Nowa Nowa Iron Project

East Gippsland, Victoria

Project Description and Proposed Mine Plan

EASTERN IRON LIMITED

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Contents

1 CONTEXT AND GENERAL INFORMATION 1
1.1 Project Location 1
1.2 Proponent Details 1
1.3 Project History 1
1.4 Overview of Proposed Project 2
1.5 Plans 4
1.6 Land Use and Overview of Environmental Values 8
2 GEOLOGICAL INFORMATION 11
2.1 Regional Geology 11
2.2 Site Geology 11
2.3 Commodity, Resource Grade and Tonnage 12
3 PROPOSED MINING APPROACH 13
3.1 Mining Method 13
3.1.1 Blasting 14
3.2 Pit Dimensions 14
3.3 Land Clearance 16
3.4 Topsoil Management 16
3.5 Site Haul Roads 16
3.6 Borrow Areas / Quarries 17
3.7 Proposals to Protect Easements, Cables or Pipelines Traversing the Property 17
4 MANAGEMENT OF MINE MATERIALS 18
4.1 Management Principles 18
4.2 Mine Material Classifications 18
4.3 Management Strategies for Mine Materials 20
5 WASTE ROCK MANAGEMENT 22
5.1 Approach to Waste Rock Management 22
5.2 Waste Rock Dump Construction 22
6 ORE PROCESSING 24
6.1 Ore Processing Method 24

6.2 Plant Layout and Equipment 24
6.3 Stockpiles 28
6.4 Infrastructure 28
7 LOW GRADE ORE MANAGEMENT 29
7.1 Approach to Low Grade Ore Management 29
7.2 Low Grade Ore Stockpile Construction and Management 29
7.3 Low Grade Ore Volumes and Composition 30
8 WATER MANAGEMENT 31
8.1 Project Water Supply 31
8.1.1 Construction 31
8.1.2 Operations 31
8.2 Water Infrastructure 31
8.3 Site Water Management 32
8.3.1 Management Philosophy 32
8.3.2 Site Water Management Strategy 32
8.4 Erosion and Sediment Control 34
8.5 Dewatering Management Strategy 35
8.6 Treatment 35
8.7 Environmental Monitoring Locations 35
9 ORE TRANSPORT 36
10 PORT FACILITIES 38
10.1 Ore Stockpiling 38
10.2 Ship Loading 38
11 OTHER ASPECTS 40
11.1 Workforce 40
11.2 Magazine Storage Facility 40
11.3 Power supply 40
11.4 Telecommunications 41
11.5 Mine Access and On-Site Transportation 41
11.6 Nowa Nowa-Buchan Road Realignment 42
11.7 Fire Management 42
11.8 Medical Services 43

11.9 General Waste Management 44

11.10 Fuel… 44

12 PRELIMINARY PROJECT SCHEDULE 45

13 REHABILITATION AND CLOSURE 46

13.1 Introduction 46

13.2 Key Rehabilitation and Closure Principles 46

13.3 Rehabilitation and Closure of Key Project Facilities 47

13.3.1 Open Pit 47

13.3.2 Waste Rock Dump 49

13.3.3 Temporary Low-Grade Ore Stockpile and Category C Waste Rock Stockpile 50

13.3.4 Plant Area 50

13.3.5 Water Storages and Sediment Control 50

13.4 Other Closure and Rehabilitation Strategies 51

13.4.1 End Land Use 51

13.4.2 Progressive Rehabilitation 51

13.4.3 Revegetation 52

13.4.4 Stakeholder Consultation Regarding Rehabilitation and Closure 55

13.4.5 Completion Criteria 55

13.5 Post-closure Monitoring and Management 56

13.6 Rehabilitation and Closure Bond 56

14 ENVIRONMENTAL MANAGEMENT PLAN 57

15 OCCUPATIONAL HEALTH AND SAFETY PLAN 58

16 COMMUNITY FACILITIES 60

17 COMMUNITY ENGAGEMENT PLAN 61

FOREWORD

Eastern Iron Limited, through their wholly owned subsidiary Gippsland Iron Pty Ltd, has prepared a referral to the Minister for Planning for a decision as to whether an Environmental Effects Statement (EES) is required for the proposed Nowa Nowa Iron Project (5 Mile Deposit) ('the Project') pursuant to the *Environment Effects Act 1978* ('the EES Referral').

The Project is a greenfield development of a high grade magnetite/hematite deposit located approximately 7 km north of the township of Nowa Nowa, which is situated on the Princes Highway between Bairnsdale and Orbost in East Gippsland, Victoria.

Eastern Iron Limited is a minerals exploration and development company that was listed on the ASX in May 2008 (ASX:EFE). The financial and technical resources of Eastern Iron underpin Gippsland Iron Pty Ltd for the ongoing approval and development of the Project.

This *Project Description and Proposed Mine Plan* has been prepared to support the EES Referral. It provides an outline of the Project during construction and operation, as well as the proposed rehabilitation and closure strategy. The document also covers the key legislative requirements for a Work Plan for a mining licence that exceeds 5 hectares under the *Mineral Resources (Sustainable Development) Act 1990*.

A detailed Environmental Management System (EMS) framework has been developed for the Project, consistent with ISO 14001 and relevant Victorian legislation and guidelines. The proposed EMS is designed to demonstrate that the environmental and social management and mitigation commitments outlined in the various Project plans will be effectively implemented, and the environmental performance of the Project will be monitored to allow 'continuous improvement' over the Project life. The EMS is also consistent with Eastern Iron's *Environmental Policy, Social Policy and Health* and *Safety Policy*.

The key management plans produced as part of the EES Referral include the:

- ***Environmental Management Plan*** (EMP), including a Rehabilitation and Closure Plan (EES Referral Attachment 2); and
- ***Stakeholder Engagement Plan*** (EES Referral Attachment 3).

The 'Rehabilitation and Closure Plan' aims to demonstrate that the long-term environmental and social management objectives have been integrated into the Project design with the aim of achieving a safe, self-sustaining and environmentally stable site post-closure. Incorporating rehabilitation and closure measures at an early stage in the Project is based on the principle that planning for mine closure is an integral part of mine development. The assessment of environmental and social aspects of the Project has informed the Project design process as documented in the ***Evaluation of Project Alternatives*** (EES Referral Attachment 4).

In conjunction with the Rehabilitation and Closure Plan, the EMP outlines Eastern Iron's commitments to ensure environmental and social risks associated with the Project are appropriately managed and monitored during the construction, operations, decommissioning and closure of the Project. The EMP also provides a comprehensive environmental and social baseline for the Project and provides a risk assessment of potential Project impacts.

As part of the EES Referral documentation, Eastern Iron aims to demonstrate that consideration of environmental and social issues has been integrated into the Project design to ensure impacts are avoided and minimised wherever possible. Furthermore, with careful implementation of the commitments outlined in the management plans provided, Eastern Iron believes that the Project can be implemented in a way which minimises potential environmental risks over the Project life and post-closure, and maximises potential economic and social benefits for the local, regional and State economy.

In addition to the EES Referral, the Project will be referred to the Department of the Environment (DoE) pursuant to the *Environment Protection and Biodiversity Conservation Act* 1999 (EPBC Act).

1 CONTEXT AND GENERAL INFORMATION

This *Project Description and Proposed Mine Plan* has been prepared by Eastern Iron to support referral to the Minister for Planning under the *Environment Effects Act 1978* for the proposed Nowa Nowa Iron Project (5 Mile Deposit) ('the Project'). This document provides an outline of the Project during construction and operation, as well as the proposed rehabilitation and closure strategy.

While all components of the Project are outlined in this report (including activities at the South East Fibre Exports wharf in Edrom, NSW), the purpose of this report is to support the EES Referral and, therefore, the focus of the report is on the components of the Project within Victoria. The Project components at the SEFE wharf will be subject to approval under relevant State and local planning provisions in NSW.

1.1 Project Location

The Project is located approximately 7 km north of the township of Nowa Nowa, which is situated on the Princes Highway between Bairnsdale and Orbost in East Gippsland, Victoria. The site is wholly within the Tara State Forest (Crown land) which has been primarily managed for forestry activities in the vicinity of the proposed works.

The proposed open pit, Waste Rock Dump (WRD) and Temporary Low-Grade Ore Stockpile generally lie adjacent to (or partially on) the existing Nowa Nowa-Buchan Road, near to its intersection with Tomato Track. The mine access road and infrastructure area is proposed to be located along the ridge associated with the existing Tomato Track, and accessed via the Bruthen-Buchan Road.

General location and regional plans showing the location of the Project and surrounding land uses are provided in Section 1.5.

1.2 Proponent Details

Eastern Iron Limited ('Eastern Iron') proposes to develop the Project through its wholly owned subsidiary Gippsland Iron Pty Ltd. Eastern Iron is a minerals exploration and development company that was listed on the ASX in May 2008 (ASX:EFE).

Eastern Iron has its main office in New South Wales, Australia and has the objective of discovering and delineating iron ore projects in eastern Australia. Since listing the company has drilled and announced maiden resources at four project areas – Cobar iron pisolite project in western NSW, Eulogie and Hawkwood iron-vanadium projects in Queensland and the Nowa Nowa Iron Project.

1.3 Project History

The magnetite deposits at the site were first drilled and characterized by the Victorian Department of Mines in the 1950s and according to the Department of Environment and Primary Industries; 'represent the largest iron ore deposits in the State'. However, in context to iron ore developments operating in other States, the production volumes and overall life of the Project are relatively small. Instead, it is the sites access to existing infrastructure, including road and port facilities, which provides an opportunity for the Project to be commercially viable, in large part by minimising the level of capital expenditure required.

On 14 February 2012, Eastern Iron exercised its option to purchase 100% of the Project from Waygara Mines Pty Ltd ('Waygara'). As part of the agreement, Eastern Iron acquired Exploration License 4509 ('EL 4509') and all available data relating to previous drilling undertaken by Waygara and the Victorian Department of Mines. Eastern Iron has since transferred EL4509 to Gippsland Iron Pty Ltd as a wholly owned subsidiary.

Eastern Iron commenced further exploration drilling in 2012 which included recompiling previous drill data to resource standards and conducting metallurgical testing of drill core material. Based on recent and historical drilling records, Eastern Iron has announced a total resource estimate of 9.6 Mt at the '5 Mile' deposit (ASX Announcement, 12 June 2013).

The mineralised body at '5 Mile' occurs below a variable thickness of younger sediments and volcanic rocks and as such is largely unweathered.

Primary mineralisation consists predominantly of magnetite with haematite becoming more common at depth. The mineralisation is also quite massive and at the 40% Fe cut-off there is little internal waste once the overburden is removed.

In light of the exploration results, and the availability of existing infrastructure proximate to the site, the Proponent is now seeking approval to develop the resource for commercial production. This rationale is furthered supported by the continuing global demand for iron ore.

The design of the Project is based on a triple-bottom line approach to environmental, social and economic factors to ensure a sustainable approach to mine development.

1.4 Overview of Proposed Project

The Project is a greenfield development of a high grade magnetite/hematite deposit generally referred to as '5 Mile'. The Project involves an open cut mining operation from a single pit with dry processing at the site to upgrade the material to a saleable product. It is anticipated that the Project will produce up to 1 Mt of ore per annum, over an initial mine life of 8-10 years. The mine will be operated using a mining contractor and local employees (i.e. no onsite accommodation).

It is proposed to transport the processed ore by road to the existing South East Fibre Exports (SEFE) wharf at the Port of Eden in Edrom, NSW ('the Port'). The main transport route between the mine and the Port is via the Princes Highway. The material will be temporarily stockpiled before being loaded onto 50-60,000t vessels and exported to international markets.

A Waste Rock Dump (WRD) is proposed to be developed adjacent to the open pit to store waste rock. Ore will be hauled from the open pit to the ROM pad and processed via dry Low Intensity Magnetic Separation (dry LIMS). Low grade ore produced in the dry LIMS process will be temporarily stockpiled adjacent to the open pit and either reprocessed later in the mine life, sold or placed in the pit (subaqueous) on closure.

The site will be fully rehabilitated at closure with the removal of all mine infrastructure and revegetation with native species. Water levels in the open pit will rebound leaving a water resource for potential use.

The main components of the Project include the:

- Open Pit;
- Mine Infrastructure (includes the ROM pad, processing plant and Mine Operations Centre(MOC));
- Waste Rock Dump;
- Temporary Low Grade Ore Stockpile;
- Water Storage Infrastructure;
- Mine Access and Haul Roads; and
- Ancillary Infrastructure.

These components are discussed individually as follows.

Open Pit

- The extent of the open pit comprises a total area of approximately 25 ha.
- Mining rates are proposed at an upper limit of 4 Mt per annum, including waste rock and ore. It is anticipated that this will produce up to 1 Mt of ore per annum, over an initial mine life of 8–10 years.
- The majority of material in the pit will be mined using drill and blast methods, however, some material near surface will be free-dug.
- Ore will be hauled from the open pit to the ROM pad for processing.

Mine Infrastructure

- Mine Infrastructure includes the Run of Mine (ROM) pad, processing plant (Crushers) and Mine Operations Centre (MOC), which collectively comprise a total area of approximately 13 ha.
- These components are located along an existing ridge (generally within the vicinity of Tomato Track) extends between the 5 Mile Deposit and Bruthen-Buchan Road.
- During construction, selected waste rock material (i.e. overburden) will be used as a source of fill to construct the ROM pad, stockpile areas, laydowns and roads.
- The processing plant comprises a two stage crushing and screening circuit to produce a -

10mm product which is then processed via dry LIMS.

- The MOC includes the administration offices, workshops, stores, parking areas, first aid and emergency response facilities. It also includes water and fuel storage areas.
- A manned security hut has also been incorporated on the mine access road as the first accessible point to the site for staff, visitors and deliveries. It will also restrict any unauthorised public access.

Waste Rock Dump (WRD)

- Approximately 24 Mt of waste rock will be generated over the life of the mine.
- Waste rock will be managed based on its geochemical characteristics to enable a safe and stable site on closure.
- A WRD covering a maximum extent of approximately 29 ha will be developed adjacent to and upstream of the open pit for disposal of approximately 22.8 Mt of waste rock.
- Other waste rock will be temporarily stockpiled to enable final in-pit disposal below a permanent water cover on closure.

Temporary Low-Grade Ore Stockpile

- The low-grade ore rejected from the dry LIMS process will be temporarily stockpiled adjacent to and upstream of the open pit during the life of the mine.
- The maximum extent of the stockpile is approximately 17 ha.
- The low grade ore may be re-evaluated for potential processing later in the mine life (subject to approval) or sold. Any material remaining at surface on mine closure will be placed in the open pit for disposal under a permanent water cover.

Water Storage Infrastructure

- Three water storages will capture site surface water runoff and facilitate mine water supply during operations. The three water storages are as follows:
  - » Operations Water Storage - located immediately downstream of the open pit on Tomato Creek. The Operations Water Storage has a maximum surface area of 3.5 Ha and a nominal volume of 154ML.
  - » Sediment Control Dam - located downstream of the open pit and mine infrastructure on Gap Creek, upstream of the confluence with Harris Creek. The Sediment Control Dam has a maximum surface area of 1.12 Ha and a nominal volume of 30ML.
  - » Clean Water Storage - located downstream of the Operations Water Storage and mine infrastructure on Tomato Creek, upstream of the confluence with Harris/Gap Creek. The Clean Water Storage has a maximum surface area of 1.69 Ha and a nominal volume of 49ML.

Mine Access and Haul Roads

- The mine access road is proposed to join the sealed Bruthen – Buchan Road and is nominally expected to be 10 metres wide and approximately 1 km in length.
- The haul road between the open pit, processing plant, WRD and temporary low grade ore stockpile is proposed to be 20 metres wide.
- Minor access roads will be constructed to access the water storages and magazine storage facility. These roads are proposed to be 10 metres wide with a combined length of approximately 1.5 km.
- All roads will be formed, unsealed roads constructed from locally won gravel with the bulk of the material coming from pre-strip activities.
- A sealed asphalt section is proposed for the mine access road at its junction with the Bruthen - Buchan Road. The sealed section will nominally extend for 100 metres into the site to protect the road from potential damage from the turning movement of loaded haulage trucks and limit the amount of gravel brought onto the arterial road.

Ancillary Infrastructure

- A Magazine Storage Facility is proposed to the north of the mine infrastructure to store explosives. Design and location criteria for the Magazine Storage Facility were identified based on relevant Australian legislation, standards and guidelines, as well as consultation with WorkSafe Victoria. The facility will be securely fenced to prevent public access.

- Water treatment infrastructure will include a potable water treatment plant to supply the operations workforce and a wastewater treatment plant to treat sewage and other grey water (eg. kitchen, etc.) at the administration area.
- The Project will require a maximum of approximately 1.2–1.5 MW of power during operations which will be provided by a series of diesel fuelled generator sets. Eastern Iron is investigating the potential for alternative fuel sources to be used for on-site generation including biofuels and/or Compressed Natural Gas (CNG).

Product Transport

- The product will be transported approximately 234 km by road to the SEFE wharf and ship loader on the south side of Two Fold Bay at the Port of Eden in Edrom, NSW ('the Port').
- All roads associated with the transport route are approved for B-Double use, with the majority of the transport route between the mine and the Port via the Princes Highway.
- B-Doubles are proposed to be operated on the transport route, 24 hours a day Monday to Friday, with additional daylight operations on weekends (if required).
- For the purposes of managing the route, it has been assumed that a trucking depot would be established in either Newmerella or Orbost ('the Transport Depot').

1.5 Plans

General Location and Regional Plans are provided below in accordance the requirements of the Mineral Resources Development (Mining) Amendment Regulations (2010). The *Work Plan Guidelines for a Mining Licence* (DPI 2002) have also been taken into account in the preparation of the Plans.

A written description of the operational aspects of the Project (supported by specific site plans) is provided in Chapters 4-11.

