### Acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
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<tbody>
<tr>
<td>DELWP</td>
<td>Department of Environment, Land, Water and Planning</td>
</tr>
<tr>
<td>DJPR</td>
<td>Department of Jobs, Precincts and Regions</td>
</tr>
<tr>
<td>EIIA</td>
<td>Extractive Industry Interest Area</td>
</tr>
<tr>
<td>EPBC</td>
<td>Environment Protection and Biodiversity Conservation Act</td>
</tr>
<tr>
<td>ERR</td>
<td>Earth Resource Regulation</td>
</tr>
<tr>
<td>GSV</td>
<td>Geological Survey of Victoria</td>
</tr>
<tr>
<td>LGA</td>
<td>Local Government Area</td>
</tr>
<tr>
<td>LiDAR</td>
<td>Light Detection and Ranging</td>
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<tr>
<td>MRSDA</td>
<td>Mineral Resources (Sustainable Development) Act 1990</td>
</tr>
<tr>
<td>PSP</td>
<td>Precinct Structure Plan</td>
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<tr>
<td>SERA</td>
<td>Strategic Extractive Resource Area</td>
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<tr>
<td>SRO</td>
<td>State Resource Overlay</td>
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<tr>
<td>SUZ</td>
<td>Special Use Zone</td>
</tr>
<tr>
<td>UGB</td>
<td>Urban Growth Boundary</td>
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<tr>
<td>WA</td>
<td>Work Authority</td>
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**GLOSSARY**

<table>
<thead>
<tr>
<th>Glossary</th>
<th>Description</th>
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<tr>
<td>Extractive resources</td>
<td>Extractive resources is a general term used to describe rock, sand, clay and gravel, which are used in construction of housing, roads and other infrastructure. It does not imply that the quality or quantity characteristics of the commodities are confirmed within the SERAs, which would be subject to future drilling programs to prove these up.</td>
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</table>
| Strategic extractive resources | Extractive resources that actually and/or potentially occur in defined locations at various scales based on their likelihood or potential to supply growth areas, taking into account accessibility to markets, while minimising impacts on environment and other land use constraints. These are informed by any of the following, including but not limited to:  
  • Local government areas (LGA) in Victoria ranked 1 to 20 based on meeting at least two of the following criteria: proximity for resource to growth areas, production of resource, scarcity of resource, and supply of resource (PwC, 2016).  
  • Extractive Industry Interest Areas (EIIA): Sub local government areas identified in reports published by the Geological Survey of Victoria (see Glossary definition).  
  • Strategic Extractive Resource Areas (SERAs) (see Glossary definition).  
  • Special Use Zones - Extractives.  
  • Strategic quarries - Individual quarries, with known extractive resources that actually or potentially produce, large quantities of materials that are in high demand.                                                                                                                                 |
<p>| Actual and/or potential extractive resources | Actual extractive resources are those that are proven to exist at a given location as indicated by the presence of current operating quarries, industry information, or findings of geoscience reports and investigations. Potential extractive resources are those that are likely to exist flagged by Extractive Industry Interest Areas or other available information, but is yet been commercially proven. |
| Melbourne Supply Area     | Comprises the municipalities of Bass Coast (part), Baw Baw (part), Cardinia, Casey, Greater Geelong (part), Hume, Macedon Ranges (part), Melton, Mitchell (part), Moorabool (part), Mornington, Murrindindi (part), South Gippsland (part), Whittlesea, Wyndham, Yarra Ranges (part). |</p>
<table>
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<th><strong>Glossary</strong></th>
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<tr>
<td><strong>Extractive Industry Interest Area (EIIA)</strong></td>
<td>Extractive Industry Interest Areas include land that has been identified as containing or potentially containing sand and stone resources of sufficient quantity and quality to support commercial extractive industry operations and which have limited environmental and/or constraints to the establishment of such operations. EIIAs serve as a geographic indicator in the planning scheme for the purpose of referral of planning permit applications only. EIIAs are not a control in the Victorian Planning Provisions (VPPs) and are not prescribed planning controls.</td>
</tr>
</tbody>
</table>
| **Strategic Extractive Resource Area (SERA)** | The Strategic Extractive Resource Area (SERA) is a new concept, which is being trialled through SERA pilot project to achieve greater visibility, recognition and planning protection of strategic extractive resources in defined locations. A SERA is defined based on an assessment of surrounding natural, cultural and existing land uses, supporting transport networks, proximity to markets, and available geoscience information including EIIAs and industry supply and demand data. Specifically, a SERA:  
  - is located generally within existing EIIAs in a strategic resource local government area.  
  - includes actual and/or potential extractive resources across the area, wholly or in part, and may support current or new extractive industry operations or their buffers.  
  - has manageable environmental and planning constraints and are accessible to markets.  
  - is implemented in the planning scheme by the State Resource Overlay and Special Use Zone. |
| **Victorian Planning Provisions (VPPs)** | The Victorian Planning Provisions are the planning policies and controls upon which all land use planning decisions are made in Victoria. |
| **Special Use Zone (SUZ) - Extractives** | The Special Use Zone - Extractives is a control within the Victorian Planning Provisions that recognises or provides for the use and development of land for specific purposes (in this case Extractives) as identified in a schedule to the zone. |
The State Resource Overlay is a control within the Victorian Planning Provisions (VPPs) that seeks to protect areas of mineral, stone and other resources, which have been identified as being of State significance, from development that would prejudice the current or future productive use of the resource.
Background

Victoria is growing rapidly, with population forecast to exceed 10 million people by 2050. Melbourne is now Australia’s fastest-growing city, and we need more extractive resources such as sand, rock and gravel to be brought to market to build homes and necessary infrastructure.

The long-term supply of strategic extractive resources needs to be secured today, in areas close to where they will be used to keep down transportation and construction costs.

The Victorian Government’s Helping Victoria Grow: Extractive Resources Strategy sets out a comprehensive plan to help ensure that current and future generations can continue to have access to the materials needed to affordably build homes, hospitals, schools, roads and other infrastructure.

The Strategic Extractive Resource Areas (SERA) pilot project is a key initiative of the Extractive Resources Strategy, which will help secure strategic extractive resources in defined locations.

The SERA pilot project is a partnership between the Victorian Government, Wyndham City Council and South Gippsland Shire Council.

Informed by the pilot project, the Victorian Government will progressively roll out SERAs in other suitable areas identified as being strategically important for the supply of extractive resources that are needed to meet expected demand. Any further SERA pilot project areas will be determined in consultation with local councils, industry and communities and appropriately assessed on a case-by-case basis.
The challenge

By 2050 the demand for extractive resources is expected to reach more than 100 million tonnes per year, more than doubling 2015 levels.

Victoria’s rapid population growth has not only increased demand for extractive materials, it has also affected their availability. Urban and rural residential developments, the introduction of new environmental safeguards and a range of other land uses, means that available options for existing quarries to expand and new quarries to be established are quickly disappearing.

Victoria’s Planning Policy Framework (PPF) recognises the importance of extractive resources for the State. However, planning schemes in their current form have not been effective in securing extractive resources and protecting operating quarries from incompatible land uses.

Extractive Industry Interest Areas (EIIRs) were established in the 1990s to identify land where future extractive resources are likely to be found, but have generally failed to provide a well-defined, visible and binding mechanism in the planning system to secure these resources.
The SERA pilot project

The SERA pilot project was initiated by the Victorian Government, with the oversight of the Extractives Strategy Taskforce to establish a new approach to securing extractive resources and providing:

- Certainty for quarry operators to know that current and potential future operations will not be impacted by housing or other incompatible land uses.
- Certainty for local community to know that their lives will not be impacted by quarry operations near their homes.
- Certainty for the broader Victorian community and business to know that the construction materials required to build the infrastructure the state needs will be safeguarded and affordable.

The SERA pilot project is trialling the use of mechanisms available in the Victorian planning system to provide greater visibility, recognition and protection of known or potential strategic resources in two local government areas.

The Wyndham and South Gippsland councils were chosen after local government areas identified as strategic resource locations were invited to express interest in participating in the pilot project.
Proposed SERA locations

**Wyndham**

The Wyndham area is recognised for its vast flat basalt plains. A number of hard rock quarries have been operating in the area for decades, producing good quality road base and aggregate from the extracted basalt, which is used for major road projects and other infrastructure in and around greater Melbourne.

More than 65 per cent of the existing EIIA in Wyndham is now inaccessible for potential extractive industries due to incompatible land uses.

The large Western Grassland Reserve and the location of small settlements and nearby towns have helped to shape the proposed SERA boundary, which avoids these important areas. It encompasses existing quarries, Special Use Zones, and areas where there are potential extractive resources that may be suitable for future quarry development.

In 2018/19, Wyndham produced 12 per cent of all hard rock in Victoria.

Proposed Wyndham SERA and surrounding Local Government Areas
South Gippsland

South Gippsland’s north western corner forms part of an extensive sand belt. The sand near Nyora has been extracted since the 1950s and is projected to continue for the next few decades.

Several quarries located in the SERA pilot project produce sand that is largely used in construction projects across Melbourne.

The proposed SERA boundary covers all of the existing sand quarries in the South Gippsland municipality that lie west of the township of Nyora. It also includes adjoining areas that are generally covered by the EIJA, the buffers of existing quarries, and areas that sit within planning zones where extractive industries are permitted.

By 2050, South Gippsland is forecast to be the largest supplier of sand to Greater Melbourne.
Proposed planning provisions for SERAs

The introduction of new planning provisions is proposed within defined SERA areas.

The new provisions aim to safeguard potential extractive resources and to protect the operations of existing quarries, while ensuring community values are maintained.

The SERA boundaries are proposed to be designated as a State Resource Overlay within the respective pilot council planning schemes. Existing quarries, or land that is currently zoned Special Use, are proposed to be designated as an updated Special Use Zone. This will limit and manage uses and development that do not complement or safely coexist with quarrying activities.

In the areas within the proposed SERAs where existing quarries do not exist, a State Resource Overlay is proposed to provide a greater level of management about the types of uses and development that will occur across these areas.

For industry, the provisions will help to minimise potential planning related impacts for existing or approved quarries. In areas of the SERA where quarries do not currently exist, the provisions will reduce the risk of losing resources for future extractive industries. This is an important outcome that will help to ensure Victoria will have sufficient supplies of extractive resources to meet the State’s future needs.
Any new quarries proposed in the SERA boundaries, will still be required to be assessed through the normal requirements under the Mineral Resources (Sustainable Development) Act, Planning and Environment Act and must address any other legislative requirements and safeguards.

Community, industry and other stakeholders are now provided the opportunity to provide feedback on the draft SERA pilot project, in particular the proposed planning provisions and areas related to the proposed State Resource Overlay and the Special Use Zone. This feedback will be used to refine the proposed planning provisions and inform the final decision to be made by the Minister for Planning.

The proposed SERA planning provision application for both the Wyndham and South Gippsland pilots are illustrated overleaf.
EXECUTIVE SUMMARY

SERA Planning Provision Application (Proposed) - Wyndham
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- The SERA pilot project
- Proposed SERA locations
- Proposed planning provisions for SERAs

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Purpose of the project

Victoria’s population continues to rapidly grow. Our population is projected to reach over 10 million people by 2050. The provision of housing and infrastructure is imperative to ensuring Victoria remains liveable, sustainable and accessible.

Underpinning the supply of housing and essential infrastructure are extractive resources. Construction materials such as concrete, bricks, asphalt, paving, road base and aggregates are made from resources extracted from quarries across Victoria. We need to secure these extractive resources close to demand areas to ensure more sustainable truck movements. This will act to maintain cost competitiveness for construction, particularly as demand for these resources is expected to double by 2050.

To do this, the Victorian Government has established the concept of Strategic Extractive Resource Areas (SERAs), which will assist in providing greater planning certainty for the continued extraction of critical resources in identified strategic areas.
Two local government areas, the City of Wyndham and Shire of South Gippsland were selected to participate in the SERA pilot project to trial and test newly developed planning controls for SERAs. The City of Wyndham and Shire of South Gippsland will play an increasingly important role as critical supply locations for strategic extractive resources in Victoria. The SERA pilot project presents an opportunity to develop planning controls to directly address issues that extractive industry operators are currently facing, provide greater certainty and clarity for landowners, as well as test and refine a methodology to identify appropriate SERA sites in the future.

SERAs are a strategic marker of potential extractive resources, but ultimately need to be commercially proven by industry. Any proposal to use and develop the land, for quarries or other purposes, within or outside of a SERA will still need to be assessed on its merits in accordance with the provisions of the relevant planning scheme and other legislation as applicable.

The SERA concept also supports quarries as a temporary land use. After resource extraction, land that supported quarry operations is required by Earth Resources Regulation to be rehabilitated to an appropriate standard.
Why action is required

A long-term supply of competitively priced extractive resources is critical for growing Victoria’s population and economy (Figure 1). The forecast growth of Victoria to over 10 million people by 2050 will require vast quantities of affordable hard rock and sand. These resources are used for constructing houses, roads, rail and bridges, hospitals and schools, employment precincts and renewable energy projects, as well as sport, tourism and recreational spaces. Residential development is the largest driver for demand of extractive resources in construction activities (Figure 2). In 2015, residential development accounted for 56% of extractive resources in construction activity.

<table>
<thead>
<tr>
<th>Growing demand</th>
<th>Supply shortfalls</th>
<th>Action required</th>
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<tbody>
<tr>
<td>Victoria’s population is set to reach <strong>10.5 million</strong> by 2050.</td>
<td>+89% extractive resources will be required for construction statewide by 2050 compared to 2015.</td>
<td>There is an urgent need to <strong>secure suitable resources</strong> to meet infrastructure and affordable housing requirements.</td>
</tr>
<tr>
<td><strong>1.6 million</strong> new homes will need to be built together with roads, rail lines, hospitals, school and other public infrastructure.</td>
<td>34% of demand in 2050 will need to be sourced from quarries not yet built or planned.</td>
<td>This will avoid flow-on effects for construction costs in the future.</td>
</tr>
</tbody>
</table>

*Figure 1* Extractive resource demand and supply in Victoria.
Expected Drivers of Demand

**Residential**
- 2015: 56%
- 2026: 50%
- 2050: 39%

**Transport**
- 2015: 12%
- 2026: 13%
- 2050: 16%

**Non-Residential**
- 2015: 22%
- 2026: 25%
- 2050: 30%

**Energy & Utilities**
- 2015: 10%
- 2026: 12%
- 2050: 14%

**Figure 2** Consumption of extractive resources in construction activities in Victoria (PwC, 2016)

Securing extractive resources is imperative in delivering Victoria’s ‘Big Build’ (Figure 3). Victoria’s transport construction boom is seeing 119 major road and rail projects being delivered, and an investment of $57 billion. These upgrades to our transport network are creating tens of thousands of jobs and they will transform the way Victorian’s travel (Figure 4 & Figure 5).
Victoria’s current program of major infrastructure projects

Key projects include:

- Suburban Rail Loop to provide a new underground rail link that will connect Melbourne’s middle suburbs.
- Metro Tunnel to run for nine kilometres beneath Melbourne’s CBD and beyond, including five new underground stations to accommodate new high-capacity trains.
- North East Link to create an essential freeway connection between Melbourne’s north and east.
- Level Crossing Removal Program to remove Melbourne’s 50 most dangerous railway level crossings.
- West Gate Tunnel Project to provide quicker and safer journeys to the western suburbs, Geelong and Ballarat, and to take thousands of trucks off residential streets.
- Regional Rail Revival Program to improve infrastructure and services on regional rail lines across Victoria.
- School buildings program, including 70 new schools for Victoria.

The estimated doubling of Victoria’s demand for these resources by 2050 means that additional resources need to be identified and secured now to reduce forecast long-term supply shortfalls. A shortfall in extractive resources close to market means that the cost of construction will rise as these materials are sourced from further afield.

The Victorian Government recognises the importance of securing well located quality extractive resources for the future and has made commitments in Plan Melbourne 2017-2050 (the metropolitan planning strategy), Helping Victoria Grow: Extractive Resources Strategy, the Joint Ministerial Statement Extractive Resources, and the Commissioner for Better Regulation Report: Getting the Groundwork Right. The establishment of the SERA pilot project is a key commitment of the Victorian Government to secure strategic extractive resources for the future.

The pilot project, overseen by the joint government and industry ‘Extractive Strategy Taskforce’, has been developed as a new approach for co-designing extractive resource planning policy with pilot local government partners.

