



**Department of State Development**  
**Resource Area Management and Planning**  
**Final Report**

July 2014

# Executive Summary

## Background

There has long been concern about the conflict that occurs when sensitive uses (such as housing) are located too close to mining activity. This is a particular issue for the mining activities that supply materials for the construction industry. These types of mines need to locate close to the market they serve (i.e. urban areas) in order to keep costs down to a reasonable level but this also means that they are more likely to experience encroachment as urban areas expand and surround them.

At the same time, there is growing concern about the potential for land-use conflict associated with other types of mining especially in regional areas. A recent example of a mining proposal on the Yorke Peninsula and a wind farm proposal in a similar location, highlights the potential for resource sterilisation in non-urban areas.

The Department of State Development commissioned the Resource Area Management and Planning project jointly with the Department of Planning, Transport and Infrastructure (DPTI) to investigate these issues and identify an approach that:

- Recognises the important local economic and public benefit of protecting mining operations that supply materials to the construction industry (especially housing and infrastructure);
- Recognises other types of mineral resources that make a significant contribution to the economy and employment opportunities;
- Identifies any current or proposed additional tools to establish a mining and planning system that protects potential future mineral resources and new operations by better managing the interface issues that can occur over time; and
- Identifies any current or proposed additional tools to assist the interface issues that occur with current operations where encroachment has already occurred.

## Key Observations

This project included a review of background information, relevant legislation and an analysis of six existing case studies. This information provided valuable background insight into the relevant impact and process issues.

These issues include:

- Even though mine tenement applications are not assessed by the planning system under the Development Act, (i.e. they are assessed under the Mining Act) there is a need to introduce a better system for recognising mining as a land-use and managing the interface issues between mining activity and land-uses that are sensitive to the impact of these activities.
- Once land is ‘zoned’ for an activity, it is very difficult to take action to avoid development unless there is funding to ‘buy up’ properties. Alternatively, attempts to ‘down zone’ land is often very difficult to achieve due to landowner opposition. This means that to improve outcomes, interaction between the mining and planning systems needs to occur at the strategic planning level (to provide guidance for zoning proposals).
- Both the land-use planning system and the environment protection policies tend to have the effect of ‘protecting’ sensitive uses regardless of what land-use was established first.

One way to limit the impact that sensitive uses can have on mining operations is to establish adequate separation distances at the earliest possible stage.

- Other than in exceptional circumstances and with considerable political commitment, there is little ability to undo existing situations where land-use interface issues currently occur (although there may be an ability to prevent further intensification of issues). The most practical option is to recognise that there is an interface issue and aim to manage expectations primarily through management practices and communication.
- Recognition of the potential impact of heavy vehicle transport routes is needed for not just the mining sector, but also for other transport-reliant industries that need to operate outside standard office business hours (e.g. to avoid heat in summer, 24 hour operations, seasonal peaks etc.). There is a need for better recognition of the strategic importance of these routes and land-use planning system recognition of interface issues so that sensitive uses can be better designed to cope with impacts.
- The planning system is not equipped to solve all interface issues as it can only prevent or limit land-use types and design techniques at a single point in time. This will minimise but not eliminate future interface issues. The Mining Act and the Environment Protection Act have the greatest ability to manage issues on an on-going basis. There will still be a need for good communication practices by operators, some level of monitoring and testing against environment protection policies and management of operations/behaviour.
- The Mining Act makes provision for addressing land-use conflicts at the time of seeking a mining tenement. This is an appropriate point in time when a decision can be made about land-use priority (whole of government perspective) and for that to be reflected in Development Plan policy.
- Based on the case study outcomes, every situation is different due to the influence of surrounding topography, nature of the mining operations and nature of the surrounding community. While there is some indication that an ‘interface consideration area’ of 500m is likely to capture most interface impacts, it is important to recognise that this should only be used as a guide and any future process should allow review and refinement of this on a case by case basis.
- There is a difference between aiming to manage interface impacts and complaints. While it is reasonable to aim to address the interface impacts, it is not realistic to assume that this will avoid all complaints. There will be an on-going need to manage complaints.
- While many mines have a long life, consideration should be given to the “mine closure process” so that the measures put in place to manage interface issues can be re-evaluated in the context of post mine uses and potentially removed.

## Key Outcomes Sought

Complementary changes to both the mining and development systems are needed in order to achieve the desired outcomes for the State. This is effectively an up-date of the systems to enable them to cope with increasingly complex and competing issues. This is essential in order to provide greater clarity and certainty for landowners, property investors and mining investors/operators.

A more collaborative approach to the planning and mining systems is needed. This approach should aim to address the majority of interface issues by achieving better mechanisms for:

- Interaction between the Development Act and the Mining Act at the strategic level to protect strategic mineral resources;
- Establishing better overall practices for dealing with interface issues.

- Recognising the presence of existing mines, mitigate potential interface issues as much as possible and avoid the intensification of existing interface issues via the planning system;
- Protecting new mines as they emerge and recognise them via the planning system;
- Ensuring that new landowners are notified of the presence of a mine; and
- Recognising transport routes that carry heavy vehicles and the interface issues that can arise.

The approach identifies three key scenarios, each of which require a slightly different approach but which are based on the following key principles:

- Information about strategic potential mineral resources needs to be included in the Planning Strategy in order to ensure proper consideration of interface and sterilisation issues through the whole of the land-use planning system;
- Interface areas need to be identified at the commencement of a new mine and adequate tools provided in both the planning and mining systems to supply information that enables proper decision making in relation to future land-use issues;
- Mines need to be recognised in Development Plans so that their presence as a land-use is acknowledged and taken into account in decision making (both for future zoning and development applications as well as in the application of Environment Protection policies).

### **Three key scenarios**

It is not possible to identify one system or one process that can resolve the issues for all situations that have or could have interface issues. The following highlights the need for a suite of actions/approaches depending on the situation.

#### **Existing operations**

The variation in context and issues revealed by the results of the case studies indicated that there is no single solution to existing situations. Each case needs individual consideration and tailored approaches both to the management of impacts and policy techniques for interface management.

All existing mines that are located in areas where there is a reasonable risk of encroachment or interface issues should be identified in Development Plans by an appropriate zone or similar land-use recognition technique. Interface areas, especially where other urban zoning is located within the interface area should be recognised using an appropriate policy tool (e.g. policy provisions or mapping) that:

- Enables an interface area to be identified according to the site specific characteristics; and
- Includes policy that enables a balanced assessment of interface issues at the development assessment stage.

This approach to the interface area recognises that it is not practical to implement an approach that may result in a 'down zoning' of affected properties.

As a by-product of this process, it would be of considerable benefit if the presence of the mine, and therefore the potential interface issues, could be identified at the time a purchaser is considering buying the land. This might occur in a manner that the presence of a mine is recognised as part of the Form 1 information under the Land and Business (Sale and Conveyancing) Act 1994.

## New applications for mines

The Mining Act makes provision for proponents to address existing land-use issues at the time that they are seeking approval to operate. In practice, this requires a proponent to address the impact of a tenement on the landowner's current activities. This represents an opportunity to address future land-use issues and 'draw a line in the sand' at this point in time.

However, in certain locations there may be a risk that surrounding land uses could change. This might introduce land uses that are sensitive.

As part of the Mining Act processes, a small amount of additional work could be undertaken to facilitate a change to the Development Plan that recognises both the presence of a new mine as well as any land-use agreements reached with existing surrounding land owners. In practice this would mean the establishment of a 'mining' zone that includes the recognition of an appropriate 'interface' area where necessary. This would trigger a referral to the EPA for a land division as a Schedule 21 item to enable more detailed impact assessment.

## Future Potential Mineral Resources Protection (30 year outlook)

There is a need to avoid future problems by identifying locations that are important for future mining. Since this could include an extensive area of land, there is a need to strategically prioritise the areas identified.

To do this, a high level, strategic planning exercise should be undertaken to identify important potential mineral resources that may also be at risk of sterilisation or are likely to be exposed to serious interface issues in the future. This is likely to occur in particular locations in the state where urban areas may expand or where major infrastructure could encourage investment in significant projects.

The Department of State Development and DPTI should work together to develop this plan and to identify specific mechanisms to ensure that this information is then included in the relevant volumes of the Planning Strategy. An appropriate consultation process is recommended to identify any current or potential land-use conflicts and resolve these prior to finalising any changes to the Planning Strategy.

## Recommendations / Actions

Complementary changes to both the mining and development systems are needed in order to achieve the desired outcomes for the State.

- Preparation of a strategic approach to potential mineral resources identification and reflected in the Planning Strategy.
- Undertake an audit of mining operations (especially those supplying construction materials) to identify whether they are experiencing or a likely to experience interface issues with a view to preparing suitable documentation for introducing policy/zoning for these operations.
- Undertake work to prepare a suitable policy tools that can identify and help to manage 'interface' areas (including for heavy vehicle routes).
- Explore the options to make a connection with the Land and Business (Sale and Conveyancing) Act 1994 so that the presence of a mine can be identified to inform potential purchasers.
- Investigate and document a system approach that enables the recognition of a mine and the interface area in the relevant Development Plan at the time a tenement is sought on the basis that the Mining Act makes provision for addressing land-use and land owner issues.

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# Abbreviations

<b>CCAA</b>	Cement Concrete and Aggregates Australia
<b>CCC</b>	Community Consultation Committee
<b>CFS</b>	Country Fire Service
<b>DAC</b>	Development Assessment Commission
<b>DPA</b>	Development Plan Amendment
<b>DPTI</b>	Department of Planning, Transport and Infrastructure
<b>EIA</b>	Environment Impact Assessment
<b>EML</b>	Extractive Mineral Lease
<b>EPA</b>	Environment Protection Authority
<b>KRA</b>	Key Resource Areas
<b>LGA</b>	Local Government Association
<b>PEPR</b>	Program for Environment Protection and Rehabilitation
<b>PIRSA</b>	Primary Industries and Resources SA
<b>PM</b>	Private Mine
<b>SACOME</b>	South Australian Chamber of Mines and Energy
<b>UDIA</b>	Urban Development Institute of Australia

## Document Update

This document has been updated since September 2013 to include refinements suggested as part of key stakeholder feedback.

# 1. Introduction

## 1.1 Context

Over the last few years, there has been growing concern about the impact that residential development has on the operation of agricultural, horticultural, industrial and mining activities. This has become of greater concern with the expansion of suburban Adelaide and, to a lesser extent, “tree change” and “weekender” lifestyle patterns which has a tendency to increase demand for housing in non-residential areas.

The potential for conflict between housing and mining activities has been a particular concern especially in relation to extractive or construction mining operations. These operations mine the materials that are needed on a day-to-day basis to support our cities and their construction and maintenance. They supply products such as concrete, cement, sand, bricks and rubble for road base. These materials are needed for hospitals, schools, road and bridge construction, housing construction, renovations etc.

There has been a long history of issues arising when residential developments (or other sensitive uses such as child care centres, schools or aged care facilities) locate too close to mining operations. This is evident at locations such as Linwood Quarry, Marino and the Golden Grove Quarries. A report was also prepared in 1999 to highlight these issues. However, there has been little progress in resolving these issues within either the planning or the mining systems. In addition to this, there may be a need to ‘protect’ important potential resources from development if we wish to have access to materials for building and repairs in the future.

This issue is not new and the “30 Year Plan for Greater Adelaide”<sup>1</sup> has a mining and resources target of “protecting 23,200 hectares of land for extraction uses”. It also states “maintain adequate access to known mineral deposits and minimise potential land-use conflicts between incompatible uses, particularly residential. Preserve appropriate separation distances between mining activities and residential areas and other incompatible developments”.

## 1.2 Aim of this Project

The Resource Area Management and Planning project aims to investigate planning and mining issues, and the legislative systems that relate to these, to identify whether a better outcome can be achieved for both mining activities and the adjacent land-uses. The project considers resource areas in the Greater Adelaide Region and the State’s major regional centres.

This project takes into account all types of mining, particularly where mining may occur in locations that have a high risk of encroachment. In practice, extractive mining tends to experience this issue to a greater extent due to the need for these resources to be sourced close to the markets they serve. Achieving a better balance in managing land-use interface issues contributes to the significant local economic benefit of construction materials to the State and the associated public interest.

The project aims to assess the planning and resource development interface issues of six example mines in South Australia; Kanmantoo Mine, Linwood Quarry, Kapunda Quarry, Para Hills Quarry, Penrice Quarry and Victor Harbor Quarry.

Extractive and other forms of mining is important to the State’s economy, however there are constant interface issues between the mines and incompatible developments which, as a result of many cumulative factors, are developed too close to operations.

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<sup>1</sup>Government of South Australia, Department of Planning and Local Government, 2010

The major contributors to the interface issues are:

- Urban encroachment due to the disconnect between planning and mining systems.
- Intensification of existing land-uses that are sensitive to resource operations, in already established or zoned urban areas (e.g. one block subdivided for two or more dwellings).
- The need for development in the Greater Adelaide Region and major regional centres versus the need for existing and future resource operations whilst upholding the importance of community health, safety and wellbeing.

The following adverse impacts can be expected if unsuitable development encroaches on established mining operations:

- Interruption and/or discontinuance of the extractive mining process resulting in delays and increased prices, with a follow on effect that impacts not only the economic viability of individual mines but also the entire industry and therefore the State's economy.
- Undue effects on community health, safety and wellbeing.
- Environmental disruption caused by premature closure of a mine.
- Non-compliance of resource operations with legislation and industry standards.

With this in mind, the project aims to identify a more collaborative, strategic approach to the operation, planning and development of current and future extractive industries within the context of facilitating the development of resources, as well as planning for urban growth.

- Resources mined from extractive quarries are vital to urban development. Each year a large amount of construction materials e.g. concrete, crushed rock aggregates, sand and clay are used for building new houses and commercial developments as well as for building and maintaining footpaths, roads, hospitals, schools, rail and ports.
- Due to increased pressure on urban development, many of the existing quarries are experiencing issues due to the encroachment of urban development, without proper regard for the operations and impact of mining industries.
- In order to maintain supply of construction materials from resource areas at a reasonable cost to end users, it is vital that potentially incompatible development, such as residential development, is identified and managed throughout planning processes.
- The project focuses on the interactions between urban development and the mining industry, particularly focusing on the extractive industry. Other land-use conflicts, such as agricultural land-uses, are not within the scope of the project.
- The project develops a strategic approach to plan for resource areas to prevent long term conflicts between mining activities and sensitive land-uses.
- A key objective of this project is to develop an approach that ensures adequate information is provided at relevant stages of the land-use planning system in order to put preventative measures in place using tools established under the Development Act.
- The project looks at how the Mining System could be utilised to facilitate and support the use of planning system tools and better communicate on-going issues to protect mining operations.

In order to do this, the project will identify current management and land-use issues associated with resource areas and the interface with the planning system. It will identify a more collaborative and improved strategic approach to the operation of resource areas and the planning system, within a broad land-use framework. Finally, it will provide a planning framework that can be applied to the future operation and land-use assessment of resource areas in the Greater Adelaide Region and major regional centres.

Consequently the following outcomes are intended as a result of this plan:

- The long-term sustainability of significant resource activities.
- Continued growth in urban development, which in turn supports extractive industries.
- Community health, safety and wellbeing maintained to the highest standards.

### 1.3 Participants

This project has been guided and managed by a joint Steering Group comprising representatives of the Department of State Development and DPTI.

Issues identification, guidance and feedback has been provided by a Reference Group that included representatives from: the Department of State Development, DPTI, Urban Development Institute of Australia (UDIA), Environment Protection Authority (EPA), Local Government Association (LGA), Cement Concrete and Aggregates Australia (CCAA) and South Australian Chamber of Mines and Energy (SACOME).

The project team would also like to thank the representatives of the six case study sites who provided additional information on the mining activity and operations.

### 1.4 Purpose of this report

This report is a summary of the findings of the investigations undertaken as agreed with the client. The report provides advice and recommendations on how to improve interactions between the SA planning and mining systems. It makes suggestions as to how both the planning and mining systems might be better used to manage interface issues. The six case study sites have been used as typical examples of how planning system techniques might be utilised and are accepted to be a reflective representation of the broader industry.

It is understood that the report will form the basis of further discussion and decision making with regards to any next steps toward implementation.

## 1.5 Scope and limitations

*This report: has been prepared by GHD for Department of State Development and may only be used and relied on by Department of State Development for the purpose agreed between GHD and the Department of State Development as set out in section 1.4 of this report.*

*GHD otherwise disclaims responsibility to any person other than Department of State Development arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.*

*The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the contract and are subject to the scope limitations set out in the contract.*

*The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.*

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## 1.6 Exclusions

This study has not included an evaluation of the current practices associated with the initial assessment and establishment of mines. The management of existing land-use rights, the consideration of environmental, economic and social impacts and the process for determining whether a mine should be established and how it operates is a major focus for the Department of State Development.

This study focuses on the practices that occur:

- In order to protect future potential mineral resources.
- Following a decision to approve a mine operation.

## 2. Background

### 2.1 Issues Summary

There are three types of commodities mined in South Australia: extractives, industrial minerals and metallic minerals. The following discussion places an emphasis on extractives, although it is recognised that other types of mines can experience similar problems with encroachment.

Extractive mining is of key importance to the South Australian economy as it provides construction material for infrastructure and the building industry. The industry is constrained by fixed geology. To be economically viable, the extractive mines need to be located within close proximity to their user market to reduce transportation costs (a major component of overall costs). This means that the mines need to be located near to urban areas (transportation costs are not as significant to the viability of industrial and metallic minerals mining).

The Department of State Development has compiled a list of Significant Mining and Resource Areas for the State which identifies 76 extractive, 5 mineral and 9 industrial mines operating in the Greater Adelaide Region. This indicates how significant the extractive mining industry is in South Australia.

The following have been identified as being of strategic significance to the State, as they are directly relevant to the construction industry:

- Crushed stone aggregate (carbonates (include limestone and dolomite), and quartzites);
- Construction sand; and
- Clay for brick making.

Furthermore, alternative reserves are not yet readily available.<sup>2</sup>

Consequently, there are growing concerns within the extractive mining industry over the conflicts between extractive industries and residential development as a direct result of:

- More intense urban development moving closer to established mines/quarries. In some instances, land has been rezoned for urban use near operating quarries and known resources. This has occurred historically at Golden Grove, Linwood (Seacliff Park/Marino) and to a lesser extent Victor Harbor.
- Intensification of land-use types which are sensitive to mining operations within established or zoned urban areas. An example of this is the residential development adjacent the Linwood Quarry.
- There is also concern that intensification of residential development could lead to compounded impacts e.g. semi-detached dwellings replacing single dwellings as a consequence of the Residential Code with respect to complying development under Schedule 4 of the Development Regulations 2008.<sup>3</sup>

This then results in unacceptable environmental conditions for the urban development that surrounds the extractive activity and causes a reduction in economic and operational viability to the activity.<sup>4</sup>

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<sup>2</sup> Kinhill, Extractive Industries and Land Use Planning Project, 1999

<sup>3</sup> Department of Planning and Local Government, 2009

<sup>4</sup> Kinhill 1999

The following list outlines impacts caused by extractive industries that are likely to impact on nearby urban development:

- Noise (blasting, mechanical processing and heavy vehicle traffic)
- Safety
- Dust
- Blast vibration
- Visual quality
- Air quality
- Stormwater
- Hazards (e.g. flyrock).

Critical factors which influence the level of impact on urban development are:

- The geological conditions which determine the locations of operations, the mining process and the distance that the blast vibration could be transmitted;
- The surrounding topography and the location of other development relative to the source of the impact;
- Ongoing management procedures and standards such as operating times, behaviour management and site planning.<sup>5</sup>

The degree to which these impacts can affect adjacent land-users fundamentally depends on the adjacent land-use. Some uses, such as residential development and aged care, would have a high degree of sensitivity. Whereas it is expected that rural uses, industry and conservation areas would be less sensitive, however this would be case specific.

Linwood Quarry and the Golden Grove operations provide clear examples of the issues that arise when urban development occurs without proper regard for the operations and impacts of mining activities. In both of these cases the on-going tension between the mining activities and the expectations of residents has resulted in the adoption of less efficient mining practices, adoption of buffering techniques, operational complications and loss of access to materials. This means that alternative sources need to be identified sooner, but the alternatives are not as well situated relative to the markets they need to serve. This adds to the cost of supplying materials for housing and infrastructure projects and hence the overall cost of these developments.

In both of the cases indicated above, the mining operations were established well before the urban area expanded. Subsequently, decisions were made to allocate land for urban purposes. It is at this point that it is critical that adequate consideration is given to the potential for land-use conflict and the specific measures needed to protect both the mining operations and the amenity and safety of nearby users.

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<sup>5</sup> Kinhill, 1999, p44

## 2.2 Legislative Context

The following provides an overview of the key legislation that is most relevant to this project. In addition, consideration has also been given to other, related legislation that might support or influence an improved methodology. The core legislation includes:

- The Mining Act 1971 (it is noted that there is other legislation that addresses various forms of mining, however the Mining Act 1971 is the most relevant to the focus of this project);
- The Development Act 1993; and
- The Environment Protection Act 1993.

The Mining Act is responsible for the assessment, operation and compliance of mining activities including extractive industries. As outlined in the Act, mining cannot take place (except by agreement) on “exempt land” which is defined by Section 9. This includes land within 400 m of a residence that exists at the time a mining operation is seeking to establish. The Mining Act has limited ability to influence the decisions associated with other types of land-uses.

The Development Act provides strategic direction for land-use and controls most forms of development and land-use activity. The Act does not address mining development directly with the exception of a few references to ‘private mines’ (see below). However the Development Act, through the development assessment process, can control the surrounding uses, and how they are situated relative to the mining activity.

The Environment Protection Act is primarily responsible for addressing current or potential environmental impacts, and has a pollution prevention role.

### Private Mines

Prior to the commencement of the Mining Act in 1971, the ownership of minerals was vested in the landowner. With the inception of the Act, the ownership of minerals was vested in the Crown. For a short period following the commencement of the Mining Act, those persons who had previously owned the minerals associated in their land, and had commenced mining operations, were given the opportunity to apply for a ‘private mine’ enabling them to retain control of those minerals and removing the requirement to obtain a mining lease. Each private mine was declared by proclamation by the Governor and has no expiry date.

To facilitate this transition, the land-use planning system made provision for the assessment of these private mines and now contains references to ‘private mines’. In the past this has created some confusion about how private mines are addressed and the relationship between the Development Act and the Mining Act.

This confusion has largely been rectified over time and, in practice, the Mining Act is responsible for all forms of mining tenements and the operation of the mines associated with these.

### 2.2.1 Mining Act 1971

The Mining Act establishes an operating framework for the assessment, management and control of mining operations in the State by:

- Enabling the definition of mineral land and vesting this in the Crown
- Making provision for the payment of royalties for the extraction of minerals
- Establishing an orderly system for prospecting, exploring, and mining (including an application system for leases and licences associated with these activities)
- Establishing a system for managing the on-going operation of a mine in terms of production, environmental impact and rehabilitation.

The approvals process under the Mining Act is summarised in Figure 1.

Until relatively recently, private mines were excluded from the Act. Part 11B now acknowledges private mines and establishes separate processes and arrangements for on-going operation, management and compliance. It is important to note that this Part of the Act requires the preparation of "Mine Operation Plans" which establishes the operational and compliance conditions of the mine. This Part also specifies the need to be consistent with any requirement of the Environment Protection Act 1993.

No new private mines will be approved, which means that, in general, all new mine tenements will conform to the current legislative requirements of the Mining Act (including the requirement to prepare a Program for Environment Protection and Rehabilitation (PEPR)).

An important aspect of the Mining Act relates to Section 9 which exempts certain types of land from mining operations. This includes land within 400m of a house, cultivated land, public infrastructure and forest reserves. Mining cannot occur unless a landowner has 'waived' their rights. The Act also makes provision for landholder compensation paid to the original landowner who agreed to the waiver. Compensation is not paid to subsequent landowners.

When considering whether to grant a mining lease, the Act makes provision for the Minister to consider a range of environmental, economic and social issues and the appropriate process for assessment (which can include an environmental impact assessment process as set out in the Development Act). This also includes consideration of other lawful activities that may be affected (Part 6, 34(6)(b)).

These aspects are important as it highlights that the Mining Act makes some provision for the resolution of landuse conflicts at the beginning of a mining operation.

The following provides an outline of PEPRs, MARPs and MOPs. PEPRs are the new MARPs. MOPs relate to private mines (historical construction material mines).

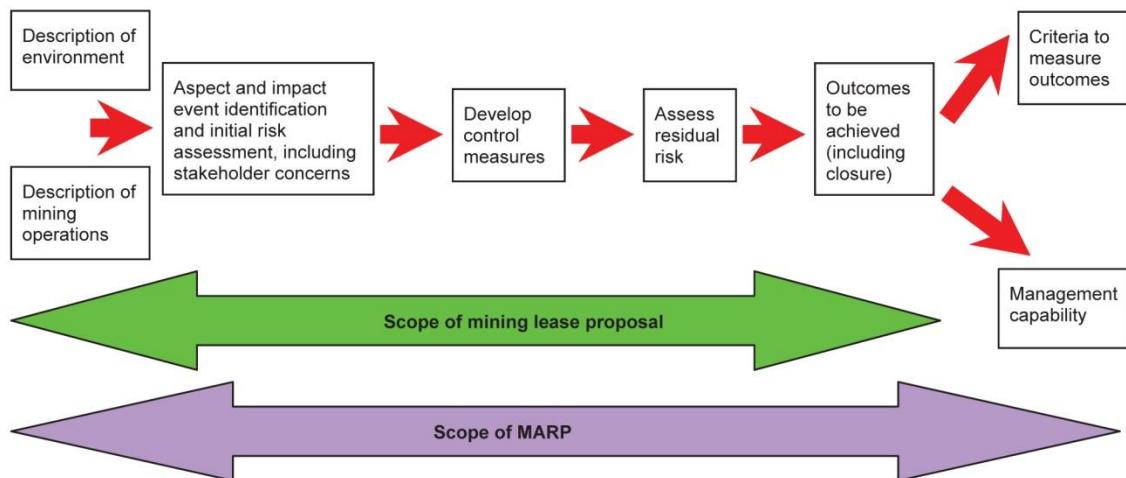
#### ***PEPR (previously MARP)***

- To comply with lease conditions a Program for Environment Protection and Rehabilitation (PEPR) is required to be submitted and approved by the Minister before mining may commence.
- The provision for a PEPR under the amended Mining Act commenced on 1 July 2011. This replaced the regulation under the Mining Act relating to the requirement for a Mining and Rehabilitation Program (MARP).
- The difference between a PEPR and a MARP is that the content for a PEPR is legislated in the amended act whereas specific content of MARPs was previously established through guidelines.

- The PEPR sets out an integrated approach to managing all the stages in the life cycle of the mine, including its closure and completion.
- PEPR should:
  - set out appropriate environmental standards (objectives) for operation of the mining lease
  - set out appropriate strategies and procedures to operate the lease in a way that will meet those environmental standards.
- Draft PEPR assessed by the Department of State Development
- The Department of State Development will consult with all persons likely to be directly affected by the proposed operation. The Department of State Development also have an obligation to provide an assurance to the public generally that the environmental standards are being met.
- Guidelines for developing PEPRs are in preparation therefore PEPRs should follow the guidelines currently set out for MARPs

Sourced from the Department of State Development Minerals, Programs for Environment Protection and Rehabilitation,

[http://www.pir.sa.gov.au/minerals/licensing\\_and\\_regulation/mining\\_operations/mining\\_and\\_rehabilitation\\_programs\\_marps](http://www.pir.sa.gov.au/minerals/licensing_and_regulation/mining_operations/mining_and_rehabilitation_programs_marps)



Source: Guidelines for miners: preparation of a mining lease proposal or mining and rehabilitation program (MARP) in South Australia, Minerals Regulatory Guidelines MG2 /V 4.11, January 2011 Mining Act 1971, p.7.

### **MOP – Mine Operations Plan**

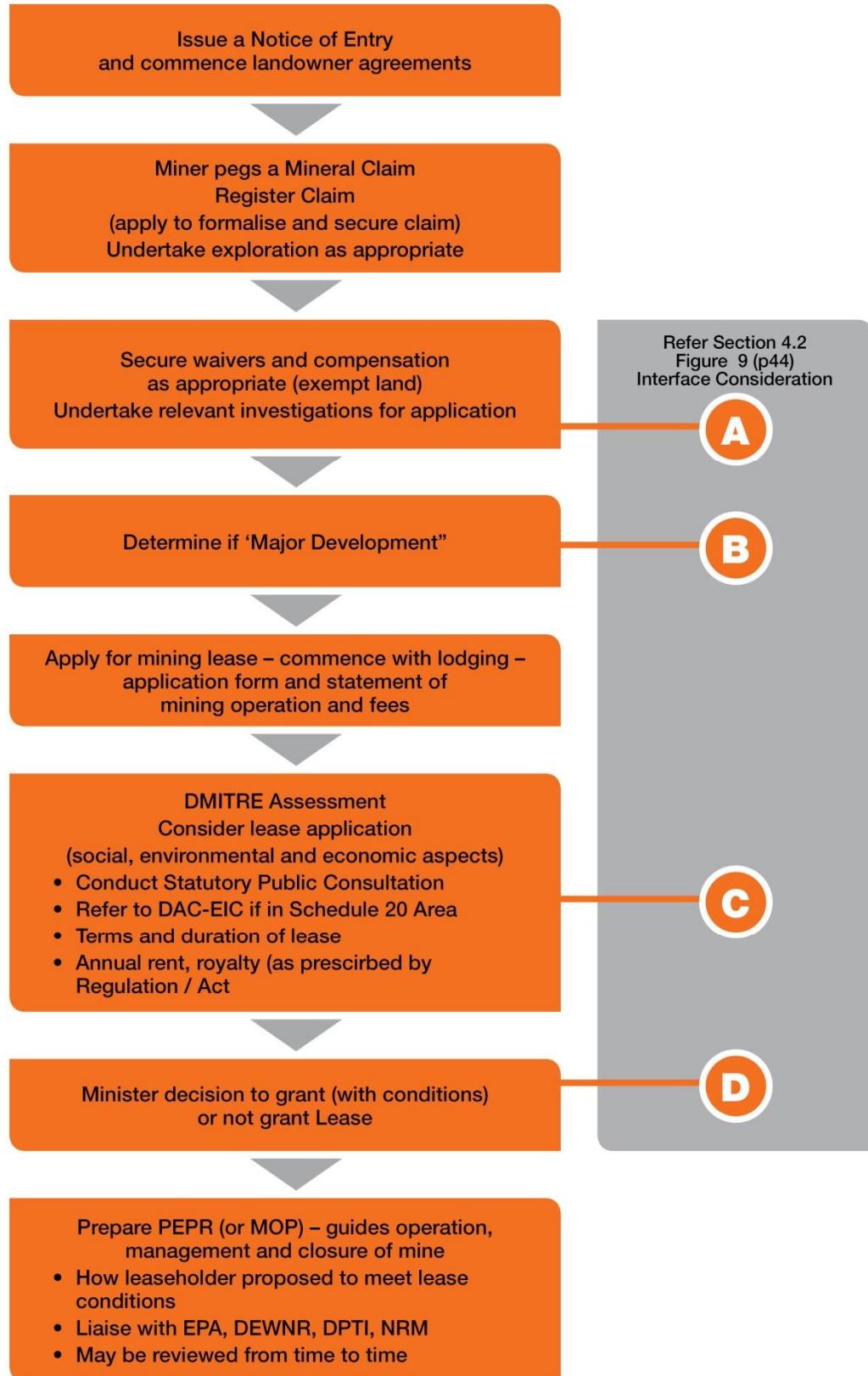
Part 11B of the Mining Act sets out the provisions relevant to Private Mines (Section 73C to 73R).