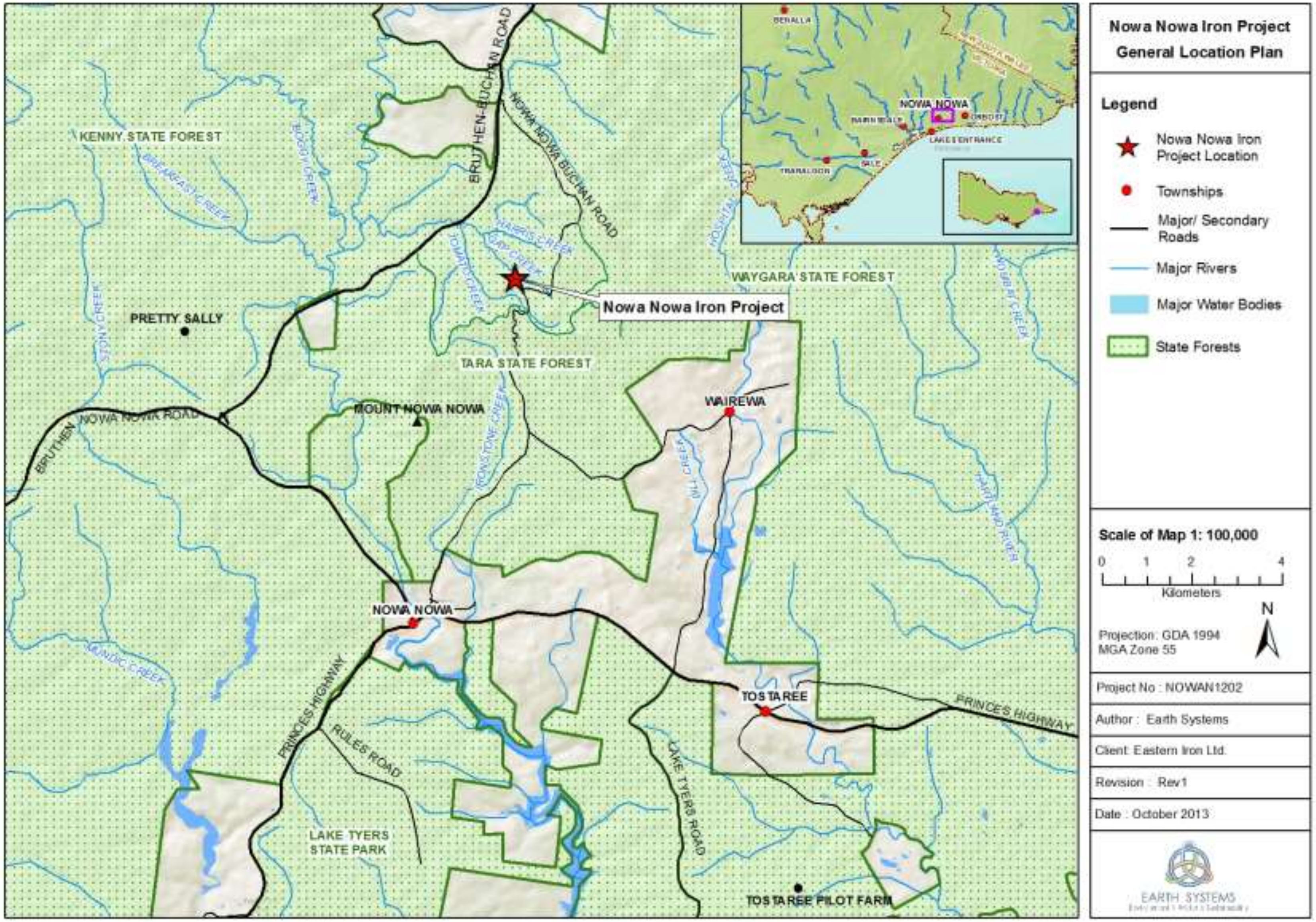

Figure 1.1 General Location Plan

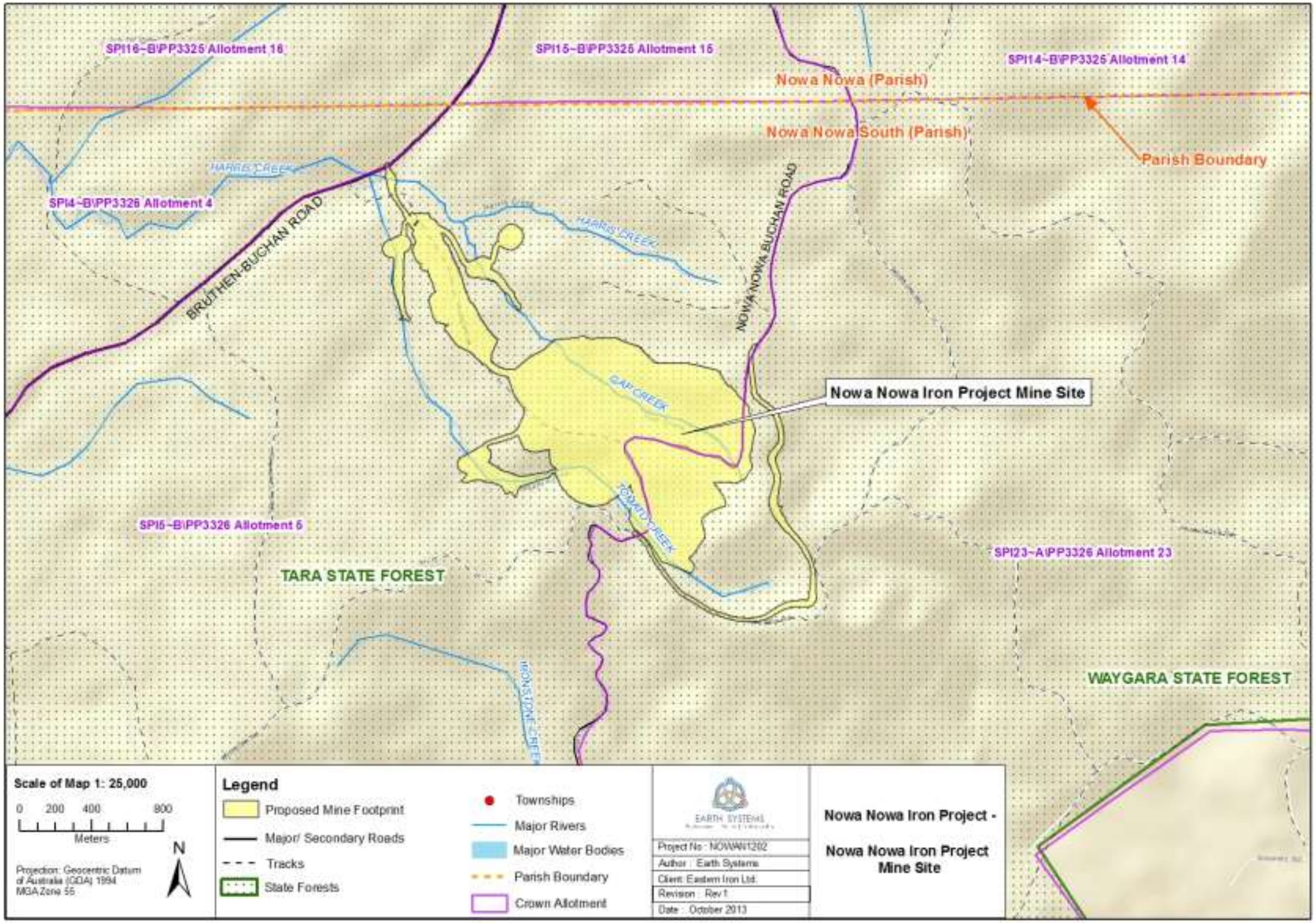

Figure 1.2 Regional Plan

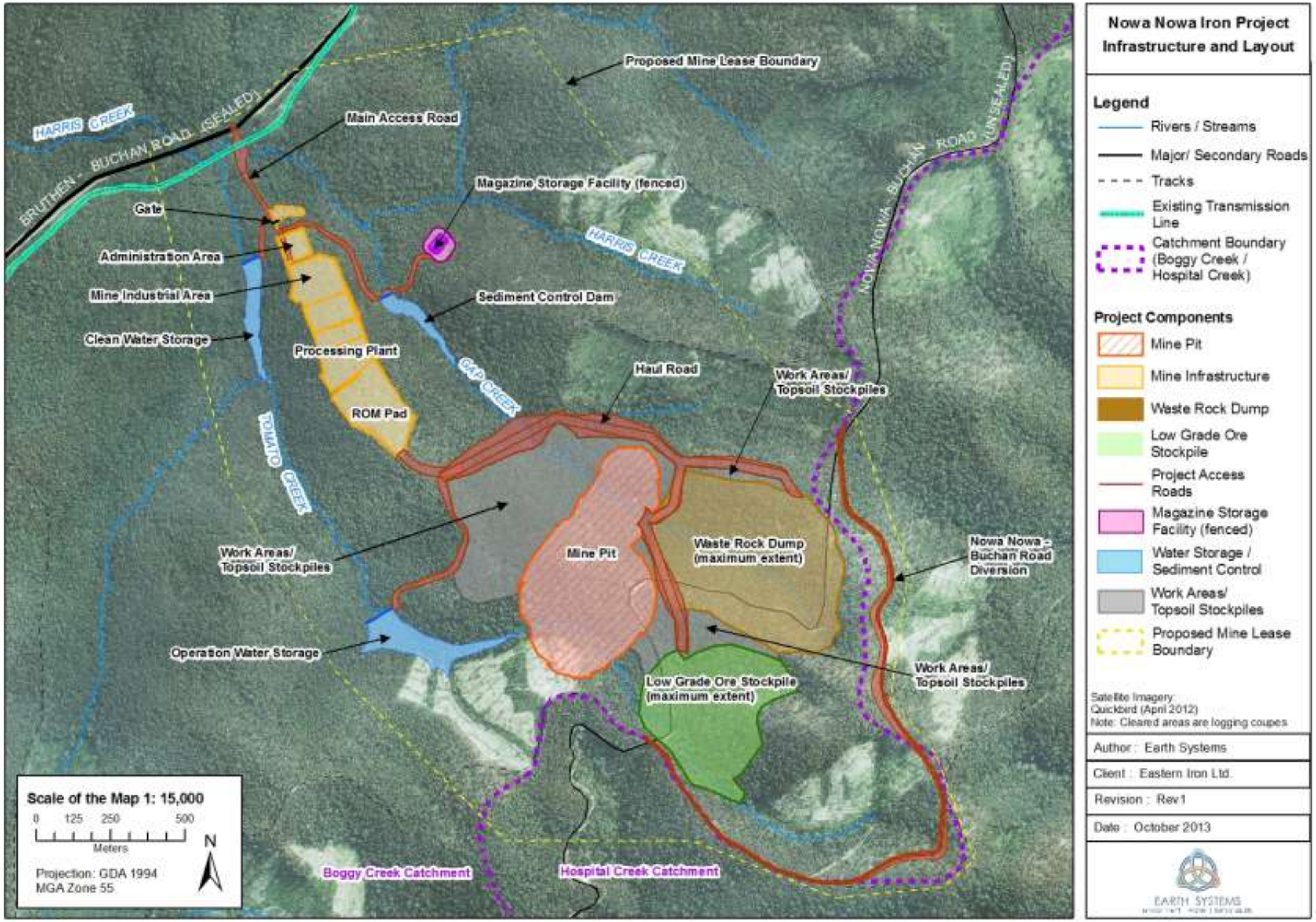

Figure 1.3 Project Arrangement at the Proposed Mine Site

1.6 Land Use and Overview of Environmental Values

Climate

The climate of East Gippsland is temperate, with a mean annual rainfall of approximately 821 mm recorded at Mount Nowa Nowa, in close proximity to the Project Area. Mean maximum temperatures recorded at Mount Nowa Nowa are highest in January (25ºC) and mean minimum temperatures are lowest in July (6ºC). Relative humidity levels range between 57% (in January) and 78% (in May). Mean wind speeds recorded at Mount Nowa Nowa are approximately 12 km/hr. The prevailing wind direction is from the north-west in the morning and south-east in the afternoon.

Hydrology and Drainage

The mine site occurs principally within the catchment of Boggy Creek, and is located adjacent to the boundary of the Hospital Creek Catchment. Several small creeks occur in the vicinity of the mine site area, which are ephemeral and dry for most of the year. These creeks are:

- Harris Creek;
- Gap Creek; and
- Tomato Creek.

Both Gap Creek and Tomato Creek are tributaries of Harris Creek, which flows into Yellow Waterholes Creek and subsequently into Boggy Creek approximately 4 km downstream of the mine site. Approximately 15 km downstream of the mine site, Boggy Creek flows into the 'Nowa Nowa Wetlands' at the northern end of Lake Tyers, which is part of the broader Gippsland Lakes. Lake Tyers is an estuary covering approximately 25 km^2, with an average depth of 3-4 m.

Social Setting

Administratively, the mine site and transportation route within Victoria are located within the East Gippsland Shire. Within the Shire, the mine site is situated within the District entitled 'Lakes Entrance and District'. This District is a rural area covering 58,714 ha. The District contains the regional centre of Lakes Entrance and several smaller townships with a total District population of approximately 7,691.

There are no nearby residential areas in the area surrounding the mine site, which is within the Tara State Forest. The nearest communities to the mine site are the small townships of Nowa Nowa and Wairewa (the nearest settlement area is Wairewa located approximately 4 km from the mine site). In 2011, Nowa Nowa had a population of approximately 147 residents. The farming hamlet of Wairewa contains approximately 20 residences.

A number of regional centres occur in the broader area surrounding the mine site, such as Lakes Entrance, Orbost and Bairnsdale.

Key stakeholders for the Project include:

- Government (local, State, Commonwealth);
- Residents of communities in surrounding area (e.g. Wairewa and Nowa Nowa);
- Recreational users of the Tara State Forest;
- Downstream water users (e.g. recreational users of Lake Tyers);
- Native title holders for the region (GLaWAC);
- Residents of Lake Tyers Reserve; and
- Residents along the transport route.

Land and Water Use

The proposed mining area is located entirely on Crown Land within the Tara State Forest which is zoned as a Public Conservation and Resource Zone (PCRZ), and currently managed by the Victorian Department of Environment and Primary Industries (DEPI) for timber harvesting. This area is significantly disturbed from previous logging activities, with most of the area having been logged over the last 60 years. Several recently cleared logging coupes are present in the area.

In addition to timber harvesting, the Tara State Forest is utilised for small-scale apiculture and biodiversity conservation, and is also available for recreational use, although rarely used for this purpose. There are no designated recreation areas within the Project Area (e.g. picnic, camping, walking tracks). The closest recreational (walking tracks) are located at Lake Tyers and Nowa Nowa.

No agricultural or urban land is located in the vicinity of the mine site, with the closest farmland located over 2 km from the mine site, and the nearest community being Wairewa located 4 km from the mine site. The Nowa Nowa-Buchan road runs through the area of the mine site, which is an unsealed road with a low traffic volume (mainly used by forestry vehicles).

The mine site occurs principally within the catchment of Boggy Creek, and is located adjacent to the boundary of the Hospital Creek Catchment. Several small creeks intersect the mine site area, which are ephemeral/intermittent and dry for most of the year. There is little standing water and no natural or man-made water bodies in the vicinity. Surface water allocations in the subcatchment of the mine site (Boggy Creek) are managed by Southern Rural Water.

Boggy Creek flows into the 'Nowa Nowa Wetlands' at the northern end of Lake Tyers. The Nowa Nowa Wetlands are located adjacent to Nowa Nowa township and is a local recreational area/tourist site. The main part of the lake is a popular tourist destination and is used by nearby residents and visitors for a number of shore-based and water-based recreational activities. The lake is also an important biodiversity conservation area, forming part of the Gippsland Lakes Ramsar Site (refer EES Referral Attachment 9).

There are no Groundwater Management Areas in the Nowa Nowa region. No direct utilisation of groundwater resources has been identified within 2 km of the mine site, as no residential or agricultural areas occur within this area.

Flora and Fauna

The Project Area occurs across two bioregions; East Gippsland Uplands (EGU) and the East Gippsland Lowlands (EGL). Five Ecological Vegetation Class (EVC) were identified during the field survey:

- Lowland Forest (Least Concern);
- Shrubby Dry Forest (Least Concern);
- Damp Forest (Least Concern);
- Riparian Forest (Depleted in EGL, Least Concern in EGU); and
- Warm Temperate Rainforest (Rare).

The area of the mine site has been managed historically for timber harvesting. This disturbance regime has led to significant habitat fragmentation and degradation and has probably altered the microclimate, hydrology, erosion patterns and the number of weeds and pests. As a result, it is unlikely that the vegetation resembles the pre-European (harvesting) habitat. Similarly, fauna biodiversity does not resemble the original suite of species present on the site. Many species have become extinct from the Gippsland region and introduced species are now common and widespread.

No EPBC Act species, communities or habitats were observed during any of the surveys of the area. Only one FFG Act listed species, the masked owl, was observed sitting on a branch 1.2 km east-north-east of the mine footprint. Despite extensive searches of the habitat, evidence of owl nests or roosts was not found. It is suspected that all three threatened owl species hunt in the area, but do not nest or roost nearby.

Only one DEPI listed flora species has been recorded previously within the mine site. The slender wire-lily (*Laxmannia gracilis*) was recorded once in 1980 near the junction of Tomato Track and Nowa Nowa-Buchan Road. However this was not found during current field assessments. Overall, only one threatened fauna species has been recorded within the broader area (not in the actual mine footprint), the FFG Act listed sooty owl. Habitat is probably insufficient for most Commonwealth and State threatened species (i.e. EPBC/FFG Act).

Lake Tyers is located approximately 15 km downstream of the mine site. The Gippsland Lakes system, including Lake Tyers, is listed under the Convention on Wetlands of International Importance (i.e. Ramsar Convention). The main lakes of the Gippsland Lakes system are Lake Wellington, Victoria and King, which are linked to the sea by an artificial entrance at Lakes Entrance. Notably, Lake Tyers is situated to the east of the Lakes Entrance area and does not have connectivity to the other lakes in the Gippsland Lakes system.

Cultural heritage

No Aboriginal sites have been previously recorded within the Project Footprint at the mine site. Two Aboriginal sites were identified during the surface survey conducted. Both are Aboriginal campsites represented by scatters of stone artefacts located on ridgetops in the vicinity of the confluence of Harris, Tomato and Gap creeks. These sites are located in the vicinity of the proposed mine access road (close to the Bruthen-Buchan Road). No Aboriginal sites were identified in other parts of the Project Footprint.

No post-European settlement historic sites have been identified in the vicinity of the mine site. The closest site identified to the Project Area is the *Red Knob Surveyor's Tree* located approximately 7 km southwest of the mine site adjacent to the Bruthen-Buchan Road (Heritage Inventory Number H8522-0009).

2 GEOLOGICAL INFORMATION

2.1 Regional Geology

The area is dominated by Palaeozoic acid volcanics, with lithosol soils (Bell, 1959). The iron deposits are situated in the north-south trending Buchan Rift basin filled with Silurian felsic Thorkidaan volcanics (lavas, ignimbrites and sediments), and the overlying Buchan Group of Silurian limestones, calcareous mudstone and very minor volcanogenic clastics.

2.2 Site Geology

The mineralization of the site is characterised by massive magnetite-haematite with lesser chlorite, talc/carbonates, pyrite, quartz with minor chalcopyrite. Magnetite is late stage and replaces specular haematite. The iron mineralisation is quite massive and at the 40% Fe Cut-off there is little internal waste once the overburden is removed. A typical drill section of the 5 Mile deposit is shown in Figure 2.1.

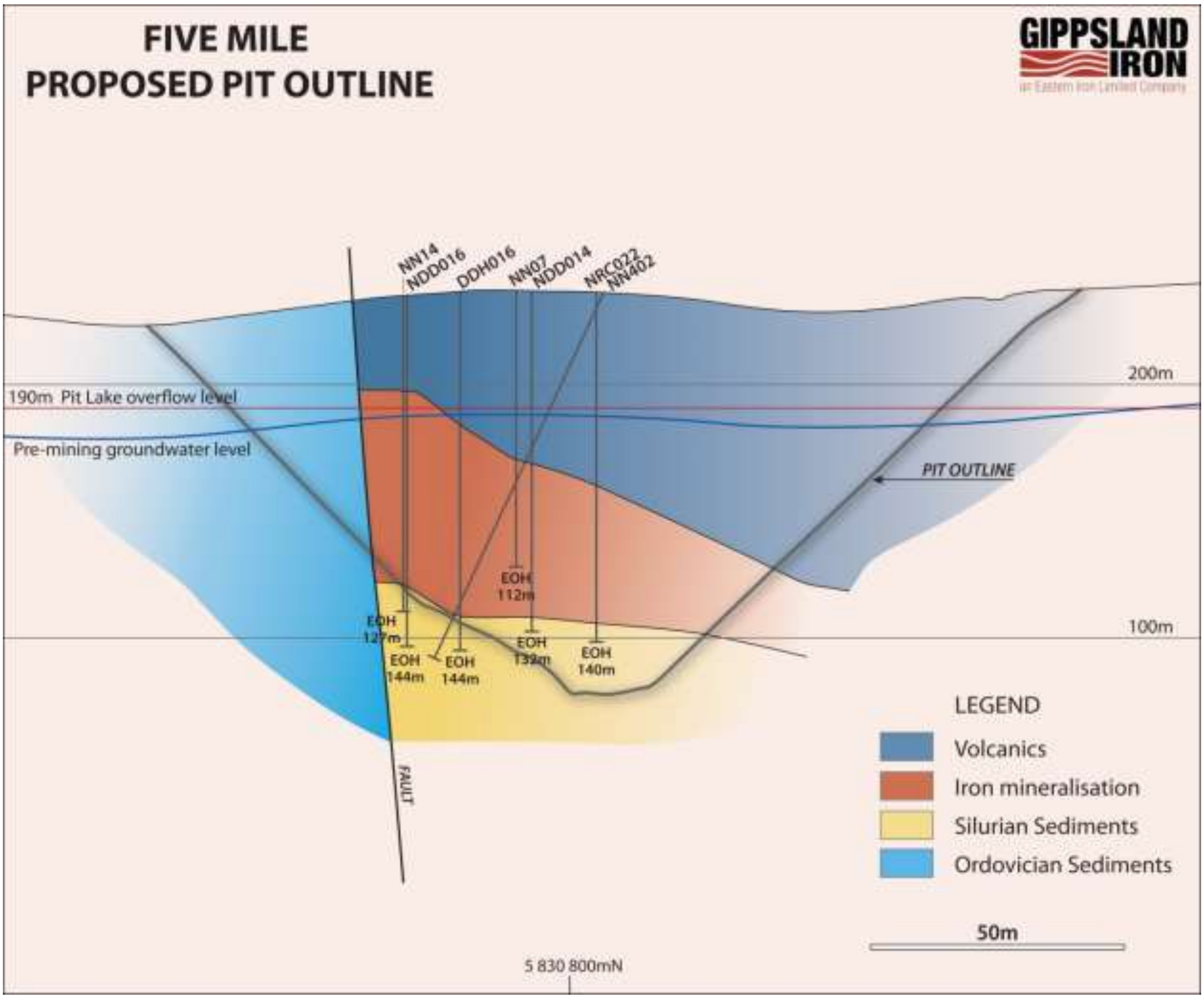

Figure 2.1 Drill Section of 5 Mile Deposit Showing Proposed Pit Outline

The 5 Mile deposit consists of a massive magnetite/haematite ore body within Silurian felsic volcanics (Thorkidaan Volcanics), turbidites and limestone. The style of mineralisation appears to be skarn-style or carbonate replacement. The mineralisation is characterised by massive magnetite-haematite with lesser chlorite, talc, pyrite and quartz with trace chalcopyrite.

