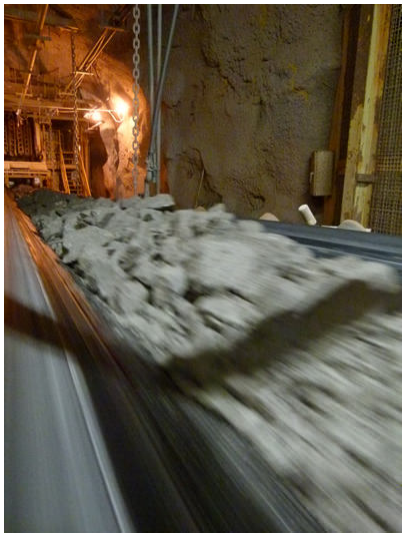
NSW GOVERNMENT | Planning & Environment

MAJOR PROJECT ASSESSMENT: Northparkes Mine Extension Project



Secretary's
Environmental Assessment Report
Section 75I of the
Environmental Planning and Assessment Act 1979

July 2014

Cover Photos: http://www.northparkes.com.au/gallery.aspx

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EXECUTIVE SUMMARY

The Northparkes Mine (NPM) is an existing copper-gold mine near Parkes in the central western region of New South Wales.

It was previously owned by North Mining Limited, a joint venture between Rio Tinto (80%) and Sumitomo (20%), but is now owned by CMOC Mining Pty Ltd (CMOC), a joint venture between CMOC Mining Services (80%) and Sumitomo (20%).

The mine has been operating since 1993, and is comprised of open cut and underground mining operations as well as a range of surface infrastructure, including an ore processing plant and large tailings storage facilities. Under its existing approval, CMOC is allowed to produce up to 8.5 million tonnes of ore a year until 2025.

CMOC is seeking approval for a further expansion of NPM. The proposed expansion involves:

- continued underground block cave mining in two existing ore bodies;
- the development of an additional underground block cave mine, under one of the existing open cut pits;
- additional campaign open cut mining in existing mine leases;
- augmenting approved Tailings Storage facilities (TSFs);
- moving the existing access road; and
- extending the life of the mine by seven years to 2032.

Production rates would remain the same, and concentrate would continue to be loaded into sealed shipping containers and trucked to the Goonumbla rail siding, located about 12 km to the south-east of the mine, before being railed to Port Kembla.

The project would provide continued employment for 350 people during normal operations, and up to 700 people during shut down periods, campaign open cut operations, and/or construction activities.

Despite the repeal of Part 3A of the EP&A Act, the project is classified as a “transitional Part 3A project” under the existing savings and transitional provisions of the Act. This means it must be assessed under the provisions of the former Part 3A of the EP&A Act.

Although the Minister for Planning is the approval authority for the project application, the application may be determined under delegation by the Executive Director, Development Assessment Systems and Approvals within the Department of Planning & Environment (the Department). This is because there were fewer than 25 public objections to the application, Council does not object to the project, and no political donations have been reported.

The Department exhibited the Environmental Assessment (EA) for the project from 11 July to 15 August 2013. During the exhibition, the Department received 9 submissions on the project: 8 from public agencies, and 1 from a local landowner near the mine.

None of the agencies objected to the project. Nevertheless, they raised a number of questions about various aspects of the project, including water resources, noise and vibration, visual impacts, waste, traffic and transport, stock movement, flora and fauna, and biodiversity offsetting. These matters have been addressed either by the provision of additional information or by the recommended conditions of approval.

The local landowner objected to the project, raising concerns about the potential dust, noise, and visual impacts of the project, and about whether it would adversely affect its bore water supply.

The Department has examined these concerns closely, and has concluded that the project is unlikely to have any significant dust, noise or visual impacts on the property. Nevertheless, the Department has recommended conditions restricting the hours in which the new access road could be constructed (only during the day) to minimise the construction noise impacts of this aspect of the project on the property, and giving the landowner the ability to ask CMOC to implement additional mitigation measures at the residence/s on its property to minimise the visual impacts of the project.

While the Department also concluded the project is unlikely to adversely affect the bore water supply of the property, it has recommended that CMOC be required to provide the landowner with a compensatory water supply in the unlikely event that the bore water supply is adversely affected by the project.

With these safeguards in place, the Department is satisfied that the impacts of the project on this landowner's property would be acceptable.

The Department has assessed the merits of the project application as a whole, in accordance with the objects of the EP&A Act and the principles of ecologically sustainable development.

This assessment has found that the impacts of the proposed expansion are likely to be similar to the impacts of the existing mining operations, and could be adequately mitigated, managed, and/or offset. To ensure this occurs, the Department has recommended a range of conditions, including conditions requiring the:

- operation of a real-time noise management system;
- implementation of a comprehensive biodiversity offset, which includes 350 ha of native vegetation (including 111 ha of EEC), and the regeneration of significant areas of the offset site;
- design and construction of the new tailings dam in accordance with strict permeability standards;
- implementation of an upgraded water management system to ensure zero off-site discharge of dirty and contaminated water;
- operation of an expanded surface and groundwater monitoring network; and
- rehabilitation of the site in accordance with strict performance criteria.

In addition, CMOC has negotiated a planning agreement with Parkes Shire Council, which includes contributing up to $3.135 million over the life of the project for road maintenance and community enhancement.

The Department is satisfied that the project represents a logical extension of the existing mining operations, and would maximise the use of existing infrastructure and facilities.

It is also satisfied that the project would generate a number of significant economic and social benefits, including:

- continued employment for up to 700 people;
- a capital investment value of $190 million;
- an annual direct and indirect regional output or business turnover of $335 million;
- annual direct and indirect regional value added of $223 million;
- annual direct and indirect household income of $39 million; and
- significant royalties and payroll tax to the State of NSW.

On balance, the Department believes the project's benefits would significantly outweigh its potential impacts, and that it is therefore in the public interest. Consequently, it has recommended that the application be approved, subject to strict conditions.

1. BACKGROUND

Northparkes Mine (NPM) is a copper-gold mine which is located 27 kilometres (km) northwest of Parkes in the central western region of New South Wales (**Figure 1**). It was approved in 1992, and started operating in 1993. The mine is owned by CMOC Mining Pty Ltd (CMOC), a joint venture between CMOC Mining Services (80%) and Sumitomo (20%).

Figure 1: *Regional Context*

1.1 Environmental Setting and Land Use

The NPM is located on the edge of the inland slopes west of the Great Dividing Range. The project area and surrounds are generally flat, with some low undulations. The most significant regional feature is Goonumbla Hill, which extends to a height of 386 m AHD and is located about 4 km south of the project area.

The project area is located within the Macquarie-Bogan River catchment, which contributes surface water runoff from 78,000 square km (km^2) 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 site. Creeks in the area are generally ephemeral and only carry surface water after very heavy rainfall events.

The area surrounding the site is comprised mostly of cleared agricultural land which is used for cropping or grazing, although there are some 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 (25 km north-east) and Parkes (27 km south-east).

The project has good access to key transport infrastructure, including Bogan Road which provides the main road access to NPM from Parkes and surrounding areas, and the Goonumbla rail siding, which is located 12 km to the south-east of the NPM site and used to dispatch mine concentrate to Port Kembla for export.

CMOC's total landholdings in the area cover 6,481 hectares (ha), including the project area as well as agricultural landholdings within the surrounding area. CMOC operates the agricultural landholdings as a commercial farm with cropping for wheat and canola being the most common agricultural land uses.

The project area covers 2,644 ha, of which approximately 1,150 ha is currently located within active operational areas associated with existing NPM operations.

As indicated in **Figure 2**, CMOC owns most of the land within the project area. The only exception to this is a portion of Crown Land within the Limestone State Forest.

The closest private residences to the project area are located approximately 1 km to the east, 2.7 km to the west and 2.8 km to the south (refer to **Figure 2**).

1.2 Existing Mining Operations

Figure 3 depicts the existing and approved mining operations at NPM. Open cut mining commenced in E22 and E27 and continued on a campaign basis until 2010, with the completion of the E22 open cut. Underground block cave mining commenced in E26 and was extended into a second block cave mine (E26 Lift 2) in 2004. This block cave mine was then extended for a second time to the north (E26 Lift 2N) in 2008. Underground block cave mining progressed into the E48 ore body in 2010.

The gold-enriched ore was originally processed through a carbon-in-pulp (CIP) gold circuit, which included the use of cyanide for gold extraction. However, in 1995 copper-gold sulphide processing circuits were constructed and the CIP circuit was decommissioned. Since this time cyanide has not been used in any process circuits on site.

Since 2010, CMOC has constructed the Estcourt Tailings Storage Facility (TSF), undertaken a mine and mill upgrade to increase the ore processing rate up to 8.5 million tonnes per annum (Mtpa), developed a warehouse within the infrastructure area and developed a Block Cave Knowledge Centre.

During 2012, CMOC produced a total of 5.45 million tonnes (Mt) of ore which was predominately sourced from the E48 block cave mine.

1.3 Existing Approvals

Development consent (DA504/90) for the NPM was originally granted in 1992. This consent and six other consents for mining related developments at NPM were surrendered in February 2007, when the Minister for Planning granted PA06_0026 under Part 3A of the EP&A Act. The existing development consents associated with NPM are listed in **Table 1**.

Table 1: *Existing Development Consents*

Development Consent	***Description***
PA06_0026	Consolidation of 7 previous consents for continued operations and the extension into the E48 Ore body
DA2009/0057	Forbes water pipeline development consent
DA11092	PSC development consent for Block Cave Knowledge Centre (2012)

As indicated in **Table 1**, the project would result in the consolidation of the existing approvals for underground mining, open cut mining and infrastructure. This process would include surrendering the existing project approval PA06_0026 (as modified) and development consent DA11092 for the Block Cave Knowledge Centre within 12 months of any project approval.

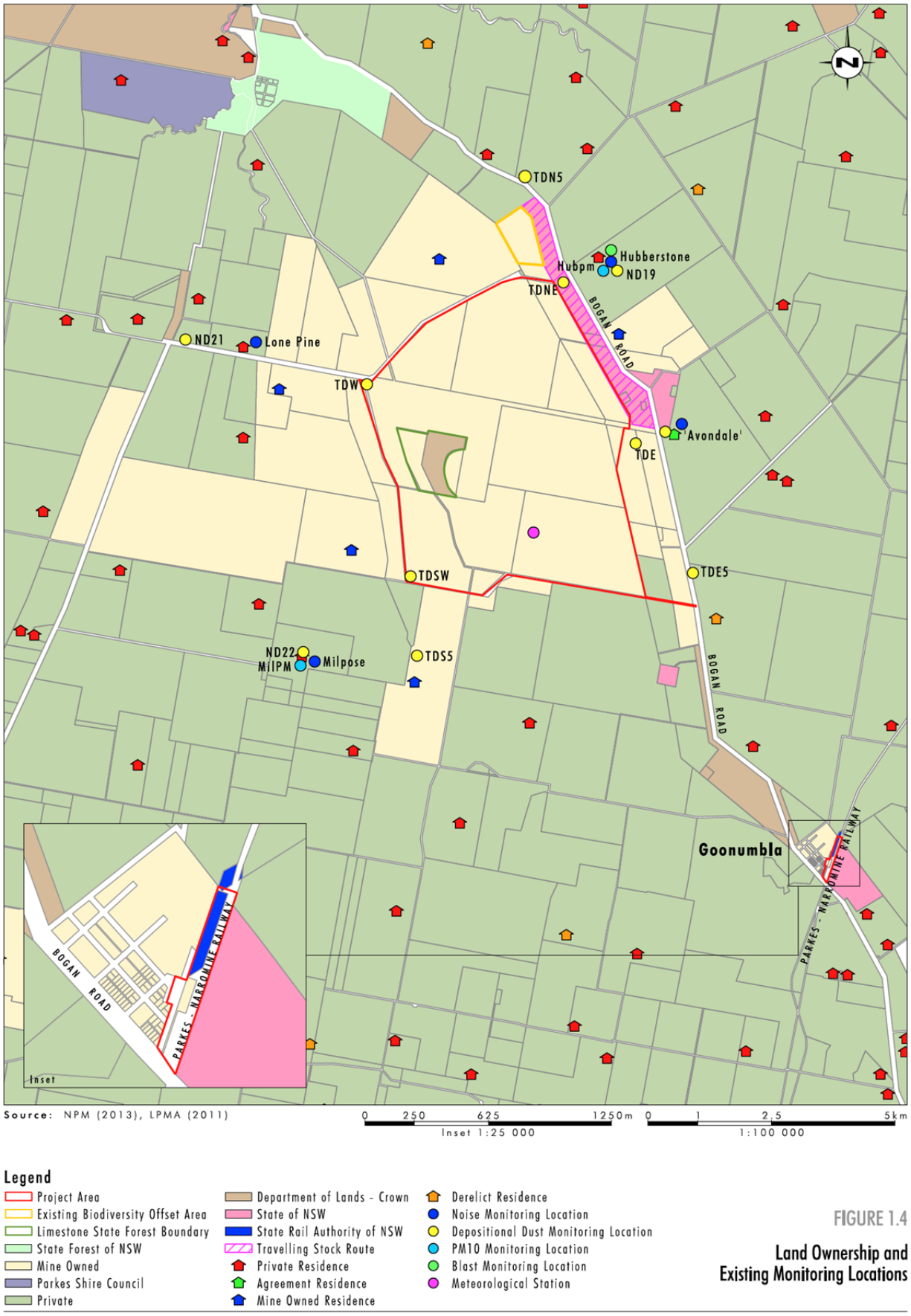

***Figure 2**: Land Ownership*

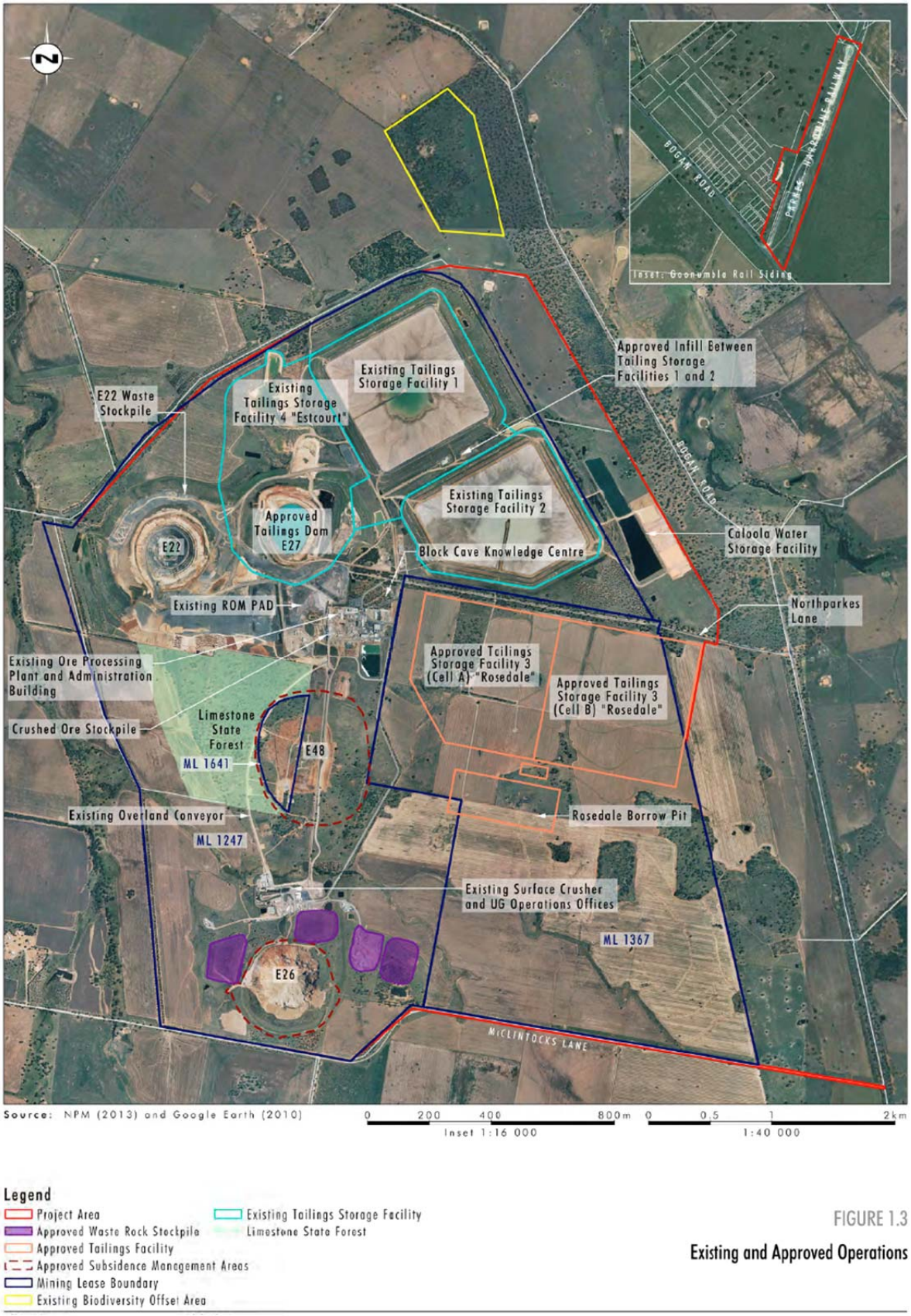

Figure 3: *Existing and Approved Operations*

2. PROPOSED PROJECT

The proposed extension of NPM involves the continuation of underground block cave mining in two existing ore bodies and development of an additional underground block cave mine, additional campaign open cut mining in existing mine leases, augmentation of the approved TSFs, and extension of the mine life by seven years to 2032. While the extension involves mining a larger resource, maximum production rates would remain the same.

The major components of the project are summarised in **Table 2**, depicted in **Figures 4, 4(a) – 4(d), 5, 6(a)** and **6(b)**, and described in detail in the environmental assessment (EA) of the project, which is attached as **Appendix A**.