Following an open selection process, the City of Wyndham and South Gippsland Shire Council became project partners in February 2018. These municipalities are strategic extractive resource locations (PwC, 2016) which respectively supply large volumes of quality hard rock and sand to Melbourne. The project is a partnership between the Department of Jobs, Precincts and Regions (DJPR), the Department of Environment, Land, Water and Planning (DELWP), the City of Wyndham and the South Gippsland Shire Council.
Figure 4  Major Transport Infrastructure Projects - Greater Melbourne

Figure 5  Major Transport Infrastructure Projects – Regional Victoria
Aims of Strategic Extractive Resource Areas

While the Mineral Resources (Sustainable Development) Act 1990 (MRSDA) provides the main legislative framework for the extractive industry in Victoria, the Victorian planning system also plays a key role in designating the location of industry and its interface with other land uses. Currently, identified extractive resources and operating quarries of strategic importance are not afforded site specific local protection as envisaged by state planning policy.

The principal aim of this pilot project is to use and adapt existing controls available in the planning system to secure known and/or potential extractive resources of strategic significance to Victoria (Figure 6).

The expected benefits from this project include:

• greater industry certainty for long-term quarry operations.
• additional areas of known and/or potential extractive resources secured and available for the long term, subject to approval processes.
• ability for decision-makers to be better informed and guided about development near extractive resources and existing operating quarries.
• stakeholders, including landowners, being given more confidence about the medium- to long-term planning and management of extractive industries, and protection of valued assets.
• a template to implement best practice planning controls that can be applied to further SERAs in other LGAs.

The proposed introduction of SERAs does not change current opportunities for establishing new quarries or expanding existing quarries in areas outside of the proposed SERAs.
**INTRODUCTION**

**Figure 6** Existing policy and the role of SERAs

**Broad State Policy Direction**
- **Legislation**
  - Planning and Environment Act 1987
  - Mineral Resources (Sustainable Development) Act 1990
- **State Policy**
  - Clause 14.03 – Resource exploration and extraction
  - Clause 52.08 – Earth and Energy Resources Industry
  - Clause 52.09 – Stone Extraction and Extractive Industry Interest Areas
- **Extractive Industry Interest Areas (EIiAs)**
  - **Broad identification** of land with actual and/or potential stone resources close to major demand centres
- **Strategic Extractive Resource Areas (SERAs)**
  - **Detailed identification** of strategically important extractive resource areas and apply planning protection to recognise and secure them
- **Work Authority / Planning Permit Approval**
  - Decision making on specific quarries

**Effective Localised Policy**
The SERA Methodology

In undertaking the pilot project, a methodical approach was taken, which included:

- An investigation of current issues facing extractive resources security in Victoria to inform the development of planning controls.
- Using the SERA determination framework outlined in the Extractive Resources Strategy (Table 1), draft SERA boundary options were identified.
  - The evidence used to inform this identification was drawn from desktop land use reviews, demand and supply models, site visits, industry engagement, existing geoscience reports, analysis of policy settings and options, and ongoing engagement with partner councils and other relevant organisations.
  - Areas in which potential extractive resources are represented by the Extractive Industry Interest Area, but also identified as highly sensitive due to local communities or key environmental assets such as the Western Grassland Reserve. These were excluded from the proposed SERA boundaries.
- Potential draft SERA boundary options were then assessed using a strengths, weaknesses, opportunities and threats assessment model with a preferred boundary selected.

This SERA identification approach is illustrated in Figure 7.

Table 1  SERA determination criteria

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Key factors</th>
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<tbody>
<tr>
<td>Investigation Area</td>
<td>Area with actual and/or potential extractive resources; project partner agreement</td>
</tr>
<tr>
<td>Accessible to markets</td>
<td>Suitable transport routes; supports vehicle logistics</td>
</tr>
<tr>
<td>Strategic extractive resource</td>
<td>Significant future supplies; quality resources; includes greenfield areas</td>
</tr>
<tr>
<td>Manageable constraints</td>
<td>Suitable buffer areas; planning policy compliant; heritage, water, and biodiversity</td>
</tr>
</tbody>
</table>
**Data Collection**
- Land use / Data collection
- Infrastructure
- Resource information
- Environmental
- Social / Cultural

**Policy Analysis**
- Supply & demand study
- Planning policy provisions
- Extractive Resources Strategy
- SERA pilot project objectives

**Spatial Database**
- Mapping
- Delineation of options

**Strategic Supply Options**
- Conservative
- Moderated
- Ambitious

**SWOT Assessment**
- Option
- Description
- Strengths
- Weaknesses
- Opportunities
- Threats

**Spatial Database**
- Endorsed by the Extractive Strategy Taskforce
- Endorsed by the Minister for Planning
- Subject to further assessment and feedback

*Figure 7* SERA Configuration Assessment Framework
2. SECURING EXTRACTIVE RESOURCES

The proposed SERA seeks to apply planning controls that will formally establish and give statutory weight in the planning system to SERAs.

A SERA is:

- a defined area that actually and/or potentially contains stone or sand across the area wholly or in part and may support current or new extractive industry operations. It has manageable environmental and planning constraints and is accessible to markets.

- a strategically important area that has been identified based on an assessment of surrounding natural, cultural and existing land uses, supporting transport networks, proximity to markets, and available geoscience information, including EIIA.

The application of planning controls is required to recognise and secure these resources for the medium to long term and to support future projects and the timely delivery of material to market.

Source: Provided by industry, Sand quarry in South Gippsland
Previous initiatives

Victoria has around 540 quarries which in 2019 produced close to 63 million tonnes of stone. The value of this production at the ‘quarry gate’ in 2019 was approximately $1020 million.

In 2012, the Victorian Parliament’s Economic Development and Infrastructure Committee Inquiry into greenfields mineral exploration and project development in Victoria (Economic Development and Infrastructure Committee, 2012) made three key recommendations to government:

- That the Victorian Government develops a state-wide integrated, strategic land use policy framework to better manage competing land uses in Victoria. This framework should be subject to periodic review giving consideration to economic, social and environmental factors.

- As part of the development of an integrated state-wide strategic land use framework, that the Victorian Government ensures studies are undertaken to determine areas of high prospectivity for extractives and future extractives needs in metropolitan Melbourne and regional Victoria.

- That the findings of the extractives prospectivity and future needs studies be incorporated into the state-wide strategic land use framework, be protected in local planning schemes, and have appropriate post-extractive uses identified that are consistent with and sensitive to abutting areas.

The impact of competing land uses on existing and proposed extractive industry was identified in parliamentary inquiries dating back to the Parliament of Victoria’s Environment and Natural Resources Committee Report on Planning Issues for Extractive Industries (Environment and Natural Resources Committee, 1994) which noted that:

- Sterilisation, or the prevention of extractive industry development by prior occupation of a site or a region by another land use, represents a major constraint imposed on future quarry developments. In particular, urban spread has sterilised, and has the potential to sterilise, large areas of stone resource, and that;

- Subdivision of broadacre farming land and forested land into small allotments often described as “hobby farms” and “bush blocks”. This process reduces the supply of land that is of a size sufficient to accommodate many “utility” land uses, including quarries.
Government initiatives to respond to issues raised by these inquiries include:
• introduction of Extractive Industry Interest Areas (1993)
• establishment of the joint industry-government Extractives Strategy Taskforce (2014)
• development of a State-wide extractive resources demand and supply study (2016), and
• release of the Extractive Resources Strategy that articulates a suite of short to long term actions including this pilot project, to ensure the supply of extractive resources meets future demand forecasts (2018).

The Metropolitan Planning Strategy, Plan Melbourne 2017-2050 (Policy 1.4.2) also affirms the importance of extractive resources, as does Clause 14.03 from the Planning Policy Framework of Victoria's planning schemes.

Source: DJPR, Mountain View Quarry, Wyndham Vale
Extractive Industry Interest Areas

Extractive Industry Interest Areas (EIIAs) were established in the 1990s by the Geological Survey of Victoria (GSV) for Melbourne, Latrobe, Geelong, Bendigo and other regions. The EIIA boundaries were reviewed and updated in 2003. For the purpose of the pilot project, the EIIAs provided a base of accepted geological evidence and assisted in demarking outer boundaries for the pilot project investigation areas within the strategic extractive resource LGAs identified by PwC (2016) for the Department of Jobs, Precincts and Planning.

The concept of EIIAs was to identify land located in reasonable proximity to major population centres that is likely to contain commercially viable stone resources where extractive industry is more likely to be established. This was to ensure that consideration of the effect of any proposed uses or development on the long-term use of the resources could be considered.

These areas were identified by a process that took into account planning, social and environmental constraints and underlying geological characteristics. The shape and extent of the EIIAs reflects the different geology and constraints operating in each region.

Land in the EIIAs includes potential resources with relatively few environmental constraints. Some EIIAs' extractive resource potential has diminished over time due to the introduction of competing activities or new land uses and environmental policies.

The extractives industry uses EIIAs to identify areas of extractive resource potential for medium and long term development.

The City of Wyndham and Shire of South Gippsland are both located in the Melbourne Supply Area which is illustrated in Figure 8.

Extractive Industry Interest Area Supply Area reports serve as reference documents for the purposes of State Planning Policy (Clause 14.03-1S).1

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1 Reference documents have only a limited role in decision-making as they are not part of the planning scheme. They do not have the status of incorporated documents or carry the same weight. Reference documents provide background information to assist in understanding the context within which a particular policy or provision has been framed. They may be wide-ranging in their content and contain information not directly relevant to specific decisions under the planning scheme.
Figure 8  Extractive Industry Interest Areas
Current policy issues

Investigations undertaken as part of the pilot project, including a review of case studies and informal consultation with select local government authorities, identified five key issues facing extractive industries in the planning system (Table 2).

Table 2  Current planning issues impacting extractive resources.

<table>
<thead>
<tr>
<th>Issue</th>
<th>Impact of the issue</th>
<th>Current measures to address</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Spatial definition</strong></td>
<td>• Planning policies, particularly clauses in local planning policy, are not sufficiently supported by spatial representation in the planning scheme either through a zone or overlay. Uninformed decision making due to lack of visibility of existing quarries (Work Authorities) in the planning scheme, including visibility of approved Work Authority conditions. EIIAs have had variable impact on identifying and protecting resources.</td>
<td>EIIAs are a reference document in the planning scheme (Clause 14.03-1S). However these are not well defined or highly visible within planning schemes.</td>
</tr>
</tbody>
</table>
| **Decision making**    | • Current planning scheme policies do not have sufficiently clear decision guidelines to enable planners to better assess the appropriateness of quarry activities.                                                                                                          | Release of new Planning Practice Note 89 – Extractive industry and resources (February 2019). The purpose of the note is to provide information and guidance about:  
• the current extractive industry approvals process  
• protecting existing extractive industry operations  
• protecting Victoria’s extractive resources  
• the Victorian Government’s initiatives for improving the regulation and protection of extractive industry and resources. |
|                        | There is insufficient guidance and clear standard decision guidelines in planning schemes for councils to make informed decisions regarding extractive industries. This includes a lack of standards, thresholds or quantifiable measures. Sensitive, compatible or acceptable uses near quarries are also not explicitly defined. This inevitably makes decisions less defendable.  
The sporadic nature of extractive industry permit applications also makes it difficult for council officers to develop the technical expertise required to make informed or defendable decisions.  
Additionally, the inherent contentious nature of extractive industry decisions increases the degree of difficulty for planners. |                                                                                                               |
<table>
<thead>
<tr>
<th>Issue</th>
<th>Impact of the issue</th>
<th>Current measures to address</th>
</tr>
</thead>
</table>
| **Consistency**  
- Planning approaches to managing extractive industries are not adequately coherent and consistent across resource areas. | There is a haphazard and inconsistent approach to decision making, with a variety of different zones and overlays used by councils.  
With the application of a variety of different controls, it is difficult to ensure that the economic benefit of state significant resources is a primary consideration in local decision making.  
If an extractive industry area is to be protected with specific tailored controls, the onus is on councils to progress a planning scheme amendment (often funded by quarry operators) to identify extractives uses after a Work Authority has been granted. | Existing Victoria Planning Provisions. |

**Encroachment**  
- Standard zones do not have appropriate permit triggers and decision guidelines to ensure the impact of any sensitive uses on the operations of existing quarries are appropriately assessed. | Encroachment of sensitive uses can restrict quarry operating hours, material transportation, blasting, and work plan expansion both within Work Authority boundaries and in suitable adjacent land.  
Increased scrutiny by communities close to quarries leads to longer processing times of work plan variations and Work Authority applications and potential referral to Victorian Civil and Administrative Tribunal (VCAT).  
This can lead to sterilisation and encroachment of existing quarry operations and future extractive resources, leading to increased cost of end products and infrastructure. | Notice of applications within 500 metres of an EIIA and existing Work Authorities (and a Work Authority that has been applied for) to DJPR, if a planning permit is trigged through a separated unrelated provision of the planning scheme.  
Clause 14.03-1S of Planning Policy Framework states that planning permit applications should clearly define buffer areas appropriate to the nature of any proposed extractives uses, and that buffers are to be owned or controlled by the proponent of an extractive industry. |
<table>
<thead>
<tr>
<th>Issue</th>
<th>Impact of the issue</th>
<th>Current measures to address</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Geoscience data</strong></td>
<td>• Evidence-based research and sufficient geological data needs to underpin any planning scheme amendment that seeks to strategically secure actual and/or potential extractive resource areas for the long term.</td>
<td>EIIAs identify areas with actual and/or potential extractive resources that are prospective for extractive industry. It is contingent upon industry to prove up specific locations within the SERA for extractive industry activities.</td>
</tr>
<tr>
<td></td>
<td>Insufficient geoscience data and understanding of stone and sand distribution and quality at a localised level. This has the potential to leave hard rock areas unidentified in the planning scheme. This may constrain adequate securing of the resources and lead to their sterilisation.</td>
<td></td>
</tr>
</tbody>
</table>

These policy issues are further highlighted by feedback from quarry operators. Operators within and outside the SERA investigation areas were interviewed about the challenges facing current and future quarry activities, as well as the concept and application of SERAs (Table 3).

**Table 3** Key topics raised by quarry operators in relation to proposed SERAs.

<table>
<thead>
<tr>
<th>Key Topic</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SERA boundaries</strong></td>
<td>In both SERA investigation areas, operators were of the view that the SERA boundaries should not only cover existing quarries, but also future expansion opportunities and buffer areas. Operators considered that SERAs should accommodate buffer areas to protect quarries from the encroachment of sensitive receptors such as dwellings or residential estates. For South Gippsland, operators were of the view that the SERA boundaries should incorporate quarrying activities to the north within Cardinia Shire Council.</td>
</tr>
<tr>
<td><strong>Transport</strong></td>
<td>Operators identified increasing road congestion as the key transport-related issue impacting their operations. They pointed to a need for regulators to be more flexible in allowing night time operations to mitigate the impact of congestion on their operations. They also identified the need to protect existing transport routes from new sensitive receptors such as the new residential estates in Wyndham or increased housing in Lang Lang. This is because it can often lead to conflict between these uses due to the impact of necessary and regular transport movements. Quarry operators consider transport along the entire supply chain from quarry to end point a critical issue. This was clearly highlighted in relation to sand extraction, with most sand supply coming from South Gippsland/Lang Lang area for Greater Melbourne rather than for local use. Rail was not seen as a viable option for transporting materials for operators in both SERAs due to material double handling and logistics issues.</td>
</tr>
</tbody>
</table>
Key Topic | Comments
--- | ---
**Regulation** | The clear message from operators was that the approval process is too long, costly and uncertain with too much weight given to a single objector or referral authority. A lack of extractive industry knowledge at a local government level was seen as another barrier in the approval process. Hard rock (blasting) operators would like to see buffers greater than current Environment Protection Authority (EPA) standards, while many operators expressed a desire for flexibility in operating hours, particularly during high demand periods.

**Constraints** | Other key constraints identified by operators include:
- biodiversity requirements such as the Western Grasslands or Adam's Creek environs, and the very high upfront costs of native vegetation offsets and the difficulty in sourcing them.
- the introduction of new sensitive receptors such as single dwellings or residential estates encroaching on buffers and transport routes, with the impact of these magnified when blasting is involved in operations.
- night time operating curfews, particularly given road congestion and continuing high demand for resources.
- difficulty in storing water and licensing restrictions associated with groundwater tables.

