

Section 1

Introduction

PREAMBLE

This section introduces the proposed Avoca Tank Project (the Proposal) and includes:

- *an outline and scope of the Environmental Impact Statement;*
- *details about the Applicant, Tritton Resources Pty Ltd;*
- *relevant background to the Proposal including a review of the history of mining and exploration and the environmental performance in the area surrounding the Project Site;*
- *the format of the Environmental Impact Statement; and*
- *identification of the personnel involved in the Proposal design, document preparation and specialist consultant investigations.*

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1.1 SCOPE

Tritton Resources Pty Ltd (the Applicant) proposes to develop and operate the Avoca Tank Project (the Proposal) to provide ore to the Company's existing and approved processing plant at the Tritton Copper Mine. The Proposal is located approximately 2km north of the Applicant's existing North East Mine and 24km northeast of its Tritton Copper Mine, 7km northwest of the village of Girilambone, and approximately 55km northwest of Nyngan (**Figure 1.1**).

The Proposal would comprise the following.

- A box cut and underground mining operation.
- A surface infrastructure area, including a run-of-mine (ROM) Pad, laydown area, workshop and offices.
- A surface waste rock emplacement.
- An extension of the existing haul road from the North East Mine.
- Ancillary surface infrastructure.

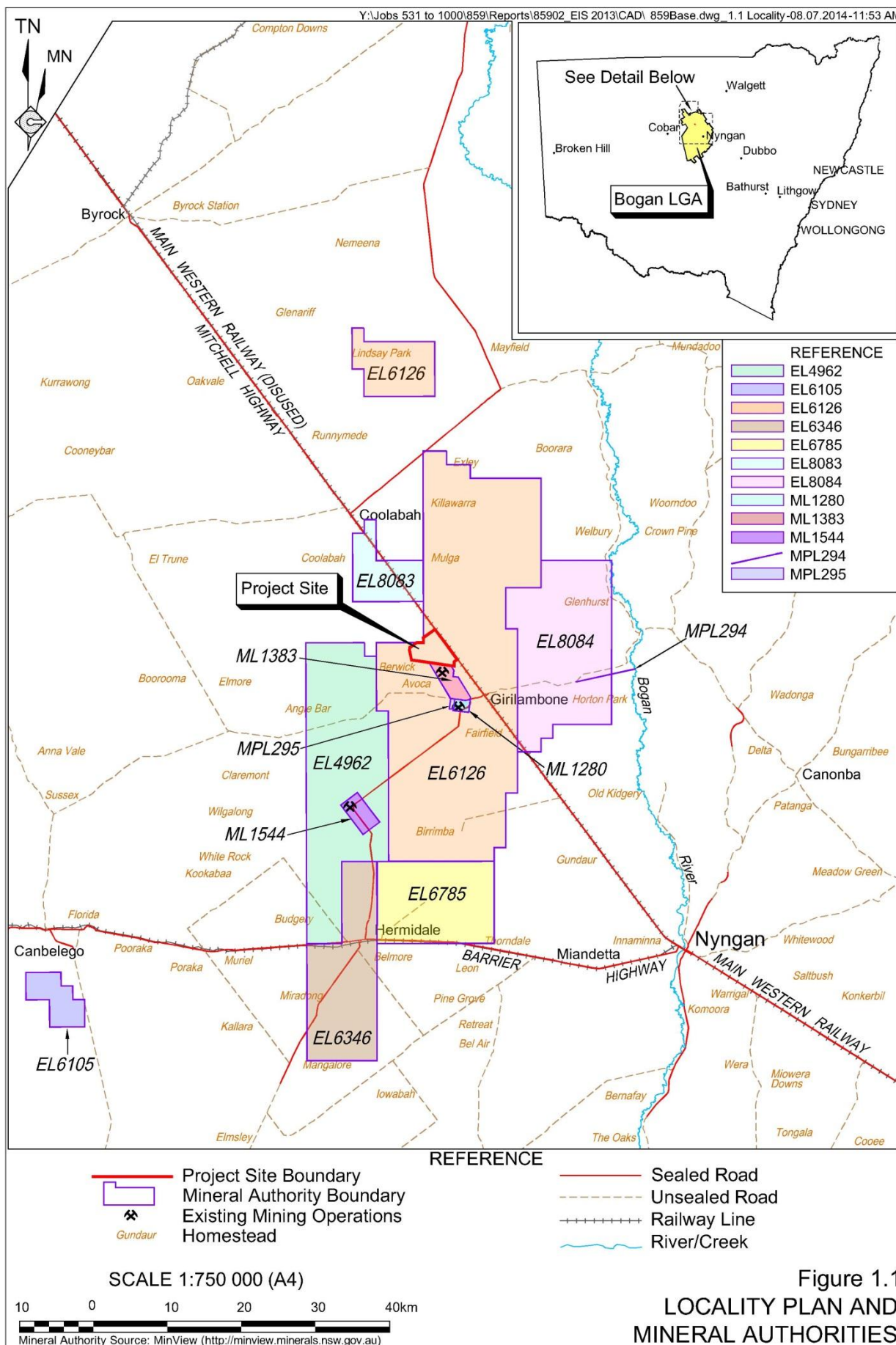
The Proposal would also include transportation of ore material from the ROM Pad to the Applicant's Tritton Copper Mine for processing via an existing private haul road and Booramugga and Yarrandale Roads.

All areas of proposed disturbance associated with the Proposal are contained within the "Project Site" which is described in more detail in Section 1.3.