- A MOP is a statutory document (requirement of Section 73G(1) of the Mining Act) that sets out objectives and criteria for mining operations.
- Mines can only be operated if a MOP relating to the operations is in place and complies with the legislation. (Unless otherwise approved by Director of Mines).
- The Focus of a MOP is to identify and demonstrate that the mining operators have addressed the key issues associated with the particular operation.

- The MOP must comply with statutory requirements of section 73G of the Mining Act:
  - And include a set of approved completion objectives and criteria; and
  - Be consistent with environment improvement programs or environment protection policies under the Environment Protection Act 1993 and Mining Act.
- The contents of the MOP must meet the specific requirements of regulation 80 of the Mining Regulations 2011 and include:
  - Description of the environment;
  - Description of mining operations;
  - Objectives for managing potential impacts on the environment for both construction and operation of the mine;
  - Objectives for final rehabilitation, site closure and future use of the site;
  - Emergency response actions; and
  - ‘criteria for measuring achievement of the objectives.
- Part 11B of the Mining Act and Mining Regulations sets out how to prepare a MOP.
- The MOP developed should be ‘fit for purpose’ avoiding unnecessary detail.
- The whole-of-mine life must be considered in development of a MOP.
- MOP should describe the state of the mine site at completion of mining operations.
- Transitional MOPs are development programs generated in the 7 year interim period beginning on 1 March 2001.
- For MOPs on operations comprising private mines and other mining tenements, it is also a statutory requirement that the recovery of minerals on mining leases be conducted in accordance with a Program for Environment Protection and rehabilitation (PEPR).
- Where a mining operation comprises private mine(s) and a number of different mining tenements (extractive mineral leases, mineral leases, miscellaneous purpose leases etc.), the Department of State Development recommends that a single document that encompasses the entire mining operation is produced and approved by the Department of State Development as a MOP and PEPR for the various private mines and mining leases that comprise the operation.
- If a draft MOP relates to **new operations** to be carried out at a private mine, the **objectives** and **criteria** sections must be released for public **consultation** in accordance with the section 73G(9) of the Mining Act and regulation 81 of the Mining Regulations.
- The MOP:
  - may be reviewed at any time by the mining operator or anyone intending to be a mining operator of the site;
  - must be reviewed at the direction of the Director of Mines which may be given at any time and for any reasonable cause;
  - must be reviewed within 7 years after the approval or last review of the plan; and
  - It is the mine operator’s responsibility to review the MOP if any new environmental **risk** is identified.

The following was sourced from ‘Minerals Regulatory Guidelines MG12 /Version 1.4, May 2012 Mining Act 1971 and Mining Regulations 2011’ pp.8-10.

Figure 1 Simplified Process – Mining



## **Development Act 1993**

The Development Act 1993 establishes a land-use planning system and a system for the application of the building rules. The Act also establishes decision making and advisory bodies to facilitate the application of the system. For the purposes of this project, the following is focused on the land-use planning aspects of the Act.

A summary schematic of the land-use planning system is shown overleaf in Figure 2.

The Act conceptually establishes three levels of planning and makes provision for various processes and procedures associated with each level:

- Strategic planning – by establishing the “Planning Strategy” (which can include a number of volumes) and processes for its up-dating and review (including consultation).
- Policy planning – by establishing “Development Plans” (which collectively cover the whole of the state) and processes for review and amendment (including investigations and consultation).
- Development Assessment – by establishing the requirement for “development” to be assessed and specifying the processes and procedures for application and assessment.

Development is defined by the Act and includes: a change in the use of land, building work, land division etc. - certain matters are specifically excluded (e.g. a mining production tenement). A fundamental principle of the Development Act is the notion of land-use where Schedule 1 of the Regulations provide a list of land-use types (a change of land-use is included in the definition of development).

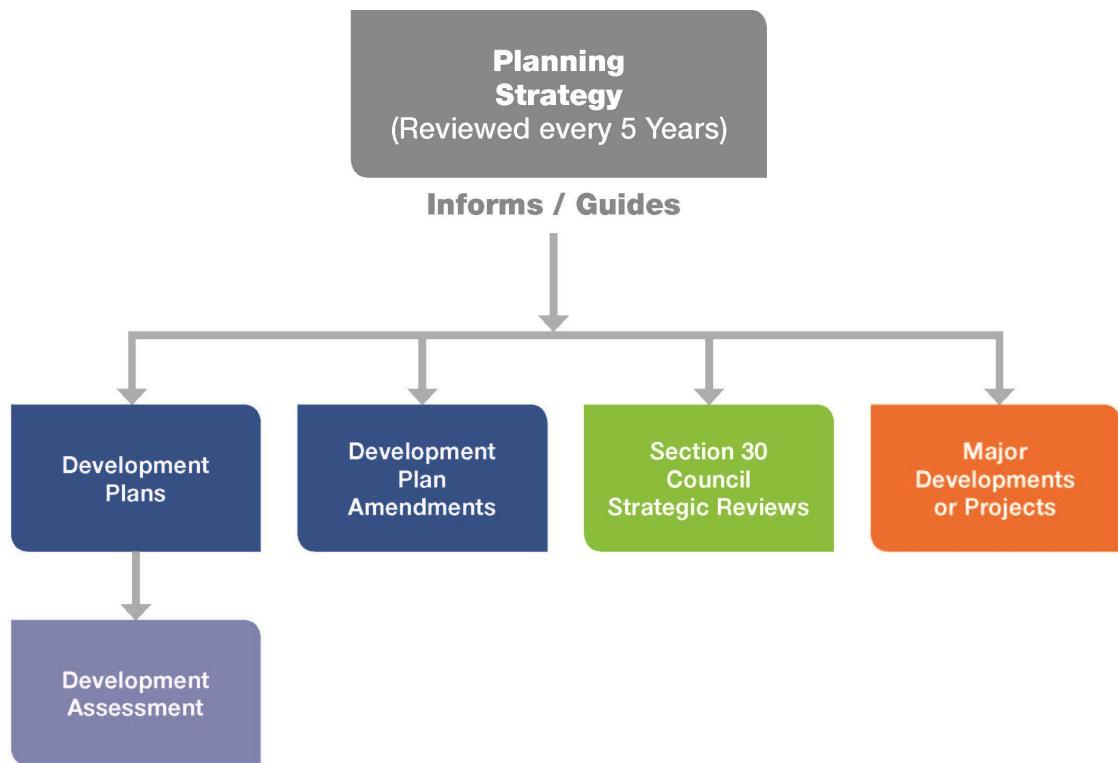
The following principles are also established by the Act:

- Strategic planning directions are intended to inform Development Plan policy and this then guides decisions with respect to development applications.
- Procedures are established to review and up-date strategic and Development Plan policy on a 5 year cycle.
- Only a Council or the planning Minister may formally amend Development Plans via a ‘Development Plan Amendment’ process. Prior to any amendment, the scope of change, investigations and consultation is agreed.
- The assessment processes is determined by the relevant Development Plan in conjunction with the assessment procedures described by the Act, (complying, non-complying, merit/consent), the level of public notification referral arrangements; from none through to limited or full public notification (Category 1, Category 2, or Category 3 respectively).
- Assessment considerations must be based on the relevant Development Plan and the policy contained within.

An underlying principle for the referral arrangements is the intention to facilitate an integrated approval system. This means that where development may require approval under more than one Act, the Development Act referral system aims to facilitate early comment from the other relevant authorities as part of the assessment process. The aims to avoid a situation where the land-use may be approved but a subsequent licence is not approved or an activity breaches a legislative requirement.

It is important to appreciate that the Development Act does not enable retrospective consideration of previous decisions. Also a decision is made on the facts at a single point in time, which means that there is little ability for consideration of issues that may extend over a period of time, such as on-going management arrangements.

Figure 2 Simplified Process – Land-use Planning



### ***Environment Protection Act 1993***

The Environment Protection Act 1993 establishes a regulatory framework to protect South Australia's environment (including land, air and water). It also established the Environment Protection Authority and its powers. This legislation is administered using a suite of legislative and non-legislative policies and regulatory tools to address environmental issues.

In general terms, the ability of the Act to protect and manage environmental impacts relies on two key elements:

- A general duty of care (which is then further defined and guided by policies and guidelines) [Section 25—General environmental duty (1) *A person must not undertake an activity that pollutes, or might pollute, the environment unless the person takes all reasonable and practicable measures to prevent or minimise any resulting environmental harm.*].
- Requirement for listed ‘activities’ (Schedule 1—Prescribed Activities of Environmental Significance) to be licenced and to meet the conditions of their licence.

It should be noted that the Environment Protection system is based on the identification of certain types of “activities” that describe operations, processes or uses that may have a tendency to “pollute” or be a potential source of pollution. Schedule 1 of the Act lists these activities (e.g. incineration, piggeries, railways etc.) including the size or scope of activities that are captured.

The Environment Protection Act does not apply in respect to wastes produced in the course of an activity (not being a prescribed activity of environmental significance) authorised by a lease or licence under the *Mining Act 1971*.

The Act enables the establishment of “Policies” to provide additional guidance on key issues. These ‘polices’ are subordinate legislation and carry far greater power and weight than Development Plan policies generally. The *Environment Protection Policies* provide a ‘benchmark’ to determine where or when an activity may exceed a duty of care with respect to not polluting the environment.

The *Environment Protection (Noise) Policy 2007* sets a benchmark for the application of the Environment Protection Act. However, in practice this policy sets a more general benchmark and is used to provide guidance in a range of situations. It is noted that noise from blasting operations carried out as part of a mining operation within the meaning of the *Mines and Works Inspection Act 1920* or *Mining Act 1971* is specifically excluded from the formal application of the policy but other aspects of mining operations can be included.

It is important to note that this policy includes a concept of a ‘principal’ land-use. The measure of whether a land-use is ‘principally promoted’ is based on Development Plan policy provisions.

The Environment Protection Act also makes provision for the preparation of other less formal guidelines. An important document relevant to this project is the “Guidelines for Separation Distances” (December 2007). This is an important land-use planning/impact management tool but it is important to stress that the guidelines distances are only guidelines as location conditions can have a consideration impact on the nature and extent of potential impacts. This document is summarised in more detail in the next section.

## 2.2.2 Interactions between the Acts

The following table sets out the specific reference in the Development Act, 1993 that set up interactions between the land-use planning system and the mining system and the EPA.

Legislative Reference*	Topic	Note
Part 8, Special Provisions Relating to Mining <b>S75 (Act)</b>	Mining Production Tenements	Makes provision for the mining Minister to refer tenement applications and public submissions to the planning Minister under certain circumstances (listed in Schedule 20 – refer below)..  This also enables the consideration of whether a major project process is warranted.)
Comment		<i>In effect this Section provided a link to enable coordination with respect to Private Mines. When a matter is referred the Extractive Industries sub-committee of the Development Assessment Commission (DAC) reviews and provides advice to Minister.</i>  <i>It also offered a mechanism for a mine proposal to be assessed via an environmental impact assessment process (an EIS or a PER process). In practice this rarely occurs.</i>
Part 14, S84 <b>(Regulation)</b>	Mining Production Tenements	Describes the detail of the process associated with S75 of the Act (above)
Schedule 20 <b>(Regulation)</b>	Mining Production Tenements	Lists the areas that will trigger a referral under S75 of the Act. These include areas such as: Adelaide and Environs (effectively metro area); the Coast; specifically identifies open space and conservation areas.

Legislative Reference*	Topic	Note
Schedule 8 <b>(Regulation)</b>	Referrals and concurrences	<p>Items 7 (Mining – General) and 8 (Mining Extractive - Industries) both provide for a referral to the mining Minister. Both have a period of 6 weeks and allocate a power of Direction.</p> <p>Item 7: refers to development within a zone or area designated for a mineral resource</p> <p>Item 8: refers to development within an “Extractive Industry” or “Extractive Industry (Deferred)” zone or area</p>
Comment		<i>The reasoning for having two referrals is not clear but may have a historical connection to the private mine issue identified previously in the Chapter. If this is the case then there may be scope to review and up-date this referral.</i>
Schedule 8 <b>(Regulation)</b>	Referrals and concurrences	<p>Item 10 (b) provides for a referral to the EPA with provision for a period of 4 weeks and “regard”.</p> <p>This is linked to Schedule 21 – Land Division creating 1 or more allotments within 400 metres of an “Extractive Industry” or “Mineral Extraction” zone.</p>
Comment		<i>It is noted that this referral uses a 400 m trigger (as opposed to the EPA separation distances).</i>

\***Act** denotes a Development Act reference and **Regulation** denotes a Regulation reference

Some aspects of the relationship between the land-use and mining systems appear to be a little out-dated. The referral under S75 of the Act might better be addressed through a strategic planning exercise where high level, government decisions about what type of land-use should prevail can be decided strategically rather than in response to a specific tenement application.

The referral arrangements raise a number of issues and questions:

- The referral to the mining Minister only captures development within the zone, policy area or designated area. This is possibly useful to prevent development in the zone that may sterilise a future potential resource. However, the mining zone policy should already make incompatible development non-complying. In this context it is questioned how useful or relevant this referral is in practice;
- It is argued the that a mining type zone or area should only apply to the extent of the mining activity area and not include ‘interface consideration areas’. If this is the case, the referral arrangements make only limited provision for assessing potential land use interface issues;
- The referral to the EPA is only for land division and only in relation to the specific zones that are named. Should this be amended to recognise that Development Plans are more varied than this (i.e. they use different zone titles)?
- The EPA referral states a distance of 400 m. Should this be amended to reflect EPA separation distances?
- The SA Planning Policy Library establishes only one zone option being a “Mineral Extraction Zone”. Is there a need to ‘align’ referral references?

### 2.2.3 Separation Distances, Exempt Land and Buffers

Across the planning, mining and environment protection systems there are various references to "distances". For those operating outside the Government system, these distances can become confusing. The investigations undertaken for this project have highlighted that each of these 'distances' serve an important but different purpose.

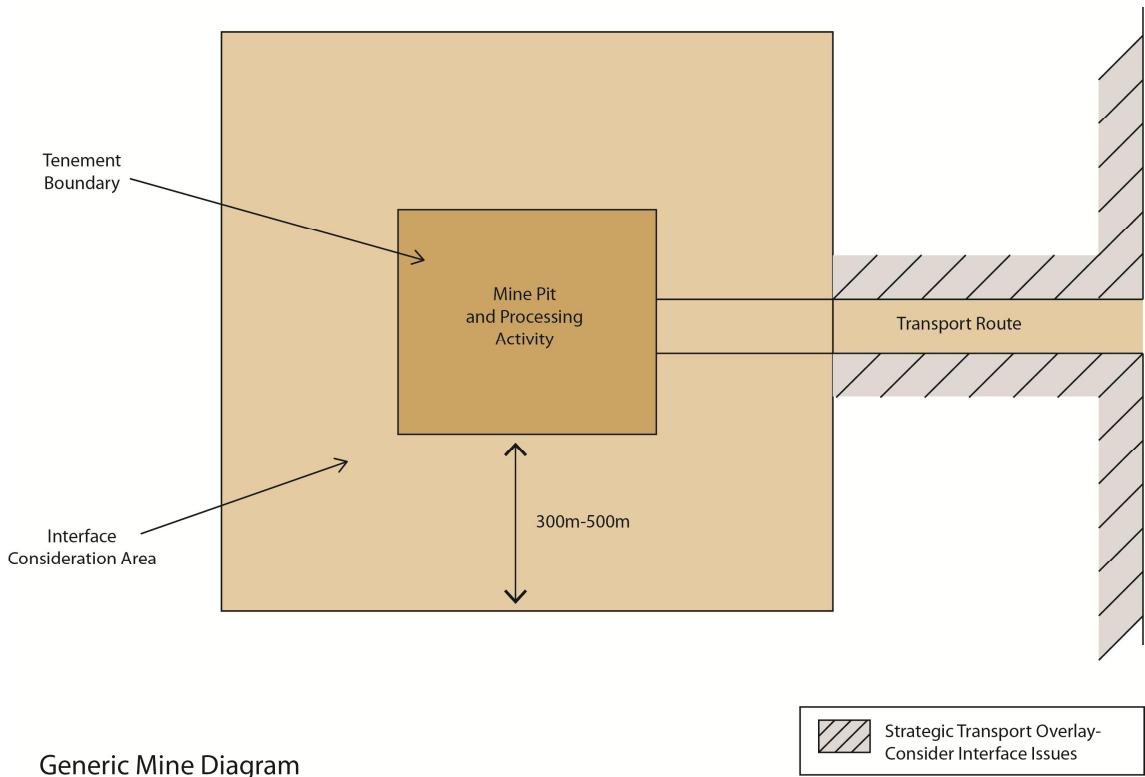
- The Mining Act makes reference to a 400 m distance from a dwelling. This relates to the exempt land provisions. The basis for this figure is not known, but it is used as a means of addressing the impact of a proposed mine on the lawful existing use of land. This is a starting point for negotiation with land owners and is linked to a compensation system. This is applied at the very early stages of the commencement of a mining operation.
- The EPA separation distances are guides that relate to the potential risk of an impact occurring. The distances used are a generalised indicator of the potential for impact and are a starting point for the evaluation of particular aspects/impacts of a mining operation and the area that might be affected (300m-3km). The EPA separation distances make a distinction between operations that involve blasting and those that do not as a reflection of the likely potential impacts.

There is a need for an additional type of distance guide to facilitate 'triggers' in the planning system. Such a distance needs to consider land use interface issues covering both environmental impacts (e.g. noise, dust) as well as amenity issues (e.g. visual impact). As with both of the above, this can only be a guide, and site specific features may determine that this guide be increased or decreased. Such a planning system guide would act as a trigger for the various tools available to manage the majority of interface issues.

The following Section 2.3.2 summarises the findings of the '*Urban Growth Management for Metropolitan Adelaide*' report which highlights that a distance of around 500 m 'captures' the majority of complaints for hard rock quarries. Although it is acknowledged that there are often exceptions due to site specific circumstances.

Based on the work undertaken previously and having regard to the other distance guides, an "interface consideration area" of between 300 and 500m is regarded as an appropriate distance range for planning purposes. The specific distance would be set based on the site context and the nature of the mining operations.

Figure 3 Generic Mine Diagram



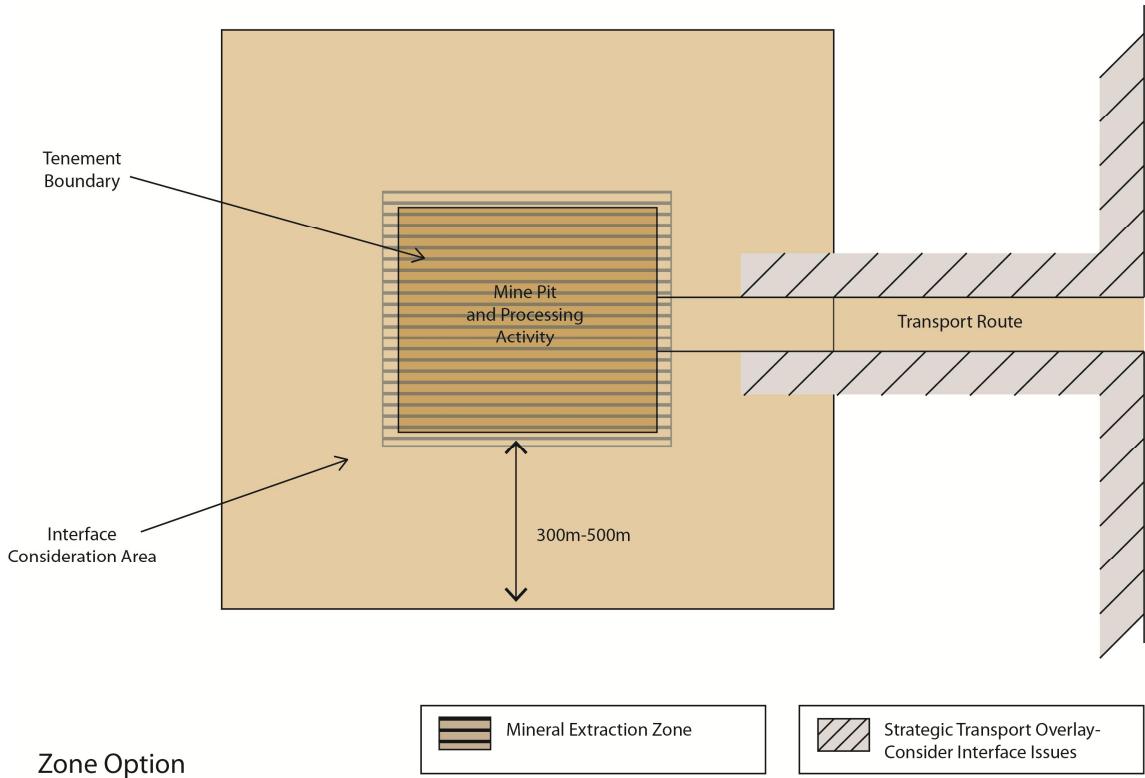
It is important to acknowledge that this is a planning “interface consideration area” that acts as a guide for the consideration of proposals (zoning change or development applications). The term has been selected to convey a message that development need not be automatically excluded, but consideration needs to be given to how interface issues can be managed and the extent to which they could impact on either the existing use or the proposed use.

An ‘interface consideration area’ should be tailored depending on the site specific circumstances, such as topography, climatic conditions and mining techniques.

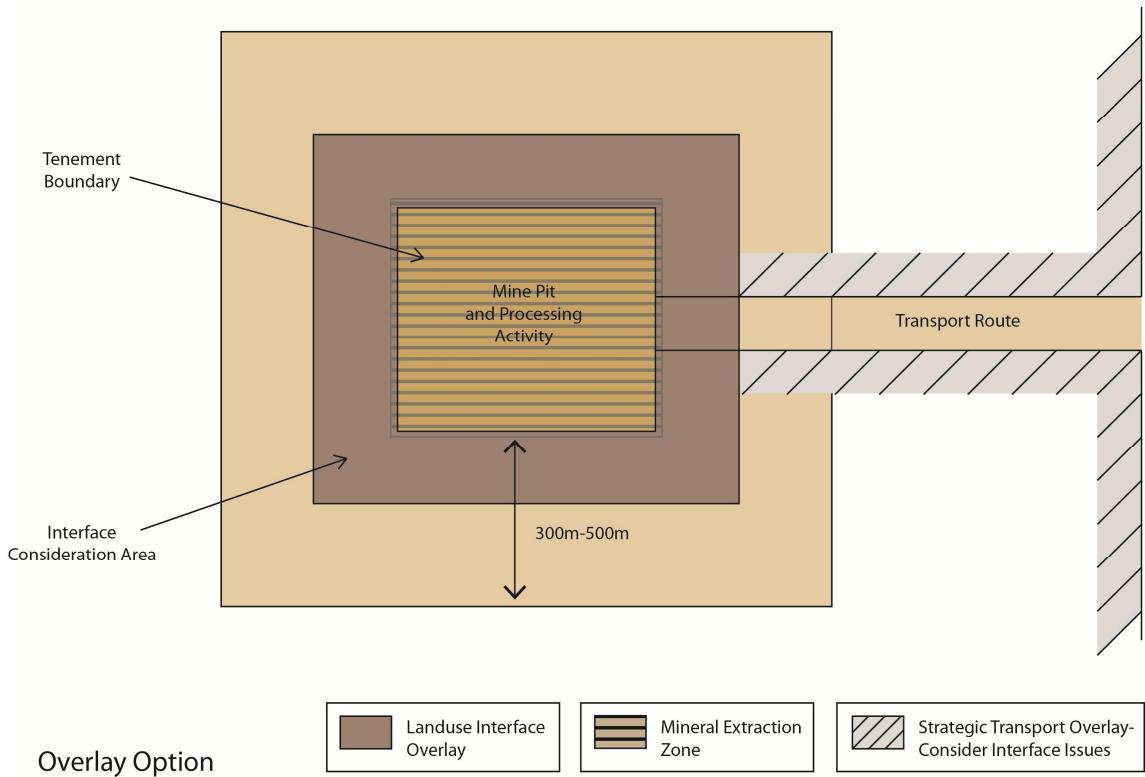
The point at which it is most appropriate and practical to identify a tailored interface consideration area is at the time a new mining operation is being considered. It is likely a more generic figure would need to be used in the case of potential resource areas.

Once an interface consideration area has been evaluated at the site specific level, then consideration can be given to what planning system mechanism might be used to manage the interface. One option might be to zone the whole area, another option might be to identify an interface overlay area, a third might be a policy. These options are indicated conceptually below.

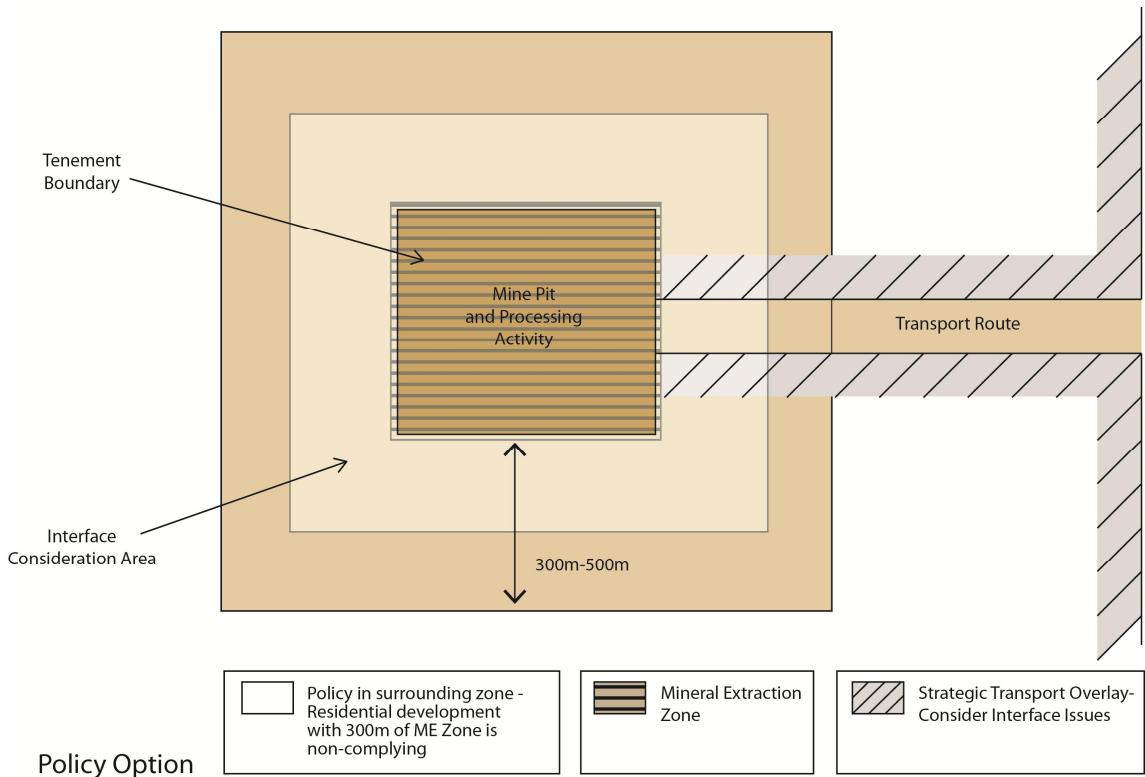
**Figure 4 Zone Option**



**Figure 5 Overlay Option**



**Figure 6 Policy Option**



### Reviewing “distances”

Some consideration has been given to the need to review the various distances used by the different agencies. Our research found that each distance is simply a ‘risk management’ tool that is used to indicate when and where certain actions should be taken.

A review of the distances would raise questions such as:

In essence this means asking the question:

- Should the 400 m referred to in the Mining Act be amended to reflect the ‘separation distances’ identified by the EPA?
- Should the EPA separation distances be changed to reflect the Mining Act distance?
- Should a planning consideration distance be 300 m, 400 m, 500 m or more?

The main outcome of such a review would be to simplify the approach from a public perspective. However, making a change would require, at best, a compromise between the three tools. This would not necessarily aid those that need to use these measures in order to achieve an outcome.

For example, the Mining Act requires one fixed number to define when a waiver is needed. But the EPA need a range to reflect the varying impact issues associated with different types of mines. The planning system needs a ball park starting point but this will not be the end point.

We would question the value of such a review and its ultimate effectiveness should single figure were to be agreed upon.

