CLEAN TEQ SUNRISE

Clean TeQ Sunrise Project

Biodiversity Management Plan and Revegetation Strategy

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22 July 2019

REVISION 2

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1. INTRODUCTION

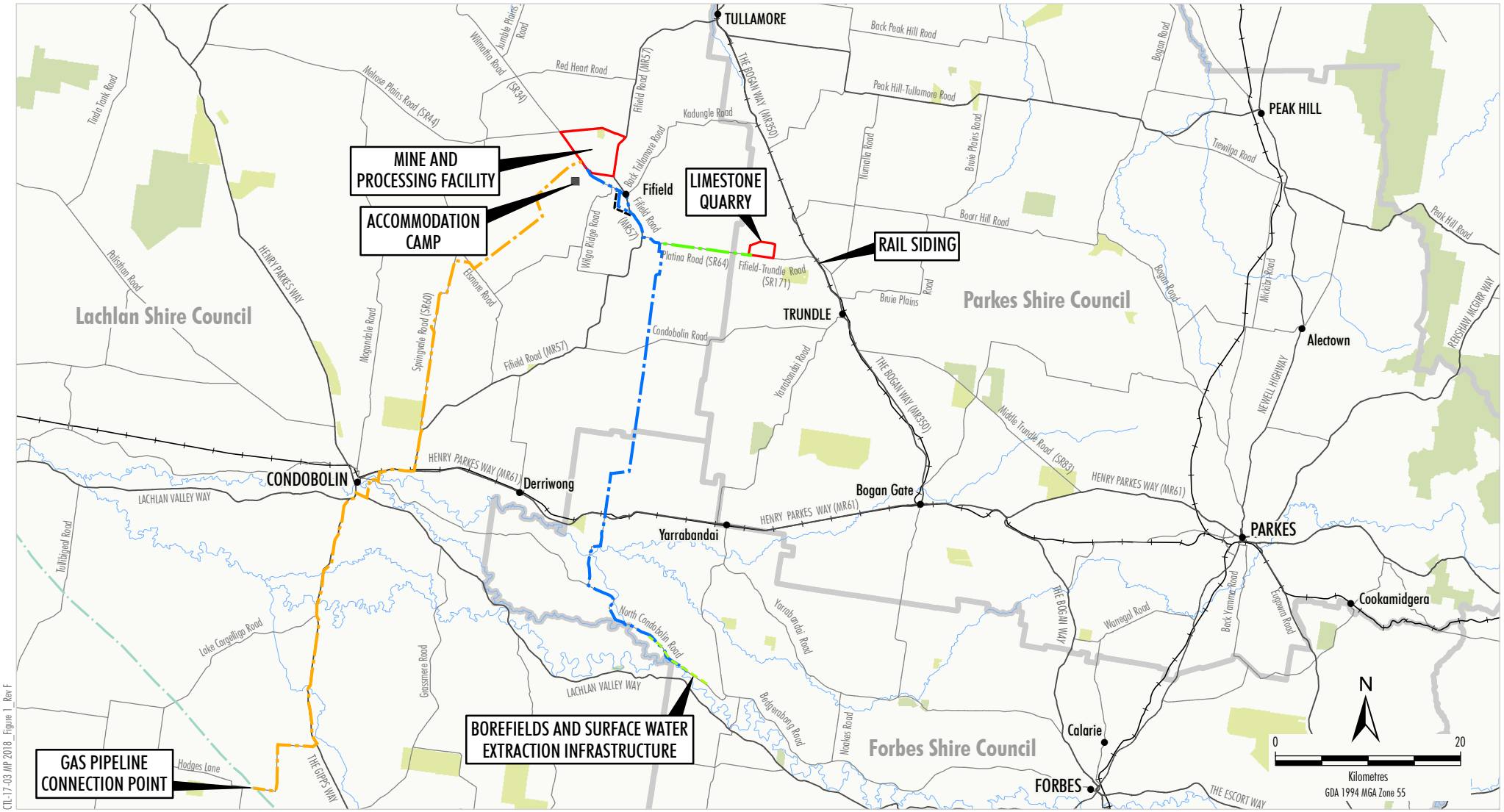
The Clean TeQ Sunrise Project (the Project) is situated near the village of Fifield, approximately 350 kilometres west-northwest of Sydney, in New South Wales (NSW) (Figure 1). The Project includes the establishment and operation of the following (Figure 1):

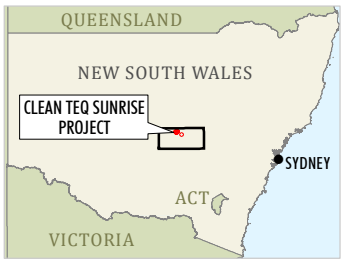
- mine (including the processing facility);
- limestone quarry;
- rail siding;
- gas pipeline;
- borefields, surface water extraction infrastructure and water pipeline;
- accommodation camp; and
- associated transport activities and transport infrastructure (e.g. the Fifield Bypass, road and intersection upgrades).

Clean TeQ Sunrise Pty Ltd owns the rights to develop the Project. Clean TeQ Sunrise Pty Ltd is a wholly owned subsidiary of Clean TeQ Holdings Limited (Clean TeQ).

Development Consent DA 374-11-00 for the Project was issued under Part 4 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act) in 2001. Six modifications to Development Consent DA 374-11-00 have since been granted under the EP&A Act:

- 2005 – to allow for an increase of the autoclave feed rate, limestone quarry extraction rate and adjustments to ore processing operations;
- 2006 – to allow for the reconfiguration of the borefields;
- 2017 – to allow for the production of scandium oxide;
- 2017 – to amend hazard study requirements;
- 2018 – to relocate the accommodation camp; and
- 2018 – to implement opportunities to improve the overall efficiency of the Project.





LEGEND

- National Park/Conservation Area
- State Forest
- Local Government Boundary
- Railway
- Existing Gas Pipeline
- Mining Lease Boundary (ML)
- Fifield Bypass
- Gas Pipeline
- Water Pipeline
- Limestone Quarry Water Pipeline
- Borefield Infrastructure Corridor

Source: Black Range Minerals (2000); Clean TeQ (2017, 2018); NSW Department of Industry (2018); NSW Land & Property Information (2017); Office of Environment and Heritage NSW (2017)

CLEAN TEQ SUNRISE PROJECT

Regional Location

Figure 1

CTL-17-03 MP 2018_Figure 1_Rev F

1.1 Purpose and Scope

This Biodiversity Management Plan and Revegetation Strategy (BMP-RS) has been prepared by Clean TeQ to satisfy the requirements of Conditions 32 to 36, Schedule 3 of Development Consent DA 374-11-00 (Tables 1 and 2).

Table 1 – Development Consent Conditions Relevant to the Biodiversity Management Plan

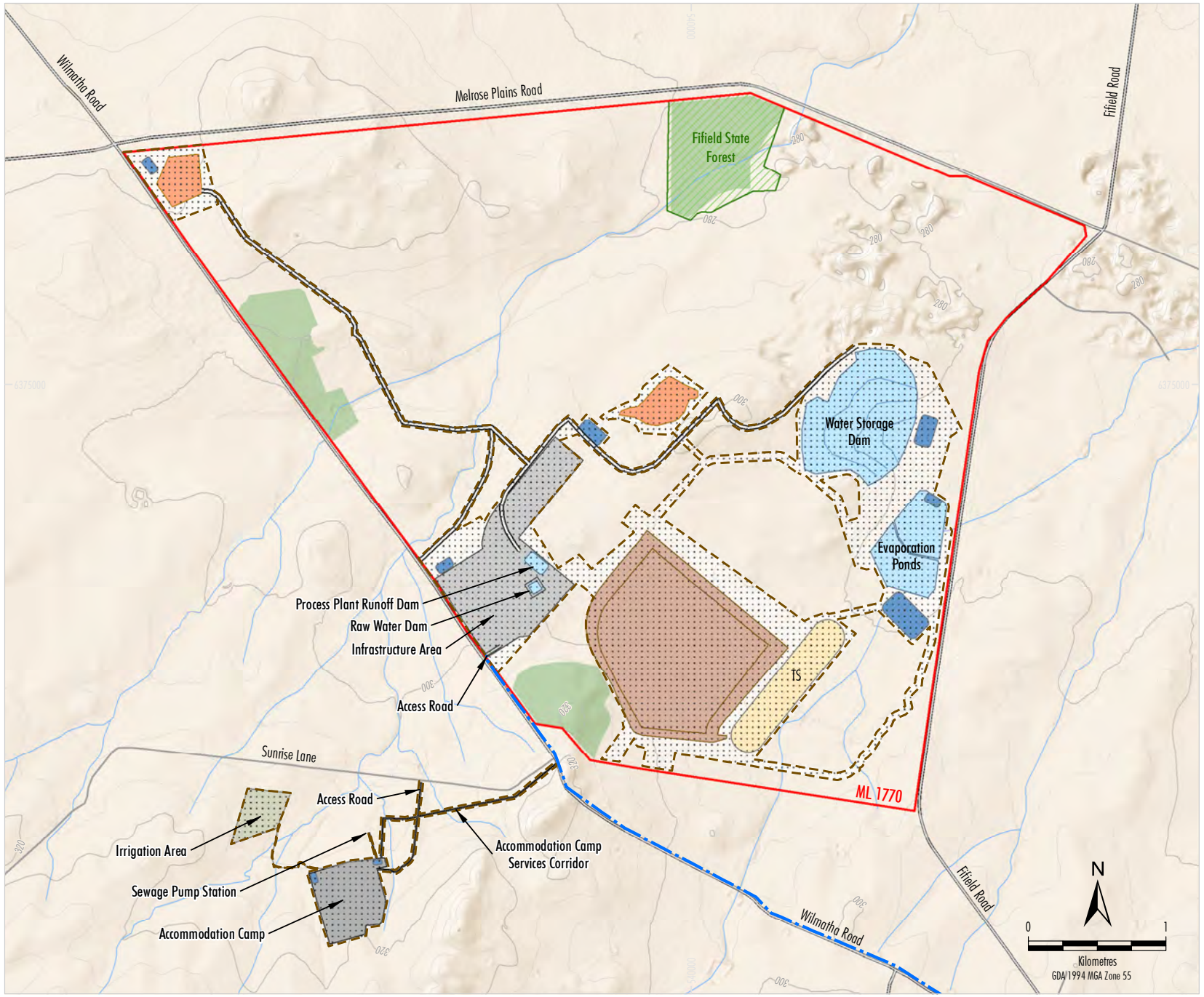
Development Consent DA 374-11-00		BMP-RS Section
35.	*Prior to carrying out any development under this consent after 6 May 2017, the Applicant must prepare a Biodiversity Management Plan for the development in consultation with OEH, and to the satisfaction of the Secretary. This plan must:*	Part A
	a) describe the short, medium, and long term measures that will be implemented to: • *manage and enhance the quality of remnant vegetation and fauna habitat on site, with specific emphasis on the preservation of remnant Box woodland; and* • *ensure that the Revegetation Strategy is effectively implemented over the life of the development;*	Sections 4.2, 4.3, 4.6, 4.7 and 4.8 Section 4.11
	b) include detailed performance and completion criteria for evaluating the performance of the revegetation area identified in the approved Revegetation Strategy, and triggering remedial action (if necessary);	Sections 4.11 and 9.4
	c) include a detailed description of the measures that will be implemented for: • *protecting vegetation and fauna habitat outside the approved disturbance area on-site;* • *enhancing the quality of existing vegetation and fauna habitat in the revegetation area identified in the approved Revegetation Strategy;* • *minimising, clearing and avoiding unnecessary disturbance within the approved development footprint;* • *recording the details of any vegetation clearing that is undertaken for the development;* • *progressively rehabilitating and revegetating the site, particularly in temporary disturbance areas;* • *maximising the salvage of resources within the approved disturbance area - including vegetative and soil resources – for beneficial reuse in the rehabilitation of the site;* • *collecting and propagating seed;* • *identifying and managing significant impacts on any threatened fauna species not identified in the EIS, (particularly the Yellow-bellied Sheathtail Bat, Little Pied Bat, Greater Long eared bat, Barking Owl, Pied Honey eater, Major Mitchell's Cockatoo and Superb Parrot);* • *minimising the impacts on threatened fauna on site, including pre-clearance surveys (with an emphasis on tree hollows, stags and roosting bats);* • *minimising potential exposure to tailings;* • *implementing a fauna rescue strategy (including provision of artificial roosts);* • *controlling weeds and feral pests;* • *managing bushfire risk;* • *controlling erosion;*	Section 4.2.1 Section 4.11 Sections 4.2.1 and 4.2.3 Section 4.2.7 Sections 4.2.6 and 4.11 Section 4.2.4 Section 4.2.4 Section 4.3 Section 4.2.2 Section 4.4 Section 4.2.3 and 4.2.5 Sections 4.5 and 4.6 Section 4.8 Section 4.7
	d) include a seasonally-based program to monitor and report on the effectiveness of these measures;	Sections 4.2, 4.5, 4.6, 4.7 and 9.4
	e) identify the potential risks to the successful implementation of the Biodiversity Management Plan, and include a description of the contingency measures that would be implemented to mitigate against these risks; and	Section 6
	f) include details of who will be responsible for monitoring, reviewing, and implementing the plan.	Section 8.4
36.	*The Applicant must implement the approved Biodiversity Management Plan for the development.*	Part A

Table 2 – Development Consent Conditions Relevant to the Revegetation Strategy

Development Consent DA 374-11-00		BMP-RS Section
Revegetation		
32.	*For every 1 ha of native woodland vegetation cleared for the mine or limestone quarry, a minimum of 2 ha must be revegetated as native woodland.*	Section 9.3
Revegetation Strategy		
33.	*Prior to carrying out any development under this consent after 6 May 2017, the Applicant must prepare a Revegetation Strategy for the development, in consultation with OEH, to the satisfaction of the Secretary. This strategy must:*	Part B
	g) include updated estimates of the likely clearing of native vegetation required over the life of the development;	Section 9.1
	h) identify areas on or off site that will be available for revegetation over the life of the development;	Section 9.2
	i) propose a strategy for progressive rehabilitation and revegetation for the development and which reflects the requirements of Condition 32 (for the mine and limestone quarry); and	Section 9.3
	j) include a program to monitor and review the effectiveness of the strategy over the life of the development.	Section 9.4
34.	*The Applicant must implement the approved Revegetation Strategy for the development.*	Part B

On 5 July 2018, the Secretary of the NSW Department of Planning and Environment (the Secretary) approved the progressive submission of environmental management plans for the Project in accordance with Condition 12, Schedule 2 of Development Consent DA 374-11-00. The scope of this BMP-RS is specifically related to the following initial Project construction activities (Figure 2):

- development of the mine, including:
  - site establishment and earthworks;
  - construction of site access roads and haul roads;
  - processing facility earthworks;
  - establishment of temporary facilities required for construction activities (e.g. offices, lay down areas, communications infrastructure);
  - construction of the mine infrastructure area including the offices, workshops, warehouse, laboratory and amenities buildings, fuel storage areas, potable water treatment plant and car parking facilities;
  - construction of the tailings storage facility and evaporation pond;
  - construction of water management infrastructure including the raw water dam, water storage dam and sediment dams;
  - construction and operation of the concrete batch plant;
  - development of gravel and clay borrow pits (including blasting and crushing);
  - installation of appropriate fencing and barriers to ensure public safety and security for mining and construction; and
  - other associated minor infrastructure, plant, equipment and activities.



LEGEND

- State Forest
- Mining Lease Boundary (ML)
- Initial Construction Activities
- Surface Development Area
- Tailings Storage Facility
- Borrow Pit
- TS Topsoil Stockpile
- Infrastructure Area
- Water Storage
- Sediment Dam
- Existing Open Woodland to be Maintained
- Water Pipeline

Note: The sediment dam located in the footprint of the evaporation ponds will be used during construction of the evaporation ponds and will be decommissioned once the evaporation ponds are constructed.

Source: Black Range Minerals (2000); Clean TeQ (2017, 2019); NSW Department of Industry (2018); NSW Land & Property Information (2017)

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Mine and Processing Facility General Arrangement (Initial Construction Activities)

Figure 2

- development and operation of the accommodation camp;
- development and operation of the borefields, surface water extraction infrastructure and water pipeline[1] (Figures 1 and 3); and
- road upgrades (Figure 4).