These policy issues are further compounded by the 3-stage approval process required by prospective operators, outlined below:
- Preparation of a work plan for endorsement by the Earth Resource Regulator (ERR).
- Preparation of a planning application supported by an endorsed work plan.
- Submission of a planning permit and endorsed work plan to obtain a Works Approval from ERR.
- The consequences of these challenges facing quarry operators include:
  - Inefficient utilisation of land and capital, discouraging investment in quarries.
  - Premature closure of extractive industry, despite proven resource availability.
  - Reluctance to open new greenfield quarry sites due to long, costly and uncertain planning process.
  - Additional truck movements to maximise limited ‘window’ for transport of materials.
  - Tightening supply due to insufficient pipeline and timeliness of new quarry projects, and higher costs upon operators, leading to higher cost of extractive resources in the market.
A new approach

Despite the significant bodies of investigative work that have previously been undertaken, and the fact that the importance of extractive industry is recognised in State Planning Policy, the loss of actual and/or potential extractive resources to other land uses remains a concern. Rural subdivision, proliferation of lifestyle properties and urban development continue to reduce identified resources. Additionally, established quarries operating in accordance with their approvals remain under pressure from encroaching incompatible land uses which have the potential to significantly hinder operations and end extraction prior to the exhaustion of the resource.

Despite high level State planning policy recognising the importance of extractive resources, this strategic direction has not appropriately filtered down to impact local level decision making. Areas that contain extractive industry, and areas that surround extractive industry where particular consideration needs to be given to appropriate nearby land uses, are often not shown on planning scheme maps. Consequently they are reliant on higher level planning scheme policy\(^2\), planning scheme ordinances\(^3\) and reference documents\(^4\) to influence decision making. This can make it challenging for council officers and referral agencies, as well as proponents and the community, to identify:

- where there are existing permissible extractive resource operations – some operations are identified by specific zones, whilst other sites are subject to the existing underlying zone. In addition, some sites are actively operating, whilst others are subject to ‘care and maintenance’ regimes
- where an EIIA is located, even though both Clause 14.03 Earth and Energy Resources and 52.09 Stone Extraction and Extractive Industry Interest Areas refer to them. The documents which identify the locations of EIIAs sit outside of the planning scheme as reference documents and therefore have limited weight and visibility.

A planning response to appropriately secure extractive resources and quarries is urgently overdue, with PwC (2016) concluding that Victoria potentially faces constrained future supply unless more quarries are approved and commence production. Given projected demand from forecast infrastructure projects and the continued challenge of maintaining access to quality extractive resources, an effective planning response will be important in securing the long-term supply of extractive resources for Victoria.

Strategic extractive resources, as distinct from extractive resources more generally, are a high priority because of the critical role they currently play or are likely to play to support Melbourne’s future growth. The SERA pilot project encompasses areas recognised for their current extractive resources and/or their extractive resource potential.

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2 Clause 14.03 Resource exploration and extraction
3 Clause 52.09-8 Stone Extraction and Extractive Industry Interest Areas - Notice of an application
4 For example - Melbourne Supply Area - Extractive Industry Interest Areas Review - Geological Survey of Victoria Technical Record 2003/2
Strategic extractive resources are a function of the presence of stone or sand, location relative to Melbourne, and supply and demand.

The Extractive Strategy Taskforce recognises the definition of strategic resource locations as defined by PwC (2016), where it meets two or more of the following criterion:

- Resource types are in short supply generally across Victoria;
- Resource location supports Melbourne’s growth;
- Resource location’s supply does not meet projected demand; and
- Resource production of the area is substantial.

PwC (2016) matched confidentially-supplied industry data against these criteria, from which twenty local government areas (LGA) were highlighted as the most important areas for the current and/or future supply opportunities for extractive resources to meet Victoria’s increasing demand.

The South Gippsland municipality was rated highest due to its significant production of sand and hard rock; supplying Greater Melbourne; and anticipated depletion in the absence of new or expanding quarry projects.

The Wyndham municipality also rated highly due to its significant production of hard rock, importance for supporting Greater Melbourne, and forecast long term depletion in the absence of new or expanding quarry projects.

At a sub-LGA level, the existing Extractive Industry Interest Areas (EIIAs) prepared by the Geological Survey of Victoria (2003) serve as a broad indicator of where extractive resources actually and/or potentially occur within the LGAs identified to be strategically important by PwC (2016).
Even after the proposed introduction of SERAs, EIIAs will continue to play an important role in broadly identifying stone resource areas close to major demand centres (Figure 9).
3. THE Wyndham PILOT SERA

DEMAND AND SUPPLY STORY WYNDHAM

In 2018/19, around 5 million tonnes of hard rock (new basalt) was extracted from quarries within the Wyndham.

In 2018-19, quarries in the Wyndham generated revenue of around $75 million, employed approximately 60 full time staff and generated around 100 indirect jobs.

In 2018/19, Wyndham produced 12% of all hard rock production in Victoria.

From 2015 to 2050, Wyndham is forecast to:

**Demand**
- the second highest amount of hard rock in Victoria.

**Supply**
- Greater Melbourne with around 50 million tonnes of hard rock.

**Use**
- around 110 million tonnes of hard rock

Without additional quarries being planned and established, Wyndham will become a net importer of hard rock with forecast shortfalls of around 40 million tonnes over the period 2015 - 2050.

**Figure 10** The extractive resource demand and supply story in Wyndham
Background and local issues facing Wyndham

The City of Wyndham (Wyndham) is located approximately 35 kilometres from central Melbourne, 43 kilometres from Geelong and covers an area of around 542 square kilometres.

Wyndham is in the western growth corridor which is one of the fastest growing areas in Australia. It is estimated that by 2036 Wyndham will be home to around 459,220 residents.

The region has a strong manufacturing and logistics base, and it will continue to play a vital role in meeting Victoria’s industrial and logistics needs. Communities in Melbourne's west are heavily reliant on the Central City and inner west for jobs and services, placing considerable pressure on the transport network. Most of Wyndham's population lives in Point Cook, Werribee, Hoppers Crossing, Tarneit, Wyndham Vale and Truganina.

Areas of significance in the municipality include:
- environmental conservation areas to the west and south, including grassland reserves and Ramsar wetland
- the Western Treatment Plant to the south
- a regionally significant industrial area to the north east
- highly productive agricultural land of state significance to the southeast.

The key transport corridors in Wyndham are the Princes Freeway and Melbourne-Geelong railway line which run from the northeast to southwest, along with a regional rail link connecting the Geelong and Ballarat railway lines.

Wyndham's traditional manufacturing base is located between Melbourne and Geelong at Laverton North and Truganina and has been a major driver of the local economy. Wyndham is also located near connections to air and sea ports and has recently grown into a significant logistics hub. Wyndham's Intensive Agricultural Precinct (IAP) has an annual estimated production value of $200 million and generates a large percentage of the total annual Victorian production of vegetables. Wyndham is also home to a range of tourism experiences concentrated at the Werribee Park Tourism Precinct, making it one of the largest and most frequently visited tourism destinations in Melbourne.

Major infrastructure and investment projects currently planned or underway in the area include:
- $288 million Cherry Creek Youth Justice Centre.
- East Werribee Employment Precinct.
- Truganina Employment Precinct.
- Wyndham Harbour5
- Implementation of the Western Rail Plan.
- Western Roads Upgrade.
Challenges for the extractive resources industry stemming from this rapidly increasing demand include:

• the need to provide at least 15-year residential land supply to maintain availability of land.

• significant demands on the environment, infrastructure, urban character and employment.

• capacity constraints on both road and rail networks as demand increases.

• the need to protect non-residential activities from residential encroachment. It is important to note that Council’s Municipal Strategic Statement (MSS) identifies the need to maintain a non-urban separation between Werribee and Geelong to the west of the Urban Growth Boundary (UGB) adjacent to existing quarry sites.

• ensuring an ongoing supply of extractive resources are within and/or near the City of Wyndham to reduce transport costs and minimise any increases in the price of constructing houses and infrastructure.
Wyndham: SERA investigation area

The investigation area for the Wyndham SERA pilot project is shown in Figure 11. The area follows the Wyndham boundary to the west and north, and the UGB to the east. It enters inside the Urban Growth Boundary (UGB) to the south east to include existing operating quarry sites.

Wyndham was selected for the pilot project due to its:

- large number of hard rock quarries, responsible for around 12 per cent of all hard rock in Victoria.
- second highest demand for extractive resources in Victoria.
- top 20 strategic resource LGA for future supply of extractive resources (PwC, 2016).
- wide tracts of land that are covered by Extractive Industry Interest Areas.
- future demand, with most of the extractive resource demand expected in central and fringe areas of Melbourne, particularly in the west.
- interface of urban development to investigate preventing urban encroachment.
- location between the demand centres of Melbourne and Geelong.
Figure 11  Wyndham Pilot SERA investigation area
Regional resource prospectivity

Geology

Geologically the Wyndham SERA pilot project investigation area is part of a world-class example of a continental flood basalt domain, termed the Western Volcanic Province. The majority of southwestern Victoria is part of this province and is largely the result of basalt volcanism that occurred between 0.3 and 8 million years ago (Neogene to Holocene). These rocks are, for the most part, assigned to the Newer Volcanic Group that covers over 90 per cent of the SERA investigation area. The Newer Volcanic Group is typically preserved as a series of stacked basaltic lava flows that are typically 60 to 70 metres in total thickness but can reach up to 100 metres where flows are preserved in paleovalleys.

In general, the Newer Volcanic Group are of extractive resource interest because they were erupted during arid climatic conditions, and across a region of relatively low relief – meaning that soil profile development was restricted and there are limited interflow sediments preserved in the sequence (in an extractives context these would represent interburden).

Extractive Industry Interest Areas

The Geological Survey of Victoria (GSV) completed reconnaissance drilling programs in the south east of the investigation area between 1975 and 1977 as part of the Metropolitan Basalt Survey to assess basalt extractives exploration potential. In 1985 the GSV undertook a review of basalt extractives resource potential using reconnaissance field visits and interpretation of aeromagnetic data.

Between 1993 and 2003 the GSV introduced and developed the EIIA concept and delineated EIIA #884085 in Wyndham, which covers a large part of the SERA investigation area (Figure 14). This EIIA was established using the geoscience inputs from the GSV’s previous studies and was defined by areas that are underlain by basalt flows that were greater than 10 metres thick and covered by less than five metres of overburden. Many of the areas identified as prospective for basalt extractives resources through this work are now operating quarries or Work Authorities. 6

The extractives industry uses EIIAs as a guide to help define areas of extractives resource potential. The current EIIA in Wyndham has worked well in focusing extractive resource evaluation and development. A number of sites distributed across the EIIA have identified basalt extractive resources, as delineated by proposals such as Work Authority (WA) 1484 and WA1485, as well as current operations at WA43, WA509, and WA186.

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6 While this work is indicative of basalt resource prospectivity – it did not, however, determine basalt resource estimates or indications of potential resource quality.
Further Investigations

GSV undertook a geoscience study as part of the pilot project in the south eastern portion of the investigation area. In this area, extractives operations are located on relatively young flows with subtle topographic features termed ‘stony rises’ that formed in response to syn-volcanic deformation processes. ‘Stony rises’ produce high quality basalt extractives products because they contain relatively low proportions of secondary alteration minerals. Coherent, massive, poorly vesiculated volcanic rocks are also considered to produce high-value extractives products.

The GSV study analysed several geoscience datasets that could be used to investigate basalt extractives resource prospectivity. The work concludes that remote sensing, geophysical, geomorphological datasets and information derived from sub-surface drilling (including some samples stored at the GSV Drill Core Library in Werribee) could identify areas of basalt extractives prospectivity. Further industry drilling programs would assist in informing future quarry projects within the proposed SERA.

As a case study a compilation of downhole lithological data was undertaken. Geostatistical interpolation of this data (inverse distance weighting) was used to generate a total basalt thickness map across the test work area. This identifies a significant area where the basalt lava flows are typically >100 metres thick. This area corresponds with a section of a north-south oriented paleovalley that extends from Diggers Rest to Werribee. This area may be potentially prospective for relatively small-footprint, long term quarry operations.

Integration of LiDAR and DEM datasets allow ‘stony rise’ features to be identified and this could be an innovative tool to identify areas that are prospective for basalt resources (Figure 12). Understanding basalt extractive resources prospectivity could be enhanced through the independent collection of extractive specific geoscience information. A study combining available data with new electrical method geophysical surveys, new generation geological field mapping, and reconnaissance drilling will enhance the knowledge of resource prospectivity.
Figure 12 Map of gridded LiDAR data in the Wyndham Pilot (DELWP, 2018 as detailed in DSE 2012) showing mapped flow boundaries (Vandenberg, 1974).
Industry operations

Demonstrated extractive resources of interest are present within the investigation area and the proposed SERA where there are existing quarries (Table 4). Wyndham’s six quarries that operate today began establishing as far back as the 1970s, primarily for hard rock (basalt). One small soil quarry (WA297) operates to the west of Werribee.

Table 4  Operating quarries in Wyndham

<table>
<thead>
<tr>
<th>Operator</th>
<th>Work Authority Number</th>
<th>Resource</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barro</td>
<td>186, including 6219</td>
<td>New basalt</td>
</tr>
<tr>
<td>Barro</td>
<td>43</td>
<td>New basalt</td>
</tr>
<tr>
<td>Holcim</td>
<td>420</td>
<td>New basalt</td>
</tr>
<tr>
<td>Holcim</td>
<td>184</td>
<td>New basalt</td>
</tr>
<tr>
<td>Hanson</td>
<td>509</td>
<td>New basalt</td>
</tr>
<tr>
<td>Kilpatrick</td>
<td>297</td>
<td>Soil</td>
</tr>
</tbody>
</table>

The Wyndham LGA is a significant contributor of basalt extractive products to the Melbourne Supply Area.

In 2018-19, 5.3 million tonnes of hard rock (new basalt) was extracted from five quarries in Wyndham. In 2018-19, these five hard rock quarries produced 21 per cent of the 24 basalt-producing WAs in Victoria, and 12% of all hard rock produced in Victoria, highlighting the importance of the Wyndham LGA for basalt-derived extractive products and indeed hard rock more generally.
Extractives operations that quarry the Newer Volcanic Group in the Wyndham LGA produce a variety of basaltic extractive products. Between 2015 and 2018, 76 per cent of Class 1 road base produced in the Melbourne Supply Area was derived from within the Wyndham LGA (Figure 13).

Hard rock production from the area has been growing at an average rate of 16 per cent per annum between 2014-15 and 2018-19. This hard rock is primarily being used to produce aggregate (Table 5).

**Table 5  Production from Wyndham SERA investigation area**

<table>
<thead>
<tr>
<th>Year</th>
<th>Total production (tonnes)</th>
<th>Aggregate (%)</th>
<th>Road base (%)</th>
<th>Fill (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2018-19</td>
<td>5,304,982</td>
<td>80.4</td>
<td>18.4</td>
<td>1.2</td>
</tr>
<tr>
<td>2017-18</td>
<td>4,871,227</td>
<td>79.5</td>
<td>18.8</td>
<td>1.7</td>
</tr>
<tr>
<td>2016-17</td>
<td>4,013,605</td>
<td>82.3</td>
<td>16.9</td>
<td>0.8</td>
</tr>
<tr>
<td>2015-15</td>
<td>3,344,842</td>
<td>75.9</td>
<td>23.7</td>
<td>1.0</td>
</tr>
<tr>
<td>2014-15</td>
<td>2,988,717</td>
<td>75.2</td>
<td>23.8</td>
<td>0.8</td>
</tr>
<tr>
<td>Cumulative total</td>
<td>17,534,588</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
Wyndham also produced 76 per cent of road base Class 1 over the period 2015-2018 (Figure 13).

In 2018-19, the five hard rock quarries in the investigation area generated revenue of $75 million. It was estimated (Earth Resource Regulator, 2019) the quarries employed approximately 60 full time staff and generated around 100 indirect jobs.

All quarries in the area are located on privately owned land and are either owner-operated sites or lease-operated arrangements. No titled Crown land is used for quarrying in the investigation area, however the rock situated below 15.24 metres from the ground surface is owned by the Crown.

The quarries have a depth less than 20 metres which is determined by groundwater and do not require multiple benches (stepped transition areas along the walls of the quarry). Blasting at the sites occurs around once a week. The quarries are protected by a 500 metre buffer as recommended by the Environment Protection Authority and regulated under the MRSDA.

Some individual quarries in the area comprise integrated operations across multiple sites, which consists of moving blasted material from one quarry site to another where crushers, screening, and storage facilities are established. Other activities include recycling of used concrete and surface rock from nearby civil construction sites. The regionally significant Wyndham Refuse Disposal Facility exists adjacent to one quarry (WA184).
Figure 14 Extractive Industry Interest Area - Wyndham Pilot
Analysis of demand and supply

There is a significant demand for the basalt resources identified in the Wyndham investigation area. Quarries in the Wyndham area will play an increasingly significant role in the long-term supply of construction material for the development of infrastructure and housing in Melbourne through to Geelong.

Wyndham’s high population growth is the major driver for local hard rock demand, which cumulatively is estimated to be around 110 million tonnes between 2015 and 2050 (PwC, 2016). Over the same period, quarries in Wyndham are also forecast to supply Greater Melbourne with around 50 million tonnes of hard rock.