## 2.3 Background Document Review

### 2.3.1 Guidelines for Separation Distances, EPA, December 2007

The '*Guidelines for separation distances*' are for the use of the Environment Protection Authority (the EPA), planning authorities, developers, planning consultants and the community as a tool in the development application processes for new or expanding developments. The guidelines were developed to provide a 'guiding' tool as a starting point for assessing the potential for an incompatible land-use locating too close. The distances are recommended separation distances between various industrial land-uses and sensitive land-uses. This is intended to both protect the sensitive use as well as the generator of the impact. The guide has been developed to assist with evaluation within the planning system and the distances are not intended to be absolute criteria, but rather a starting point for evaluation. This recognises that every site and situation is different and therefore the impacts will be different in nature and extent.

Of particular relevance to this project are the distances recommended for materials handling (extractive industries) being:

- Operations with blasting – 500m
- Operations with no blasting – 300m
- Noise separation distance – 3km

### 2.3.2 Urban Growth Management for Metropolitan Adelaide – Information on Extractive Industries, PIRSA, 2005

The '*Urban Growth Management for Metropolitan Adelaide*' report discusses the findings of complaint data received by quarry operators, the EPA, PIRSA, and the City of Tea Tree Gully with regards to excavation activity within and adjacent metropolitan Adelaide. This information is useful in determining appropriate separation distances between mining activity and sensitive uses such as residential development.

It is important to note that with regards to separation distances mining operations are split into two categories, hard rock quarries where blasting is undertaken and sand/clay pits where no blasting occurs. These quarries have varying operational requirements which consequently results in different separation distance requirements.

The majority of complaints received were in relation to blasting activities, with the average distance for these complaints occurring at 489m from the mine/quarry.

Dust was also a common complaint, the average complaint distance relating to dust from hard rock quarries occurred at a distance of 690m, compared to 250m for sand/clay pits. Indicating that blasting activity is likely to cause dust to travel further distances.

Noise was also a common complaint in both hard rock and sand/clay pits. The average distance for noise complaints for hard rock quarrying was 675m, however no distance was recorded for noise complaints in sand/clay pits.

The highest frequency of complaints for hard rock quarries occur between 500m and 550m, whereas the highest frequency of complaints for sand/clay pits occurs adjacent to the sites.

The findings in this report show that while 60% of blasting complaints were received at a distance of 500m or less, the majority occurred at around the 500m mark. This would suggest that for blasting operations, a separation of at least 500m would be needed. Most complaints for sand/clay pits occurred at distances less than 300m.

The EPA suggests a 500m separation distance for mining operations involving blasting, and 300m for those where blasting is not required. These buffers are about protecting sensitive uses from harmful impacts.

At the time, the then Planning SA recommended a separation distance of 400m to be consistent with the EPA referral for residential land division applications within 400m of an ExIn Zone or area..

Interstate Government organisations tend to recommend 200m for non-blasting activity and 500m for blasting hard rock, with the exception of the EPA in WA which suggests 500m and 1000m respectively.

The '*Urban Growth Management for Metropolitan Adelaide*' recommends three zones around the mining activity:

- An Operational zone, which would be based around the tenement boundary or the extent of the operation. Areas within this zone would not be available to any other development whilst the quarry was in operation.
- Buffer or Exclusion zone – an exclusion zone for new development and no further intensification of incompatible land-uses. Future potential purchasers to be notified of the presence of the nearby mining operation.
- Notification zone – would encompass an area that would capture the majority of complaints received and include relevant transport corridors. Any potential purchasers to be formally notified of the mining operation and made aware of any development restrictions.

This report also recommends that there should be an exclusion zone of 500 m for hard rock quarries and 300 m for sand/clay pits, with a notification zone of 950 m and 400 m respectively. These distances could be modified depending on the specific site requirements and conditions.

It should be noted that the use of the term "zone" in the context of this report is best interpreted as a generalised term. This report considers the intent of the approach described above as an outcome rather than a mechanism. There are a range of 'tools' that may be used to achieve these outcomes.

### 2.3.3 Planning Policy Library, DPTI, (Version 6, Sept 2011)

The Planning Policy Library contains a range of policy that has been developed with wide consultation as benchmark policy for inclusion in Development Plans. It acts as a source of common policy to encourage more consistent application of the development assessment process.

Appendix 1 includes an overview of the different types of policy, mapping and policy tools that are available for inclusion in Development Plans. The appendix also includes examples of policy that relate specifically to mining and interface issues.

The Planning Policy Library highlights that there are a range of policy techniques or tools available to address a range of issues associated with land-use types, infrastructure and interfaces.

While mining activity is addressed to some extent, the overall flavour of the policy is to protect sensitive uses from impacts. There is only limited recognition of the interface issues that are created when sensitive uses encroach on operations that are likely to generate impacts. Although the interface policy does recognise the need to address some level of interface management there is also a need to address the interface issues created by heavy vehicles using major transport and B-Double routes as well as rail corridors. Strategic Transport

Overlays are a new ‘planning’ tool introduced by the Library to assist with this. However, their effectiveness relies on the routes (road and rail) being adequately mapped.

It is important to recognise that this base policy alone is insufficient to provide clear guidance for development assessment. Recognition of the local context and spatial identification of key issues through mapping, character statements and concept plans is essential to providing guidance.

## 2.4 Emerging Issues

### 2.4.1 Pace and type of Growth

In more recent times, there appears to have been some changes in the trends associated with the pace and types of urban growth, including:

- More substantial infrastructure projects (road, rail etc.) that require greater volumes of materials as well as a high ‘grade’ of materials.
- Extended hours of construction activity (night works) to minimise traffic inconvenience and meet deadlines.
- Larger houses, more upgrading and extending of houses.
- Longer horizons for planned urban growth (30 Year Plan for Greater Adelaide).
- Pressure for housing in areas outside traditional urban boundaries (including expansion of small townships) (retirement market, tree and sea change, rural lifestyle).

This all places additional pressure on the demand for construction materials, not only in terms of the type of material and the quality of material, but also the times at when the material needs to be delivered (e.g. encouraging night time truck movements). Longer term consideration needs to be given to the nature of these trends and the implications if sources of construction materials become more limited in urban areas.

### 2.4.2 Possible future issues

Queensland has recently needed to address the impact of a number of extreme natural events that have caused damage to buildings and infrastructure. This has placed considerable pressure on the supply of construction materials and highlighted availability and cost problems at a critical time. In response to this, the QLD Government has taken steps to protect and facilitate access to key construction materials and resources.

The 30 Year Plan for Metropolitan Adelaide places an emphasis on making more efficient use of the existing urban area. This is likely to encourage infill development in various forms, which could lead to the intensification of sensitive uses. There are already issues associated with mining and residential interfaces. There is also a potential for more pressure to be placed on these operations, particularly when the economic cycle improves and demand for construction materials increases.

It would both be preferable and practical to establish a clear model for the resolution of interface issues before the pressure for construction materials increases again.

### Sterilisation of potential future resources

While sensitive land-uses can have an impact on the operation of existing or future mine operations, consideration also needs to be given to the impact of sterilisation of a resource. It has generally been assumed that the nature of land-use activity in remote and general farming areas is mostly of a low cost/low infrastructure investment nature. However, there are several indicators that suggest new technology may change this.

Investment in development that utilises technology to overcome historical barriers to development could sterilise future potential mineral resources simply because the value of the investment may be too high to move or relocate. Major investments could include wind farms, solar generation projects and horticulture using treated water.

### **Climate Change**

Climate change and natural hazards also present a potential issue for the future. It is predicted that climate change is likely to result in an increase in the frequency of extreme climatic events (storms, heat waves etc.) which could result in extensive damage to buildings and infrastructure (flooding, damaging winds, fire). The recovery and rebuilding phase following such events as well as natural hazards and earthquakes, would substantially increase the demand for construction materials.

## **2.5 Key Observations**

Based on the legislative and background review, the following observations are considered core to this project:

- The importance of extractive mining activity to the State has been outlined in the Planning Strategy. However the absence of spatial representation of mineral resources within the Development Plan makes the implementation of this in the rezoning process difficult. Complementary changes to both the mining and development legislation are needed in order to achieve the desired outcomes for the State.
- The future challenges are likely to be more varied in both nature and spatial extent.
- There is a need for an approach that works for all forms of mining and for the whole of the state where risks of conflict or sterilisation are of high risk.
- The planning system has a hierarchy of policy development and refinement that commences at the strategic planning stage. If particular issues are to be embedded in the whole system then information sharing and interaction needs to start at the strategic planning stage.
- Interaction between the Development Act and the Mining Act primarily occurs at the tenement/application assessment or project consideration stage. This is often too late for the planning system to address encroachment or interface issues.
- The Development Act does not control or assess mining applications and therefore Development Plan policy has not evolved to fully take mining activity into account.
- The Mining Act makes suitable provision for addressing existing land-use issues at the time a tenement is sought. This should enable new operators to 'draw a line in the sand' with respect to land-use and landowner expectations at that point in time.
- It is critical to get land-use and policy arrangements in place at the time a mining operation commences. This will reduce the extent of on-going management of issues that need to be addressed retrospectively.
- The Development Act is the most suitable mechanism for managing the location and design of development to minimise land-use conflict. The planning system has the best tools for considering interface issues provided this occurs at the right stages of the planning system.
- The Environment Protection Act and the Mining Act have the greatest ability to address on-going management and operational issues.

- Discussions with key agencies and a review of policy wording indicates a tendency for both the planning system and the environment protection system to give preference to residential uses (considered ‘sensitive’ uses) regardless of which land-use was first established.
- The EP (Noise) Policy is based on a concept of ‘principal’ land-use. This is derived from the policy and zoning contained in a Development Plan. If mining operations are not recognised in Development Plans then the application of policy could be skewed.
- The EP (Noise) Policy can result in restrictions to noise generating activities (and times of operation) if a sensitive use locates in the vicinity.
- Separating sensitive uses or encouraging compatible land-uses (e.g. light industry) are the most effective approaches available to limit the effect of the noise policy on noise generating activities.
- There are various ‘distances’ used to assess the potential for land-use impact. A reasonable guide for planning purposes would be useful as a starting point for considering the potential for interface conflicts.

## 2.6 Key Outcomes

The following are possible relevant outcomes for a new approach:

- Strategic information on mining issues, particularly where there is likely to be a risk of land-use conflict, needs to be fed into the planning system at the “Strategic Planning” stage.
- As the life span of many of the State’s extractive operations is limited due to the current pressures from encroaching development, it is important to determine and protect potential locations for future extractions.
- There is a need to have a balanced approach at the application stage, to ensure that new development and mining operations take the operation/presence of other land-uses into account (both mining and planning). This could be indicated via an ‘interface consideration area’ that is relevant to the specific site and nature of operations.
- There is a need for a suitable agreed set of separation distances for extractive activities that can act as a guide in the planning system to provide a basis for triggering interface management tools in the planning system.

# 3. Case Studies

## 3.1 Background

As part of the original brief, the Steering Group selected six existing mines as basis for case study investigations. This work follows two preliminary case studies that were undertaken by DPTI in early 2013 – White Rock/Stonyfell and Sellicks Hill. It is understood that the sites selected were intended to provide a range and mix of location and issue types. The following was undertaken for each case study site:

- A GIS data base of planning and mining information was collated
- Issues mapping was prepared
- Representatives of each operation were interviewed to identify operational issues
- Discussions were held with The Department of State Development and EPA in regards to compliance issues
- A summary of the key information and issues was collated.

Using the information gathered through the above process, a possible ‘planning system’ approach was developed for each site. It is important to note that there are a range of options available. This exercise is intended to highlight the opportunities and challenges associated with different approaches in different situations.

## 3.2 Summary of Discussions

The following table provides an overview of the key issues for each of the selected case study sites. More detailed notes and assessment comments are contained in Appendix 2.

Mine	Key Issues	Encroachment Issues
Kanmantoo Copper Mine	<ul style="list-style-type: none"><li>• Noise</li><li>• Dust</li><li>• Light (1 person)</li></ul>	<ul style="list-style-type: none"><li>• Established, strong community relationships.</li><li>• Support for reopening of mine and ongoing operations.</li><li>• Mine built own heavy vehicle road.</li></ul>
Linwood Quarry	<ul style="list-style-type: none"><li>• Traffic/transport</li><li>• Dust</li><li>• Noise</li></ul>	<ul style="list-style-type: none"><li>• Significant operation</li><li>• Ongoing issues with incompatible development proposals.</li></ul>
Kapunda Quarry	<ul style="list-style-type: none"><li>• Noise</li></ul>	<ul style="list-style-type: none"><li>• Located in rural setting.</li><li>• Potential for rural residential encroachment in the future.</li></ul>
Para Hills Quarry	<ul style="list-style-type: none"><li>• Stormwater run-off from adjacent residential area</li></ul>	<ul style="list-style-type: none"><li>• Housing almost surrounds the quarry within the 500 m buffer zones and transport routes.</li></ul>
Angaston (Penrice) Quarry,	<ul style="list-style-type: none"><li>• Traffic/Transport</li><li>• Dust</li><li>• Noise</li></ul>	<ul style="list-style-type: none"><li>• Community Consultation Committee (CCC) exists.</li><li>• Rezoning circumstances that led Minister to be involved in request to re-zone land east of quarry useful to understand.</li><li>• B-Double route changed to address complaints.</li></ul>
Victor Harbor Quarry	<ul style="list-style-type: none"><li>• Trucks travelling through Victor Harbor</li></ul>	<ul style="list-style-type: none"><li>• Not much encroachment yet.</li><li>• Different non-residential zones around the quarry.</li><li>• Development Applications for houses to the south of the quarry.</li></ul>

### 3.3 Observations

In terms of the operational aspects it was noted that:

- Operators generally worked hard to address communication and complaint issues and either had communication mechanisms in place or were actively involved in local community networks.
- All operations were practising at least some level of restraint with respect to operational practices (blasting protocols, hours of operation, management of staff behaviour).
- There were many examples of where mine operations were blamed for impacts that originated from other sources (other heavy vehicle traffic, noise from viticulture activities, dust from wider sources etc.).
- There are some impacts that occur that cannot be controlled (e.g. dust storms).
- Impacts and time issues relate to market demand for resources, major project requirements and seasonal influences (e.g. early morning truck movements to deliver concrete on hot days or to meet project construction requirements, 24 hr construction).
- Some of the case studies included examples where the mines did have a mining-type zoning. Yet residential zoning was still located on the boundary of the mine. This suggests that zoning of the mine is only part of the issue; dealing effectively with interface issues needs attention.
- Transport routes also seem to create issues, especially in rural/semi-rural areas where the out-of-hours background noise and traffic levels are normally quite low. However, issues arose in urban areas when vehicles needed to use roads at very early hours of the morning or where there were increases in the numbers of vehicles due to a specific/large construction project.
- Rural and township locations seemed to have generally fewer complaints. This is possibly due to a better understanding of the direct link between mining, employment and development. It may also be due to closer direct and personal interactions with the community.
- There is some indication that historical issues may be re-occurring.

Based on the discussions with operators the following anecdotal information was noted:

- 500 metres appears to cover/include the majority of issues (lesser distances may also apply).
- Some impacts may exceed this distance but often this is a temporary issue (e.g. dust with a northerly wind, noise associated with blasting).
- Managing impacts (and perceptions) by managing operating procedures and behaviour (and having good communications) is critical to reducing conflicts and complaints.
- There appears to be a 'skewing' of planning system and environment protection system that has the effect of giving preference to housing at the expense of other land-uses (this is not unique to mining activity, similar issues are experienced in relation to primary production (right to farm) and other types of industry sectors (where restriction on operations are forcing industrial use out of traditional areas)).

### 3.4 Development Plan Evaluation and Options

An evaluation of the current Development Plan provisions was undertaken for each site. The case study information, combined with this evaluation has then been used to test possible planning and mining system techniques or approaches.

It is important to note that this evaluation did not include a detailed exploration of the historical sequence of policy and zone change. It focuses on the current situation and implications.

#### 3.4.1 Kanmantoo Copper Mine

##### **Background**

- Located on the site of a historical mine that has been re-established;
- Kanmantoo township, to the north, was associated with the old mine and has since expanded toward the south (close to the mine) prior to the establishment of the new mine (but still over 1 km from the current mine operations);
- A native vegetation protection policy area is located between the new mine operations and the township; and
- An industrial activity (fertiliser operation) was established on a portion of the old mine site which has had a history of generating interface issues (mainly odour) that led to policy change.

##### **Impacts**

- The surrounding topography generally aids the visual screening of the operation from the township, although considerable effort is being made to address visual impact to the north;
- While the town is located a reasonable distance away, it is understood that vibration is a continuing issue. This may be due to geological features that transmit the vibration over greater distances. This type of impact is highly unpredictable and is unlikely to be able to be addressed through up-front mechanisms;
- In order to avoid noise impacts associated with heavy vehicles, a ‘private road’ access to the Old Princess Highway (near Callington) was constructed which created a ‘by-pass’ route to avoid Kanmantoo township but is also much more direct;
- Dust can be an issue under particular climatic conditions. A separation distance can be effective for minimising the impact of localised dust generation but is not as effective on dry, windy days when dust can travel a considerable distance and from various sources;
- Night lighting (24 hr operation) is reported to impact on one residence located to the south of the operation. This residence has a direct line view of the operations (topographical conditions). Most of the mine is screened from view. The operation adjusts the lighting as needed to reduce this impact.

## Development Plan Policy

- The mine is zoned Rural (Kanmantoo) Zone which encourages uses including agriculture, primary production, wind farms, intensive animal keeping and tourist accommodation. However, the zone is highly restrictive with respect to the potential for land division and new dwellings not associated with the land-uses envisaged in the zone.
- An Industry (Kanmantoo) Zone covers the site of the fertiliser operation and includes a 500 m separation mechanism. Key aspects of this include
  - A 10 m landscaped 'buffer' in the Industry Zone
  - A dwelling and tourist accommodation within 500 m of the Industry Zone boundary is non-compliant
  - Land division within 500 m of the Industry Zone is non-compliant
  - The 500 m is highlighted as a shaded area on a zone map and indicated on the legend
- This is an example of an approach where a separation distance of 500 metres has been established by policy and does not change the zone but still restricts land division and dwellings. It is also noted that the 'visual' screen is located within the zone but the separation extends into the adjacent zone. In this case the impacts are quite specific and a separation is the most appropriate option.
- The following policy is in the Rural Zone
  - *7. Rural activities which will result in disturbance to adjoining landowners or adversely affect the rural character of the zone should not occur.*This is an example of a policy that prioritises 'amenity' over the operation of land-uses envisaged for the zone.
- The following policies in the Rural (Kanmantoo) Zone provide the link to the Industry zone to create the separation distance:
  - *11 Development in the locality of the Industry (Kanmantoo) Zone should have regard to the potential impacts of uses within the Industry (Kanmantoo) Zone, such as noise, traffic and odour, and where necessary should be sited and designed to minimise the effect of such impacts.*
  - *12 New dwellings and tourist accommodation should not be located within 500 metres of the allotment generally to the west of Éclair Mine Road within the Industry (Kanmantoo) Zone.*
  - *13 Development should not adversely impact on the operations of development in the Industry (Kanmantoo) Zone.*
  - *14 Development in the locality of the Industry (Kanmantoo) Zone should occur in a manner that does not result in the degradation of native vegetation.*
- It is noted that there are several policies that recognise the potential for development to sterilise mineral resources. For example, the following policy also is contained in the Rural (Kanmantoo) Zone:
  - 20 Development should not be undertaken in the vicinity of known mineral deposits:**
    - (a) until the full extent and significance of such deposits has been determined;
    - (b) if such development would be incompatible with mining operations; or
    - (c) if it would add to the cost of extracting the resource.

- Notwithstanding the above, it is unclear how a Development Assessment Officer might be able to identify where such resources are located. A brief phone discussion with a DC Mount Barker development assessment officer revealed that they do not have this information at hand. In order for policy such as this to be in any way effective, it is crucial that the information is made available in a mapped form.

### **Policy Options**

- It is preferable that this mine be recognised spatially in the Development Plan so that the protective policy can be applied.
- Given that the mine has an estimated life of 10 years and that the rural zone policy is relatively favourable (ie restricts sensitive uses, acknowledges mineral resources and interface issues etc...) it may not be necessary to formally 'zone' this operation. Other options such as identification on a relevant map or plan may be sufficient.
- Consideration should also be given to the future use of this site. If there is potential for future uses that have similar impacts (e.g. industrial) it may be appropriate to include a policy, similar to that used for the Industry zone, to create a 500 m separation.
- In addition to the case study example, there is a need to provide some form of 'mapping' of mines and deposits so that policy 20 can be effective.

#### 3.4.2 Linwood

##### **Background**

This case study is an example of a situation where, due to several circumstances, a very important resource is now severely constrained by the development that surrounds it. The circumstances relating to Linwood have evolved over a considerable period of time and have been influenced by a range of factors and drivers, not all of which relate to the land-use planning system.

- It is located in the foothills, adjacent a main road and near the coast, a setting that is attractive for the expansion of the metropolitan area;
- The historical land ownership context contributed to pressure for residential 'precinct' development;
- Residential zoning appear to have followed the Hills Face Zone boundary (established in 1971).

Regardless of the historical context, it would seem that even recent policy approaches have failed to recognise this operation and the interface issues.

##### **Impacts**

- As a hard rock quarry, the impacts include the usual impacts (noise, vibration, traffic, dust, etc). Linwood has little option other than to minimise impacts through very careful management and maintaining communication. However, it is accepted that the mine operation cannot avoid some level of impact given the proximity of residential development;
- Due to the nature of the material and its location, this operation can generate a large number of heavy vehicles, day and night (depending on the needs of the project being served). Some consideration is being given to re-locate the main entrance to move this activity away from the northern entrance (which is surrounded by residential uses) to one located to the south, which is within the Hills Face Zone.

## **Development Plan Policy**

- The northern portion of the operation is covered by a mining zone but the majority of the operation is located within the Hills Face Zone. This zone has a highly restrictive policy regime with respect to both land division and new dwellings. In this context the Hills Face Zone should prevent sensitive uses encroaching from the east or the west.
- The residential zone on the south east corner of the operation (the “Cement Hill Policy Area”) calls for residential development at low densities with a minimum allotment size of 450m<sup>2</sup>. It is also noted that there are some areas adjacent to the mine that have been designated for the purposes of Schedule 4 (complying development clause 2B, Residential Code). This significantly increases the likelihood of a residential development being proposed, and gaining approval, in those areas.
- The Development Plan does not recognise the full extent of the mining operation and its potential impacts (policy and mapping). This means that there is little ability to require new land division or housing applications to have regard to impact issues.

## **Policy Options**

There is 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.

It is essential that the full extent of this land-use is recognised in the Development Plan in some form. Ideally, it is preferred that it be zoned for mining. However, the Hills Face Zone provisions do afford protection for the operations to the east and west and it is likely that a change to the Hills Face Zone may be difficult to achieve. Furthermore, this could trigger a broader review that could bring residential development close to the mine.

In this context the following actions may help to alleviate the situation:

- The presence of the mine should 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;
- Facilitate the re-location of the entrance to the northern end of the operation (reduce impact in southern area). It is essential that the new entrance is then protected, and that no additional sensitive uses are exposed to the impacts.
- Introduce a map or plan that indicates the presence of the mine within the Hills Face Zone and its alternative access along with an indication of a ‘consideration area’ (eg on a concept plan) to ensure that interface issues are adequately taken into account.
- Introduce a policy area within the relevant residential zones that a) limits further intensification of sensitive land-uses and b) encourages new buildings to be constructed in a manner that minimises the impacts of the mine (noise attenuation, orientation, visual screening, etc).
- Review whether land within 500 m of the mine boundary be excluded from the operation of Schedule 4, 2B

The Marion Development Plan is an example of a new policy and mapping structure derived from the Planning Policy Library. It has an overlay “Development Constraints” which is linked to policy that relates to “Building near Airports”. A similar approach may be appropriate to address issues related to “Building near Mines”.

### 3.4.3 Kapunda Quarry

#### Background

- While Kapunda has a long history of mining, the Mantina operation is relatively new. It is located in the rural area to the east of the Kapunda township.
- The operator is seeking to secure an additional lease area. It is understood that the operator has purchased a considerable portion of land surrounding the operation.
- The land division pattern was created well before the mine and in some cases may have connections with early settlement plans. The pattern of land-use and actual building is predominantly rural in nature.

#### Impacts

- One resident in a rural location is located relatively close to the operation and may experience greater impacts due to the proximity and the topography. It was indicated that this person was the previous land owner, and has since re-built in a location that is still impacted. It is possible that discussions with the landowner about potential interface issues and the designation of the land that is most susceptible to these impacts at the time of establishing the mine operations might have prevented this situation.
- Another rural resident opposes the use of the heavy vehicle route despite its designation as such. The operator avoids the use of the by-pass and takes the route through the town.
- The operator is undertaking a number of actions to better manage impacts. However, managing dust on hot and windy days is very difficult.
- There has been limited development in this locality during the period that this mine has been in operation. Whilst much of the land division patterns were pre-existing, a couple of the more recent residential developments might have been better sited.

#### Development Plan Policy

- The mine area is not specifically identified in the Development Plan and is currently zoned Primary Industry. This zone does afford some protection by limiting land division to very large allotments and subsequent or additional dwellings. However, the policy has limited ability to prevent a new dwelling on an allotment that does not already contain a dwelling.
- It is noted that there are some smaller allotments (although still of a larger rural living size) located to the east of the EMLs. These allotments were created some considerable time ago (paper towns). Once created, it is very difficult for the planning system to prevent a dwelling being built on a 'vacant' allotment.
- It is noted that the Primary Industry zone makes no reference to the location/siting of dwellings having regard to potential impacts. While there are provisions that address separation distances this is tailored to protecting residential development from these impacts.
- A form of 'deferred urban' zone is located to the north east of the mine. At this point in time, additional dwellings are non-compliant in the Fringe Kapunda Zone but the policy direction clearly indicates the intention for this area to become urban/ residential in the future.

- It is noted that a “heavy vehicle bypass” route is identified on the Kapunda township Structure Plan. This is the same ‘B-double’ route that the operator is currently not using, due a resident’s complaint. It is clear that some thought was put into the designation of this route, and at some point in the future, the use of this route may be required. The current approach to placating the complainant may unintendedly be creating a mistaken impression that this route will not be used in the future.

### **Policy Options**

- This mine needs to be identified in the Development Plan. Given its location on the edge of the Kapunda township and the direction in which the town is planned to grow it would be prudent to offer as much recognition and protection as possible;
- This is a case where the Extractive Mineral Leases (EMLs) (and possibly the extended resource area) should be zoned for mining purposes with as much of the ‘consideration area’ included in the zone as possible (i.e. the land owned by the operator);
- Given that this is a relatively new mine, careful consideration should be given to the extent of the zoning (i.e. not just cover the EMLs)
- The mining operation and consideration area should be included on the Kapunda Structure Plan;
- Policy should also be included in the Primary Industry Zone and the Fringe Kapunda Zone to encourage siting and design that has regard to the mine impacts (dust, noise etc...)
- Additional policy may be required to better recognise the designated heavy vehicle bypass route (it is noted that current policy recommends that dwellings are set back from this road).

#### **3.4.4 Para Hills Quarry**

##### **Background**

- Based on the lessons associated with Linwood, attempts have been made to prevent the same degree of interface issues. However, it is noted that this operation is located on the boundary with another Council area (Tea Tree Gully). Achieving coordination across Development Plan boundaries can be difficult.
- The quarry appears to have achieved some degree of separation from sensitive uses.
- Despite the Extractive Industry zoning, anecdotal information suggests that an existing dwelling within the zone (possibly a caretaker’s residence) was approved for a home activity. While not necessarily an incompatible use, a concern was raised that adequate fencing was not provided and that children gained access to a part of the mine operations area.

## **Impacts**

- A combination of techniques has been used to manage impacts including:
  - The operators introduced a mounded, vegetated screen some time ago
  - Have mined from the edges of the Private Mine (PM) boundary into the centre
  - The depth of the mine may help to reduce the noise impact
  - Some degree of separation has been achieved
  - The access to Bridge Road is relatively short and direct
- While this operation has had some complaints in the past, this has not been excessive. There are currently few complaints, which may be due to a combination of the techniques listed above and a slower market.
- The operator has issues with managing stormwater runoff from the residential areas to the east of the site. A detention facility was initially intended to be provided by the developer but it was never built.

## **Development Plan Policy**

- The operation is zoned for Extractive Industry and a portion of this includes a buffer area within the zone.
- The Salisbury Development Plan includes a Structure Plan that recognises the mine and a buffer area as well as open space areas which have also created a buffer to the mine
- A rural living type zone is located on the western boundary of the zone.
- The Tea Tree Gully Development Plan designates residential zoning to the boundary of the Extractive Industry Zone, but no reference is made to the presence of the mine. It would appear that the pattern of land division has stopped short of the zone boundary.

## **Policy Options**

- The Salisbury Development Plan gives proper recognition to the presence of the mine (on a map) and it is noted that the 'buffer' to the residential uses is included in the mining zone. Additional consideration of the interface area includes the designation of a low density residential zone. This demonstrates how a consideration area might comprise a combination of approaches.
- It is of some concern that the presence of the mine is not recognised in the Tea Tree Gully Development Plan. The land to the eastern boundary of the mining zone is zoned residential and there is no policy or mapping recognition of the mine. In theory, this arrangement sets up a potential Linwood scenario.
- The presence of the mine and the need to manage interface issues needs to be recognised in the Tea Tree Gully Development Plan. Given that the land is already zoned, this might best be done through a policy in the Residential Zone.

### 3.4.5 Penrice Quarry

#### Background

- As with other examples, this quarry has a relatively long history of operation as do the adjacent settlement areas (particularly Penrice). However, some expansion of these areas has brought sensitive uses closer to the operation.
- The mine has had some history of complaints, although new operators have invested additional time and effort in addressing this history. Its location on an escarpment has resulted in a visibility issue that cannot be avoided.
- The operators have suggested that the mine is moving northward, away from the residential areas but it is not clear if the zoned area to the south will be mined in the future.

#### Impacts

- The key impact for this mine is the visual impact, which is largely unavoidable;
- Traffic impacts were a significant issue but a new B-double route has helped to resolve this;
- More common noise and dust issues have been lessened with improved practices and communications;
- Some impacts associated with other activities (especially viticulture) have been attributed to the mine.

