Chapter 14

Land Use, Tenure and Contamination

TABLE OF CONTENTS

14.1	**Introduction**	**14-1**
14.2	**Regional Land Use and Character**	**14-1**
14.2.1	Regional Context and Regional Councils	14-1
14.2.2	Regional Plan Area	14-3
14.2.3	Natural Resource Management Areas	14-4
14.3	**Land Tenure and Use**	**14-4**
14.3.1	Mining Tenements	14-4
14.3.2	Property Tenures in the Project Area	14-5
14.3.3	Existing Dwellings	14-9
14.3.4	Land Zoning	14-9
14.3.5	Land Suitability	14-11
14.3.6	Good Quality Agricultural Land	14-12
14.3.7	Strategic Cropping Land	14-15
14.3.8	Stock Routes	14-20
14.3.9	Key Resource Areas and Declared Water Storage Catchments	14-20
14.3.10	Environmentally Sensitive Areas	14-22
14.3.10.1	Category A, B and C ESAs	14-22
14.3.10.2	Broadly Defined Environmentally Sensitive Areas	14-24
14.3.11	Native Title	14-24
14.3.12	Third Party Infrastructure	14-24
14.3.13	Mining and Petroleum Tenures	14-28
14.4	**Existing Contaminated Land**	**14-33**
14.4.1	Methodology	14-33
14.4.2	Current and Historical Land Use	14-33
14.4.3	Third Party Infrastructure	14-34
14.4.4	Nearby Receptors	14-34
14.4.5	Historical Cultural Heritage Sites	14-34
14.4.6	Contaminated Land and Environmental Management Registers	14-34
14.4.7	Site Personnel Surveys	14-35
14.4.8	Aerial Photography	14-35
14.4.9	Mineral Exploration	14-35
14.4.10	Management Measures	14-36
14.5	**Potential for the Project to Contaminate Land**	**14-36**
14.6	**Potential Impacts and Mitigation Measures**	**14-37**
14.6.1	Properties, Residences and Receptors	14-37
14.6.1.1	Potential Impacts	14-37
14.6.1.2	Mitigation Measures	14-37
14.6.2	Land Suitability, Good Quality Agricultural Land and Strategic Cropping Land	14-38
14.6.3	Stock Routes	14-39
14.6.4	Environmentally Sensitive Areas	14-39
14.6.5	Third Party Infrastructure and Non-statutory Plans	14-39
14.6.5.1	Third Party Infrastructure	14-39
14.6.5.2	Non-Statutory Plans	14-41
14.6.6	Mining and Petroleum Tenures	14-42
14.6.7	Land Use of Adjacent Areas	14-42
14.6.8	Post Operations Land Use	14-43
14.7	**Conclusion**	**14-43**

Tables

Table 14-1 Mining Leases and Local Government Boundaries 14-4
Table 14-2 Real Property Tenure – Byerwen Project 14-6
Table 14-3 Distance to Receptors 14-9
Table 14-4 Areas of Land Suitability Classes (LSCs) for Rain-Fed Broadacre Cropping 14-11
Table 14-5 Areas of Land Suitability Classes (LSCs) for Beef Cattle Grazing 14-11
Table 14-6 GQAL Classes based on SPP1/92 Mapping and Site Investigation 14-15
Table 14-7 Third Party Easements 14-28
Table 14-8 EIS Chapters where Potential Land Contamination Described 14-36
Table 14-9 Extent of Agricultural Land Category within Project Footprint 14-38
Table 14-10 Third Party Infrastructure Description and Owners 14-39

Figures

Figure 14-1 Project Location – Regional Context 14-2
Figure 14-2 Properties Intersected by the Project Area 14-8
Figure 14-3 Properties and Dwellings 14-10
Figure 14-4 Land Suitability for Rain-Fed Broadacre Cropping 14-13
Figure 14-5 Land Suitability for Beef Cattle Grazing 14-14
Figure 14-6 GQAL as Mapped under State Planning Policy 1/92 14-16
Figure 14-7 GQAL as Mapped by Site Inspection 14-17
Figure 14-8 Potential SCL as Mapped by the Queensland Government 14-18
Figure 14-9 SCL per Preliminary Site Investigation 14-19
Figure 14-10 Stock Routes 14-21
Figure 14-11 Environmentally Sensitive Areas 14-23
Figure 14-12 Aboriginal Cultural Heritage Parties 14-26
Figure 14-13 Third Party Infrastructure Locations 14-27
Figure 14-14 Overlapping Mining Tenures – EPCs and EPMs 14-30
Figure 14-15 Overlapping Mining Tenures – MDLs and MLs 14-31
Figure 14-16 Overlapping Petroleum Tenures 14-32

14. LAND USE, TENURE AND CONTAMINATION

14.1 Introduction

This chapter describes the existing land uses and infrastructure potentially affected by the construction and operation of the project, the impacts on those land uses and infrastructure, as well as any potential mitigation measures for those impacts. The topics addressed include land tenure, native title, current land use, land use and planning provisions, contaminated land, land suitability, strategic cropping land (SCL), good quality agricultural land (GQAL), stock routes and environmentally sensitive areas.

Parts of this chapter are based on the following technical reports provided as appendices to this EIS:

- **Appendix 14** – Byerwen Coal Project Land Technical Report
- **Appendix 15** – Byerwen Coal Project – Preliminary Site Investigation (in relation to contaminated land).