The Proposal is not classified as 'State Significant Development' under the *State Environmental Planning Policy (State and Regional Development) 2011* (State and Regional Development SEPP) because it:

- has a capital investment value of less than \$30 million;
- would not extract coal or mineral sands; and
- would not be located within an environmentally sensitive area.

The Proposal is, however, classified as "Designated Development" under the Clause 25 of Schedule 3 of the *Environment Planning and Assessment Regulation 2000* because the area of disturbance would be more than 4ha. In addition, the Proposal may be classified as "Regional Development" under Clause 3 of Schedule 4A of the *Environmental Planning and Assessment Act 1979* because the capital cost of the Proposal would be \$20 million. As a result, under Clause 21 of the State and Regional Development SEPP, the Proposal is to be assessed by a Joint Regional Planning Panel (JRPP).



The Proposal, would also require the following additional approvals (see Section 2.1.3).

- A Mining Lease (ML) to be issued under the *Mining Act 1992*.
- A new or modified Environment Protection Licence issued under the *Protection of the Environment Operations Act 1997* (POEO Act).
- A range of approvals under the *Water Management Act 2000* (WM Act).

As a result, the Proposal may also be classified as “Integrated Development” under Section 91 of the EP&A Act.

This document outlines the Proposal, its resources and describes the existing environment on and surrounding the Project Site, and assesses the environmental impacts of the Proposal after a range of design and operation environmental safeguards are adopted.

The contents of this document reflect the following:

- The key assessment requirements identified within the Director-General’s Requirements (DGRs) issued by the then NSW Department of Planning and Infrastructure and including reference to the key assessment requirements of the following government agencies:
 - Office of Environment and Heritage;
 - Roads and Maritime Services;
 - NSW Office of Water;
 - NSW Industry and Investment – Division of Resources and Energy;
 - Department of Primary Industries;
 - Environment Protection Authority; and
 - Bogan Shire Council.
- The requirements of Section 79(C) of the *Environmental Planning and Assessment Act 1979* (EP&A Act).
- The requirements of Schedule 2 of the *Environmental Planning and Assessment Regulations 2000* (EP&A Reg).
- The experience of R.W. Corkery & Co. Pty Limited in the preparation of documentation for similar projects throughout NSW.

1.2 THE APPLICANT

The Applicant, Tritton Resources Pty Ltd, is a wholly owned subsidiary of Straits Resources Limited (Straits). The Applicant, through its associated companies, has operated the Tritton and Girilambone Copper Mines since 1992. A description of the existing, approved activities is provided in Section 1.4.3.

Straits is an established copper mining and exploration company listed on the Australian Securities Exchange. Straits flagship asset is the Tritton Copper Operations in NSW which produce approximately 25 000t of copper concentrate and copper cement annually. The operations incorporate multiple mines and a 1.5Mt per annum concentrator. Straits has an experienced Board and management team focussed on operational excellence and strengthening the Company's corporate structure.

1.3 PROJECT SITE

The Project Site covers an area of approximately 18.6ha and incorporates all areas of Proposal-related activities. **Table 1.1** and **Figure 1.2** present land titles within the Project Site, noting that all land titles within the Project Site are registered to Mr P.G. Johnston.

The applicant will formalise an arrangement to purchase land required for the Proposal from Mr Johnston should development consent be granted.

Table 1.1
Project Site Land Titles

| Lot | DP | Lot | DP |
|---|--------|-------------|--------|
| Part Lot 3 | 751342 | 144 | 751315 |
| 135 | 751315 | Part Lot 10 | 751315 |
| Source: Land and Property Information (LPI 2013). | | | |