1.2 Objective and Structure of the BMP

The objective of this BMP-RS is to address relevant approval conditions (Section 3) and facilitate the management of biodiversity at the Project. The remainder of this BMP-RS is structured as follows:

Section 2: Describes the review and update of this BMP-RS.

Section 3: Provides the statutory requirements of the Project.

Part A - Biodiversity Management Plan

Section 4: Describes the management of biodiversity on site.

Section 5: Provides details of performance measures.

Section 6: Provides the risk and contingency measures.

Section 7: Provides details of BMP-RS scheduled review and updates.

Section 8: Provides reporting protocols.

Part B - Revegetation Strategy

Section 9: Provides the mine site and limestone quarry Revegetation Strategy.

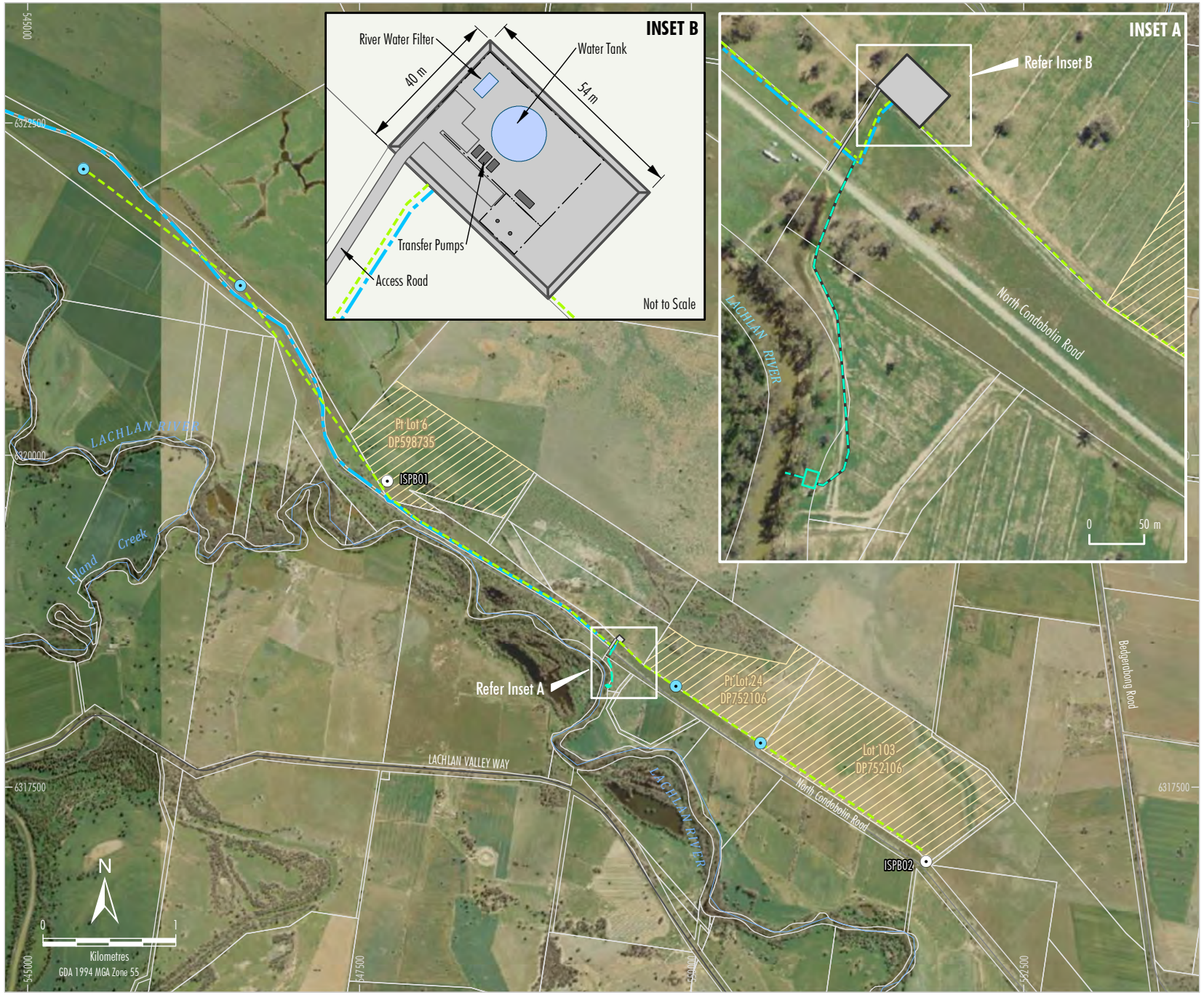
Section 10 Provides the references used in this BMP-RS.

1.3 Consultation

In accordance with Condition 35, Schedule 3 of Development Consent DA 374-11-00, this BMP-RS was provided to the NSW Office of Environment and Heritage (OEH) on 6 February 2018 for its review and comment. Correspondence was received from the OEH on 5 March 2018 providing review comments. Clean TeQ provided a revised version of the BMP-RS to the OEH on 25 June 2018 incorporating the OEH's review comments. The OEH provided residual comments on 12 July 2018. Clean TeQ has incorporated these residual comments into this version of the BMP-RS.

Following receipt of these residual comments, minor revisions have been made to reflect the determination of Modification 4 in December 2018. With the agreement of the Secretary (letter dated 27 March 2019) and consistent with Condition 12, Schedule 2 of Development Consent DA 374-11-00, this BMP-RS has not been re-submitted to the OEH for comment due to the minor nature of these revisions.

[1] The water pipeline includes the Fifield Bypass and Alternative Pipeline Route alignments.



LEGEND

- Property Boundary
- Borefield Location
- Water Pipeline
- Borefield Infrastructure Corridor *
- Surface Water Infrastructure Corridor *
- Pump Station
- Transfer Station
- Access Road
- Production Bore (constructed)
- Production Bore (not constructed)

* Infrastructure Corridor includes linking pipline, access road and electricity transmission line.

Source: Clean TeQ (2017, 2019); Ivanplats Syerston (2005); NSW Land & Property Information (2018)
NSW Imagery: © Department of Finance, Services & Innovation (2018)

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Borefields and Surface Water Extraction General Arrangement

Figure 3

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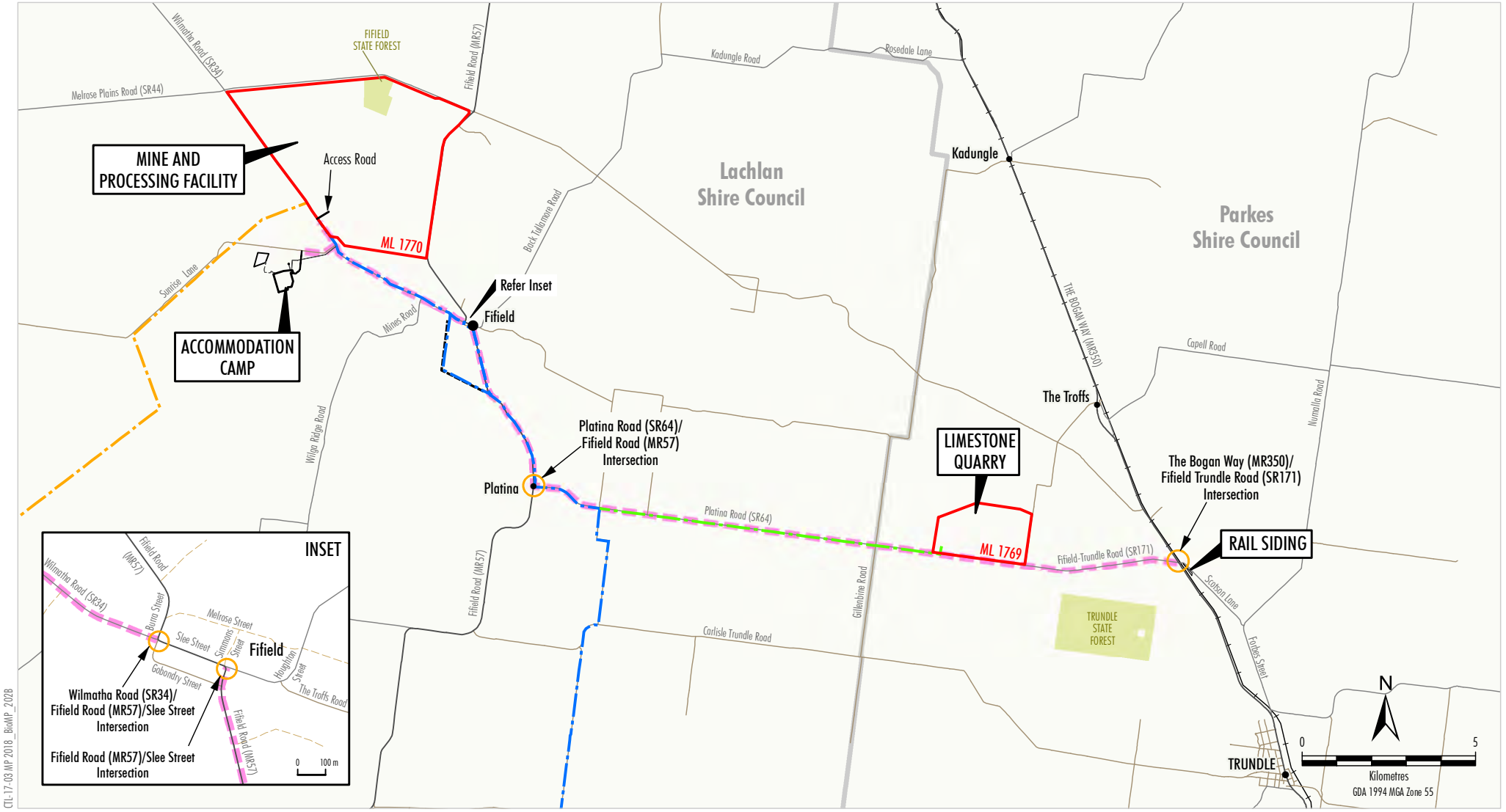

LEGEND

- State Forest
- Local Government Boundary
- Railway
- Mining Lease Boundary (ML)
- Gas Pipeline
- Water Pipeline
- Limestone Quarry Water Pipeline
- Fifield Bypass
- Extent of Road Upgrade

Source: Black Range Minerals (2000); Clean TeQ (2018); NSW Department of Industry (2018); NSW Land & Property Information (2017); Office of Environment and Heritage NSW (2107)

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Road Upgrades

Figure 4

2. BIODIVERSITY MANAGEMENT PLAN REVIEW AND UPDATE

This BMP-RS has been provided to the OEH for the purposes of consultation in accordance with Condition 35, Schedule 3 of Development Consent DA 374-11-00. The BMP-RS has been reviewed by the OEH and their comments incorporated where appropriate.

Consistent with the Secretary's approval for the progressive submission of environmental management plans on 5 July 2018, this BMP-RS will be re-submitted and approved prior to the commencement of construction of the limestone quarry, rail siding and gas pipeline, as well as prior to the commencement of mining operations.

In accordance with Condition 6, Schedule 5 of Development Consent DA 374-11-00, this BMP-RS will be reviewed, and if necessary revised (to the satisfaction of the Secretary), within three months of the submission of:

- an Annual Review (Condition 5, Schedule 5);
- an incident report (Condition 8, Schedule 5);
- an independent environmental audit (Condition 10, Schedule 5); or
- any modification to the conditions of Development Consent DA 374-11-00 (unless the conditions require otherwise).

The reviews will be undertaken to ensure this BMP-RS is updated on a regular basis and to incorporate any recommended measures to improve the environmental performance of the Project.

Within four weeks of conducting a review of this BMP-RS, the Secretary will be advised of the outcomes of the review and any revised documents submitted to the Secretary for approval.

If agreed with the Secretary, a revision to this BMP-RS required under Development Consent DA 374-11-00 may be prepared without undertaking consultation with all parties nominated under the relevant condition of Development Consent DA 374-11-00.

The revision status of this BMP-RS is indicated on the title page of each copy.

The approved BMP-RS will be made publicly available on the Clean TeQ website, in accordance with Condition 12, Schedule 5 of Development Consent DA 374-11-00.

3. STATUTORY REQUIREMENTS

Clean TeQ's statutory obligations relevant to biodiversity and revegetation management are contained in:

- the conditions of Development Consent DA 374-11-00;
- relevant licences and permits, including conditions attached to mining leases; and
- other relevant legislation.

Obligations relevant to this BMP-RS are described below.

3.1 Development Consent 374-11-00

3.1.1 Biodiversity Management Plan and Revegetation Strategy Requirements

Conditions 32 to 36, Schedule 3 of Development Consent DA 374-11-00 require the preparation of a BMP-RS. Tables 1 and 2 present these requirements and indicates where they are addressed in this BMP-RS.

3.1.2 Management Plan (General Requirements)

In addition to the BMP-RS requirements prescribed in Tables 1 and 2, Condition 4, Schedule 5 of Development Consent DA 374-11-00 outlines the management plan (general) requirements that are also applicable to the preparation of this BMP-RS (Table 3).

Table 3 – Management Plan (General) Requirements

Development Consent DA 374-11-00		BMP-RS Section
Management Plan Requirements		
4.	*The Applicant must ensure that the management plans required under this consent are prepared in accordance with any relevant guidelines, are consistent with other plans prepared for other stakeholders, and include:*	
	a) detailed baseline data;	Section 4
	b) a description of: • *the relevant statutory requirements (including any relevant approval, licence or lease conditions);* • *any relevant limits or performance measures/criteria;* • *the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the development or any management measures;*	 Section 3 Section 4.11 and 5 Section 4
	c) a description of the measures that will be implemented to comply with the relevant statutory requirements, limits, or performance measures/criteria;	Sections 4 to 9
	d) a program to monitor and report on the: • *impacts and environmental performance of the development;* • *effectiveness of any management measures (see c above);*	 Section 7 Section 7
	e) a contingency plan to manage any unpredicted impacts and their consequences;	Section 6
	f) a program to investigate and implement ways to improve the environmental performance of the development over time;	Section 5 and 7

Table 3 (Continued) – Management Plan (General) Requirements

Development Consent DA 374-11-00		BMP-RS Section
	g) a protocol for managing and reporting any: • *incidents;* • *complaints;* • *non-compliances with statutory requirements; and* • *exceedances of the impact assessment criteria and/or performance criteria; and*	 Section 8.1 Section 8.2 Section 8.3 Section 8
	h) a protocol for periodic review of the plan.	Section 7.1
	Note: The Secretary may waive some of these requirements if they are unnecessary or unwarranted for particular management plans.	

3.2 Licences, Permits and Leases

In addition to the requirements of Development Consent DA 374-11-00, all activities at or in association with the Project will be undertaken in accordance with the following licences, permits and leases which have been issued or are pending issue:

- Mining Lease 1770 sought and issued by the NSW Minister for Resources under the NSW *Mining Act, 1992*.
- Mining Operations Plan(s) submitted and approved by the NSW Division of Resources and Geoscience.
- Environment Protection Licence(s) (EPLs) issued by the Environmental Protection Authority under the NSW *Protection of the Environment Operations Act 1997* (POEO Act).
- Water supply works, water use approvals and water access licences (WALs) issued by the Department of Industry – Water under the NSW *Water Management Act, 2000* including:
  - Water Supply Works Approval 70CA614098 for the Project Borefields.
  - WAL 32068 in the Upper Lachlan Alluvial Groundwater Source (Upper Lachlan Alluvial Zone 5 Management Zone) for 3,154 share components under the *Water Sharing Plan for the Lachlan Unregulated and Alluvial Water Sources 2012*.
  - WAL 39837 in the Upper Lachlan Alluvial Groundwater Source (Upper Lachlan Alluvial Zone 5 Management Zone) for 766 share components under the *Water Sharing Plan for the Lachlan Unregulated and Alluvial Water Sources 2012*.
  - WAL 28681 in the Lachlan Fold Belt Murray-Darling Basin (MDB) Groundwater Source (Lachlan Fold Belt MDB [Other] Management Zone), for 243 share components under the *Water Sharing Plan for the NSW Murray Darling Basin Fractured Rock Groundwater Sources 2011*.
  - WAL 6679 in the Lachlan Regulated River Water Source, for 123 share components (General Security) under the *Water Sharing Plan for the Lachlan Regulated River Water Source 2016*.