#### Development Plan Policy

- Most of the mine and a portion of land that has resource potential are zoned for extractive mining. At the southern extent, this zoning abuts a rural living (1 ha) zone and the township of Penrice. It is noted that the area to the north (Deposit RL 109) is currently zoned Primary Production.
- The portion of the zone that extends south of Penrice Road is not currently covered by a ML.
- The Primary Production zone and the rural living zone do not make specific reference to the mine but the following policy might assist with interface assessment (interface policy)  
*5 Sensitive uses likely to conflict with the continuation of lawfully existing developments and land-uses considered appropriate for the zone should not be developed or should be designed to minimise negative impacts.*
- It is noted that the mining zone is designated the same colour at the primary production zone which may lead to confusion with this land-use on the zone map.

#### Policy Options

- Consideration should be given to reviewing the mining zoning to include the new ML and determine the need for managing interface issues;
- Additional policy should be included to recognise the interface issues associated with the mine;
- It is preferable that mining zones are given a different colour code to Primary Production;
- The revised B-double route should be recognised in the Development Plan and policy included to address interface issues along this route (possibly via a “development constraints” overlay).

### 3.4.6 Victor Harbor

#### Background

- Expansion of Victor Harbor has now reached the vicinity of this mine. The duplication of the southern expressway and growth in the ‘retiree’ sector of the population could see Victor Harbor continue to expand;
- While the mine is not zoned, previous advice provided by the Department of State Development has limited the proximity and density of residential zoning;
- It is understood that this mine operates at a relatively low level at this point in time.
- Complaints are understood to be limited but this may be because activity levels are generally lesser compared to the other examples;

#### Impacts

- Generally appear to be limited. Main issue is dust in summer.
- Landscaping has been undertaken to mitigate visual impacts.

#### Development Plan Policy

- The mine is zoned General Farming which makes no reference to mining activity. Land division and residential development are both consent uses in the zone and there is no minimum allotment size. This means that there is real potential for additional dwellings in the zone provided that they do not inhibit farming activity or detract from the rural character.
- However, the general section of the Development Plan contains policy that specifically relates to mining. The Council-wide “Significant Constraints” structure plan shows the general location of 8 quarries. Of particular interest is the following policy

**Objective 53:** *The continued availability of metallic, industrial, and construction, minerals by preventing development likely to inhibit their exploitation.*

Mineral resources in the region should be delineated so that adequate supplies of minerals can be secured in areas where there is no major environmental conflict. The most suitable sites, consistent with environmental constraints and expected future demand, should be kept free of development likely to inhibit the exploitation of the resource. Sufficient land should be available to provide resources for continued production and for the establishment of buffer areas between the mineral deposit and adjoining development.

- Residential (urban and rural living) zoning is located to the south, east and north east and boundaries appear to have been set back 400 m from the boundary of the PM and EML. However, a setback has not been provided for the mineral potential area. Policy in these zones make little reference to the presence of the mine but given the zone boundary setbacks this may not be necessary provided future development does not occur in the General Farming Zone.
- One policy in the Rural Living 2 Zone states:

**20** *Established mining operations should minimise interference with the surrounding environment and land-uses.*

It is questioned what this policy is intended to do. If a residential development application is lodged, it is not clear how this policy would be applied retrospectively to an established mining operation.

## **Policy Options**

- Given that the General Farming zone does not have strict constraints on land division or additional dwellings and the likelihood that expansion will occur in the future a key question is whether this resource needs to be protected for the future.
- If it does require protection, then this is an example of a location where there is a high risk of encroachment. Consideration should be given to zoning the mine and establishing a clear interface consideration area.
- Policy is also needed to recognise the potential impact on existing residential, rural and deferred urban zones to ensure the impacts are incorporated into design, and the density of residential development is not increased.

## **3.5 Observations**

- The experiences and examples of past practice highlight the problems that arise when interface issues are not adequately addressed early enough.
- While the exempt land provisions of the Mining Act do seem to account for land-use and interface issues at the time of seeking a tenement approval, this is undermined when subsequent development is approved in inappropriate locations without adequate protection measures.
- Encroachment and interface issues arise when mining and the presence of mines are not indicated in Development Plans. This also occurs when the issue of sensitive uses and interface impact area is not recognised even if the boundary of the mine operation is identified.
- There are various pros and cons associated with including interface areas within mining zones or within other zones. The best approach might best be decided at the time a new operation establishes.
- There are some impacts that cannot be predicted (e.g. geological conditions) or practically controlled (e.g. dust storms).
- The more dated Development Plans appear to contain policy that has regard to mining and mining operation impacts. It would appear that, over time, the recognition of mining in the assessment process has deteriorated both through a lack of identification and a lack of policy. This could be a result of a 'philosophy' that Development Plans should only contain policy relating to 'development' as defined by the legislation. Since mining is not included in this, over time the references have been left out.
- General policy that attempts to address interface issues has little effect if the situations where this needs consideration are not spatially identified.
- There are a range of policy and mapping/plan techniques that can be used to manage interface issues depending on the specific site and historical context.
- Not all complaints are reasonable, and in some cases, placating a complainant may raise unsustainable expectations.

### 3.6 Key Directions

The case studies have highlighted a number of key principles:

- Greater use need to be made of the Planning Strategy to encourage coordinated response between the planning and the mining systems but identifying mining uses on maps (at the least).
- The presence and location of mining operations needs to be recognised in the Development Plans (including the role of designated roads for heavy vehicle use) as a fundamental step in enabling the consideration of interface issues.
- In addition to recognising mining operations as a land-use in Development Plans, there is a need to introduce a better mechanism for managing interface issues.
- Better use needs to be made of the “interface between Land Uses” section fo the SA Planning Policy Library.
- When a new mine is established, this is the best time to ‘draw a line in the sand’ and address not only the extent of the mine, but any future land-use expectations that may be inappropriate whilst the mine operates.
- A mechanism is needed to alert future purchasers of nearby land of the presence of the mine for the life of the mine.
- The interface consideration area might include a range of strategies to manage impacts depending on the nature of the impacts. This might include clear separation of sensitive uses using non-complying triggers, assessment on merit of sensitive uses that are well designed and located or a low density of sensitive uses.
- For existing operations, an on-going interface management system is the most practical solution, although it would be helpful if future buyers of property could be given some notification of the presence of a mining operation.
- A better system of recognising heavy vehicle routes (not just for mining) is needed, particularly in rural and semi-rural locations.

# 4. System Overview

## 4.1 Introduction

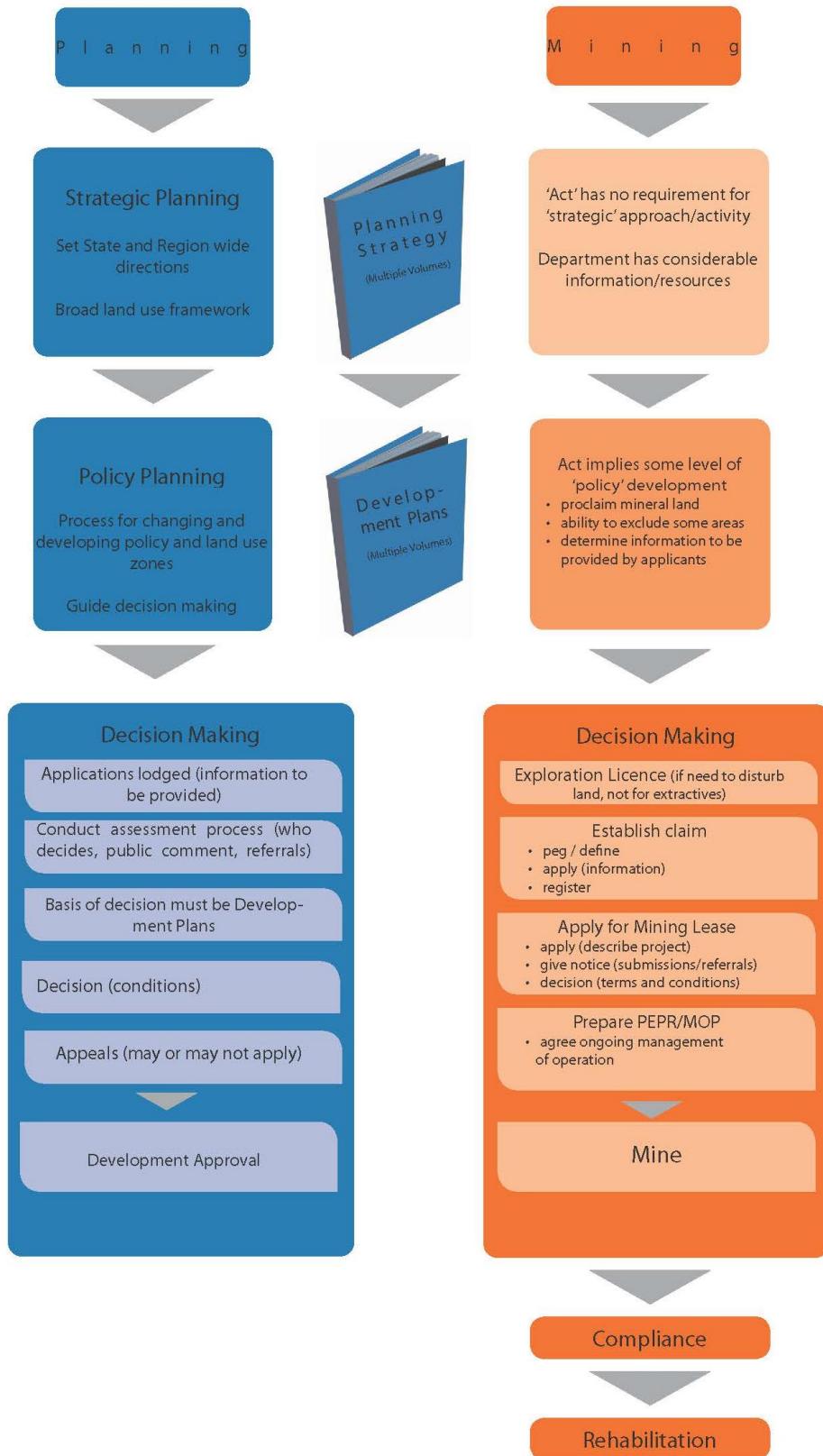
The following aims to explore how the planning and mining systems currently work and the various processes and procedures involved in implementing these systems.

The ‘mining system’ is implemented by a number of mining acts. In this study we are focussing on the Mining Act, 1971. In very general terms the Mining Act regulates and controls mining operations.

The ‘planning system’ is implemented by the Development Act, 1993 which, in broad terms, regulates most land use types and buildings. However, mining is specifically excluded from the Development Act.

Figure 7 provides a high level summary of the planning and the mining systems in South Australia as established by the relevant Acts and associated administrative arrangements. In this context, Section 4.2 explores a process model that could help to establish mechanisms to protect mines and potential mineral resources. Section 4.3 explores how the planning system might better manage other forms of land uses that impact on mines and mineral resources.

**Figure 7 Planning and Mining Overview**



The Development Act does not have a strong focus on on-going management or compliance issues. In contrast, it tends to focus more effort at the strategic and policy levels with a view to providing clearer direction for land-use decision making.

The Mining Act tends to focus on the “application and compliance” aspects of the mining system. It does not have a strong focus on policy and little (if any focus) on strategic planning for mining.

By investing a bit more time and effort to better interact with the “strategic planning” level, it may be possible to reduce the resources required at the complaints and compliance end of the mining system. This will take time to translate, but overall would result in a more efficient mining system.

#### 4.1.1 Observations

The process overview highlights that:

- The planning system places a greater focus on developing strategic directions and assessment policy before applications are lodged and assessed.
- The mining system tends to have a greater focus on managing issues once an application is lodged and for the life of the mine.
- This different emphasis has limited the level of interaction between the two systems.

#### 4.1.2 Suggested Outcomes

A new approach should aim to address the majority of issues by achieving better mechanisms for:

- Interaction between the Development Act and the Mining Act at the strategic level to protect strategic mineral resources;
- Establishing better overall practices for dealing with interface issues at the commencement of a new mine operation;
- Recognising the presence of existing mines and interface issues within the planning system;
- Protecting new mines as they emerge;
- Ensuring that new landowners are aware of the presence of a mine; and
- Recognising transport routes that carry heavy vehicles and the interface issues that can arise.

To achieve these outcomes, the following conceptual approaches (process models) have been developed as a starting point for consideration of a new system. The process models aim to ensure that current and new mine operations and future potential mineral resources are recognised to so that their impacts and the impacts of other uses can be properly taken into account when considering rezoning and when assessing Development Applications.

Key heavy vehicle and strategic transport routes also need to be indicated in Development Plans to encourage better design and/or orientation of sensitive uses to protect against impacts (primarily noise). This is needed for all industries and activities that rely on heavy vehicles.

Two key functional areas have been identified: Resource Planning and Development Management. Though the two areas do interact at certain points, they are distinct areas of responsibility, and separate process models have been developed for each.

Draft process models for both resource planning and development management are presented as Figure 8 and Figure 10. The models represent a high level review of the processes that have been undertaken based on the background information collected for the project and two key meetings held with the Department of State Development and DPTI staff.

#### 4.1.3 Resource planning

This functional area acknowledges that the Mining Act is the legislation that approves and manages mining activities. As such, there is a need for this legislation and associated processes (both legislative and administrative) to provide a reasonable operating environment for mining activity. The mining planning system should include resource-related activities such as:

- Mapping/identification of relevant resource data.
- Strategic assessment of the importance of resources (e.g. The Department of State Development criteria for Key Resource Areas).
- Exploration, feasibility & project investigations.
- Applications for mining leases and licenses.
- Decision making processes related to those applications.
- Mine development, operational management and closure.

A number of these activities are managed through the provisions of the Mining Act. However, it is suggested that more work needs to be undertaken at the strategic level in order to provide a more certain operating environment for mining activity in the future.

#### 4.1.4 Development management

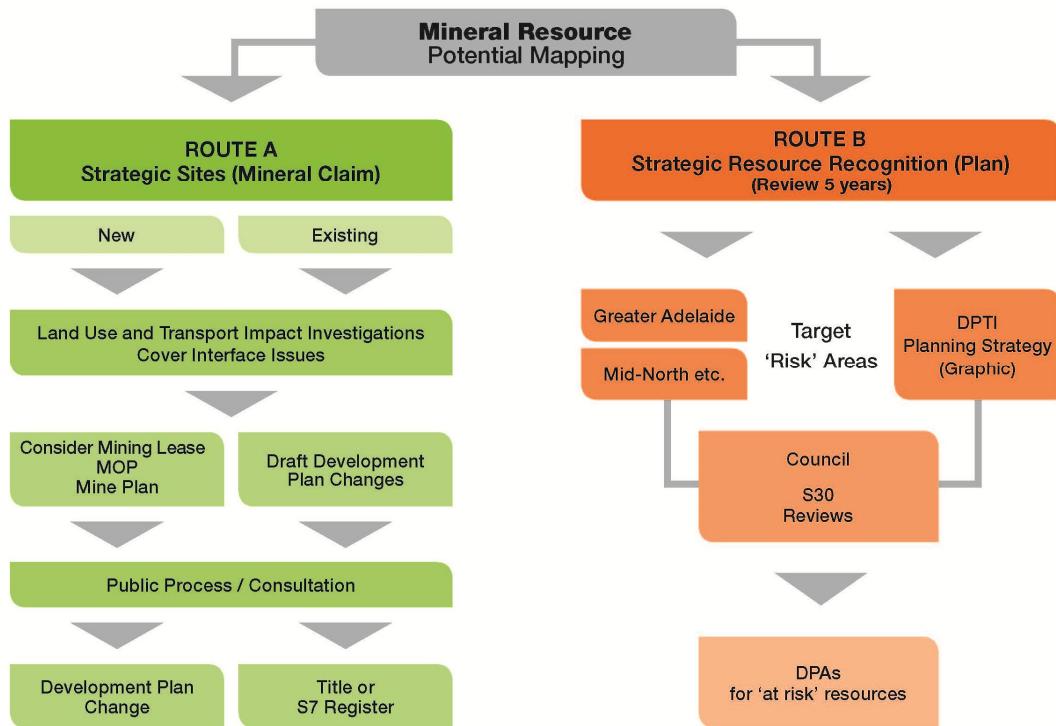
This area relates to land-use and development activities (specifically excluding mining) and is managed through the Development Act. Activities include:

- Strategic spatial planning to identify land-use priority and protect natural resources, major investments and infrastructure.
- Development Plans, assessment policy and amendments.
- Assessment of development applications (range of land-use types).
- Decision making processes.

### 4.2 Resource Planning Process Model

Within the Resource Planning Process Model, two key processes are assumed. Both processes utilise the data held in the Department's Resource Potential Mapping as the baseline source of information.

**Figure 8 Mineral Resource - Potential Mapping**



#### 4.2.1 Route A – Existing Operations

There are a number of existing operations that are both important sources of materials and minerals and are either under pressure from interface issues or could be in the future. Where this is the case, each operation needs to be assessed on a case by case basis to determine what measures could be taken to address interface issues.

It would be prudent for this assessment to include consideration of any strategies that could be applied to the mine layout or management techniques that might reduce the impacts as well as mechanisms to manage interface issues beyond. Although it should be acknowledged that existing operators already play an important role in working with the community and managing their operations to minimise impacts.

It may be possible to ‘recognise’ an existing mining operation in Development Plans via a relatively simple technique that identifies a mine operation on a relevant map (although this may require legislative support). Another option is to “zone” the area of the mine using the current Development Plan Amendment (DPA) provisions. This would involve public consultation processes. Any change to land-use potential beyond the tenement area would, in practice, require an appropriate planning system process to introduce changes (e.g. a DPA). This is likely to include some level of consultation with landowners.

This approach would require:

- Identification (list) of those mine sites that require this approach;
- Technical and financial support to assist the operators to undertake the relevant research and investigation and to produce the necessary documentation;
- Assistance to identify the most appropriate implementation pathway (Council or Minister);
- Support to assist to with responses to submissions.

#### 4.2.2 Route A – The creation of a new mine operation (mine development)

Route A relates to any situation where a new operation is being considered and assumes that, following exploration (or pegging a claim), a decision is made to progress a possible opportunity prior to securing a Mining Lease.

In this situation, it is in the interests of both the State Government and the proponent to consider all the business aspects of a new mine operation including any risks that might threaten this investment in the longer term. The initial planning for such a project includes a range of background work including investigations and documentation in order to ‘prove’ up the potential project in order to develop a mining proposal to secure a mining lease. This information is also later required to feed into more formally recognised processes such as the production of a Programme for Environmental Protection and Rehabilitation (PEPR) once a mining lease is secured.

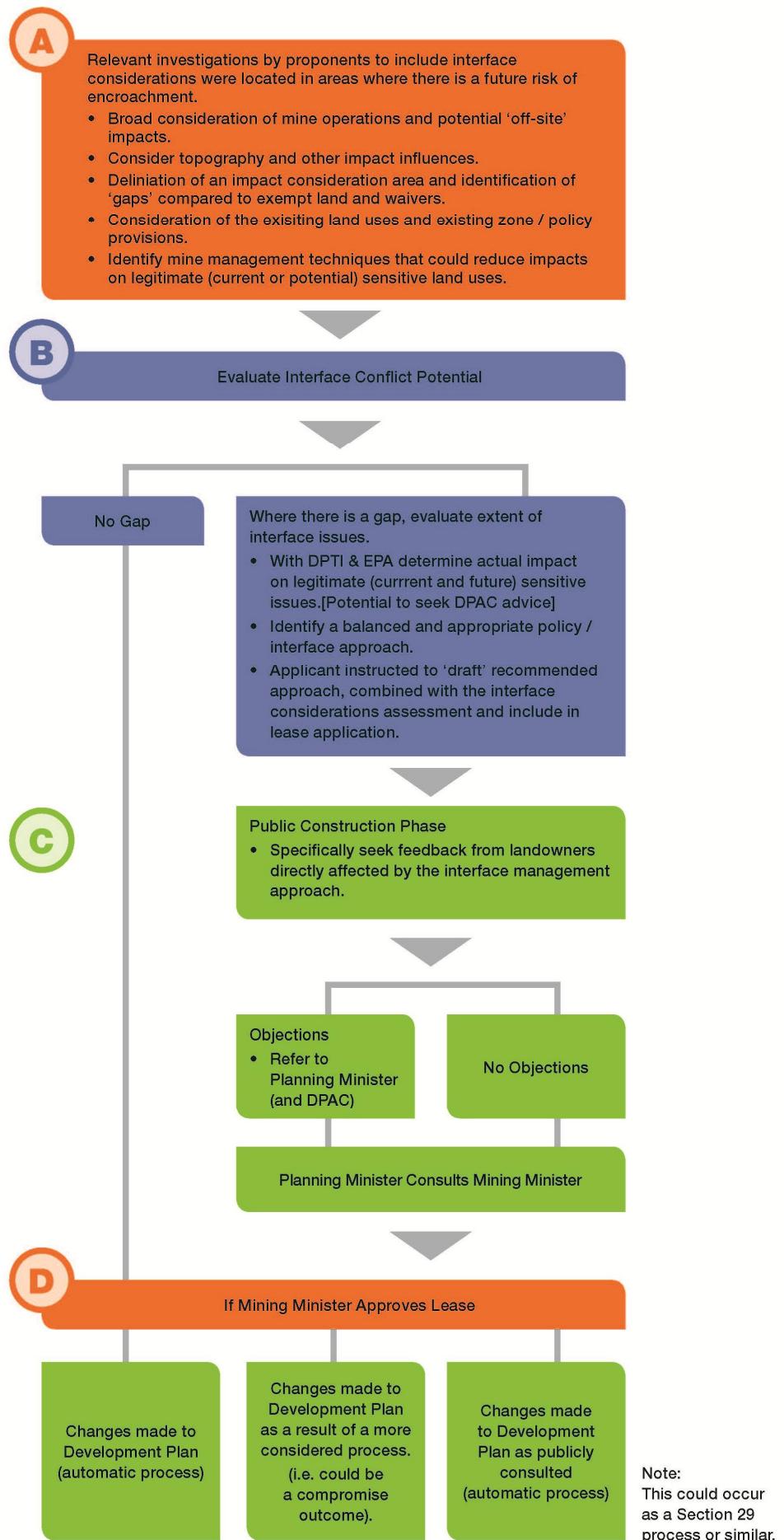
In the context of the above, it would be possible within the framework of the existing processes to undertake a small scope of work that evaluates the potential land-use impact and possible conflicts arising from development of the proposed mine. This work would be based on the existing land-use situation, and would take into account, probably on a generic basis, the likely nature of the mine operations such as blasting requirements, processing and handling activities, etc. This would also consider, as far as practical, the likely extent of interface impacts.

The work would also consider likely transport routes and access arrangements (which would normally be considered in pre-feasibility work in any case). This might include considering the use of existing routes, building new routes or seeking new B-Double designations. This would also be a useful basis for discussion with Councils.

The following methodology has been developed to describe this approach. The methodology includes the recognition of a number of key principles/issues:

- The mining system considers, approves and manages mining land-uses. It is appropriate that this system also considered the interaction between mining and other land-uses. This is already recognised in the Mining Act to some extent, but an increasingly complicated land-use system needs a more sophisticated, up-front approach;
- The land-use planning system approves other forms of land-use. It is appropriate that this system considers the on-going interface issues generated by these other land-uses;
- At the time a new mine is considered, it is appropriate to ensure that land-use interface issues are fully addressed;
- Current exempt land and compensation provisions provide a well-established and defined basis for mine proponents to negotiate with landowners. A change to these arrangements could prompt a broader review with unintended consequences (eg similar to a Hills Face Zone review);
- Where there is a ‘gap’ between the exempt land and other landowner agreements and the potential impact consideration area, it is appropriate to establish a system for addressing these potential issues when considering a mining tenement application;
- It is not appropriate to consider future development potential that does not yet exist. Consideration should be confined to realistic development potential afforded by the zoning and policy that exists at the time. Government is in the best position to make a reasonable judgement on this matter (as opposed to the mine proponent).

**Figure 9 Interface Consideration Process**



## **Development Plan recognition**

Section 29 is an existing provision in the Development Act that enables the Minister to make changes to Development Plans under certain circumstances (e.g. to fix an error). Planning policy change may also occur provided that “due process” has been followed.

This concept of “due process” is based on the principle that changes of policy can occur outside the Development Act process, provided they have been brought forward in fundamentally the same manner as if they had been initiated under the Development Act. Essentially the focus is to ensure that landowners affected by policy change are given fair and reasonable notice of the change, are afforded the right to express their view of the change, independent consideration is given to these views and a reasonable/balanced position is determined.

An example of where this application applies is to aquaculture projects, where the process of obtaining an aquaculture lease includes investigations, documentation and public consultation (in addition to the other lease issues) that mirrors the Development Plan Amendment (DPA) process.

Such a procedure may be appropriate, to aid policy and land use control changes in Development Plans to protect a mine of state significance. The level of consultation would depend on the level of landowner agreement at the time.

In other cases, consideration might be given to another type of process whereby mines are simply recognised in Development Plans through mapping. This could occur as a Section 29 process (or similar) to recognise the fact that the mining Minister has agreed to issue a Mining Lease (approve a land-use).

## **Notification of Mine at the time of property sale**

An issue that has arisen during the discussions is how (or whether) private mines or mining leases are identified when land ownership changes in close proximity to the mine. Under the Land and Business (Sale and Conveyancing) Act 1994, Section 7 requires a notice to be issued that includes information about any legal interests in the land to be purchased. This includes any State Government interests (e.g. water easements) specific information related to development including zoning.

A unique issue for mining activity is that there is no choice about where mining locates. It is absolutely linked to the geology of the resource. This means that mining can occur in all sorts of locations and situations. One of the related issues for managing resident reactions to mining impacts is managing their expectations. While people might expect industrial types impacts in an inner city or industrial location, it is harder to accept in a hills or rural setting. In addition to this, the undulating topographical settings of most mines means that they can be hidden from view but still in relatively close proximity.

It is recommended that, as part of this work, this aspect of notification is explored to identify whether there are ways in which proximity to private mines or mining leases can be reflected via S7 notices. This would recognise additional work is needed to determine the legislative and administrative changes needed to implement this aspect, the State Government’s interest in the mine and its right to operate.

#### 4.2.3 Route B – Strategic Recognition of Resources

This route assumes that there are potential resources that may warrant protection even though there is no current proposal to mine the resource. This might occur in situations where there is a combination of strategic considerations such as:

- The presence of a particularly rare mineral resource;
- A location that is directly at risk of encroachment by land uses that are either sensitive to mining operations or could sterilise the resource (investment value);
- Relative economic importance (proximity to market, potential business value, employment generation, return to State)

The approach to considering strategic importance is described in more detail in the following Chapter.

In practice, the level of protection would not be likely to be at the same level as for an operating mine, because the real impacts could not be fully determined at the time of planning for protection.

#### **Strategic Resources Identification**

This process could occur in parallel with the DPTI Planning Strategy processes which would then feed into Council's Section 30 Review process. The Development Act requires that the Planning Strategy be reviewed every five years. The initial task would be to identify important resource areas that are at risk of being sterilised by urban activity. This would be a collaborative exercise between the Department of State Development and DPTI. This would form the basis of an ongoing review process that could be established to consider changes every five years to align with Planning Strategy reviews.

Where important resources are at risk of encroachment, these sites could be indicated graphically on plans (as with the Yorke Peninsula). This will ensure the presence of the resource is flagged for both for the purposes of feeding into Development Plan Amendments and for Major Project/Development applications.

High 'at risk' areas might be indicated by the:

- Proximity of a township or regional centre.
- Presence of major infrastructure (e.g. high voltage electricity, gas mains, major roads).
- Key elemental features (e.g. high scenic areas, high solar or wind ratings, water supply).

#### **Up-dating Development Plans**

Section 30 of the Development Act requires Councils to review their Development Plans every five years or following a revision of the Planning Strategy. This review could trigger a requirement to take account of resources identified as being both important and at risk of encroachment.

At this point, it is possible to consider including these areas as a policy area level of recognition within Development Plans. Policy areas are less restrictive than zoning, but they do highlight that a particular issue needs to be considered in the context of a development application. They can also act as a mechanism for referral to an agency (e.g. The Department of State Development).

In comparison, the bushfire hazard ratings are reflected in Development Plans as policy areas. Depending on the nature of the proposed development and the level of hazard, referrals are triggered to the Country Fire Service (CFS) and certain design standards may apply.

In a similar vein, an application may be referred to the Department of State Development where the proposal may compromise the resource. The Department of State Development would then advise whether the proposal is appropriate as proposed, whether design/siting changes might render it acceptable or whether the proposal is unacceptable. This gives the Department of State Development the ability to take into account the procedural requirements of obtaining a Mining Lease (e.g. is a new house likely to be located within 400m of a resource area).

Some resource areas can cover very large areas of land and the extent of the policy area would require careful consideration, so that landowners may still use land in a useful manner. This approach means that the policy areas would generally be an overlay to rural or agricultural zones, enabling the land to be used for associated purposes.

Where there is likely to be pressure for more intense uses, consideration may be given to establishing a zone for the resource area. However, this would occur only where there is a critical resource that is imminently at risk of encroachment. Where an operator may subsequently seek a Mining Lease over the resource, then a zone could be established under Route A.

