Statement of Environmental Effects

for a Proposed Modification to the

Manuka Mine

(Importation and Processing of Mt Boppy Mine Ore)

Prepared by:

R.W. CORKERY & CO. PTY. LIMITED

May 2015
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# CONTENTS

LIST OF ACRONYMS .................................................................................................................. VII

1. INTRODUCTION ..................................................................................................................... 1
   1.1 SCOPE ................................................................................................................................. 1
   1.2 FORMAT OF THE STATEMENT .......................................................................................... 3
   1.3 THE APPLICANT ................................................................................................................ 4
   1.4 OVERVIEW OF EXISTING OPERATIONS ....................................................................... 5
      1.4.1 Existing Approvals ........................................................................................................ 5
      1.4.2 History of Mining Operations (2011 – 2014) ............................................................... 8
      1.4.3 Current Mine Operations ............................................................................................. 10
      1.4.4 Environmental Performance ....................................................................................... 11
   1.5 CONSULTATION ................................................................................................................. 15
      1.5.1 Government Agency Consultation ............................................................................... 15
      1.5.2 Community Consultation ............................................................................................ 18
      1.5.3 Aboriginal Consultation ............................................................................................. 18
   1.6 MANAGEMENT OF INVESTIGATIONS .............................................................................. 19

2. DESCRIPTION OF THE PROPOSED MODIFICATION ............................................................ 20
   2.1 INTRODUCTION .................................................................................................................. 20
      2.1.1 Objectives ................................................................................................................... 20
      2.1.2 Overview of Proposed Modification ............................................................................ 20
   2.2 UPDATED MINE SITE LAYOUT ....................................................................................... 20
   2.3 IMPORTATION OF MT BOPPY MINE ORE ................................................................... 23
      2.3.1 Introduction .................................................................................................................. 23
      2.3.2 Transportation Operations ......................................................................................... 23
      2.3.3 Processing Operations ............................................................................................... 27
      2.3.4 Tailings Management ............................................................................................... 30
   2.4 REMAINING SITE ACTIVITIES ....................................................................................... 33
   2.5 EMPLOYMENT, HOURS OF OPERATION AND MINE LIFE ............................................. 33
      2.5.1 Employment ................................................................................................................. 33
      2.5.2 Hours of Operation ..................................................................................................... 34
      2.5.3 Mine Life .................................................................................................................... 34
   2.6 BIODIVERSITY OFFSET STRATEGY ................................................................................. 34
      2.6.1 Introduction .................................................................................................................. 34
      2.6.2 Offset Principles ......................................................................................................... 35
      2.6.3 Offset Requirements ................................................................................................. 35
      2.6.4 Proposed Biodiversity Offset Area ............................................................................ 36
      2.6.5 Security, Implementation and Monitoring ............................................................... 40
   2.7 REHABILITATION ............................................................................................................... 41
      2.7.1 Introduction ................................................................................................................. 41
      2.7.2 Rehabilitation Objectives .......................................................................................... 42
      2.7.3 Final Landform .......................................................................................................... 42
CONTENTS

3. ISSUE IDENTIFICATION AND PRIORITISATION ........................................................................ 46
   3.1 INTRODUCTION .............................................................................................................. 46
   3.2 LOCAL ENVIRONMENTAL SETTING ............................................................................. 46
      3.2.1 Introduction ............................................................................................................. 46
      3.2.2 Topography and Drainage ...................................................................................... 46
      3.2.3 Soil and Land Capability ....................................................................................... 48
      3.2.4 Climate ................................................................................................................... 48
      3.2.5 Land Use and Land Ownership ............................................................................. 50
   3.3 ENVIRONMENTAL ISSUES, POTENTIAL IMPACTS AND CONSTRAINTS ....................... 50
      3.3.1 Introduction ............................................................................................................ 50
      3.3.2 Transportation ....................................................................................................... 52
      3.3.3 Noise ...................................................................................................................... 56
      3.3.4 Surface Water Resources ...................................................................................... 57
      3.3.5 Groundwater Resources ....................................................................................... 58
      3.3.6 Air Quality ............................................................................................................. 59
      3.3.7 Biodiversity .......................................................................................................... 60
      3.3.8 Cultural Heritage .................................................................................................... 60
      3.3.9 Visual Amenity ....................................................................................................... 61
      3.3.10 Socio-economic Setting ...................................................................................... 61
   3.4 ISSUE PRIORITISATION ................................................................................................. 62

4. ASSESSMENT AND MANAGEMENT OF KEY ENVIRONMENTAL ISSUES .............................. 64
   4.1 INTRODUCTION .............................................................................................................. 64
   4.2 TRAFFIC AND TRANSPORT .......................................................................................... 64
      4.2.1 Introduction ............................................................................................................. 64
      4.2.2 Objectives .............................................................................................................. 64
      4.2.3 Design Features, Operational Controls and Management Measures ..................... 65
      4.2.4 Environmental Effects ........................................................................................... 67
   4.3 NOISE AND VIBRATION ............................................................................................... 68
      4.3.1 Introduction ............................................................................................................. 68
      4.3.2 Objectives .............................................................................................................. 68
      4.3.3 Assessment Criteria ............................................................................................... 68
      4.3.4 Operational Safeguards and Controls ................................................................... 69
      4.3.5 Assessment Methodology ...................................................................................... 69
      4.3.6 Environmental Effects ........................................................................................... 70
   4.4 AIR QUALITY ................................................................................................................ 71
      4.4.1 Introduction ............................................................................................................. 71
      4.4.2 Objectives .............................................................................................................. 71
      4.4.3 Operational Safeguards and Controls ................................................................... 71
      4.4.4 Environmental Effects ........................................................................................... 71
   4.5 BIODIVERSITY .............................................................................................................. 72
      4.5.1 Introduction ............................................................................................................. 72
# CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.5.2 Assessment Methodology</td>
<td>72</td>
</tr>
<tr>
<td>4.5.3 Assessment of the BOS</td>
<td>73</td>
</tr>
<tr>
<td>4.6 SOCIO-ECONOMIC SETTING</td>
<td>73</td>
</tr>
<tr>
<td>5. EVALUATION OF THE PROPOSED MODIFICATION</td>
<td>75</td>
</tr>
<tr>
<td>5.1 INTRODUCTION</td>
<td>75</td>
</tr>
<tr>
<td>5.2 EVALUATION OF RESIDUAL EFFECTS</td>
<td>75</td>
</tr>
<tr>
<td>5.2.1 Biophysical Considerations</td>
<td>75</td>
</tr>
<tr>
<td>5.2.2 Socio-Economic Considerations</td>
<td>76</td>
</tr>
<tr>
<td>5.3 EP&amp;A ACT SECTION 96(2) CONSIDERATIONS</td>
<td>76</td>
</tr>
<tr>
<td>5.3.1 Introduction</td>
<td>76</td>
</tr>
<tr>
<td>5.3.2 Substantially the Same Development</td>
<td>76</td>
</tr>
<tr>
<td>5.3.3 Notification of the Application</td>
<td>77</td>
</tr>
<tr>
<td>5.3.4 Consultation with the Relevant Minister, Public Authority or Approval Body</td>
<td>77</td>
</tr>
<tr>
<td>5.3.5 Submissions Regarding the Proposal</td>
<td>77</td>
</tr>
<tr>
<td>5.4 SECTION 79C(1) CONSIDERATIONS</td>
<td>78</td>
</tr>
<tr>
<td>5.4.1 Introduction</td>
<td>78</td>
</tr>
<tr>
<td>5.4.2 Environmental Planning Instruments, Plans and Regulations (Section 79C (1a))</td>
<td>78</td>
</tr>
<tr>
<td>5.4.3 Likely Impacts of the Development (Section 79C (1b))</td>
<td>81</td>
</tr>
<tr>
<td>5.4.4 Suitability of the Site (Section 79C (1c))</td>
<td>81</td>
</tr>
<tr>
<td>5.4.5 Submissions (Section 79C (1d))</td>
<td>81</td>
</tr>
<tr>
<td>5.4.6 The Public Interest (Section 79C (1e))</td>
<td>81</td>
</tr>
<tr>
<td>5.5 OBJECTS OF THE EP&amp;A ACT</td>
<td>82</td>
</tr>
<tr>
<td>5.6 CONCLUSION</td>
<td>83</td>
</tr>
<tr>
<td>6. REFERENCES</td>
<td>84</td>
</tr>
</tbody>
</table>

# APPENDICES

- **Appendix 1** Application to modify Development Consent DA 2010/LD-00074 ................................................. A1-1
- **Appendix 2** DA 2010/LD-00074 ................................................. A2-1
- **Appendix 3** Correspondence with Cobar Shire Council and the various Government Agencies ............. A3-1
- **Appendix 4** Road Noise and Vibration Assessment ......................................................... A4-1
- **Appendix 5** Traffic Impact Assessment ................................................................. A5-1
- **Appendix 6** Draft Biodiversity Offset Strategy .................................................. A6-1
- **Appendix 7** Stormwater Management Scheme ......................................................... A7-1
# CONTENTS

## FIGURES

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Figure 1</td>
<td>Locality Plan</td>
<td>2</td>
</tr>
<tr>
<td>Figure 2</td>
<td>Approved Mine Site Layout</td>
<td>7</td>
</tr>
<tr>
<td>Figure 3</td>
<td>Existing Mine Site Layout</td>
<td>9</td>
</tr>
<tr>
<td>Figure 4</td>
<td>Modified Mine Site Layout</td>
<td>22</td>
</tr>
<tr>
<td>Figure 5</td>
<td>Transport Routes</td>
<td>25</td>
</tr>
<tr>
<td>Figure 6</td>
<td>Approved Processing Flow Chart</td>
<td>28</td>
</tr>
<tr>
<td>Figure 7</td>
<td>Proposed Processing Flow Chart</td>
<td>29</td>
</tr>
<tr>
<td>Figure 8</td>
<td>Biodiversity Offset Area</td>
<td>37</td>
</tr>
<tr>
<td>Figure 9</td>
<td>‘Manuka’ Property Vegetation Communities</td>
<td>38</td>
</tr>
<tr>
<td>Figure 10</td>
<td>Indicative Final Landform</td>
<td>43</td>
</tr>
<tr>
<td>Figure 11</td>
<td>Regional and Local Topography and Drainage</td>
<td>47</td>
</tr>
<tr>
<td>Figure 12</td>
<td>Land Ownership and Residential Receivers</td>
<td>51</td>
</tr>
</tbody>
</table>

## TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table 1</td>
<td>Current Consents, Authorisations and Licenses</td>
<td>5</td>
</tr>
<tr>
<td>Table 2</td>
<td>Summary of Government Agency Consultation</td>
<td>16</td>
</tr>
<tr>
<td>Table 3</td>
<td>Comparative Disturbance Areas</td>
<td>21</td>
</tr>
<tr>
<td>Table 4</td>
<td>Existing Mine-related Traffic</td>
<td>24</td>
</tr>
<tr>
<td>Table 5</td>
<td>Recommended Road Upgrade and Maintenance of the Manuka Transportation Route</td>
<td>26</td>
</tr>
<tr>
<td>Table 6</td>
<td>Approved and Proposed Hours of Operation</td>
<td>34</td>
</tr>
<tr>
<td>Table 7</td>
<td>Rehabilitation Objectives and Targets</td>
<td>42</td>
</tr>
<tr>
<td>Table 8</td>
<td>Monthly Climate Data</td>
<td>49</td>
</tr>
<tr>
<td>Table 9</td>
<td>Summary of Identified Environmental Issues</td>
<td>63</td>
</tr>
<tr>
<td>Table 10</td>
<td>Kidman Way Traffic</td>
<td>67</td>
</tr>
<tr>
<td>Table 11</td>
<td>Road Traffic Noise Modelling Results</td>
<td>70</td>
</tr>
<tr>
<td>Table 12</td>
<td>Application of SEPP (Mining, Petroleum Production and Extractive Industries) 2007</td>
<td>79</td>
</tr>
<tr>
<td>Table 13</td>
<td>Objects of the EP&amp;A Act</td>
<td>82</td>
</tr>
</tbody>
</table>

## PLATES

<table>
<thead>
<tr>
<th>Plate</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plate 1</td>
<td>Illustrated Effect of the Manuka Property Vegetation Plan</td>
<td>41</td>
</tr>
<tr>
<td>Plate 2</td>
<td>Cobar-Bedooba Road (SR 13) view southward from SR 14</td>
<td>53</td>
</tr>
<tr>
<td>Plate 3</td>
<td>Manuka-Yarranvale Road (SR 14) view eastward from SR 13</td>
<td>53</td>
</tr>
<tr>
<td>Plate 4</td>
<td>Kidman Way (MR 410) with outside lane markings</td>
<td>53</td>
</tr>
<tr>
<td>Plate 5</td>
<td>Kidman Way (MR 410) narrow sections</td>
<td>53</td>
</tr>
</tbody>
</table>
## LIST OF ACRONYMS

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABS</td>
<td>Australian Bureau of Statistics</td>
</tr>
<tr>
<td>AEMR</td>
<td>Annual Environmental Management Report</td>
</tr>
<tr>
<td>AHD</td>
<td>Australian Height Datum</td>
</tr>
<tr>
<td>AHIP</td>
<td>Aboriginal Heritage Impact Permit</td>
</tr>
<tr>
<td>BBAM</td>
<td>BioBanking Assessment Methodology</td>
</tr>
<tr>
<td>BOA</td>
<td>Biodiversity Offset Area</td>
</tr>
<tr>
<td>BOM</td>
<td>Bureau of Meteorology</td>
</tr>
<tr>
<td>BOMP</td>
<td>Biodiversity Offset Management Plan</td>
</tr>
<tr>
<td>BOS</td>
<td>Biodiversity Offset Strategy</td>
</tr>
<tr>
<td>BVT</td>
<td>Biometric Vegetation Type</td>
</tr>
<tr>
<td>DA</td>
<td>Development Approval</td>
</tr>
<tr>
<td>DRE</td>
<td>Division of Resources &amp; Energy</td>
</tr>
<tr>
<td>ESCP</td>
<td>Erosion and Sediment Control Plan</td>
</tr>
<tr>
<td>EIS</td>
<td>Environmental Impact Statement</td>
</tr>
<tr>
<td>EP&amp;A Act</td>
<td><em>Environmental Planning and Assessment Act 1979</em></td>
</tr>
<tr>
<td>EPA</td>
<td>Environment Protection Authority</td>
</tr>
<tr>
<td>EPL</td>
<td>Environment Protection Licence</td>
</tr>
<tr>
<td>EPBC Act</td>
<td><em>Environment Protection and Biodiversity Conservation Act 1999</em></td>
</tr>
<tr>
<td>JRPP</td>
<td>Joint Regional Planning Panel</td>
</tr>
<tr>
<td>LEP</td>
<td>Local Environmental Plan</td>
</tr>
<tr>
<td>LLS</td>
<td>Local Land Service</td>
</tr>
<tr>
<td>ML</td>
<td>Mining Lease</td>
</tr>
<tr>
<td>MOP</td>
<td>Mining Operations Plan</td>
</tr>
<tr>
<td>MR</td>
<td>Main Road</td>
</tr>
<tr>
<td>NAF</td>
<td>Non-acid Forming</td>
</tr>
</tbody>
</table>
This Statement of Environmental Effects (SoEE) has been prepared by R.W. Corkery & Co. Pty Limited on behalf of Black Oak Minerals Limited (the Applicant) to accompany an application to Cobar Shire Council to modify Development Consent DA 2010/LD-00074 (the Proposed Modification) for the Manuka Mine (the Mine). The Mine is located on the “Manuka” property approximately 85km south of Cobar NSW (Figure A).

The Applicant acquired the Mine in September 2014 with the objective of utilising, with some modification, the existing processing infrastructure to process ore from the Mt Boppy Mine (also owned by the Applicant). The principal components of the Proposed Modification are as follows.

- The transportation, importation and processing of ore from the Mt Boppy Mine at Canbelego, via the Barrier Highway, Kidman Way, Manuka-Yarranvale Road (Shire Road [SR] 14) and Bedooba Road (SR 13).
- Minor modifications to the Mine Site layout to reflect current disturbance.
- A modification to the Biodiversity Offset Strategy for the Mine to accommodate a reduction in the active impact footprint of the Mine Site.

The Proposed Modification has been lodged under Section 96(2) of the Environmental Planning and Assessment Act 1979 and is considered Integrated Development under Section 91 of that Act as

- a permit will be required under Section 138 of the Roads Act 1993 for road works undertaken on various roads; and
- a Controlled Activity Approval may also be required under Section 91 of Water Management Act 2000 if these road works occur on ‘waterfront land’.

APPROVED AND EXISTING OPERATIONS

The principal components of the approved mining operations under DA 2010/LD-00074 are as follows.

- Extraction of silver and lead bearing ore from up to four pits.
- Placement of non-ore material extracted to waste dumps located adjacent to these pits.
- Crushing, milling and processing of the ore through the on-site plant to produce silver bullion and lead concentrate.
- Disposal of tailings, within an above ground Tailings Storage Facility (TSF).
• Transportation of silver bullion and lead concentrate from the Mine to the State highway and/or rail network. The approved transport routes from the Mine are as follows.
  – Mine Site to Barrier Highway (Cobar) for the delivery of bulk materials, despatch of silver bullion and movement of personnel to and from the Mine Site (via SR 13, SR 14 and Main Road [MR] 410).
  – Mine Site to Hermidale Rail Siding for the delivery of lead concentrate (via SR 13, SR 14, MR 410, MR 461 and SR 228).
• Rehabilitation of the disturbed areas of the Mine Site as completed.

Figure B provides the layout of the Mine Site as originally presented in the 2010 EIS.

Since the issue of DA 2010/LD-00074, two of the four pits have been developed in the locations nominated in the original EIS, with waste rock placed within waste dumps constructed in locations largely in accordance with EIS designs.

The final locations of the ROM Pad, processing plant area and associated buildings, and the TSF have, however, been modified to prevent sterilisation of additional resources and to take advantage of topographic features. Other modifications to Mine Site layout as presented in the EIS include the following.

• Construction of a temporary stockpile of hard rock materials adjacent to the primary north-south haul road.
• Construction of temporary stockpiles of limestone, clay and low grade ore, to the south of Manuka Pit (but predominantly within an area identified for the Manuka Waste Dump and soil and vegetation stockpiles).

• Construction of a more direct access road from SR 13, using the existing Manuka property access road, to the Mine.

Figure C identifies the layout of the Mine incorporating these modifications.

In addition to the noted modification to Mine Site layout, operations have been varied by the former and current operator of the Mine as follows.

• Diesel fuel, as opposed to natural gas, is the source for power generation. This has no material impact on Mine operations as the movement of diesel carrying trucks replaces those previously nominated to transport natural gas.

• The production of a lead concentrate does not form part of the operating processing circuit.

• The development of Belah and Bimble Pits is unlikely to proceed in the short-term due to lower than anticipated recovery of silver, non-recovery of lead and deflated commodity prices. This has ramifications for the offsetting requirements of DA 2010/LD-00074.

THE PROPOSED MODIFICATION

Mine Site Layout Amendment

The location, size, shape or alignment of certain aspects of the Mine vary slightly from the concept designs presented in the EIS. The Proposed Modification would provide for an updated Mine Site layout to be referenced such that it is consistent with the as-constructed layout.
Figure B
Approved Mine Site Layout

REFERENCE
- Project Site Boundary (As presented in RWC, 2010)
- Pit Boundary
- Waste Rock Emplacement Boundary
- Processing Plant and Office Area Boundary
- Topsoil Stockpile Boundary
- Tailings Storage Facility Boundary
- Mine Access Road
- Internal Haul Road

SCALE 1:25 000 (A4)

Source: Source: ASTER GDEM (http://asterweb.gsfc.nasa.gov/gdem.asp)
Figure C

MODIFIED MINE SITE LAYOUT

REFERENCE
- Mine Site Boundary (ML1659)
- Pit Boundary
- Waste Dump Boundary
- Other Disturbance
- Temporary Stockpile Boundary
  (Material to be removed)
- Tailings Storage Facility Boundary
- Additional Approved Development
- Watercourse / Drainage Line
- Clean Water Diversion Drain
- Dirty Water Diversion Drain
- Sediment Basin

SCALE 1:20 000 (A4)

Figure C
Figure C reflects the as-constructed layout of those aspects of the Mine that have commenced and the as-approved layout of those aspects that have yet to commence. Principal differences include the following.

- The Manuka and Boundary Pits, and associated waste dumps, are of slightly different shapes to those presented in the EIS.
- The ROM Pad, Processing Plant and Office Area occur closer to the TSF and are of different dimensions to the approved area.
- The TSF, while of approximately the same area, is of a different shape which better reflects the surrounding topography.
- Temporary stockpile areas of hard rock, low grade ore, and clay have been created.
- Ancillary infrastructure, including the site access road, internal haul roads and surface water management structures, have been modified.
- The Bimble and Belah Pits, and associated waste dumps have yet to be constructed and therefore remain generally in accordance with the approved layout.

The total impact areas associated with these modified features are, however, equivalent to the areas identified in the EIS and approved by DA 2010/LD-00074.

Transportation of Mt Boppy Ore

At the Mt Boppy Mine, 60t capacity AB-triple road trains would be loaded and exit via Gilgunnia – Canbelego Road. The laden trucks would turn left onto the Barrier Highway (SH 8), left onto MR 410, right onto SR 14, left onto SR 13 and right onto the Mine Access Road (see Figure D). Unladen trucks would depart the Manuka Mine and travel in the reverse direction. Occasionally, trucks returning to the Mt Boppy Mine would be back loaded with waste rock or other material for use in road maintenance or rehabilitation operations.

The Applicant proposes to undertake transportation continuously over two 12hr shifts per day, although haulage would cease during wet weather or when the road surface of SR 13 and SR 14 remain wet. Based on the use of up to five dedicated road train sets¹, a maximum of 20 trips or 40 movements, transporting approximately 1 200t ore, would be made each day.