- WAL 1798 in the Lachlan Regulated River Water Source, for 300 share components (General Security) under the *Water Sharing Plan for the Lachlan Regulated River Water Source 2016*.
- WAL 42370 in the Lachlan Regulated River Water Source, for zero share components (High Security) under the *Water Sharing Plan for the Lachlan Regulated River Water Source 2016*.

- Groundwater licences for monitoring bores under the *Water Management Act 2000.*
- Aboriginal Heritage Impact Permits (AHIP #C0003049 and AHIP #C0003887) issued by the OEH under the NSW *National Parks and Wildlife Act 1974*.
- Mining and workplace health and safety related approvals granted by the NSW Department of Industry and SafeWork NSW.
- Permits under the *Roads Act 1993*.
- Heavy Vehicle Authorisation Permit 119039 issued by the National Heavy Vehicle Regulator under the *Heavy Vehicle National Law NSW.*
- Crown Land Licences issued under the *Crown Land Management Act, 2016*.

3.3 Other Legislation and Relevant Requirements

Clean TeQ will conduct the Project consistent with the requirements of Development Consent DA 374-11-00 and any other legislation that is applicable to an approved Part 4 Project under the EP&A Act.

In addition to the statutory obligations described in Sections 3.1 and 3.2, the following NSW Acts (and their Regulations) may be applicable to the conduct of the Project:

- *Aboriginal Land Rights Act, 1983;*
- *Biodiversity Conservation Act, 2016;*
- *Biosecurity Act, 2015;*
- *Crown Lands Management Act, 2016;*
- *Contaminated Land Management Act, 1997;*
- *Dams Safety Act, 2015;*
- *Dangerous Goods (Road and Rail Transport) Act, 2008;*
- *Energy and Utilities Administration Act, 1987;*
- EP&A Act;
- *Fisheries Management Act, 1994;*
- *Forestry Act, 2012;*
- *Mining Act, 1992;*
- *National Parks and Wildlife Act, 1974;*
- *Pipelines Act, 1967;*

- POEO Act;
- *Rail Safety (Adoption of National Law) Act, 2012;*
- *Roads Act, 1993;*
- *Soil Conservation Act, 1938*;
- *Water Act, 1912;*
- *Water Management Act, 2000;*
- *Work Health and Safety Act, 2011; and*
- *Work Health and Safety (Mines and Petroleum Sites) Act, 2013.*

Commonwealth Acts which may also be applicable to the conduct of the Project include:

- *Environment Protection and Biodiversity Conservation Act, 1999* (EPBC Act); and
- *Native Title Act, 1993.*

Relevant licences or approvals required under these Acts will be obtained as required.

PART A – BIODIVERSITY MANAGEMENT PLAN

4. MANAGEMENT OF BIODIVERSITY ON SITE

As described in Section 1, this BMP-RS has been prepared for the initial Project construction activities at the mine site (Figure 2), development and operation of the borefields, surface water extraction infrastructure and water pipeline (Figures 1 and 3) and road upgrades (Figure 4). A description of the biodiversity associated with these components is described below.

This section (Section 4) provides a number of measures to manage and enhance the quality of remnant vegetation and fauna habitat on site, including:

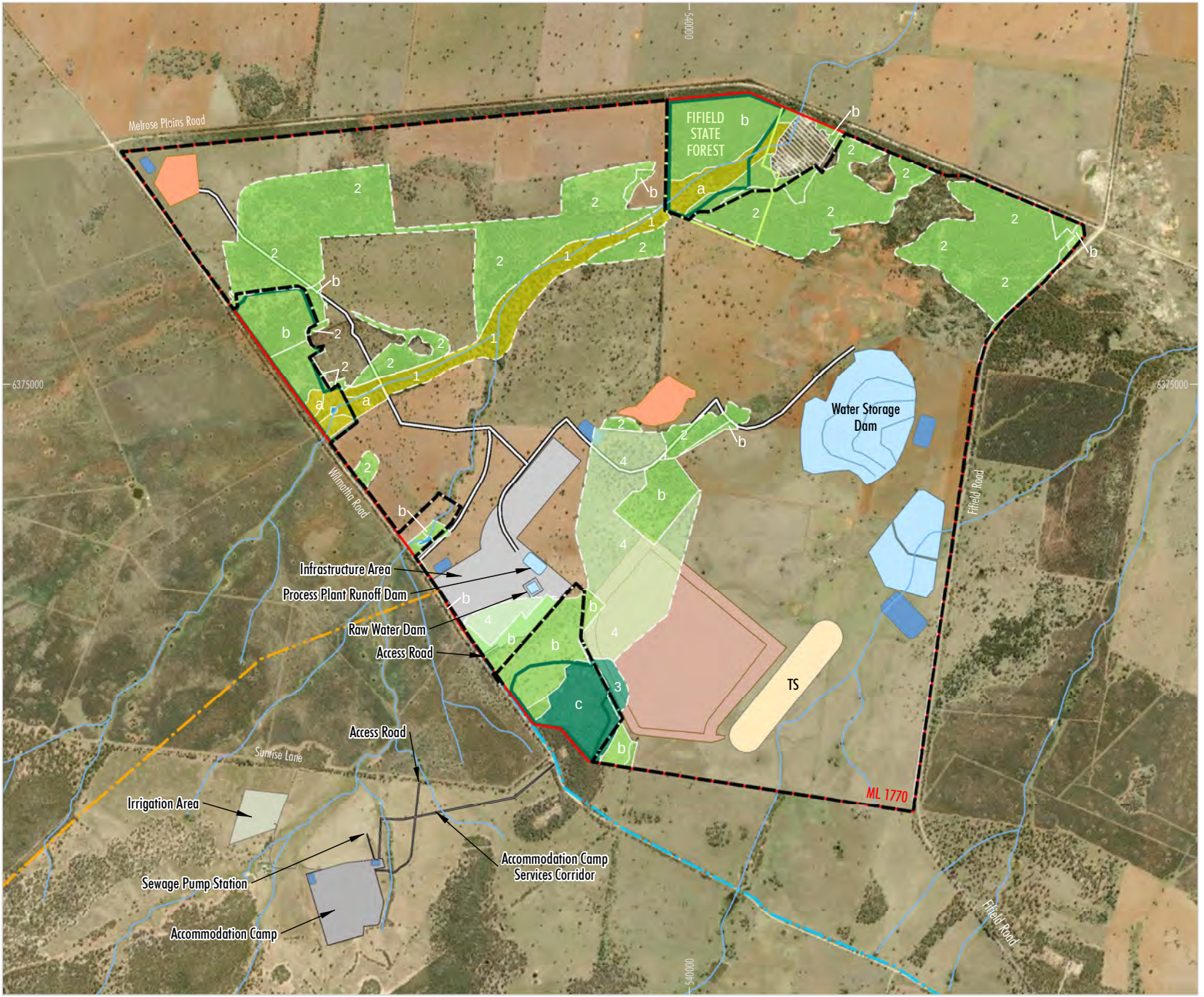
- a Ground Disturbance Permit (Section 4.1);
- a Vegetation Clearance Protocol (Section 4.2);
- threatened species management measures (Section 4.3);
- tailings storage facility management (Section 4.4);
- weed control and monitoring measures (Section 4.5);
- feral animal control and monitoring measures (Section 4.6);
- controlling erosion measures (Section 4.7);
- bushfire management measures (Section 4.8);
- road management measures (Section 4.9);
- education program (Section 4.10); and
- management of Revegetation Areas (Section 4.11).

Mine Site

The initial Project construction activities at the mine site will clear small areas of woodland vegetation (Figures 5a and 5b). Fifield State Forest occurs partly within the mine site, but will not be cleared for the initial Project construction activities (Figure 5a). Some patches of remnant woodland outside of the Project area will be preserved (shown on Figure 5a as existing open woodland to be maintained). Threatened flora and fauna recorded at the mine site are shown on Figures 6 to 8.

Borefields and Surface Water Extraction Infrastructure

The location of the borefields and surface water extraction infrastructure largely comprises of cultivated land that is grazed by sheep and dominated by exotic plants.



LEGEND

- State Forest
- Mining Lease Boundary (ML)
- Approved Surface Development Area
- Gas Pipeline
- Water Pipeline
- Existing Open Woodland to be Maintained

Initial Construction Activities

- Tailings Storage Facility
- Borrow Pit
- TS Topsoil Stockpile
- Infrastructure Area
- Sediment Dam
- Water Storage
- Diversion Structure
- Approved Water Pipeline

Vegetation Mapping (AMBS, 2017)

- Yellow Box Woodland on Sandy Loam Soils on Alluvial Plains
- Western Grey Box - Poplar Box - White Cypress Pine Tall Woodland on Red Loams
- Mugga Ironbark - Inland Grey Box - Pine Tall Woodland of the NSW South Western Slopes Bioregion
- Quarry/Mine
- Dam

Vegetation Mapping (Orchid Research, 2000)

1. *Eucalyptus melliodora/Callitris glaucophylla*
2. *E. populnea/C. glaucophylla, E. microcarpa/C. glaucophylla, E. microcarpa/E. populnea/C. glaucophylla, C. glaucophylla*
3. *E. sideroxylon/E. microcarpa*
4. *Geijera parviflora/Alectryon oleifolius*

Source: AMBS (2017); Orchid Research (2000); Black Range Minerals (2005); Clean TeQ (2018); NSW Department of Industry (2017); NSW Land and Property Information (2017)
NSW Imagery: © Department Finance, Services & Innovation (2017)

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Mine and Processing Facility (Initial Construction Activities) - Vegetation Communities

Figure 5a

CTL-17-03 MP 2018_BioMP_203c

LEGEND

- Mining Lease Boundary (ML)
- Approved Surface Development Area
- Gas Pipeline
- Water Pipeline

Plant Community

- 1a Green Mallee, Mugga Ironbark Grey Box Woodland (PCT 217)
- 1b Green Mallee Low Woodland (PCT 217)
- 1c Previously cultivated land with advanced grassland/shrubland regeneration (PCT 217)
- 1d Previously cultivated land with regrowth of predominantly native grasses, herbs and low shrubs (PCT 217)
- 2 Low lying area with Derived Native Grassland (PCT 82)
- Cleared land/Non-native areas
- Dam

Threatened Ecological Community

- Derived Grassland form of the Grey Box Woodland EEC (BC Act and EPBC Act)

Source: Black Range Minerals (2000); Clean Teq (2018); AMBS (2017); NSW Department of Industry (2017); NSW Land & Property Information (2017)
NSW Imagery: Esri Basemap

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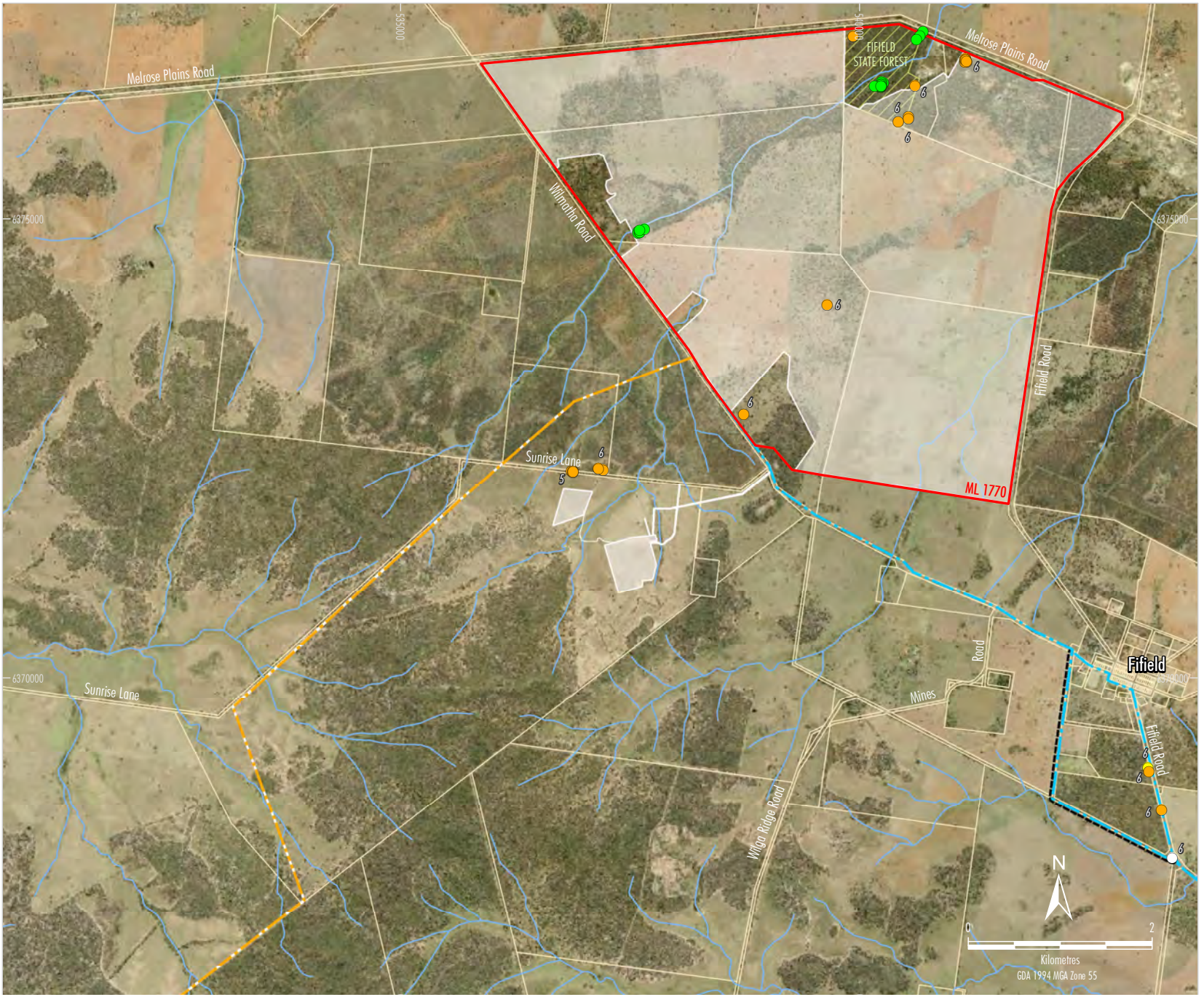
Plant Community Types - Accommodation Camp

Figure 5b

CTL-17-03 MP 2018_BioMP_204B



LEGEND

- State Forest
- Mining Lease Boundary (ML)
- Approved Surface Development Area
- Fifield Bypass
- Gas Pipeline
- Water Pipeline

Threatened Species

- *Austrostipa wakoolica*
- *Lepidium monoplocoides*
- *Swainsona sp.*
- *Tylophora linearis*

Reference: 5. AMBS (2017)
6. AMBS (2016)

Note: There are no references 1 - 4 on this figure.

