	0
Large business (200+ employees)	1	0	0	0	0	0	0	0

Data sourced from: ABS, 8165.0 Counts of Australian Businesses, Including Entries and Exits, June 2015 to June 2019 – Businesses by Main State by Industry Class by Employment Size Ranges, June 2019

Figure 1.2 shows the mine gate value and production volume of extractive mineral commodities as a percentage of total mineral commodity production in SA from 2006 to 2019. It shows the volume share of extractives is much higher and fluctuates to a greater degree over time compared to the value share. This comparison also indirectly highlights the relative impact of transport costs on the delivered value (i.e. at the construction project location) compared to many other mineral commodities. Figure 1.2 also shows the mine gate value per tonne of extractive mineral commodities produced per annum, which has increased by 38 per cent from 2006 to $14 per tonne in 2019 (unadjusted for CPI).

Figure 1.2: Value and volume of extractive mineral commodities mined in SA as a percentage of total value and volume of minerals mined in SA and average value per tonne, per annum, 2006–2019



Source: Resource Production Statistics from 2006 to 2019 (Web Page, 5 June 2020) <https:\\energymining.sa.gov.au/minerals/resource_production_statistics>

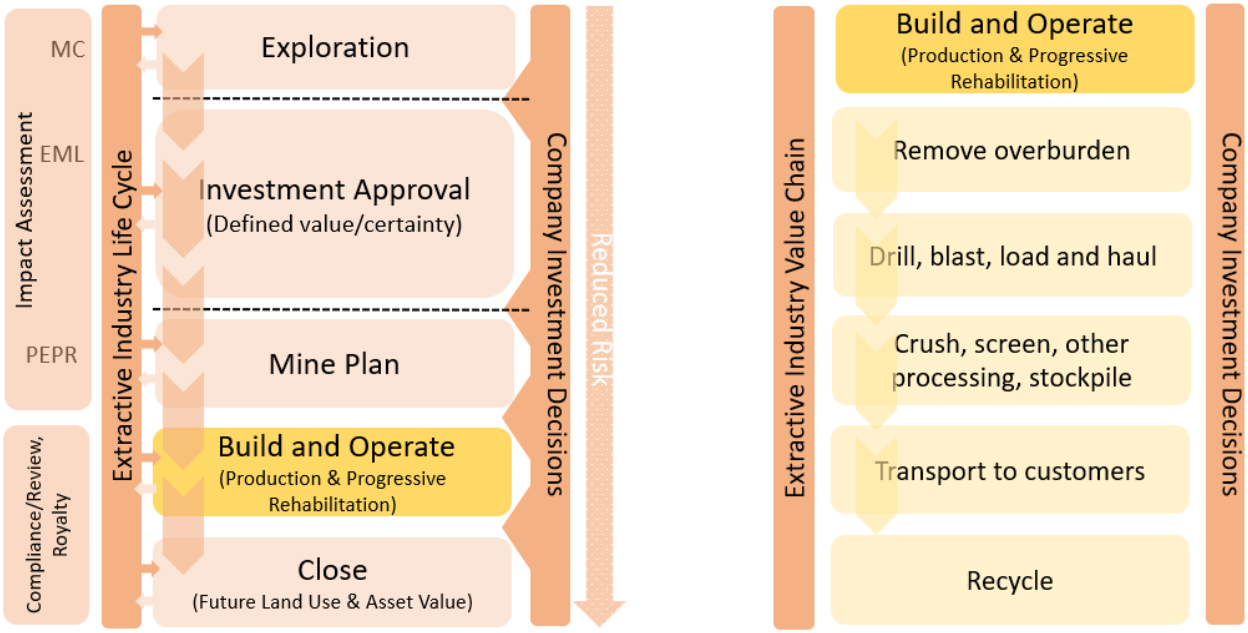
1.3 Life cycle and supply chain

The development and exploitation of an extractives reserve follows the defined stages of a life cycle, illustrated in the left-hand side of Figure 1.3. The reserve must be:

- Discovered (through exploration).
- Evaluated, defined, valued and development planned by the business to the point of receiving investment approval. The Commission understands most extractives quarries tend not to do exploratory drilling to define the extent of their resource.
- Built and operated (entailing a bankable business plan, construction and operation within regulatory boundaries and performance against expectation). This stage typically includes progressive rehabilitation.
- Closed (having regard to the terminal value of the location of the resources and its rehabilitation).

Investments in this activity occur at each stage (see Figure 1.3). The level of risk to the business tends to fall as the mine moves through the stages, as confidence builds in the information available and the parameters of the mining project (scale, length of life, etc.).

Figure 1.3 Extractives activity life cycle and value chain



Source: South Australian Productivity Commission

1.3.1 Government decisions

Extractives activity involves three areas of high-level decisions by the state's regulatory system, which are related to the stages in the left-hand side of Figure 1.3:

- deciding the *initial land use* – extractives or some alternative use – having regard to the various public interests, for example, geographically fixed resources to build infrastructure and settlement of an expanding population;
- the subsequent *operating conditions* for an approved extractives operation, having regard to the local impact on its neighbours and other state-level objectives; and
- deciding the *subsequent land use*, which affects quarry closure and rehabilitation requirements, while ensuring the state's exposure to a costly legacy of poor decisions is contained to an acceptable level.

The tools applied by the government are noted in Figure 1.3. Other than for private mines, the government approves a mineral claim, which stakes a claim over the relevant parcel of land.[15] Having discovered a deposit of extractive material, proponents must take out an EML over the deposit as the next step, which sets out broadly what they intend to do with the deposit. Before building and mining may start, proponents must obtain an approved operations plan (a program for environment protection and rehabilitation (PEPR)) which specifies the performance and compliance required from the co-regulators of operations, including rehabilitation requirements. Private mines, which have already established their rights over the deposit, must at this stage provide a mine operation plan (MOP). During the life of the quarry (both EML and PM) the operator also pays a fixed royalty to the state government per tonne of output, which is compensation for removal of the state's extractive minerals. The regulatory process is discussed in more detail in the next chapter.

[15] Whilst it is open to proponents to lodge an exploration program for environment protection and rehabilitation (PEPR), it is understood that this is extraordinarily rare in the extractives industry.

1.3.2 Quarrying and other neighbourhood interests in extractives operations

The right-hand side of Figure 1.3 illustrates more detailed aspects of the operational phase, including the operational supply chain, which is governed by several regulators to address the various public interests associated with the neighbourhood effects. To elaborate, these include but are not limited to:

- noise and dust associated with mining (blasting, hauling, crushing, etc.);
- water (including the water table);
- congestion and accident risk associated with truck movements;
- loss of visual amenity;
- safety in the workplace (risks of accident and injury, the consequences of which may not be taken sufficiently into account by managers); and
- impacts on Indigenous and non-Indigenous heritage assets and native vegetation.

These neighbourhood effects can have a significant impact on the well-being of the local community. However, they may not always be considered by quarry operators, not being a direct part of the operating costs under consideration. In such circumstances the extent of these spill-overs can become excessive, a symptom of which will be complaints from the community. In this circumstance, there is a case for government to intervene, to take these costs into account in decision making. In this sector, in SA, these interventions take the form of regulations, though other tools are available.

The end of life of a deposit raises other questions. The community has an interest in securing a valuable use of the land abandoned. Meeting this expectation can be more or less easy depending on the extent of rehabilitation that has occurred during and at the end of the production process. An operator who fails to rehabilitate imposes costs on the community subsequently, as the site is reclaimed for another use. These situations also lead to an argument for, and an application of, various policy tools or forms of intervention, to bring the side effects into account. Again, the question is whether the right tools are chosen to resolve each particular problem.

1.3.3 State interests in the location of extractives activities

The right-hand side of Figure 1.3 refers to customers, who are mostly involved in construction projects or supply more highly processed inputs, such as concrete, to construction work. Concrete is a mixture of aggregates, such as sand and gravel or crushed stone, water and Portland cement, which itself is made from extractive materials. All these activities involve connections to other supply chains, from outside this industry, which deliver various inputs.

As Map 1.1 shows, there are many significant deposits in SA. While the unit value of the material at the mine gate is low, transport costs per unit of the material are relatively high. Longer transport distance can make a significant difference to the delivered cost of the material (sometimes equivalent to multiples of the mine gate price of the quarry output) and so to construction costs. Transport may also involve impacts such as congestion and road damage.

The Commission heard that Adelaide is uniquely placed compared to other Australian capital cities as its highest-production quarries, which are also the longest established and generally

have the longest operational lives, are located within the greater metropolitan area. Their proximity to major metropolitan infrastructure projects is a competitive advantage to South Australia by minimising the transport component, which makes up the highest proportion of construction material costs.

That said, the local community has an interest over time in taking up land in adjacent urban areas, as the population grows. If land which is sought to be converted to housing abuts extractives projects, and that development is allowed to proceed, the costs of the side effects noted above apply to more people. An outcome could be the closure of a mine, through local community pressures and applications of the regulatory process. This closure could be earlier than contemplated at the start of the mining process. Other extractives resources are available, but they are likely to be more distant, so the extractives activity shifts to locations from which transport costs are greater. At the same time, if the mine is not closed, then housing developments move to other and potentially less preferred locations.

The state therefore has further interests (in addition to royalties) that relate to optimising the geographic usage and reservation of extractives deposits, for example:

- avoiding unnecessary costs to infrastructure projects arising from unnecessary transport costs;
- avoiding additional damage to roads from hauling material an unnecessary distance; and
- avoiding higher costs or lower levels of amenity from denying access to housing land adjacent to existing suburban areas.

1.3.4 The regulatory process

The regulatory regime applied to this sector must, accordingly, adjudicate on a variety of interests. Extractives companies, end users of the products and input suppliers have strong incentives to promote efficient outcomes. Various parties are affected by the neighbourhood consequences of the mining operations, and they have a strong interest in the outcomes. But in addition, there are interests at the state level. The mining operation involves the management of assets of the state, the mineral deposit, which is translated to value through royalty systems and the construction of state infrastructure.

Other considerations are the terms of access to resources in ways which minimise transport costs: those which are borne by customers affect the costs of other projects, including infrastructure investment, with consequences for the state as a whole. Side effects, such as congestion and road wear, affect other road users. As well, there is an impact to consider on the provision of land for new housing adjacent to existing urban settlements. Later sections discuss in more detail how these regulatory elements are designed and implemented, at the various stages of the life cycle.

While DEM is the lead regulator for extractives, no single regulatory agency is accountable for the entirety of this picture. Managing the regulatory interdependence is a key challenge for the overall efficiency of the regulatory arrangements. The Commission heard of repeated instances where inefficient interfaces among regulators caused delays, excessive complexity, additional cost and an inefficient approach to risk.

Possible causes lie at several levels. One is the operational level where there is the risk of regulators crossing over and impeding each other, possibly because of different decision-making systems, staff skills, expectations and cultures. This results in regulatory interfaces

that are unnecessarily complex, costly, time consuming and high in ambiguity for both the regulators and proponents.

This situation also raises the question of how the overall value and balance of SA interests are assessed, since the detail of operations can obscure the aggregate of the state interests. It makes sense for specialists to deal with particular policy issues, environmental impacts for example, but if the values received and perceived to be associated with this sector are to be maximised all the interests involved have to be taken into account and reconciled. The answer is not an addition to the proliferation of agencies to resolve this issue but to:

- clarify the interests of proponents, opponents and the people of South Australia and the principles for reconciling them;
- establish mechanisms for the interaction of the existing set of agencies and the interests on which they are focused, as a market would do;
- simplify and clarify the regulatory task of each agency; and
- viewed through the lens of the state's interests, align the regulatory processes to achieve the best result in the shortest time.

1.4 Outline of the report

This report is structured as follows:

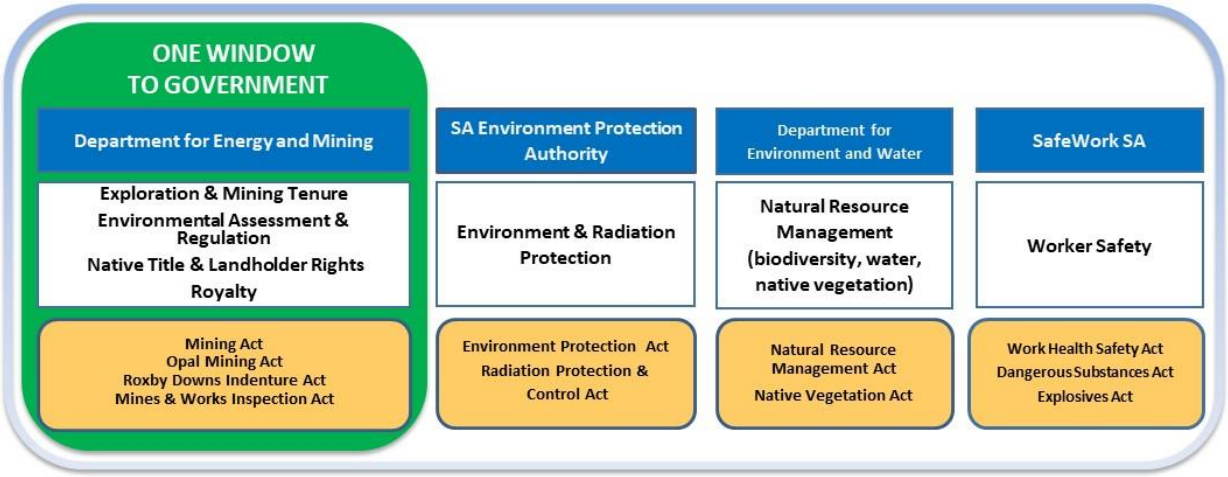
- Chapter 2 sets out the regulatory framework and processes.
- Chapter 3 provides the Commission's distillation of the key issues.
- Chapter 4 examines processes for mining proposals, extractive mineral leases and operating authority.
- Chapter 5 addresses quarry operations, co-regulation and alignment of standards.
- Chapter 6 considers quarry rehabilitation, indemnification and closure.
- The concluding chapter sets out the Commission's views about a better regulatory framework for extractives.

2. The regulatory framework

2.1 Introduction

The Department for Energy and Mining (DEM) is responsible for the administration and management of mineral resources and is the lead agency for the regulation of South Australia's (SA) mineral exploration and mining sectors.

Figure 2.1: Regulatory framework applied to quarries



Source: DEM

Figure 2.1 shows the responsibilities held by DEM and other agencies that regulate aspects of quarry approvals and operations. DEM refers mining lease applications and operational approvals to referral agencies to satisfy statutory requirements and to draw on the technical expertise possessed by those regulators. They are often denoted as referral authorities or referral agencies when involved in mining applications and assessments. The regulatory frameworks understood by the Commission as being applicable to quarrying activity and the wider extractives industry supply chain are summarised in Appendix 2.

2.1.1 Two-stage assessment process

A core function of DEM, in collaboration with referral agencies, is to assess and approve new leases and environmental programs (environmental programs refers collectively to programs for environment protection and rehabilitation and mine operation plans). In SA the three primary approvals under the *Mining Act 1971* (the Mining Act) that are required to prospect for, establish and commence quarry operations are:

- mineral claim: an administrative process[16] which allows the holder to prospect for minerals in the area of the claim for 12 months, and the right to apply for a lease over the area;
- extractive mineral lease (EML): gives the holder the exclusive right to mine for extractive minerals on the South Australian Mineral Commodity List; and

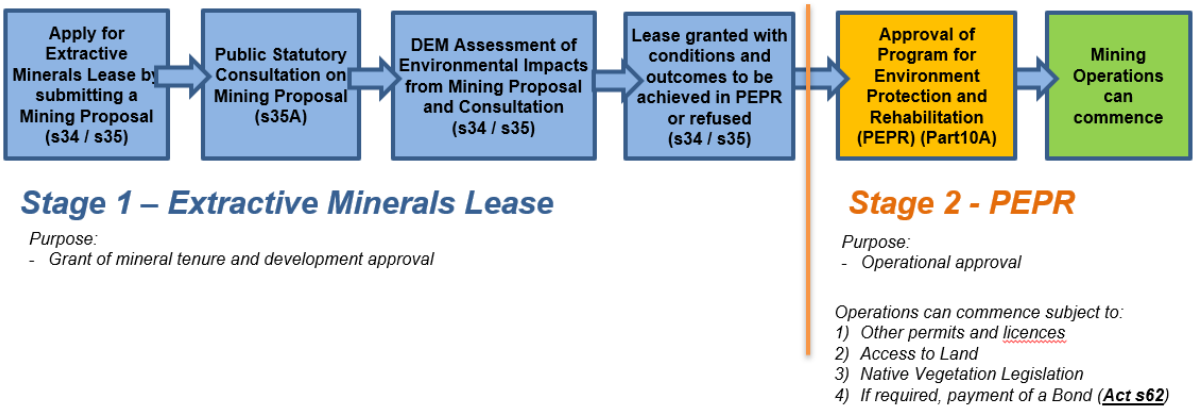
[16] Establishing and registering a claim requires negotiations regarding land access and other authorisations, agreements and consents. Registration of a mineral claim is purely an administrative process. If information required by the *Mining Act* has not been provided, the Mineral Tenements Team at DEM assists applicants so the mineral claim can be registered. See MG24 (n 5).

- Program for environment protection and rehabilitation (PEPR): the operational approval which is used by DEM to regulate quarry operations.

The Mining Act does not provide any other mechanism to authorise extraction and sale of extractive minerals in South Australia.

In the case where the operator is not the landowner, land access[17] must also be negotiated. Operators may also need to negotiate a waiver of exemption if proposed quarry operations are within exempt land as defined by the Mining Act. Exempt land is exempt from mining operations unless waived under the Mining Act.[18]

Figure 2.2: Two-stage mining assessment process



Source: DEM

Given the uncertainties involved, including with respect to the extent of the deposit and the costs of operations, it makes sense to move through a series of stages in both investment decisions and in regulatory approvals. Investments occur in the mining operation to a greater scale and with increasing confidence as the quality of the information about the deposit improves. Feedback from the regulatory process is also important at each step to identify the likely impacts on other interests, and issues which ultimately might stop the project.

The minister may publish a notice about information required for these approval processes. These are called ministerial determinations and they specify the information requirements for EML and PEPR applications. Ministerial Determinations 2 and 3 are specific to extractive minerals.[19] Compliance with ministerial determinations is mandatory and enforceable under the *Mining Regulations 2011*[20] (the Mining Regulations).

Private mines (PM) are regulated by part 11B of the Mining Act and regulation 80. They are exempt from the other parts of the Mining Act.[21] Consequently, PMs are regulated through a mine operation plan (MOP) instead of a PEPR. The requirements for a MOP are defined in

[17] Department for Energy and Mining, *Landowner Rights and Access Arrangements for Mineral Exploration and Mining*, Minerals Regulatory Guidelines MG4 (2020).
[18] *Mining Act* (n 4) ss 9, 9AA.
[19] Department for Energy and Mining (DEM), *Ministerial Determination D002: Minimum Information Required to be Provided in a Program for Environment Protection and Rehabilitation 2018* (Ministerial Determination 2); and *Ministerial Determination 003: Minimum Information Required to be Provided in a Mining Proposal or Management Plan For an Extractive Minerals Lease (EML) and Any Associated Miscellaneous Purposes Licence (MPL) 2018* (Ministerial Determination 3).
[20] *Mining Regulations 2011* regs 30(3), 65(7) (*Mining Regulations*).
[21] *Mining Act* (n 4) pt 11B, s 73D(1).

the Mining Regulations.[22] There is no corresponding ministerial determination but there is a regulatory guideline to assist in the preparation or review of a MOP.[23]

Stage 1: Extractive mineral lease application process

The Mining Act and Mining Regulations set out a framework for application, assessment and approval of an EML. As shown in Figure 2.2, applicants must submit a mining proposal which is assessed by DEM against legislative requirements before undergoing a public consultation process which informs the decision to either grant or refuse the application. If the decision is to grant, the mining proposal and the feedback from the consultation process may contribute to conditions on the lease and requirements for the PEPR.

The Commission described procedural aspects of the EML, PEPR and MOP processes in detail in its draft report.[24]

Stage 2: PEPR/MOP assessment process

Original PEPR

Once an EML has been granted a PEPR must be submitted within 12 months. The purpose of the PEPR is to provide information to demonstrate that the environmental outcomes outlined in the approved EML can be achieved. Draft outcome measurement criteria proposed during the lease assessment stage are finalised in the PEPR in line with the requirements of Ministerial Determination 2.

Mine operation plan (MOP) assessment process

Where quarry operations are proposed on a PM that has never been operated, a MOP must be prepared in accordance with the requirements prescribed by the Mining Regulations and assessed by DEM.[25] The draft objectives and criteria in the MOP must be subject to public consultation for at least 20 business days,[26] which is a similar process to the statutory consultation required for EML applications. Unlike an EML, only objectives and criteria are published, with no contextual information about proposed quarry size, location of operations on the PM, hours of operation or strategies to achieve the objectives. Whilst only certain parts of a MOP are subject to consultation, DEM advises that referral agencies do provide expert advice and input into MOPs as required.

If submissions are received the PM holder may be required to respond to DEM only if the comment is directly related to an objective or criterion. Only the minister's delegate can approve objectives and criteria for new operations after this consultation process has occurred.[27] The MOP assessment process thereafter mirrors the PEPR assessment process.

[22] *Mining Regulations* (n 20) reg 80.
[23] DEM, *Guidelines for Miners: Preparation of a Mine Operations Plan (MOP)*, *Minerals Regulatory Guidelines MG12* (May 2012).
[24] South Australian Productivity Commission, *Extractives Industry Supply Chain Draft Report* (Report, June 2020) [2.1.2].
[25] *Mining Regulations* (n 20) reg 80.
[26] Ibid reg 81.
[27] *Mining Act* (n 4) pt 11B, s 73G(11).

PEPR or MOP review

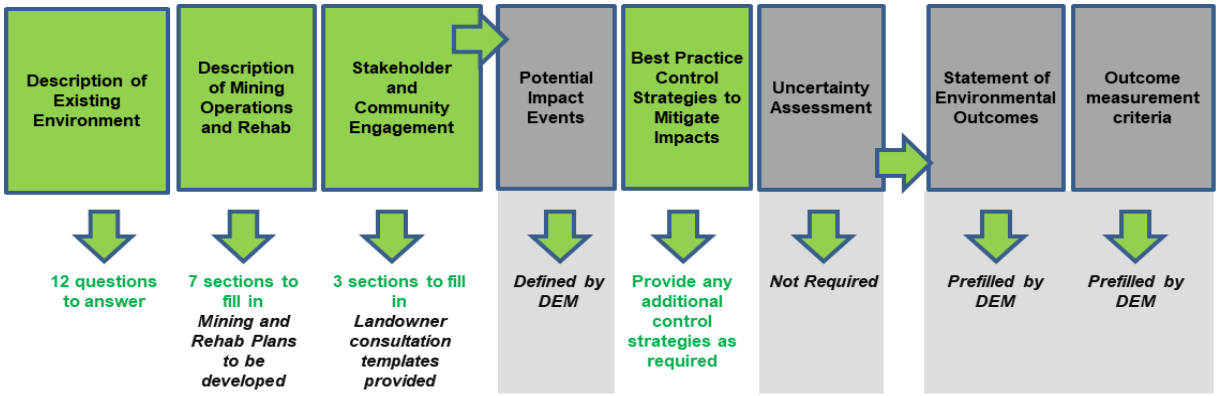
PEPRs can be reviewed at the initiation of the tenement holder or directed by the Minister for Energy and Mining (for any reasonable cause) in accordance with section 70C of the Mining Act. For PEPR reviews where the current approved PEPR does not contain a set of environmental outcomes, Ministerial Determination 2 sets out the requirement for an impact assessment to develop a statement of environmental outcomes. PEPR reviews requiring an impact assessment on average take longer to approve given the level of information required from the applicant.[28]

MOPs are the operational approval for PMs and must be prepared in accordance with regulation 80 of the Mining Regulations. Most MOPs require an impact assessment to determine appropriate objectives and criteria and are counted as PEPRs (i.e. as operational plans) in DEM's public reporting.[29]

2.1.2 Simplifying lower-risk mining proposals

The Mining Act requires that all EML applications are made with a mining proposal and regulated through a PEPR. In November 2015 DEM introduced a simplified process for EML mining proposals and PEPRs that can be used where the proposed quarry meets predetermined 'defined impact' eligibility criteria, which are specified in an eEvaluation tool made available for this purpose.[30] The green areas of Figure 2.3 indicate information required in the defined impact process (compared with the standard process shown in grey).

Figure 2.3: Defined impact template requirements comparison



Source: DEM

The eligibility criteria are designed to define potential environmental or third-party property impacts associated with the proposed mining operation. Proposed quarry activities that meet the eligibility criteria have been determined to have defined impacts prescribed by DEM that are considered to be lower risk and well understood.[31]

The benefit of this approach is that, where eligible, the proposal that follows is subject to predetermined environmental outcomes, which negates the need for an environmental

[28] Mineral Resources Regulation Report (n 13) 44.
[29] Ibid.
[30] DEM, *Extractive Minerals eEvaluation Tool* (Web Page, 19 May 2020) <http://www.energymining.sa.gov.au/minerals/mining/extractive_minerals>.
[31] Department of State Development, *Preparation of a Mining Proposal and/or Program for Environment Protection and Rehabilitation for Quarries in South Australia with Defined Impacts, Minerals Regulatory Guidelines MG23* (2015) (MG23).

impact assessment, which is the most resource-intensive part of any mining proposal assessment process. Applicants commit to the predetermined set of environmental outcomes and measurement criteria.

2.2 Regulatory performance

Statistical data on extractive minerals regulatory activities is captured by DEM on:

- each EML application submitted to DEM;
- each PEPR/MOP assessment application submitted to DEM – including those that are newly submitted assessments as well as reviews of existing operations; and
- compliance activities carried out by DEM including inspections, audits and royalties.

The statistical data can provide an indication of the performance of the extractive minerals regulatory regime. DEM publishes an annual report which reports the statistical information.[32]

With respect to the statistical figures that are presented in this report:

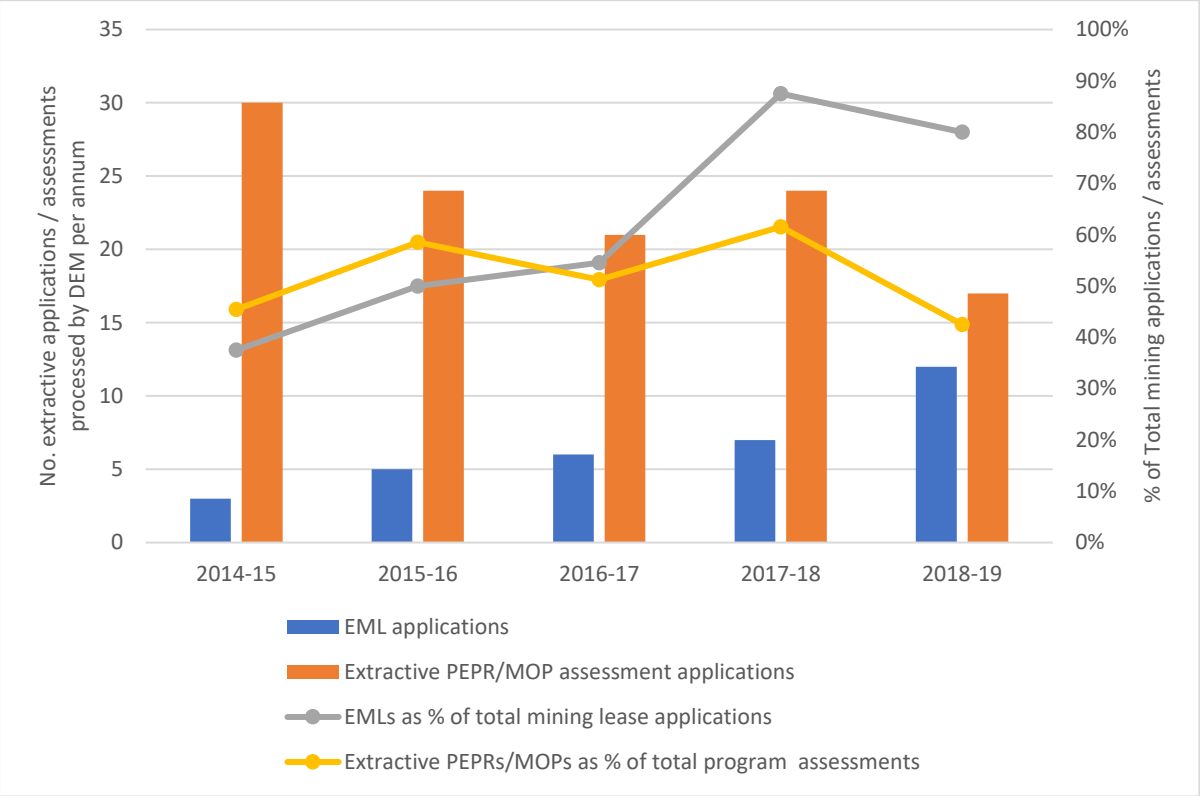
- The financial date assigned to each application/assessment is based on the date the application/assessment was submitted to DEM (and when it was first formally recorded in DEM's database).
- Unless otherwise specified, all EML and PEPR/MOP applications are included in the figures irrespective of an application's status at the time the data was provided to the Commission. Consequently, data for 2018–19 in particular may be impacted by applications that are still pending and have not yet received resolution (approval, withdrawal or refusal).
- The timeline data that is recorded by DEM on processing application times (number of days) does not include activities or processes undertaken before the application is assigned to a DEM assessment officer (including any pre-lodgement review activities), nor time taken after the minister's delegate has approved an application (for EMLs only and including the regulatory notification process).