Magnetite appears to be late stage replacing specular haematite, but where extensive weathering is apparent haematite appears to occur after magnetite.

The Thorkidaan Volcanics consist of andesites, rhyolites, felsic ignimbrites, volcaniclastics and volcanic breccias, and represent the dominant hangingwall lithology. Footwall lithologies include mudstones, shales, sandstones and some limestone. The magnetite mineralisation dips roughly to the south at an angle of approximately 20–30°.

2.3 Commodity, Resource Grade and Tonnage

A maiden resource estimate was completed for the Project in February 2012. As a result of further definition of the resource from additional drilling and using higher values for the specific gravity of the ore based on measurements taken during drilling in February 2012 the resource estimate was upgraded in May 2012. The latest resource estimate was completed in June 2013 (Table 2.1). Compared with the previous (May 2012) resource estimate, the June 2013 estimate is slightly (9.4%) reduced as a result of adjusting the location of a "hard" boundary along the western (faulted) margin of the orebody.

To develop the June 2013 estimate, quarter core samples were collected and assayed on a down hole 2m basis except where obvious geological contacts were present. Samples were analysed by XRF. The resource estimate was compiled by H&S Consultants Pty Ltd using assay data from 24 diamond drillholes drilled by the GSV in 1955 and reported in GSV Bulletin 57 (G. Bell 1959), two diamond drillholes drilled by Gulf Mines Ltd in 2008, as well as results from nine diamond drill holes and eleven RC holes drilled by Eastern Iron in 2012 and 2013. The June 2013 estimate is shown in Table 2.1 and has been reported at a cutoff grade of 40% Fe. Full details of the resource estimate are available in the ASX announcement from 12 June 2013 entitled "Resource Upgrade and elevated copper results reported from drilling at Nowa Nowa Iron Project, Victoria". Six of the historical GSV drillholes have been twinned by Eastern Iron drilling, comprising one RC and five diamond drillholes. Twinned drillholes were used to verify the geological interpretation, confirm the assay tenor and to provide sample for metallurgical testwork. All drillhole data and assays are consistent with those from the earlier independent GSV drilling.

Table 2.1: 5 Mile Resource Estimate June 2013

	Measured		Indicated		Inferred		Total	
Prospect	Mt	Fe%	Mt	Fe%	Mt	Fe%	Mt	Fe%
5 Mile	2.1	52	3.7	50	3.9	50	9.6	50

3 PROPOSED MINING APPROACH

3.1 Mining Method

It is expected that the 5 Mile resource will be mined by conventional open pit mining methods. This will involve 100 -120 tonne class hydraulic excavators loading 85-120 tonne capacity off road dump trucks. Some material will be able to be free dug but the majority will require drill and blasting to break up the material for excavation.

Mining capacity is expected to average 1 million bank cubic metres of material per year producing approximately 1M tonnes of ore to be processed per annum, with a life of mine waste to ore ratio of 2.3:1. Initially a higher proportion of waste will be mined due to the overburden cover on the ore body. The proportion of waste mined reduces significantly over the final 3-4 years of operation. Total material movement is expected to be approximately 33 Mt comprised of 9.5 Mt ore and 24 Mt of waste.

Following excavation, the ore material will be loaded and trucked out of the pit along the haul roads to the Run of Mine (ROM) stockpile for crushing and screening. The waste rock is also loaded and trucked out of the pit to either facilities requiring waste rock for construction of the Waste Rock Dump (WRD) adjacent to the open pit (refer Section 5). An overview of the overall process is depicted in Figure 3.1.

Mining will progress below the current groundwater table, with the pit dewatered to allow mining. Water will be pumped from in pit sumps and/or pit dewatering bores and transferred to the Operations Water Storage for reuse (refer Section 8).

Mining work is currently expected to be carried out 7 days per week, 24 hours per day.

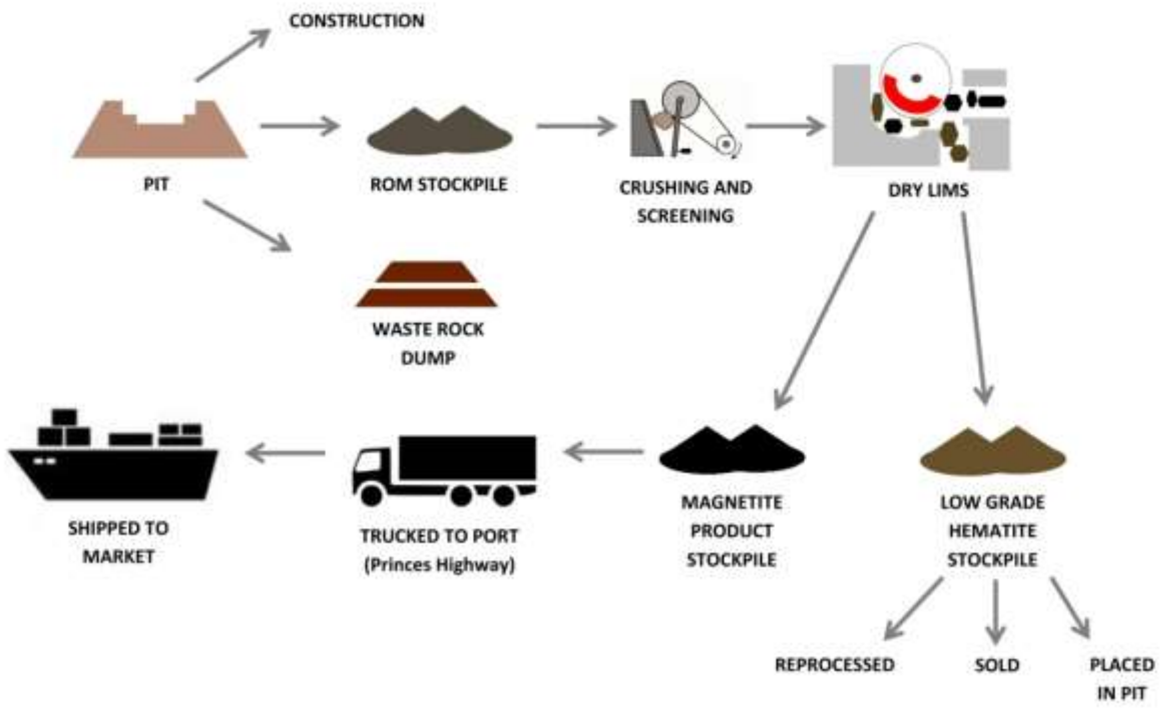

Figure 3.1 Schematic Overview of Process

3.1.1 Blasting

Blasting would likely occur 3-5 times per week during daylight hours only. This would be a very tightly controlled operation to ensure the safety of all people including the public in surrounding areas.

Blasting will be conducted where the ore and/or waste rock is too hard for an excavator to dig efficiently. Drill and blast procedures and designs will be prepared in consultation with blasting specialists to ensure:

- Safety of the mine workforce and public;
- Control of flyrock; and
- Vibration control.

Flyrock management will ensure that appropriate and safe blasting practice is adopted and continuously refined during the life of the Project. The use of explosives will be restricted to appropriately trained personnel using established procedures.

Eastern Iron plans to establish and enforce a nominal 500 m flyrock safety exclusion zone around the blasting area. The local population will be prevented from entering the exclusion zone during blasting times, including the existing Nowa Nowa-Buchan Road, where necessary.

With appropriate blasting measures, it will be possible to reduce flyrock distances to approximately 200 m or less. Impacts on the surrounding communities will also be minimised through a public education program, assigning specific blasting times, erecting suitable warning signs, and by monitoring.

3.2 Pit Dimensions

The expected open pit excavation will be approximately 700–800 metres long by 300–400 metres wide at the surface, with an overall area of approximately 25 Ha. The pit is expected to have a maximum depth of 195 m.

The pit will have nominal overall wall angles of 38-42 degrees. Pit walls will be comprised of 5-10 metre berms every 20 metres with up to 60 degree inter berm wall slopes.

The mine design and excavation will be controlled by an ongoing geotechnical management plan to ensure the stability of the pit walls. Ore and waste will be excavated at a bench height safe and appropriate to the excavator reach whilst also maintaining integrity of the orebody through minimizing dilution and ore loss.

Mining of the pit will be accessed by an approximately 25 metre wide ramp at a 10% gradient.

The pit is designed to maximise the extraction of financially viable ore. Further optimisation of the pit will be progressively conducted throughout the life of the Project to confirm the effect of additional resource drilling, revised resource model, mine planning refinements, potential changes in iron ore prices, continuing metallurgical testwork, and any other factors which may impact on revenue and costs. These may periodically result in minor changes to the design of the open pit throughout its life.

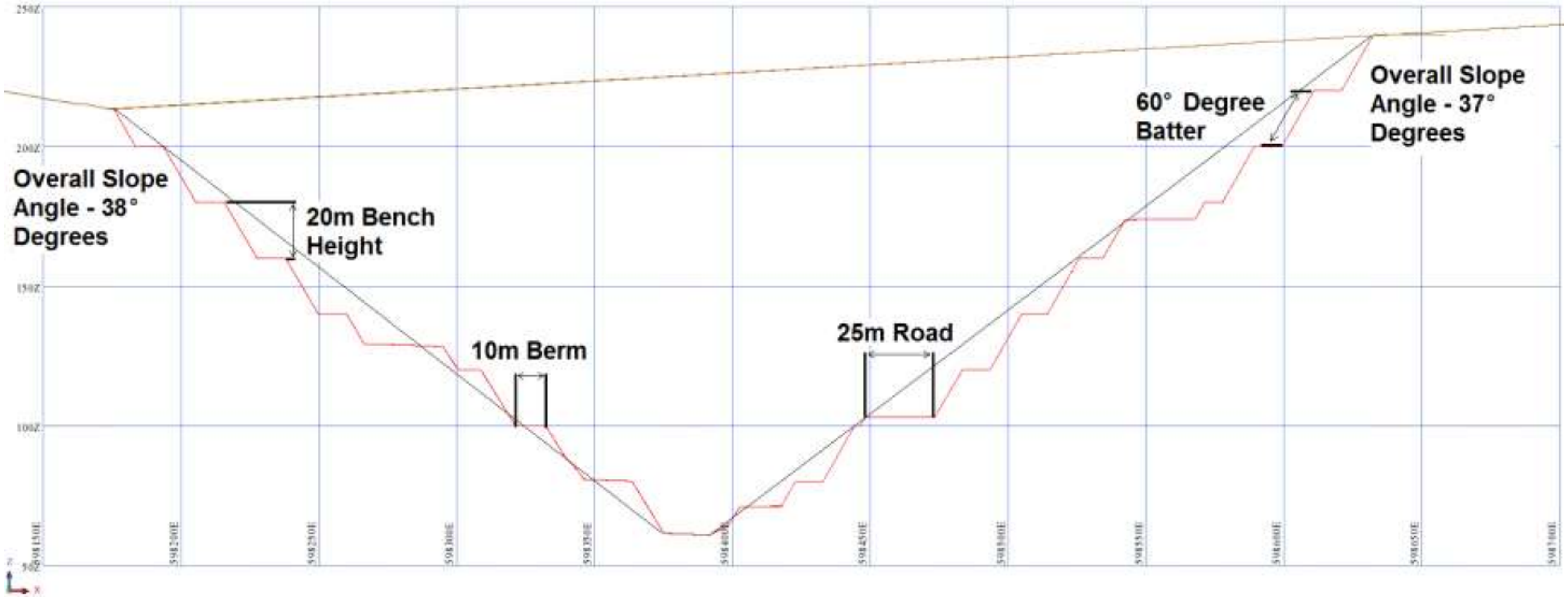

Figure 3.2 Typical cross section of pit indicating overall slope angles, bench heights and batter slopes.

3.3 Land Clearance

The Project design has been optimised to minimise the Project footprint where possible to reduce the area of land clearance required. Controls will also be implemented during land clearing activity that facilitate avoidance or minimisation of impacts from vegetation removal and earthworks during Project construction and operations, including:

- Land clearing will be restricted to the minimum area required for safe operations and will be conducted during the drier months;
- Land clearing will be conducted progressively, such that land is cleared immediately prior to construction to the extent practicable;
- Vehicle and equipment exclusion zones will be established (with fencing and signage) to protect sensitive vegetation, riparian areas, or native vegetative strips that will not be cleared and exist in close proximity to active areas.

Land is to be cleared to the limit of clearing which will be indicated on civil earthworks drawings. Land that has been assigned for clearance will be surveyed, marked out and signed off by an appropriate person prior to clearing, in order to ensure no significant areas are inadvertently and unnecessarily disturbed.

Generally speaking the limit of clearing is less than five metres outside of the edge of earthworks. The exception to this will be due to adhering to provisions under the Bushfire Management Overlay (BMO). It has been determined that clearance of inner and outer zones of 39 and 20 metres respectively will be required to be maintained around buildings (refer Section 11.7). A 50 m buffer has also been allowed around the edge of the pit for safety and to allow for access around the pit.

Land clearance will be undertaken through the use of a dozer and grader. Topsoil management during land clearance is described in the next section. In the case of the WRD and the Temporary Low-Grade Ore Stockpile, land clearance may be gradual and conducted only as the footprint expands over time.

3.4 Topsoil Management

Topsoil will be removed from all cleared areas prior to any excavation occurring. Following land clearance activities topsoil shall be stripped and stockpiled. Topsoil is notionally the first 150-300 mm of soil and this will be confirmed through site investigations. Removed topsoil will be dumped and stockpiled in piles of maximum 2 metres height to minimum compaction over time.

The stockpiles will be located in areas that are not to be further disturbed and nominally in areas close to areas of later rehabilitation use. Proposed topsoil stockpile areas are illustrated in Figure 1.3. At the end of mine life, or at earlier times that rehabilitation of any areas are possible, topsoil will be reclaimed from the stockpiles and spread on rehabilitated surfaces. As part of the progressive rehabilitation and revegetation process (refer Section 13.4.2), topsoil will be relocated directly to a rehabilitated area rather than stockpiled wherever possible.

Further details regarding land clearing, topsoil recovery and stockpiling is provided in Section 13.4.2.

3.5 Site Haul Roads

It is expected that there will be approximately 2-3 kilometres of onsite mining haul roads. These would be mainly for the haulage of mined waste to the waste dump and mined ore to the ROM stockpile. Low-grade ore rejected from processing will also need to be transported to the Temporary Low-Grade Ore Stockpile. An additional road from the ROM to the Mine Industrial Area (MIA) will also allow access for heavy equipment to the maintenance area.

Mine haul roads would be constructed for the safe two way passage of 85-120 tonne capacity dump trucks. The roads would be approximately 25 to 30 metres wide.

Haul roads would incorporate drainage and culverts to allow site water management as required. Regular road maintenance of haul roads will be required by grading and watering to minimise dust generation and provide a safe efficient running surface.

Light vehicles may also use the haul roads for access to mining areas. There would be no access to site haul roads from public roads areas other than through a security managed site access point.

3.6 Borrow Areas / Quarries

A site wide geotechnical investigation is currently underway to confirm if in situ material is suitable for road, hardstand and dam construction. Sources of clay and sand will be investigated for use in the water storage structures and services trenches respectively. Where appropriate and cost efficient, local materials will be used preferentially, otherwise material will be hauled in by truck from existing quarries in the broader region. Civil design is continuing; on completion, quantities of materials required and proposed sources will be identified and included in the Work Plan.

3.7 Proposals to Protect Easements, Cables or Pipelines Traversing the Property

There is an existing 22 kV transmission line running along the south-eastern side of the Bruthen-Buchan Road (Figure 1.3). The proposed mine access road will be built beneath this line and no impact on the existing circuit is expected.

No easements or pipelines have been identified as traversing the property.

4 MANAGEMENT OF MINE MATERIALS

4.1 Management Principles

The management of mine materials aims to maximise the geochemical stability of materials so as to minimise the potential for water quality impacts during operations and post-closure. The key principles of management for geochemical stability are as follows:

- Wherever possible, sulfidic materials will be properly stored under a permanent water cover (minimum 2 m) to prevent oxidation of sulfide minerals post-closure.
- Where surface storage of sulfidic materials cannot be avoided, rock dumps will be constructed so as to minimise the ingress of oxygen and water and thereby minimise the rate of oxidation and the flux of acid sulfate related acidity.
- All drainage potentially affected by sulfide oxidation will be captured and managed so as to prevent the discharge of water that does not meet environmental objectives for the site.

4.2 Mine Material Classifications

Management strategies for the handling and disposal of mine materials during operation and post-closure were developed based on geochemical assessment and classification according to management category.

The geochemical classification scheme and management categories developed in the geochemical assessment (EES Referral Attachment 6) are described in Table 4.1 and Table 4.2.

Table 4.1 Geochemical classification of waste rock materials according to management category for the 5 Mile deposit.

Management category	Geochemical classification criteria	Geochemical properties		
		AMD potential	NMD potential	Salinity potential
Category N	NAPP < –40 kg H_2SO_4/t AND Sulfur < 0.6 wt%	Potentially acid consuming	Very low potential for NMD generation	Very low potential for salinity generation
Category A	NAPP < 0 kg H_2SO_4/t AND Sulfur < 0.3 wt%	Non acid forming (NAF)	Very low potential for NMD generation	Very low potential for salinity generation
Category B	NAPP < +10 kg H_2SO_4/t AND Sulfur > 0.3 wt% AND < 0.6 wt%	Potentially acid forming (PAF) – marginal	Low potential for NMD generation	Low potential for salinity generation
Category C	NAPP > +10 kg H_2SO_4/t	Potentially acid forming (PAF)	Moderate potential for NMD generation	Moderate potential for salinity generation

Table 4.2 Geochemical classification of ore materials according to management category for the 5 Mile deposit.

Management category	Geochemical properties		
	AMD potential	NMD potential	Salinity potential
ROM ore	Potentially acid forming (PAF) Average NAPP: +44 kg H_2SO_4/t	High potential for NMD generation	High potential for salinity generation
Dry LIMS product	Potentially acid forming (PAF) Average NAPP: +27 kg H_2SO_4/t	Moderate potential for NMD generation	Moderate potential for salinity generation
Low-grade ore	Potentially acid forming (PAF) Average NAPP: +107 kg H_2SO_4/t	High potential for NMD generation	High potential for salinity generation

Table 4.3 Estimated abundance of waste rock materials by management category and lithology.

Management category	Waste rock lithology		
	Volcanics	Sediments	Limestone
	%	%	%
Category N	0	8	50
Category A	91	42	50
Category B	9	25	0
Category C	0	25	0

Table 4.4 Estimated mass of waste rock materials by management category.

Waste rock lithology	Estimated proportion of total waste rock* (%)	Mass of waste rock by management category (Mt)			
		A	B	C	N
Volcanics	70	15.3	1.5	0.0	0.0
Sediments	20	2.0	1.2	1.2	0.4
Limestone	10	1.2	0.0	0.0	1.2
Total	100	18.5	2.7	1.2	1.6

*Preliminary estimate based on interval metres in sighted geological logs and interpretive cross-sections.

The estimated abundance of each waste rock lithology according to management category based on the present limited assessment of 37 waste rock intervals is provided in Table 4.3, and the estimated overall mass of waste rock predicted to fall into each management category are provided in Table 4.4.

Note that the management categories are based on management requirements for rocks of given geochemical properties, and are not based on the precise abundances of each category of materials.

