2 Evaluation Approach Used in this EES
Evaluation Approach Used in this Environment Effects Statement

2.1 Coordinated Assessment of the Proposal

The proposal by SGM to undertake further gold mining in the Big Hill area requires evaluation and assessment under a number of State and Commonwealth Acts. These are set out in more detail in Chapter 3 of this EES.

The primary environmental assessment requirements stem from the Victorian Environment Effects Act 1978 (EE Act). Under this Act, the Minister has determined that an environment effects statement (EES) is required for the Project. The outcome of the EES process is a Minister’s Assessment, which informs decision-making about the Project, including other statutory approvals which are required subject to an approval under the EE Act. The primary legislative approvals for the Project require that:

- The potential environmental, social and economic impacts of the Project adjacent to the Stawell township are investigated and assessed in this EES, in accordance with the requirements of the Environment Effects Act 1978, Ministerial Guidelines and the Scoping Requirements for this EES.

- The Project must be designed, constructed, operated, monitored and managed after closure to meet the requirements of the Mineral Resources (Sustainable Development) Act 1990. The Minister for Energy and Resources will decide whether the Project meets the requirements of a number of regulations and guidelines given force by that Act. A work authority will also be required to satisfy the conditions of section 42(7) of the MRSD Act.

- The Project was referred to the Commonwealth government under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act). SGM was subsequently advised on 9 December 2013 that the Project is not a controlled action.

A Work Plan Variation under the MRSD Act is required and will describe in detail the management and mitigation measures proposed to meet compliance requirements. The table of contents of a working draft of the Work Plan Variation is included as Appendix B to this EES. A working draft of the Work Plan Variation is available on the Crocodile Gold website for the information of the Stawell community. The Work Plan Variation will be updated as required following the completion of the Panel inquiry and the Minister for Planning’s Assessment of the EES (see Chapter 3, Section 3.2.3 for more detail about the Work Plan Variation).

This EES has been prepared under the provisions of the EE Act at the request of the Minister.

In July 2013, the Minister released draft EES Scoping Requirements for public exhibition which set out the proposed scope and provided guidance on the matters to be investigated and documented in this EES.

The final EES Scoping Requirements were provided to SGM by the Minister in October 2013 following the public consultation process.

The EES Scoping Requirements set out the matters that need to be addressed in this EES by the proponent, including the identification of all relevant regulatory requirements; the detail required in the description of the proposal; the specific environmental, social and economic issues to be investigated; and the need to describe alternatives and mitigating measures to avoid or minimise impacts. These key requirements were built into the scope of the specialist technical studies conducted to provide information and analysis for this EES.
In terms of the general approach to the assessment of potential impacts, the EES Scoping Requirements require:

- a **systems-based** approach informed by an understanding of the relationship between different aspects of the proposal and between different aspects of the environment

- a **risk-based** approach that identifies and evaluates potential hazards and their likelihoods, and therefore the level of investigation necessary to assess potential impacts and inform the need for action to mitigate each risk.

Section 2.1.1 and Section 2.1.2 explain the structure of this document and where each of the matters that must be addressed can be found. Section 2.2 explains how this EES will draw together the assessment requirements using a systems and risk based approach.

### 2.1.1 Evaluation Objectives

The EES Scoping Requirements outline a number of draft evaluation objectives for the Project. These objectives reflect the key matters to be investigated in the EES, relevant legislation and policies, the objectives and principles of ecologically sustainable development and environmental protection. The objectives are set out in Table 2-1, which also lists where each of the evaluation objectives are addressed in this EES.

#### Table 2-1 Big Hill Enhanced Development Project EES draft evaluation objectives

<table>
<thead>
<tr>
<th>Draft evaluation objective</th>
<th>Key legislation*</th>
<th>EES Section</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Resource Development</strong> - to enable an economically viable mining project that makes the best use of available gold resources.</td>
<td>MRSD Act</td>
<td>Chapter 8, Section 8.17</td>
</tr>
<tr>
<td><strong>Biodiversity</strong> - to avoid or minimise adverse effects on native vegetation and listed flora and fauna species and ecological communities, including any relevant species listed under the EPBC Act, and address opportunities for offsetting potential losses consistent with relevant policy.</td>
<td>MRSD Act, FFG Act, Wildlife Act, EPBC Act</td>
<td>Chapter 8, Section 8.2</td>
</tr>
<tr>
<td><strong>Landscape, Visual and Recreational Values</strong> - to minimise adverse effects on landscape, visual amenity and recreational values associated with Big Hill and environs.</td>
<td>P&amp;E Act</td>
<td>Chapter 8, Section 8.15</td>
</tr>
<tr>
<td><strong>Health and Social</strong> - to protect the health and wellbeing of residents and the social fabric of the community in the area, in the context of project hazards.</td>
<td>MRSD Act, EP Act, SEPPs and PEM, P&amp;E Act</td>
<td>Chapter 8, Sections 8.16 and 8.18</td>
</tr>
<tr>
<td><strong>Amenity</strong> - to minimise adverse noise, vibration and other amenity effects on nearby residents and local communities, to the extent practicable.</td>
<td>EP Act, SEPPs, and NIRV, P&amp;E Act, MRSD Act</td>
<td>Chapter 8, Sections 8.5, 8.6 and 8.7</td>
</tr>
<tr>
<td><strong>Water</strong> - to ensure that surface water and groundwater quality and potable water supply are adequately protected from adverse impacts arising from the Project.</td>
<td>EP Act, SEPPs and PEM</td>
<td>Chapter 8, Sections 8.10, 8.11, and 8.12</td>
</tr>
</tbody>
</table>
2 Evaluation Approach Used in this Environment Effects Statement