Approval for the Mt Boppy Mine to intersection of MR 410 with The Peak Way is to be approved by DA 2011/LD-00070 (as modified). Approval for the remainder of the transport route is the subject of this Proposed Modification (see Figure D).

Processing of Mt Boppy Ore

The same processing circuit used to process the silver bearing ore of the Manuka Mine would, with minor modification, be used to process the gold bearing Mt Boppy ore. The tailings material generated by the processing operations would be discharged to the existing TSF, which has sufficient capacity to accept the approximately 1 000 000t of tailings that would be produced.

¹ Two road trains would be operated initially, increasing to five by January 2016. An additional road train would be operated as required if road closures due to wet weather or repairs requires the Applicant to "catch-up" on the transport schedule.
While the tailings produced by the processing of the two ores would have different physical and chemical characteristics, the design parameters of the TSF (as designed and constructed) do not require modification. An additional lift of the approved TSF would be required and therefore to ensure that tailings generated from the Mt Boppy ore are appropriately managed.

- Undertake construction in accordance with the approved design.
- Undertake appropriate QA/QC testing of the floor, embankment and lining materials to confirm these achieve the nominated design specifications.

**Biodiversity Offset Strategy**

On the basis of the reduced disturbance footprint of the Mine, the Applicant proposes a revised Biodiversity Offset Strategy (BOS) which complies with the nominated 2:1 offset ratio required by DA 2010/LD-00074.

The revised BOS would include an area of 410ha, of the same vegetation to be disturbed, on the “Manuka” property to the northeast of the Mine Site (see Figure E). The Applicant proposes to secure, conserve and maintain this area, and a separate area containing Aboriginal Site #34-1-0008, through a variation to the Property Vegetation Plan (PVP) held over the “Manuka” property.

**IDENTIFICATION AND PRIORITISATION OF ISSUES**

In order to undertake a comprehensive assessment of the Proposed Modification, appropriate emphasis needs to be placed on those issues likely to be of greatest significance to the local environment, neighbouring landowners and the wider community.

Issue identification was completed through a combination of the following methods.

- Consideration of the local environmental setting.
- Identification of environmental features which could be affected by the proposed modifications.
- Consideration of the environmental performance at the Mine.
- Consideration of the environmental issues of concern or relevance raised during consultation.
- The experience of Mine personnel and author of this SoEE.

On the basis of frequency of identification, potential consequence of impact, existing safeguards and controls, and relevance to the Proposed Modification, it has been identified that only the following environmental parameters could be adversely affected and therefore require detailed assessment.

- Traffic and transport.
- Noise and vibration.
- Air quality (dust).
- Biodiversity (offsets).

The socio-economic effects of the Proposed Modification are also considered relevant to the assessment.

**ASSESSMENT OF IMPACTS, EVALUATION AND JUSTIFICATION**

**Traffic and Transportation**

A Traffic Impact Assessment, considering the potential impacts of the Proposed Modification to road condition and intersection performance was commissioned by the Applicant. The Traffic Impact Assessment Report provided recommendations as to the mitigation of potential impacts through road and intersection upgrade and maintenance.
The Applicant contends that with the implementation of appropriate road and intersection upgrades, and establishment of an appropriate road maintenance agreement with Council, transportation using 60t-capacity AB-triple road trains could be undertaken without adverse impact on the local and main roads of the transportation route and without unacceptable impact on other road users.

Noise
An assessment of the road traffic noise and vibration has confirmed that the proposed transportation could be undertaken without exceeding total traffic, relative increase or sleep disturbance noise criteria at the closest residential receiver. The assessment also confirms that vibration would be imperceptible at this closest receiver.

Dust Emissions
The use of a binding agent on the section of SR 14 adjacent to the “Yarranvale” property residence has been negotiated with the owner of that property and is likely to be effective in managing nuisance dust emissions.

Biodiversity
A revised BOS has been prepared and reviewed against the Condition 32 of DA 2010/LD-00074, and the Interim Policy for Assessing and Offsetting Biodiversity Impacts of ‘State Significant Development’ (OEH, 2011). Notably, the revised BOS achieves the nominated 2:1 offset ratio required by Condition 32, contains the same Biometric Vegetation Type as has been disturbed, and would be enforceable and secured in the long-term through management as part of the “Manuka” property PVP. The revised BOS therefore achieves an acceptable outcome in accordance with guidelines produced by the NSW Office of Environment & Heritage.

Socio-economic Considerations
The continued operation and employment generated by the Proposed Modification would impact positively on the Cobar LGA. Notably, the additional employment of up to 10 truck drivers and transition to a drive-in, drive-out operation would increase the total number of employees drawn from the Cobar LGA. This would in turn positively impact on other local businesses as wages earned at the Mine are spent locally.

Furthermore, given the reliance of the Cobar LGA on the mining industry, the confirmation of a continued 18 to 30 months operation at the Manuka Mine (associated with the processing of Mt Boppy ore) would have a positive impact on local morale and outlook.

CONCLUSION
Based on the implementation of proposed operational controls and management measures, it is assessed that the Proposed Modification would be undertaken in a manner that would satisfy all relevant statutory goals and criteria, environmental objectives and reasonable community expectations.

- The transportation of ore could be undertaken, subject to selective upgrading of SR 13, SR 14 and intersections and ongoing maintenance, without unacceptable impact on these local roads or other road users.
- All road noise levels associated with Mine-related transportation are predicted to be compliant with road noise criteria.
- A revised Biodiversity Offset Strategy, reflecting the reduced current impact footprint, would achieve a Tier 3: Mitigated Net Loss outcome.
• Impacts of the Mine on other environmental parameters would not change from those already approved.

• The Proposed Modification would result in beneficial impacts such as employment and expenditure on services.
1. INTRODUCTION

1.1 SCOPE

This Statement of Environmental Effects (SoEE) has been prepared by R.W. Corkery & Co. Pty Limited (RWC) on behalf of Black Oak Minerals Limited (“the Applicant”) to accompany an application to Cobar Shire Council (“Council”) to modify Development Consent DA 2010/LD-00074 (“the Proposed Modification”) for the Manuka Mine (“the Mine”). A copy of the application form and the development consent are presented as Appendices 1 and 2 respectively. The Mine is located approximately 85km south of Cobar NSW (Figure 1).

The principal components of the Proposed Modification are as follows.

- The transportation, importation and processing of ore from the Mt Boppy Mine at Canbelego (see Figure 1), via the Barrier Highway, Kidman Way, Manuka-Yarranvale Road (Shire Road 14) and Bedooba Road (Shire Road 13).
- Minor modifications to the Mine Site layout to reflect current disturbance.
- A modification to the Biodiversity Offset Strategy (BOS) for the Mine to accommodate a reduction in the active impact footprint of the Mine Site.

A second application to modify DA 2010/LD-00074 to permit disposal of tailings from the processing of ore within a completed pit of the Mine is also in preparation. However, investigations into the design and anticipated impacts of in-pit tailings placement are ongoing and constraints in relation to the timing of commencement of importation of Mt Boppy ore necessitate that the applications be submitted separately. In the event that an application to permit in-pit tailings placement is not submitted or is not approved, tailings generated by the Mt Boppy ore would be placed within the existing, approved Tailings Storage Facility (TSF).

The Mine is Designated Development in accordance with the provisions of Schedule 3(1) of the Environmental Planning and Assessment Regulation 2000 (EP&A Reg) and the Proposed Modification is lodged under Section 96(2) of the Environmental Planning and Assessment Act 1979 (EP&A Act) as it represents “substantially the same development as the development for which consent was originally granted”. The Mine was identified as Regional Development in accordance with Schedule 4A of the EP&A Act when originally assessed, and as a result determination of the Proposed Modification will be made by the Joint Regional Planning Panel (JRPP) (Western Region). Council will manage the receipt and assessment of the application. The Proposed Modification is also identified as

The Proposed Modification is also recognised under Section 91 of the EP&A Act as Integrated development as the following additional approvals are required.

- A permit under Section 138 of the Roads Act 1993 for road works undertaken on Shire Road (SR) 13 (Cobar-Bedooba Road), SR 14 (Manuka-Yarranvale Road) or Main Road (MR) 410 (Kidman Way) from the relevant roads authority(ies), namely Council and the NSW Roads and Maritime Service (RMS).
Figure 1
LOCALITY PLAN

REFERENCE
- Mine Site Boundary (ML1659)
- "Manuka" Property Boundary
- Main Road
- Shire/Local Road (Sealed/Unsealed)
- Railway Line
- Watercourse

SCALE 1:1 500 000 (A4)

See Detail 1 Above

Mine Site Boundary (ML1659)
"Manuka" Property Boundary
Main Road
Shire/Local Road (Sealed/Unsealed)
Railway Line
Watercourse
• A controlled activity approval under Section 91 of the Water Management Act 2000 (WM Act) from the NSW Office of Water (NOW) for road works which traverse waterfront land (as defined by the WM Act).^2

While other integrated approvals are held by the Applicant (refer to Section 1.4.1), notably Environment Protection Licence (EPL) 20020 (issued by the NSW Environment Protection Authority [EPA] under the Protection of the Environment Operations Act 1997) and Mining Lease (ML) 1659 (issued by the Minister for Resources & Energy under the Mining Act 1992), these do not require variation or modification as a consequence of the Proposed Modification.

This SoEE describes the proposed changes to transportation and related on-site operations, identifies and describes the relevant features of the existing environment within and surrounding the Mine that may be affected, and assesses the environmental effects of the Proposed Modification after a range of environmental safeguards are adopted.

The contents of this document also reflect the results of consultation with Council, other government agencies and potentially affected local stakeholders. Copies of the correspondence received documenting assessment requirements are presented in full as Appendix 3, and summarised in Section 1.5.

1.2 FORMAT OF THE STATEMENT

This SoEE has been prepared in five sections together with references and a set of appendices.

Section 1: Introduces the Proposed Modification and the Applicant and briefly reviews the background to the Proposed Modification, the approved operations of the Mine, consultation undertaken and management of investigations.

Section 2: Describes the Proposed Modification in detail and highlights where it differs from the currently approved operation. This section also provides an overview of the revised BOS and planned rehabilitation of the Mine.

Section 3: Describes how issues for assessment were identified through consideration of the local environmental setting, results of consultation, environmental performance and the experience of the author, and prioritised through a review of potential impacts and constraints.

Section 4: Describes and presents the assessment of specific environmental impacts arising from the Proposed Modification and management measures that the Applicant has incorporated into the Proposed Modification to minimise impact on the biophysical, social and economic environment, surrounding the Mine.

Section 5: Provides an evaluation of the Proposed Modification with respect to the relevant planning instruments and provides a justification of the Proposed Modification with respect to biophysical, economic and social considerations.

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^2 While the road would continue to be managed by the road (public) authority, as the works would be undertaken in accordance with the Proposed Modification (to DA 2010/LD-00074), it is understood the Applicant would not be exempt from the requirement for the approval.
References: Provides a list of documents that were referenced during the preparation of this document.

The document concludes with a set of appendices as follows.

Appendix 1: A copy of the application to modify Development Consent DA 2010/LD-00074.

Appendix 2: A copy of DA 2010/LD-00074 as currently approved.

Appendix 3: A copy of correspondence with Cobar Shire Council and the various government agencies regarding assessment requirements for the Proposed Modification.

Appendix 4: A copy of a Road Noise and Vibration Assessment undertaken for the Proposed Modification by Mr Nathan Archer of SLR Consulting Pty Limited.

Appendix 5: A copy of a Traffic Impact Assessment undertaken for the Proposed Modification by Mr Michael Bloem of Constructive Solutions Pty Limited.

Appendix 6: A copy of the draft BOS prepared by OzArk Environment & Heritage Management Pty Limited in conjunction with RWC and submitted to the NSW Office of Environment & Heritage and NSW Local Land Services for review.

Appendix 7: A copy of the Stormwater Management Scheme for the Mine, recently updated and submitted to the NSW Environment Protection Authority (RWC, 2015).

1.3 THE APPLICANT

Polymetals Mining Ltd was incorporated in 1986, publicly listed in May 2011 and merged with Southern Cross Goldfields Limited in 2013. Southern Cross Goldfields Limited subsequently changed its name to Black Oak Minerals Limited in December 2014. For the purposes of this document, these Companies are collectively referred to as the “Applicant”.

DA 2010/LD-00074 was granted for the Mine (then known as Wonawinta Silver Mine) in 2011 and mining and processing commenced in 2012. Prior to the issue of the development consent there was no history of mining or extractive industry on the Mine Site or surrounding land.

In September 2014, the Applicant acquired the Mine with the objective of recovering and processing the remaining ore contained on the ROM pad, other stockpiles and the two open cuts. An opportunity was identified to utilise, with some modification, the existing processing infrastructure at the Manuka Mine to process ore from the Mt Boppy Mine.

In consolidating the two mining operations, a range of aspects relating to the existing approved operations require modification. These are described in detail in Section 2.
1.4 OVERVIEW OF EXISTING OPERATIONS

1.4.1 Existing Approvals

Table 1 provides a summary of the relevant consents, authorisations and licences held by the Applicant for the Mine.

<table>
<thead>
<tr>
<th>Approval/Lease/Licence</th>
<th>Issue Date</th>
<th>Expiry Date</th>
<th>Details / Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Development Approvals</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DA 2010/LD-00074</td>
<td>1 June 2011</td>
<td>2 June 2016</td>
<td>Development Consent granted by Cobar Shire Council. Modifications revising Conditions 1, 13 and 27 and adding conditions 37 to 43 approved 29 February 2012.</td>
</tr>
<tr>
<td>Mining Authorisations</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ML1659</td>
<td>23 November 2011</td>
<td>23 November 2032</td>
<td>Incorporating 923.8ha for mining of copper, gold, lead, silver and zinc.</td>
</tr>
<tr>
<td>EL6155</td>
<td>17 November 2003</td>
<td>16 November 2015</td>
<td>Incorporating 5 units for exploration of Group 1 minerals. Renewed 20 December 2012.</td>
</tr>
<tr>
<td>EL7515</td>
<td>7 April 2010</td>
<td>7 April 2017</td>
<td>Incorporating 5 units for exploration of Group 1 minerals. Renewed 17 September 2014.</td>
</tr>
<tr>
<td>Other Approvals &amp; Licences</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AHIP 1131690</td>
<td>13 May 2012</td>
<td>14 May 2017</td>
<td>Impact to Aboriginal objects from construction of Mine.</td>
</tr>
<tr>
<td>Water Access Licence 30322</td>
<td>28 November 2012</td>
<td>Not Applicable</td>
<td>Issued by NOW providing entitlement to 750ML from the Kanmantoo Fold Belt MDB Groundwater Source.</td>
</tr>
</tbody>
</table>

In accordance with DA 2010/LD-00074, the Applicant has approval for the following activities on ML 1659.

- Extraction of silver and lead bearing ore from up to four pits, identified as Boundary, Manuka, Belah and Bimble Pits.
- Placement of non-ore material extracted to waste rock emplacements located adjacent to these pits.
- Crushing, milling and processing of the ore to produce silver doré / bullion and lead concentrate. The processing operations require the addition of water which is sourced from a bore field located approximately 4km to the south on the “Wirlong” property, transferred by pipe to the Mine Site and stored within a HDPE lined processing pond within the Processing Plant and Office Area.

- Disposal of processing waste, tailings, within an above ground TSF to be constructed as progressive upstream lifts to a maximum height of 279.5m AHD. At full capacity, the TSF has storage capacity for approximately 8Mt of tailings.

- Transportation of silver doré / bullion and lead concentrate from the Mine to the State highway and/or rail network. The approved transport routes from the Mine are as follows.
  - Mine Site to Barrier Highway (Cobar) for the delivery of bulk materials, despatch of silver bullion and movement of personnel to and from the Mine Site.
    - SR 13 (Cobar-Bedooba Road): 6km.
    - SR 14 (Manuka-Yarravale Road): 25km.
    - MR 410 (Kidman Way): 75km.
  - Mine Site to Hermidale Rail Siding for the delivery of lead concentrate.
    - SR 13 (Cobar-Bedooba Road): 6km.
    - SR 14 (Manuka-Yarravale Road): 25km.
    - MR 410 (Kidman Way): 10km.
    - MR 461 (Priory Tank Road): 31km.
    - SR/MR 228 (Nymagee-Hermidale Road): 75km.

A third transport route for the transport of natural gas to the Mine Site was also approved, however, has not been required (refer to Section 1.4.3).

- Rehabilitation of the Mine involving decommissioning and removal of Mine Site infrastructure, some backfilling of the completed pits and profiling of the retained voids and above waste management structures (waste dumps and TSF).

**Figure 2** provides the layout of the Mine Site as originally presented in the original EIS (RWC, 2010).

Off ML 1659 and separate to DA 2010/LD-00074, the Applicant operates a temporary mining camp facility for the accommodation of the mine workforce and an airstrip previously operated to transfer personnel to and from the Mine.
1.4.2 History of Mining Operations (2011 – 2014)

Following the issue of DA 2010/LD-00074, ML 1659 and EPL 20020, the Mine was operated by Cobar Consolidated Resources Limited (CCR). During that period, two of the four pits were developed, and associated waste dumps constructed, in locations approximating those nominated in RWC (2010).

As a result of further resource definition and exploration / sterilisation drilling results, which identified a potential resource in the general vicinity of the ROM Pad, Processing Plant and Office Area, some modification to the layout of these was made. The final shape and layout of the TSF was also modified to better account for local ground and topographic conditions, as well as the modified location of the ROM Pad and Processing Plant and Office Area. Other modifications to Mine Site layout included:

- Construction of a temporary stockpile of hard rock materials (for on-site construction works and road maintenance) adjacent to the primary north-south haul road of the Mine.
- Construction of temporary stockpiles, accessed by a ring road of the primary north-south haul road, to the south of Manuka Pit but predominantly within an area identified for the Manuka Waste Dump and soil / vegetation stockpiles by RWC (2010).
- Construction of a more direct access road from SR 13, using the existing Manuka property access road, to the Mine.

Figure 3 identifies the layout of the Mine incorporating these modifications, both on a base map representing the pre-mining environment and an aerial photo base identifying all current disturbance.

It is noted that these modifications do not increase the overall disturbance footprint of the Mine as assessed by RWC (2010), nor encroach upon or disturb sensitive areas of the Mine Site, e.g. threatened biota or Aboriginal sites not already identified within the impact footprint, and have subsequently been incorporated into successive MOPs submitted to, and approved by DRE.

Mining and processing operations on the Mine Site by the former operator continued until March 2014 when CCR was placed into administration. At this time the Mine was placed under care and maintenance with mining and processing operations suspended. Following a period of assessment where prospective options for continued trading of CCR were reviewed, the Mine was purchased by the Applicant as a liquidated asset (refer to Section 1.3) with all leases and licences transferred by November 2014.

Following completion to the satisfaction of the EPA of surface water management works required by a Pollution Reduction Program issued under EPL 20020 to the former operator, mining and processing recommenced at the Mine in February 2015. Since acquiring, and now operating the Mine, the Applicant has identified a number of conditional requirements which were not completed, or not completed satisfactorily by the former operator. These are discussed further in Section 1.4.4 and form the basis for several proposed modifications to the development consent.
1.4.3 Current Mine Operations

The Mine is currently operating within ML 1659 in accordance with a Mining Operations Plan (MOP) approved until September 2015 (RWC, 2012c). In considering the approved mining operations, current mine plans provide for several variations.

- Following a review of power requirements for the Mine, it was determined that diesel fuel would be a more appropriate source for power generation than natural gas. As a result, access to and from a natural gas supply and associated truck movements has not been required. These truck movements have been replaced by diesel fuel tankers using the Cobar – Mine Site transport route (see Section 1.4.1) which has been approved by Council for use by AB-triple road trains (pers. comm. T. Lowien).

- Following commencement of processing operations, it became apparent that the recovery of lead concentrate would not be economic and hence this has never formed part of the mining or processing operations. Approval to recover and produce a lead concentrate is retained, however, this is considered unlikely in the short term and if feasible in the future likely involve a reprocessing of tailings.

- While approval is retained for the mining of Belah and Bimble Pits (see Figure 2), it is unlikely these will be developed in the short-term due to lower than anticipated recovery of silver, non-recovery of lead and deflated commodity prices.

As a result, the Applicant proposes to mine and process the remaining ore recovered from the Manuka Pit and various low grade stockpiles located on the Mine Site. Once complete, any remaining stockpiles of low grade or other material which cannot be economically processed will be either placed within the completed pits as backfill or on the waste dumps and rehabilitated in accordance with the current MOP (RWC, 2012c). Without importation of ore from the Mt Boppy Mine, it is likely that mining and processing would be completed by September or October 2015, with rehabilitation continued until complete to the satisfaction of the Division of Resources & Energy (DRE) (of the Department of Trade & Investment, Regional Infrastructure & Services [NSW T&I]).

In consideration of the above, and the modifications to Mine layout identified in Section 1.4.2, the impact footprint identified on Figure 3 represents the maximum disturbance footprint of the Mine until further decisions are made on the development of Belah and Bimble Pits. As is discussed further in Section 2.6, the Applicant has recently proposed to use this reduced disturbance footprint as the basis for a revised BOS, as required by Condition 32 of DA 2010/LD-00074, with future disturbance on the Mine Site to be dependent on an increase in the value or area of biodiversity conserved by this strategy.
1.4.4 Environmental Performance

1.4.4.1 Complaints

An appreciation of the standard of environmental performance, from the community’s perspective, is often gauged through any complaints received directly or through the EPA or Council. Non-compliances with operating conditions are also an indication of environmental performance.

Operations at the Mine have not been a significant source of complaint since commencement of operations in 2012, with Annual Environmental Management Reports (AEMRs) prepared by the former operator not identifying any complaints received.

Council have subsequently noted that complaints have been received in relation to the impact of mine-related traffic on local roads. The Applicant acknowledges that additional upgrade and maintenance is likely to be required to ensure that the heavy vehicle traffic generated by the Proposed Modification does not adversely affect the quality and performance of local roads. This SoEE considers the effect of heavy vehicle traffic and provides recommendations as to how this could be managed to achieve this objective.

