

## **Section 1.0**



Introduction

## 1.0 Introduction

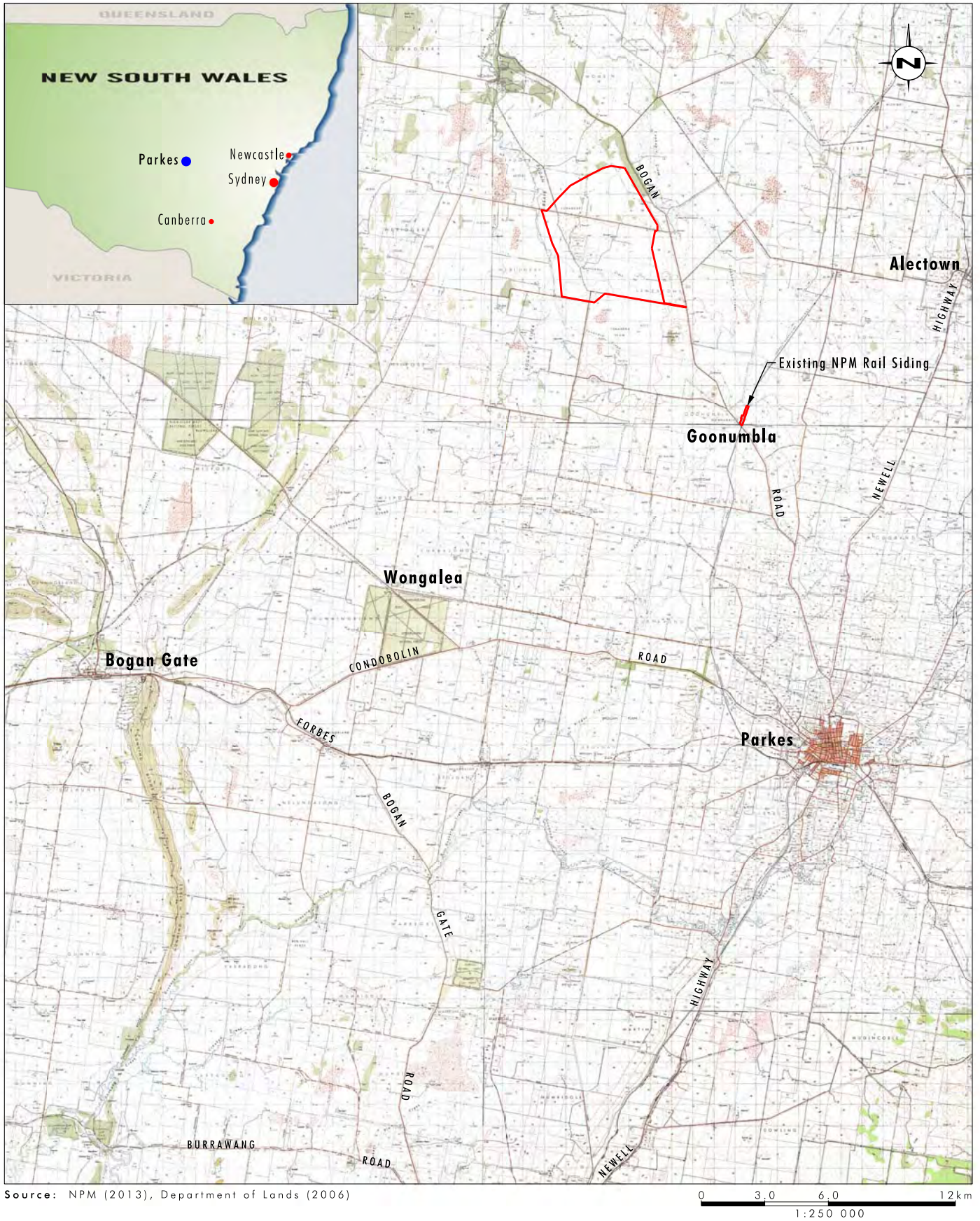
Northparkes Mines (NPM) is an existing copper-gold mine located approximately 27 kilometres north-west of Parkes (refer to **Figure 1.1**) in the central west region of New South Wales (NSW). NPM has been operational since 1993 and has included the development of open cut and underground mining operations targeting a number of ore bodies, as well as associated ore processing and tailings storage infrastructure. The existing operations have been developed in accordance with a number of development consents and project approvals, the most recent of which being PA06\_0026 (as modified), which provides for continued mining operations through to 2025.

NPM lodged the application for the Step Change Project (the Project) in 2011 which originally proposed a large scale expansion of existing operations for processing of up to 30 Million tonnes per annum (Mtpa), extension to underground mining operations and significant expansion of site infrastructure. Since the lodgement of the Project application, NPM have undertaken a detailed review of project design options to optimise the Project to maximise economic performance whilst minimising potential environmental impacts. In a fiscal climate where large scale mining projects have become increasingly difficult to develop, not just in Australia but internationally, a Project of the scale originally proposed is not considered viable at this time. On this basis the Project has been refined to adjust to market conditions as described below.

NPM are seeking approval for the Project which encompasses the continuation of underground block cave mining in two existing ore bodies, the development of underground block cave mining in the E22 resource, additional campaign open cut mining located in existing mining leases, augmentation to approved Tailings Storage Facilities (TSFs) and an extended mine life of seven years until 2032. The Project will be undertaken on land owned by NPM and within existing mining leases.

The Project Area is shown in **Figure 1.2** and consists of existing and proposed mining operations and associated infrastructure. **Figure 1.2** shows the major components of the Project which include:

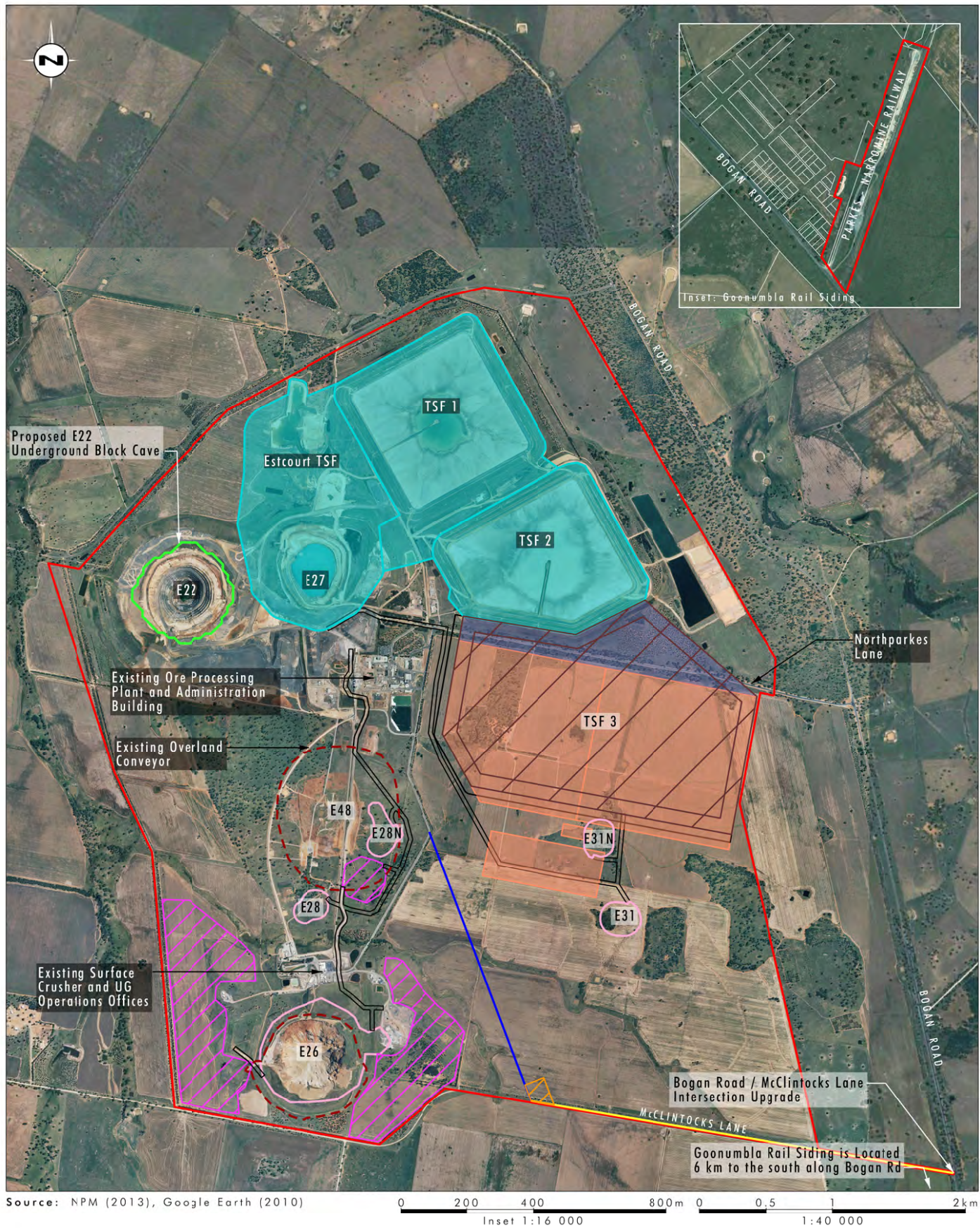
- continuation of approved underground block cave mining in the E48 and E26 ore bodies, and associated underground infrastructure;
- development of underground block caving in the E22 resource beneath the E22 open cut void;
- campaign open cut mining through development of five open cut resources including:
  - development of four small open cut pits E31, E31N, E28, E28N;
  - E26 open cut which is located in an area of previous underground block cave subsidence (existing vertical extent of subsidence void is approximately 200 metres);
- amendments to the configuration of TSFs including:
  - continuation of tailings disposal to the existing and approved TSFs (TSF 1 and 2, infill between TSF 1 and 2, and Estcourt) to an approved height of 28 metres;
  - provision for additional raises on Estcourt TSF to provide for an increased height from the approved 25 metres to up to approximately 28 metres above ground surface;
  - development of a new TSF 3, which will extend to the south from the southern embankment of TSF 2 to a height of approximately 28 metres above ground surface, which incorporates the approved Rosedale TSF;



**Legend**  
 Project Area

**FIGURE 1.1**  
**Locality Map**





### Legend

- Project Area
- Approved Tailings Storage Facility (Rosedale)
- Approved Subsidence Management Areas
- Existing Tailings Storage Facility
- Proposed Tailings Storage Facility Extension
- Proposed TSF3
- New Underground Block Cave Mining Area
- Proposed Open Cut Areas
- Proposed Upgrade to McClintocks Lane
- Proposed Access Control and Visitor Car Park
- Proposed Waste Dumps
- Proposed Site Access Road
- Proposed Haul Road

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FIGURE 1.2

Northparkes Mines Step Change Project



- development of new waste dumps for the management of open cut waste rock. Waste rock from open cut mining areas can be utilised in the development of TSF 3;
- continuation of approved ore processing infrastructure up to 8.5 Mtpa capacity, and road haulage of copper concentrate to the existing Goonumbla rail siding;
- continued use of existing site infrastructure including administration buildings, workshop, internal access roads and service infrastructure;
- continued use of surface mining infrastructure including ventilation shafts, hoisting shaft and ore conveyors;
- continuation of existing approved water supply and management processes;
- development of an amended access road to service all mine related traffic entering the site;
- establishment of new visitor car parking facilities and access control to support the amended mine site access;
- continuation of approved mining operations for an extended life of an additional seven years until end of 2032; and
- rehabilitation and closure of the mine site will be carried out after the end of the operational life of the Project in accordance with relevant approvals.