1.4 BACKGROUND TO THE PROPOSAL

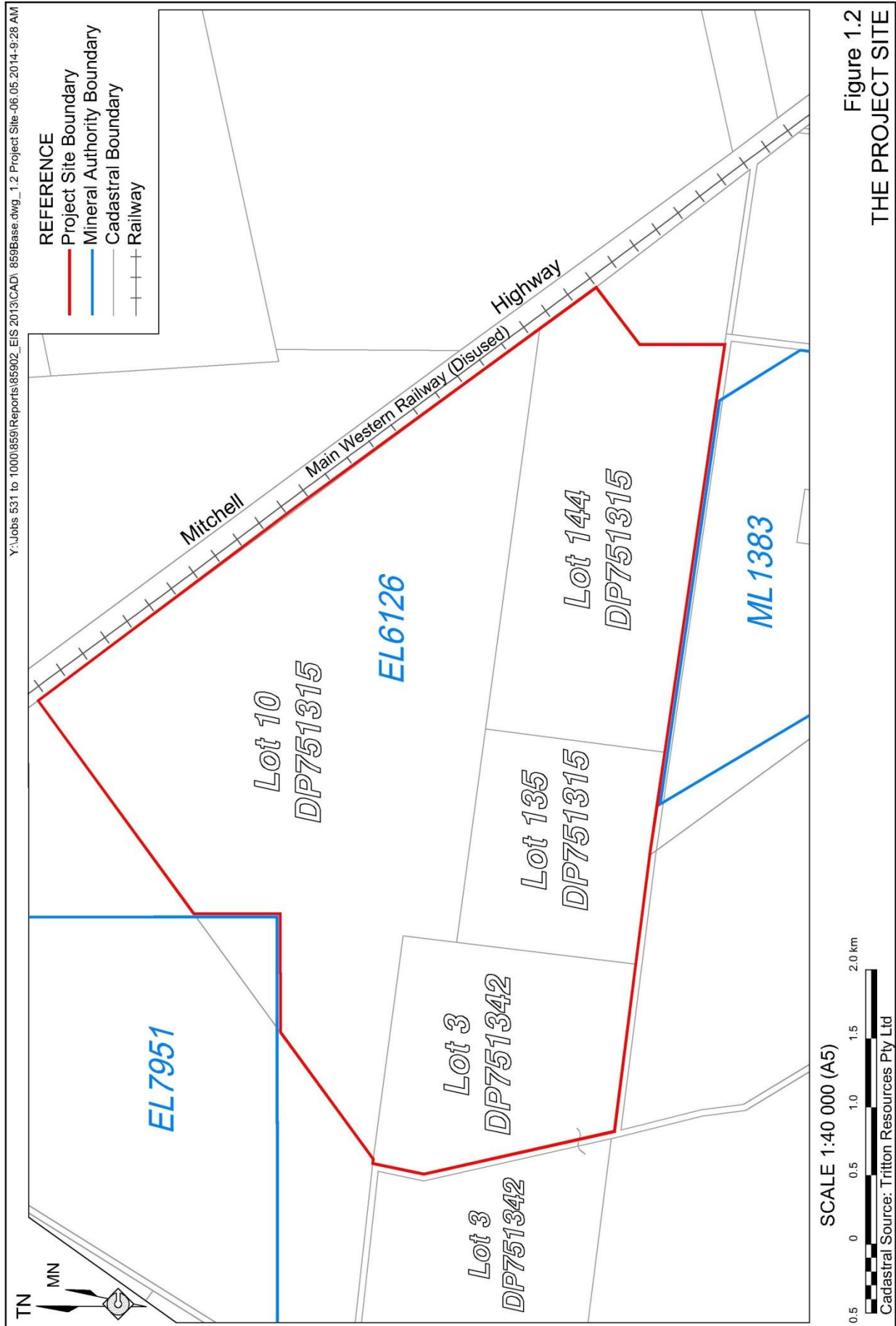
1.4.1 Existing Mineral Authorities

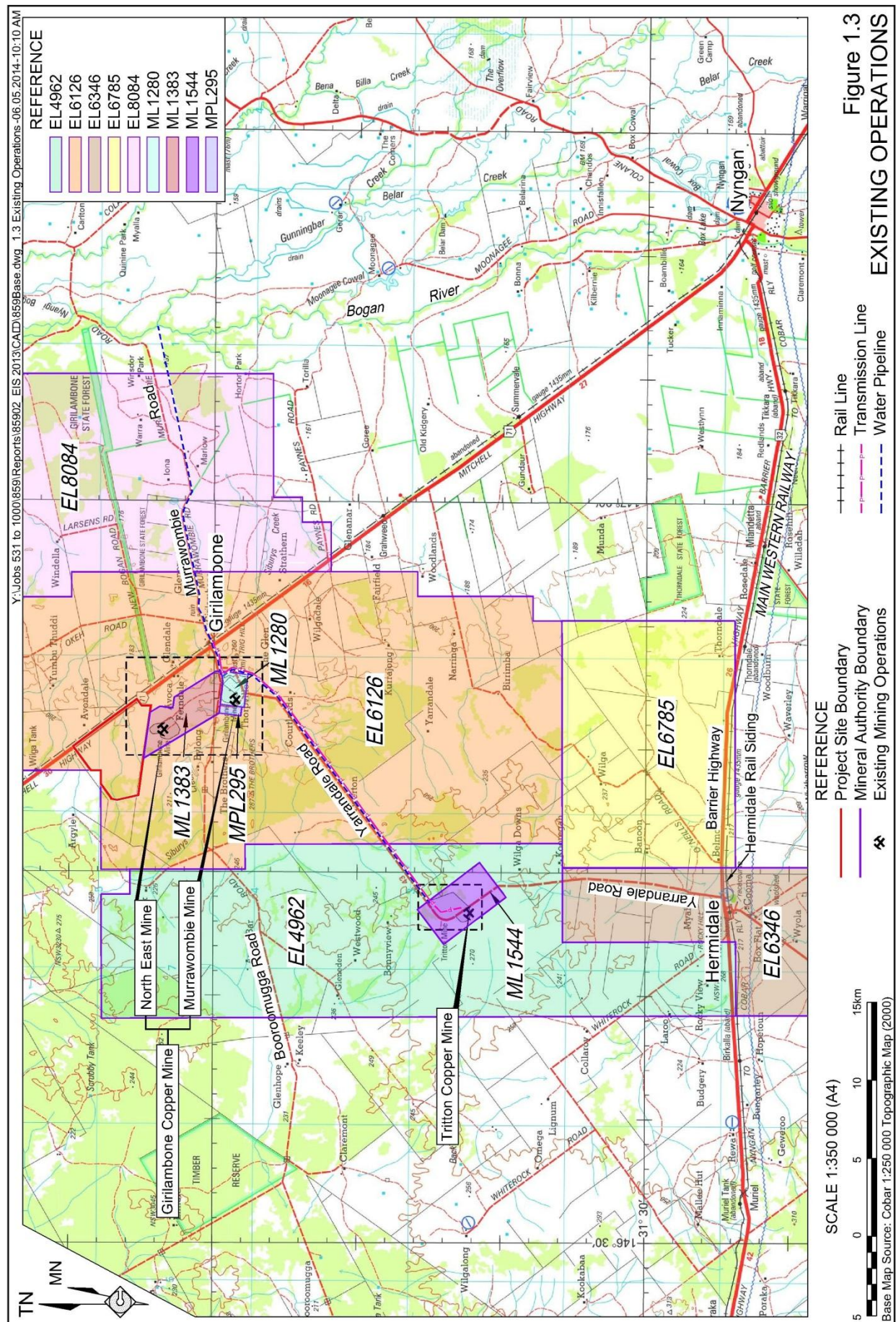
Table 1.2 presents the mineral authorities held by the Applicant and related companies in the vicinity of the Project Site. **Figure 1.1** presents the locations of the mineral authorities identified in **Table 1.2**.