1.4.4.2 Environmental Incidents and Notices

The Mine has been the subject of several notices from the NSW EPA in relation to various aspects of the operation. Notable notices include the following.

Notice to Provide Information and/or Records (Notice Number 1507590)

On 27 July 2012, the EPA requested information in relation to the commencement of scheduled activities at the Mine prior to the addition of these scheduled activities to EPL 20020. At the time, the operator acknowledged that there had been erroneous understanding that the EPL issued for scheduled development work approved the mining and processing of ore at the Mine.

Notice of Variation of Licence No. 20020 (Notice Number 1511987)

Following attendance at an AEMR meeting on 7 March 2013 and subsequent field investigation, the EPA identified the need for a comprehensive review of surface water management on the site. A Pollution Reduction Program (PRP) condition was added to EPL 20020 on 12 April 2013.

The former operator commissioned TGM Management Pty Ltd to review the status of surface water management against the *Erosion and Sediment Control Plan* (ESCP) prepared for the Mine (RWC, 2012b). In accordance with the PRP, features of the ESCP which had not been constructed or implemented as designed, remained incomplete, or required modification were identified. A report entitled “Wonawinta Mine Manuka Station Water Management Report” (TGM, 2013) was prepared in May 2013 and provided to the EPA. Remedial works were commenced, however, no schedule for completion was provided as a request for confirmation (from the EPA) that the recommendations included in TGM (2013) were to satisfactory was not received.
Notice of Clean-up Action (Notice Number 1521692)

Following a field inspection of the Mine on 23 April 2014, the NSW EPA noted overflows from surface water drains had led to the discharge of sediment to surrounding land in at least two locations. The EPA subsequently issued the operator with Clean-up Notice No. 1521692 requiring the sediment be cleaned up and a report provided nominating completion of the works recommended by TGM (2013).

The former operator again commissioned TGM to review the status of surface water management works and the report “Wonawinta Mine Manuka Station Review of Site Water Management Report” was submitted to the EPA on 27 June 2014 (TGM, 2014).

Notice of Variation of Licence No. 20020 (Notice Number 1523376)

On the basis that TGM (2014) identified several structures as incomplete, the EPA proposed (on 29 August 2014) and then completed a variation of EPL 20020 (on 15 September 2014) to revise the PRP condition which restricted any operation at the Mine until the outstanding works were complete. Notably, the Mine was being managed under care and maintenance at this time (as noted to the EPA by the Mine administrators on 10 July 2014). On acquiring the Mine, the Applicant undertook to complete the outstanding surface water management works in accordance with the PRP and confirmed completion of these works in reports submitted to the EPA on 13 January and 20 January 2015.

1.4.4.3 Compliance

Prior to the previous operator entering administration and acquisition of the Mine by the Applicant, Council personnel completed an audit of compliance of the operation against the conditions of DA 2010/LD-00074. A number of non-compliances were identified and are identified below along with reference to actions proposed or underway to return the Mine to compliance. In a number of cases, the Proposed Modification provides for a review of the condition and ‘resetting’ of compliance requirement.

- **Condition 1.** Council identified variations to the layout of the Mine, compared to EIS designs as discussed in Sections 1.4.2 and 1.4.3.

  The Applicant considers that the Proposed Modification allows for the existing disturbance footprint, which is no larger and does not impact on any additional sensitive areas, to be adopted for the purpose of DA 2010/LD-00074.

- **Condition 4.** A Section 138 Permit has not been obtained for works on SR 13 or SR 14.

  Based on the proposed increase in heavy vehicle traffic travelling on these roads, the Proposed Modification provides for a review of upgrade and maintenance requirements which will instruct on the requirement and form of a Section 138 Permit. Ultimately, it is recommended that the Applicant and Council enter into a binding agreement, possibly in the form of a Voluntary Planning Agreement (VPA), for any road works and maintenance requirements.

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3 The second report was in response to a request from the EPA dated 19 January for further clarity on the completion of some works.
- **Condition 7.** Council has advised that surface water management on the Mine Site does not achieve compliance with the requirements to “implement all practicable measures to prevent or minimise harm to the environment during the construction and operation of the development”.

As discussed under the sub-heading of Environmental Incidents and Notices above, the Applicant has now completed the requirements of a PRP issued to ensure that surface water management on the Mine Site is adequate.

- **Condition 8.** Council notes that complaints received in relation to the impact on mine traffic on local roads constitutes a non-compliance against this condition which requires “No nuisance or interference with the amenity of the area is to be created by reason of any process or operation on the premises”.

As noted under the sub-heading of Complaints above, this SoEE aims to review the potential impacts of additional heavy vehicle traffic on local roads and recommend measures to minimise and mitigate these impacts.

- **Condition 10.** Council notes a Bushfire Management Plan (BFMP) has been submitted but notes it is inconsistent with the NSW Rural Fire Service’s (RFS) requirements relating to Bush Fire Management Plans.

While this technically does not represent a non-compliance as the condition does not require the BFMP to be prepared in accordance with any RFS guidelines, the Applicant will review and update the BFMP, addressing the RFS guidelines and reflecting the current Mine Site layout.

- **Conditions 11 and 12.** These conditions note the former operator did not provide advice to Council at least 5 days before commencing development work at the Mine, nor provide Council with a Pre-Commencement of Work Compliance Report.

These conditions cannot be complied with in their current form, however, modification to reflect any changes resultant from approval of the Proposed Modification would allow the Applicant to comply.

- **Condition 13.** This condition requires the Applicant consult with Bogan Shire Council prior to using MR 228 for the purpose of lead concentrate transport.

MR 228 is no longer likely to be used by the Applicant and it is recommended that this condition be modified to add text which confirms consultation and agreement is only required prior to use of this road for the purpose of haulage.

- **Condition 14.** Council have identified that consultation required in relation to the development of a Community Enhancement Program, has not been undertaken.

As the main source of impact on Council maintained infrastructure and services will be to SR 13 and SR 14, it is recommended that this condition be modified to reference the establishment for road upgrade and maintenance requirements.
• **Condition 18.** Council questions whether the Applicant has complied with the requirement to apply for, and obtain an Aboriginal Heritage Impact Permit (AHIP) for all Aboriginal sites to be impacted.

As noted in Table 1, AHIPs 1131690 and 1131993 have been issued.

• **Condition 21.** Council has identified the installation and operation of sewerage management systems has been carried out without prior approval pursuant to Section 68 of the *Local Government Act 1993*.

The Applicant acknowledges the requirement to obtain the approval but notes that the facility is located at the mining camp beyond the limit of DA 2010/LD-00074.

• **Conditions 22 to 29, 37 and 39.** Council notes the various conditional requirements revolving around road and intersection upgrades, establishment of a bus service and the management of mine traffic through a Driver Code of Conduct have not been completed.

Notably, a bus service no longer forms part of the operation, replaced by a drive-in drive-out roster (8 days on, 6 days off).

With respect to the remaining conditions, this SoEE reviews the requirements for road and intersection upgrade and maintenance and it is suggested that these conditions be reviewed and modified in light of the Proposed Modification.

• **Conditions 30 and 31.** These conditions note the former operator did not provide advice to Council at least 5 days before commencing mining at the Mine, nor provide Council with a *Pre-Mining Operations Compliance Report*.

These conditions cannot be complied with in their current form and are no longer considered relevant. It is suggested these conditions be removed.

• **Conditions 32 to 34.** Council notes the requirement to prepare a BOS, secure the area included in the BOS and prepare and implement a Biodiversity Offset Management Plan have not been completed.

A BOS was submitted to Council for review prior to the date nominated (31 December 2011), however, Council has since advised, as part of Council compliance review completed in 2014, that it did not satisfy Council’s requirements (specifically in relation to demonstration of consultation). At the time, the former operator considered the consultation undertaken as part of the EIS in which the quantum of the biodiversity offset was established satisfied this conditions.

The above notwithstanding, a new BOS has been prepared and consultation with the NSW Office of Environment & Heritage (OEH) and Local Land Services (LLS) undertaken by providing the draft for review and comment. This BOS reflects the revised disturbance footprint of the Mine and proposes security through creation as a Conservation PVP. Once OEH and LLS have completed their review, the BOS will be updated and provided to Council for acceptance. It is anticipated this will occur prior to the determination of the Proposed
Modification with the opportunity to modify the conditions to reflect determination of the Proposed Modification and modified (current) impact footprint.

- **Condition 41.** Council notes that works required to upgrade the entrance to the Mine had not been completed at the time of review.
  
The requirement for these works are reviewed as part of this SoEE.

- **Condition 42.** Council notes that an inspection of the Mine Access Road has not been completed.

  It is noted the condition references the former operator, as well as Council. The Applicant considers the works completed and welcomes an inspection by Council to confirm.

The Applicant acknowledges the number and significance of the noted non-compliances, however, notes the opportunity provided by the Proposed Modification to ensure that compliance can be achieved for all conditions within a reasonable period.

1.5 CONSULTATION

1.5.1 Government Agency Consultation

1.5.1.1 Cobar Shire Council

The Applicant has regularly consulted with Council over the recommencement and modification to operations at the Mine since acquisition in September 2014.

On 24 February 2015, the Applicant formerly notified Council of the intention to lodge an application to modify DA 2011/LD-00074. As part of this notification, the Applicant supplied Council with a Project Overview which identified the key components of the Proposed Modification, proposed application of Section 96(2) of the EP&A Act, likely government stakeholders and critical environmental considerations to be assessed in the SoEE.

In subsequent correspondence received on 10 March 2015, Council confirmed that the application could be made under Section 96(2) of the EP&A Act, confirmed that an SoEE was the appropriate documentation to accompany the application, and agreed that the Applicant should consult each government agency directly to obtain specific assessment requirements. Council also noted some uncertainty over the role of the Joint Regional Planning Panel (JRPP) in determining the application, however, subsequent correspondence with the Department of Planning & Environment (Dubbo office) and the JRPP confirmed that the application would be determined by the JRPP following assessment and recommendation by Council.

Also in the correspondence received on 10 March 2015, Council referenced Clause 228 of the Environmental Planning & Assessment Regulation 2000 (EP&A Reg) as providing guidance on the content of the environmental assessment documentation. Specifically, Council requested the SoEE provide detail on the likely impacts of the Proposed Modification on relevant roads and the necessary upgrade and maintenance requirements of these.
1.5.1.2 Other Government Agencies and Authorities

Table 2 provides a summary of the agencies contacted including whether a response and/or assessment requirements were provided.

<table>
<thead>
<tr>
<th>Agency</th>
<th>Response Received</th>
<th>Assessment Requirements Provided</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cobar Shire Council</td>
<td>10/03/15</td>
<td>Yes</td>
</tr>
<tr>
<td>Division of Resources and Energy</td>
<td>25/03/15</td>
<td>Yes</td>
</tr>
<tr>
<td>Environmental Protection Authority</td>
<td>16/03/15</td>
<td>Yes</td>
</tr>
<tr>
<td>Office of Environment and Heritage</td>
<td>24/03/15</td>
<td>Yes</td>
</tr>
<tr>
<td>NSW Office of Water</td>
<td>13/03/15</td>
<td>Yes</td>
</tr>
<tr>
<td>Roads and Maritime Service</td>
<td>24/03/15</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Note 1: Refer to Section 1.5.1.1

The following describes the consultation undertaken with each of these government agencies and authorities, along with a summary of the key assessment requirements identified by each.

Environment Protection Authority

The EPA was initially consulted in 13 January 2015 requesting advice as to the critical issues related to the in-pit tailings disposal option and guidance in the form of policy or established criteria which might be applied. In responding (27 January 2015), the EPA referenced policy with respect to tailings storage facilities that these be lined to achieve a permeability of $1 \times 10^{-9}$ metres per second (m/s) or less with a compacted clay liner of at least 90 centimetres (cm) in thickness or equivalent geo-synthetic liner. Alternatively, sufficient evidence should be provided in support of this to demonstrate the construction will be adequate to prevent pollution of groundwater (e.g. geological evidence, groundwater modelling etc.). The EPA made specific reference to the presence of cyanide within the tailings to be disposed and requirement that seepage is prevented from posing a risk to groundwater and the environment.

The Applicant, accompanied by geotechnical and tailings consultant Mr Bruce Brown (Bruce Brown Consulting Pty Limited) and Mr Mitchell Bland of RWC, subsequently met with Mr Brad Tanswell of the EPA on 9 March 2015 to further describe and discuss the proposed placement of tailings in-pit. The information provided by the Applicant on the potential benefits of the in-pit disposal and minimal beneficial uses of the groundwater below the Mine Site was taken under consideration and the EPA’s position regarding the need to effectively line a in-pit disposal facility was reiterated.

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4 It is noted that when consultation was undertaken, the Proposed Modification included the proposed in-pit tailings disposal option. The descriptions of consultation and assessment requirements is restricted to that relevant to this Proposed Modification, i.e. importation of Mt Boppy ore.
The EPA provided formal advice on assessment requirements of the SoEE on 16 March 2015 (see Appendix 3). These reiterated the requirements with respect to tailings facility lining and prevention of pollution of groundwater resources, as well as identified the following additional environmental issues requiring assessment.

- Impacts on air quality.
- The impact on noise and vibration amenity particularly due to haulage of ore to the premises.
- The potential impact of water pollution on local watercourses (including water demand and management requirements).
- The impact on groundwater, including on groundwater dependent ecosystems and other water users.
- The management of cyanide.

It is considered that the last three issues raised refer primarily to the proposed in-pit disposal of tailings which no longer forms part of the Proposed Modification.

**NSW Roads and Maritime Services**

On 9 March 2015, the Applicant met with representatives of RMS to discuss the proposed haulage of ore between Mt Boppy Mine and Manuka Mine. The following issues were identified as requiring consideration in the SoEE.

- Consideration as to the designation of the proposed roads for the type of vehicle proposed.
- An assessment of lighting requirements for the intersection of Kidman Way and SR 14.
- Minimum design standards for the Kidman Way – SR 14 intersection as follows.
  - Widening of the left turn from SR14 to accommodate the swept path.
  - A minor widening of the left turn from Kidman Way.
  - Widening of the shoulder for east-bound traffic for a BAR treatment.

In correspondence received on 24 March 2015, RMS confirmed the points made in the 10 March 2015 meeting but confirmed that Kidman Way (MR410) and Barrier Highway (HW8) are designated for use by A-B Triple vehicles.

**Division of Resources & Energy**

The DRE responded to a request for feedback on assessment requirements on 25 March 2015. The correspondence received from DRE indicated that the ‘standard SEARs apply’, where the standard SEARs are taken to refer to assessment of final land use, final landform, rehabilitation and mine closure.

The DRE also identified the need for an assessment of possible sterilisation of resources, however, it is noted this comment was made with reference to the in-pit placement of tailings which does not form part of the Proposed Modification.
**NSW Office of Environment & Heritage**

Responding on 25 March 2015, OEH identified their key information requirement as:

1. impacts to Aboriginal cultural heritage objects; and
2. impacts on flora, fauna, threatened species, populations, communities and their habitats.

More specifically, OEH identified the following specific requirements.

- The possible reduction in size of the BOS was queried with further description as to what is being proposed in relation to development of the various pits required along with further discussion and justification for any reduction in the BOS.
- Completion of flora, fauna and cultural heritage assessments for all road upgrades, maintenance activities and the new pipeline (noting the reference to the new pipeline refers to that required to transfer tailings from the processing plant to the in-pit tailings disposal facility which now no longer forms part of the Proposed Modification).

**1.5.2 Community Consultation**

The Applicant met with the owner and occupier of the only residence located between the Mine and the Kidman Way on 3 May 2015, namely “Yarranvale”. The proposed haulage of ore from Mt Boppy to the Mine was discussed, including the likely scheduling of truck movements, number of truck movements each day and period over which the haulage is proposed. The owner of “Yarranvale”, Mr B.J. Harland, indicated no issue with the proposed transportation of ore on SR 14. Mr Harland did request that measures be implemented to minimise the generation of dust on SR 14 and agreed that a polymer based binding agent be used initially.

**1.5.3 Aboriginal Consultation**

No additional disturbance is proposed as part of the Proposed Modification and as a result no additional consultation with the Aboriginal community is required. Previously, the former operator of the Mine undertook consultation to establish Registered Aboriginal Parties (RAPs), field survey to identify Aboriginal sites and further discussions and inspections in the negotiation of AHIPs for the management of those sites which could not be avoided by the Mine.
1.6 MANAGEMENT OF INVESTIGATIONS

The preparation of this document has involved a study team managed by Mr Alex Irwin (BSc(Hons)), Senior Environmental Consultant of R.W. Corkery & Co. Pty Limited. Mr Mitchell Bland (BSc(Hons), MEconGeol, LLB(hons)) and Ms Lauren Clear (MEnv, BSc(Earth Science)) with the same Company assisted with preparation of this document.

Representatives from Black Oak Minerals Limited also assisted with the preparation of this document, including:

- Mr Troy Lowien, General Manager Mineral Resources and Compliance;
- Mr Peter Kelliher, Site Manager – Manuka Silver Project; and
- Mr David Sproule, Managing Director.

The following specialist studies were also undertaken by the following specialist consultancies.

- Traffic Impact Assessment – Constructive Solutions.
  - Mr Mick Bloem (BEng (Civil)).
- Road Noise and Vibration Assessment – SLR Consulting.
  - Mr Nathan Archer, BEng Civil (Hons).

In addition, Dr Alan Robertson (HND, PhD (Pure and Applied Chemistry)) of RGS Environmental provided an analysis of the geochemical properties of tailing materials produced by the Mt Boppy ore for consideration in assessing any impacts associated with placing these material in the approved TSF. Mr Phil Cameron (BSc, AssocDip AppSci) of OzArk Environmental and Heritage Management Pty Ltd has consulted on the magnitude of impact and revised biodiversity offset requirements.
2. DESCRIPTION OF THE PROPOSED MODIFICATION

2.1 INTRODUCTION

2.1.1 Objectives

The Applicant’s objectives in modifying DA 2010/LD-00074 are as follows.

- To ensure that the Mine remains compliant with existing conditions or commitments, unless modified by the Proposed Modification.
- To make a range of minor modifications to the layout of the Mine to reflect the current disturbance footprint.
- To consolidate operations at the Mine (in parallel with a separate application in relation to the Mt Boppy Mine) to create operational efficiencies that ensure the viability and longevity of both operations.
- To allow for the importation and processing of ore from the Mt Boppy Mine within the Mine Site.
- To revise the BOS to reflect current disturbance of the Mine.
- To minimise, to the maximum extent practicable, the impact on the local environment and community and other stakeholders.
- To ensure that the ongoing operation of the Mine can continue in a safe, reliable and cost-effective manner and continue to contribute to the Cobar, NSW and Commonwealth economies.

2.1.2 Overview of Proposed Modification

The principal components of the Proposed Modification are as follows.

- Minor modifications to the approved Mine Site layout to reflect the as-constructed layout.
- The transportation, importation and processing of ore from the Mt Boppy Mine
- A modification to the BOS to reflect a reduction in the active impact footprint of the Mine Site.

2.2 UPDATED MINE SITE LAYOUT

As noted in Section 1.4.2 and 1.4.3, as the Mine has been developed, certain aspects have been constructed slightly different location to those approved or with a size that is slightly larger or smaller than that approved. The purpose of this aspect of the Proposed Modification is to regularise the development consent such that it is consistent with the as-constructed layout.
Figure 4 presents the proposed amended layout which reflects the as-constructed layout of those aspects of the Mine that have commenced and the as-approved layout of those aspects that have yet to commence. Principal differences include the following.

- The Manuka and Boundary Pits and associated waste dumps, while generally in the approved location, are slightly different shapes to those approved.
- The Bimble and Belah Pits and associated waste dumps have yet to be constructed and are generally in accordance with the approved layout.
- The Processing Plant and Office Area occur closer to the TSF and are of different dimensions to the approved area.
- The TSF, while of approximately the same area, is of a different shape which better reflects the surrounding topography.
- Temporary stockpile areas of hard rock (for on-site road maintenance and construction), low grade ore (awaiting processing), and clay (for future capping and rehabilitation) have been created. Several of these occur within the impact footprint of waste dumps or soil stockpiles.
- The locations of soil stockpiles are slightly modified from that originally proposed.
- Ancillary infrastructure, including the site access road and internal haul roads and surface water management structures, have been modified since the approval of DA 2010/LD-00074.

Table 3 presents the estimated areas of each of the above approved, constructed and proposed (but yet to be constructed) components.

<table>
<thead>
<tr>
<th>Component</th>
<th>Approved Area (ha)</th>
<th>As-constructed (ha)</th>
<th>Proposed Area (ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pits</td>
<td>95.3</td>
<td>20.8</td>
<td>45</td>
</tr>
<tr>
<td>Waste Dumps</td>
<td>83.8</td>
<td>21.3</td>
<td>34</td>
</tr>
<tr>
<td>Temporary Stockpiles</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Soil</td>
<td>25.5</td>
<td>27.1</td>
<td>6.1</td>
</tr>
<tr>
<td>• Hard Rock, Low Grade Ore</td>
<td>21.8</td>
<td>22.5</td>
<td>-</td>
</tr>
<tr>
<td>Processing Plant and Office Area</td>
<td>38.8</td>
<td>43.1</td>
<td>-</td>
</tr>
<tr>
<td>Tailings Storage Facility</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>265.2</td>
<td>134.8</td>
<td>85.1</td>
</tr>
</tbody>
</table>

Note 1: Stockpile locations have not been identified for the Bimble and Belah Pits and Waste Dumps and that a nominal area has been estimated based on the area to be disturbed (79ha) and an average stripping depth of 150mm

Note 2: The extent of ancillary infrastructure, e.g. roads, sediment basins and water management structures, is not identified in RWC (2010), as a result, comparative areas have not been determined
Figure 4
Modified Mine Site Layout

SCALE 1:20 000 (A4)

REFERENCE
- Mine Site Boundary (ML1659)
- Pit Boundary
- Waste Dump Boundary
- Other Disturbance
- Temporary Stockpile Boundary
  (Material to be removed)
- Tailings Storage Facility Boundary
- Additional Approved Development
- Watercourse / Drainage Line
- Clean Water Diversion Drain
- Dirty Water Diversion Drain
- Sediment Basin

Contour Source: ASTER GDEM (http://asterweb.jpl.nasa.gov/gdem.asp)
In summary, the disturbance footprint of the as-constructed layout is equivalent to that originally presented by RWC (2010). Notably, and as discussed in greater detail in Section 2.6.3, the vegetation of the Mine Site is homogenous and therefore disturbance is to the same vegetation community. Furthermore, no Aboriginal sites or artefacts, other than those for which AHIPs have been obtained have been disturbed as a result of the modified layout.