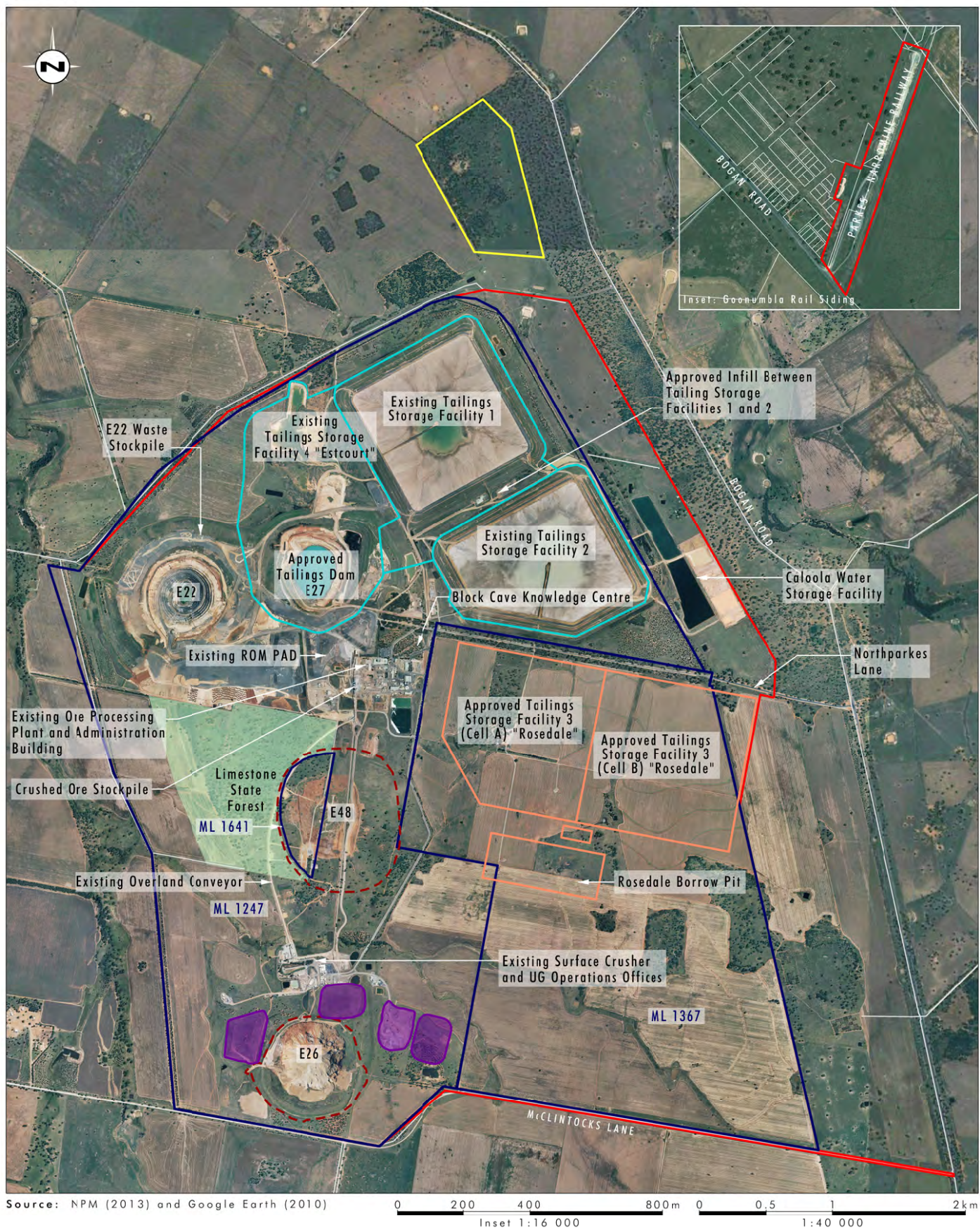
The Project also provides the opportunity for the integration, update and consolidation of existing approvals for underground mining, open cut mining and infrastructure within the NPM Project Area. This process is proposed to include surrendering of the existing project approval PA06\_0026 (as modified) and development consent DA11092 related to the Copper Knowledge Centre within 12 months following any granting of a Project Approval for this Project. Further detail on the existing project approval and development consents is provided in **Section 1.1**.

## 1.1 History of Mining Operations

Mining operations at NPM commenced in 1993 following an extensive exploration program and the granting of the original development consent. Since that time, NPM has progressed with the development of open cut and underground mining operations, and associated infrastructure, in accordance with development consents previously granted.

**Figure 1.3** provides an overview of the existing and approved operations at NPM. The historical and existing development consents associated with NPM are listed in **Table 1.1**, with an overview provided below.





### Legend

- Project Area
- Approved Waste Rock Stockpile
- Approved Tailings Facility
- Approved Subsidence Management Areas
- Mining Lease Boundary
- Existing Biodiversity Offset Area
- Existing Tailings Storage Facility
- Limestone State Forest

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FIGURE 1.3

Existing and Approved Operations



**Table 1.1 – NPM Development Consents History Summary**

Development Consent Identifier	Description
DA504/90 (surrendered)	Original Consent.
DA836/95 (surrendered)	Development of open cut mines E22 and E27, and associated haul roads.
DA895/95 (surrendered)	Development of No 2 TSF.
DA976/96 (surrendered)	Water supply augmentation.
DA00204 (surrendered)	Development and operation of the Caloola Clay Borrow Pit.
DA03079 (surrendered)	Development and operation of the Estcourt process water storage.
DA03107 (surrendered)	In-pit disposal of tailings into the E22 and E27 open cut and within the E22 sound bund.
PA06_0026	Consolidation of approvals for continued operations and the extension into the E48 Ore body.
Modification 1	Estcourt TSF, a mine and mill upgrade to increase production to 8.5 Mtpa and extension of mine life until 2025.
Modification 2	1200 m <sup>2</sup> warehouse within the approved mine infrastructure area.
-	Parkes Shire Council (PSC) approval for Road Train Access on Bogan Road (1999).
DA2009/0057	Development Consent (Forbes water pipeline).
DA11092	PSC development consent for Block Cave Knowledge Centre (2012).

North Mining Limited originally received development consent for NPM in 1992, 15 years after the first onsite resource discovery. This approval was based on open cut mining of E22 and E27 and underground mining of E26 within the 'Mining Reserve' of 64.1 million tonnes (Mt).

Underground block cave mining commenced at NPM in October 1993 with the construction of the E26 underground block cave mine through the granting of development consent DA504/90. NPM commissioned its second block cave mine, E26 Lift 2 in 2004. In 2008, NPM commissioned an extension to the second block cave mine, E26 Lift 2 North (E26 Lift 2N). Mining operations at NPM focus on the extraction of a range of ore bodies based on a range of target mineral concentration limits.

Open cut mining commenced with the E27 pit in December 1993 and the E22 pit in January 1994. The gold-enriched oxide ore was processed through a separate carbon-in-pulp (CIP) gold circuit, including the use of cyanide for gold extraction, prior to the construction of the copper-gold sulphide processing circuits in 1995. Ore was then stockpiled for blending with E26 underground material. Open cut mining at NPM operated on a campaign basis determined by economic and environmental viability. Previous open cut mining at NPM ceased in October 2010 with the completion of the E22 open cut campaign. The CIP processing plant has been decommissioned from site, with cyanide no longer used in process circuits on site.