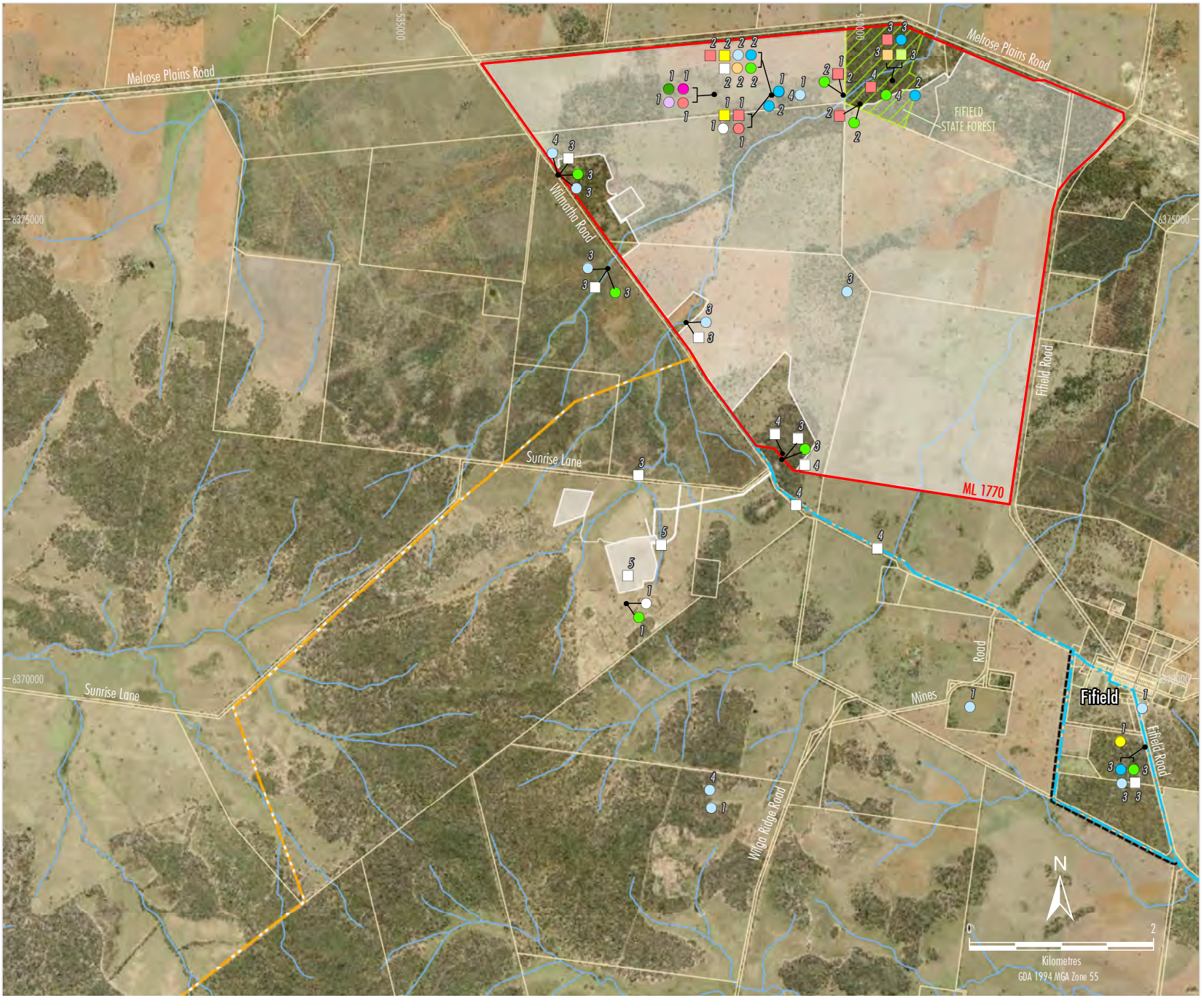
Source: Clean TeQ (2018); NSW Department of Industry (2017); NSW Land and Property Information (2017)
NSW Imagery: © Department of Finance, Services & Innovation (2017)

CLEAN TEQ SUNRISE PROJECT

Threatened Flora Records

Figure 6

CTL-17-03 MP 2018_BioMP_210B



LEGEND

- State Forest
- Mining Lease Boundary (ML)
- Approved Surface Development Area
- Fifield Bypass
- Gas Pipeline
- Water Pipeline

Threatened Birds

- Malleefowl
- Black Falcon
- Spotted Harrier
- Little Eagle
- Major Mitchell's Cockatoo
- Turquoise Parrot
- Superb Parrot
- Brown Treecreeper (eastern subspecies)
- Painted Honeyeater
- Hooded Robin
- Grey-crowned Babbler (eastern subspecies)
- Varied Sittella
- Gilbert's Whistler
- Diamond Firetail
- Dusky Woodswallow

Reference: 1. Atlas of Living Australia (2017)
2. Birdlife Australia (2017)
3. Future Ecology (2017)
4. OEH (2017)
5. AMBS (2017)

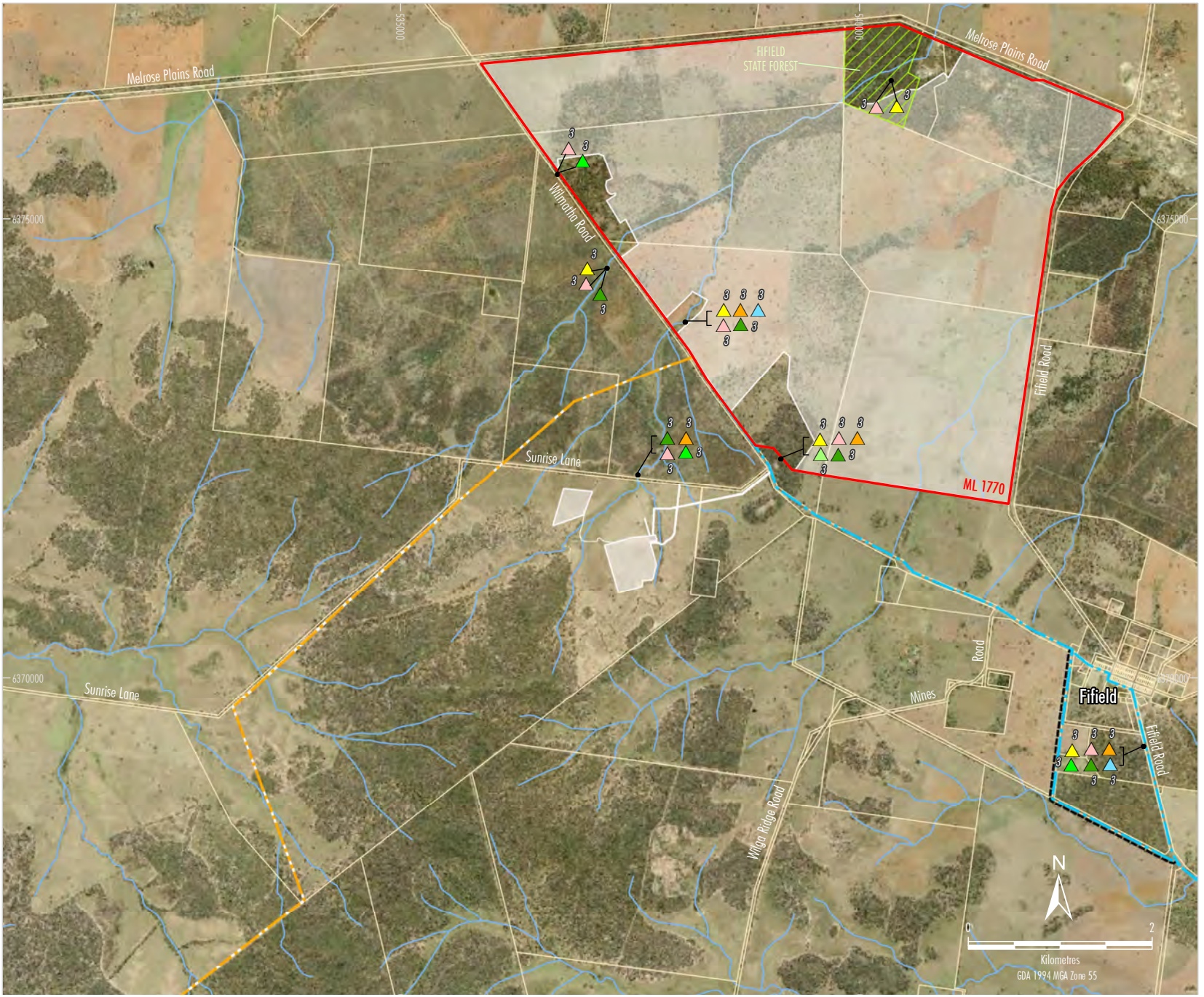
Source: Clean TeQ (2018); NSW Department of Industry (2017); NSW Land and Property Information (2017)
NSW Imagery: © Department of Finance, Services & Innovation (2017)

CLEAN TEQ SUNRISE PROJECT

Threatened Bird Records

Figure 7

CTL-17-03 MP 2018_BioMP_206B



LEGEND

- State Forest
- Mining Lease Boundary (ML)
- Approved Surface Development Area
- Fifield Bypass
- Gas Pipeline
- Water Pipeline

Threatened Mammals

- Yellow-bellied Sheathtail-bat
- ^ Eastern Bentwing-bat
- ^ Corben's Long-eared Bat
- ^ Large-eared Pied Bat
- Little Pied Bat
- ^ Southern Myotis
- ^ Eastern Cave Bat

Reference: 3. Future Ecology (2017)

Note: There are no references 1 and 2 on this figure.
^ Unconfirmed calls possibly recorded via bat recording devices.

Source: Clean Teq (2018); NSW Department of Industry (2018); NSW Land and Property Information (2017)
NSW Imagery: © Department of Finance, Services & Innovation (2017)

CLEAN TEQ SUNRISE PROJECT

Threatened Bat Records

Figure 8

CTL-17-03 MP 2018_BioMP_207B

The surface water infrastructure will be constructed near the Lachlan River and will be located in River Red Gum Woodland. Vegetation clearance for the surface water infrastructure will be minimised as per the measures described in Section 4.2.

Water Pipeline

Service corridors for the water pipeline will be established in public road reserves for the majority of their length (Black Range Minerals, 2000) (Figure 1). The density of native vegetation in the road reserves varies considerably along the corridors (from cleared to intact) and depends on the width of the corridor and degree of past disturbance (Orchid Research, 2000). Vegetation clearance would be minimised as described in Section 4.2. The alternative water pipeline alignment (Figure 1) will be constructed in previously cleared road verges along Wilmatha Road, Gobondry Street and Fifield Road (i.e. avoiding the need to clear any areas of native vegetation communities) (Hunter Eco, 2017).

Road Upgrades

The road upgrades are shown on Figure 4. The materials transport route is a narrow road easement over most of its length and has thin strips of remnant native vegetation beside it (Black Range Minerals, 2000).

4.1 Ground Disturbance Permit

The Project Ground Disturbance Permit process is an internal process that applies to all surface disturbance works at the Project. The Ground Disturbance Permit process is as follows:

- Prior to any direct ground disturbance activities commencing in a proposed work area, relevant site personnel (or the relevant Project Manager) will prepare a Ground Disturbance Permit for approval by the Environmental Superintendent.
- Approval of the Ground Disturbance Permit must be obtained prior to the commencement of direct ground disturbance activities. The proposed impact area would be delineated in accordance with the Biodiversity Management Plan and Revegetation Strategy, prior to commencing disturbance works.

4.2 Vegetation Clearance Protocol

A Vegetation Clearance Protocol has been developed to minimise the impact from vegetation clearance activities on native flora and fauna, including threatened species. The Vegetation Clearance Protocol will apply to all initial Project construction activities (Black Range Minerals, 2000).

The Vegetation Clearance Protocol is described below and shown on Figure 9. The protocol involves:

- clearing restrictions (Section 4.2.1);
- undertaking pre-clearance surveys (Section 4.2.2);
- applying clearing methods to minimise impacts on fauna (Section 4.2.3);
- salvaging of material (including seed) for habitat enhancement (Section 4.2.4);
- installation of artificial bat roosts (Section 4.2.5);
- rehabilitation following construction (Section 4.2.6); and
- reporting (Section 4.2.7).

4.2.1 Clearing Restrictions

Timing of Habitat Clearance

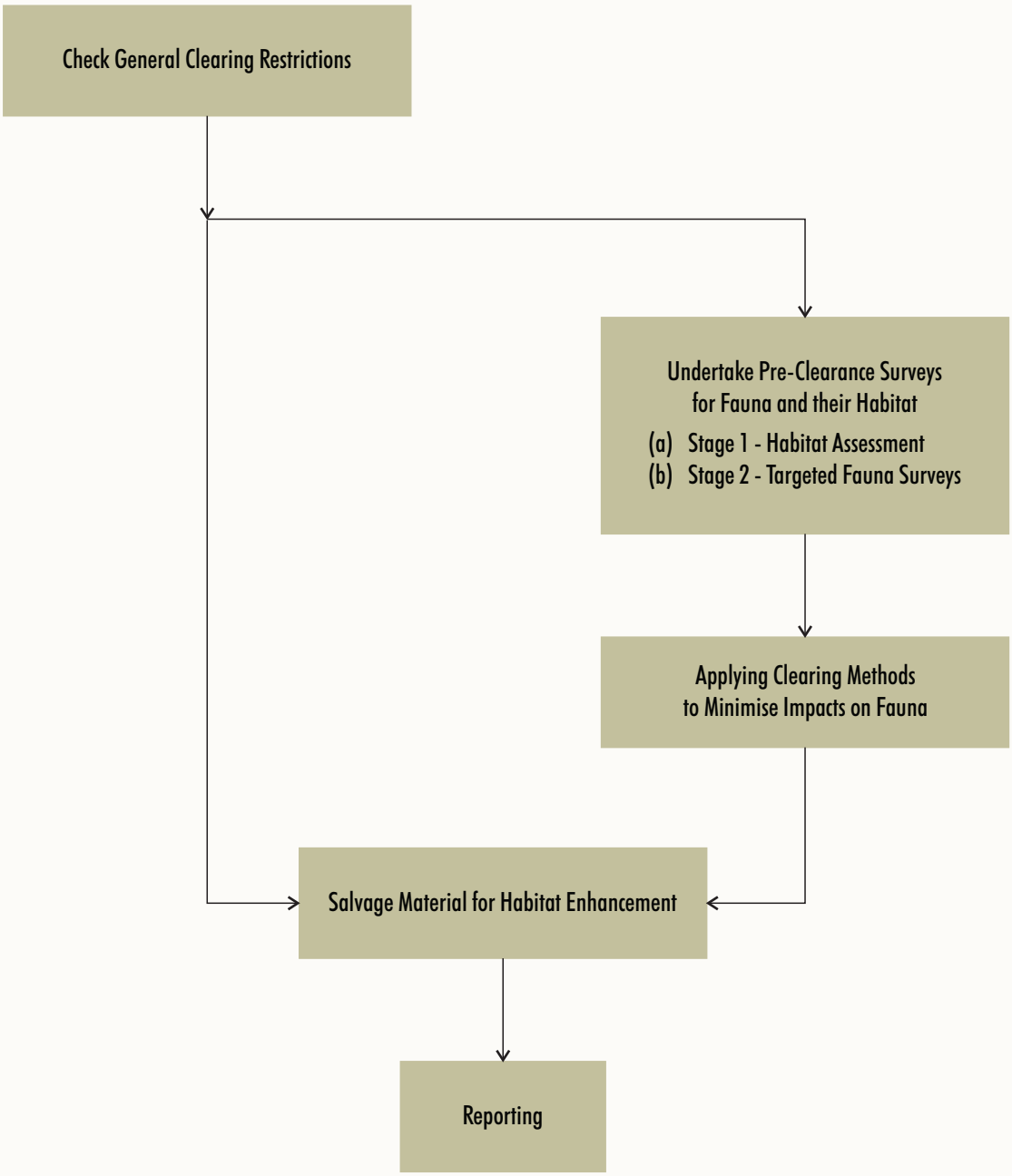
Habitat clearance will be undertaken between late summer and late autumn (February to May), where possible, as this period would minimise impacts on birds and bats likely to be present on site[2]. Should clearance of trees be required at other times of the year, the clearing procedures will be reviewed to minimise impacts on fauna likely to be at risk at that time of year (Section 4.2.3). Clearance of derived native grassland or non-habitat trees or shrubs will occur at any time of year.

Minimising Clearance

Condition 35(c), Schedule 3 of Development Consent DA 374-11-00 requires measures to minimise clearing and avoiding unnecessary disturbance within the approved development footprint.

Mature remnant trees (including those with tree hollows) will be retained where possible (Black Range Minerals, 2000). Approved disturbance limits near areas to be cleared will be delineated on the ground prior to clearing activities (e.g. flagging tape and posts) to protect vegetation and fauna habitat outside the approved disturbance area in accordance with Condition 35(c), Schedule 3 of Development Consent DA 374-11-00.

[2] The *Syerston Nickel Cobalt Project Environmental Impact Statement* (Project EIS) (Black Range Minerals, 2000) describes that the removal of native vegetation will be undertaken, where possible, in late autumn or winter to minimise disturbance to potential breeding activities. This period will avoid potential breeding activities for birds but it coincides with the hibernation period for bats, and a number of threatened bat species have been recorded on-site during recent surveys by Future Ecology (2017) (Section 4.3).



CTL-17-03 MP 2018_BioMP_001A

Figure 9

Where practicable during construction of the water pipelines, corridors will be kept as narrow as possible and will be positioned in the cleared section of road reserves to minimise disturbance to trees and shrubs (Black Range Minerals, 2000). Construction laydown areas will also be located on already disturbed sites (Black Range Minerals, 2000). The alternative water pipeline alignment option will be constructed in previously cleared areas along Wilmatha Road, Gobondry Street and Fifield Road.

The pump station (and pipeline to the Lachlan River) has been specifically sighted to avoid mature River Red Gums (i.e. trees old enough to flower).