2.3 IMPORTATION OF MT BOPPY MINE ORE

2.3.1 Introduction

As identified in Section 1.3, the Applicant purchased the Mine in September 2014 with the intention of processing the remaining silver ore. However, the Applicant notes that the approved processing methodology, namely carbon-in-leach processing to recover silver doré or unrefined silver bars, is also suitable, with some minor modification to the processing plant, for processing ore from the Applicant’s Mt Boppy Mine. As a result, the Applicant proposes to transport ore from the Mt Boppy Mine to the Manuka Mine for processing. This would require approval for the following activities that are not currently approved under DA 2010/LD-00074 for the Manuka Mine.

- Transportation of ore using AB-triple road trains from the Mt Boppy Mine via:
  - Gilgunningia – Canbelego Road;
  - Barrier Highway (SH 8);
  - Kidman Way (MR 410);
  - Manuka – Yarranvale Road (SR 14); and
  - Cobar – Bedooba Road (SR 13).
- Processing of that ore through the Mine processing plant.
- Placement of the tailings material generated into the approved TSF.

This subsection provides an overview of the approved activities as they relate to each of the above and the proposed modified activities.

2.3.2 Transportation Operations

2.3.2.1 Approved Transportation Operations

Currently three transport routes are approved for the Mine, however, as noted in Section 1.4.3, only one is currently used, the Cobar to Mine Site route. Table 4 presents the estimated existing Mine-related traffic levels on this route.
## Table 4
Existing Mine-related Traffic

<table>
<thead>
<tr>
<th>Vehicle type</th>
<th>Estimated number of vehicles movements per day/week</th>
</tr>
</thead>
<tbody>
<tr>
<td>Light Vehicle</td>
<td>20/100</td>
</tr>
<tr>
<td>Heavy Vehicle</td>
<td></td>
</tr>
<tr>
<td>• Semi-trailer, Rigid Truck or equivalent</td>
<td>&lt;1/&lt;5</td>
</tr>
<tr>
<td>• B-double</td>
<td>4/20</td>
</tr>
<tr>
<td>• AB-triple</td>
<td>2/10</td>
</tr>
</tbody>
</table>

Source: Black Oak Minerals Limited

### 2.3.2.2 Proposed Transportation Operations

Figure 5 presents the proposed transport route. In summary, the transport route from the Mt Boppy Mine to the Manuka Mine would be subject to the following approvals.

- Mt Boppy Mine to the intersection of MR 410 and The Peak Way. This component of the transport route would be approved under DA 2011/LD-00070. A separate application is currently before Council to amend that development consent to permit the proposed transportation operations.
- Intersection of MR 410 and The Peak Way to the Mine. This component of the transport route is the subject of the current application and is described in this subsection.

In summary, laden 60t capacity AB-triple road trains\(^5\) would depart the Mt Boppy Mine and would travel along the Gilgunnia – Canbelego Road, before turning left onto SH 8, left onto MR 410, right onto SR14, left onto SR13 and right onto the Mine Access Road. Unladen trucks would depart the Manuka Mine and travel in the reverse direction. Occasionally, trucks returning to the Mt Boppy Mine would be back loaded with waste rock or other material for use in road maintenance or rehabilitation operations.

As noted in Section 1.5.1.2, discussions with the RMS have confirmed the Barrier Highway and Kidman as open to use by AB-triple vehicles. It is also noted that Council has approved the use of SR 13 and SR14 by AB-triple road trains (for the delivery of fuel to the Mine) (pers. comm. T. Lowien).

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\(^5\) The application for modification to DA 2011/LD-00070 referenced the initial use of smaller 50t capacity B-Doube road trains until such time as the designation of the route for AB-triple road trains was confirmed. Subsequent to the submission of the application to modify DA 2011/LD-00070, RMS confirmed the Barrier Highway and Kidman Way as open to use by A-B Triple vehicles.
Figure 5
TRANSPORT ROUTES

REFERENCE
- Mine Site Boundary (ML1659)
- Cobar / Bogan LGA Boundary
- Approved Transport Routes
  - Cobar - Mine Site
  - Hermidale - Mine Site
- Proposed Transport Routes
  - Proposed Transportation Route (DA 2010/LD-00074) (Manuka Mine)
  - Approved Transportation Route (DA 2006/LDA-00015) (Mt Boppy Mine)
The Applicant proposes to undertake transportation of ore 24hr/day 7 days/week, although it is noted haulage would be suspended when it is raining or when SR 13 and SR 14 remain wet after rainfall. Transportation operations would initially use two dedicated road train sets, increasing to five by January 2016\(^6\), operated over two 12hr shifts per day. A return trip would require approximately 4.5hrs providing for a maximum of four trips per day per road train set. As a result, a maximum of 20 trips or 40 movements, transporting approximately 1200t, could be made per day.

The proposed transportation movements for the purpose of ore delivery would be in addition to the existing heavy vehicle movements (see Table 4). Similar to current operations, the processing of Mt Boppy ore would not produce lead concentrate and as a result, the route between the Kidman Way and Hermidale (described in Section 1.4.1) would remain unutilised.

### 2.3.2.3 Proposed Road Upgrade and Maintenance

#### 2.3.2.3.1 Proposed Works

Based on an inspection of SR 13, SR14 and MR 410, consultation undertaken with the two road authorities (Council and RMS), and consideration of the type and volume of traffic proposed, the existing conditional requirements with respect to road and intersection upgrades and maintenance, and the restricted period over which the additional transportation would be undertaken (17 months), traffic and engineering consultancy Constructive Solutions Pty Limited has provided recommendations as to appropriate road upgrades and maintenance. Table 5 provides the recommended road upgrades and maintenance of the Proposed Modification, along with a recommended schedule for implementation.

<table>
<thead>
<tr>
<th>Road / Intersection</th>
<th>Proposed Works</th>
<th>Timetable</th>
</tr>
</thead>
<tbody>
<tr>
<td>MR 410 – SR 14 Intersection</td>
<td>• Pavement widening on MR 410 to cater for AB-triple vehicle swept paths for left turn out of SR 14 onto MR 410.</td>
<td>Prior to haulage of ore using AB-triple road trains</td>
</tr>
<tr>
<td></td>
<td>• Basic Right (BAR) treatment on MR 410 to cater for AB-triple vehicle swept paths for the right turn out of MR 410 onto SR14.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Install retro-reflective pavement markers (RRPMs) (in lieu of street lighting).</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Install improved (larger than minimum standard size) advance warning signage of the intersection and trucks turning signage.</td>
<td></td>
</tr>
<tr>
<td>SR13 and SR14</td>
<td>• Provide for a stabilized causeway crossing of Sandy Creek, comprising a stabilized granular base, downstream concrete wall and limestone backfill, in lieu of a concrete causeway;</td>
<td>Prior to ore haulage</td>
</tr>
<tr>
<td></td>
<td>• Provide bitumen sealing, or equivalent, at locations adjacent to homesteads to reduce dust nuisance;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Install guideposts in accordance with Austroads standards to delineate the road alignment during night conditions.</td>
<td></td>
</tr>
</tbody>
</table>

\(^6\) If due to periods of extended wet weather, transport operations are suspended for an extended period, a sixth road train set may be introduced to “catch-up” on the transport schedule.
Table 5 (Cont'd)
Recommended Road Upgrade and Maintenance of the Manuka Transportation Route

<table>
<thead>
<tr>
<th>Road / Intersection</th>
<th>Proposed Works</th>
<th>Timetable</th>
</tr>
</thead>
<tbody>
<tr>
<td>SR13 and SR14 (Cont’d)</td>
<td>• In the event upgrade to the road surface is required (or triggered by agreement between the Applicant and Council), the recommended upgrade between the Kidman Way and mine entrance is as follows:- (i) a heavy formation grade, using imported gravel, of at least 8m wide x 150mm thick; (ii) new and/or restored table and mitre drains as needed; and (iii) elimination or replacement of existing stock grids to suit the 8m wide formation;</td>
<td>As negotiated with Council</td>
</tr>
<tr>
<td></td>
<td>• Undertake maintenance and repair of SR 13 and SR 14, the terms of which are to be agreed with Council.</td>
<td>Ongoing and as negotiated with Council</td>
</tr>
<tr>
<td>SR 14 – SR 13 intersection</td>
<td>• Install improved (larger than minimum standard size) advance warning signage of the intersection and trucks turning signage.</td>
<td>Prior to haulage of ore using AB-triple road trains</td>
</tr>
<tr>
<td>Mine Access Road – SR 13 intersection</td>
<td>• Install improved (larger than minimum standard size) advance warning signage of the intersection and trucks turning signage.</td>
<td>Prior to haulage of ore</td>
</tr>
<tr>
<td></td>
<td>• Provide storage capacity off SR 13 for the largest class of vehicle requiring access to the Mine.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Provide gravel sheeting at the Mine Entrance.</td>
<td></td>
</tr>
</tbody>
</table>

Source: Modified after Constructive Solutions (2015) – Table 11

2.3.2.3.2 Responsibility for Works

The Applicant accepts the responsibility for funding of the works nominated in Table 5, or as subsequently agreed with Council. The Applicant proposes that the formal arrangement identifying responsibilities for funding of works, completion of works, provision of access and/or permits and funding of the nominated maintenance requirements would be based on Council’s Local Infrastructure Contributions Plan (2012) and formalised in the form of Section 94 contributions or a VPA between the Applicant and Council.

2.3.3 Processing Operations

2.3.3.1 Approved Processing Operations

Section 2.6 of RWC (2010) describes the approved processing operations. In summary, the approved operations include the following (Figure 6).

1. Feed Preparation: involving the initial screening, crushing and mixing of ore and water
2. Grinding and Gravity Circuit: involving further size reduction and production of lead concentrate.
3. Leaching and Adsorption (carbon-in-leach) Circuit: where sodium cyanide and lime are be added to leach the silver from the ore which would then attach to carbon.

4. Elution and Merrill Crowe Circuit: involving the recovery of silver and production of silver doré (unrefined bars).

**FIGURE 6**

APPROVED PROCESSING FLOW CHART

Source: Modified after RWC (2010) – Figure 2.10

### 2.3.3.2 Proposed Processing Operations

The Proposed processing operations for the Mt Boppy ore would utilise the same carbon-in-leach processing methodology as the approved processing operations. **Figure 7** presents the proposed processing flow chart. Those components of the processing plant that would not be utilised for processing of Mt Boppy ore are presented as grey text.
In summary, ore from Mt Boppy would be processed as follows.

- Ore would be placed on the ROM Pad and fed into the existing crusher using a front-end loader.
- Crushed ore would be passed to a screen, with over size material returned to the crusher and undersize material passed to the existing mill for further size reduction.
- Ground ore would then be passed to the existing gravity separation circuit, with the dense, coarse gold fraction transferred directly to the gold recovery circuit and the remaining material to the carbon-in-leach plant.
- Gold would be recovered from the ore using the same processing methodology as the existing silver recovery circuit, namely:
  - leaching of gold from the ore using sodium cyanide in the existing carbon-in-leach circuit;
  - adsorption of gold onto activated carbon;
– stripping of the gold from the carbon in the existing elution circuit;
– precipitation of a gold-rich precipitate within the existing Merrill Crowe circuit; and
– production of gold doré using the existing calcine oven and furnace.

A range of minor adjustments will be required to the existing processing plant to permit processing of the Mt Boppy ore, including modifications to:

- screens, cyclones and transfer pumps and pipes to take into account the changed material flow paths; and
- the leach and gold/silver recovery circuits to account for longer leach times and different properties of the Mt Boppy ore.

The required modifications would, however, be minor in nature and would not increase the intensity or environmental impacts associated with the approved processing operations.

2.3.4 Tailings Management

2.3.4.1 Approved Tailings Management

Section 2.7 of RWC (2010) describes the approved tailings management operations. In summary, the tailings to be produced by the Mine are typically:

- very fine grained, with approximately 40% finer than 1µm, reflecting the clay-rich nature of the Manuka ore;
- of low permeability, with an assumed permeability of 1 x 10-8m/s to 1 x 10-9m/s-107;
- slightly alkaline with pH range of 7.8 to 8.2;
- moderately to highly saline (3 000µS/cm to 15 500µS/cm);
- slightly elevated concentrations (Geochemical Abundance Index >3 average crustal abundance) of some metals and metalloids including antimony, arsenic, cadmium, lead, magnesium, mercury and zinc; and
- non acid forming (NAF) / acid consuming, with a measure acid neutralising capacity of between 129kg H2SO4/t and 735kg H2SO4/t.

The TSF of the Mine is designed (by URS Australia Pty Ltd) with the following design characteristics.

- Area – 49ha. The location has been chosen to avoid disturbance to remnant stands of woodland vegetation.

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7 Rowe Cell testing and analysis of the tailings is under way and will be presented as part of a subsequent proposal to modify DA 2010/LD-00074 for the in-pit disposal of tailings.
8 Results generated following static and kinetic leach column tests on four tailings samples taken from the Manuka Mine TSF undertaken by RGS (in preparation).
- Tailings storage capacity – >8 million m³.
- Crest elevation – 279.5m AHD.
- Crest width – 8m.
- Slope of outer face – 1:2.5 (V:H).
- Slope of inner face – 1:2.5 (V:H).
- Key trench – up to 1m deep, base 4m wide, side slopes = 1:1 (V:H).
- Floor and embankment lining – ‘select’ clay sourced from the upper waste layers of the Manuka Pit to achieve a permeability value of between 2x10^-10m/s and 5x10^-10m/s over 600mm.

Construction of Stage 1A of the TSF was completed by Lucas Earthmovers Pty Ltd in December 2012, supervised by TGM Group Pty Ltd and the former operator. Design consultant URS Australia Pty Ltd (URS) regularly visited the site during construction to monitor progress against design. On completion, the maximum embankment height achieved was 8m at an RL of 259m AHD. Stage 1A provides a storage capacity for 585,000m³ of tailings.

The TSF is a prescribed dam under Schedule 1 of the *Dams Safety Act 1978* and a report prepared by URS entitled *Tailings Storage Facility (TSF) - Stage 1A Wonawinta Silver Mine* (URS, 2013) confirms the construction of the TSF in accordance with design. Critically, URS (2013) confirms the required 600mm liner of clay was constructed (as two 300mm layers).

### 2.3.4.2 Proposed Tailings Management

#### 2.3.4.2.1 Introduction

The Applicant notes that the nature of tailings that would be produced from the Mt Boppy ore would differ from the tailings produced by processing the Manuka Mine ore. As a result, the subsection provides a brief overview of the characteristics and volume of the Mt Boppy tailings and a summary of the key modifications proposed to the existing tailings management measures in light of the identified differences in tailings streams.

In addition, the Applicant notes that an application for in-pit tailings placement within the Boundary Pit is currently in preparation. However, until such time as this mode of tailings management is approved, all Mt Boppy tailings would be placed within the approved TSF.
2.3.4.2.2 Mt Boppy Tailings Characteristics

The tailings generated by the processing of the Mt Boppy ore are likely to be coarser as a consequence of being generated from fresh rock ore (as opposed to weathered clay based ore of the Manuka Mine). As a consequence, the tailings are likely, at least on deposition, to have a higher permeability than the Manuka ore tailings.

Assessment of leachate generated by static and kinetic leach column tests on four samples taken from the Mt Boppy Mine tailings storage facility by RGS (in preparation) provides the following summary of key geochemical characteristics.

- Acidic with pH of 3.7 to 4.2;
- Slightly to moderately saline (1 000µS/cm to 4 000µS/cm);
- slightly elevated concentrations (Geochemical Abundance Index >3 average crustal abundance) of some metals and metalloids including antimony, arsenic, cadmium, lead, magnesium, mercury and zinc; and
- Potentially Acid Forming – Low Capacity (PAF-LC), with a low Net Acid Producing Potential (NAPP).

2.3.4.2.3 Mt Boppy Tailings Volume

The Applicant anticipates that approximately 630 000t of ore would be transported from the Mt Boppy Mine to the Manuka Mine. Processing of this ore would result in approximately 1 000 000m³ of tailings that would be placed within the TSF.

Section 2.7.4 of RWC (2010) identifies that the approved mining operations within the Mine Site would generate approximately 2.2 million cubic metres of tailings and that the capacity of the approved TSF would be approximately 8 million cubic metres. As a result, the approved capacity of the TSF is sufficient to cater for both the Manuka and Mt Boppy tailings streams.

2.3.4.2.4 Proposed Modified Tailings Management Measures

In light of the above, the Applicant proposes the following additional tailings management measures to ensure that tailings generated from the Mt Boppy ore are appropriately managed.

- Undertake construction of Stage 1B and Stage 2 of the TSF in accordance with the design of URS.
- Undertake appropriate QA/QC testing of the floor, embankment and lining materials as documented for Stage 1A in URS (2013).

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9 Rowe Cell testing and analysis of the tailings is under way and will be presented as part of a subsequent proposal to modify DA 2010/LD-00074 for the in-pit disposal of tailings.
2.4 REMAINING SITE ACTIVITIES

The following site operations would continue to be undertaken as approved and documented in the current MOP (RWC, 2012c).

- Processing of the currently stockpiled low grade and limestone based ore.
- Management of waste rock and clay stockpiles within the completed Boundary Pit or existing waste dumps.
- Ongoing management of the “Wirlong” bore field and associated infrastructure, surface water, weeds and feral pests, as well as other activities ancillary to the approved operations.
- Rehabilitation of the Mine Site, in accordance with the currently approved MOP and subsequent versions of that document.

In addition to the above, the Applicant retains approval to develop and extract ore from two smaller pits to the north of the Manuka Pit, namely Belah and Bimble Pits. Based on the proposed commencement of Mt Boppy ore processing in September 2015 it is not envisaged that these pits will be developed until at least March 2018. This notwithstanding, it remains the Applicant’s intention to ensure that it is well positioned to quickly recommence mining and silver production operations within the Mine Site in response to fluctuations in the silver price, enabling it to take advantage of short-term price increases. As is discussed in Section 2.6, this will require modification to the BOS for the Mine which is currently based on the existing disturbance footprint.

2.5 EMPLOYMENT, HOURS OF OPERATION AND MINE LIFE

2.5.1 Employment

On completion of mining activities within the Manuka Pit, the Applicant will employ 40 full time personnel at the Mine. Drawn from within an approximate 500km radius of the Mine Site, these personnel drive to the Mine to commence an 8 day roster and are accommodated at the mine camp facility on the “Manuka” property. At the completion of each 8 day period, the personnel drive back to their regular residence for 6 days off.

This roster, travel and accommodation arrangement represents a small modification to the operations undertaken by the former operator which utilised a predominantly fly-in, fly-out workforce. While the mine workforce may draw from various locations in regional NSW, it is considered likely that the proportion of employees residing within the Cobar LGA would increase over time.

The Proposed Modification would require the employment of at least 10 full time truck driver positions for the operation of the five dedicated AB-triple road trains to be operated between the Mt Boppy and Manuka Mine. Unlike the Mine Site workforce, these positions would be residential, i.e. reside in Cobar or other towns of the local area.
2.5.2 Hours of Operation

Table 6 records the approved and proposed hours of operation for all activities planned at the Mine.

Table 6
Approved and Proposed Hours of Operation

<table>
<thead>
<tr>
<th>Activity</th>
<th>Approved Hours of Operation</th>
<th>Proposed Hours of Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vegetation clearing and topsoil stripping</td>
<td>7 days¹ Daylight hours</td>
<td>7 days¹ Daylight hours</td>
</tr>
<tr>
<td>Construction operations</td>
<td>7 days² 24 hours</td>
<td>7 days² 24 hours</td>
</tr>
<tr>
<td>Open cut mining operations</td>
<td>7 days 24 hours</td>
<td>7 days 24 hours</td>
</tr>
<tr>
<td>Maintenance operations</td>
<td>7 days 24 hours</td>
<td>7 days 24 hours</td>
</tr>
<tr>
<td>Processing operations</td>
<td>7 days 24 hours</td>
<td>7 days 24 hours</td>
</tr>
<tr>
<td>Rehabilitation operations</td>
<td>7 days 7:00am to 6.00pm</td>
<td>7 days 7:00am to 6.00pm</td>
</tr>
<tr>
<td>Transportation³</td>
<td>7 days Daylight hours</td>
<td>7 days 24 hours</td>
</tr>
</tbody>
</table>

Note 1: During each campaign
Note 2: Construction operations are now compete
Note 3: Including transportation of ore from the Mt Boppy Mine to the Manuka Mine Site

Source: Black Oak Minerals Limited

2.5.3 Mine Life

Based on the importation and processing or ore from Mt Boppy Mine, the life of the Manuka Mine would be extended by between 18 and 30 months. In the event that the Belah and Bimble Pits remain undeveloped, mine closure would occur towards the end of 2018. Development and mining of the Belah and Bimble Pits would extend mine life by between 1 and 3 years, i.e. between 2019 and 2021.

2.6 BIODIVERSITY OFFSET STRATEGY

2.6.1 Introduction

In consultation with the former lease holder of the “Manuka” Property, who holds an agreement with the Applicant to buy back the lease at the completion of mining, and in accordance with Conditions 32 and 33 of DA 2010/LD-00074, the Applicant proposes to secure, conserve and maintain an area of 410ha on the “Manuka” property under a PVP. The following subsections are taken from the BOS which has been prepared as a draft for comment (by OES and LLS) by OzArk Environmental and Heritage Management Pty Ltd (OzArk, unpublished). A copy of the draft BOS is included in full as Appendix 6.
2.6.2 Offset Principles

The following key outcomes were considered during the development of the BOS.