2.2.1 Extractives-related applications processed by the Department for Energy and Mining

Figure 2.4 below shows the number of extractives-related applications (EMLs and PEPR/MOPs) that are submitted to DEM for processing and those numbers as a proportion of total lease applications and program assessments processed per annum.

[32] Mineral Resources Regulation Report (n 13) 11.

Figure 2.4: Number of extractives-related applications processed by DEM per annum by type of application, 2014–15 to 2018–19[33]



Source: DEM generated reports 2020: SR117: MLA Assessments, SR118: MOP/PEPR Assessments

Based on the data provided:

- The number of PEPR/MOP assessment applications exceeds EML applications per annum as the PEPR/MOP application number includes reviews of existing operations and new applications.
- EML applications have increased in number by 300 per cent from 2014–15 to 2018–19 (from 3 to 12), while EML applications as a proportion of all mining lease applications (grey line) has increased from 38 per cent in 2014–15 to 80 per cent in 2018–19.
- Over the five years to 2018–19, on average, 51 per cent of total mining program assessment applications have been for extractive PEPR/MOPs (yellow line).

DEM also publishes some statistical performance indicators including:

- the time taken to process EML and PEPR/MOP applications and performance against target timeframes based on the days spent with DEM (183 days or 6 months to process an EML and 92 days or 3 months to process a PEPR/MOP); and
- volume and type of complaints and incidents.[34]

Further information on performance against target timeframes for days taken (with DEM) is provided in Section 4.6.1.

[33] Financial year based on date of receipt or submission of application.
[34] Mineral Resources Regulation Report (n 13).

2.2.2 Regulatory compliance activities

Both industry and regulators have compliance responsibilities to ensure outcomes are consistent with policy objectives. Operators must comply with statutory obligations that also form part of their social licence to operate, and regulators monitor and enforce their mandate through compliance frameworks and tools.

Consistent with regulatory approval processes, DEM advised that its compliance approach aims to use a 'performance-based regulatory approach which focuses on what should be achieved (outcomes), not how it should be achieved'.[35] Under the extractives regulatory framework in SA, it is the tenement holder's responsibility to monitor and demonstrate their compliance with the conditions of their EML and PEPR/MOP.

DEM's regulatory compliance model focuses on graduated measures, with unresolved or critical issues escalating to 'compulsive' and 'punitive' measures (e.g. lease cancellation, prosecution or administrative penalty).[36] DEM compliance officers undertake site visits, inspections and audits to check adherence to statutory requirements and approval conditions.

Statistical information on the volume and type of DEM compliance activities (inspections and audits) is published annually. In the period 1 January 2018 to 30 June 2019 there were 1,004 exploration and mining inspections completed of which '50% were associated with extractive minerals operations (i.e. extractive mineral leases and private mines), which range from metropolitan hard rock quarries to low-risk, small sand mining operations'.[37]

While DEM is the lead agency for mining approvals, extractives operators must also comply with the regulatory frameworks of co-regulators who have independent mandates that cover quarry operation activities and externalities. Unless DEM has delegated authority to manage compliance with co-regulator mandates (for example, native vegetation under the *Natural Resources Management Act 2004*), co-regulators also have a range of regulatory tools available to support compliance. For example, the Environment Protection Authority has 'regulatory tools, and the ability to exercise discretion to determine which tool is appropriate for particular circumstances'.[38] Co-regulation is discussed in Chapters 4 and 5.

[35] Department of State Development, Mineral Resources Division, *Mining Act Compliance and Enforcement in South Australia*, *Report Book 2016/00028* (Report, 2016) 9.
[36] Ibid 6–8.
[37] Mineral Resources Regulation Report (n 13) 12.
[38] Environment Protection Authority (SA), *Compliance and Enforcement Regulatory Options and Tools* (Web Page, November 2009) 8 <http://www.epa.sa.gov.au/files/4771765_cem.pdf>.

3. The issues: developing and sustaining the extractives industry supply chain

3.1 Introduction

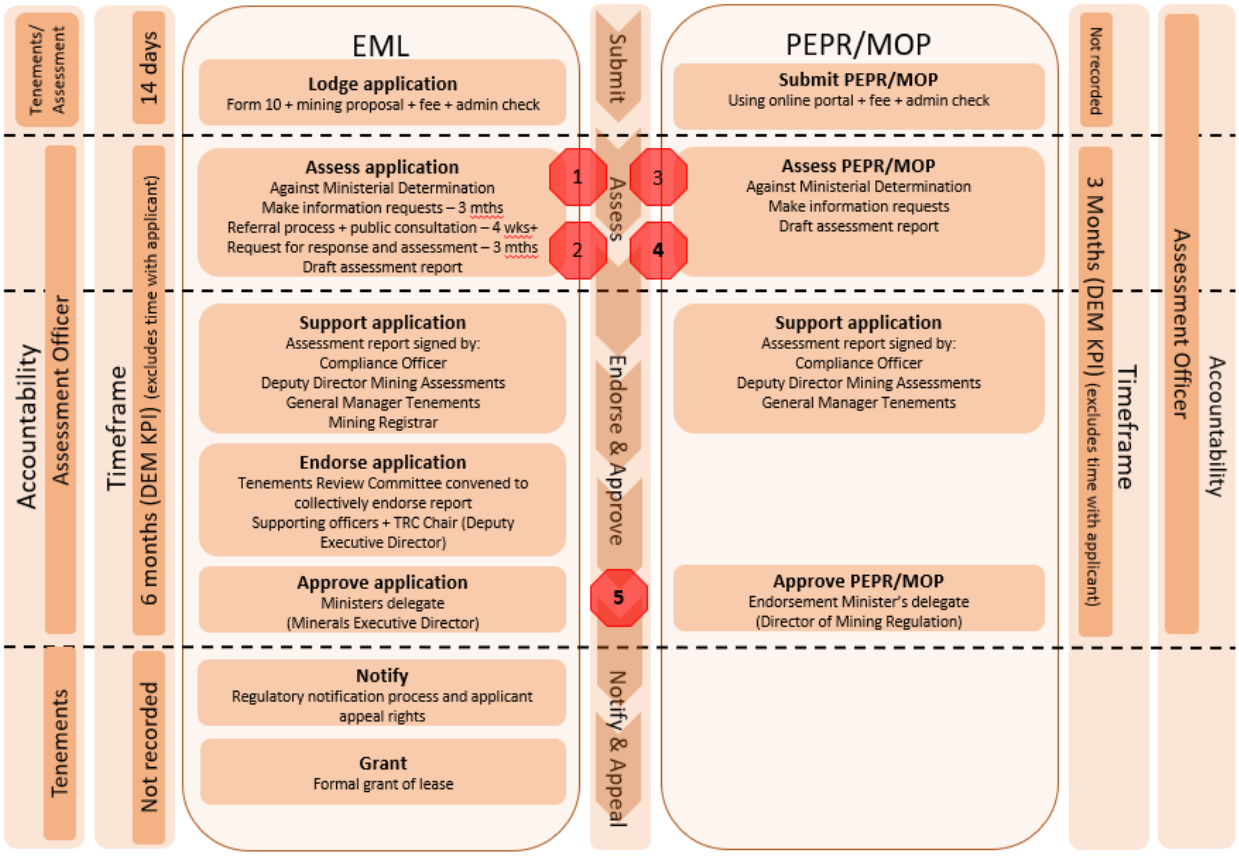
This chapter distils the key issues that are subsequently considered in detail in chapters 4, 5 and 6:

- Issues arising in the mining assessment process: the specific parts of the assessment process to obtain an extractive mineral lease (EML) and a program for environment protection and rehabilitation (PEPR) or a mine operation plan (MOP) that the Commission has heard cause the most concern for industry and quarry operators.
- Quarry operations and the supply chain: those specific quarry operational activities or key supply chain activities that are covered by a regulatory mandate other than the Department for Energy and Mining (DEM) that have been raised by industry or proponents as being inefficient or creating costs or delays.
- Strategic development and continuity of quarries: the issues impacting on establishing and sustaining quarries in the right place and at the right time to minimise avoidable infrastructure costs while not compromising other government objectives.
- Quarry closure and indemnification of the state against rehabilitation costs: examining information and rehabilitation requirements and the achievement of fit-for-purpose outcomes at quarry closure. Obligations for quarry rehabilitation, impacts on future land use, and the alignment of quarry rehabilitation policy and indemnification arrangements as seen from both regulator and operator perspectives are considered.

3.2 Issues arising in the mining assessment process

The specific parts of the assessment process to obtain an EML, PEPR or MOP that have been the greatest concern to the extractives sector are set out below and shown overlayed on the end-to-end assessment process in Figure 3.1.

Figure 3.1: EML and PEPR assessment process pressure points



Source: Office of the South Australian Productivity Commission

1

<u>Requests for additional information</u>

Regulators often require proponents to provide additional information either before public consultation or after, with some requests being a result of the referral process. Industry feedback indicates that information requests can be unexpected, costly and result in significant delays for approval. Opportunities exist to reduce the likelihood of multiple information requests by clarifying in advance the key issues to be addressed without subsequent amendment unless there is a fundamental change in circumstances. This could be achieved by updating, simplifying and co-locating extractives guidance material for industry, and improving pre-lodgement processes for applicants. Adoption of a risk-based approach which is broadened to include referral agencies where appropriate is also recommended (see Section 4.2).

2

<u>Risk and proportionality in quarry assessment processes</u>

The Commission has heard that the level of detail required by regulators to assess EML applications and PEPRs is not always proportionate either to the risks posed by small-to-medium extractives operations or to the decision the regulators are required to make. The level of detail, depth of assessment and timeframes associated with getting approval are impacting on operators' ability to site quarries in proximity to regional road infrastructure projects where resources are available, reducing project costs. Codes of practice used interstate were raised but do not align with the requirements of the *Mining Act 1971* (Mining Act) and, based on interstate examples, their parameters are very confined in any case. There are opportunities to further

streamline the assessment process for low-risk proposals by broadening the eligibility criteria for the defined impact process (see Section 4.3).

3 Inconsistency in approach by regulators

While the ministerial determinations outline the minimum information requirements, the level of detail required by regulators in practice to assess an EML application, PEPR or MOP can be inconsistent. Industry has asked for more consistency and a greater level of certainty to support predictable assessment timeframes and costs to obtain an approval. Consistency in approach can be improved by further developing extractives industry–specific regulator performance, and building on existing formal cooperation arrangements (e.g. memoranda of understanding) between regulators, or putting them in place where they do not exist (Section 4.4).

4 Public consultation

Public consultation and stakeholder engagement are impacted by the capability of the officer or organisation undertaking the consultation, community expectations, perceived risk, and the applicable statutory requirements (an EML or private mine). Responses to issues raised require balancing social licence to operate considerations with the broader strategic significance of the quarry resource (Section 4.5).

5 Assessment application timeframes

The time taken to process applications and approvals directly affects a quarry operator's ability to access, produce and deliver quarry material for construction projects. There are opportunities to revise and reset performance indicators for mining applications. Existing mining approval and necessary pre-qualification requirements and timeframes effectively act as barriers to establishing strategically located regional quarries. Preclusion of these quarry operations can add avoidable costs to state infrastructure. There are opportunities to increase efficiencies in the mining approvals process, revise pre-qualification arrangements to support competitive material supply with an acceptable level of risk to government, and better coordinate and integrate the DEM and Department for Infrastructure and Transport (DIT) processes to support regional business participation in tendering processes (Section 4.6).

3.3 Quarry operations and the supply chain

Quarry operations and supply chain activity can fall within the mandates of several regulators in addition to DEM. Co-regulators validly hold mandates to regulate activities or externalities arising from quarry operations (e.g. air quality), and supply chain activities (e.g. explosives transport and deployment). Industry and operators have concerns about how uniformly and consistently these mandates are applied.

3.3.1 Two systems: approvals, operations and co-regulation

There may be an association between quarries operating under dated environmental programs and the level of intervention of co-regulators in mining operations.

The Commission has considered examples where the environmental objectives and criteria applicable to a quarry approved under the mining regulations do not reflect contemporary environmental standards administered by, for example, the Environment Protection

Authority. This limits the extent to which DEM can effectively regulate those sites, including ensuring the operator meets contemporary environmental standards in line with community expectations. This results in other regulators, with separate powers but with mandates that validly cover quarry activities, being obliged to act on non-compliances and regulate that site. There are important opportunities to align the criteria in environmental programs applicable to quarries under the Mining Act with co-regulators' standards to support a DEM-led regulatory model and improve consistency and uniformity for operators. These issues are discussed in detail in Section 5.2.1.

3.3.2 Road network regulation impedes delivery

Road network access can significantly influence the efficiency of delivering construction materials to the end user. Getting material to infrastructure projects can be subject to several road network access constraints and increase the delivered price. It is just as important to industry to protect transport routes of extractives as it is to protect quarries. The role that road network access plays in supply chain productivity has been acknowledged in state planning policies.[39] There are also examples of government–industry partnerships that have led to innovative road network access solutions and improved productivity.[40] Where government is the end user of construction materials there are potential budget savings to be made through unlocking road network access, and prioritising road network upgrades that would increase the transport productivity of the extractives (and other) industries. The contracting arrangements between the head construction contractor and government is also an important part of achieving the benefits of lower-cost extractives construction inputs. These issues are discussed in detail in Section 5.2.2.

3.3.3 Reform of explosives legislation and regulation

The extractives industry uses explosives products and associated expertise. Industry and service providers consider the *Explosives Act 1936* and its regulations outdated and not fit for purpose. They assert the current state is inefficient regulation that imposes additional costs on businesses and causes commercial opportunities to be lost. SafeWork SA advises several attempts have been made to reform the explosives regulatory framework over the last 25 years, and that national harmonisation initiatives have influenced the progress of those reforms in South Australia (SA). Another attempt to reform explosives regulation is well advanced as part of the national approach. These issues are discussed in detail in Section 5.2.3.

3.4 Strategic development and continuity of quarries

In SA, there are two prevailing situations influencing the strategic development and ongoing life of quarries, both of which impact on the state's interest in its ownership of mineral resources:

- There are competing interests arising from the increasing proximity of residential development and other sensitive land uses to the large and most productive quarries

[39] See e.g. State Planning Commission, *Integrated Movement Systems* (Policy Discussion Paper, 2018) (State Planning Commission, Integrated Movement Systems); and State Planning Commission, *Guide to the Draft Planning and Design Code: Rural and Urban Council Areas (Phases Two and Three)* (Report, 2019) (State Planning Commission, Draft Code).
[40] Primary Industries and Resources South Australia, *Improving Road Transport for Primary Production* (Web Page, 12 May 2020) <https://pir.sa.gov.au/major_programs/improving_road_transport_for_primary_production>. (Primary Industries and Resources South Australia)

in the state, the majority of which are Strategic Resource Areas[41] and are located in the Greater Adelaide metropolitan area.

- The time it takes to obtain a mining approval for small-scale campaign quarries[42] in regional locations is misaligned with the timeframes applicable for notice periods and minimum tender requirements associated with quarry pre-qualification and tendering. This misalignment effectively bars establishing small regional quarries to supply cost-effective construction materials to regional infrastructure (mostly road) projects.

3.4.1 Proximity and competing interests

The Commission considers that the state has an important advantage arising from the location of the state's most productive quarries in the Greater Adelaide metropolitan area, and their closeness to the biggest demand for construction materials (refer to Sections 1.3 and 5.3.). That said, the commercial advantages of that proximity also give rise to frictions in the form of competing interests over land use as Adelaide's suburbs have expanded, creating the risk of premature sterilisation of some of the resource base that these quarries rely on. The Commission considers regulation needs to incorporate the perspective that quarries are a *state* resource by virtue of the state's ownership and translating the state's position to local planning and development decision making is part of reconciling those competing interests.

There are inevitably incompatibilities between activities reasonably required in conducting quarry operations and the amenity expected by the community in adjacent residential settings. Quarries can also be seen as opportunistic locations to place services and infrastructure, such as pipelines and power lines. When considering options to reconcile these incompatibilities it becomes apparent that the current situation is often analogous to unmixing a cake. This has been acknowledged in previous examinations of the interfaces between mining and planning activities and the regulation of those activities.[43] Despite this acknowledgement and specific strategy and policy responses,[44] effectively protecting and preserving access to construction materials remains a challenge. These challenges manifest as potentially avoidable regulatory requirements being placed on the quarry industry involving additional costs, which flow to infrastructure prices and, where materials feed into state infrastructure projects, an adverse impact on the state budget.

There is a prospect that if other interests override those of the quarry and their customers then quarries may prematurely close, or land containing construction materials may be sterilised. This would result in loss of strategic advantage and require construction materials to be sourced from further afield than would otherwise be necessary, as is the case in some other Australian states. The opportunities to reform regulation and reconcile competing interests have been lost at this point. The additional cost arising from the transport of construction materials can be significant. There are opportunities as part of the state's planning reforms to ensure the appropriate protection of extractives resources. The

[41] The identification of Strategic Resource Areas and their importance is discussed in Sections 5.3.1 and 5.3.3.
[42] For the purposes of the review a campaign quarry refers to a short-term quarry that is established as close as possible to a specific project to minimise transport costs and therefore total materials and project costs. It can also refer to a long-established quarry that is operated sporadically to supply specific projects that require material available only from that quarry, or that are only commercially viable if supplied by that quarry.
[43] GHD, Department of State Development, *Resource Area Management and Planning* (Final Report, 2014) (RAMP Report).
[44] See e.g. Department of Planning, Transport and Infrastructure, *30-Year Plan for Greater Adelaide – 2017 Update* (2017) [P66] 77; State Planning Commission, *State Planning Policies for South Australia* (2019) SPP 1.4, SPP 9, SPP 10 (Planning Policies).

introduction of a Resource Extraction Zone and a Resource Extraction Protection Overlay is intended to protect current and future state-significant resource extraction activities and the lawful operation of mines and quarries having regard to adjacent development. Whilst these changes, along with associated referral powers, create the prospect of preserving future resources and the state's strategic advantage, the limited application of these arrangements in the urban areas of the state effectively neutralises their purpose. These issues are considered in Section 5.3.

3.4.2 Small-scale quarries and regional infrastructure

There is a market for the output of small-scale, low-risk, campaign-type quarry operations in regional SA. The demand primarily comes from regional infrastructure projects, particularly regional road upgrades and extensions, with the potential being that the most cost-effective construction materials could come from small-scale, short-term quarries that can be located in close proximity to infrastructure projects. They can be low-risk activities taking the form of a sand pit or limestone outcrop in a farmer's paddock. The Commission heard that such opportunities can and have been missed because there is a misalignment between the time it takes to obtain the applicable mining approvals, the time it takes to pre-qualify a new quarry necessary for a conforming tender, and the period for which the project's tendering process is open.

The introduction of defined impact templates (see Sections 2.1.2 and 4.3) for use by proponents who meet predetermined eligibility requirements has had a positive impact on approval timeframes. Some proponents consider that for these small-scale, short-term operations this simplified process is still disproportionate and incapable of providing an approval to support tendering in time. Boral's submission to the Leading Practice Mining Acts Review stated that a kilometre of standard two-lane highway would contain approximately 400 truckloads of aggregates,[45] highlighting the financial significance that a regional road upgrade could have on project costs and opportunities, particularly for regional small businesses. Specific examples of potential savings were raised with the Commission (Section 4.6.3). Where these opportunities are missed, materials are still supplied to projects, but usually from long-established regional quarries further afield, adding avoidable costs.

Improvements to mining approval process are important for these small-scale operations to deliver benefits to regional infrastructure projects. DIT uses quarry pre-qualification to determine if quarry material is fit for purpose. Pre-qualification processes require proponents to demonstrate a history of material performance and consistency in specification. Whilst DIT considers that this approach effectively mitigates the risks emanating from supply of substandard materials, namely road failure, it favours existing quarries with established compliance records (which make them a lower-risk supplier). This creates a barrier to new quarries and is particularly relevant to small-scale, short-term campaign quarries capable of being developed that would cut the cost of materials for regional road projects. Attempts to address this opportunity will need to ensure infrastructure performance and whole-of-life costs of a project are not compromised. A combination of competition and contracting with head constructors could see the savings passed through to the government as the customer. Accepting a tender pending pre-qualification may also give the most cost-effective suppliers an opportunity to compete.

[45] Boral, Submission to Department for Energy and Mining, *Leading Practice Mining Acts Review Discussion Paper* (2016) 2.

Furthermore, without improvements in the notification to market of upcoming regional infrastructure projects and restructuring pre-qualification arrangements, the benefits of shortening the timeframes it takes to obtain mining approvals will not be fully realised and may still preclude participation in the tender. These issues are discussed in Section 4.6.3.

3.5 Quarry closure

Rehabilitation and closure of quarries are regulated through the Mining Act. The *Mining Regulations 2011* specifically require that all mining proposals include a set of mine rehabilitation outcomes. This approach results in reduced disturbance area, determination of liability and costs for final rehabilitation in an economically efficient way. Industry has suggested that specifying quarry rehabilitation and closure arrangements before mining commences is a challenge. It considers that regulatory oversight of quarry closure should not extend to detailed plans until quarrying has commenced, resource boundaries are understood and a clear timeframe for closure is established. These issues are discussed in detail in Section 6.2.

3.6 Indemnification of the state against closure and rehabilitation costs

The Mining Act prescribes the establishment of the Extractive Areas Rehabilitation Fund (EARF) to indemnify the government against any liability incurred to land disturbed by mining operations for extractive minerals. The holder of a mining tenement is responsible under legislation for rehabilitating land disturbed by mining operations. The EARF was created to ensure that the financial liabilities from non-rehabilitated mining activities do not become the responsibility of the people of SA. The value of quarry land for future purposes depends on its rehabilitation, and effective operation of government intervention to indemnify the community if required. The purpose and operation of the EARF has evolved and changed over time, which has led to a divergence of views between the regulator and operators. This divergence may be affecting rehabilitation behaviours. There are opportunities for clarification of the EARF's purpose, its relationship to rehabilitation behaviour and standards, and consideration of other indemnification models that mutually serve state and industry interests. These issues are discussed in detail in Section 6.3.

4. Mining proposals, extractive mineral leases and operating authority

4.1 Introduction

This chapter explores the five most prominent issues that were raised in relation to the mining assessment and approvals process led by the Department for Energy and Mining (DEM).

The issues are:

- requests for additional information;
- risk and proportionality in mining assessment;
- inconsistency in approach by regulators;
- public consultation; and
- assessment application timeframes.

4.2 Requests for additional information

As part of the extractive mineral lease (EML) and program for environment protection and rehabilitation (PEPR)/mine operation plan (MOP) application processes, regulators may seek further information from proponents in line with statutory requirements and to fulfil regulators' mandates.

The volume, proportionality and complexity of information requirements was a key theme raised by industry stakeholders. The principal concerns were not that information is required, but that the iterative nature of information requests, excessive detail and type of information requested caused avoidable delays and unanticipated costs and uncertainty. Industry participants sought earlier and more comprehensive advice about the scope and detail of information required to support the application process.

Key issues raised by industry and businesses were:

- Requests for information (RFIs) for an impact assessment that were neither proportionate to the risk profile of the project nor the risk profile of the operator.
- The type, nature and volume of information requests varied according to the risk tolerance, or capability, of the individual assessment officer and can differ between regulators.
- Regulators appeared not to appreciate the costs incurred in responding to all information requirements, particularly where multiple requests require expert advice at significant cost to the proponent.
- Regulators were perceived as increasingly requiring proponents to provide detailed reports and information that they consider are the regulator's responsibility.
- Regulators' expectations of information requirements align more to the size of the organisation rather than risk, with more information and detail required from larger organisations.

- Information requirements did not have regard to a proponent's previous regulatory track record (good or bad).
- There is a lack of clarity and agreement between regulators and proponents on the type and detail of information required early in the application process, and the minimum information requirements laid out in the ministerial determinations do not assist.

Regulators indicated they share some of the concerns raised by industry, particularly those practices that inefficiently use resources or potentially have an adverse impact on environmental outcomes. Issues raised by regulators included:

- The volume and type of information requests can depend on the quality of an application, with poor quality applications requiring extensive follow-up and clarification.
- Co-regulators can adopt different approaches to an issue reflecting their regulatory mandate, which can influence the nature of the information requested.
- Co-regulators can request information after the application has been accepted by DEM.
- The referral process coordinated by DEM does not capture all regulatory processes and requirements in the extractives industry supply chain, which leads to occasions where proponents are left having to navigate regulatory licensing requirements with co-regulators (with additional information requirements).

4.2.1 Volume

Industry feedback indicated that the number of information requests can be excessive:

> *Excessive multiple requests for information … Boral notes that other legislation such as the Planning, Infrastructure and Development Act/Regulations limits planning authorities to only make one request for information*.[46]

> *In many cases we find ourselves producing 5 or 6 versions of a MOP or PEPR to accommodate what often seems like an endless stream of requests for 'further information' and revisions resulting in lengthy delays and increased costs for the applicant*.[47]

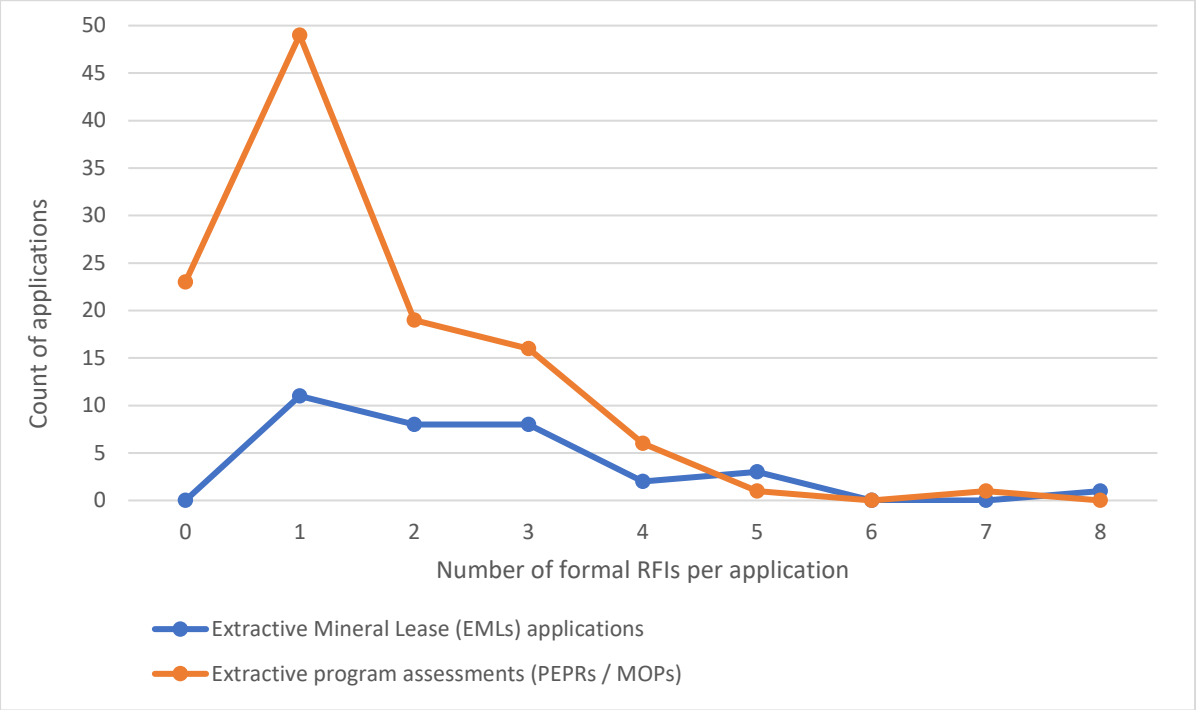
DEM records the number of formal RFIs associated with each application for an EML, PEPR or MOP. Figure 4.1 shows that:

- 22 EML applications (67 per cent) and 43 PEPR/MOP applications (37 per cent) required two or more formal RFIs.
- The number of formal RFIs per application ranged from zero to eight, with 9 per cent of EML applications requiring five information requests.
- MOP program assessment applications required, in general, more RFIs than PEPRs, with 56 per cent of MOPs requiring two or more RFIs compared to 35 per cent for PEPRs.

[46] Boral, Submission DR3 to South Australian Productivity Commission, *Extractives Supply Chain Review* (9 April 2020) 2 (Boral Submission).
[47] ePlanningSA Pty Ltd, Submission DR6 to South Australian Productivity Commission, *Extractives Supply Chain Review* (7 May 2020) 5 (ePlanning Submission).

In the view of the Commission, one request for further information related to applications or assessments is reasonable. But in Figure 4.1 there is significant number of cases in which there is a higher number of requests. The Commission concludes therefore that the regulatory process is not operating optimally.

Figure 4.1: Volume of extractive mineral applications by number of information requests, 2014-15 to 2018-19



Source: DEM reports SR117-PT: All MLA Assessments (printed on 11/05/2020); and SR118: MOP/PEPR Assessments (printed on 27/04/2020)[48]

DEM data provided on the Commission's request shows that, on average, over the five years to 2018–19 the number of information requests per application (EML or PEPR/MOP) declined. The Commission also heard that the formal RFI data above:

- do not include additional information requirements arising from environmental regulatory licensing requirements not captured in DEM's referral process but necessary to enable a proponent to operate and supply the market (e.g. prescribed activities of environmental significance under the *Environment Protection Act 1991*[49]);
- do not reflect the size of the regulatory burden on a proponent as they do not account for the complexity or scope of each RFI – a single RFI may contain numerous complex questions from various regulators including DEM; and
- can be an indication of the quality and completeness of the submitted application as poor quality and/or incomplete submissions will likely require follow-up with the proponent.