1.4.2 Historic Mining Operations

The Girilambone copper deposits (see **Figures 1.3** and **1.4**), were first discovered in 1879 with mining commencing in 1881. Ownership has changed several times throughout the various stages of mining operations since that date.

Modern mining activities included the establishment of an open cut mining operation in the early 1990's. At that time, the copper ore was processed by conventional heap leach methodology using sulphuric acid as the leachate.





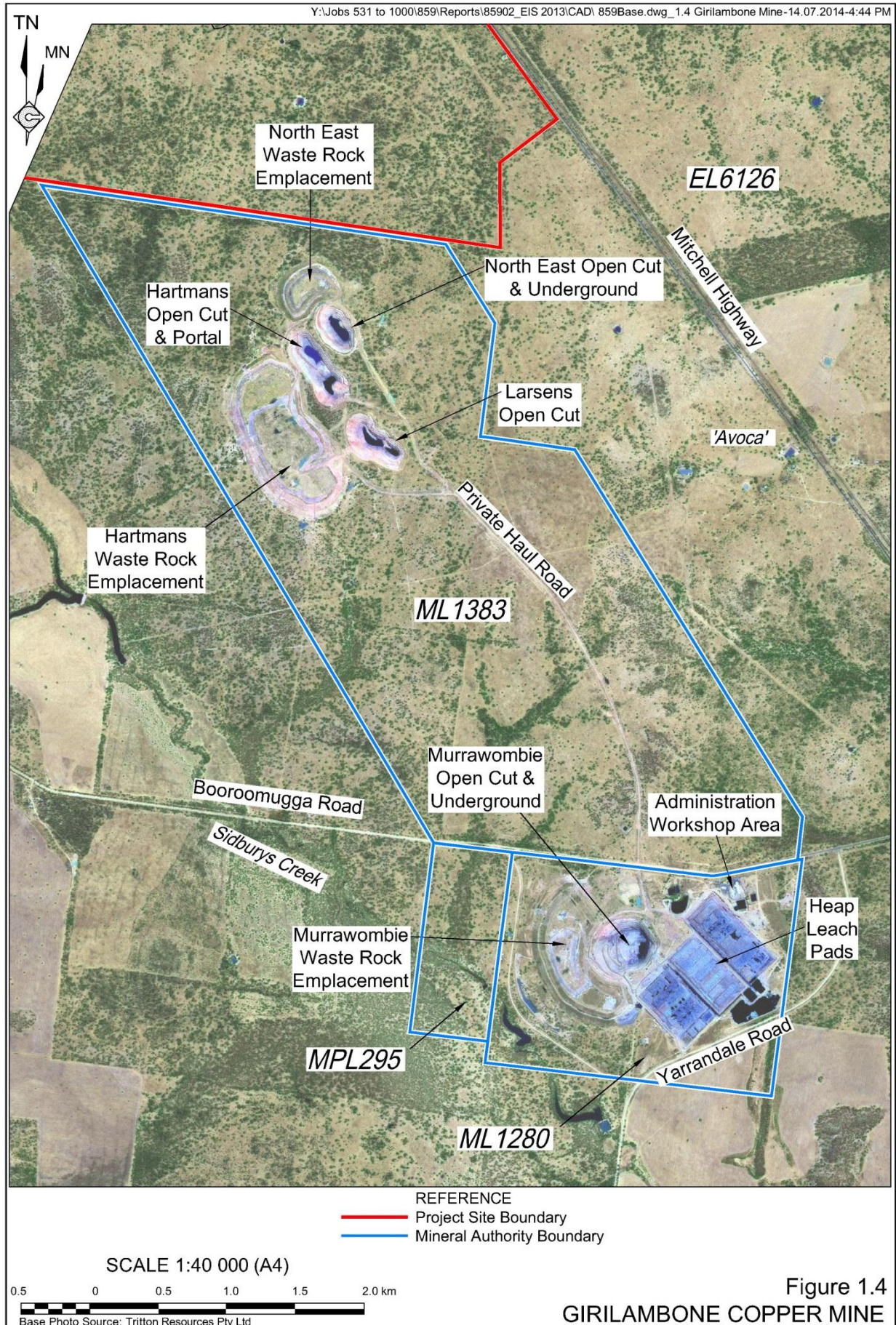


Table 1.2
Existing Mineral Authorities

| Mineral Authority (Mining Act 1992) | Holder / Applicant | Grant Date | Expiry Date |
|--|--|------------|----------------------------|
| ML 1544 | Tritton Resources Pty Ltd | 22/12/2003 | 22/12/2024 |
| ML 1383 | Tritton Resources Pty Ltd | 13/01/1996 | 12/01/2017 |
| ML 1280 ² | Tritton Resources Pty Ltd | 06/08/1992 | 05/04/2013 ^{1, 2} |
| MPL 294 | Tritton Resources Pty Ltd | 06/08/1992 | 05/08/2013 ^{1, 2} |
| MPL 295 ² | Tritton Resources Pty Ltd | 06/08/1992 | 05/08/2013 ^{1, 2} |
| EL 4962 | Tritton Resources Pty Ltd | 19/03/1996 | 25/04/2014 ^{1, 2} |
| EL 6346 | Tritton Resources Pty Ltd | 23/11/2004 | 22/11/2014 |
| EL 6105 | Oxley Exploration Pty Ltd 51% / Tritton Resources Pty Ltd 49% | 28/07/2003 | 27/06/2015 |
| EL 6785 | Tritton Resources Pty Ltd | 22/05/2007 | 22/05/2015 |
| EL 6126 | Tritton Resources Pty Ltd | 15/09/2003 | 14/09/2016 |
| EL 8083 | Tritton Resources Pty Ltd | 10/05/2013 | 10/05/2015 |
| EL 8084 | Tritton Resources Pty Ltd | 10/05/2013 | 10/05/2015 |
| Note 1: Renewal Sought –pending determination. | | | |
| Note 2: Issued under the <i>Mining Act 1973</i> – All other authorities issued under the <i>Mining Act 1992</i> . | | | |
| Source: Minview (http://minview.minerals.nsw.gov.au) and Tritton Resources Pty Ltd. | | | |

The Girilambone Copper Company (GCC) was the product of a Joint Venture between the Applicant (60%) and Nord Pacific Ltd (40%) in 1991. GCC commenced open cut mining at the Murrawombie Mine in 1992, and continued until 1997. Two levels of underground development were completed prior to the mine being placed on care and maintenance in 2008. Mine evaluation work is continuing as part of a consolidation of the Tritton projects within the Girilambone locality.

The North East Mine, comprising the Hartmans, Larsens and North East Open Cuts, is located approximately 2km to the south of the Project Site and 4km northwest of the Murrawombie Open Cut (see **Figures 1.3** and **1.4**). Mining of the three open cuts was completed by GCC (now a subsidiary of Straits) prior to the Applicant assuming control of the operations in 2005. Further decline development for the North East extension started in late 2007, and despite a short period of care and maintenance in 2008, continues to be developed.