- The BOS should aim to ‘maintain or improve’ biodiversity values.
- The BOS should be enforceable, monitored and audited.
- The BOS should provide long term security for the proposed offset area.

The following policies and principles were referenced during the evaluation of the offset.

- OEH Principles for the use of Biodiversity Offsets in NSW (OEH Offset Principles).

The justification of the preferred option was based on these policies and principles including the following.

‘Whether or not the proposal, together with actions to avoid or mitigate or compensate to prevent unavoidable impacts will maintain or improve biodiversity values’.

The quantum of offsetting requirements has been substantiated by completing an assessment of the BOA following the BioBanking Assessment Methodology (BBAM) promoted by OEH as the most appropriate method for offset calculations.

2.6.3 Offset Requirements

*Condition 32* of DA 2010/LD-00074 requires that a BOS for the Manuka Mine must:

a) be prepared in consultation with OEH;
b) quantify and categorise the biodiversity values of both the impacted site and proposed offset area(s);
c) incorporate an area of up to 600ha (based on a 2:1 ratio of offset to disturbance) of ‘like for like’ vegetation;
d) provide for the protection of significant Aboriginal site 34-1-0008; and
e) be submitted to Council for approval by 31 December 2011, or such later date as is mutually agreed.

It is noted that the Applicant proposes modification to offset requirement (c), and has prepared a draft BOS according, to account for the current disturbance footprint of the Mine (165ha) and which will not increase until at least March 2018.

It is also noted that the BOS was originally submitted to Council in December 2011. Notice has subsequently been provided that this BOS did not satisfy the conditional requirements in relation to consultation. The Applicant proposes modification to requirement (e) to reflect the Proposed Modification to the Mine.
The proposed modified conditional requirements of Condition 32 to reflect the notes above are as follows.

The Applicant shall prepare a suitable Biodiversity Offset Strategy (in the form of a Property Vegetation Plan or equivalent arrangement) to compensate for the impacts of the project. This Biodiversity Offset Strategy must:

(a) be prepared in consultation with the NSW Office of Environment and Heritage;
(b) quantify and categorise the biodiversity values of both the impacted site and proposed offset area(s);
(c) incorporate an area of up to 600ha (based on a 2:1 ratio of offset to disturbance) of ‘like for like’ vegetation;
(d) provide for the protection of significant Aboriginal site 34-1-0008; and
(e) be submitted to Council for approval by 31 December 2015, or such later date as is mutually agreed.

2.6.4 Proposed Biodiversity Offset Area

2.6.4.1 Location and Setting

The proposed Biodiversity Offset Area (BOA) is located on the “Manuka” property to the northeast of the Mine Site and adjacent to SR 13 (see Figure 8).

While only 335ha of the “Manuka” property is required for offsetting the disturbance associated with the Mine, the property comprises an area of 7 545ha of contiguous vegetation (see Section 2.6.4.2). Should the disturbance footprint of the Mine Site increase in the future, e.g. in order to develop the Belah and/or Bimble Pits, the identified area of 410ha could be extended.

2.6.4.2 Vegetation Communities

OzArk has completed field survey and desktop review of the vegetation contained within the Mine Site and that of the “Manuka” property and BOA. Figure 9 provides the results of this analysis which confirms the vegetation to be relatively homogenous and conforming to two vegetation types.

- **Poplar Box – Gum-barked Coolibah - White Cypress Pine shrubby woodland mainly in the Cobar Peneplain Bioregion** (Benson 103), Biometric Vegetation Type (BVT) WE91. This is the dominant vegetation type on the “Manuka” property (7 341ha) and has been described as one of three variants, depending on landform parameters:
  - open and sparse open woodland variant that comprises the bulk of the Project Site (103);
  - along drainage lines (103D = drainage line); and
  - along the sandstone ridges ( 103SS = sandstone ridge variant).
STATEMENT OF ENVIRONMENTAL EFFECTS

BLACK OAK MINERALS LIMITED

Report No. 802/27

Manuka Mine

Figure 8

Biodiversity Offset Area

REFERENCE
- Mine Site Boundary (ML1659)
- "Manuka" Property Boundary
- Proposed Biodiversity Offset Area (Area = 410ha)
- Aboriginal Heritage Site

Dated 7/5/15

Figure 8
Biodiversity Offset Area
Figure 9

"MANUKA" PROPERTY VEGETATION COMMUNITIES

REFERENCE
- Mine Site Boundary (ML1659)
- Mine Impact Footprint (Area = 165ha)
- "Manuka" Property Boundary
- Proposed Biodiversity Offset Area (Area = 410ha)
- Aboriginal Heritage Site

Vegetation Map Units (Biometric Vegetation type)
- WE81 - Proplar Box-Gum barked Coolibah - White Cypress Pine Shrubby Woodland mainly in the Cobar Penepplain Bioregion (Benson 103)
- WE84 - Mallee - smooth barked Coolibah Woodland on red earth flats of the eastern Cobar Penepplain Bioregion (Benson 174)
• *Mallee* – Smooth-barked Coolibah woodland on red earth flats of the eastern Cobar Peneplain Bioregion (Benson 174), BVT WE84. This vegetation type occurs over the ridge which occurs on the eastern side of the “Manuka” property (204ha).

Only WE91 occurs within the Mine disturbance footprint and proposed BOA.

### 2.6.4.3 Fauna

Threatened fauna species considered likely to inhabit or use the BOA, and the relevant NSW or commonwealth legislation under which they are listed, are as follows. Those identified with * have been recorded on the Mine Site (OzArk, 2010a), the remainder are considered highly likely to occur within the area (OzArk, undated).

- Grey-crowned Babbler *Pomatostomus temporalis temporalis* (TSC Act)*.
- Halls Babbler *Pomatostomus halli* (TSC Act)*.
- Major Mitchell Cockatoo *Cacatua leadbeateri* (TSC Act)*.
- Malleefowl *Leipoa ocellata* (TSC and EPBC Acts)*.
- Superb Parrot *Polytelis swainsonii* (TSC and EPBC Act)*.
- Kultarr *Antechinomys laniger* (TSC Act)*.
- Little Pied Bat *Chalinolobus picatus* (TSC Act)*.
- Yellow-bellied Sheathtail-bat *Saccolaimus flaviventris* (TSC Act)*.
- Brown Treecreeper *Climacteris picumnus victoriae* (TSC Act).
- Speckled Warbler *Chthonicola sagittata* (TSC Act).
- Pied Honeyeater *Certhionyx variegates* (TSC Act).
- Black-chinned Honeyeater *Melithreptus gularis gularis* (TSC Act).
- Turquoise Parrot *Neophema pulchella* (TSC Act.)
- Spotted Harrier *Circus assimilis* (TSC Act).
- Pine Donkey Orchid *Diuris tricolor* (TSC Act).
- Cobar Greenhood Orchid *Pterostylis cobarensis* (TSC and EPBC Act).

### 2.6.4.4 Cultural Heritage

*Condition 32(d)* requires that the BOS provide for the “protection of significant Aboriginal site #34-1-0008”.
While originally contained within the initial BOA concept of the 2010 EIS (RWC, 2010), Site #34-1-0008 is now external to the proposed BOA (see Figure 8). Management of Site #34-1-0008 would, however, be included in the conservation measures to be incorporated into the BOS as a component of a proposed ‘Manuka’ property Conservation PVP.

### 2.6.4.5 Current Land Management

The ‘Manuka’ property is owned by the Applicant and, excluding the mining areas, it is operated as a grazing property via a sub-lease arrangement (to Mr Andrew Moseley) on areas which lie outside ML 1659. It is the Applicant’s objective that the current use of the property as a pastoral lease is maintained and that the future use of the property as a pastoral holding is not compromised as a consequence of the biodiversity management for property as a whole. Upon completion of the Mine, the mine impacted areas will be rehabilitated, in accordance with a MOP, and the property returned to a grazing enterprise as per Western Lands Lease terms and conditions.

A Property Vegetation Plan (PVP) currently exists against the title of the ‘Manuka’ property. The ‘Manuka’ PVP was formulated and is being administered by the Western Local Land Services (LLS) (formerly the Western Catchment Management Authority) to meet the requirements of the Native Vegetation Act 2003 and the Native Vegetation Regulations 2005. It lays out a best practices management approach for the removal of specific invasive native species that, either through seasonal conditions or past cultural practices, have overtaken the naturally occurring grasses and other herbage that would normally provide critical habitat for a number of native animal species.

Plate 1 provides an illustration as to the effectiveness of the PVP in maximising groundcover (the left side of the fence is managed under the ‘Manuka’ PVP, the right side is not).

### 2.6.4.6 Proposed Land Management

It is proposed to couple the strategies recommended in the ‘Manuka’ PVP with a range of management actions aimed at providing measureable on-ground results as the basis for the BOS. The proposed BOA of the ‘Manuka’ property, and area surrounding Site #34-1-0008, would be upgraded to a conservation PVP. The principle aim of the BOS and conservation PVP would be focused on managing groundcover and species diversity within the BOA, and protection and conservation of Site #34-1-0008. The aim is to encourage the higher succession of perennial native grasses rather than the current dominance of bare ground & low successional annual species. This will improve the overall diversity of the BOA.

### 2.6.5 Security, Implementation and Monitoring

As noted in Section 2.6.4.6, the Applicant proposes to secure the BOA through modification of the ‘Manuka’ property PVP, to incorporate the BOA and Site #34-1-0008 into a defined Conservation PVP.
The Applicant would prepare and implement a *Biodiversity Offset Management Plan* (BOMP) within 6 months of approval of a BOS by Council, i.e. in accordance with *Condition 34* of DA 2010/LD-00074. The BOMP would include specific measures to be implemented within the ‘conservation/ areas of the PVP. Specific performance criteria would be established which would focus primarily on the establishment of native groundcover, reduction in weeds and removal or management of feral pests.

A monitoring regime would also be defined in the BOMP for measurement against the performance criteria.

### 2.7 REHABILITATION

#### 2.7.1 Introduction

The rehabilitation objectives and strategy for the Mine have been described in the *Mining Operations Plan (MOP)* (incorporating a Rehabilitation Plan) for the Wonawinta Silver Mine dated September 2012 (RWC, 2012c). That MOP expires in September 2015 and the Applicant proposes to prepare a new MOP in accordance with the revised guidelines *ESG3: Mining Operations Plan (MOP) Guidelines, September 2013*. The following is broadly consistent with the rehabilitation operations described in *Section 2.15* of RWC (2010).
2.7.2 Rehabilitation Objectives

The short term rehabilitation objectives of the Mine include the following.

- Stabilise all completed areas of disturbance no longer required for ongoing mining purposes, i.e. mined-out and backfilled pits, completed sections of waste dumps, redundant haul roads. This will be achieved through progressive reshaping, spreading of topsoil and seeding of completed sections of the mining lease.
- Reduce the visual impact upon surrounding residents through early establishment of vegetation in areas where mining-related operations have been completed.

The long term rehabilitation objectives of the Mine include the following.

- Provide a low maintenance, geotechnically stable and safe, non-polluting landform which is sympathetic to surrounding landforms and suitable for the proposed final land use of low intensity agriculture and passive nature conservation.
- Create a landform that is self-sustaining or has maintenance requirements consistent with the agreed post mining land use.
- Allow for the relinquishment of ML 1659 and the return of the security lodged within a reasonable time after the end of the mine life.

Table 7 expands upon the objectives of rehabilitation with respect to specific features of rehabilitation, and the targets for meeting these objectives are presented.

2.7.3 Final Landform

Figure 10 presents the revised final landform, taking into account the proposed modified Mine Site layout. The proposed landform is broadly consistent with that identified in Plan 6 of RWC (2012c). In summary, the proposed final landform would include the following.

- Four final voids. The degree of backfilling of each void will be dependent on scheduling of future mining operations which is in turn dependent on commodity prices.
- Five reshaped and revegetated waste rock emplacements.
- A Processing Plant and Office Area with all infrastructure removed and vegetation re-established.
- A capped, free draining and revegetated TSF.
- All other infrastructure and disturbed areas not required for a lawful final land use removed or modified, including a reduction in the width of haul roads to that suitable for light vehicles.
Table 7
Rehabilitation Objectives and Targets

<table>
<thead>
<tr>
<th>Feature</th>
<th>Objective</th>
<th>Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surface Infrastructure</td>
<td>Decommission and remove all surface infrastructure (unless required for a lawful post-mining land use).</td>
<td>All surface infrastructure removed (unless required for a lawful post-mining land use).</td>
</tr>
<tr>
<td>Landform</td>
<td>Provide a geotechnically stable landform.</td>
<td>Geotechnical assessment based on site specific review determines that the retained slopes of the open cut are not likely to actively erode or ‘slip’ to an extent requiring further earthworks and profiling.</td>
</tr>
<tr>
<td></td>
<td>Provide a non-polluting landform.</td>
<td>Water quality monitoring results show the landform is non-polluting within the meaning of Section 120 of the Protection of the Environment Operations Act 1997.</td>
</tr>
<tr>
<td></td>
<td>Ensure the final open cut voids are safe and secure.</td>
<td>Construct a safety bund around the open cut voids with appropriate signage.</td>
</tr>
<tr>
<td></td>
<td>Create a landform sympathetic to the surrounding setting.</td>
<td>A final landform constructed as illustrated on Figure 10, or as otherwise agreed in consultation with the DRE.</td>
</tr>
<tr>
<td>Biodiversity</td>
<td>Ensure final vegetation is self-sustaining, i.e. has maintenance requirements consistent with the agreed post mining land use.</td>
<td>Rehabilitation monitoring and/or function analyses undertaken by appropriately qualified specialists demonstrate equivalence to analogue site conditions.</td>
</tr>
<tr>
<td></td>
<td>Revegetated areas contain species consistent with surrounding vegetation communities.</td>
<td>Rehabilitation monitoring confirms the non-native and non-target species (weeds) achieve criteria nominated in the MOP.</td>
</tr>
<tr>
<td>Other</td>
<td>Allow for the relinquishment of the mining tenements and the return of the security lodged over the Mining Lease within a reasonable time after the end of the mine life.</td>
<td>Within 10 years of final rehabilitation.</td>
</tr>
</tbody>
</table>

2.7.4 Final Land Uses

Consistent with the final land use approved by DA 2010/LD-00074, the Mine Site would be returned to a combination of agricultural land, with the proposed BOA to be retained for management of local biodiversity.

2.7.5 Rehabilitation Procedures

Rehabilitation of the Mine Site is currently being undertaken in accordance with the schedule and procedures nominated in the MOP (RWC, 2012c) and can be summarised as follows.

- Selective backfill of the Boundary and Manuka Pits has been completed (see Figure 3).
- The landform of the Boundary Waste Dump has been completed with sections of this structure at various stages of rehabilitation ranging from Landform Establishment to Ecosystem and Land Use Establishment.
• Placement of waste rock to the Manuka Waste Dump has been completed and Landform Establishment and Growth Medium Development activities are being undertaken.

• Temporary stockpiles of low grade ore, clay and hard rock are being progressively removed with the landform to be returned to pre-disturbance conditions.

• Stabilisation of soil stockpiles through sowing of cover crops has been undertaken.

• Land management practices, including weed and pest management, are ongoing.

On the basis that the Proposed Modification requires no change to approved mining and waste rock management activities, rehabilitation procedures for the majority of the Mine Site would remain unchanged from those described in the MOP (RWC, 2012c). However, in recognition of the modified nature of the tailings to be managed as a result of processing of Mt Boppy Mine ore, the following modified rehabilitation procedure would be implemented for the TSF.

• The upper surface of the TSF would be capped with a combination of coarse waste rock (to form a capillary break) and clay (to form an impermeable barrier).

• The capping material would be covered by a store and release cover, including growth medium/soil. The store and release cover would permit suitable vegetation to be established on the rehabilitated surface of the TSF and would ensure that incident rainfall is not permitted to seep into the underlying tailings.

The specific design and implementation of these modified rehabilitation operations will be presented in the next MOP for the Mine.
3. ISSUE IDENTIFICATION AND PRIORITISATION

3.1 INTRODUCTION

In order to undertake a comprehensive environmental assessment of the Proposed Modification, appropriate emphasis needs to be placed on those issues likely to be of greatest significance to the local environment, neighbouring landowners and the wider community.

Issue identification was completed through a combination of the following methods.

- Consideration of the local environmental setting (refer to Section 3.2).
- Identification of environmental features which could be affected by the proposed modifications to operations at the Mine (refer to Section 3.3).
- Consideration of the environmental performance at the Mine in order to identify those environmental features that are, have been or are likely to be affected by mining operations (refer to Section 1.4.4).
- Consideration of the environmental issues of concern or relevance raised during community and government consultation (refer to Section 1.5).
- The experience of Mine personnel and the author of this SoEE in relation to the likely impacts.

Section 3.4 provides a summary of the potential for impact on each environmental feature as a method of prioritising assessment.

3.2 LOCAL ENVIRONMENTAL SETTING

3.2.1 Introduction

The descriptions of various environmental aspects of the Proposed Modification throughout Sections 3.3 and 4 are reliant upon a range of background information common to many of the key environmental issues. In this section, background information is provided on the topography, soil and land capability, climate and land use and ownership.

3.2.2 Topography and Drainage

3.2.2.1 Regional Topography and Drainage

The Mine is located in the central portion of the Cobar Penneplain Bioregion (see Figure 11), in the centre of semi-arid western NSW. Formed on the northwesterly extension of the Lachlan Fold Belt, the Cobar Penneplain is characterised by rolling downs and flat plains punctuated by stony ridges and ranges.

The majority of the Mine Site is located within the Lachlan River catchment, with surface water flowing to the south and then west via a number of poorly-defined, ephemeral and unnamed creeks. The northern part of the Mine Site lies within the Darling River catchment, with surface water flowing north into Sandy Creek which flows onto the floodplains of the Cobar Penneplain (ANRA, undated; NPWS, 2003).
3.2.2.2 Local Topography and Drainage

Pre-mining topography within the Mine Site is characterised by roughly north-south oriented stony ridges and intervening valleys (see Figure 11). Elevations within the area vary from approximately 200m AHD within the channels of local drainage features to almost 360m AHD at the most elevated point of the north-south oriented ridges. Slopes within the local area vary from approximately 1° within the valleys to approximately 30° between the stony ridges.

The Mine Site itself is bound to the east and west by two of the north-south aligned ridges with the eastern ridge reaching a maximum elevation of 311m AHD towards the northeastern corner of the Mine Site and the western ridge reaching a maximum elevation of approximately 335m AHD roughly midway along the western Mine Site boundary (see Figure 11). A smaller and less defined ridge occurs on the Mine Site between the major western ridge and the flatter valley floor and rises to an elevation of between 270m and 280m AHD.

The dominant drainage feature of the Mine Site is a north-south aligned drainage line which roughly bisects the Mine Site. This central drainage line is made up of a number of poorly-defined channels, accepting runoff from a series of smaller sub-catchments, which carry surface runoff to the south.

Drainage on the Mine Site only flows during, and immediately following periods of heavy rainfall. While there is no record of flow velocity or depth during such events, it appears that water very quickly flows off the Mine Site (due to the position of the Mine Site high in the catchment).

3.2.3 Soil and Land Capability

The soils within and surrounding the Mine Site are characterised by Devonian and Silurian carbonate-bearing sediments and granite. The soils are typical of the Barnato Downs Sub-region of the Cobar Peneplain Bioregion within which the Mine is located. On the more elevated areas of the Mine Site, the soils are predominantly shallow stony loams. These loams deepen towards the mid-slopes and lower slopes to red loams with significant clay content. Through the centre of the Mine Site, significant sand deposits are present above a more clayey layer.

As no site specific soil sampling or analysis has been undertaken of the soils within the Mine Site, a high erodibility factor of 0.05 has been assumed for the purposes of erosion and sediment control.

3.2.4 Climate

3.2.4.1 Introduction

Climatic conditions have the potential to influence a range of Mine-related impacts at surrounding residences and on the local environment. This subsection provides a brief overview of the climatic conditions surrounding the Mine, focusing particularly on those aspects of the climate that are likely to influence the potential Mine.
3.2.4.2 Data Sources

Meteorological data from the following Bureau of Meteorology (BOM) stations is presented in Table 8. Long term climate data was sourced from the following locations as they provided the largest and most complete datasets within the local area.


<table>
<thead>
<tr>
<th>Temperature (°C)</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>April</th>
<th>May</th>
<th>June</th>
<th>July</th>
<th>Aug</th>
<th>Sept</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
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<tbody>
<tr>
<td>Mean maximum temperature</td>
<td>35</td>
<td>34</td>
<td>31</td>
<td>25</td>
<td>20</td>
<td>17</td>
<td>16</td>
<td>18</td>
<td>22</td>
<td>27</td>
<td>30</td>
<td>33</td>
<td></td>
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<tr>
<td>Mean minimum temperature</td>
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<td>19</td>
<td>17</td>
<td>12</td>
<td>8</td>
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<td>6</td>
<td>9</td>
<td>12</td>
<td>16</td>
<td>18</td>
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</table>

<table>
<thead>
<tr>
<th>Rainfall (mm)</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>April</th>
<th>May</th>
<th>June</th>
<th>July</th>
<th>Aug</th>
<th>Sept</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
<th>Annual</th>
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</thead>
<tbody>
<tr>
<td>Mean rainfall</td>
<td>39.3</td>
<td>39.4</td>
<td>32.8</td>
<td>25.8</td>
<td>30.1</td>
<td>29.8</td>
<td>25.8</td>
<td>27.9</td>
<td>23.9</td>
<td>32.2</td>
<td>32.3</td>
<td>35.9</td>
<td>373</td>
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<tr>
<td>Highest rainfall</td>
<td>236.7</td>
<td>235.1</td>
<td>227.9</td>
<td>175.6</td>
<td>121.3</td>
<td>96.2</td>
<td>95.8</td>
<td>95.4</td>
<td>98.7</td>
<td>117.6</td>
<td>148.3</td>
<td>154.7</td>
<td>755.0</td>
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<tr>
<td>Lowest rainfall</td>
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<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.2</td>
<td>0.1</td>
<td>0.0</td>
<td>0.0</td>
<td>0.2</td>
<td>0.7</td>
<td>109.0</td>
<td></td>
</tr>
<tr>
<td>Highest daily rainfall</td>
<td>113.3</td>
<td>89.7</td>
<td>114.3</td>
<td>71.4</td>
<td>59.4</td>
<td>43.4</td>
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<td>282</td>
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Note: Temperature and rainfall data were sourced from Cobar MO station for the months of May 1962 – March 2015, and from the Cobar Post Office station for the months of February 1881 – December 1965.