[48] All extractives-related applications that were processed by DEM from 2014-15 to 2018-19 are included in Figure 4.1, irrespective of whether the application was supported, withdrawn or refused.
[49] Sch 1.

4.2.2 Proportionality and consistency

The Commission heard that the information required is sometimes not proportionate to the risk of the proposed quarry project, including examples where:

- Relatively low-risk quarry proposals must provide the same information as a quarry proposal of much higher risk or complexity.
- Quarry proposal applications that have apparently very similar risk and complexity profiles must provide different amounts of information with differing levels of detail.

Industry advised the Commission that regulators often do not understand the impact that repeated requests for information can have on a proponent including:

- the costs incurred by diverting resources to answering information requests and/or the purchase of specialist expert services to produce expert reports; and
- uncertainty caused by unexplained and unpredictable variability in information requirements, making it difficult for proponents to adequately plan for, and allocate an efficient quantum of resources to, an application process.

  Consultants are unable to provide fee estimates at the commencement of the project to account for RFIs (requests for information) due to inconsistencies in the review process.[50]

  Having prepared a Mineral Claim application, Mining Proposal, MOP or PEPR and submitting it for departmental review and approval it can sometimes be months before any response is received. Following a review there are often changes sought by the delegated Assessment Officer. It becomes even more protracted when there is a change of Assessment Officer halfway through the assessment process or after satisfying all of the required changes the document is sent for review by another member of staff who may have a different point of view and require more changes and additions.[51]

4.2.3 Co-regulation and referrals

As the lead regulator, DEM coordinates formal RFIs from referral authorities into a single document to send to the applicant. This is intended to reduce duplication and streamline the process. The Commission has heard from industry that:

- Different assessment officers and regulatory authorities can have different perspectives on an issue that was unforeseen when DEM coordinated the original formal RFI, resulting in additional, follow-up RFIs at no fault of the applicant.
- Proponents are required to provide additional information in order to comply with licensing requirements for regulatory authorities that are not captured by DEM's referral process but are necessary for the proponent to supply quarry materials (e.g. transport or tender requirements).

A quarry operator may be required to obtain approvals from co-regulators during or after obtaining approvals under the Mining Act. For example, DEM advises that, whilst most native vegetation clearance requirements are completed as part of the PEPR process under DEM's delegated authority from the Native Vegetation Council, EPA licensing generally

[50] Boral Submission (n 46) 2.
[51] ePlanning Submission (n 47) 5.

occurs after the approval of a PEPR once the quarry operation reaches a certain production threshold.[52]

From the proponent's perspective, unanticipated and separate requests for information from different sources, often later during the process or separate to DEM's coordination, and requiring duplicate (or even contradictory) information causes uncertainty and confusion.

> *In some instances, getting a lease approved can be a long and expensive process … information required seems to change over time. This may be a combination of different people (DEM and other government agencies) reviewing the document and regulations/determinations coming into effect during the process … certain issues (for example water) taking on greater significance that they might need to.*[53]

Whilst operators report these concurrent processes can cause delays and uncertainty for operators, they are nonetheless an existing and valid part of the regulation of extractives supply chain activity, and it is incumbent on operators to understand all applicable regulations and licensing applicable to their proposed operation.

4.2.4 Guidance

DEM publishes guidance material on mining to provide information and assistance for proponents making applications and to clarify regulatory obligations. The mining section of the DEM's website provides:

- 13 ministerial determinations[54] pursuant to the minister's powers under the *Mining Regulations 2011* (Mining Regulations) setting out minimum information requirements; and
- around 24 regulatory guidelines and 32 information sheets on regulatory processes.[55]

DEM also facilitates workshops, forums or other events from time to time where industry information and policy positions are shared.

With respect to the published guidance material, the Commission notes that:

- Some guidance documents are specific to the extractive minerals industry (applications and regulations).
- Other information also relevant for extractive mineral leases and operators is contained within various other guidelines or documents (e.g. technical guidance on landscape function analysis).
- Many regulatory guidelines are very detailed and quite long (60-plus pages), and some are relatively old (for example, EARF guidelines are 11 years old).

The Commission notes that DEM recently released a new guideline to assist with development of environmental outcomes and is working on another guideline to assist with development of measurement criteria for quarrying and mining applications.[56] DEM advises

[52] *Environment Protection Act 1993* (SA) sch 1, s 7(7).
[53] Clay and Mineral Sales Pty Ltd, Submission DR5 to South Australian Productivity Commission, *Extractives Supply Chain Review* (5 May 2020) 2 (Clay and Mineral Sales Submission).
[54] Ministerial Determination 2 and Ministerial Determination 3 (n 19).
[55] See the extractives minerals guidelines: DEM, *Regulatory Guidelines* (Web Page, 4 June 2020) <http://www.energymining.sa.gov.au/minerals/mining/regulatory_guidelines>.
[56] MG30 (n 1) and a yet to be released measurement criteria guideline.

that the new guidelines aim to clearly set out expectations to reduce information requests and reduce timeframes.

The Commission has heard that, whilst there is a large amount of published information available for the extractive minerals industry sector, industry provided feedback that the guidance material can be open to different interpretations by different assessment officers or by different applicants. Misinterpretation by applicants of information requirements can add considerable cost and time to an application process.[57]

DEM has advised the Commission that the quality of an applicant's submission and response to information requests can be a contributing factor to the number and type of formal RFIs. The quality of information provided by an applicant can reflect several factors, including how well the proponent understands the application process and information requirements, and the proponent's experience with the applicable regulatory process.

In the Commission's view, regulatory guidance material needs to strike an efficient balance between providing information that is clear and informative while leaving sufficient flexibility for proponents and regulators to exercise judgement and apply a risk-based, outcomes-focused approach. Guidance material that is clearly written, easily accessible (preferably in one place) and regularly reviewed and updated will help to reduce the risk of misinterpretation and rework.

Recommendation 4.1: Regulatory guidance for industry

To promote transparency, improve compliance and reduce unnecessary red tape, Department for Energy and Mining (DEM), in consultation with industry and government stakeholders:

- simplify, update and streamline DEM's regulatory and process-related guidance material and information for quarry operators applicable to obtaining a mineral claim, extractive minerals lease and program for environment protection and rehabilitation/mine operations plan under the *Mining Act 1971*;
- identify and publish links on the DEM website to co-regulator legislation, regulation, and guidance material applicable to extractive minerals supply chain activity not covered by the *Mining Act 1971*;
- support the one-door-to-government model and facilitate ease of access for industry by identifying gaps in existing guidance material and locating all DEM documentation and co-regulator links on an updated single 'extractive minerals supply chain' web page; and
- communicate the changes widely to industry, quarry operators, the wider extractive minerals supply chain, and relevant government agencies.

[57] Barossa Quarries Pty Ltd, Submission DR2 to South Australian Productivity Commission, *Extractives Supply Chain Review* (20 April 2020) 1.

4.2.5 Capability and performance

Based on feedback provided, a key factor influencing the number, variability and type of information requirements is the level of capability[58] in both regulators and proponents. Capability influences the extent to which risk is understood and embedded in application processes and reflects:

- how well regulatory authorities understand extractives mining as a 'sub-sector' of mining in South Australia (SA) with unique and distinguishable considerations, and their approach to exercising their regulatory mandate in the quarry context;
- the level of training and skills development of regulatory officers and whether the authorising environment they operate in supports them to exercise professional discretion rather than applying a 'one-size-fits-all' approach;
- consistency amongst areas within the regulator as disagreement on what is required can lead to additional and unnecessary information requests;
- the experience and skills of quarry owners and operators; and
- if, and how, the capability of the proponent is supported and/or recognised.

Regulators who have a good understanding of the industry (including specific challenges facing the industry) and can assess the risk associated with a particular application are more likely to focus only on the information that is necessary to effectively assess an application. Capable operators have a better understanding of regulator information requirements and are able to respond efficiently and effectively.

> *Major costs are associated with DEM multiple requests for information (RFI). Boral typically engages consultants to prepare lease applications/Mine Operations Plans/Program for Environment Protection and Rehabilitation (PEPR)*.[59]

4.2.6 Early identification of information requirements

The Commission heard that proponents are often uncertain or unclear on the timing, type and extent of information that they will be required to provide at the commencement of an application process. Providing clarity and a shared understanding about information requirements early in the application process can limit the risk of iterative requests for information and additional rework, and support a shared understanding.

DEM advised that it is standard practice to have a pre-lodgement review involving referral agencies for larger metallic mineral lease applications. A pre-lodgement review is normally considered on a case-by-case basis for quarry impact assessments, usually for the more complex assessments. Pre-lodgement typically involves the DEM assessment officer reviewing a draft mining proposal or PEPR prior to the official submission or lodgement of an application.

A pre-lodgement review may, but rarely does, involve referral regulatory authorities. DEM advises that consulting with referral agencies prior to lodgement can add considerable value to the process. Pre-lodgement review aims to:

[58] For the purposes of this section, 'capability' refers to the skills, ability, data, capacity and knowledge that is required to fulfil a party's role and obligations.
[59] Boral Submission (n 46) 2.

- identify and prioritise risks including any potential 'show-stoppers';
- ensure the proponent has undertaken a reasonable public or targeted consultation process in line with statutory requirements (including a stakeholder consultation plan if required), and consultation is commensurate with the scope and risk of the proposal;
- provide greater certainty to the proponent and the regulator, enabling them to plan for capital and resource requirements earlier (including providing an early indication of whether the project is likely to proceed or not);
- focus the resources of the regulator and proponent on identified and prioritised issues (including information requirements);
- help manage the requirements of referral authorities to improve overall efficiency in the process; and
- support a proportionate assessment process and reduce timeframes.

DEM considers pre-lodgement review can streamline the process, reduce overall timeframes, lead to a more consistent approach, and involve fewer information requests. In principle, the Commission agrees. In practice, few extractives-related application processes involve a pre-lodgement review which may mean proponents:

- are unaware of the pre-lodgement option (noting the guidance material focuses on pre-lodgement for metallic or industrial proposals)[60];
- have insufficient time (e.g. the mineral claim might be about to expire); or
- do not consider it would add value.

A pre-lodgement process for extractives requires:

- capable assessment officers who can identify gaps in the information provided up front by the proponent and understand the impacts on the application process;
- an agreed and clear understanding of the extent of pre-lodgement review required, commensurate with the risk or complexity of the application;
- transparent performance targets and reporting to provide evidence on whether (or not) pre-lodgement adds value despite being an additional process step; and
- appropriate resourcing and planning to ensure sufficient time and staff are available to undertake pre-lodgement activity.

Industry representatives have told the Commission that they support having a pre-lodgement process that establishes expectations at the start and potentially reduces additional information requests. The Commission was advised that it would be particularly helpful for those processes to involve multiple regulatory authorities including DIT and Department for Environment and Water (DEW).

The Commission considers that a pre-lodgement process can have significant benefits when both the parties approach the process seriously and see it as an implicit contract. A successful pre-lodgement process is mutually beneficial and identifies all critical issues

[60] DEM, *Preparation of a Mining Proposal for Metallic and Industrial Minerals MG2a* (2020) 7.

(show-stoppers), enabling regulators and proponents to understand and identify risks, establish information requirements up front, and confirm in writing their understandings of what is required. It commits both parties to an expeditious process, enabling the early identification of projects that cannot proceed due to insurmountable issues, that is, delivering an 'early no'. The subsequent process is expected to be faster than would otherwise be the case and the outcome of the pre-lodgement, in effect, becomes a conditional approval subject to satisfying the various regulators on the key issues.

A pre-lodgement process may not be the most appropriate approach for all quarry applications, irrespective of risk, given it necessarily involves the use of resources to undertake an additional step at the commencement of, or prior to, an application process. Pre-lodgement with all regulators is most appropriate for larger or complex projects, whilst other reforms to streamline processes and requirements for lower-risk projects may be more beneficial.

Recommendation 4.2: Pre-lodgement review

To support efficiencies in the quarry impact assessment process, minimise rework and provide greater transparency and accountability, the Department for Energy and Mining (DEM) to establish an optional pre-lodgement process for all quarry EML, PEPR and MOP applications modelled on the arrangements for fast-track pre-lodgement approvals in the state planning system, noting, among other requirements, the need for:

- early and reliable identification of critical issues by DEM and referral authorities at the start of the process;
- a standard of no more than one further request for information;
- timeframes for assessment and response to be met by DEM and referral authorities; and
- proportionality in the requirements identified in the pre-lodgement meeting.

The extent of a pre-lodgement process may be minimal for low-risk, simple applications or comprehensive and involve co-regulators where complex. The size of the pre-lodgement undertaking to be determined mutually between proponent and DEM.

DEM to ensure the pre-lodgement review is advertised on its website and is widely communicated to the extractives industry in South Australia.

The performance of the pre-lodgement review process be measured and reported on to determine the extent of net benefit over time, identify opportunities for improvements, and establish appropriate performance targets. Performance measurement to include measuring and comparing the time taken for applications with and without pre-lodgement review, and measurement and analysis of total time taken to obtain final approvals (inclusive of time taken with applicants as well as regulators, and time taken for all regulatory processes and activities).

4.3 Risk and proportionality in quarry assessment processes

The Commission heard the complexity of impact assessments in mining proposals, PEPRs and MOPs is not proportionate to the level of risk posed by small-to-medium sized extractives operations. Industry contends that impact assessment requires specialised skills

not held by most owner/operators or mine managers. The delays created by small-scale operators reconciling regulators' requirements effectively precludes them from obtaining mining approvals for campaign-type quarry operations in a timeframe that would enable them to participate in tender opportunities to supply to regional road upgrade projects.[61] This is not in the state's interest as the result is needing to source construction materials from further afield, adding transportation costs and increasing total project costs.

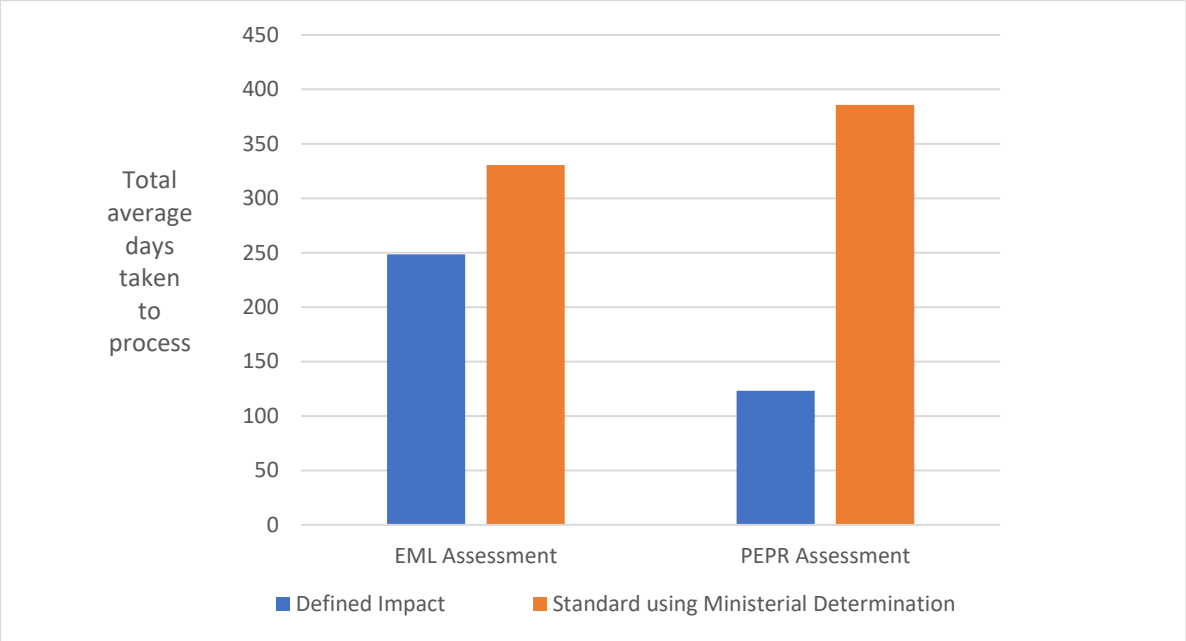
In November 2015, DEM sought to simplify the assessment process through the introduction defined impact templates (the templates) (refer to Section 2.1.2). Where eligibility requirements are met, the template approach is intended to:

- ensure an efficient application process for industry;
- reduce time, effort and cost for industry to prepare mining proposals and PEPRs; and
- reduce time, effort and cost for regulators in assessing and approving applications.

The Commission has heard that operators have benefited from using the templates:

> *the main benefit [of the defined impact template] being the transfer of information between the mining proposal to the PEPR. This can shorten the approval times which is helpful when trying to get approval of a lease for a specific project.*[62]

Figure 4.2: Comparison of the defined impact templates and standard average total days for processing EML and PEPRs/MOPs (extractives), 1 January 2016[63] to 2018–19



Source: DEM data – SR118: MOP/PEPR Assessments and SR117-PT

Figure 4.2 shows that EML applications using the templates are, on average, 82 days faster than those not using the templates. The greatest reduction in time occurs during the PEPR assessment with an average reduction of 262 days. DEM advised there are examples of template PEPRs being approved within 7 days of lodgement.

[61] Cement Concrete and Aggregates Australia (CCAA), Submission DR4 to South Australian Productivity Commission, *Extractives Supply Chain Review* (30 April 2020) (CCAA Submission DR4).
[62] Clay and Mineral Sales Submission (n 53) 2.
[63] DEM advises that the defined impact template process was introduced in December 2015.

Table 4.1: Comparison of information required and process of defined impact template mining proposals and standard mining proposals

Defined impact template mining proposal	**Standard mining proposal**
Information required	**Information required**
• Completion of 13 eligibility questions • 23 questions requiring provision of information • 23 checkbox responses/options for additional information • 4 plans *Total of 38 pages*[64]	• 52 headings where information is required. Some headings require up to 7 separate inputs • 10 headings where information is required for each environmental aspect identified. On average 15 environmental aspects are considered. • 12 maps/plans[65] *Pages dependant on complexity, on average 80 pages*
Assessment process	
The process is the same as outlined in Section 2.1.1	

Source: South Australian productivity Commission

Table 4.1 shows the templates have a simpler information requirement (and lesser burden) compared to the information requirements of the ministerial determinations. The key difference is that the templates do not require an environmental impact assessment as the impacts have been defined through the eligibility criteria and appropriate outcomes predetermined by DEM.[66] The template information requirements are confined to understanding the existing environment, proposed quarry operations, consultation and controls to achieve outcomes.

Despite being recognised as low risk, template applications are still required to go through the same assessment and endorsement process as applications made under the ministerial determinations. Industry feedback has identified that:

- The template does not alleviate issues that arise from differences in interpretation of information by individual assessment officers or other agencies during the referral process.
- When using templates, timeframes to obtain a mining approval are still a key issue for proponents wanting to participate in tender opportunities for regional infrastructure projects.

A quarry code of practice was raised in feedback as a way to further streamline regulatory requirements for lower-risk quarry operations by confining or negating the requirement to do an impact assessment, or even obtain an approval if adopting a notification-only approach. Cement Concrete and Aggregates Australia (CCAA) suggested quarries that do not impact

[64] DEM, *Defined Impact Mining Proposal Template* (2015).
[65] Ministerial Determination 3 (n 19).
[66] MG23 (n 31).

on the water table or a water course, or native habitats, and are of a minimal depth could have standard requirements apply.[67] In Victoria and Tasmania codes of practice provide practical standards required of small-scale quarry operators.

Table 4.2: Interstate codes of practice

Jurisdiction	Code of practice
Victoria	Since 1 January 2010, quarries less than 5 hectares in area and less than 5 metres in depth (and where no blasting or native vegetation clearance occurs) are exempt from the work plan requirements in the *Mineral Resources (Sustainable Development) Act 1990* (Vic).[68]
Tasmania	Quarry Code of Practice, May 2017.[69] Documents acceptable environmental guidelines for quarrying to promote industry self-regulation. The sections of the code are not in themselves legally enforceable; however, provisions of the code can be enforced as permit conditions by issuing Environment Protection Notices.

Source: as cited.

DEM advised that during development of the templates the option of a code of practice was considered for lower-risk quarry operations. The design of the Mining Act precludes a notification-only approach. All mining operations must be authorised through a mining lease, applications for an EML must be supported by a mining proposal,[70] and operational approvals must be obtained through a PEPR.[71] Following detailed discussion with, and advice from, DEM after the draft report, the Commission is satisfied the templates can be developed to further streamline approvals.

Industry considers that template assessment processes could be further shortened, and that eligibility to use the templates could be expanded to include larger quarries:

> *we believe there is virtually no risk with further expanding the scope of potential quarry operations which might be eligible. Indeed, even the most complex quarry operations are mostly only varied by final landform, layout of the site and services, geological stability and the presence/management of ground water.*[72]

DEM advises that a project to expand the template criteria has already commenced. CCAA has been regularly updated and support broadening of the eligibility criteria to allow operators proposing blasting under certain conditions to apply using the templates. This will allow operators to quarry harder rock that can be used for aggregates suitable for a wider range of road-building applications. DEM is presently testing the updated templates with new

[67] Cement Concrete and Aggregates Australia (CCAA), Submission FR3 to South Australian Productivity Commission, *Extractives Supply Chain Review* (24 July 2020) 4 (CCAA Submission FR3).
[68] Victorian Government, Earth Resources, *Code of Practice for Small Quarries* (Web Page, 1 June 2020) <https://earthresources.vic.gov.au/legislation-and-regulations/guidelines-and-codes-of-practice/code-of-practice-for-small-quarries#rehabilitation>.
[69] Tasmanian Government, Mineral Resources, *Quarry Code of Practice* (Web Page, 20 May 2020) <https://www.mrt.tas.gov.au/portal/quarry-code-of-practice>.
[70] *Mining Act* (n 4) s 35(1)(a).
[71] *Mining Act* (n 4) pt 10A, s 70B.
[72] CCAA Submission DR4 (n 61) 3.

applicants that meet the eligibility criteria and proposes to make permanent changes to the templates by the end of 2020.

The efficiencies arising from the template process come from the reduced information requirements, in turn requiring less assessment by DEM.

DEM advise that further process efficiencies may be gained by:

- improved pre-lodgement processes to ensure applications are lodged with sufficient information to support a streamlined process;
- adopting a standard 2-week public consultation period for template applications, noting that it has previously been custom to set a period of 4 weeks (14 days is specified in the Mining Act as the minimum period for publication of a notice of a proposed mining lease)[73];
- finalise a lean review of the workflow steps for the mining lease application process with the aim of reducing assessment times where possible; and
- reviewing IT systems and interfaces to further enable online applications, assessment and tracking.

There are also opportunities to streamline bulk sampling requirements through the template approach that form part of DIT's quarry pre-qualification processes. This is discussed in more detail in Section 4.6.3.

The Commission concludes further reductions in template timeframes can be made by developing an assessment process that is proportionate to the level of assessment required where outcomes and measurement criteria have been predetermined by DEM.

Recommendation 4.3: Develop and broaden the application of the defined impact template assessment process

To reduce timeframes associated with defined impact template applications and PEPRs, the Department for Energy and Mining (DEM) develop a specific assessment process for defined impact template assessments that includes but is not limited to:

- improving pre-lodgement processes (see also Recommendation 4.2) with the aim of applications requiring minimal assessment once lodged, enabling early public consultation;
- adopting the 14-day minimum period for publication of a notice of a proposed mining lease;
- only referring applications to referral agencies where there is a statutory requirement;
- making internal endorsements and the DEM business process proportionate to the reduced risk profile; and
- improving IT systems and interfaces to support transparency and enable online applications, assessment, real-time tracking and reporting.

[73] *Mining Act* (n 4) s 35A(1)(c).

4.4 Inconsistency in approach by regulators

4.4.1 Department for Energy and Mining

Within DEM, EML applications, PEPRs and MOPs are assessed by a team of assessment officers with varying levels of industry experience. The Commission has received positive feedback on industry's general experience with the staff from DEM and other co-regulators whose mandates cover the extractives sector. Stakeholders generally acknowledged that, while there are issues with inconsistent approaches, there are staff who have a deep understanding of the sector and engage well with the industry. Industry has welcomed opportunities to work with regulators on recent reforms.

The Commission has heard that there can be inconsistent approaches to a DEM assessment where assessment officers change, resulting in new RFIs and a discontinuity in the assessment process:

> *It becomes even more protracted when there is a change of Assessment Officer halfway through the assessment process or after satisfying all of the required changes the document is sent for review by another member of staff who may have a different point of view and require more changes and additions.*[74]

> *DEM regulation officers do a good job … [there is] inconsistency within assessments of Mining Lease Proposals (MLP), PEPR and MOP documents [and] timeframes can be lengthy.*[75]

Inconsistent approaches lead to unnecessary delays for approvals. This section focuses on the issue of consistency and the underlying causes as experienced by proponents.

Industry advised:

- Less experienced staff can be risk averse and rely on a checklist and 'one-size-fits-all' approach to assessments rather than exercising professional discretion.
- Interpretation of information required for EML applications and PEPRs by the respective ministerial determinations can vary depending on the assessment officer and their interests or expertise.
- Proponents can experience variations in the level of engagement from different assessment officers, requiring proponents to adapt to different approaches to the same assessment process.

The Commission endorses the view of the Australian Productivity Commission that effective and efficient risk-based regulation requires regulators that:

> *are accountable and transparent; follow clear and predictable processes; build fit-for-purpose technological and staff capabilities; collect, use and disseminate data effectively; and work to inform the community about their activities*.[76]

Irrespective of how well a regulatory framework is designed, performance is critical to executing the mandate and successfully achieving intended policy outcomes. Inconsistent

[74] ePlanning Submission (n 47) 3.
[75] Hallett Resources, Submission DR7 to South Australian Productivity Commission, *Extractives Supply Chain Review* (15 April 2020) 1.
[76] Australian Productivity Commission (n 8) 2.

expectations of proponents by regulators creates uncertainty for operators which can translate to additional time and costs to obtain an approval, or an application not being made at all, leaving construction material in the ground.

The Commission considers the following actions are likely to increase consistency:

- provide enough flexibility in regulation design to enable regulators and quarry operators to respond to risks proportionately. This may be assisted by the drafting of the new regulations;
- provide opportunities for secondments and officer exchange programs within and across different regulators to foster common understandings of how different mandates apply to quarry operations and the supply chain;
- ensure assessment officers have a minimum number of opportunities every year to 'get out on the ground' to develop a comprehensive, practical understanding of the nuance and context of the circumstances which they assess;
- offer training and strategies to lift capability and target skills gaps including technical expertise and risk-based regulation; and
- provide information-sharing opportunities to exchange information between industry and regulators.

Improving consistency reduces the risk of delays and uncertainty. Greater certainty and transparency in assessments for all quarries would be welcomed by the industry. According to information provided to the Commission by DEM:

- Approximately 50 per cent of the mining assessment team's full-time equivalent hours are dedicated to extractives assessments.
- The majority of staff members dedicated to extractives assessments have less professional experience than staff dedicated to metallurgical assessments, which may impact on the effectiveness of pre-lodgement meetings.
- During 2018–19 EML applications were 81 per cent of total mining lease applications, compared with 38 per cent in 2015.
- Extractives PEPR/MOP assessments on average over the past five years have been 51 per cent of the total, with 116 programs assessed.[77]
- All assessment officers report directly to the Deputy Director of Mining Assessments.[78]

In recent years the number of combined extractives assessments as a percentage of the total has increased. The high volume of assessments, number of officers involved and varied levels of experience likely contributes to the inconsistency experienced by industry. The flat structure of the assessment team and current delegations have resulted in the Deputy

[77] DEM data – *SR117: All MLA Assessments* – printed on 11/05/2020 and *SR118: MOP/PEPR Assessments* – printed on 27/04/2020.
[78] DEM information provided on request (May 2020) based on proportion of full-time equivalent roles in the Mining Regulation Branch.

Director of Mining Assessments being responsible for reviewing and endorsing all correspondence and reports produced by the team.

The Commission understands that the compliance team within DEM, responsible for regulating 587 EMLs and 220 private mines,[79] previously had a similar flat structure before a dedicated team leader role responsible for oversight of the extractives function was created.[80] This role has reportedly improved efficiency and quality control of documentation prior to consideration by the delegate with specific oversight over the extractives function.