The Murrawombie Open Cut and associated underground development, as well as the North East Mine, are collectively known for the purposes of this document as the Girilambone Copper Mine.

1.4.3 Current Mining Operations

1.4.3.1 Introduction

The Applicant currently operates the Girilambone and the Tritton Copper Mines (locations shown on **Figure 1.3**) utilising the same processing plant (located at the Tritton Copper Mine) to process ore from both operations.

The following subsections provide a summary of existing approved activities at each mine, including the respective mining and processing operations, current layouts and approvals.

1.4.3.2 Girilambone Copper Mine

Figure 1.4 presents an overview of the layout of the Girilambone Copper Mine, including the following infrastructure.

- Murrawombie Open Cut and Underground Portal.
- Murrawombie Waste Rock Emplacement.
- Heap Leach Pads.
- North East and Larsens Open Cuts.
- Hartmans Open Cut and Portal.
- North East and Hartmans Waste Rock Emplacements.
- Administration and workshop areas.

The Murrawombie Open Cut and Underground mine is currently in care and maintenance. However, these operations continue to be evaluated as part of the Applicant's ongoing review of its projects in the locality. Heap leach operations continue to extract residual copper from the Heap Leach Pads and include the installation of a new copper cementation plant in 2008. The administration and workshop areas continue to service both the Heap Leach Pad operations and the North East Mine.

Open cut mining has ceased within the Hartmans Open Cut which continues to be backfilled with extracted waste rock from the North East underground mine.

All ore currently extracted from open cut and underground operations, is treated at the Applicant's processing plant located at the Tritton Copper Mine. Ore material is transported from the Girilambone Copper Mine to the Tritton Copper Mine via a private haul road between the North East Open Cut and the Murrawombie Open Cut and then via the public Booramugga and Yarrandale Roads (**Figure 1.3**). This material is initially transported from the open cuts using off-road haul trucks and placed on a ROM Pad adjacent to each open cut. The material is then loaded into road-registered, side tipping road trains for transportation to the Tritton Copper Mine (see Section 1.4.3.3).

Table 1.3 outlines the existing development approvals for the Girilambone Copper Mine.

1.4.3.3 Tritton Copper Mine

Figure 1.5 presents an overview of the layout of the Tritton Copper Mine, including the following infrastructure.

- Box cut and decline.
- ROM Pad, crushing and screening plant and surge pile.
- Waste rock emplacement.