Primary markets for the material extend across Greater Melbourne and Geelong, local urban development and infrastructure projects such as the Cherry Creek Youth Justice Centre benefit from having locally sourced low-cost construction materials.

Major projects such as the Westgate Tunnel, Metro Tunnel, proposed Outer Metropolitan Ring Road and Suburban Rail Loop will also continue to drive significant demand for hard rock resources from the Wyndham area. Local priority projects including the State’s future second container port at Bay West, Avalon Airport Expansion, and a West Intermodal Freight Terminal would further add to demand for extractive resource materials from Wyndham.

Source: DJPR, Mountain View Quarry, Wyndham Vale
Wyndham is expected to experience a significant shortfall in hard rock resources required to meet demand by 2050 (PwC 2016), ranking behind only City of Melbourne which has the state’s highest shortfall. Over the period 2015–2050, it is predicted that demand for hard rock from Wyndham will have outstripped supply by around 40 million tonnes, becoming a net importer of hard rock.

This shortfall is likely to result from future quarry closures and restrictions on the expansion or development of new quarries. It will need to be met by new quarries or expansions, or by transporting material from outside Wyndham, likely at a higher cost. The proposed Outer Metropolitan Ring Road, which is planned to extend alongside the proposed SERA, would benefit from a long term supply of locally sourced affordable road construction materials.
Proposed quarry projects

In addition to the known extractive resources located at operating quarry sites, there is further evidence that there are potential extractive resources of interest across parts the SERA investigation area as demonstrated by several proposed quarries (Table 6).

These quarry proposals are located within the Western Grasslands Reserve and are therefore unlikely to proceed. The Western Grasslands were formally protected under Victorian and Commonwealth laws in 2010, while the proposed quarry applications were received by Earth Resources Regulation between 2011 and 2013 after the Victorian and Commonwealth governments agreed to protect the Western Grasslands.

### Table 6  Projects received by the ERR between 2011 and 2013

<table>
<thead>
<tr>
<th>Company</th>
<th>Work Authority No.</th>
<th>Date of Proposal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barro Group Pty Ltd</td>
<td>WA006052</td>
<td>20/7/2015</td>
</tr>
<tr>
<td>Dennis Family Corporation</td>
<td>WA1480</td>
<td>7/4/2014</td>
</tr>
<tr>
<td>Kimmui Investments Pty Ltd</td>
<td>WA1484</td>
<td>28/2/2012</td>
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<tr>
<td>Kimmui Investments Pty Ltd</td>
<td>WA1485</td>
<td>28/2/2012</td>
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<tr>
<td>Kimmui Investments Pty Ltd</td>
<td>WA1486</td>
<td>28/2/2012</td>
</tr>
<tr>
<td>Kimmui Investments Pty Ltd</td>
<td>WA1487</td>
<td>28/2/2012</td>
</tr>
</tbody>
</table>
Two additional quarry projects had been granted ERR approval and planning permits prior to the introduction of the Western Grasslands protections. These quarries WA43 (Barro) and WA509 (Hanson) were not subject to the strategic impact assessment and were exempted from the Public Acquisition Overlay until such time as the quarry reserves are exhausted.

On this basis, two quarry projects WA43 and WA509 located in the Western Grassland Reserves have been encompassed by the proposed SERA configuration. This is because they have resources or reserves and they meet the requirements of the Victorian and Commonwealth governments.
Key issues facing existing and future extractive resources in Wyndham

Issues raised in interviews with quarry operators highlight the challenges for safeguarding extractive resources for the future, including:

- continual urban encroachment as the SERA investigation area is located alongside the UGB.
- new communities, outside the 500 metre buffer but within two kilometres of existing quarries and along transport routes, introduce operational barriers and raise concerns regarding noise and truck movements.
- local government limitations (permitted tonnage and hours of use) on local roads.
- introduction of grassland reserves over the EIIA, which significantly reduces available extractive resource areas within the Wyndham LGA.
- quarries are unable, or encounter planning uncertainty, to be able to expand operations such as widening or deepening pits due to environmental and community concerns.

These issues limit the operational hours of quarries and material transport, increasing transport costs due to additional distance travelled and time that trucks spend in peak congestion periods when entering Melbourne.

Given the above constraints, limited opportunities exist to establish new or expand existing quarries. The remaining opportunities that exist due to suitable geology, appropriate zoning and strategic recognition therefore need to be given priority consideration for inclusion as a SERA.

Known quality resources are situated on both sides of the UGB in Wyndham. These areas are zoned appropriately for quarrying activities and are considered by the EIIA and the Western Growth Corridor Plan for long-term extractive industries and employment use. Other parcels of land are also zoned appropriately for quarrying activities that are not affected by the issues outlined above.

Key factors that have informed the design of the proposed SERA boundary in Wyndham are summarised in Table 7.
### Table 7  Key drivers for the design of the Wyndham SERA

<table>
<thead>
<tr>
<th>Key driver</th>
<th>Comments</th>
</tr>
</thead>
</table>
| **Underlying geology**| **Figure 12** shows the potential extent of the basalt of interest across the investigation area.  
**Key considerations:**  
• A vast part of the investigation area, which is covered by the EIIA, is characterised by basalt (hard rock).  
• All existing quarries in Wyndham are located within the EIIA  
• The EIIA is substantially covered by the Western Grasslands, effectively preventing access to the underlying basalt resources for extractive industry. |
| **Urban growth**      | Precinct Structure Plans (PSP) in Wyndham have a direct interface or are located within the proposed Wyndham SERA investigation area. The main PSPs located within the investigation area are Mambourin East and Werribee Junction.  
Existing policy (West Growth Corridor Plan and *Plan Melbourne 2017-2050*) designates Mambourin East for the purposes of industrial land. Similarly, the *Melbourne Industrial and Commercial Land Use Plan* (DELWP, 2020) identifies the Werribee Junction PSP area as predominantly for industrial purposes (regionally significant classification). The precinct structure planning process has not formally commenced for these areas. Future planning will need to reflect any outcomes of the pilot project.  
The approved Black Forest Road South PSP includes a 500 metre buffer from extraction limits of an adjacent quarry.  
**Key considerations:**  
• There are approved and proposed PSPs with associated sensitive uses in and surrounding the SERA investigation area.  
• The Mambourin East and Werribee Junction PSPs are predominantly designated for employment land. |
### Planning zones and overlays

<table>
<thead>
<tr>
<th>Key driver</th>
<th>Comments</th>
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</thead>
<tbody>
<tr>
<td><strong>The following planning zones are applied in the SERA investigation area:</strong></td>
<td></td>
</tr>
<tr>
<td>• The Rural Conservation Zone covers most of the investigation area, including the Western Grasslands.</td>
<td></td>
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<tr>
<td></td>
<td>– WA509 and WA43 operate in the Rural Conservation Zone.</td>
</tr>
<tr>
<td>• The Special Use Zone (Schedule 6 - Earth and Energy Resources Industry) is used in sections through the investigation area to designate land for the purposes of extractive industry. At the time of application, the form and content of this schedule was prescribed by the Minister for Planning to recognise and reserve the land for the extractive resource industry.</td>
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<tr>
<td></td>
<td>– Three quarries are located in this Zone, specifically WA420, WA186, and WA184.</td>
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<tr>
<td>• The Farming Zone and Green Wedge Zone is also prevalent throughout the investigation area.</td>
<td></td>
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<tr>
<td></td>
<td>– No quarries currently operate in the Farming Zone. WA6219 and WA297 are located in the Green Wedge Zone.</td>
</tr>
<tr>
<td><strong>The following key overlays are located in the SERA investigation area:</strong></td>
<td></td>
</tr>
<tr>
<td>• Public Acquisition Overlay (Schedule 7 - Western Grassland Reserves) and Environmental Significance Overlay (Schedule 4 - Western Grassland Reserves) apply to the Western Grassland Reserve.</td>
<td></td>
</tr>
<tr>
<td>• The Environmental Significance Overlay (Schedule 2 - Rural Conservation Area) and Schedule 5 - Grasslands within the Werribee Plains Hinterland) also apply to land in the investigation area and seek to identify, permanently protect and manage biodiversity assets that are important within the Melbourne region and to protect the landscapes associated with the grasslands within the Werribee Plains hinterland respectively.</td>
<td></td>
</tr>
<tr>
<td>• Heritage Overlays apply to dry stone walls.</td>
<td></td>
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<tr>
<td><strong>Key considerations:</strong></td>
<td></td>
</tr>
<tr>
<td>• The Public Acquisition Overlay and Environmental Significance Overlay which apply to the Western Grassland Reserves.</td>
<td></td>
</tr>
<tr>
<td>• Extractive industries are permissible uses (permit required) in the zones most predominantly applied in the SERA investigation area (Farming Zone, Green Wedge Zone and Rural Conservation Zone).</td>
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</tbody>
</table>
**Key driver** | **Comments**
--- | ---
**Transport routes and distribution** | **Figure 15** show the roads that connect the quarries within the Wyndham SERA to the Princes Freeway West. Quarry material from Wyndham’s southern quarries is transported directly onto the Princes Highway, while quarry materials in the north are primarily transported to Werribee and beyond via Ballan Road. The Princes Freeway West is the major road connector for the transport of quarry material to areas of demand. Transport trucks compete for space with more than 60,000 cars and trucks using the road daily where they enter Wyndham. This builds to around 200,000 vehicles at the roads busiest point over the West Gate Bridge.

In recent years there have been several projects to upgrade the Princes Freeway West to support a larger volume of traffic and vehicles with a higher payload. The Princes Freeway West can support High Productivity Freight Vehicles from Little River through to Melbourne with a maximum load limit of 68.5 tonnes (pending different axle combinations).

The Boral plant in Truganina (located outside the investigation area) used a rail spur line until it was decommissioned approximately 10 years ago. The main rail line to which this spur line connects supports rail movements between the Central City and Melton and Bacchus Marsh and beyond. As the line is increasingly used for passenger movement, rail transport of quarry material from the Wyndham area is becoming less likely. However, if a benefit can be demonstrated, rail could be considered to meet future demand.

The Outer Metropolitan Ring Road is proposed to be constructed just to the east of the investigation area. There is a Public Acquisition Overlay in place to enable land to be acquired along a designated corridor for this purpose. The Outer Metropolitan Ring Road reservation will accommodate a 100 kilometre long high-speed transport link for people and freight in Melbourne’s north and west. This will create the opportunity for new road and rail transport links through the Werribee, Melton, Tullamarine, Craigieburn / Mickleham and Epping / Thomastown areas to be provided as transport demand warrants.

Bay West has been identified as the preferred site for the State’s future second container port, with the planning for the port’s development identified as a short-term action in the Victorian Freight Plan 2018. The future development of the container terminal and associated infrastructure may impact on the eastern edge of the SERA.

**Key considerations:**

- There is potential to improve transport and distribution routes in the northern part of Wyndham
- There are opportunities to use High Productivity Freight Vehicles to support the transport of extractives
<table>
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<tr>
<th>Key driver</th>
<th>Comments</th>
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<tr>
<td><strong>Infrastructure</strong></td>
<td>AusNet’s power network comprises a 500kW and 275 kW transmission line that extends across the northern section of the SERA investigation area. A 60kV power line extends from the Wyndham Refuse Disposal Facility to Geelong. The State Government is developing a new Juvenile Detention Centre to the west of the Holcim Quarry, north of the Princes Freeway. The Wyndham City Council operates the Wyndham Refuse Disposal Depot. It is regionally significant for the management of waste across the Western Melbourne region and operates in association with the Holcim quarry. A Western Irrigation Network (WIN) is proposed north of the investigation area to supplying Class C recycled water to agricultural land to the west of Melbourne, which may enhance agricultural activities adjacent to the Wyndham LGA.  <strong>Key considerations:</strong>  • Protection of infrastructure assets in the area is vital for the growth of western Melbourne. • Any future quarry project proposed throughout the SERA will be required to comply with necessary buffer areas from existing infrastructure. • Quarries can be designed and managed to operate in association with infrastructure.</td>
</tr>
<tr>
<td>Key driver</td>
<td>Comments</td>
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</table>
| Heritage and landscape  | **Cultural Heritage**  
The Wathaurung Aboriginal Corporation is the Registered Aboriginal Party (RAP) for the Wyndham investigation area, except for the top north-east corner from the Werribee River which is contested land. The river corridor has an extensive history of Aboriginal occupation, with cultural heritage sites along the waterway. Historical observations of Aboriginal movement and activities suggest that quarries where Aboriginal people made ground stone tools may exist  
**Other Heritage**  
Early European settlers cleared land for agriculture and used volcanic rocks to construct dry stone walls to mark property boundaries, make stock enclosures, house enclosures, garden walls, dam walls and wells. Examples of these dry stone walls can be found within the southern portion of the investigation area, along with a few locally significant buildings and ruins of the past.  
**Landscape**  
Distinctive and dominate landscape features outside the SERA site are Mount Cottrell and the You Yangs. The Western Grassland Reserves in and around the SERA investigation area connect the You Yangs to the Werribee River across the volcanic plains.  
Much of this land will also be subject to the Western Plains South Green Wedge (WPSGW) Management Plans, which are currently in development. The plan will provide a framework to support sustainable land use, land management, and development of the WPSGW.  
The Green Wedge Management Plan will consider the interface and connections between the WPSGW and the Western Grassland Reserves, Eynesbury township and the UGB. Changes to the extent or boundaries of the Western Grassland Reserves, Eynesbury township and UGB will not be considered by the Green Wedge Management Plan.  
**Key considerations:**  
- Consideration must be given to heritage aspects of individual projects, this will include the preparation and approval of a Cultural Heritage Management Plan for any new quarries.  
- Extractive resource industries are permissible within green wedges, as one of the purposes of the Green Wedge zone is to recognise, protect and conserve stone and mineral resources.                                                                 |

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7 A green wedge is an area of land which has agricultural, environmental, historic, landscape, recreation and/or tourism value. Consequently, intense urban development is precluded in these areas. More specifically as documented in the Principles, Issues and Guidelines for Green Wedges, the role of the green wedges includes providing opportunities for agricultural uses, such as market gardening, viticulture, aquaculture, farm forestry and broad acre farming, preserving rural and scenic landscapes, preserving conservation areas close to where people live, preserving renewable and non-renewable resources and natural areas, such as water catchments, providing and safeguarding sites for infrastructure that supports urban areas, such as airports and sewage treatment plants, allowing industries such as sand and stone extraction to operate close to major markets, enabling the development of networks of open space and providing opportunities for tourism and recreation.
Agriculture and horticulture are important elements of the Wyndham landscape and its local economy. Extensive dryland cropping and grazing have been the main type of agriculture for this region. Plan Melbourne 2017-2050 seeks to protect agricultural land and support agricultural production (Policy 1.4.1). There are several large grazing and livestock properties in the north west of the investigation area.

Hobby farming is dominant, particularly around Little River, with land used mainly for livestock grazing. The Werribee South intensive agriculture precinct to the south-east of the investigation area is a significant source of fresh produce for the city and state. Within the investigation area, due to the extent of surface rock across the basalt plains, the land has limited agricultural capability.

**Key considerations:**
- Land within the SERA investigation area has limited capability in regards to agricultural uses.
The Western Grassland Reserves are located within the investigation area and are a location for strategic biodiversity offsets following changes to the UGB in 2010 (Figure 16). The land is intended to be acquired as part of the Melbourne Strategic Assessment program to provide offsets in accordance with the Commonwealth EPBC Act 1999.

The natural temperate grasslands and grassy woodlands that make the Western Grassland Reserves form the world’s largest remaining concentration of Volcanic Plains Grasslands and protect some of Victoria’s most endangered ecosystems. They are among the most under-represented ecosystems in Australia’s conservation estate and are recognised nationally as some of the most threatened vegetation types.

The Western Grassland Reserves is subject to a Public Acquisition Overlay (PAO7). The acquiring authority for this land is the Minister responsible for administering Part 2 of the Crown Land (Reserves) Act 1978, currently the Minister for Environment.

An Environmental Significance Overlay also applies to the reserves. Its aim is to increase the extent of grasslands from two per cent to 20 per cent within the reserves.

Within the Western Grassland Reserves, new extractive quarry operations are not considered to be an appropriate interim land use. New quarries would prejudice the purpose for which it is to be acquired and would not be consistent with PAO7. This is because post-quarry rehabilitation processes cannot recreate the same ecosystems and biodiversity values that existed beforehand. These values are reflected by the boundaries of the proposed SERA for Wyndham.

Existing quarry operations can continue to operate, and each Work Authority will outline required rehabilitation processes when these quarries come to the end of their life.