Source: Bureau of Meteorology Stations – Cobar MO NSW (Station No.: 0428027) & Cobar Post Office (Station No. 0428237)

These meteorological stations are located between 80km and 90km to the north of the Project Site. Data from both stations were combined to obtain average temperature and rainfall data for the period 1881 to 2009.

These meteorological stations are located between 80km and 90km to the north of the Project Site. Data from both stations were combined to obtain average temperature and rainfall data for the period 1881 to 2009.
3.2.5 Land Use and Land Ownership

3.2.5.1 Land Use

Land use on and surrounding the Mine Site are as follows.

- **Agriculture** – principally grazing of sheep and goats. The “Manuka” property, which is owned by the Applicant, is managed in accordance with the terms of a PVP over the property. Agricultural activities on other properties are principally undertaken in more cleared areas in between the more densely vegetated hill and ridge tops.

- **Mining** – has been an ongoing feature of the Cobar local government area (LGA) since the 1870s. The McKinnon’s Mine is located approximately 50km to the north of the mining lease.

- **Mineral exploration** – for precious and base metals is a feature throughout the Cobar LGA.

3.2.5.2 Land Ownership

3.2.5.2.1 Mine Site

The land on which the Mine is located is owned by the Applicant. **Figure 12** identifies the ownership of lands surrounding the Mine Site, along with known residences.

3.2.5.2.2 Manuka Mine Transportation Route

The ownership of land adjoining the shire roads of the transportation route, along with identified residences, is also presented on **Figure 12**.

As noted in Section 1.5.2, the only property with a residence in close proximity to the transportation route is “Yarranvale”. The owner of this property and residence has been consulted in relation to the Proposed Modification.

3.3 ENVIRONMENTAL ISSUES, POTENTIAL IMPacts AND CONSTRAINTS

3.3.1 Introduction

This section provides an overview of the key environmental issue associated with the Proposed Modification. This section also determines if any impacts to these environmental issues will result from the Proposed Modification, and whether further assessment is required.
3.3.2 Transportation

3.3.2.1 Existing Environment and Conditions

3.3.2.1.1 Introduction

Constructive Solutions Pty Limited (CSPL) (2015) provides a detailed description of the three roads under consideration based on a field inspection of 4 and 5 February 2015. The following describes the key features of each road.

3.3.2.1.2 Roads

Cobar-Bedooba Road (SR 13)

Cobar-Bedooba Road is a local road providing an alternative route (from the south) to Cobar. SR 13 provides access to a number of rural holdings and provides a 3.9km link between the Mine Entrance and SR14. There is no posted speed limit and therefore the default speed zone is considered to be 100km/hr. As identified in Sections 1.4.3 and 2.3.2.2, Council has issued approval for the use of SR 14 by AB-triple road trains delivering fuel to the Mine.

The subgrade of SR14 has been shaped to formation, with a width of approximately 6m over the 3.9km section of the transportation route (see Plate 2). No gravel or other pavement is present other than where defects in the subgrade have been rectified. Guideposts are present, however, CSPL (2015) note that the locations of these is random and the delineation of road alignment at night would be poor. CSPL (2015) identify that reasonably well maintained table drains are present on both sides of the formation, however, there are no corresponding depth markers in place.

Noting the above, CSPL (2015) consider the existing alignment is considered suitable for the passage of proposed haulage vehicles.

Manuka-Yarranvale Road (SR 14)

Manuka-Yarranvale Road is a local road of approximately 25km in length linking MR 410 with SR 13 and providing access to a number of rural holdings (see Figure 12). There is no posted speed limit and therefore the default speed zone is considered to be 100km/hr. As identified in Sections 1.4.3 and 2.3.2.2, Council has issued approval for the use of SR 14 by AB-triple road trains delivering fuel to the Mine.

The subgrade of SR14 has been shaped to formation, varying in width between 4.5m and 6m (see Plate 3). No gravel or other pavement is present other than where defects in the subgrade have been rectified. Guideposts are present, however, CSPL (2015) note that the locations of these is random and the delineation of road alignment at night would be poor. CSPL (2015) identify that reasonably well maintained table drains are present on both sides of the formation, however, there are no corresponding depth markers in place.

Noting the above, CSPL (2015) consider the existing alignment is considered suitable for the passage of proposed haulage vehicles.
Plate 2: Cobar-Bedocba Road (SR13) view southward from SR14 (Ref: CSPL(2015))(Plate 10)

Plate 3: Manuka-Yarravale Road (SR14) view eastward from SR13 (Ref: CSPL(2015))(Plate 7)

Plate 4: Kidman Way (MR410) with outside lane markings (Ref: CSPL(2015))(Plate 2)

Plate 5: Kidman Way (MR410) narrow sections (Ref: CSPL(2015))(Plate 3)
The Kidman Way (MR 410)

The Kidman Way (MR410) is a sealed, two-way Main Road which provides a link between Cobar to the north and Hillston to the south. MR 410 is identified from the RMS online interactive Restricted Access Vehicle Maps as approved Type 1 A-double road trains. As noted in Section 1.5.2, RMS has confirmed that MR 410 is also open to A-B triple road trains.

The road generally consists of a sealed pavement of approximately 6.2m to 8.8m wide with reasonably well maintained table drains on both sides of the road (see Plates 3 and 4). A number of segments along MR410 have been upgraded which accounts for the varying sealed width and line marking standard. CSPL (2015) provides a more detailed description of the varying road conditions by chainage from the Barrier Highway.

CSPL (2015) note that the pavement is in generally good condition, however, outer wheel path failures, edge break and minor pavement failures requiring heavy patch repairs were observed particularly on those segments with narrower seal widths.

3.3.2.1.3 Intersections

The Kidman Way (MR 410) and Manuka-Yarranvale Road (SR 14)

The intersection is a T-intersection with MR 410 as the priority road. Advanced warning signs for the intersection are located in both directions along Kidman Way. There is no give way signage, however, a sight screen is in place to alert drivers to the end of SR 14.

Sight distances exceeds the Austroads (2009) requirement in both directions, however, CSPL (2015) confirm the intersection in its current formation does not retain the dimensional capacity for the type of vehicle proposed (AB-triple road train).

Manuka-Yarranvale Road (SR 14) and Cobar-Bedooba Road (SR 13)

The intersection is a T-intersection with SR 13 as the priority road. There is no give way signage in place, however, there is a sight screen to alert road users to the end of SR 14.

The sight distance along SR 13 is greater than 300m and exceeds the ARRB (2009) requirement in both directions.

Cobar-Bedooba Road (SR 13) and the Mine Access Road

The Mine Access Road intersects with SR 13 approximately 3.9km to the southwest of SR 14. The Mine Access Road has no controls or advanced warning signs.

The sight distance along SR 13 is greater than 300m and exceeds the ARRB (2009) requirement in both directions.

3.3.2.1.4 Traffic Volumes and Peak Flows

No traffic count data is available for either SR 13 or SR 14. Based on field inspection and consultation CSPL (2015) confirm that both carry very low traffic volumes (less than 50 vehicles per day), largely restricted to local land owners, visitors to these properties, as well
as Mine-related traffic. Given the status of these roads, no peak hour traffic volume data is available, however, using an assumption or 15% of total daily traffic, a peak hourly traffic rate of 8 vehicles per hour has been applied.

Traffic count data collected by Council in July and August 2013 identified an average of 851 vehicles per day (28% being heavy vehicles) use this road approximately 10km south of Cobar. The volume of traffic decreases to an average of 248 vehicles per day (48% being heavy vehicles) approximately 30km south of Cobar. On the basis of a conservative traffic growth rate of 2% applied to the 2013 traffic, traffic volume in 2016 is calculated as 263 vehicles per day (137 light vehicles / 126 heavy vehicles). No peak traffic volume data is available, however, using an assumption or 15% of total daily traffic, a peak hourly traffic rate of 40 vehicles per hour has been applied.

### 3.3.2.2 Proposed Modifications and Potential Impacts

The Proposed Modification proposes to increase the number of heavy vehicle movements using the Manuka Mine transportation route by approximately 40 movements per day. This has the potential to impact on the integrity of these roads, increase maintenance requirements and costs, and adversely affect the driveability and safety of these roads.

The capacity and dimensions of the trucks proposed to be used would also be larger than those previously assessed and approved by DA 2010/LD-00074. MR 410 is open to AB-triple road trains and hence any potential impacts associated with the movement of these vehicles on this main road are accounted for in the management and maintenance of this road by RMS.

While it is noted that Council has provided approval for the use of SR 13 and SR 14 by A-B triple road trains for the purpose of fuel delivery, the increase in number proposed for the transportation of ore could impact on the road if not appropriately managed. Furthermore, the current arrangement of the intersections of the Manuka Mine transportation route does not cater for the swept paths of larger dimension vehicles. As a consequence, movement of these vehicles through the intersections requires travel off the defined road surface could affect the pavement edge, road side drainage and vegetation. Further, the swept paths of these larger dimension vehicles through the intersections would currently require travel on the wrong side of the road in order to make the turn effectively, creating a safety hazard (in particular if occurring at night).

Finally, the increase in heavy vehicle movements may impact negatively on other road users and property owners of the Manuka Mine transportation route. This negative impact would be magnified by poor road conditions but similarly mitigated by improved road and intersection conditions.

Section 4.2 reviews the potential impacts noted above and assesses these after consideration of the various impact minimisation, mitigation and management measures proposed by the Applicant.
3.3.3  Noise

3.3.3.1  Existing Environment and Conditions

The noise environment surrounding the Mine is influenced by typical rural activities such as livestock and local traffic, together with noise associated with wind in the trees, insects and birds. Traffic on nearby roads would also contribute to the local noise climate.

The noise generated from the existing operations at the Mine includes the following.

- Noise from mining operations incorporating the extraction of waste rock and ore material from open cut areas.
- Noise from backfilling of completed pits and waste rock emplacements.
- Noise from the Processing Plant.
- Noise from the use of vehicles on haul roads.
- Noise from use of vehicles on SR 13.

No sensitive locations are located near the Mine Site or transportation route.

Only two residences are located within the immediate vicinity of the Mine Site (see Figure 12).

- The “Manuka” property homestead is approximately 1.9km east of the Mine Site. The Eastern Ridge identified on Figure 11 lies between the “Manuka” homestead and the major noise generating activities of the Mine. Notably, the Applicant has acquired Western Lands Lease (WLL) 6238 for this property and hence the residence is considered mine-related for the purposes of assessment.

- The “Wirlong” homestead is approximately 1.5km southwest of the closest noise generating activity on the Mine Site. The Western Ridge identified on Figure 11 lies between the “Wirlong” homestead and provides significant acoustic shielding of Mine noise.

A noise assessment was undertaken by ERM (2010) to assess the potential noise impacts of the Mine at these two residences. Even under worst-case noise generating activities on the Mine Site, assessed under noise enhancing conditions (inversion [+4°C/100m] and noise enhancing winds [wind strength of 3m/s towards the respective receiver]), compliance with noise criteria was predicted. No complaints regarding mining noise have been lodged by resident of either residence suggesting the modelling of ERM (2010) accurately reflects noise emissions of the Mine.

An assessment of road noise impacts was also undertaken by ERM (2010) which determined that even at a distance as close as 13m from the road, compliance with road noise criteria could be achieved. Based on the use of the transportation route described in Section 2.3.2, the closest residential receiver, “Yarranvale”, is approximately 225m north of Manuka-Yarranvale Road and is unlikely to be adversely affected by traffic noise.
3.3.3.2 Proposed Modifications and Potential Impacts

On the basis that there would be no significant or noise enhancing modification to Mine Site operations\textsuperscript{10}, the Proposed Modification would have no impact on current compliance with noise criteria at the nearest residential receivers to the Mine Site. The noise assessment of ERM (2010) remains valid for Mine Site noise and therefore no further assessment is required.

The Proposed Modification would, however, increase the number of heavy vehicle movements travelling between the Mine Site and MR 410. Furthermore, these movements would occur during both the day time and night periods. This has the potential to adversely impact on the amenity of the “Yarranvale” residence on SR 14.

These potential impacts are further addressed in Section 4.3.

3.3.4 Surface Water Resources

3.3.4.1 Existing Environment and Conditions

As noted in Section 3.2.2.2, the dominant drainage feature of the Mine Site is a north-south aligned drainage line which roughly bisects the Mine Site. All current Mine Site activities are located within the catchment of this drainage line (see Figure 11).

Flows from the east and west of the Mine Site disturbance are diverted around existing disturbance in accordance with a Stormwater Management Scheme (RWC, 2015) prepared and implemented in accordance with Conditions O5.4 to O5.6 of EPL 2002\textsuperscript{11}. The Stormwater Management Scheme also provides for the capture, storage, treatment and reuse or discharge of runoff from disturbed areas of the Mine Site. A copy of the Stormwater Management Scheme is included as Appendix 7.

Saline water sourced from a licensed bore field approximately 4km south on the “Wirlong” property is stored within a high-density polyethylene (HDPE) plastic lined Process Water Pond to minimise risks of spillage, leakage or leaching the surrounding environment. The Applicant also manages water and waste streams containing the following potential contaminants:

- cyanide and other process reagents (tailings and return water pipelines);
- hydrocarbons (from diesel storage and refuelling areas); and
- low pH (acid) runoff (from acid generating ore and/or waste materials).

A Water Management Plan prepared for the Mine (RWC, 2012) identifies the potential impacts associated with the transfer, storage and use of these water streams, and the operational safeguards, controls and management measures implemented to reduce the risk (probability and/or consequence) of each.

\textsuperscript{10} It is noted that the Proposed Modification would require an increase in the frequency of road registered truck movements on the Mine Site associated with the delivery of Mt Boppy ore. However, when this commences (September 2015) these noise sources will effectively replace those of the much louder haul truck operations which will have ceased following completion of mining on the Mine Site.

\textsuperscript{11} The Stormwater Management Scheme satisfies Conditions 15 of DA 2010/LD-00074.
3.3.4.2  Proposed Modifications and Potential Impacts

No change to the disturbance footprint of the Mine, nor management of water and waste transfer pipelines, is proposed as a result of the Proposed Modification. On the basis that Mine Site water management is undertaken in accordance with the Water Management Plan (RWC, 2012), no additional impacts on surface water associated with general runoff of the Mine Site, saline water transfer and use, and hydrocarbon management, are anticipated.

It is noted that the Mt Boppy ore is PAF-LC (refer to Section 2.4.3.2.2) and therefore has the potential to generate acidic runoff if left exposed for significant periods. On the basis of the acid generating nature of the Mt Boppy Mine ore and tailings, the following potential impacts require consideration.

- Discharge of runoff from stockpiled Mt Boppy Mine ore with pH below the criteria limits of the Water Management Plan (pH<6.5).
- Pollution associated with low pH (<6.5) tailings or return water in the event of a spillage or leakage of tailings or return water pipeline.

However, as the Mt Boppy ore would be stockpiled on the Mine Rom Pad, any runoff would be contained and directed to the ROM Pad sump. This would be pumped from the sump to the Raw Water Dam as required (as nominated in the Stormwater Management Scheme – see Appendix 7). Therefore, as any acidic runoff would be contained, no further assessment is required.

It is noted that the tailings and return water streams are already identified as potential pollutants, with management and mitigation measures for reducing the potential for impact in the event of a spill or leak included in the Water Management Plan for the Mine (RWC, 2012). Consideration of response and contingency management in the event of a spill or leak is also included in the Pollution Incident Response Management Plan (PIRMP) (RWC, 2012d) prepared for the Mine. On the basis that appropriate spill / leak prevention and response measures are already in place for tailings and return water, no further assessment is required.

3.3.5  Groundwater Resources

3.3.5.1  Existing Environment and Conditions

The 2010 EIS (RWC, 2010) provides a detailed review of local groundwater conditions, potential impact and management. Notably, no surface water – groundwater interaction was identified locally (TIG, 2010). Mining remains above the local groundwater table with the management and monitoring of potential pollution currently implemented in accordance with the Mine Water Management Plan (RWC, 2012).

3.3.5.2  Proposed Modifications and Potential Impacts

On the basis that the Proposed Modification does not include any activities which would result in additional or modifications to impact on groundwater, no further assessment of groundwater resources is included in this SoEE.
3.3.6 Air Quality

3.3.6.1 Existing Environment and Conditions

Pollutant emission sources generated by the approved operations include the following:

- excavation, haulage and use of waste rock;
- ore stockpiling and screening;
- wind erosion off exposed surfaces and stockpiles;
- general movement of heavy vehicles on unsealed roads within the Mine Site; and
- movement of vehicles on unsealed roads on the Manuka Mine transportation route.

The primary sources of greenhouse gas emissions from the Mine include the following:

- Combustion of diesel fuel by diesel-powered equipment and vehicles, including front-end loaders, excavators, bulldozers, graders, drill rigs and haul trucks; and
- Combustion of diesel fuel by road registered trucks and other vehicles travelling to and from the Mine Site.

3.3.6.2 Proposed Modifications and Potential Impacts

Mine Site Operations

The Proposed Modification would not result in any increase to dust generation or greenhouse gas emissions. While the proposed importation of ore from the Mt Boppy Mine would increase the number of road-registered trucks entering and exiting the Mine Site each day, this is offset by the fact that mining operations have now ceased. Hence the emission sources of mining equipment, haul truck movements and temporary stockpiles of ore and overburden would be reduced to very low levels or eliminated entirely. Notably, no complaints have been registered in relation to air quality from the two closest residential receivers to the Mine Site. On the basis of the above, no further assessment of Mine Site air emissions has been undertaken.

Transport Operations

The Proposed Modification would result in an increase in the number of vehicle movements on SR 14, an unsealed road which is aligned past the “Yarranvale” residence at a distance of approximately 225m. Without mitigation, dust emissions associated with vehicle movements on this road may increase as a result, potentially affecting the owners / residents of the “Yarranvale” residence.

These potential impacts are further addressed in Section 4.4.
Greenhouse Gas Emissions

As calculated in RWC (2010), the primary source of greenhouse gas emissions of the Mine are a result of diesel fuel consumption. On the basis that when transportation of ore from Mt Boppy Mine commences, mining at the Manuka Mine will have ceased, the total consumption of diesel fuel will be far less that used in the calculations of RWC (2010). Therefore, the Proposed Modification would not result in any additional emissions of greenhouse gases and no further assessment is required.

3.3.7 Biodiversity

3.3.7.1 Existing Environment and Conditions

Sections 2.6.4.1 to 2.6.4.3 and Figure 9 provide an overview of regional and local biodiversity. Further information can be obtained from the following documents.

- Wonawinta Silver Project – Flora & Fauna Assessment (OzArk, 2010).

As detailed in Section 4.4 of RWC (2010), design features, operational controls and management measures are implemented to limit impacts on threatened species and communities.

3.3.7.2 Proposed Modifications and Potential Impacts

While no additional areas of the Mine Site are proposed to be disturbed, the Proposed Modification does provide for a revised BOA concept. Section 4.5 provides a review of the adequacy of the BOS, as described in Section 2.6.

3.3.8 Cultural Heritage

3.3.8.1 Existing Environment and Conditions

Previous field survey of the Mine Site identified 18 new Aboriginal sites, two previously recorded Aboriginal sites and one non-Aboriginal (historic) site on the Mine Site. Of these, AHIPs have been obtained for the five Aboriginal sites which occur within the impact footprint of the Mine Site.

3.3.8.2 Proposed Modifications and Potential Impacts

As the proposed Modification does not require any additional disturbance which could result in the destruction of sites of Aboriginal or non-Aboriginal significance, no additional cultural heritage impacts are anticipated and no further assessment has been undertaken as part of this SoEE.
3.3.9 Visual Amenity

3.3.9.1 Existing Environment and Conditions

As discussed in Section 4.10 of RWC (2010), the components of the Mine that may impact on visual amenity and their currently approved operational controls and measures are as follows.

- Waste dumps are progressively rehabilitated with the objective being to establish a cover of vegetation as soon as practically possible. The final landform of the Mine Site has been designed to be amenable to future low intensity agriculture which will be sympathetic to the surrounding landforms and vegetation types.
- Active dust suppression is undertaken to reduce the potential for the creation of a ‘dust cloud’ over the Mine Site.
- Sign posts and instructions provided to drivers request vehicles reduce speeds in the vicinity of the “Yarranvale” residence to minimise the generation of dust.
- Waste management on the Mine Site includes appropriate management of consumable waste such that wind-blown rubbish does not spread from the Mine Site.
- Night lighting is directed downward and towards the active areas of operation (minimising the light spill from the Mine Site).

Notably, the Mine Site is highly isolated from public vantage points both regionally, being 85km south of Cobar, and locally, with the Mine Site being screened visually from Cobar-Bedooba Road by a vegetated north-south oriented ridgeline on the “Manuka” property.

3.3.9.2 Proposed Modifications and Potential Impacts

No additional impacts on visual amenity would occur as a result of the Proposed Modification and no further assessment has been undertaken as part of this SoEE.