14.2 Regional Land Use and Character

14.2.1 Regional Context and Regional Councils

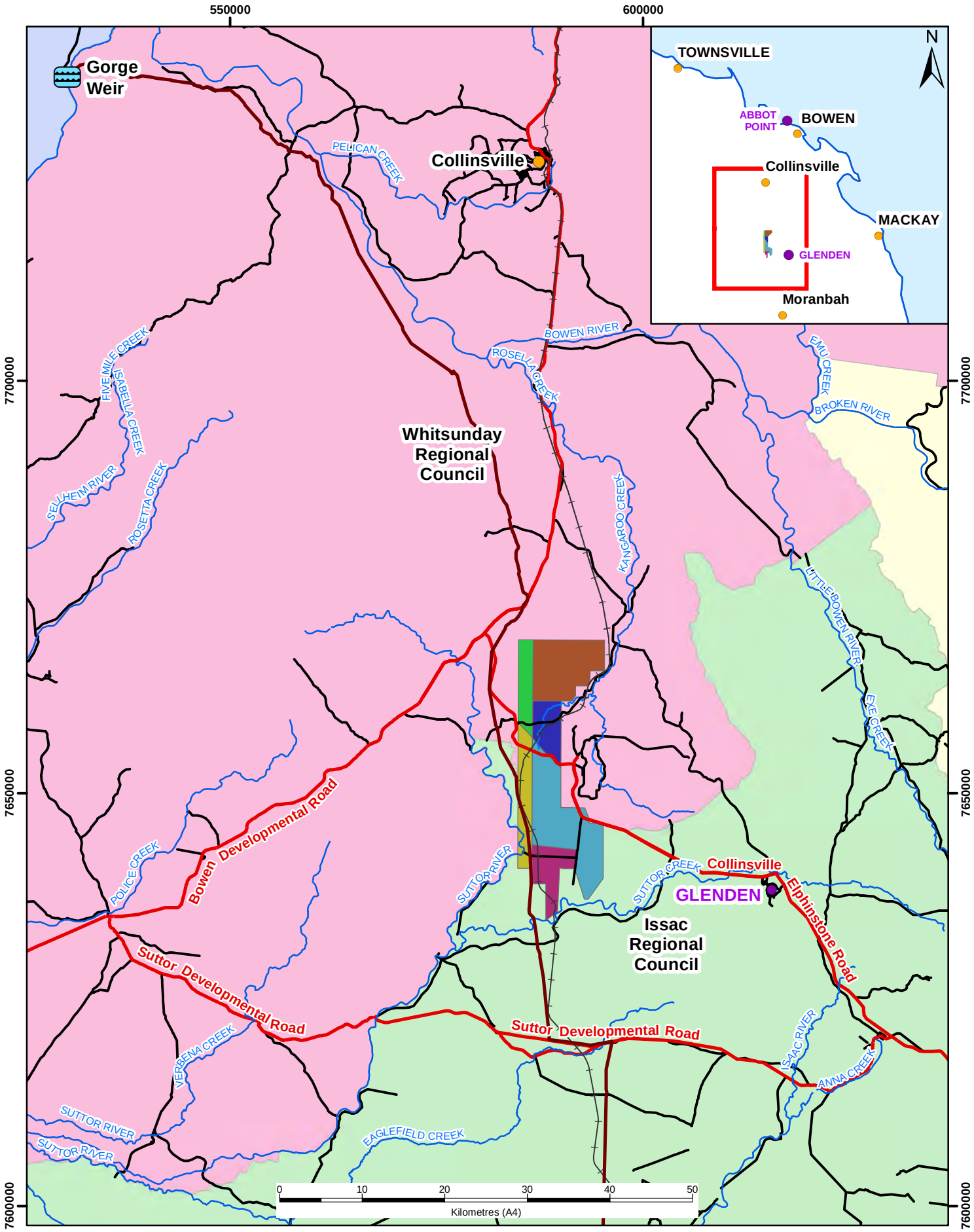
The project is located within the Isaac Regional Council (IRC) and Whitsunday Regional Council (WRC) local government areas. Prior to local government amalgamations on 15 March 2008, the project area was formerly within the Nebo Shire local government area (now part of the IRC) and Bowen Shire local government area (now part of the WRC). Until a planning scheme is adopted by the WRC and IRC that applies to the entire WRC and IRC local government areas respectively, the Planning Schemes for Nebo Shire 2008 and Bowen Shire 2006 continue to apply to regulating land use in the former Nebo Shire and Bowen Shire local government areas.

Chapter 5 describes the location of the project in a regional and local context. The closest population centres (measured from the centre to the project area boundary, rather than distance travelled by road) and current population numbers (ABS, 2012) are:

- Glenden, approximately 20 km to the east (population 1,308)
- Collinsville, approximately 57 km to the north (population 4,044)
- Moranbah, approximately 70 km to the south (population 8,965).

The regional centre of Mackay is located approximately 135 km to the east of the project site.

Figure 14-1 shows the location of the project in a regional context, including regional council boundaries.



Legend

- Watercourses
- GAP Rail line
- Main Towns
- Highway
- Main Road
- Formed and Unformed Local Roads
- Burdekin to Moranbah Pipeline
- Charters Towers Regional Council
- Issac Regional Council
- Mackay Regional Council
- Whitsunday Regional Council
- MLA 10355
- MLA 10356
- MLA 10357
- MLA 70434
- MLA 70435
- MLA 70436

Project Location Regional Context

Figure 14-1 | **Byerwen Coal Project**

Date: *30/01/2013*

Author: samuel.ferguson

Map Scale: 1:600,000

Revision: R1

Coordinate System: GDA 1994 MGA Zone 55

G:\CLIENT\SA-TO-D\BYEGEN - Byerwen EIS\GIS\Maps\EIS Chapters\EIS_Chpt_14_LandUse\BYEGEN_ProjRegLocation.mxd

14.2.2 Regional Plan Area

The project is located within the boundaries of the Mackay, Isaac, Whitsunday Regional Plan (MIWRP) (DLGP, 2012a) area. The purpose of the MIWRP is to sustainably manage regional growth and enhance the quality of life in the region. The MIWRP is a statutory instrument under the *Statutory Instruments Act 1992* and influences planning schemes, community plans and strategic land use decisions.

The Mackay, Isaac and Whitsunday State Planning Regulatory Provisions 2012 (DLGP, 2012b) allocate all the land in the Mackay, Isaac and Whitsunday region into one of the following categories:

- Regional Landscape and Rural Production Area
- Urban Footprint
- Rural Living Area

The project mining tenements are in the Regional Landscape and Rural Production Area. The accommodation village planned in Glenden is in the urban footprint[1]. Land use within the Regional Landscape and Rural Production Area includes mineral and extractive resources. Therefore the project mining leases are in an area that is consistent with the intentions of the MIWRP.

Where there is an inconsistency between the State planning regulatory provisions and another planning instrument, or any plan, policy or code under an Act, the State planning regulatory provisions prevail to the extent of the inconsistency. Land use designations in and surrounding Glenden differ between the local planning scheme for the Nebo shire, with the Nebo shire planning scheme including 'open space and recreation' zones in the Urban Footprint zone of the MIWRP.

Within the region, the Bowen Basin is the target of both coal mining and coal seam gas (CSG) extraction.