The Victorian Biodiversity Atlas identifies many significant species that have been recorded in the SERA investigation area. This includes 11 nationally significant species (listed under the EPBC Act 1999) and 81 species of state significance (FFG Act 1988 and/or DSE Advisory List). Any works that impact on Matters of National Environmental Significance may require referral under the EPBC Act to determine whether further assessment is required.

The existence and impact of state prohibited and restricted category weeds in the area also needs to be considered.

**Key considerations:**

- The significance of the Western Grassland Reserves and the associated Public Acquisition Overlay eliminates potential for new quarries.
- New quarry operations are not appropriate to be located on the Western Grassland Reserves.
<table>
<thead>
<tr>
<th><strong>Key driver</strong></th>
<th><strong>Comments</strong></th>
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<tbody>
<tr>
<td>Water</td>
<td>The western portion of Port Phillip Bay is the groundwater catchment for this investigation area. The proposed SERA is located in an unincorporated area where no significant development of groundwater has occurred. This is usually because the resource is low yielding or for the investigation area, the quality has traditionally severely limited its use. The availability of groundwater and surface water impacts from any new or expanding quarries in the area needs to be considered with regard given to the requirements of the Water Act 1989. Surface water available for use in the area may be limited by a permissible consumptive volume set at the Basin scale and sustainable diversion limits at the catchment and sub-catchment scale. Groundwater available for use may be limited by a permissible consumptive volume. When these limits on entitlement allocation are reached it is necessary for new users to trade and transfer an entitlement from another user. The Werribee Irrigation district is situated on the Werribee River delta. The irrigation district is contained within the Deutgam Water Supply Protection Area (WSPA) and groundwater extractions are managed under the Deutgam local management plan. The quarry sites are located outside of the WSPA and are not expected to impact this WSPA due to the quarrying occurring above the water table. The main waterways in the investigation area include the Werribee River, Lollypop Creek and Little River. The Werribee River’s lower reach provides the investigation area’s main aquatic habitat and is a priority reach for environmental flow delivery as it supports a diverse range of native fish species, waterbugs and platypus. The lower Werribee River is in moderate condition with good flows and physical form and moderate water quality, aquatic life and riparian health. Lollypop Creek flows into Port Phillip Bay via the Western Treatment Plant. The creek is in poor condition, with good physical form but poor hydrology, riparian health and aquatic life. Defining the western boundary of the SERA investigation area, Little River flows are in very poor condition with very poor hydrology and riparian health. The conditions of approval for a Work Authority cover many aspects associated with water (groundwater, water usage and storage and discharge control) and water licences. These conditions are typically provided by Southern Rural Water. Regard would need to be given to the cumulative impact of quarries on the supply of water within the investigation area. Acid sulphate soils are also present throughout the SERA investigation area. If excavated and exposed to air, sulphides in the soil react with oxygen to create sulphuric acid. Sulphuric acid can be harmful to infrastructure and human health if it is mismanaged. Therefore, any new quarry operations need to consider the impact their activities will have on the water table.</td>
</tr>
</tbody>
</table>
### Key driver | Comments
--- | ---
**Water** | Part of the Port Phillip Bay (Western Shoreline) and Bellarine Peninsula Ramsar Site is located within the SERA investigation area. The Ramsar site, covers 22,650 hectares, includes freshwater wetlands, estuaries, intertidal shorelines, sub-tidal beds, inland saline wetlands and Melbourne Water’s treatment facility. The investigation area contains natural waterways, temperate grasslands, seasonally herbaceous areas, and cane grass wetland. Other key features include Freshwater Swamp and habitat for the Growling Grass frog.

**Key considerations:**
- Acid sulphate soils and the production of sulphuric acid needs to be considered as part of any future quarry application.
- The cumulative impact of quarries and other land use and development in the investigation area needs to be considered together. The Port Phillip Bay (Western Shoreline) and Bellarine Peninsula Ramsar Site is partially located within the SERA investigation area.
- The availability of water for use in the area including any applicable limit on consumptive use as determined by permissible consumptive volumes and sustainable diversion limits for surface water and permissible consumptive volumes for groundwater.
- Water licensing requirements including the requirements of any applicable water management plan.
- A water entitlement may be required for water needed during quarry operations and for rehabilitation and post-closure.
- The availability of groundwater and surface water in the area.
- The market for entitlements may be thin in some areas because of the limited number of entitlement holders or limited history of water entitlement trade in the area. This may make securing the required entitlement difficult. Trade may be possible.
- The proponents or operators need to contact Southern Rural Water early for advice on water availability and licensing requirements.
Figure 15 General Infrastructure - Wyndham Pilot
Figure 16: Significant Environmental Values - Wyndham Pilot

The Wyndham Pilot SERA

STRATEGIC EXTRACTIVE RESOURCE AREAS (SERAS) PILOT PROJECT

51
Wyndham SERA configuration options

The proposed SERA boundary has been influenced by the location of the EIIA, existing quarries and several key policy and land use considerations (Table 8). An assessment of the strengths, weaknesses, opportunities and constraints of the proposed SERA boundary has also been undertaken (Figure 17).

Table 8  Wyndham SERA: Key policy and land use considerations

<table>
<thead>
<tr>
<th>Consideration</th>
<th>Impact on proposed SERA boundary</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Growing demand for Wyndham’s hard rock:</strong></td>
<td>The proposed SERA boundary seeks to protect existing quarries as well as identify future areas with potential for extractive industry to locate.</td>
</tr>
<tr>
<td>There is a need to secure current and additional supply across the municipality to avert forecast shortfalls.</td>
<td></td>
</tr>
<tr>
<td><strong>Resource presence:</strong></td>
<td>There is actual and/or potential rock across the SERA investigation area, and it was therefore not a limiting factor in the delineation of the proposed SERA boundary. It is contingent upon industry undertake localised drilling programs to identify viable stone resources that may support a future quarry project.</td>
</tr>
</tbody>
</table>
| The SERA investigation area may contain rock that is suitable to support future quarry activities. This can be determined through:  
  • Existing identification as an EIIA.  
  • Available geoscience evidence across parts of the pilot project area.  
  • Existing and proposed extractive industry operations in the SERA investigation area. |                                                                                                                                                                                                                                  |
| **The Western Grassland Reserves:**               | The proposed SERA boundary does not apply on the Western Grassland Reserve. The only exception is the existing quarries within the reserves which were provided with exemptions under the State-Commonwealth grasslands protection agreement. |
| The Western Grassland Reserves are a declared environmental asset with Commonwealth protection. |                                                                                                                                                                                                                                  |
### Consideration

<table>
<thead>
<tr>
<th>Existing planning controls and land uses:</th>
</tr>
</thead>
<tbody>
<tr>
<td>The SERA investigation area generally contains zoning that requires a permit for extractive industry. Existing land uses and townships also limit the ability to identify practical future extractive industry areas.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Impact on proposed SERA boundary</th>
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<tbody>
<tr>
<td>The proposed SERA boundary is located on land where quarries are permitted subject to obtaining approval of a planning application. The boundary also applies to land that is considered appropriate for future extractive industries, factors include:</td>
</tr>
<tr>
<td>• Limited existing buildings / developments</td>
</tr>
<tr>
<td>• Large lots sizes</td>
</tr>
<tr>
<td>• Encompasses land with suitable planning policies.</td>
</tr>
</tbody>
</table>

### Transport routes:

| The movement of supporting trucks to move resources out of current and potential quarries is an important logistical consideration. |

| The proposed SERA boundary is only applied in areas with access to transport routes, including the Princes Freeway and Ballan Road. |
**Figure 17** Wyndham: Proposed SERA pilot boundary
### STRATEGIC EXTRACTIVE RESOURCE AREAS (SERAS) PILOT PROJECT

#### STRENGTHS
- Majority of land previously designated as an EIIA.
- The identified land has existing underlying zoning that permits quarries.
- Approved and operating quarries are secured.
- Opportunities for small and large new quarries as identified land contains lot sizes that are viable for prospective extractive industry activity.
- Good access to freight network.
- Aligns with State strategic policy directions.
- Avoids key environmental assets.

#### WEAKNESSES
- The Western Grasslands Reserve limits future extractive industry.
- Werribee Plains Hinterland areas of environmental significance.
- Geological knowledge more limited in areas outside of approved quarries.

#### OPPORTUNITIES
- Supports designated employment areas (Werribee Junction PSP and Mambourin East PSP).
- Potential improvements to vehicle movements.

#### THREATS
- Extent of cultural heritage value is relatively unknown. Culturally sensitive areas (land within 200 metres of a named waterway) will still require Cultural Heritage Management Plans to permit quarry approval.
- Proposed controls apply to privately owned land and the securing of land for the purposes for extractive resources may be contested.
4. THE SOUTH GIPPSLAND PILOT SERA

DEMAND AND SUPPLY STORY SOUTH GIPPSLAND

In 2018-19, around 2 million tonnes of sand were produced in South Gippsland. Sand production in South Gippsland has increased by 42 per cent since 2014-2015.

Within the SERA investigation area, there is more than 20 years supply of important sand reserves.

In 2018-19, quarries in the SERA investigation area employed approximately 32 full time staff and generated a further 40 indirect jobs.

Output from quarries in the SERA investigation area accounted for around 13 per cent of Victoria’s total sand production in 2018/19.

South Gippsland is a top 3 supplier of sand in Victoria. By 2050, it will become the largest supplier of sand to Greater Melbourne.

Between 2015 and 2050, 22 per cent of Greater Melbourne’s demand for sand will be supplied from South Gippsland.

In 2050, 80 per cent of South Gippland’s sand supply will be transported to Greater Melbourne.

South Gippsland’s sand will be needed as far afield as Greater Geelong, Ballarat and Mitchell.

Figure 18 The extractive resource demand and supply story in South Gippsland
Background

The Shire of South Gippsland (South Gippsland) covers an area of approximately 3,297 square kilometres and is located about 100 kilometres south east of Melbourne.

South Gippsland’s residential population is largely located towards the central northern portion of the municipality. Significant environmental conservation areas, sensitive coastal areas, marine parks and tourist locations are located in the south of the municipality. Highly productive agricultural land is located within the central portion of the municipality.

South Gippsland plays an important role in Victoria’s extractive resources industry. Extractive industry is located widely across the municipality, with current sand extraction largely confined to the western districts and hard rock extraction situated in the eastern areas.

South Gippsland has an estimated population of 29,324 (est. 2017) with most of this population living in the towns of Leongatha, Korumburra, Mirboo North, Foster and Nyora. The key transport corridors are the South Gippsland, Bass and Strzelecki Highways.

The challenges facing South Gippsland include:
- considerable seasonal variation in the number of people within the municipality due to the holiday homes and the large influx of tourists during the summer months;
- an aging resident population;
- decreasing household sizes;
- more than half of the population living outside urban areas, with strong demand for dwellings outside town areas by those seeking a more remote rural lifestyle; and
- the need to plan for housing and facilities to cater for anticipated population growth in the northwest of the shire, which is also where significant sand resources exist along with several operating quarries.

South Gippsland is one of the most important agricultural production regions in Victoria. Dairying is one of the largest employment sectors in the shire, with around 10 per cent of Victoria’s dairy farms being in South Gippsland.

Overall, agriculture, forestry and fishing have an output of $720 million. Manufacturing has an economic output of $670 million, of which most of this is generated from food manufacturing. Construction has an output of $390 million. ABS (2018).

Although a small employer, petroleum production activities are a significant contributor to the economic output of the municipality, as the Bass Strait oil and gas platforms are serviced by EXXON Mobil’s Barry’s Beach Facility.

Major infrastructure and investment projects currently underway include:
- South Gippsland Highway upgrades including Black Spur/Koonwarra bends;
- Northern Towns Water Supply Project;
- Port Welshpool Long Jetty Restoration;
- Leongatha Alternate Route (highway re-alignment), major upgrades to dairy facilities, including Burra Foods in Korumburra and ViPlus Dairy in Toora;
- connection to the National Broadband Network and upgrades to the mobile phone network; and
- new residential developments8.

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8 Economic Development and Tourism Strategy 2018-2020, South Gippsland Shire Council
South Gippsland: SERA investigation area

The South Gippsland SERA investigation area is located in the north western corner of the municipality, bordering Cardinia Shire Council and Bass Coast Shire Council. The investigation area’s western, northern and eastern boundaries extend along the South Gippsland Shire boundary, and its eastern boundary generally follows the existing EIIA boundary, providing adequate distance from the nearby town of Nyora (Figure 19).

The area of the investigation area is approximately 3,000 hectares, or around 1 per cent of the entire South Gippsland Shire.

The area encompassed by the SERA investigation area was part of the Regional Sand Extraction Strategy: Lang Lang to Grantville (Planning and Heritage, Department of Infrastructure, 1996). This Strategy sought to ensure protection of sand resources in the region in a manner which also protects significant environmental, economic, and social values of the area. Areas of the South Gippsland SERA pilot project are shown in the Regional Sand Extraction Strategy as having prospectivity for sand.

South Gippsland was selected for the pilot project because it is:

- ranked as the number one most strategic local government area based on its long-term supplies of quality sand (PwC, 2016), being currently responsible for 11.5 per cent of all sand and gravel production in Victoria.
- a critical supply point for sand supporting Melbourne’s growth.
- located in a regional area with sand resources extending into adjoining LGAs.
- an area considered strategically important for future extractive industry expansion.

Source: Provided by industry, Sand quarry in South Gippsland
Figure 19  South Gippsland Pilot SERA investigation area
Regional resource prospectivity

Geology

Quarry operations in the investigation area extract material from a series of Cenozoic sedimentary units accumulated in the Western Port ‘Sunkland’, which is part of the Gippsland Basin. The sedimentary units comprise the Yallock Formation (fluvial deposits of Oligocene age), Sandringham Sandstone (shallow marine deposits of Neogene age), and the Cranbourne Sand (unlithified aeolian dune deposits of Holocene). The distribution of these stratigraphic units is influenced by movement along northwest-trending faults and global climatic conditions that controlled relative sea level during the time of deposition.

The primary control on sand-bearing unit distribution and continuity is the original depositional environment in which these sediments accumulated. This determines sand sheet thickness (especially relevant for the Yallock Formation) and lateral continuity, sand grain size, mineralogy, and the occurrence of contaminants that impact processing routes and the resulting extractive product(s).

The units are only exposed west of the northwest trending Heath Hill Fault, which is a major geological control on the distribution of the sand-bearing geological units due to the elevated topography to the east, which prevented wider distribution of young wind-blown sand deposits.

Extractive Industry Interest Areas

The Geological Survey of Victoria (GSV) has completed a significant number of extractive resources prospectivity investigations and strategies throughout Victoria since the 1950s, including the investigation of sand resource potential within the Gippsland region.

Sand prospectivity and resource investigations were mostly undertaken by drilling with dedicated field programs in the 1970s and 1980s. However, almost all drilling was located outside the investigation area, to the north and the southwest in adjacent LGAs. These investigations identified several areas of prospectivity in particular for the production of concrete sand, fine sand, and undifferentiated sand. These investigations resulted in an improved understanding of prospectivity and has led to an uptake of Work Authorities in the Grantville and Lang Lang areas.

Between 1993 and 2003 the GSV introduced and developed the ELIA concept and delineated ELIA #884121 and #884122. (Figure 21) which cover the majority of the SERA investigation area. These ELIAS were established using the geoscience inputs from the GSV’s previous studies and were defined by areas underlain by favourable geology and cited as being a potential major supplier of sand to the Melbourne area.
Additional research

As part of the SERA pilot project, GSV undertook a geoscience review covering the areas surrounding the existing work authorities in the investigation area.

The GSV review analysed several geoscience datasets that could be used to investigate sand resource prospectivity (Figure 20). The work concludes that remote sensing, geophysical, geomorphological datasets and information derived from sub-surface drilling (including some samples stored at the GSV Drill Core Library in Werribee) could identify areas of sand extractives prospectivity.

An analysis of available geological (field) mapping, regional drill hole data in conjunction with remote sensing imagery (LiDAR) and regional geophysical surveys (undertaken by the GSV) suggests that Sandringham Sandstone, Yallock Formation, and Cranbourne Sand all extend to the north and southwest, well beyond the investigation area.

Confirmation of the relative significance of these stratigraphic units, in terms of extractive production and potential, is problematic because current GSV geological field mapping data does not differentiate between the Sandringham Sandstone and Yallock Formation (they were previously co-termed Brighton Group). GSV unpublished mapping, identified during the review, appears to indicate that most current Work Authorities in the investigation area are located over undifferentiated Brighton Group rocks.