3.3.10 Socio-economic Setting

3.3.10.1 Existing Environment and Conditions

The socio-economic setting of the Mine was described in Section 3.5 of RWC (2010). While the 2011 Census results (ABS, 2011) indicate a reduction in the population of the Cobar Local Government Area (LGA) since 2006, there has been no major change to the main attributes of the setting in relation to age distribution, employment (occupation and industries), income and housing statistics. The Sandy Creek statistical area of the 2006 ABS Census (ABS (2006) reviewed for the purpose of community profiling was not used for ABS (2011) and so assessment of any changes locally is not possible. Anecdotally, however, the information gathered by the Applicant (and previously by the former operator of the Mine) suggests there has been no major change to the demographics of the land surrounding the Mine Site.
Of greatest significance with respect to socio-economic setting is the importance of the mining industry to employment within the Cobar LGA. ABS (2011) reports that 30.7% of all employment in the LGA is from mining. It can be extrapolated that employment in service based industries such as Retail Trade (8.4%), Professional Scientific and Technical Services (1.3%) and Public Administration and Safety (7.4%) is dependent, either directly or indirectly, to some degree on the employment generated by the mining industry.

3.3.10.2 Proposed Modifications and Potential Impacts

The primary effects of the Proposed Modification on the local socio-economic conditions area as follows.

- The continued operation of the Mine, which would otherwise remain under care and maintenance, would provide for a continuation of employment for the 40 personnel operating the processing plant and ancillary operations.
- The additional employment of 10 truck drivers for the haulage of ore from the Mt Boppy Mine to the Manuka Mine.
- The increased potential for local employment through the transition from a fly-in, fly-out workforce to a drive-in, drive-out workforce (requiring personnel to reside within a reasonable distance from the Mine Site).

These effects are considered largely positive for the Cobar LGA and considered further in Section 4.6.

3.4 ISSUE PRIORITISATION

Table 9 presents a summary of the environmental issues identified through review environmental performance (Section 1.4.4), consultation (Section 1.5), and the specific review of potential impacts associated with the Proposed Modification (Section 3.3). On the basis of frequency of identification, potential consequence of impact and relevance to the Proposed Modification (noting original documentation supplied to government agencies included in-pit tailings disposal as a component of the proposed modified operations), each issue is identified as having high, moderate, low or no priority for assessment.
### Summary of Identified Environmental Issues

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<th>Environmental Issue</th>
<th>Source and Frequency of Identification</th>
<th>Priority (refer to Section)</th>
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<td>Traffic and Transport</td>
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<tr>
<td>Noise &amp; Vibration</td>
<td>Y (B)</td>
<td>Moderate (4.3)</td>
</tr>
<tr>
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<td>Y (B,C)</td>
<td>N/R</td>
</tr>
<tr>
<td>Groundwater</td>
<td>Y (B,C)</td>
<td>N/R</td>
</tr>
<tr>
<td>Air Quality</td>
<td>Y (B)</td>
<td>Moderate (4.4)</td>
</tr>
<tr>
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<td>Y (E)</td>
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<tr>
<td>Resource Sterilisation</td>
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**Note 1:** Government Consultation Reference:  
A. Cobar Shire Council  
B. Environment Protection Authority  
C. NSW Office of Water  
D. Division of Resources & Energy  
E. Office of Environment & Heritage  
F. Roads and Maritime Services  

**Note 2:** N/R = Not Relevant or Required
4. ASSESSMENT AND MANAGEMENT OF KEY ENVIRONMENTAL ISSUES

4.1 INTRODUCTION

This section assesses those environmental issues that have been identified as potentially affected by the Proposed Modification (refer to Section 3). In each case, the environmental objectives are identified and the operational controls, safeguards and management measures proposed to achieve these objectives described. The environmental effects of the Proposed Modification upon the local environment, assuming all proposed safeguards and procedures are adopted, are then reviewed.

4.2 TRAFFIC AND TRANSPORT

4.2.1 Introduction

As noted in Section 3.3.2, the proposed importation of Mt Boppy ore to the Mine Site has the potential to impact on the road surface and traffic conditions of SR 13 and 14, MR 410 and the intersections between these roads. The following subsections provide a summary of a Traffic Impact Assessment (CSPL, 2015), provided in full as Appendix 4, which reviews existing road conditions, assesses the potential impact of the Proposed Modification on local road and traffic conditions and recommends road upgrades and maintenance to manage or mitigate these impacts. Following from Section 3.2.2.1, which provides a review of existing road and traffic conditions, the following subsections:

- identify the objectives of traffic management (Section 4.2.2);
- review the proposed road upgrades, maintenance and other operational controls (Section 4.2.3); and
- provide an assessment of residual impact given the implementation of the proposed upgrades, maintenance and management measures (Section 4.2.4)

It is noted that the increased traffic of the Proposed Modification also has the potential to effect noise levels and dust emissions received at one residence. These impacts are assessed separately in Sections 4.3 and 4.4 respectively.

4.2.2 Objectives

The objectives of the proposed transportation of ore between the Mt Boppy Mine and Manuka Mine are as follows.

- To transport ore from the Mt Boppy Mine to the Manuka Mine without adversely affecting the road surface of SR 13, SR 14 and MR 410.
- To provide for the necessary upgrades to local roads and intersections, as agreed by Council and RMS, to allow for safe operation of the largest capacity / dimension vehicle to be used for ore transportation.
- To ensure all vehicle movements are undertaken in a safe manner, with due regard to other road users.
4.2.3 Design Features, Operational Controls and Management Measures

4.2.3.1 Design Features (Proposed Road Upgrades and Maintenance)

Section 2.3.2.3 (see Table 5) summarises the road and intersection upgrades and scheduling which have been proposed in accordance with the recommendations of CSPL (2015).

The Applicant understands that permits issued under Section 138 for any road works are required and would obtain these prior to commencing any works on the shire and main roads.

4.2.3.2 Operational Controls and Management Measures

Restricted Access Vehicle Approval

The RMS has confirmed that MR 410 is open to AB-triple road trains and no further designation is required.

The operation of AB-triple road trains on SR 13 and SR 14 has been approved by Council for fuel delivery to the Mine Site. Approval to extend this approval is required for ore transportation, however, subject to agreement between the Applicant and Council for road upgrade and maintenance, the assessment included in this SoEE is considered as sufficient to enable Council to review and provide this approval. The Applicant would not commence the transportation of ore until such time as Council has approved use of these roads for AB-triple road trains.

Hazardous Materials Transport Management

Hazardous materials are defined within DoP (2011) as substances falling within the classification of the Australian Code for the Transportation of Dangerous Goods by Road and Rail (Dangerous Goods Code) (Department of Infrastructure, Transport, Regional Development and Local Government, 2009). The Applicant would continue transport the following hazardous materials to the Mine Site:

- diesel fuel;
- sodium cyanide;
- hydrochloric acid; and
- caustic soda.

The transportation of sodium cyanide, for which a Preliminary Hazard Analysis12 was completed in accordance with Clause 12 of State Environmental Planning Policy 33 – Hazardous and Offensive Development (SEPP 33) (RWC, 2010), is undertaken in accordance with a Cyanide Management Plan. The transportation of other hazardous materials is managed by the relevant transporter in accordance with the relevant section of the Dangerous Goods Code.

12 The Preliminary Hazard Analysis (PHA) was reviewed and considered sufficient as a Final Hazard Analysis following approval of DA 2010/LD-00074. The Cyanide Management Plan for the Mine incorporates the operational safeguards, management and contingency measures identified in the PHA.
Notably, the Mt Boppy ore is not a hazardous material and therefore no change to current management is required.

**Speed and Fatigue Management**

Drivers would be instructed to limit speed to 80km/hr or less on all unsealed roads, or where the speed limit is not sign-posted. Driving to the sign-posted speed limit, or less if conditions dictate, would be included within a Driver Code of Conduct.

Drivers would operate on a 12 hour roster and encourage drivers to take regular breaks. The taking of regular breaks would be formalised within a Driver Code of Conduct.

**Safe Operation Management**

The following controls would be implemented by the Applicant to maximise safe operation and minimise the potential for traffic incident involving a Mine-related vehicle.

- All transportation activities would be undertaken strictly in accordance with the conditions of DA 2010/LD-00074 (as modified).
- Every loaded truck travelling to and from the Mine Site would be inspected to confirm no overloading, even distribution of load and other factors which could influence safe transport. Trucks would not be permitted to exit either the Mt Boppy or Manuka Mine Sites until such an inspection has been completed.
- All trucks would be required to be well maintained. Trucks assessed to be unroadworthy would not be loaded.
- Deliveries of any “oversize” loads, e.g. large earthmoving equipment, would be undertaken in accordance with RMS and Council restrictions on transport hours and safety/warning requirements.
- The Applicant would refuse entry to any driver seen or reported to act in a dangerous or discourteous manner. Complaints raised against truck drivers would be taken seriously and, if verified, the offending driver(s) refused future entry to the Mine Site.

**Local School Bus Operations**

At the beginning of each school year, the Applicant would consult with local bus services to identify any change to pick-up / drop-off points on MR 410 (or addition of SR 13 or SR 14 to bus route). All drivers would be advised to restrict speeds during the nominated hours of school bus operation. This requirement would be formalised within a Driver Code of Conduct.

**Driver Code of Conduct**

General safe operating practices, and specific requirements to the Mine (as noted above), would be incorporated in a Driver Code of Conduct as required by *Conditions 23 and 24* of DA 2010/LD-00074. The Driver Code of Conduct would to be provided to each truck driver (for agreement and signature).
4.2.4 Environmental Effects

Roads and Intersections
CSPL (2015) has reviewed the Proposed Modification and the potential impacts on the roads and key intersections of the proposed Manuka Mine transportation route. On the basis that the nominated road and intersection upgrades (or equivalent as agreed with the relevant road authority) are completed, and these roads and intersections are maintained to the agreed standard, there is no reason why the transportation of ore should not proceed as proposed.

Traffic and Road Users
As noted in Section 3.3.2.1.4, the volume of traffic on the roads of the proposed Manuka Mine transportation route is low.

Based on the recorded traffic volumes and types collected by Council in August 2013, and an annual increase in traffic of 2% annually, Table 10 documents the increase attributable to the Proposed Modification on the Kidman Way.

<table>
<thead>
<tr>
<th>Year</th>
<th>Existing and Forecast Traffic</th>
<th>+ Additional Ore Transportation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Vehicles</td>
<td>Heavy Vehicles</td>
</tr>
<tr>
<td>2014</td>
<td>253</td>
<td>121</td>
</tr>
<tr>
<td>2015</td>
<td>258</td>
<td>124</td>
</tr>
<tr>
<td>2016</td>
<td>263</td>
<td>126</td>
</tr>
<tr>
<td>2017</td>
<td>269</td>
<td>129</td>
</tr>
</tbody>
</table>

Source: Modified after CSPL (2015) – Table 9

The following is illustrated by Table 10.

- A large proportion of traffic on the Kidman Way are already heavy vehicles (48%).
- The Proposed Modification would increase the total volume of traffic and proportion of heavy vehicles on the Kidman Way, however, the increase in the proportion of these would be relatively minor (7%).

The increase in traffic proposed is unlikely to be noticeable on MR 410, which notably is already open to AB-triple road trains. The only potential issue of concern in relation to interaction with other road users is the current configuration of the MR 410 – SR 14 intersection, which the Applicant has agreed would be upgraded on confirmation on the proposed modification to DA 2010/LD-00074.

Mine-related traffic on SR 13 and SR 14 is likely to be the dominant source of traffic with only occasional interaction with other vehicles on this road. Based on the nature of use of these roads (local property access), these interactions would occur almost exclusively during the day time. Therefore, given the relatively limited interaction between heavy vehicles and non-mine traffic (which would be predominantly during daylight hours), the management of the road to
and acceptable standard, and adherence of ore delivery and other truck drivers to a Driver Code of Conduct, it is assessed that the Proposed Modification may proceed without unacceptable impact or risk to other road users.

4.3 **NOISE AND VIBRATION**

4.3.1 **Introduction**

As noted in Section 3.3.2, the Proposed Modification could result in road traffic noise levels received at one residence, “Yarranvale”, increasing. In order to confirm that the road traffic noise would comply with applicable road noise criteria, the Applicant commissioned SLR Consulting Pty Limited (SLR) to complete a Road Traffic Noise and Vibration Impact Assessment. The following subsections summarise Road Traffic Noise and Vibration Impact Assessment of SLR (2015), a complete copy of which is provided as Appendix 5.

4.3.2 **Objectives**

The principal objectives for road traffic noise management of the Proposed Modification are as follows.

- To ensure that road traffic noise levels comply with relevant noise criteria of the NSW Road Noise Policy (RNP) (EPA, 2013).
- To ensure that noise levels attributable to Mine traffic are minimised as far as practically possible.

4.3.3 **Assessment Criteria**

On the basis that there are no other viable transportation routes available to the Applicant other than that proposed, SLR (2015) notes that the route may be considered a ‘principal haulage route’ (as defined by the RNP). As a principal haulage route, adopted road noise criteria (external) are as follows.

- Total Traffic Noise.
  - Daytime (L_{Aeq(15hour)} < 60dB(A).
  - Night time (L_{Aeq(9hour)} < 50dB(A).
- Relative Increase.
  - Existing L_{Aeq(period)} + 12dB(A).

Vehicle pass-bys of a residence at night have the potential to disturb sleeping residents if the maximum L_{A1(1minute)} noise level is very high. The RNP notes that:

- maximum internal noise levels below 50 to 55 dB(A) are unlikely to cause awakening reactions; and
• one or two noise events per night, with maximum internal noise level of 65 to 70 dB(A), are not likely to affect health and well-being significantly.

On the basis that internal noise levels are at least 10dB(A) less than those received at the façade of a building, SLR (2015) nominate a external sleep disturbance criteria as follows.

• \( L_{A1(1\text{minute})} < 60\text{dB(A)} \)

### 4.3.4 Operational Safeguards and Controls

Regardless of the assessment of environmental effects of road traffic noise criteria at the single residential receiver located on SR 14, the Applicant would implement the following controls and safeguards (as recommended by SLR, 2015).

• Toolbox meetings would include regular discussion / instruction on driving to minimise noise.

• An 80km/hr speed limit would be required of truck drivers of the AB-triple road trains travelling between Mt Boppy and Manuka Mines.

• Signage would be installed on SR 14 (subject to Council agreement) ‘reminding’ drivers to minimise noise in the vicinity of the residential receiver.

• Drivers would be instructed to minimise the use of engine brakes on the proposed Manuka Mine transportation route (especially within 5km of the SR 14 – MR 410 intersection).

• Drivers would be instructed to report and deformities or irregularities of the road surface. These would either be repaired by the Applicant or reported to Council for repair (depending on the final arrangement between Council and the Applicant in relation to road maintenance).

• Vehicles which travel between the Mt Boppy and Manuka Mines would be well-maintained and not operated unless nominated standards are confirmed (see also Section 4.2.3.2).

### 4.3.5 Assessment Methodology

SLR (2015) modelled the equivalent and maximum noise levels, using the Federal Highway Administration (FHWA) Model, received at the only identified residential receiver, namely “Yarranvale” (see Figure 12). It was not considered necessary to consider receivers located along the Kidman Way given the main road status of this road and existing designation for AB-triple roads trains.
Using reference noise levels from an SLR database of light and heavy vehicle pass-by noise measurements, the received noise level at the “Yarranvale” residence were modelled considering existing traffic conditions (50 vehicle movements of which 10% are heavy vehicles) and those including the traffic of the Proposed Modification (refer to Section 2.3.2). Based on an evenly distributed scheduling of truck movements over a 24 hour period, the proportion of vehicle movements modelled during the day time and night time period was split 62.5%:37.5% (reflecting the 15 hour:9 hour periods).

For further information on the modelling parameters, assumptions and application, refer to Sections 3.3 to 3.6 of SLR (2015).

### 4.3.6 Environmental Effects

#### 4.3.6.1 Road Noise

The results of the road noise modelling of SLR (2015) is presented in Table 11.

<table>
<thead>
<tr>
<th>Location</th>
<th>Period</th>
<th>Predicted Noise Level $L_{Aeq(period)}$ (dBA)</th>
<th>Relative Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Existing</td>
<td>Proposed</td>
<td>Total</td>
</tr>
<tr>
<td>Yarranvale</td>
<td>Daytime</td>
<td>36</td>
<td>42</td>
</tr>
<tr>
<td></td>
<td>Night Time</td>
<td>36</td>
<td>42</td>
</tr>
</tbody>
</table>

Source: Modified after SLR (2015) – Table 8

The road traffic noise levels are predicted to be well below the relevant Total Traffic Noise and Relative Increase criteria of the RNP (see Section 4.3.3) during both the daytime and night time periods.

SLR (2015) predict the maximum pass-by noise level ($L_{A1(minute)}$) received at “Yarranvale” would be 55dB(A). This is below the externally measured sleep disturbance criteria (see Section 4.3.3).

#### 4.3.6.2 Vibration

The RNP states that vibration levels from vehicles operating on a roadway are unlikely to be perceptible unless there are significant road irregularities. The potential for vibration impacts is further reduced if the receiving location is greater than 20m from the road.

Given the Yarranvale residence is 225m from SR 14, SLR (2015) confirm that road traffic vibration levels would be negligible and below levels of human perception.
4.4 AIR QUALITY

4.4.1 Introduction

As noted in Section 3.3.6.2, the proposed increase in vehicle movements on SR 14 could result in an increase in dust emissions received at one residence (“Yarranvale”).

4.4.2 Objectives

The principal objective for the management of dust emissions associated with the increased traffic to be generated by the Proposed Modification is as follows.

- To ensure that dust emissions generated by heavy vehicle movements on SR 14 are minimised and do not result in nuisance impacts at the “Yarranvale” residence.

The definition of a nuisance impact follows guidance provided by the EPA and refers to an annual average dust deposition rate of 4g/m$^2$/month, or an increase above background of 2g/m$^2$/month.

4.4.3 Operational Safeguards and Controls

Following consultation with the owner of the “Yarranvale” property, it has been agreed that a binding agent would be applied to the road surface which adjoins the residence. There are numerous such binding agents available commercially and the specific product and rate of application would be identified prior to the commencement of haulage.

Dust suppressing binding agents reduce the potential for dust lift-off in one of two primary ways. Either a chemical polymer binds the surface soil together, effectively creating a thin ‘mat’ over the road surface which reduces the occurrence of individual dust particles available for lift-off. Or a hydrophilic compound is applied which draws moisture from the atmosphere and ‘wets’ the road surface. On the basis that a wet road surface is more susceptible to damage, it is likely a polymer based binding agent would be used.

In the event that the use of the binding agent does not satisfactorily reduce dust emissions, the Applicant has identified the following contingency option.

- Apply a bitumen seal over the road surface fronting the entrance to the “Yarranvale” residence. The exact distance of seal would be determined in consultation with the property owner and Council.

4.4.4 Environmental Effects

There is significant evidence available from the mining industry demonstrating the effectiveness of binding agents in reducing dust emissions. Mills (2010) reports that the requirement to water haul roads on mines in the Pilbara region is potentially reduced by 95% through the application of a binding agent. It is therefore considered likely that a binding agent would be effective in managing dust emissions generated by all vehicle movements on SR 14 without the requirement to regularly water or seal the road.
4.5 BIODIVERSITY

4.5.1 Introduction

As noted in Section 3.3.7.2, the Proposed Modification provides for a revised BOS, which accounts for the reduced disturbance footprint of the Mine (refer to Section 2.6, Figures 8 and 9). OzArk Environmental and Heritage Management Pty Limited was engaged by the Applicant to review the offset requirements for this revised disturbance footprint and has prepared a draft BOS for review by OEH and LLS prior to submission to Council (OzArk, 2015). The following subsections provide a brief summary of the methodology used to review offset requirements and confirm the adequacy of the BOS as currently proposed.

4.5.2 Assessment Methodology

OzArk (2015) reviewed the proposed BOS in relation to the offset principles identified in Section 2.6.2.

- The BOS should aim to ‘maintain or improve’ biodiversity values.
- The BOS should be enforceable, monitored and audited.
- The BOS should provide long term security for the proposed offset area.

While not a State Significant Development, OzArk (2015) used the OEH Interim Policy for Assessing and Offsetting Biodiversity Impacts of ‘State Significant Development’ (OEH, 2011). Under OEH (2011), the Applicant is required to:

- describe, quantify and categorise the biodiversity values and impacts of a proposal;
- identify, for benchmarking purposes, the offsetting that would be required to meet, improve or maintain the standard; and
- provide the information for calculating offsets under this policy.

OEH (2011) relies on the ability of an assessment to categorise and quantify the biodiversity values of land to be impacted and that to be used to offset the impacts. The BioBanking Assessment Methodology (BBAM) provides an approved method of completing such categorisation and quantification, establishing benchmark requirements for offsets based on the type, condition and quantum of the biodiversity to be disturbed. OEH (2011) requires that the nominated offset strategy be considered against benchmark requirements (generated by BBAM) to determine whether it meets one of the following biodiversity outcomes.

- Tier 1: Improve or maintain. The BBAM nominated benchmark offsets are achieved.

13 It is noted that the BOS also incorporates the offset requirements for the Mt Boppy Mine as required by Conditions 23 to 25 of DA 2011/LD-00070. Reference to the Mt Boppy Mine component of the BOS is excluded from discussions in this SoEE.
• Tier 2: No net loss. With the exception that ‘red flag’ areas, e.g. EECs or threatened flora, are not protected, the benchmark offsets nominated by BBAM are achieved.

• Tier 3: Mitigated net loss. The nominated offset does achieve the benchmark nominated by BBAM, however, a lesser quantum is justified on the basis of other factors.

4.5.3 Assessment of the BOS

4.5.3.1 Maintain of Improve

Noting that the current conditions of DA 2010/LD-00074 require a 2:1 ratio of offset to disturbance, the proposed 410ha of the BOA exceeds the 330ha minimum based 165ha of disturbance.

Importantly, the BVT of the BOA is the same as that to be disturbed (WE91 - Poplar Box - Gum-barked Coolibah - White Cypress Pine shrubby woodland mainly in the Cobar Peneplain Bioregion (Benson 103)), i.e. it is ‘like for like’.