4.4.2 Referral agencies

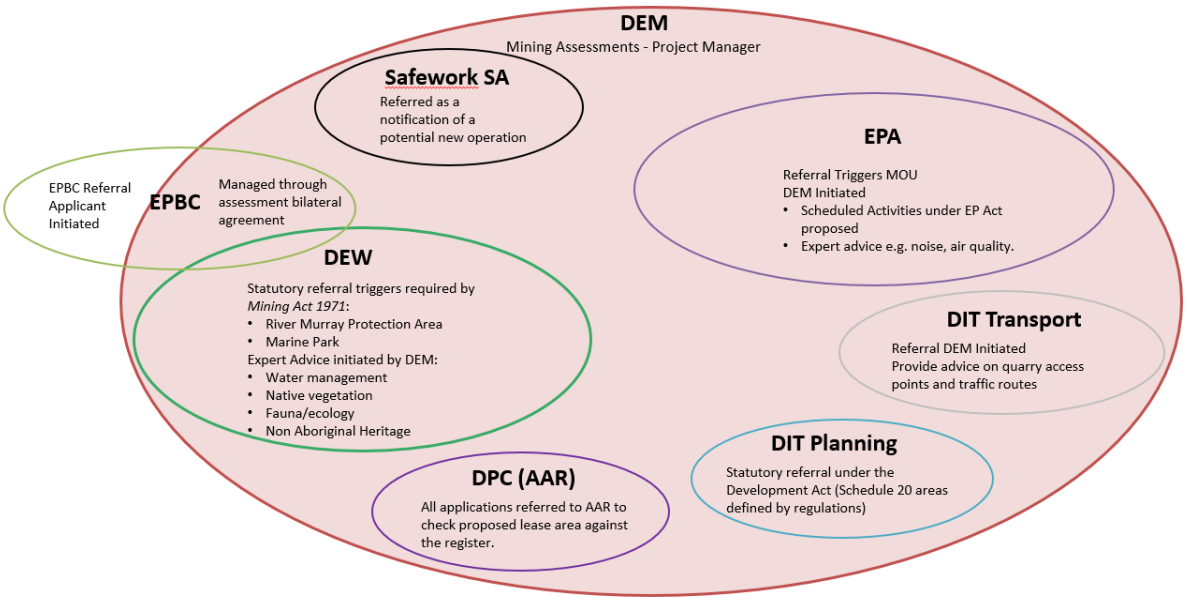
The Commission heard that the level of detail required by referral agencies can also be inconsistent with DEM requirements:

> *In some instances, getting a lease approved can be a long and expensive process … information required seems to change over time. This may be a combination of different people (DEM and other government agencies) reviewing the document and regulations/determinations coming into effect during the process … certain issues (for example water) taking on greater significance that they might need to.*[81]

Industry provided specific examples where referral agencies have required a level of detail not previously required by DEM at the beginning of the application process and the Commission accepts the veracity of that evidence. Figure 4.3 is a stylised presentation of the referral agencies that may consider an application and their respective mandates. While DEM defines the scope of a referral, the referral agency may adopt a different scope given their independent regulatory mandate. Additional requests for information can result, causing frustration for proponents. There may be several reasons why referral agencies adopt a different scope than DEM, including legislative mandate, capability, agency culture and levels of experience of the officers involved. Resolving these inconsistencies is clearly a matter for the senior leadership of the regulators. In particular, the boundary of the decisions or advice required from referral authorities by DEM as the lead regulator needs to be clarified to avoid unnecessary RFIs as a result of misunderstanding or regulatory creep.

[79] Mineral Resources Regulation Report (n 13) 40.
[80] DEM information provided on request (May 2020) based on Mining Regulation Branch Organisation Chart.
[81] Clay and Mineral Sales Submission (n 53) 2.

Figure 4.3: Referral agencies and reasons for referrals during the lease assessment process



Source: South Australian Productivity Commission

Groundwater assessments have been the cause of some frustration to proponents where inconsistent approaches by regulators resulted in some proponents investing significant resources to resolve groundwater issues whilst other sites of similar size and risk were only required to pay minimal attention to the groundwater assessment. The apparent failure by the regulators to quickly resolve those inconsistencies before they imposed avoidable costs on proponents is unfortunate and undesirable in the Commission's view. The difficulty of collecting technical water data can inhibit the progress of applications. DEW indicated it takes a practical approach and works with operators to find solutions and alternatives within water allocation plans.

The Commission understands through consultation with DEM and DEW that in 2017 both agencies jointly prepared a draft guideline to manage the interaction of the mineral and energy resources sector with water resources in South Australia. For reasons unknown to the Commission the guideline was neither finalised nor released to industry. There may be value in revisiting that work, inclusive of specific reference to the extractives sector as part of Recommendation 4.1.

The referral process between DEM and the Environment Protection Authority South Australia (EPA) is subject to an administrative arrangement created to achieve consistent, collaborative and efficient regulation of the state's mineral resources, especially where the obligations of both parties overlap.[82] The Commission considers such arrangements can be beneficial including clarifying the expectations of each regulator, coordinating their internal processes, and connecting up the different regulatory mandates of each regulator, better reflecting the one-door-to-government approach.

[82] Department for Manufacturing, Innovation, Trade, Resources and Energy (DMITRE) MRD and Environment Protection Authority, *Administration Arrangement* (2013) 2.

Recommendation 4.4: Formalising referral arrangements between regulators

To increase regulatory efficiency for extractive mineral impact assessments and minimise the risks associated with a duplication of responsibility, the Department for Energy and Mining and all relevant referral agencies put in place formal administrative arrangements, authorised by relevant agency Chief Executives, that:

- clarify each agency's regulatory mandate and areas of responsibility;
- specify how areas of joint responsibility and interdependent regulatory functions will be managed by each regulator;
- specify the decision required from each regulator, with the principle of requiring no more information from a proponent than is necessary to reach that decision;
- provide timeframes for completing referrals, after which if there is no response then the proposal is deemed to comply;
- provide a procedure to escalate matters quickly to the final decision maker where regulator delegates are unable to resolve any tensions in areas of responsibility impacting on the progress of an impact assessment application; and
- specify the frequency of reviewing and updating the administrative arrangement.

A key underpinning principle of the arrangements is to balance a proportionate level of prescription to support practical and expedited referral activity with retaining delegates' ability to meet their regulatory role under their respective mandates.

4.5 Public consultation

For the purposes of the review, ‘public consultation’ incorporates:

- consultation facilitated by regulators and/or the proponent;
- formal or informal engagements; and
- face-to-face interactions or written submissions.

Statutory obligations for public consultation in the Mining Act include:

- Section 35A prescribes publication of mineral lease mining proposals (including extractive mineral leases) for consultation.
- Section 73G(8) prescribes publication of parts of a draft MOP for new operations.
- Environmental outcome requirements for quarrying and mining must be developed following stakeholder consultation (Mining Regulations 30(1)(c), 49(1)(c) and 65(2)(a)).

DEM advises that consultation with stakeholders comprises consultation with the landowner and with ‘any other person who may be directly affected’[83] where:

[83] MG30 (n 1) 10.

> '*affected community' refers to the members of the community affected by a company's activities … most commonly social (eg resettlement, changed services such as education and health), economic (eg compensation, job prospects, creation of local wealth), environmental and political*.[84]

Some guidance on stakeholder engagement is provided in existing regulatory guidelines published by DEM including the newly released guideline on developing environmental outcomes for quarrying and mining.[85] DEM advise that early, effective and ongoing consultation will increase the likelihood of building trust in the community, providing greater transparency and clarity of information about the potential impacts, and obtaining necessary social licence.[86] DEM advise that a new guideline on developing community engagement plans for mining operations in SA is being drafted.

Issues raised with the Commission on public consultation and stakeholder engagement include:

- The capability of different extractives operators/owners to undertake effective public consultation or engagement varies.
- Consultation can influence community expectations beyond the scope of the project.
- Public consultation requirements can be disproportionate to the potential consequences or risks.
- Responses to issues raised through public consultation need to balance the broader strategic significance of a quarry resource, i.e. consider the state's interest.
- The minimal publication requirements for MOPs reduces the overall effectiveness of public consultation.

4.5.1 Impacts on effective public consultation

Industry stakeholders have generally acknowledged the importance of early and effective public consultation in establishing and maintaining community acceptance of their operations (the social licence to operate[87]). The regulatory requirements necessary to obtain approval to establish, operate and close a quarry include consideration of community expectations and other public interests. In that regard, a social licence to operate supports an effective regulatory regime.[88]

> *we agree that community consultation is justified in cases where there has been a significant change in the mining operation which could have an impact upon the local neighbourhood/community.*[89]

The Commission heard that some quarry operators consistently go beyond what is required or expected for public consultation, while others undertake minimal consultation on comparable quarry activities. In addition, concerns were raised about consultation undertaken in good faith being subject to campaigns by special interest groups, rather than engaging with individuals and communities directly affected by the proponent's project.

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[84] Ibid 21.
[85] Ibid.
[86] Ibid 10.
[87] Commonwealth of Australia, Standing Committee on Industry, Innovation, Science and Resources, *Inquiry into How the Mining Sector Can Support Businesses in Regional Economies* (2018) [6.2].
[88] See the tenement holder requirement to prepare a PEPR pursuant to *Mining Act* (n 4) s 70B.
[89] ePlanning Submission (n 47) 1.

Industry advised that a proponent's previous experience with public consultation, their planning processes and the amount of resources they dedicate to consultation will affect the level and value of public engagement. Regulators share this view.

Regulators advise that effective community engagement can provide cost-effective outcomes for industry. Examples were provided where a lack of early and effective engagement led to protracted and ongoing complaints resulting in the implementation of long-term remedial control measures at significant cost to the business.

The Commission has heard operators' ability to engage in public consultation can be impacted by:

- government (state and local) influencing community expectations on what can or cannot be achieved – sometimes raising expectations on issues outside the operator's control (e.g. regulatory process issues);
- changes made to a proposal during the approval process in response to regulators' requirements and/or delays, which then creates confusion and a disconnect with the community who were consulted on the original proposal;
- the timing of public consultation in the application process;
- public engagement requirements that are disproportionate to the risk and impact of the project proposal – particularly where a proponent may have received informal approval for a smaller campaign style operation from stakeholders directly impacted (e.g. the landowner and/or local authority);
- government planning decisions for new developments (residential, infrastructure or industry) on land adjacent to an existing quarry that have not taken into consideration the potential for longer-term land use conflicts; and
- the ability to apply a proportionate and balanced response to issues focused on stakeholders who are directly or materially affected.

> *The way in which Government communicates expectations and responds to issues from the community can significantly affect the community's position as a whole. In many cases, the individual company is left to defend community complaints that are often about Government process and not within the control of the company.*[90]

Public consultation requirements for applications that result in disproportionate and irrelevant responses (including complaints) can absorb significant resources for the proponent and regulators, adding to timeframes and costs.

> *tenement holders of existing mines/quarries are asked to provide a new/updated PEPR or MOP for an existing operation (which in many cases has been operating for decades) they are told they must 'consult' with the local community … this often provides a focus for people to find issue with the mine who previously were oblivious to its operation and had no issues or concerns with it … we agree that community consultation is justified in cases where there has been a significant change in the mining operation which could have an impact upon the local neighbourhood/community.*[91]

[90] Ibid 4.
[91] Ibid 1.

4.5.2 Consultation for different tenement types

There are different requirements for public inspection of extractive mining proposals depending on whether the quarry site is, or will be, on an EML or is a PM:

- Section 73Q of the Mining Act requires a MOP (for a PM) to be registered on the mining register; however only the proprietor's name, mine location and an extract showing the objectives and criteria can be made available for public inspection.
- The complete mining proposal for an EML will be published.

DEM considers that the public consultation process associated with MOPs could be significantly improved by releasing the full MOP with an invitation to comment. DEM do not consider it possible to comment on objectives and criteria in a meaningful way without understanding the proposed quarry size, location of actual operations within the quarry site, hours of operation, potential impacts and strategies to achieve the objectives. The Commission agrees.

The *Statutes Amendment (Mineral Resources) Act 2019* was passed on 17 October 2019 and, although it includes a range of amendments impacting on PMs, it does not amend the public inspection obligations for a MOP. The Commission understands that the new Act requires all MOPs to transition to PEPRs after 15 years which will then subject them to the regulatory obligations in the Mining Act that apply to PEPRs, including consultation.

4.5.3 Public consultation for the extractives industry

Public consultation is a key factor in establishing and maintaining a quarry's social licence to operate. Effective public consultation can reduce the risk of costly project delays or termination by:

- providing a way for stakeholders to inform the operator of their concerns;
- providing an opportunity for the operator to address those concerns before operations commence;
- helping communities adapt to forthcoming changes; and
- reducing the risk of issues arising further down the track.

Based on what the Commission has heard, the key issues impacting on the effectiveness of public consultation and the extractives industry are the:

- variability in the level of skill and expertise (capability) of organisations tasked with undertaking the public consultation;
- ability for organisations to gain a better understanding and knowledge of when and how to undertake public consultation;
- early identification of what requires public consultation; and
- proportionate responses to public consultation.

Disproportionate approaches or responses to public consultation can be symptomatic of an inflexible regulatory framework and poorly applied practices. Ineffective or poorly executed public consultation can lead to a disconnect between public expectations and achievable

outcomes, and can exacerbate the existing pressures on quarry operations and resources, particularly for issues of proximity to other sensitive land uses.

The Commission generally considers this advice to be appropriate and consistent with the general approach to regulation set out by the Department of the Prime Minister and Cabinet Best Practice Consultation guidance note.[92]

DEM advises they have amended their proposed stakeholder engagement guideline following consultation and expect that it will be published in the next 6 months. DEM has also indicated to the Commission that they are planning to develop a shorter version that will be more suitable for smaller operators – this will be relevant to the extractives sector given the large number of SME operators. CCAA has indicated a flexible approach to consultation requirements is supported, and identifying who has standing in a consultation is a valuable consideration.

4.6 Assessment application timeframes

The time taken to obtain approvals to establish a new quarry, or increase the size of an existing quarry, is a key theme. To a large extent the time taken for an approval depends on the issues set out earlier in this chapter. To that end the Commission anticipates that improving timeframes for proponents, and increasing the efficiency of regulators in undertaking assessments, will result from the implementation of the Commission's recommendations regarding those preceding issues. This section is about understanding the gamut of issues, the views of industry and quarry operators, and considering how the costs and consequences of delay can compromise the state's interests through quarry operators' missed opportunities.[93]

Whilst industry stakeholders state they accept the need for environmental and safety requirements, they are concerned about delays in processing applications which they consider have contributed to lost commercial opportunities and investment in SA. These delays have both local and state-wide effects: a proponent misses the opportunity to tender for a specific infrastructure project because of delayed processes, and the raw construction materials for the infrastructure project come from more expensive (distant) sources. South Australians collectively pay for this additional cost and inefficiency.

> *Applications [are] not being made. This is particularly common in regional areas where a quarry may only be viable based on a particular Government project, yet as a result of the timeframe required to prepare, submit and assess an application being incompatible with the timeframe of the Government infrastructure project, these quarries do not materialise*.[94]

The issues raised regarding timeframes to obtain an EML or PEPR/MOP approval include:

- An application to expand a relatively low-risk existing quarry took more than a year to process.
- There can be limited or no communication with proponents about the progress of an application, why it has not progressed, and expected completion date.

[92] Department of the Prime Minister and Cabinet, Best Practice Consultation guidance note (web page, 26 August 2020) <https://www.pmc.gov.au/resource-centre/regulation/best-practice-consultation-guidance-note>.
[93] See e.g. CCAA Submission DR4 (n 61) 3.
[94] Ibid 2.

- Approvals required from referral agencies can add considerably to assessment timeframes.
- Misalignment of timing between obtaining the applicable mining approval and the DIT quarry pre-qualification timeframes can preclude small operators from regional tendering opportunities.
- Eligibility to apply the 'defined impact' approach to low-risk, low-impact operations could be further expanded to cut timeframes for applications.
- Industry has concerns regarding the practical value of the target timeframes used by DEM to measure timeliness performance.

Industry stakeholders have been critical of delays or unanticipated changes to timeframes and their consequences. They include:

- foregone income opportunities as operators are unable to supply to market whilst awaiting the outcome of their application(s);
- diversion of investment – particularly for larger operators who are able to divert investment to opportunities interstate or overseas; and
- unanticipated changes to operational requirements arising from the requirements of co-regulators.

4.6.1 Measuring timelines

The number of days taken to process each EML and PEPR/MOP extractive related application submitted is recorded and reported by DEM.

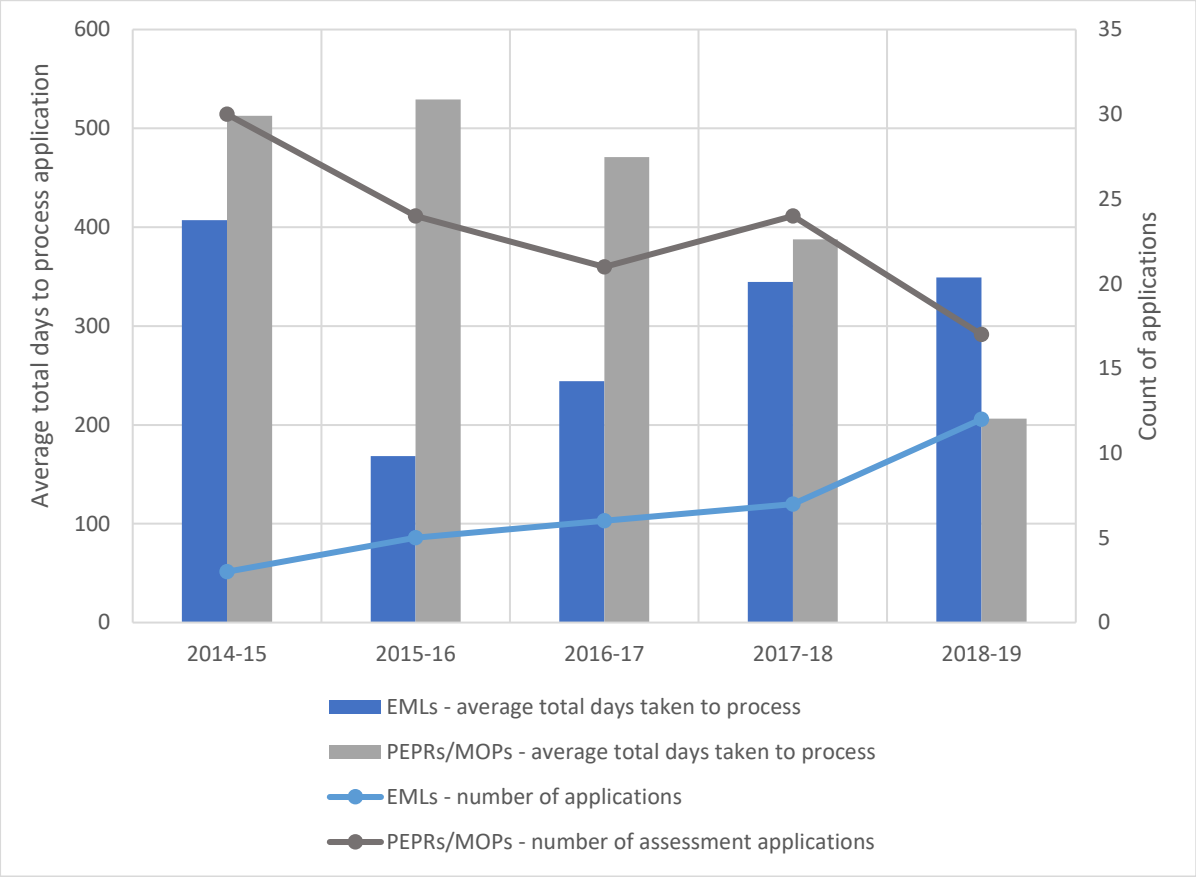
Total days taken

Figure 4.4 below shows the average total number of days taken to process EML and PEPR/MOP applications, with applications assigned to the financial year in which they were formally lodged or submitted to DEM. As indicated in Section 2.2, all applications have been included irrespective of their status at the time the data was provided to the Commission, and there are limits on the scope of the timeline data that is recorded by DEM. These factors can impact on comparisons of timeline data between years – particularly for 2018–19.

Figure 4.4 shows:

- The number of EML applications has risen steadily each year since 2014-15 while processing times have fluctuated, but rising to an average of over 300 days (total) in 2017-18 and 2018-19.
- Both the number of PEPR/MOP applications and the time taken to process them has fallen since 2014-15.

Figure 4.4: Average number of total days taken to process EML applications and PEPR/MOP assessment applications per annum, 2014–15 to 2018–19[95]



Source: DEM data SR117-PT: All MLA Assessments and SR118: MOP/PEPR Assessments

Analysis of the timeline data for EML applications indicates that, on average, the total number of days taken to process applications that were approved (201) was around half the total days taken to process those that were withdrawn or refused. EML applications that were refused took the longest time to process (439 days on average).

Target timeframe performance

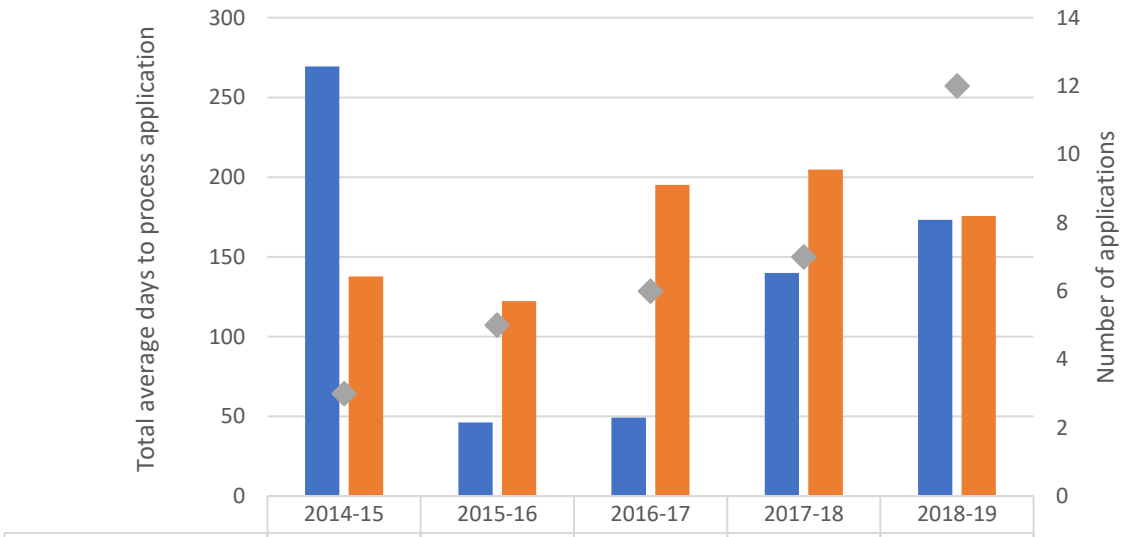
As discussed in Section 2.2.1, DEM records and publishes some statistical data on the proportion of applications that have achieved set target timeframes. Current targets for extractive related applications are set at 183 days or 6 months to process an EML application, and 92 days or 3 months to process a PEPR/MOP. Although DEM captures data on the time spent with the proponent/applicant, the target timeframes are only based on, and measure performance against, the number of days that the application process took with DEM. The Commission was advised by DEM that the target timeframes were established by reviewing key state assessments undertaken previously, particularly those that were determined to have been completed efficiently and effectively and met the required outcome.

Figure 4.5 below shows the average number of days taken to process EML applications submitted to DEM for the past five years to 2018–19. It is important to note that the relatively small number of applications, particularly with respect to 2014–15, can bias the results of comparisons of processing times. Regulators could obtain further value from the data by

[95] Financial year dates based on date of submission/application to DEM.

undertaking a more in-depth analysis, particularly where there are identified trends and/or anomalies.

Figure 4.5: Extractive mineral lease (EML) application processing times per annum – average days taken with applicant and with DEM, 2014–15 to 2018–19[96]



	2014-15	2015-16	2016-17	2017-18	2018-19
Days with applicant	269	46	49	140	173
Days with DEM	138	122	195	205	176
Number of applications	3	5	6	7	12

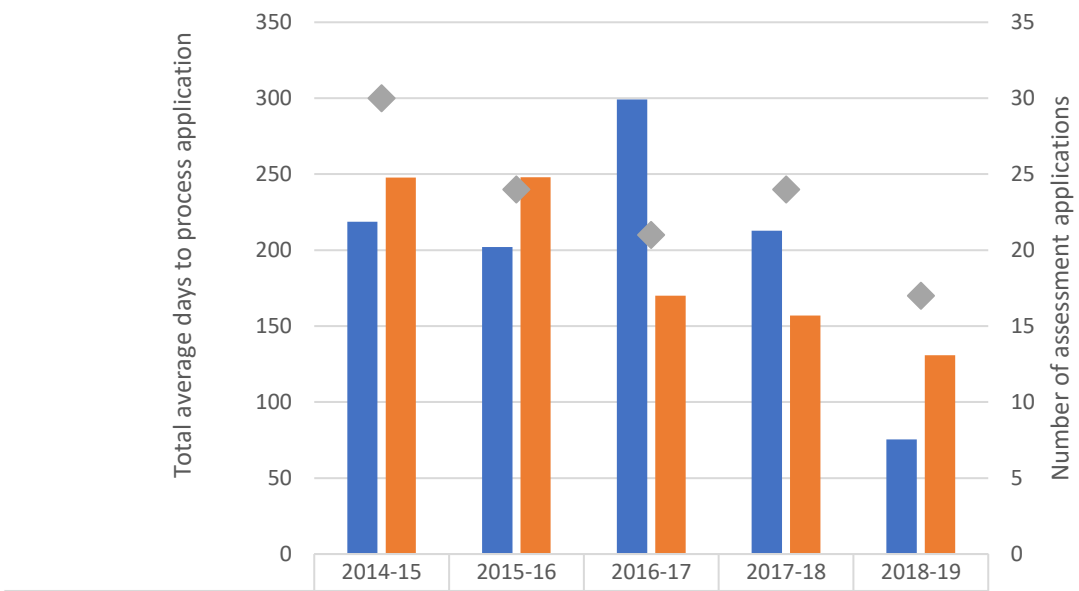
Source: Based on DEM data – SR117-PT: All MLA Assessments

According to the data provided by DEM, Figure 4.5 above indicates that for those applications submitted in the last three years, the time taken with DEM has been longer than for those submitted in the first two years.

Figure 4.6 below provides information on the average number of days taken to process PEPR or MOP assessment applications submitted to DEM, along with information on their number.

[96] Financial year based on date of receipt or submission of application. Note that for 2018–19, the calculations may incorporate some application processes that were not yet completed within the year thereby potentially understating the average processing times.

Figure 4.6: Extractive mineral program assessment applications (PEPRs and MOPs) processing times per annum – average days taken with tenement holder (applicant) and with DEM, 2014–15 to 2018–19[97]



	2014-15	2015-16	2016-17	2017-18	2018-19
Days with tenement holder	219	202	299	213	75
Days with DEM	248	248	170	157	131
No. application assessments	30	24	21	24	17

Source: DEM data – SR118: MOP/PEPR Assessments

Figure 4.6 above indicates that over the five years to 2018–2019 the number of PEPR and MOP applications has fluctuated from a high of 30 in 2014–15 to a low of 17 in 2018–19.

The Commission's analysis of the DEM data found that over the past five years to 2018–19, 61 per cent of all EML applications and 42 per cent of all PEPRs and MOPs met the target timeframes for days spent with DEM. The Commission notes that, over the same period, 68 per cent of supported (approved) EML applications met the target timeframe compared to 60 per cent of EML applications that were withdrawn or refused.

The Commission's view

In summary, application processes achieve target timeframes only around half the time. In that case, the assessment of the Commission is that application processes can be improved significantly.

According to the most recently published data, key factors impacting on approval timeframes have been 'resourcing constraints' and the additional work required to review and update PEPRs for existing mines (which requires an impact assessment) so they align with current legislation, standards and expectations.[98] The apparent target timeframe performance underscores the need for a range of actions to improve this situation, including triaging

[97] Financial year based on date of receipt or submission of application. Note that for 2018–19, the calculations may incorporate some application processes that were not yet completed within the year thereby potentially understating the average processing times.
[98] Mineral Resources Regulation Report (n 13) 44.

applications on a risk/complexity basis, streamlining the assessment process, lifting capability and removing bottlenecks in the decision-making process.

The Commission has recently been advised by DEM that they are currently undertaking several Lean Process Reviews to streamline lodgement, assessments and communications with a view to reducing application timelines.

Industry expressed concern over the limitations of this timeline data as a performance measure:

- Clearer feedback is requested on milestones and timeframes throughout the approvals process supported by greater automation of process.
- End-to-end processes from pre-lodgement through to commencement of operations are not measured.
- It is subject to 'stop the clock' provisions whereby measurement stops when an application is withdrawn and restarts when, and if, it is resubmitted.
- The target timelines currently used to measure good practice (six months for processing EMLs and three months to process PEPRs) are too long for commercial purposes and in any event are only being met around half the time.

  Statistics do not bear out the concerns that our members have regarding the difficulty to bring quarry projects to fruition in a timely manner.[99]

  Applications being withdrawn and resubmitted. This skews the approval timeframe statistics.[100]

  Excessive DEM approval timeframes … Boral recommends the introduction of industry benchmarking for mine approvals.[101]

  Whilst DEM cannot be held to account for the time a company takes to respond, reporting on the total timeframe is nonetheless providing a more wholistic picture to industry and the general public.[102]

DEM advises that the current target timeframes are based on those used for metallic mineral applications. The Commission sees merit in DEM and the industry co-designing a relevant and appropriate set of timeframes and performance measures specific to the process for extractives to help improve regulator performance and increase industry confidence.

Recommendation 4.5: Set and report new extractives target timelines for approval and publicly report performance against those targets

In order to raise the productivity of the extractives regulatory process, the Department for Energy and Mining (DEM) adopt a new target setting and reporting process for timelines for approvals and reviews in the DEM-led process that:

- starts with the current targets but adopts goals for further reductions over three years, including to reflect specific issues or conditions associated with extractives related processes;

[99] CCAA Submission (n 61) 2.
[100] Ibid 2.
[101] Boral Submission (n 46) 1.
[102] CCAA Final Report Submission (n 67) 1–2.

- considers appropriate internal organisational arrangements and structures to support these goals;
- consults with industry on proposed revised timeframes and supporting organisational arrangements, including on the underpinning principles and performance improvements to support those timeframes; and
- publishes explanatory information and regular progress reports on the performance against the targets.