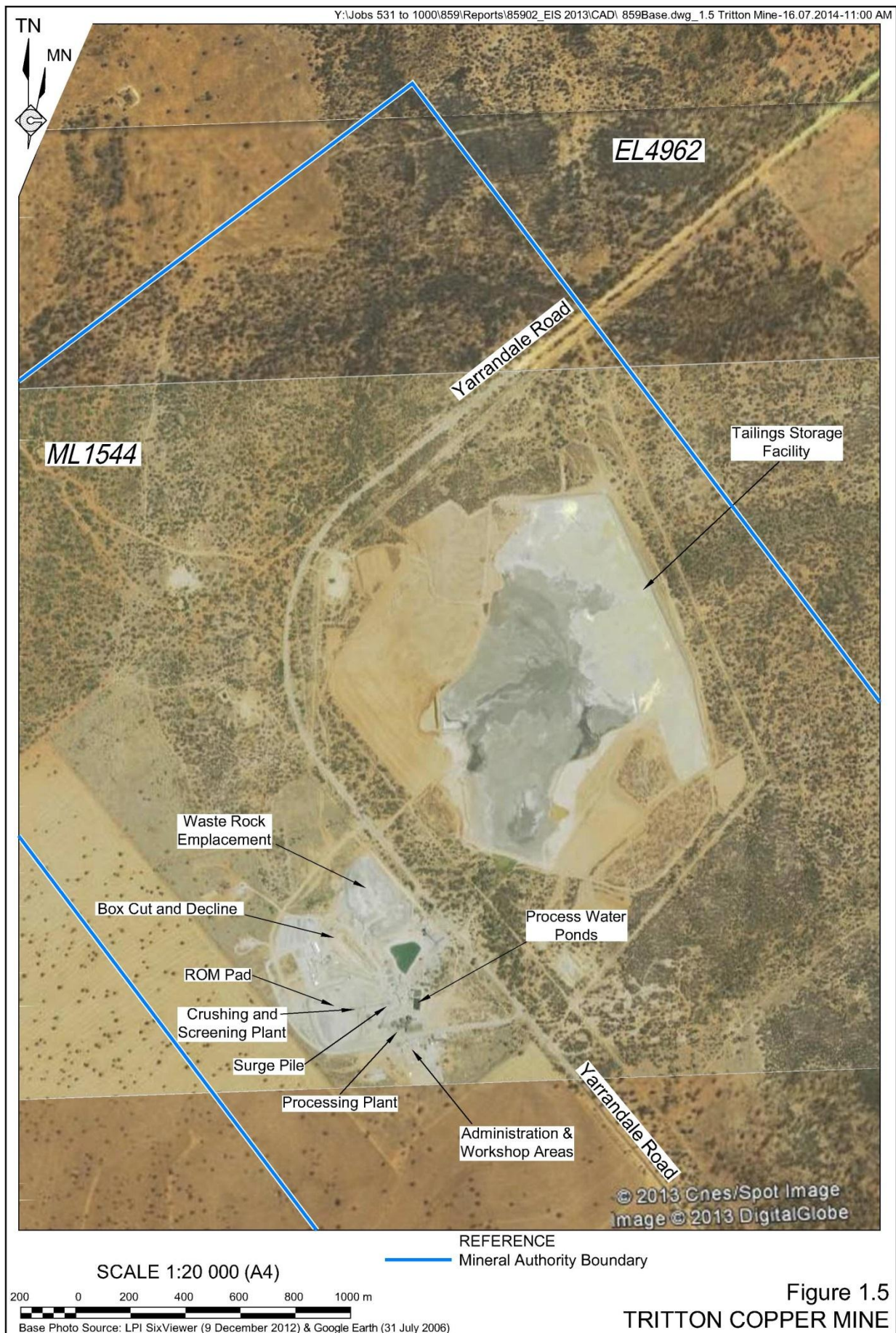


Table 1.3
Girilambone Copper Mine Existing Development Approvals

| Approval | No. | Grant Date | Expiry Date | Purpose of Approval |
|------------------------------------|----------|------------|-------------|--|
| Murrawombie Mine | | | | |
| Development Consent | 1/91 | 25/10/1995 | N/A | Original Development Approval for the Murrawombie Mine. |
| Development Consent | 5/95 | 21/09/1995 | N/A | Ancillary works associated with the original Murrawombie Development Approval. |
| Development Consent Modification | 1/91 | 13/12/2007 | N/A | Modification to commence underground mining at Murrawombie and to permit transportation of up to 1Mtpa of ore to the Tritton Copper Mine from the combined Girilambone operations. |
| Development Consent | 2010/022 | 13/9/2010 | 13/9/2015 | Subdivision of Booramugga Road which intersects the Murrawombie mining area. |
| Development Consent | 2010/029 | 04/11/2010 | 04/11/2015 | Construction of a Communication Tower at Murrawombie. |
| North East Mine | | | | |
| Development Consent | 6/95 | 25/10/1995 | N/A | Original Development Approval for the North East Mine. |
| Development Consent Modification | 42/2007M | 26/07/2007 | N/A | Modification to commence underground mining at North East and to permit transportation of up to 1Mtpa of ore to the Tritton Copper Mine from the combined Girilambone operations. |
| Development Consent | 049/2007 | 13/09/2007 | 13/09/2012 | Construction of the North East surface facilities. |
| Development Consent Modification | 18/2010 | 2/7/2010 | N/A | Construction of the North East ROM Pad. |
| Source: Tritton Resources Pty Ltd. | | | | |

- Processing plant and process water ponds.
- Tailings Storage Facility.
- Administration and workshop areas.

Mining continues to be undertaken at the Tritton underground operations. The waste rock extracted is used to backfill underground workings, with any excess being placed at surface within the waste rock emplacement, adjacent to the box cut. Ore material is processed using an existing flotation plant, with tailings discharged to a Tailings Storage Facility.

Underground mining and processing operations are undertaken 24-hours per day, 7 days per week.

Concentrate produced by the processing plant at the Tritton Copper Mine is placed in sealed shipping containers. These containers are transported via Yarrandale Roads to the Hermidale rail siding. From the siding, they are transported by rail to Newcastle for export to China, India, Japan, Korea or the Philippines by ship.

Table 1.4 outlines the existing development approvals for the Tritton Copper Mine.