In February 2007, the NSW Minister for Planning granted PA06\_0026 under Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act). This approval provided for the ongoing operation of the previously approved mining operations and facilities and the extension of underground block cave mining into the E48 ore body (refer to **Figure 1.3**). This project was known as the E48 Project. After approval in 2007, NPM commenced construction of E48 Lift 1, its third major block cave mine. Initial production of E48 Lift 1 began in 2010 and forms part of the approved underground mining operations in conjunction with E26 Lift 2 and E26 Lift 2N.

In October 2009, approval was granted for two modifications to PA06\_0026 under Section 75W of the EP&A Act. Section 75W modification 1 (Mod 1) provided for the construction of the Estcourt TSF, a mine and mill upgrade to increase processing up to 8.5 Mtpa and extension of mine life until 2025. Section 75W modification two (Mod 2) provided for the development of a 1200 m<sup>2</sup> warehouse within the approved mine infrastructure area. In 2012 NPM was granted approval for development of a block-cave knowledge centre under Part 4 of the EP&A Act (DA 11092) from PSC.

NPM continues to operate in accordance with PA06\_0026 (as modified), DA 209/0057 and DA 11092, with further detail of the existing and approved mining operations provided in **Section 2.2**.

## 1.2 Site Context

### 1.2.1 Environmental Setting and Land Use

The Project Area is located on the edge of the inland slopes west of the Great Dividing Range. The existing NPM site is generally flat, with some low undulations, ranging in elevation from 288 metres Australian Height Datum (mAHD) to 301 mAHD. The area surrounding the NPM site is also generally flat with the most significant regional feature being Goonumbla Hill, which extends to a height of 386 mAHD, located approximately 4 kilometres south of the Project Area.

Existing mining activities have resulted in alterations to the natural topography of the Project Area. These changes consist primarily of alteration to topographical relief associated with the TSFs and waste rock stockpiles and the creation of topographic lows by the open cut mines (E22) and by subsidence associated with E26 and E48 underground block cave mining.

The Project Area is located within the Macquarie-Bogan River catchment, which contributes surface water runoff from approximately 74,800 square kilometres (km<sup>2</sup>) to the Murray-Darling Basin System. NPM is located within four sub-catchments in the headwaters of the Bogan River, with one tributary, Goonumbla Creek traversing the Project Area. The surface water resources within and surrounding the Project Area, including Goonumbla Creek, Tenandra Creek and Bogan River are generally ephemeral and only carry surface water after very heavy rainfall events.

The area surrounding the proposed Project Area is dominated by various large agricultural land holdings cultivated predominately for cropping or pastoral practices. The surrounding locality and region consists of mostly cleared agricultural land with patches of remnant vegetation primarily associated with road reserves, travelling stock routes and State Forests. The closest townships to the Project Area are Peak Hill (approximately 25 kilometres north-east) and Parkes (approximately 27 kilometres south-east).



The Project Area (refer to **Figure 1.2**) covers approximately 2644 hectares, of which approximately 1150 hectares is currently located within active operational areas associated with existing NPM operations. The majority of the remaining land within the Project Area has previously been disturbed through agricultural land uses and is currently operated by NPM as a farm. The Project Area relates to the areas of existing mining leases and includes all land proposed for open cut and underground mining operations and the integration of ore handling, tailings and water management and other infrastructure associated with the Project, including Goonumbla rail siding (refer to **Figure 1.2**).

The existing land use within the Project Area has been primarily associated with mining activities since operations commenced onsite in 1993. Since initial development, operations at the NPM site have expanded to include open cut and underground mining activities. Prior to the establishment of mining operations, the primary land use in the Project Area was agriculture, which has a substantial history in the area, with an emphasis on cultivation activities typical of the established agricultural land uses within the surrounding area.

NPM owns approximately 6481 hectares of land surrounding existing operations. NPM operates these landholdings as a commercial farm with cropping for wheat and canola being the most common agricultural land uses. In addition, NPM have completed revegetation works within their landholdings which occur in linear strips along roadways and fence lines as well as in blocks adjacent to remnant vegetation.