4.6.2 Misalignment of timeframes and tendering opportunities

To submit a conforming tender for a state government construction or infrastructure project, the supplying quarry must be pre-qualified by DIT.[103] According to DIT, the pre-qualification system is designed to reduce risk to government posed by using unsuitable materials which, for example, could result in early failure of a road or safety risks to road users. It facilitates the tender process, ensuring that a proposed supplier of materials has the capacity to provide product of specified quality safely and to meet environmental and other standards. It is a preventative approach to risk insofar as aims to apply resources to establishing quality of materials in advance of their use. Implicitly, it rejects the alternative of pursuing contractual or other legal remedies in the event of infrastructure failure as a consequence of the use of sub-standard materials. DIT indicates the pre-qualification process is its preference and it is not prepared to consider changes that may compromise material quality.

Established quarry operators largely support the pre-qualification process as it provides quality controls and allows for improved efficiency during the tender process, that is, limiting the amount of information DIT requires from prime contractors, and in turn construction material suppliers.[104] The requirements to be pre-qualified for supply of pavement materials are set out in the Prequalification Guidelines.[105]

DIT information indicates that a pre-qualification process takes at least three months to be completed.[106] To place this time period into context, DEM advise that an application for an EML and PEPR using the defined impact templates could be processed in three months.

There are several requirements in the DIT Prequalification Guidelines, including validation by a site inspection, that effectively preclude new quarries from obtaining a pre-qualification:

- A new site may not have a quarry face or sufficient exposed material for DIT to understand the material properties.
- The product performance is untested.
- Processing techniques to manage quality are not demonstrated until established.

[103] DPTI, *Contractor Prequalification Scheme Supply of Pavement Materials – Guidelines, Conditions and Application Form* 1 (Prequalification Guideline).
[104] CCAA Final Report Submission (n 67) 2.
[105] Prequalification Guideline (n 103) 2.
[106] DPTI, *Prequalification for Transport and Building Infrastructure* (Web Page, 4 August 2020) <https://dpti.sa.gov.au/contractor_documents/prequalification>.

- It is not possible to provide evidence which (through consecutive test results) demonstrates that the quarry/plant can consistently produce the products in accordance with the appropriate DIT specifications or equivalent.
- Provision of a copy of the applicable EML (which cannot be provided before it is approved).

DIT advised the Commission that in the absence of specific product performance information the assessor may rely on investigations undertaken for resource potential, such as test pits.

In addition to assessing material against specification, DIT advised that the pre-qualification process enables DIT to assess the performance of materials which, although they may meet master specifications, may not perform in a construction context. This assessment must be undertaken by a suitably qualified professional, e.g. a pavement engineer, geologist, etc. This additional assessment is an important part of mitigating the risk of material failure and pavement defects over the life of the infrastructure.

Whilst the Commission accepts product specification and performance assurance are necessary to manage the risk of infrastructure failure, the current regime also acts as a barrier to entry for new quarries. Potential new suppliers who are proposing to supply from a new quarry will be unable to demonstrate any product history. This situation particularly penalises regional areas and affects small operators who focus on low-risk campaign quarries that can be developed to supply regional road projects at competitive cost to government. Several industry stakeholders provided evidence to this effect, suggesting there is misalignment between the time taken to approve the establishment and operation of a quarry under the Mining Act, and the time taken to obtain a DIT pre-qualification for a quarry.

This misalignment leads to lost business opportunities for local businesses, and additional costs to the project by having to truck in material from an established pre-qualified quarry from further away. This matter generally affects regional road projects where a proponent seeks to establish or extend a quarry close to the site. A specific example was cited to the Commission where a foregone tender added $30–$40 per tonne in transport costs for a job that required delivery of 100,000 tonnes of material. Had the tender to supply that project from a closer quarry been successful, it was asserted the transport cost would have been $7 per tonne, a potential saving of up to $3.3 million which represented 22 per cent of the cost of the infrastructure project.

The Commission also heard that, whilst the pipeline of regional infrastructure projects may be advertised well ahead of calling for tenders, in practice there is only a short period of time between when a specific project is funded and the tender put to market. The short lead time compounds the challenge of obtaining the applicable mining and DIT pre-qualifications required to tender.

Industry stakeholders advised that maintaining a portfolio of strategically sited pre-qualified, approved EMLs is commercially unviable in part because obtaining the applicable mining approvals to lawfully drill for samples to accelerate DIT's pre-qualification requirements was very difficult to achieve in the timeframes. The cost and uncertainty of supply requirements for regional upgrade projects was another factor. CCAA submitted that 'small quarries should not be encouraged where there are established quarries close by', contending that whilst it supports 'the need for low cost materials in remote and isolated locations' this

should not undervalue the investment and costs to larger, established quarries in populated areas.[107]

DIT advised the Commission that there are areas in the state where no quarries exist within a reasonable distance to road infrastructure. While the supply and transport of high-grade sealing aggregate, used for the wearing surface, can be economically justified, road base materials are commonly found across the state.[108] DIT advises that road base is the construction material that is most susceptible to higher delivered costs through higher transport costs as it is required in high volumes and is of relatively low unit value.

The misalignment between processes is apparent where an operator seeks pre-qualification prior to applying for an EML. If supply to DIT is the proponent's goal it makes business sense to obtain pre-qualification for the resource potential before applying for, and bearing the cost of, an EML. However, this would also require that the proponent take out a mineral claim (MC), and DEM advised the Commission that the current system does not easily allow for bulk sample testing on a MC. DEM are exploring changes to the MC registration processes to request information from the applicant at this early stage, which will enable DEM to streamline the process for bulk sampling. This may be delivered through a new MC Bulk Sample PEPR template which could be submitted and assessed immediately after the MC registration. As an MC is valid for 12 months it would be open to a proponent to use that time to undertake bulk sampling and seek to obtain a pre-qualification from DIT.

The Commission is advised that, where operators have contacted DIT and DEM to accelerate applicable approvals to support a tender application, the agencies have been responsive. The Commission heard that this kind of proactive outreach by operators is rare though, and that most operators find navigating the misalignment too difficult, meaning applications aren't being made. The current misalignment acts as a market barrier to operations that are likely to result in a positive budget impact for the state.

In contrast, the *Local Government Act 1999* allows for local councils to enter land to obtain extractive minerals for the construction of council infrastructure without authorisation under the Mining Act.[109] The CCAA indicated that DIT had historically replied upon a power under the *Highways Act 1926* that enlivens the same powers as a council under the *Local Government Act 1999* to obtain extractive minerals,[110] and suggested this power could be used by DIT to identify and promote to industry extractives resources that could be drawn on in support of infrastructure tenders.

DIT advised the Commission that individual councils have their own pavement design requirements which can vary greatly between metropolitan and regional councils. The risk associated with councils supplying unsuitable material to their own projects is less than that faced by DIT, which relies on industry sources, and for large and complex state projects. The different approaches demonstrate the value of a risk-based approach.

In summary, pre-qualification has benefits in managing the level of risk to which the government is exposed in the procurement of construction materials for state infrastructure. This risk needs to be contrasted with the potential efficiencies and budget savings to the state that may flow from reassessing the existing pre-qualification of pavement materials requirements. Where more flexible pre-qualification arrangements can be established that

[107] CCAA Submission FR2 (n 67) 4-5.
[108] W G Harvey, *Hardrock Extractive Minerals for Metropolitan Adelaide – Strategic Review* (Report Book 2010/00019).
[109] *Local Government Act 1999* pt 4, s 294(7).
[110] Ibid s 294.

would support testing arrangements for new quarries, providing for an acceptable level of risk to the state, there is a real prospect of opening up new markets for the supply of some construction materials. The current requirements effectively bar new quarries obtaining pre-qualification, and therefore preclude them from responding to a tender, foregoing project-related efficiencies, regional employment opportunities and potential savings to the state budget by sourcing those materials closer to the construction site.

Recommendation 4.6: Reassess quarry product pre-qualification to support competitive material supply

To enable regional businesses capable of developing low-risk campaign quarries to supply competitive construction materials in close proximity to regional projects, the Department for Infrastructure and Transport (DIT) in collaboration with the Department for Energy and Mining (DEM) within six months of this recommendation being supported:

- identify specific testing and other pre-qualification assessment processes that, without compromising DIT's capacity to manage related risk in construction projects, will enable the pre-qualification of, and therefore the supply of construction materials by, new quarries located close to regional construction sites;
- identify changes to DEM's mineral claim and any other applicable mining authority that is required to align with and support amended DIT pre-qualification processes;
- consult with select industry participants on the implications for the proposals for both established suppliers and potential new entrants, including a focus on managing risks arising from the supply of poor-quality materials; and
- implement these changes.

5. Quarry operations, co-regulation and aligning standards

5.1 Introduction

This chapter addresses the regulatory issues that follow the approvals of a mineral claim, extractive mineral lease (EML) and program for environment protection and rehabilitation (PEPR) or mine operations plan (MOP). The chapter starts with consideration of co-regulation applied to activities undertaken in the normal course of quarry operations. Industry reported that the control measures and other requirements these regulations can impose, particularly the extent to which they interact with mining approvals, create confusion and additional costs for proponents. A detailed discussion of proximity issues completes the chapter, tying in the preceding sections and exploring how the regulation of quarries and supply chain activity can be disproportionately affected, and the critical role the planning system plays.

5.2 Co-regulation: environmental licensing, transport and explosives

Some quarry operations and key parts of the supply chain are subject to regulatory mandates other than those covered by the *Mining Act 1971* (Mining Act). For example, crushing may create externalities in relation to air quality (dust) which, whilst regulated through the quarry's environmental program, is also regulated by environmental licensing under the *Environment Protection Act 1993* (EP Act). Activities that may be subject to an Environment Protection Authority (EPA) licence are set out in Schedule 1 of the EP Act. Other co-regulation considered by the Commission includes the regulation of transport and road network access such as the *Heavy Vehicle National Law (South Australia) Act 2013* (SA), and explosive-related regulation, namely the *Explosives Act 1936* (SA).

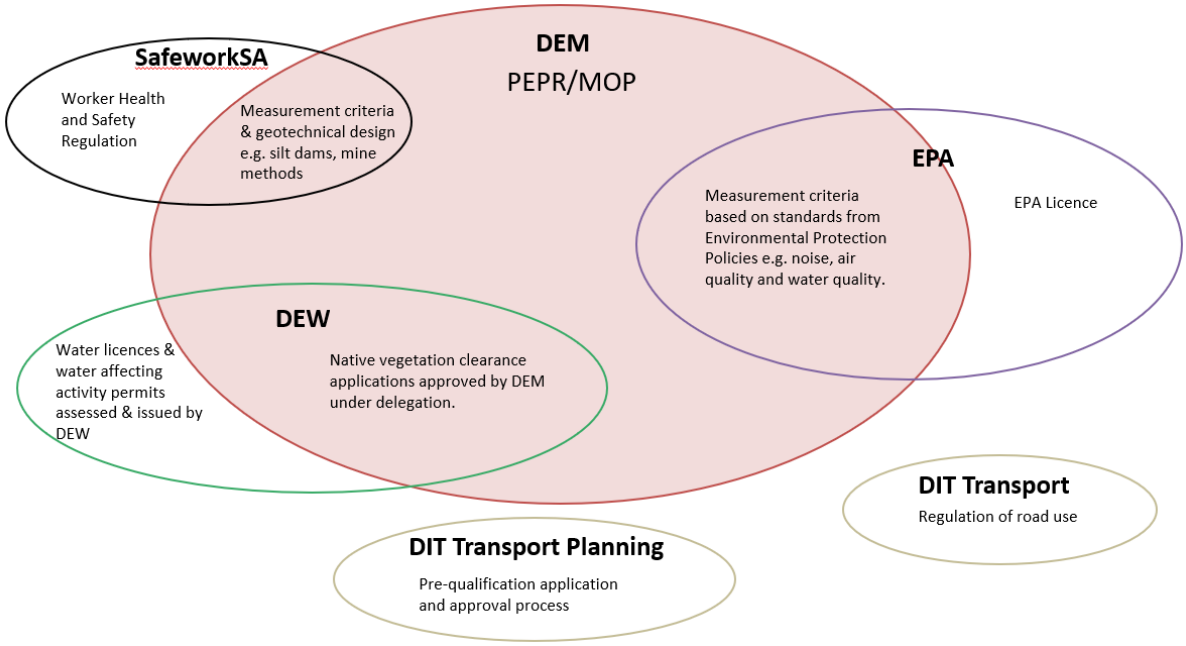
Co-regulation is relevant to this review to the extent that it imposes concurrent regulatory requirements with which a quarry operator must comply, separate from the Mining Act, to operate effectively and lawfully. Co-regulation is distinguishable from the referral process (set out in Chapter 2) where technical information and expertise is sourced by the Department for Energy and Mining (DEM) from other regulators as part of an impact assessment and granting a lease or operating approval under the Mining Act.

5.2.1 Environmental regulation and licensing

Three main areas of environmental co-regulation impact on quarry operators: EPA environmental licensing, Department for Environment and Water (DEW) water licensing and DEW (Native Vegetation Council) native vegetation clearance requirements. To a lesser extent there can be crossover between SafeWork SA (SWSA) and DEM in relation to worker safety and quarry design. Department for Infrastructure and Transport (DIT) (transport and road network access) and Natural Resource Management Boards also cover quarry and supply chain activities. The Commission's understanding of the gamut of co-regulation overlaps is captured in Figure 5.1.

Several examples were raised with the Commission to support the contrasting views set out in this section. Some of this material was assessed by the Commission as being confidential on commercial or other grounds.

Figure 5.1: Operational Quarry current regulatory overlap



Source: South Australian Productivity Commission

Achieving contemporary environmental protection standards

The Commission has observed that quarry air quality requirements are regulated by both DEM through MOPs or PEPRs, which can include air quality in their environmental objectives and criteria, and the EPA through their policy and licensing arrangements.[111] The Commission understands that DEM customarily adopts the compliance criteria within the EPA air quality policy as a benchmark.

The experience of Sellicks Hill quarry illustrates the application of co-regulation with respect to environmental outcomes, specifically air quality. Following community complaints primarily about dust since 2011, the EPA revised the prevailing EPA operating licence conditions for Sellicks Hill quarry in 2016 to include the requirement of a dust management plan[112] following an extensive period of air quality monitoring. The dust management plan was subsequently revised several times and significant control measures in the form of infrastructure to cover activities (e.g. a crusher) and materials (sand stockpile) have been introduced.[113] EPA has indicated that its expectations were based on its benchmarking against other similar sized operations and mitigation measures deemed reasonable and of good practice.

DEM advised that the environmental objectives and measurement criteria in the Sellicks Hill quarry MOP pre-dated the EPA's 2016 intervention. The MOP was subsequently reviewed

[111] EPA, *Environment Protection (Air Quality) Policy 2016* (Policy, 9 April 2020) <https://www.legislation.sa.gov.au/LZ/C/POL/ENVIRONMENT%20PROTECTION%20(AIR%20QUALITY)%20POLICY%202016/CURRENT/2016.-.AUTH.PDF>.
[112] Golder, *Southern Quarries Dust Management Compliance Plan – Dust Management Plan* (Report, 6 December 2019) <https://www.epa.sa.gov.au/files/14560_southern_quarries_dust_mgt_plan_dec2019.pdf>.
[113] EPA, *Sellicks Hill (Southern Quarries)* (Web Page, 14 May 2020) <https://www.epa.sa.gov.au/business_and_industry/industry-updates/southernquarries>.

and updated to include contemporary environmental objectives and measurement criteria aligned with the EPA standards.

DEM suggested that the design of the objectives and criteria in MOPs[114] which it had approved prior to revised MOP requirements being prescribed in the *Mining Regulations 2011* (Mining Regulations) are not based on the contemporary impact assessment framework.[115] DEM can only enforce the approved MOP, which limits its ability to regulate to achieve contemporary environmental outcomes.

This issue has been picked up in several legislative amendments in the *Statutes Amendment (Mineral Resources) Act 2019*, which include broadening the definition of 'environment' for private mine tenements, which had been narrower than the definition applicable to other tenements under the Mining Act. This definition is important as the broader the definition of environment, the wider the scope of issues capable of being regulated through environmental programs under the Mining Act.

Other limitations addressed in the new Act relate to MOP reviews, the conduct of authorised investigations and the general duty to avoid undue damage to the environment, and the transition of MOPs to PEPRs in 15 years' time.[116]

The Mining Act requires that MOPs be reviewed every seven years.[117] The Commission considers that dated objectives and measurement criteria limit the extent to which DEM can regulate and support a quarry operator to achieve contemporary environmental outcomes. This creates a situation where a co-regulator, namely the EPA or DEW, is required to intervene and exercise their own statutory powers that cover quarry operations and supply chain activities to achieve the desired environmental outcome. Updating environmental programs, with criteria that align with the standards of co-regulators that are relevant to quarry operations would be supported by a lead regulator model with DEM as the primary point of contact on most compliance matters. This approach would respond to the concerns expressed by some operators about the need for a more uniform and consistent interaction between regulators and quarry operators.

The success of this lead regulator model is dependent on the effective alignment of the standards of co-regulators applicable to quarry operations with the environmental program criteria which are linked with DEM's compliance powers. This approach does not create any new obligations on quarry operators, nor does it replace the statutory licensing requirements under the EP Act (and other co-regulator legislation and regulation), but it does strengthen the lead regulator model. It will enable DEM to exercise the appropriate enforcement powers and impose compliance activity if required.[118] In some complex cases, including breaches of activities licensed under other legislation, co-regulator involvement will be desirable and necessary. In these instances, an improved and better coordinated approach may enable DEM to resolve potential breaches earlier in line with environmental program criteria, before escalating to breaches of licensed activity, limiting the extent to which co-regulators will need to engage directly with the operator.

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[114] *Mining Act* (n 4) s 73G(2)(b); *Mining Regulations* (n 20) reg 80.
[115] Ministerial Determination 3 (n 19).
[116] See e.g. *Statutes Amendment (Mineral Resources) Act 2019* s 97(2), amending s 73(c)(1) of the *Mining Act* regarding the definition of environment as applicable to private mines; s 101 repealing s 73H(3) of the *Mining Act* that conditioned compliance with the General Duty on meeting MOP objectives, and sch 1, s 15 respectively.
[117] *Mining Act* (n 4) s 73G(10).
[118] Ibid pt 10B.

Following consultation, the Commission concluded that co-regulators generally saw merit in a DEM-led model in these terms. Proposals to support effective alignment of regulatory standards are discussed later in this section.

DEM advised that it is already engaging selectively with industry and operators to update older environmental programs, particularly where sites have experienced complaints from other stakeholders. The EPA advises it is collaborating with DEM to modernise benchmarking and environmental standards as part of the development and implementation of the *Statutes Amendment (Mineral Resources) Act 2019*.

The Commission understands that measurement criteria can be expressed in environmental programs as both a reference to the applicable co-regulator standard (e.g. *Environment Protection (Noise) Policy 2007*) and prescribed levels or scientific measurements (e.g. 55 decibels during the day between 3 pm and 8 pm). The CCAA has suggested that where co-regulator standards are adopted in environmental programs 'then as and when the legislation is amended, the conditions are automatically amended, thus limiting the chance for an inconsistent approach between regulators'.[119] Whilst the Commission agrees there is efficiency in environmental programs calling up applicable criteria specified in co-regulator legislation, regulation or policy where possible, DEM advises that prescribing measurement criteria assists in avoiding ambiguity and supports effective compliance.

In response to Draft Recommendation 5.1 the CCAA raised concerns about the potential for changes to quarry operating approvals to adversely impact on the investment cycle of quarry operators.[120] As noted above, the frequency of environmental program reviews is dealt with in the Mining Act[121] (see Section 2.1.1). However, at the same time, business faces a risk of community reaction when environmental performance lags behind its expectations.

The Commission has concluded that a 'stocktake' of environmental programs and updating them to align their objectives and criteria with contemporary environmental standards will mitigate the proximity issues and associated costs that have been raised, primarily by industry. The timing of implementation of this recommended update to environmental programs, and any subsequent review for that matter, may consider the potential to create business risk having regard to the significance of any prevailing environmental risks. The Commission would expect environmental programs to be reviewed in line with the relevant legislative provisions so as to maintain contemporary environmental standards.

Recommendation 5.1: Strengthening the lead regulator model - updating environmental programs

In order to support a lead regulator model and to improve environmental outcomes through a more uniform and consistent approach, the Department for Energy and Mining in collaboration with co-regulators audit existing environmental programs (programs for environment protection and rehabilitation (PEPRs) and mine operation plans (MOPs)). That work to:

- identify where there are gaps between the existing objectives and measurement criteria in environmental programs and applicable co-regulator contemporary environmental standards;

[119] CCAA Submission FR2 (n 67) 3.
[120] Ibid 2.
[121] *Mining Act* (n 4) s 70C for PEPRs and s 73G for MOPs.

- communicate those gaps to quarry operators; and
- support, in collaboration with quarry operators, updates to PEPRs and MOPs to align their objectives and measurement criteria with the contemporary environmental standards of applicable co-regulators.

To manage the impact on the regulator's resources, and in consideration of the potential impact on industry, the audits be prioritised on a risk-based approach with attention to quarries identified as Strategic Resource Areas, those programs with obsolescent environmental criteria, and sites with existing proximity issues.

Native vegetation

DEM exercises delegated authority from the Native Vegetation Council in its impact assessment processes.[122] Whilst this arrangement is not strictly within the Commission's definition of co-regulation native vegetation issues warrant consideration. Much of the feedback regarding native vegetation related to the impact of significant environmental benefit (SEB) arrangements, the scheme giving effect to biodiversity offsetting principles which requires the demonstration of a net environmental benefit following clearance of native vegetation.[123]

Industry argued to the Commission that the SEB can act as a commercial barrier to establishing or expanding a quarry. Depending on the geography involved, the expense of the SEB payment option may be significant for smaller mining proposals and low-yield operations.[124]

> *Removing native vegetation when quarrying is a balance between the value of the resource and the value of the vegetation. If the cost of removing the vegetation (even poor quality) is extremely expensive then extractive resources important to South Australia will be sterilised. Native vegetation rules have changed in the last few years making it more financially difficult to obtain resources*.[125]

An example was cited where the regulator-imposed outcomes over and above those determined by an independent expert assessment including a higher SEB payment and additional fauna surveys, creating frustration and potentially significant additional costs.[126] While the Commission understands the SEB may require expenditures by proponents, it considers this facility is relatively simple and efficient.

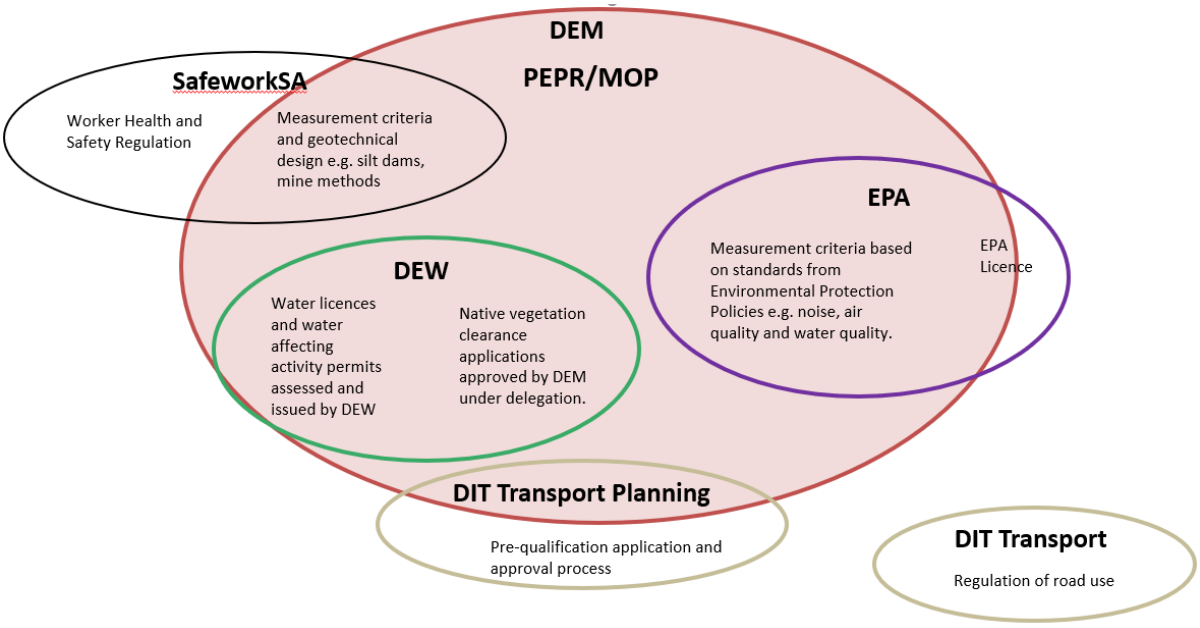
Aligning co-regulator standards and environmental program criteria

The Commission has suggested there are efficiencies to be achieved by better aligning the environmental program criteria applicable to an operational quarry with the contemporary standards of co-regulators whose mandate covers quarry operational and supply chain activity. A strengthened lead regulator model is expected to increase consistency in the interactions between the state and quarry operators, and positively impact on the way proximity issues are managed. The improved alignment under this model is illustrated

[122] Department for Environment and Water, *Native Vegetation Council* (Web Page, 28 May 2020) <https://www.environment.sa.gov.au/about-us/boards-and-committees/native-vegetation-council>.
[123] DEW Offsetting (n 7).
[124] See e.g. PGH Bricks and Pavers, Submission DR9 to South Australian Productivity Commission, *Extractives Supply Chain Review* (17 February 2020) 1.
[125] Clay and Mineral Sales Submission (n 53) 2.
[126] See e.g. ePlanning Submission (n 47) 4–5.

conceptually in Figure 5.2, which contrasts with the Commission's characterisation of the current extent of alignment in Figure 5.1.

Figure 5.2: Operational quarry proposed regulatory overlap



Source: South Australian Productivity Commission

The Commission previously proposed that co-regulator standards be delegated to DEM. Whilst native vegetation approvals obtained as part of the EML process are delegated to DEM,[127] delegation of powers from other co-regulators to DEM may be neither legally possible, nor desirable. Other approaches are available. The roundtable discussions following the draft report's release identified one specific candidate. DEW indicated that, whilst water licensing activities under the *Landscape South Australia Act 2019* (Landscape Act)[128] cannot be delegated to DEM, it may be possible for DEM to incorporate assessments of water-affecting activities as part of the PEPR assessment process. Assessments of water-affecting activities have been simplified under the Landscape Act but will continue to be managed locally by the relevant landscape board, creating an opportunity for alignment.[129]

This approach could be implemented to apply more broadly to align co-regulator standards with DEM environmental program criteria by the development of memoranda of understanding and other enabling administrative arrangements between DEM and the relevant co-regulators, complementary to those recommended by the Commission above regarding the referral process (see Section 4.4.2 and Recommendation 4.4). These enabling arrangements are critical to support Recommendation 5.1 to update the environmental performance of programs managed by DEM under the Mining Act. DEM already has substantive arrangements in place with the EPA.[130] The revision, or where none presently exists the development, of these arrangements will have an emphasis on how standards are

[127] *Native Vegetation Regulations 2017* reg 14(1)(b).
[128] *Landscape South Australia Act 2019* pt 8, div 2.
[129] See ibid sch 5, s 100; Landscape South Australia, *Managing South Australia's Landscapes (Policy Overview)* (Web Page, 27 July 2020) 12, 15, 21 <https://d3u55zae1ecw4x.cloudfront.net/lbsa/docs/Landscape-SA-Policy-Overview.pdf>.
[130] *Administrative Arrangement between South Australian Environment Protection Authority (EPA) and Mineral Resources Division, Resources and Energy Group, Department Manufacturing, Innovation, Trade Resources and Energy (DMITRE)* (8 February 2013); *Memorandum of Understanding between the Environment Protection Authority and the Department for Manufacturing, Innovation, Trade Resources and Energy* (17 August 2012).

best captured and made enforceable in the relevant environmental program to support the lead regulator model.

Recommendation 5.2: Alignment of co-regulator standards with quarry environmental program objectives and criteria

To clarify the application of co-regulator mandates applicable to quarry activity, administrative arrangements are to be developed between the Department for Mining and Energy and relevant co-regulators, or where they are already in place, revise and improve them.

Those arrangements are to strengthen the lead regulator model, minimise duplication of regulator effort and provide for an ongoing systemic approach to align relevant co-regulator standards with environmental program (program for environment protection and rehabilitation and mine operation plan) objectives and criteria under the *Mining Act 1971*.

5.2.2 Transport and road network access

The Commission considered the economic implications of transporting construction materials, including how the extent of transport activity is influenced by mining approvals and tendering processes and how productivity is affected by the regulation of transport and access to the road network.

The Commission heard that road network access can influence the efficiency of the transport of construction materials. The ability to get material out of the quarry and delivered to infrastructure projects can be subject to several road network access constraints.

The CCAA considers most construction materials are:

> *transported by heavy vehicle in relatively short distances in urban and peri-urban areas (e.g. under 60km per delivery for aggregates and under 15km for pre-mixed concrete). There are about 100,000 average heavy vehicle movements in Australia per day (usually during daylight hours) relating to our industry. Our industry contributes up to 10% of total road freight by volume.*[131]

The Resource Area Management and Planning (RAMP) Project final report from 2014 identified that:

> *access and transport is an essential consideration for all types of mining … depending on the location of the mine and the nature of the transport required (type, size and delivery hours), transport and access can represent a critical set of interface issues*.[132]

Heavy vehicle (strategic) transport routes

South Australian roads are either arterial or local roads, which determines the applicable authority (state or council respectively), and are functionally classed by the relevant authority (the road manager).[133] Given the diversity of locations of quarries and end users

[131] Cement Concrete and Aggregates Australia, Submission to National Transport Commission, *A Risk-Based Approach to Regulating Heavy Vehicles* (31 May 2019).
[132] RAMP Report (n 43) 63.
[133] Department for Infrastructure and Transport, *A Functional Hierarchy for South Australia's Land Transport Network* (Report, 2013).