Table 2: *Major Components of the Northparkes Extension Project*

Aspect	***Description***
Project Summary	• **Consolidating all existing development consents for underground mining, open cut mining and associated infrastructure;** • **Continued block cave underground mining in two ore bodies (E26 and E48) and development of an additional underground block cave mine in an ore body (E22) which was previously subject to open cut mining;** • **Development of an open cut mine in an existing mine subsidence zone (E26) and four small additional open cut mines (E28, E28N, E31 and E31N) to be campaign mined, yielding up to 7 Mtpa for stockpiling and processing as required;** • **Continued operation of the existing processing plant to allow up to 8.5 Mtpa of ore to be processed until the end of 2032;** • **Continued operation of the existing site offices, underground access, water supply infrastructure and logistics connections;** • **Continued transfer of tailings to TSF 1, 2 and TSF 1/TSF 2 infill, the development of a new TSF 3 and additional lifts to TSF 4;** • **Closure of the existing site access road, and construction and operation of an upgraded site access road and intersection at McClintocks Lane and Bogan Road;** • **Continued operation of the Block Cave Knowledge Centre;** • **Continued road haulage of concentrate to Goonumbla rail siding for transport to Port Kembla; and** • **Rehabilitation of the site.**
Disturbance Area	• 1,389 ha including 1,150 ha of existing disturbance land and 239 ha of additional disturbance.
Mining and Reserves	• Ore reserves of 74 Mt; • Mineral resource reserves of 288 Mt with 0.57% Cu and 0.26 g/t Au; and • Standard open cut mining methods and block cave underground mining method (refer to **Figure 3**).
Ore Stockpiling and Processing	• Extracted ore would be placed in run-of-mine (ROM) stockpiles with a combined capacity of up to 300,000 t; • Ore would be transported via conveyor to the processing plant, which would produce copper concentrate (containing traces of gold and silver) at a rate of up to 8.5 Mtpa using grinding, floatation and thickening processes.
Tailings Management	Tailings disposal to: • the existing TSFs 1, 2 and TSF 1/TSF 2 infill; • a newly developed TSF 3 (which extends to the south) to a height of 28 metres (m); and • a raised TSF 4 to a height of 28 m.
Waste Dumps	• Waste dump stockpile locations are shown in **Figure 2**. • Existing waste material in E31/E31N would be used to form the TSF 3 embankments. • E26 waste material would be stockpiled adjacent to the E26 subsidence zone to a maximum height of 25 m. • E28/E28N would be stockpiled between E28 and E28N open cut pits to a maximum height of 30 m.
Transportation	Concentrate would be loaded into sealed shipping containers and trucked to the Goonumbla rail siding, located 12 km from the NPM site (refer to **Figure 1**), where it would be stored prior to being railed (5 trains per week) to Port Kembla.
Project Life and Staging	Project life to 2032. Representative project stages are shown in **Figures 4(a) – 4(d)**. Mine staging involves maintaining a constant supply of ore for processing by using block cave underground mining to provide the primary resource and campaign open cut mining to provide a supplementary lower grade resource.
Surface Infrastructure	• Site offices, training rooms, workshop facilities and car parks; • Processing plant, underground access and ancillary infrastructure, water supply infrastructure, ventilation infrastructure, ore conveyors and lifts and logistics connections; and • Four wastewater treatment plants and water management infrastructure.
Water Use and Management	• Water demand would be around 6,900 megalitres (ML) per annum for the processing plant, mining activities, dust suppression and potable water use. • Water supply from a bore field in the Lachlan Valley near Forbes via Water Access Licences and a Joint Water Supply Licence held with Parkes Shire Council (PSC). This water is supplemented with water recycled from the process plant thickeners and TSFs and rainfall recovered from the TSFs and other site water storages. • The existing water management system, comprising clean and dirty water systems, would be augmented to ensure there are no discharges from the site.
Mine Access	• New site access from Bogan Road into McClintock's Lane and into an existing internal access road between the ore processing plant and the underground operations offices;

Aspect	***Description***
	• Upgrade of the Bogan Road and McClintock's Lane intersection; and • Upgrade of McClintock's Lane and reconstruction of the internal access road to 25 m wide, 2-way sealed road.
Employment	Continued employment for 350 employees during normal operations and up to 700 employees during shut down periods, campaign open cut operations, and/or construction activities.
Hours of Operation	24 hours a day, 7 days a week.
Biodiversity Offset	The project would result in the clearing 239 ha of land, including 52 ha of native vegetation with 38 ha of EEC. The biodiversity offset strategy proposed to compensate for this loss includes a total of 350 ha of land (including 111 ha of EEC).
Rehabilitation, Final landform and End Land Use	The site would be rehabilitated to a combination of native grassland and agricultural land for cropping with a few restricted areas (subsidence zones and open cut voids) (refer to **Figures 6(a)** and **6(b)**).
Community Contributions	$3.135 million for community infrastructure and road upgrades and maintenance, consistent with a planning agreement between CMOC and Council dated 29 October 2013
Capital Investment Value	$190 million

The major components of the currently approved project are compared to those of the proposed project in **Table 3.**

Table 3: *Comparison of Approved (as Modified) and Proposed Projects*

Aspect	***Existing Approved Operations***	***Proposed Operations***
Mining Areas	• Underground block cave mining of E26 and E48; and • Open cut mining of E22 and E27 (ceased in 2010).	• Continued block caving of E26 and E48; • Development of block caving in E22 (previously subject to open cut mining); • Development of open cut area in existing subsidence zone for E26; and • Development of 4 small open cuts at E28, E28N, E31 and E31N.
Ore Processing	• Up to 8.5 Mtpa from underground and open cut mining areas; and • Ore processing plant including surface crusher, crushed ore stockpiles, active grinding mills, froth floatation area and concentrate storage.	• No change.
Mine Life	• Until 2025	• Until 2032 (i.e. additional 7 years)
Operating Hours	• 24 hours a day, 7 days a week	• No change
Number of Employees	• 700 full time	• No change
Mining Methods	• Multiple underground block cave; and • Campaign open cut mining yielding up to 2 Mtpa for stockpiling and processing as required.	• No change to underground mining; and • Campaign open cut mining yielding up to 7 Mtpa for stockpiling and processing as required.
Tailings Management	• TSF 1 – TSF 4	• TSF to be augmented to connect existing and approved tailings facilities, through the development of TSF 3 southward from the existing southern embankment of TSF 2. Proposed TSF 3 would substantially include the approved TSF 3 Rosedale
Ancillary Infrastructure	• Site offices, training rooms and workshop facilities; and • Overland conveyor to transport ore from hoisting shaft to the ore processing plant stockpiles.	• No change
Waste Water Treatment	• Operation of 4 wastewater treatment plants	• No change
Site Access	• Via Northparkes Lane and Bogan Road	• Closure of the existing site access road through the development of TSF 3; • Provision of an upgraded site access road along a new alignment from McClintocks Lane; • Development of an access control and visitors car park at the intersection of the proposed site access and McClintocks Lane; • Upgrade/seal McClintocks Land between the NPM road access and Bogan Road; and • Upgrade to the intersection of McClintocks Lane and Bogan Road.
Transport of Concentrate	• Road haulage of concentrate to Goonumbla rail siding for transport to Port Kembla	• No change
Block Cave Knowledge Centre	• Operations for the domestic and international training of underground block cave mining methodology	• No change