### 1.2.2 Land Ownership

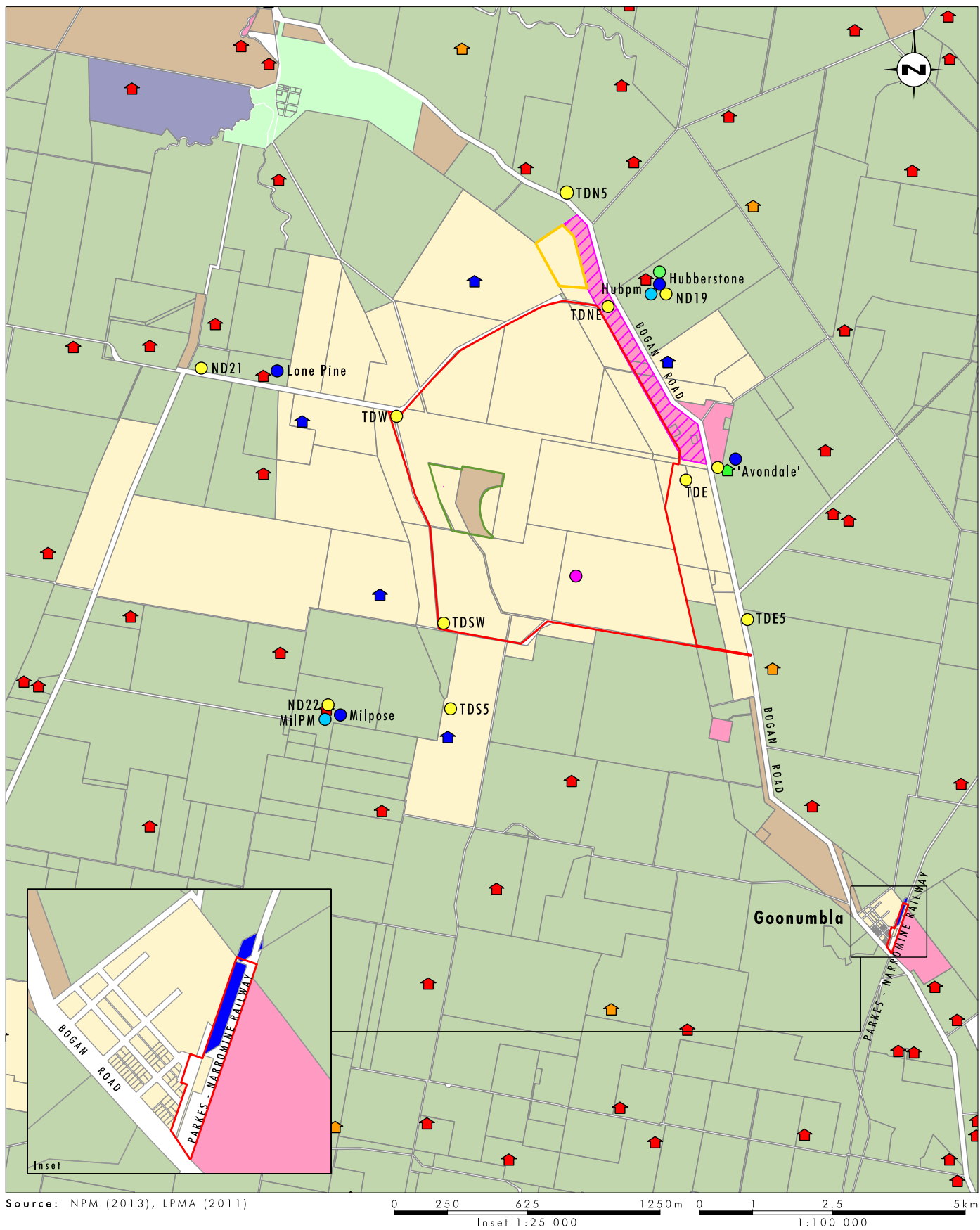
Land ownership and the location of private and mine owned residences around the Project Area are shown on **Figure 1.4**. As shown on **Figure 1.4**, NPM owns all land within the Project Area, with the only portion of land not owned by NPM being Crown land within the Limestone State Forest (refer to **Figure 1.4**). An additional area of NPM owned land is located within Limestone State Forest as a result of a land swap arrangement for the E48 Project. The Limestone State Forest is currently managed by NPM in consultation with Forests NSW in accordance with management agreements developed as part of the E48 Project.

The NPM landholdings are comprised of approximately 6481 hectares which encompass the existing NPM site as well as agricultural landholdings within the surrounding area. A schedule of lands located within the Project Area is included in **Appendix 1**.

The remaining land surrounding the Project Area is mostly owned by private landholders. The closest private residences vary in distance to the Project Area ranging from approximately 1 kilometre to the east, approximately 2.7 kilometres to the west and approximately 2.8 kilometres to the south of the Project Area boundary as shown on **Figure 1.4**. In addition to private land owners, a variety of entities have landholdings surrounding the Project Area including the State of NSW (Crown Land, travelling stock route), PSC, and the State Rail Authority of NSW (refer to **Figure 1.4**).

### 1.2.3 Existing Environmental Management Systems and Performance Monitoring

NPM operate and manage the environmental aspects of the existing mining operations under an ISO 14001 certified Health Safety, and Environment and Quality (HSEQ) management system to encourage rigor and consistency in environmental management across the site. In addition to meeting the requirements of ISO 14001, the NPM HSEQ management system also meets Rio Tinto Environmental Standards and considers all relevant State and Commonwealth legislation.



### Legend

- |  |   |  |
|--|---|--|
| <span style="border: 1px solid red; display: inline-block; width: 20px; height: 10px;"></span> Project Area  | <span style="background-color: #d2b48c; border: 1px solid black; display: inline-block; width: 20px; height: 10px;"></span> Department of Lands - Crown | <span style="background-color: #f5deb3; border: 1px solid black; display: inline-block; width: 20px; height: 10px;"></span> Derelict Residence |
| <span style="background-color: #fffacd; border: 1px solid orange; display: inline-block; width: 20px; height: 10px;"></span> Existing Biodiversity Offset Area | <span style="background-color: #f08080; border: 1px solid black; display: inline-block; width: 20px; height: 10px;"></span> State of NSW                | <span style="color: blue;">●</span> Noise Monitoring Location  |
| <span style="background-color: #90ee90; border: 1px solid green; display: inline-block; width: 20px; height: 10px;"></span> Limestone State Forest Boundary    | <span style="background-color: #0000ff; border: 1px solid black; display: inline-block; width: 20px; height: 10px;"></span> State Rail Authority of NSW | <span style="color: yellow;">●</span> Depositional Dust Monitoring Location  |
| <span style="background-color: #90ee90; border: 1px solid green; display: inline-block; width: 20px; height: 10px;"></span> State Forest of NSW                | <span style="background-color: #ff00ff; border: 1px solid black; display: inline-block; width: 20px; height: 10px;"></span> Travelling Stock Route      | <span style="color: cyan;">●</span> PM10 Monitoring Location   |
| <span style="background-color: #f5deb3; border: 1px solid black; display: inline-block; width: 20px; height: 10px;"></span> Mine Owned                         | <span style="color: red;">■</span> Private Residence  | <span style="color: green;">●</span> Blast Monitoring Location   |
| <span style="background-color: #8080ff; border: 1px solid black; display: inline-block; width: 20px; height: 10px;"></span> Parkes Shire Council               | <span style="color: green;">■</span> Agreement Residence  | <span style="color: magenta;">●</span> Meteorological Station  |
| <span style="background-color: #808080; border: 1px solid black; display: inline-block; width: 20px; height: 10px;"></span> Private                            | <span style="color: blue;">■</span> Mine Owned Residence  |  |

**FIGURE 1.4**  
**Land Ownership and**  
**Existing Monitoring Locations**



The HSEQ management system provides standards, policies, procedures and a system of work to ensure NPM manages its environmental aspects in a manner that is planned, controlled, monitored, recorded and audited, using a system that drives continual improvement.

NPM is operated in accordance with a range of environmental management plans required by the existing project approval (refer to **Table 1.2**). In addition to this, NPM have developed a range of environmental management plans that provide detailed guidance on the implementation of a range of environmental management controls. All management plans are incorporated in the NPM HSEQ management system. Central to the implementation of the HSEQ management system, and associated environmental management plans, is a comprehensive environmental monitoring program. The key elements of the environmental monitoring program are shown on **Figure 1.4** and are further discussed in the relevant Environmental Assessment (EA) sections of this EA (refer to **Section 5.0**).