The surface water infrastructure corridor between the pump station and the transfer station will be constructed within a 35 m wide corridor, specifically sighted to minimise clearance of River Red Gum Woodland regeneration. The alignment will be finalised during detailed design of the Project; however, the access road and water pipeline will not involve the disturbance of any mature trees.

Existing Open Woodland to be Maintained

Existing open woodland to be maintained within the mine site is shown on Figure 5a. The Project EIS (Black Range Minerals, 2000) described that a primary aim of preserving such areas will be to maintain biodiversity and to facilitate the potential for linking these areas to rehabilitation areas.

Management activities will include exclusion of grazing livestock, weed and feral species control (Sections 4.5 and 4.6), and provision of habitat features (e.g. those salvaged [Section 4.2.4]) and the artificial bat roosts [Section 4.2.5]).

4.2.2 Pre-clearance Targeted Vertebrate Animal Surveys

Targeted pre-clearance surveys for vertebrate fauna will be undertaken by a suitably qualified person(s). The objective of the pre-clearance vertebrate fauna surveys is to identify:

1. habitat features in trees that could harbour vertebrate fauna and place them at risk during vegetation clearance activities (e.g. tree hollows), or features that could be salvaged and reused such as mature trees and stags; and
2. vertebrate fauna most likely to be at risk during vegetation clearance activities and those that will be managed during clearing activities.

The two stages to the pre-clearance surveys are outlined below.

Stage 1 – Habitat Assessment

The first stage of the pre-clearance surveys will involve a habitat assessment to:

- identify habitat trees (i.e. trees that contain nests or suspected bat roosts, including mature trees with hollows);
- identify habitat features that will be used in the mine site rehabilitation and habitat enhancement in the Revegetation Areas (Section 9.2); and
- identify seed resources for seedling propagation for mine site rehabilitation.

The first stage of the pre-clearance surveys may be undertaken concurrently with the second stage of the pre-clearance surveys.

Stage 2 – Targeted Vertebrate Animal Surveys

Targeted vertebrate fauna surveys will be undertaken to identify species most likely to be at risk during vegetation clearance activities and those that will be managed during clearing activities, such as hollow-dwelling fauna (e.g. birds, bats and/or arboreal mammals). Targeted vertebrate animal surveys will be undertaken in a particular area of habitat within two weeks prior to clearing, so the information can be used to inform clearance activities.

4.2.3 Clearing Procedures to Minimise Harm to Native Vertebrate Animals/Fauna Rescue Strategy

Management of Non-habitat Trees

Vegetation around habitat trees may be initially cleared so that the habitat trees are isolated and less desirable for animals to inhabit them prior to clearance.

Management of Habitat Trees

If a habitat tree contains a nest that is suspected to be active (i.e. suspected to contain eggs or young), the tree will not be cleared until after fledglings have left the nest.

A suitably qualified person(s) will be present during clearing of habitat trees to manage vertebrate animals in accordance with appropriate licenses. Habitat trees will be inspected by a suitably qualified person(s) immediately prior to and after felling for animals. A suitably qualified person(s) may:

- leave animals to move on their own accord (prior to or after felling);

- capture and release animal(s) into surrounding suitable habitat either at the time of capture or at a more suitable time depending on the animal (e.g. at night for arboreal mammals and bats); and
- capture injured animal(s) for assessment by a suitably qualified ecologist in relation to the animal's welfare.

The following clearing methods will be employed when clearing habitat trees containing a feature (e.g. hollows, openings, cracks, and loose bark) suspected to be used by bats, birds or arboreal animals:

- immediately prior to clearance, the tree will be shaken with machinery to encourage animals to move to an alternative tree;
- the tree will be lowered slowly using an excavator (or similar), with the tree hollow facing upwards (to enable animals to exit);
- the felled tree will be visually inspected for animals; and
- the felled tree will be left *in situ* overnight to enable remaining animals to exit at night.

Material for habitat enhancement will be salvaged prior to or following felling of vegetation (whichever is more appropriate) (Section 4.2.4).

Section 4.2.5 describes the installation of artificial bat roosts in accordance with Condition 35(c), Schedule 3 of Development Consent DA 374-11-00. Relocation of bat roosts will only be considered if clearing is to occur in winter and the tree is suspected to have a hibernating bat colony.

Management of Pipeline Trenches

The Project EIS (Black Range Minerals, 2000) describes that the pipeline trenches be left exposed for as short a period as possible. The ends of trenches will be ramped to allow larger sized fauna to escape (Black Range Minerals, 2000). A member of the construction crew will be made responsible for inspecting exposed trenches twice a day (morning and afternoon/evening) at a minimum for any trapped fauna, and if necessary clearing the trench of any fauna prior to the pipe being lowered. Any fauna found within a trench will be removed and released into the nearest suitable habitat.

During periods where the pipeline construction is adjacent to high quality habitat areas and there is a sustained increase in fauna becoming trapped in the pipeline, other options to reduce fauna interaction with the trench will be investigated.

In the event that three consecutive monitoring periods of the exposed trench reports more than five trapped fauna in the trench, this will trigger alternate options to be considered such as decreased trench exposure time and increased fauna checks.

Temporary fencing along the exposed trench (e.g. with shade cloth or silt fabric) could be considered where the pipeline is constructed adjacent to high quality habitat areas (Black Range Minerals, 2000).

4.2.4 Salvage of Material for Habitat Enhancement

Salvage of material (including seed) for habitat enhancement will be undertaken opportunistically for beneficial reuse in the rehabilitation at the mine site.

Salvage of Habitat Features

Habitat features (e.g. tree hollows, trunks, logs, branches, small stumps and roots) will be salvaged during vegetation clearance activities at the mine site and stockpiled for relocation to nearby areas (i.e. rehabilitated areas). Ground cover (e.g. small logs, fallen branches and leaf litter) will be retained within stripped topsoil to improve the viability of the soil when it is used in rehabilitation.

Existing open woodland to be maintained within the mine site is shown on Figure 5a. Management activities for these areas will include provision of habitat features (e.g. those salvaged).

Collection and Propagation of Seed

In accordance with Condition 35(c), Schedule 3 of Development Consent DA 374-11-00, seed will be opportunistically collected from felled trees at the mine site for seedling propagation (or used directly in rehabilitation) to reduce the demand of commercial seed for mine site rehabilitation.

Felled Vegetation along the Pipelines

Felled trees and shrubby vegetation greater than 1.5 metres (m) in height will be removed from the road easement to minimise potential fire hazards (Black Range Minerals, 2000).

4.2.5 Installation of Artificial Bat Roosts

Objective

Artificial roosts will be installed to provide habitat opportunities to tree dwelling bats in accordance with Condition 35(c), Schedule 3 of Development Consent DA 374-11-00. A number of potentially occurring threatened bat species roost in tree hollows (Yellow-bellied Sheathtail-Bat [*Saccolaimus flaviventris*] and possibly the Corben's Long-eared Bat [*Nyctophilus corbeni*] – Figure 8).

Methodology

Within 12 months of commencement of construction, a total of 50 artificial bat roosts will be installed in existing open woodland to be maintained at the mine site (Figure 5a). Fabricated ply-wood micro bat nest boxes will be pre-purchased (e.g. Nest Boxes Australia - http://www.nestingboxes.com.au/). Artificial bat roosts will be generally installed:

- in separate healthy living trees;
- approximately 2 m above the ground;
- with a similar aspect; and
- to provide shelter from rain and, if possible, excessive sun.

Existing open woodland to be maintained within the mine site is shown on Figure 5. Management activities for these areas will include provision of artificial bat roosts.

The following minimum data will be recorded upon installing the nest boxes:

- date;
- GPS location of each nest box and type;
- height of the nest box;
- surrounding vegetation maturity/type; and
- photographs of each installed box.

Monitoring

Objective

Once installed, the nest boxes will be monitored by suitably qualified personnel to observe bat usage.

Timing

Occupation of nest boxes is typically low during the first year after installation. However, the quarterly inspections will enable occupation timing to be documented. Following the first year, monitoring will occur annually in spring and may then be reduced to monitoring in spring every two years following a review of the monitoring reports.

Methodology

The entrance to the nest box will be blocked prior to inspection to reduce the chance of possible nocturnal inhabitants escaping and risking predation (Freegard and Richter, 2009).

Surveillance of bat boxes will be undertaken via watching groups of nest boxes for exiting bats at dusk (de Souza-Daw, 2003), Bat boxes will not be opened once occupied by bats (de Souza-Daw, 2003) as disturbing hibernating bats can lead to exhaustion of food reserves and death of the animal (Strahan, 2004).

The following minimum data will be recorded during each monitoring event:

- date;
- type of nest box and its specifications (at commencement of study);
- nest box number and location;
- signs of animal presence (e.g. guano);
- species of animals present (or possibly present inferred from secondary evidence);
- breeding data where possible;
- number of individuals; and
- sex and age of individuals (adults, independent subadults or dependent juveniles).

Data Analysis

Results will be compiled after each monitoring event. The data will be statistically analysed as determined by the suitably qualified person.

Ongoing Maintenance

The nest boxes will be left *in situ* and maintained for the life of the mine. The boxes are to be checked annually and maintained if infested (e.g. by bees) or replaced if in disrepair. The results of the monitoring may inform future management of the nest boxes.

4.2.6 Rehabilitation Following Construction of the Borefields, Surface Water Extraction Infrastructure and Water Pipeline

The Project EIS (Black Range Minerals, 2000) describes that following construction of the water pipelines, the disturbance areas are to be rehabilitated with native grasses and forbs, creating ground cover for small fauna. Weeds will be managed as described in Section 4.5.

Two native endemic trees will be replanted for every tree removed as a result of the water pipelines (Black Range Minerals, 2000). Since the water pipelines are mostly in road reserves and private land, permission will be sought from the relevant landholder to plant trees. The rehabilitation strategy for the water pipeline described in the EIS will be extended to the alternative water pipeline alignment option.

Rehabilitation will not be warranted post construction of the borefields, however weeds will be managed as described in Section 4.5 (Black Range Minerals, 2000).

Following the decommissioning stage, rehabilitation of the borefields and surface water extraction infrastructure will be undertaken in consultation with underlying landowners. Regeneration of the borefields and surface water extraction infrastructure areas will reflect the vegetation of the existing environment and will include management of weed species. The final landform for the borefields, surface water extraction infrastructure and water pipeline will not be significantly different to the existing landform.

4.2.7 Reporting

A Vegetation Clearance Protocol report will be prepared annually and published as a section of the Annual Review (Section 7.1). It will include a summary of previous Vegetation Clearance Protocol reports. The Project Annual Review will include:

- a summary of the management of vegetation and fauna at each stage of the Vegetation Clearance Protocol in the reporting period;
- a list of threatened species recorded during the implementation of the Vegetation Clearance Protocol in the reporting period;
- an overview of the results of the Vegetation Clearance Protocol, including the quantity of material salvaged for habitat enhancement; and
- the species and number of trees cleared for the water pipelines as two native endemic trees will be replanted for every tree removed (Black Range Minerals, 2000).

An artificial bat roost monitoring report will be prepared annually (or every two years if monitoring is reduced as above) and included in the Annual Review (Section 7.1).

4.3 Threatened Species Management

Condition 35(c), Schedule 3 of the Development Consent DA 374-11-00 requires measures to identify and manage significant impacts on any threatened fauna species not identified in the EIS, particularly the Yellow-bellied Sheathtail Bat, Little Pied Bat, Greater Long Eared Bat (now Corben's Long-eared Bat), Barking Owl, Pied Honeyeater, Major Mitchell's Cockatoo and Superb Parrot. This condition is intended to apply to the mine site and limestone quarry.

Measures to Identify Significant Impacts on Threatened Fauna Species

Impact assessments were undertaken in the Project EIS for all of the threatened species listed in Condition 35(c), Schedule 3 of Development Consent DA 374-11-00, which concluded that no threatened fauna species are likely to be significantly affected by the Project (Mount King Ecological Services, 2000b; Greg Richards and Associates, 2000b). This was based on the occurrence of areas of more suitable habitat in the region, the relative mobility of many species and the high level of disturbance across much of the Project area.

Subsequent to the fauna surveys undertaken by Mount King Ecological Services (2000a) and Greg Richards and Associates (2000a), targeted fauna surveys for threatened species were undertaken at the mine site by Future Ecology (2017) during August and October 2016. Table 4 lists the threatened species recorded by Future Ecology (2017) during these surveys, all of which were birds and bats. The threatened species records are shown on Figures 7 and 8. All of the species listed in Condition 35(c), Schedule 3 of Development Consent DA 374-11-00 were recorded[3] at the mine site by Future Ecology (2017), except the Barking Owl and Pied Honeyeater. The recent survey findings do not change the significance of the impacts due to the more suitable habitat in the region, the relative mobility of many species and the high level of disturbance across much of the Project area.

[3] Corben's Long-eared Bat was possibly recorded as the calls cannot be identified to species level.

Table 4 – Threatened Species Recorded at the Mine Site

Scientific Name	Common Name	Confidence Level of Detection	Status		Relevant Management Measures
			BC Act[1]	EPBC Act[2]	
Birds					
Artamus cyanopterus	Dusky Woodswallow	Definite	V	-	This species may use habitat in the existing open woodland to be maintained at the mine site (Figure 5a).
Climacteris picumnus victoriae	Brown Treecreeper (eastern subspecies)	Definite	V	-	Clearance of potential habitat will be minimised via the Vegetation Clearance Protocol (Section 4.2).
Lophochroa leadbeateri	Major Mitchell's Cockatoo	Definite	V	-	Clearance of potential habitat will be minimised via the Vegetation Clearance Protocol (Section 4.2) and this species may possibly use the salvaged hollows.
Pachycephala inornata	Gilbert's Whistler	Definite	V	-	Clearance of potential habitat will be minimised via the Vegetation Clearance Protocol (Section 4.2).
Polytelis swainsonii	Superb Parrot	Definite	V	V	Clearance of potential habitat will be minimised via the Vegetation Clearance Protocol (Section 4.2) and this species may possibly use the salvaged hollows and trunks.
Pomatostomus temporalis temporalis	Grey-crowned Babbler (eastern subspecies)	Definite	V	-	These species may use habitat in the existing open woodland to be maintained at the mine site (Figure 5a).
Stagonopleura guttata	Diamond Firetail	Definite	V	-	This species may use habitat in the existing open woodland to be maintained at the mine site (Figure 5a).
Bats					
Chalinobolus dwyeri	Large-eared Pied Bat	Possible^	V	V	Clearance of potential foraging habitat for this cave-dwelling bat will be minimised via the Vegetation Clearance Protocol (Section 4.2).
Chalinobolus picatus	Little Pied Bat	Definite	V	-	This species may possibly use the artificial bat roosts (Section 4.2.5).
Miniopterus schreibersii oceanensis	Eastern Bentwing-bat	Possible^	V	-	Clearance of potential foraging habitat for this cave-dwelling bat will be minimised via the Vegetation Clearance Protocol (Section 4.2).
Myotis macropus	Southern Myotis	Possible^	V	-	This species may possibly use the artificial bat roosts (Section 4.2.5).
Nyctophilus corbeni	Corben's Long-eared Bat	Possible^	V	V	This species may possibly use the artificial bat roosts (Section 4.2.5).
Saccolaimus flaviventris	Yellow-bellied Sheathtailed-bat	Definite	V	-	This species may possibly use the artificial bat roosts (Section 4.2.5).
Vespadelus troughtoni	Eastern Cave Bat	Possible^	V	-	Clearance of potential foraging habitat for this cave-dwelling bat will be minimised via the Vegetation Clearance Protocol (Section 4.2).

Highlighted species – species listed in Condition 35(c), Schedule 3 of the Development Consent DA 374-11-00.

[1,2] Threatened fauna species status under the BC Act and/or EPBC Act (current as at November 2017).

V = Vulnerable.

^ = possible recording via bat recording devices.

Surveys undertaken by Future Ecology (2016) in the locality of the borefields and surface water extraction infrastructure identified one Brown Treecreeper (eastern subspecies) (*Climacteris picumnus picumnus*) (a small bird listed as 'Vulnerable' under the BC Act).

The Lachlan River is recognised as part of the *Aquatic Ecological Community in the Natural Drainage System of the Lowland Catchment of the Lachlan River Endangered Ecological Community* listed under the *Fisheries Management Act, 1994* (FM Act).

