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Farm Management Plan

BYLONG COAL PROJECT
Response to PAC Review Report

Hansen Bailey
ENVIRONMENTAL CONSULTANTS

global environmental solutions

Bylong Coal Project

Draft Farm Management Plan

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Bylong Coal Project

Draft Farm Management Plan

PREPARED BY:

SLR Consulting Australia Pty Ltd
ABN 29 001 584 612
10 Kings Road
New Lambton NSW 2305 Australia
(PO Box 447 New Lambton NSW 2305 Australia)
T: +61 2 4037 3200 F: +61 2 4037 3201
newcastleau@slrconsulting.com www.slrconsulting.com

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Table of Contents

Table of Contents

TABLES

Table of Contents

FIGURES

PLATES

1 EXECUTIVE SUMMARY

The purpose of the Farm Management Plan is to identify the agricultural management practices to be utilised on land holdings associated with the Bylong Coal Project, allowing for sustainable agricultural principals to continue and co-exist with mining activities.

The Plan identifies the land available to the agricultural enterprise and how this will be modified in response to mining activities. Further to this, the incorporation of rehabilitated land to the rotational grazing regime is identified.

Improvement strategies to increase the production capacity of the agricultural enterprise are identified, including the benefits of operating the land holdings as a consolidated operation.

The Farm Management Plan aims to ensure that KEPCO land holdings within the Bylong Valley are operated and maintained as a fully integrated commercial and productive enterprise.

2 PREAMBLE

This draft Farm Management Plan has been prepared in support of the planning approvals process for the Bylong Coal Project (the Project). This draft Plan is one of a few draft Environmental Management Plans which have been prepared to provide further information around the proposed management of potential environmental and social issues associated with the Project.

On the 27 July 2017, the NSW Planning and Assessment Commission (PAC) issued the PAC Merit Review Report (PAC Review Report) for the Project, which identified a number of issues and concerns with the information provided to-date.

In this regard, the PAC Review Report provided the following statements:

"A range of mitigation measures are proposed, but their effectiveness is uncertain and at time qualified et al…."

"The Commission is of the view that a decision-maker would need to carefully consider the risks attached to the proposed mitigation treatments in its assessment of the overall merits of the project. The case for the project, particularly those aspects of the project responsible for the most severe impacts, is eroded when impacts and the uncertainty of the proposed measures are considered together".

"In closing, the Commission finds that doubts persist about the potential benefits and impacts of this project, despite extensive research and peer assessment. As a result, all aspects of the project will need to be comprehensively and cautiously considered, carefully weighted, and balanced against one another at the determination stage".

To assist the relevant authorities in the determination stage of the Project, the draft Environmental Management Plans have been prepared to detail the proposed environmental management and mitigation measures that will be implemented throughout the life of the Project. The early development of the draft Environmental Management Plans should provide certainty and assurance that effective controls, procedures and processes (surpassing contemporary environmental management within the NSW coal mining industry) will be adequately implemented to the Project to negate any potential risks or impacts to the environment.

Should the Project be approved, the various draft Environmental Management Plans will be reviewed and updated in accordance with any final Development Consent conditions issued for the Project. Furthermore, consultation with the relevant regulatory agencies will be undertaken during the review and updated of this draft Plan to ensure that any outstanding issues or concerns are adequately addressed. The revised Plan will be submitted to the relevant regulatory agencies, as required, for approval.

3 INTRODUCTION

SLR Consulting (SLR) was engaged by WorleyParsons Services Pty Ltd (WorleyParsons) on behalf of KEPCO Bylong Australia Pty Limited (KEPCO) to complete a Farm Management Plan for its agricultural land holdings which have been acquired to facilitate the Bylong Coal Project (the Project).

This Farm Management Plan will be utilised to guide the ongoing management of this landholding as a profitable and sustainable agricultural enterprise that will coexist with future mining activities.

KEPCO is the holder of two Authorisations (A287 and A342) under the *Mining Act 1992* (NSW) (Mining Act) and has commissioned WorleyParsons to facilitate the management of the exploration activities, Project feasibility study implementation, environmental approvals and ongoing environmental monitoring for the Project.

KEPCO has been developing the Project through an exploration phase, feasibility studies, planning approval program and other activities required for the approval and development of a greenfield coal mine in Bylong, NSW. The site is predominantly farmland, with the north eastern fringes comprising open bush land.

SLR's Associate Agronomist, Murray Fraser observed the agricultural enterprise in operation and interviewed the Farm Manager, on the 16th and 17th October, 2017.

The scope of this Plan includes KEPCO landholdings which are available for agricultural production, as may differ from time to time in line with Project requirements and subject to staged releases of rehabilitated land to the agricultural enterprise. Land available to support agriculture will further be influenced by rehabilitation of Biodiversity Offset areas, which overtime will require the exclusion of cattle to facilitate positive ecological outcomes.

The Plan is inclusive of land which was not assessed as part of the Bylong Coal Project Environmental Impact Statement (EIS) and supplementary assessments. This is because certain land holdings are remote from the impact of mining activities. Noting this, total areas including, but not limited to Soil Types and Land Capability will differ from that of assessments completed to assist approval requirements.

3.1 PROJECT DESCRIPTION

Mining is proposed to be undertaken in two open cut mining areas utilising open cut excavator mining techniques supported by trucks and other ancillary mining equipment. Underground mining, using contemporary longwall mining techniques, is anticipated to commence within 7 years from construction.

The key features and components of the proposed Bylong Mine are shown on **Figure 1** and include:

- Two open cut mining areas, Overburden Emplacement Areas (OEAs) and associated haul roads. Open cut mining is undertaken 24 hours a day, 7 days a week over an approximate 10 year period;
- An administration, workshop, bathhouse, explosives magazine and other open cut mining related facilities;
- An underground coal mine operating 24 hours a day, 7 days a week for an approximate 20 year period, commencing within 7 years from the commencement of construction of the mine;

- Primary access to the underground mine via drifts constructed adjacent to the rail loop and Coal Handling and Preparation Plant (CHPP);
- Facilities to support underground mining operations including access roads, ventilation shafts, workshop, offices and employee amenities, fuel and gas management facilities;
- A CHPP with a designed throughput of approximately 6.0 Mtpa of ROM, equipped with dewatering technology to facilitate the dewatering of fine rejects material;
- Co-disposal of dewatered fine and coarse reject materials within OEAs and final open cut voids (avoiding the need for a tailings dam);
- A rail loop and associated rail load out facility and connection to the Sandy Hollow to Gulgong Railway Line to facilitate the transport of product coal;
- Surface and groundwater management and water reticulation infrastructure including diversion drains, dams (clean, dirty and raw water), borefield; pipelines, pumping stations and other required infrastructure;
- Communications and electricity reticulation infrastructure; and
- A Mine Access Road to provide access to the site facilities.

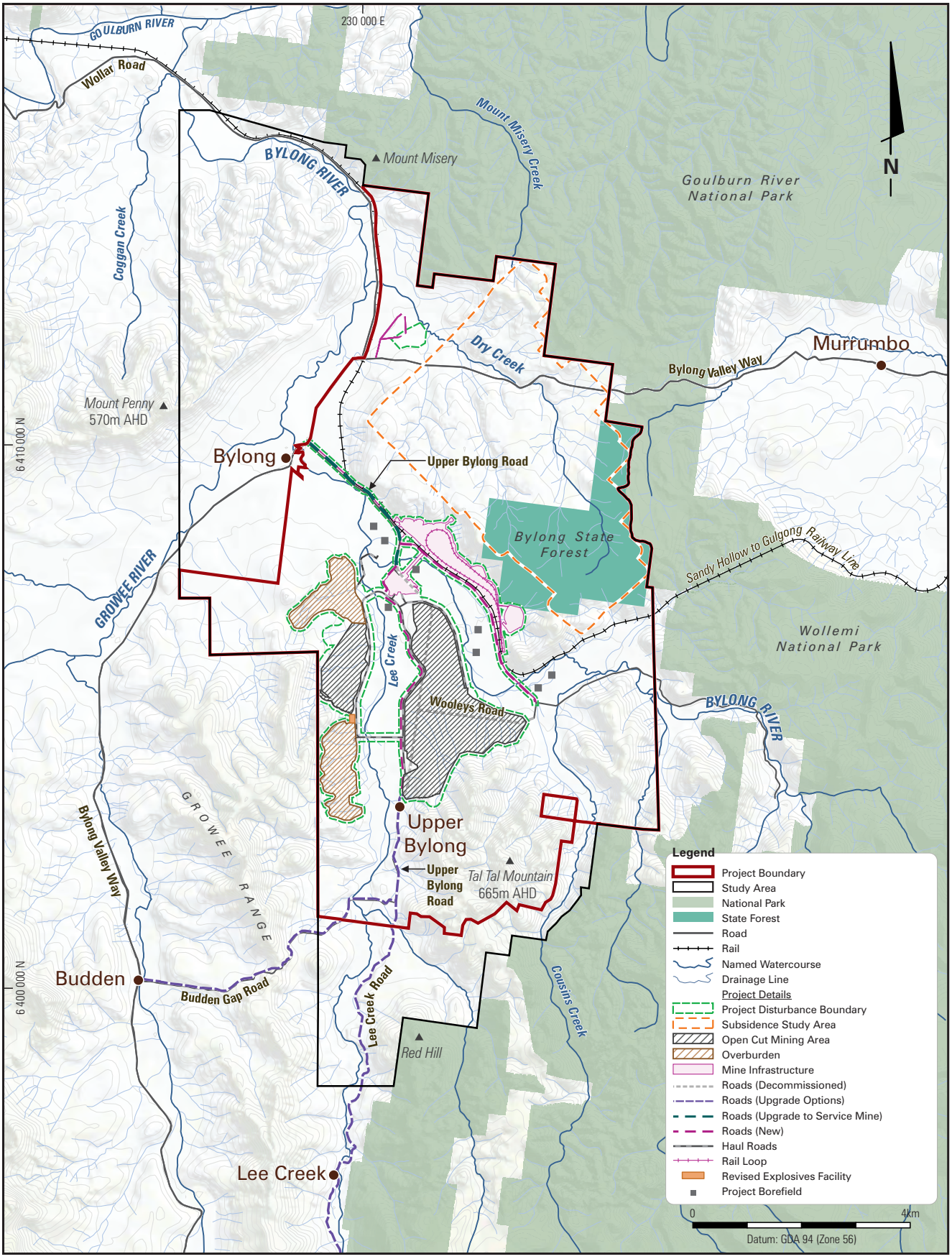
4 VISION STATEMENT

KEPCO is committed to sustainable agricultural practices and to operate its agricultural land holdings as a fully utilised commercial farming enterprise which co-exists with, and provides benefits to the KEPCO mining operation and the regions agricultural production.

5 ORGANISATIONAL STRUCTURE

The agricultural enterprise is wholly owned by KEPCO who have engaged an experienced Farm Manager to operate the agricultural enterprise. The Farm Manager will report to the Mine General Manager.

The agricultural enterprise currently employs eight fulltime staff, six males and two females, all of whom live in the district.



HB BYLONG Social Impact Management Plan 1538 F3 Revised Conceptual Project Layout 13 12 2017

BYLONG COAL PROJECT

Conceptual Project Layout

FIGURE 1

5.1 Responsibilities

The below table provides information as to the specific roles and responsibilities required for the adequate implementation of this Plan.

Table 1 Farm Plan Responsibilities

Position Title	Responsibility
General Manager	Ensure appropriate budget and resources are allocated to facilitate the implementation of the Farm Management Plan.
Farm Manager	Responsible for the implementation of this plan including; • Development of an annual operating budget for the agricultural enterprise. • Implementation of the Farm Management Plan including day to day management of the agricultural enterprise. • Annual review of the Farm Management Plan in conjunction with the General Manager. • Interfacing with the Environmental Manager in regard to the interaction between the agricultural enterprise and the mining operations. • Providing accurate and timely data to the Environmental Manager regarding animal and pasture data for the purpose of reporting against development consent requirements.
Environmental Manager	Facilitate orderly transfer of agricultural land to mining purposes in conjunction with the mine planning team and Farm Manager. Facilitate orderly transfer of rehabilitated mine land back to the agricultural enterprise for farming operations in conjunction with the mine planning team and the Farm Manager. Through the implementation of an environmental monitoring program, monitor the mine for impacts on the agricultural enterprise in conjunction with the Farm Manager. Responsible for collating data from the agricultural enterprise for the purpose of review and reporting in accordance with the requirements of development consent.

6 EXISTING ENVIRONMENT

Following is a summation of the existing agricultural environment of the Bylong Valley in general and with specific information for the KEPCO holding provided where appropriate.