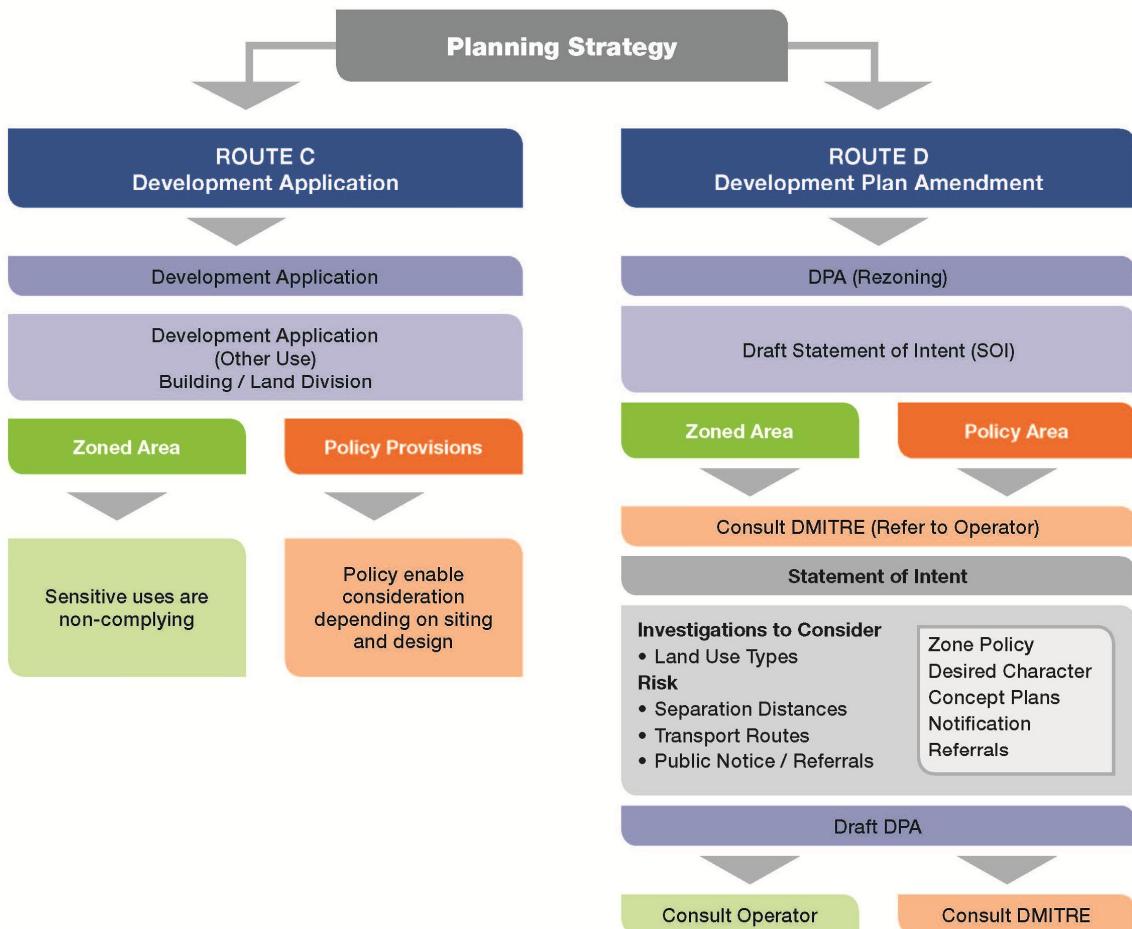
#### **4.3 Development Management Process Model**

This process model considers two scenarios in which “other” forms of development might encroach on resource areas. It should be noted that this approach applies after a mine lease is approved. Applications for development within a mining zone or in proximity of a mine would be managed by the policy and procedures that were established specifically for the mining operation in the lead up to the issue of a lease.

This aspect is focused on managing the interface between mining activity and sensitive land-uses.

The starting point for the development management processes is the Planning Strategy. Under the Development Act, the Planning Strategy plays an important role as reference point to guide policy decisions. This indicates the importance of having resource areas reflected in the Strategy.

Figure 10 Development Process



#### 4.3.1 Route C – Development Application

Consideration of a specific development proposal can occur in three ways:

- Lodgement of an application through the normal assessment process (i.e. with Council or DAC depending on the circumstances).
- Request for a Major Project/development assessment (decided by the Minister).
- Crown Development applications under S49 of the Development Act.

In the first case, an application is assessed against the provisions within the Development Plan. In the second case, a proposal follows an environmental impact assessment methodology but is still required to have regard to the Planning Strategy and Development Plan zones and policies.

Major Projects/developments have wider consultation and investigation requirements than for normal DAs and offer scope for both the Department of State Development and operators to provide advice at numerous points in the process.

Crown Development applications relate to proposals that involve the provision of public infrastructure (this includes infrastructure provided by the private sector). These applications are assessed by DAC in a similar manner to normal applications. However, information flow in this area may be limited. Public notification only occurs if the project is over \$4m and this is limited to Category 2, and most Development Plan policy is silent on the issue of infrastructure. On the other hand, departmental expertise provides for a greater scope of advice to be provided within Government and through the case managers for these projects. Consideration is needed in the state-wide approach to assess the value of internal Government processes to advise on these projects and their potential impacts on mine operations.

## **Development within a zoned area**

Where a development application occurs within an area zoned for a mine operation, the application will be assessed against the policies currently within the zone. The zone can establish policy that discourages or prevents sensitive uses in critical locations, and can also establish procedures for notification and referrals.

Consideration needs to be given to the following:

- In most circumstances development adjacent to a zone would include notification (but there are some exceptions) – however, if the mining zone includes a separation or buffer area, then development beyond the zone should not be an issue.
- Within the zone, some forms of development can be made non-complying (with or without qualification).
- Provision for notification is usually to the landowner and relates to adjacent land/allotment boundaries. This may not always mean that the operator is notified.
- It may be necessary or appropriate to have a referral arrangement to consider impact risks for sensitive uses where it is appropriate to be more flexible about sensitive uses.

## **Development within a ‘consideration’ area**

Where a development application occurs within an interface consideration area its treatment will depend on the nature of the consideration area. As indicated previously, the specific policy tool that might be used to manage interface issues may vary from situation to situation.

This might include consideration of siting or design measures to manage impacts or referral arrangements. This raises some questions that require consideration on a case by case basis:

- What types of land-uses should be listed for referral?
- In some cases the value of a development can be a barrier to a future mine, there may be a need for a development cost trigger (e.g. a solar generation plant, major infrastructure projects)?
- If the policy area identifies the extent of the potential resource, does this include separation distances? If not, is there a need to have a referral trigger within a certain distance of the policy area?
- Is it appropriate to have two levels of referral to the Department of State Development – one in which the Department of State Development provides advice to the decision makers and one where the Department of State Development provides direction? If the policy areas identify resources that are truly important and at risk then direction may be more appropriate. If the policy areas are a more general identification of potential then advice may be more appropriate.
- It may be appropriate to have two levels of policy area (i.e. important and strategically important).
- Is there a role for the EPA if there is no operating mine?

These questions further demonstrate the need for case by case evaluation.

#### 4.3.2 Route D - Proposed Development Plan Amendment (DPA)

There may be circumstances where an amendment to a Development Plan is proposed to introduce zoning that would facilitate development that may encroach on an important resource. Provided the resource is at least identified in the Planning Strategy, there is an ability to establish a consultation requirement with the Department of State Development at the Statement of Intent (SOI) stage of the DPA process.

The SOI is a 'brief' that scopes the intent of the DPA and requires approval from the planning Minister before a DPA can proceed. An SOI contains a section in which consideration must be given to the Planning Strategy for the area. Where a resource area is identified in the Strategy, this could be used as a trigger for having the SOI referred to the Department of State Development for comment prior to a decision by the Minister.

At this point the Department of State Development would have the opportunity to provide advice about the importance of the resource and the potential impact of the rezoning (depending on the nature of the rezoning). This advice may recommend that the rezoning should not occur, that the zone boundary be altered to account for adequate buffers around the mine site, may determine that there are unlikely to be any issues or may identify any particular investigations required. The investigations could consider issues including, the impact of future mining operations, separation distances, transport routes and referral arrangements.

There may be some circumstances where a rezoning is proposed adjacent to an existing zoned mining area or an identified transport route. Statements of Intent are required to consider the nature of adjoining zones (including zones in adjacent Development Plans). As part of the SOI approval process it may be appropriate to specify consultation with the mine operator within the zone.

# 5. Typical Scenarios and Approaches

## 5.1 Overall Outcome

The following addresses the typical scenarios and tests planning approaches to dealing with each. The key driving considerations behind each suggested approach is:

- Planning for the protection of construction materials has a significant and broad local public advantage (efficient use of public money for infrastructure and public buildings, manage land development and house construction costs).
- Planning for the protection of other mineral resources potentially has significant wider economic benefit (e.g. local employment, financial return to State).
- Planning for the protection of resources and the operation of mines needs to occur very early – it is too late if the discussion occurs when a development application has been lodged.
- Initial focus of effort needs to occur in those locations where the risk of land-use conflict is relatively high.

The key question for each of these examples is “what is a reasonable approach to balancing the need to avoid future problems but also allowing the productive use of land”?

The following examples aim to highlight both the opportunities and challenges associated with the application of planning and mining system tools. Additional information and case study examples (including mapping) is contained in Appendix 7.2.

## 5.2 Existing Operations – Site Specific Assessment

### 5.2.1 Site Specific Example – Penrice Angaston

The Penrice Angaston case study example has been used as a basis for testing the policy approach for an existing operation. In this case there are issues associated with residential zoning directly abutting the mine operations. However, there are also opportunities to address future expansion.

Appendix 2 contains background information on the six case studies and Appendix 3 contains relevant mapping. The Penrice example demonstrates a history of development that means that operations are constrained on the southern side of the mine. However, there is an opportunity to limit encroachment at the northern end of the operation, where it is possible that the mine extend in the future.

The following example considers the various options and combinations of options to the zoning/policy approach to both the existing arrangements and future extension. The Penrice Angaston example presents two key challenges:

- The existing operations are covered by a suitable Zone but the potential expansion area is not – should the zone be extended and should cover the tenement or an extended area or the full extent of the potential interface area?
- There is no policy to manage interface issues beyond the Mineral Extraction Zone – can a policy or overlay be introduced over the urban and rural living zones to minimise further intensification of sensitive uses? Should this also apply to the Primary Production Zone?

Policy Approach	Notes/ Comments
<p><b>Mineral Extraction Zone Option</b></p> <p>Extend the zone cover the:</p> <ul style="list-style-type: none"> <li>• Future mining activity to the north – to prevent sterilisation</li> <li>• Interface Consideration area abutting this – prevent or manage interface issues</li> </ul>	<ul style="list-style-type: none"> <li>• Use the Policy Library Module “Mineral Extraction Zone” as a policy base.</li> <li>• Consider including the interface consideration area within the zone.</li> <li>• Sensitive uses, sterilisation of resource and land division – non-complying.</li> <li>• Reconsider non-complying list for post mining uses (cemetery, some industrial/commercial uses may be appropriate).</li> </ul>
<p><b>Policy Control Option</b></p> <p>Introduce a ‘policy’ mechanism to control encroachment or intensification of sensitive uses that would cover:</p> <ul style="list-style-type: none"> <li>• Existing and future mining activity</li> <li>• Apply ‘over’ existing zones(i.e. where land is already zoned for urban and primary production)</li> </ul>	<ul style="list-style-type: none"> <li>• Policy control needs to be created (e.g. an overlay, Principles of Development Control and Non-Complying provisions)</li> <li>• Referral may be triggered</li> </ul>
<p><b>Overlay Policy Option</b></p> <p>Overlay to include:</p> <ul style="list-style-type: none"> <li>• An approximate “interface consideration area” to extend from the zone boundary to achieve 500 m in total</li> <li>• Covers areas that are already zoned for urban use (cannot be ‘down zoned) as well as ‘compatible’ zoned land (e.g. general farming)</li> </ul>	<p>Policy to allow activity in the interface consideration area (similar to a primary production zone – general farming) but limit:</p> <ul style="list-style-type: none"> <li>• Additional land division – to limit the density of residential development.</li> <li>• Land-uses likely to be sensitive to mining impacts (e.g. residential, education, health).</li> </ul> <p>Consider re-use or future uses:</p> <ul style="list-style-type: none"> <li>• Cemetery, special industry (if separation distances can be achieved), service trade etc.</li> </ul>
<p><b>Strategic Transport Routes Overlay</b></p> <ul style="list-style-type: none"> <li>• Apply as a mechanism to manage interface issues next to main roads or B-Double routes and ‘last mile’</li> </ul>	<ul style="list-style-type: none"> <li>• Need to add requirement for noise attenuation or set-back for land-uses that are sensitive to heavy vehicle traffic.</li> </ul>

Policy Approach	Notes/ Comments
<p><b>Site Specific Considerations</b></p> <ul style="list-style-type: none"> <li>• Topography is such that visual impact is unavoidable</li> <li>• Viticulture also contributes to impacts</li> </ul>	<ul style="list-style-type: none"> <li>• Location of current or future access points.</li> <li>• Access route and connection for B-Double access.</li> <li>• Extent of overlay – cover area but not too restrictive.</li> <li>• Topography issues – stormwater, visual impact.</li> <li>• Whether mineral potential has already been sterilised.</li> </ul>

This example highlights the various zoning/policy options available to deal with an existing situation. The options and the implications are complex and cannot be determined without discussions with key stakeholders and a better appreciation of likely landowner reactions.

Determining what is the best option for existing operations will need to be addressed on a case-by-case basis.

### 5.2.2 Site Specific Issues

This study explored the issues associated with six case studies. Two other case studies were also explored in the lead up to this study. They included Sellicks Hill and Stonyfell/White Rock.

A number of common elements were identified across these case studies:

- The distinction between operations that ‘blast’ and those that do not would appear to be valid. Where blasting occurs, there are more issues associated with vibration and noise;
- The issues associated with on-site noise mostly related to crushing activity. Careful location of crushing equipment could reduce issues;
- Transport routes and noise associated with vehicles were a common issue and aggravated when early deliveries needed to occur (cement) and volumes increased (major projects);
- Topography is a major influence on real and perceived impacts (this aspect cannot be addressed generically);
- Managing visual impact did not necessarily practically address other impacts but was considered to mitigate issues (manage perceptions);
- Direct communication between the owners/operators of the mines and the surrounding community/Council helped to manage expectations and issues.

The Queensland Government recently introduced a set of policy changes applying to approximately 100 identified “key resource areas” across the State. The approach was a relatively generalised one, with a common approach and policy applied to all sites. This has generated some criticism due to the lack of site specific evaluation (e.g. impractical location of transport routes).

Consideration was given to whether a similar approach could be applied in SA, using the case studies as examples. The reality is that this approach could only be applied to two of the case studies: Kapunda and Victor Harbour. Even so, there would be issues associated with the application of the transport route approach at Kapunda.

### 5.2.3 Site Specific Methodology

A site specific methodology for addressing interface issues requires consideration of the current situation and the likely future situation both from the mining perspective and the land use planning perspective.

#### ***Context Evaluation***

The initial step is to describe the current and potential future context and map this as far as possible.

Current Context	Future Context
Consider the location of the mine: <ul style="list-style-type: none"> <li>• Nature of the topography</li> <li>• Climatic conditions and prevailing winds</li> <li>• Surrounding land uses</li> <li>• Potential visibility</li> <li>• Drainage lines</li> </ul>	Consider the future of the Mine: <ul style="list-style-type: none"> <li>• Direction/approach to mining</li> <li>• Expansion Options</li> <li>• Change of access?</li> <li>• Rehabilitation / screening options</li> </ul>
Consider the nature of the mine: <ul style="list-style-type: none"> <li>• Blasting or not blasting</li> <li>• Crushing or not</li> <li>• Cement or not</li> <li>• Location of processing, loading etc..</li> </ul>	Future land use development potential: <ul style="list-style-type: none"> <li>• Proximity of the existing urban area</li> <li>• Access to services (water, electricity)</li> <li>• Does the current zoning restrict development already</li> </ul>
Consider the access arrangements: <ul style="list-style-type: none"> <li>• Access / entrance location</li> <li>• Route to 'main road'</li> <li>• Other heavy vehicles</li> </ul>	Consider the strategic planning directions: <ul style="list-style-type: none"> <li>• Mine recognised in strategy?</li> <li>• Longer term land use plan or restrictions?</li> </ul>
Consider the current policy environment: <ul style="list-style-type: none"> <li>• Mine recognised in the Development Plan?</li> <li>• Current zoning (sterilisation and interface implications)</li> </ul>	Consider future

#### ***Interface Risk Assessment***

This information then forms the basis of an interface assessment process. An 'interface consideration area' can then be mapped relative to the mine operation area. A starting point for this consideration area is 500m. If the operation does not involve blasting or crushing, then this could be reduced to 300m.

This provides a 'picture' of the interface risk locations (i.e. those locations where there is or could be interface issues arising between the mine operation and sensitive uses). For existing operations, consideration could also be given to evaluating the history of complaints.

### **Interface Mitigation Assessment**

Having established those locations where there is a risk, the next step is to evaluate the options for mitigation and the likelihood of success. At this point, specialist advice may be required in relation to predicting specific impacts and selecting appropriate tools.

Example of mitigation strategies include:

Mitigation Strategy Option	Consideration
Adjust the approach to the mine and its operations to minimise the potential for impacts in particular locations.	Can impact causing activities be relocated within the site? (e.g. access point, crushing equipment),
Introduce barriers/screens to address real or perceived issues.	Can visual barriers be introduced to manage ‘perception’? Can the physical features of the mine itself be used to screen impacts?
Introduce planning system mechanisms to avoid the establishment of sensitive uses (e.g. residential development, health facilities etc...)	To what degree are these already present or allowed? Does this involve a down-zoning?

### **Conclusions**

At the conclusion of this process, there should be sufficient information to provide clear direction for the actions that are needed to reduce interface issues as far as practical. This can then be fed into a number of implementation actions.

Once of these could lead to policy or zoning change in the relevant Development Plan.

## **5.3 New Operations - Site Specific Assessment**

### **5.3.1 Site Specific Example- Victor Harbour**

While Victor Harbour is not a new mine, its location and the layout of the surrounding land-uses provide an insight in to how “new mine” operations might start up and then evolve over time. In this case the surrounding land-use zoning appears to have taken into account the presence of the mine. However, there is anecdotal evidence to suggest that there is pressure for additional development around the mine.

Appendix 2 and 3 contain additional background information and mapping.

Policy Approach	Notes/ Comments
<b>Mineral Extraction Zone</b>  Introduce a zone to cover the: <ul style="list-style-type: none"><li>• Core area of mining activity – tenement area</li><li>• Likely expansion area - prevent sterilisation</li></ul>	Use the Policy Library Module “Mineral Extraction Zone” as a base.  Where possible include the consideration area within the zone where the land has been purchased as part of negotiations.  Sensitive uses, sterilisation of resource and land division – non-complying.  Reconsider non-complying list (cemetery, some industrial/commercial uses may be appropriate).

Policy Approach	Notes/ Comments
<b>Policy Control Option</b> Introduce a policy mechanism to prevent sensitive uses in consideration area that is not covered by the zone <ul style="list-style-type: none"> <li>• Prevent sensitive uses in General Farming Zone</li> <li>• Restrict intensification in the Rural Living (2) Zone</li> </ul>	<ul style="list-style-type: none"> <li>• Policy needs to be inserted into two zones and would require: Non-complying trigger for land division to avoid intensification in Rural Living Zone and noncomplying trigger for residential in General Farming Zone</li> </ul>
<b>Overlay Policy Option</b> Overlay to include: <ul style="list-style-type: none"> <li>• An approximate “consideration area” to extend from the zone boundary to achieve 500 m in total</li> <li>• Covers areas that already zoned to rural living use and cannot be ‘down zoned’ and ‘compatible’ zoned land (. general farming)</li> </ul>	Policy to allow activity in consideration area (similar to a primary production zone – general farming) but limit: <ul style="list-style-type: none"> <li>• Land division – to limit the density of residential development.</li> <li>• Land-uses likely to be sensitive to mining impacts (e.g. residential, education, health).</li> </ul> Consider re-use or future uses: <ul style="list-style-type: none"> <li>• Cemetery, special industry (if separation distances can be achieved, service trade etc.).</li> </ul>
<b>Strategic Transport Routes Overlay</b>	Need to add requirement for noise attenuation or set-back for land-uses that are sensitive to heavy vehicle traffic.
<b>Site Specific Considerations</b> This site is on the edge of the Victor Harbour urban area. It is potentially at high risk of encroachment and requires stronger policy support to address potential future development scenarios.	<ul style="list-style-type: none"> <li>• Location of current or future access points.</li> <li>• Access route and connection for B-Double access.</li> <li>• Extent of overlay – cover area but not too restrictive.</li> <li>• Topography issues – stormwater, visual impact.</li> </ul>

The Victor Harbour example highlights a situation where there is a high risk of future encroachment. This example also highlights the need to consider future expansion. In this case it is questioned whether the planning system is strong enough to resist pressure for residential development in the surrounding farming zone. Over the next 20 years, it is possible that urban zoning could surround this mine operation. Without the ‘interface consideration area’ being included in the Mineral Extraction Zone, is it realistic to assume that new housing can be prevented in the area surrounding the mine?

## 5.4 Strategically Important Potential Mineral Resources

The following example aims to explore the approach for protecting locations with mineral resource potential. The purpose of this exercise is to use an on-ground example to help identify the planning tools available to protect mineral resources that are not the subject of a mining tenement, but which are important and need protection from sterilisation.

These types of situations would need to be identified as part of a joint Department of State Development/DPTI strategic exercise that addresses the quality/scarcity of the material as well as the likelihood of development encroachment.

Appendix 3 contains a map titled “Selected Possible Key Resource Area – South West Kapunda”. This map provides an example of the issues identified below.

## Context Evaluation

A preliminary context evaluation highlighted the following:

Context Element	Notes
Location	<ul style="list-style-type: none"> <li>Undulating topography</li> <li>Several creek/rivers (River Light)</li> <li>General farming area</li> <li>Some scattered farming building (may be dwellings)</li> <li>Approximately 4km from Kapunda and 8km from Freeling</li> </ul>
Access and Infrastructure	<ul style="list-style-type: none"> <li>Possible river crossing</li> <li>Proximity to Thiele Highway</li> <li>Rail corridor nearby</li> <li>Likely to have limited access to 'urban' infrastructure</li> </ul>
Development Plan Policy	<ul style="list-style-type: none"> <li>Zoned Primary Industry – prevents urban activity but may enable farm houses</li> </ul>
Encroachment / Sterilisation Risk	<ul style="list-style-type: none"> <li>Relatively low</li> <li>Possible scattered housing (Light River amenity?)</li> </ul>

The likelihood of significant encroachment is relatively low, although there is a limited possibility of additional farm housing. The potential for sterilisation is also likely to be low. The presence of the River Light and other creeklines would deter land uses that might have water quality impacts. The potential for a wind energy project is unclear.

Based on the context evaluation a simple approach to this example would be to identify this resource area in the relevant Planning Strategy to indicate its presence and to prevent future rezoning of this area.

Should there be a concern that a land use type could sterilise this resource, it would be possible to insert a concept plan and associated policy into the General Farming Zone to identify this resource and a standard consideration area of 500m. This would enable the 'evaluation' of any future land uses. In this context it would be preferable to have a referral trigger to -the Department of State Development to support any development assessment process.

The "Selected Possible Key Resource Area – South West Kapunda" map in Appendix 3 indicates the possible spatial area that might be covered relative to the existing cadastre.

## 5.5 State-Wide Assessment - Methodology

A state-wide approach to resource area planning and management involves developing a state strategic view about mineral resources. In essence, the outcome would be a mining version of the Planning Strategy, highlighting mining operations or potential mineral resources of strategic importance.

A strategic mineral resources plan would provide guidance to the planning system by 'feeding' information into the planning system at the strategic level. Ideally, this plan would be reviewed regularly (possibly every 5-10 years) in order to check that trends and assumptions are still relevant.

The development of this strategy would require an appreciation of both the mining industry (relative strategic importance) as well as an understanding of development industry to determine likely future trends and influences. Consequently, such a strategy would best be approached with the involvement of both the Department of State Development and DPTI.

The overarching objective is to identify those locations that are most likely to present situations where development could sterilise an important source of construction materials or mineral resources. This requires consideration of both the importance of the potential resource and the risk of development pressure.

### Timeframes

Consideration of timeframes is important. A mine operation usually has a lifespan greater than most strategic planning timeframes (i.e. exceeding 30 years). In addition to this, estimating growth or the pace of growth beyond a 5 to 10 year horizon can be very difficult.

On the other hand, it generally takes 5-10 years for the planning process to facilitate new growth areas. This includes the time needed to undertake strategic planning, coordination of infrastructure, rezoning processes and then the lodgement of land division.

On this basis, the state-wide assessment should have at least a 10 year horizon in mind when assessing the potential for growth and potential encroachment.

### Nature of Materials/Minerals

The nature of the extractive materials or minerals provides a generalised indication of the likely mining and processing approach which in turn can point to the potential for and nature of impacts.

At a strategic state-wide level this provides some indication of the degree of interface issues that could occur.

Using extractive industries as an example, the majority of the literature identifies a range of construction materials needed for the construction and building industry. Some distinction is made between materials that require blasting to facilitate extraction (e.g. hard rock) and those that do not (e.g. sand). The reason for this distinction is to reflect the likely extent and nature of potential impacts on surrounding sensitive uses.

The nature of materials may also have an impact on the degree of other impacts such as dust, traffic impacts, processing impacts etc. The nature of these impacts become more relevant at the site specific level.

In the case of the state-wide approach, the nature of the materials is less relevant as the approach is more generic in nature.

On this basis it is appropriate that a generic "consideration distance" of 500m for extractive industries be applied to the approach.

For other types of minerals the consideration could be open cut and underground mining approaches. The consideration distance could be greater or lesser than 500m.

The consideration distance is the distance between the identified potential resource and a surrounding distance within which sensitive development might occur.

## Nature of Land-uses

There are two main categories of land-uses that require consideration:

- Those that are sensitive to the impacts of mining and associated activities (noise, dust, vibration).
- Those that represent a significant investment that could ‘sterilise’ a resource because they are too expensive to relocate (undermining the cost of the material outcomes being sought).

The first type of land-use category relates primarily to uses such as residential, child care and education, tourism accommodation and health related uses. Typically this type of land-use occurs in the following main circumstances:

- Expansion of existing urban areas - linked to or limited by the expansion of infrastructure
- Rural living style living - increasingly divorced from ‘grid’ services but often within a commutable distance to a major centre.

The second type of land-use are less predictable:

- Investment in economic precincts (e.g. intensive animal keeping, horticulture) – generally linked to a major source of water or electricity/gas or both.
- Significant projects (e.g. tourism development, solar/wind generation) – generally linked to major infrastructure or a particularly scenic location.

## Resource Protection Criteria and Economic Considerations

The Department of State Development have considered criteria to provide an indication of resources areas that “are or have potential to be of economic significance to the State or region”. The criteria were developed based on interstate approaches and a number of ‘context’ considerations. This is an important perspective as the effort required to protect resources can be considerable.

However, it is important to highlight that this ‘economic’ evaluation is not an indication of importance per se but an appreciation of those mining activities that are both important and sensitive to land use encroachment. Different mining sectors will have different economic profiles which in turn will influence the degree to which operations are likely to be sensitive to encroachment or sterilisation by other land uses.

Three important perspectives are relevant:

- The ability of the mine to ‘accommodate’ costs associated with sterilisation and encroachment (some mining sectors may have finer profit margins which do not enable the buy-up of surrounding land)
- The relative value of the mine to the local economy (flow on benefits and costs, employment generation, State revenue etc...)
- Cost implications of location (sensitivities to travel distances, relative property values etc..)

Having identified those resource areas that meet the protection criteria and evaluated their sensitivity to land use encroachment, further evaluation is then needed to determine the relative risk of encroachment or development pressure. This occurs in the final stage of analysis described in the following sub-section.

## Synthesis

The process of synthesising this information is typical of any strategic planning exercise. It is an iterative process of comparison, evaluation and prioritisation. The output would be a map of locations where a priority needs to be given to protecting mines or mineral resources in the face of other competing land uses.

It is important to note that this is not necessarily a list of the most important mines or mineral resources in the State but rather a list of those that are important but are also most at risk of sterilisation or encroachment.

### 5.5.1 Construction Materials Approach

The following sets out a high level process for assessment for sources of construction materials:

- Identify the location of those potential resources (critical to the construction industry) (sourced from the Department of State Development potential mapping set).
- Determine those locations that are relatively close to the markets that they need to serve (criteria required) – e.g. identify a guideline distance or radius from the market.
- Determine the risk of encroachment (nature and source of encroachment) – e.g. urban growth areas, horticulture, solar/wind power generation etc.
- Identify these resources (graphically) in the relevant Planning Strategy.
- Reflect these resources in the Development Plan (with relevant policy and procedural triggers).

The manner in which the final dot point might occur depends on the intended overall outcome.

One option is to make one set of generic changes for all operations. This is the model that has been used on Queensland. The danger for the “one-in, all in approach” is that some operations may lose the stronger controls that they already have and highly sensitive situations may hold up changes for all operations.

Another option is to deal with each site individually and tailor the approach to the current and historical circumstances. The objective would be to get the best, negotiated policy outcome possible.

## Potential Resources – strategic evaluation

Based on the current Planning Strategy (various volumes):

- Consider the construction material requirements for major identified centres (Greater Adelaide, Mount Gambier, Murray Bridge, Port Augusta, Port Pirie, Whyalla, Port Lincoln and Ceduna) – region by region approach (criteria needed similar to the criteria developed for the Key Resource Areas (KRAs)).
- Consider strategic importance (nature and quality of the material, availability of alternative sources and proximity to market, mine operation logistics).
- Identify those potential resources within the specified proximity (to be defined) – high mineral potential and medium mineral potential.
- Consider the risk or potential for encroachment or sterilisation – suitability of land for future development (evaluation criteria to be defined – e.g. land features, proximity to major infrastructure).
- Consider at a high level, the likely major transport routes (shown graphically in the strategy).

Once a set of potential resources have been identified then these can be mapped and included in the relevant Planning Strategy documents. The Planning Strategy can be up-dated at any time. Wording should also be included in the Strategy to indicate how future decisions should be addressed where potential conflict might arise.

For Example:

Development that is sensitive to the impact of mining activities, including the transport of materials, should be directed away from identified resource areas and their major transport routes.

**Where consideration is to be given to future development, this must balance the wider social and economic implications associated with the loss of access to construction materials against the contribution of the proposed uses.**

**Potential Resources – high risk protection**

For those situations where it has been identified that there is:

- A strategically important potential resource.
- There is a high risk of encroachment within in the next 10 years.

It is then likely to be a need to undertake an additional step to further protect the resource. This would involve identifying the resource area as an Overlay in the Development Plan. A mineral resource overlay would identify the area of the resource.

It is recommended that the area identified on these overlays includes the estimated area of the resource (or significant portion) as well as a “consideration area” of 500 metres from the edge of the resource.

If the overlay includes both the resource and a ‘consideration area’, then there are triggers in the Development Act that will enable a referral to the Department of State Development where a development application may be lodged.