(infrastructure projects), construction materials may necessarily need to be transported on state and council roads, in metropolitan and regional areas, and on several different types of transport corridor, i.e. a 'major traffic route', a 'freight route' and 'peak hour routes'.

The National Heavy Vehicle Regulator (NHVR) administers the Heavy Vehicle National Law (HVNL) for vehicles over 4.5 tonnes gross vehicle mass and regulates access to the road network for those heavy vehicles. The HVNL is given effect in South Australia through the *Heavy Vehicle National Law (South Australia) Act 2013* (SA) (HVNL Act) and several state regulations. Restricted Access Vehicles (RAV) are prescribed heavy vehicles permitted to be used on parts of the road network approved for RAV use, which is accessible through DIT's RAVNet interactive online map system.

Cement Concrete and Aggregates Australia (CCAA) considers that construction material transport routes need appropriate protection to ensure the flow of construction materials. CCAA proposed buffer zones be used for transport routes to minimise conflict with other competing land uses.[134]

> *The use of strategic transport routes by heavy vehicles associated with the mining industry needs to be fundamentally accepted.*[135]

The Civil Contractors Federation was concerned about road access restrictions for heavy vehicles including access to local roads requiring council approval. Load limits on ferries in regional locations and approach roads can require longer routes to be used, adding to costs. The movement of plant on the road network was raised in the context of inconsistent regulations applying to pastoralists and quarry operators, even though the two industries' road network usage and risks are arguably comparable.

The apparent similarities and regulatory disparities between pastoralist and miner access to the road network was raised by several stakeholders. The Local Government Association stated that many roads will already have to be at a standard that is suitable for large farm machinery and therefore are also likely to be suitable for some heavy mining vehicles.

Prescribed commodity routes enable a modified standard to apply (i.e. access by a more efficient, larger vehicle combination such as a B-Double) but must still meet certain standards to protect the road infrastructure and ensure road safety. Agricultural commodity routes are limited to seasonal operation, are restricted to transporting prescribed commodities, and attract time restrictions to minimise environmental and amenity impacts, and speed restrictions to prevent infrastructure damage and maintain vehicle stability and safety on rough or unsealed roads.[136]

Transport industry feedback indicated that the seasonal nature of commodity routes is generally inconsistent with the transport requirements of the extractives industry, which usually involves ongoing and regular transport of material over several decades. The industry also noted that, when considering single projects, such as regional road projects which are short term, there are similarities between transporting seasonal commodities and material from a short-term, small campaign quarry to the road upgrade site. The Commission considers the commodity route concept is worth developing for application to the transport of extractive minerals from regional campaign or otherwise fixed-term quarrying operations.

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[134] CCAA Submission DR4 (n 61) 2.
[135] RAMP Report (n 43) 63.
[136] SA.GOV.AU, *Commodity Freight* (Web Page, 12 May 2020) < https://www.sa.gov.au/topics/driving-and-transport/heavy-vehicles/operating-a-heavy-vehicle/commodity-freight>.

Recommendation 5.3: Modified road network access for transporting extractive materials to specified infrastructure projects

To support increased infrastructure project efficiencies, decrease costs and create employment opportunities for regional road and other projects requiring extractives inputs, the Department for Energy and Mining and the Department for Infrastructure and Transport jointly evaluate the feasibility of a modified road network access regime for the transport of extractive materials.

The project to focus on but not be limited to the net productivity gains arising from the transport of extractive materials to regional infrastructure projects by more efficient vehicles accessing the road network.

In addition to consultation with the National Heavy Vehicle Regulator, the project is to seek feedback from the South Australian Freight Council, Cement Concrete and Aggregates Australia, quarry operators and regional communities.

The project report to be published on both public sector agencies' websites no later than 1 July 2021.

Extractive minerals transport and the planning system

State Planning Policy (SPP) acknowledges the importance of the design and location of strategic transport routes.[137] The SPP identifies the need to protect strategic transport corridors 'from incompatible development to ensure their uninterrupted and efficient operation'. The Planning and Design Code (the Code) will introduce:

> *a number of overlays to replace the current Strategic Transports Routes overlay. These include Urban Transport Routes, Major Urban Transport Routes, Non-stop Corridor, Future Road Widening and Key Outback and Rural Routes Overlays.*[138]

The SPP also anticipates 'the future expansion and intensification of strategic transport infrastructure and service provision (corridors and nodes)'.[139] And with reference to the challenges presented by quarry proximity to other sensitive land uses, it accepts that 'many of our major corridors and facilities have been developed over a long period and this has highlighted where interfaces require more sensitive and ongoing management'.[140]

The importance of heavy vehicle routes to mining was identified in the 2014 RAMP report:

> *There is a need for better recognition of the strategic importance of these [heavy vehicle] routes and land-use planning system recognition of interface issues so that sensitive uses can be better designed to cope with impacts*.[141]

And this has been reaffirmed recently in broad terms in the state's key infrastructure strategy:

> *With the freight task anticipated to increase, a continuing trend to bigger and more productive freight vehicles and a 24/7 operating environment, it is critical that this freight connectivity is*

[137] See e.g. State Planning Commission, Integrated Movement Systems (n 39).
[138] State Planning Commission, Draft Code (n 39) 124–127.
[139] See Planning Policies (n 44) SPP 11.6, SPP 11.7.
[140] Ibid.
[141] RAMP Report (n 43) 65.

> *supported by the right investments and protected by the encroachment of incompatible land uses*.[142]

Whilst the challenges of developing road network infrastructure to improve economic growth are many,[143] it is clearly vital to decreasing the risk of projects and improving productivity.[144]

First and last mile

First and last mile issues are at least as important to the transport of extractive materials as strategic heavy vehicle transport routes.[145] For the purposes of this review 'first and last mile' refers to the transport route between the quarry or end user (project site) and an existing heavy vehicle route. These terminating or starting road segments are necessary to achieving the full productivity from the completed route. This section focuses on the productivity of transporting construction materials.

Industry stakeholders are concerned about restricted heavy vehicle access to the road network, constrained site access in the central business district, and the need for streamlined last mile access.[146] CCAA has suggested that road upgrades adjacent to quarries and end user sites should automatically include access for B-Doubles and Higher Mass Limit vehicles. The Commission heard, notwithstanding that some quarry operators have high-performance vehicles in their fleet, some infrastructure project site managers prohibit their access to the site, purportedly on risk/safety grounds.

The South Australian Freight Council (SAFC) summarised the productivity issues that arise in relation to heavy vehicle road network access and first and last mile:

> *when there is a mismatch between the freight vehicles allowed on a Heavy Vehicle Corridor and the short section connecting an origin/destination point into that corridor – the First or Last Mile ... a less than optimal vehicle is used for the whole task and productivity is reduced along the full corridor and the full logistics task*.[147]

Because first and last mile routes are often not approved for RAVs,[148] or only for access at a lower level than the main freight route, the vehicle used for the entire journey is generally less efficient, despite most of the transit being conducted on a route capable of using a more efficient (larger) vehicle. If a more efficient vehicle were used for the route covering most of the journey (i.e. a B-Double instead of a semi-trailer) productivity could be increased by up to 50 per cent.[149]

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[142] Infrastructure SA, *20-Year State Infrastructure Strategy* (Discussion Paper, 2019) 31 (State Infrastructure Strategy).
[143] See e.g. Department for Infrastructure and Transport, *GlobeLink* (Web Page, 14 May 2020) <https://dpti.sa.gov.au/infrastructure/major_projects/globelink>; Casey Briggs, 'The GlobeLink Freight Project has Now Been Officially Scrapped — But Was It Doomed Anyway?' *ABC News* (Web Page, 28 January 2020) <https://www.abc.net.au/news/2020-01-28/globelink-transport-airport-project-was-doomed-from-the-start/11905558>.
[144] State Infrastructure Strategy (n 142) 26.
[145] RAMP Report (n 43) 63.
[146] Cement Concrete and Aggregates Australia, *Cement, Concrete, Stone & Sand – Rebuilding South Australia; Protecting Lives; Creating Jobs – South Australia's Policy Priorities 2020* (Policy, 2020).
[147] South Australian Freight Council, *South Australia's Freight Transport Infrastructure – Moving Freight, The First and Last Mile* (Report, 2015) 3. (South Australian Freight Council)
[148] National Heavy Vehicle Regulator, *Restricted Access Vehicles – Compliance and Enforcement Bulletin 1* (Bulletin, February 2020) <https://www.nhvr.gov.au/files/201706-0172-ce1-restricted-access-vehicles.pdf>.
[149] South Australian Freight Council (n 147) 4.

Box 5.1: DIT freight model

Illustrative quarry product freight task of 1,000 tonnes

Whilst the Commission has not had the opportunity to undertake any specific transport-related modelling, DIT shared a theoretical model of a general freight task of 1,000 tons of construction materials that demonstrated how the number of road trips can be reduced and productivity increased by using more efficient vehicles:

- The number of total trips could be reduced from 392 trips (19-metre semi-trailer) to 153 trips (36.5-metre AB triple).
- The gross tonnes travelling on the road network would be reduced from 23,333 t to 21,298 t, having a positive impact on road maintenance.

DIT suggested that the reduction in trips would also:

- reduce greenhouse gas emissions;
- positively impact on disruption to amenity in residential and other areas of sensitive land use in the vicinity of the road network used to access quarries and end-use locations; and
- incrementally reduce trip and weight outcomes for other heavy vehicle configurations.

Source: DIT

The Commission understands the limitations on road access for RAVs. The DIT model illustrates the potential productivity gains and other (environmental and community) benefits that could be derived by selectively using more efficient heavy vehicles more broadly. This could be approached either by changing the access authority (as discussed above) or through changes to the road network itself. The Commission is aware of examples where investment in the road network has improved productivity in the transport of construction materials.

The economic and safety benefits of high-performance vehicle use are outlined in the state's infrastructure strategy, which notes improvements to the RAV network will require some capital work to be undertaken on the network, and that:

> *risk assessment[s] to determine suitability for larger vehicles … and State Government in conjunction with the NHVR should support local councils in conducting these. There are also key pinch points within the network which, if addressed, will result in significant improvements in efficiency and productivity*.[150]

Case Study 5.1: Improving first and last mile road network access

Clare Quarry and the Broughton Valley Road Bridge

The Broughton Valley Road Bridge is a key access point to the Clare Quarry. In February 2019 a new bridge was constructed after the old bridge was washed away. Before the new bridge was constructed the transport of construction materials to the north of the state and beyond required semi-trailers to take material from Clare Quarry to Jamestown

[150] State Infrastructure Strategy (n 142) 136–137.

where the loads were transferred to larger, more efficient trucks for transport to the north of the state and beyond.

The new bridge, a joint project of Clare Quarry and the Australian Government, has enabled one large truck to drive directly to the quarry to be precisely loaded and weighed using a weighbridge. The unrelated redevelopment of a nearby intersection has also improved access.

The Deputy Prime Minister commented that the new bridge would increase the efficiency of Clare Quarry's delivery of raw materials to construction projects in South Australia and the Northern Territory, and also benefit the movement of agricultural products from the region to markets.[151]

This project demonstrates that the transport productivity gains suggested by the CCAA can be achieved and could potentially be reproduced in other quarry locations through a structured and deliberate consideration of first and last mile access issues.

Source: DIT, DEM and media as cited

The SAFC has elsewhere identified several first and last mile issues. The SAFC's analysis demonstrates it is possible to identify and map first and last mile issues for extractives for strategic analysis. The Improving Road Transport for Primary Production Project demonstrates the types of industry-specific transport productivity gains that can be achieved through an industry–regulator partnership approach.[152] That project built on a South Australian government 90-Day Project to 'improve productivity such as route extensions and last mile access'.[153]

Permissible working hours

The times during which extractive minerals are transported on the road network are changing. The RAMP final report identified as an emerging issue the extended hours of construction activity (night works) to minimise traffic inconvenience and meet deadlines. DIT has confirmed that this trend remains applicable today. This creates particular challenges linked with the times when the construction material needs to be delivered (e.g. encouraging night-time truck movements).[154]

The CCAA proposed encouraging construction outside peak transport times to enable night-time concrete pours to reduce time spent by concrete agitators in peak hour congestion. It also suggested the delivery of other quarry-sourced construction material outside of congested peak traffic periods.[155] It is unclear from their submission what regulatory changes are needed to give effect to these proposals.

[151] See Flinders News, *Bridging the Safety Gap at Spalding* (Web Page, 8 February 2019) <https://www.theflindersnews.com.au/story/5894621/bridging-the-safety-gap-at-spalding/>; Plains Producer, *Big Broughton Bridge Rebuild* (Web Page,13 February 2019) <https://www.plainsproducer.com.au/2019/02/13/big-broughton-bridge-rebuild/>.
[152] Primary Industries and Resources South Australia (n 40).
[153] Office of the Commissioner for Public Employment, *Improving Road Transport for the Agricultural Industry* (Web Page, 14 May 2020) <https://publicsector.sa.gov.au/culture/90-day-projects/improving-road-transport-for-the-agriculture-industry/>.
[154] RAMP Report (n 43) 22.
[155] CCAA Submission DR4 (n 61) 2.

Recommendation 5.4: First and last mile access improvements

To support productivity gains by using more efficient heavy vehicles to transport construction materials on parts of the road network where their access is not currently authorised, the Minister for Energy and Mining and the Minister for Transport establish a joint industry-government partnership, in the spirit of the Improving Road Transport for Primary Production project, to:

- identify first and last mile road access locations used to transport extractive minerals on a prioritised basis, including access to/from established and proposed metropolitan and regional quarries, and fixed end-user locations such as batch plants;
- determine the extent to which the State Planning Policy and the current transport-related Planning and Design Code overlay proposals address those identified first and last mile issues; and
- consult quarry operators, transport industry, local government, community and other regulators with relevant mandates, such as the Environment Protection Authority.

The project is to recommend by 1 July 2021 proposed road network access reforms, based on a cost–benefit analysis, for action by the state.

Road network investment

There are existing significant commitments and scheduled programs of work to improve South Australia's road network.[156] The importance of these projects to state economic growth is reflected in the SPP:

> *Growth in South Australian economy is likely to increase the state's freight task for the foreseeable future. As new industries are established and sectors such as defence, food production, processing and mining continue to develop, the state's freight network will need to accommodate increased demand and provide more flexible services. This will involve rural road networks, which serve as critical links in the supply chain for agricultural and other commodities. This could lead to intensification of activity on industrial lands and freight precincts and on the corridors that connect them. Protecting the freight system's ability to produce competitive outcomes for South Australian businesses and consumers is vital*.[157]

The importance of prioritising infrastructure that contributes to economic growth underpins the state's recently released infrastructure strategy.[158]

The Commission understands that the current prioritisation of road network upgrades does not consider extractive minerals transport operations, albeit the benefits to industry more broadly are considered. Where construction materials are used in state infrastructure the South Australian government is the end user and bears the cost of those products. Productivity gains are achievable by allowing more efficient (larger) trucks to transport construction materials on more routes. The net benefit of the cost efficiencies and medium-

[156] See e.g. 'South Australia Fast Tracks Infrastructure Projects', *Infrastructure Magazine* (Web Page, 30 March 2020) <https://infrastructuremagazine.com.au/2020/03/30/south-australia-fast-tracks-infrastructure-projects/>.
[157] Planning Policies (n 44) 58.
[158] State Infrastructure Strategy (n 142) 26.

to long-term budget savings achievable by prioritising the development of relevant parts of the road network needs to be evaluated.

Submissions from industry and advice from some regulators is that the accountability for upgrading road infrastructure to support proposed quarry operations is generally placed on proponents, particularly first and last mile routes in regional locations.[159] It is understood that these obligations are imposed by the relevant road manager, i.e. either the state (DIT) or the relevant local council. The transport industry expressed the view this is because those roads are often used exclusively for access to a quarry, as opposed to freight routes where the benefit of any upgrade applies to more industries, arguably providing a broader 'public good'.

In the Commission's view the characterisation of the benefits derived by improving quarry access roads as only providing a private benefit to quarry operators is imperfect. Public benefit can be derived where first and last mile improvements create increased efficiencies (e.g. use of more efficient vehicles) and decreased costs in the extractives industry supply chain. This can translate to savings to government as a direct or indirect buyer of quarry materials.

Recommendation 5.5: Prioritising road network upgrades to optimise the extractive minerals supply chain

To create opportunities for state infrastructure project cost savings to government, the Department for Infrastructure and Transport are to incorporate the efficiencies that can be delivered in relation to the transport of extractive materials in their business cases for prioritising road network development and upgrades (e.g. road network access improvements and first and last mile projects).

5.2.3 Storage and transportation of explosives

The extractives industry is a consumer of explosives products and possesses expertise related to the deployment and use of those products. Controlled blasting is an essential component of quarry operations.[160] This section addresses the transport of explosive material within South Australia for use in South Australian quarries.

Proposed reforms sought by industry

The Commission has been advised that South Australian quarry operators generally in-source their blasting operations given the level of expertise required and the controls applicable to explosive transport and storage. The Australasian Explosives Industry Safety Group Inc. (AEISG) expressed the view that South Australia has been very tardy in reforming the outdated *Explosives Act 1936* (SA) (the Explosives Act) and its regulations. AIESG advised that the Council of Australian Governments (COAG) Strategic Issues Group formed in 2012 and coordinated by SafeWork Australia developed several explosive regulation harmonisation proposals by the end of 2016,[161] with all work health and safety

[159] See e.g. ePlanning Submission (n 47) 4.
[160] For general information regarding quarry blasting operations see Cement Concrete and Aggregates Australia, *Living Near A Quarry – Blasting Management* (Web Page, 12 May 2020) <https://www.ccaa.com.au/imis_prod/documents/Quarries/Quarry%20Factsheet%20-%20Blasting%20LR.pdf>.
[161] Safe Work Australia, *Explosive Regulation Reform* (Web Page, 20 March 2020) <https://www.safeworkaustralia.gov.au/law-and-regulation/explosive-regulation-reform>.

ministers agreeing to those proposals in 2019.[162] South Australia is yet to give effect to these proposals. Orica also noted that 'industry has not been consulted on any proposals relating to new or updated legislation'.[163]

AEISG raised several concerns in relation to the storage and transport of explosives, which it says arise from South Australia's unilateral approach to explosives regulation in what is effectively a national supply chain. This approach creates inefficient regulation, with additional costs being passed on to business and commercial opportunities being lost.

The key issues raised with the Commission include:

- Nationally and internationally accepted industry codes of practice and standards are not adopted in South Australia notwithstanding participation in the relevant Council of Australian Governments process.
- Opportunities to adopt efficient and safe transport options for explosives, such as Mobile Explosives Processing Units are not licensable in South Australia but are used in several other Australian jurisdictions that have significant mining and extractives sectors.
- Licensed explosives transporters are required to hold additional explosives transport licences not required in any other Australian jurisdiction, which is a consequence of South Australia not having adopted COAG-approved security principles that it was required to implement by 2004.[164]

The Commission heard from quarry operators that explosives trucks must be booked a month in advance. Moreover, if the quarry operator needs to cancel its blasting on the day of the booking, because of environmental factors precluding blasting on that day, it can be a challenge to re-book that explosives service within a reasonable timeframe. This can lead to quarry operations being stopped. AEISG shared operator views in this regard, indicating that the different and additional requirements in South Australia:

> *often incur a significant time penalty, adding to cost and hindering the competitiveness of industry participants, and in extreme cases leading to loss of business … An unwillingness on the part of some industry participants to challenge the SA [regulator's] rulings leads to an unwillingness to participate in SA mining and extractive industries related ventures*.[165]

Orica indicated it is not clear to industry what performance indicators SWSA adopts to measure their performance in achieving regulatory objectives. It had also observed decreasing resources over the past 18 months in the explosives compliance section, leading to licensing and regulatory delays impacting on Orica's ability to meet extractives industry customers' requests.

The views of the regulator

SWSA advised that there have been several attempts to reform the state's explosives regulation in the last 25 years. The Explosives Act and its regulations were reviewed in 1995 and redrafted in 1996 but that reform was not progressed. A further review of explosives and dangerous substances legislation was subsequently undertaken, leading to public

[162] Australasian Explosives Industry Safety Group Inc (AEISG), Submission DR1 to South Australian Productivity Commission, *Extractives Supply Chain Review* (9 April 2020) 2 (AEISG Submission).
[163] Orica, Submission DR8 to South Australian Productivity Commission, *Extractives Supply Chain Review* (9 April 2020) 2.
[164] AEISG Submission (n 162).
[165] Ibid 5.

consultation on a Bill in 2005 and several redrafts of associated regulations. That process was not progressed for several reasons, including SafeWork Australia progressing national harmonisation on explosives regulation from 2009. Between 2012 and 2016 COAG oversaw this process, which in South Australia led to a further review of the state's legislation and a public consultation process which was reported on in 2017.

The Commission notes there has been a change in the leadership of SWSA and priority is being given to these reforms. Proposed new legislation, consistent with the national approach, is in the process of being prepared. SWSA advised that industry is aware of these developments and will be consulted in late 2020 when a Consultation Bill is available.

The Commission's view

Whilst the Commission received only two submissions addressing explosives regulation, they make cogent arguments for the need to expedite South Australia's reform of the regulation of explosives. Following release of the draft report, SWSA advised the efforts being made to reform explosives regulation in South Australia since 1995, and the impact of the national approach to reform on South Australia's efforts. Based on that advice, consultation on substantive explosives reform is expected late in 2020. SWSA also advise that, given the complexity of explosives regulation, and the several sets of regulations requiring consideration, that process may take at least two years to complete.

Whilst the reasons behind the apparent delay in explosives reform have been clarified, industry feedback indicates there is some work to do in terms of effectively and transparently engaging with industry, particularly how the regulator responds to industry proposals about improvements to explosive regulation. It would be prudent for the impending reform process to acknowledge, and where supported by evidence reflect, industry feedback on best practice and the current commercial impacts on the explosives industry in South Australia.

Recommendation 5.6: Reform of explosives regulation in South Australia

In support of stronger industry engagement and improved sourcing and deployment of explosives across the South Australian extractive minerals industry, the Treasurer and SafeWork SA:

- evaluate SafeWork SA's existing standards, practices and administrative arrangements consequent on, and to the extent possible concurrently with, the existing South Australian explosives regulation reform process; and
- consult with industry representatives, quarry operators, state and national regulators and other stakeholders on these matters and publish the outcomes of those consultations, and policy and administrative reforms, on SafeWork SA's website.

5.3 Proximity to competing or alternative land uses

The proximity of established quarries to other sensitive land uses was raised frequently during consultation. These issues are most common in urban areas but there are examples in the regions where tourism and other regional industries are present. The proximity challenges have been articulated to the Commission as an opportunity to ensure the state's economic development requirements are reflected in and not compromised by local-level planning processes.

Proximity to other sensitive land uses impacts on quarries in two primary ways:

- Residential or other development (e.g. pipeline infrastructure) has the potential to perpetually sterilise land, or parts of land, which contain extractive minerals. This can require those extractives-based construction materials to be sourced from further afield, adding to the cost of materials.
- Community objections to quarry operations arising from a real or perceived impact on their amenity from normal quarry processes (i.e. dust, noise, traffic) are said by industry to lead to additional scrutiny by regulators and requirements placed on the operator to provide additional information and controls, slowing or otherwise limiting quarry operations and/or incurring additional operational costs.

The regulatory system can, in the Commission's view, address these issues more efficiently without compromising government's broader objectives. Managing these negative effects is in the state's interest for two reasons:

- Premature sterilisation or closure of quarries in the greater metropolitan area (and in some regional locations) reduces the strategic cost advantage found in South Australia. Currently there is no mechanism for assessing and considering the cost to the state of premature closure, including foregone royalties and the additional costs of infrastructure and road maintenance. This missing market induces a bias in the current system towards premature closure.
- Improving the efficiency and proportionality of the regulation of quarries may avoid additional operational costs arising from inefficient controls and limitations on production that can lead to higher construction material prices. This proportionality must also balance other public interests and policy outcomes.

Notwithstanding the policy and strategy responses (see Chapter 3), the Commission has heard several examples of proximity issues creating challenges for quarry operators.

> *Resource protection is not only required from urban encroachment, quarries are often seen as easy targets for the placement of services, such as gas pipelines, power lines, rail services and roads, effectively sterilising significant portions of strategic resources, particularly when taking into account the incompatibility of blasting in close proximity to the infrastructure*.[166]

5.3.1 Attempts to address proximity issues

The RAMP Project was undertaken in 2014 to improve the interaction between mining and planning regimes in South Australia to maintain ongoing access to long-life valuable extractives resources and to minimise conflicts between incompatible land uses.[167] RAMP focused on complementary changes to the mining and planning development systems needed to address complex and competing interests as urban areas expand.

RAMP recommended effective interaction between planning and mining legislation to protect strategic mineral resources and ensure potential interface issues arising from interests in land proximate to quarries can be identified.[168] One of the key actions following RAMP was

[166] CCAA Submission DR4 (n 61) 2.
[167] Department for Energy and Mining, *Planning and Development*, 'Resource Management and Planning (RAMP) Project' (Web Page, 30 April 2020) <http://www.energymining.sa.gov.au/minerals/land_access/planning_and_development#ramp>.
[168] RAMP Report (n 43) 67–68.

identification of the state's Strategic Resource Areas (SRAs).[169] The *Identification of Strategic Mineral Resource Areas in South Australia – Greater Adelaide Region and Major Regional Centres* report (SRA Report) explicitly acknowledges the need to protect the state's strategic resources in the context of the large impact transportation costs can have on the price consumers pay for construction materials.[170]

> *To maintain supply of construction materials from resource areas at a reasonable cost to end users,* ***it is vital that development that is potentially incompatible with existing extractives industry activities is identified through the extractive mining lease approval process****. At this stage, it is important to consider any planning implications with surrounding zoning and envisaged land uses, with the view to minimise potential impacts through interface areas (buffers) around future extractive mining operations.*[171]

The definition of SRAs captures both future protection and existing proximity and interface issues by reference to:

- an area that is of key economic value to South Australia due to the quantity or quality of construction materials or mineral resources that are extracted or contained within that area; and
- the experience of urban encroachment or incompatible development interface issues or the likelihood of that in the near future.[172]

The 29 SRAs in the Greater Adelaide region (including 53 individual quarry operations), and 23 quarries near major regional centres, were determined based on criteria assessing location, production rate, operational life and quality or rarity of material.[173] The SRA Report was an information document that provides no practical statutory protection, and did not preclude the use and development of land in an SRA for other purposes.[174]

DEM advises the current SRAs include those resources over which there is a tenement and which are determined as being economically significance to the state; that is, potentially exploitable resources that did not meet the SRA criteria have not been included in the SRA Report.[175] The risk of premature sterilisation of resources therefore remains. Whilst the potential future use of the land which contains an extractives resource will be influenced by government policy priorities and community views over time, there is a risk that development decisions will be made without awareness of the location of strategic resources that may be in high demand or short supply in the future.

The CCAA has suggested:

> *[given] the absence of identification and protection of SRAs there is potential for urban encroachment to sterilise the resource or at least increase the regulation on quarries, which increases prices for construction materials and impacts the costs of infrastructure projects and housing affordability.*[176]

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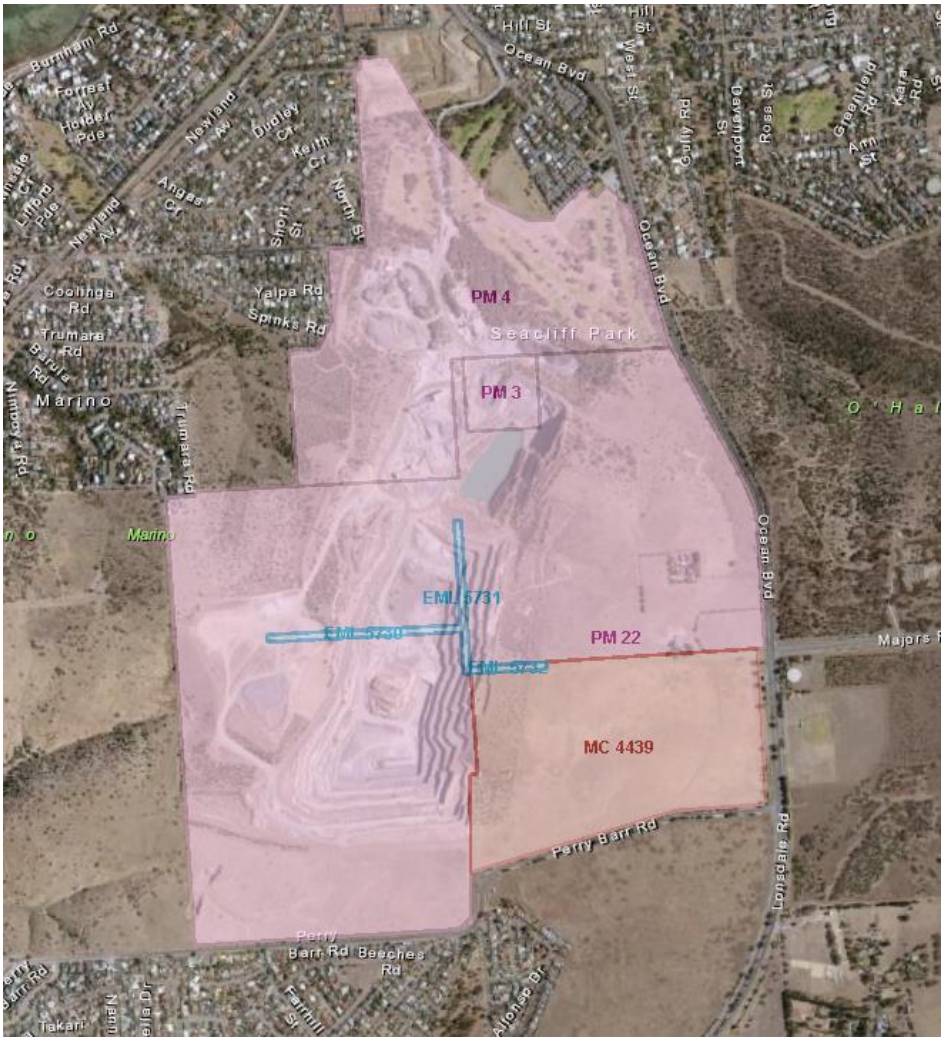
[169] Department of State Development, *South Australia's Resource Area Management Plan: Valuing the Future of our Extractives Sector* (Work Plan, 2015) (SRA Work Plan).
[170] SRA Report (n 9) 8.
[171] Ibid, emphasis added.
[172] Ibid 10.
[173] Ibid 12–18.
[174] Ibid 5.
[175] Ibid 11–16.
[176] Cement Concrete and Aggregates Australia (CCAA), Submission to Department for Energy and Mining, *Leading Practice Mining Acts Review* (22 February 2017) [2.1.2].