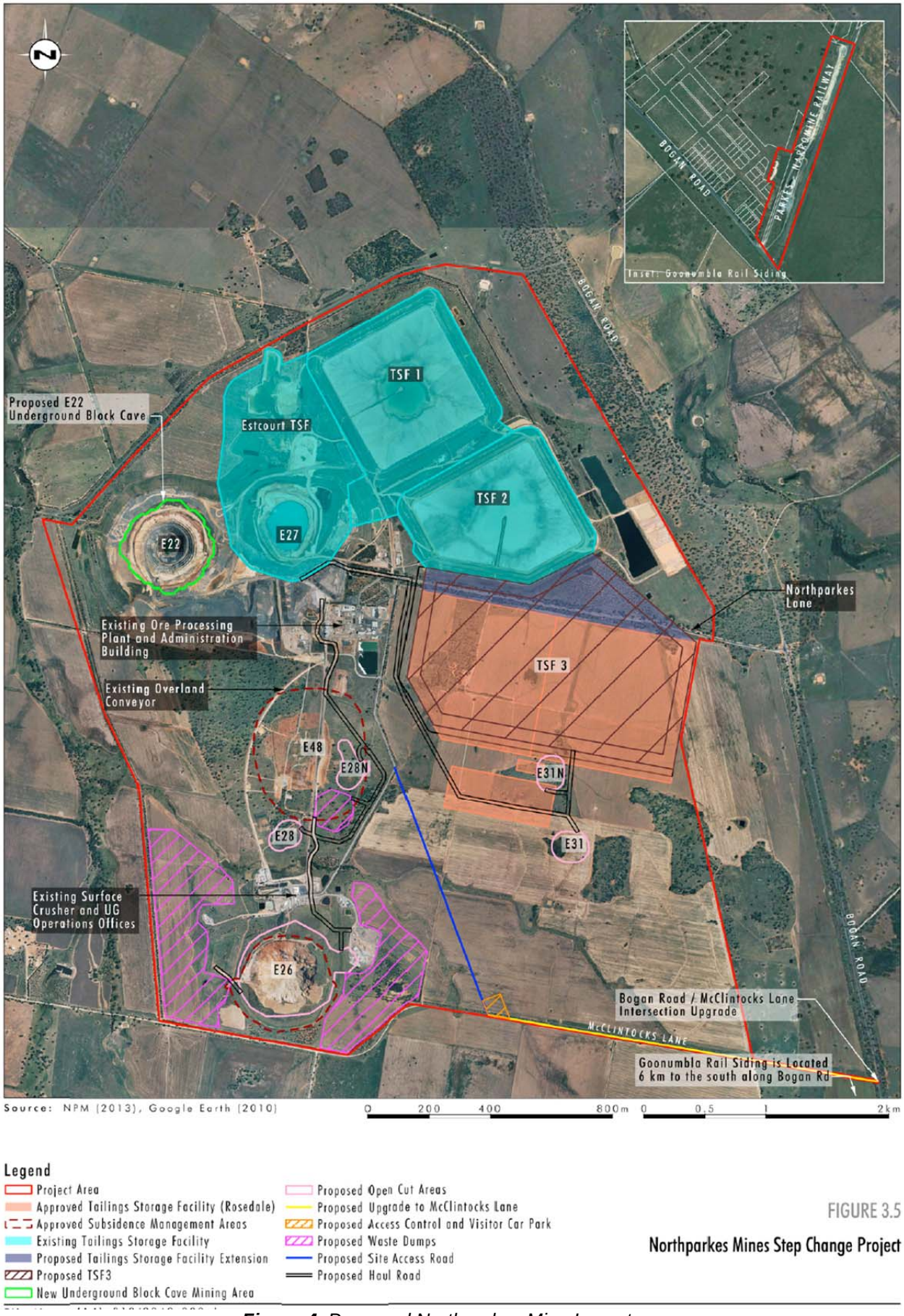

***Figure 4**: Proposed Northparkes Mine Layout*

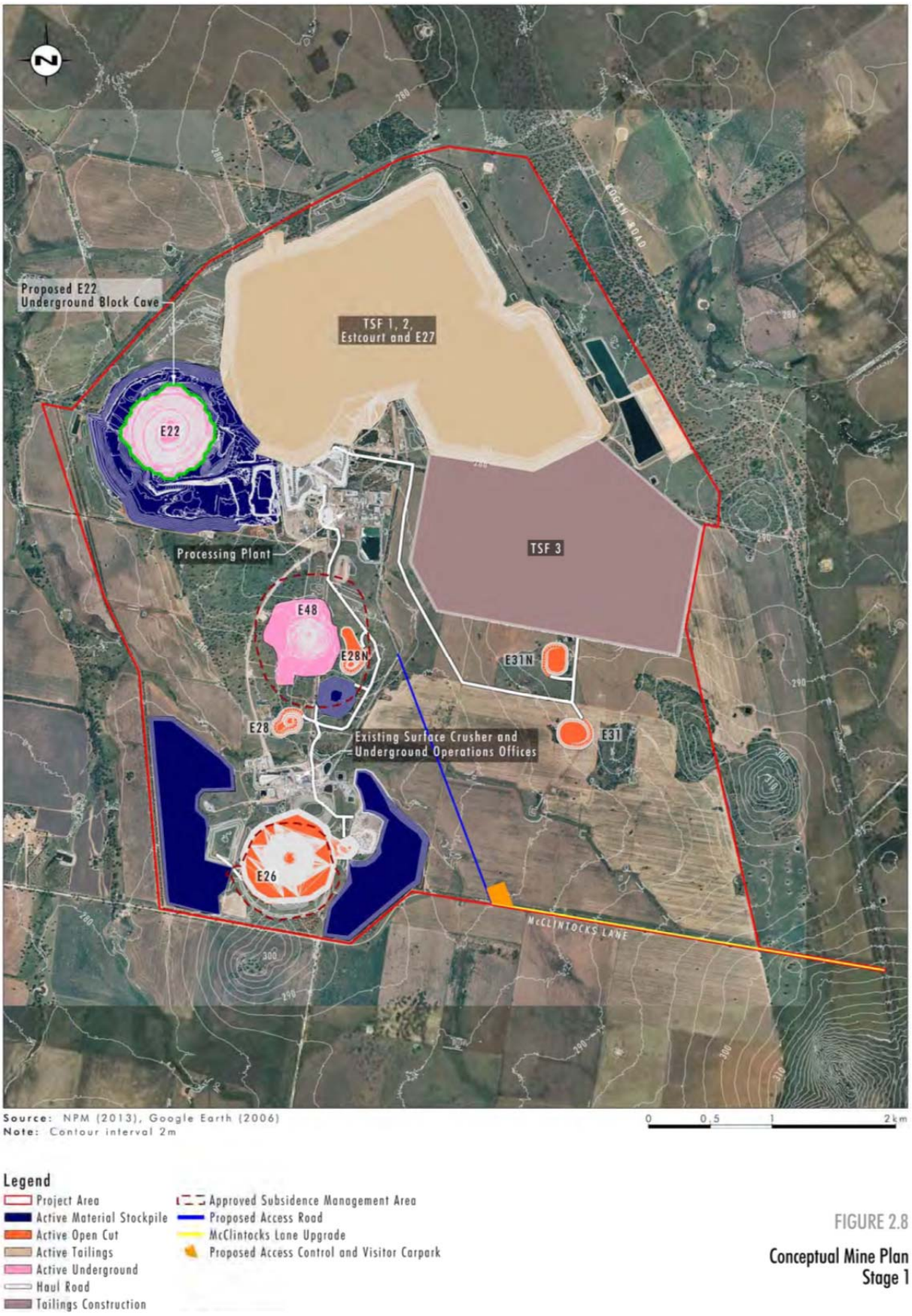

***Figure 4(a)**: Proposed Northparkes Mine Layout – Stage 1*

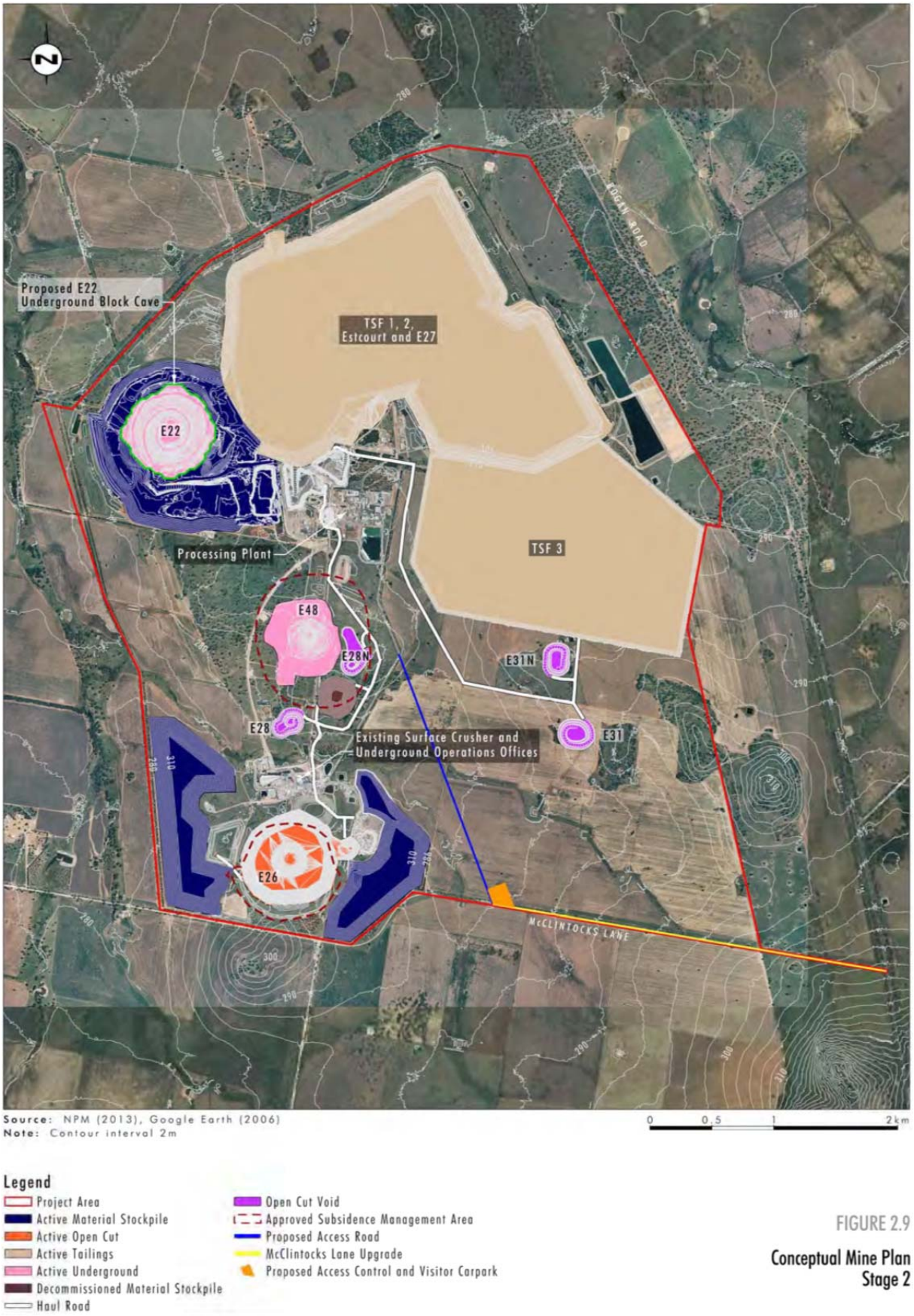

***Figure 4(b)**: Proposed Northparkes Mine Layout – Stage 2*

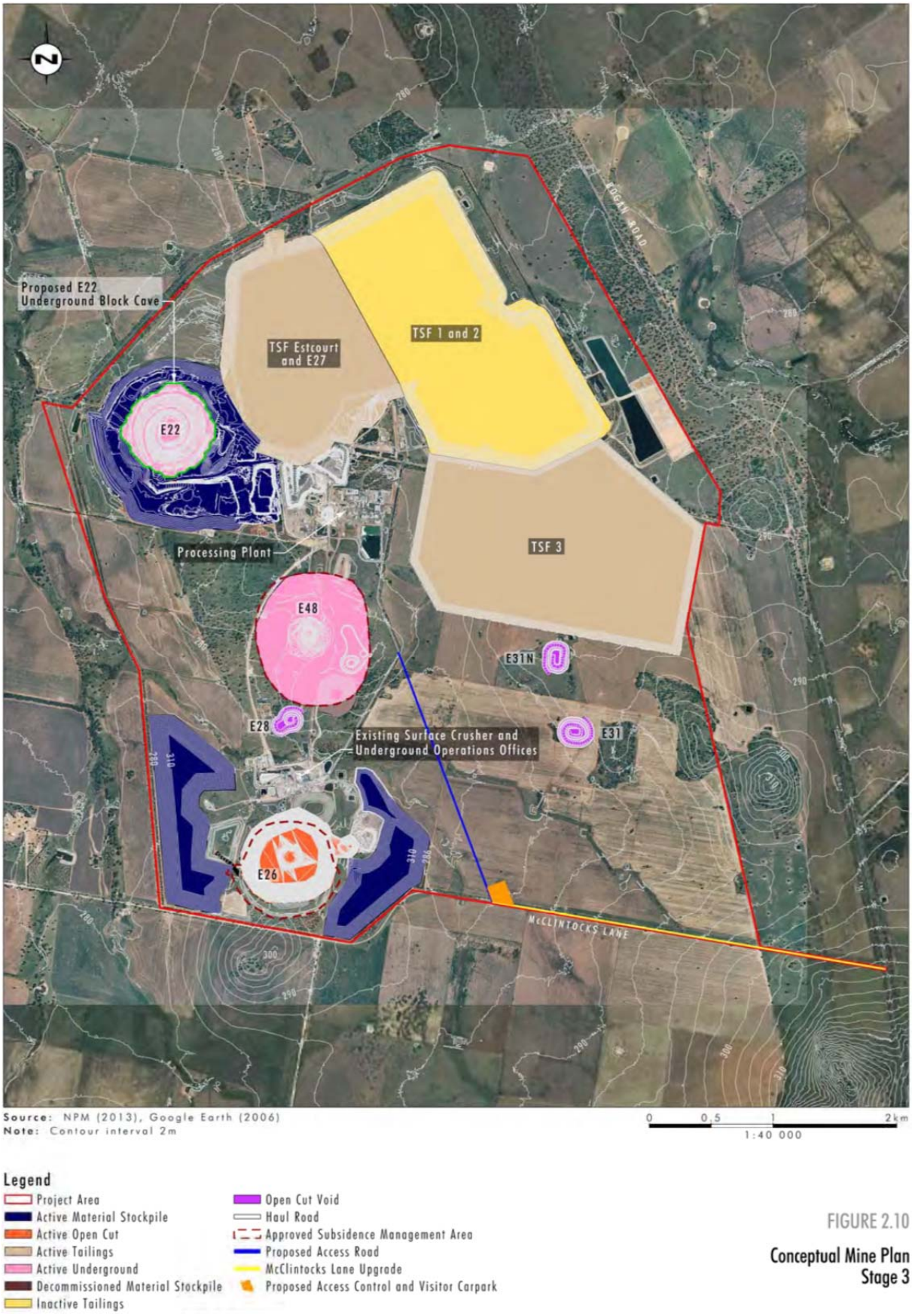

***Figure 4(c)**: Proposed Northparkes Mine Layout – Stage 3*

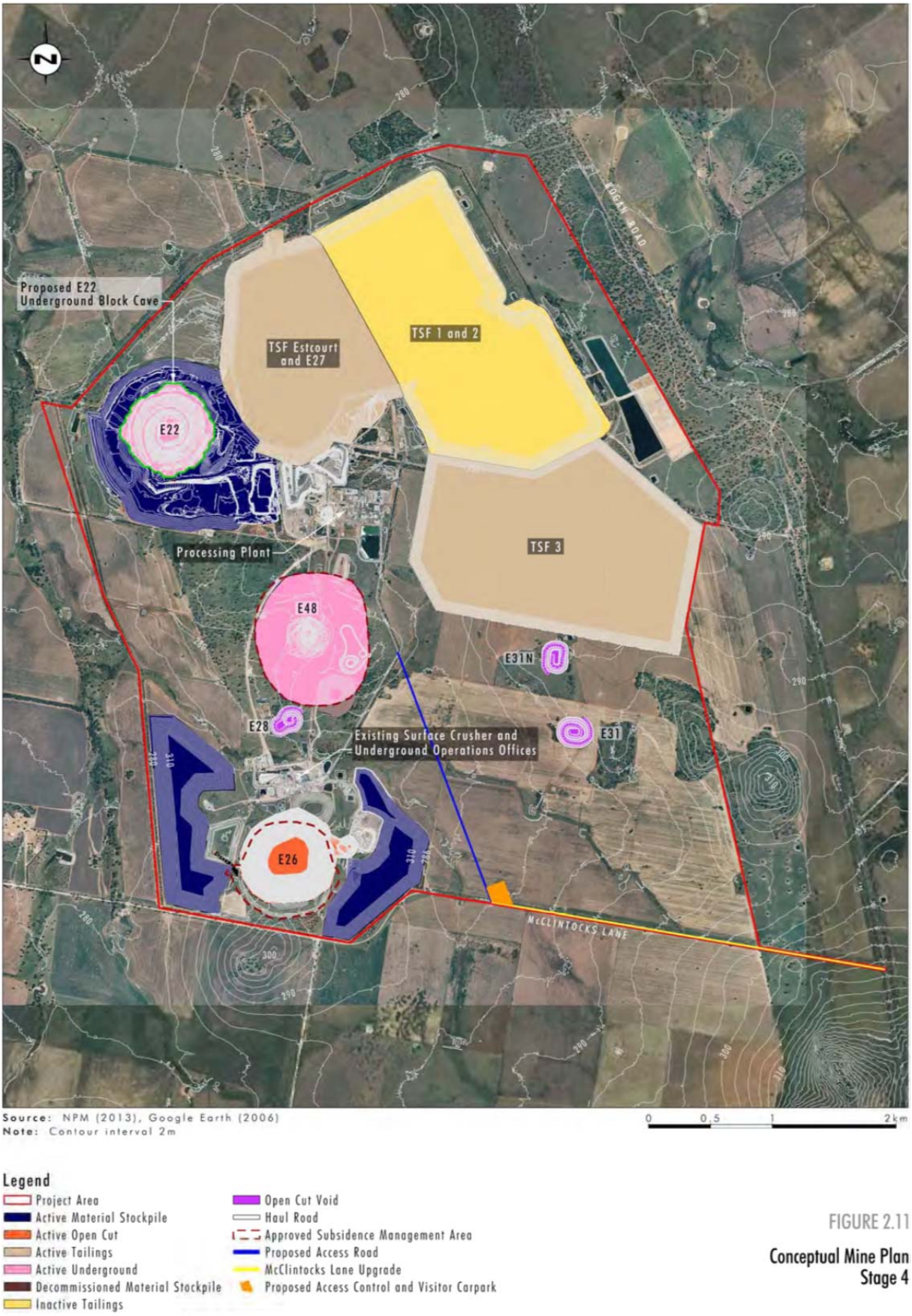

***Figure 4(d)**: Proposed Northparkes Mine Layout – Stage 4*

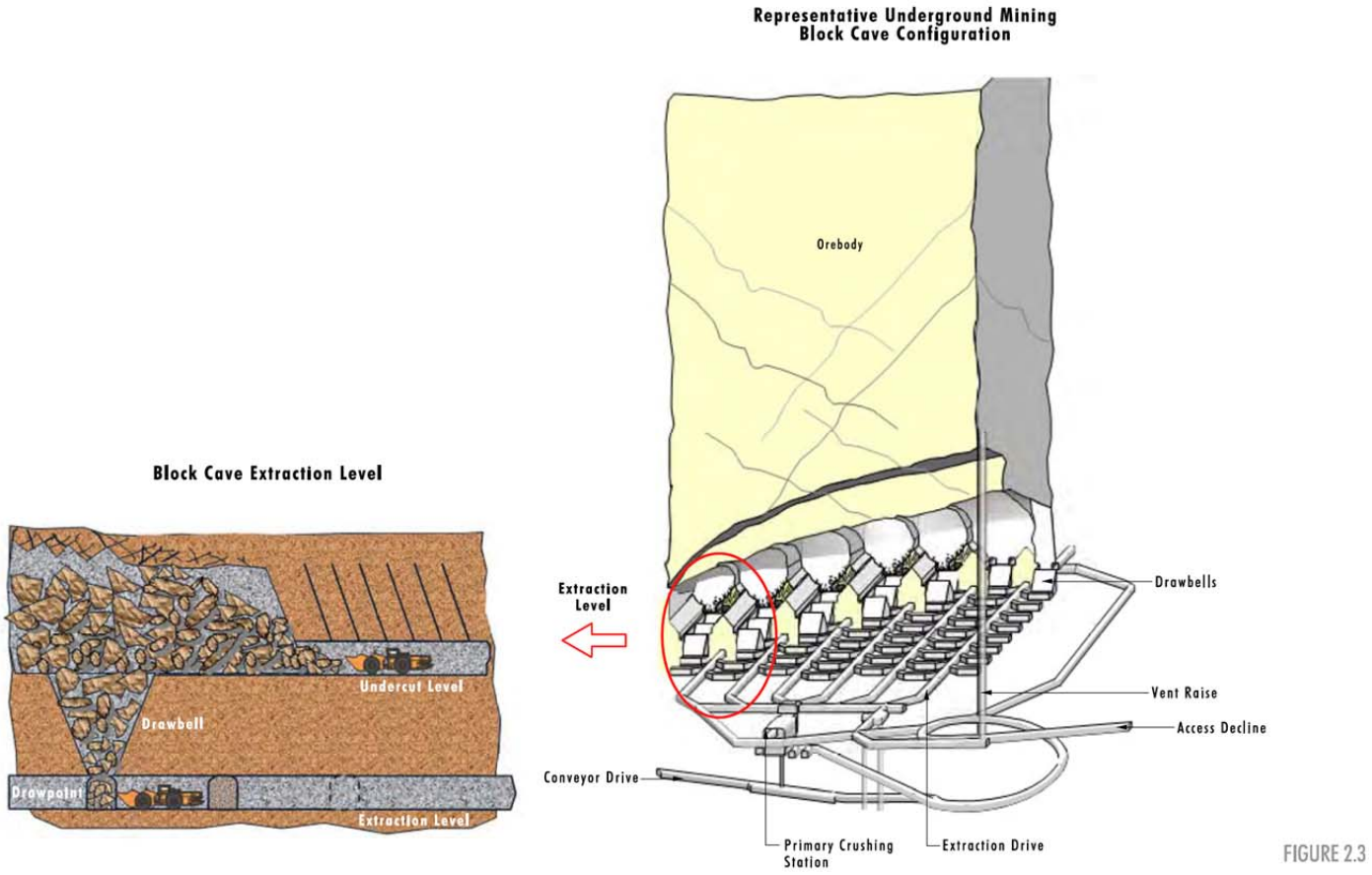

Figure 5: *Typical Block Cave Mining Method*

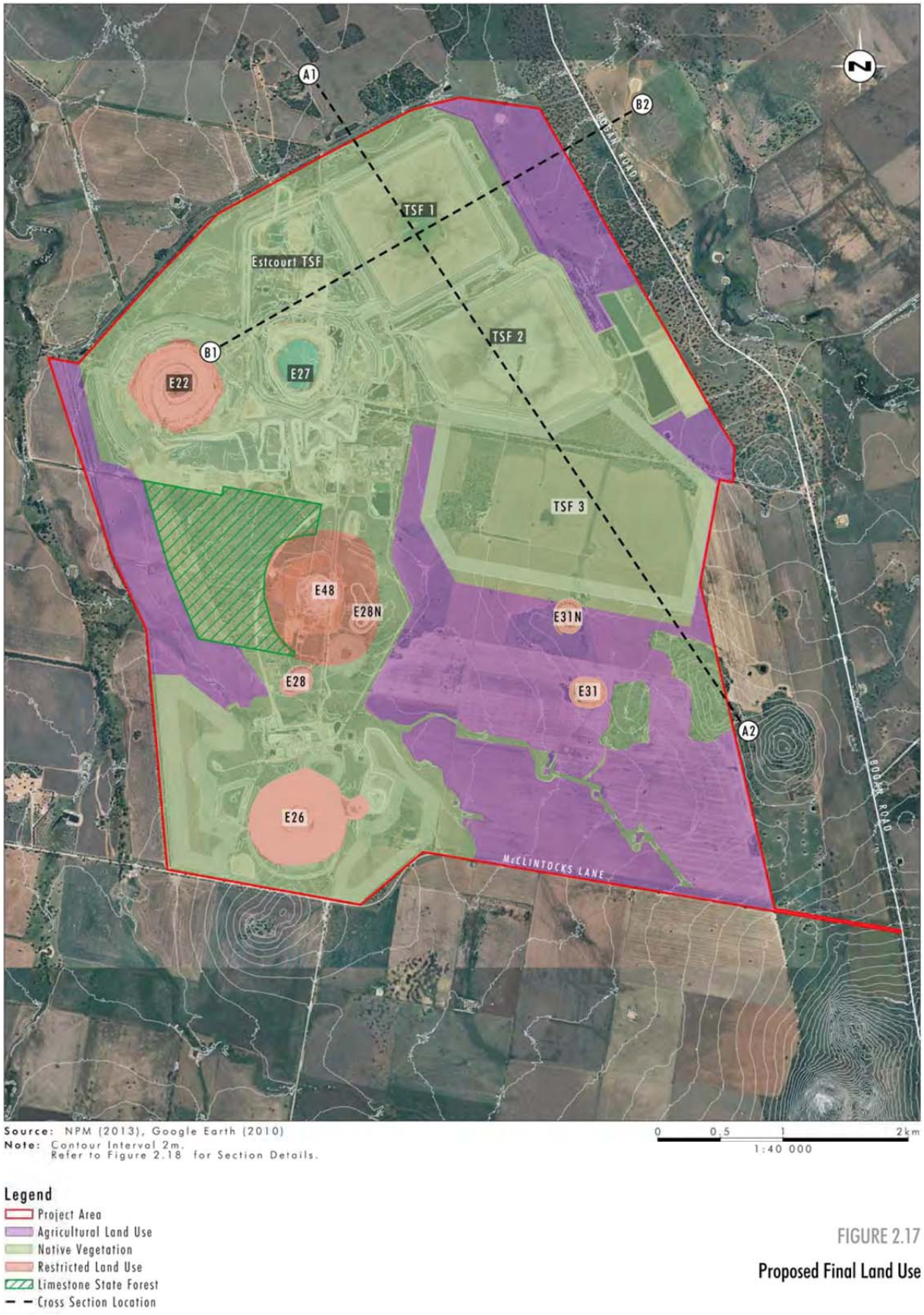

Figure 6(a): *Proposed Final Land Use*

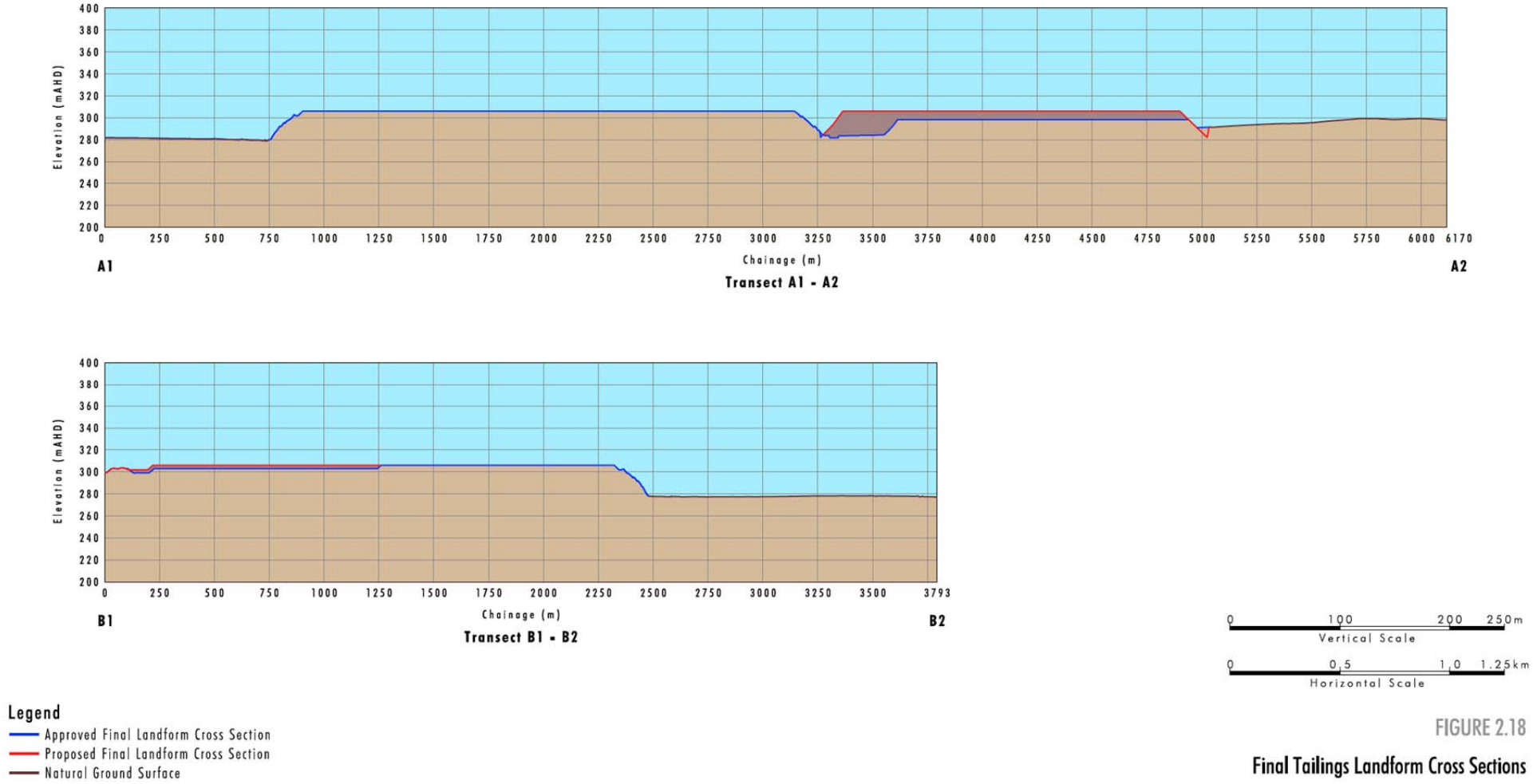

Figure 6(b): *Final Tailings Landform Cross Section*

3. STATUTORY CONTEXT

3.1 Transitional Part 3A Project

Despite the repeal of Part 3A of the EP&A Act, the project is classified as a "transitional Part 3A project" under the savings and transitional provisions under Schedule 6A of the Act, because it was development for the purpose of mining with a capital investment value of greater than $30 million, and consequently met the criteria in Clause 5(1)(c) of Schedule 1 of *State Environmental Planning Policy (Major Development) 2005*. This means the assessment of the merits of the project will be completed under the provisions of the former Part 3A of the EP&A Act.