Table 1.4
Tritton Existing Development Approvals

| Approval | No. | Grant Date | Expiry Date | Purpose of Approval |
|--------------------------------------|----------|------------|-------------|--|
| Development Consent (1) | 41/98 | 01/09/1999 | 22/12/2024 | Original Tritton Project Development Approval. |
| Development Consent (2) | 30/2004 | 20/12/2004 | 29/12/2009 | Construction of the Rail Loading Hardstand for the export of copper concentrate. |
| Development Consent Modification (3) | 41/98 | 19/12/2007 | 22/12/2024 | Upgrade of the Tritton Processing Plant to accept up to 1Mtpa of ore from the combined Girilambone operations. |
| Development Consent (4) | 029/2007 | 25/05/2007 | 24/05/2012 | Expansion of the administration facilities at Tritton. |
| Development Consent (5) | 2010/006 | 25/05/2010 | 25/5/2015 | Construction of a Paste fill Plant for the Tritton underground mine. |
| Development Consent (6) | 2010/028 | 04/11/2010 | 4/11/2015 | Construction of a Communication Tower at Tritton. |
| Source: Tritton Resources Pty Ltd. | | | | |

1.4.4 Previous Exploration Operations

The Applicant has actively undertaken exploration activity within its Exploration Licences and Mining Leases (**Figure 1.1**). The following provides a summary of those exploration activities.

- Resource extensional drilling programs, testing depth and lateral extension of the Tritton, North East, Larsens, and Murrawombie resources.
- Diamond drilling to define copper resources adjacent to operations, including Double Tanks and Budgery mineral deposits.
- Reverse circulation and diamond drilling of geochemical soil anomalies, leading to new discoveries, including the Avoca Tank and Kurrajong projects.
- Successful grass roots exploration, including soil geochemistry and regional geophysical surveys across the tenement package.

In addition, the Applicant, in conjunction with the New South Wales Geological Survey and Geoscience Australia, has categorised the geological style of mineralisation within the Applicant's tenement package as a Volcanic Associated Massive Sulfide Deposit – Besshi style. This will allow better targeted exploration, for this style mineralisation in the future.

1.4.5 Mineral Resource Estimate

Section 4.1.3 presents an overview of the regional and Project Site geological setting, as well as the mineralisation associated with the Avoca Tank deposit. **Table 1.5** presents the estimated mineral resource associated with the deposit.

Table 1.5
Mineral Resource Estimate – 31 December 2013

| Estimate | Classification | Cut Off Cu (%) | Tonnes (kt) | Cu (%) | Au (g/t) | Cu (kt) | Au (koz) |
|-------------------------------------|----------------|-------------------|----------------|------------|-------------|-------------|-------------|
| 31 Dec 2013 | Measured | 0.6 | | | | | |
| | Indicated | 0.6 | 774 | 2.9 | 0.9 | 23.0 | 21 |
| | Inferred | 0.6 | 129 | 1.0 | 0.2 | 1.4 | 0.9 |
| | Total | 0.6 | 903 | 2.6 | 0.8 | 24.4 | 21.9 |
| Source – Tritton Resources Pty Ltd. | | | | | | | |

1.4.6 Ongoing Exploration Operations

The Applicant would continue to undertake exploration operations within the Project Site and surrounding mineral authorities. In summary, the following indicative exploration activities would continue to be undertaken.

- Geological mapping, surface geochemical sampling and geophysical investigations to identify further exploration targets within the Applicant's exploration licences.
- Diamond and reverse circulation drilling to further define existing mineralised zones and identify new zones.
- Detailed review of existing data to focus and develop the Applicant's geological understanding of the area within and surrounding the Project Site to assist in identifying further potential mineable resources.

1.4.7 Environmental Performance

1.4.7.1 Introduction

The Applicant is committed to undertaking all extraction, processing, transportation and associated activities in a responsible and pro-active manner which:

- enables the co-existence of the various land uses in the area;

- is environmentally and socially responsible; and
- minimises any real or perceived impacts on other members of the community.

Central to this approach would be the continuation of regular contact with neighbours and members of the local community and a willingness to openly discuss actual or perceived issues and to implement appropriate changes to operational procedures.

This commitment to environmental performance is demonstrated by the reviews of the existing operations which are reported through the *Annual Environmental Management Reports* in consultation with the relevant agencies to ensure continual improvement to the monitoring regime and performance of the operations. The following sections provide a summary of the environment monitoring performance for the existing operations, based upon *Annual Environmental Management Reports* prepared for the existing operations.

1.4.7.2 Air Quality

Dust gauge sample analysis for total insoluble solids and heavy metals indicate that both the yearly average and the seasonal averages are aligned to the background averages with some minor fluctuations which are more likely attributable to local agricultural activities than the Applicant's operations.

1.4.7.3 Noise

Modern mining operations have been ongoing at the Girilambone Copper Mine since 1992. During that time, it has been identified that mining operations do not trigger noise criteria at residences in the Girilambone locality, nor have there been any noise-related complaints. The Applicant continues to consult with the local community to ensure if any issues that may arise are dealt with promptly.

1.4.7.4 Biodiversity

No threatened species have been identified in the vicinity of the Girilambone or Tritton Copper Mines.

1.4.7.5 Surface Water

Monitoring of clean water storages in the vicinity of the Applicant's existing operations has returned results below the relevant Australian and New Zealand Environment and Conservation Council's *Guidelines for Fresh and Marine Water Quality* (ANZECC 2000) trigger values.

During the 2012 reporting year, approximately 290ML of the Applicant's 931ML surface water allocation from Burrendong Dam was used. This allocation is associated with Water Access Licences WAL009374, WAL009375 and WAL009940.