The MIWRP states the following about the region:

- The region has an area of 90,340 km^2 and a population of 180,000 with an additional 100,000 people expected by 2031. The population in the Mackay region is 121,000 and the majority of growth (66,000 people) is expected in Mackay.
- The region contains high quality natural resources, particularly mineral resources and productive agricultural land. The Bowen Basin has Australia's largest coal deposit and accounts for 83% of the nation's coal production.
- The region has one of the fastest growing economies in Queensland, growing at 5.5% per annum in recent years, driven by the resource sector. In recent years, the resource sector has contributed more than half of the total gross regional product for the region, and is the largest employer of the region's residents. Coal mines in the region directly employ about 18,500 people (as at March 2011).
- Two thirds of the region is used for primary production.
- The region's coast is adjacent to the Great Barrier Reef (GBR).
- The region has almost 570,000 ha of protected areas and also state forests and nature refuges.
- In the vicinity of the Byerwen Project the landscape is savannah, major river systems, grasslands and scattered patches of Brigalow ecosystems.

In relation to Glenden, the MIWRP states that increases in housing density are supported in Glenden to facilitate additional growth, recognising constraints on further expansion due to productive rural land and mining leases adjacent to the town. As of June 2012, there were no mining or petroleum tenements

[1] Accommodation in Glenden is off tenement and will require development approval under the *Sustaining Planning Act 2009* (SP Act). The proponent has an arrangement with a third party who will develop the accommodation facilities in Glenden and seek all relevant approvals for the construction and operation of the facilities (see Chapter 3 Project Approvals).

(both applications and granted) overlapping or immediately adjacent to the town of Glenden and therefore this should not restrict growth in the Urban Footprint zone in Glenden.

The MIWRP identifies that, within the project tenement areas there is / are:

- no Queensland Estates
- potential for some areas to be within the 'interim floodplain assessment' area (the potential for the project to be affected by flooding is described in Chapter 16)
- areas of general and high ecological significance
- areas of good quality agricultural land
- entirely within the Burdekin River catchment

14.2.3 Natural Resource Management Areas

The project is located in the Burdekin Dry Tropics (BDT) Natural Resource Management (NRM) Plan area. The BDT NRM Plan states the following about the region:

- The BDT region covers an area of approximately 133,432 km² and has a population of approximately 190,000.
- The project is located in a subregion of the BDT:
  - that contains the brigalow belt north, desert uplands and Einasleigh uplands bioregions
  - where land use is predominantly rangeland grazing, improved pasture grazing, dryland cropping, mining, protected areas and state forests
- The region's coastal and marine area is dominated by the GBR.
- There are at least fifteen traditional owner groups that have an affiliation with the BDT region.
- Since the 1970s there has been a general trend toward intensification of grazing production within the region which has been facilitated by, amongst other things, tree clearing and pasture development.
- Most State Forests that occur within the region are used for a range of purposes other than timber harvesting including conservation, grazing, apiculture, recreation and research.

14.3 Land Tenure and Use

14.3.1 Mining Tenements

The mine site will be located on six mining leases (mining lease applications (MLAs) 10355, 10356, 10357, 70434, 70435 and 70436), which covers an area of 22,697 hectares. **Table 14-1** shows the area of each MLA within the IRC and WRC. **Figure 14-1** shows the boundary of the regional councils and the MLA boundaries.

Table 14-1 Mining Leases and Local Government Boundaries

Mining Lease Application	Local Government	Area within Local Government (ha)
MLA 10355	Whitsunday (Bowen Shire)	5,411
MLA 10356	Whitsunday (Bowen Shire)	2,203
MLA 10357	Whitsunday (Bowen Shire)	1,893
MLA 70434	Whitsunday (Bowen Shire)	1,935

Mining Lease Application	Local Government	Area within Local Government (ha)
	Isaac (Nebo Shire)	5,798
MLA 70436	Whitsunday (Bowen Shire)	1,099
	Isaac (Nebo Shire)	1,794
MLA 70435	Isaac (Nebo Shire)	2,560
Total		22,693

The Bowen Shire Planning Scheme shows that the MLAs within the Shire are all located on properties zoned as rural. The Nebo Shire Planning Scheme shows that the MLAs within the Shire are all located on properties zoned as rural.

14.3.2 Property Tenures in the Project Area

Table 14-2 identifies the tenure property type (leasehold, road and water properties), regional council within or intersected by the property, details of the ownership of land, property size and extent of property within project area (project MLAs) and the project footprint. The cadastral boundaries of these properties are shown in **Figure 14-2**.

There are 7 leasehold (lands lease) properties that are either within or intersected by the project MLAs:

- Lot 689 SP251696 will experience the largest direct impact from the project relative to the property's size (40.9% of the property is within the project footprint). Lot 689 SP251696 is owned by a wholly owned subsidiary of Byerwen Coal Pty Ltd.
- Lot 3 SP171922 and Lot 14 SP225054 are leased by the same third party and will experience direct impacts from the project, with between 4% and 6% of the properties within the project footprint, respectively.
- Lot 1 CP905226 will experience direct impacts from the project, with 14.5% of the property within the project footprint. Lot 1 CP905226 is owned by QCoal Managing Director, Chris Wallin.
- Lot 682 CP906890 will experience direct impacts from the project, with 5.9% of the property within the project footprint.