The Minister for Planning is the approval authority for the project application. However, under the Ministerial delegation of 27 February 2013, the Executive Director, Development Assessment Systems and Approvals may determine the application since there were fewer than 25 public objections, the local Council does not object to the project, and no political donations have been reported.

3.2 Permissibility

The project area is zoned RU1 Primary Production under the *Parkes Local Environment Plan* (LEP). Extensive agriculture is permitted without consent in this zone.

Under the *State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007* (Mining SEPP), underground mining is permissible with consent on any land and open cut mining is permissible with consent on land where agriculture may be carried out with or without consent.

Consequently, the Minister may approve the carrying out of the project.

3.3 Integrated Approvals

Under section 75U of the EP&A Act, a number of other approvals have been integrated into the major project approval process and are not required to be separately obtained for the project. These include:

- heritage-related approvals under the *Heritage Act 1977* and *National Parks and Wildlife Act 1974*; and
- certain water-related approvals under the *Water Management Act 2000*.

Under section 75V of the Act, a number of further approvals are required to be obtained, but these must be approved in a manner that is consistent with any Part 3A approval for the project. These include:

- variations to the existing mining lease under the *Mining Act 1992*;
- variations to the existing Environment Protection Licence (EPL) under the *Protection of the Environment Operations Act 1997*; and
- approval under Section 138 of the *Roads Act 1993* for road upgrades and disturbance to public roads.

The Department has consulted with the relevant Government authorities responsible for these other approvals (see Section 4) and has considered the issues relating to these approvals in its assessment of the Project (see Section 5). None of these authorities object to the project on grounds related to these other approvals subject to the imposition of suitable conditions.

3.4 Other Approvals

CMOC needs to obtain several other approvals for the project, which are not integrated into the Part 3A approval process, including:

- an approval from the Commonwealth Minister for the Environment under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) because the Project is a "controlled action" as it is likely to have a significant impact on one listed Critically Endangered Ecological Community (Grey Box) and two threatened fauna species (superb parrot and swift parrot).
- an approval from Council for the closure of Northparkes Lane under the *Roads Act 1993*; and
- Water licences from the NSW Office of Water (NOW) under both the *Water Act 1912* and the *Water Management Act 2000*.

The Department has consulted with the relevant public authorities responsible for granting these other approvals during the assessment process. These authorities do not object to granting the required approvals.

3.5 Environmental Planning Instruments

Under Section 75I of the EP&A Act, the Secretary's report is required to include a copy of, or reference to, the provisions of environmental planning instruments (EPIs) that substantially govern the carrying out of the project.

A consideration of the relevant EPIs was provided in the EA and has been further considered by the Department (**Appendix B**). The Department is satisfied that CMOC has adequately considered the requirements of the applicable EPIs, and that none of these instruments substantially govern the carrying out of the project.

The Mining SEPP was recently modified to require consent authorities to consider the significance of the resource when considering the merits any mining proposal, as well as the economic benefits to the State and region of any such proposal.

While these provisions of the Mining SEPP do not strictly apply to the project application (because it is a transitional Part 3A project), consistent with longstanding practice the Department has considered these matters fully in its assessment of the merits of both proposals.

This assessment has concluded that:

- the ore reserve is reasonably significant given its size (74 Mt) and its location within an existing approved mine;
- extraction of the ore reserves would allow continued operation of the mine for an additional 7 years; and
- the project would generate substantial economic benefits for both the State and the region by ensuring continued employment of 700 people, attracting capital investment of around $190 million to the Parkes local government area and generating royalties for the State Government.

3.6 Objects of the Environmental Planning and Assessment Act 1979

Decision-makers should consider the objects of the EP&A Act when making decisions under the Act. These objects are detailed in section 5 of the Act, and include:

'The objects of this Act are:

(a) to encourage:

(i) 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,

(ii) the promotion and co-ordination of the orderly and economic use and development of land,

…

(vi) 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

(vii) ecologically sustainable development (ESD)'

The Department is satisfied that the Project encourages the proper use of resources (Object 5(a)(i)) and the promotion of orderly and economic use of land (Object 5(a)(ii)).

The encouragement of environmental protection (Object 5(a)(i)) is considered in detail in Section 5 of this report. Based on this consideration, the Department is satisfied that the impacts of the Project can be mitigated and/or managed to ensure an acceptable level of environmental performance.

Finally, the Department has fully considered the encouragement of ecologically sustainable development (ESD) (Object 5(a)(vii)) throughout its assessment of the merits of the Project application, and sought to integrate all significant economic and environmental considerations and avoid any serious or irreversible damage to the environment, based on an assessment of risk-

weighted consequences. Based on this consideration, the Department is satisfied that the Project can be carried out in a manner that is consistent with the principles of ESD.

3.7 Statement of Compliance

Under section 75I of the EP&A Act, the Secretary's report is required to include a statement relating to compliance with the Secretary's environmental assessment requirements issued with respect to the project. The Department is satisfied that the environmental assessment requirements have been complied with.

4. CONSULTATION

4.1 Exhibition of the EA

In accordance with section 75H(3) of the EP&A Act, the Secretary is required to make the EA for the project publicly available for at least 30 days. After accepting the EA for the project, the Department made the EA publicly available from 11 July to 15 August 2013.

A total of 8 submissions on the project were received (refer to **Appendix C**), including:

- 7 from public authorities, including:
  - Environment Protection Authority (EPA);
  - The Office of Environment and Heritage (OEH);
  - Department of Trade and Investment, Regional Infrastructure and Services (NSW Trade & Investment);
  - Department of Primary Industries (DPI) within NSW Trade & Investment – Crown Lands, NSW Office of Water (NOW), Fisheries NSW, and Office of Agricultural Sustainability and Food Security (OASFS);
  - Roads and Maritime Services (RMS);
  - Forbes Shire Council (FSC); and
  - Parkes Shire Council (PSC); and
- 1 from a nearby landowner (Annette Moss – Hillview Property, located near the proposed new mine access road intersection).

The PSC and FSC submissions were in support of the proposed project.

None of the other public authorities objected to the project, but raised issues requiring clarification in relation to water resources, noise and vibration, visual impacts, waste, traffic and transport, stock movement, flora and fauna, and biodiversity offsetting. A number of agencies also outlined proposed conditions of approval for the project.

The submission from the nearby landowner objected to the project, and raised a number of concerns, including that the EA did not consider the potential impacts of the project on an existing dwelling on the Hillview property (located 200m to the north of the primary residence and depicted as a derelict residence in the EA) and a proposed dwelling (located to the west of the existing dwelling), which is currently the subject of a development application with PSC.

The submission also raised concerns about the movement of stock across Bogan Road in the vicinity of the new access road and intersection.

4.2 Responses to Submissions

CMOC provided a formal Response to Submissions (RTS). In addition, CMOC provided an addendum to the RTS to respond to the OASFS submission and present additional information in relation to a number of commitments made in the original RTS report. This included results of:

- surveys for the Sloanes Froglet during appropriate weather conditions;
- additional surveys for the *Diuris tricolor* across the disturbance area during the known flowering period; and
- additional survey of the Kokoda offset site which targets threatened species.

A copy of the RTS and addendum are provided at **Appendix D**. The Department made the RTS and addendum reports publicly available for viewing or download on its website. In addition, the

Department forwarded the RTS and addendum reports to key Government agencies (including the OEH, OASFS, NOW and the EPA) and invited further comments.

The majority of agencies indicated that the issues raised in their original submissions were adequately addressed in the RTS. However, additional comments outlining residual concerns were received from OEH, NOW and the EPA. These are discussed further below.

4.3 Residual Concerns in Agency Submissions

The **OEH** raised concerns with CMOC's proposal to restore the derived native grassland (DNG) component of the Grey Box Grassy Woodland Endangered Ecological Community (EEC) to an ecologically sustainable woodland EEC at the Kokoda biodiversity offset site. OEH indicated that reconstruction of the EEC to woodland involves risks and uncertainties for biodiversity outcomes.

As discussed in detail in Section 5.2 of this report, Umwelt indicates that a large portion of the DNG component of the EEC would naturally regenerate once stock is removed, and that CMOC has committed to actively manage and revegetate the other areas of DNG that it considers are less likely to naturally regenerate.

To further assist in the establishment of an ecologically sustainable Grey Box Grassy Woodland EEC, OEH requested that the approval conditions include a requirement for CMOC to prepare a restoration plan with clear targets and outcomes at appropriate timeframes. The Department agrees with this approach and has recommended that this information be prepared as part of the Biodiversity Management Plan for the project.

The OEH also questioned CMOC's proposed mechanism for in perpetuity conservation of the biodiversity offset, which included protection under Section 88E of the *Conveyancing Act, 1919*. The Department acknowledges OEH's reservations in relation to this conservation mechanism, however is satisfied that the specific mechanism used to ensure in perpetuity conservation of the offset can be negotiated between the relevant parties post-approval. Consequently, the Department has recommended a project approval condition which requires CMOC to make suitable arrangements to protect the offset in perpetuity in consultation with OEH and to the satisfaction of the Secretary, by the end of June 2015.

Finally, the OEH made specific recommendations to minimise the potential impacts on a population of Pine Donkey Orchid identified at the project site. As discussed in detail in Section 5.2 of this report, these recommendations have been incorporated into the draft project approval.

The **NOW** requested:

- further clarification on the water entitlements for various stages of the mine life;
- the opportunity to comment on the peer review of the groundwater flow model prior to the determination of the project; and
- that CMOC be required to prepare a management plan for the new access road and crossing over Goonumbla Creek and that this address the design, construction and rehabilitation of the works.

CMOC has provided information in relation to water entitlements and the groundwater peer review to NOW. NOW has indicated that it is satisfied with this information. The Department has recommended a condition requiring CMOC to prepare a management plan for the new access road and crossing of Goonumbla Creek, in consultation with NOW, prior to the commencement of the works.

The **EPA** identified a number of outstanding issues in relation to noise and water management which have been addressed in the proposed conditions for the project.

5. ASSESSMENT

In its assessment of the merits of the project application, the Department has considered the:

- EA, submissions, RTS (including the addendum) and the additional information provided by CMOC (refer to **Appendix A, C** and **D**, respectively);
- existing approvals and associated environmental assessments of the NPM (refer to Section 1.3 of this report);
- relevant provisions of the EPIs (refer to **Appendix B**), policies and guidelines; and
- relevant provisions of the EP&A Act and Regulation, including the objects of the Act, the suitability of the site for the project, and whether the project is in the public interest.

The following provides a summary of the findings of this assessment.

5.1 Noise

Issue

The project has the potential to generate construction, operational and road traffic noise impacts.

Consideration

CMOC engaged Umwelt to undertake a noise impact assessment (NIA) for the project. The NIA was carried out in accordance with applicable guidelines, including the *NSW Industrial Noise Policy* (INP) (EPA, 2000), the *Interim Construction Noise Guideline* (ICNG) (DECCW, 2009) and the *NSW Road Noise Policy* (RNP) (DECCW, 2011), and supported by monitoring results from the existing NPM operations.

The NIA assessed a number of project scenarios, including the assumed worst-case scenario with noise attenuating meteorological conditions (i.e. source to receiver winds and temperature inversions).

The NIA based the project specific noise levels (PSNLs) on the criteria specified in the existing project approval, which were derived from the intrusive criteria, in accordance with the INP. Both the EPA and the Department are satisfied with this approach.

The submission from a nearby landowner indicated that the NIA did not assess potential noise impacts on an existing occupied residence on the "Hillview" property, or a proposed new residence on the property, which is the subject of an existing development application. In response to this submission, CMOC engaged Umwelt to assess the potential operational noise impacts on these properties. The results of this assessment are included in the RTS and summarised in the operational noise section below.

Operational Noise

Table 4 provides a summary of the noise level exceedances predicted at privately-owned land in the vicinity of the project. These results are also illustrated on **Figure 7**. The results reflect key operating scenarios, including:

- Scenario 1 – continuation of the existing approved 24 hour a day operations including operation of the ore processing plant, underground mining, support activities, loading and dispatch of concentrate and concurrent construction of TSF 3;
- Scenario 2 - continuation of the existing approved 24 hour a day operations and concurrent construction of TSF 3 (as in Scenario 1) with the proposed open cut mining in E26 and E31 and the associated out-of-pit placement of waste material to the east and west of the E26 open cut; and
- Scenario 3 - continuation of the existing approved 24 hour a day operations (as in Scenario 1) with the proposed open cut mining in E26 and E28 and the associated out-of-pit placement of waste material to the east and west of the E26 open cut. In addition, this scenario includes the construction of additional lifts to Escourt TSF.

The "Avondale" property is subject to an existing private negotiated agreement with CMOC over the life of the project and has therefore been excluded from **Table 4**.

Table 4: *Summary of Operational Noise Predictions*

Meteorological Conditions	**Criteria Day / evening / night**	***Noise Exceedances at Residence***				
		Scenario 1: Existing Operations	***Scenario 2: Existing Operations Plus***		***Scenario 3: Existing Operations Plus***	
			Mining in E26 and E31	***TSF 3 construction***	***Mining in E26 and E28***	***Estcourt construction***
Neutral calm – day, evening and night	35/ 35 / 35	0	0	0	0	0
Gradient wind – evening and night		0	0	2 dB(A) at Hubberstone	0	0
F class stability conditions – winter evening and night		0	3 dB(A) Hubberstone and Adavale	5dB(A) at Hubberstone	2 dB(A) at Hubberstone and Adavale	3dB(A) at Hubberstone and Adavale

Scenario 1 represents the typical operating scenario for the majority of the mine life, and **Table 4** indicates this is predicted to generate noise levels less than the PSNL criteria at all residential receivers under all modelled meteorological conditions.

The NIA indicates that Scenarios 2 and 3 represent the worst case operational situations when existing underground mining activities and ore processing are combined with open cut mining and TSF construction. The open cut mining would be conducted on a campaign basis and construction of the TSF would be staged over 12 months within the initial five to eight years of the project.

The results presented in **Table 4** indicate that the potential maximum exceedance of the PSNLs would be up to 5 dB(A) at the Hubberstone residence, which is located approximately 1 km to the east of the mine. The NIA indicates that this exceedance is primarily associated with the equipment used in the construction of TSFs and would only be experienced during F-class stability conditions in the winter evening and night-time periods. The Hubberstone residence is also predicted to experience moderate noise level exceedances (i.e. up to 3 dB(A)) during this operating scenario when gradient winds are blowing in evening and night time periods.

The Adavale property, which is located 2.7 km to the west of the mine, is also predicted to experience moderate noise level exceedances of up 3 dB(A) during both Scenario 1 and 2 operations when F-class stability conditions occur in the winter evening and night-time periods.

The Department recognises that these exceedances would only occur during worst-case meteorological conditions, and believes they can be avoided by scheduling activities associated with open cut mining and TSF/Estcourt construction during periods with non-adverse meteorological conditions. The Department is satisfied that this would not result in significant operational disruptions to mining activities, particularly considering that CMOC proposes to conduct open cut mining on a campaign basis.

The Department has therefore recommended that the existing PSNLs remain for the proposed operations, and that no extra dispensation be given to activities during adverse meteorological conditions. Consequently, CMOC would need to reschedule these non-critical activities during adverse meteorological conditions in order to ensure compliance with the noise criteria, and it has agreed to this approach.

Moreover, the Department recommends that prior to undertaking open cut mining and construction activities during evening and night time periods, CMOC should first confirm that predicted meteorological conditions for that night are such that it would be able to comply with its noise criteria, rather than reacting to any complaints. The Department has recommended that this proactive approach be reflected in the updated Noise Management Plan (NMP).

The Department has also recommended conditions requiring regular noise monitoring be carried out over the life of the project.

Sleep Disturbance

The NIA includes an assessment of the potential for sleep disturbance caused by the project during the night-time period. The assessment indicates that the predicted maximum noise levels during both calm and prevailing worst-case meteorological conditions would be below the sleep disturbance criterion of 45 dB(A)$L_{A1(1\ min)}$ at all privately owned residences.