On the basis of the above, the proposed BOS would achieve a Tier 3 offset outcome. While this falls short of a Tier 1 ‘improve or maintain’ outcome, it is acceptable as:

a) The Mine is not SSD and hence a Tier 1 outcome is not required; and

b) The conditions of DA 2010/LD-00074 already identify a Tier 3 outcome as suitable for the disturbance associated with the Mine.

4.5.3.2 Enforceability

The Applicant proposes to implement the BOS as a modified PVP of the “Manuka” property. The modified PVP, including the specific conservation management for the BOA, would be registered by LLS and enforced as a condition of the title for the property.

The Applicant would prepare a Biodiversity Offset Management Plan (BOMP), in consultation with the property manager, LLS, OEH and Council. This BOMP would include the various performance criteria and indicators agreed with OEH and LLS, as well as the monitoring regime to be implemented. Ultimately, the implementation of the BOMP will remain a conditional requirement of DA 2010/LD-00074 and hence be enforceable by Council.

4.5.3.3 Long-term Security

The PVP, registered by LLS and included on the lease hold title for Manuka (WLL 6238), provides the long-term security required for the BOS.

4.6 SOCIO-ECONOMIC SETTING

As noted in Section 3.3.10.2, the effects of the Proposed Modification are considered largely positive.
Positive Effects

The Proposed Modification would provide for the continued employment of the 40 existing personnel at the Mine, as well as an additional 10 transport operations positions. Notably, while the Mine would still operate a camp facility, operation as a drive-in, drive-out site has resulted in the bulk of the current workforce residing within a 6 hour drive of the Mine. It is expected that over time, a proportion of those residing outside the Cobar LGA would move to the LGA to reduce travel time to and from the Mine at the commencement and end of each roster. Furthermore, as personnel is turned over, it is expected that the proportion of new employees would be drawn from Cobar (noting that within the Cobar LGA, over 30% of those employed nominated mining as the industry of employment in the 2011 ABS Census, illustrating an existing skills base for mining within the LGA).

The truck drivers required to transport the ore from Mt Boppy Mine to Manuka Mine would be residential and almost certainly based within the Cobar LGA. This would therefore provide employment to local residents or result in the movement of employees (and families) to the Cobar LGA.

An increase in employment drawn from the Cobar LGA, would impact indirectly (and positively) on other local businesses as income earned by these employees is spent in Cobar. Furthermore, the continued operation of the Mine would require a continuation of the supply of goods and service, such as mechanical repairs, administrative services, cleaning services, etc., of which a proportion would be drawn locally.

Furthermore, and given the significance of mining as an industry within the Cobar LGA, the continued operation of the Mine would almost certainly positively influence the morale / outlook of Cobar residents and businesses. The ability to quantify this impact is difficult, however, it is likely to promote retention of residents and local expenditure.

Negative Effects and Management

The only identified negative effect of the Proposed Modification relates to the increased used and potential increase in cost of maintaining SR 13 and SR 14. However, as discussed in Section 2.3.2.3 and 4.2.3, the Applicant acknowledges a responsibility to ensure that maintenance costs borne by Council are not increased as a result of the Proposed Modification. It is expected that preparation and implementation of a VPA between the Applicant and Council would be a requirement of the modified development consent.
5. EVALUATION OF THE PROPOSED MODIFICATION

5.1 INTRODUCTION

In evaluating whether the development and operation of the Proposed Modification is justified, consideration has been given to biophysical and socio-economic factors, including the predicted residual impacts on the local and wider environment and the potential benefits of the Proposed Modification. A review of the Proposed Modification against the provisions of the EP&A Act that guide modification and assessment of development in NSW is provided, followed by a review of the objects of the EP&A Act and a final evaluation of the Proposed Modification.

5.2 EVALUATION OF RESIDUAL EFFECTS

5.2.1 Biophysical Considerations

Section 4 presents a range of residual impacts on the biophysical environment that are predicted should the Proposed Modification proceed, after the adoption of a number of operational controls and management measures. A brief summary and review of these residual impacts is provided below.

Traffic and Transportation

A Traffic Impact Assessment (CSPL, 2015), considered the potential impacts of the Proposed Modification to road condition and intersection performance. The Applicant contends that with the implementation of appropriate road and intersection upgrades, and establishment of an appropriate road maintenance agreement with Council, transportation using 60t-capacity AB-triple road trains could be undertaken without adverse impact on the shire and main roads of the transportation route and without unacceptable impact on other road users.

Noise

An assessment of the road traffic noise and vibration by SLR (2015) has confirmed that the proposed transportation could be undertaken without exceeding total traffic, relative increase or sleep disturbance noise criteria at the closest residential receiver. SLR (2015) also confirms that vibration would be imperceptible at this closest receiver.

Air Quality

The use of a binding agent on SR 14 adjoining the “Yarranvale” residence is considered likely to reduce dust emissions from vehicle movements on this road. The effectiveness of this measure would be reviewed in consultation with the property owner and Council with a the application of a bitumen seal to a section of the road an identified contingency measure.

Biodiversity

A revised BOS has been prepared and submitted to OEH and LLS for comment. This BOS has been reviewed against the existing conditions of DA 2010/LD-00074 relevant to biodiversity, and the Interim Policy for Assessing and Offsetting Biodiversity Impacts of ‘State Significant Development’ (OEH, 2011). This review confirms that the revised BOS achieves the
nominated 2:1 offset ratio required by *Condition 32* of DA 2010/LD-00074, contains the same BVT as has been disturbed, and would be enforceable and secured in the long-term through management as part of the broader PVP for the “Manuka” property. In accordance with OEH (2011), the revised BOS achieves a Tier 3 – Mitigated Net Loss outcome.

5.2.2 Socio-Economic Considerations

As is discussed in Section 4.6, the continued operation and employment generated by the Proposed Modification would impact positively on the Cobar LGA. Notably, the additional employment of 10 truck drivers and transition to a drive-in, drive-out operation would increase the total number of employees drawn from the Cobar LGA. This would in turn positively impact on other local businesses as wages earned at the Mine are spent locally.

Socially, the continuation of the Manuka Mine, which is linked to the continued operation of the Mt Boppy Mine, the impact would also be positive. Given the reliance of the Cobar LGA on the mining industry, the confirmation of a continued 18 to 30 months operation at the Manuka Mine Site would have a positive influence on local morale and outlook.

5.3 EP&A ACT SECTION 96(2) CONSIDERATIONS

5.3.1 Introduction

Section 96(2) of the EP&A Act sets out the requirements to be met for a consent authority to modify a consent. The following subsections provide an evaluation of the Proposed Modification against the provisions of Section 96(2).

5.3.2 Substantially the Same Development

Section 96(2)(a) of the EP&A Act 1979 nominates that “A consent authority may...modify a consent if:

c) it is satisfied that the development to which the consent as modified relates is substantially the same development as the development for which consent was originally granted and before that consent as originally granted was modified (if at all) under this section”.

The Applicant contends that the Proposed Modification would effectively remain “substantially the same development” for the following reasons.

- The Proposed Modification would not require any additional disturbance on the Mine Site.
- The Proposed Modification would utilise a transportation route currently used for the delivery of fuel, reagents and other bulk materials.
- Rehabilitation of the Mine Site would result in substantially the same final landform as the currently approved final landform.
5.3.3 Consultation with the Relevant Minister, Public Authority or Approval Body

Section 96(2)(b) of the EP&A Act 1979 states that “A consent authority may... modify a consent if:

   a) it has consulted with the relevant Minister, public authority or approval body (within the meaning of Division 5) in respect of a condition imposed as a requirement of a concurrence to the consent or in accordance with the general terms of an approval proposed to be granted by the approval body and that Minister, authority or body has not, within 21 days after being consulted, objected to the modification of that consent”.

The Applicant notes that this is a matter for Council, however, as discussed in Section 1.5 the Applicant has consulted with those government agencies from which General Terms of Approval will be required or from whom Council is likely to seek advice prior to assessment of the Proposed Modification.

5.3.4 Notification of the Application

Section 96(2)(c) of the EP&A Act 1979 states that “A consent authority may... modify a consent if:

   b) “it has notified the application in accordance with:

      (i) the regulations, if the regulation so require, or

      (ii) a development control plan, if the consent authority is a council that has made a development control plan under section 72 that requires the notification or advertising of applications for modification of a development consent”.

The Applicant notes that this is a matter for Council. However, the Applicant anticipates that Council will notify relevant parties in accordance with Clause 118 of the Environmental Planning and Assessment Regulation 2000.

5.3.5 Submissions Regarding the Proposal

Section 96(2) (d) of the EP&A Act 1979 states that “A consent authority may... modify a consent if:

   a) it has considered any submissions made concerning the Proposed Modification within the period prescribed by the regulations or provided by the development control plan, as the case may be”.

This is a matter for the Council to consider, however, the Applicant will respond to any submissions received by Council during the assessment process.
5.4 SECTION 79C(1) CONSIDERATIONS

5.4.1 Introduction

Section 79C(1) of the EP&A Act sets out the matters for consideration by a consent authority when determining an application for development consent. The following subsections provide an evaluation of the Proposed Modification against the provisions of that section.

5.4.2 Environmental Planning Instruments, Plans and Regulations (Section 79C (1a))

Cobar Local Environmental Plan 2012

The Applicant notes that the Mine Site is situated within land zoned as Zone RU1 - Primary Production under the Cobar Local Environment Plan 2012. The objectives of Zone RU1 – Primary Production under that plan are as follows.

- To encourage sustainable primary industry production by maintaining and enhancing the natural resource base.
- To encourage diversity in primary industry enterprises and systems appropriate for the area.
- To minimise the fragmentation and alienation of resource lands.
- To minimise conflict between land uses within this zone and land uses within adjoining zones.

Open cut mining is permitted with consent in this zone. The coexistence of mining activities and agriculture is demonstrated by the proposed method of securing and implementing the BOS, i.e. amendment to the existing PVP over the “Manuka” property to incorporate conservation measures within the wider agricultural context of the property.

SEPP (Mining, Petroleum Production and Extractive Industries) 2007

The SEPP specifies matters requiring consideration in the assessment of any mining development, as defined in NSW legislation. Table 12 presents a summary of the relevant clauses requiring consideration and the Proposed Modification with respect to each relevant clause.

State Environmental Planning Policy No. 33 – Hazardous and Offensive Development (SEPP 33)

SEPP 33 identifies that hazardous and offensive industries, and potentially hazardous and offensive industries, relate to industries that, without the implementation of appropriate impact minimisation measures would, or potentially would, pose a significant risk in relation to the locality, to human health, life or property, or to the biophysical environment.

The Proposed Modification would not any modifications to the types, volumes, storage or use of hazardous or dangerous goods within the Mine Site. As a result, SEPP 33 is not relevant to this application.
Table 12
Application of SEPP (Mining, Petroleum Production and Extractive Industries) 2007

<table>
<thead>
<tr>
<th>Relevant SEPP Clause</th>
<th>Description</th>
<th>Comments</th>
</tr>
</thead>
</table>
| 12: Compatibility with other land uses | Consideration is given to:  
  - the existing uses and approved uses of land in the vicinity of the development;  
  - the potential impact on the preferred land uses (as considered by the consent authority) in the vicinity of the development; and  
  - any ways in which the development may be incompatible with any of those existing, approved or preferred land uses.  
The respective public benefits of the development and the existing, approved or preferred land uses are evaluated and compared.  
Measures proposed to avoid or minimise any incompatibility are considered. | The Proposed Modification would permit the continuation of an existing approved land use within the Mine Site. The land in question has been previously disturbed by mining activities and the Proposed Modification would be considered a beneficial use with respect to alternative available uses.  
The land within and surrounding the Mine Site is zoned for Primary Production. As such the use for open cut mining would not conflict with surrounding agricultural use. |
| 12AA: Significance of resource | Consideration is given to the significance of the resource that is the subject of the application, having regard to:  
  - the economic benefits, both to the State and the region; and  
  - the advice provided by the DG of DTIRIS as to the relative significance of the resource in comparison with other mineral resources across the State. | The recommencement of operations at the Mine Site would result in the continued employment of 40 people (Mine Site) and additional employment of 10 people (transport).  
In addition, it would be expected that the operation would contribute to the local, regional and wider economies through direct and indirect economic benefits associated with annual expenditure.  
No advice has been sought from DRE regarding the significance of the resource (given the currency of the mining operation). |
| 12AB: Non-discretionary development standards for mining | Consideration is given to development standards that, if complied with, prevents the consent authority from requiring more onerous standards for those matters | This is a matter for Council. |
| 13: Compatibility with mining, petroleum production or extractive industry | Consideration is given to whether the development is likely to have a significant impact on current or future mining, petroleum production or extractive industry and ways in which the development may be incompatible.  
Measures taken by the Proponent to avoid or minimise any incompatibility are considered.  
The public benefits of the development and any existing or approved mining, petroleum production or extractive industry must be evaluated and compared. | The Proposed Modification would not limit access to or impact the development of future mining operations. |
<table>
<thead>
<tr>
<th>Relevant SEPP Clause</th>
<th>Description</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>14: Natural resource and environmental management</td>
<td>Consideration is given to ensuring that the development is undertaken in an environmentally responsible manner, including conditions to ensure:</td>
<td>The environmental performance of the Mine is discussed in Section 1.4.4. The Applicant would continue to manage surface water resources in order to separate clean, dirty and potentially contaminated water in accordance with a Water Management Plan and Erosion and Sediment Control Plan (refer to Section 3.3.4). The Proposed Modification would not result in any impact on groundwater resources (refer to Section 3.3.5). The Proposed Modification would not result in any additional impact to threatened species or regional biodiversity as no additional disturbance is proposed (refer to Section 3.3.7). The greenhouse gas emissions of the Proposed Modification would not exceed those estimated for the originally approved operation (refer to Section 3.3.6).</td>
</tr>
<tr>
<td>15: Resource recovery</td>
<td>The efficiency of resource recovery, including the reuse or recycling of material and minimisation of the creation of waste, is considered.</td>
<td>The efficiency of resource recovery would be maximised as the more modern processing plant of the Manuka Mine could be utilised to process the ore of the Mt Boppy Mine. This avoids the requirement to install a new plant at Mt Boppy, while also maintaining operations at Manuka Mine (increasing the potential for continued mining should base the international silver price increase). Furthermore, this would allow for the Manuka Mine to be rehabilitated over a two to three year period while processing is undertaken.</td>
</tr>
<tr>
<td>16: Transportation</td>
<td>The following transport-related issues are considered.</td>
<td>Material transported from the Mine Site would use the local and State road network to deliver ore material to the Manuka Mine. No feasible alternative to road transportation is available. The Proposed Modification would use an existing approved transportation route. The Applicant has committed to the preparation of a Driver Code of Conduct.</td>
</tr>
<tr>
<td></td>
<td>- The transport of some or all of the materials from the site by means other than public road.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Limitation of the number of truck movements that occur on roads within residential areas or roads near to schools.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- The preparation of a code of conduct for the transport of materials on public roads.</td>
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</tr>
</tbody>
</table>
Table 12 (Cont’d)
Application of SEPP (Mining, Petroleum Production and Extractive Industries) 2007

<table>
<thead>
<tr>
<th>Relevant SEPP Clause</th>
<th>Description</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>17: Rehabilitation</td>
<td>The rehabilitation of the land affected by the development is considered including:</td>
<td>A summary of the proposed approach to rehabilitation is provided in Section 2.7. The Mine Site would be rehabilitated in accordance with a <em>Mining Operations Plan</em> to be adjusted to reflect the conditions of the Proposed Modification, should it be approved. The Proposed Modification would not constrain the final land use or expected final landform.</td>
</tr>
<tr>
<td></td>
<td>– the preparation of a plan that identifies the proposed end use and landform of the land once rehabilitated;</td>
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<tr>
<td></td>
<td>– the appropriate management of development generated waste;</td>
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<tr>
<td></td>
<td>– remediation of any soil contaminated by the development; and</td>
<td></td>
</tr>
<tr>
<td></td>
<td>– the steps to be taken to ensure that the state of the land does not jeopardize public safety, while being rehabilitated or at the completion of rehabilitation.</td>
<td></td>
</tr>
</tbody>
</table>

5.4.3 Likely Impacts of the Development (Section 79C (1b))

A detailed assessment of the environmental factors potentially impacted by the Proposed Modification is provided throughout Section 4. The continued and proposed operational controls and management measures that would be implemented and the residual environmental effects of the Proposed Modification have also been described. A summary and evaluation of the potential biophysical and socio-economic impacts of the Proposed Modification is provided in Section 5.2.

5.4.4 Suitability of the Site (Section 79C (1c))

The Mine is approved for the purpose of open cut mining and processing of ore.

5.4.5 Submissions (Section 79C (1d))

It is anticipated that Council will take any submissions into consideration during the assessment of this application.

5.4.6 The Public Interest (Section 79C (1e))

Given that the Proposed Modification would provide for the continuation of operations at the Mine and the subsequent benefit to local employment and services, along with the continued payment of taxes and royalties, it is considered that the Proposed Modification is in the public interest.
5.5 **OBJECTS OF THE EP&A ACT**

The Proposed Modification is being sought under Section 96(2) of the EP&A Act and must therefore satisfy the objects of that Act embodied in Section 5 of the Act. Table 13 identifies the objects of the EP&A Act and confirms that each has been satisfied by the Proposed Modification and this SoEE.

<table>
<thead>
<tr>
<th>Object</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>• to encourage:</td>
<td>The Proposed Modification would not require any additional disturbance to land. Any upgrades to local roads would be undertaken within the approved road easement. The Proposed Modification would therefore result in a beneficial use of land previously transformed and upon which most other land uses would be constrained.</td>
</tr>
<tr>
<td>• the proper management, development and conservation of natural and artificial resources, including agricultural land, natural areas, forests, minerals, water, cities, towns and villages for the purpose of promoting the social and economic welfare of the community and a better environment,</td>
<td>The Proposed Modification would result in a beneficial use of land previously transformed by mining activity without limiting surrounding land uses.</td>
</tr>
<tr>
<td>• the promotion and co-ordination of the orderly and economic use and development of land,</td>
<td>No additional communication or utility services would be required by the Proposed Modification and therefore no additional impact requiring specific consideration and management would result.</td>
</tr>
<tr>
<td>• the protection, provision and co-ordination of communication and utility services,</td>
<td>The Mine Site is an existing mine located on WLL 6238 and it is not proposed that this land be provided for public purposes.</td>
</tr>
<tr>
<td>• the provision of land for public purposes,</td>
<td>The Mine Site is an existing mine located on WLL 6238 and would not impact the provision and co-ordination of community services and facilities.</td>
</tr>
<tr>
<td>• the provision and co-ordination of community services and facilities, and</td>
<td>The Proposed Modification would not involve any additional disturbance and therefore not result in additional impacts to threatened species, populations and ecological communities, and their habitats.</td>
</tr>
<tr>
<td>• the protection of the environment, including the protection and conservation of native animals and plants, including threatened species, populations and ecological communities, and their habitats, and</td>
<td>On the basis that the Proposed Modification would have minimal additional residual impacts on the biophysical environment it is considered to conform to the principles of ecologically sustainable development.</td>
</tr>
<tr>
<td>• ecologically sustainable development, and</td>
<td>The Proposed Modification would not contribute to any additional pressure on local housing.</td>
</tr>
<tr>
<td>• the provision and maintenance of affordable housing, and</td>
<td>The relevant environmental planning legislation has been reviewed in Section 5.4.2. It has been concluded that the Proposed Modification would meet the requirements of all relevant legislation and would not constrain the ability of different levels of government in the State to exercise their functions.</td>
</tr>
<tr>
<td>• to promote the sharing of the responsibility for environmental planning between the different levels of government in the State, and</td>
<td>The Applicant anticipates that this application will be made publicly available by Council and that the public will be encouraged to make submissions.</td>
</tr>
<tr>
<td>• to provide increased opportunity for public involvement and participation in environmental planning and assessment.</td>
<td></td>
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</tbody>
</table>
5.6 CONCLUSION

The Proposed Modification provides for the transportation to, and processing of ore from the Mt Boppy Mine at the Manuka Mine in a manner that would maximise the efficiency of resource recovery while minimising environmental impacts.

The following conclusions have been made throughout the SoEE concerning potential impacts to the biophysical or socio-economic environment.

- The use of 60t-capacity AB-triple road trains could be undertaken, subject to selective upgrading of SR 13, SR 14 and intersections and ongoing maintenance, without unacceptable impact on these local roads or other road users.

- All road noise levels associated with Mine-related transportation are predicted to be compliant with the NSW Road Noise Policy, during all periods of operation.

- A proposed revision to the Biodiversity Offset Strategy, reflecting the reduced current impact footprint, would achieve a Tier 3: Mitigated Net Loss outcome, comply with the conditional requirement of DA 2010/LD-00074, would be enforceable and able to be secured in the long-term.

- Any additional impacts that might have been associated with nuisance dust emissions from the movement of road trains on local unsealed roads at residential receivers would be mitigated by the proposed use of a binding agent on those sections of road adjacent to the receiver.

- Impacts of the Mine on threatened biota, cultural heritage, water resources, visual amenity and other environmental parameters would not change from those approved by DA 2010/LD-00074.

- There would be no additional adverse impacts to the local or regional socio-economic setting. Rather the Proposed Modification would result in beneficial impacts such as employment and expenditure on services.

Based on the implementation of proposed operational controls and management measures, it is assessed that the Proposed Modification would be undertaken in a manner that would satisfy all relevant statutory goals and criteria, environmental objectives and reasonable community expectations.
6. REFERENCES


Environmental Resources Management (ERM) (2010). Wonawinta Silver Project – Noise Assessment, prepared on behalf of Cobar Consolidated Resources Limited.


OzArk Environment & Heritage Management (OzArk) (2010). Wonawinta Silver Project – Flora & Fauna Assessment, prepared on behalf of Cobar Consolidated Resources Limited.