Integration of LiDAR and DEM datasets allow topographic and geological features, including faults and young sandsheets, to be identified (Figure 20) and this could be an innovative tool to identify areas that are prospective for high quality sand resources. Understanding sand resource prospectivity would be enhanced through the collection of extractive specific geoscience information. A study combining available data with new electrical method geophysical surveys, new generation geological field mapping, and reconnaissance drilling would enhance the knowledge of resource prospectivity.
Figure 20 Map of gridded LiDAR data in the South Gippsland Pilot (DELWP, 2018 as detailed in DSE 2012) showing mapped flow boundaries (Vandenberg, 1974).
Industry operations

Extractive industries were first established in the investigation area of South Gippsland in the early 1950s, with the development of the former ACI Operations Pty Ltd, which is now operated by Sibelco. Additional sand quarries were developed during the 1970s and 1990s.

Today, there are six operating quarry sites across the SERA investigation area all extracting sand that is used primarily as a key input for concrete production across Greater Melbourne, as well as glass and other uses (Table 9).

Existing Work Authorities cover a significant proportion of the investigation area and produce several extractive products derived from sedimentary (sand) units. Significantly, between financial years 2015 and 2018, 33 per cent of cement sand produced in the Melbourne Supply Area was derived from Work Authorities entirely within the investigation area. This highlights the known prospectivity throughout parts of the study area. The extent to which extractive resources on existing Work Authorities and expired licences have been depleted is unknown due in part to a lack of digital resource and production data.

Table 9 Operating quarries in South Gippsland

<table>
<thead>
<tr>
<th>Operator</th>
<th>Work Authority Number</th>
<th>Resource</th>
</tr>
</thead>
<tbody>
<tr>
<td>Holcim (formerly Sibelco)</td>
<td>2</td>
<td>Sand</td>
</tr>
<tr>
<td>Holcim (formerly Sibelco)</td>
<td>423</td>
<td>Sand</td>
</tr>
<tr>
<td>Barro</td>
<td>1004</td>
<td>Sand</td>
</tr>
<tr>
<td>Hanson</td>
<td>333</td>
<td>Sand</td>
</tr>
<tr>
<td>MQG</td>
<td>157</td>
<td>Sand</td>
</tr>
<tr>
<td>MQG</td>
<td>1102</td>
<td>Sand</td>
</tr>
</tbody>
</table>
In 2018-19, over 2 million tonnes of sand was produced in the Shire of South Gippsland, with nearly all of this occurring within SERA investigation area. Output has been growing at around 10 per cent since 2014-15.

Output from quarries in the SERA investigation area account for around 11 per cent of Victoria’s 15.5 million tonnes of sand production. Around half of the sand from the SERA investigation area is used for concrete production with the other half used for glass, foundry sand and other uses (Table 10).

**Table 10**  Production from the South Gippsland SERA investigation area

<table>
<thead>
<tr>
<th>Year</th>
<th>Total production (tonnes)</th>
<th>Concrete sand (%)</th>
<th>Other sand (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2018-19</td>
<td>2,083,042</td>
<td>51.24</td>
<td>48.73</td>
</tr>
<tr>
<td>2017-18</td>
<td>1,818,690</td>
<td>52.37</td>
<td>50.28</td>
</tr>
<tr>
<td>2016-17</td>
<td>1,977,236</td>
<td>64.60</td>
<td>45.96</td>
</tr>
<tr>
<td>2015-16</td>
<td>1,655,636</td>
<td>54.02</td>
<td>45.96</td>
</tr>
<tr>
<td>2014-15</td>
<td>1,467,869</td>
<td>33.52</td>
<td>66.48</td>
</tr>
<tr>
<td>Cumulative total</td>
<td>7,534,605</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
There is more than 20 years supply of sand reserves in the SERA investigation area that will continue to be required by high demand areas such as Greater Melbourne. Quarry operators are looking to expand or modify current operations to prepare for this growing demand, including MQG whose application for an expansion of WA 157 is listed on the Joint Ministerial Statement’s Hot List to be given priority planning.

These quarries play a significant role in the supply of concrete sand for Melbourne. Their strategic importance will continue into the future, particularly considering the imminent exhaustion of some sand reserves at Bacchus March and expansion constraints facing quarries in the Yea sand district. Development in Melbourne’s Northern Growth Corridor now uses sand sourced from South Gippsland, which would otherwise come from closer sources if they were not facing supply constraints.

In 2018-19, quarries in the SERA investigation area generated sales of approximately $40 million. It is estimated that these quarries employed 32 full time staff and generated 40 indirect jobs (Earth Resource Regulator, 2019).

Quarries in the SERA investigation area are located on privately owned land and Crown land. The quarries are located on land in the Farming Zone and within existing EIIAs.

Owing to the variation in water table heights, the quarries operate using dry or wet (dredging) methods. One quarry is nearing resource exhaustion and likely to close and be rehabilitated soon.

The quarries are protected by a 250 metre buffer as recommended by the Environment Protection Authority and regulated under the MRSDA. The buffer distance is shorter than the 500 metre buffer distance for Wyndham quarries, because blasting is not used as an extraction technique for sand quarries.

Some quarries in the area comprise integrated operations, which consists of importing sand from quarries outside of the investigation area and blending it on site. This allows them to achieve the required product specifications for different markets.

There is wide variation in sand quality across the SERA investigation area, allowing a range of product types to be supplied to the market for use in concrete, glass, mortar, foundry, packing sand and turf topdressing.

Quarry operators generally do not transport their materials, instead they use contractors to transport or sell material ex-bin to major buyers. For example, sand from the SERA investigation area is collected by operators of hard rock quarries in other regions that produce concrete for the Melbourne market. This is due to the difficulties of obtaining sand closer to their hard rock quarries and concrete batching plants.
Figure 21 Extractive Industry Interest Area - South Gippsland Pilot
Analysis of demand and supply

Demand for sand from South Gippsland comes primarily from outside the Shire. South Gippsland is currently in the top 3 LGAs in Victoria that supply sand, and by 2050 it is forecast to become the largest supplier of sand to Greater Melbourne.

Between 2015 and 2050, 22% of Greater Melbourne’s demand for sand will be supplied from South Gippsland, which is around 57 million tonnes of sand. This accounts for 80 per cent of South Gippsland’s sand supply that will be transported to Greater Melbourne (PwC, 2016). Other local government destinations for South Gippsland’s sand include Greater Geelong, Ballarat, and Mitchell.

Between 2015 and 2050, the local cumulative demand for sand and gravel resources in South Gippsland is estimated to total 1.4 million tonnes (EY demand data, 2015). This demand is generated as a result of growth in local population, road construction and maintenance, and economic growth more generally.

It is also estimated that South Gippsland is expected to experience a shortfall in sand and gravel production by 2050. By the year 2050, it is expected that there will be a production shortfall of sand and gravel of 325 thousand tonnes, based on survey data collected for PwC (2016).

This shortfall is likely to occur due to future quarry closures, restrictions on expansion, and none or insufficient new quarries developed. This is despite industry identifying a strong quantity of sand resources in the area.
Key issues facing existing and future sand resources in South Gippsland

Issues raised in interviews with quarry operators highlight the challenges facing the sand resource industry in the SERA pilot project area in South Gippsland. This includes:

- long lead times for planning applications which places uncertainty upon proponents. This is particularly an issue considering fast diminishing reserves and the need to expand to meet growing demand;
- existing rural residential activities located in proximity to quarries and transport routes generate concerns as quarries expand towards approved limits;
- local government limitations on use of local roads prevent timely entry onto major transport corridors and force trucks into congested traffic conditions near Melbourne;
- the need for expensive biodiversity offsets associated with quarry expansion; and
- high level policy considerations (such as agricultural land protection policies) that may potentially encumber expanded or new quarry operations.

Based on feedback from industry, there is good resource potential to support quarry expansion within the SERA investigation area. Expansion beyond current approved extractive operations needs to have a supportive policy basis to provide long-term certainty for proponents to reinvest at these sites, while also ensuring the community has greater certainty.

Key drivers that have driven the design of the proposed SERA boundary in South Gippsland are now discussed in further detail (Table 11).

### Table 11  Key drivers for the design of the South Gippsland SERA

<table>
<thead>
<tr>
<th>Key driver</th>
<th>Comments</th>
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<tbody>
<tr>
<td><strong>Underlying geology</strong></td>
<td>Several EIIAs are located across the South Gippsland LGA (<a href="#">Figure 21</a>). Key considerations:</td>
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<td>- A large part of the investigation area is covered by an EIIA contains sand.</td>
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<td></td>
<td>- South Gippsland’s largest sand quarries are located within the EIIA.</td>
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<tr>
<td></td>
<td>- The EIIA in the investigation area is substantially covered by existing Work Authorities. Some industry operators in the investigation area have indicated long term sand resources remain on or adjacent to their Work Authority sites.</td>
</tr>
</tbody>
</table>
### Zones and Overlays

**Key driver**: The SERA investigation area is predominantly located in the Farming Zone.

A wedge of Rural Living Zone is located within the SERA investigation area. The possibility for sensitive uses within the SERA investigation area is an important consideration, particularly given the proximity of the existing Work Authority 2.

Public Use Zone 4 (Transport) runs through the centre of the investigation area to identify the existing South Gippsland rail corridor.

The Green Wedge Zone adjoins the SERA investigation area, particularly to the east and north within the Shire of Cardinia where there are also several existing operating quarries.

The Bushfire Management Overlay (BMO) is applied to a significant portion of the SERA investigation area. The BMO requires a permit to subdivide or development land for specified uses. It provides application requirements and decision guidelines to ensure any development appropriately responds to the bushfire hazard.

A Significant Landscape Overlay (Schedule 3 – Lang Lang/Heath Hill) applies outside the SERA investigation area within the Shire of Cardinia. The overlay recognises the landscape significance of the Heath Hill landscape and seeks to ensure that any new buildings and works avoid detrimental effects on the landscape.

A planning scheme amendment (South Gippsland C116) is also currently going through the implementation process with the purpose of applying a Land Subject to Inundation Overlay (LSIO). Areas of Adams Creek and Little Lang Lang River within the SERA investigation area are affected by the proposed amendment. The provisions of the LSIO require that particular buildings and works require a planning permit and consideration from Melbourne Water or the relevant floodplain management authority to ensure that new development is protected from flooding and does not cause any significant rise in flood levels or flow velocities, which may adversely affect other properties.

**Key considerations:**
- The presence of the Rural Living Zone in the investigation area raises potential issues with sensitive uses near existing quarries.
### Key driver: Transport routes and distribution

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<tr>
<td>In the northern portion of the SERA investigation area, quarry material is transported onto McDonalds Track and through to the South Gippsland Highway, while in the south it is moved directly on the South Gippsland Highway. The Westernport Highway and the South Gippsland Highway are the major road connectors for the transport of quarry material to areas of demand. Transport trucks compete for space with more than 19,000 cars and trucks using the road daily. Recent and current projects will accommodate an estimated 60,000 vehicles on the South Gippsland Highway connecting to the Monash Freeway through to major construction projects in and around Melbourne. These roads have been strengthened to support High Productivity Freight Vehicles with a maximum load limit of 68.5 tonnes (pending different axle combinations). There is a potential rail option to transport extractive resources from South Gippsland. A statewide supply chain study utilising rail will need to be undertaken to analyse the costs and benefits of rail to freight quarry materials from South Gippsland. Calculating the cost of loading from the quarry to a freight train and unloading and transporting to destination requires a high level of analysis. <strong>Key consideration:</strong> • The Westernport Highway and the South Gippsland Highway are the major roads used to remove extractives resources to demand areas.</td>
<td></td>
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### Key driver: Heritage and landscapes

<table>
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<th>Comments</th>
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<tr>
<td>The Bunurong Land Council Aboriginal Corporation is the Registered Aboriginal Party for the region. There are few places of Aboriginal cultural heritage remaining from the pre-contact period, and almost none from the post-contact period. Remaining sites, places, structures and relics are therefore highly significant in demonstrating the Aboriginal history of the region. The topography varies from low lying areas, grassy open plains and elevated slopes across the SERA investigation area. In South Gippsland, most of the post-contact heritage places reflect four key historic themes: • early pastoralism and settlement • the development of railways • the development of agricultural industries (particularly dairying) • coal and gold mining, which had a significant influence nearby at Korumburra and Foster respectively. These post-contact heritage places are not present in a meaningful manner within the SERA investigation area. <strong>Key considerations:</strong> • Consideration needs to be given to heritage aspects of individual projects, this will include the preparation and approval of a Cultural Heritage Management Plan.</td>
<td></td>
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</table>
South Gippsland’s agriculture sector is regionally significant and identified as one of the most important food production regions in Australia. Extensive agricultural land, highly fertile soil and relatively high rainfall has supported the production of food and fibre to the Victorian community and supported employment and businesses. The sector also supports associated rural industries, such as food processing, abattoirs, shearing, irrigation supplies and stock feed producers that contribute to the economy.

The main contributing areas are in dairy production and processing, paper manufacturing and meat production. The Gippsland region produces approximately one-third of Victoria’s and 20 per cent of Australia’s dairy production and is the largest contributor to economic output from the region, representing over half of the total Gippsland agriculture value. Around 10 per cent of Victoria’s dairy farms are in South Gippsland and the dairy industry is the largest employer in the municipality. The meat production industry, primarily beef and some lamb, generates approximately a quarter of Victoria’s total agricultural value and less than five per cent of Australia’s meat production.

Although the broader Gippsland region is nationally significant for agriculture, there are currently no intensive agricultural land uses with high associated infrastructure investments located within the SERA investigation area.

Like extractive resource-rich land, agricultural land is under threat due to competing land uses in the Gippsland region due to its high amenity landscapes and accessibility to key road and rail corridors. An action from Plan Melbourne seeks to map and protect strategic agricultural land in the planning system. As part of the action, and to understand the value of land for agriculture, DELWP is collaborating with Agriculture Victoria and Deakin University’s Centre for Rural and Regional Futures to better understand the suitability and capability of land within Melbourne’s green wedge and peri-urban areas.

Preliminary findings of the project identify land within the SERA investigation area, and within South Gippsland more broadly, as being potentially strategically significant. Proximity to sources of recycled waste water could provide agricultural land with a secure source of water for irrigation.

The combination of natural and man-made features within the SERA area including: soils, landscapes, rainfall, access to water, resilience to climate change, access to infrastructure and integration with industry, make the area highly valuable for agricultural production. The proposed planning control that would give effect to the SERA would enable existing and future agricultural uses, as long as they are not deemed to prevent extractive operations in the future.

**Key considerations:**

- Productive agricultural land in this region is of significance to the state. Quarrying activities can be compatible with agricultural land and mutually inclusive over the long term.
### Key driver

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<tr>
<th>Biodiversity considerations</th>
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</table>

South Gippsland contains diverse vegetation communities as well as a wide range of native plants and animals, some of which are unique to the region including the Giant Gippsland Earthworm, the Eucalyptus Strzelecki and the Strzelecki Koala.

A portion of the SERA investigation area is covered by native vegetation which is in excellent condition (Figure 22). Adam’s Creek reserve and its close surrounds in particular has high strategic biodiversity value. The Adams Creek Reserve is declared Crown Land. Any proposal to establish a quarry within the Reserve would require planning and biodiversity approvals as well as access granted by the Minister for Environment.

The high biodiversity value of the area does not necessarily restrict or impinge upon quarry operations. It does, however, mean that any offsets required through the approval process will likely be more onerous, given the quality of ecology and high biodiversity value. Quarry applications would be subject to the usual native vegetation assessment processes and native vegetation protection applies to the works rather than to uses.

**Key considerations:**

- There are high strategic biodiversity values in this area.
- High biodiversity values present in the area do not restrict current quarry operations. Potential opportunity to explore strategic approach for biodiversity management and quarry development.
<table>
<thead>
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<th>Key driver</th>
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</tr>
</thead>
</table>
| Water      | **Water quality and supply is critical to the continued economic success of the South Gippsland region. Increasing development from settlement and tourism has put many waterways, coastal, estuary and marine assets in South Gippsland under significant pressure.**  

The Westernport catchment is the groundwater catchment for SERA investigation area. This site is within the Koo Wee Rup Water Supply Protection Area (WSPA) to which a statutory management plan applies. The plan is available from Southern Rural Water’s website. The groundwater salinity level of water across the investigation area suits most water uses, with the exception of potable use.  

The availability of groundwater and surface water in the area needs to be considered. Surface water available for use in the area may be limited by a permissible consumptive volume set at the Basin scale and sustainable diversion limits at the catchment and sub-catchment scale. Groundwater available for use may be limited by a permissible consumptive volume. When these limits on entitlement allocation are reached it is necessary for new users to trade and transfer an entitlement from another user.  

The impact of quarries on groundwater also needs to be monitored. Quarries that operate using wet dredging methods will result in significant loss of groundwater via evaporation from the dredging ponds. These groundwater losses will continue over the life of the quarry.  