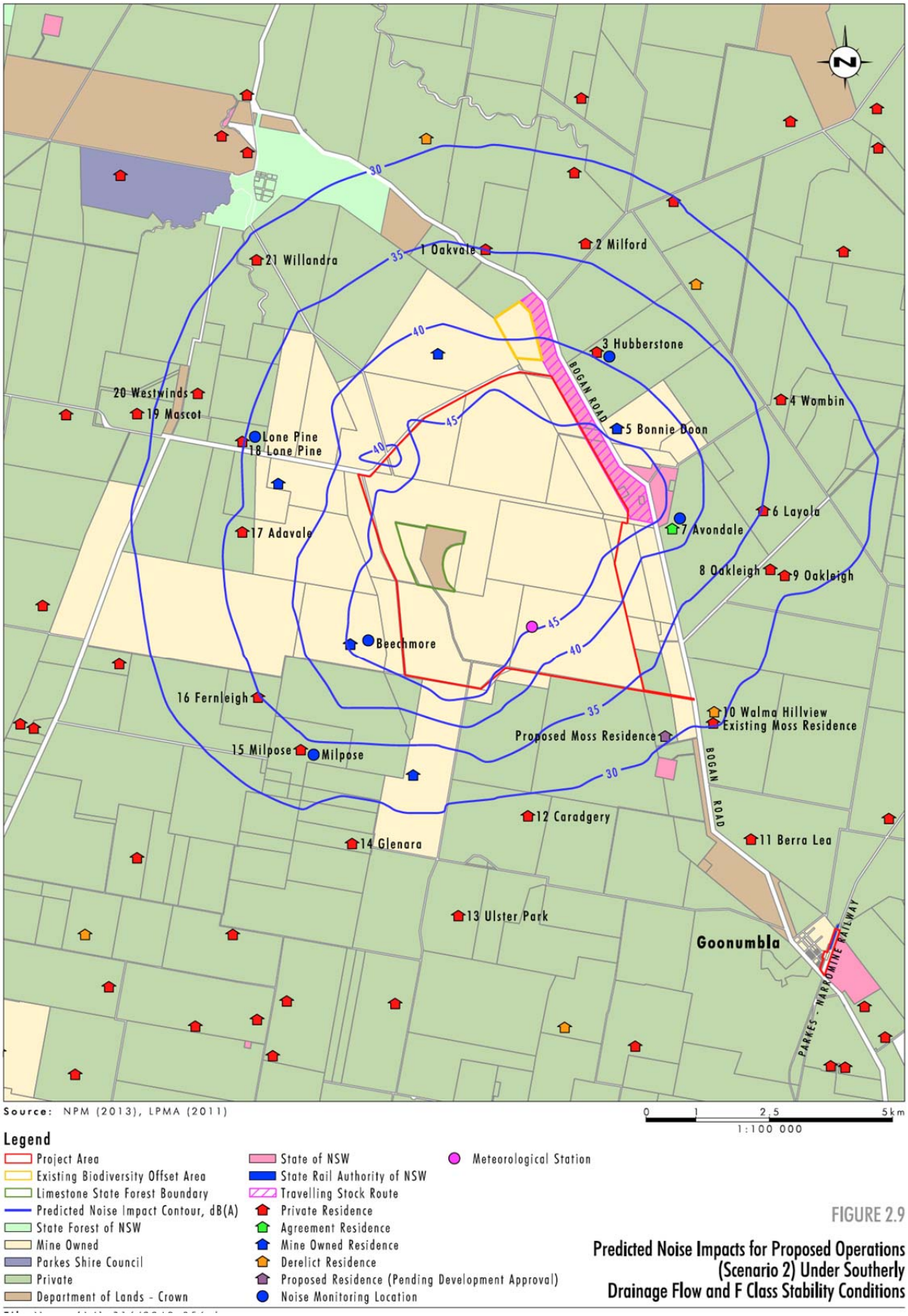

***Figure 7**: Noise Predictions*

Construction Noise Assessment
The project would result in some exceedances of the applicable construction noise criteria at the Hillview residences (existing and proposed) during the construction of the new access road.

The Department believes these exceedances would be acceptable because:
- they would only occur over a short period (up to 12 months);
- would only occur during the day when there are adverse weather conditions (i.e. rarely); and
- the noise levels at these residences would still comply with the recommended day time amenity criteria for rural areas under the INP.

Consequently, the Department has recommended that CMOC be allowed to exceed the noise limits at certain properties during the construction of the new access road. It has also recommended that CMOC be required to implement all reasonable and feasible mitigation measures during these construction works to minimise any potential amenity impacts.

Road Traffic Noise
The NIA included an assessment of the road traffic noise impacts associated with both light and heavy vehicles travelling to and from NPM via McClintocks Lane. The assessment indicated that the noise levels associated with NPM traffic, as well as cumulative traffic, would not exceed the day or night-time road traffic noise criteria outlined in the *NSW Road Noise Policy* (DECCW, 2011).

Conclusion
The Department is satisfied that the noise impacts of the project can be suitably minimised with the implementation of best management practice.

To ensure this occurs, the Department has recommended conditions requiring CMOC to:
- comply with strict noise limits;
- restrict construction works associated with road and intersection upgrades to day time periods;
- implement best management practice to minimise the construction, operation and road noise impacts of the project;
- implement a real-time noise management system, to proactively minimise the noise impacts of the project during the construction of the TSF and concurrent open cut mining operations;
- conduct attended noise monitoring at least 4 times a year, and more frequently if prevailing meteorological conditions invalidate the data, there are complaints or the real time monitoring results exceed specified triggers; and
- review and update the existing Noise Management Plan for the project.

5.2 Biodiversity

Issues
The project would result in the clearing of 239 ha of land, of which 52 ha is native vegetation (including 38 ha of EEC) and 187 ha is disturbed, planted or non-vegetated land. Clearing of the native vegetation would result in the removal or disturbance of a range of habitat for threatened fauna species.

Consideration
CMOC engaged Umwelt to undertake a flora and fauna assessment for the project. The assessment is included as Appendix 9 of the EA.

In its submission on the EA, OEH raised concerns about the survey effort that was undertaken for specific flora and fauna species, including the Pine Donkey Orchid (*Diuris tricolor*) and the Sloane's Froglet. In response, CMOC commissioned Umwelt to undertake additional survey for these species in the disturbance area during the known flowering period for the orchid and appropriate weather conditions for the froglet. Results of these additional surveys were included in the RTS Addendum report (refer to **Appendix D**).

Flora
As indicated in **Table 5**, the project impact area contains 5 vegetation communities and 4 types of disturbed or non-vegetated areas. The distribution of the vegetation communities and disturbed areas are shown on **Figure 8**.

***Figure 8**: Vegetation Communities of the Project Disturbance Area*

Three of the vegetation types (totalling 38 ha) contain endangered ecological communities (EECs) and/or critically endangered ecological communities (CEECs) as defined by the NSW *Threatened Species Conservation Act 1995* (TSC Act) and the Commonwealth *Environmental Protection and Biodiversity Conservation Act* 1999 (EPBC Act), respectively (referred to as EECs in the remainder of this report).

Table 5: *Summary of Direct Impacts on Vegetation Communities*

Vegetation Community	**Impact Area (ha)**
Bimble Box – White Cypress Pine Woodland	12
Bimble Box – White Cypress Pine Woodland – Exotic Understorey	1.7
Grey Box Grassy Woodland *	23
Grey Box Grassy Woodland – Derived Native Grassland (DNG) *	15
White Box – Yellow Box – Blakely's Red Gum Woodland *	0.28
Subtotal	**52**
Disturbed and Non-Vegetated Areas	
Cultivated Land	112
Disturbed Land	11
Exotic Grassland	39
Plantation	25
Subtotal	**187**
TOTAL	**239**
***** EECs and/or CEECs as defined by the TSC Act and the EPBC Act, respectively	

The original flora survey did not identify any threatened flora species in the project area. However, an additional survey in September 2013 identified a population of Pine Donkey Orchid (*Diuris tricolor*) within the central portion of the site. A proposed haul road was located within the identified population of orchids.

In order to avoid the majority of this population, CMOC committed to revising the alignment of the haul road to avoid direct impact on 142 individual plants. The revised alignment would only impact on 14 individual Pine Donkey Orchid plants, which Umwelt did not consider to be significant. CMOC also committed to fencing the remaining population to protect it during construction activities, maintaining a 20 m buffer around the population, conducting annual seasonal monitoring to access the ongoing status of the population, and implementing weed controls.

OEH supported CMOC's proposed realignment of the haul road to avoid the majority of the orchid population, and the proposed active management measures to protect the population. Both OEH and the Department agree that these measures would protect the vast majority of the orchid population, and that offsetting the impacts on this species is unnecessary.

OEH also recommended that CMOC be required to prepare a management plan for the two populations of Pine Donkey Orchid located on site (including to the north of the project area near Adavale Road and near the E48 subsidence zone). OEH indicated that the management plan should include objectives to maintain the populations as well as proposed management, monitoring and reporting activities. The Department has recommended a condition requiring the existing populations of this species to be monitored, managed and maintained and that these measures be detailed in the Biodiversity Management Plan.

<u>Fauna</u>

A total of 141 fauna species were recorded during surveys of the project area and surrounds, including 91 birds, 25 mammals, 13 reptiles and 12 frogs. Of these species, 15 are listed as vulnerable, endangered or critically endangered under the TSC Act and/or the EBPC Act. These 15 species included 12 birds, 2 bats and 1 amphibian.

The original fauna surveys recorded two threatened fauna species in the proposed disturbance area, including the Superb Parrot (*Polytelis swainsinii*) and Grey-crowned Babbler (*Pomatostomus temporalis temporalis*).

Umwelt undertook additional targeted survey for the Sloanes Froglet during a rainfall event in September 2013. The targeted survey did not identify the froglet within any areas of suitable habitat within the proposed disturbance area. Umwelt concluded that the species is unlikely to be significantly impacted by the project. OEH accepted this finding.

The fauna impact assessment indicated that the project would result in the loss of 116 ha of fauna habitat within the proposed disturbance area, including 62 ha of woodland habitat and 54 ha of grassland habitat.

To minimise the impacts on fauna, CMOC proposes to implement a range of standard management strategies including progressive clearing, pre-clearance surveys and habitat augmentation. CMOC claims that these measures would complement the key mitigation measure, which is the implementation of the biodiversity offset strategy (see below).

Aquatic Ecosystems

The flora and fauna assessment indicates that no threatened aquatic flora or fauna species listed under the *Fisheries Management Act 1994* were recorded and no natural aquatic habitat occurs within the project area. Furthermore, no Groundwater Dependent Ecosystems or creeklines or streams that may be fed by groundwater flow through the project area.

Rehabilitation and Final Landform

The EA indicates that, given the nature of the operational activities at NPM, there is limited scope for progressive and ongoing rehabilitation, aside from that required to suppress dust and manage specific safety issues on site. This is primarily due to the nature of the mining process, which requires restricted access to subsidence areas, the need to use material stockpiles and the need for the TSFs to remain open for the life of the project. However, CMOC has committed to continue to progressively rehabilitate drainage lines and paddock margins within its landholdings.

The EA indicates that the establishment of native vegetation, with areas of native grassland, is the most sustainable final land use option for the majority of the disturbed areas across the project area. The final land use would also involve the maintenance of agricultural land, primarily for cropping. The final proposed rehabilitated landform, shown in **Figures 6(a)** and **6(b)**, would involve the establishment of:

- 1,580 ha of native vegetation;
- 759 ha of agricultural land use; and
- 112 ha within the Limestone State Forest.

CMOC indicates that the areas of native vegetation to be established in rehabilitated areas would consist of native grassland and open woodland, consistent with the key species composition for Grey Box Grassy Woodland, Grey Box Grassy Woodland – Derived Native Grasslands and the White Box – Yellow Box – Blakely's Red Gum Woodland communities.

CMOC indicates the proposed approach for rehabilitation of the site is consistent with surrounding land uses, which are dominated by agricultural land uses, with isolated areas of native vegetation.

A number of restricted areas associated with subsidence and open cut voids would remain (totaling 190 ha). CMOC has committed to ensuring these areas are geotechnically stable, with buffer areas and appropriate access restrictions. CMOC also committed to investigating the potential use of the voids as emplacement areas for tailings disposal. NSW Trade & Investment and the Department support these commitments.

CMOC indicates that the TSFs on site would be filled and shaped to the proposed final landform levels (see **Figure 6(b)**) and subsequently capped. They would then be revegetated with open grassland vegetation.

NSW Trade & Investment is supportive of the rehabilitation proposal detailed in the EA.

The Department has recommended that the rehabilitation strategy contained in the EA be expanded upon in a detailed Rehabilitation Management Plan, to be prepared in consultation with relevant agencies and aimed at achieving defined rehabilitation objectives.

Biodiversity Offset Strategy

CMOC engaged Umwelt to prepare a biodiversity offset strategy that, together with the rehabilitation of the mine site, is directed toward reducing the biodiversity impacts of the project (refer to Appendix 9 of the EA).

Following an extensive offset identification process, Umwelt proposed the Kokoda Offset Site, a 350 ha site located in the Mandagery locality of the Central West Slopes of NSW (refer to **Figure 9**). Umwelt considered the Kokoda site to be the most appropriate site of the numerous sites investigated because it is strategically located in the vicinity of several National Parks and State Forests, contains large areas of EEC and has the potential to contribute to existing regional vegetation corridors.

The results of an ecological survey undertaken across the site are presented in the EA. Results of an additional survey, undertaken to target threatened species and inform further refinement of the management strategies proposed for the site, was included in the RTS Addendum.

As shown in **Figure 10**, the Kokoda site comprises lower fertility soils in the north, predominantly cleared for grazing, and dense woodland covered slopes and ridge lines in the south. Twelve vegetation communities were identified on the site, including three EECs. The areas of each vegetation community that would be impacted by the proposed extension of the NPM, compared to the area of the same or equivalent vegetation at the Kokoda offset site are provided in **Table 6**.

Table 6: *Comparison of Vegetation Communities to be Impacted vs Offset*

Vegetation Community	NPM Impact Area (ha)	Kokoda Offset Site (ha)
Grey Box Grassy Woodland EEC (including DNG)	38	109
White Box – Yellow Box – Blakely's Red Gum Woodland EEC	0.28	2.2
Bimble Box – White Cypress Pine Woodland	12*	
Bimble Box – White Cypress Pine Woodland – Exotic Understorey	1.7*	
Dwyer's Red Gum – Grey Box – Mugga Ironbark – Black Cypress Pine Forest		150*
Rocky Rise Shrubby Woodland		26
Grey Box – Ironbark Woodland		25
Dwyer's Red Gum – Grey Box – Mugga Ironbark – Black Cypress Pine DNG		15
Dwyer's Red Gum Creekline Woodland		9.4
Dwyer's Red Gum – Grey Box – Mugga Ironbark – Black Cypress Pine Woodland Low Quality		8.6
Mugga Ironbark Woodland		1.9
Cultivated Land	112	
Disturbed Land	11	
Exotic Grassland	39	
Plantation	25	
Farm Track – Disturbed Land		1.3
Farm Dam		1.2
Total	**239**	**350**

Note * - OEH accepts the use of Dwyer's Red Gum – Grey Box – Mugga Ironbark – Black Cypress Pine Forest as a direct offset for Bimble Box – White Cypress Pine Woodland (OEH correspondence dated 19 November 2013).

The biodiversity offset would result in offset ratios of 1:6.7 for native vegetation and 1:2.9 for EEC communities.

In addition, Umwelt has confirmed that the Kokoda offset site provides a direct offset for all of the threatened fauna species recorded in the project area and disturbance area, including the grey crowned babbler, black falcon, superb parrot, brown treecreeper, eastern bentwind-bat and little pied bat. Furthermore, the offset also provides conservation value for threatened fauna species which were not recorded in the project or disturbance area such as the glossy black cockatoo, little lorikeet, hooden robin, diamond firetail, varied sittella and yellow-bellied sheathtail-bat.