The management categories above will be used in conjunction with the mine block model by construction of a geochemical classification layer using the classification criteria. This will involve the following:

- Analysis of all waste rock intervals in resource drillholes for:
  - Total sulfur (by LECO)
  - Acid neutralisation capacity (ANC)
- Calculation of maximum potential acidity (MPA) from total sulfur:
  - MPA [kg H_2SO_4/tonne] = Sulfur [wt%] × 30.6

- Calculation of net acid producing potential (NAPP) from MPA and ANC:
  - NAPP [kg H_2SO_4/tonne] = MPA [kg H_2SO_4/tonne] – ANC [kg H_2SO_4/tonne]
- Application of the criteria in Table 4.1 to assign a management category to every waste rock block in the mine model;

The geochemical classification layer once constructed will be used to schedule waste materials for selective management.

4.3 Management Strategies for Mine Materials

The management strategies to be implemented for each management category of mine materials are summarised in Table 4.5.

Table 4.5 Summary of management strategies for categorised mine materials.

Management category	Management strategy
Waste rock category A	Waste rock dump in upper Gap Creek
Waste rock category B	Waste rock dump in upper Gap Creek, encapsulated within Category A and N waste rock
Waste rock category C	Temporarily stockpile upstream of the open pit in Tomato Creek with drainage control, and on closure storage in the open pit under a permanent water cover (min. 2 m)
Waste rock category N	Waste rock dump in upper Gap Creek and/or storage in the open pit on closure for pit water treatment
Low-grade ore	Temporarily stockpile upstream of the open pit in Tomato Creek with drainage control, and on closure storage in the open pit under a permanent water cover (min. 2 m)

Features of the mine plan to note with regard to management of geochemical stability are as follows:

- There is no tailings storage facility (TSF).
- The mine pit is designed to flood on mine closure, and overflow into Tomato Creek.
- Category C waste rock and low-grade ore (if unsold) will be temporarily stockpiled in a location upstream of the pit to allow any drainage from the waste rock dump to be controlled during operations, and then to be backfilled into the pit on or prior to mine closure for storage under a permanent water cover (minimum 2 m) to prevent oxidation.
- Category A, B and N waste rock materials will be stored permanently in a waste rock dump located upstream of the pit in Gap Creek. This location ensures that any drainage from the waste rock dump ultimately reports to the open pit both during operations and post-closure. Drainage from the waste rock dump will by collected and pumped for storage and reuse during operations.
- The waste rock dump will be constructed such that Category B materials are encapsulated within Category A and N materials to inhibit any potential release of acid drainage in the long term.
- An Operations Water Storage will be located immediately downstream of the pit on Tomato Creek to capture all drainage from the pit, waste rock dump, ROM pad and stockyard, and the temporary low-grade ore stockpile and Category C waste rock pile during operations. The storage and its management are designed to ensure nil release of stored water.
- Additional water storages downstream (Clean Water Storage, Sediment Control Dam) will provide additional protection to prevent any potential residual downstream water quality impacts.
- Drainage from all other mine infrastructure will report to the Sediment Control Dam during operations.
- When the pit is flooded post-closure, natural inflows from the upstream catchment and groundwater rebound will be augmented by

pumping clean catchment water from the Clean Water Storage and Sediment Control Dam to minimise the period that sulfidic materials and wall rock will be exposed to atmospheric oxygen.

- To maximise the amount of runoff reporting to the open pit post-closure, the waste rock dump will be completed with a cover system utilising suitable waste rock and clay materials to minimise the infiltration of water into the dump and maximise runoff generation. The area of the top surface of the dump will be maximised and graded to the east to allow all runoff to be captured at the upstream end of Gap Creek and diverted into the adjacent Tomato Creek catchment (using the new topography).

The application of these management principles in waste rock management is described below. Specific management strategies for low grade ore are provided in Section 7.

5 WASTE ROCK MANAGEMENT

5.1 Approach to Waste Rock Management

Waste rock will be managed according to the management categories provided in Table 4.1. A geochemical classification layer will be developed for the mine block model and a management category assigned to each block based on analysis of sulfur and acid neutralising capacity. This classification layer will facilitate scheduling and selective management of waste rock materials.

Category A waste rock (non-acid forming) can be used for construction. Any Category A waste rock that is not required for construction activities, and Category B and Category N waste rock, will be placed in the WRD.

The WRD will be constructed on the eastern side (up-gradient) of the pit (Figure 1.3) in upper Gap Creek. It is intended that the WRD will be a stable long-term structure and will be rehabilitated at the end of mine life. The WRD has been strategically placed up-gradient from the open pit to ensure all runoff and seepage from the facility reports to the pit after mine closure (refer Section 8.3.2).

A total of 24 Mt of waste rock will be produced by the mining operation over the mine life. Approximately 22.8 Mt (comprising 18.5 Mt of Category A, 2.7 Mt of Category B, and 1.6 Mt of Category N materials, minus construction materials) will be stored in the WRD, which will be built up over approximately 10 years at an average waste production rate of 2.3 Mt per annum. Pre-mining, the waste rock has an average density of 2.75 t/m^3, and is expected to have a bulking factor of approximately 40% once placed in the WRD.

Category C waste rock will be temporarily stockpiled with the low-grade ore upstream of the pit in upper Tomato Creek during operations. On mine closure, this temporarily stockpiled material will be backfilled into the open pit for permanent safe storage under a permanent water cover (minimum 2 m).

5.2 Waste Rock Dump Construction

The WRD will be constructed as follows:

- The WRD will be constructed from only Category A, B and N waste rock materials in a location upstream of the open pit in Gap Creek (see Figure 1.3).
- To maximise the long-term geochemical stability of the WRD, it will be constructed in thin horizontal lifts from the base of the dump upward, with compaction and moisture content optimised to minimise air entry. This will involve truck dumping with subsequent flattening and compaction (with optimum moisture content) of each layer (1–2 m) prior to placement of the next layer on top. Traditional end-dumping construction methods are to be avoided, as such methods are well known to produce internal dump structures that enhance sulfide oxidation and pollution discharge.
- In the WRD, Category B waste rock will be encapsulated within Category A and N materials by strategic placement so as to avoid positioning the Category B materials close to the edge of the dump. A minimum 10 m buffer of Category A/N materials will be placed between the dump edges and the Category B material. This encapsulation approach isolates the Category B material in engineered cells to minimise oxygen and water infiltration.
- Category N materials, with excess neutralising capacity, will be placed strategically to optimise in situ neutralisation. The acid-neutralising layers will be located so as to intercept and neutralise seepage.
- Each lift of the waste rock dump will be compacted and graded such that all drainage is directed eastward (upstream) into Gap Creek and contained in a pond/sump for pumping to the Operations Water Storage for treatment (if necessary) and reuse in ore processing and dust

suppression. Drainage will include engineered drains and rock armouring where necessary. Final surfaces will have reclaimed topsoil applied to assist revegetation.

- In the event that runoff exceeds sump/pump capacity, excess drainage from the waste rock dump will report to the open pit.
- More detailed geochemical characterisation of the waste rock and the mining schedule will be conducted to develop a more detailed designed for the waste rock dump.
- The WRD will have the following general parameters:
  - » batter angle = 37 degrees,
  - » single slope = 15 degrees,
  - » bench height = 20 metres,
  - » bench width = 48 metres,
- The maximum height of the dump will depend on the available area to contain the required volume of waste and will be set so as to accord with the surrounding landform.
- Construction of the WRD will be by progressive dumping of waste by truck to approximate dump outlines with final shaping by bulldozer. In general, compaction will only occur through the use of construction equipment.
- Runoff and erosion control during dump construction will be implemented by progressive installation of batter protection layers (ie. thick layers > 5 m thick) of inert material and progressive completion of surface cover over completed sections of the waste rock dump. An abandonment bund of inert material may be placed around the top of each dump slope to prevent runoff water flowing from the dump surface over the slopes and causing erosion.
- Construction materials (eg, Category A waste rock) will be subject to detailed geochemical and geotechnical characterisation in advance of construction to develop an inventory of volumes of material available for waste rock dump and drainage construction.
- On closure, the WRD will be completed with a cover system using suitable waste rock and clay from decommissioned water storages (primarily the Sediment Control Dam) to limit infiltration of water and maximise the collection of clean catchment water (see Section 13.3.2).

6 ORE PROCESSING

6.1 Ore Processing Method

The processing method of the ore is a simple crushing and screening operation with the material to be exposed to dry Low-Intensity Magnetic Separation (LIMS). In this process, ore is crushed to <10mm and fed over rotating drum magnets to produce a finished product of +58% Fe.

This methodology does not require any chemical reagents or biological processes to be employed with the only additive being water to control dust and moisten the product in readiness for transport to the port.

The processing plant will have a nominal throughput of 1 Mt/a of ore producing 800,000 tonnes of product and 200,000 tonnes of non-magnetic low-grade ore.

6.2 Plant Layout and Equipment

The processing plant will be located on the ridge between the Gap and Tomato Creeks (generally within the vicinity of the existing Tomato Track) adjacent to the other main infrastructure as shown in Figure 1.3. The plant area is accessible from the sealed Bruthen – Buchan Road located approximately 500m to the north.

A conceptual layout plan of the processing plant and ROM facility are provided in Figure 6.1. The plant layout and equipment selection is currently under development. Investigations are focussing on the use of mobile plant where possible in preference to a fixed processing plant solution. The final configuration will depend on suitability of equipment, availability and economics.

An indicative process flow diagram (PFD) is shown in Figure 6.2, which should be viewed in conjunction with the following description of the processing method:

- ROM ore will be stockpiled at grade in a number of fingers by the mining fleet. The number of fingers and ultimate sizing of the ROM will be driven by the ore body variability and product specification.
- Ore would be fed by front end loader (FEL) into a hopper above a variable speed vibrating grizzly feeder which would direct the ROM ore to the jaw crusher. The majority of the finer particles would fall through the grizzly, onto the apron feeder to conveyor belt CV001. The coarse particles would travel over the grizzly into a primary jaw crusher. Crushed ore would combine with grizzly feeder undersize on the apron feeder.
- The ore on CV001 would report to the primary screen. Material from the top and middle decks would be directed to secondary crushers with varying closed side settings. Output from the crushers would travel back to the primary screen via CV004. Material from the lower deck of the screen would be directed to CV005.
- The ore on CV005 travels into a hopper above the dry LIMS where the material is separated into magnetic and non-magnetic streams. The streams report to individual stacking conveyors to form separate stockpiles.

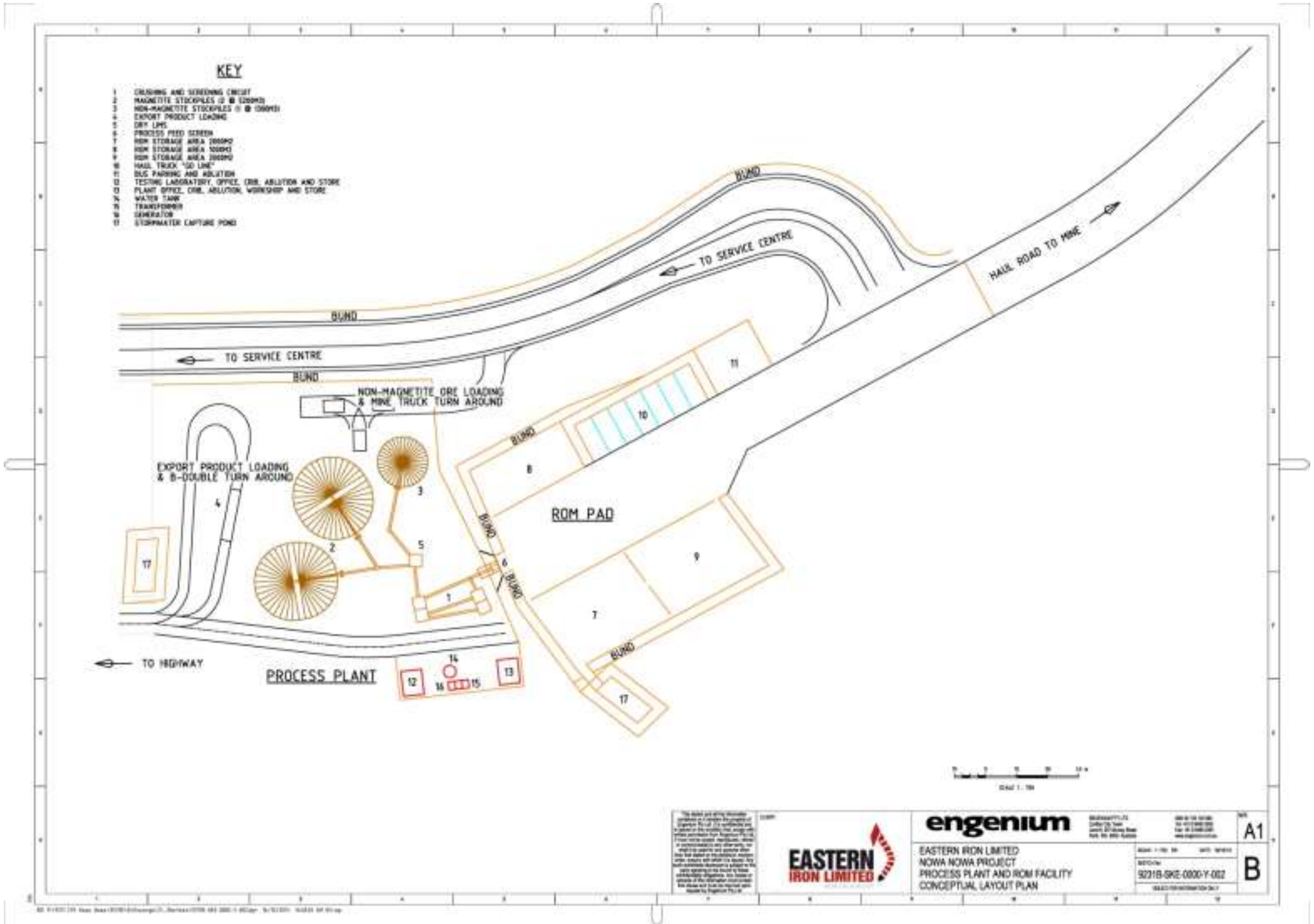

Figure 6.1 Process Plant and ROM Facility Conceptual Layout Plan (Engenium 2013)

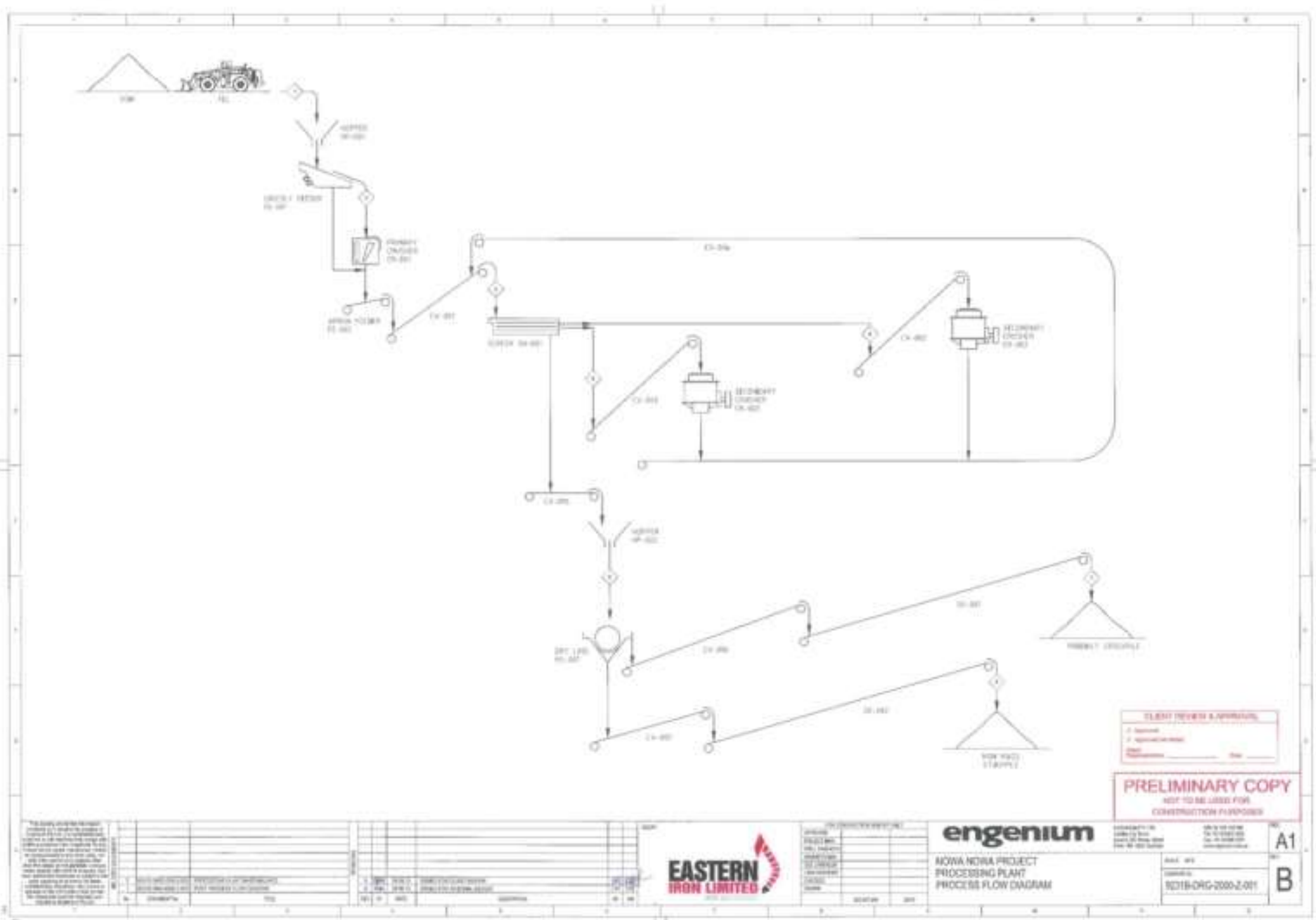

Figure 6.2 Preliminary Process Flow Diagram (Engenium 2013)

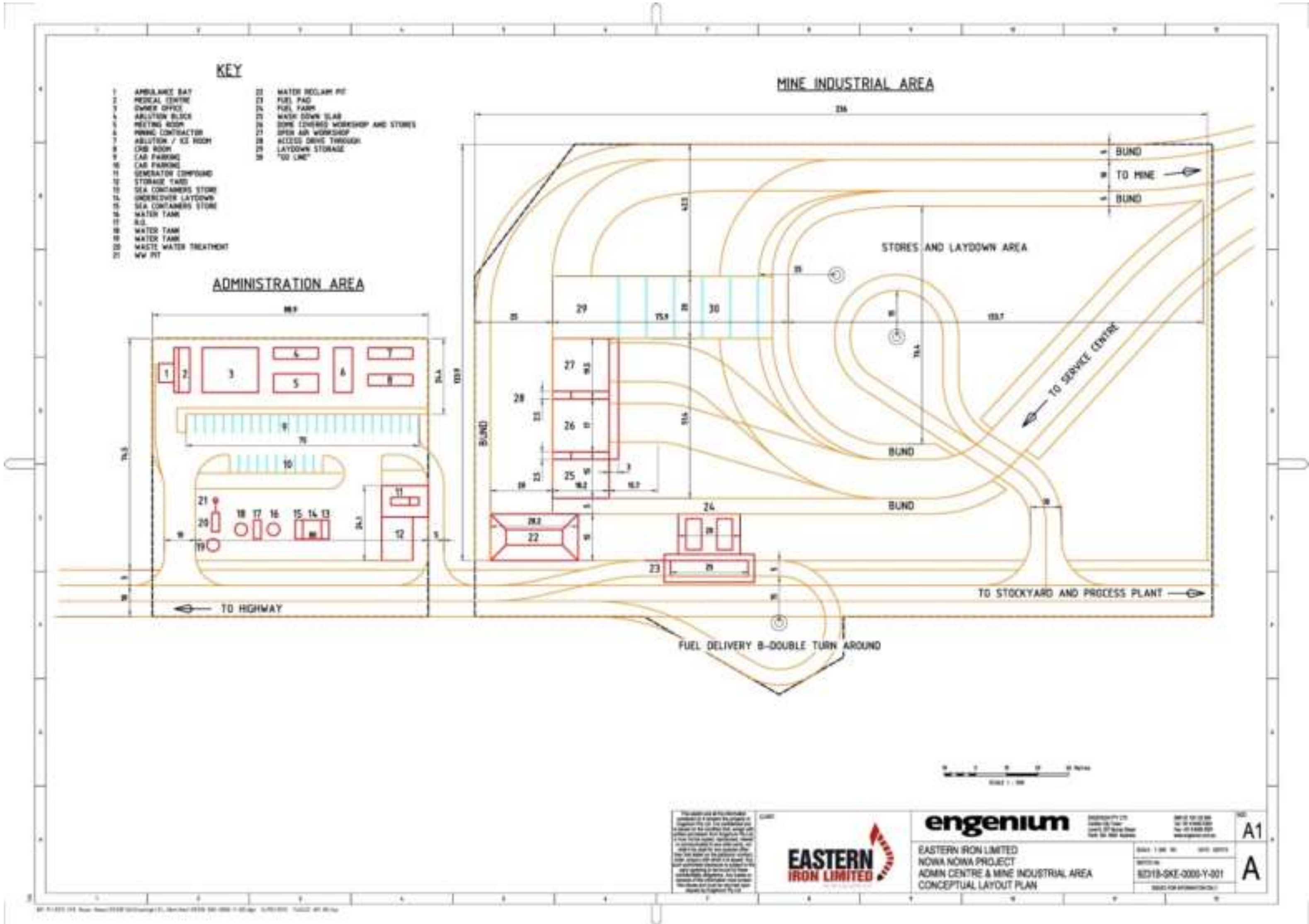

Figure 6.3 Administration Area and Mine Industrial Area Conceptual Layout (Engenium 2013)

6.3 Stockpiles

Separate stockpiles will be established at the stockyard for the product and non-magnetic low grade ore. Two product stockpiles have been allowed for, each with a three day production capacity. A single non-magnetic stockpile has also been allowed for with a three day production capacity.