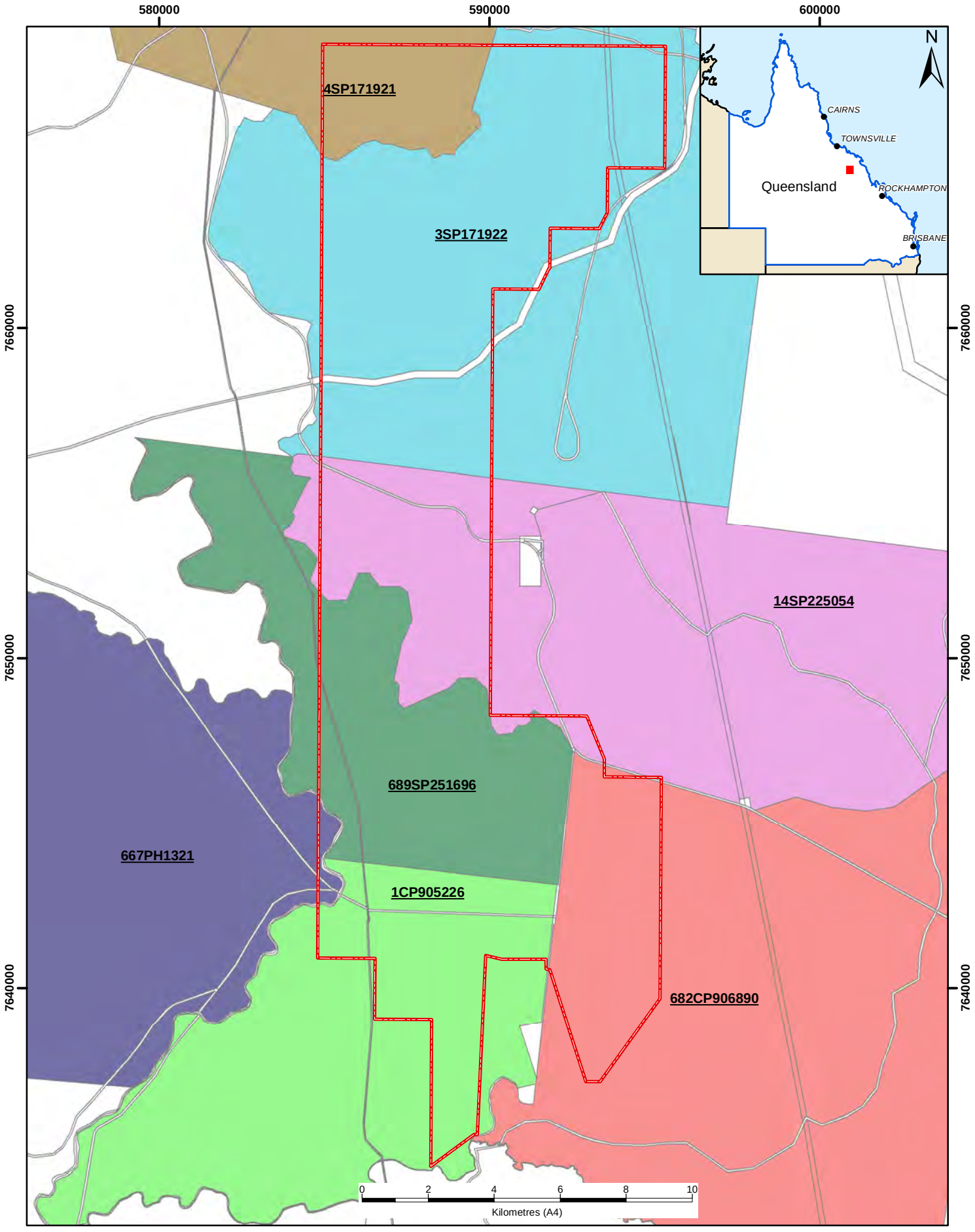
There are no planned acquisitions of additional properties by proponent related entities or individuals, within or intersected by the project.

The proponent will negotiate compensation arrangements with landholders that are directly impacted. Minor portions of Lot 4 SP171921 and Lot 667 PH1321 are within the project area but are not directly within the project footprint. The proponent will negotiate compensation arrangements with these landholders.

Table 14-2 Real Property Tenure – Byerwen Project

Lot	Plan	Tenure	Description and land use	Council	Property size (ha)	Extent of property within MLAs (ha)	Percentage of property within MLAs	Extent within the project footprint (ha)	Percentage within the project footprint
1	CP905226	Lands Lease	Tenure: Grazing Homestead Perpetual Lease (GHPL) 30/4120. Lessee: Private Individual - Chris Wallin	Isaac Regional	9,846	2,947	29.9%	1,429	14.5%
3	SP171922	Lands Lease	Tenure: Term Lease (TL) 0/235865 Lessee: Collinta Holdings. Pty. Ltd. - Grazing	Whitsunday Regional	17,576	7,846	44.6%	813	4.6%
4	SP171921	Lands Lease	Tenure: GHPL 5/2123 Lessee: Private Individual - Grazing	Whitsunday Regional	43,947	1,514	3.4%	0	0.0%
14	SP225054	Lands Lease	Tenure: Term Lease 0/35642 Lessee: Collinta Holdings Pty. Ltd. - Grazing	Whitsunday Regional	16,946	2,863	16.9%	992	5.9%
667	PH1321	Lands Lease	Tenure: Lands Lease (Mount Lookout Holding) Lessees: Private individuals. - Grazing Tenure Reference Pastoral Holding (PH) 5/667.	Whitsunday Regional	35,467	120	0.3%	0	0.0%

Lot	Plan	Tenure	Description and land use	Council	Property size (ha)	Extent of property within MLAs (ha)	Percentage of property within MLAs	Extent within the project footprint (ha)	Percentage within the project footprint
682	CP906890	Lands Lease	Tenure: Lands Lease (Suttor Creek Holding). Lessees: Private individuals - Grazing Tenure Reference TL 0/235783.	Isaac Regional	19,453	2,536	13.0%	958	4.9%
689	SP251696	Lands Lease	Tenure: Lands Lease Lessee: Leichhardt Pastoral Pty. Ltd. - Grazing Tenure Reference TL 0/235359	Isaac Regional	6,786	4,563	67.2%	2,777	40.9%
		Roads and Watercourses	Wollombi Road, Collinsville-Elphinstone Road, unnamed roads, Cerito Road, Suttor River			304		28	
Total					150,021	22,693		6,997	



Legend

- Project Area
- 4SP171921
- 14SP225054
- 667PH1321
- 1CP905226
- 682CP906890
- 3SP171922
- 689SP251696

Properties Intersected by the Project Area		QCOAL GROUP
Figure 14-2	**Byerwen Coal Project**	elp environmental and licensing professionals pty ltd
Date: *30/01/2013*	**Author:** samuel.ferguson	
	Map Scale: 1:150,000	
Revision: R1	**Coordinate System:** GDA 1994 MGA Zone 55	
G:\CLIENT\SA-TO-D\BYEGEN - Byerwen EIS\GIS\Maps\EIS Chapters\EIS_Chpt_14_LandUse\BYEGEN_Cadastral_Simple.mxd		

14.3.3 Existing Dwellings

Existing dwellings in and around the project area, including those near transport routes were identified using satellite imagery and the proponent's existing knowledge of the area. **Figure 14-3** shows the dwellings on the properties identified within a 10 km buffer zone of the project area and within a 5 km buffer zone of the transport route between Glenden and the project area. Residences which will remain permanently occupied during the project are considered to be receptors for the purpose of assessing impacts in this EIS.