The majority of the agricultural interests in the Bylong Valley are considered mixed farming enterprises with beef cattle grazing, fodder crops and lucerne production being the main agricultural pursuits undertaken. Fodder cropping and lucerne production occurs under both dryland and irrigated regimes.

6.1 Property Description

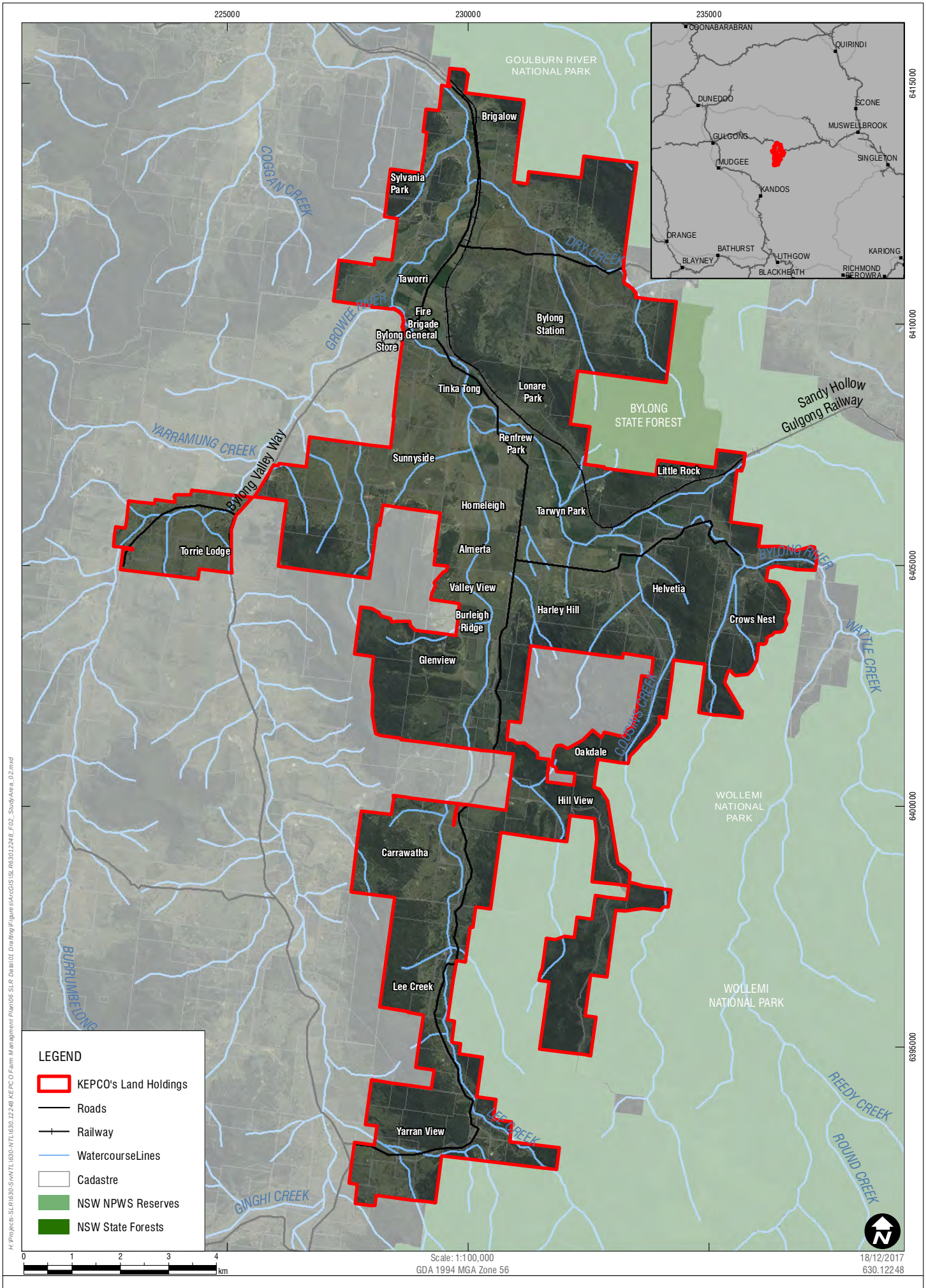
The KEPCO holding is approximately 10,113 hectares and comprises a number of aggregated properties which have been purchased by KEPCO over the past five years. The main properties which comprise the KEPCO holding are listed below, and shown on **Figure 2**.

- Bylong Park, including Brigalow, Sylvania Park and Taworri
- Bylong Station
- Wallings Aggregation, including Sunnyside, Homeleigh, Almerta, Valley View, Helvetia and Torrie Lodge
- Tarwyn Park and Iron Tank
- Harley Hill, including Glenview and Byleigh Ridge
- Hillview
- Carrawatha
- Lee Creek
- Yarran View
- Oakdale
- Tranquil Valley
- Little Rock

The KEPCO holding is intended to be operated on a continuing basis as a completely integrated agricultural enterprise producing beef cattle, lucerne and fodder crops. The geographic extent of farming operations will vary over time. Sections of land will be progressively released for mining activities during the early years of the Project, followed by the progressive reincorporation of land upon its rehabilitation.

For ease of reference throughout this Farm Management Plan, the original property names are used when referring to a particular area of the KEPCO holding, as they are in the day to day management of the agricultural enterprise.

Figure 2 shows the entire KEPCO land holdings, including that required for the Bylong Coal Project.



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Study Area

FIGURE 2

6.2 Topography

Topography across the KEPCO holding ranges from the alluvial valley floors along the Bylong River, Lee Creek and Cousins Creek, gradual to gently rising depositional footslopes along the margins of the alluvial valley floor, rising again to depositional midslopes of moderate gradient.

The mid-slope areas in turn rise to rugged erosional upper slopes, cliff lines and escarpments, which are not suited to beef cattle grazing, fodder crop or lucerne production. **Figure 3** shows a slope analysis across the KEPCO holding, using three slope classes:

- Areas of up to 10% slope (green) which are generally suited to cultivation for lucerne and fodder crop production, along with beef cattle grazing, comprising 4,982 hectares.
- Areas of greater than 10% and up to 18% slope (yellow), which are generally suited to beef cattle grazing on native and improved grass pastures, comprising 1,471 hectares.
- Areas of greater than 18% slope (red) which are generally not suited to the agricultural enterprises undertaken by KEPCO, comprising 3,660 hectares. The exception to this are the large basalt domes located in the west of the KEPCO holding on Sunnyside which are highly fertile and suited to beef cattle grazing with improved grass pastures.

6.3 Soil Types

Australian Soil Classification soil types were mapped by the NSW Office of Environment & Heritage (OEH, 2017) and are shown in **Table 2** and **Figure 4**.

Table 2 Australian Soil Classification

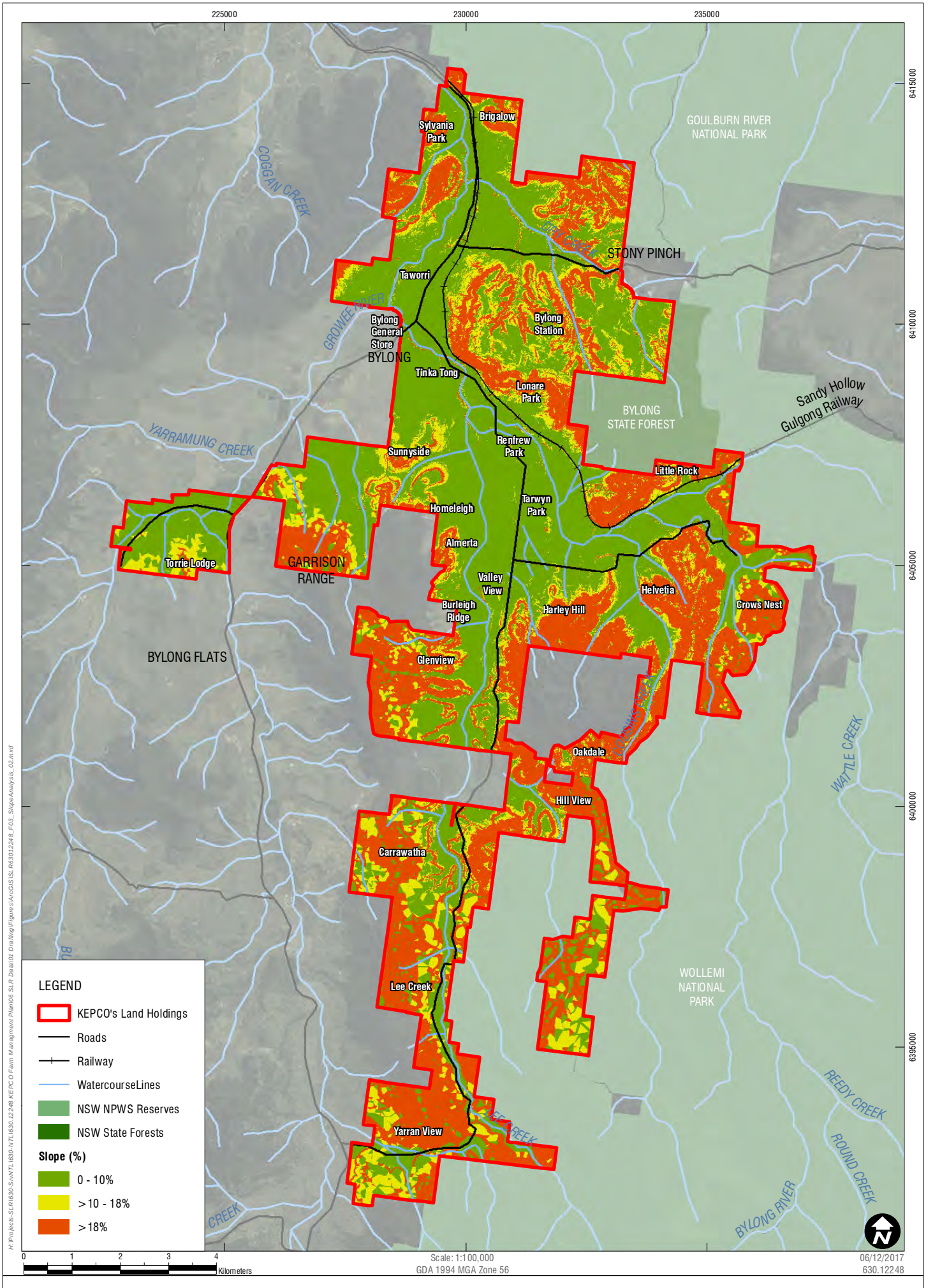
Soil Type	Inherent Fertility	Hectares	%
Dermosols	High	1,994	20
Sodosols	Moderately Low	5,409	53
Rudosols & Tenosols	Low	2,710	27
	Total	**10,113**	**100**

6.4 Land & Soil Capability

Land and Soil Capability classes were mapped in accordance with the NSW Office of Environment & Heritage (OEH, 2017) and are shown in **Table 3** and **Figure 5**.