It is proposed that the reclaiming of stockpiles will be undertaken by FEL. Product will be loaded into B-Doubles for transport to the Port (refer Section 9), whilst non-magnetic low-grade ore will be loaded into articulated dump trucks for transport to the Temporary Low-Grade Ore Stockpile (refer Section 7).

ROM ore and the LIMS product both require specific management measures during handling to avoid the release of salinity and/or near-neutral metalliferous drainage, as follows:

- To prevent the generation of acid drainage, ROM ore shall not be stockpiled under unsaturated conditions for more than ~2 years.
- Drainage from the ROM ore on the ROM pad has the potential to present with elevated levels of sulfate and dissolved metals such as copper, cobalt, cadmium, manganese, nickel and zinc. Drainage from the ROM pad will be contained and reused in processing or transferred to the Operations Water Storage for short-term storage and possibly treatment.
- To prevent the generation of acid drainage, the dry LIMS product shall not be stockpiled under unsaturated conditions for more than ~3 years.
- Drainage from the dry LIMS stockpile has the potential to present with elevated levels of sulfate and dissolved metals such as copper, cobalt, cadmium, manganese, nickel and zinc. Drainage from the stockpiled product is to be contained and treated if necessary.

6.4 Infrastructure

Infrastructure is required to support the ore processing operation. The following is expected to be required:

- Provision of power and water to operate the processing plant:
  - » Once the processing plant equipment has been selected the electrical load list can be completed and the power draw determined. This will enable sizing of the diesel fuelled generator sets.
  - » Process water to be used for dust suppression and moisture conditioning will be stored in a tank adjacent to the plant. Water would be sourced according to the details in Section 8.1.
- Maintenance facilities for servicing the processing plant and mobile equipment (e.g. FEL).
- Sample preparation laboratory.
- Site office, crib and ablution facilities with provision of services such as power, potable water and communications. The three buildings would all be transportable construction.

7 LOW GRADE ORE MANAGEMENT

7.1 Approach to Low Grade Ore Management

As a result of using the dry LIMS process described in Section 6.1 two streams will be produced:

- A magnetic stream which is the product stream, and
- A non-magnetic stream which is referred to herein as 'low-grade ore'.

The low-grade ore will be temporarily stockpiled up-gradient of the open pit during the life of the mine (Figure 1.3).

As per Figure 3.1, at the end of mine life, the low-grade ore will either be:

- Reprocessed (subject to approval);
- Sold; or
- Placed in the pit (subaqueous disposal).

Specific management measures during operations for the Temporary Low-Grade Ore Stockpile are as follows:

- Low-grade ore will be temporarily stockpiled upstream of the open pit in the upper Tomato Creek catchment (see Figure 1.3).
- Category C waste rock (or other waste rock if Cat. C is not available) will be used to construct a retention structure to contain the low-grade ore and prevent erosion and/or uncontrolled runoff from the stockpile.
- Drainage from the stockpile will be captured in a sump and pumped to the Operations Water Storage for treatment (if necessary) and reuse in ore processing and dust suppression.
- In the event that runoff inflows exceed sump/pump capacity, excess runoff from the stockpile will report to the open pit.
- If feasible, the northern extent of the open pit will be developed first and the low-grade ore backfilled into the completed northern pit during operations to minimise the potential for AMD generation and dust generation during operations, and reduce the footprint of the Temporary Low-Grade Ore Stockpile.
- The geochemistry of the low-grade ore and the chemistry of drainage from the stockpile will be monitored throughout operations to confirm potential treatment requirements.
- Treatment of drainage from the Temporary Low-Grade Ore Stockpile, if required, could involve the application of a suitable acid-neutralising agent (eg. calcium hydroxide) using a small portable dosing system.

7.2 Low Grade Ore Stockpile Construction and Management

The Project proposes to utilise FELs to load the mine dump trucks at the stockyard and haul the material to the Temporary Low-Grade Ore Stockpile. The scheduling of transport of low-grade ore to the stockpile will be clarified during the detailed design stage. A typical cross section of the Temporary Low-Grade Ore Stockpile is provided in Figure 7.1. Temporary retention walls for the stockpile will be constructed using Category C waste rock materials. Category A waste rock can be used if the amount of Category C waste rock is insufficient.

The Temporary Low-Grade Ore Stockpile will require regular dust suppression through the use of a water cart so that any fine material does not become airborne contaminants.

All run off from the stockpile will be contained in constructed sumps. Any excess drainage exceeding pump/sump capacity will report to the open pit.

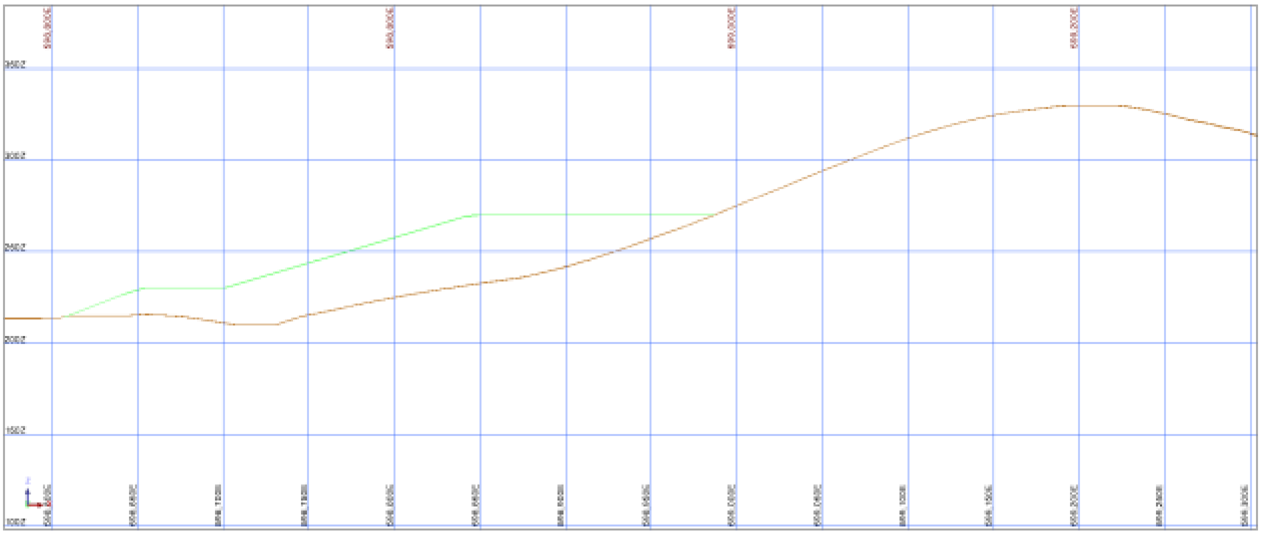

Figure 7.1 Typical cross section of the Low Grade Ore Stockpile (5,830,260 Northing).

7.3 Low Grade Ore Volumes and Composition

Final volumes of low-grade ore will be determined once the metallurgical test work programme, pit optimisation and mine scheduling is complete. Early indications are that a maximum of 20% of plant throughput would report to the non-magnetic stream thus resulting in approximately 200,000 tonnes per annum.

Testwork completed on three drill holes during the scoping study is shown in Table 7.1. Composite samples from additional holes are currently being tested to obtain additional information.

Table 7.1 -10 mm Non Magnetic Material

Hole Number	Fe (%)	SiO_2 (%)	Al_2O_3 (%)	P (%)	S (%)
NNDD012	31.0	21.9	7.03	0.057	12.04
NNDD013	26.7	35.4	9.06	0.071	2.55
NNDD014	48.6	12.9	3.11	0.036	8.96

8 WATER MANAGEMENT

8.1 Project Water Supply

The Project will require water during the construction and operations phases. Design indicates that approximately 180 ML will be required for construction over 8–10 months. During operations, overall consumption will be approximately 164 ML/year (accounting for recycling onsite).

8.1.1 Construction

The primary water requirements during the construction phase will be for the pre-conditioning of material for use in road and hardstand construction and dust suppression. During the early stages of construction, water for construction use will be extracted from the open pit dewatering bores. Once construction of the proposed water storages is complete (starting with the Sediment Control Dam), water for Project construction may be supplied from the water storages subject to water availability. Alternative water sources (eg. trucking in water from alternative sources) will be identified if proposed water supply options are insufficient for Project construction.

8.1.2 Operations

Approximately 164 ML/y of water will be required for operations. This figure includes:

- dust suppression (~104 ML/y);
- crushing and screening (~58 ML/y);
- vehicle wash down at the MIA (~9 ML/y); and
- potable water (~0.5 ML/y).

The Project will obtain water from:

- Surface water, including rainwater collected in the open pit (average of approx. 50–150 ML/y) and where necessary supplemented with catchment runoff (up to approx. 30–90 ML/y); and
- Groundwater from open pit dewatering bores and/or open pit sumps (estimated at 30–150 ML/y).

All water used during operation will be recycled where possible, including recycling of vehicle wash down water (80% recycled) and potable water (90% reused in operations).

In the unlikely event that water supply from the above sources is insufficient during any stage of Project construction and operations, the Project will source water from alternative sources. Alternative potential water sources include:

- Increased rate of groundwater abstraction from open pit dewatering bores;
- Groundwater extraction from an alternative borefield site (subject to approval); and
- Water delivered by truck from an alternative location.

8.2 Water Infrastructure

The main surface water infrastructure will include the three surface water storages as provided in Table 8.1:

Table 8.1 Surface water storages.

Storage	Max. surface area (m^2)	Max. water relative level (mAHD)	Av. depth (m)	Max. volume (ML)	Max. wall height (m)	Max. wall span (m)
Operations Water Storage	35,000	189	4.4	154	12.2	105
Sediment Control Dam	11,200	170	2.7	30	7.3	50
Clean Water Storage	16,900	163	2.9	49	6.8	65

It is expected that these storages will be constructed as typical earth dams. The dam wall specifications will be influenced by the geology in the creek bed and surrounding topography, and subject to approval from Southern Rural Water.

Groundwater extraction, for open pit dewatering, will be conducted via pit dewatering bores and / or sumps within the open pit.

A network of pumps, pipelines and sumps will be required for site water management.

Water treatment infrastructure will include a potable water treatment plant to supply the operations workforce and a wastewater treatment plant to treat sewage and other grey water (eg. kitchen, etc.) at the administration area.

8.3 Site Water Management

8.3.1 Management Philosophy

The objectives of the water management strategy which forms part of the Project design are to:

- Efficiently utilise water onsite by collecting site runoff and recycling water;
- Minimise potential hydrology, surface water quality and hydrogeology impacts during construction, operations and post-closure.

8.3.2 Site Water Management Strategy

These objectives were considered in the development of the site water management strategy, and the proposed Project arrangement has been designed to meet the proposed water management objectives. Key features of the proposed water management strategy are as follows:

- A dry LIMS process will be used for processing of ore. The dry and reagent-free process results in minimal water requirements for the Project and eliminates the requirement for a Tailings Storage Facility.
- The Project footprint will be constrained to the Boggy Creek catchment (only) to limit potential hydrology/water quality impacts to this catchment alone (ie. avoiding potential impacts to the Hospital Creek catchment).
- The open pit will be flooded post-closure and allowed to overflow into Tomato Creek with a positive water balance.
- A waste rock dump will be constructed upstream of the mine pit in Gap Creek such that all drainage from the top dump surface is channelled eastward for collection in a sump upstream of the dump. During operations, collected drainage will be pumped to the Operations Water Storage (see below), and any drainage exceeding sump/pump capacity will report to the pit. Post-closure, seepage from the dump reports directly to the pit, and surface runoff from the top of the dump is diverted into upper Tomato Creek and also ultimately reports to the pit.
- Low-grade ore and Category C waste rock will be temporarily stockpiled upstream of the pit in the Tomato Creek catchment and all drainage collected in a sump and pumped to the Operations Water Storage (see below). Any drainage exceeding sump/pump capacity will report to the pit. On mine closure, this temporarily stockpiled material will be backfilled into the pit for permanent safe storage under a permanent water cover (minimum 2 m).
- Three water storages will be constructed to capture site surface water runoff and facilitate mine water supply during operations (Figure 1.3). The three storages are as follows:
  - » An Operations Water Storage located immediately downstream of the open pit on Tomato Creek.
  - » A Sediment Control Dam located downstream of the open pit and MIA on Gap Creek.
  - » A Clean Water Storage, located downstream of the Operations Water Storage and MIA on Tomato Creek, upstream of the confluence with Harris/Gap Creek.
- A waste water treatment plant will be used to treat sewage, and treated waste water will be recycled for use onsite via the Operations Water Storage.

Operations Water Storage

- During operations, the Operations Water Storage will hold drainage from the following sources:
  - Waste Rock Dump;
  - Temporary Low-Grade Ore Stockpile and Category C waste rock pile;
  - Open pit;
  - ROM pad and stockyard;
  - Groundwater extracted for pit dewatering;
  - Recycled water from the wastewater treatment plant.
- During operations, the Operations Water Storage will be managed as follows:
  - Water for operational use will be preferentially abstracted from the Operations Water Storage to keep the water level as low as possible (in order to provide maximum storage capacity for high rainfall events).
  - Apart from a small direct catchment area, all inflows into the Operations Water Storage are pumped from sumps around the mine site. Pumping from the various sumps will be managed so as to ensure that the Operations Water Storage does not exceed capacity.
  - Excess drainage at the sumps upstream of the open pit (upper Tomato Creek and upper Gap creek) will, if necessary, be allowed to discharge into the open pit.
  - Surface seepage under the dam wall will be collected in a sump and pumped back into the Operations Water Storage.
  - Groundwater extracted for pit dewatering may be diverted to the Sediment Control Dam (to maintain environmental flows and offset up-stream capture of surface water) if operations water supply from the Operations Water Storage is sufficient.
- On mine closure, any remaining water in the Operations Water Storage will be pumped into the open pit to accelerate pit flooding after backfill of low-grade ore and Category C waste rock.
- Post-closure, the Operations Water Storage will be partially decommissioned as a wetland to passively treat overflow from the pit lake in the long term.

Sediment Control Dam

- The Sediment Control Dam will hold drainage from the proposed Project facilities located in the Gap Creek catchment and to allow for settling of suspended sediments.
- All Project Facilities will be arranged such that all drainage (excluding the ROM pad and Stockyard) will be directed into Gap Creek upstream of the Sediment Control Dam.
- During operations, the Sediment Control Dam will be managed as follows:
  - Water will be abstracted from the Sediment Control Dam for mine water use if the Operations Water Storage is dry.
  - Where possible, regular environmental flows will be maintained from the Sediment Control Dam (water quality permitting).
  - Groundwater extracted for pit de-watering may be diverted to the Sediment Control Dam (to maintain environmental flows and offset upstream capture of surface water) if operations water supply from the Operations Water Storage is sufficient.
- On mine closure, water from the Sediment Control Dam will be pumped into the open pit to accelerate pit flooding after backfill of low-grade ore and Category C waste rock.
- Post-closure, the Sediment Control Dam is to be decommissioned and the site rehabilitated if no alternative use for the dam is identified. Silt and clay recovered from decommissioning of the Sediment Control Dam will be used for construction of the impermeable layer of the waste rock dump cover system.

Clean Water Storage

- The Clean Water Storage will capture clean water to supplement site water resources. It will also provide another level of protection for the downstream environment in the extremely unlikely event of a failure of the Operations Water Storage.

- During operations, the Clean Water Storage will be managed as follows:
  - » Water will be abstracted from the Clean Water Storage for mine water use if the Operations Water Storage and Sediment Control Dam are dry.
  - » Where possible, regular environmental flows will be maintained from the Clean Water Storage.
- Post-closure, the Clean Water Storage is to be partially decommissioned as a polishing wetland (in addition to the decommissioned Operations Water Storage) to passively enhance water quality from the flooded open pit.
- Post-closure, if groundwater inflows are not determined to be sufficient, one or all three water storage dams will be used to provide water to assist with the rapid filling of the open pit so as to minimise the period that any sulfidic wallrock and backfilled mine materials are exposed.

Further information regarding the rehabilitation and closure of the water storages is provided in Section 13.3.5.

8.4 Erosion and Sediment Control

Sediment control is required to ensure compliance of off-site discharge water quality to prescribed standards. Erosion control is important to maintain the integrity of the mine infrastructure. Construction and operation activities will be managed to limit erosion that would otherwise result in high suspended loads discharging from the mine site.

A key aspect of the sediment transport control strategy will be the construction of the Sediment Control Dam as outlined in Section 8.2.

In addition, the following erosion control and sediment management measures will be implemented during the construction and operations phases of the proposed Project:

- Sequencing of construction activities to reduce erosion potential during the high rainfall months (winter to spring) and account for the implementation and deployment of erosion and sediment control measures.
- Vegetation clearance will be minimised, and vegetation will be preserved in areas where construction will occur at a later date.
- Vegetation on steep slopes and riparian corridors will be preserved where possible.
- Grading of the Process Plant and Administration areas to drain towards the Sediment Control Dam to allow for settling of sediment prior to discharge from site. A surface water diversion drain will direct drainage back to the Sediment Control Dam.
- Where practicable, access / haul roads will be graded to drain towards the Sediment Control Dam to allow for settling of sediment prior to discharge from site.
- Construction/installation of surface water management infrastructure (eg. cut-off/diversion drains, velocity dissipation devices, culverts) where appropriate to minimise and control surface water flow over disturbed areas.
- The WRD and Temporary Low-Grade Ore Stockpile will be located upstream of the open pit and drainage from these structures captured in sumps for pumping to the Operations Water Storage.
- Geotextiles and natural matting will be used where appropriate to assist with erosion control on steep slopes (ie. 3:1 or greater) where erosion potential is particularly high.
- Minimisation of dust (eg. water application to unsealed road surfaces).
- Installation of sediment control measures downstream of construction works and disturbed land areas (eg. silt fences, sediment basins, sediment traps, fibre rolls).
- Progressive revegetation of disturbed land areas, giving priority to high risk erosion areas such as steep slopes and sites close to rivers and creeks

The following strategies, adapted from the *Minesite Water Management Handbook* (MCA, 1997), will be implemented during road construction works:

- Clean surface runoff water will be diverted upstream of work areas.
- Roads will be designed to allow for frequent and safe discharge where runoff is concentrated.
- Roads will be constructed with maximum cross fall (cross-section) slopes of 3%. This will allow water to be cleared from the road surface quickly, but without creating deeply incised scour paths.
- On slopes, up-slope drainage will be diverted and discharge controlled. Drainage will be dissipated from the road surface by outsloping the camber or providing side drains or table drains with protection at the discharge points.
- Where side drains are installed to catch surface water from the pavement and runoff from cut bank slopes, the drains will be sized such that the design flow depth is no higher than the underside of the pavement top coarse or base coarse layer.
- Drains will preferably be directly off the road at cut and fill interfaces or otherwise down batter slopes at designated locations via erosion protected chutes.
- Culverts will be installed at road drainage crossings, perpendicular to the road alignment, with attention given to upstream and downstream erosion protection. If possible, culverts will be positioned at the narrowest part of the stream.
- Culverts will be designed with appropriate slopes to facilitate sediment movement without deposition and consequent culvert blockages.
- Drainage over the surface of drainage crossings will have adequate controls to ensure that sediment runoff to the stream is minimised.
- Permanent structures will be designed using an average recurrence interval of 50 years, and temporary structures will be designed using an average recurrence interval of 2 years (6 hour storm duration).