Dwelling R1 is on Lot 689 SP251696, which is owned by a wholly owned subsidiary of Byerwen Coal Pty Ltd, and the dwelling will be vacated prior to any construction for the project. For the purpose of assessing impacts in this EIS, R1 will not be a receptor. Dwelling R4 on Lot 1 CP905226 is unoccupied and will remain unoccupied for the life of the project and is not considered as a receptor for the purpose of assessing impacts in this EIS. Dwelling R9 has been identified as an abandoned homestead and is not considered as a receptor for the purpose of assessing impacts in this EIS. **Table 14-3** shows the distance of the identified receptors (other than R1, R4 and R9) to the project area boundary and the closest project footprint activity. All receptors are at least 5 km from the project footprint.

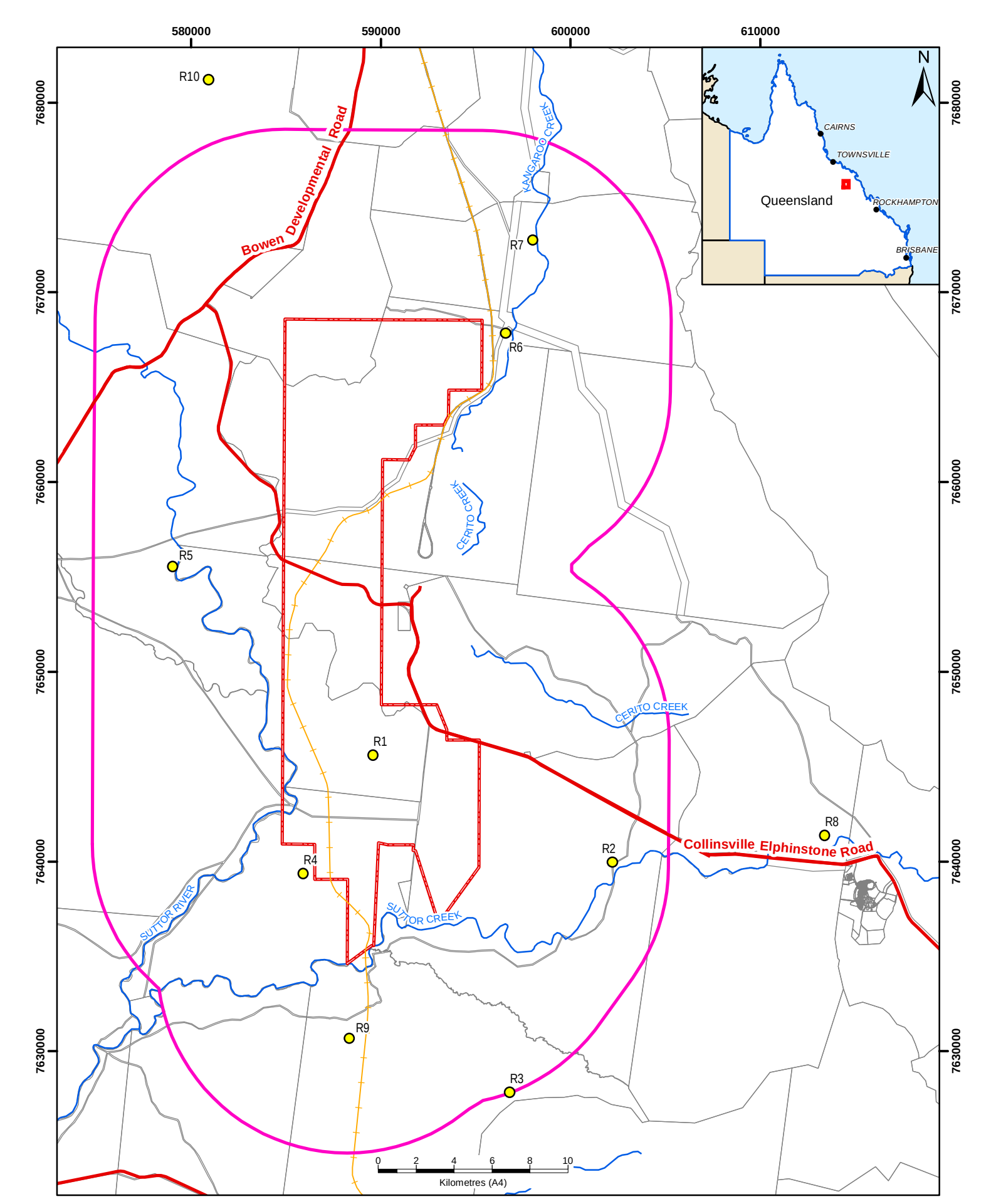
Table 14-3 Distance to Receptors

Receptor ID	Distance to project area boundary (km)	Distance to project footprint (km)
R2	7	7.2
R3	10	12.5
R5	5.9	6.9
R6	1.2	5.4
R7	5	10.8
R8	18.2	18.2
R10	13.2	17

14.3.4 Land Zoning

Within the former Nebo Shire and Bowen Shire greater than 95% of land is zoned as rural or open space and recreation. This reflects the land use within the region surrounding the project, which is a mix of large-scale grazing, cropping, and mining activity. Well vegetated areas and small and large holdings are dominant features of the landscape. The project tenements are within land zoned as rural under local planning schemes. As described in **Section 14.2.2**, the project tenements are within land zoned as Regional Landscape and Rural Production Area under the MIWRP.

The nearest towns to the project are Glenden, Mount Coolon, Moranbah and Collinsville. These townships provide the main services for mining and primary production activities in the area and a range of government and community facilities. Glenden is the nominated location for accommodation facilities to support the project. Under the Nebo Shire planning scheme, Glenden and its immediate surrounds have various land zone designations other than rural, including urban expansion, residential, commercial, industrial, community purposes and open spaces and recreation. Other than one land parcel, these areas correspond to the Urban Footprint Zone in the MIWRP.