The overlays would need to be inserted into the Development Plan via a Development Plan Amendment process. Specific investigations would be fed into the DPA to demonstrate the value of the resource, the risk of encroachment and the specific policy/procedural triggers needed. This process includes a public consultation process.

## 5.6 Observations

- It is critical that the Planning Strategy documents contain at least graphical indications of the location of potential resources – this acts as a reference point for rezoning proposals.
- At the time a Council (or the Minister) is considering a rezoning, there is a requirement to consider the Planning Strategy – if important resources are not identified, then there is a chance that a rezoning might occur without consideration of future resources.
- Where there is high risk of encroachment/sterilisation, there is a need for a trigger to consider the potential impact of development applications (e.g. to consider lower density or non-urban proposals).
- There is a need to delineate a resource within the Development Plan. Zoning is not an option until there is a Mining Lease and a real prospect of a mining operation.
- The alternative is a policy overlay that generally identifies the area of consideration, combined with a referral trigger that allows consideration of proposals on a case-by-case basis.

Consideration will need to be given the area of land identified through this mechanism. There is some risk associated with not getting the identified area ‘right’. This needs to be balanced against the extent of area that might not be available for alternative land-uses. This balancing of considerations can occur as part of the strategic evaluation process and can be refined through a DPA process.

## 5.7 Transport Routes

Access and transport is an essential consideration for all types of mining. However, 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.

The interface issues associated with transport routes fall into two main categories as described below.

### 5.7.1 Strategic transport routes

This is a term used in the planning system to indicate roads that perform a main/arterial road function for a range user groups, not just mining. Issues arise for the mining industry where heavy vehicles use these roads at times and volumes that create noticeable noise impacts.

DPTI has released a draft document “A Functional Hierarchy for South Australia’s Land Transport Network” (June 2013). This document provides an outline of the functional hierarchy, identifying which transport corridors are important for different modes of transport. Major Traffic Routes and Freight Routes are most critical to the mining industry. It is intended that the planning system would reflect the functional hierarchy and encourage land uses/design responses relevant to likely impacts.

In general, the Development Plan offers a range of mechanisms to map/identify these strategic transport routes. Whether planning policy should address impact/interface issues is a broader land-use/interface question.

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

### ***Major Project Planning***

A number of examples were provided where mines were require to deliver construction materials at times that generated greater impacts than perhaps would normally be the case.

For example, a major infrastructure project might be operating overnight to reduce the impact on day time traffic. Other operational circumstances may require the supply of cement to the construction site overnight or in the early morning. In such situations, consideration should be given to the impact this causes as part of the project application and assessment process or in the context of the construction management plan. If the noise impacts are considered a reasonable short term impact in order to avoid other types of impacts, then the project proponent should notifying residents of the increase in truck traffic and noise.

### 5.7.2 Local & regional B-double routes

When looking at the requirements and impacts with regard to transport, it is important that consideration is given beyond the arterial road ‘Freight Routes’ that are highlighted within the Functional Hierarchy, and onto the ‘last mile’. That is, beyond the designated arterial freight network maintained by the state government, and onto what is often the local road network (maintained by local government) used to provide direct access to business premises. Unlike arterial roads which are often ‘gazetted’, providing broad approval for use by specific configurations of heavy vehicles, these local road accesses to businesses are often utilised by a

small number of such vehicles (sometimes down to only a single vehicle) and are therefore often only issued a ‘permit’, for their use only. For this ‘last mile’ component, there is a need to ensure that they are considered in the same manner as the broad arterial freight network, in terms of impacts such as the likes of noise.

In some cases these routes may be used by a number of different industries. The Kapunda example is a designated township “by-pass route”.

The process of designation of these routes is undertaken by DPTI and should include the involvement of Council where Council assets are involved. However, it is not clear whether Council engagement occurs sufficiently early to enable Council to negotiate road upgrade and maintenance issues.

This study has not undertaken an in-depth investigation of this process. However, it may be relevant to consider whether the current process could or should include the following:

- Early Council involvement to enable discussion and agreement on road, intersection, floodway and bridge upgrades and agreement on on-going maintenance costs (including proportional contributions).
- In rural/regional locations, consider signage to designate B-double routes to alert future land owners and drivers.

### 5.7.3 Regional Mining and Infrastructure Planning

DPTI is currently undertaking a project to determine the transport and infrastructure needs of the mining industry in several key regions of the State.

The outcome of this work may provide a clearer indication of transport corridors and key transport facilities.

It would be appropriate that the results of this work feed into the strategic planning level of the planning system to enable subsequent policy responses that manage potential interface issues, planning and mining.

# 6. Recommendations

It is important to recognise that mining, planning and environment protection systems have all been established with a primary focus and purpose. This has led to a situation where overlapping issues have not been fully or specifically addressed. In particular, there are inadequate connections between the mining system and the planning system to facilitate the sharing of relevant information at the right time. The planning system needs clear information at the strategic planning level, if policy is to have its maximum effect. The mining system enables new mines to address some land-use issues at the outset, but the planning system is best placed to manage future interface issues.

## 6.1 Key Observations

This project included a review of background information, relevant legislation and an analysis of six existing case studies. This information provided valuable background insight into the relevant impact and process issues.

These issues include:

- Even though mine tenement applications are not assessed by the planning system under the Development Act, (i.e. they are assessed under the Mining Act) there is a need to introduce a better system for recognising mining as a land-use and managing the interface issues between mining activity and land-uses that are sensitive to the impact of these activities.
- Once land is ‘zoned’ for an activity, it is very difficult to take action to avoid development unless there is funding to ‘buy up’ properties. Alternatively, attempts to ‘down zone’ land is often very difficult to achieve due to landowner opposition. This means that to improve outcomes, interaction between the mining and planning systems needs to occur at the strategic planning level (to provide guidance for zoning proposals).
- Both the land-use planning system and the environment protection policies tend to have the effect of ‘protecting’ sensitive uses regardless of what land-use was established first. One way to limit the impact that sensitive uses can have on mining operations is to establish adequate separation distances at the earliest possible stage.
- Other than in exceptional circumstances and with considerable political commitment, there is little ability to undo existing situations where land-use interface issues currently occur (although there may be an ability to prevent further intensification of issues). The most practical option is to recognise that there is an interface issue and aim to manage expectations primarily through management practices and communication.
- Recognition of the potential impact of heavy vehicle transport routes is needed for not just the mining sector, but also for other transport-reliant industries that need to operate outside standard office business hours (e.g. to avoid heat in summer, 24 hour operations, seasonal peaks etc.). There is a need for better recognition of the strategic importance of these routes and land-use planning system recognition of interface issues so that sensitive uses can be better designed to cope with impacts.
- The planning system is not equipped to solve all interface issues as it can only prevent or limit land-use types and design techniques at a single point in time. This will minimise but not eliminate future interface issues. The Mining Act and the Environment Protection Act have the greatest ability to manage issues on an on-going basis. There will still be a need for good communication practices by operators, some level of monitoring and testing against environment protection policies and management of operations/behaviour.

- The Mining Act makes provision for addressing land-use conflicts at the time of seeking a mining tenement. This is an appropriate point in time when a decision can be made about land-use priority (whole of government perspective) and for that to be reflected in Development Plan policy.
- Based on the case study outcomes, every situation is different due to the influence of surrounding topography, nature of the mining operations and nature of the surrounding community. While there is some indication that an ‘interface consideration area’ of 500m is likely to capture most interface impacts, it is important to recognise that this should only be used as a guide and any future process should allow review and refinement of this on a case by case basis.
- There is a difference between aiming to manage interface impacts and complaints. While it is reasonable to aim to address the interface impacts, it is not realistic to assume that this will avoid all complaints. There will be an on-going need to manage complaints.
- While many mines have a long life, consideration should be given to the “mine closure process” so that the measures put in place to manage interface issues can be re-evaluated in the context of post mine uses and potentially removed.

## Key Outcomes Sought

Complementary changes to both the mining and development systems are needed in order to achieve the desired outcomes for the State. This is effectively an up-date of the systems to enable them to cope with increasingly complex and competing issues. This is essential in order to provide greater clarity and certainty for landowners, property investors and mining investors/operators.

A more collaborative approach to the planning and mining systems is needed. This approach should aim to address the majority of interface issues by achieving better mechanisms for:

- Interaction between the Development Act and the Mining Act at the strategic level to protect strategic mineral resources;
- Establishing better overall practices for dealing with interface issues.
- Recognising the presence of existing mines, mitigate potential interface issues as much as possible and avoid the intensification of existing interface issues via the planning system;
- Protecting new mines as they emerge and recognise them via planning system;
- Ensuring that new landowners are notified of the presence of a mine; and
- Recognising transport routes that carry heavy vehicles and the interface issues that can arise.

The approach identifies three key scenarios, each of which require a slightly different approach but which are based on the following key principles:

- Information about strategic potential mineral resources needs to be included in the Planning Strategy in order to ensure proper consideration of interface and sterilisation issues through the whole of the land-use planning system;
- Interface areas need to be identified at the commencement of a new mine and adequate tools provided in both the planning and miningsystems to supply information that enables proper decision making in relation to future land-use issues;

- Mines need to be recognised in Development Plans so that their presence as a land-use is acknowledged and taken into account in decision making (both for future zoning and development applications as well as in the application of Environment Protection policies).

## 6.2 Recommendations

The following key recommendations are suggested to assist with the establishment of the above.

### **Strategic Input**

1. Achieve interaction between the Development Act and the Mining Act at the strategic level to protect strategic mineral resources. Conduct a strategic planning exercise to consider the need for protection of potential mineral resources. This exercise would consider those locations which are more likely to also be attractive to other land-use types based on key indicators. Produce a 'map' to highlight the location of strategically important potential mineral resources.

*The strategic planning for mineral resources task should include an evaluation of both the importance of the mineral resources as well as the "risk" of sterilisation or encroachment.*

2. Issue for consultation the relevant information to be included in the Planning Strategy, to identify and address any potential strategic land-use conflict situations. Conduct a Planning Strategy update process.

*This tasks should seek to 'confirm' across State and Local Government, in principle agreement to the priority allocation of land for mining purposes (current or future).*

*Work with Councils to encourage incorporation of mining issues into Development Plan policy via Section 30 Review processes. Consider the preparation of a mining and planning system guide to encourage this approach.*

### **Policy Tools**

3. Establish better overall practices for dealing with interface issues. Review and evaluate the various policy tools and up-date requirements to assist in addressing the interface issues and the types of impacts that are caused by mining operations.

*The policy tools review should include a review of the SA Planning Policy Library to ensure that the interface policy and zone policy adequately reflect the needs of mining and interface issues. Consideration should also be given to a review of an overlay mechanism.*

*Consider the preparation of a guide for dealing with mining interface issues. Ensure that the focus is on those uses that are 'sensitive' to mining impacts and acknowledge that the 500 m is a starting point for planning purposes – each situation will be different and will require a tailored response.*

*Consideration might also be given to up-dating referral arrangements and terminology.*

4. Consider an interface management mechanism for strategic transport routes to protect the use of these routes generally.

*The current overlay approach could be up-dated to address interface issues as well as 'protect' the route from the impacts of land use activity.*

### **Existing Operations**

Recognise the presence of existing mines, mitigate potential interface issues as much as possible and avoid the intensification of existing interface issues via the planning system.

5. Ensure that all existing mining operations that have or could have interface issues are zoned as “Mineral Extraction” or similar. Compile a list of operations that require greater ‘policy’ recognition in Development Plans.
6. Support these mine operators to obtain the technical and procedural support/advice to progress DPA processes to implement the most appropriate arrangements for their specific operations.
7. Government should continue to assist the extractive minerals industry in its efforts to manage and mitigate interface impacts that exist as a result of the history of land use evolution.

*This might occur through community engagement activities, changes to operational plans and complaints management.*

*Consider the preparation of a guide for mine operators to assist their interaction with the communities, the planning system and the EPA.*

### **New Operations**

Protect new mines as they emerge and recognise them via the planning system.

8. Establish a system where the process for new mining proposals includes the consideration of interface issues and produces the documentation to facilitate appropriate changes to Development Plans.

### **Transport Routes**

Recognise transport routes that carry heavy vehicles and the interface issues that can arise.

9. Review the process for designating B-Double routes to ensure that Councils have an opportunity to address on-going maintenance costs and explore the option of signage for these routes in rural/regional locations.

### **Awareness**

Ensuring that new landowners are notified of the presence of a mine.

10. As an interim task, prepare a plan of all active mining operations by Council area and make this available as reference information for use in Development Assessment processes with possible follow on to Section 30 processes.

*This should include a simple awareness raising guide for planners on the nature and types of impacts that mines can have and will aid development assessment processes now, offering some opportunity to consider interface issues as part of a merit based assessment process.*

11. Explore the option of a mechanism that enables the identification of a mine within close proximity to property, so that new landowners are made aware of its presence.

*Consideration might be given to the use of Section 7 under the Land And Business (Sale and Conveyancing) Act. Although this will require the preparation and maintenance of an adequate and up-to-date data base on active mining operations (refer recommendation 3).*

# Appendices

## Appendix 1 – Planning Policy Library

Assessment Section	Function
<b>General Section Provisions</b>	<p>These policies apply across the whole council area and relate to a range of social, environmental, and economic development issues such as:</p>
Objectives	<ul style="list-style-type: none"> <li>• Site and design criteria</li> <li>• Access and vehicle parking requirements</li> <li>• Heritage and conservation measures</li> <li>• Environmental issues</li> <li>• Hazards</li> <li>• Infrastructure requirements</li> <li>• land-use specific requirements.</li> </ul>
Principles of Development Control	<p>They establish the development standards that apply to all forms of development and provide a yardstick against which the suitability of development proposals is measured.</p>
<b>Overlay Section Provisions</b>	<p>These policies are spatially located through the application of specific overlay mapping where there is a envisaged land use outcome or application of appropriate design requirements determined by the locality of the proposed development.</p>
	<p>Overlays developed include:</p>
	<ul style="list-style-type: none"> <li>• Affordable Housing</li> <li>• Noise and Air Emissions</li> <li>• Strategic Transport Routes</li> </ul>
<b>Zone Section Provisions</b>	<p>These policies give greater certainty and direction about where certain forms of developments should be located.</p>
	<p>Maps are referenced within zones that show where land uses are suitable to be located.</p>
	<p>Generally, envisaged forms of development within a zone are identified and encouraged through carefully worded policies.</p>

Assessment Section	Function
Desired Character Statements	These express a vision about how the zone should look and feel in the future. They may describe the valued elements of the neighbourhood or area to be retained and/or what level and nature of change is desired.
Objectives	These are the specific planning policies that determine what land uses are encouraged or discouraged in the zone. They often contain detailed provisions to further guide the scale and design of development.
Principles of Development Control	These also provide lists of complying and non-complying development and any public notification provisions that vary from those in the Development Regulations.
Policy Area	Policy areas apply to a portion of a zone and contain additional objectives, desired character statements and principles of development control for that portion.
Precincts	<p>Precincts are used to express policies for a small subarea of a zone or a policy area.</p> <p>Precincts are used if additional site-specific principles of development control are needed to reflect particular circumstances associated with those sub-areas.</p>
Procedural Matters	<p>All zones have a procedural matters section that identifies and lists complying, non-complying and public notification categories for various forms of development.</p> <p>Policy areas and/or precincts, which are a sub-set of the zone, share this procedural matters section. Their respective lists can be modified to accommodate policy area and precinct variations.</p>
<b>Table Section Provisions</b>	<p>These tables provide detailed data for the assessment of certain elements of development, for example, numeric values for setbacks from road boundaries and car parking rates for certain types of development.</p> <p>Conditions for complying development are grouped into their respective tables.</p>

Assessment Section	Function
<b>Mapping Section</b>	
Structure Plan Maps	Structure Plan maps will commonly show the general arrangement and broad distribution of land uses; key spatial elements; and movement patterns throughout the council area and major urban areas.
Council Index Maps	<p>This is the first point of reference when determining the appropriate map(s) applying to a specific property.</p> <p>An enlargement index map may be included where needed, eg for large townships.</p>
<b>Extent Map Series</b>	
Location Maps	<p>Individual overlay and spatial-based maps (based on the Council Index Maps) originate from a single Location Map and 'drill down' through relevant extent maps affecting that location.</p> <p><i>Note: the entire council area will always be represented as the first map in the extent map series and will commence as Map 1.</i></p>
Overlay Maps	<p>Used to show issue areas or features that run across a number of zones, and are spatially defined to a cadastre, for example:</p> <ul style="list-style-type: none"> <li>• Transport</li> <li>• Development Constraints</li> <li>• Heritage</li> <li>• Natural Resources</li> <li>• Affordable Housing</li> <li>• Noise and Air Emissions</li> <li>• Strategic Transport Routes</li> </ul> <p><i>Note: issues that are not spatially defined to a cadastre can appear in this section; however they will be presented as illustrative maps only.</i></p>
Zone Maps	Used to determine which zone applies to which land.
Policy Area Maps	Used to depict the presence and location of any applicable policy area.

Assessment Section	Function
Precinct Maps	Used to depict the presence and location of any applicable precincts.
<b>Bushfire Maps (<i>where applicable</i>)</b>	Bushfire Protection Area – BPA Maps are used to determine the potential bushfire risk (high, medium or general), associated with an allotment located within an area prone to bushfires.
Concept Plan Maps	<p>Concept Plans are used to depict graphically key features and conceptual layouts of how specific areas should be developed.</p> <p>Concept Plans appear at the end of the extent map series as a separate section.</p> <p>Concept Plans are consecutively numbered, commencing with number 1.</p>

## Interface Between Land Uses

### OBJECTIVES

- 1 Development located and designed to minimise adverse impact and conflict between land uses.
- 2 Protect community health and amenity from adverse impacts of development.
- 3 Protect desired land uses from the encroachment of incompatible development.

### PRINCIPLES OF DEVELOPMENT CONTROL

- 1 Development should not detrimentally affect the amenity of the locality or cause unreasonable interference through any of the following:
  - (a) the emission of effluent, odour, smoke, fumes, dust or other airborne pollutants
  - (b) noise
  - (c) vibration
  - (d) electrical interference
  - (e) light spill
  - (f) glare
  - (g) hours of operation
  - (h) traffic impacts.
- 2 Development should be sited and designed to minimise negative impacts on existing and potential future land uses desired in the locality.
- 3 Development adjacent to a **Residential Zone** or residential area within a **Township Zone** (*Conversion note: optional policy text (the words 'or residential area within a Township Zone' is core policy for relevant Greater Adelaide Development Plans and core policy for Regional Development Plans)*) should be designed to minimise overlooking and overshadowing of adjacent dwellings and private open space.
- 4 Residential development adjacent to non-residential zones and land uses should be located, designed and/or sited to protect residents from potential adverse impacts from non-residential activities.
- 5 Sensitive uses likely to conflict with the continuation of lawfully existing developments and land uses desired for the zone should be designed to minimise negative impacts.
- 6 Non-residential development on land abutting a residential zone should be designed to minimise noise impacts to achieve adequate levels of compatibility between existing and proposed uses.

### Noise Generating Activities

- 7 Development that emits noise (other than music noise) should include noise attenuation measures that achieve the relevant *Environment Protection (Noise) Policy* criteria when assessed at the nearest existing noise sensitive premises.
- 8 Development with the potential to emit significant noise (e.g. industry) should incorporate noise attenuation measures that prevent noise from causing unreasonable interference with the amenity of noise sensitive premises.

- 9 Outdoor areas (such as beer gardens or dining areas) associated with licensed premises should be designed or sited to minimise adverse noise impacts on adjacent existing or future noise sensitive development.
- 10 Development proposing music should include noise attenuation measures that achieve the following desired noise levels:

Noise level assessment location	Desired noise level
Adjacent existing <i>noise sensitive development</i> property boundary	<p>Less than 8 dB above the level of background noise (<math>L_{90,15\text{min}}</math>) in any octave band of the sound spectrum</p> <p>and</p> <p>Less than 5 dB(A) above the level of background noise (<math>LA_{90,15\text{min}}</math>) for the overall (sum of all octave bands) A-weighted level</p>
Adjacent land property boundary	<p>Less than 65dB(Lin) at 63Hz and 70dB(Lin) in all other octave bands of the sound spectrum</p> <p>or</p> <p>Less than 8 dB above the level of background noise (<math>L_{90,15\text{min}}</math>) in any octave band of the sound spectrum and 5 dB(A) overall (sum of all octave bands) A-weighted level</p>

## Air Quality

- 11 Development with the potential to emit harmful or nuisance-generating air pollution should incorporate air pollution control measures to prevent harm to human health or unreasonable interference with the amenity of sensitive uses within the locality.
- 12 Chimneys or exhaust flues associated with commercial development (including cafes, restaurants and fast food outlets) should be designed to ensure they do not cause a nuisance or health concerns to nearby sensitive receivers by:
  - (a) incorporating appropriate treatment technology before exhaust emissions are released to the atmosphere
  - (b) ensuring that the location and design of chimneys or exhaust flues maximises dispersion and takes into account the location of nearby sensitive uses.

## Rural Interface

- 13 *(Conversion note: core policy in relevant Greater Adelaide and Regional Development Plans)* The potential for adverse impacts resulting from rural development should be minimised by:
  - (a) not locating horticulture or intensive animal keeping on land adjacent to townships
  - (b) maintaining an adequate separation between horticulture or intensive animal keeping and townships, other sensitive uses and, where desirable, other forms of primary production.
- 14 *(Conversion note: core policy in relevant Greater Adelaide and Regional Development Plans)* Traffic movement, spray drift, dust, noise, odour and the use of frost fans and gas guns associated with primary production should not lead to unreasonable impact on adjacent land uses.
- 15 *(Conversion note: core policy in relevant Greater Adelaide and Regional Development Plans)* Existing primary production and mineral extraction should not be prejudiced by the inappropriate encroachment of sensitive uses such as urban development.

- 16 *(Conversion note: core policy in relevant Greater Adelaide and Regional Development Plans)*  
Development that is adjacent to land used for primary production (within either the zone or adjacent zones) should include appropriate setbacks and vegetative plantings designed to minimise the potential impacts of chemical spray drift and other impacts associated with primary production.
- 17 *(Conversion note: core policy in relevant Greater Adelaide and Regional Development Plans)* New urban development should provide a buffer of at least 40 metres wide (inclusive of any fuel break, emergency vehicle access or road) separating urban and rural activities.
- 18 *(Conversion note: core policy in relevant Greater Adelaide and Regional Development Plans)*  
Development located within 300 metres of facilities for the handling, transportation and storage of bulk commodities should:
  - (a) not prejudice the continued operation of those facilities
  - (b) be located, designed and developed having regard to the potential environmental impact arising from the operation of such facilities and the potential extended hours of operation.

## Mineral Extraction

### OBJECTIVES

- 1 Development of mining activities in a way that contributes to the sustainable growth of the industry.
- 2 Protection of mineral deposits against intrusion by inappropriate forms of development.
- 3 Areas with scenic or conservation significance protected from undue damage arising from mining operations.
- 4 Mining operations undertaken with minimal adverse impacts on the environment and on the health and amenity of adjacent land uses.
- 5 Minimisation of the impacts from mining activities upon the existing groundwater level and the quality of groundwater resources.
- 6 Mining operations that make adequate provision for site rehabilitation.

### PRINCIPLES OF DEVELOPMENT CONTROL

- 1 Known reserves of economically viable mineral deposits should be kept free of development that may inhibit their future exploitation.
- 2 Development in proximity to mining operations should not be undertaken where it may be exposed to adverse impacts resulting from mining activities.
- 3 Mining in scenic and native vegetation areas should only be undertaken if:
  - (a) the proposed location is the best site in regard to minimising loss of amenity, degradation of the landscape and loss of native vegetation
  - (b) there are a limited number of known reserves of the minerals in the area or elsewhere in the State
  - (c) the extraction and transportation of materials from alternative sites to principal centres of consumption carry significantly higher costs
  - (d) the site is capable of restoration with locally indigenous plant species to counter the long-term impact on the landscape and biodiversity.
- 4 Stormwater and/or wastewater from land used for mining should be diverted into a silt retention structure so that it can be reused on-site for purposes such as truck wash-down, dust control, washing of equipment and landscape irrigation or for disposal off-site in an environmentally responsible manner.
- 5 Access to land used for mining should be sited and designed to accommodate heavy vehicle traffic and ensure the safety of all road users.
- 6 Mining operations should:
  - (a) ensure that minimal damage is caused to the landscape
  - (b) minimise the area required for operations, and provide for the progressive reclamation of disturbed areas
  - (c) minimise disturbance to natural hydrological systems.

## Separation Treatments, Buffers and Landscaping

- 7 Mining development should be sited, designed and sequenced to protect the amenity of surrounding land uses from environmental nuisance such as dust or vibration emanating from mining operations.
- 8 Mining operations that are likely to impact upon the amenity of the locality should incorporate a separation distance and/or mounding/vegetation between the mining operations (including stockpiles) and adjoining allotments to help minimise exposure to those potential impacts.
- 9 Quarry faces should be orientated away from public view.
- 10 Screening of mining areas should occur in advance of extraction commencing.
- 11 An area of densely vegetated and/or mounded land should be established around the perimeter of mining sites in order to screen excavated land and mineral processing facilities from all of the following:
  - (a) residential areas
  - (b) tourist areas
  - (c) tourist routes
  - (d) scenic routes.
- 12 Screen planting around mining operations should incorporate a mixture of trees and shrubs that:
  - (a) contribute to an attractive landscape
  - (b) suit local soil and climatic conditions
  - (c) are fast growing and/or have a long life expectancy
  - (d) are locally indigenous species.
- 13 Borrow pits for road making materials should:
  - (a) be sited so as to cause the minimum effect on their surroundings
  - (b) (*Conversion note: PDC 13 (b) is optional policy*) not be located on land shown on Map(s) X/X if equivalent resources are available within other areas within the Development Plan boundary.

*(Conversion note: PDC 13 (b) could be area specific or related to visibility from arterial or scenic roads, ie it can be written in the following ways:*

*'not be located on land within the Township Fringe Policy Area 1 (as shown on Policy Area Maps Go/1, Go/6, Go/7, Go/10 and Go/11) if equivalent resources are available within other areas within the Development Plan boundary.'*

*or*

*'not be located on land visible from arterial or scenic roads as shown on Overlay Maps – Transport.'*

## Strategic Transport Routes Overlay

Refer to the [Map Reference Tables](#) for a list of maps that relate to this overlay.

The following policies apply to the ‘designated area’ marked on the relevant *Overlay Map(s) – Strategic Transport Routes*.

### INTERPRETATION

Where the Objectives and/or Principles of Development Control that apply in relation to this overlay are in conflict with the relevant General Objectives and/or Principles of Development Control in the Development Plan, the overlay will prevail.

### OBJECTIVES

- 1 Development that recognises the importance of strategic transport routes and does not impede traffic flow or create hazardous conditions for pedestrians, cyclists or drivers of vehicles, including emergency services vehicles.

### PRINCIPLES OF DEVELOPMENT CONTROL

- 1 Development adjacent to a strategic transport route should:
  - (a) avoid the provision of parking on the main carriageway
  - (b) be accessible via service roads, where possible, that provide:
    - (i) parking off the main carriageway
    - (ii) a buffer from the main carriageway for pedestrian and cycle activity
  - (c) not impede the potential for overhead cabling and associated infrastructure to be established in an existing or proposed tram corridor.
- 2 Vehicular site access should not be provided along the main street frontage where an alternative access is available.
- 3 Development adjacent kerbside bus stops should be set back to provide sufficient space for indented bus bays with associated hard stand area, shelter and a 1.2 metre wide continuous accessible path behind the bus shelter.

## Mineral Extraction Zone

Refer to the [Map Reference Tables](#) for a list of the maps that relate to this zone.

### OBJECTIVES

- 1 A zone comprising land intended for the mining and quarrying of minerals in a sustainable manner.
- 2 Mining operations planned and undertaken in a co-ordinated manner to ensure the maximum recovery of resources.
- 3 *(Conversion note: core policy if a desired character statement exists for the zone)* Development that contributes to the desired character of the zone.

### *(Optional Local Addition) DESIRED CHARACTER*

Click and type .

*(Conversion note: refer to the [Guide to Desired Character Statements](#) for advice on preparing Desired Character Statements)*

### PRINCIPLES OF DEVELOPMENT CONTROL

#### Land Use

- 1 The following forms of development are envisaged in the zone:
  - activities ancillary to mineral extraction, including excavation and/or fill associated with rehabilitation work
  - mineral extraction
  - mineral processing.
- 2 Development listed as non-complying is generally inappropriate.
- 3 Development, other than development indicated as envisaged in the zone, should not be undertaken if:
  - (a) significant mineral deposits are present
  - (b) mineral extraction on adjacent land is prejudiced
  - (c) the use is not in association with the mining operations
  - (d) the establishment of an appropriate after-use is impeded.

#### Form and Character

- 4 *(Conversion note: optional text (core policy if a desired character statement exists for the zone))* Development should not be undertaken unless it is consistent with the desired character for the zone.
- 5 Areas designated or set aside for stock piles should be of low profile when viewed from public roadways or residential areas.

- 6 Screen planting, using locally indigenous plant species where possible, or mounding should be established along public road frontages and within the mineral extractive area to screen mining operations, buildings and plant from public view.

## Land Division

- 7 Land division should not result in an additional number of allotments partly or wholly within the zone.

## PROCEDURAL MATTERS

### Complying Development

Complying developments are prescribed in Schedule 4 of the *Development Regulations 2008*.