Acid sulphate soils are present throughout the SERA investigation area and across the South Gippsland region. If excavated and exposed to air, sulphides in the soil react with oxygen to create sulphuric acid. Sulphuric acid can be harmful to infrastructure and human health if it is mismanaged. Therefore, any new quarry operations need to consider the impact their activities may have on the groundwater, surface water and other nearby land uses.  

Significant areas within the South Gippsland region are subject to flood risks, including land immediately surrounding Adam’s Creek Reserve. Given this, Amendment C116 to the South Gippsland Planning Scheme is currently undergoing a planning scheme amendment process. It proposes to map out areas subject to inundation and apply rules and guidelines for appropriate development on the applied areas. |
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**Key considerations:**

- The significant groundwater gradient from East to West across the proposed site along with the high transmissivity of the sediments means there is high potential for groundwater contamination to move offsite.
- The impact of quarries using wet dredging methods on groundwater losses.
- The availability of water for use in the area including any applicable limit on consumptive use as determined by permissible consumptive volumes and sustainable diversion limits for surface water and permissible consumptive volumes for groundwater.
- Water licensing requirements including the requirements of any applicable water management plan.
- A water entitlement may be required for water needed during quarry operations, for rehabilitation and post-closure.
- The availability of groundwater and surface water in the area.
- The market for entitlements may be thin in some areas because of the limited number of entitlement holders or limited history of water entitlement trade in the area. This may make securing the required entitlement difficult.
- The proponents or operators need to contact Southern Rural Water early for advice on water availability, water licensing requirements and determine if trade will be necessary.
Figure 22 Significant Environmental Values - South Gippsland Pilot
South Gippsland SERA configuration options

Given the preceding analysis, the proposed SERA boundary has been influenced by several key policy and land use considerations (Table 12). An assessment of the strengths, weaknesses, opportunities and constraints of the proposed SERA boundary has also been undertaken (Figure 23).

### Table 12  South Gippsland SERA: Key policy and land use considerations

<table>
<thead>
<tr>
<th>Consideration</th>
<th>Impact on proposed SERA boundary</th>
</tr>
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<tbody>
<tr>
<td><strong>Strategic importance of South Gippsland’s sand supply:</strong></td>
<td>The proposed SERA boundary seeks to protect existing quarries as well as identify future areas for extractive industry to locate for the purpose of sand extraction.</td>
</tr>
<tr>
<td>There is a need to secure current and additional supply of extractive resources across the municipality to avert forecast shortfalls.</td>
<td></td>
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</table>

**Resource presence:**  
- Areas of the EIIA within the SERA investigation area contain sand resources suitable to sustain quarry activities. This can be determined through:  
  - existing identification as an EIIA  
  - existing and proposed extractive industry operations.  
- There is demonstrated sand resources within parts of the SERA investigation area. The Heath Hill Fault generally limits sand to its east despite some quarry operations located partly east of the fault. There are markets for all qualities of sand that are being extracted throughout the current and proposed quarries.  

**Native vegetation and biodiversity values:**  
- Sections of the SERA investigation area contain intact native vegetation and are of high strategic biodiversity value.  
- Areas with high biodiversity value have been included within the proposed SERA boundary, because:  
  - Current quarry operations have attained approval in adjacent areas. High biodiversity values present in the area do not restrict quarry operations. Any expansion of quarries would require necessary approval if biodiversity was to be impacted.  
  - Any proposed new quarry will still need to undergo a merits assessment before attaining approval.  
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- Areas of the EIIA within the SERA investigation area contain sand resources suitable to sustain quarry activities. This can be determined through:  
  - existing identification as an EIIA  
  - existing and proposed extractive industry operations.  
- There is demonstrated sand resources within parts of the SERA investigation area. The Heath Hill Fault generally limits sand to its east despite some quarry operations located partly east of the fault. There are markets for all qualities of sand that are being extracted throughout the current and proposed quarries.  

**Native vegetation and biodiversity values:**  
- Sections of the SERA investigation area contain intact native vegetation and are of high strategic biodiversity value.  
- Areas with high biodiversity value have been included within the proposed SERA boundary, because:  
  - Current quarry operations have attained approval in adjacent areas. High biodiversity values present in the area do not restrict quarry operations. Any expansion of quarries would require necessary approval if biodiversity was to be impacted.  
  - Any proposed new quarry will still need to undergo a merits assessment before attaining approval.
<table>
<thead>
<tr>
<th>Consideration</th>
<th>Impact on proposed SERA boundary</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Existing planning controls and land uses:</strong></td>
<td>The proposed SERA boundary is located on land where quarries could previously be permitted with approval of a planning application. The proposed SERA boundary covers part of the Rural Living Zone, in order to provide a recognised buffer from existing quarries to limit establishment of further incompatible uses. The boundary also applies to land that is considered appropriate for future extractive industries, factors include:</td>
</tr>
<tr>
<td>The SERA investigation area generally contains zoning that requires a permit for extractive industry. The Rural Living Zone land in the SERA investigation area contains existing sensitive uses close to existing (as well as potential future) quarries.</td>
<td>• Limited existing buildings / developments</td>
</tr>
<tr>
<td></td>
<td>• Large lots sizes</td>
</tr>
<tr>
<td></td>
<td>• Suitable existing planning policies apply over the land.</td>
</tr>
</tbody>
</table>
Source: Provided by industry. Sand quarry in South Gippsland.
Figure 23 Proposed South Gippsland pilot SERA
<table>
<thead>
<tr>
<th><strong>STRENGTHS</strong></th>
<th><strong>WEAKNESSES</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Majority of land designated was previously identified as an EIIA.</td>
<td>• Buffer areas around existing approved quarry operations extend into neighbouring municipalities.</td>
</tr>
<tr>
<td>• The identified land has existing underlying zoning that permits quarries.</td>
<td>• The Adams Creek Nature Conservation Reserve has high biodiversity value.</td>
</tr>
<tr>
<td>• Approved and operating quarries are secured, with accommodated ability to expand.</td>
<td>•</td>
</tr>
<tr>
<td>• Opportunities for small and large new quarries as identified land contains lot sizes that are viable for prospective extractive industry activity.</td>
<td></td>
</tr>
<tr>
<td>• Geological knowledge of the investigation area is supported by industry.</td>
<td></td>
</tr>
<tr>
<td>• Good access to freight network.</td>
<td></td>
</tr>
<tr>
<td>• Aligns with State strategic policy directions.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>OPPORTUNITIES</strong></th>
<th><strong>THREATS</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Agglomeration of sand quarries is located in close proximity to the north of the designated area in Cardinia. These quarries could be secured in a future SERA.</td>
<td>• Extent of cultural heritage value is relatively unknown along Adams Creek Reserve. Any new quarries to the south will require Cultural Heritage Management Plans to permit quarry approval.</td>
</tr>
<tr>
<td></td>
<td>• Proposed controls apply to privately owned land and the securing of land for the purposes for extractive resources may be contested.</td>
</tr>
<tr>
<td></td>
<td>• Existing dwellings in the Rural Living Zone which is in close proximity to the designated SERA area.</td>
</tr>
</tbody>
</table>
5. PLANNING CONTROLS FOR STRATEGIC EXTRACTIVE RESOURCE AREAS

Planning for Extractive Industries: Current Issues

Currently, there is considerable variation in planning approaches across the State for extractive resources. With proposed SERA boundaries for each pilot project configured, a planning response needs to ensure it recognises and secures access to the identified strategic resource areas. Clearly identified strategic resource areas will help to facilitate open and transparent dialogue about extractive industry uses with local councils, industry, communities and relevant planning agencies.

Source: DJPR, Hard rock quarry in Wyndham
Zones

A number of zones provide specifically for, and in some circumstances encourage, extractive industry. Zones detail if a planning permit is required, and the matters that a relevant council must consider before deciding to grant a permit. They also contain information relating to land uses, subdivision of land, construction of new buildings and other changes to the land.

The zones where extractive industry is a permissible use, and include:

- Rural Conservation Zone (RCZ)
- Rural Living Zone (RLZ)
- Rural Activity Zone (RAZ)
- Green Wedge Zone (GWZ)
- Green Wedge A Zone (GWAZ)
- Farming Zone (FZ)
- Special Use Zone (SUZ)

It is a requirement that proposed quarries will require a planning permit in each of these zones. However, a permit is not required if an Environment Effects Statement has been prepared under the Environment Effects Act 1978.

In identifying SERA sites, the underlying zoning and its allowable land uses needs to be considered. The Rural Living Zone and Green Wedge A Zone support rural residential development (sensitive uses) and smaller lot minimum subdivision areas, while a key purpose of the Rural Conservation Zone is to enhance and protect the existing natural environment and natural processes. The Rural Activity Zone (RAZ) also supports a wide range of tourism, commercial and retail uses (tourism focus) in a rural context.

Following a spatial investigation of the distribution of the existing possible zones across Victoria, it can be concluded that:

- The majority of quarries in Victoria are located in the Farming Zone.
- Within metropolitan Melbourne, quarries are generally located in the Green Wedge Zone.
- A tailored Special Use Zone is sporadically used by some metropolitan councils (e.g. Wyndham, Melton, Knox, Frankston) to reserve land for the purpose of the ‘Earth and Energy Resource Industry’.
An analysis of zones where extractive industry is permissible, including investigating the permit requirements and guidelines contained within, details the following findings:

**Sensitive uses can be approved close to quarries:**

Many sensitive uses are permissible, either 'as of right' (no permit required) or with a permit. For instance, in the Farming Zone no permit is required to use the land for the purposes of a dwelling if the land is greater than 40ha. Given this, non-compatible or potentially disruptive uses can occur close to operating quarries. This encroachment makes it more difficult for quarries to operate without impacting on the amenity of nearby dwellings. Additionally, it also diminishes the capability for quarries to expand operations in the future.

**Land fragmentation can occur:**

Prevalent subdivision of land can lead to land fragmentation. While the Green Wedge Zone and Farming Zone have a relatively large lot minimum subdivision area (40ha), other zones close to quarry locations can permit finer grain subdivision. For instance, the Rural Living Zone (which is within South Gippsland SERA investigation area) contains a subdivision minimum of 2 hectares. A subdivision minimum of at least 40 hectares is considered appropriate for extractive industry, as quarry operations are generally within this size limit.

Land fragmentation is particularly an issue on previously identified EIIA areas, as it is a deterrent for prospective quarry operators to acquire land and attain approval for operations. This is unhelpful considering the land has previously been strategically identified as appropriate for extractive purposes via the EIIA. Land ownership is also encouraged for quarry operators as it improves their ability to own and operate buffer distances and therefore mitigate quarry impacts on surrounding uses. Although quarry operator ownership of surrounding land for buffers is encouraged in planning policy, it doesn’t always materialise in practice.

**EIIAs have not been effective in moderating competing land uses:**

Land encompassed by EIIAs has come under increasing pressure from competing uses, such as housing. In some instances this has caused sterilisation of opportunities for extractive industries. The current EIIAs, as identified in the land use planning system, do not provide a binding mechanism to secure actual and/or potential extractive resources of strategic importance. SERAs therefore have an opportunity to play an important role securing, at a detailed local level, resources that are of value to Victoria.
Overlays

In addition to the requirements of the zone, further planning provisions may apply to a site or area through the application of an overlay. Generally, overlays apply to a single issue or related set of issues (such as heritage, an environmental concern or flooding). Most overlays make requirements about development rather than land use. Overlays do not change the intent of the zone.

Many overlays have schedules to specify local objectives and requirements. Schedules are used to identify the needs, circumstances and requirements of individual municipalities in specific local circumstances.

Regarding extractive industry, there are two common overlays that are applied

- Environmental Significance Overlay (ESO)
- State Resource Overlay (SRO)

The Environmental Significance Overlay is widely used in the planning system to identify areas where the development of land may be affected by environmental constraints. In Baw Baw, the Environmental Significance Overlay (South Gippsland ESO) is used to identify and protect State significant sand resources in the Trafalgar area. It is also used extensively as a buffer tool for securing strategic extractive resources. An example includes the Maryvale Pulp and Paper Mill (Latrobe ESO), where the Environmental Significance Overlay is used to manage amenity impacts and to ensure the Mill is protected from incremental encroachment of any inappropriate development.

The State Resources Overlay is currently applied in the Wellington and Latrobe Planning Schemes for the protection of state significant coal resources.

An analysis of applied overlays, relating to extractive industry finds:

**Quarry buffer areas are generally not mapped:**

Buffer areas around approved quarry operations are generally not adequately planned for or mapped in the planning system. At the local level there is not appropriate guidance on what is deemed to be acceptable uses or development that can locate in proximity to operating quarries.

There needs to be greater visibility of approved quarries, as well as effective decision guidelines and guidance in place to allow councils to make informed decisions about the potential impact of uses or development on existing or future quarry operations.
The Environmental Significance Overlay is widely applied:

The Environmental Significance Overlay is widely applied in the planning system for a variety of purposes. Examples include extractive resource protection, watercourse protection, regulating development within proclaimed water catchments, wetland and habitat protection, as well as buffers for various uses (e.g. areas of biological significance and uses with amenity impacts).

Given their broad application, the use of another tailored planning tool to designate SERA sites is more appropriate and would adequately elevate and identify strategic state significant resources in the planning systems.

The State Resources Overlay has not been applied to protect extractive resources to date:

The State Resource Overlay already exists within the Planning System with the following purpose:

To protect areas of mineral, stone and other resources, which have been identified as being of State significance, from development that would prejudice the current or future productive use of the resource.

Given the projected doubling of demand for extractive resources from 2015-2050, and projected shortcomings in supply, actual or potential extractive resources in critical resource locations are considered to be of State significance.

Despite its purpose, the overlay is only applied to state significant coal resources in Wellington and Latrobe. The overlay has been tested in the Victorian Civil and Administrative Tribunal and has successfully ensured significant coal resources were taken into account in planning decisions. Importantly the overlay itself is not a permit trigger and relies on the permit trigger of any underlying zoning (i.e. farming zone) before it can come into consideration from a statutory decision-making perspective.

Given this, the State Resource Overlay would need to be reviewed and modified if it were to be applied to moderate specific sensitive uses in the SERA pilot project sites.
Implementing Strategic Extractive Resource Areas: Opportunity

The analysis within this chapter, coupled with the five policy issues facing extractive industries that were highlighted earlier in the report, demonstrate the issues that need to be addressed by SERAs. These issues represent current challenges or gaps that extractive industries are facing in relation to implementation of planning policy. Given the purpose and intent of SERAs, there is an opportunity to use the planning system to provide greater protection for strategic extractive resources in Victoria (Figure 24).

<table>
<thead>
<tr>
<th>Issues</th>
<th>Opportunity: SERAs as a planning tool</th>
</tr>
</thead>
<tbody>
<tr>
<td>Encroachment</td>
<td>Can control development and sensitive uses</td>
</tr>
<tr>
<td>Spacial definition</td>
<td>Can protect existing quarries</td>
</tr>
<tr>
<td>Decision making</td>
<td>Define buffer areas</td>
</tr>
<tr>
<td></td>
<td>Secure future resources</td>
</tr>
<tr>
<td>Consistency</td>
<td>Establish clear decision guidelines</td>
</tr>
<tr>
<td>Geological Data</td>
<td>Enable councils to make informed/defendable decisions</td>
</tr>
<tr>
<td></td>
<td>Establish a best practice model that can be applied to SERA sites</td>
</tr>
<tr>
<td></td>
<td>Building upon the evidence base provided by EIAs to attain more detailed data on extent, and quality of resources in an area</td>
</tr>
<tr>
<td></td>
<td>Utilise supply and demand information.</td>
</tr>
</tbody>
</table>

Figure 24 Opportunities for SERAs to address existing issues relating to extractive resources.

Planning policy needs to be applied to protect three distinct aspects of the SERA:

- **Quarry operations**: Protect existing quarry operations and their ability to expand operations in the future.
- **Buffer areas around existing quarry operations**: Buffer distances around existing quarry operations to ensure that inappropriate uses do not encroach on or impede an operating quarry’s ability to function.
- **Potential extractive resource areas**: Identifying land appropriate for the location of future extractive industry. Any development on these areas must not forego the opportunity for extractive industry to occur on the site.
Proposed Planning Approach for the Pilot SERAs

The following approach is recommended to protect the various aspects of SERA sites:

- **For operating quarries (where there is an existing Work Authority):** Apply Special Use Zone.

- **For the buffer areas around existing quarry operations and greenfield areas of potential extractive resources (within the SERA):** Apply the State Resource Overlay.

This configuration is preferred because of the following advantages:

- A best practice Special Use Zone schedule and State Resource Overlay schedule can be applied for the SERA pilot project sites. These model schedules are robust and could also be used in any future SERA sites.