Table 3 Land and Soil Capability

Class	Agricultural Capability	Hectares	%
3	High	1,436	14
4	Moderate	3,825	38
5	Moderately Low	2,165	21
7	Very Low	2,687	27
	Total	**10,113**	**100**



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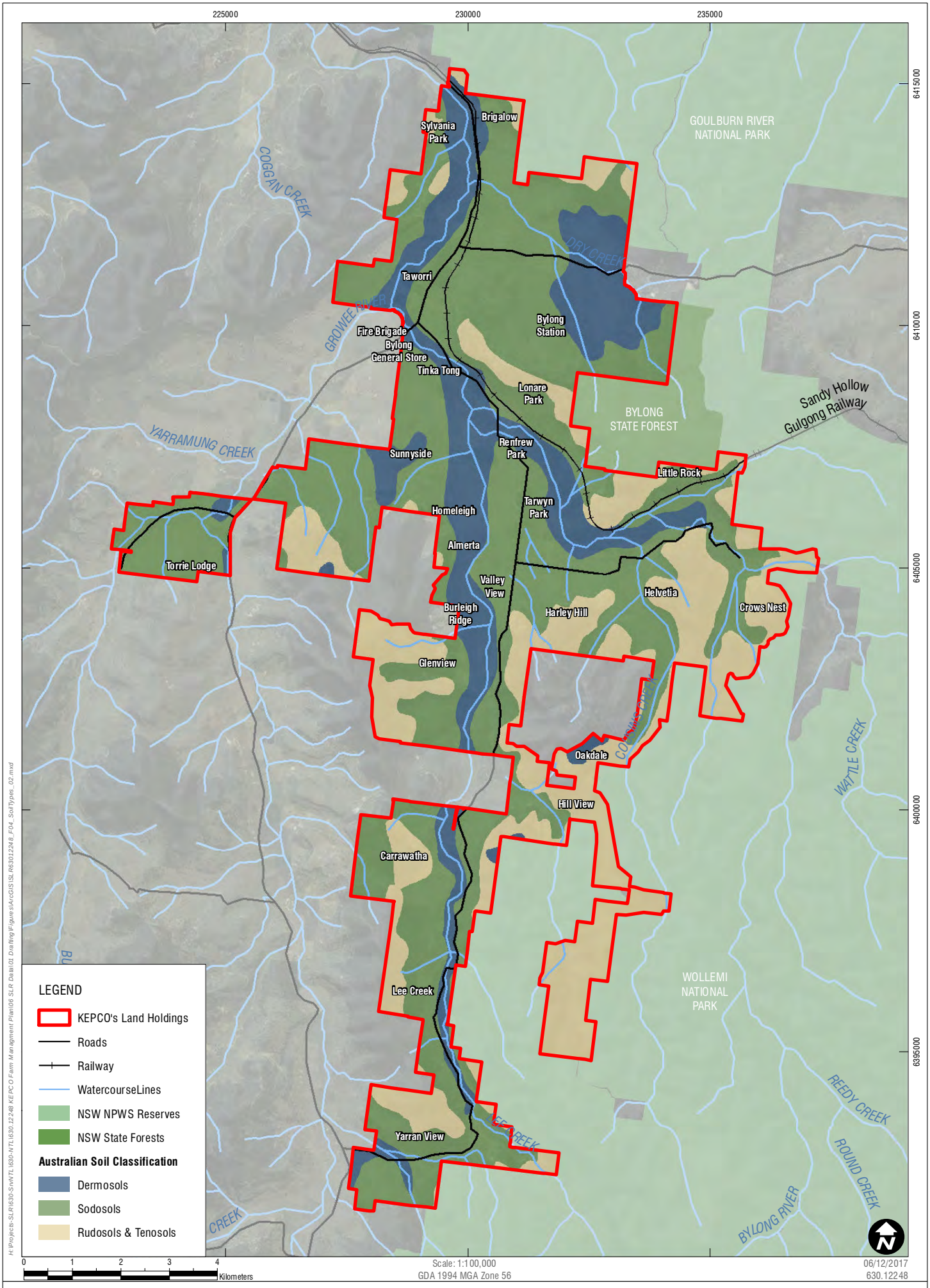
Slope Analysis

FIGURE 3



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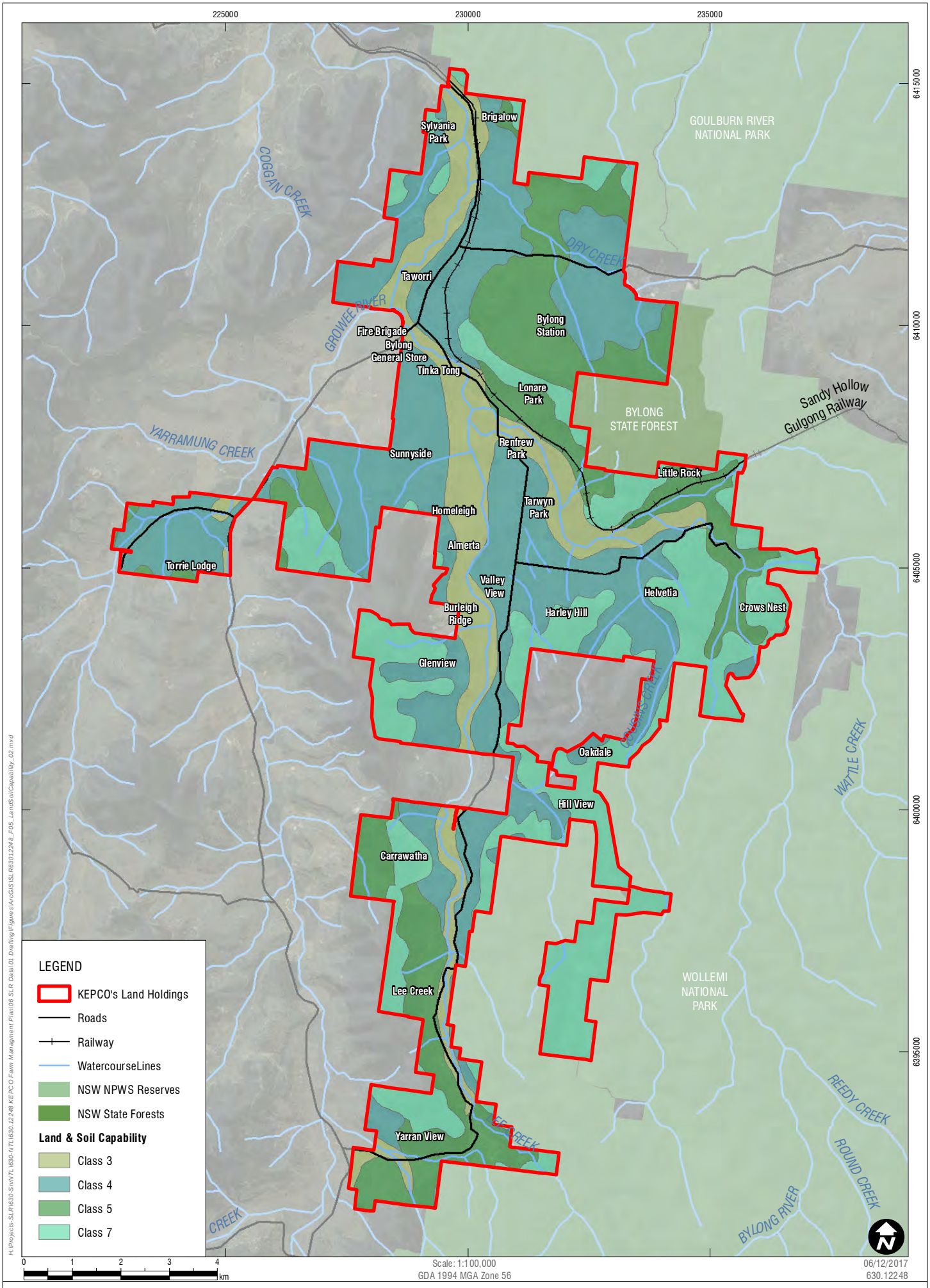
Soil Types

FIGURE 4



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Land & Soil Capability

FIGURE 5

6.5 Remnant Vegetation

Much of the productive agricultural area has been historically cleared of native woodland vegetation. Remnant woodland vegetation types within the KEPCO holding are generally divided into the landform types discussed previously.

- Rough barked apple and yellow box occur along the alluvial valley floor.
- White box, grey box and slaty gum are found on the footslopes and midslopes.

The upper slopes, escarpment and cliff lines are generally uncleared due their unsuitability for agriculture and are dominated by cypress pine and Blakely's red gum.

KEPCO has not planned for any further clearing of remnant woodland vegetation as part of the ongoing agricultural operations within the holding. Maintenance of existing infrastructure (i.e. fences, farm tracks) may require minimal disturbance to ensure works can be completed appropriately. Should minor disturbance be required KEPCO will seek approval in accordance with the *Local Land Services Act 2013*, where required to ensure all activities are carried out in a compliant manner.

6.6 Growing Seasons

The climate is dominated by continental influences and is described as having hot summers with mild winters, with winds predominantly coming from the east-south-east during autumn and summer and from the west and north-west during winter and spring.

Daytime temperatures and rainfall patterns allow growth of native pastures and improved fodder and pasture types during both the summer and winter growing seasons. Rainfall is summer dominant with an average of 587 millimetres per annum, shown in **Table 4** (MLA, 2016)

Table 4 Bylong Average Monthly Rainfall (millimetres)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
78	61	51	33	38	39	36	33	39	50	59	70

Spring and summer rainfall (or irrigation) allows the growth of lucerne, tropical grass pastures (predominantly Rhodes grass and liverseed grass) and native grass pasture (predominantly red grass and spear grass). Summer fodder species sown during the spring period include Shirohie millet and cowpeas. Autumn and winter rainfall (or irrigation) allows the growth of predominantly improved pasture species such as annual ryegrass, perennial phalaris, cocksfoot, tall fescue, clover and medic. Oats for fodder is sown during the autumn period.

The year round growing season at Bylong allows flexibility in pasture and cattle management decisions.

6.7 Land Use

The total area available for agricultural production within the KEPCO holding is approximately 6,254 hectares (**Figure 6**). Land availability to agriculture has been calculated via slope analysis; lands with a gradient above 18% have been excluded from the agricultural enterprises, along with heavily timbered areas. The total available land for agriculture as displayed in **Figure 6**. It is inclusive of land which will be excluded in stages due to both mining operations and establishment of Biodiversity Offset Areas. This Plan will be reviewed annually by the Environmental Manager in consultation with the Farm Manager, to ensure an accurate representation of land available to the agricultural enterprise is identified, recorded and communicated.

The alluvial valley floor in the north of the KEPCO holding is utilised for dryland and irrigated lucerne and fodder crop production, which includes Brigalow, Sylvania Park, Taworri and Bylong Station. The remaining areas capable of agricultural production are subject to beef cattle grazing.

Primary land uses for the foreseeable future are cattle grazing and forage production from fodder crops and irrigated lucerne strands.

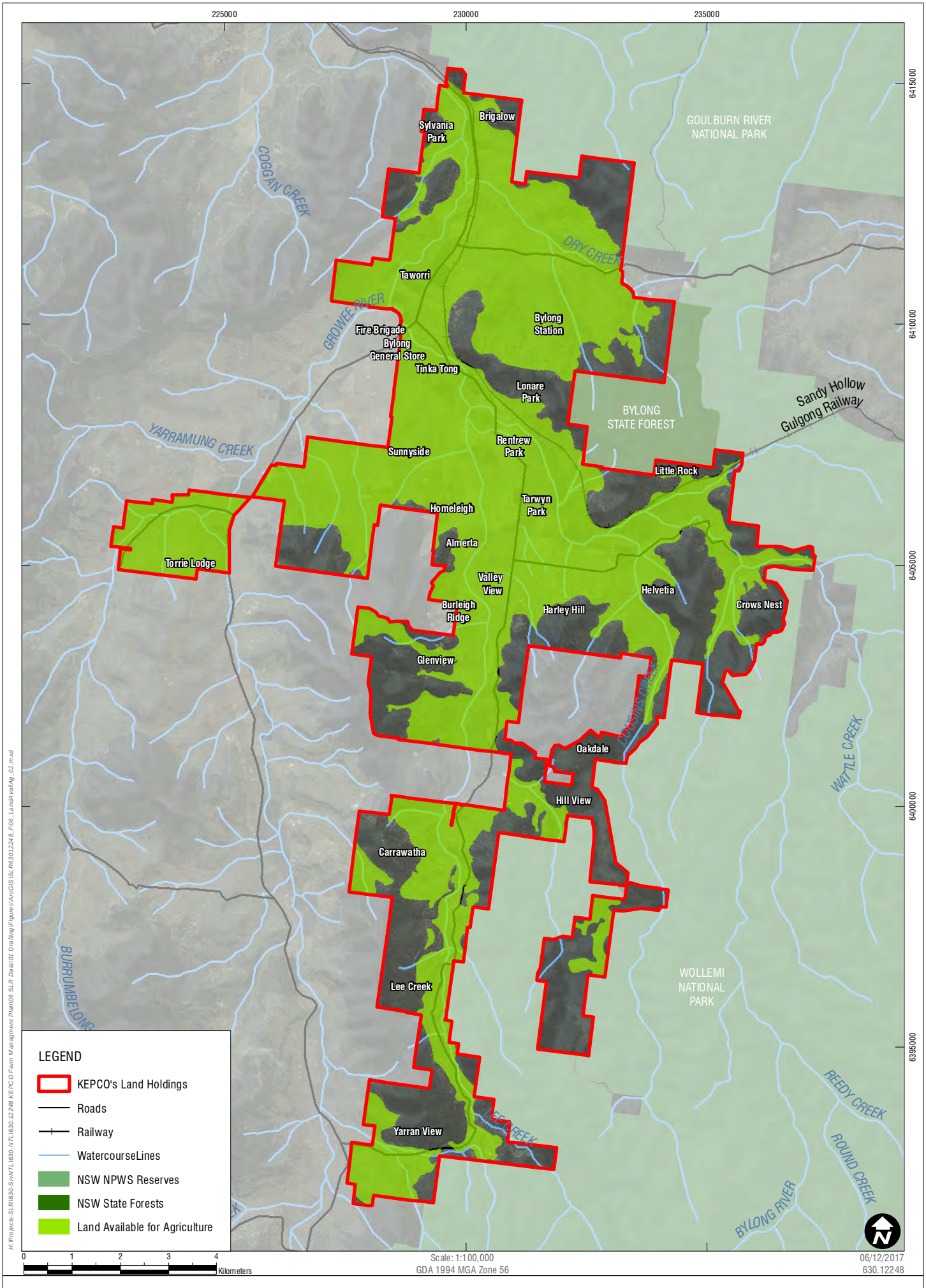
Cattle Grazing Strategy

During seasons of good pasture growth, intensive grazing management is undertaken with high stocking rates (large mobs of cattle) crash grazing paddocks for short periods of time, before being moved to the next paddock well before feed supplies are exhausted. Under intensive grazing management cattle are moved every 2-4 days.