<table>
<thead>
<tr>
<th>Draft evaluation objective</th>
<th>Key legislation*</th>
<th>EES Section</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cultural Heritage</strong> – to avoid or minimise adverse effects on Aboriginal and historic heritage values, sites and places.</td>
<td>Aboriginal Heritage Act, Heritage Act</td>
<td>Chapter 8, Sections 8.3 and 8.4</td>
</tr>
<tr>
<td><strong>Environmental Management Framework</strong> - to provide a transparent framework with clear accountabilities for managing environmental effects and hazards associated with construction, operation, decommissioning and rehabilitation phases of the Project, in order to achieve acceptable environmental outcomes.</td>
<td>MRSD Act, EP Act, EE Act, EPBC Act</td>
<td>Chapters 10 and 11</td>
</tr>
<tr>
<td><strong>Sustainable Development</strong> - overall, to demonstrate that the Project would achieve a balance of economic, social and environmental outcomes that contribute to ecologically sustainable development and provide a net community benefit.</td>
<td>MRSD Act, EE Act, EPBC Act</td>
<td>Chapters 7, 8 and 11</td>
</tr>
</tbody>
</table>

* Refer to Abbreviations list for full titles of legislation listed.

2.1.2 Structure of EES Sections

Each chapter of this EES document (or chapter section, where relevant) contains a text box at the beginning, which sets out the relevant tasks in the EES Scoping Requirements and summarises the principal findings or conclusions of each chapter or section as the result of undertaking those tasks.

The chapters of this EES relating to potential environmental, social and economic impacts are structured so that each segment of the bio-physical environment or each potential social issue is considered in turn. The assessment is presented in the following order for each issue:

- **Introduction** – an overview of the relevant section/s of the scoping requirement, outcomes from the community consultation and engagement process as well as a summary of key findings
- **Existing Conditions** - an outline of the existing conditions which inform the impact assessment, having regard to the level of risk
- **Impact Assessment** – an assessment of the overall potential impacts of the Project taking a risk-based approach
- **Management And Mitigation Measures** – a description of the measures that could reduce and/or mitigate the risk of significant impacts
- **Conclusion** - an assessment of the acceptability of residual effects (those that are likely to occur following the implementation of mitigation measures) within the broader project context.

2.2 Approaches to Evaluating the Project

The Scoping Requirements specify that:

‘Preparation of the EES document and the necessary investigation of effects should be consistent with the principles of a systems approach and risk-based approach as specified in the Ministerial guidelines for assessment of environmental impacts under the Environment Effects Act 1978 (Ministerial Guidelines).’
2 Evaluation Approach Used in this Environment Effects Statement

The following sections outline how this EES will draw together the assessment requirements using a systems- and risk-based approach.

2.2.1 Systems-Based Approach

A systems-based approach has been used in the design and assessment of the Project. The key feature of a systems-based approach is that it considers all aspects of a proposal and all potential impacts of a proposal as an inter-related system, including an assessment of interactions between different project elements and the environment. A systems-based approach also considers different time-frames of response in different components of the system, including short, medium and long-term impacts.

In addition, the EES evaluates the potential impacts of the Project by recognising interactions between the natural, social and economic environments.

For example, the EES investigates the potential for an impact on the physical environment (pollution of the air by particulates) to impact on other aspects of the physical environment (contamination of potable water supply) or on the social environment (adverse human health impacts) as well as the economic environment (impact on local tourism or perceptions of water quality).

2.2.2 Risk Assessment and Management Approach

As specified in the Ministerial Guidelines a risk-based approach has been adopted in the assessment of environmental effects for the Project. The risk assessment has also been used to draw together the systems-based approach in a way that allows evaluation of the likelihood and consequence of flow-on effects between the physical, social and economic aspects of the environment.

A semi quantitative approach to risk assessment was adopted for the Project EES. This involved the use of a multi-disciplinary subject matter specialist panel for assessing the likelihoods and consequences associated with potential impacts and risk events of the Project. The specialists engaged in the risk assessment process were those selected to conduct the detailed technical studies for the EES and covered all key areas of potential impacts. The specialist studies conducted for the EES evaluated, in qualitative terms, the potential impacts and risks associated with the Project and identified avoidance, management and mitigation measures for each potential impact. The risk assessment process then used the subject matter specialist panel to develop a semi quantitative evaluation of individual and combined risks for the Project. This approach enables the assessment of risks associated with social, environmental, engineering and economic issues on a relatively even basis.

The approach is compliant with AS/NZS 31000:2009 Risk Management Process and involves the following steps:

- establishment of the context of the risk assessment
- risk identification
- risk analysis
- risk evaluation.
2 Evaluation Approach Used in this Environment Effects Statement

The Risk Management Process was conducted in a workshop format on 5 August 2013 and included follow-up discussions and review. In advance of the workshop, a review of draft technical reports prepared for the Project was conducted and discussions held with subject matter specialists. Based on this review and discussion, a preliminary assessment of potential impacts and risks was made.

During the workshop, a risk register was developed, in consultation with the subject matter specialists, and likelihoods and consequences of risk events and potential impacts were assigned.

The inputs and outputs of the workshop were sent to all subject matter specialists for review and validation, to ensure a complete risk register.

The Big Hill Enhanced Development Project Risk Report (Risk Report) (refer to Technical Appendix 18) provides the complete project risk register as well as a series of risk profiles showing total impact and risk during construction/operation and post closure as well as potential impacts to asset categories. Chapter 9 of this EES provides a summary of the Risk Report, including the way in which the key project risks have been identified and assessed.