(*Optional*) In addition, the following forms of development are designated as complying subject to the conditions contained in [Table XX – Conditions for Complying Development](#):

- Click and type

*OR*

(*Optional*) In addition, the following forms of development are designated as complying subject to the complying criteria / conditions as outlined in the table below:

Form of development	Complying criteria / conditions

(Conversion notes:

- pursuant to section 35(1a) of the *Development Act 1993*, development subject to a referral (per section 37 or 37A of the Act) cannot be listed as complying
- dwellings cannot be listed as complying where they are located within high, medium or general bushfire risk areas as shown on Bushfire Protection Area maps or Bushfire Prone Areas in Development Plan)

### Non-complying Development

Development (including building work, a change in the use of land, or division of an allotment) for the following is non-complying:

(Conversion note:

- consider whether alterations or additions to existing non-complying development are appropriate exceptions
- when making local additions, terminology should be consistent with the Better Development Plan Terminology List)

Form of development	Exceptions
Advertisement and/or advertising hoarding	
Amusement machine centre	
Cemetery	
Community centre	
Consulting room	
Crematorium	
Dairy	

<b>Form of development</b>	<b>Exceptions</b>
Dwelling	Except where: (a) ancillary to and in association with mining operations (b) located on the same allotment as the associated mine.
Educational establishment	
Horticulture	
Hospital	
Hotel	
Indoor recreation centre	
Intensive animal keeping	
Land division	Except where no additional allotments are created wholly or partly within the zone.
Motel	
Motor repair station	
Nursing home	
Office	Except where: (a) ancillary to and in association with the operation of the associated mine (b) located on the same allotment (c) has a floor area of less than 150 ( <i>optional variable</i> ) square metres.
Place of worship	
Pre-school	
Residential flat building	
Service trade premises	
Shop	
Stock sales yard	
Stock slaughter works	
Tourist accommodation	
Warehouse	
Wrecking yard	

### Public Notification

Categories of public notification are prescribed in Schedule 9 of the *Development Regulations 2008*.

(*Conversion note: categories of notification will be based on the Development Regulations but Council should consider adding the envisaged developments in PDC 1 as Category 1 or 2 development where appropriate, for example if they would otherwise default to Category 3*).

(*Optional*) Further, the following forms of development (except where the development is non-complying) are designated:

Category 1	Category 2
<hr/>	

## Appendix 2 – Case Studies

### Schedule of Meetings with Quarries and Contacts

Site/s	Name/details	Meeting date
Boral Linwood and Para Hills and Stoneyfell	Rodney Kazem Operations Manager - Quarries SA Telephone: 0884250413 Mobile: 0427001680 Email: <a href="mailto:Rodney.Kazem@boral.com.au">Rodney.Kazem@boral.com.au</a>	Wednesday, 5 June, 9am
Kapunda, Mantina	Rino Obbiettivo Managing Director Phone: 8566 2302 Mobile: 0427 973 343. Email: <a href="mailto:rino@mantinaquarries.com.au">rino@mantinaquarries.com.au</a>	Wednesday, 29 June, 1pm
Penrice (Angaston)	James Rowe, Production Manager <a href="mailto:james.rowe@penrice.com.au">james.rowe@penrice.com.au</a>  Mick Sanderson, Environmental Advisor <a href="mailto:michael.sanderson@penrice.com.au">michael.sanderson@penrice.com.au</a>	Wednesday, 29 June, 10am
Victor Harbor, Holcim	Darren Dunn Manager - Quarry Operations Montacute Quarry Phone: 8390 2127 Mobile: 0419 477 700 Fax: 8390 2116 Email: <a href="mailto:darren.dunn@holcim.com">darren.dunn@holcim.com</a>	Wednesday, 12 June, 11am
Kanmantoo, Hillgrove	Steven McClare, General Manager <a href="mailto:steven.mcclare@hillgrovresources.com.au">steven.mcclare@hillgrovresources.com.au</a>  Catherine Davis 0408 396 964 <a href="mailto:catherine.davis@hillgrovresources.com.au">catherine.davis@hillgrovresources.com.au</a>	Wednesday, 5 June, 2pm
Whiterock - Hanson	Michael Harvey SA Quarry Manager Keith George T +61 (0)8 84314866 M +61 (0)418 819142 <a href="mailto:michael.harvey@hanson.com.au">michael.harvey@hanson.com.au</a>	Monday 3 June, 10am
Sellicks – Southern Quarries	<u>Michael</u> Close Operations Manager, Southern Quarries 29 Dequetteville Terrace Kent Town SA 5067 Telephone: 08 8334 4704 Mobile: 0414 332 470 Email: <a href="mailto:mclose@southernquarries.com.au">mclose@southernquarries.com.au</a>	Tuesday 4 June 9am (Kent Town)

## Agenda of Meetings with Quarry Operators

Agenda	
Introductions	
Project overview and objectives	
Site history	
Mapping of site	
Interface and operational issues	
Transport and access	
Future quarry developments	
Mine lifespan	
Next steps and timeframes	

## Site Summaries

### Kanmantoo Copper Mine

Mine	Key Issues	Encroachment Issues
Kanmantoo Copper Mine	<ul style="list-style-type: none"> <li>• Noise;</li> <li>• Dust;</li> <li>• Light (1 person);</li> <li>• Blasting Vibration; and</li> <li>• Traffic through townships.</li> </ul>	<ul style="list-style-type: none"> <li>• Established, strong community relationships;</li> <li>• Support for reopening of mine and ongoing operations;</li> <li>• Mine built own heavy vehicle road; and</li> <li>• Application of rural or residential limits (e.g. noise) in an industrial setting.</li> </ul>

Ref No	Kanmantoo Copper Quarry
Key materials/products	Copper
Council Area	District Council of Mount Barker
Current Zoning (mine site)	Rural Kanmantoo Zone
Estimated total lifespan (commencement date + on-going years)	Approximately 10 years
Nearest sensitive receptor (metres)	200 metres
Land-use setting (rural, township edge etc...)	Rural
Topographical Setting (flat, undulating, steep valley)	Undulating

#### Background /History

- Successfully applied for and permitted a mining lease and extractive mineral lease;
- Has been some form of mining at site for over 100 years;
- 1848 first copper found in Callington – at the time there were 6 or 8 smelters;
- A lot of the original vegetation has been removed for farming and cropping purposes;
- A local buffer was put in place in 2007 as part of sites planning;
- Product / Processing Activity;
- Blasting every 2 days;
- Blasting, truck and shovel operators, processing plant;
- Copper mine; and
- Operate 24/7 days.

#### Traffic and Transport arrangements

- Dedicated access road - Built a new access road to Princes Highway to keep heavy vehicle and other traffic out of local towns.

### **Adjacent Land-use Issues**

- Mainly grazing and general farming;
- Hobby famers;
- Railway line on the Southern boundary of site;
- Township North East of site;
- Fertilizer plant to the east; and
- Further subdivision to North on edge of existing Kanmantoo township.

### **Elective Management practices**

- Trying to recreate natural shape of surrounding topography;
- Community Group that meets quarterly in the town hall so it is also open to the public;
- Dedicated environmental contact who responds and deals with complaints; and
- Maintain own complaints register.

### **Incidences/complaints/restrictions**

- Due to topography issues with noise, dust and vibration;
- In 2008 friction between mine and landowners re blasting;
- Concerns with noise and vibrations;
- Dust creation, air quality;
- Spills;
- Visual impact; and
- Majority of complaints from a few individuals.

## **Development Plan Evaluation and Options**

### **Background**

- Located on the site of a historical mine that has been re-established;
- Kanmantoo township, to the north, was associated with the old mine and has since expanded toward the south (close to the mine) prior to the establishment of the new mine (but still over 1 km from the current mine operations);
- A native vegetation protection policy area is located between the new mine operations and the township; and
- An industrial activity (fertiliser operation) was established on a portion of the old mine site which has had a history of generating interface issues (mainly odour) that led to policy change.

## Impacts

- The surrounding topography generally aids the visual screening of the operation from the township, although considerable effort is being made to address visual impact to the north;
- While the town is located a reasonable distance away, it is understood that vibration is a continuing issue. This may be due to geological features that transmit the vibration over greater distances. This type of impact is highly unpredictable and is unlikely to be able to be addressed through up-front mechanisms;
- In order to avoid noise impacts associated with heavy vehicles, a ‘private road’ access to the Old Princess Highway (near Callington) was constructed which created a ‘by-pass’ route to avoid Kanmantoo township but is also much more direct;
- Dust can be an issue under particular climatic conditions. A separation distance can be effective for minimising the impact of localised dust generation but is not as effective on dry, windy days when dust can travel a considerable distance and from various sources;
- Night lighting (24 hr operation) is reported to impact on one residence located to the south of the operation. This residence has a direct line view of the operations (topographical conditions). Most of the mine is screened from view. The operation adjusts the lighting as needed to reduce this impact.

## Development Plan Policy

- The mine is zoned Rural (Kanmantoo) Zone which encourages uses including agriculture, primary production, wind farms, intensive animal keeping and tourist accommodation. However, the zone is highly restrictive with respect to the potential for land division and new dwellings not associated with the land-uses envisaged in the zone;
- An Industry (Kanmantoo) Zone covers the site of the fertiliser operation and includes a 500 m separation mechanism. Key aspects of this include:
  - A 10 m landscaped ‘buffer’ in the Industry Zone;
  - A dwelling and tourist accommodation within 500 m of the Industry Zone boundary is non-compliant;
  - Land division within 500 m of the Industry Zone is non-compliant; and
  - The 500 m is highlighted as a shaded area on a zone map and indicated on the legend.
- This is an example of an approach where a separation distance of 500 metres has been established by policy and does not change the zone but still restricts land division and dwellings. It is also noted that the ‘visual’ screen is located within the zone but the separation extends into the adjacent zone. In this case the impacts are quite specific and a separation is the most appropriate option;
- The following policy is in the Rural Zone:
  - *7. Rural activities which will result in disturbance to adjoining landowners or adversely affect the rural character of the zone should not occur.*

This is an example of a policy that prioritises ‘amenity’ over the operation of land-uses envisaged for the zone.

- The following policies in the Rural (Kanmantoo) Zone provide the link to the Industry zone to create the separation distance:
  - *11 Development in the locality of the Industry (Kanmantoo) Zone should have regard to the potential impacts of uses within the Industry (Kanmantoo) Zone, such as noise, traffic and odour, and where necessary should be sited and designed to minimise the effect of such impacts.*
  - *12 New dwellings and tourist accommodation should not be located within 500 metres of the allotment generally to the west of Éclair Mine Road within the Industry (Kanmantoo) Zone.*
  - *13 Development should not adversely impact on the operations of development in the Industry (Kanmantoo) Zone.*
  - *14 Development in the locality of the Industry (Kanmantoo) Zone should occur in a manner that does not result in the degradation of native vegetation.*
- It is noted that there are several policies that recognise the potential for development to sterilise mineral resources. For example, the following policy also is contained in the Rural (Kanmantoo) Zone:
  - 20 Development should not be undertaken in the vicinity of known mineral deposits:**
    - (a) until the full extent and significance of such deposits has been determined;
    - (b) if such development would be incompatible with mining operations; or
    - (c) if it would add to the cost of extracting the resource.
- Notwithstanding the above, it is unclear how a Development Assessment Officer might be able to identify where such resources are located. A brief phone discussion with a DC Mount Barker development assessment officer revealed that they do not have this information at hand. In order for policy such as this to be in any way effective, it is crucial that the information is made available in a mapped form.

### Policy Options

- It is preferable that this mine be recognised spatially in the Development Plan so that the protective policy can be applied;
- Given that the mine has an estimated life of 10 years and that the rural zone policy is relatively favourable (i.e. restricts sensitive uses, acknowledges mineral resources and interface issues etc...) it may not be necessary to formally 'zone' this operation. Other options such as identification on a relevant map or plan may be sufficient;
- Consideration should also be given to the future use of this site. If there is potential for future uses that have similar impacts (e.g. industrial) it may be appropriate to include a policy, similar to that used for the Industry zone, to create a 500 m separation; and

In addition to the case study example, there is a need to provide some form of 'mapping' of mines and deposits so that policy 20 can be effective.

## Linwood and Para Hills Quarry

### Para Hills

Mine	Key Issues	Encroachment Issues
Para Hills Quarry	<ul style="list-style-type: none"><li>• Stormwater run-off from adjacent residential area</li><li>• Blasting</li><li>• Dust</li></ul>	<ul style="list-style-type: none"><li>• Housing almost surrounds the quarry within the 500 m buffer zones and transport routes.</li></ul>

#### Background /History

- Private mine and purchased by Boral in 1974; and
- Provide road base materials and aggregates – substrate.

#### Product / Processing Activity

- Quarry currently undertakes drilling, blasting, crushing and hauling.

#### Traffic and Transport arrangements

- Access to quarry is off Barker Road; and
- Concerns are raised from time to time regarding blasting, dust and truck movements.

#### Adjacent Land-use Issues

- Site surrounded by Gulfview Heights and Golden Grove developments;
- Residential development and vacant land; and
- Site has potential to be residential development as its highest and best end-use.

#### Elective Management practices

- Boral manage impacts from encroachment and have restricted operations accordingly. Investment into best practices to reduce impacts including dust management, varying blasting techniques;
- Constructed a vegetated buffer mound on the eastern side in 1974 with the pit located behind;
- Proactive attempt to control visual issues; and
- A water course runs into the quarry at the eastern edge of the quarry – creek and storm water runoff - this water has been redirected around the edge of the quarry and across the northern edge to avoid water running through operational areas of the quarry.

#### Incidences/complaints/restrictions

- Currently not providing a large amount of resource as product is tied into providing materials for residential development and project work;
- Market is slow at the moment so truck movements are not high;
- Very few complaints but have had some complaints in the past regarding blasting, dust and traffic; and
- Mineral extraction started in the middle of the pit and is moving outwards.

## Development Plan Evaluation and Options

### Background

- There is no history of discussions with Council's regarding quarry planning and surrounding housing or other impacts. Recent discussions have focused on highest and best end-use options for the quarry in relation to the surrounding areas;
- Residential housing is considered one of the better end-use outcomes given the location and adjoining estates; and
- The quarry appears to have achieved some degree of separation from sensitive uses. Separation is due to Open Space policy – green belt areas.

### Impacts

- A combination of techniques has been used to manage impacts including:
  - The operators introduced a mounded, vegetated screen some time ago;
  - Some degree of separation has been achieved mainly due to Open Spaces areas within the surrounding area more so than planning so as to minimise impacts on the quarry;
  - The access to Bridge Road is relatively short and direct; and
  - A joint project between the Council and Boral to upgrade Barker Rd was recently completed to reduce dust and drag-out issues.
- While this operation has had some complaints in the past, this has not been excessive. There are currently few complaints, which may be due to a combination of the techniques listed above and a slower market.

### Development Plan Policy

- The development plan includes the Extractive Zone within the quarry title boundaries but there is no buffer zone indicated in the plan;
- A rural living type zone is located on the western boundary of the zone;
- The Tea Tree Gully Development Plan designates residential zoning to the boundary of the Extractive Industry Zone but no reference is made to the presence of the mine. It would appear that the pattern of land division has stopped short of the zone boundary;
- Boral's highest and best end-use for this site includes an option for residential housing;
- Buffer zones are not currently part of the development plan and Boral believes there is benefit of buffer zones although thought needs to be given to the commercial viability of owning/maintaining the land within that zone; and
- A better outcome might be planning to ensure compatible neighbours and land uses are approved on adjoining land.

## **Policy Options**

- The Salisbury Development Plan gives proper recognition to the presence of the mine (on a map) and it is noted that the ‘buffer’ to the residential uses is included in the mining zone. Additional consideration of the interface area includes the designation of a low density residential zone. This demonstrates how a consideration area might comprise a combination of approaches;
- It is of some concern that the presence of the mine is not recognised in the Tea Tree Gully Development Plan. The land to the eastern boundary of the mining zone is zoned residential and there is no policy or mapping recognition of the mine. In theory, this arrangement sets up a potential Linwood scenario;
- The presence of the mine and the need to manage interface issues needs to be recognised in the Tea Tree Gully Development Plan. Given that the land is already zoned, this might best be done through a policy in the Residential Zone; and
- Boral have had several discussions regarding “buffer zones” and whether there should be a requirement for future planning. It is Boral’s view that the benefits of a buffer zone include a reduction in impacts on neighbours resulting in a reduction in the number of complaints to the EPA regarding noise, dust, and vibration. At present industry fund measures aimed at minimising impacts including water carts, sprinkler systems, dust monitoring units, reporting, community meetings etc. Boral has concerns with mandatory buffer zones in particular the commercial impact of a requirement to “own” additional land. Purchasing and maintaining land within the metro area can be cost prohibitive. Boral preference for a better outcome is to work with Government and Council’s to ensure compatible neighbours where appropriate. Buffer zones may be the preferred approach at some sites although each site needs to be assessed individually.

## Linwood Quarry

Mine	Key Issues	Encroachment Issues
Linwood Quarry	<ul style="list-style-type: none"> <li>• Traffic/transport</li> <li>• Dust</li> <li>• Noise</li> <li>• Blast induced vibrations.</li> </ul>	<ul style="list-style-type: none"> <li>• Significant operation</li> <li>• Ongoing issues with incompatible development proposals.</li> </ul>

Ref No	Linwood Quarry
Key materials/products	Limestone and aggregate (Dolomitic siltstone) Limestone/Aggregate
Council Area	City of Marion, City of Holdfast Bay
Current Zoning (mine site)	Hills Face Zone and Extractive Industry Zone
Estimated total lifespan (commencement date + ongoing years)	A nominal thirty (30) years has been used to plan the future outlook for the quarry however this does not indicate life of resource. The Quarry is expected to continue for up to eighty (80) years
Nearest sensitive receptor (metres)	Residential right up to Mining Lease boundary - 300m along Perry Barr Rd
Land-use setting (rural, township edge etc...)	Hills Face Zone, Extractive Zone but surrounded by Residential, golf course (Boral land)
Topographical Setting (flat, undulating, steep valley)	Foothill, Undulating

### Background /History

- Quarrying began at the present site in 1882 by Brighton Cement Works;
- The current crushing plant was built in 1987;
- The quarry currently employs 17 people with an additional 5 employees operating the onsite concrete batching plant;
- Boral Resources owns the land upon which the crushing plant and infrastructure is situated along with the house located at 99 Ocean Blvd;
- The extraction of rock from portions of the current quarry workings is privately owned land that Boral Resources leases from Longfield Pty Ltd;
- The quarry and its infrastructure is located on several (three PM 3, 4 and 22) private mines;
- Quarry was zoned Rural up to 1990's; and
- Old mine under the golf course (adjoining) which has been rehabilitated.

### **Product / Processing Activity**

- Limestone aggregates which are quarried from the "upper calcareous section of the Tapley Hill formation";
- Drilling;
- Blasting – once a week at midday on a Wednesday; and
- A premix concrete batching plant.

### **Traffic and Transport Arrangements**

- Current access off Ocean Boulevard, down Club House Road;
- This may change in the future to Majors Road but would need to move: weight bridge, truck wash, build a new road and plant extra screening;
- Use semi-trailers;
- Operations 6am – 6pm however depending on demand/projects, extended operating hours are required;
- Blast every Wednesday at midday;
- Door knock local residents on clubhouse road regarding out of normal hours transport; and
- Up to 500 truck movements a day.

### **Adjacent Land-use Issues**

- The North western part of the site is bounded by established residential development (Marino), with undeveloped residential and hills face zone land abutting the remainder of the Western boundary; and
- The City of Marion Golf Park abuts the north eastern mine site boundary, with vacant hills face zone land to the east and southeast (bounded by Ocean Boulevard and Perry Barr Road).

### **Incidences/complaints/restrictions**

- 300m along Perry Barr Rd there are houses - Boral objected to this housing without success. The resulting impacts on the quarry operations are substantial e.g. reduction in the areas that could be mined within the mine boundary. Boral has been required to carry costs associated with researching and measuring impacts, for example dust. This resulted in the installation of water carts and sprinkler systems - Advanced TEOM units monitored by Boral and the EPA. Boral research has revealed that the dust is mainly atmospheric as opposed to being generated by the quarry;
- Seacliff Park re-development DPA is pending.- Gasparin Development site on the old Lorenzin contaminated land. Boral have had discussions to ensure that the DPA takes into account safety issues re quarry haul road and foot traffic between new housing and golf course. Boral are happy to work with Council and Planning SA provided haul road is relocated to a preferred location away from new dwellings;
- Still community concerns with blasting, vibrations, air quality, noise, visual and dust;
- The information Boral has received from TEOM units has demonstrated that much of the dust is atmospheric and not from the quarry;
- Quarry dust is mainly an issue at night as water carts and sprinklers operate during the day;

- Always going to have a large amount of complaints due to the proximity of housing and being a high quality resource continues to have high demands placed on it.
- Highly reactive clay seam in which the mine sits which is a perfect conductor for sounds i.e. ground vibrations;
- Boral now think very carefully about their operations and the potential impact. This has led to restrictions in operations and huge investments to reduce impact on stakeholders so a change in operating hours and blasting procedures. Access to parts of the private mine resource are lost due to housing along Perry Barr road too close to the quarry boundary;
- Recent example was when concrete needed to be provided at night for road building – every affected landowner on the exit was notified of the extra truck traffic and drivers were briefed fully on expectations; and
- There are costs associated with managing community expectations e.g. holding community meetings, dust monitoring and measures to minimize impacts, and this is a growing expense for Boral.

### **Elective Management practices**

- The site normally operates from 6.30am to 6.00pm Monday to Saturday although extended hours are required at times;
- The site is not normally worked on Sundays or Public Holidays;
- Truck movements on the site can continue out of hours with cement deliveries to the concrete plant and aggregate deliveries from the quarry to customers in the metropolitan area but when this occurs it is well communicated to affected residents;
- Dust generation from quarry roads and excavation areas is generally only a problem during the drier summer months and is controlled as much as possible by the continual use of a water spray truck;
- Extensive areas of tree planting and screening mounds have been established around the quarry boundary to improve the visual amenity of the site;
- Joint Working Group established and meet every 6 months (3 months); and
- Boral also hold public meetings and Community Open Days.

### **Development Plan Evaluation and Options**

#### **Background**

- This case study is an example of a situation where, due to several circumstances, a very important resource is now severely constrained by the development that surrounds it. The circumstances relating to Linwood have evolved over a considerable period of time and have been influenced by a range of factors and drivers, not all of which relate to the land-use planning system;
- Linwood is located in the foothills, adjacent a main road and near the coast, a setting that is attractive for the expansion of the metropolitan area;
- The historical land ownership context contributed to pressure for residential ‘precinct’ development;
- Residential zoning appear to have followed the Hills Face Zone boundary (established in 1971); and

- Regardless of the historical context, it would seem that even recent policy approaches have failed to recognise this operation and the interface issues.

### **Impacts**

- As a hard rock quarry, the impacts include the usual impacts (noise, vibration, traffic, dust, etc.). Linwood has little option other than to minimise impacts through very careful management and maintaining communication. However, it is accepted that the mine operation cannot avoid some level of impact given the proximity of residential development; and
- Due to the nature of the material and its location, this operation can generate a large number of heavy vehicles, day and night (depending on the needs of the project being served). Some consideration is being given to re-locate the main entrance to move this activity away from the northern entrance (which is surrounded by residential uses) to one located to the south, which is within the Hills Face Zone.

### **Development Plan Policy**

- The northern portion of the operation is covered by a mining zone but the majority of the operation is located within the Hills Face Zone. This zone has a highly restrictive policy regime with respect to both land division and new dwellings. In this context the Hills Face Zone should prevent sensitive uses encroaching from the east or the west;
- The residential zone on the south east corner of the operation (the “Cement Hill Policy Area”) calls for residential development at low densities with a minimum allotment size of 450m<sup>2</sup>. It is also noted that there are some areas adjacent to the mine that have been designated for the purposes of Schedule 4 (complying development clause 2B, Residential Code). This significantly increases the likelihood of a residential development being proposed, and gaining approval, in those areas; and
- The Development Plan does not recognise the full extent of the mining operation and its potential impacts (policy and mapping). This means that there is little ability to require new land division or housing applications to have regard to impact issues.

### **Policy Options**

- There is 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;
- Boral’s recommendation that it is essential that the full extent of this land-use is recognised in the Development Plan in some form. Ideally, it is preferred that it be zoned for mining. However, the Hills Face Zone provisions do afford protection for the operations to the east and west and however any changes to the Hills Face Zone may be difficult to achieve. Furthermore, this could trigger a broader review that could bring residential development close to the mine;
- In this context the following actions may help to alleviate the situation:
  - The presence of the mine should 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;
  - Facilitate the re-location of the entrance to the northern end of the operation (reduce impact in southern area). It is essential that the new entrance is then protected, and that no additional sensitive uses are exposed to the impacts;

- Introduce a map or plan that indicates the presence of the mine within the Hills Face Zone and its alternative access along with an indication of a ‘consideration area’ (e.g. on a concept plan) to ensure that interface issues are adequately taken into account;
- Introduce a policy area within the relevant residential zones that a) limits further intensification of sensitive land-uses and b) encourages new buildings to be constructed in a manner that minimises the impacts of the mine (noise attenuation, orientation, visual screening, etc.); and
- Review whether land within 500 m of the mine boundary be excluded from the operation of Schedule 4, 2B.
- Boral notes that the City of Marion Development Plan is an example of a new policy and mapping structure derived from the Planning Policy Library. It has an overlay “Development Constraints” which is linked to policy that relates to “Building near Airports”. A similar approach may be appropriate to address issues related to “Building near Mines”; and

Boral also notes that the Seacliff Park Re-development, Development Plan Amendment is pending. Boral opposes the development proposed in the DPA unless it factors in measures to relocate the entry road and a green space buffer is created given significant safety concerns and any risks associated with new dwellings adjoining quarry operations. Any new residents need to be made aware of operations prior to purchase. Notation on lands titles may be necessary to ensure new buyers are aware of significant mine next to their new dwelling.

#### Mantina Quarry, Kapunda

Ref No	Mantina Kapunda Quarry
Key materials/products	Aggregate and sand
Council Area	Light Regional Council
Current Zoning (mine site)	Primary Industry Zone
Estimated total lifespan (commencement date + on-going years)	Established 1990 and at least another 40 years
Nearest sensitive receptor (metres)	400m
Land-use setting (rural, township edge etc...)	Township edge
Topographical Setting (flat, undulating, steep valley)	Undulating

#### Background /History

- Established in 1990
- Employ 27-30 employees and buy local products if possible e.g. tyre, hardware, stationary, agriculture sprays
- Borders Light River which is limiting the mine development
- Active member in the community

#### Product / Processing Activity

- Concrete plant
- Aggregate and sand
- Drilling, blasting, crushing, screening and load and haul

### **Traffic and Transport arrangements**

- Access off East Terrace
- This does lead to a B double route however there is an ongoing complaint along that routes
- Trucks turn left into East Terrace, down Perry Road and then through the main street of Kapunda
- Would like to see all of East Terrace upgraded
- A lot of the truck in local area also come from Johnson Mill

### **Adjacent Land-use Issues**

- Mainly general rural and grazing
- Some new residential to north east
- Town of Kapunda boundary to the NW

### **Elective Management practices**

- Amend operations to respond to community concerns e.g. changed blasting procedure
- Noise reduction
- 10pm curfew self-imposed on blasting
- Creating mounds to minimise visual impacts

### **Incidences/complaints/restrictions**

- Noise and dust
- Complaints from southern boundary regarding blasting and fly rock
- Rumbling of the crusher and screening process
- Visual impact to new residential development to the east

## Penrice Angaston Quarry

Mine	Key Issues	Encroachment Issues
Angaston (Penrice) Quarry	<ul style="list-style-type: none"> <li>• Traffic/Transport;</li> <li>• Dust; and</li> <li>• Noise.</li> </ul>	<ul style="list-style-type: none"> <li>• Community Consultation Committee (CCC) exists.</li> <li>• Rezoning circumstances that led Minister to be involved in request to re-zone land east of quarry useful to understand; and</li> <li>• B-Double route changed to address complaints.</li> </ul>

### Background/History

- The mine is owned by PSP and was acquired in 1989 from ICI Australia Ltd;
- 2.5 km north of Angaston Township, the mine is directly north of the Penrice township;
- Commenced drilling in 1945;
- Initially only provided limestone (Soda Ash) which was transported to their Osborne site – high grade limestone but in 2007/8 started to extract aggregates for road base and tonnage doubled – 2.3 million tonnes in 2013; and
- Penrice is the largest marble and limestone mine in South Australia.

### Product / Processing Activity

- High grade limestone for the PSP, Osborne soda ash manufacturing plant for glass-making.
- Low grade limestone for concrete manufacture, aggregates, and production material for foundry flux, glass and paver manufacture, stockfeed, lime and white cement production, road-making etc.;
- This is no longer a fact, we import soda ash now as opposed to manufacturing;
- Processes undertaken onsite include:
  - Extraction, drilling; and
  - Blasting.
- Crushing plant installed in 2003;
- There will be some level of noise and dust generated through mine operations, crushing activities, vehicle and equipment movement;
- Blasting up to 3 times per week at current market rates;

### Traffic and Transport arrangements

- Access via Penrice Road;
- Transport product by train to the Osborne plant;
- Truck movements vary based on demand;
- Initially there were no assigned Double B roads and the trucks used to travel straight through Nuriootpa. This generated a lot of complaints from the broader community. Now there is a designated Double B route that goes directly out to Sturt Highway; and
- Essential for quarry to be near transport and market.

## **Adjacent Land-use Issues**

- Hobby Farming;
- Viticulture;
- Residential broad hectare (Rural living) and smaller residential subdivision;
- Planned urban growth of Angaston extends right to the southern boundary of the quarry; and
- Residential zoning goes right up to Mineral extraction zoning edge and there is no buffer provision in place.

## **Incidences/complaints/restrictions**

- Majority of the complaints are regarding:
  - Dust (Caused by northerly winds);
  - Transport movements;
  - Noise and vibration – Reverse beepers, Trucks, crusher;
  - Concerns with ground water; and
  - Lighting over spill – not sustained was from another source.
- Mining lease restricts times of truck movements

## **Elective Management practices**

- Combined strategy of proactively visiting neighbours on a regular basis with further consultation upon request;
- 24/7 hotline for environmental concerns;
- Produce a quarterly community newsletter this was reintroduced approx. 18 months ago and is ongoing;
- Established a Community Consultative Committee that currently meet six monthly (drawn out to 6 monthly due to no real issues pending);
- Conduct Mine tours and hold community open days every two years;
- Rehabilitate site using a mosaic pattern of vegetation blocks to reduce visual intrusion and to integrate with the local land forms;
- Any runoff from the western overburden mounds will be directed into a silt trap;
- Avoid operating in strong wind conditions, if higher dust levels are created by wind conditions;
- Appropriate dust suppression systems including water sprays, vegetation of landforms and wetting of haul roads;
- Maintain vegetation screens and environmental embankments around the site as reasonably practicable;
- Modify mine operations for example timing of truck movements, crushing and blasting; and
- Don't use rock breaker on a Sunday.