During periods of low rainfall or poor pasture growth, extensive grazing management is undertaken, with cattle having access to larger paddocks or multiple smaller paddocks at the one time. Lick blocks are made available to cattle, allowing them to digest and utilise the poorer quality dry feed.

Cattle grazing strategies are heavily reliant on seasonal conditions; however the relatively conservative stocking rates allow considerable flexibility in decision making. Forward planning given current feed loads and seasonal outlook is an important consideration in the overall grazing strategy.

1,000 hectares of sub-tropical grasses with clover and lucerne are planned to be sown over a five year period on the footslope and mid-slope areas. This will increase the overall cattle carrying capacity of the KEPCO holdings and will assist in maintaining agricultural production rates during the period of mining associated with the Project. These pastures will allow cattle carrying capacity to be maintained at a target level of 3,000 head in an average season.



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Land Available for Agriculture

FIGURE 6

6.8 Property Infrastructure

Cattle Handling Facilities

There are a number of cattle handling facilities, with the main cattle handling complex located at Bylong Station. All cattle which are brought in or sold are handled at this complex. Other workable cattle yards are utilised as required, located at Taworri, Helvetia, Sunnyside, Valley View, Lee Creek and Yarran View.

Additional cattle handling facilities are planned to be built on Carrawatha in the next two years. The facilities on the Yarran View property are also being upgraded, utilising transportable yards. All remaining cattle handling facilities will be maintained to ensure safe and efficient stock handling.

Sheds and Silos

Sheds used for hay storage are located on Sylvania Park, Bylong Station and Taworri. There are numerous other farm sheds located on the remaining properties which are utilised as required.

Silos are located on Helvetia, Sylvania Park, Bylong Station and Taworri. There are no further plans for additional sheds and silos within the KEPCO holding.

Accommodation

Buildings which have been assessed as suitable by KEPCO for ongoing accommodation are located adjacent to the Bylong General Store (Gumbira & Weeroona houses), Bylong Station Homestead & Cottage, Harley Hill, Helvetia, Innisfail, Marapana, Sunnyside Homestead & Cottage, Tarwyn Park, Taworri Complex including Homestead, Managers Cottage & Front Cottage and Lee Creek.

There are no plans for additional accommodation within the KEPCO holding.

Expenditure for maintenance of farm buildings and accommodation is budgeted at approximately 4% of projected gross farm income.

Fencing

Boundary fencing, including fencing along public roadways and the railway line, gates and stock grids are all in stock-proof condition and undergo regular maintenance. Some internal fencing requires upgrading with electric wires or rationalization.

Internal fencing will continue to be maintained and upgraded into the future, or removed where it is deemed redundant. Boundary fencing will be maintained in a stock-proof condition.

Upgrading of riparian fencing along the Bylong River and creek lines will continue.

Laneways will be introduced in 2019 to allow more efficient and safer movement of cattle between properties. Fencing maintenance is budgeted at approximately 3% of projected gross farm income.

Vehicle Access

Access to all properties and paddocks is excellent with the holdings traversed by numerous public roadways. The Bylong Valley Way is fully sealed, the Upper Bylong Road sealed to its intersection with Woolleys Road, and the remaining unsealed public roadways regularly maintained by the Mid-Western Regional Council, including Woolleys Road, Lee Creek Road and Wollar Road.

When mine construction commences parts of the Upper Bylong and Woolleys Roads will be closed with alternative access to the eastern parts of the property accessible via the proposed new East Link Road. Southern properties will be accessible via Lee Creek Road. To ensure ongoing access to agricultural lands a Procedure will be developed identifying the appropriate method in which access via the mining operations is to be coordinated and carried out. The Procedure will facilitate general access and heavy vehicle access for items such as tractors and cattle trucks. The Procedure will be developed by the Environmental Manager in consultation with the Farm Manager and General Manager before the commencement of operations.

Farm tracks will continue to undergo regular maintenance throughout the year, with slashing and grading undertaken to ensure safe and reliable vehicle access in all conditions.

Water Licences

Water entitlement currently exceeds that what is required to operate the agricultural enterprise. Mining operations will utilise the additional entitlement and source additional entitlement from the Sydney Basin North Coast Water Sharing Plan. Water modelling presented within the Draft Water Management Plan demonstrates that KEPCO holds appropriate entitlement within the Bylong River Water Source to cater for both agricultural and mining operational activities.

Water licences held by KEPCO and which are available for agricultural production are shown in the following tables. Water licenses will be modified to allow for industrial purposes before commencement of mining operations.

Table 5 shows Water Access Licences (WAL) and their allowable use, while **Table 6** shows Basic Rights Approvals which are for stock and domestic use only.

Table 5 Water Access Licences

WAL	Water Sharing Plan	Use	Source	Property Area	ML
17731	Bylong River Water Source	Irrigation, Stock & Domestic	4 Bores, 2 Wells	Taworri	486
17711	Bylong River Water Source	Irrigation, Stock & Domestic	2 Bores, 2 Wells	Sylvania	248
17716	Bylong River Water Source	Irrigation, Stock & Domestic	1 Well	Brigalow	240
17709	Bylong River Water Source	Irrigation, Stock & Domestic	2 Bores, 1 Well	Bylong Station	494
17729	Bylong River Water Source	Irrigation, Stock & Domestic	2 Bores, 1 Well	Bylong Station	486
17732	Bylong River Water Source	Irrigation, Stock & Domestic	1 Well	Renfrew Park	5
17712	Bylong River Water Source	Industrial, Irrigation, Stock & Domestic	2 Wells	Lonare Park	240
17713	Bylong River Water Source	Irrigation, Stock & Domestic	8 Bores, 1 Well	Sunnyside	336
17714	Bylong River Water Source	Irrigation	1 Bore	Tinka Tong	104
39757	Sydney Basin – North Coast Groundwater Source	Irrigation	2 Bores	Torrie Lodge	267
40283	Sydney Basin – North Coast Groundwater Source	Irrigation	1 Bore	Helvetia	144
17720	Bylong River Water Source	Irrigation & Stock	1 Bore	Lee Creek	155
17726	Bylong River Water Source	Irrigation & Stock	1 Bore	Lee Creek	251
				Total Megalitres	**3,456**

Table 6 Basic Rights Approvals

Basic Rights Approval	Water Sharing Plan	Use	Source	Property Area
20WA212934	Inland Groundwater Sources	Stockwater Only	1 Bore	Oakdale
20WA206613	Bylong River Water Source	Stockwater Only	1 Well	Innisvale
20WA206614	Bylong River Water Source	Stockwater Only	1 Well	Innisvale
20WA206615	Bylong River Water Source	Stockwater Only	1 Well	Valley View
20BL173534	Not Subject to Water Sharing Plan*	Stockwater Only	1 Bore	Homeleigh
20BL173166	Not Subject to Water Sharing Plan*	Stockwater Only	1 Bore	Harley Hill
20BL173218	Not Subject to Water Sharing Plan*	Stockwater Only	1 Bore	Harley Hill
20WA214815	Sydney Basin – North Coast Groundwater Source	Stockwater Only	1 Bore	Hill View
20WA215271	Sydney Basin – North Coast Groundwater Source	Stockwater Only	1 Bore	Yarranview
20BL172120	Not Subject to Water Sharing Plan*	Stockwater Only	1 Bore	Yarranview
*license not yet converted				

There are no further immediate plans for additional independent water licences from the Hunter Unregulated and Alluvial Water Sources Water Sharing Plan (Bylong River Water Source) to be purchased by KEPCO to support the agricultural enterprise. It is possible that additional water licences may be acquired as part of a property acquisition associated with a purchase under Voluntary Land Acquisition and Mitigation Policy (VLAMP) requirements.

Stock Water

All grazing paddocks have permanent water available, with a combination of water troughs and/or dams proving permanent stock water for cattle. Troughs are fed from the pump pressurized bore and pipe network, sourced under the relevant Approvals shown in **Tables 5** and **Table 6**. The bore pumps are operated under electric and solar power.

Sight balls are installed on all water tanks to allow safe and efficient checking of water tank levels. Water checks are conducted a minimum of three times a week to ensure water is always available to cattle.

Jointed concrete water troughs have been the preferred trough installed by previous landholders. Due to the age of a number of the troughs, it is proposed that they will be replaced with round poly or concrete troughs. Troughs will be replaced on an as need basis in response to failure of the established troughs or via a targeted replacement program.

Ongoing maintenance of stock water infrastructure will continue to be an important component of the management of the KEPCO holding. Stock water access points will continue to be assessed to ensure maximum feed utilisation through ensuring all grazing areas have adequate watering points.

Stockwater supply will be upgraded to circumvent the active mining area to maintain cattle production.

Expenditure for maintenance and upgrades of stock water is budgeted at approximately 2% of projected gross farm income.

Irrigation Equipment

Four cannon irrigators and one centre pivot irrigator are used on the high production areas at Bylong Station, Taworri, Sylvania and Brigalow to produce lucerne and fodder crops. Irrigation water is sourced under the relevant WALs shown in **Table 4**.

Two additional existing irrigation schemes will be revamped in 2018 on Bylong Park, adding a further 25 hectares under irrigation management. All irrigation infrastructure is located outside of the Project Disturbance Area.

There are no further plans for additional irrigation infrastructure within the KEPCO holding.

There is no infrastructure for flood irrigation.

Farming Equipment

KEPCO is self-sufficient for the majority of its lucerne and oaten hay enterprise. KEPCO utilise a square baler, mower, rake, tractor, truck, and hay loading equipment.

A contractor is engaged when the production of small square bales is required.

KEPCO has a minimum tillage Agri-Drill pasture planter which is used for sowing lucerne and tropical grass pasture, a Brookfield Chain Bar which is used for sowing fodder crops, along with a grouper for seed and fertiliser movement.

Current farming equipment will be upgraded in May 2018, in line with equipment lease periods maturing. The following additional equipment will be considered in 2019 to facilitate an increase in hay production:

- Tractor.
- Small square baler, plus accumulator.
- 36 foot trailer to transport bales to hay shed.

Farming equipment expenditure for lease payments and maintenance is budgeted at approximately 9% of projected gross farm income.

Plate 1 Brookfield Chain Bar

Plate 2 Agri-Drill Pasture Seeder

In the short term, there are no plans for further purchase of farming equipment for use within the KEPCO holding. Instead local contractors will be utilised where equipment is required for maintenance or capital tasks.

7 BEEF CATTLE ENTERPRISE

The KEPCO cattle enterprise is a combination of purchased trade cattle and station bred steers and heifers. The beef cattle enterprise is the major income source for the operation, generating approximately 95% of gross income.

As at the 9th October 2017, the breeding herd comprised 623 Angus, Angus Cross (Black Baldy), Hereford, Charolais and Santa Gertrudis cows, with 90 Angus cows joined to Charolais bulls, while the remaining cows are joined to Angus bulls, as shown in **Table 7**.

Trade steers and heifers are generally purchased at less 12 months of age, with a preference for easy handling cattle. At present, the trade herd comprises Angus, Black Baldy, Hereford and Speckle Park breeds. Opportunity cattle purchases are considered when seasonal conditions are favourable.

Total cattle numbers as of 9th October 2017 were 2,397, comprising 623 breeding cows, 681 steer weaners, 716 heifer weaners, 82 trade steers, 285 trade heifers, eight Angus and two Charolais breeding bulls.

Low birth weight Angus bulls are joined to heifers to ensure ease of first time calving. Charolais bulls have been introduced to the Angus breeding herd to increase hybrid vigour. A 97% calf marking rate was achieved for 2017.

Bulls are purchased out of the paddock, rather than at sales, enabling temperament and walking ability to be observed in a paddock setting rather than yards.