The lower Lachlan River is also recognised habitat for the Silver Perch (*Bidyanus bidyanus*) (listed as 'Vulnerable' under the FM Act) (DPI, 2016). Due to the limited number of naturally occurring self-sustaining populations of the species, however, the Silver Perch is unlikely to occur within the lower Lachlan River and consequently is not likely to be impacted by the Project. No other threatened populations listed under the FM Act are likely to occur in the lower Lachlan River. Notwithstanding, measures to address potential impacts on fish are provided below.

Measures to Manage Impacts on Threatened Fauna Species

Since no threatened fauna species are likely to be significantly affected by the Project (Mount King Ecological Services, 2000b; Greg Richards and Associates, 2000b), measures to manage significant impacts are not required. General measures to manage impacts on threatened species are, nonetheless, provided in Table 4.

In addition, the following measures will be implemented to manage potential impacts on fish:

- a self-cleaning screen will be installed on the proposed pump station that would reduce the intake of fish at the pump inlet; and
- the pump on the pump station will be started slowly and then ramping up velocity to reduce the likelihood of fish in the vicinity of the intake being drawn into the pump.

Clean TeQ will also design and construct the pump station near the Lachlan River in consideration of the *Controlled Activities on Waterfront Land Guidelines for instream works on waterfront land* (Department of Primary Industries [DPI], 2012).

4.4 Tailings Storage Facility Management

Tailings generated in the processing facility will be deposited in the tailings storage facility. The saline nature of the tailings water (principally magnesium sulphate) prevents the re-use of it in the process plant. During the initial Project construction activities the tailings storage facility and evaporation surge dam will be constructed but not operated (Figure 2).

As described in Section 1, this BMP-RS has been prepared for the initial Project construction activities at the mine site (Figure 2), development and operation of the borefields, surface water extraction infrastructure and water pipeline (Figures 1 and 3) and road upgrades (Figure 4). This BMP-RS will be revised prior to operation of the tailings storage facility to describe a management program aimed at minimising potential exposure of vertebrate fauna to tailings in the tailings storage facility in accordance with Condition 35(c), Schedule 3 of Development Consent DA 374-11-00 (e.g. daily routine inspections for avifauna and contingency measures in the unlikely event that the tailings storage facility becomes a focus for avifauna).

4.5 Weed Control

Objective

The weed control program described below aims to manage weeds to minimise their impact on native flora and fauna.

Baseline Data

Vegetation mapping on Figure 5a shows that the mine site comprises predominantly cleared land. The site has a high level of exotic plant species due to the past disturbances (clearance, grazing and cropping) (AMBS Ecology and Heritage, 2017; Orchid Research, 2000).

In NSW all plants are regulated under the NSW *Biosecurity Act, 2015* with a general biosecurity duty to prevent, eliminate or minimise any biosecurity risk they may pose. Any person who deals with any plant, who knows (or ought to know) of any biosecurity risk, has a duty to ensure the risk is prevented, eliminated or minimised, so far as is reasonably practicable.

State level determined priority weed species are set by the NSW (DPI). The NSW *Biosecurity Act, 2015* and regulations provide specific legal requirements for state level priority weeds and high risk activities. One State level determined priority weed species, African Boxthorn (*Lycium ferocissimum*), is known to occur on site (AMBS Ecology and Heritage, 2017; Orchid Research, 2000) (Table 5).

Regionally determined priority weed species are listed in the *Central West Regional Strategic Weed Management Plan 2017–2022* (Central West Local Land Services, 2017) along with regional strategic responses. Two regionally determined priority weeds are known to occur on site (AMBS Ecology and Heritage, 2017; Orchid Research, 2000) (Table 5).

Table 5 – Priority Weeds

Species	Status[1]	Level	Mandatory Measure (*Biosecurity Regulation, 2017*)	Regional Strategic Responses (*Central West Local Land Services, 2017*)
African Boxthorn (*Lycium ferocissimum*)	Of Concern	State level determined priority weed species	*Measure* *A person must not import into the State or sell this species.* *Relevance to the Project* This Mandatory Measure is not applicable to the activities associated with the Project.	*Regional Strategic Responses* *Work within existing widespread weed programs for strategic asset protection.* *Prioritise the application of the General Biosecurity Duty to assist with management of these species.* *Work with industry to develop industry standards including restrictions on sale and trade.* *Relevance to the Project* CleanTeQ will prioritise the application of the General Biosecurity Duty for these species.
Bathurst Burr (*Xanthium spinosum*)	Of Concern	Regionally determined priority weed species	N/A	
St John's Wort (*Hypericum perforatum*)	Of Concern	Regionally determined priority weed species	N/A	

1. *'These species are a high priority for asset protection. Many are actively managed under a number of current programs, or are commercial species with a manageable biosecurity risk. It is not feasible to contain or eradicate these species, however minimising their impacts is reasonably practicable.'*

Procedure for Controlling and Monitoring Weeds

Weeds will be controlled at the mine site, borefields, surface water extraction infrastructure, water pipeline and road upgrades.

All weeds will be monitored and controlled during the initial Project construction activities *by an appropriately qualified contractor using standard methods.* The procedure for controlling and monitoring weeds is as follows:

1. Monitor (map) the location and density of all weeds through inspections of the mine site.
2. Identification of suitable control methods for identified weeds.
3. Implementation of the selected control methods on the identified weeds.
4. Follow-up site inspections to evaluate the effectiveness of the weed control.
5. Follow-up control where previous control has been sub-optimal.

The control of priority weeds is required under the *NSW Biosecurity Act, 2015*. In the event that any priority weed is identified, it will be controlled in accordance with the appropriate strategy as defined in *Central West Regional Strategic Weed Management Plan 2017–2022* (Central West Local Land Services, 2017 or its revision).

Recommended published techniques for the removal of priority weeds will be consulted prior to weed control, e.g. *Noxious and Environmental Weed Control Handbook* (DPI, 2014a). The control of weeds is intended to be adaptive and will be informed/reviewed based on monitoring.

Frequency, Timing and Duration

The procedure for controlling and monitoring weeds will commence within six months of construction activities and be implemented twice a year, every six months (or at other times when rainfall conditions are favourable to weed outbreaks). Significant weed occurrences on the mine site (20-40% cover or priority weeds) found opportunistically outside these times during any other site inspections will be targeted for control.

Performance Indicators and Contingency Measures

The performance indicator is the extent of weed species, which will be reduced then maintained at 40% below the baseline weed abundance percentage across the mine site, and that no new priority weed species will be introduced. This percentage will indicate the success of management actions once the weed management activities have been implemented.

During the initial management stage and weed reduction period, corrective actions will be investigated if there is a significant increase in weed diversity.

In the event a consistent increase in weed extent is recorded once the 40% reduction level has been reached and maintained, or a new priority weed species is identified that was not recorded during baseline surveys, additional strategies to control the problematic weed species will be reviewed (e.g. changing the weed control method or increasing the frequency of weed control) (Section 6).

Clean TeQ will adopt on-going best-practice active and adaptive management of weeds. Ideally, weed species should not comprise more than 20% of any strata in the native vegetation communities on the site.

Record Keeping and Reporting

A weed monitoring report will be prepared annually that includes a summary of previous monitoring reports. The following data will be recorded:

- the location and abundance of priority and/or environmental weeds;
- control methods, effort and timing; and
- effectiveness of the weed control.

A summary of the weed monitoring results will be reported in the Annual Review (Section 7.1).

4.6 Feral Animal Controls

Objective

The objective of feral animal control program is to manage feral animals to minimise their impact on native flora and fauna.

Baseline Data

Due to the past disturbances (clearance, grazing and cropping), a number of non-native animals have been recorded in the mine site, namely, House Sparrow (*Passer domesticus*), Common Starling (*Sturnus vulgaris*), Dog (*Canis lupus familiaris*), Feral Goat (*Capra hircus*), Feral Cat (*Felis catus*), Brown Hare (*Lepus capensis*), House Mouse (*Mus musculus*), European Rabbit (*Oryctolagus cuniculus*), Pig (*Sus scrofa*) and European Red Fox (*Vulpes vulpes*) (Future Ecology, 2017; Mount King Ecological Services, 2000a).

Procedure for Controlling Feral Animals

Clean TeQ will maintain a clean, rubbish-free environment across the mine and processing facility site, particularly around administration and contractor areas. This will discourage scavenging and reduce the potential for colonisation of these areas by non-endemic fauna (e.g. introduced rodents, birds).

Feral animals *within* the mine site will be monitored and controlled during the initial Project construction activities *by an appropriately qualified contractor using standard methods.* The procedure for controlling feral animals is as follows:

1. Monitor the abundance of feral animals.
2. Identification of target feral animals and suitable control methods (e.g. trapping and/or baiting).
3. Implementation of the selected control methods on the target feral animals.
4. Re-monitor the abundance of feral animals to evaluate the effectiveness of the control methods.
5. Follow-up control where previous control has been sub-optimal.

Control measures will be implemented by mine staff or by an appropriate Pest Control Contractor(s) as required. All personnel involved in feral animal control will be required to hold relevant and valid licences/permits, including any relevant chemical licences for pesticide use. The *Humane Pest Animal Control: Code of Practice and Standard Operating Procedures* (DPI, 2013, or its revision) will be followed.

Control methods for moderately common or abundant feral animals are outlined in Table 6. A selection of these techniques or additional techniques may be undertaken depending on the feral animal species which is in an abundance that requires control (as determined through monitoring) and the success of these control techniques. The control of feral animals is intended to be adaptive and will be informed/reviewed based on monitoring.

Table 6 – Example Control Methods for Feral Animals

Scientific Name	Common Name	Status[1]	Control Method	Relevant Documents
Felis catus	Feral Cat	-	Ground baiting/trapping.	A and B
Lepus capensis	Brown Hare	-	Ground baiting.	A and B
Oryctolagus cuniculus	European Rabbit	Declared pest	Warren ripping/fumigation; and/or ground baiting (using 1080 poison).	A, B and C
Sus scrofa	Pig	Declared pest	Ground baiting (using 1080 poison).	A and B
Vulpes vulpes	European Red Fox	Declared pest	Ground baiting (using 1080 poison).	A, B, D and E

1 Local Land Services Act, 2013

A *PestSmart Toolkit* (Invasive Animals Cooperative Research Centre, 2015)

B *Vertebrate Pest Control Manual* (DPI, 2014b)

C *Threat Abatement Plan for competition and land degradation by rabbits* (Department of the Environment, Water, Heritage and the Arts [DEWHA], 2008b)

D *Threat Abatement Plan for predation by the European red fox* (DEWHA, 2008a)

E *NSW Threat Abatement Plan: predation by the red fox* (*Vulpes vulpes*) (OEH, 2011)

Frequency, Timing and Duration

An initial feral animal study will be undertaken within the first 12 months after approval of the BMP-RS. If the results of the survey indicate that a control program is necessary, such a control program will be implemented and monitored.

Monitoring of feral animals (including foxes, rabbits and cats) will be undertaken every subsequent two years by an appropriately qualified contractor. If the results of these surveys indicate that a control program is necessary, such a control program will be implemented and monitored as described in this section. Feral animal occurrences on the mine site recorded opportunistically outside these times will be documented.

Performance Indicators and Contingency Measures

The performance indicator is the extent of feral animal species, which will be reduced then maintained at 25% below the feral animal abundance baseline across the mine site. This percentage will indicate the success of management actions once the pest control management activities have been implemented. Different targets may be required for individual pest species depending on the abundance of the species and the effectiveness of control measures. Individual targets may be set for individual pest species if monitoring indicates the need for individual targets.

During the initial management stage and feral animal reduction period, corrective actions will be investigated if there is a significant increase in feral animal diversity.

In the event a consistent increase in feral animals is recorded once the 25% reduction level has been reached and maintained, additional strategies to control the problematic feral animal species will be reviewed (e.g. changing the control method or increasing the frequency of control) (Section 6).

Record Keeping and Reporting

A feral animal monitoring report will be prepared annually that includes a summary of previous monitoring reports. The following data will be recorded:

- the location and abundance of feral animals;
- control methods, effort and timing; and
- effectiveness of the control methods.

A summary of the feral animal monitoring results will be reported in the Annual Review (Section 7.1).

4.7 Controlling Erosion

Erosion and sediment controls will be designed, installed and maintained generally in accordance with the series *Managing Urban Stormwater: Soils and Construction* including *Volume 1* (Landcom, 2004), *Volume 2A – Installation of Services* (Department of Environment and Climate Change [DECC], 2008a) and *Volume 2C – Unsealed Roads* (DECC, 2008b).

Water collected from the disturbance footprint (e.g. internal haul roads and waste dumps) will be temporarily contained in the sediment dams.

Erosion and sediment control structures will be inspected on a regular basis and following rainfall events in order to assess the structural integrity and effectiveness of the control structures and any pumping requirements. Results of this monitoring would be used to evaluate necessary ameliorative measures.

4.8 Bushfire Management

In accordance with Condition 49, Schedule 3 of the Development Consent (DA 374-11-00), Clean TeQ will:

- ensure the development provides for asset protection in accordance with the NSW Rural Fire Service's *Planning for Bushfire Protection 2006* (or equivalent) and is suitably equipped to respond to fires on site;
- develop procedures to manage potential fires on site and in the vicinity of the site, in consultation with the NSW Rural Fire Service; and
- assist the NSW Rural Fire Service and emergency services as much as possible if there is a fire in the vicinity of the site.

A Bushfire Management Plan will be prepared to provide procedures and protocols for the management of lands associated with the mine and processing facility. It will address, but not be limited to, the management of bushfire risk developed, in consultation with the local NSW Rural Fire Service and the Lachlan Shire Council. The Bushfire Management Plan will include:

- identification of fire hazards and assets at risk;
- identification of areas within the Mining Lease 1770 requiring fuel management;
- description of fuel management strategies;
- planning and implementation procedures for hazard reduction;
- detection, reconnaissance and reporting of fires; and
- fire fighting activities.

During induction, all staff and contractors will undergo training in bushfire prevention and management strategies (Section 4.10).

4.9 Mine Site Road Maintenance

A number of measures will be implemented with the objective of reducing the occurrence of fauna-vehicle collisions on internal mine roads. To reduce the potential for vehicle strike at the mine site, speed limits will be imposed on vehicles using roads and tracks and signposting installed along roads adjacent to existing woodland (Black Range Minerals, 2000). To reduce the chance of vehicle strike the employees at the Project will undergo training detailed in Section 4.10.

4.10 Staff and Contractor Inductions

Initial staff and contractor inductions will include the following (Black Range Minerals, 2000):

- measures to reduce the occurrence of fauna-vehicle collisions:
  - warnings on the hazards of driving at dusk and dawn, when road strike of nocturnally active fauna is most likely;
  - speed limits; and
  - the requirement for vehicles to remain on purpose built roads, where practicable.
- bushfire prevention and management strategies including:
  - identifying construction and operational areas with fire potential;
  - identifying surrounding areas with the potential to carry fire;
  - appropriate and safe activities in fire-sensitive areas; and
  - awareness of fire prevention and fighting protocols and procedures.

4.11 Management of the Revegetation Areas

This section addresses the requirements of Condition 35, Schedule 3 of Development Consent DA 374-11-00 in relation to the Revegetation Areas described in Section 9.2.

As described in Section 1, this BMP-RS has been prepared for the initial Project construction activities at the mine site (Figure 2), development and operation of the borefields, surface water extraction infrastructure and water pipeline (Figures 1 and 3) and road upgrades (Figure 4). This BMP-RS will be revised prior to the commencement of construction of the limestone quarry, rail siding and gas pipeline, as well as prior to the commencement of mining operations. The revision will be updated to describe a management program for the Revegetation Areas (Section 9.2), which will:

- describe the short, medium, and long term measures that will be implemented to ensure that the Revegetation Strategy is effectively implemented over the life of the development;
- include detailed performance and completion criteria for evaluating the performance of the Revegetation Area identified in the approved Revegetation Strategy, and triggering remedial action (if necessary);

- include a detailed description of the measures that will be implemented for enhancing the quality of existing vegetation and fauna habitat in the Revegetation Area identified in the approved Revegetation Strategy; and
- include a detailed description of the measures that will be implemented for progressively rehabilitating and revegetating the site, particularly in temporary disturbance areas.

4.12 Management of the Accommodation Camp

Table 7 provides measures to mitigate and manage impacts from the accommodation camp (Figure 5b).