8.5 Dewatering Management Strategy

Mining is planned to occur below the water table. The pit will be dewatered to allow mining to continue, with groundwater pumped either from in pit sumps and pit dewatering bores. Extracted groundwater will be transferred to the Operations Water Storage. If water supply requirements permit, extracted groundwater may be transferred directly to the Sediment Control Dam to supplement environmental flows.

8.6 Treatment

The Project has been designed to avoid requirements for water treatment where possible. Water treatment requirements for the Project are expected to be limited to the following:

- Installation of a water treatment plant to produce potable water, and
- Installation of a waste water treatment plant to treat sewage.

Sewage treatment facilities will be required to treat raw sewage from various sources including toilets, basins and kitchen facilities. Raw sewage treatment facilities will be installed as part of the Administration Area and MIA (see Figure 6.1).

8.7 Environmental Monitoring Locations

The proposed environmental monitoring program is detailed in the ***Environmental Management Plan*** (EES Referral Attachment 2).

9 ORE TRANSPORT

The saleable product produced at the processing plant will be loaded into standard B-double trucks (42 t net) and trucked approximately 234 km by road to the SEFE wharf and ship loader on the south side of Two Fold Bay at the Port of Eden in Edrom, NSW. The proposed transport route is illustrated in Figure 9.1.

The majority of the transport route between the mine and the Port is via the Princes Highway. It is proposed to access the Princes Highway from the mine site by travelling west from the site onto Bruthen-Buchan Road, south-west along Bruthen-Buchan Road to Nowa Nowa Road, and south-east along Nowa Nowa Road to the Princes Highway. Trucks will then use Edrom Road to access the SEFE site from the Princes Highway in NSW (as the only road available to the Port). All roads are approved for existing B-Double use.

It is proposed to operate B-Doubles on the transport route, 24 hours a day Monday to Friday (day and night shift), with additional daylight operations on weekends (if required).

For the purposes of managing the route, it has been assumed that a transport depot will be established in either Newmerella or Orbost ('the Transport Depot'). The final location of the Transport Depot will be at the discretion of the transport contractor and subject to Council approval.

The Transport Depot will allow the route to be split into two legs – the mine to depot run and depot to port run. Trailers would be decoupled at the depot in addition to driver rest breaks, refuelling and maintenance. Both sections of the transport route will operate two 12 hour shifts.

According to AECOM, the only capital works required will be the construction of a mine site access road and resultant intersection at Bruthen-Buchan Road (EES Referral Attachment 7). Whilst the mine site access road will be a formed, unsealed gravel road, the intersection will be nominally sealed for 100 m into the site to limit the amount of gravel brought onto the road and increase the life of the intersection.

As part of the ***Traffic Impact Assessment*** (EES Referral Attachment 7), trip generation and distribution calculations were undertaken for both the construction and operational phases of the project. These indicate that the mine is likely to increase traffic volumes on the surrounding road network by up to:

- 128 light vehicles and 6 heavy vehicle trips per day during the construction phase; and
- 216 light vehicles and 368 heavy vehicle trips per day during the operational phase.

It is expected that the existing road network will be able to accommodate this increase in traffic and as a result no upgrades to the road network are required.

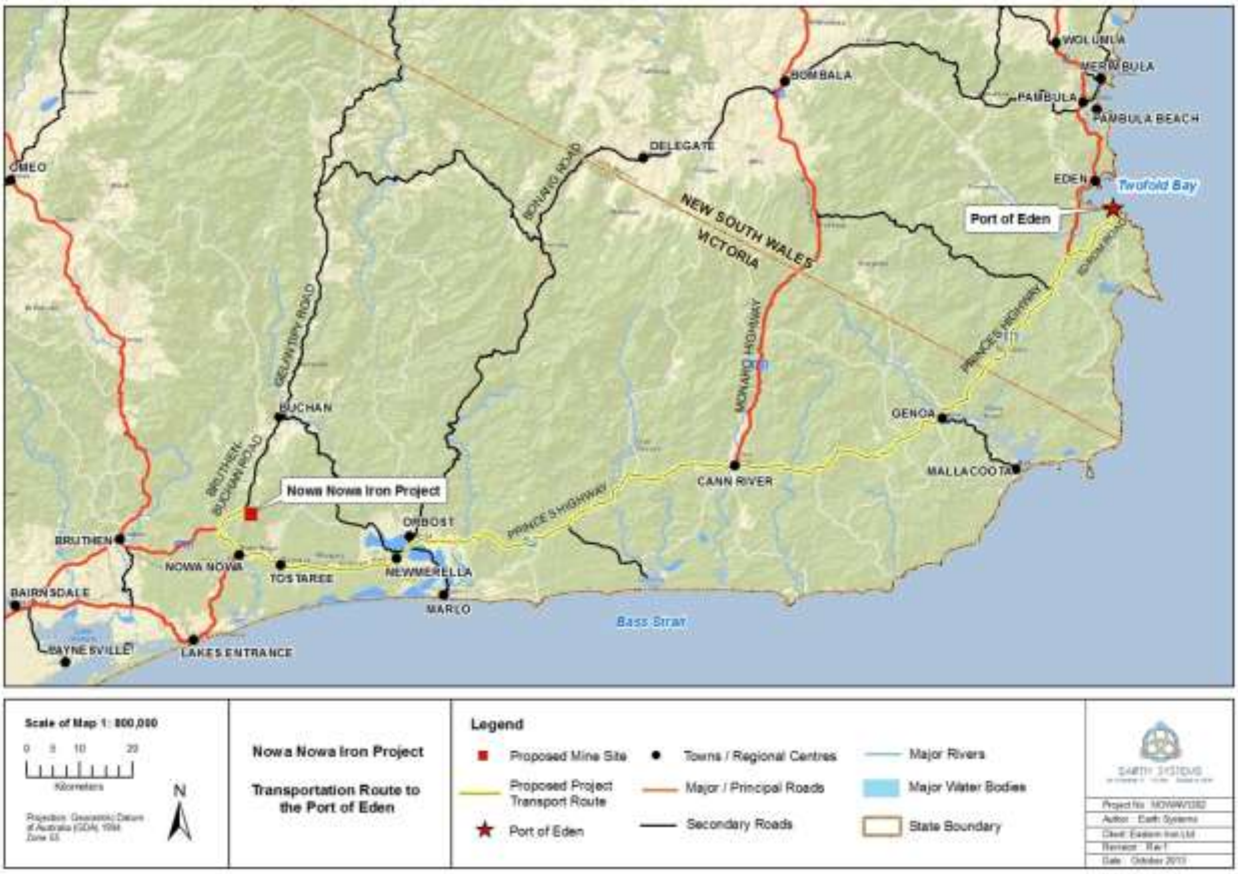

Figure 9.1 Product transportation route to the Port of Eden.

10 PORT FACILITIES

Eastern Iron proposes to utilise the SEFE wharf and ship loader on the south side of Two Fold Bay at the Port of Eden in Edrom, NSW. The wharf is a privately operated by South East Fibre Exports Pty Ltd (SEFE) under a long term lease and is currently used principally for woodchips, however it may be used for other bulk commodities. It consists of a T head jetty with centre loading point and five mooring dolphins.

Eastern Iron has entered into a Memorandum of Understanding (MoU) with South East Fibre Exports Pty Ltd (SEFE) to stockpile the ore at the site and co-share the existing ship loading facility at the site. The wharf and ship loader is currently underutilised and capable of taking 50,000–60,000 t vessels.

Assuming 1 Mt of ore is mined per year, approximately 800,000t of product will be exported via the SEFE wharf per annum. This equates to 15 vessels a year under the existing wharf limits.

The existing port operations are contained within a high woven wire electrified fence. Access to the site is controlled via one main entrance gate on Edrom Road, which leads past the security office and into site. No changes are proposed to this existing situation.

The SEFE operations maintain approval to operate 24 hours a day, 7 days a week; although a recent downturn in forestry activity means that the site is not currently running at maximum capacity.

The main access gate continues to be manned 24 hours a day which will allow truck deliveries to continue in accordance with the hours proposed. Trucks are proposed to enter the site via the main gate and travel in a north-west direction to the stockpile site. Trucks will then unload and exit via the same road to avoid travelling through the existing log yard.

10.1 Ore Stockpiling

A conceptual layout of the proposed ore stockpiles is provided in Figure 10.3. The ore stockpiles are proposed to be located at the existing wood waste incinerator site which is planned to be dismantled. It is likely that the base of the stockpiles will be constructed using sacrificial material to form the necessary compaction.

Stockpiling will include two stockpiles each holding approximately 14,000 to 15,000 m^3. At a bulk density of approximately 1.9 t/m^3, this would equate to a maximum of approximately 60,000 tonnes of ore being stored at any one time.

The stockpile site will be engineered to ensure that any surface water runoff is captured and treated via the existing Waste Water Treatment Plant (WWTP) in accordance with the terms of the NSW EPA Licence applying to the property.

10.2 Ship Loading

Ship loading will require a new reclaim area and a new conveyor system to connect with the existing SEFE infrastructure and wharf loader.

The existing conveyor system used for woodchips will be cleaned after ship loading to prevent any cross contamination between the ore and woodchips, consistent with operations at numerous other wharf loading facilities in Australia.

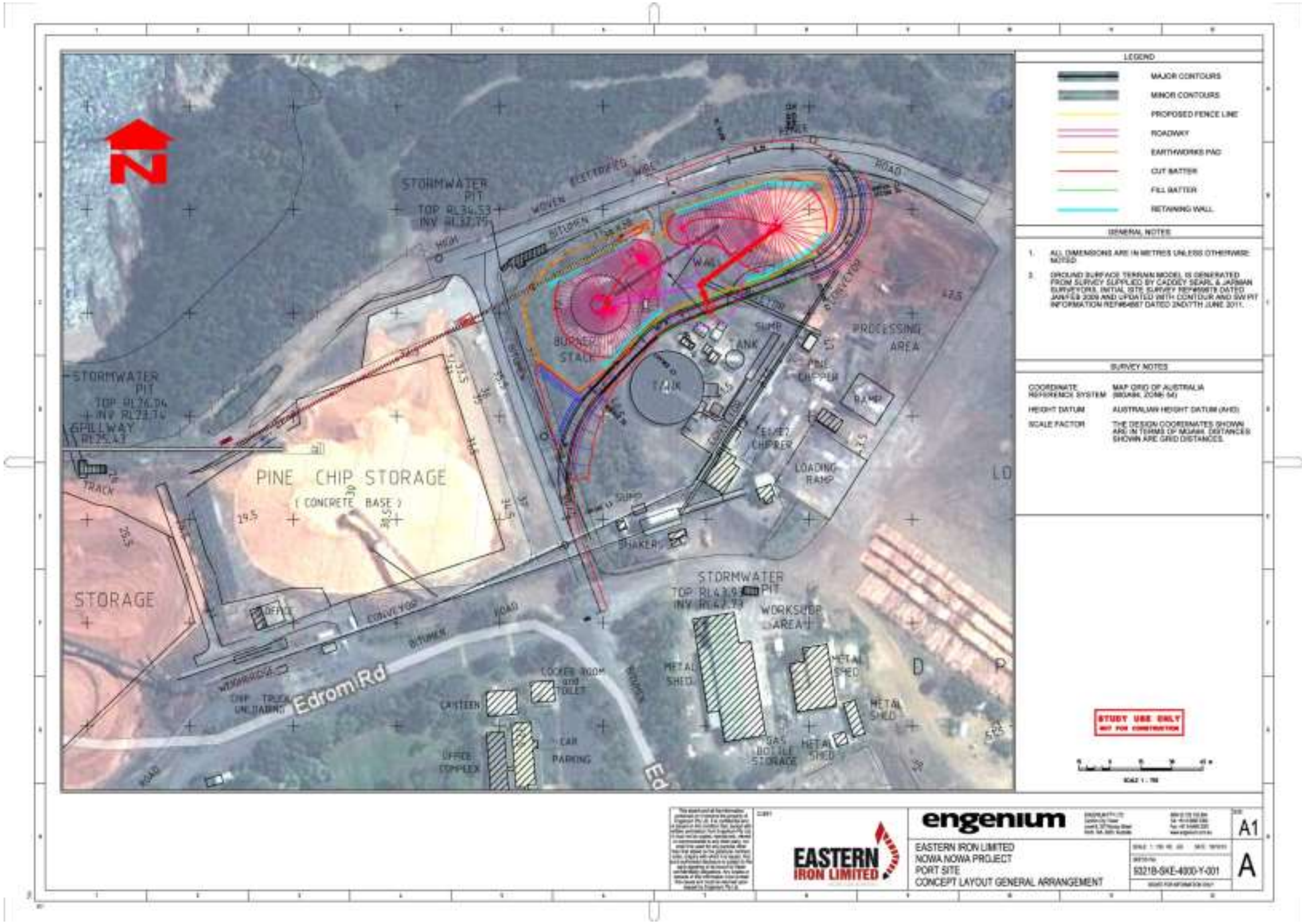

Figure 10.1 Conceptual layout of ore stockpiles and proposed works at SEFE Wharf (Project stockpiles indicated in red)

11 OTHER ASPECTS

11.1 Workforce

A construction manning exercise was completed to determine peak and average numbers during construction. Crew sizes were calculated for the various packages of work and a construction sequence produced which will be refined once the preliminary project execution schedule is developed. Once fully operational the mine is expected to provide up to 120 Full Time Equivalent (FTE) positions, including haulage contractors.

The mine is located close to a number of regional centres. It is therefore proposed that no camp will be constructed and the workforce will be drive in / drive out.

In addition to the manning estimates above, there will also be a requirement for construction crews at the Port. The manning schedule for site works at the Port has not been developed, however it is estimated that a total workforce of approximately 30 people will be required during the construction phase. The shipping operations will be conducted by SEFE's existing workforce at the wharf.

11.2 Magazine Storage Facility

Minimal ANFO will be stored on site. Ammonium Nitrate will be stored as a component for mixing ANFO directly prior to blasting. These materials will be stored in a magazine storage facility located on a slope to the east of the mine industrial area and processing plant (Figure 1.3).

Design and location criteria for the Magazine Storage Facility were identified based on relevant Australian legislation, standards and guidelines, as well as consultation with WorkSafe Victoria. The facility will be securely fenced to prevent public access. Relevant legislation and standards include:

- Dangerous Goods (Explosives) Regulations (2011)
- AS 2187.1 Explosives - Storage, transport and use – Storage (1998, Amended 2000)

The design of the Facility is indicated in Figure 11.1 and includes the following dimensions:

- Pad is 90 by 70 metres;
- 2 x 40' shipping containers;
- 2 metre offset around the containers;
- Bund is 6 metres high, the batter slopes 1V:2H;
- 3 metres at the top of the bund to facilitate construction;
- Access road around the bund is 10 metres wide with a 15 metre radius at the corners; and
- 20 metres out the front of the containers.

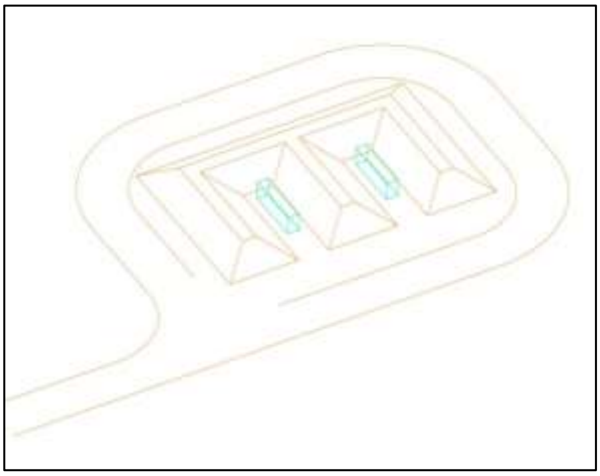

Figure 11.1. Preliminary layout of Magazine Storage Facility with containers indicated in green (Engenium 2013)

11.3 Power supply

It is estimated that the Project will require a maximum of approximately 1.2-1.5MW of power during operations. Power is required at a number of locations at the mine site including:

- Administration Area;
- MIA;
- Processing Plant;
- Mining Contractor's Go Line Facilities; and
- At various bore locations.

The use of mains power via the existing 22 kV circuit that runs next to Bruthen-Buchan Road past the Mine entrance was considered, but was not considered feasible for the Project (refer EES Referral Attachment 4).

The Project plans to utilise diesel-fuelled generator sets to provide power. The engineering design of the generator sets as part of the feasibility study is currently underway. The approach currently being considered includes:

- A pair of generators powering the Administration Area and MIA;
- A set of generators at the processing plant;
- Individual generators at ground water bore and surface water pump locations; and
- An additional generator at the fuel farm (if required).

Eastern Iron is investigating the potential for alternative fuel sources to be used for on-site generation including Compressed Natural Gas (CNG) and biofuels.

11.4 Telecommunications

Communications are currently being investigated. The following is being considered:

- Options include microwave and VSAT for data and voice.
- Mobile phone coverage currently extends over the project site. The existing network will not be enhanced by Eastern Iron.
- Radio communications will be in the form of UHF or VHF.

11.5 Mine Access and On-Site Transportation

A number of access roads are required to be constructed. The main road is the mine access road which will commence at an intersection with Bruthen-Buchan Road (in the vicinity of Tomato Track) and extend to the processing plant hardstand (length approximately 1 km). The mine access road will pass the security gate, administration centre, MIA and stockyard.

The road will be constructed from locally won gravel with the bulk of the material coming from pre-strip activities. The running surface of the road would be approximately 10 metres wide and would be a formed, unsealed road.

Other access roads will connect to infrastructure such as the explosives magazine and water storage dams (combined length approximately 1.5 km). These roads are illustrated in Figure 1.3.

A sealed asphalt intersection has been proposed to protect Bruthen-Buchan Road from potential damage from the turning movement of loaded B-Doubles and limit the amount of gravel brought onto the arterial road. This intersection will be designed in accordance with the *Austroads Guide to Road Design – Part 4A: Unsignalised and Signalised Intersections*. The intersection design will incorporate the following turn treatments:

- The right turn treatment (BAR) features a widened shoulder on Bruthen-Buchan Road that allows through vehicles, having slowed, to pass to the left of turning vehicles.
- The left turn treatment (BAL) on Bruthen-Buchan Road has a widened shoulder, which assists turning vehicles to move further off the through carriageway making it easier for through vehicles to pass
- The left turn treatment (BAL) on the minor road allows turning movements from a single lane with a shoulder that is too narrow to be used by left turning vehicles (to prevent drivers from standing two abreast at the holding line)

A concept sketch of the intersection design is provided in Figure 11.2. Detailed design guidance for the intersection is provided in Appendix B of EES Referral Attachment 7.

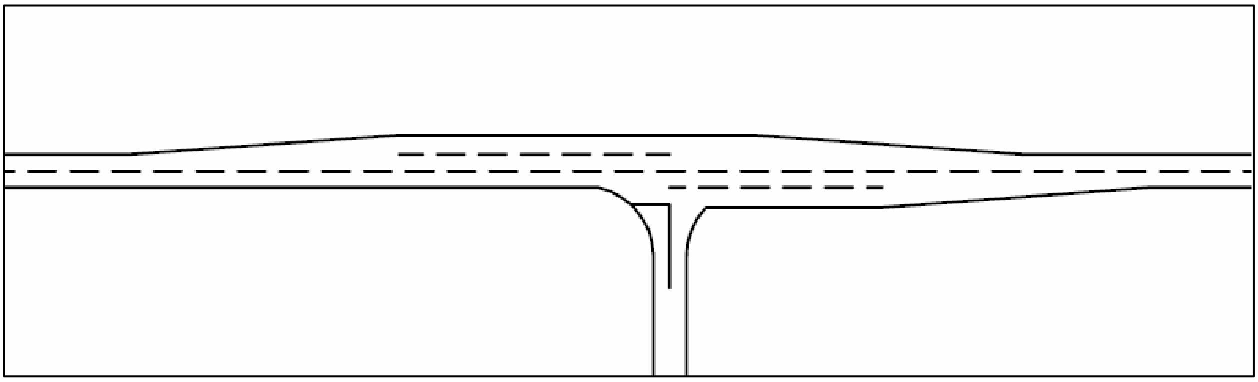

Figure 11.2 Basic Rural Turn Treatment Concept Design (AECOM, 2013)

11.6 Nowa Nowa-Buchan Road Realignment

The proposed mine footprint impacts on the existing Nowa Nowa-Buchan Road, affecting approximately 1.8 km of its length. To maintain continuous connection between Forest Road (in the south) and Bruthen-Buchan Road (in the north), it is proposed to divert the Nowa Nowa-Buchan Road around the eastern side of the mine footprint as shown in Figure 1.3.