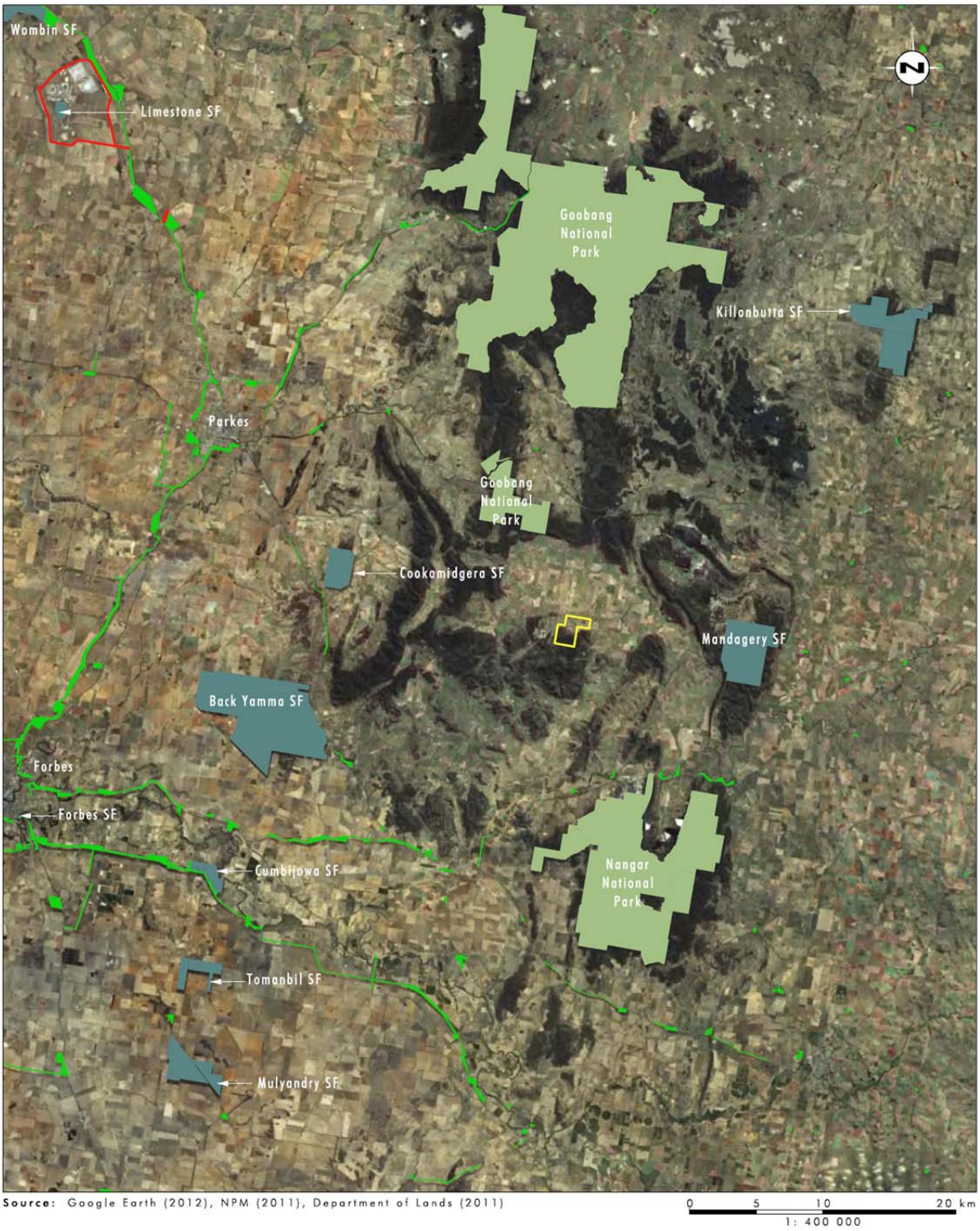

***Figure 9**: Proposed Kokoda Offset Site Regional Location*

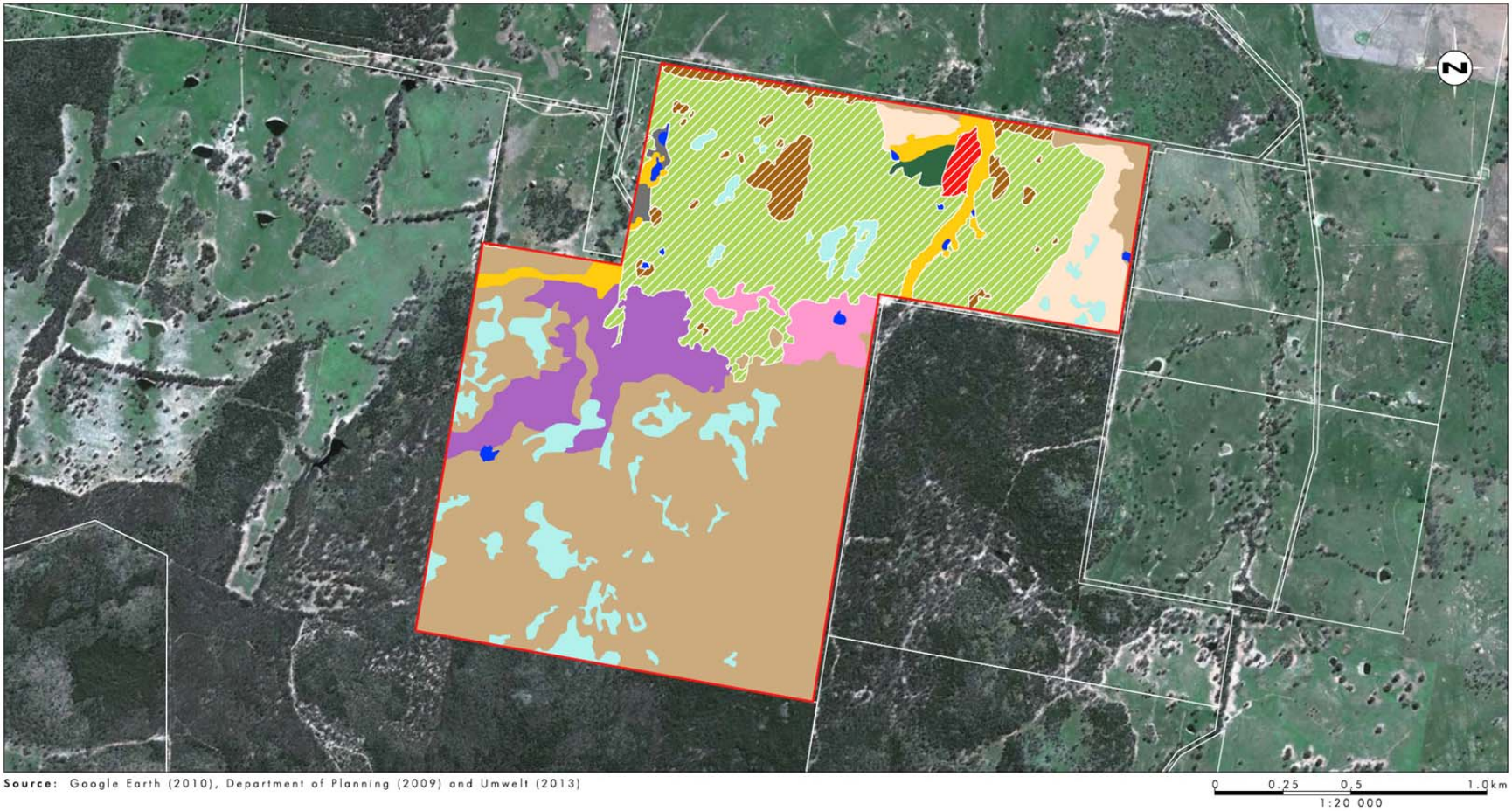

Figure 10*: Vegetation Communities in the Kokoda Offset Site*

OEH was concerned that the Grey Box Grassy Woodland EEC within the offset includes a large proportion of the DNG component of this community (96 ha of the 109 ha in total). In response to these concerns, CMOC committed to manage the entire Kokoda site to conserve and enhance the ecological values, with a focus on regenerating the areas of DNG to a woodland community. Preliminary on-ground works proposed to achieve this outcome include:

- weed and pest control programs;
- exclusion of stock from the site;
- planting of DNG areas with poor recovery potential;
- undertaking ecological monitoring across the offset site to monitor the success of plantings and the recovery of the DNG areas that have a high natural recovery potential.

Umwelt estimates that of the 96 ha of DNG EEC within the offset site, 38 ha would readily naturally regenerate once stock is removed from the site, 22 ha is likely to regenerate and the remaining 36 ha would require active revegetation in order for it to be restored to woodland EEC.

In order to further assist in the establishment of an ecologically sustainable Grey Box Grassy Woodland EEC, OEH also requested that the approval conditions include a requirement for CMOC to prepare a restoration plan with clear targets and outcomes at appropriate timeframes (i.e. 2, 5, 10 years, etc). OEH also requested that the plan include contingencies should the biodiversity outcomes in relation to DNG restoration not be achieved.

The Department agrees with this approach and has recommended that this information be prepared as part of the Biodiversity Management Plan for the project.

In addition, the Department has recommended that CMOC be required to pay a significant conservation bond. If the offset strategy is not completed in accordance with the completion criteria in the Biodiversity Management Plan, the Secretary would call in all, or part of, the conservation bond, and arrange for the satisfactory completion of the relevant works.

CMOC has also committed to in-perpetuity conservation of the Kokoda offset. To ensure this occurs to the satisfaction of OEH, the Department has recommended a project approval condition that requires CMOC to make suitable arrangements to protect the offset in perpetuity in consultation with OEH and to the satisfaction of the Secretary, by the end of June 2015.

Conclusion

The Department is satisfied that CMOC has investigated all reasonable and feasible measures to avoid and/or minimise the biodiversity impacts of the project, and that the vegetation clearing is justified in this instance to enable the extraction of the ore resource.

The Department is also satisfied that the implementation of the biodiversity offset strategy, coupled with the rehabilitation strategy, would suitably offset any residual impacts associated with this clearing and improve the conservation value of the region in the medium to long term.

To ensure this occurs, the Department has recommended that CMOC be required to:

- implement the biodiversity offset strategy and rehabilitation strategy;
- provide suitable habitat for the threatened fauna species confirmed and identified as being potentially present in the disturbance areas;
- provide for the in perpetuity conservation of the offset area and the rehabilitated mine area;
- develop a comprehensive Biodiversity Management Plan and Rehabilitation Management Plan; and
- lodge a substantial conservation and biodiversity bond to ensure that the offset areas are established and maintained to the satisfaction of the Secretary.

It should also be noted that the recommended conditions of approval also include obligations for CMOC to implement biodiversity offsets (i.e. the Limestone National Forest Offset and the Escourt Biodiversity Offset) that were required under previous development consents.

5.3 Water Resources

Issues

The project has the potential to impact on local and regional groundwater and surface water resources.

Consideration

CMOC engaged Golder Associates (Golder) to undertake a groundwater impact assessment and Umwelt to undertake a surface water impact assessment of the project. These reports are included at Appendix 10 and Appendix 11 of the EA, respectively.

The groundwater impact assessment was subsequently peer reviewed by Dr Noel Merrick from Heritage Computing Pty Ltd. A copy of the peer review is included at **Appendix E.**

In summary, Dr Merrick concluded that the groundwater model is fit for purpose. In Dr Merrick's view, the predicted drawdowns are overestimated, meaning that predictions are conservative from an environmental point of view. Dr Merrick indicated that, even with the overestimations, the predicted impacts are of no concern.

Water Balance

The EA indicates that the total water demand at the NPM site is in the order of 6,900 ML per annum (ML/a). The majority of the site water demand is for ore processing (1,800 ML/a) and from evaporative losses from open water storages (2,700 ML/a). The remaining water demand is required for open cut and underground mining activities, dust suppression, construction activities and potable water requirements.

The on-site water sources for the existing approved operations and the proposed extension are detailed in the surface water assessment and summarised in **Table 7** below.

Table 7*: Existing and Proposed Water Sources*

On-site Water Source	Current Approved Operations (ML)	Proposed Extension (ML)
Recycled (rainfall onto TSF)	2,091	2,091
Surface water runoff	400	523
Groundwater	63	290
Total	**2,554**	**2,904**

The current water deficit at the NPM is approximately 4,350 ML/a. The EA predicts that this deficit would reduce slightly to around 4,000 ML/a as a result of the proposed extension, primarily due to increased on-site surface water runoff and groundwater intake.

NPM currently relies on external water sources to meet any water deficit. These include:

- water access licences within the Upper Lachlan Alluvial Groundwater source (Zone 3) – totalling 7,400 ML/a;
- general and high security river allocations from the Lachlan River – totalling 3,000 ML/a; and
- a water supply agreement with Parkes Shire Council – totalling 1,000 ML/a.

Umwelt indicates that the *Water Sharing Plan for the Macquarie Bogan Unregulated and Alluvial Water Sources 2012* (WSP) applies to the NPM project Area. Therefore, any surface and groundwater take is governed by the *Water Management Act 2000* and the *Water Act 1912*.

CMOC has confirmed that it holds current surface water and groundwater licences for the extraction and use of the water from the external water sources listed above, and that the extension project does not require any increase of the existing licence limits.

The Department is satisfied that CMOC has sufficient volume and security of external water supply to sustain its proposed extension operations. The Department has recommended a condition requiring CMOC to prepare and regularly update the Site Water Balance for the project.

Groundwater

The project area is located within the Lachlan Fold Belt, which comprises generally hydraulically tight rocks with poor aquifer storage and low permeability. The project area consists of a weathered shallow

regolith overlying fresh bedrock strata. Golder indicates that the upper stratum of the bedrock is low yielding and of low water quality, but is accessed by regional groundwater users, primarily for stock use. The regional water table prevails at a depth of about 40 m below ground level and groundwater quality is variable but mostly brackish to saline.

Golder indicates that the proposed extension has the potential to impact on groundwater resources by:

- increasing mine inflows and associated groundwater drawdowns;
- reducing baseflows to local creeks;
- impacting goundwater dependent ecosystems; and
- impacting groundwater quality.

Mine Inflows

Golder used predictive modelling to calculate groundwater seepage rates for each of the mining areas associated with the existing and proposed operations (refer to Appendix 1 of the RTS). The modelling incorporates the historical dewatering programs that have been implemented at the NPM since 1995.

The modelling results indicate that the predicted groundwater inflows would vary over the life of the project depending on the operation and closure of each mine. For the majority of the mine life predicted inflows are expected to be less than 1 ML/day, with a maximum inflow of up to 2.1 ML/day (766 ML/year) when mining is simultaneously occurring in the E26, E26 Lifts 1 & 2 and E48 underground mines.

CMOC has confirmed that it currently holds two mine dewatering licences under the *Water Act 1912* for 464 ML/year to account for the predicted maximum inflows for the existing operations. It also holds three additional high security licences for 4,250 ML/year for the purposes of mining and/or irrigation, which CMOC indicates are available for mine dewatering as needed over the life of the project. The Department and NOW are satisfied that these groundwater licences are in excess of predicted inflows, with sufficient capacity to provide a reasonable contingency.

The groundwater model predicts that the groundwater inflows into the mine areas would only have a localised impact on groundwater levels. Groundwater levels are predicted to lower by a maximum of 42 m (at E26) after mine closure, with other block cave zones predicted to be depressed by approximately 10 m. Aquifer impacts within open cut mining areas are predicted to be relatively short duration, with groundwater levels in the vicinity of the open cuts fully recovered at the end of the project life. At the cessation of the proposed mining, Golder predicts that the lateral extent of bedrock drawdown would be approximately 4.5 km from the mining areas.

Golder indicates that there are 185 registered groundwater bores in the vicinity of the NPM site. The majority (94) are used for stock and irrigation supply, with the remainder registered for domestic use. Groundwater in the vicinity of the site is not considered a valuable resource and the bores are not well utilised because they are low yielding and the water is of low quality.

The location of the existing groundwater bores in the vicinity of the NPM are shown in **Figure 11**. Golder has confirmed that the closest privately owned groundwater bore (G002860) to the NPM is located outside of the 2 m drawdown zone and that the project would not result in drawdown in the water table or pressure head of greater than the cumulative 2 m at any of the existing private bores within an 8 km radius of the site. NOW has confirmed that this indicates that the project would meet the Level 1 impact thresholds of the *Aquifer Interference Policy*, which it considers to be acceptable.

However, the Department has recommended a condition requiring CMOC to provide compensatory water supplies to any landowner whose water supply is adversely affected by the project.

In its submission, NOW questioned the predicted groundwater take at the NPM after mine closure and whether the voids would act as groundwater sinks or sources and the potential impacts associated with the voids. In its response, CMOC indicated that the voids would act as groundwater sinks during the mining and post mining periods and that the groundwater impacts would be localised to the mine operation areas.

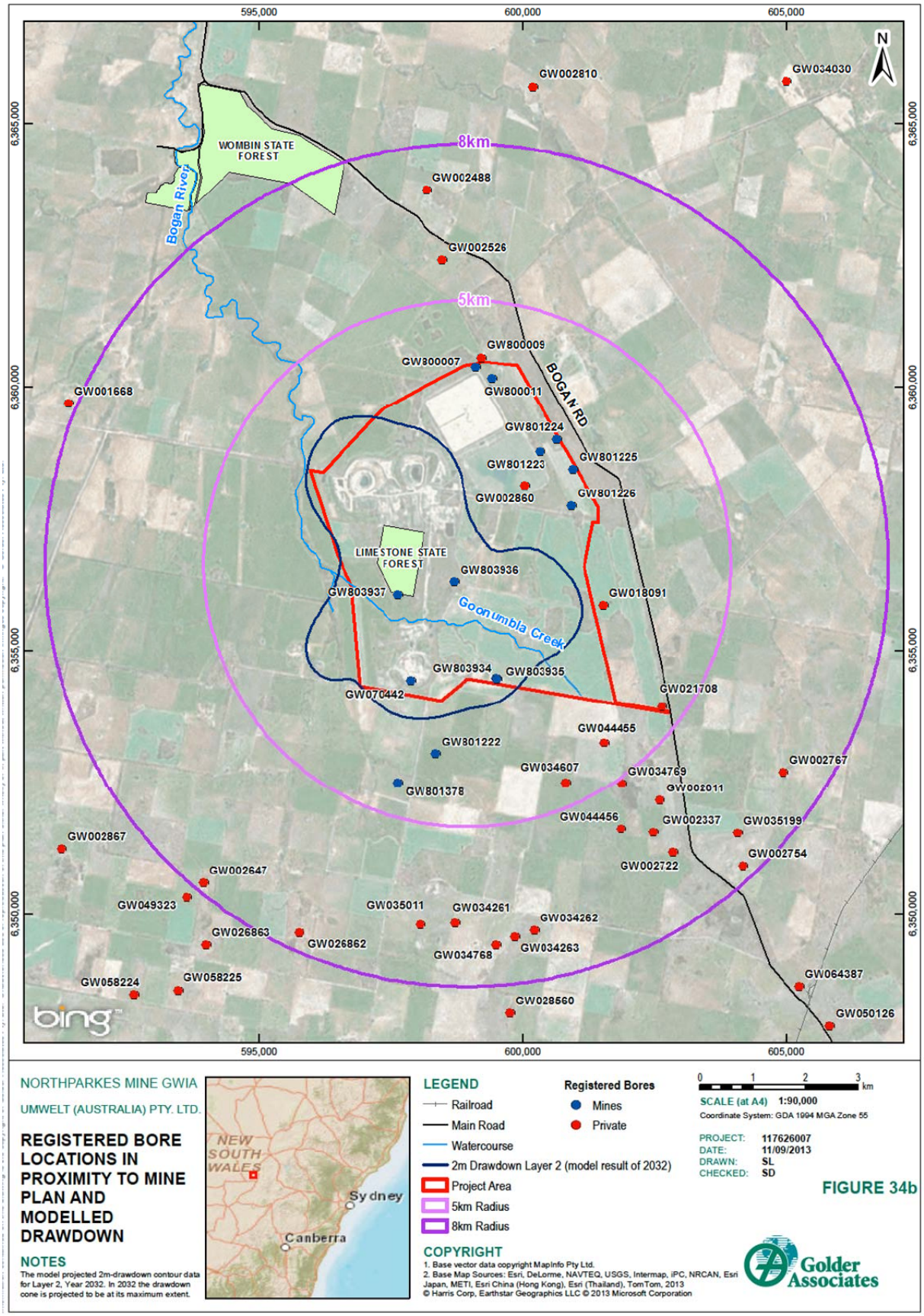

***Figure 11**: Registered Bores in the vicinity of the NPM in relation to predicted drawdowns*

Baseflows
It relation to baseflows, Golder has indicated that, in the vicinity of the NPM site, the Bogan River and its tributaries are ephemeral and only flow after sustained periods of intense rainfall. There is no permanent baseflow because the groundwater table lies well below the base of the channel. The project would therefore not impact on baseflows. Both NOW and the EPA accept this conclusion.

Groundwater Dependent Ecosystems
In relation to groundwater dependent ecosystems (GDEs), Golder indicates that there are no high priority GDEs within or surrounding the project area. The nearest high priority GDE is located more than 50 km south-east of the mine site, well outside the zone of influence of the mine dewatering.

Groundwater Quality
In relation to groundwater quality, Golder considered the risk of leachate seeping into the groundwater system from the TSFs. The EA indicates that the existing and proposed TSFs at the NPM have been designed, constructed and operated to prevent the contamination of groundwater resources. CMOC has confirmed that the monitoring results from the bores surrounding the existing three TSFs have not shown any adverse groundwater quality impacts.