Cattle numbers are dependent on climatic and market conditions. KEPCO will maintain cattle numbers at an optimum number taking into consideration the noted conditions to ensure that the enterprise is operated in a sustainable and economic manner. Cattle numbers provided in **Table 7** and discussed above are provided for reference.

Table 7 Cattle Breeding Plan 2017

Breed	Breeder Type	Breeder Number	Bulls Joined	Calves Marked 2017
Angus	Cows	34	Charolais	35
Hereford	Heifers	42	Angus	40
Angus	Cows	56	Charolais	52
Charolais	Heifers	49	Angus	46
Charolais Cross	Cows	45	Angus	43
Angus Cross	Cows	53	Angus	47
Santa Gertrudis	Cows	53	Angus	Calve January 2018
Charolais Cross	Cows	56	Angus	Calve May 2018
Angus	Cows	81	Angus	81
Angus	Cows	154	Angus	157
			Total Calves 2017	**501**

According the *MLA Stocking Rate Calculator* (2013), the current cattle numbers are calculated as approximately 23,300 Dry Sheep Equivalents (DSE), or 3.7 DSE per hectare of available agricultural land. Compared to district averages of 3 to 4 DSE per hectare for hill grazing country, 6 to 7 DSE per hectare for lower slope grazing areas and 10 to 25 DSE per hectare on irrigated pasture and fodder crops (Scott Barnett & Associates, 2015) this would be considered a conservative stocking rate.

Since early September 2017, 482 grown cattle were sold due to the ongoing dry conditions (approximately 4,400 DSE). The current cattle breed and stocking strategy will continue to operate into the future and forms the basis for the agricultural enterprise operated on the KEPCO holding.

7.1 Cattle Marketing

Two options are used to market grown out cattle including via direct agreement with large scale beef purchasing enterprises and direct to the abattoir (Over the Hook).

Direct Agreement

KEPCO aims to sell 50% of its trade cattle under direct agreement with large scale beef cattle purchasing enterprises. Under KEPCOs current agreement, cattle are required to be between 420 and 590 kilogram liveweight (2017 average was 560 kg), two tooth (2 years), grass fed, free range, paddock fattened and hormone free. Agreements of this nature have extremely high levels of traceability and as such only KEPCO station bred cattle are sold through this scheme. These cattle are identified with a red tag.

The direct agreement approach is favoured due to its potential to achieve market premiums for cattle which fall into the stated specifications. This will continue to be the favoured selling method for KEPCO, whilst ever these premiums are available.

Over The Hook

The remaining trade cattle are sold over the hook direct to Abattoirs in the State, which comprise all cattle purchased from off-property and any that did not meet the requirements of an established agreement. The cattle are sold in the same weight range, but can be up to four tooth (2 ½ years). These cattle are identified by a yellow tag.

The Over the Hook sale approach will continue to be an integral part of the cattle marketing strategy, allowing the sale of cattle at a known price and which do not meet the requirements for the direct agreement.

All cattle trading will continue to be conducted through local agents.

7.2 Cattle Husbandry

The Bylong Station cattle handling complex is used as the receiving point for all purchased cattle. It is also treated as a “biosecurity area” where cattle are drenched and immunised before being taken to other properties within the KEPCO aggregation for growing out to market weights. Livestock movements are conducted according to the *NSW Biosecurity Act 2015*.

Trade cattle are purchased at nine to twelve months of age. There is a strong emphasis on low stress stock handling. To achieve this, once cattle are trucked into Bylong Station they are held in the cattle yards for one day, being walked through the yarding complex a number of times to get used to being handled. They are then fed hay, given access to water and left in the yard complex overnight.

Veterinary requirements and computer processing begins the following day. All cattle are tagged with a unique identifier and weighed. Young weaners stay on Bylong Station for a minimum of two weeks to be schooled in vehicle, human voice and electric fence recognition.

After two weeks, the weaners are then moved to Tarwyn Park. Again, they are regularly moved through paddocks on Tarwyn Park to be further schooled in human contact.

Breeding cows are also moved close to the Bylong Station homestead for calving wherever possible, as this is the best area for observation during calving.

Bylong Station is also used as the main loading out area for cattle leaving for sale.

An indicative weekly timeline for cattle movements and water checks is as follows.

- Monday, check cattle and water tanks. Check troughs if necessary.
- Tuesday to Thursday, cattle are moved to new paddocks as required, check water tanks. Cattle are moved on these days where possible so they can be checked again before the weekend.
- Friday, check cattle and water tanks. Check troughs if necessary.
- Saturday and Sunday, check water tanks. Check troughs if necessary.

Cattle are checked and moved regularly and this is why a strong emphasis on getting them used to human contact once they are brought onto Bylong Station, and later Tarwyn Park.

Hillview, Carrawatha, and Lee Creek are used to run breeding cows only, as the majority of the grazing is on native pastures. If extra paddocks are required they can also be moved to Byleigh Ridge, Glenview and Harley Hill. This strategy has been enacted on the basis that the noted properties are adjoining.

Yarran View is used to run grazing steers, due to a neighbouring landholder operating a stud bull operation. Steers are brought into Yarran View at 300 kilograms, grown out to 450 kilograms then moved back up to high production areas in the north and taken through to sale weights of over 500 kilograms.

The current cattle husbandry strategy will be carried forward into the future, with an emphasis on low stress stock handling and optimal weight gains for cattle grazing within the KEPCO holding.

7.3 Pasture Management

Pastures are managed through stock movement, leaving sufficient groundcover to prevent erosion of topsoil and to allow rapid pasture growth after rainfall, which is generally recognised at 70% groundcover or 800 kilograms of dry matter per hectare.

Single superphosphate is spread at 120 kilograms per hectare on 400 hectares annually. This stimulates clover and medic growth which in turn stimulates grass growth through the production of nitrogen. The 400 hectare parcel of land treated with single superphosphate annually is identified via a farm inspection where poor feed quality or growth rates have been acknowledged.

Broadleaf weed control occurs as required and is further detailed in **Section 7.8**.

Pastures will continue to be managed in order to maintain adequate groundcover to prevent erosion and allow good recovery from grazing. Weeds will be managed to maintain diversity of desirable pasture species. The current fertilising regime will continue into the near future.

The planned 1,000 hectares of sub-tropical grasses with clover and lucerne are included in the pasture management strategy.

7.4 Fodder Cropping

The main fodder crop grown for grazing and hay production is oats. Paddocks for fodder cropping are prepared using a Brookfield Chain Bar cultivator. The paddock is then ground spread with 80 kilograms per hectare of Di-Ammonium Phosphate (DAP) and 120 kilograms per hectare of oats. The Brookfield Chain Bar is then run across the paddock twice on a diagonal cross to sow the fertiliser and seed. This method has the significant advantage of effectively managing weeds with no herbicide application, a fast rate of sowing and excellent crop establishment.

Cattle are removed from fodder crops while there is still sufficient dry matter coverage to enable efficient regrowth and prevent wind and/or water erosion. During favourable seasonal conditions, oats will be grazed twice by cattle during winter before being removed to allow for recovery and hay production in the spring.

As previously discussed, lucerne is sown on the high production areas in the north. Paddocks are chemically fallowed or cultivated with the Brookfield Chain Bar. Lucerne is then sown with an Agri-Drill along with DAP fertiliser.

A similar method is also used for sowing tropical grass pasture on the footslopes, and these are sown with DAP to provide nitrogen and phosphorus.

Lucerne and fodder crops on Brigalow, Sylvania Park and Bylong Station are irrigated as required as dictated by climatic conditions.

Lucerne production will be increased to supply clean lucerne hay in small square bales to the equine industry. Additional plantings will commence in April 2018 on Bylong Station.

Fodder cropping and lucerne production will continue in the future management planning, providing grazing for cattle and fodder conservation opportunities for the KEPCO holding.

Fertiliser, herbicide and seed expenditure for pasture management and fodder cropping is budgeted at 12% of projected gross farm income.

7.5 Hay Production

Hay production is an additional income source for the operation, generating approximately 5% of gross income and also supplements feed for cattle production. Hay production is considered a very important component of the overall farm plan as it provides fodder conservation, weed control and off-season income opportunities.

Large square bales of lucerne and oaten hay are produced for on-farm cattle feed and also for sale. Small square bales of prime lucerne hay are produced for sale into the horse market. Bylong Station, Sylvania Park and Brigalow focus on high quality lucerne hay production. Hay is sold off-farm through a local merchant and by negotiation with other neighbouring landholders.

Oaten hay in large bales is produced when fodder crops are surplus to grazing requirements, however during poor climatic conditions forage oats may be utilised for grazing.

The proposed hay production schedule for summer 2017-2018 is shown in **Table 8**. Hay production for the past three years has been 20% for on-farm use and 80% for off-farm sales.

Table 8 2017-2018 Proposed Hay Production

Property	Hectares	Irrigation Type	Hay Type	Tonnes
Bylong Station	50	Cannon	Lucerne 5 Cuts	625
	18	Cannon	Lucerne 5 Cuts	225
	10	Pivot	Lucerne 5 Cuts	125
			Total Tonnes Hay	**975**

For the 2017-2018 hay schedule, the proposed 975 tonnes of lucerne hay equates to approximately 820 large square bales of first cut and weather damaged lucerne hay for use on-farm and for off-farm sales, and 21,000 small bales of prime lucerne hay for off-farm sales into the horse fodder market.

The 78 hectares of hay production will utilise approximately 780 megalitres of licenced groundwater, estimating two megalitres per cut per hectare.

There are no plans for silage or grain production.

Expenditure for contract hay making is budgeted at approximately 5% of projected gross farm income.

Hay production is dependent on climatic and market conditions. KEPCO will maintain hay production taking into consideration the noted conditions to ensure that the enterprise is operated in a sustainable and economic manner. Hay production numbers provided in **Table 8** and discussed above are provided for reference.

Hay production will continue to be an important part of the management structure of the KEPCO holding, providing fodder security and additional income through off-farm sales, targeting the equine industry.

Opportunity fodder conservation of liverseed grass (*Urochloa spp.*) will also be utilised as a pasture management tool during favourable seasonal conditions.

7.6 Equine Facilities

A number of the KEPCO properties have equine facilities located within them. The key facilities are stables, holding yards and round yards. KEPCO will review these facilities to determine the extent that they can be made available to equine enterprises that can co-exist with the agricultural enterprises.

7.7 Natural Sequence Farming

Infrastructure Management

Infrastructure for Natural Sequence Farming (NSF) on Tarwyn Park, namely the “leaky weirs” are to remain in place, with necessary licensing requirements for continued use to be discussed with DPI-Water.

Fencing

Fencing and gate locations are to be rationalised for more efficient and safer stock movement. Upgrades of existing electric fencing are also being undertaken, especially concerning riparian areas of the Bylong River.

Pasture Management

Pastures on Tarwyn Park will continue to be managed under NSF principals, and have been incorporated into the rotational grazing schedule. Active management measures include slashing of pasture, fertilising with single superphosphate and regular stock movement. Weed control will be undertaken, focusing on the control of *African Boxthorn, Noogoora* and *Bathurst burr*. In that part of the property referred to as Iron Tank, management will be aimed at making the pastures more palatable for cattle. Currently pastures in this location are not preferentially grazed by cattle, possibly due to excessive rank growth as a result of elevated subsurface water levels.

Stocking

Tarwyn Park is utilised to graze newly purchased mobs of weaners once they have been through the acclimatisation period at Bylong Station.

Weaners are grazed on Tarwyn Park in four separate mobs of 75 during the normal stocking regime. Livestock continue to be moved into different paddocks weekly, further acquainting them with being handled.

7.8 Land Management

Weed Management

The current weed control program proposes 1,140 hectares of broadleaf weed control (**Table 9**) which comprises approximately 20% of the available agricultural area, with a similar area proposed for each following management year. Emphasis is on control of noxious weeds including *Noogoora burr, Bathurst burr,* blackberry*, African boxthorn* and golden dodder.

General inspections of the land holdings will be completed by the Farm Manager between the implementation of weed control activities and areas present with identified noxious weeds noted. The Weed Control Program identified in **Table 9** will be updated based on the inspections to ensure noxious weeds are actively managed and not allowed the opportunity to establish. The implementation of the Weed Control Program will be carried out in spring before flowering or as identified to be most effective taking into consideration the nature of the identified weeds.

Chemicals utilised within the Weed Control Program will be based on the targeted weed and environmental considerations. The Environment Manager will be responsible for approving the proposed chemical to be used. Consultation with Central Tablelands Local Land Services (LLS) and or the Environmental Protection Agency (EPA) may be conducted dependant on the nominated chemical.

The weed control program will continue to be an important factor in future management planning of the KEPCO holding. Seasonal weed control will continue to be undertaken when conditions are favourable for effective control.