The NPM HSEQ management system is regularly audited as part of the ISO 14001 surveillance program. In addition NPM commission independent compliance audits of operations, with the most recent independent audit conducted in accordance with the current project approval, and submitted to Department of Planning and Infrastructure (DP&I) in December 2011.

**Table 1.2 – Summary of Environmental Management Plans  
as Required by Existing Approvals**

<b>Name of Plan</b>
Cultural Heritage Management Plan
Construction Noise Management Plan
Environmental Monitoring Program
Air Quality Monitoring Program
Noise Monitoring Program
Environmental Management Strategy
Landscape Management Plan
Water Management Plan
Vegetation Management Plan

### **1.3 Overview of Planning Approval Process and Director-General's Requirements**

The Project requires approval under Part 3A of the EP&A Act as it has been declared a Part 3A project by the DP&I. The Project is a transitional Part 3A project as explained in **Section 3.0**. DP&I issued Director-General's Requirements (DGR's) for the Project that outline the specific requirements to be addressed as part of the preparation of the EA (refer to **Appendix 2**). A checklist of the DGR's and where they have been addressed in the EA is outlined in **Table 1.3**.

**Table 1.3 – Checklist of Director-General’s Requirements  
for the Environmental Assessment**

<b>General Requirements</b>	<b>Relevant EA Section</b>
<p>The Environmental Assessment must include:</p> <ul style="list-style-type: none"> <li>• An executive summary.</li> <li>• A detailed description of the project including: <ul style="list-style-type: none"> <li>▪ need for the proposed development;</li> <li>▪ a detailed resource and land use assessment;</li> <li>▪ alternatives considered, including a detailed justification for the proposed mine plan;</li> <li>▪ the likely inter-relationship between the proposed operations and the existing or approved mining operations at Northparkes;</li> <li>▪ likely staging of the development - including construction, operational stage/s and rehabilitation; and</li> <li>▪ plans of any proposed building works.</li> </ul> </li> </ul>	<p>Whole of Document Refer to <b>Section 2.1</b> Refer to <b>Section 5.2</b></p> <p>Refer to <b>Section 2.4</b></p> <p>Refer to <b>Section 2.3.2</b></p>
<ul style="list-style-type: none"> <li>• A risk assessment of the potential environmental impacts of the project, identifying the key issues for further assessment.</li> </ul>	<p>Refer to <b>Section 5.1</b> and <b>Appendix 3</b></p>
<ul style="list-style-type: none"> <li>• A detailed assessment of the key issues specified below and any other significant issues identified in the risk assessment (see above), which includes: <ul style="list-style-type: none"> <li>▪ a description of the existing environment and its values, using sufficient baseline data;</li> <li>▪ an assessment of the potential impacts of all stages of the project, including any cumulative impacts, taking into consideration any relevant guidelines, policies, plans and statutory provisions (see below);</li> <li>▪ a description of the measures that would be implemented to avoid, minimise and, if necessary, offset the potential impacts of the project, and ensure that the project is in the public interest and meets the net benefit test; and</li> <li>▪ detailed contingency plans for managing any potentially significant risks to the environment.</li> </ul> </li> </ul>	<p>Refer to <b>Section 2.2</b></p> <p>Provided throughout EA</p>
<ul style="list-style-type: none"> <li>• A statement of commitments.</li> </ul>	<p>Refer to <b>Section 6.0</b></p>
<ul style="list-style-type: none"> <li>• A conclusion justifying the project on economic, social and environmental grounds, taking into consideration whether the project is consistent with the objects of the Environmental Planning and Assessment Act 1979, including the principles of ecological sustainable development.</li> </ul>	<p>Refer to <b>Section 7.0</b></p>
<ul style="list-style-type: none"> <li>• A signed statement from the author of the Environmental Assessment certifying that the information contained in the report is neither false nor misleading.</li> </ul>	<p>Refer to <b>Appendix 1</b></p>



**Table 1.3 – Checklist of Director-General’s Requirements  
for the Environmental Assessment (cont.)**

<b>General Requirements</b>	<b>Relevant EA Section</b>
<ul style="list-style-type: none"> <li>Land Resources – including an Agricultural Impact Statement which includes a detailed assessment of the potential impacts on: <ul style="list-style-type: none"> <li>soils and land capability (including salinisation and contamination);</li> <li>landforms and topography, including surface drainage, rock formations, subsidence, steep slopes, etc.; and</li> <li>land use, including agricultural, forestry, conservation and recreational use.</li> </ul> </li> </ul>	<p>Refer to <b>Section 5.2</b> and <b>Appendix 5</b></p> <p><b>Section 5.2.1</b></p> <p><b>Section 5.2.1</b></p> <p><b>Section 5.2.1</b></p>
<ul style="list-style-type: none"> <li>Water Resources – including: <ul style="list-style-type: none"> <li>A detailed assessment of potential impacts on the quality and quantity of existing surface and ground water resources in accordance with the NSW Aquifer Interference Policy, including: <ul style="list-style-type: none"> <li>detailed modelling of potential groundwater impacts including identification of any highly productive groundwater (as defined by the Aquifer Interference Policy) or groundwater dependent ecosystems;</li> <li>impacts on affected licensed water users and basic landholder rights; and</li> <li>impacts on riparian, ecological, geomorphological and hydrological values of watercourses, including watercourse diversions and environmental flows.</li> </ul> </li> <li>a detailed site water balance, including a description of site water demands, water disposal methods (inclusive of volume and frequency of any water discharges), water supply infrastructure and water storage structures;</li> <li>an assessment of proposed water discharge quantities and quality/ies against receiving water quality and flow objectives;</li> <li>identification of any licensing requirements or other approvals under the <i>Water Act 1912</i> and/or <i>Water Management Act 2000</i>;</li> <li>demonstration that water for the construction and operation of the development can be obtained from an appropriately authorised and reliable supply in accordance with the operating rules of any relevant Water Sharing Plan (WSP);</li> <li>a description of the measures proposed to ensure the development can operate in accordance with the requirements of any relevant WSP or water source embargo; and</li> <li>a detailed description of the proposed water management system (including sewage), water monitoring program and other measures to mitigate surface and groundwater impacts.</li> </ul> </li> </ul>	<p>Refer to <b>Sections 5.7</b> and <b>5.8</b> and <b>Appendix 10</b> and <b>11</b> (Groundwater and Surface water assessments).</p> <p><b>Section 5.7.3</b></p> <p><b>Sections 5.7.4.3</b> and <b>5.8.2.4</b></p> <p><b>Sections 5.6</b> and <b>5.8.2</b></p> <p><b>Section 5.8.1</b></p> <p><b>Section 5.8.2</b></p> <p><b>Section 5.8.3.1</b></p> <p><b>Section 5.8.2</b></p> <p><b>Sections 5.7.5</b> and <b>5.8.3</b></p> <p><b>Sections 5.8.1.1</b> and <b>5.8.2.1</b></p>