5.3.2 Proximity case study

The Commission considers the Linwood quarry illustrates proximity issues, especially the complexity of competing land use interests in urban areas of the state. Figure 5.3 shows a satellite image of Linwood quarry. In 2014 the RAMP report concluded there was 'very little that the planning system can do to protect this resource from the development that has occurred at the southern and northern ends, and the interface issues that now arise',[177] and recommended the quarry 'be reflected in the Planning Strategy and a 500m separation area be identified that prevents future zoning for sensitive uses without careful consideration of interface issues', among other things.[178] In the succeeding five years, at least 67 community-based complaints were made about the quarry, mostly about blasting and dust.[179] Linwood is also subject to EPA licensing arrangements in relation to concrete batching works, waste recycling and extractives industries.[180]

Figure 5.3: Linwood quarry



[177] RAMP Report (n 43) 30.
[178] Ibid.
[179] DEM, *Complaints Incidents Report* (Report, 2020).
[180] EPA, *Licence No. 1187 Boral Resources (SA) Limited* (Licence, 1 November 2016) <https://www.publicregister.epa.sa.gov.au/document/Dk/zY/9m3UV4yCYf8OzTsveT35wQs.pdf>.

Source: SARIG

In December 2018 Boral submitted an EML application to DEM to extend the quarry operations to the east of the current pit boundary (within the existing tenement).[181] That application attracted 11 public submissions, several of which opposed the proposal or raised concerns regarding dust, noise and visual amenity. Some acknowledged the quarry's attempts to be 'a good neighbour', and some objectors had moved to the area very recently.[182]

Meanwhile local governments are working on a proposed redevelopment of a site located immediately adjacent to the northern tip (tenement Private Mine 4) of the Linwood quarry. A Development Plan Amendment would be required to accommodate the proposed redevelopment, and changes to the quarry's road access arrangements are central to the redevelopment.[183]

Under the proposed Planning and Design Code the northernmost Linwood quarry tenements would be covered by the Resource Extraction Zone, and the main pit would be covered by the Hills Face Zone.[184] Boral is proposing that quarries are placed wholly in the Resource Extraction Zone.[185] Local communities' views may conflict with this. These elements illustrate the complexity of closer proximity.

The CCAA considers that in such circumstances there is potential for the buffer land to be rezoned for residential purposes, which would sterilise that resource. To avoid this CCAA proposes legislatively barring rezoning for 25 years following the last extractive operations unless the deposit has exhausted at least 80 per cent of its reserves.[186]

5.3.3 Limitations of existing strategic resource protections

The absence of any legal standing or enforceability of the SRAs has contributed to the proximity issues heard by the Commission. The challenge is to balance the value to South Australia of its most valuable construction resources with other public interests. This is a complex matter. Given that these challenges persist notwithstanding some policy changes responding to RAMP's planning-related recommendations,[187] the Commission considers SRAs deserve legal status in the planning system. SRAs need to be considered as part of the development approval process, and the planning system needs to effectively interface and coordinate with the approval of mining tenements.

The *Planning, Development and Infrastructure Act 2016* (PDI Act) became operational in outback areas (Phase 1) on 1 July 2019, with rural areas (Phase 2) operational in July 2020 and urban areas (Phase 3) to follow in 2021.[188] The Code will introduce a Resource

[181] DEM, *Linwood Quarry Eastern Extension Project* (Web Page, 26 May 2020) <http://www.energymining.sa.gov.au/minerals/mining/mines_and_quarries/linwood_quarry/linwood_quarry_eastern_extension_project>.
[182] Ibid.
[183] City of Marion, *Seacliff Park Development Site* (Web Page, 26 May 2020) <https://www.makingmarion.com.au/seacliffpark>.
[184] DPTI, *Planning and Design Code Consultation Map Viewer* (Web Page, 26 May 2020) <https://dpti.geohub.sa.gov.au/portal/apps/webappviewer/index.html?id=5fcfc772bf7d4c279ad9bb11c15bf419>.
[185] Boral Submission (n 46).
[186] CCAA Submission DR4 (n 61) 1.
[187] Planning Policies (n 44).
[188] Department for Infrastructure and Transport, 'A Phased Approach to Transitioning to the New Planning System', *SA Planning Portal* (Web Page, 4 May 2020) <https://www.saplanningportal.sa.gov.au/planning_reforms/implementation>.

Extraction Zone and a Resource Extraction Protection Area Overlay. Zones provide guidance on the type of development that can happen in an area. Overlays contain policies and deal with planning issues of state interest and can span several zones. Where policy in a zone conflicts with the policy in an overlay, the overlay policy will take precedence.[189]

The Resource Extraction Protection Area Overlay is intended to provide for the:

> *Protection of current and future state significant resource extraction activities by ensuring development has regard to potential environmental and amenity impacts generated by the lawful operation of proximate mines and quarries*.[190]

The Code includes a referral to the Minister responsible for administering the Mining Acts for specified development applications within the Resource Extraction Protection Area Overlay (including within the Resource Extraction Zone). The purpose of referral is to 'provide expert assessment and direction to the relevant authority on the potential for development to adversely impact upon the lawful continued operation of resource extraction operations'.[191]

Boral raised concerns about the proposed referral power, which is discretionary in specified circumstances, including 'where the development is, in the opinion of the relevant authority, minor in nature and would not warrant a referral when considering the purpose of the referral'.[192] Boral is concerned 'that the relevant authority may not have sufficient experience in determining potential impacts which a use deemed as "minor in nature" may have on the extractive industry … [and recommends] that DEM be resourced appropriately to fulfil this function'.[193]

DIT advised that 'minor in nature' is not defined under the PDI Act. As a practice though planners would typically consider the nature, size, intra-site location and interaction between the development being proposed and the surrounding locality. Under the PDI Act only an Assessment Manager, Council/Regional Assessment Panel or the State Planning Commission can determine a performance assessed development application. Assessment Managers will be accredited under a new Accredited Professional Scheme, providing that an assessment of the 'minor nature' of a development will be undertaken by an accredited professional. Whilst not a legislative requirement, in practice Assessment Managers may also consult with DEM to support their assessment.

The Commission is advised that, whilst the Resource Extraction Zone is intended eventually to apply to most SRAs, this is not currently the case. Quarries covered by the Resource Extraction Zone will enjoy protections associated with the restrictions on incompatible developments specified in that state-wide zoning under the Code, but not all quarries will be covered. Boral, for example, has indicated that several of its quarries will be located in zones other than the Resource Extraction Zone. The Commission understands that the implementation of the Code and its new zones and overlays is intended to be 'policy neutral', that is, effectively 'roll-over' the existing development outcomes. Some quarry operators indicated that some council planning decisions, approving residential or agricultural development for example, have previously not considered the presence of an existing quarry. It was suggested that where proximity issues have arisen under pre-Code zoning, a

[189] State Planning Commission, Draft Code (n 39) 21.
[190] Plan SA, *Planning and Design Code*, Part 3 – Overlays, Resource Extraction Protection Area Overlay Procedural Matters – Referrals (Web Page, October 2019) <https://code.plan.sa.gov.au/browse-the-code>.
[191] Ibid.
[192] Ibid.
[193] Boral correspondence (email, 31 July 2020).

policy-neutral approach will mean any existing proximity issues are likely to remain under the Code.

The Commission was advised that in the imminent Phase 3 of the Code's implementation, the Resource Extraction Protection Area Overlay will not be applied around urban quarries. Feedback on Phase 3 of the Code included:

> *potential to expand application of overlays such as the Resource Extraction Protection Overlay, to identify and protect known economically workable deposits of minerals from incompatible development. This was also viewed as a way to better transition current development restrictions applying to areas surrounding some mining or quarry sites (i.e. by way of existing encumbrances or land management agreements), including the Gulfview Heights Quarry in the Salisbury Council area … Similarly feedback was received on the expansion of application of the Resource Extraction Protection Overlay to key quarry sites across the State was suggested to better protect these sites and minimise interface issues arising from the establishment of incompatible land uses in proximity to these sites. This was also suggested in the absence of any rezoning of sites*.[194]

DIT advised the Commission that complexities arising from the proximity of existing quarries in the greater metropolitan area would require significant investigation and consultation with all stakeholders to be able to apply the Resource Extraction Protection Overlay in those locations. Reconciling the impact on existing developments within a proposed Resource Extraction Protection Area Overlay is one of the obvious challenges.

The Commission was advised that evidence-based assessment by DEM indicates 500 metres from the tenement is an effective and appropriate distance for the Resource Extraction Protection Area Overlay generally. That distance is based on assessed externalities and data about other impacts arising from quarry operations including dust and vibrations from blasting operations, and complaints data. Whilst this distance is not prescribed in the Resource Extraction Protection Area Overlay parts of the Code, it is found in the Code's Geographic Information System mapping function providing a 500 metre distance from Resource Extraction Zones. Where the Resource Extraction Protection Area Overlay intersects with an urban-type planning overlay the Resource Extraction Protection Area Overlay is excluded, that is, the urban-type overlay displaces the Resource Extraction Protection Area Overlay.

The Commission accepts the highest priority of the state planning reforms is to implement sound state planning policy, and that specific Code amendments may follow the transition. It is not clear to the Commission how effective those overarching state policies will be in achieving the intended public good of protecting state resources, where existing quarries, and ancillary activities such as batch plants, will not be covered by the Resource Extraction Zone or Resource Protection Extraction Area Overlay.[195] Whilst it is understood that the Code may be amended by the Minister for Planning on advice from the State Planning Commission, including from a consultative process under an Act other than the PDI Act,[196] the current approach significantly reduces the potential value of the statutory protections in the greater metropolitan area.

[194] Department for Infrastructure and Transport, *Phase Three of the Planning and Design Code (Urban Areas) What We Have Heard Report* (June 2020) 43.
[195] Planning Policies (n 44) SPP 10.
[196] *Planning, Development and Infrastructure Act 2016* s 75.

The new extractives zoning and overlays have the capacity to give legal protection to most SRAs, but their partial application in the urban areas of the state, where the most substantial interface issues are present, appears likely to limit their value. The Commission sees merit in rigorously assessing the cost to the state of their exclusion. Whilst state planning policy has captured the key outcomes of the RAMP Report,[197] commitments emanating from that work to effectively link up mining approvals with the planning system in the form of appropriate zoning to mitigate quarry-related proximity issues appears not to have come to fruition as had been intended.[198]

Recommendation 5.7: Managing current and future proximity issues

To mitigate existing proximity issues, the Department for Infrastructure and Transport (DIT), in conjunction with the Department for Energy and Mining (DEM) design and implement a methodology for applying the Resource Extraction Zone and Resource Extraction Protection Area Overlay to those existing quarries that will not be covered by those arrangements on implementation of the Planning and Design Code, beginning with SRA quarries in the Greater Adelaide area.

To avoid future proximity issues and mitigate the risk of premature sterilisation of strategic resources, the Geological Survey of South Australia update and publish the extractives Strategic Resource Areas of the state to inform the application, by DIT, of the Resource Extraction Zone and Resource Extraction Protection Area Overlays required to protect extractives resources capable of being exploited in the future.

To respond to the key outcomes proposed by the Resource Area Management and Planning Project, DIT and DEM establish a joint project to design and implement processes that will align quarry lease and operating approvals under the *Mining Act 1971* with zoning arrangements under the *Planning Development and Infrastructure Act 2016* to ensure that the Resource Extraction Zone and Resource Extraction Protection Area Overlay are applied in the course of the process of establishing a quarry.

[197] See e.g. Planning Policies (n 44) SPP 10.
[198] See 'key areas for action' 4 and 5 in SRA Work Plan (n 170) 2.

6. Quarry rehabilitation, indemnification and closure

6.1 Introduction

This chapter examines issues relating to rehabilitation of quarries, closure arrangements and post-closure land use. Analysis covers the purpose of rehabilitating quarry land, proportional regulation of rehabilitation, closure planning and future land use through quarry environmental programs, and government's indemnification against operator non-performance. The Commission has a focus on the purpose of the Extractive Areas Rehabilitation Fund (EARF) having regard to feedback received, with wider considerations given to alternative indemnification models.

6.2 Quarry closure and post completion: achieving fit-for-purpose outcomes

There are clear state and community interests in ensuring quarry land can be used following closure of the quarry. Key factors that influence the post-closure use and value of ex-quarry land include:

- the location of the land – noting the large number of quarries located in, and around, metropolitan Adelaide;
- the life cycle of the quarry – noting that many quarries can have life cycles that exceed 50 years;
- the extent and quality of rehabilitation that has been undertaken throughout the life of the quarry (i.e. progressive rehabilitation); and
- the property rights of the land – who owns the land versus who is responsible for progressive rehabilitation towards an agreed final land form.

The rehabilitation and closure of quarries are regulated by the *Mining Act 1971* (the Mining Act). The *Mining Regulations 2011* (the Mining Regulations) require that all mining proposals include a set of mine rehabilitation outcomes with the aim of minimising the disturbance area and determining the size and costs for final rehabilitation in an economically efficient manner.[199] Mine operation plans (MOPs) require a statement of objectives that relates to ongoing and final rehabilitation of the site, site closure, and future use of the site.[200]

The level of specificity required to describe the extractive mineral lease (EML) requirements are further defined in ministerial determinations,[201] which at the lease application stage require a conceptual description of how the quarry site may look on completion. DEM advises that this information is required to set appropriate completion outcomes in the lease. The information requirements for PEPRs[202] go further, moving from concept to a description, and influence the type and extent of progressive rehabilitation that is required.

The Commission has heard from industry that the level of detail required for MOPs and PEPRs for post-closure land use has increased over time, with DEM requiring that proponents provide detailed geotechnical designs and more defined end-of-use concepts:

[199] *Mining Regulations* (n 20) regs 30(1)(d), 65(2)(b).
[200] Ibid reg 80(3)(c).
[201] Ministerial Determination 3 (n 19).
[202] Ministerial Determination 2 (n 19).

> *Post closure arrangements are becoming excessive and at times, impractical. For example, it is extremely difficult (if at all) [sic] to predict a specific land use in 30 to 50 years. The focus should be on a range of intended/envisaged land uses, not dissimilar to Development Plan/Planning and Design Code zones. In addition, triggers for forward planning end-use e.g. 30/20/10 years to end of life could be regulated.*[203]

As a practical matter, the capacity to predict the final land use following the end of quarry operations and associated progressive and final rehabilitation varies widely. Industry contended that DEM expected detail based on the concept of a final use that cannot be accurately predicted, given the long life of some quarries.

While closure information may be easier to capture for smaller quarries where the staged plans and rehabilitation can be easily planned across a uniform resource, the Commission accepts this approach is unsuitable for hard rock quarries, where the extent of the resource may be, for commercial reasons, poorly defined in the early stages.

DEM acknowledged that despite the requirements[204] the description in the first PEPR could only be conceptual at this early stage for some operations. As discussed in Section 4.2.5, the capability of the assessment officer may influence whether conceptual or detailed information is requested. This inconsistency is likely to be inefficient and costly to the proponents.

Operational approvals also require that operators set out plans to rehabilitate progressively through a staged approach.[205] This approach aims to minimise disturbance area and help operators to determine the final rehabilitation liability and costs. It is also more cost effective to conduct rehabilitation work at the same time as quarrying as it draws on operator experience and available equipment. However, progressive rehabilitation requires the operator to have some vision of a final land form to ultimately determine what land uses are available.

The Commission heard examples where the placement of material during rehabilitation and a focus on maximising extraction of the resource can reduce potential future land use options. As a low-value commodity, consideration needs to be given to whether greater value may be realised by not extracting the full resource to allow for alternative valuable land uses:

> *Mine closure approaches that seek to maximise the conversion of in situ mineral endowment into an expansion of human, social and built capital will have the greatest chance of success*.[206]

The location of major quarries within the Adelaide metropolitan area affords opportunities to realise value during operations and post-quarry completion. For companies that also own the land the economic incentives to realise the whole-of-life value are even greater. Interstate in Melbourne's south-east a Boral quarry, through a decade-long planning process, is set to be transformed into a 1700-home estate where Boral expects to earn $300 million over the life of the development.[207] The Commission concludes a balanced approach is needed that

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[203] Boral Submission (n 46) 2.
[204] Ministerial Determination 2 (n 19) [3.7].
[205] Ibid [3.3.2].
[206] B E Harvey, *The Eye of the Beholder – Utility and Beauty in Mine Closure* (University of Queensland, 2016) 21.
[207] Simon Johanson, *Boral Quarry Set to Turn into $1b Melbourne Housing Estate* (Web Page, 21 June 2019) <https://www.smh.com.au/business/companies/boral-quarry-set-to-turn-into-1b-melbourne-housing-estate-20190621-p51zz4.html>.

ensures sufficient early information to enable appropriate planning towards a final land form without locking in expectations and without requiring expenditure on rehabilitation activities that may be unnecessary.

Based on what the Commission has heard, there are clear trigger points throughout the life of the quarry where decisions are taken that may impact on the proposed final land form and consequently on when and how to undertake progressive rehabilitation.

Recommendation 5.8: Planning for closure

The Department for Energy and Mining implement a flexible and transparent approach to planning for final land use post-quarry closure, and associated rehabilitation obligations, by incorporating pre-approved 'triggers' into the regulatory framework that will result in a review of expected final land forms and associated rehabilitation requirements. Consideration to be given to incorporating the following as lease conditions and/or environmental program (program for environment protection and rehabilitation, and mine operation plans) criteria:

- time-based triggers particularly for quarries with a long life cycle;
- environmental obligation triggers – for example native vegetation offset requirements that impact on the commercial value of land;
- geological triggers given the lack of up-front exploration undertaken by most quarry operators which can lead to unforeseen discoveries down the track; and
- financial triggers that impact on a company's ability to access capital including price fluctuations and levels of infrastructure activity.

6.3 Rehabilitation and indemnifying against operator non-performance

It is in the interests of both the state and community that land that has been altered by quarrying activities is rehabilitated and remediated so that:

- The land area is safe and will not impose an environmental hazard to the community or local ecosystems.
- The impact of other negative externalities resulting from the mining activity including visual disturbance can be addressed.
- The land can be made available for another use or purpose post-closure.

Part 10A of the *Mining Act 1971* requires holders of mining tenements to ensure land adversely affected by mining operations is properly rehabilitated.

The Commission heard that the efficiency and effectiveness of progressive rehabilitation practices can be influenced by:

- government policies, practices and instruments;
- the geology of the land and type of extractive mineral being quarried (e.g. hard rock versus sand);

- the capability of the quarry operator to undertake rehabilitation (or engage a sub-contractor to do so) and of the regulators to monitor and ensure compliance with rehabilitation requirements;
- the anticipated final land form and use, and how that changes over time (particularly where quarries have a long life cycle); and
- the property rights of the site and whether a quarry operator/owner can potentially obtain a financial benefit from post-quarry development at the site which will provide an incentive to ensure the quarry is suitably remediated for re-use.[208]

During or after the closure of a quarry, circumstances can arise where the state is left with a rehabilitation liability as a result of the quarry operator not complying with their rehabilitation obligations. Non-compliance can be due to various reasons including company failure, inadequate or poorly applied rehabilitation practices, or additional unanticipated rehabilitation costs arising from unforeseen changes over time (e.g. urban encroachment altering the type and nature of externalities). Unanticipated or unforeseen matters are particularly relevant for Adelaide's strategic metropolitan quarries given that some have a very long life cycle. These circumstances illustrate that the government has an interest in indemnifying the state against costs arising from:

- quarry operators who do not, or cannot, meet their rehabilitation obligations and therefore do not achieve their prescribed environmental outcomes – including those for mine closure and completion;
- abandoned quarries (also known as legacy mines) where it is not possible to recover rehabilitation costs from the previous owner; and
- unanticipated rehabilitation costs that continue to accrue post-surrender of the quarry.

Governments seek to impose policy mechanisms that support compliance with progressive rehabilitation obligations and that indemnify the government (and therefore community) against potential commercial failure. Indemnification models are discussed in Section 6.3.2 below.

With respect to extractive mineral operations in SA, section 63 of the Mining Act prescribes the establishment of the EARF. The Mining Act prescribes that:

- The EARF is funded from a prescribed rate applied to the royalty received or recovered by the Minister on extractive minerals (currently 22 cents per tonne).[209]
- The Minister can expend any portion of the EARF for the following specified purposes up to a prescribed threshold within a financial year (s 63(4)):
    - rehabilitation of land that has been disturbed by extractive mineral mining operations;
    - implementation of measures that prevent or limit damage or impairment of the environment by extractive mineral mining operations; and

[208] A qualification to this observation is that a mining operator can be pursued through common law for damages to third parties as a result of negligently leaving a quarry site without adequately or appropriately remediating or rehabilitating the site (particularly with respect to environmental and other hazards).
[209] *Mining Regulations* (n 20) reg 75A.

- promotion of research into mining engineering methods and practices that reduce environmental damage or impairment resulting from extractive mineral mining operations.

The Mineral Resources Division of DEM administers the EARF in accordance with the *EARF Guidelines for Operation* (May 2009). According to the latest published information,[210] the net balance of the EARF in 2018–2019 was $27.5 million. DEM states that current funding commitments are:

- $0.45 million to fund four quarry rehabilitation projects; and
- an unspecified amount to fund the employment of 5.5FTE of the 29 DEM regulatory officers who undertake extractive mineral mining compliance, assessments of applications and EARF management activities.

6.3.1 Issues raised on rehabilitation and indemnification for extractive minerals

The funding and purpose of the EARF has emerged as a key issue for the review. The Commission observed a clear gap in understanding between DEM and industry and within industry. In particular there is:

- a set of questions over the growing net balance of the EARF and how that relates to current and expected rehabilitation liabilities (including the impact of progressive rehabilitation on future liabilities);
- a lack of a shared understanding between industry and government stakeholders on the purpose and application of the EARF and its relationship with progressive rehabilitation obligations; and
- confusion within the industry arising from outdated EARF guidelines that do not reflect how the EARF is currently administered and DEM's expectations on how EARF funds are to be expended.

> *Boral notes that there appears to be ambiguity in respect of our ability to access the Extractive Areas Rehabilitation Fund (EARF). While Boral has contributed substantial amounts to the EARF, Boral has not used all of its contributions and would appreciate transparency on our future ability to draw down on the EARF contributions. Clarification of the Government's intentions of the EARF into the future would also be appreciated*.[211]

Financing the EARF

The EARF is essentially a pooled fund indemnification model that is financed through a contribution from extractives royalty revenue that has been paid by quarry operators. The royalty rate for extractives is based on the volume of production (for commercial purposes) and is therefore not related to the value of extractives (unlike royalties paid for other minerals). The royalty is the charge applied by the government to operators for making a commercial use of a state-owned resource (minerals). Conceptually, it is unrelated to the rehabilitation costs associated with the quarrying activity – the decision to earmark some of the royalty for that purpose is a separate matter.

The funding model used to finance the EARF (by way of royalty revenue contribution) has exacerbated the different perceptions of the EARF, with industry telling the Commission:

[210] Mineral Resources Regulation Report (n 13) 65.
[211] Boral Submission (n 46) 3.

- if industry is unable to obtain EARF funds, then royalty rates for extractives should be reduced by the EARF prescribed rate; and
- the EARF model should be revised to enable operators to seek funding based on their EARF contributions (i.e. royalty rates) during operations and/or at closure.

EARF reviews and amendments

A summary of the key events and amendments that have shaped the EARF since its establishment in 1972 is in Appendix 3. There have been four major reviews of the EARF that have resulted in changes to its administration and application. In particular:

- The 2004 review strengthened the notion of progressive rehabilitation as it applies to the operator, which notionally reduces industry's reliance on the EARF to fund rehabilitation and the liability risk to government.
- The recent Leading Practice Mining Acts review (LPMA review) sought feedback on a proposal to develop a revised, combined financial assurance model that would: cover the potential rehabilitation liability risk to the government and community; include appropriate incentives for progressive rehabilitation; and be flexible and cost effective for mining operators.

The Commission notes that new *Statutes Amendment (Mineral Resources) Act 2019* includes only a minor administrative change to the EARF which may be because consideration of submissions was limited to those that did not impact current or future accumulation of EARF funds.[212] At the time of writing DEM had recently released the new draft mining regulations for consultation.[213]

The various changes and amendments to the EARF have been an important contributor to current differences in perception between DEM and industry on the purpose and application of the fund. These divergent views persist, notwithstanding the consultation that has occurred with industry.

Guidance for regulators and industry

The Commission has heard that the current EARF guidelines are dated and ambiguous and have contributed to industry misconceptions and confusion on the purpose and application of the fund. Examples include:

- The guideline (and other DEM documentation) state that it is the responsibility of an EML holder or PM owner to rehabilitate the EML or PM but also states that 'the miner is responsible for undertaking and funding all rehabilitation on the relevant lease or private mine sites *except* where it is funded from the EARF'.
- Matters that are out of scope for EARF funding include those matters where rehabilitation is required and it is 'reasonably possible' to modify mining operations to meet current rehabilitation standards.
- The guideline only discusses funding projects – it does not include information on using the EARF to pay for other purposes (including funding of DEM regulatory

[212] Department of State Development, *Leading Practice Mining Acts Review Mining Act 1971 and Regulations Discussion Paper* (December 2016) [2.4], [2.6].
[213] DEM, *Draft Mining Regulations, Consultation 3 August to 11 September* (Web Page, 13 August 2020) <https://www.energymining.sa.gov.au/minerals/mining/update_on_mining_regulations_2020>.

officers even if they are working on the application of rehabilitation practices for extractive minerals).

6.3.2 Indemnification funding models

The issues and risks identified with respect to indemnification and progressive rehabilitation are common to most government jurisdictions and 'All State and Territory governments have arrangements in place to cover the costs of mines in the event that companies do not fulfil their rehabilitation requirements.'[214]

In 2018, the Council of Australian Governments (COAG) Energy Council endorsed a set of seven principles to underpin financial indemnification approaches in Australia which are summarised (abridged) in Box 6.1 below.

Box 6.1: National COAG principles for managing rehabilitation financial risks

Principles for managing rehabilitation financial risks

COAG Energy Council agreed principles to manage rehabilitation financial risks:

- Responsibility for rehabilitation lies with the tenement holder.
- Rehabilitation and closure plans should be established before project commencement.
- Governments should hold financial securities for rehabilitation that reflect the level of disturbance and risk of the operation.
- Risk-based mechanisms should be in place to ensure cost estimates for rehabilitation remain current throughout the life of the project.
- Monitoring processes should be applied to identify early any risk that the company may not be able to fulfil its rehabilitation requirements.
- Mechanisms are developed to monitor and apply financial obligations for closure.
- Financial assurance policies should encourage progressive rehabilitation and improved closure planning.

Source: COAG Energy Council National Principles for Managing Rehabilitation Financial Risks (20 September 2018)

Table 6.1 below provides a summary of some of the different indemnification models governments may apply to insure the state against the risk of a quarry operator not meeting their rehabilitation obligations.

Table 6.1: Potential indemnification models for extractive mining

Performance bond financial assurance model
The quarry operator is required to establish a bond (either via a lump sum in advance or accumulated through regular payments over time or as production increases) which is refunded when rehabilitation is completed on, or after, quarry closure.

[214] Australian Productivity Commission (n 8) 211.

The value of the bond may change over time – accumulating as funds are invested and diminishing as rehabilitation is progressively undertaken. If an operator defaults, the government can apply funds (from the bond) to the remaining rehabilitation costs.

The bond model essentially makes the cost of rehabilitation an element of the cost of establishment of the project (in net present value terms). Higher capital cost may be passed on to consumers who purchase or use their product.