Table 9 2017-2018 Proposed Weed Control Program

Property Area	Number of Paddocks	Hectares
Bylong Station	5	65
Taworri	6	120
Sylvania	2	55
Sunnyside	3	245
Tinka Tong	2	40
Helvetia	6	175
Tarwyn Park	9	230
Byleigh Ridge	2	40
Harley Hill	2	40
Yarran View	3	50
Lee Creek	5	80
	Total Hectares	**1,140**

Soil Conservation

Soil conservation works will be undertaken as required. Areas of focus will be those not proposed to undergo surface disturbance during proposed mining operations, including gully erosion on the upper slope areas at Taworri and Sylvania Park, and also at Yarran View. Advice from the Soil Conservation Service of NSW will be sought as necessary.

Soil conservation practices are also undertaken by using the Agri-Drill and Brookfield Chain Bar which rely on minimal disturbance to the soil profile for sowing either pasture or fodder crops. The majority of fodder cropping and pasture improvement is carried out on the alluvial valley floor and footslopes, due to the nature and slope of these soils being less susceptible to erosion.

Improved grazing management under KEPCO ownership will also reduce the potential for further development of soil erosion in the agricultural area.

Bushfire Management

Bushfire management will be undertaken according to the *Bushfire Management Plan* (Ecological 2013, currently under review). Key objectives of the Bushfire Management Plan are:

- Protection of life and property.
- Reducing the fire ignition potential by employees, contractors and their equipment when accessing KEPCO landholdings.
- Preventing the spread of unplanned fire within and beyond the KEPCO landholdings.
- Compliance with bushfire related legal and regulatory requirements.
- Protection of flora, fauna and vegetation communities within KEPCO landholdings from inappropriate fire regimes and unplanned fire events.
- Using fire as a management tool to maintain and enhance ecosystems, where applicable.

Efficient grazing and irrigation strategies will also reduce dry fuel loads, further reducing bushfire risk within the KEPCO holdings.

The Bushfire Management Plan will be updated every five years, after a bush fire event, or when other changes require the Plan to be updated.

Feral Animal Management

Feral animal management is conducted in liaison with the Central Tablelands LLS. At present there are wild dog monitoring cameras operating within the KEPCO holding which have been supplied and are maintained by the Central Tablelands LLS.

Bating programs are run in conjunction with neighbouring landholders under the direction of the Central Tablelands LLS.

Further potential feral animal control measure which may be implemented on KEPCO land holdings include trapping and targeted culling campaigns performed by registered and authorised parties.

Stakeholder Liaison

Regular contact is made with neighbours, especially when baiting programs are active. At Yarran View, steers only are grazed due to the neighbouring landholder (Tallooby Stud) breeding Angus bulls. This prevents interaction with breeding cows and heifers.

Regular consultation is also undertaken with NSW National Parks, Forestry Corporation of NSW and Department of Industry – Lands who are the dominant surrounding landholder, for activities such as bushfire management and feral animal control.

Regular liaison is also undertaken with the NSW Department of Primary Industries via their website to access agricultural research, cattle husbandry, weed control, pasture, fodder cropping and grazing advice.

Agricultural Procurement

Local procurement is a priority for the agricultural enterprise with local businesses and organisations engaged in providing goods and services to the farm operation.

KEPCO as far as is practical is committed to utilising a local workforce and local suppliers for its agricultural enterprise.

8 INTERACTION WITH MINING OPERATIONS

The current farming operation is operated in the knowledge that certain areas will become unavailable for agricultural production in the future. This will allow the agricultural enterprise to co-exist and benefit the mining operation.

Agricultural land will undergo progressive release with grazing activities occurring up until release to the mining operation. Benefits of this strategy include:

- Utilisation of all grazing areas up until mining operations commence, resulting in less wastage of pasture and increase agricultural productivity prior to mining commencement.
- Continued weed control, which reduces the weed seed bank and increases the population of desirable grazing species. This will leave a seed bank of desirable pasture species in the topsoil to be stripped, allowing the growth of pasture species in topsoil stockpiles and again after topsoil spreading during the commencement of rehabilitation.

- A reduction in dry fuel loads around mining operations, reducing bushfire risk.

Strategic use of mine buffer land, biodiversity areas and the release of rehabilitated land back to agricultural enterprise is described below.

At the conclusion of rehabilitation, previously disturbed land will be progressively reintroduced into the grazing schedule as part of the ongoing agricultural enterprise. Given the species which are to be established on the rehabilitated areas, strategic grazing will be of benefit to the successful establishment of pastures.

8.1 Mine Buffer Land

It is proposed that buffer land within and around the active mining areas will continue to be utilised for grazing, with electric fencing and portable water infrastructure introduced to confine cattle to the desired “buffer grazing areas”. Cattle grazing within the mine buffer land will be in proximity to the proposed mining operation. As discussed below, cattle have demonstrated to not be adversely impacted by potential mining impacts, grazing in close proximity is standard practice at other mining operations throughout the Mid-Western Region and the Hunter Valley.

Two studies have found that cattle do not undergo stress when exposed to high levels of noise or vibration. Responses of Farm Animals to Sonic Booms (Casaday & Lehman, 1967) found that milk production dairy cattle were not impacted by sonic booms recorded between the range of 125 dB and 136 dB. The *Report on Vibration Effects in Transported Cattle* conducted by Heggies (2006) found that cattle suffered no adverse effects when commonly exposed to vibration levels in excess of 200 millimetres per second during road transportation, including levels of stress and contentment.

This strategy of grazing mine buffer land will also reduce dry fuel loads, lowering bushfire hazard, enable ongoing weed management and increase agricultural productivity.

A procedure will be developed to enable cattle grazing activities to be undertaken immediately adjacent mining operations. This procedure will maximise the use of available grazing areas. The procedure will define the appropriate methods for moving cattle through active mining areas in conjunction with the mine planning team.

8.2 Biodiversity Improvement Areas and Offsets

Any agricultural activities in nominated Biodiversity areas will be undertaken in accordance with the Offset Management Plan (OMP) and Biodiversity Management Plan (BMP).

Biodiversity Offsets will be fenced to exclude livestock. Seasonal opportunistic grazing in Biodiversity Offsets may occur for weed control or to reduce dry fuel loads and lower bushfire risk. Grazing of Biodiversity Offset areas will be at the request of the Farm Manager pending approval of the Environmental Manager following an inspection of the Biodiversity Offsets.

Areas that have been historically cropped within the Biodiversity Offsets will continue to be used for this purpose, as they been determined as not suitable for the purpose of Offsets and are unlikely to regenerate into a native vegetation community. These are typically the lower lying areas that are located on flat alluvial floodplains with highly fertile soil.

KEPCO will ensure all commitments and conditions regarding the management of Biodiversity Offsets will be maintained.

8.3 Rehabilitated Land

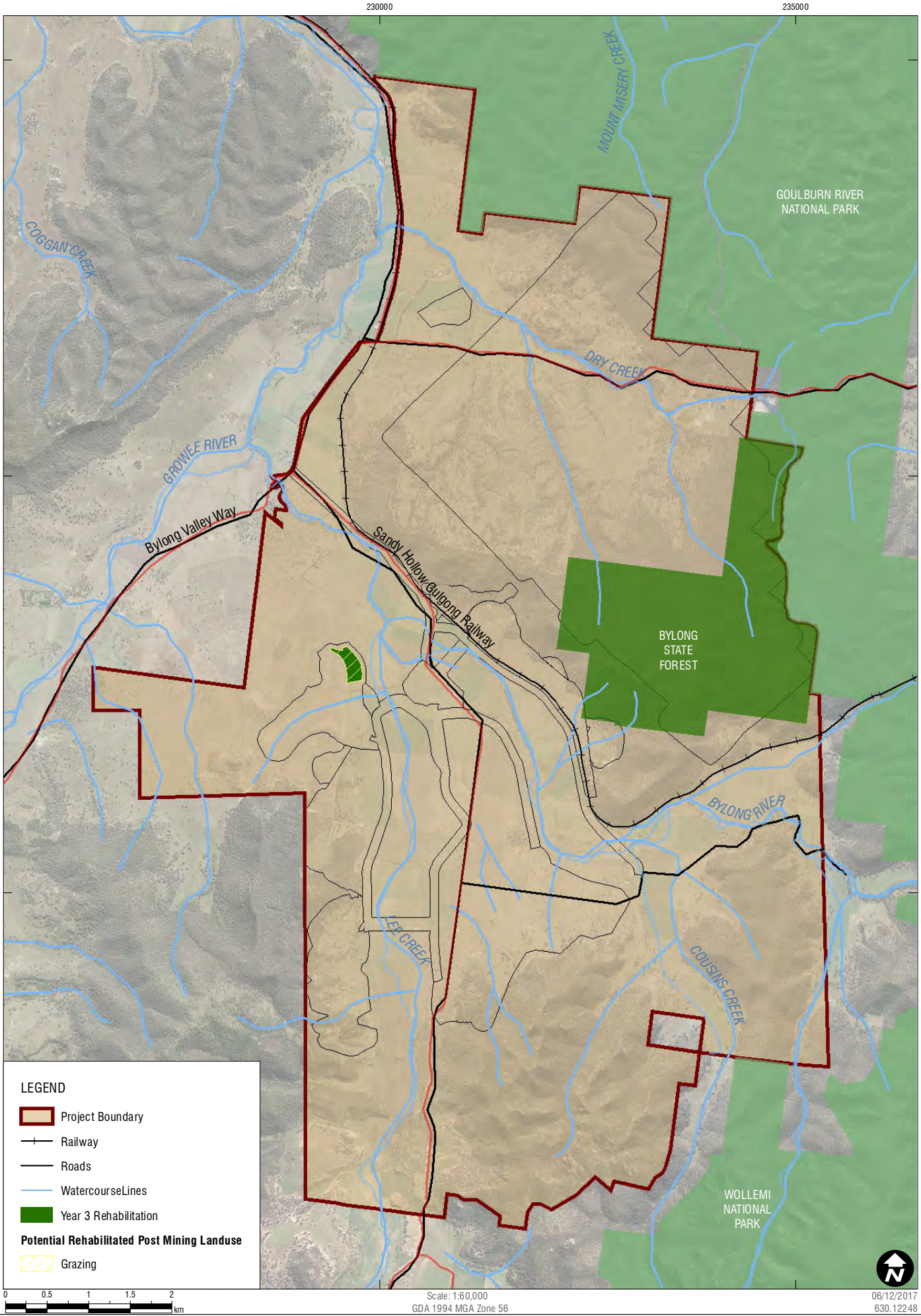
Rehabilitation of the mining area will be conducted in stages. This approach ensures rehabilitation is progressively undertaken in response to mining activities. Rehabilitation objectives and scheduled completion of specific mine areas are identified within the draft Rehabilitation Management Plan (RMP). Objectives are inclusive of returning rehabilitated land to that of the pre mining land uses of grazing, cropping and native woodland. The proposed mine rehabilitation staging is identified below in **Figures 7** to **11**.

Areas identified to support both grazing and cropping will be progressively released to the agricultural enterprise. Given the species which are to be established on the rehabilitated areas, strategic grazing will be of benefit to the successful establishment of pastures. Cattle will not be utilised in the establishment of native woodland rehabilitation and are to be excluded from the relevant areas.

As identified in Section 5.9 of the RMP, mine land rehabilitated to support grazing land use will be made available to the agricultural enterprise during Years 1, 2 and 3 (post rehabilitation) for inclusion in the rotational grazing regime. The introduction of cattle is to encourage further root growth of ryegrass and help “bed-down” the rehabilitation. Cattle introduced to rehabilitated areas will be closely monitored and managed to ensure no degradation to soils and the stability of the landform occurs.

Post Year 3, cattle will be removed from the rehabilitated areas to facilitate establishment of perennial pasture species identified in Section 5.9 of the RMP.

Monitoring of the rehabilitated areas will continue post Year 3. The Environmental Manager in consultation with an appropriately skilled Soil Scientist will assess monitoring results of soils, landform stability and pasture establishment. This assessment will identify if the specific rehabilitated area is suitable for reintroduction to the rotational grazing regime, or if additional time and works are required in order to ensure the land is positively trending towards an environment supportive of agriculture. As discussed in **Section 6.7** the Environmental Manager will consult with the Farm Manager in regards to which rehabilitated lands are available to the agricultural enterprise.