**Table 1.3 – Checklist of Director-General’s Requirements  
for the Environmental Assessment (cont.)**

<b>General Requirements</b>	<b>Relevant EA Section</b>
<ul style="list-style-type: none"> <li>Waste – including: <ul style="list-style-type: none"> <li>accurate estimates of the quantity and nature of the potential waste streams of the development, including tailings, leachate and acid-generating potential;</li> <li>an assessment of the construction, operation and final landform of proposed waste rock emplacements and tailings storage facilities;</li> <li>a leachate disposal strategy; and</li> <li>a description of measures that would be implemented to minimise production of other waste, and ensure that that waste is appropriately managed.</li> </ul> </li> </ul>	<p>Refer to <b>Section 5.15</b></p> <p><b>Section 5.15.1</b></p> <p>Various, <b>Sections 5.0</b> and <b>2.3.10</b></p> <p><b>Section 5.15.1</b></p> <p><b>Section 5.15.2</b></p>
<ul style="list-style-type: none"> <li>Biodiversity – including: <ul style="list-style-type: none"> <li>measures taken to avoid, reduce or mitigate impacts on biodiversity;</li> <li>accurate estimates of proposed vegetation clearing;</li> <li>a detailed assessment of potential impacts of the development on any: <ul style="list-style-type: none"> <li>terrestrial or aquatic threatened species or populations and their habitats, endangered ecological communities and groundwater dependent ecosystems;</li> <li>regionally significant remnant vegetation, or vegetation corridors;</li> </ul> </li> <li>if proposed, a comprehensive offset strategy to ensure the development maintains or improves the terrestrial and aquatic biodiversity values of the region in the medium to long term.</li> </ul> </li> </ul>	<p>Refer to <b>Section 5.6</b> and <b>Appendix 9</b></p> <p><b>Section 5.6.1</b></p> <p><b>Section 5.6.7</b></p> <p><b>Section 5.6.7</b></p> <p><b>Section 5.6.2</b></p> <p><b>Section 5.6.9</b></p>
<ul style="list-style-type: none"> <li>Noise, Vibration &amp; Blasting – including a quantitative assessment of potential: <ul style="list-style-type: none"> <li>construction, operational and off-site transport noise impacts;</li> <li>blasting impacts on people, livestock and property;</li> <li>reasonable and feasible mitigation measures, including evidence that there are no such measures available other than those proposed; and</li> <li>monitoring and management measures, in particular real-time, attended noise monitoring and predictive meteorological forecasting.</li> </ul> </li> </ul>	<p>Refer to <b>Sections 5.4</b> and <b>5.5</b> (Noise and Blasting) and <b>Appendices 7</b> and <b>8</b></p> <p><b>Section 5.4.6</b> <b>Section 5.5.3</b></p> <p><b>Sections 5.4.7</b> and <b>5.5.4</b></p> <p><b>Sections 5.4.7</b> and <b>5.5.4</b></p>



**Table 1.3 – Checklist of Director-General’s Requirements  
for the Environmental Assessment (cont.)**

<b>General Requirements</b>	<b>Relevant EA Section</b>
<ul style="list-style-type: none"> <li>Air Quality – including a quantitative assessment of potential: <ul style="list-style-type: none"> <li>construction and operational impacts, with a particular focus on extraction, processing and transport dust emissions, as well as diesel and blast fume emissions;</li> <li>reasonable and feasible mitigation measures to minimise processing, dust, diesel and blast fume emissions, including evidence that there are no such measures available other than those proposed; and</li> <li>monitoring and management measures, in particular real-time air quality monitoring.</li> </ul> </li> </ul>	<p>Refer to <b>Section 5.3</b> and <b>Appendix 6</b> <b>Section 5.3.6</b></p> <p><b>Section 5.3.7</b></p> <p><b>Section 5.3.7</b></p>
<ul style="list-style-type: none"> <li>Heritage – including: <ul style="list-style-type: none"> <li>an Aboriginal cultural heritage assessment (including both cultural and archaeological significance) which must: <ul style="list-style-type: none"> <li>demonstrate effective consultation with Aboriginal communities in determining and assessing impacts, and developing and selecting mitigation options and measures;</li> <li>outline any proposed impact mitigation and management measures (including an evaluation of the effectiveness and reliability of the measures);</li> </ul> </li> <li>a Historic heritage assessment (including archaeology) which must: <ul style="list-style-type: none"> <li>include a statement of heritage impact (including significance assessment) for any State significant or locally significant historic heritage items; and</li> <li>outline any proposed mitigation and management measures (including an evaluation of the effectiveness and reliability of the measures).</li> </ul> </li> </ul> </li> </ul>	<p>Refer to <b>Section 5.10</b> and <b>Appendix 13</b></p> <p><b>Section 5.10.3</b></p> <p><b>Section 5.10.8</b></p> <p>Refer to <b>Section 5.11</b></p> <p><b>Sections 5.11.5 and 5.11.6</b></p> <p><b>Sections 5.11.7</b></p>
<ul style="list-style-type: none"> <li>Traffic &amp; Transport – including: <ul style="list-style-type: none"> <li>accurate predictions of the road traffic generated by the construction and operation of the project;</li> <li>an assessment of potential traffic impacts on the safety and efficiency of the road network; and</li> <li>a detailed description of the measures that would be implemented to maintain and/or improve the capacity, efficiency and safety of the road networks in the surrounding area over the life of the project.</li> </ul> </li> </ul>	<p>Refer to <b>Section 5.9</b> and <b>Appendix 12</b> <b>Sections 5.9.2 and 5.9.3</b> <b>Section 5.9.4</b></p> <p><b>Section 5.9.5</b></p>
<ul style="list-style-type: none"> <li>Hazards – including: <ul style="list-style-type: none"> <li>a detailed description of the management of process chemicals including transport, storage and handling; and</li> <li>bushfires.</li> </ul> </li> </ul>	<p>Refer to <b>Section 5.16</b></p> <p><b>Section 5.16.1</b></p> <p><b>Section 5.16.2</b></p>