Legend

- Project Area
- Cadastre
- 10km Buffer
- Sensitive Receptors
- GAP Rail line
- Major Watercourses
- Main Road

Properties and Dwellings		QCOAL GROUP
Figure 14-3	**Byerwen Coal Project**	elp environmental and licensing professionals pty ltd
Date: *30/01/2013*	**Author:** samuel.ferguson	
	Map Scale: 1:250,000	
Revision: R1	**Coordinate System:** GDA 1994 MGA Zone 55	
G:\CLIENT\SA-TO-D\BYEGEN - Byerwen EIS\GIS\Maps\EIS Chapters\EIS_Chpt_14_LandUse\BYEGEN_sensitivercpt.mxd		

14.3.5 Land Suitability

Land suitability assessment defines a land resource's fitness to sustain a particular form of land use, for example crops or pasture. It takes into account that although land may be suitable for cultivation and cropping, the requirements for specific uses vary.

Land suitability assessment works by assigning a suitability class for a land use based on soil, topographic, climatic and economic attributes/potential limitations factors (such as effective soil depth, erosion hazard, slope, flooding, rainfall, and complexity of mapping unit). The assigned land suitability class (LSC) reflects the score of the most limiting attribute.

Five LSCs have been defined for use in Queensland, with suitability decreasing progressively from Class 1 to 5. Classes 1 – 3 are regarded as suitable for a given agricultural land use and are generally capable of similar levels of productivity, but Class 3 land requires more inputs (for example resources and management) than Class 1 land. Land of Classes 4 and 5 are generally unsuitable for the given land use.

The land suitability of the project for beef cattle grazing (the existing land use) and rain-fed broadacre cropping was assessed using criteria provided in the *Technical Guidelines for the Environmental Management of Exploration and Mining in Queensland* (QDME, 1995); specifically Attachment 2 - *Land suitability classification for cropping and grazing in the semi-arid sub tropics of Queensland*. The suitability assessment identifies LSCs based on soil and site characteristics such as plant available water capacity, nutrient properties, physical properties, salinity, rockiness, microrelief, soil pH, exchangeable sodium percentage (ESP), wetness, topography, erosion status and frequency of flooding. Information for the assessment was provided by field observations, soil descriptions and the results of laboratory analyses. Some soil and site characteristics required subjective interpretation (e.g. flooding frequency). Refer to **Appendix 14** for further details.

The areas and proportions of the LSCs for rain-fed broadacre cropping within the project area are provided in **Table 14-4** and their distribution, as determined by site investigations, is shown on **Figure 14-4**.

Table 14-4 Areas of Land Suitability Classes (LSCs) for Rain-Fed Broadacre Cropping

LS Class	Area (ha)	Area (%)
1	0	0
2	2,663	12
3	0	0
4	10,738	47
5	9,286	41
Total	**22,687***	**100**

* This is comparable to the total project area reported of 22,697 ha with the discrepancy an artifact of GIS mapping.

The distribution of the LSCs, as determined by site investigations, for beef cattle grazing is shown in **Figure 14-5**. **Table 14-5** provides areas of each LSC for beef cattle grazing in the project area.