Table 7 – Accommodation Camp – Measures to Mitigate and Manage Impacts

Mitigation Measure	Techniques	Timing/Frequency	Potential Risk	Contingency Measure
Vegetation Clearance Protocol - Timing of tree clearance	Trees used for nesting would not be felled until young have left the nest, where possible.	Prior to clearing.	Trees used for nesting are accidently felled.	A suitably qualified person(s) will be present during clearing of habitat trees to manage vertebrate animals.
Vegetation Clearance Protocol - Pre-clearance Surveys	Pre-clearance vertebrate fauna surveys would be undertaken in two stages: • identify habitat features that could harbour vertebrate fauna and place them at risk during vegetation clearance activities (e.g. tree hollows), or features that could be salvaged and reused such as mature trees and stags; and • identify vertebrate fauna most likely to be at risk during vegetation clearance activities and those that would be managed during clearing activities.	Within two weeks prior to clearing.	Trees with habitat features with vertebrate fauna inside are accidently felled.	A suitably qualified person(s) will be present during clearing of habitat trees to manage vertebrate animals.
Vegetation Clearance Protocol - Delineating clearing limits	Approved disturbance limits near areas to be cleared would be delineated on the ground prior to clearing activities (e.g. flagging tape and posts). Scattered trees which could provide habitat for threatened 'species credit species' (refer to Resource Strategies, 2017) would specifically be identified with flagging tape during nearby construction works.	Prior to clearing.	Incidental clearing.	Review and adapt current Vegetation Clearance Protocol procedures.
Staff and Contractor Inductions	Initial staff and contractor inductions would include the following: • measures to reduce the occurrence of fauna-vehicle collisions; and • bushfire prevention and management strategies.	During staff and contractor inductions.	Increase in incidents.	Review induction content and update.
Weed Control	Agricultural activities would continue to occur on the Sunrise Property outside the modified accommodation camp area (including the management of weeds). Additional weed monitoring and control would be undertaken around the accommodation camp, as necessary.	Commence within six months of construction activities and be implemented twice a year, every six months (or at other times when rainfall conditions are favourable to weed outbreaks).	Weed invasion – perennial and annual grasses, perennial herbs, annual and biennial herbs and woody weeds.	Review additional strategies to control target weed species. Increase the frequency of weed control and monitoring.

Table 7 (Continued) – Accommodation Camp – Measures to Mitigate and Manage Impacts

Mitigation Measure	Techniques	Timing/Frequency	Potential Risk	Contingency Measure
Feral Animal Control	Agricultural activities would continue to occur on the Sunrise Property outside the modified accommodation camp area (including the management of feral animals). Additional feral animal monitoring and control would be undertaken around the accommodation camp, as necessary. Domestic pets will not be allowed at the accommodation camp. The accommodation camp will be kept as a clean, rubbish-free environment in order to discourage scavenging and reduce the potential for colonisation of these areas by non-endemic fauna (e.g. rodents). The accommodation camp inhabitants would not be permitted to keep native fauna or to encourage fauna through feeding.	Control measures would be implemented by mine staff or by an appropriate Pest Control Contractor(s) as required.	Sustained increase in feral animal numbers despite control measures.	Review additional strategies to control target feral animals. Increase the frequency of feral animal control and monitoring.
Bushfire Control	Bushfire management measures at the Project will be implemented in accordance with Condition 49, Schedule 3 of Development Consent DA 374-11-00 and would include the site being suitably equipped to fight fires; develop asset protection in accordance with the Rural Fire Service's Planning for Bushfire Protection 2006; and consultation with the Rural Fire Service. The modified accommodation camp would include fire-fighting infrastructure (e.g. fire water tank and reticulation system).	Upon commencement of the Accommodation Camp construction.	Unplanned bushfire over the Subject land.	Inspect and remedy issues with fences, gates or access. Re-evaluate the required management.

Source: Resource Strategies (2017)

5. PERFORMANCE MEASURES AND PERFORMANCE INDICATORS

Performance indicators/measures are provided in Sections 4.5 and 4.6 to guide the implementation of weed and feral animal management in consideration of Condition 4(b), Schedule 5 of Development Consent DA 374-11-00. In the event that a consistent increase in weed extent and/or consistent increase in feral animals are recorded, contingency measures would be implemented as outlined in Section 6.

6. RISKS AND CONTINGENCY MEASURES

6.1 Adaptive Management

In accordance with Condition 3, Schedule 5 of Development Consent DA 374-11-00, Clean TeQ will assess and manage risks to comply with the criteria and/or performance measures outlined in Schedule 3 of Development Consent DA 374-11-00.

Where any exceedance of these criteria and/or performance measures occurs, at the earliest opportunity, Clean TeQ will:

- take all reasonable and feasible measures to ensure that the exceedance ceases and does not recur;
- consider all reasonable and feasible options for remediation and submit a report to the DP&E describing these options and preferred remediation measures; and
- implement remediation measures as directed by the Secretary of the DP&E.

6.2 Potential Contingency Measures

Condition 35(e), Schedule 3 of Development Consent DA 374-11-00 requires potential risks to the successful implementation of this BMP-RS be identified and the development of contingency measures that will be implemented to mitigate these risks.

Table 8 provides potential risks and associated contingency measures (corrective actions) to be implemented if the monitoring program identifies the performance criteria are not being met. Contingency measures may not be limited to those listed in Table 8.

Clean TeQ will also implement any preferred contingency measures identified to address an incident (Section 8.1)

Table 8 – Contingency Measures

Aspect of the Biodiversity Management Plan	Potential Risk	Contingency Measures
Vegetation Clearance Protocol	Incidental clearing	• collect any salvageable habitat feature materials (e.g. logs); and • review and adapt current Vegetation Clearance Protocol procedures.
	Clearance outside late autumn-winter period[4]	• prior to clearance, undertake a review of species that may be susceptible during the time of clearance, review and adapt preclearance survey methods where practical; and • increase the number of pre-clearance surveys/surveyors.
	High abundance of fauna not listed in targeted pre-clearance surveys	• update Vegetation Clearance Protocol to accommodate the identified species.
	Open Woodland is not maintained	• remediation actions to enhance vegetation (e.g. add fertiliser); and • exclude access with fencing and signage.
	Artificial Bat Roosts sustain damage	• check roosts after significant weather events; and • update maintenance schedule.
	Construction laydown areas are outside of already disturbed areas	• minimise the disturbance where possible.
	Non establishment of grasses and forbes in water pipeline corridor after revegetation	• investigate reason for non establishment (i.e. herbivory, poor soil); and • ameliorate the cause and revegetate area.
Threatened Species Management	High mortality rates of fauna vertebrates	• review Vegetation Clearance Protocol, including pre-clearance surveys; • increase the number of persons conducting pre-clearance surveys; and • reduce the period between survey and clearance commencement.
	Threatened species not listed in management plan is discovered at the site	• review management plan and injured fauna recovery strategy; and • include species in pre-clearance surveys.
Weed Control	Weed invasion – perennial and annual grasses, perennial herbs, annual and biennial herbs and woody weeds	• review additional strategies to control target weed species; • increase the frequency of weed control and monitoring; and • re-evaluate the grazing strategy.
Feral Animal Control	Sustained increase in feral animal numbers despite control measures	• review additional strategies to control target feral animals; and • increase the frequency of feral animal control and monitoring.
Grazing Livestock	Livestock breach exclusion areas	• remove stray livestock and ameliorate the access problem; and • include stray livestock check in maintenance schedule.
Controlling Erosion	Erosion and sedimentation	• targeted revegetation along drainage lines and scalded areas to minimise risk of erosion; • restriction of livestock access to erosion prone areas (e.g. along watercourses); • locate new offset area management infrastructure (e.g. access roads) in stable locations; and • maximise the re-use of existing infrastructure (e.g. access roads).
Mine Site Road Management	High occurrence Vehicle-fauna collisions	• improve training of all staff and contractors in awareness; and • review signage displayed in areas deemed to be at higher risk of collision (e.g. roads bordering woodlands).
Staff and Contractor Inductions	Increased in incidents	• review induction content and update; and • introduce 'refresher' training at six month periods.

[4] Habitat clearance will be undertaken between late summer and late autumn (February to May), where possible, as this period would minimise impacts on birds and bats likely to be present on site

7. REVIEW AND IMPROVEMENT OF ENVIRONMENTAL PERFORMANCE

7.1 Annual Review

In accordance with Condition 5, Schedule 5 of Development Consent DA 374-11-00, Clean TeQ will review the environmental performance of the Project by the end of March each year (for the previous calendar year) to the satisfaction of the Secretary.

In relation to biodiversity management, the Annual Review will (where relevant):

- describe the development that was carried out in the relevant calendar year, and the development that is proposed to be carried out during the following calendar year;
- include a comprehensive review of the monitoring results and complaints records of the development over the past year, which includes a comparison of these results against the:
  - relevant statutory requirements, limits or performance measures/criteria;
  - monitoring results of previous years; and
  - relevant predictions in the Project EIS and subsequent environmental assessments.
- identify any non-compliance over the last year, and describe what actions were (or are being) taken to ensure compliance;
- identify any trends in the monitoring data over the life of the development;
- identify any discrepancies between the predicted and actual impacts of the development, and analyse the potential cause of any significant discrepancies; and
- describe what measures will be implemented over the next year to improve the environmental performance of the development.

7.2 Independent Environmental Audit

In accordance with Condition 10, Schedule 5 of Development Consent DA 374-11-00, an independent environmental audit of the Project will be conducted by a suitably qualified, experienced and independent team of experts whose appointment has been endorsed by the Secretary.

The independent environmental audit will assess the environmental performance of the Project and review the adequacy of this BMP-RS. If necessary, appropriate measures or actions to improve the environmental performance of the Project or this BMP-RS will be recommended.

An independent environmental audit will be conducted within one year of the commencement of the development under this consent, after 6 May 2017.

The independent environmental audit, and Clean TeQ's response to the recommendations in the audit, will be made publicly available on the Clean TeQ website, in accordance with Condition 12, Schedule 5 of Development Consent DA 374-11-00.

8. REPORTING PROTOCOLS

In accordance with Condition 4(g), Schedule 5 of Development Consent DA 374-11-00, Clean TeQ has developed protocols for managing and reporting the following:

- incidents;
- complaints;
- non-compliances with statutory requirements; and
- exceedances of the impact assessment criteria and/or performance criteria.

These protocols are described in detail in Clean TeQ's Environmental Management Strategy.

In accordance with Condition 9, Schedule 5 of Development Consent DA 374-11-00, Clean TeQ will provide regular reporting on the environmental performance of the Project on the Clean TeQ website.

8.1 Incident Reporting

An incident is defined as a set of circumstances that causes or threatens to cause material harm to the environment and/or breaches or exceeds the limits or performance measures/criteria in Development Consent DA 374-11-00.

In the event that review of biodiversity monitoring data indicates that an incident has occurred, the incident will be reported in accordance with Condition 8, Schedule 5 of Development Consent DA 374-11-00. Clean TeQ will notify the Secretary and any other relevant agencies including the relevant Councils immediately after it becomes aware of the incident. Clean TeQ will also notify any affected landholders of any incident that has caused, or threatens to cause, material harm to the environment.

Within seven days of the date of the incident, Clean TeQ will provide the Secretary and any other relevant agencies with a detailed report on the incident and such further reports as may be requested. The report will:

- describe the date, time and nature of the exceedance/incident;
- identify the cause (or likely cause) of the exceedance/incident;
- describe what action has been taken to date; and
- describe reasonable and feasible options to address the incident and identify the preferred option to address the incident.

8.2 Complaints

Clean TeQ will maintain a Community Complaints Line (tel: 1800 952 277) and email address (community@cleanteq.com) for the sole purpose of receiving community contacts and complaints. The Community Complaints Line number will be available on the website and included in Clean TeQ's advertising and community communication tools. The Community Complaints Line will be staffed 24 hours a day, seven days a week during construction and operations. Clean TeQ will respond to callers on the next business day. If the issue is urgent a member of the leadership team will be contacted immediately.

Clean TeQ has developed a procedure that outlines its commitment to receiving, resolving and recording complaints received from the community. Detailed records of each complaint resolution are kept in Clean TeQ's record management systems.

Complaints will be investigated within 24 hours of receipt. The cause of the complaint will be analysed and actions to resolve the complaint taken as soon as possible. In complex cases where resolution will take more than 48 hours, Clean TeQ will commit to update the community member regularly until the complaint is resolved.

In accordance with Condition 12(a), Schedule 5 of Development Consent DA 374-11-00, a complaints register will be made available on the Clean TeQ website and updated monthly.

8.3 Non-Compliance with Statutory Requirements

A protocol for managing and reporting non-compliances with statutory requirements has been developed as a component of Clean TeQ's Environmental Management Strategy and is described below.

Compliance with all approvals, plans and procedures is the responsibility of all personnel (staff and contractors) employed on or in association with Clean TeQ and the Project.

The Clean TeQ Environmental Superintendent will undertake regular inspections and internal audits, and initiate directions identifying any remediation/rectification work required, and areas of actual or potential non-compliance.

As described in Section 8.1, Clean TeQ will report incidents in accordance with Condition 8, Schedule 5 of Development Consent DA 374-11-00 and in accordance with the protocol for industry notification of pollution incidents under Part 5.7 of the POEO Act. Clean TeQ will notify the Secretary and any other relevant agencies including the relevant Councils immediately after it becomes aware of the incident which causes or threatens to cause material harm to the environment. Within seven days of the date of the incident, Clean TeQ will provide the Secretary and any other relevant agencies with a detailed report on the incident and such further reports as may be requested.

A review of compliance with all conditions in Development Consent DA 374-11-00, Mining Lease 1770 and all other approvals and licences will be undertaken prior to (and included within) each Annual Review (Section 7.1).

Additionally, in accordance with Condition 10, Schedule 5 of Development Consent DA 374-11-00, an independent environmental audit (Section 7.2) will be conducted by a suitably qualified, experienced and independent team of experts whose appointment has been endorsed by the Secretary to assess whether Clean TeQ is complying with the requirements in Development Consent DA 374-11-00, and any other relevant approvals, EPLs, and/or mining leases.

8.4 Responsibilities

The responsibilities assumed under this BMP-RS are listed in Table 9 below.

Table 9 – Biodiversity Management Plan Responsibilities

Role	Responsibility
Managing Director	• Provide adequate resources to implement the requirements of this BMP-RS.
Environmental Superintendent	• Notify relevant authorities and potentially affected external stakeholders of biodiversity incidents. • Coordinate the response to biodiversity incidents. • Prepare reports relating to biodiversity incidents. • Provide all employees and contractors adequate training in environmental awareness, legal responsibilities, and pollution incident response. • Coordinate relevant reviews of this BMP-RS. • Co-ordinate monitoring of biodiversity. • Implement this BMP-RS at the Project.

PART B – REVEGETATION STRATEGY

9. REVEGETATION STRATEGY

This section describes the Revegetation Strategy prepared in accordance with Condition 33, Schedule 3 of Development Consent DA 374-11-00. The objective of the Revegetation Strategy is to revegetate select areas of the post-mine landform with native woodland.

The Revegetation Strategy provides the following:

- estimates of the likely clearing of native vegetation at the mine site and limestone quarry (Section 9.1);
- proposed Revegetation Areas (Section 9.2);
- a strategy for progressive rehabilitation and revegetation within the Revegetation Areas (Section 9.3); and
- a program to monitor and review the effectiveness of the Revegetation Strategy (Section 9.4).

9.1 Native Vegetation Clearance

Condition 32, Schedule 3 of Development Consent DA 374-11-00 requires that for every 1 hectare (ha) of native woodland vegetation cleared for the mine or limestone quarry, a minimum of 2 ha must be revegetated as native woodland. Table 10 provides estimates of the likely clearing of native vegetation at the mine site and limestone quarry. A total of approximately 503 ha of woodland will be cleared at the mine site and limestone quarry. Therefore, 1,006 ha will be revegetated as native woodland (herein referred to as the Revegetation Areas) (Table 10). In addition, vegetation clearance will also be required for other Project components including the accommodation camp, borefields, surface water extraction infrastructure and water pipeline. The exact amount of vegetation clearance for these Project components will be determined once detailed design is complete.