- The Special Use Zone Schedule:
  - Provides clear policy direction about the future use of the land. It provides clear purpose & requirements relating to extractive industry.
  - Has strong precedent in being applied to designate land for the purposes of extractive uses.
  - Is the appropriate mechanism to clearly define specific extractive industry use requirements.

- The State Resource Overlay schedule:
  - Clearly defines buffer and potential resource areas spatially in the planning system.
  - Elevates the importance of SERA sites with their designation under the State Resource Overlay.
  - Is the appropriate mechanism to define use and development requirements that will not sterilise or encroach on future potential extractive resources or existing operations.
  - Fulfils its intended purpose to protect areas of mineral, stone and other resources of strategic value to the State.
  - Enables compatible uses to function in proximity to extractive industries.
Sensitive Uses

With the delineated SERA boundaries, consideration needs to be given to the types of uses and development that negatively impact on the operation of current quarries or pose a risk to any future extractive industry uses. New sensitive uses can cause material detriment to existing extractive industry by impacting on the way they operate under an approved work plan.

The ‘Stone Extraction and Extractive Industry Interest Areas’ Particular Provision (Clause 52.09) in planning schemes sets out existing uses that are deemed to be sensitive and therefore require notice to be given to DJPR. The previously established sensitive uses are:

- Accommodation
- Child care centre (now classified with the education centre land use term)
- Education centre
- Hospital

These existing requirements include applications that seek to subdivide land for the above-mentioned uses. They are longstanding previously established sensitive uses in the planning scheme and should be reaffirmed in controls used to designate SERAs.

In addition to previously established sensitive uses, consideration needs to be given to other possible uses that could be of detriment to the strategic function of SERAs and how the more localised analysis provided by SERAs could provide an opportunity to ensure these uses are appropriately assessed in the planning system.

For uses that seek approval to locate close to an existing quarry (within a specified buffer distance), consideration needs to be given to both the amenity, health, safety and environment of surrounding land, as well to the safeguarding of the existing extractive industry operation. Extractive industry operations can generate ground and air vibration, dust, noise, and changes to the topography and landscape. There are also risks associated with quarries that use blasting for extraction.

The following considerations were taken into account when determining which additional uses should trigger a permit:

- Does the proposed use have the ability to cause detriment or complications for an existing operating quarry?
- Does the proposed use pose amenity issues?
- Does the proposed use represent an assembly point to bring people together?
- Is the proposed use or development considered a long term use that will not enable the resource to be extracted in the future?
The following uses have been identified to have the potential to cause detriment to existing / potential future operations or pose amenity issues, and therefore will require a permit under the proposed State Resource Overlay:

| • Accommodation   | • Place of assembly          |
| • Crematorium     | • Retail premises           |
| • Education centre| • Winery                    |
| • Funeral parlour | • Veterinary clinic         |
| • Hospital        |                            |
| • Leisure and recreation |                        |

In addition to the existing sensitive uses detailed in Clause 52.09, these uses have been added to require a permit under the proposed State Resource Overlay. These uses contain potential amenity issues if located in proximity to quarries. Additionally, they represent assembly points where people congregate, which is not consistent with the objectives of SERAs.

With the triggering of a permit the responsible planning authority (as well as the determining referral authority) will need to be provided with sufficient information by the proponent to satisfy them that the proposed use or development will not be adversely impacted by its proximity to an existing quarry. Alternatively, on land designated as a SERA without current extractive industry approvals, the proponent will need to demonstrate that the proposed use or development will not inhibit future extractive industry use.

There are a limited number of uses stated in the proposed State Resource Overlay that don’t already require a permit with existing underlying zoning in the SERA investigation areas (Figure 25). While many existing zones require permits for potentially sensitive uses, the new proposed provisions ensure the impact on the resource will also be an important consideration in decision making.
### Table: Accommodation Uses

<table>
<thead>
<tr>
<th>Accommodation</th>
<th>FZ</th>
<th>GWZ</th>
<th>GWZA</th>
<th>UGZ</th>
<th>RCZ</th>
<th>RLZ</th>
<th>RAZ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Camping &amp; caravan park</td>
<td>○</td>
<td></td>
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<td></td>
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<td></td>
<td></td>
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<tr>
<td>Corrective institution</td>
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<td></td>
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<tr>
<td>Dependent person’s unit</td>
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<tr>
<td><strong>Dwelling</strong></td>
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<tr>
<td>• Bed &amp; breakfast</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>• Caretaker’s house</td>
<td></td>
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<tr>
<td>• 1 dwelling on a lot at least 40 hectares</td>
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<tr>
<td>Group accommodation</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Host farm</td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>Residential aged care facility</td>
<td></td>
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<tr>
<td><strong>Residential building</strong></td>
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<tr>
<td>• Community care accommodation</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>• Residential hotel</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>– Motel</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>– Rooming house</td>
<td></td>
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<tr>
<td>Residential village</td>
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<tr>
<td>Retirement village</td>
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<td></td>
</tr>
</tbody>
</table>

**Legend:** ○ No permit required

**Figure 25** Zones in the SERA investigation areas and the ‘Accommodation’ land use term - An analysis of nested uses where no permit in required

Uses that have been deemed a potential risk to existing and future industry within a SERA that already require a permit in the underlying zoning have been relisted in the State Resource Overlay for clarity. This makes it clear that any proposed application must meet the requirements of the State Resource Overlay in addition to the requirements of the associated zone and other aspects of State planning policy relating to extractive resources (Clause 14.03). It is also important to allow for the ability to specifically state sensitive uses in the State Resource Overlay because:

- The proposed SERA areas cover multiple zones with different land use requirements
- Local council’s can schedule local variations to zones which can change requirements on a site by site basis.
Development: Subdivision

Subdivision and land fragmentation are issues that need to be responded to by the proposed State Resource Overlay. Land fragmentation is a considerable deterrent for prospective quarry operator’s ability to purchase land and set up operations. Subdivision below 40 hectares may be considered to be inappropriate in designated SERA areas. Subdivision smaller than 40 hectares in many of the underlying zones in the SERA investigation areas are already prohibited, however some zones do allow subdivision below 40 hectares without a permit (Figure 26). To ensure any subdivision of lots smaller than 40 hectares is monitored and assessed, the proposed State Resource Overlay requires a permit for any application to subdivide land, except where each lot created is at least 40 hectares.

Although there are limited zones in the SERA investigation areas where smaller subdivision is permitted below 40 hectares, the ability for the State Resource Overlay to specify subdivision requirements is important. Particularly considering that the rural zones can contain schedules that vary subdivision requirements.

<table>
<thead>
<tr>
<th>Accommodation</th>
<th>FZ</th>
<th>GWZ</th>
<th>GWZA</th>
<th>UGZ</th>
<th>RCZ</th>
<th>RLZ</th>
<th>RAZ</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 2 hectares</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>2-8 hectares</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>8-40 hectares</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>&gt;40 hectares</td>
<td></td>
<td>●</td>
<td></td>
<td>●</td>
<td>●</td>
<td>●</td>
<td></td>
</tr>
</tbody>
</table>

Legend: ● Prohibited

Figure 26 Prohibited subdivision lot sizes for zones in the SERA investigation areas
Development: Buildings and works

To ensure no inappropriate development occurs in SERA areas, a permit would be required under the proposed State Resource Overlay to construct a building or to construct or carry out works. Any proposed development and associated buildings and works in a designated SERA will also need to be assessed against Agricultural uses do not specifically trigger the need for a permit within the proposed State Resource Overlay. While agriculture is generally considered to be a complementary land use, some development associated with more intensive agricultural uses may have an impact on the objectives of SERA sites. In recognition of the generally compatible nature of agricultural uses, some exceptions to the requirement of a permit for buildings or works have been stipulated in the proposed State Resource Overlay.

This is also the case for other types of development which will have an inconsequential impact on the objectives of SERA sites. These exceptions for the need for a permit under the proposed State Resource Overlay are:

- An alteration or extension to an existing building provided the gross floor area of the alteration or extension is not more than 200 square metres.
- A non-habitable building with a gross floor area not exceeding 200 square metres.
- A building or works associated with the use of land for stone extraction.
- Works with an area not exceeding 200 square metres.
- Works associated with the use of land for agriculture.
- A rainwater tank.
- Land in a Public Use Zone 4.
Responding to the requirements of the State Resource Overlay

DJPR is proposed to be a determining referral authority for applications that trigger a permit under the State Resource Overlay. This means that DJPR will need to assess uses or building and works that trigger a permit. The following considerations will be taken into account by DJPR when assessing the appropriateness of particular uses or buildings and works:

- Whether the proposed use or development is compatible with extractive industry use.
- The potential for the use or development within the buffer areas for the extractive industry use to limit the operation and expansion of adjoining and nearby extractive industry uses.
- Whether the proposed use or development will adversely impact future development of the resource.
- If existing natural features and topography will mitigate potential impacts of existing or future extractive industry use on the proposed use.
- Whether the proposed use or development is a major capital development which may adversely impact on the future productive extraction of the resource.
- Whether the proposed development is designed and sited in a location that minimises amenity impacts from resource extraction operations and its transportation.
Drafted Provisions – Key Policy Decisions

In consideration of the requirements and policy certainty that SERA sites intend to bring, draft planning provisions have been prepared to be applied to the SERA pilot project sites. Inclusion of a full list of detailed changes that have been drafted and their specific attributes are included in Appendix B.

The rationale behind particular policy decisions contained within the controls are detailed below:

**Buffer areas**

In lieu of detailed buffer area mapping for each of the existing quarries within the SERA investigation area, the threshold distances of 250 metres (without blasting) and 500 metres (with blasting) have been applied to the SERA pilot project sites. These threshold distances are taken from the ‘Recommended separation distances for industrial residual air emissions’ (EPA Guideline 1518). Given sand resources don’t require blasting to extract, the 250 metre buffer has been applied in the South Gippsland SERA site. The 500 metre buffer has been applied to the Wyndham SERA site as hard rock resource extraction requires blasting.

Buffer areas have previously only applied to existing approved extractive industry operations.

**Commencement point for the measurement of buffer areas**

For existing quarry operations within the SERA pilot project sites, the buffer areas are measured from approved Work Authority boundaries. This is because Work Plan variations can occur that change the point of extraction. If buffer areas were measured from the point of extraction, any variation in the point of extraction would cause the buffer mapping in the planning system to be outdated. If planning scheme buffer mapping was to be updated it would need to occur via a planning scheme amendment, which would create considerable lag times.

**Application of the Special Use Zone over Work Authority sites**

While a Work Authority approval provides a degree of protection for extractive industry, the application of the SUZ provides greater certainty in securing use and development of land for extractive industry. It also encourages interim uses, prohibits incompatible uses and encourages land rehabilitation practices. Other benefits of applying the SUZ rather than retaining the underlying zoning include:

- A specific planning control for identified extractive resource areas is an ideal tool to give greater planning certainty and set clearer expectations to industry, the community and local government about extractive industry land use and development.
- Many identified and potential future extractive resources are affected by the Farming Zone, Green Wedge Zone and Rural Conservation Zone. These zones can continue to be applied to extractive resources, but a range of potentially incompatible uses are allowed either with or without a planning permit. A specific planning control for extractive resources provides clearer guidance and transparency of extractive industry operations in the planning scheme.
Single State Resource Overlay schedule for buffer areas and future extractive industry areas

A single SRO schedule has been drafted to apply to both the buffer areas surrounding an existing quarry, as well to designate future extractive industry areas. One singular schedule, as opposed to two, was selected for the following reasons:

- On the SERA pilot project sites, there is intersection between the buffer areas and future extractive resource areas. Two separate controls would overlap and potentially cause confusion. Particularly if there is little differentiation between requirements of the two overlays.

- It is more practical and streamlined to have the controls located in one schedule. This avoids duplication and improves ease of use and legibility for planners, industry, and the general community.

State Resources Overlay rather than Special Use Zone to designate future resource areas

The Special Use Zone was not considered appropriate for designate of future resource areas, because:

- The State Resources Overlay provides protection of extractive resources while also ensuring that other land uses can continue to occur.

- Quarry applications within either the Special Use Zone or State Resources Overlay will still need to go through the usual merits based assessment. If a quarry application was not able to attain approvals through this process, the land would effectively be sterilised under the Special Use Zone.
Referral Authority

Any uses or development triggering a permit under the proposed controls must be referred to the Secretary of the Department administering the MRSDA (currently DJPR) as a determining referral authority.

If a determining referral authority objects to the granting of a permit, the responsible authority (usually local government) must refuse to grant the permit. If a determining referral authority specifies conditions, those conditions must be included in any permit granted. DJPR has been classified as a determining referral authority rather than a recommending referral authority. If a recommending referral authority objects to a permit application, the responsible authority will retain the discretion to decide whether or not to grant the permit.

The proposed controls have specified DJPR as a determining referral authority, because the strategic importance of the resource to the State requires enforceable protection. DJPR, and its role in strategic planning for resources, including monitoring of demand and supply, is best placed to provide this advice and make determinations.

Clause 52.09-8 (Stone Extraction and Extractive Industry Interest Areas) has existing notice requirements to DJPR for the use, subdivision or construction of buildings for stipulated sensitive uses. These notice assessments are only exercised if there is a direct risk to the resource. With DJPR as a determining referral authority in the proposed controls, there is increased ability to more strategically consider applications and their potential impact on significant resources to the State.

Exemptions from Notice and Review

Subject to the fulfillment of specified conditions, the current drafting of the SERA planning provisions allows extractive industry permit applications to be exempt from normal notice and review requirements of the Planning and Environment Act 1987. This means that third parties cannot object to an extractive industry planning permit application or appeal a decision relating to an extractive planning permit application.

- The land is at least 250 / 500 metres (depending on sand or hard rock resource) from land uses that require a permit in the SRO.
- The land has access to a road in a Road Zone, Category 1.

The inclusion of specific criteria that must be met before gaining these exemptions acts to ensure they are only attained where proposed quarry operations are well separated from existing sensitive uses and transport infrastructure is well suited.
Benefits for industry locating in SERA sites

Designated SERA sites are intended to place a clear strategic policy indicator for locations where it is generally appropriate for the extractive resource industry. With this clear policy position, it is expected that it will be beneficial and meaningful for industry to locate within defined SERA areas. There are many benefits for industry in being included in the proposed SERAs, including:

- Increased policy protection and certainty for extractive industry already operating.
- In future resource areas, designation as a SERA removes the requirement to justify if extractive industry is an appropriate use of the land. This removes tension between industry, local government, and local residents.
- Greater certainty with more consistent and uniform planning requirements and approaches for extractive resources.
- Strengthening of planning provisions for extractive resources.
- Placing greater weight on extractive resources by discouraging incompatible uses in buffer areas.
- Maintaining existing approvals and rights and not negatively impacting approvals processes currently being sought.
- Sending a strong message to the extractive resources industry, community and local government about the importance of how the planning system can best respond to protecting identified and future extractive resources.
Source: Provided by industry, Sand quarry in South Gippsland
Proposed planning provision application – Wyndham SERA

In consideration of the analysis provided in this report, the proposed application of planning provisions for the Wyndham SERA is illustrated in Figure 27, while the proposed planning provisions for the South Gippsland SERA are illustrated in Figure 28. The proposed application of the planning controls is subject to consultation and feedback.
Figure 27  SERA Planning Provision Application (Proposed) - Wyndham
Figure 28 SERA Planning Provision Application (Proposed) - South Gippsland
APPENDIX A.
ADDITIONAL PILOT AREA MAPS

Source: DJPR, Mountain View Quarry, Wyndham Vale
The Wyndham Pilot SERA

Figure 29 Groundwater Dependant Ecosystems - Wyndham Pilot
Figure 30 Cultural Heritage - Wyndham Pilot
Figure 31 Annual Average Daily Traffic Volumes - Wyndham Pilot
Figure 32 Planning Zones - Wyndham Pilot
Figure 33 Planning Overlays - Public Acquisition, Heritage and Built Form - Wyndham Pilot
Figure 34 Planning Overlays - Environment, Landscape and Land Management - Wyndham Pilot
Figure 35 Land Ownership - Wyndham Pilot
South Gippsland Pilot SERA

Figure 36 Groundwater Dependant Ecosystems – South Gippsland Pilot
Figure 37 General Infrastructure - South Gippsland Pilot
Figure 38 Cultural Heritage - South Gippsland Pilot
Figure 39 Annual Average Daily Traffic Volumes - South Gippsland Pilot
Figure 40 Planning Zones - South Gippsland Pilot
Figure 41: Planning Overlays - South Gippsland Pilot
Figure 42 Land Ownership - South Gippsland Pilot