Furthermore, Golder indicates that the mobility of metals within the groundwater system in the vicinity of the site would be limited due to the low hydraulic conductivity and the presence of clays. Any leachate generated from the proposed TSF3 is therefore considered unlikely to adversely impact on regional groundwater quality. This conclusion is supported by previous investigations (Rio Tinto, 2011 and Mackie Environmental Research, 2006).

However, the EPA was not satisfied with the level of information provided in the EA in relation to the construction methodologies and design standards of the proposed TSF3. CMOC consequently provided detailed information in the RTS, which confirmed that the floor of the TSF would be constructed with a 450 millimetre (mm) clay liner with a permeability of at least 1×10^{-9} m/s. The embankments are proposed to be constructed with materials that would deliberately allow water to flow through for controlled collection and recycling to the processing plant.

The Department is satisfied that the proposed permeability of the clay lining would comply with the liner standards in the *NSW Environmental Guidelines for Solid Waste Landfills* (EPA, 1996), and has recommended that this design criteria be included in the water management performance measures of the project approval.

CMOC has confirmed that the existing TSFs are “prescribed dams” under the *Dams Safety Act, 1978*, and would require the approval of the Dams Safety Committee.

The Department and the EPA are satisfied that these standards would ensure that the TSF3 would pose a negligible risk of contamination of groundwater. Further, CMOC has committed to installing additional monitoring bores around the proposed TSF to detect any changes in groundwater quality.

Acid Rock Drainage
In its submission, NOW questioned the acid rock drainage (ARD) and oxidation potential within the block cave mines following dewatering. The RTS indicates that that previous assessments of ARD potential within the block caves and resultant increases in TDS in the groundwater (Ryan, 2003 and Rio Tinto, 2011), indicate that there are no significant risks to the regional groundwater quality. CMOC has also confirmed that the existing operations at NPM have not detected any ARD within the block cave mines. The Department is therefore satisfied that ARD potential is low, and that the proposed continued groundwater monitoring regime is sufficient to detect and manage any future occurrences.

The EA indicates that CMOC has also conducted extensive net acid generation tests on the waste rock, which has confirmed that the waste is very unlikely to produce acid. This is due to the overall low sulphide content and the presence of carbonate minerals in the waste rock. CMOC has committed to continue monitoring the waste over the life of the project to ensure this remains the case. Irrespective, CMOC has committed to capture drainage from the waste dumps in the existing contaminated water management system and incorporate it into the dirty water management system on site (see below).

Surface Water

The project area is located within the headwaters of the Macquarie-Bogan River catchment, which contributes surface water runoff from about 74,000 km^2 to the Murray-Darling Basin system. The Bogan River, which is located immediately to the west of the NPM site, flows to the north-west towards Nyngan before joining the Darling River near Bourke. Within the upper southern reaches of the catchment the Bogan River collects flows from Tenandra Creek, Goonumbla Creek and Cookopie Creek (refer to **Figure 12**).

Within the project area, the Bogan River and its tributaries are ephemeral and surface water only flows after heavy or prolonged rainfall periods.

The existing NPM operations are supported by an extensive water management system which includes catch drains, diversion bunds, sediment dams and process water dams that manage clean, dirty and contaminated water across the site. The key components of the existing approved water management system are shown in **Figure 13**.

Umwelt indicates that the proposed extension project has the potential to impact on surface water resources by:

- reducing the catchment area draining to the Bogan River;
- reducing water quality due to runoff from additional disturbed areas including the open cut mines, extended tailings facilities and the additional/extended waste rock dumps; and
- modifying the flooding regime in the vicinity of the site.

Environmental Flows

Umwelt indicates that the project would result in a reduction in the natural catchment area by 203 ha, which represents a 0.2% reduction in the Bogan River catchment and a 0.8% reduction in the Cookopie Creek catchment. This catchment area reduction represents a reduction in average yearly runoff to downstream water users and the environment of 123 ML.

Umwelt indicates that there are no licenced water users on Cookopie Creek downstream of the mine site, and that the ephemeral nature of both the Bogan River and Cookopie Creek mean that they are not a reliable source of water for downstream land owners. Similarly, the ephemeral nature of the system means that the downstream environment is subject to a cycle of wetting and drying, which would not be altered by the existing or proposed operations at NPM.

Umwelt concludes that the project would result in negligible impact to downstream water users or the environment.

The Department notes that CMOC is exempt from a requirement to obtain a water access licence in respect of this capture of surface runoff, pursuant to clause 10(1) of the *Water Management (General) Regulation 2011*.

Surface Water Quality

In order to prevent the contamination of clean water and ensure compliance with statutory obligations, CMOC proposes to continue to operate the existing water management system on site and integrate additional surface water management controls into the system to control runoff associated with the extension project. The additional controls proposed are shown in **Figure 14**.

Additional information provided in the RTS has clarified that the dirty water system would be managed to ensure there are no discharges from site. CMOC indicated that all existing and proposed sediment basins at the NPM would be designed to capture water from the 90^{th} percentile 5 day duration rainfall event. The EPA and the Department agree that this is an appropriate design standard to minimise the likelihood of unauthorised discharges of sediment laden water from the mine site.

CMOC has confirmed that the contaminated water management system (i.e. runoff from the open cut mining areas, decant water from the TSFs and runoff from the waste dumps) would continue to be designed and operated as a closed circuit system. As such, CMOC has confirmed that the TSFs have been designed to maintain freeboard capable of containing the runoff generated by the 100 year 24 hour design storm event.

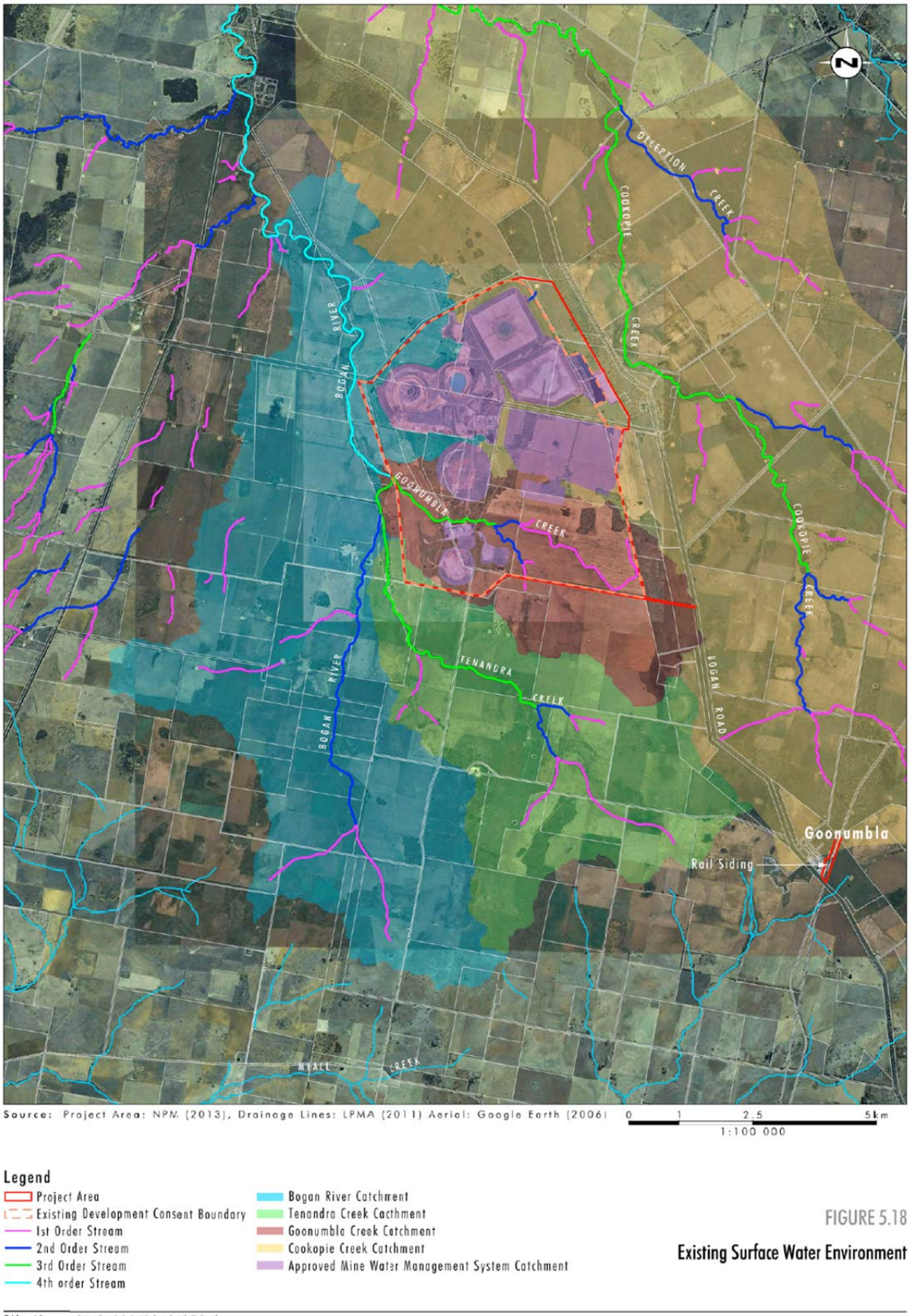

***Figure 12**: Existing Surface Water Environment*

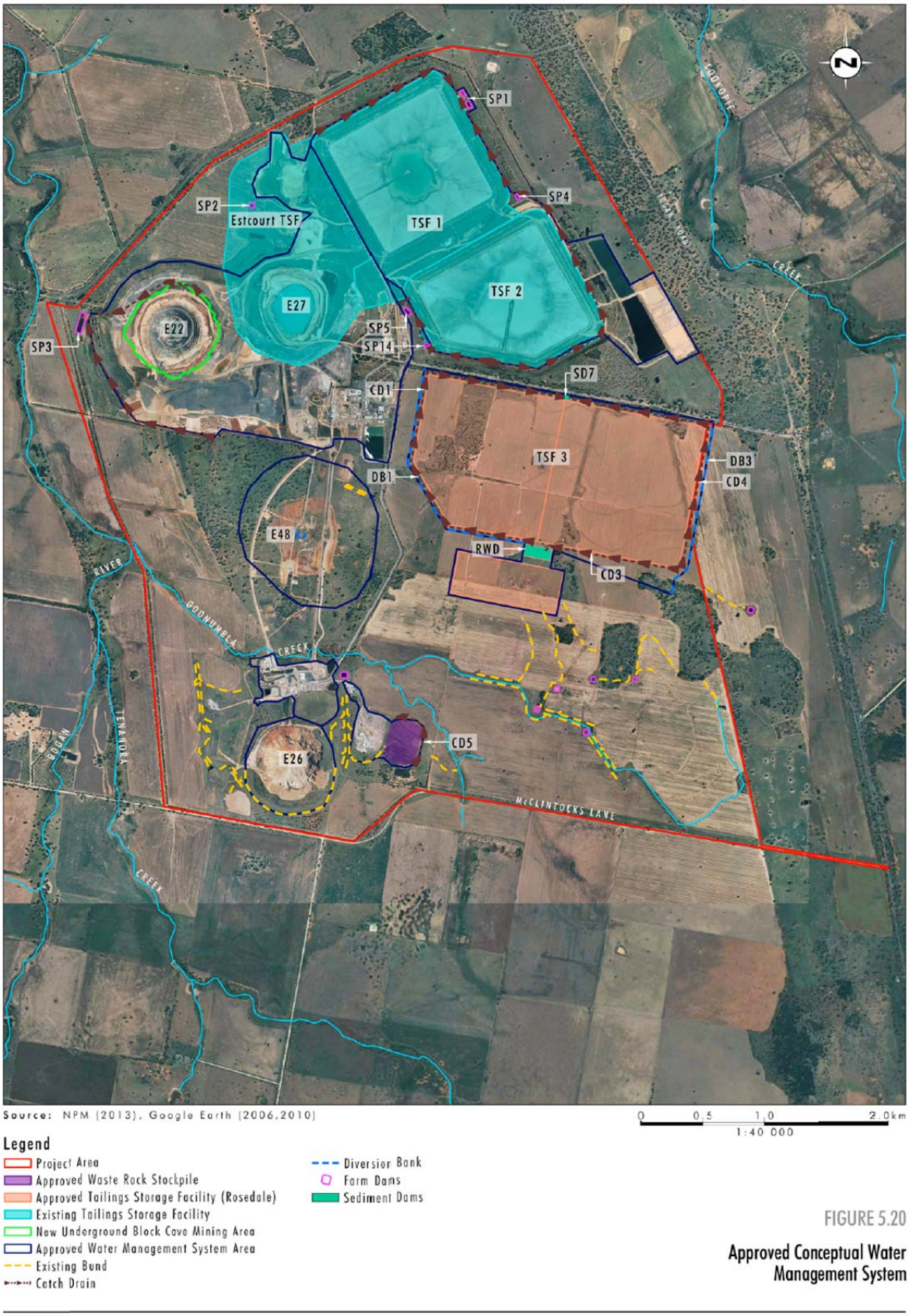

***Figure 13**: Approved Water Management System at NPM*

***Figure 14**: Proposed Water Management System at NPM*

To ensure this occurs, the Department has recommended performance objectives requiring the TSFs to be designed, constructed and maintained in accordance with the standards set out in the *Environmental Guidelines – Management of Tailings Storage Facilities* (VIC DPI, 2006), including a requirement to maintain a minimum freeboard of 600 mm or a sufficient freeboard to accommodate a 1 in 100-year ARI, 72 hour rainfall event without overtopping at all times, whichever is greater.

The EPA raised numerous issues in relation to water quality results from the existing dirty water system, which were addressed in detail in CMOC's RTS. The EPA subsequently recommended that the water quality monitoring programs and management trigger criteria within the existing Water Management Plan be reviewed and updated in a revised plan, in consultation with the EPA. The Department considers this is appropriate and has recommended conditions of approval accordingly.

Flooding

The surface water impact assessment included modelling of the potential flooding impacts within the site and surrounds, including the modelling of the 1 in 100 year Average Recurrence Interval (ARI) flood levels. The modelling indicates that all of the existing and proposed mining activities and associated infrastructure are located outside of the 100-year ARI flood extent. However, the closest point of the flood extent is within 20 m of the proposed waste rock stockpiles. To manage this risk, CMOC proposes to construct a 1 m high bank at the toe of the stockpiles. The Department supports this management measure.

NOW questioned the design of the proposed road crossing over Goonumbla Creek, including details of the road formation in relation to flood flows and mitigation measures to ensure channel and floodplain stability. In the RTS, CMOC confirmed that the road crossing would be designed to convey the 100-year ARI flood flows and provided design criteria for the crossing.

NOW indicated its support for the design criteria proposed for the road crossing, however noted that the acceptability of the potential redistribution of floodwaters and the ability to mitigate flooding impacts would need to be addressed during the detailed design phases of the project. The Department has recommended that the design criteria for the road crossing be included in the water management performance measures in the project approval, and has recommended a condition requiring the detailed design of the creek crossing be determined in consultation with NOW.

Conclusion

The Department is satisfied that the proposed extension is unlikely to significantly impact local and regional groundwater and surface water resources, and that the project can be suitably managed to ensure an acceptable level of environmental performance.

To ensure this occurs, the Department has recommended that CMOC be required to:

- hold suitable water licences for the project;
- provide compensatory water supply to any landowner whose water supply is adversely affected by the project;
- ensure that it has sufficient water for all stages of the project, and if necessary, adjust the scale of mining operations on site to match its available water supply;
- operate as a "zero" discharge site;
- comply with a range of water performance measures;
- prepare a detailed Groundwater Management Plan for the project, which includes:
  - baseline data on groundwater levels, yield and quality in the region, and privately-owned groundwater bores, that could be affected by the project;
  - groundwater assessment criteria, including trigger levels for investigating any potentially adverse groundwater impacts;
  - a program to monitor and report on the impacts of the project;
  - a program to validate the groundwater model for the project; and
  - a plan to respond to any exceedances of the groundwater assessment criteria; and
- prepare a detailed Surface Water Management Plan for the project, which includes:
  - baseline data;
  - detailed description of the water management system;
  - detailed performance criteria and trigger levels;
  - a program to monitor and report on the surface water impacts of the project; and
  - a contingency plan to respond to any unpredicted impacts.

5.10 Other Issues

The project is likely to generate a range of other environmental impacts – including agriculture, blasting, air quality, subsidence, visual amenity, lighting, traffic, Aboriginal and European heritage, waste, greenhouse gases and socio-economic. However, as indicated in **Table 8**, these impacts are not predicted to be significant, and the Department is satisfied that they can be controlled, mitigated or managed through appropriate conditions of approval.

***Table 8**: Other Impacts*

Issue	Consideration	Conclusion
Agriculture	• The EA includes an Agricultural Impact Assessment (AIA), which was completed by WHK Ivey Agricultural Consultants (WHK). • The AIA indicates that all of the agricultural resources and enterprises that would be directly impacted by the project are managed as part of CMOC's agricultural enterprises. CMOC currently manages 3,900 ha of land resources within and directly adjacent to the project area for agricultural production focusing on dryland cropping. • The project area is predominantly class III land (191 ha), which is suitable for cropping on a rotational basis but is subject to soil erosion difficulties. The remaining land (47 ha) is class II, which is suitable for a wide variety of agricultural uses. • The project would result in the disturbance of 117 ha of this land, approximately 4.3% of the average crop land within the NPM landholdings. • The loss of agricultural land would result in foregone gross income of around $55,000 per annum and foregone profit of around $17,000 per annum, which represents 0.04% of the estimated annual average production in the Parkes LGA. • WHK indicates that the project would have a negligible impact on agricultural production and enterprises within the region. • As indicated in Section 5.2, the final land use includes returning large areas of land to its original agricultural capability use. DPI indicated its support for this final land use.	• The Department is satisfied that CMOC has adequately demonstrated that the project would have minimal impacts on land resources, agricultural resources and agricultural enterprises within and surrounding the project. • The Department has recommended a rehabilitation objective that requires the land to be returned to agricultural uses post-mining to a similar standard to adjacent agricultural areas.
Blasting	• The EA includes a Blast Impact Assessment (BIA), which was undertaken by SLR Consulting. • CMOC is proposing to undertake 1 blast per day, six days a week in the vicinity of the proposed open cut mining areas. This frequency is consistent with the existing approval. • The BIA indicates that the blast vibration and overpressure levels can be managed to achieve compliance within the relevant criteria at all privately-owned residences. • The BIA indicates that there are small areas of one privately owned property (Milpose) located within 500 m of the E26 open cut pit. CMOC has committed to consult with this landholder prior to blasting activities to minimise potential impacts, including impacts to livestock. • Blasting would also occur within 500 m of McClintocks Lane. CMOC has committed to undertake appropriate road closure and traffic management processes when blasting is undertaken in the vicinity of McClintocks Lane. • CMOC has also committed to monitor all blasts during campaign open cut mining to determine compliance with relevant criteria, and to refine relevant site laws and future blast designs.	• The Department accepts that blasting operations can feasibly be managed to meet the applicable criteria by reducing maximum instantaneous charge and applying other standard blast management techniques. • The Department has recommended strict conditions in relation to blast criteria, blasting hours, frequency and operating conditions. • The Department is therefore satisfied that, subject to compliance with these strict blast management conditions, blasting can be managed such that the operations would not significantly affect private property or road users. • In addition, the Department has recommended a condition requiring a Blast Management Plan to be prepared and implemented.
Air Quality	• The EA includes an Air Quality Impact Assessment (AQIA), which was prepared by SKM. • The AQIA indicates that since 2010, the existing site operations have complied with EPA criteria. • The AQIA modelling results indicate that the annual average particulate matter (PM_{10}), total suspended particulates and dust deposition levels	• The Department is satisfied that CMOC has adequately demonstrated that the project would not significantly impact local or regional air quality, and would comply with relevant EPA air quality criteria at all privately-owned residences.