Table 10 – Estimate of Native Vegetation Clearance

Native Woodland Vegetation	Mine Site (ha)	Limestone Quarry (ha)	Size of Revegetation Areas (ha) (in accordance with Condition 32)
AMBS Ecology and Heritage (2017)			
Mugga Ironbark –Inland Grey Box – Pine Tall Woodland of the NSW South Western Slopes Bioregion	1.5	-	-
Western Grey Box –Poplar Box – White Cypress Pine Tall Woodland on Red Loams	57.5	-	-
Yellow Box Woodland on Sandy Loam Soils on Alluvial Plains	4	-	-
Orchid Research (2000)			
Eucalyptus melliodora/ Callitris glaucophylla	37	-	-
E. populnea/ C. glaucophylla, E. macrocarpa/C. glaucophylla, E. macrocarpa/ E. populnea, C. glaucophylla	301	-	-
E. sideroxylon/ E. macrocarpa	5.5	-	-

Table 10 (Continued) – Estimate of Native Vegetation Clearance

Native Woodland Vegetation	Mine Site (ha)	Limestone Quarry (ha)	Size of Revegetation Areas (ha) (in accordance with Condition 32)
Geijera parviflora/ Alectryon oleifolius	95	-	-
OEH (2016)			
Poplar Box Grassy Woodlands on Alluvial Clay Soils	-	0.5	-
Western Grey Box Tall Grassy Woodland on Alluvial Loam and Clay Soils in the NSW South Western Slopes and Riverina Bioregion	-	1	-
Total	**501.5**	**1.5**	**1,006***

* Condition 32, Schedule 3 of Development Consent DA 374-11-00 requires that for every 1 ha of native woodland vegetation cleared for the mine or limestone quarry (Table 10), a minimum of 2 ha must be revegetated as native woodland.

The limestone quarry is located in cleared land within scattered trees and native grasses (Orchid Research, 2000) (Figure 10). It is surrounded by intensively managed farmland paddocks used for cropping and grazing. Isolated trees occur within the ploughed areas and some native herb and grass species were recorded in the unploughed corners of paddocks.

9.2 Revegetation Areas

Figure 11 identifies the Revegetation Areas as required by Condition 33(b), Schedule 3 of Development Consent DA 374-11-00 and consistent with the conceptual final landform in the Project EIS (Black Range Minerals, 2000). The Revegetation Areas are located over the waste emplacements, tailings storage facility and infrastructure areas (Figure 11). The Revegetation Areas shown on Figure 11 cover an area of approximately 1,229 ha (approximately 223 ha more than required [Table 10]).

The final voids (western and eastern), diversion dam, water storage pond and process plant runoff dam have been excluded from the Revegetation Areas as these post mine landforms would not be conducive to the establishment of native woodland.

The Revegetation Areas are continuous with existing open woodland to be maintained within the mine site as shown on Figure 5a. The Project EIS (Black Range Minerals, 2000) described that a primary aim of preserving such areas will be to maintain biodiversity and to facilitate the potential for linking these areas to the Revegetation Areas.

9.3 Revegetation Areas – Rehabilitation and Revegetation Strategy

The rehabilitation and revegetation strategy for the Revegetation Areas will be consistent with the rehabilitation programme presented in the Project EIS (Black Range Minerals, 2000).

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LEGEND

- State Forest
- Railway
- Mining Lease Boundary (ML)
- Limestone Quarry Water Pipeline

Vegetation Mapping

- A — Poplar Box Grassy Woodland on Alluvial Clay-loam Soils
- B — Western Grey Box Tall Grassy Woodland on Alluvial Loam and Clay Soils in the NSW South Western Slopes and Riverina Bioregions
- C — Derived Tussock Grassland of the Central Western Plains and Lower Slopes of NSW
- D — Cultivated Land

Source: Black Range Minerals (2000); Clean TeQ (2018); NSW Department of Industry (2018); NSW Land & Property Information (2016); Office of Environment and Heritage NSW (2016)

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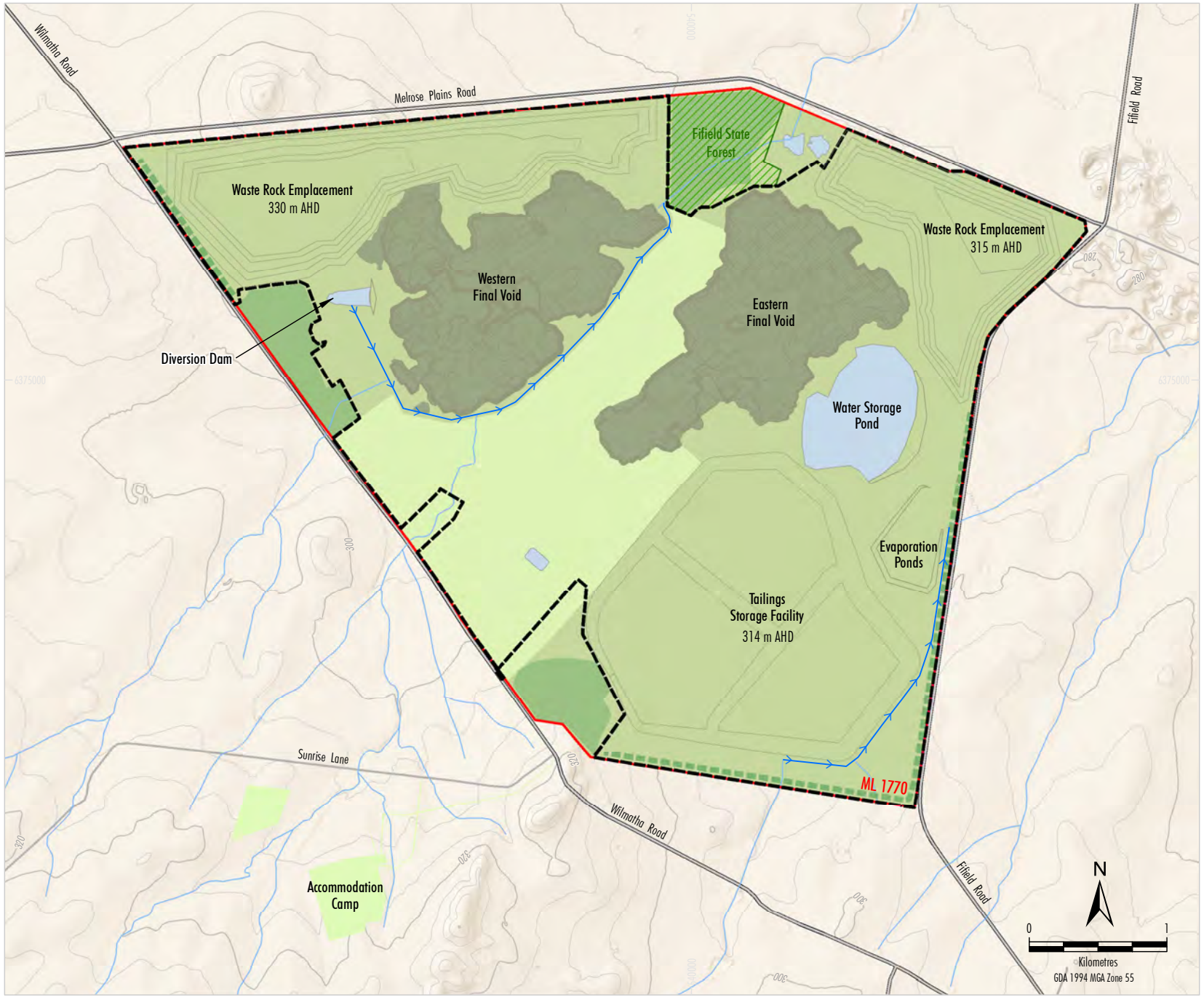
Limestone Quarry - Vegetation Communities

Figure 10



LEGEND

- State Forest
- Mining Lease Boundary (ML)
- Approved Surface Development Area

Final Land Use

- Nature Conservation (Endemic Woodland)
- Agriculture (Pasture for Grazing)
- Final Void
- Water Management Area
- Diversion Structure
- Vegetation Screening
- Existing Open Woodland to be Maintained

Source: Clean TeQ (2017, 2018); Black Range Minerals (2000); NSW Department of Industry (2018); NSW Land & Property Information (2017)

CLEAN TEQ SUNRISE PROJECT

Conceptual Final Landform and Land Uses

Figure 11

CTL-17-03 MP 2018_BioMP_209B

Rehabilitation Objectives

The general objective of the Revegetation Areas will be to re-establish woodland endemic to the region (Black Range Minerals, 2000). Other objectives are to (Black Range Minerals, 2000):

- provide acceptable post-mine landforms with a diversity of plant species suitable for endemic woodland;
- construct stable landforms that cater for the long term containment of mining wastes in a manner that conforms with regulatory requirements and land use objectives;
- prevent detrimental effects on the water quality of downstream water courses into the long term;
- provide cover to reduce the potential for erosion; and
- provide visual enhancement of post mining landforms and rehabilitated infrastructure areas.

Rehabilitation Principles

The Revegetation Areas will form an expansion of, and be continuous with, existing woodland areas consistent with the rehabilitation principles in the Project EIS (Black Range Minerals, 2000) (Figure 11). Additionally, the following rehabilitation principles form the basis for rehabilitation planning and design at the mine and processing facility (Black Range Minerals, 2000):

- Rehabilitation of mine and processing facility landforms is to be progressive and conducted in accordance with an approved Mining Operations Plan and Rehabilitation Management Plan.
- The stability of newly prepared (i.e. topsoiled) landforms prior to the establishment of long-term vegetation is to be protected via the construction of moisture-retaining passive drainage systems, water-holding structures and, where appropriate, the use of authorised hybrid cover crops to provide initial erosion protection.

Revegetation Species

The majority of the native vegetation to be cleared at the mine site and limestone quarry comprises Western Grey Box (*E. microcarpa*) and Poplar Box (*E. populnea*). In recognition that Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions Endangered Ecological Community (Inland Grey Box Woodland EEC) is listed under the BC Act, the Revegetation Areas will target revegetation with species consistent with the Inland Grey Box Woodland EEC.

A provisional list of revegetation species from the Inland Grey Box Woodland EEC Final Determination (NSW Scientific Committee, 2011) that may be used in the Revegetation Areas is provided in Appendix A. The flora species included have been recorded in the locality by AMBS Ecology and Heritage (2017). The placement of these species (or other species) in the Revegetation Areas will depend on final slopes, drainage and topsoil characteristics.

Local endemic (adapted) species will preferentially be used, however consideration will be given to the use of a high-quality seed sourced further from the site over a low quality, more local, seed source.

Future versions of the Mining Operations Plan and Rehabilitation Management Plan will include specific details of the locations and composition of the vegetation communities to be established in rehabilitated areas once the necessary mining planning and design processes have been undertaken.

Revegetation Methods

Initial revegetation will be undertaken using native and introduced grasses to facilitate rapid stabilisation. Final long-term revegetation will comprise the use of native species to re-establish endemic woodland.

Primary species to facilitate rapid stabilisation include Windmill grass (*Chloris truncata*) and Wheat grass (*Elymus scaber*), as well as slower establishing species such as Kangaroo grass (*Themeda triandra*) and Wallaby grass (*Rytidosperma* spp.). All non-native introduced grasses will be non-persistent. A list of all non-native species used in revegetation activities will be established closer to the commencement of revegetation activities and documented in the Mining Operations Plan and Rehabilitation Management Plan.

Mine and processing facility infrastructure will be removed following completion of the Project and the foundation soils will be tested if necessary for any residual contamination (which, if found, will be removed or treated). The area will then be contour ripped, topsoiled and revegetated with endemic seed and/or tube stock.

9.4 Revegetation Monitoring Programme

Visual monitoring of revegetation will be conducted on a regular basis to assess whether vegetation is establishing and to determine the need for any maintenance and/or contingency measures (such as the requirement for supplementary plantings, erosion control and weed control).

The quality of rehabilitation will be monitored annually using Ecosystem Function Analysis (EFA) or a similar systems-based approach. An overview of the EFA method is provided below.

EFA is a CSIRO developed method used to provide indicators of rehabilitation success and allows the assessment of ecosystem sustainability through the plotting of development trajectories. EFA aims to measure the progression of rehabilitation towards a self-sustaining ecosystem through the assessment of landscape function, vegetation dynamics and habitat complexity. EFA is divided into the following three modules/components: the Landscape Function Analysis (LFA) component; the vegetation composition and dynamics component; and the habitat complexity component.

The Soil Surface Analysis component of LFA provides an effective quantitative tool for assessing ecosystem function. Data recorded as part of LFA monitoring is based on landscape processes and focuses on the dynamics of resource mobilisation, transport, deposition, use and loss of soil condition. Parameters assessed as part of LFA monitoring typically include:

- soil cover;
- perennial grass basal cover and canopy cover;
- litter cover, origin and incorporation;
- cryptogam cover;
- crust condition;
- erosion type and severity;
- amount of deposited material;
- micro-topography (surface roughness);
- surface resistance to disturbance; and
- soil type (slake and texture tests).

The vegetation composition and dynamics component of EFA monitoring provides a quantitative assessment of species composition, density and cover. The habitat complexity component of EFA provides an index of the development of available habitats for fauna and includes measurements of vegetation cover, ground habitat (e.g. litter, logs and rocks) and the availability of water. The monitoring of habitat complexity is based on the assumption that more environmental niches for fauna develop as the diversity of vegetation and ground cover (e.g. litter) increases.

A number of permanent transects will be established within rehabilitated areas. Corresponding transects will also be established in adjacent undisturbed (analogue) communities. The information obtained will be used to track the rehabilitation progress, predict self-sustainable values and compare the rehabilitation and analogue sites. Remedial management strategies will be implemented where necessary.

Visual assessments will also be incorporated into the revegetation monitoring programme to allow for the rapid application of remedial actions where necessary.

The effectiveness of the revegetation strategy will be reviewed annually for the life of the development.

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APPENDIX A

Revegetation Species List – Inland Grey Box Woodland

Table A1 – Revegetation Species List – Inland Grey Box Woodland

Species Listed in NSW Scientific Committee (2011)	AMBS Ecology and Heritage (2017)
Abutilon otocarpum	-
Acacia buxifolia	-
Acacia hakeoides	✓
Acacia homalophylla	-
Alectryon oleifolius	✓
Allocasuarina luehmannii	-
Angophora floribunda	-
Atriplex semibaccata	✓
Austrodanthonia auriculata	-
Austrodanthonia caespitosa	-
Austrodanthonia setacea	-
Austrostipa scabra subsp. falcata	✓
Brachychiton populneus	✓
Bursaria spinosa	-
Callitris endlicheri	✓
Callitris glaucophylla	✓
Calotis cuneifolia	✓
Carex inversa	✓
Cassinia arcuata	-
Casuarina cristata	✓
Casuarina pauper	-
Chamaesyce drummondii	✓
Chloris truncata	✓
Crassula sieberiana	✓
Dodonea viscosa subsp. cuneata	-
Einadia nutans	✓
Enchylaena tomentosa	✓
Enteropogon acicularis	✓
Eremophila debilis	✓
Eremophila deserti	-
Eucalyptus albens	-
Eucalyptus camaldulensis	-
Eucalyptus conica	-
Eucalyptus largiflorens	-
Eucalyptus melliodora	✓
Eucalyptus microcarpa	✓
Eucalyptus pilligaensis	-
Eucalyptus populnea subsp. bimbil	✓
Geijera parviflora	✓
Glycine clandestina	✓
Goodenia pinnatifida	✓
Hardenbergia violacea	-
Hibbertia obtusifolia	-
Indigofera australis	-
Jacksonia scoparia	-
Lomandra filiformis	✓
Maireana enchylaenoides	✓
Maireana microphylla	✓
Microlaena stipoides	✓
Microseris lanceolata	✓
Myoporum montanum	✓

Table A1 (Continued) – Revegetation Species List – Inland Grey Box Woodland

Species Listed in NSW Scientific Committee (2011)	AMBS Ecology and Heritage (2017)
Myoporum platycarpum	-
Oxalis perennans	✓
Paspalidium jubiflorum	✓
Pittosporum angustifolium	✓
Plantago debilis	✓
Podolepis jaceoides	-
Pterostylis longifolia	-
Ptilotus obovatus	✓
Rumex brownii	✓
Sclerolaena birchii	-
Sclerolaena muricata	-
Senna aciphylla	-
Senna artemisioides	✓
Sida corrugata	✓
Solanum parvifolium	-
Tricoryne elatior	✓
Vittadinia dissecta	-
Vittadinia gracilis	-
Wahlenbergia communis	✓
Wahlenbergia luteola	✓
Walwhalleya subxerophilum	-
Xerochrysum viscosa	-
Zieria cytisoides	-