The risks associated with this model include:

- The bond system may not be appropriate for smaller businesses who face higher costs of finance (particularly if required upfront).
- It relies on the bond being set at the right level – too high and it may act as a disincentive to business activity, too low and it may be ignored and ineffective.
- Information asymmetry can mean the quarry operator has a better knowledge of rehabilitation costs than the regulator setting the bond value.
- The ability to set the bond at the right level relies on accurate estimates of rehabilitation costs, which in turn relies on an identified and agreed understanding of the final state of the quarry (which can change over time).[215]

Taxation financial assurance model

The operations of the quarry are taxed (x cents per tonne produced) and the revenue is accumulated in a fund which is then available to be applied to pay for the costs of outstanding rehabilitation liabilities (where an operator does not meet their rehabilitation obligations at or after quarry closure).

The risks are similar to those for the performance bond model outlined above plus:

- The administration costs can be higher, particularly if the model includes an option where operators can submit applications seeking funds for rehabilitation projects.
- There may be an incentive to delay rehabilitation activities, shifting expenditure to a later date (and potentially raising costs).
- There can be an incentive to free ride on the contributions of other quarries (relying on those that will comply) – this may penalise high-performing operators.
- The application of a tax can distort business and rehabilitation activity by impacting on the costs of extraction per tonne.
- The tax rate is not set at a rate that will accrue sufficient funds to cover the total potential rehabilitation liability (requires ongoing actuarial assessments to measure total rehabilitation liability across the state).

Policy measures

Given the risks remaining with the above models, financial and non-financial regulatory instruments may be applied to insure against both rehabilitation not occurring to the right level, and the risk of operator default.

[215] International Council on Mining and Metals, 'Integrated Mine Closure', *Good Practice Guide* (Web Page, 2019) 47–54 <https://www.icmm.com/website/publications/pdfs/closure/190107_good_practice_guide_web.pdf>.

Regulatory tools to support and promote rehabilitation may involve:

- regulating the management of rehabilitation to minimise its cost by requiring it to be brought forward (i.e. progressive rehabilitation) although this may be less of an issue for a bond model;
- regulating the expected end use by requiring regular reviews of expected end use in consultation with stakeholders;
- applying standards to the completion of rehabilitation and the final state of the site; and
- imposing a continuing obligation for maintenance after closure (i.e. the residual environmental risk remaining after surrender of a mine site).[216]

On their own, the above tools may deal with the issues of insufficient investment in rehabilitation, but they do not cover the financial risk of a quarry operator defaulting. That would require some kind of insurance scheme (public or private) of which there are some existing models in SA including third party motor insurance and workers' compensation. The specific risks and unintended consequences would need to be identified and managed including the potential impact on smaller operators who may have more difficulty accessing affordable private insurance against default.

Codes of practice or conduct

This could involve an operator and community agreeing on a set of practices with which the operator complies, and evidence to demonstrate compliance. No bond, taxation or regulation is applied other than an expectation of transparency. This approach takes account of a quarry operator's interest in establishing a reputation for work – particularly with regard to seeking new work.

Self-insurance instead of a contribution (or reduced payments based on performance) to a fund may be offered to those with codes of conduct to recognise good performance.

This tool may be offered in addition to other tool(s) and may lower the costs of the application of other tools.

Source: South Australian Productivity Commission

In the Australian Productivity Commission's draft report on resources sector regulation, some of the initial leading practice findings on 'financial surety arrangements' were:

- Rehabilitation bonds that cover the full cost of providing rehabilitation offer the highest level of financial assurance for governments and provide operators with incentives to complete rehabilitation in a timely manner (noting that although many jurisdictions are moving towards this model a leading practice example has not been identified).[217]
- Rehabilitation pools can reduce incentives for companies to rehabilitate their sites and require greater use of regulatory compliance and enforcement tools to guard against this risk. Jurisdictions who use this method should separate larger companies from the pool (and use the bond model for them) in order to ensure the levy reflects

[216] Australian Productivity Commission (n 8) 215.
[217] Ibid 213.

the risk of a company passing on their liabilities to the government. (The Queensland model was identified as a leading example.)[218]

- Progressive rehabilitation can be encouraged by having financial surety arrangements where the bond/tax payable is reduced commensurate with ongoing rehabilitation work.[219]

Inter-jurisdictional comparisons

An overview of the policy approaches and instruments that are used in four other Australian states (WA, Victoria, NSW and Queensland) to address potential liabilities arising from mining/quarry companies that do not acquit their environmental rehabilitation obligations is in Appendix 4.

The Commission notes that:

- All jurisdictions use the estimated rehabilitation cost to help determine the size of a company's bond or fund contribution.
- All provide online calculator tools and guidelines to support the application of a consistent methodology to estimate expected rehabilitation costs over the life of a quarry and the associated bond/fund contribution.
- Victoria, NSW and Queensland all require a good understanding and/or early agreement on expected final land use of a proposed quarry site and this information is then used to develop rehabilitation obligations and cost estimates.
- The regulator undertakes regular reviews and companies provide regular reporting to ensure estimated rehabilitation costs are accurate and updated, and rehabilitation milestones are being met.
- In WA and Queensland, interest earned on the pooled fund may be used to fund rehabilitation projects (including for legacy mines) or administration costs.
- WA, NSW and Queensland have separate specific programs targeted at rehabilitating or remediating legacy mines, often funded from interest earned on financial assurance contributions.
- Queensland provides both the option of a pooled fund or surety (bank guarantee) with consideration to the financial risk profile of the individual company and the quarry site, and the estimated rehabilitation cost.

As part of the LPMA review, analysis was undertaken on the two financial assurance models in the Mining Act: unconditional financial bonds imposed on mineral tenement owners (used for all tenements except extractives); and payment into a pooled fund to cover potential rehabilitation liabilities (used for extractives – currently the EARF). The review concluded each model has advantages and disadvantages:

- Financial bonds may become out of date, it can be difficult to accurately estimate potential rehabilitation liability, bonds can tie up a company's working capital to provide surety, and it is difficult to apply them to abandoned or legacy mines.

[218] Ibid 214.
[219] Ibid 215.

- Pooled funds (EARF) can be a disincentive for operators to manage risks if they expect the fund will cover their costs. Responsible miners can essentially subsidise the bad practices of other miners. However, it can be simpler to access finance from a pooled fund in order to rehabilitate abandoned or legacy mines where the mining company is no longer able to pay.

6.3.3 The Commission's view

The Commission concludes there are very obvious gaps between the expectations of industry and DEM regarding the EARF's purpose. The gaps include:

- the method by which the EARF is funded via contributions from royalty payments – there is no clear link between contributions and rehabilitation liabilities;
- outdated EARF guidelines that discuss redundant administrative arrangements and do not reflect DEM's expectations that the EARF is essentially a fund of last resort (and to fund internal resources) rather than an option for the private sector to obtain finance for rehabilitation projects;
- publications that advise that over 1,000 projects have been funded through the EARF,[220] thereby raising industry expectations that similar projects will continue to be funded into the future; and
- a lack of communication on the EARF across the industry following the disbandment of the EARF Project Assessment Panel, notwithstanding DEM's previous efforts to engage with the industry and industry associations.

The Commission heard that DEM's policy on financial assurance to mitigate against non-rehabilitated quarry sites has moved:

- to reflect progressive rehabilitation requirements over the life of the quarry; and
- away from the EARF being viewed as a potential source of funds for rehabilitation at the end of the quarry life cycle.

The LPMA review highlighted that a pooled fund model such as the EARF needs to be managed and applied in a manner that will minimise the risk that the EARF:

- will not have sufficient funds to cover rehabilitation and remediation costs in the event that a quarry at closure has not been satisfactorily rehabilitated or remediated;
- is a disincentive for operators who choose to defer their rehabilitation responsibilities because they expect the EARF to pay for them; and
- results in miners who do progressively rehabilitate and pay into the EARF essentially subsidising the bad practices of other miners.

The Commission considers the community has an interest in securing valuable uses of land that is no longer used for quarrying purposes. The value of that land for future purposes depends in part on the extent of rehabilitation that has occurred during, and at the end of, the quarry production process.

Operators who fail to meet their obligations to rehabilitate the land impose costs on the community (and state) who may seek to reclaim the site for another use. These situations

[220] Mineral Resources Regulation Report (n 13) 65.

lead to an argument for a policy tool or government intervention to indemnify the community against the potential rehabilitation and remediation liability that may arise.

The issues raised above indicate that such policy tools, or intervention, must be implemented in a way that minimises risk and the potential for adverse or unintended consequences for other policy objectives. Some of the issues to consider when developing an appropriate government response (or package of responses) include:

- the property rights of the land on which the quarry is situated and the potential impact on rehabilitation performance depending on different ownership structures;
- the anticipated final land use of the quarry site, which may change over time;
- the costs and incentives for rehabilitation, how and when it is incurred;
- the risk of failure of a quarry operator (including capability and broader economic influences); and
- information asymmetries throughout the quarry life cycle.

Although significant changes to the EARF may require legislative amendment, the Commission considers that the existing wording of the Mining Act is sufficiently broad to enable substantive reforms. As part of the consultation arrangements on the new mining regulations a discussion paper is intended to be prepared post 1 January 2021 in relation to funding options for the new Mine Rehabilitation Fund established under the *Statutes Amendment (Mineral Resources) Act 2019*.[221] Whilst the Mine Rehabilitation Fund is established as a means to address abandoned obligations, the discussion paper process may provide an opportunity to also consider extractives-related indemnification arrangements.

Recommendation 5.9: Review of extractives financial indemnification model

The Department for Energy and Mining (DEM) lead a joint review with representatives from industry and key co-regulators to investigate and identify opportunities to reform the current extractives rehabilitation indemnification model. The review will:

- have regard to the Council of Australian Governments Energy Council's 'National Principles for Managing Rehabilitation Financial Risks';
- consider different financial assurance models (including bonds and insurance funds), regulatory tools and complementary approaches applied in other jurisdictions to identify approaches that could be adopted to improve the efficiency and effectiveness of extractives rehabilitation indemnification in South Australia;
- review the results of an actuarial analysis of extractives sites undertaken by DEM to provide a more complete understanding of the potential rehabilitation liability - including impacts arising through the application of progressive rehabilitation practices;

[221] Department for Energy and Mining, 'Package 2 – Explanatory Document – Royalties and Finance', *Update on Mining Regulations 2020* (Web Page, 13 August 2020) 13–14 <https://www.energymining.sa.gov.au/__data/assets/pdf_file/0009/368730/Package_2_-_Explanatory_Document_-_Royalties_and_Finance_Final.pdf>.

- increase the transparency of, and accountability for, extractives indemnification funding arrangements, including criteria that determine who can access, and grounds for expenditure of, funds;
- clearly identify the link between the type of rehabilitation liability (incomplete or insufficient, or outright default) and how indemnification funding is to be applied;
- publish and seek comment on the review findings prior to finalising a preferred approach; and
- develop implementation and communication plans to support and promote a shared understanding between regulators and the extractives industry on the purpose and application of the preferred approach.

7. Towards a better regulatory framework

7.1 Introduction

This report concludes with a review of the themes, especially those related to the design of the regulatory framework.

The thrust of the Commission's approach is to streamline both the approvals process for extractives and the deployment of the outputs of extractive production in construction and other productive uses, without compromising the other government objectives and public interests. The Commission concludes there is significant scope for improvement in a regulatory system led by DEM that generally appears to enjoy the confidence of the extractives sector.

Most of what the Commission recommends in this report can be achieved without changing regulation or legislation, although it is likely that the impending process of developing the regulations for the Mining Act will present opportunities to improve the benefit of the Commission's recommendations. The one area where legislative change is necessary is the long overdue changes to the *Explosives Act 1936*, where the need to modernise that Act in the light of standards adopted elsewhere in Australia has been recognised for many years. The current work by SafeWork SA can address this gap.

For the rest, the Commission's approach can be summarised in six points that constitute, in effect, a high-level principle-based action plan:

- clarify the scope of the regulated activity and the public and stakeholder interests involved;
- identify principles for reconciling conflicts, and incorporate the concept of the interests of the state;
- understand the nature of the problems, the scope of the regulatory task and the interdependence of regulatory objectives;
- identify the agencies involved and establish a mechanism for their efficient and timely interaction;
- simplify and clarify the task of each agency, including a review of tools and processes; and
- revisit the alignment of the regulatory tasks and their outcomes in the interests of the state.

The recommendations translate these points into specific, practical actions.

7.2 Clarify the scope of the activity and the interests involved

The first step in the design of a regulatory framework is to define the scope of the activity to which it is directed, and the stages of value adding involved. The scope of activity is generally defined in terms of industry classifications; however, these definitions may not align with the manner in which the businesses or their consumers think about the boundaries, scope and interaction of their activities. A value chain perspective on the activity, working back from the final users of the goods or services being produced, provides a reality check. This perspective also helps identify the various stages of value adding which

the activity involves and thereby the issues that do or might arise. Failure to check those steps may also lead to lack of consideration of a particular step in the process of transformation of raw materials, which is critical to performance from a customer point of view. For example, while the production of a finished product from raw materials is a major activity, transport of the product over the 'last mile' is critical to the customer.

In this report, the value chain framework was adopted to consider the series of steps from raw material to delivered product. This framework facilitated the identification of the various interests associated with the value-adding process. In this case, these involved not only the quarry operators and their current (and future) customers (some of whom are government agencies), but also residents (current and future) of neighbouring areas and road users. The taxpayers of the state are also relevant parties in the extractives sector, particularly in respect of their ownership of the extractives resources and the costs of constructing and maintaining public infrastructure.

Corresponding regulatory activities are then also identified in this context of the value chain, drawing on the advice of the identified interests, which also assisted the Commission to identify the 'red lights' that arise in the regulatory processes.

7.3 Identify principles for reconciling conflicts, and understand the concept of the interests of the state

The interest of the state is to maximise the value of the output from the activity, here the production of extractive materials, having regard to costs arising from the activity that are borne externally and to the ongoing consideration of the 'best' use of the land containing the extractives resource. From a state perspective, this includes not just the commercial value of the activities of the sector, but also their side effects, the value (or cost) of which is less obvious and explicit. It also includes compensation to the state for the use (extraction) of its resources through royalties and the loss to it from premature cessation of extractive activity.

The report identified instances of effects on air and water quality, on vegetation, on natural amenity, and on road damage and congestion. These various elements can be assessed, and constraints applied through the application of regulation, without which those consequences are likely to be excessive from the state's point of view. However, there is a trade-off with respect to the commercial value of the activity, since too tight a constraint with respect to an environmental goal may lead to an excess burden in terms of commercial consequences, including for the state. A well-designed regulatory process will consider all those interests and, taking into account the lack of perfect information and the costs of removing uncertainty, strive for an efficient outcome.

7.4 Understand the nature of the problems and the scope of the regulatory task

As noted, the case for regulation, or action by government, more generally arises from the sorts of consequences of the value-adding activity, in this case in the extractives sector, which would not otherwise be taken into account by the managers of that activity. These effects could be benefits or costs, but in most instances just mentioned are the latter. The scope of the regulatory task is to recognise and mitigate these consequences.

In this sector, this is done by, for example (with respect to the establishment and operational phases of a project):

- establishing indicators for performance with respect to air, water and noise and approving systems for their achievement;
- identifying and planning for consequences for native vegetation;
- limiting access to infrastructure to reduce road wear and congestion;
- applying rules on the treatment of the amenity of mine sites and their closure; and
- using planning processes to account for both mining operations and urban development.

In addition, the government intervenes by the application of a royalty in order to capture some of the value of the resources for taxpayers. These forms of intervention to respond to these issues are the standard practice in many jurisdictions. The identification of problems must involve public consultation, involving the various interests already identified. These consultations offer the prospect of removing uncertainty from projects and potentially extending their lives, when managed for that purpose. But without a set of principles to guide the process, there is also a risk that the public consultation process can be disruptive.

7.5 Identify the agencies involved and establish a mechanism for their interaction

An important principle in the design of any regulatory framework is that a different policy tool should be directly applied to each problem. An efficient solution will not be found through a single ‘silver bullet’ approach. Given the number of problems to be solved, and therefore the range of instruments required, there is a question of the allocation of responsibility for their management. It is valuable to have specialists apply their knowledge to particular technical problems, for example, to advise on the management of the consequences of establishing a mine for the stock of native vegetation in the vicinity. Generally, the scale of activity is insufficient to justify an in-house team of specialists in a lead agency such as DEM. One alternative is to contract out those roles. But more likely, and as is the practice in South Australia, those specialists are found in other agencies, such as EPA, DIT, etc. to which the relevant assessment is referred.

Essentially, staff of these bodies then interact with those in DEM in a matrix, with DEM leading on matters related to the minerals (a cross-cutting role) and other agencies specialising in particular questions. They come together in a ‘project’, which is the approval (or review) of a proposal for a mine. At the approval stage this project is led by DEM.

Additional issues arise when quarries are in operation, when co-regulators have their own statutory responsibilities, as well as being referral agencies as in the approvals stage. Hence the Commission suggests work to better align co-regulators’ standards with the criteria in quarry environmental programs, which are enforced by DEM in the first instance. The desire is to provide a more uniform and consistent interaction with industry and to simplify, and improve the performance of, the regulatory system, whilst retaining the statutory mandate of co-regulators who will still intervene, albeit less frequently and to a lesser extent.

While structure matters, ultimately the performance of the project team which operates across agencies depends on the members understanding that working on a project as a team but in a matrix, in other words a whole-of-government approach, is essential. The delivery of this message is the responsibility of chief executives.

7.6 Simplify and clarify the task of each agency, including a review of tools and processes

Within this broad structure, there are matters for attention with respect to the process addressed to each problem, to the design of the tool being used and the manner of its application. This report includes recommendations with respect to the process of issuing a lease, approving a mine operation plan, ensuring quarry products conform with standards, managing the movement of explosives, determining priorities for road investments, managing the urban planning system for buffers around strategic resource projects, managing funds for rehabilitation and so on.

7.7 Revisit the alignment of the regulatory tasks and their capability to deliver outcomes in the interests of the state

A final step, having clarified and sought to simplify the task of each agency, is to review the alignment of the various tasks, and of 'who does what', their coverage of the set of problems identified and then the ability to bring the material together to meet the interests of the state. The leadership role of DEM means that this is the location at which those state interests are considered together.

Overall, the framework can be constantly reviewed, iteratively and 'on the job'. That is, each project offers the opportunity for learning and reflecting, while also reporting against timelines and targets, and taking into account feedback in consultation processes from the various interests. In other words, there is opportunity through DEM's practice to continually refine the framework.

Appendices

Appendix 1: Submissions in response to the Extractives Industry Supply Chain Review

Number	Organisation name	Submission Number
Submissions responding to the draft report supporting the final report		
1	AustralAsian Granite Pty Ltd	FR1
2	Boral Resources Pty Ltd	FR2
3	Cement Concrete and Aggregates Australia	FR3
Submissions responding to the issues paper supporting the draft report		
1	Australasian Explosives Industry Safety Group Incorporated	DR1
2	Barossa Quarries Pty Ltd	DR2
3	Boral	DR3
4	Cement Concrete & Aggregates Australia	DR4
5	Clay & Mineral Sales Pty Ltd	DR5
6	ePlanning SA Pty Ltd	DR6
7	Hallett Resources	DR7
8	Orica	DR8
9	PGH Bricks & Pavers	DR9
10	Ray Paxton Consulting	DR10

Appendix 2: Regulatory frameworks applicable to the extractives industry supply chain

Legislation	Administration/regulator	Applicability
Environment Protection Act 1993 (EP Act)	EPA MOU between MRD and EPA to manage regulatory overlap and interactions	Applies to 'extractives industry sector' as defined in EP Act and operations in schedule 1.[222] Relevant operators are licensed under a tiered system based on risk and capability. As at November 2008, 91% of licensed premises were deemed of low risk (tier 3).[223]
Native Vegetation Act 1991	Native Vegetation Council Approval of management plan delegated to DEM	Exempts mining operations from requirement to seek approval from the Native Vegetation Council to clear native vegetation. Subject to approval of a management plan incorporating 'significant environment benefits', incorporated into the PEPR.
National Parks & Wildlife Act 1972	DEW	Permits required where mining access and activities disturb protected species.
Natural Resources Management Act 2004[224]	DEW	Permits required for mining that impacts on specified watercourses. Water licensing requirements for mining activities that take water in a prescribed water resource area.
Aboriginal Heritage Act 1988	Department of the Premier and Cabinet – Aboriginal Affairs and Reconciliation	Protect sites of scientific and heritage significance.
Work Health and Safety Act 2012 (WHS Act)	SafeWork SA on behalf of the Treasurer Mining and Quarrying Occupational Health and Safety Committee established under part 2 of WHS Act	WHS requirements for mining are regulated through chapter 10 of the WHS Regulations. Mining operations where extraction is incidental to the activity (e.g. some road works) are excluded.
Mines and Works Inspection Act 1920 (MWI Act)	DEM on behalf of Minister for Energy and Mines	MWI Act has very limited application following the Leading Practice Mining Acts Review. Most remaining relevant obligations transferred to other Acts.
Development Act 1993 & Development Regulations 2008	Department for Infrastructure and Transport (DIT) and local councils (regarding development approvals[225])	Larger mining projects require assessment and approval under the Act. Regulations specify requirements for mining production tenements in certain areas and local government consultation. Building code rules apply to structures.
Fair Trading (Mining &	SA Small Business Commissioner	Prescribed as a code of conduct under the *SA Fair Trading Act 1987.*

[222] *Environment Protection Act 1993* s 7(7).
[223] SA Government, Environment Protection Authority, *EPA Industry Compliance Audit Report for the Extractive Industries* (Report, 2008) 4.
[224] The *Natural Resources Management Act 2004* has been repealed and replaced by the *Landscape South Australia Act 2019*.
[225] The Commission notes that this arrangement will be affected by the new planning regulations and Planning and Design Code.

Legislation	Administration/regulator	Applicability
Resources Industry Land Access Dispute Resolution Code) Regulations 2018		Provides for stakeholders to access an enforceable mandatory dispute resolution framework.
Explosives Act 1936	SafeWork SA on behalf of the Treasurer	Regulates the transport and storage of explosives for blasting (licensing, storage facilities, transportation, purchase).
Heavy Vehicle Access Framework	DIT and Australian Government	Requirements regarding road access and use for heavy vehicles transporting raw materials (including restricted access & permits).
Local Government Act 1999 (LG Act)	DIT and local councils	Interactions between LG Act and Mining Act given roles of local government as mine operators (e.g. borrow pits) and as land and road owner/manager.
Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act)	Australian Government Accreditation is provided to states and territories and there is an assessment bilateral agreement with SA Government.	Mining that will impact on 'matters of national environmental significance' as defined in the EPBC Act must be identified and managed through approved actions.

Appendix 3: History of the Extractive Area Rehabilitation Fund

Year	Event
1972	EARF established under the *Mining Act 1971* requiring private mines that produce extractive minerals to pay a 5 c per tonne royalty which the Minister pays into the EARF. Quarry operators encouraged to employ horticulturalists to seek funding from EARF for rehabilitation projects.
1979	Hypothecated rate to EARF increased to 10 c per tonne due to a significant reduction in the EARF balance because of rehabilitation costs associated with Stonyfell quarry.
1994	Minister approved an external review of the EARF resulting in the development of EARF guidelines. Parliament determined that a royalty would be imposed on extractive minerals of 20 c per tonne, with 10 c of that being assigned to the EARF (effective 1995).
2002	Government commenced an internal review of the EARF following identification of a number of concerns including a reliance on regulators to instruct operators to undertake progressive rehabilitation (i.e. industry not directly responsible for financing rehabilitation). Undertook consultation with the Extractive Industries Association.
2003	Discussion paper *Funding of Rehabilitation in the Extractive Industries in South Australia* released for public consultation proposing two models: • fully funded, government-managed EARF model (no change); or • rehabilitation security bonds managed by government. Key considerations were: commercial cost to industry; incentives on miners to undertake rehabilitation; and mitigation of risks to community.
2004	EARF review completed, 43 submissions received, and EARF guidelines for operations approved by Minister. Guidelines included establishment of Project Assessment Panel with industry and government representation to assess applications for funding, undertake reviews and report annually to the Minister.
2006	Extractive mineral royalty rate increased to 35 c per tonne, of which 25 c per tonne is applied to EARF (split with 4 c to administration costs and remaining 21c to EARF).
2009	EARF guidelines updated (including appeals process).
2014	Treasurer increases extractive minerals royalty rate to 25 c per tonne (EARF contribution remains unchanged at 25 c per tonne). Actuary commissioned to assess EARF and current and future liabilities. Recommended a target balance of $20 million, and reduce rate hypothecated to EARF to 22 c per tonne.
2016	Minister writes to the CCAA noting their support for reducing the EARF contribution rate but rejecting their proposal to also reduce the extractive minerals royalty rate by 3 c per tonne.
2017	Minister implements actuarial recommendation to reduce rate hypothecated to EARF to 22 c per tonne.

Source: DEM

Appendix 4: Jurisdictional comparison of financial assurance arrangements

Western Australia[226]
Administers a pooled 'Mining Rehabilitation Fund' (MRF) – a special purpose account under the *Financial Management Act 2006*. The MRF operates in accordance with the *Mining Rehabilitation Fund Act 2012* and associated regulations. All mining tenement holders (under the *Mining Act 1978* (**WA**)) must contribute to the MRF annually. Estimates of rehabilitation liability and associated MRF levy are calculated using an online calculator based on the size of the land area to be mined and the area of land already rehabilitated. Interest earned on the MRF is used to pay for administration costs and may be used to fund rehabilitation of abandoned or legacy mines or where a quarry operator has failed to meet their rehabilitation obligations. Quarrying undertaken on private land is not covered by the Mining Act (WA).
Victoria[227]
Potential final land use must be agreed (with regulator and landowner) prior to determining rehabilitation obligations and conditions. The *Mineral Resources (Sustainable Development) Act 1990* (Vic) requires quarry operators to submit a bank guarantee based on their total rehabilitation liabilities to the regulator prior to commencement of site works. Since December 2015, extractives operators can opt to pay a cash bond for sites with total assessed rehabilitation liability of $20,000 or less. An online bond calculator is used to estimate rehabilitation costs and regular reviews of the liability are undertaken. Once the regulator agrees that rehabilitation obligations have been satisfactorily completed, the rehabilitation bond may be released and the site returned to the owner/manager.
NSW[228]
For authorisations granted under the *Mining Act 1992* (NSW), post-mining land use and associated rehabilitation obligations must be approved by the relevant authority prior to approval to mine. Mining title holders are required to lodge a rehabilitation security deposit with the regulator to cover the full estimated cost of all rehabilitation and mine closure activities.

[226] Government of Western Australia, Department of Mines, Industry Regulation and Safety, *Mining Rehabilitation Fund (MRF)* (Web Page, 14 August 2020) <https://www.dmp.wa.gov.au/Environment/Mining-Rehabilitation-Fund-MRF-4906.aspx>.
[227] Victoria State Government, Earth Resources, *Rehabilitation Bonds* (Web Page, 14 August 2020) <https://earthresources.vic.gov.au/legislation-and-regulations/guidelines-and-codes-of-practice/rehabilitation-bonds.
[228] NSW Government, Resources and Geoscience, *Rehabilitation Security Deposits* (Web Page, 14 August 2020) <https://www.resourcesandgeoscience.nsw.gov.au/miners-and-explorers/applications-and-approvals/mining-and-exploration-in-nsw/rehabilitation-security-deposits>.

An online rehabilitation cost estimation tool and handbook assists in calculating the total liability and associated security deposit.

Regular reviews and annual reporting of rehabilitation cost estimates are undertaken.

The deposit may be returned after evidence is provided to the regulator demonstrating that rehabilitation objectives and completion criteria have been met.

A separate 'Derelict Mines Program' deals with legacy mines.[229] Generally the responsibility for derelict mines lies with the landowner.

Queensland

The new *Mineral and Energy Resources (Financial Provisioning) Act 2018* (Qld) resulted in:

- a new Progressive Rehabilitation and Closure Plan[230] to describe the intended post-mining land use and rehabilitation techniques, and to set enforceable time-based milestones for rehabilitation actions;
- a new financial provisioning scheme and a 'scheme manager' (Queensland Treasury)[231] who assesses individual resource sites with regard to company financial risk and the site attributes. The scheme manager then decides if financial security is to be paid via a pooled fund (for very low, low or moderate risk companies), or surety (i.e. bank guarantee or insurance) for high risk companies. The pooled fund contribution is based on the estimate rehabilitation cost (using an online calculator) and company financial risk. Regular reviews are undertaken to ensure the estimates are up to date and accurate.

A separate abandoned mine lands program deals with legacy mines.[232] The program prioritises legacy mine rehabilitation projects which are funded via the interest generated from the pooled financial assurance fund.

[229] NSW Government, Resources and Geoscience, *Legacy Mines Program* (Web Page, 14 August 2020) <https://www.resourcesandgeoscience.nsw.gov.au/landholders-and-community/minerals-and-coal/legacy-mines-program>.
[230] Queensland Government, Business Queensland, *Progressive Rehabilitation and Closure Plan for Mined Land* (Web Page, 14 August 2020) < https://www.business.qld.gov.au/running-business/environment/licences-permits/rehabilitation/progressive-rehabilitation-closure-plans>.
[231] Queensland Government, Queensland Treasury, *Financial Provisioning Scheme* (Web Page, 14 August 2020) < https://www.treasury.qld.gov.au/resource/financial-provisioning-scheme/>.
[232] Queensland Government, Environment, Land and Water, *Abandoned Mine Management in Queensland* (Web Page, 14 August 2020) <https://www.qld.gov.au/environment/land/management/abandoned-mines/management>.

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