Issue	Consideration	Conclusion
	are predicted to continue to comply with the EPA criteria under the worst case operating scenario for the extension project. • The AQIA indicates that there is potential for exceedance of the cumulative air quality criteria at one property (Milpose) on up to 2 days per year. • In order avoid this potential impact, CMOC has committed to installing at least one real-time PM_{10} monitor, and adjusting its operations during any adverse weather conditions to ensure compliance.	• The Department supports the installation of a real-time air quality monitor and is satisfied that this would allow proactive management of site operations during adverse weather conditions. • The Department has recommended conditions requiring CMOC to implement all reasonable and feasible measures to reduce dust, and prepare an Air Quality Management Plan for the extended project.
Subsidence	• The EA indicates that subsidence associated with the block caving mining method is predictable and limited to the areas immediately above the underground mines. • The project would result in three subsidence zones – above E26, E48 and E22. The subsidence crater above E26 covers 20 ha and is 500 m in diameter and 200 m deep. The E48 subsidence zone is predicted to cover 84 ha and be between 125 m and 200 m deep. The subsidence zone above E22 would not change as a result of the extension project. • The RTS indicates that the voids are predicted to act as groundwater sinks during the mining and post-mining periods. • CMOC has committed to subsidence management strategies, including fencing and signage to restrict access and revegetating areas surrounding the subsidence zones to reduce potential for soil erosion.	• The Department is satisfied that CMOC has adequately demonstrated that the subsidence impacts would be limited to the areas immediately above the block cave mines, and can be appropriately managed to minimise impacts to water resources and public safety. • The Department has recommended rehabilitation objectives in relation to subsidence management, and a condition requiring CMOC to prepare a Rehabilitation Management Plan to detail the measures to be implemented to achieve these objectives.
Visual and Lighting	• The EA includes a Visual Impact Assessment (VIA), which provides radial analyses of the principal visual components of the project. • The elements of the project that would be potentially visible from surrounding private residences and public roads are generally limited to the increased height of the TSF (from 20 m to 28 m) and Escourt TSF (from 25 m to 28 m), and the development of additional waste dumps of up to 30 m high in the southern extent of the project area. • Visually prominent features at night would be lighting associated with the continued use of the ore transport and processing infrastructure, mobile lighting at the open cut mines and mobile lighting during the construction and operation of the TSFs. • The VIA indicates that CMOC's landholdings provide substantial visual buffering between the project components and residences. • The VIA indicates that the views from residences to the extended project would be generally consistent with the existing visual environment. The majority of private residences would only have relatively long distance views, which were considered unlikely to result in significant impacts. • A submission from one private resident raised concern about potential visual impacts from an existing residence (Moss property) located to the south-east of the site and a proposed residence located to the south. In the RTS, Umwelt indicated that views from the existing Moss residence would be consistent with the existing visual environment and that the vegetation along the Travelling Stock Reserve would continue to provide visual buffering to the project. The proposed residence would have more direct views of project related infrastructure including the waste dumps. • To minimise potential visual and lighting impacts at the proposed Moss residence and other private residences surround the project, CMOC committed	• The Department is satisfied with the level of assessment undertaken in relation to visual and lighting impacts. • The Department believes the visual impacts of the project would be minor, and generally consistent with the existing visual impacts of the mine. • Nevertheless, the Department believes CMOC should be required to minimise the visual impacts of the project on any residence surrounding the site with direct views of the mining operation. • The Department has recommended conditions requiring CMOC to implement best management practice to minimise the visual and off-site lighting impacts of the project, and to implement reasonable and feasible visual mitigation measures to any potentially impacted residence upon request of the landowner.

Issue	Consideration	Conclusion
	to a range of mitigation and management measures including maintenance of existing vegetation, additional screening plantings, continued establishment of vegetation corridors and ensuring lights are positioned such that light is directed towards works areas and not towards private residences and roads.	
Traffic	• The EA includes a Traffic Impact Assessment (TIA), which was prepared by Transport and Urban Planning. • The TIA indicates that the project would not change existing staff levels, hours of operation, frequency of shutdowns, or the concentrate haulage arrangements. Other than the extension to mine life from 2025 to 2032 and changed mine access arrangements (from Northparkes Lane to McClintocks Lane), the traffic impacts of the project are consistent with existing approved operations. • CMOC has committed to upgrading McClintocks Lane to provide a two lane sealed road and to constructing a new intersection in Bogan Road at McClintocks Lane to Austroads standards.	• The Department is satisfied that the traffic impacts of the project are generally consistent with existing approved operations. • The Department is satisfied that the proposed road maintenance contributions for Bogan Road and McClintocks Lane are adequate, and notes that Council has advised that it is also satisfied with this arrangement. • The Department has recommended a condition requiring CMOC to design, construct, and maintain the site access intersection of Bogan Road and McClintocks Lane and the McClintocks Lane access road to Austroads standards and to the satisfaction of Council.
Aboriginal and European Heritage	• The EA includes an Aboriginal Cultural Heritage Assessment, which was undertaken by Central Queensland Cultural Heritage Management (CQCHM). • CQCHM identified 17 areas on the site that contain Aboriginal cultural heritage, including 16 areas containing isolated stone artifact/s and one scarred tree. All of the sites were assessed as being of low significance. The majority of the sites were located in the vicinity of the Bogan River, and would not be disturbed by the project. • CQCHM indicated that the project would result in the disturbance of 3 isolated artefacts (Site 51, 52 and 35-6-0039) and 1 artefact scatter (Site 36-5-0153) of low significance. • CMOC committed to updating its existing Aboriginal Heritage Management Plan to provide for management of Aboriginal heritage across the project area. In addition, CMOC committed to conducting surveys of all portions of the proposed disturbance area prior to disturbance. OEH supports these commitments. • The EA indicates that the project would not impact any listed state significant or locally significant historic items.	• OEH has indicated that it is satisfied with the level of assessment and consultation undertaken in relation to Aboriginal heritage. • The Department has recommended a condition requiring a Heritage Management Plan to be developed in consultation with the Aboriginal communities and the OEH.
Waste	• The EA includes a detailed assessment of the nature and volume of construction and operational waste streams predicted to be generated, including waste rock, tailings and other non-mineral wastes. • Approximately 42 Mt of waste rock would be produced from open cut operations and 4 Mt of waste rock would be produced from underground operations. This would be stockpiled at the southern portion of the site (refer to **Figure 4**). As indicated in Section 5.3, acid generation tests conducted on the waste rock indicates that the waste is very unlikely to produce acid. CMOC has committed to continue monitoring the waste to ensure this remains the case. • The existing and proposed TSFs would be able to store approximately 122 Mt of tailings over the life of the project. The design of the TSFs and leachate management systems has been discussed in Section 5.3 of this report. • CMOC has committed to continuing to implement a hierarchy waste management for non-mineral	• The Department has recommended conditions requiring CMOC to minimise the waste generated by the project, including seepage from the waste dumps and leachate from the TSFs. In addition, the Department has recommended that CMOC be required to monitor and report on effectiveness of the waste minimisation and management measures in the Annual Review.

Issue	Consideration	Conclusion
	wastes, which focuses on avoidance, reduction, reuse and recycling of waste streams.	
Greenhouse Gases	• The EA includes a Greenhouse Gas (GHG) and Energy Assessment, which was undertaken by Umwelt. • The assessment predicts that a total of 4.3 million tonnes of carbon dioxide equivalent ($MtCO_2$-e) would be generated over the life of the project. • Umwelt indicates that this level of emissions is equivalent to 0.0017% of the Australian and 0.00002% of the global emissions per annum. • The vast majority of the project-related emissions (ie 96%) are attributed to Scope 2 emissions associated with the production of electricity used by the project. • The assessment concludes that, on a comparative basis, the total GHG emissions from the project represent a very small proportion of the current and global GHG emissions, and when considered in isolation, the project would have a negligible contribution to global warming/climate change. • CMOC has committed to a range of measures to reduce GHG emissions from the project, including improving energy use and efficiency.	• The Department accepts that the GHG emissions generated by the project would be minor. However, the Department has recommended a condition requiring CMOC to implement measures to minimise the release of GHG.
Socio Economic	• The EA includes a Social Impact Assessment (SIA), which was undertaken by Umwelt and an Economic Assessment, which was undertaken by Gillespie Economics. • The SIA indicates that the project would not change the existing number of full-time workers at the mine, and that the proposal would therefore not place additional pressure on the existing infrastructure or services in the local area. • The Economic Assessment includes a benefit cost analysis (BCA) which was undertaken in accordance with the NSW Government's draft *Guideline for the use of Cost Benefit Analysis in mining and coal seam gas proposals* (2012). • The BCA analysed the trade-off between the net production benefits of the project and the potential environmental impacts. The net production benefits of the project to Australia are estimated at $28 million or $60 million when non-market employment benefits are considered. Environmental costs were estimated at $1 million and were primarily associated with GHGs. The project was therefore considered desirable and justified from an economic efficiency perspective. • The project is also estimated to contribute: - $335 million in annual direct and indirect regional output or business turnover; - $223 million in annual direct and indirect regional value added; - $39 million in annual direct and indirect household income; and - 497 direct and indirect jobs. • CMOC has also agreed to pay Council $3.135 million, which includes community and road maintenance contributions. In addition, CMOC has agreed to contributing 80% of the costs to maintaining Bogan Road and McClintocks Lane over the life of the project. • In addition, in CMOC has committed to prepare a Social Impact Assessment 10 years prior to mine closure. In response to a request from DPI, CMOC has indicated that this would address, amongst other things, mitigation actions to manage any adverse regional employment impacts associated with mine closure.	• The Department is satisfied that the project would have a positive socio-economic effect on the locality and region. • The Department is satisfied that the planning agreement between CMOC and Council has been entered into and registered on title and that the community and road maintenance contributions would be paid over the life of the mine. • The Department is satisfied that the Social Impact Assessment, which CMOC has committed to preparing prior to mine closure, would address potential adverse regional employment impacts.

6. RECOMMENDED CONDITIONS

The Department has prepared recommended conditions of approval for the Northparkes Extension Project (refer to **Appendix F**). These are required to:

- prevent, minimise, and/or offset adverse impacts of the complex;
- ensure standards and performance measures for acceptable environmental performance;
- ensure regular monitoring and reporting; and
- provide for the ongoing environmental management of the project.

The Department believes the conditions reflect current best practice for the regulation of mines in NSW.

CMOC has reviewed and accepted the Department's proposed conditions.

7. CONCLUSION

The Department has assessed the merits of the project application, EA, submissions on the project and CMOC's Response to Submissions, in accordance with the requirements of the EP&A Act.

The Department is satisfied that approval of the project would allow access to significant additional ore reserves (around 74 Mt) that are located within the approved mine, and would promote continuity of existing mining operations.

The key issues arising from the Department's assessment of the project relate to:

- noise impacts at two privately owned residences during worst case operations scenarios;
- clearing of 239 ha of land, of which 52 ha is native vegetation (including 38 ha of EEC); and
- management of tailings storage facilities (TSFs) and dirty and contaminated water systems.

The Department is confident that these impacts can be adequately mitigated, managed, offset and/or compensated through the implementation of a number of commitments made by CMOC and conditions recommended by the Department, including:

- operation of a real-time noise management system;
- implementation of a comprehensive biodiversity offset, which includes 350 ha of native vegetation (including 111 ha of EEC) and the regeneration of significant areas of the offset site from grassland to woodland vegetation communities;
- design and construction of the new tailings dam in accordance with strict permeability standards;
- implementation of a water management system to ensure zero off-site discharge;
- continued operation of a comprehensive surface and groundwater monitoring network; and
- rehabilitation of the site in accordance with strict performance criteria.

The Department has recommended a broad range of stringent conditions to ensure these measures are effectively implemented. In addition, the Department has recommended conditions requiring CMOC to contribute approximately $3.135 million toward community and road maintenance contributions.

The project also has a number of significant economic and social benefits including:

- continued employment of up to 700 people;
- a capital investment value of $190 million;
- an annual direct and indirect regional output or business turnover of $335 million;
- annual direct and indirect regional value added of $223 million;
- annual direct and indirect household income of $39 million; and
- significant royalties and payroll tax to the State of NSW.

On balance, the Department considered that the project's benefits would significantly outweigh its potential impacts and that it is in the public interest. Consequently, it believes the project should be approved subject to the recommended conditions of approval.

8. RECOMMENDATION

It is RECOMMENDED that the Executive Director, Development Assessment Systems and Approvals, as a delegate for the Minister:

- considers the findings and recommendations of this report;
- approve the project application, subject to conditions, under section 75J of the EP&A Act; and
- sign the attached project approval (see **Appendix F**).

Mike Young
Manager
Mining Projects

David Kitto
Director
Mining Projects

APPENDIX A
ENVIRONMENTAL ASSESSMENT

Refer to the following NSW Planning & Environment website link:

http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=4615

APPENDIX B
CONSIDERATION OF ENVIRONMENTAL PLANNING INSTRUMENTS

SEPP (Major Development) 2005

The proposal meets the criteria in clause 7 of schedule 1 of the Major Development SEPP for classification as a major project (see Section 3.1 of this assessment report). The Department is satisfied that the project can be undertaken in a manner that is generally consistent with the aims, objectives, and provisions of the SEPP.

SEPP (Mining, Petroleum Production and Extractive Industries) 2007

State Environmental Planning Policy (Mining, Petroleum and Extractive Industries) 2007 (Mining SEPP) requires the consent authority to consider number of matters prior to granting development consent:

1. Clause 7 (1) (b) of the Mining SEPP makes mining permissible with consent on any land where development for the purposes of agriculture or industry may be carried out (with or without development consent). Consequently, the proposed development is permissible with consent, and the consent authority may determine the application.
2. Part 3 of the Mining SEPP requires the consent authority to consider the following:
    a. compatibility of the proposal with other land uses;
    b. natural resource management and environmental management;
    c. resource recovery;
    d. road transport; and
    e. rehabilitation.

The Department has fully considered all of these matters in its merit assessment (see Section 5 of this report). Having considered these matters in detail, the Department is generally satisfied that the proposed development can be undertaken in a manner that is generally consistent with the matters for consideration under Part 3 of the Mining SEPP.

SEPP (Infrastructure) 2007

The SEPP requires a consent authority to notify relevant public authorities about developments that may affect public infrastructure or public land. The Department has notified Roads and Maritime Services (RMS) and Parkes Shire Council. Neither of these authorities objected to the proposed development, and any recommendations made by these authorities have been considered by the Department, and incorporated into the conditions of consent where appropriate. This satisfies the requirements of *SEPP (Infrastructure) 2007*.

SEPP No.33 – Hazardous and Offensive Development

CMOC undertook a preliminary hazard analysis (PHA) in accordance with *SEPP No.33 – Hazardous and Offensive Development*. The PHA concluded that the project would not result in offsite hazardous impacts as all hazardous incidents underground (e.g. fires, explosions, etc.) would be confined and the location of open cut workings and site explosive magazines include a sufficient buffer from the site boundary. The Department also considers the project to be consistent with the land use zoning for the surrounding lands.

Consequently, the Department is satisfied that the proposed development does not pose a credible risk under SEPP 33 to surrounding land uses, and is therefore consistent with the aims, objectives, and requirements of SEPP 33.

SEPP No.44 – Koala Habitat Protection

The SEPP requires a consent authority to consider the presence of any core or potential koala habitat. The EIS includes a detailed ecological impact assessment which found that there are no core koala habitat areas. However, there is potential koala habitat within the project area due to the presence of feed tree species. SEPP 44 does not prevent a consent authority granting consent to a development that is located in potential koala habitat.

In this case, the Department notes that the proposed development would not result in any significant impacts on potential koala habitat. As such, the proposed development is not inconsistent with the aims, objectives, and requirements of SEPP 44.

SEPP No.55 – Remediation of Land

The SEPP requires the consent authority to consider whether or not land associated with the project is contaminated. The EIS has identified that there are no known contamination issues affecting the project area. The Department notes that potential contamination may exist as a result of past land use activities. However, SEPP 55 does not prevent a consent authority granting consent to a development on land that may potentially be contaminated. The Department is satisfied that any contaminated land uncovered during the construction or operation stages of the project would be appropriately managed. The Department is therefore satisfied that the project is generally consistent with the aims, objectives, and provisions of SEPP 55.

Parkes Local Environmental Plan 2012

Under the *Parkes Local Environmental Plan 2012* (the LEP) the NPM is situated on land defined as Zone RU1 Primary Production, where mining is permissible with consent.

APPENDIX C
SUBMISSIONS

Refer to the following NSW Planning & Environment website link:

http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=4615

APPENDIX D
RESPONSE TO SUBMISSIONS

Refer to the following NSW Planning & Environment website link:

http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=4615

APPENDIX E
PEER REVIEW OF GROUNDWATER ASSESSMENT

APPENDIX F
RECOMMENDED PROJECT APPROVAL