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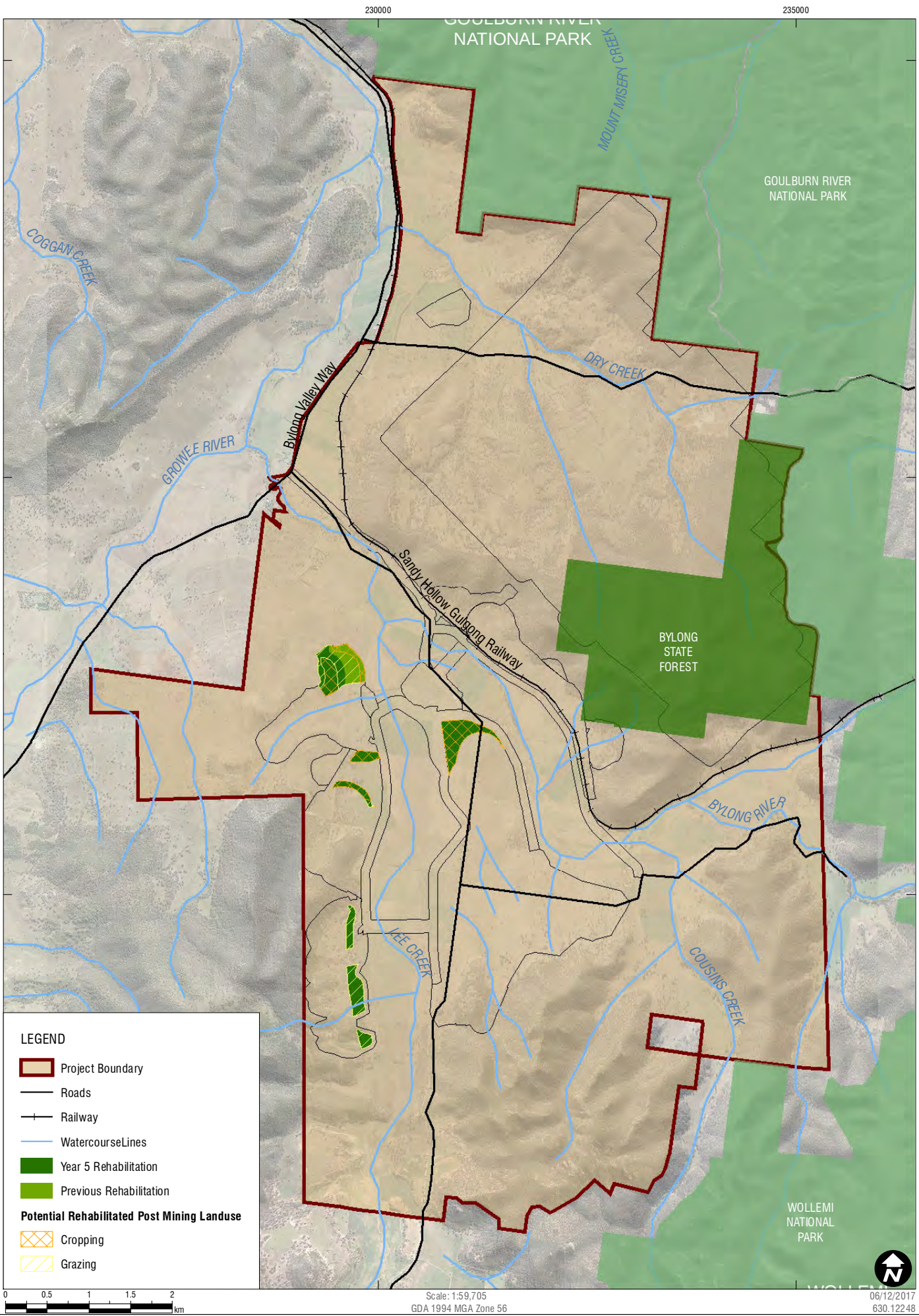
Staged Rehailitation
Years 0 - 3

FIGURE 7



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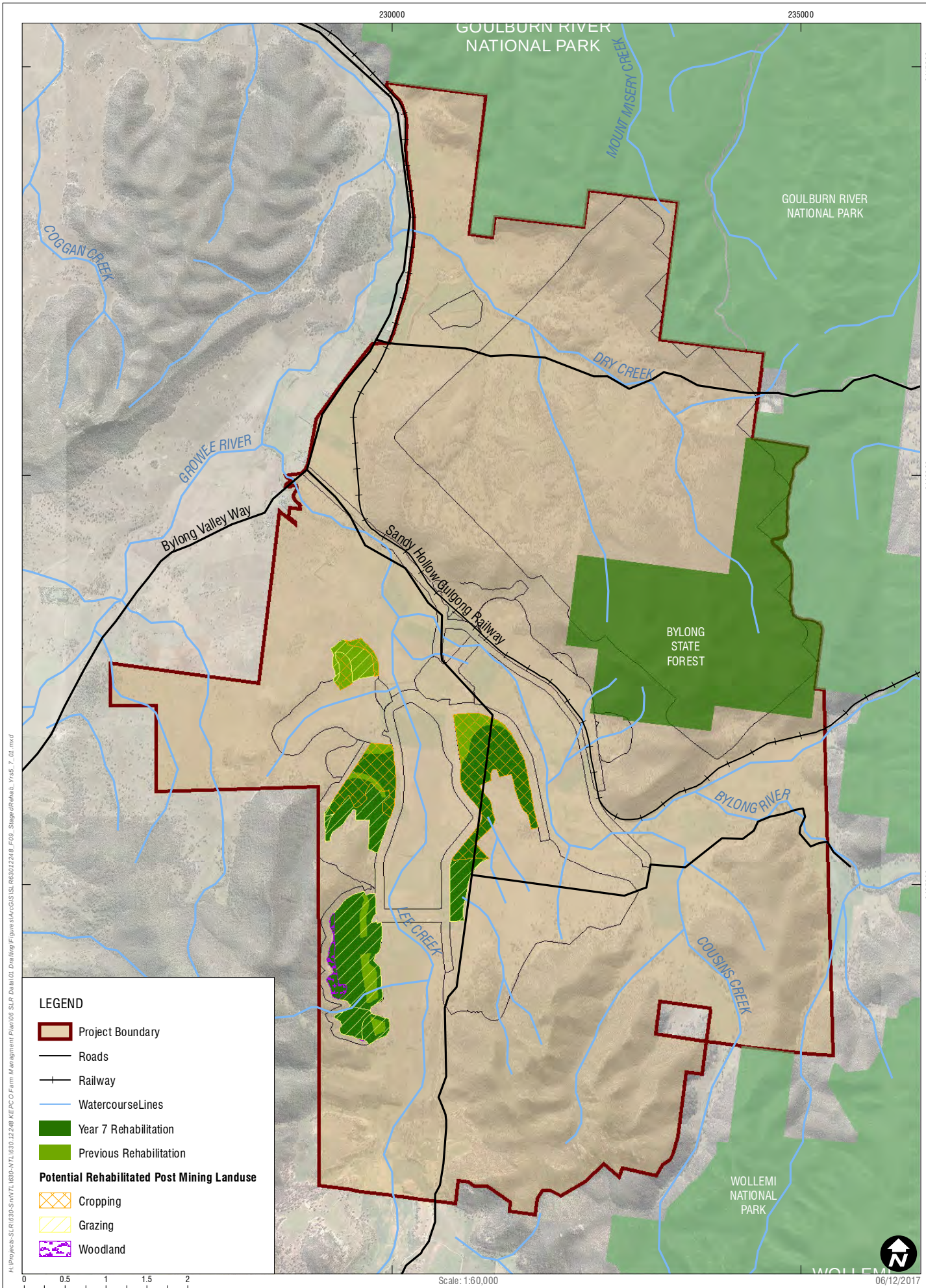
Staged Rehailitation
Years 3 - 5

FIGURE 8



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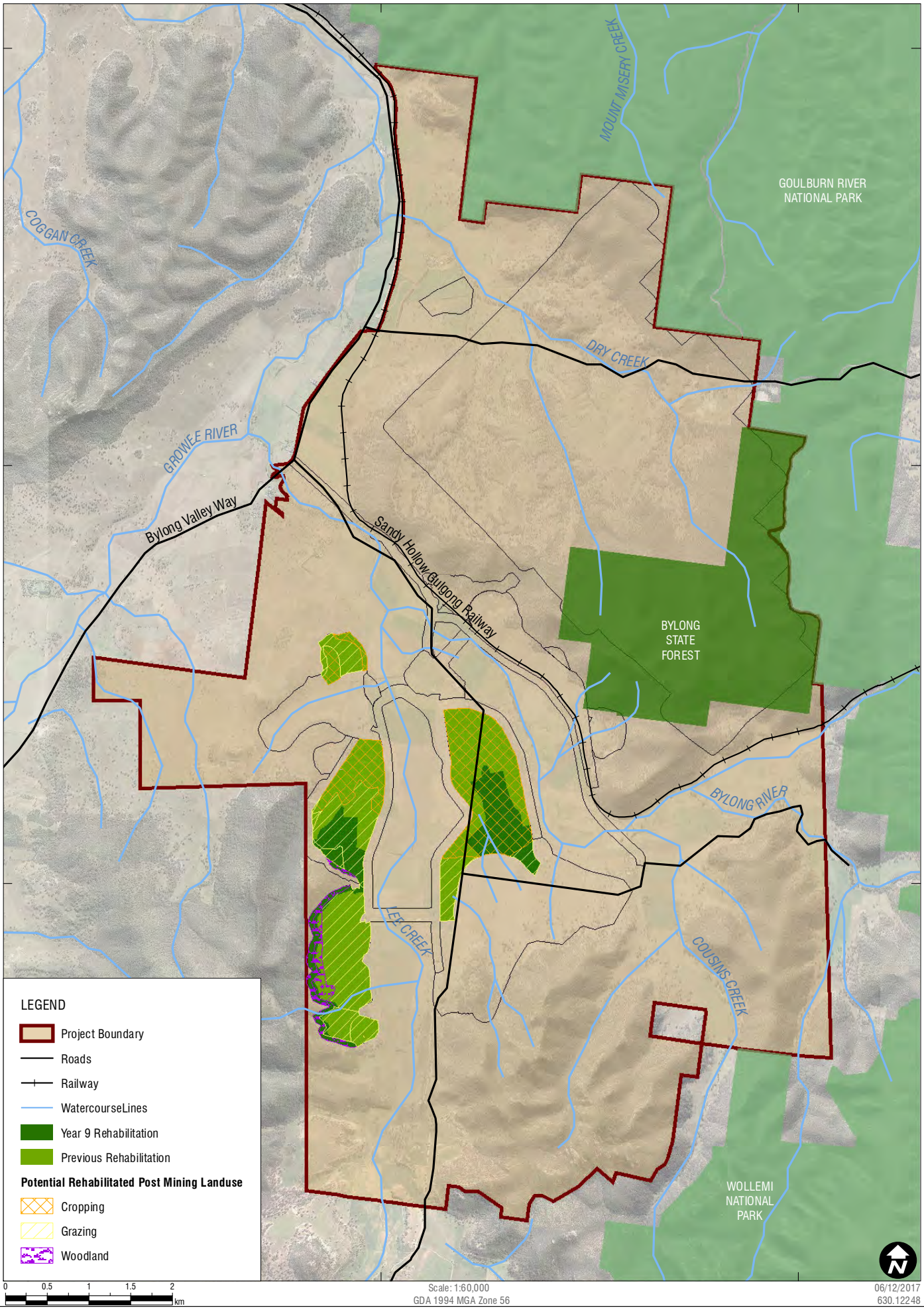
Staged Rehailitation
Years 5 - 7