The proposed diversion has been designed to avoid steep grade changes along its length and to ensure ongoing heavy vehicle use (i.e. forestry) can be safely maintained.

11.7 Fire Management

The Project will be developed consistent with the appropriate Planning Scheme requirements under the Bushfire Management Overlay (BMO) in relation to construction standards, defendable space, water supply and access. These aspects will be maintained to the satisfaction of the responsible authority and the CFA on a continuing basis.

Defendable space requirements for certain mine site infrastructure generally comprises an inner and outer zone with prescribed vegetation management requirements. Based on the requirements of *Practice note 65 – Bushfire Management Overlay and Bushfire Protection: Planning Requirements* (DPCD, 2011), a requirement to achieve a bushfire attack level of BAL-29 or less has been determined for the buildings at the mine site. Based on the vegetation and slopes at the site, inner and outer zones of 39 and 20 metres respectively will be required to be maintained around buildings.

The table below sets out the requirements that will be adhered to for vegetation management within inner and outer zones in accordance with the *Planning for Bushfire Victoria* guidelines (CFA 2012).

Table 11.1 Vegetation Management Requirements (CFA 2012)

Inner zone	• Within 10 metres of a building, flammable objects such as plants, mulches and fences must not be located close* to vulnerable parts of the building such as windows, decks and eaves. • Trees must not overhang the roofline of the building, touch walls or other elements of a building. • Grass must be no more than 5 centimetres in height. All leaves and vegetation debris are to be removed at regular intervals. • Shrubs must not be planted under trees and must be separated by at least 1.5 times their mature height. • Plants greater than 10 centimetres in height at maturity must not be placed directly in front of a window or other glass feature. • Tree canopy separation of 2 metres and the overall canopy cover of no more than 15 per cent at maturity. • Tree branches below 2 metres from ground level must be removed.
Outer zone	• Grass must be no more than 10 centimetres in height and leaf and other debris must be mowed, slashed or mulched. • Shrubs and/or trees must not form a continuous canopy with unmanaged fuels. • Tree branches below 2 metres from ground level must be removed. • Trees may touch each other with an overall canopy cover of no more than 30 per cent at maturity. • Shrubs must be in clumps of no greater than 10 square metres, which are separated from each other by at least 10 metres.

* Close is considered to be 1.5 to 2 times the mature height of the fuel.

In order to prevent the ignition of a fire at the Project site, and appropriately respond to fires if they occur, the following additional controls will be implemented:

- Spark arrestors will be fitted and operational on all machinery and equipment.
- Work areas will be kept clear of dry or dead vegetation.
- Combustible materials will not be stored near any potential sources of ignition.
- All structures and facilities will be equipped with fire extinguishers, including vehicles and machinery.
- General and hazardous waste, oils and grease will be removed from site.
- Any spillages or leakages of flammable solvents or materials will be cleaned up immediately.
- Electrical appliances and equipment will be regularly serviced and maintained.

Provision for fire fighting equipment will be designed and installed according to the Building Code of Australia and Australian Standards. This may involve the installation of fire tanks, pump sets, fire hose reels and fire hydrants (as necessary). The design will be developed and discussed with input from the Country Fire Authority.

Additionally the water cart to be used for dust suppression can be equipped with a hand held water cannon if required.

11.8 Medical Services

A qualified medic will be present at the mine site during the day shift, and on-call during the night shift. An ambulance will also be situated on-site and equipped with medical trauma response equipment to act as the primary first-aid facility.

Initial emergency response at the mine would be through the Emergency Response Teams (ERT). If the injuries sustained require medical attention the injured persons will be taken to the nearest suitable hospital.

In the event a major injury occurs, the medic will transport the injured person to Bairnsdale Regional Health Service. If it is a minor injury or illness then it is likely that Orbost Regional Health would be suitable.

11.9 General Waste Management

It is proposed that all general waste will be removed from site. There is no current plan to construct a tip on site.

All hazardous waste (i.e. hydrocarbons, batteries etc.) will also be removed from site and disposed of appropriately.

11.10 Fuel

The refuelling facility for the mine would be a packaged facility supplied complete from the fuel supplier. The facility consists of a master self bunded tank which incorporates all the necessary pumps, hoses and appurtenances to enable the refuelling of light vehicles and service trucks. It also contains all of the necessary equipment to facilitate the refilling of the facility via fuel truck tankers.

Self-bunded slave tanks of similar capacity may be added to the master tank as required obtaining the necessary capacity for the mining operation. Fuel consumption is currently unknown and therefore the size of the tanks has not been calculated.

The facility would require construction of an impervious concrete refuelling slab with a collection sump where oily water could be treated before being released.

12 PRELIMINARY PROJECT SCHEDULE

A preliminary Project execution schedule is being prepared as part of the DFS, which is due for completion before the end of 2013. The proponent will be in a position to proceed to mining (subject to completion of the DFS), upon receipt of all relevant approvals.

Based on current timeframes, the Proponent is aiming to obtain all relevant approvals and commence detailed design/procurement and construction in the second half of 2014.

The Construction Phase, including clearance and pre-strip activities, is expected to take approximately 8-10 months. Accordingly, the Proponent is aiming to deliver the first shipment of product in the second or third quarter of 2015.

The Project mine life is estimated at 8-10 years subject to mining rates and further exploration success.

13 REHABILITATION AND CLOSURE

13.1 Introduction

The rehabilitation and closure plan is based on the principle that planning for mine closure is an integral part of mine development and operations planning and should be initiated during feasibility studies. The closure strategy has been incorporated into the design of the key Project components (e.g. open pit, waste rock dump, temporary low-grade ore stockpile, processing plant, and water storage facilities). Upon decommissioning and closure, further actions will be required to ensure long-term geotechnical and geochemical stability for each of the Project components and to ensure that post closure land use objectives and completion criteria have been met.

Mining projects are dynamic operations and closure planning is therefore an adaptive process. Uncertainties associated with closure strategies will reduce as stakeholder expectations are determined, rehabilitation techniques are refined and closure investigations are completed. The role of the closure planning process is to manage uncertainty and the attendant risks in the life-cycle of the mine to ensure that closure objectives will be achieved. Some elements of closure and rehabilitation planning will therefore be dynamic, subject to periodic review and refinement to account for changes to the mine plan, improvement of site closure knowledge-base and evolving stakeholder expectations.

The rehabilitation and closure strategy below summarises the methodologies devised for decommissioning the key Project components and provides the framework for rehabilitation strategies that Eastern Iron will incorporate into the final closure strategy. A detailed framework for the implementation of decommissioning, closure, rehabilitation and associated monitoring is provided in the ***Environmental Management Plan*** (EES Referral Attachment 2).

Eastern Iron will produce a stand-alone *Mine Rehabilitation and Closure Plan* as part of the approvals process for the Project. This plan will be reviewed and updated periodically as required.

13.2 Key Rehabilitation and Closure Principles

The strategies that Eastern Iron will implement to ensure rehabilitation and closure meets regulatory requirements, closure criteria and stakeholder expectations are based upon the following principles:

- The Project is designed and will be constructed in a manner that facilitates effective rehabilitation and closure;
- Post-closure landforms will be geochemically and geotechnically stable;
- Surface and groundwater will be managed to ensure that post-closure discharge to downstream receiving waters will be of suitable quality to meet regulatory requirements and closure criteria;
- Post-closure groundwater rebound and diversion of surface water into the mine pit will provide adequate water to ensure that the pit lake overflows regularly into Tomato Creek, ensuring a permanent water cover over mine materials backfilled into the pit (unsold low-grade ore and Category C waste rock) during progressive rehabilitation and decommissioning;
- Progressive rehabilitation and revegetation will be conducted where possible and within the earliest practicable timeframe;
- Topsoil will be recovered and stockpiled during construction for rehabilitation and revegetation during operations and upon closure;
- Revegetation efforts will be conducted using native species of local provenance (unless stakeholder consultation identifies agriculture or plantation forestry for desired end land use);
- All applicable stakeholders will be engaged for final end land use determination and completion criteria;

- Regulatory requirements for decommissioning and closure will be fulfilled; and
- Closure outcomes will meet corporate objectives.

13.3 Rehabilitation and Closure of Key Project Facilities

13.3.1 Open Pit

A concept plan for closure and rehabilitation of the pit is provided in Figure 13.1. The rehabilitation and closure strategy for the open pit is as follows:

- The pit will remain in place post-closure.
- Post-closure, the open pit is designed to flood and overflow regularly into Tomato Creek. The overflow level of the pit lake is approximately 190 mAHD, and the premining peak groundwater level in the pit area is approximately 187 mAHD (see Figure 2.1). The post-closure flood level of the pit is therefore designed to be marginally higher than the premining groundwater level, and will provide a water cover of >100 m over the backfilled materials. The post-closure water balance indicates that the pit lake will overflow regularly into Tomato Creek in the long term.
- Backfilling of Category C waste rock and low-grade ore (if any remains) into the pit is to be conducted in a manner that prevents the backfilled materials from becoming perched on benches above the height of the final waste rock pile. Perched material may not remain permanently under water and has the potential to present a long-term water quality risk.
- A layer of acid-consuming materials (eg. Category N waste rock) and organic material should be laid over the backfilled materials in order to promote the activity of sulfate-reducing bacteria in the base of the pit lake.
- The pit lake is designed to provide passive treatment for all inflows through a combination of retention time, sulfate reduction by sulfate reducing bacteria (SRB), and acid neutralisation by alkalinity produced by SRB activity and the dissolution of limestone, and alkalinity brought in by groundwater.
- The post-closure pit will have highwalls of 30–40 m in height (above the pit lake water level) on the western and eastern sides exposing volcanics (see Figure 13.2). Some sulfide oxidation is expected in these exposed highwalls in the long term, but geochemical assessment shows that no acid drainage will be produced. Based on observations from historical quarries in the area, this oxidation only appears to occur on rock surfaces and is expected to be limited. All drainage from the exposed highwalls reports to the pit for passive treatment.
- As the pit is flooded, any acidity or salinity generated in the groundwater drawdown cone during operations will be flushed into the pit. The chemistry of pit lake water will be monitored throughout the flooding operation to identify whether treatment (eg addition of limestone or calcium hydroxide) may be required in this initial flood period.
- To minimise the period that wall rock is exposed to atmospheric oxygen on closure and to dilute potentially mildly saline water inflows, flooding of the pit will be augmented by pumping from the Clean Water Storage and Sediment Control Dam (in addition to natural inflows from groundwater and upstream runoff) prior to decommissioning of those storages.
- During decommissioning, the pit's stability will be considered in line with expected future land uses of the area. It is expected that the designed pit slope angles will remain stable beyond the operating mine life and into closure.
- Main ramp accesses into the pit will remain allowing access to the final water level. This will allow wildlife and/or personnel safe access. The top area of the pit will be protected from general access by a substantial bund formed around the pit perimeter and fencing where necessary. This bund will be vegetated and expected to be a permanent feature post closure. It is not intended to provide any vehicle access to the pit area.

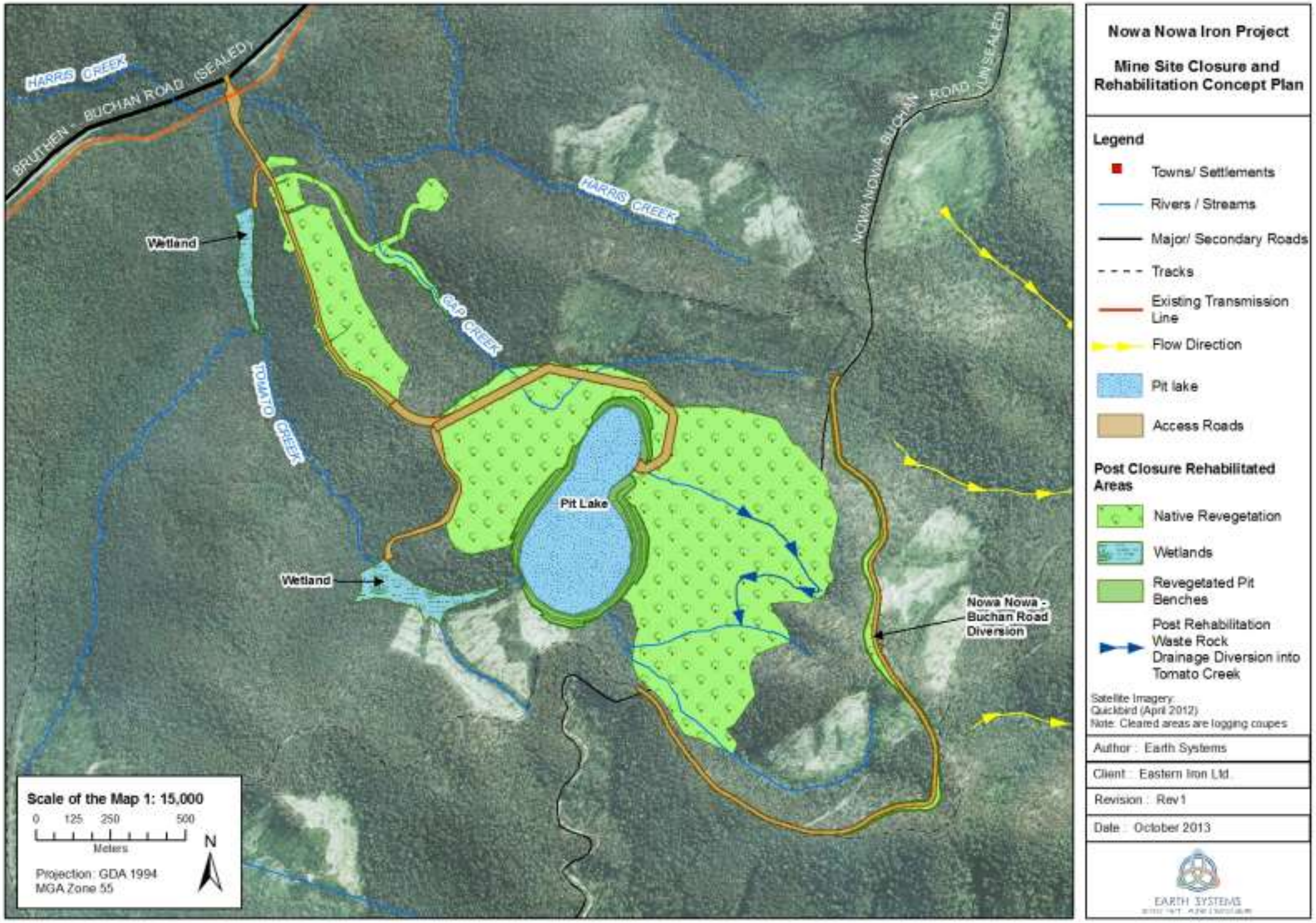

Figure 13.1 Mine Site Closure and Rehabilitation Concept Plan

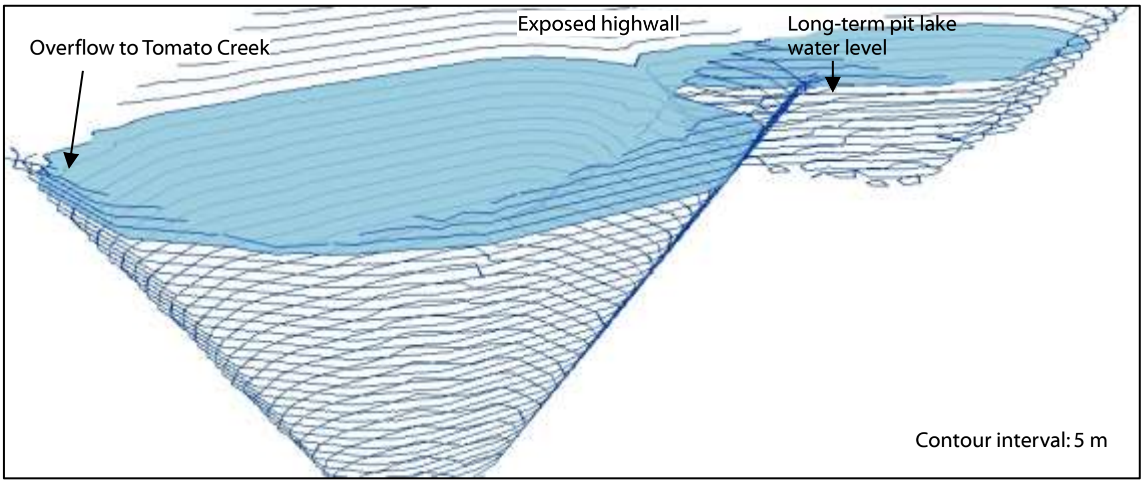

Figure 13.2 Preliminary pit shell showing design long-term pit flood level (approx. 190 mAHD).

13.3.2 Waste Rock Dump

The Waste Rock Dump (WRD) construction methodology, objectives and principles (detailed in Section 4) form the basis for the rehabilitation and closure strategy for the WRD. The construction principles devised to promote geochemical and geotechnical stability during operations will provide the framework for ensuring long-term stability of the facility post-closure. The primary features of design and construction that will facilitate closure include:

- The WRD will be located immediately upstream of the open pit and entirely within its catchment to provide for control of seepage and runoff from the facility;
- The WRD will contain only Category A, B and N waste rock, and Category B waste rock will be encapsulated within Category A/N waste rock to minimise AMD generation;
- The WRD will be constructed in a manner that ensures long-term geotechnical stability post-closure. This will be achieved through diversion of upstream surface water around the WRD, ground-up construction and compaction to inhibit water percolation, progressive rehabilitation with grading and planting of each lift conducted after the completion of each lift, and the ultimate development of a uniform and low-angle slope (<20°).

Upon decommissioning, the following actions will be undertaken to further provide for long-term geochemical and geotechnical stability:

- Downstream seepage from the WRD will report to the mine pit (pit lake);
- The waste rock dump is to be completed with a cover system that minimises the infiltration of water into the dump and maximises runoff generation. This cover system will require an impermeable layer (such as clay) to prevent infiltration and an overlying armour layer (coarse rock) to prevent erosion. Basal clays from the water storages will be available as impermeable materials for the dump cover system once the storages are decommissioned.
- The area of the top surface of the dump is to be maximised and graded to the east to allow all runoff to be captured at the upstream end of Gap Creek and diverted into the adjacent Tomato Creek catchment (using the new topography). The surface should be gently sloping and channelled to maximise runoff capture and minimise erosion.
- Clean catchment water collected from the waste rock dump is to be channelled around the top of dump into the adjacent Tomato Creek catchment to ultimately report to the open pit.
- Drainage from the waste rock dump will report to the pit post-closure for passive treatment. The chemistry of leachate from

the waste rock dump is to be monitored throughout operations to confirm any potential requirement for additional treatment.

- Stockpiled topsoil will be spread along the contour following final WRD shaping and keyed to the WRD surface during the first dry season following decommissioning.
- The WRD will be revegetated according to the methodology detailed in Section 13.4.3. It is anticipated that native grass species will be seeded for rapid establishment to enhance geotechnical stability and native deciduous tree species will be planted to further enhance stability, promote transpiration, and to provide organic matter (carbon) to the decommissioned open pit (refer to Section 13.1.1).
- The final waste rock dump landform will be engineered so as to minimise erosion potential, runoff and infiltration into the dump, while maximising the catchment drainage reporting to the mine pit post-closure. A landform with a flat top and relatively gentle slopes (maximum 20°) could satisfy these objectives.