1.4.7.6 Groundwater

Groundwater sampling indicates that groundwater quality in the vicinity of the Applicant's operations naturally exceeds both the ANZECC (2000) stock watering and irrigation trigger values. These results are widely distributed, indicating that poor quality groundwater is a feature of the area surrounding the Applicant's operations.

In consultation with the Environment Protection Authority (EPA), an investigation was commenced in 2012 to clarify potential groundwater impacts in the vicinity of the Girilambone Copper Mine heap leach pads and pregnant liquor solution ponds. This investigation has been completed and identified actions are in progress.

1.5 FORMAT OF THE DOCUMENT

This *Environmental Impact Statement* includes five sections of text, references, glossary and a set of appendices. The information presented in this document covers all aspects of the planning, development, operation, rehabilitation and environmental monitoring of the Proposal at a level of detail reflecting the environmental risk posed by each issue. The issues and their relevant importance to the assessment of the Proposal have been identified through consultation with government agencies, surrounding residents and the local community, and through specialist consultant assessments.

The format of the *Environmental Impact Statement* is as follows.

- Section 1:** introduces the Proposal, the Applicant, the Project Site and the mineral authorities held by the Applicant. Background information in relation to previous mining and mineral exploration operations within the Project Site and at surrounding operations is also provided. The section concludes with information on the structure of the document and management of investigations.
- Section 2:** describes the Applicant's objectives and proposed mining, waste and water management, hours of operation, infrastructure and services and rehabilitation activities. Section 2 also describes other feasible alternatives considered and rejected by the Applicant throughout the design phase of the Proposal.
- Section 3:** provides a description of the process used to identify and prioritise the key issues for assessment with reference to consultation undertaken and relevant statutory instruments. Section 3 also provides a general environmental risk analysis.
- Section 4:** describes the general environmental setting of the Project Site, with particular reference to aspects of the local environment likely to be critical to the assessment of the Proposal. The management and mitigation measures that have been incorporated into the Proposal design to protect the local environment, are also presented. This section also analyses the potential impact the Proposal would have on the physical, biological and social environment once the proposed safeguards and procedures are adopted.

Section 5: provides a conclusion to the document which justifies the Proposal in terms of biophysical, economic and social considerations, ecologically sustainable development and the requirements of Section 79C of the EP&A Act. Section 5 also records the consequences of not proceeding with the Proposal.

References: list the various source documents referred to for information and data used during the preparation of the *Environmental Impact Statement*.

Glossary: presents a list of the acronyms, symbols and units and technical terms used throughout the *Environmental Impact Statement*.

Appendices: present the following additional information.

1. A copy of the application for development consent.
2. A copy of the Director-General's Requirements and matters identified for consideration in the correspondence submitted to NSW Department of Planning and Environment (DP&E), formerly known as NSW Department of Planning and Infrastructure (DP&I), by other State government agencies.
3. An itemised and tabulated summary of the Director-General's Requirements, and other raised issues, with reference to the section(s) within the *Environmental Impact Statement* or *Specialist Studies* where each is addressed.
4. A consolidated list of commitments made by the Applicant in relation to the Proposal.
5. Aboriginal Cultural Heritage Assessment Report prepared by OnSite Cultural Heritage Management Pty Ltd.
6. Ecology Assessment prepared by EnviroKey Pty Ltd.
7. Groundwater Impact Assessment prepared by Environmental Strategies Pty Ltd.
8. Noise and Blasting Assessment prepared by EMGA Mitchell McLennan Pty Ltd.
9. Historic Heritage Assessment Report prepared by OnSite Cultural Heritage Management Pty Ltd.

1.6 MANAGEMENT OF INVESTIGATIONS

This document has been prepared by Mr Mitchell Bland (B.Sc (Hons), MEconGeol, LLB (Hons)), Principal Environmental Consultant and Mr Chris Dickson (B.Sc. (Phys Geog.)), Environmental Consultant, both with R.W. Corkery & Co Pty. Limited (RWC). An internal peer review of all documentation has also been undertaken by Mr Alex Irwin, Senior Environmental Consultant (B.Sc.(Hons)) of RWC.

The following employees of the Applicant provided information in relation to the existing and proposed activities and reviewed and approved this document for release.

- Simon Fitzgerald – General Manager – Projects.
- Ian Sheppard – Chief Operating Officer.
- Tom Cooney – Projects Director.
- Greg Stephenson – Senior Environmental Advisor.
- Nathan Jones – Environmental Advisor.
- John Miller – General Manager – Tritton Mines.
- Chris Raymond – Exploration Superintendent.
- Derek Garment – HSET Manager – Tritton Mines.
- Emily Grimsley – Geologist – Tritton Mines.

A range of environmental investigations have been initiated to identify the environmental constraints. These studies have been undertaken by a team of specialist consultants managed by RWC including the following key individuals and companies.

- Heritage (Aboriginal and Historic) – OnSite Cultural Heritage Management Pty Ltd.
Mr Gerard Niemoeller (BA (Hons)).
- Ecology – EnviroKey Pty Ltd.
Mr Steve Sass (B.App.Sci (Env.Sci) (Hons)).
- Groundwater – Environmental Strategies.
Mr Tim Chambers (M.Eng Sc, B.A Geology (Honours), B.Sc Comp. Sc.).
- Noise and Vibration – EMGA Mitchell McLennan.
Mr Oliver Muller (BSc (REM & HGeog), MAAS).

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