## Development Plan Evaluation and Options

### Background

- As with other examples, this quarry has a relatively long history of operation as do the adjacent settlement areas (particularly Penrice). However, some expansion of these areas has brought sensitive uses closer to the operation;
- The mine has had some history of complaints, although new operators have invested additional time and effort in addressing this history. Its location on an escarpment has resulted in a visibility issue that cannot be avoided; and
- The operators have suggested that the mine is moving northward, away from the residential areas but it is not clear if the zoned area to the south will be mined in the future.

### Impacts

- The key impact for this mine is the visual impact, which is largely unavoidable;
- Traffic impacts were a significant issue but a new B-double route has helped to resolve this;
- More common noise and dust issues have been lessened with improved practices and communications; and
- Some impacts associated with other activities (especially viticulture) have been attributed to the mine.

### Development Plan Policy

- Most of the mine and a portion of land that has resource potential are zoned for extractive mining. At the southern extent, this zoning abuts a rural living (1 ha) zone and the township of Penrice. It is noted that the area to the north (Deposit RL 109) is currently zoned Primary Production;
- The portion of the zone that extends south of Penrice Road is not currently covered by a ML;
- The Primary Production zone and the rural living zone do not make specific reference to the mine but the following policy might assist with interface assessment (interface policy)  
*5 Sensitive uses likely to conflict with the continuation of lawfully existing developments and land-uses considered appropriate for the zone should not be developed or should be designed to minimise negative impacts; and*
- It is noted that the mining zone is designated the same colour at the primary production zone which may lead to confusion with this land-use on the zone map.

### Policy Options

- Consideration should be given to reviewing the mining zoning to include the new ML and determine the need for managing interface issues;
- Additional policy should be included to recognise the interface issues associated with the mine;
- It is preferable that mining zones are given a different colour code to Primary Production; and
- The revised B-double route should be recognised in the Development Plan and policy included to address interface issues along this route (possibly via a “development constraints” overlay).

## Victor Harbor Quarry

Ref No	Holcim Victor Harbor Quarry
Key materials/products	Sand and aggregate
Council Area	City of Victor Harbor
Current Zoning (mine site)	General Farming Zone
Estimated total lifespan (commencement date + on-going years)	20 years (depends on market conditions)
Nearest sensitive receptor (metres)	300 m
Land-use setting (rural, township edge etc...)	Rural with some pressure from urban expansion
Topographical Setting (flat, undulating, steep valley)	Relatively Flat

### Background /History

- Development Application referred to the Department of State Development for subdivision SW of quarry - advised was taken on board and subdivision request was limited to large lots

### Product / Processing Activity

- Crushing, screening and blasting
- Only blast 3 or 4 times a year but it has been up to 6 time a year
- Supply product from concrete plants but also for local market

### Traffic and Transport arrangements

- Access from Inman Valley Road and then use the ring road around Victor Harbor

### Adjacent Land-use Issues

- General grazing and farming on large lots
- Some residential encroachment to the south east
- Large lot residential to the South
- Victor Harbor Golf Club to the east

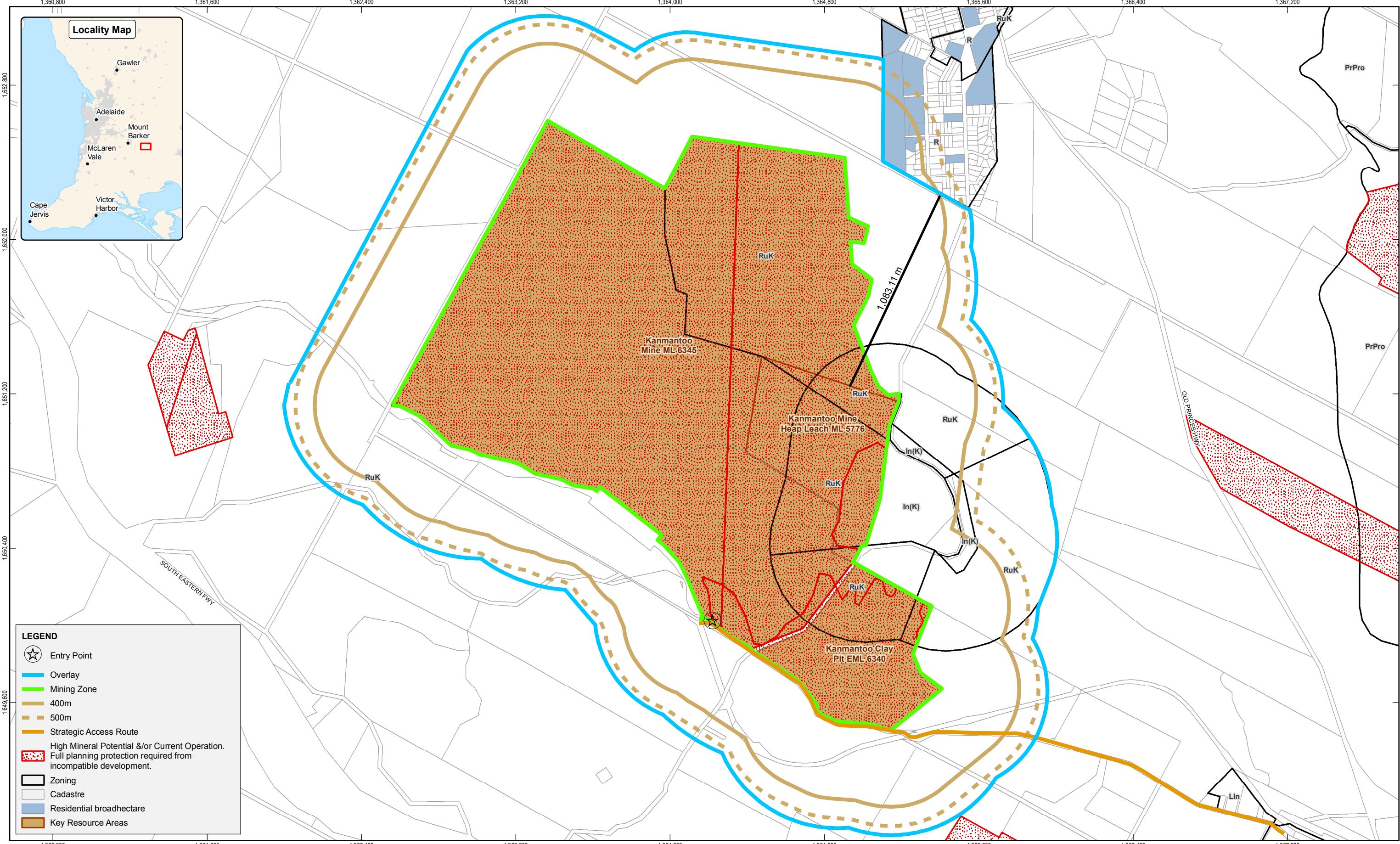
### Elective Management practices

- Planting around site to limit visual affects

### Incidences/complaints/restrictions

- Not a lot of complaints from surrounding landowners
- Dust in summer is the main reason for complaints on hot and windy days
- Respond to community issues as they arise – no specific processes in place

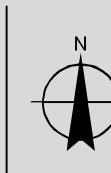
## Appendix 3 – Case Study Maps



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Map Projection: Lambert Conformal Conic  
Horizontal Datum: GDA 1994  
Grid: GDA 1994 South Australia Lambert

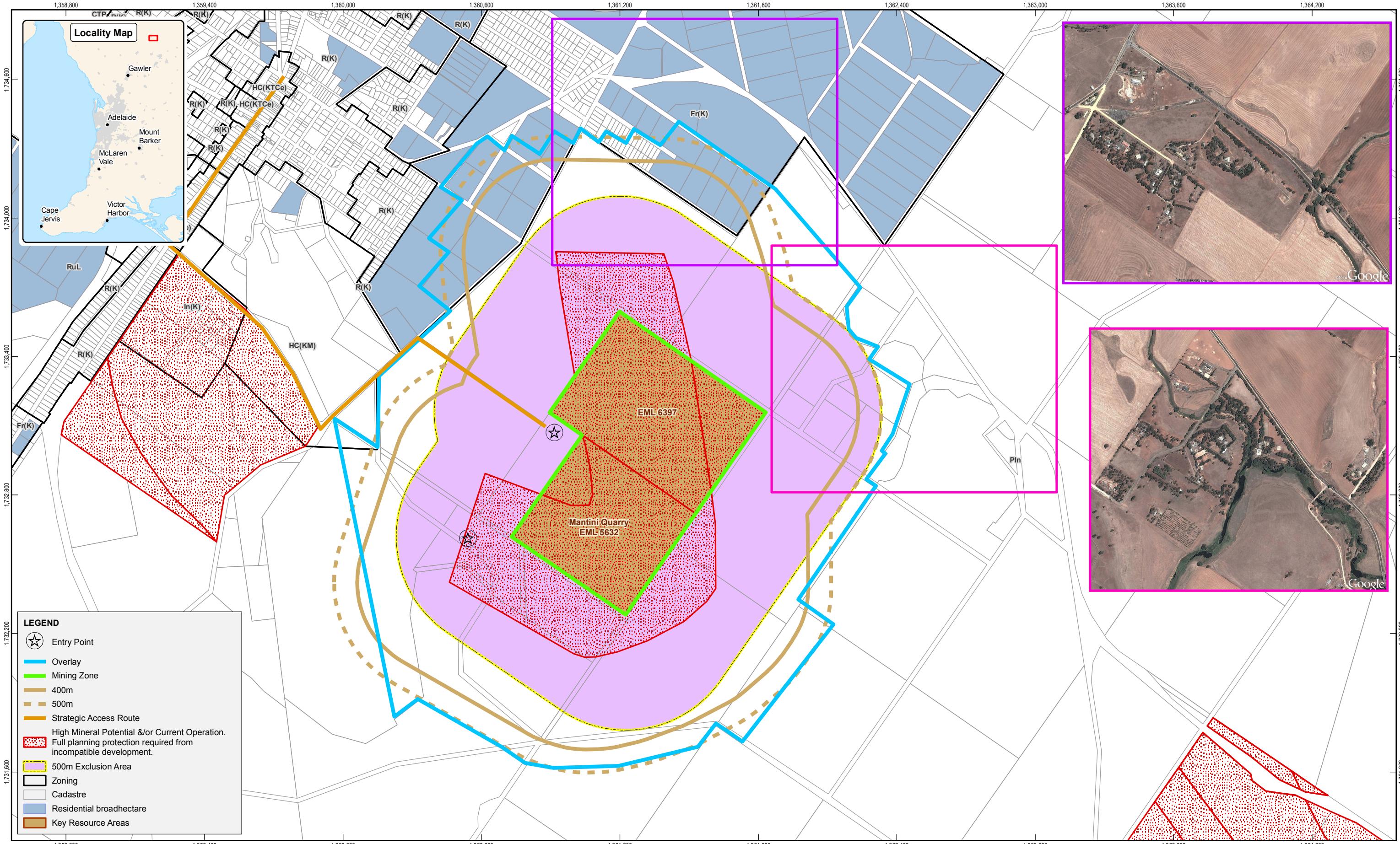


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## Kanmantoo Mine

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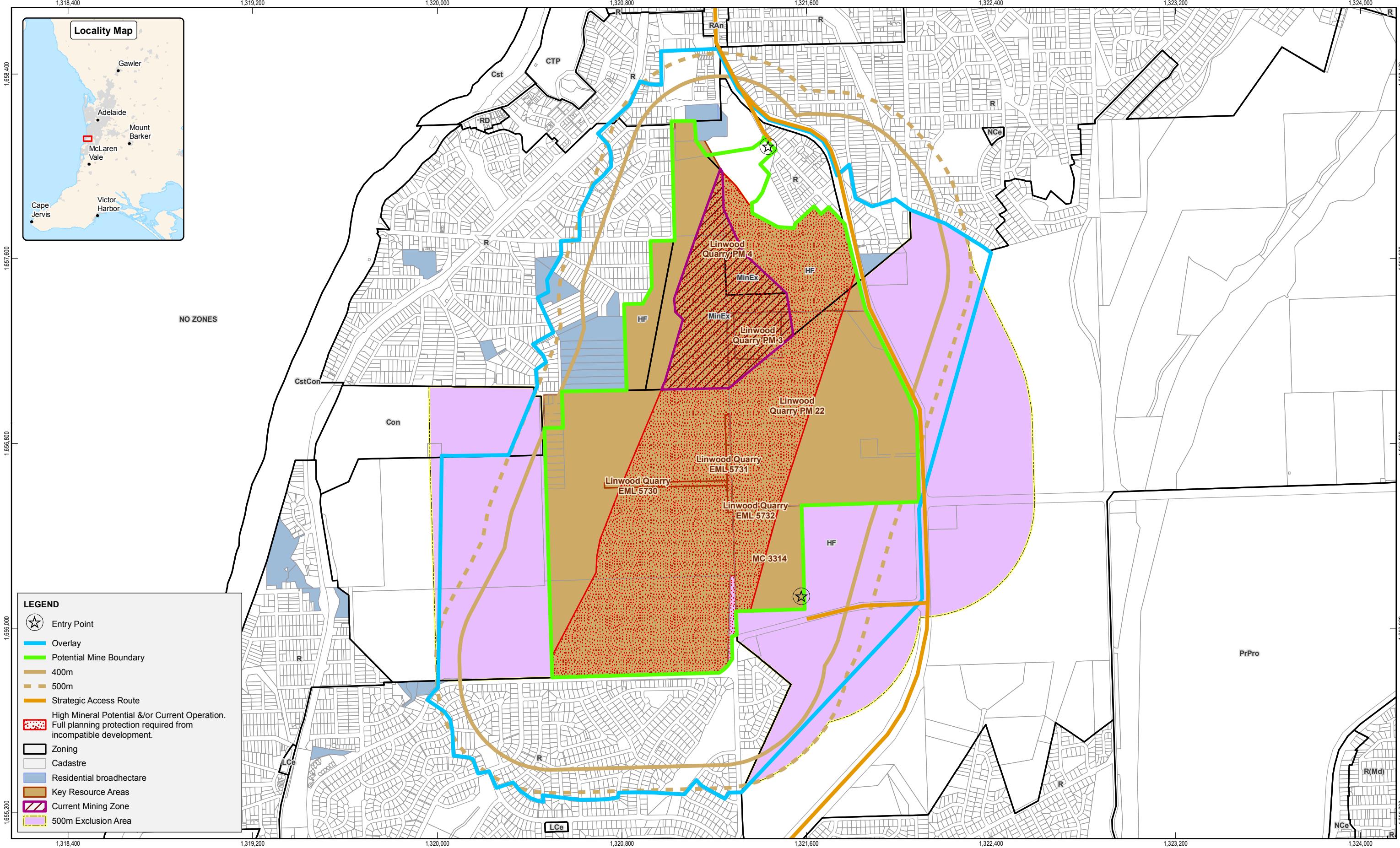


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## Kapunda Quarry

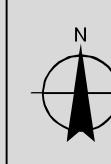
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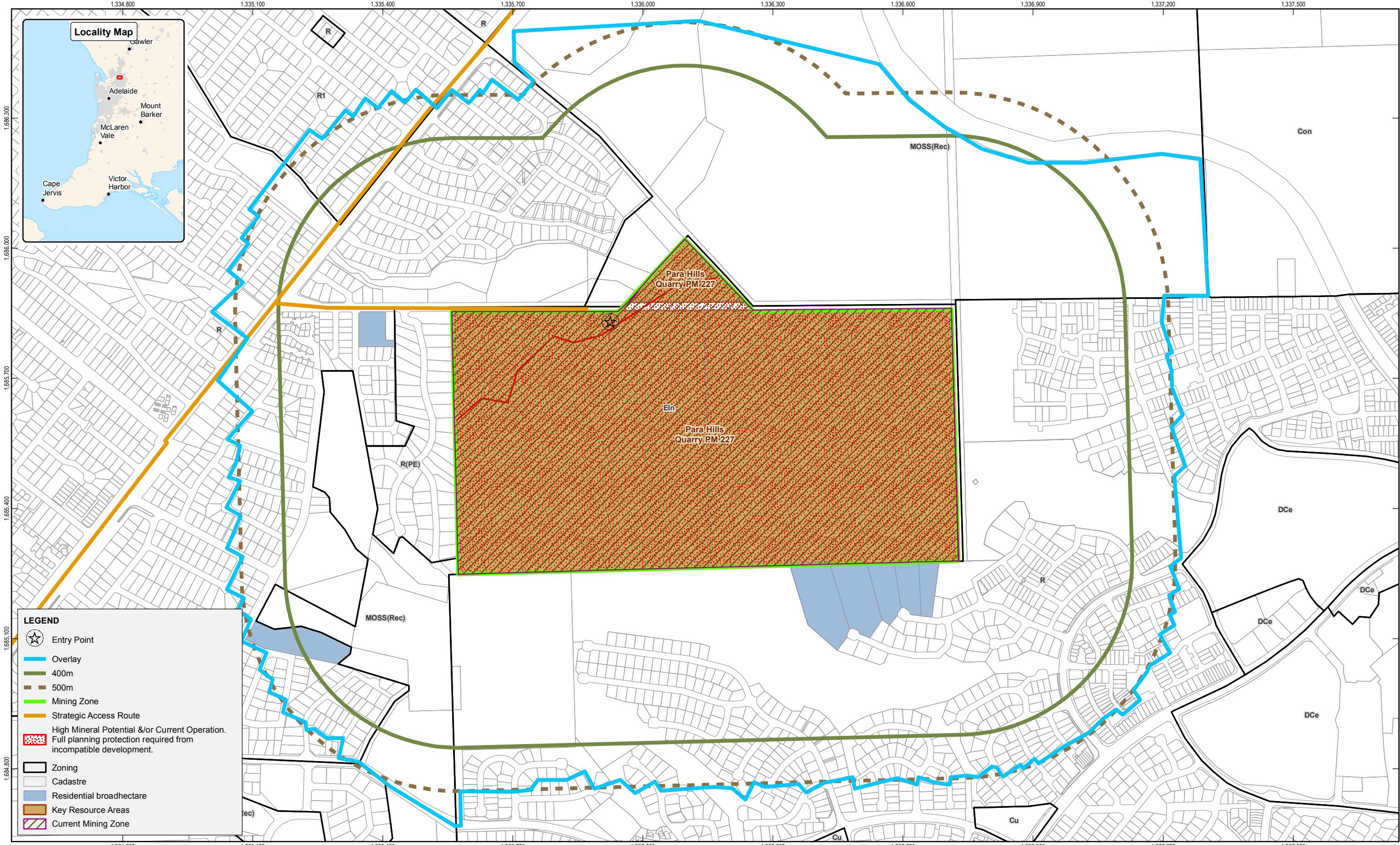


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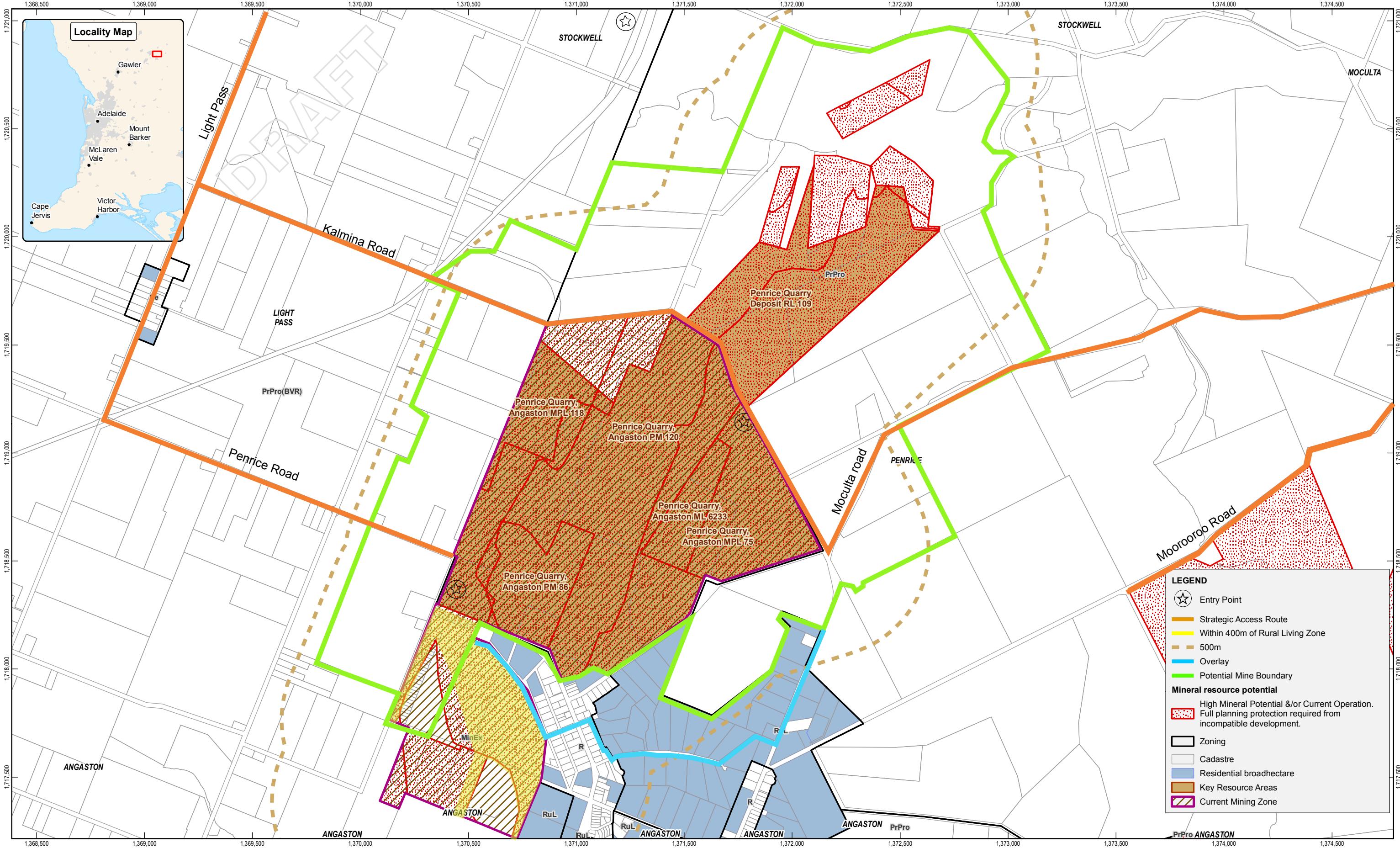


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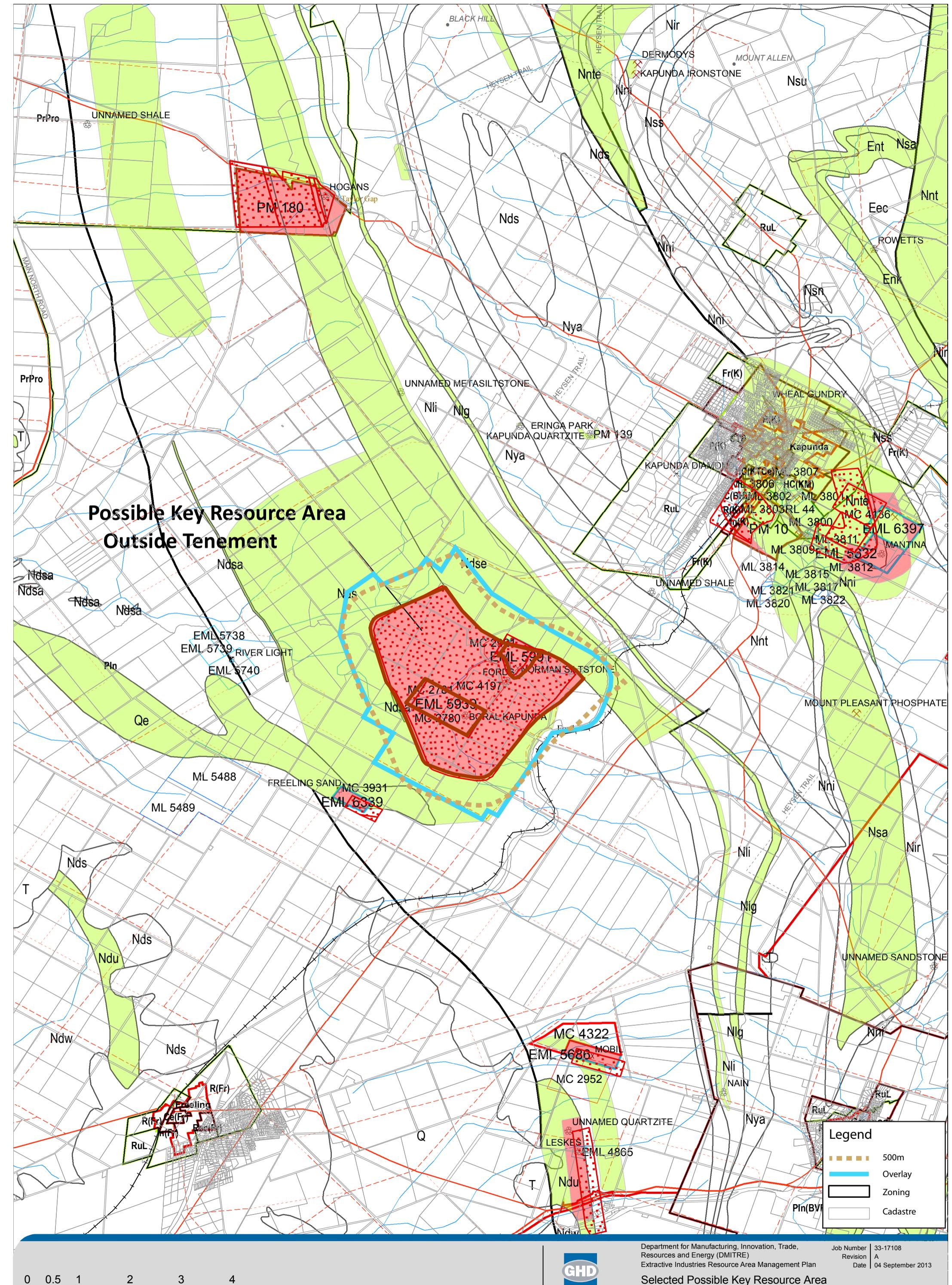


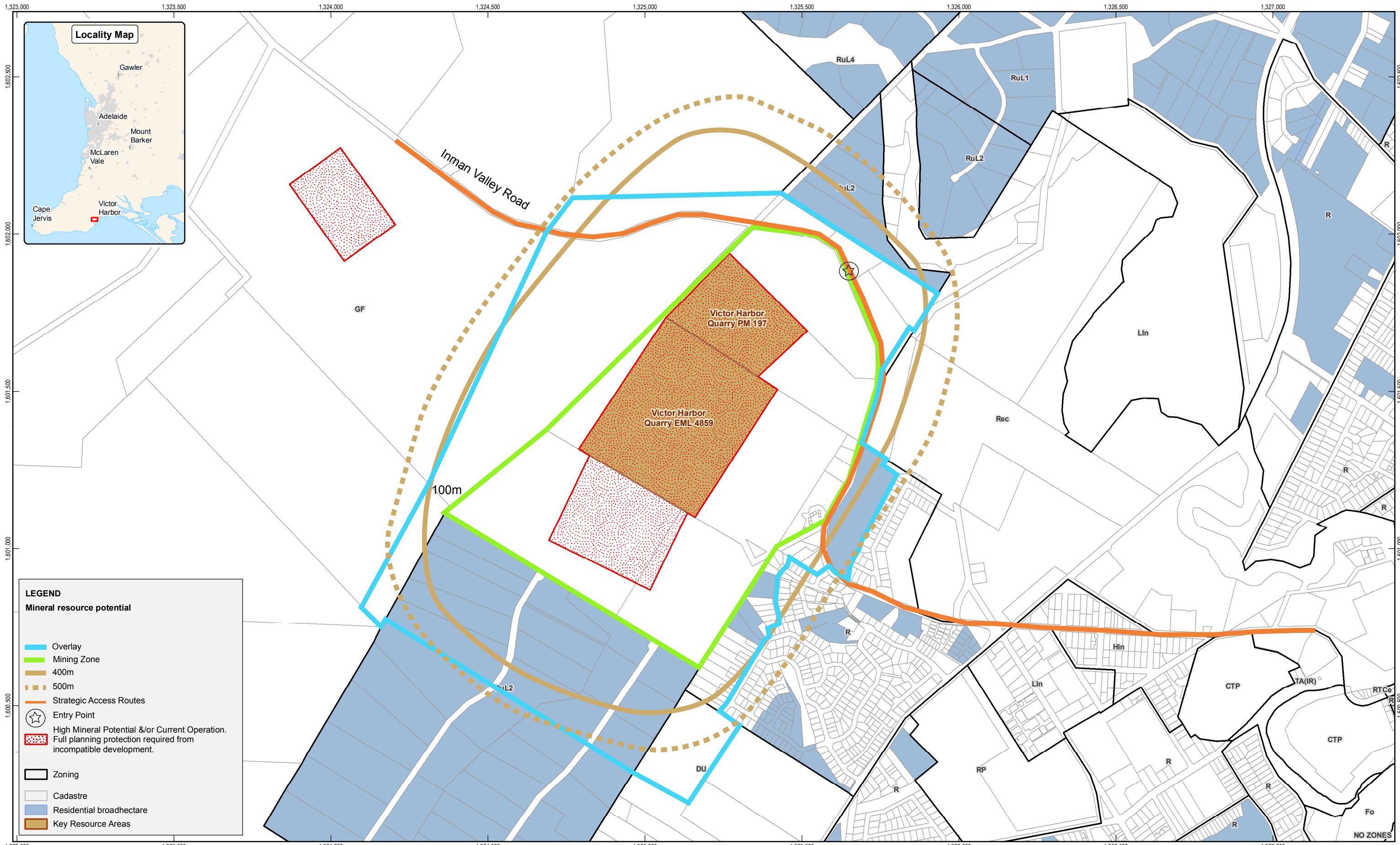
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Map Projection: Lambert Conformal Conic  
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		Name	Signature	Name	Signature	Date
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