Table 14-5 Areas of Land Suitability Classes (LSCs) for Beef Cattle Grazing

LS Class	Area (ha)	Area (%)
1	0	0
2	6,129	27
3	3,411	15
4	12,666	56

LS Class	Area (ha)	Area (%)
5	482	2
Total	**22,687**	**100**

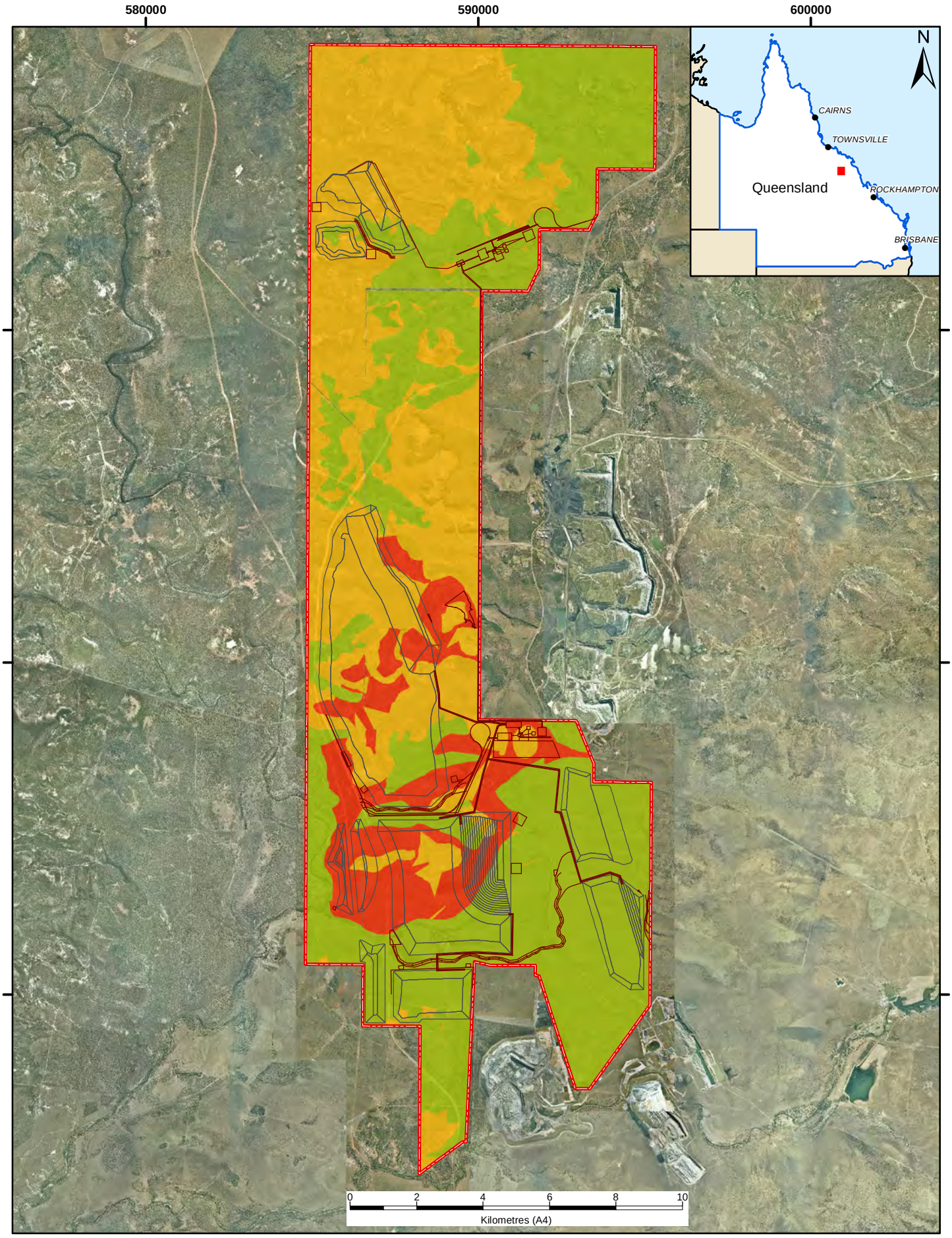
14.3.6 Good Quality Agricultural Land

The project site was assessed for GQAL as required by State Planning Policy 1/92 – Development and the Conservation of Agricultural Land (DHLGP, 1992) and following the State Planning Policy 1/92 Guideline: The Identification of GQAL (DPI and DHLGP 1993). The Nebo Shire and Bowen Shire Planning Schemes identify GQAL. A small portion of land in the Nebo Shire within the project area is mapped as "GQAL (grazing)". None of the project area within the Bowen Shire is mapped as GQAL.

The GQAL mapping references for the project area provided in DPI and DHLGP (1993) are a land suitability study by Shields (1984) and the land system mapping of Gunn et al. (1967). The mapping of these two studies have been combined in **Figure 14-6**, with each of the studies' land units interpreted using the GQAL class given in DPI and DHLGP (1993). These studies are broad-scale (1:250,000 for Shields (1984) and 1:500,000 for Gunn et al. (1967)).

Site investigations were conducted to determine the classes of GQAL present within the project area, as shown in **Figure 14-7**. Refer **Appendix 14** for further information. This has the advantages of being derived from a site-specific land study that included finer scale mapping (i.e. 1:50,000) than that of the earlier studies, and the data used were collected from the project site and immediate vicinity and are therefore more likely to be representative of local conditions. The site specific GQAL assessment reinterprets the land suitability assessment results (**Section 14.3.5**) using the GQAL classes as follows:

- Land identified as suitable for rain-fed broadacre cropping with negligible or minor limitations (i.e. LSCs 1 and 2) is considered to be GQAL Class A (crop land)
- Land identified as suitable for rain-fed broadacre cropping with moderate limitations (i.e. LSC 3) is considered to be GQAL Class B (limited crop land)
- Land identified as suitable for beef cattle grazing (i.e. LSCs 1 to 3) is considered to be GQAL Class C (pasture)
- Land that belongs to more than one GQAL class is allocated to the highest of the classes.
- All other land is considered to be GQAL Class D (non-agricultural land).



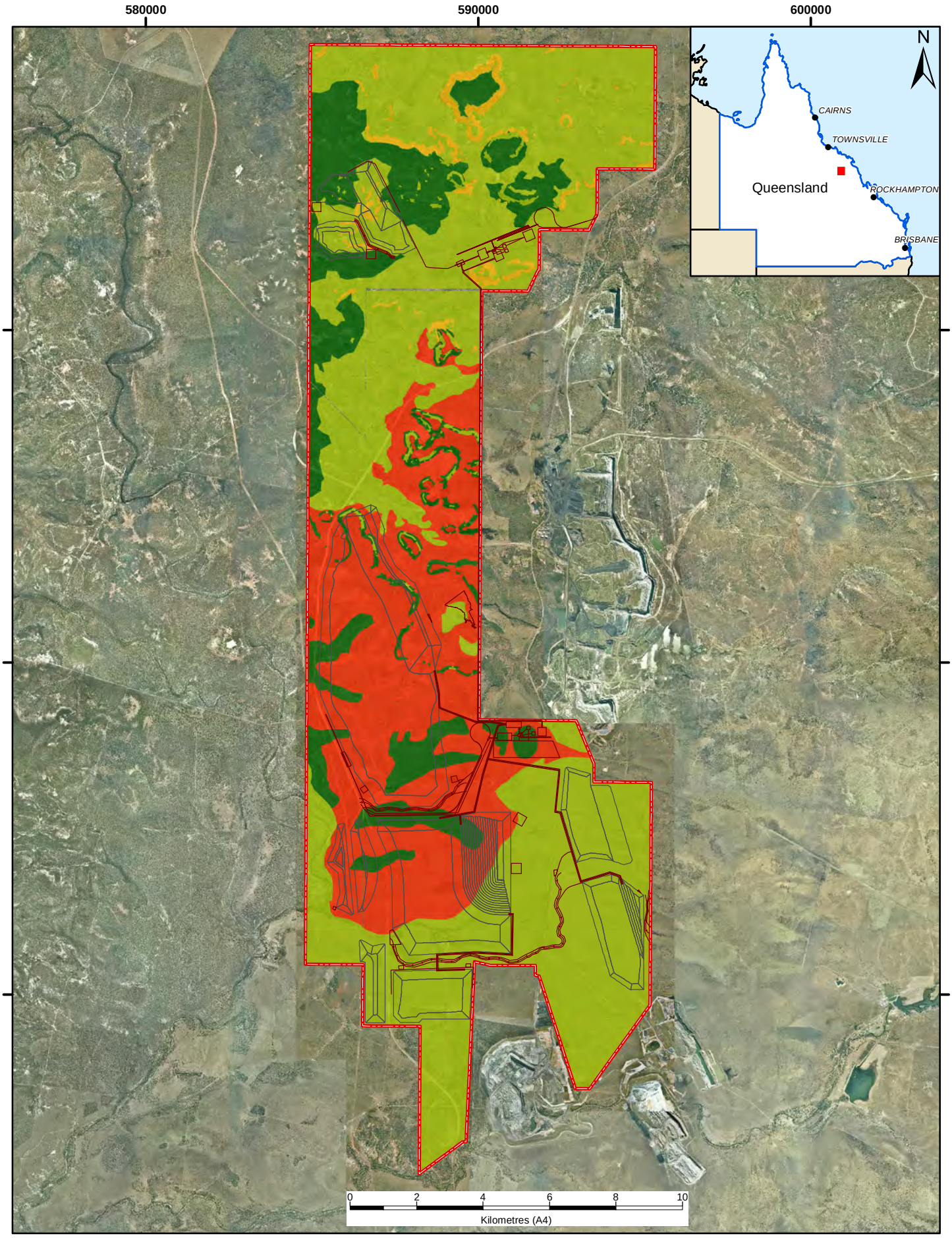
Legend

- Project Area
- Waste Rock Dumps and Pits
- Mine Infrastructure

Suitability per Site Investigation

- 2
- 4
- 5

Land Suitability for Rain-fed Broadacre Cropping	QCOAL GROUP
Figure 14-4	**Byerwen Coal Project**
Date: *4/02/2013*	**Author:** samuel.ferguson
	Map Scale: 1:150,000
Revision: R1	**Coordinate System:** GDA 1994 MGA Zone 55
G:\CLIENT\SA-TO-D\BYEGEN - Byerwen EIS\GIS\Maps\EIS Chapters\EIS_Chpt_14_LandUse\BYEGEN_LS_Cropping.mxd	