**Table 1.3 – Checklist of Director-General’s Requirements  
for the Environmental Assessment (cont.)**

<b>General Requirements</b>	<b>Relevant EA Section</b>
<ul style="list-style-type: none"> <li>Visual – including: <ul style="list-style-type: none"> <li>a detailed assessment of the: <ul style="list-style-type: none"> <li>changing landforms on the site during the various stages of the project;</li> <li>potential visual impacts of the project on private landowners in the surrounding area as well as key vantage points in the public domain, including lighting impacts; and</li> </ul> </li> <li>a detailed description of the measures that would be implemented to minimise the visual impacts of the project.</li> </ul> </li> </ul>	<p>Refer to <b>Section 5.12</b></p> <p><b>Section 5.12.2</b></p> <p><b>Section 5.12.4</b></p> <p><b>Section 5.12.5</b></p>
<ul style="list-style-type: none"> <li>Greenhouse Gases – including: <ul style="list-style-type: none"> <li>a quantitative assessment of potential Scope 1, 2 and 3 greenhouse gas emissions;</li> <li>a qualitative assessment of the potential impacts of these emissions on the environment; and</li> <li>an assessment of reasonable and feasible measures to minimise greenhouse gas emissions and ensure energy efficiency.</li> </ul> </li> </ul>	<p>Refer to <b>Section 5.13</b> and <b>Appendix 14</b></p> <p><b>Section 5.13.4</b></p> <p><b>Section 5.13.5</b></p> <p><b>Section 5.13.6</b></p>
<ul style="list-style-type: none"> <li>Social &amp; Economic – including an assessment of the: <ul style="list-style-type: none"> <li>potential direct and indirect economic benefits of the project for local and regional communities and the State;</li> <li>potential impacts on local and regional communities, including: <ul style="list-style-type: none"> <li>increased demand for local and regional infrastructure and services (such as housing, childcare, health, education and emergency services);</li> <li>impacts on social amenity;</li> </ul> </li> <li>a detailed description of the measures that would be implemented to minimise the adverse social and economic impacts of the project, including any infrastructure improvements or contributions; and/or</li> <li>voluntary planning agreement or similar mechanism; and</li> <li>a detailed assessment of the costs and benefits of the development as a whole, and whether it would result in a net benefit for the NSW community.</li> </ul> </li> </ul>	<p>Refer to <b>Section 5.17</b> and <b>Appendices 15</b> and <b>16</b></p> <p><b>Section 5.17.2</b></p> <p><b>Section 5.17.1.4</b></p> <p><b>Section 5.17.1.4</b> <b>Sections 5.17.1.5 and</b> <b>Appendix 15</b></p> <p><b>Section 5.17.1.5</b> <b>Section 5.17.2</b></p>
<ul style="list-style-type: none"> <li>Rehabilitation – including the proposed rehabilitation strategy for the site, having regard to the key principles in the Strategic Framework for Mine Closure, including: <ul style="list-style-type: none"> <li>rehabilitation objectives, methodology, monitoring programs, performance standards and proposed completion criteria;</li> <li>nominated final land use, having regard to any relevant strategic land use planning or resource management plans or policies; and</li> <li>The potential for integrating this strategy with any other rehabilitation and/or offset strategies in the region.</li> </ul> </li> </ul>	<p>Refer to <b>Section 2.3.10</b> and <b>Appendix 4</b></p> <p><b>Table 2.6</b></p> <p><b>Section 2.3.10.1</b></p> <p><b>Section 2.3.10</b></p>

## 1.4 Project Team

Umwelt (Australia) Pty Limited (Umwelt) has prepared this EA on behalf of NPM. Umwelt, have additionally prepared the following specialist assessments:

- Surface Water;
- Noise;
- Ecology;
- Social Impact Assessment;
- Greenhouse Gas and Energy;
- Visual Impact;
- Historic Heritage; and
- Hazards, including Bushfire Assessment.

A number of organisations undertook other specialist studies as part of the EA process, including:

- Golder Associates:
  - Groundwater Assessment.
- Sinclair Knight Merz (SKM):
  - Air Quality Impact Assessment.
- SLR Consulting:
  - Blasting Impact Assessment.
- Transport & Urban Planning:
  - Traffic Impact Assessment.
- Gillespie Economics:
  - Economic Impact Assessment.
- Central Queensland Cultural Heritage Management:
  - Aboriginal Cultural Heritage Assessment.

Further details of the Project Team are provided in **Appendix 1**.



## 1.5 Environmental Assessment Structure

The purpose of this EA is to enable consideration of the implications of proceeding with the NPM Step Change Project in relation to the EP&A Act and the Environmental Planning and Assessment Regulation 2000 (refer to EA Statement of Authorship in **Appendix 1**). The EA accompanies the Project Application and has been prepared in accordance with the DGR's (refer to **Appendix 2**). An overview of the layout of this EA is provided below.

The Executive Summary provides a brief overview of the Project and the major outcomes of the EA.

**Section 1.0** introduces the Project, outlines the Project background, provides a summary of the key Project details and outlines the Project team involved in producing the EA and the structure of the EA.

**Section 2.0** provides a detailed description of the Project.

**Section 3.0** describes the planning context for the Project, including the applicability of Commonwealth and State legislation.

**Section 4.0** contains a description of the stakeholder consultation program and the environmental and community issues identified as part of this process for detailed assessment in the EA.

**Section 5.0** contains a description of the existing environment and a comprehensive analysis and assessment of the key EA issues relevant to the Project, including the Project-specific and cumulative impacts.

**Section 6.0** details the Statement of Commitments proposed to be adopted throughout the life of the Project in order to mitigate impacts.

**Section 7.0** contains a conclusion and justification for the Project.

**Section 8.0** contains a list of references referred to in the EA.

**Section 9.0** contains abbreviations and glossary.