FIGURE 9



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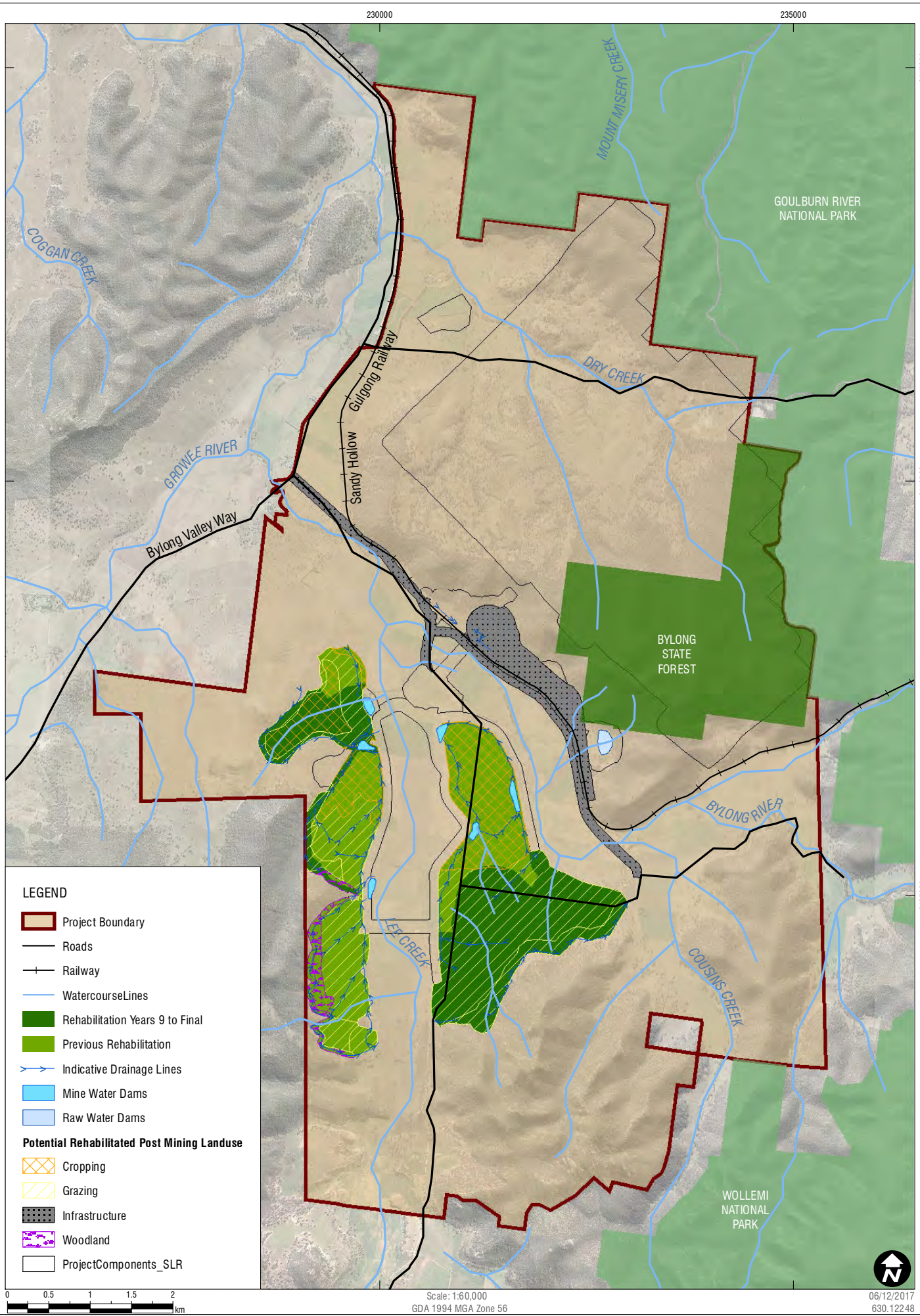
Staged Rehailitation
Years 7 - 9

FIGURE 10



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Staged Rehailitation Final

FIGURE 11

9 PROPERTY IMPROVEMENT OPPORTUNITIES

The Farm Management Plan provides the following significant property improvement opportunities the for KEPCO holding:

- Improved agricultural production through the aggregation of smaller properties, allowing greater flexibility in stock movements and management decisions.
- Improved agricultural production through the continued pasture improvement and weed control.
- Continued maintenance of boundary fencing and upgrades and rationalisation of internal fencing, allowing more efficient and safer stock movements.
- Continued upgrades of gates and cattle grids, with complete removal of all “Queensland” wire strained gates and electric tape gates.
- Increased noxious weed control across the holding, especially in proposed mine surface disturbance areas, reducing weed seed banks, benefitting the current agricultural enterprise and also the proposed mine rehabilitation through the proliferation of desirable pasture species. Additionally, benefitting neighbours by minimising weed seed transport further down catchment.
- More efficient use of stock water through the staged replacement of jointed concrete troughs.
- There is an opportunity to increase the irrigation area, enabling the production of more fodder for sale or use on-farm.

KEPCO believes enhanced rehabilitation outcomes are possible due to improved soil structure, desirable pasture species composition and reduced weed seed population generated by the agricultural enterprise prior to, and at completion of mining operations.

Further capital property improvement will be introduced in 2019, after adoption of the mine plan.

Overall, the agricultural enterprise provides an opportunity for KEPCO to become an industry leader where an agricultural enterprise co-exists and enhances ongoing mining operations and rehabilitation activities.

10 MONITORING

10.1 Pasture and Beef Production

To ensure the practices discussed within this Plan are effectively implemented, pasture coverage and grazing records are to be maintained. This allows for pasture growth rates and production (pasture availability as dry matter per hectare) and pasture consumption to be calculated and recorded. This data will be used in connection with livestock weight appraisals to assess animal performance. Data will be reviewed annually to ensure implemented pasture and animal managed practices are sustainable and provide positive economic outcomes. Results of the data review will take into consideration climatic conditions when compared to previous monitoring periods.

Pasture monitoring and beef production calculation will be based on the *Prograze Profitable, Sustainable Grazing* (NSW DPI, 2017) methodology.

10.2 Reference Sites

Pasture reference sites will be established in proximity to the Project during mining and rehabilitation stages. Reference sites will be utilised to compare production rates as discussed in **Section 10.1**. The comparison of data will assist in ensuring rehabilitated lands are positively tracking to that of pre-mining conditions. Further assessment of rehabilitation is identified in the draft RMP.

Reference sites will be established at the commencement of mining operations. Data collated from both reference sites and lands utilised by the agricultural enterprise will be reviewed annually and assessed. Reference site data will be utilised to assess if rehabilitated land can be released to the agricultural enterprise. Baseline soil nutrient data was compiled and analysed in the *Comparative Agricultural Productivity Assessment of Properties Subject to Varying Land Management Techniques* (SLR, 2017).

10.3 Environmental Monitoring

A comprehensive environmental monitoring network has been established for the Project to ascertain baseline data to support the environmental assessment process. The monitoring network will be further developed to ensure compliance with Development Consent and associated licenses.

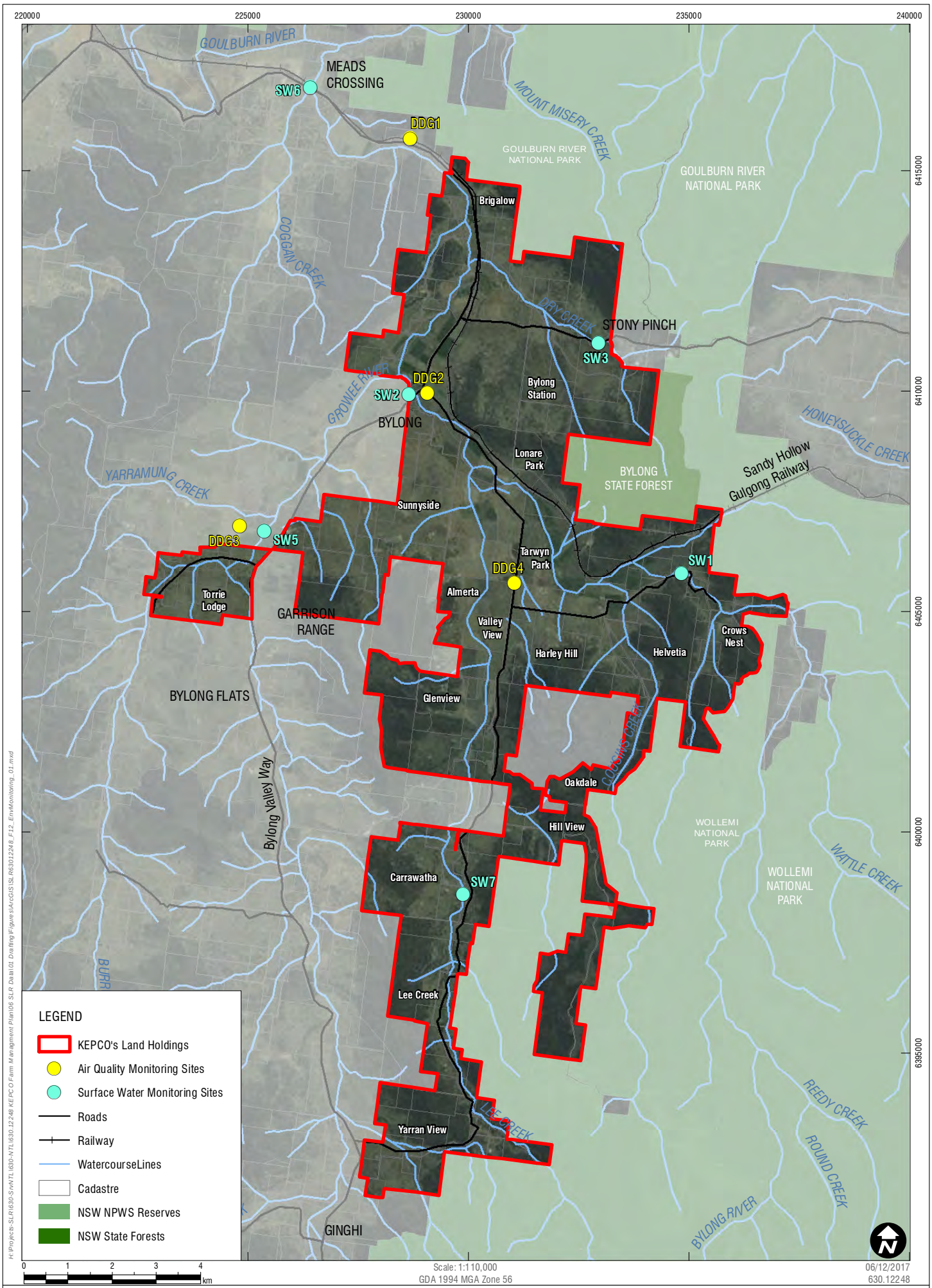
Data from established monitoring program will be reviewed annually to assess if the agricultural enterprises has been potentially affected by mining activities. The review will include an assessment of Surface Water and Air Quality data from the following monitoring locations, as provided in **Table 10** below, locations are in identified **Figure 12**.

Table 10 Monitoring Locations

Surface Water Monitoring Site	Location
SW1	Upstream Bylong River
SW2	Confluence Growee River and Bylong River
SW3	Upstream Dry Creek
SW5	Upstream Growee River
SW6	Downstream Bylong River
SW7	Upstream Lee Creek
Air Quality Monitoring Site	**Location**
DDG1	North West (Wollar Road)
DDG2	Bylong Village
DDG3	West (Wingarra)
DDG4	South

Surface water and air quality data will be assessed for divergence from baseline levels. Surface water assessment will be inclusive of the following analytes; EC, pH and Turbidity (NTU) whereas air quality will consider Total Insoluble Matter (TIM).

Should data demonstrate a divergence an investigation will be performed by the Environmental Manager, to identify the source and as necessary develop an impact mitigation plan in consultation with the Farm Manager.



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Environmental Monitoring Locations

FIGURE 12

11 COMPLAINTS AND INCIDENT MANAGEMENT

Complaints and incidents which are associated with the agricultural enterprise will be managed under the Bylong Coal Mine Environmental Management System (EMS) in consultation with the Farm Manager.

The EMS identifies the appropriate procedures in which complaints and incidents are managed and escalated. All complaints and incidents will be investigated and where appropriate and feasible mitigation measures put in place to prevent recurrence.

12 REVIEW AND REPORTING

In accordance with the preliminary development consent conditions Condition 5, Schedule 6 of DA SSD-6367 this Plan will be reviewed within three months of the submission of an Annual Review, Incident Report or independent environmental audit. The Plan will be reviewed by the Farm Manager in consultation with the Environmental Manager. The review will take into consideration:

- Land available to the agricultural enterprise considering mining activities, rehabilitation establishment and status of biodiversity offset areas.
- Effectiveness of practices identified within the Plan.
- Results of the pasture and beef production assessment from the rehabilitated land comparison.
- Current best practice agricultural methods which potentially could be implemented.

Additional review of this Plan will be conducted following changes in statutory requirements, operational or management procedures or when triggered by any event, complaint or finding(s) that identify improvements in the controls that effectively manage the identified hazard.

Results of the monitoring requirements identified within the Plan will be reported within the Annual Review.

13 WORK HEALTH & SAFETY

All KEPCO agricultural activities are conducted according to the *Bylong Coal Project Health, Safety and Environmental Management Plan* (WP, 2017) and the *Bylong Coal Project Farm Emergency Plan* (WP, 2015).

14 REFERENCES

Casaday & Lehman (1967) *Responses of Farm Animals to Sonic Booms*

Cumberland Ecology (2015) *Bylong Coal Project Biodiversity Offsets Strategy*

Ecological (2013) *Bylong Project – Exploration Phase Bushfire Management Plan*

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