13.3.3 Temporary Low-Grade Ore Stockpile and Category C Waste Rock Stockpile

Upon Project decommissioning, any remaining low-grade ore and all Category C waste rock (temporarily stockpiled in the upper Tomato Creek catchment during operations) will be backfilled into the mine pit for permanent safe storage under a permanent water cover (minimum 2 m) to prevent sulfide oxidation.

Backfilling is to be conducted in a manner that prevents backfilled material from becoming perched on benches (and thus potential exposed to the atmosphere after the pit is flooded).

Progressive rehabilitation of the low-grade ore stockpile is being considered. For this scenario, the northern extent of the open Pit could be excavated first, to its final depth of approximately 60 m. Some or all of the low-grade ore material that would otherwise be stockpiled above ground would instead be stored at the base of the northern portion of the pit, eliminating the need for double handling of this material. This situation would be possible provided that overall ore production schedules for the Project would allow the northern extent of the pit to be sufficiently mined in advance of material placement needs.

13.3.4 Plant Area

Prior to construction of the Processing Plant and ancillary facilities, the surface will be graded to promote surface water drainage to the east, toward Gap Creek and the downstream Sediment Control Dam (refer to Section 13.1.5).

Upon decommissioning, the following activities will be conducted:

- The Plant and ancillary facilities will be dismantled, with material removed from site.
- Materials may be sold for scrap to local merchants, removed off-site for recycling, or transported to an appropriate disposal facility;
- Soil testing will be undertaken to identify soil contamination, if applicable;
- Any building materials, foundations or soil contaminated by metals, hydrocarbons or other contaminants will be remediated and/or removed from site and disposed of in an appropriate dumping facility; and
- All exposed soil will be graded to approximately pre-Project contours, ripped to reduce compaction, spread with topsoil (if necessary) and revegetated with native plant species according to methodologies detailed in the ***Environmental Management Plan*** (EES Referral Attachment 2).

13.3.5 Water Storages and Sediment Control

At closure:

- The Operations Water Storage will be decommissioned but the structure retained as a wetland to passively treat overflow from the pit lake.
- The Clean Water Storage downstream of the Operations Water Storage will be decommissioned but the structure retained as an additional wetland to polish water

draining from the decommissioned Operations Water Storage.

- The Sediment Control Dam will be decommissioned and the former channel reinstated (if no alternative use for the dam is identified). This will involve reshaping the channel, revegetating with native riparian species.

The post-closure concept plan for the water storages is illustrated in Figure 13.1.

Prior to decommissioning, the water contained in all storages will be pumped to the open pit to accelerate flooding of the pit to a level of at least 2 m above the level of backfilled mine materials (see Section 13.3.1).

Erosion and sediment controls will be in place during decommissioning (refer to EMP for detailed erosion and sediment control).

Figure 13.3 Example of wetland revegetation

13.4 Other Closure and Rehabilitation Strategies

13.4.1 End Land Use

Final end land use decisions will be determined through ongoing stakeholder consultation (see Section 13.4.4). It is expected that disturbed lands will be graded to match contours of adjacent topography and will be revegetated to match their respective pre-disturbance vegetative communities, with the aim of restoring the area to timber production where possible. A rehabilitation and closure concept plan showing potential end land uses is shown in Figure 13.1.

Where rapid plant establishment is required (e.g. in highly erodible areas), native grass species will be planted, with a selection of native trees and shrubs interspersed at a desirable stocking level.

13.4.2 Progressive Rehabilitation

The Project will employ a life-of-mine progressive rehabilitation strategy that will facilitate achievement of designated final land uses that are compliant with completion criteria. Sections of the Project site will be rehabilitated when they become available, within the confines of seasonal climatic restrictions.

Rehabilitation methods will be tested in advance of mine closure, allowing for gradual development and improvement of rehabilitation measures.

The objectives of the progressive rehabilitation plan include the following:

- The overall disturbed footprint of the Project will be progressively reduced as early in the life of mine as possible;
- Various rehabilitation options will be trialled, particularly with respect to plant species selection, in advance of decommissioning with demonstrated results utilised for future efforts;
- Surface water quality will be better maintained (e.g. via reduction in erosion and sediment transport from revegetation efforts);
- Visual amenity of the Project site will be incrementally improved; and
- The overall risk of rehabilitation failure and ultimate liability will be reduced.

Examples of progressive rehabilitation currently planned include the following:

Rehabilitation of exploration areas: Drill pads, sumps and access tracks associated with exploration activities will be rehabilitated immediately following the conclusion of their utility. These disturbed areas will be graded to match the physical contours of adjacent land and will be revegetated according to revegetation principles developed for this Project (refer to ***Environmental Management Plan***, EES Referral Attachment 2). Compacted surfaces will be ripped and topsoil applied (where required) during the drier months and native seedlings will be planted or seed will be applied during the first planting season following site preparation.

Waste Rock Dump rehabilitation: As is detailed in Section 13.1.2, the construction of the WRD will allow for progressive grading, topsoil application, and revegetation of the batter slope. Early phase revegetation of the WRD will serve as a pilot study to improve ongoing progressive and final rehabilitation via monitoring the effectiveness of the methodology, and continuously improving materials handling and species selection (e.g. plant species' survival, nursery practices, material stockpiling and handling);

Early decommissioning: Sites that required vegetation removal, major earthworks, or other land disturbing activity that promote erosion during all phases of Project exploration and operations will be rehabilitated as soon as is practicable following the completion of their utility. Grading and additional earthworks will be conducted during the dry months, with planting / seeding implemented during the first planting season.

Ongoing hazards and geotechnical risk assessment and mitigation: Throughout construction and operations, monitoring will be conducted for geotechnical stability of Project facilities and roads and to identify areas prone to erosion or land-slip. Sites that are deemed geotechnically unstable will be rehabilitated according to engineering best practices and areas exhibiting signs of erosion (e.g. signs of rill formation, cracks on road surface edges, etc.) will have the appropriate erosion and sediment control measures applied as soon as possible following detection.

13.4.3 Revegetation

The following section summarises Eastern Iron's revegetation standard. Greater detail is provided in the ***Environmental Management Plan*** (EES Referral Attachment 2). A concept plan for areas to be revegetated is provided in Figure 13.1.

Soil Recovery and Stockpiling

Topsoil will be removed from all areas to be disturbed prior to any excavation occurring. When feasible, topsoil will be directly relocated to a rehabilitation site as per the Project's progressive rehabilitation plan. If a rehabilitation site is not available, topsoil will be stockpiled.

A Standard Operating Procedure for constructing and maintaining topsoil stockpiles will be developed for the Project that will specify Project stockpile locations, soil handling procedures and erosion and sediment control measures that will be incorporated. Greater detail regarding topsoil stockpiling is provided in the ***Environmental Management Plan*** (EES Referral Attachment 2).

A summary of the principles outlined in these documents will include the following:

- Topsoil and subsoil will be stockpiled separately in strategic locations to minimise hauling distances to rehabilitation sites.
- Topsoil stockpiles will be less than 2 m in height with batter slopes not exceeding a gradient of 1 m vertical to 2 m horizontal.
- Where topsoil from stockpiles will not be used for a time period in excess of 3 months, the stockpile will be seeded or planted to minimise erosion and help maintain soil quality, unless adequate natural stocking occurs.
- Water generated from mining construction, operational activities and natural surface runoff will be diverted around stockpiles to minimise erosion.
- Silt fences or similar structures will be implemented on downhill slopes adjacent the stockpiles to capture sediment from surface water run-off.

Site Preparation

Where applicable, the following will be conducted at each rehabilitation site requiring planting:

- Where feasible, rehabilitation sites will be graded to approximately pre-Project contours to direct surface water to natural drainages and to minimise potential erosion;
- Where closure planning involves altering the landscape from Pre-Project contours (e.g. the WRD), landforms will be graded to contours that are similar to adjacent topography, with slopes and profiles that convey surface water to intended receiving waters.
- Compacted surfaces (former roads / building sites) will be mechanically ripped to an approximate depth of one (1) metre prior to topsoil application or planting / seeding to promote surface water infiltration, aeration and root growth.
- Where required (e.g. if topsoil was removed from site during Project construction), topsoil will be applied to the rehabilitation site to a depth of approximately 30 centimetres following grading and ripping.
- Rehabilitation sites located in high traffic areas will be fenced-off or adequately marked to prohibit disturbance from vehicular or foot traffic.
- Non-native invasive species will be mechanically removed or sprayed with herbicide prior to planting or seeding with native species.

Figure 13.4 Example of early mine site rehabilitation / revegetation

Species Selection

The final species mix will be determined during stakeholder consultation, with due consideration to pre-mining vegetation communities, desired end land uses, and the utility of select species to promote landform stability. Where feasible, vegetation established in rehabilitation areas will be analogous to native vegetation communities in close proximity to the site (Shrubby Dry Forest with Damp Forest in riparian corridors). Native plant species of local provenance will be used for rehabilitation (unless agriculture or commercial timber is the desired end land use). A combination of broadcast seeding and seedling planting will be employed.

Native grasses and legumes will be considered for areas requiring rapid establishment of vegetation (i.e. areas prone to erosion). It is anticipated that native shrub and tree species will be interspersed to a desired stocking level to promote a return to the native vegetative community and to provide deeper roots for geotechnical stability.

Seed Management

The preferred source of seed for rehabilitation activities is from fresh topsoil collected from the mine site. If topsoil is not available or if topsoil is deficient in adequate or viable seed, seed from locally sourced native species will be used.

- Qualified personnel will conduct surveys to determine the appropriate timing for seed harvest for preferred native species. Seed will be collected annually and stored in a properly refrigerated storage facility. For each species selected for seed collection, the following factors will be determined: species-specific handling or storage requirements; duration of seed viability; stratification / scarification requirements; and additional species-specific pre-treatment methods (if applicable).
- Where additional quantities of seed are required over and above what can be sourced on site, preference will be given to commercial seed that has been collected from the appropriate species of local provenance. Seed vendors will be required to ensure that seed mixes are weed-free and composed of viable native species.

Nursery Production

Eastern Iron will fulfil planting and seeding requirements through one of two management options, or the combination of both:

- Constructing a nursery for the Project with sufficient capacity to sustain its revegetation program; or
- Sourcing from local commercial nurseries.

Whether on-site or through a commercial vendor, the core objectives of the Projects' nursery production system will be to:

- Supply a range of plant species capable of achieving the proposed post closure land use objectives;
- Produce healthy seedlings in a timely and cost-efficient manner, and in sufficient quantity to meet progressive and final rehabilitation requirements;
- Process and store seed of ample quantity and viability to meet progressive and final rehabilitation requirements;
- Maintain a nursery inventory and a planting schedule that anticipates needs at least 18 months in advance revegetation; and
- Develop and maintain a seed collection database identifies collection locations and date of seed harvest.

Mine decommissioning will require substantially greater quantities of seedlings for rehabilitation than during the average year of mine operations. Long-term planning will be required to ensure that adequate seed and seedling sources are available to fill the acreage to the desired stocking level. Accordingly, the Project may determine that it is cost-effective to work in association with local commercial nurseries to supplement seed or seedlings over the life of the Project. Working with local commercial nurseries would also contribute to the Project's community and business development programs. Eastern Iron will undertake a feasibility assessment of nursery production options at the project development stage.

Figure 13.5 Example of Nursery Production for Rehabilitation

13.4.4 Stakeholder Consultation Regarding Rehabilitation and Closure

Eastern Iron will undertake early engagement with stakeholders regarding rehabilitation and closure issues to facilitate in identifying risks, understanding stakeholder expectations, and developing strategies to avoid or minimise risks and manage expectations. A stand-alone ***Stakeholder Engagement Plan*** is provided in EES Referral Attachment 3 (refer Chapter 17).

Stakeholder engagement for the Project will begin formally as part of Project approvals and will continue throughout operations and decommissioning of the Project to ensure that decisions regarding landform design, end land use, and plant species selection are in-line with stakeholder expectations.

Stakeholders of the Project include both internal and external stakeholders who are likely to affect, be affected, or have an interest in mine closure planning, closure criteria, and outcomes. A list of key Project stakeholders that will be consulted regarding end land uses or other aspects of closure planning is provided in Chapter 17.

The following five principle objectives for the consultation process for Project closure and rehabilitation are adapted from *Strategic Framework for Mine Closure* (ANZMEC/MCA, 2000). The Project will:

- **Identify** relevant stakeholders and interested parties and invite them to join in formal consultation.
- Conduct consultation throughout the life of the mine.
- **Develop communication strategies** that reflect the needs of the stakeholder groups and interested parties.
- **Devote adequate resources** to ensure the effectiveness of the consultation process.
- **Work with affected communities** to manage the potential impacts of mine closure, wherever practicable.

13.4.5 Completion Criteria

Eastern Iron will establish a performance framework that clearly defines rehabilitation success or failure, facilitates a consistent approach to performance monitoring, and recommends maintenance measures for rehabilitation areas that promotes the achievement of completion criteria.

Eastern Iron will develop clear and measurable completion criteria in consultation with relevant government authorities, local communities and additional relevant stakeholders prior to Project commissioning. However, the development of criteria will be an iterative process. Criteria will be flexible enough to adapt to changing circumstances without compromising the objectives. Criteria will be reviewed, and may be revised accordingly in consultation with stakeholders. Ultimately, completion criteria will form the basis for which responsible authorities determine whether Eastern Iron may relinquish their interest in the decommissioned mine site.

Standards and principles

- Upon closure, the rehabilitated mine site will be compliant with applicable legislative requirements for closure (at a minimum), including relevant sections of the MRSD Act and MRD Regulations;
- Post closure discharge will be compliant with applicable State and Commonwealth legislation, including the *Water Act* (1989), the *Environmental Protection Act* (1970), and Victorian SEPPs;
- Rehabilitation methods will be conducted according to industry best practice, where applicable, including: *Mine Closure and Completion* (DITR, 2006a), *Mine Rehabilitation* (DITR, 2006b), *Strategic Framework for Mine Closure* (MCA / ANZMEC, 2000), and *Planning for Integrated Mine Closure: Toolkit* (ICMM, 2008); and
- Wherever practicable, final land use designations and completion criteria will be consistent with applicable stakeholder expectations.

The criteria will be developed by PBM in consultation with relevant stakeholders to ensure that there is broad agreement on the post-closure land use objectives and the basis for measuring the achievement of each objective.

Examples of measureable completion criteria include the following:

- On-site and downstream water quality (e.g. with respect to baseline conditions and applicable discharge guidelines).
- Revegetation success (e.g. vegetative cover (%), species diversity, native vs. non-native plant establishment).
- Geochemical stability of remnant Project domains (e.g. WRD)
- Geotechnical and landform stability.

13.5 Post-closure Monitoring and Management

Eastern Iron will conduct periodic qualitative and quantitative monitoring for the duration of Nowa Nowa mining operations and post-closure. Post-Closure Monitoring and Management is detailed in EES Referral Attachment 2, the ***Environmental Management Plan***.

13.6 Rehabilitation and Closure Bond

As per Section 80 of the MRSD Act, Eastern Iron will provide a rehabilitation bond for an amount determined by the Earth Resources Regulation Branch of DEPI.

Eastern Iron will incorporate DEPI requirements regarding the rehabilitation bond, understanding the following components of this obligation:

- Eastern Iron will provide a rehabilitation bond in the form of an unconditional bank guarantee prior to work commencing;
- The Earth Resources Regulation Branch (ERR) of DEPI will set and review the rehabilitation bond for the Project in accordance with the *Mineral Resources (Sustainable Development) Act 1990*;
- Under provisions of the *Mineral Resources Development Regulations 2002*, Eastern Iron is required to submit an annual assessment of the current rehabilitation liability of the Project operation. This self-assessment will be documented in accordance with guidelines specified in DEPI's *Establishment and Management of Rehabilitation Bonds for the Mining and Extractive Industries*;
- Eastern Iron will provide an estimate of rehabilitation liability in annual reports;
- Rehabilitation bonds will be periodically reviewed by the Department during the life of the operation to ensure that the security remains at an appropriate level; and
- DEPI will undertake targeted audits of annual rehabilitation self-assessments for quality assurance.

14 ENVIRONMENTAL MANAGEMENT PLAN

An ***Environmental Management Plan*** **(EMP)** is provided as a stand-alone attachment to the EES Referral Form (Attachment 2). The EMP addresses the requirements of Schedule 9 of the *Mineral Resources Development (Mining) Amendment Regulations* (2010). The *Work Plan Guidelines for a Mining Licence* (DPI 2002) have also been taken into account in the preparation of the EMP.

15 OCCUPATIONAL HEALTH AND SAFETY PLAN

An Occupational Health and Safety (OHS) Plan will be produced for the Project as part of the final Work Plan. This Plan will meet all legislative requirements of the Project under the *Occupational Health and Safety Act 2004* and *Occupational Health and Safety Regulations 2007*. Consistent with the *Work Plan Guidelines for a Mining Licence* (DPI 2002), this plan will demonstrate, as far as is reasonably practicable, that work areas and processes are designed and operated to be safe and without risk to human health. The plan will address, where required, the design of works and proposed operation of the work areas.

As per the *Work Plan Guidelines for a Mining Licence* (DPI 2002), the Plan will include plans of the work area and written information on the following subjects:

- **Safe Design** - A description of the process used during design to identify OH&S and mining hazards, to assess the risks associated with these hazards, and to determine and implement risk control measures.
- **Design Phase Hazards and Risk Controls** - A list of hazards identified, the controls and OH&S systems to be incorporated into the design.
- **Management** - A description of the Safety Management System that will be used once work commences.
- **General OH&S** - A description of how OH&S risks will be managed.
- **Consultation** – A description of the consultative mechanisms to be put in place for OH&S consultation.

A safety management system (SMS) will be developed for the Project (and documented in the OHS Plan) which will:

- Provide a comprehensive and integrated management system for the control of risk;
- Be accessible and comprehensible;
- Set out Eastern Iron's safety policy;
- Describe the systems, procedures and other risk control measures implemented which eliminate or reduce risk;
- Set out the performance standards which measure the effectiveness of the SMS; and
- Describe the processes for auditing and performance monitoring.

Reference material to assist OHS Plan development will include:

- AS/NZS ISO 31000:2009 Risk management - Principles and guidelines
- HB 436:2004 OHS Risk Management Handbook
- HB 436:2004 /Amdt 1:2005 Risk Management Guidelines Companion to AS/NZS 4360:2004
- Controlling OHS hazards and risks – A handbook for workplaces, WorkSafe Victoria 2007
- Fatigue in Mines, A handbook for Earth Resources, 2009
- Dangerous goods incident reporting, WorkSafe Victoria 2012
- Sun Protection For Construction And Other Outdoor Workers, WorkSafe Victoria 2005
- Guidance Note Surface exploration drilling checklist, WorkSafe Victoria 2010
- Guidance Note Safety Management Systems for Major Hazard Facilities, WorkSafe Victoria 2011
- Guidance Note Hazard Identification at a Major Hazard Facility, WorkSafe Victoria 2011
- Guidance Note Control Measures for a Major Hazard Facility, WorkSafe Victoria 2011

- Guidance Note Safety Assessment for a Major Hazard Facility, WorkSafe Victoria 2011
- National Minerals Industry Safety and Health Risk Assessment Guideline, Minerals Industry Safety and Health Centre, 2005
- Minerals Industry Safety Handbook – NSW Department of Minerals Resources 2002

16 COMMUNITY FACILITIES

As the mine site and surrounding areas occur within the Tara State Forest (which is managed primarily for forestry activity), no community facilities are expected to be significantly impacted by the Project.

Further details of potential impacts on community issues are provided in the ***Socioeconomic and Health Baseline and Evaluation*** (EES Referral Attachment 12).

17 COMMUNITY ENGAGEMENT PLAN

A ***Stakeholder Engagement Plan*** is provided as a stand-alone attachment to the EES Referral Form (refer Attachment 3). The scope of the plan encompasses community consultation and engagement, as well as consultation with other key Project stakeholders. The Plan has been produced consistent with the following legislation and guidelines:

- Mineral Resources Development (Mining) Amendment Regulations (2010)
- Community Engagement Guidelines for Mining and Mineral Exploration in Victoria (DPI 2008)
- Work Plan Guidelines for a Mining Licence (DPI 2002)

Key stakeholders identified for the Project include:

- Local communities;
- Commonwealth Government;
- Victorian State Government;
- NSW State Government;
- Local Government;
- Community Interest Groups;
- Water catchment authorities;
- Aboriginal community including Native Title Holders and Registered Aboriginal Parties;
- Local facilities / service providers; and
- Local business / industry.