Legend

- Project Area
- Waste Rock Dumps and Pits
- Mine Infrastructure

Suitability per Site Investigation

- 2
- 3
- 4
- 5

Land Suitability for Beef Cattle Grazing	QCOAL GROUP
Figure 14-5	**Byerwen Coal Project**
Date: *4/02/2013*	**Author:** samuel.ferguson
	Map Scale: 1:150,000
Revision: R1	**Coordinate System:** GDA 1994 MGA Zone 55
G:\CLIENT\SA-TO-D\BYEGEN - Byerwen EIS\GIS\Maps\EIS Chapters\EIS_Chpt_14_LandUse\BYEGEN_LS_Grazing.mxd	

Table 14-6 compares the extent of each class of GQAL in the MLAs, as mapped by in accordance with SPP 1/92 and as per site investigations. Mapping of GQAL per site investigation indicates that agricultural land quality is lower than mapped by publically available datasets.

Table 14-6 GQAL Classes based on SPP1/92 Mapping and Site Investigation

GQAL class	Area within MLAs per SPP1/92 mapping (ha)	Area within MLA per site investigation (ha)
A	4,158	2,666
B	0	0
C	12,097	6,887
D	6,414	13,144
Total*	**22,669**	**22,697**

* Footprint totals are marginally different as an artifact of GIS mapping

14.3.7 Strategic Cropping Land

Publically available mapping of SCL shows that the project area MLAs are located within the Strategic Cropping Management Area (SCMA) and that a portion of the MLAs are located on areas mapped as being potential SCL. **Figure 14-8** shows the location of the SCMA and, land mapped as potential SCL (trigger area) in the project area and surrounds, as mapped by the Queensland Government.

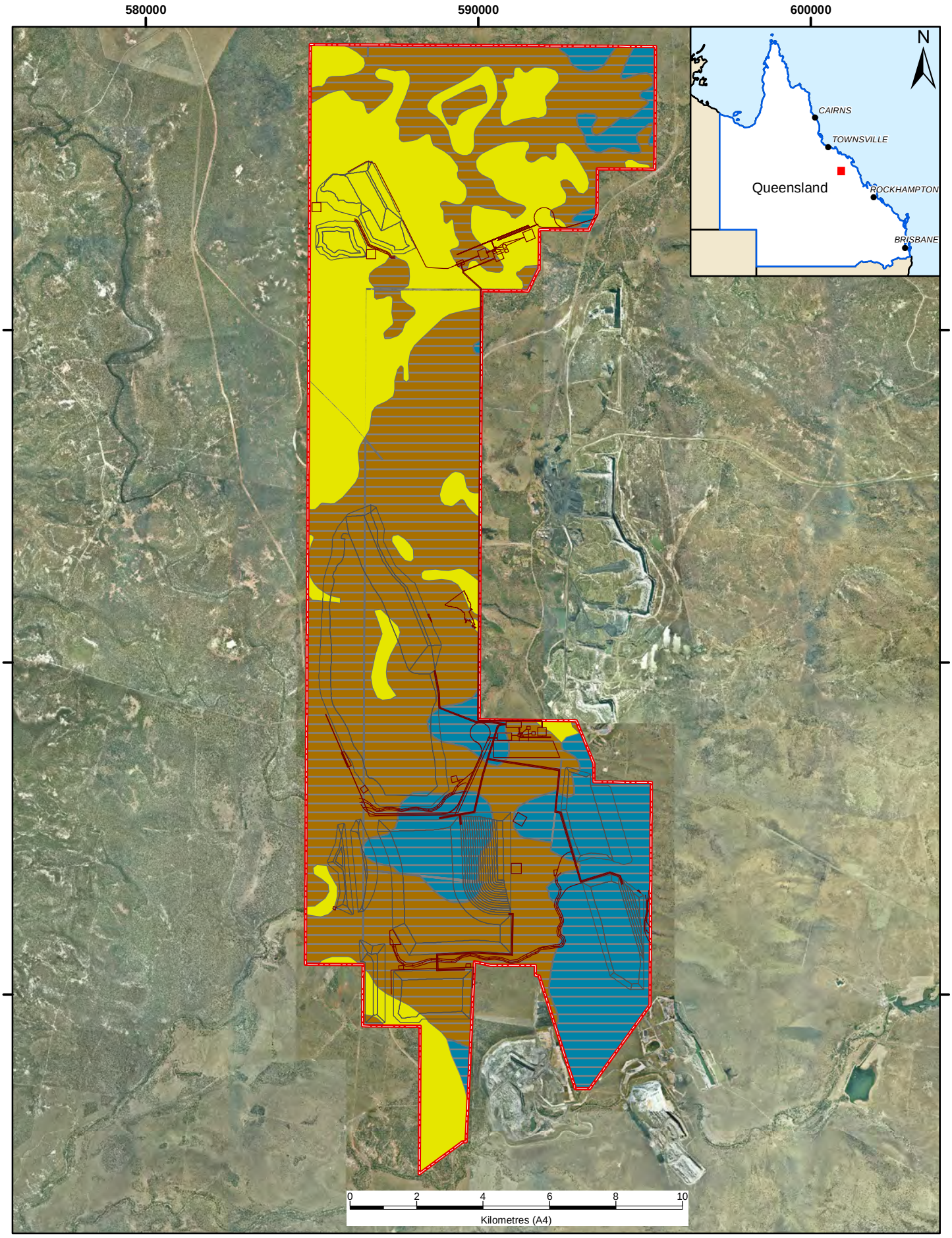
An 'on-ground' SCL assessment was conducted in June 2011 as per the SCL requirements at that time (refer to **Appendix 14** for further details). Areas of land that met all of the SCL assessment criteria at that time were identified within the Byerwen project site.

Since completion of the June 2011 survey, finalised SCL Guidelines were released in September 2011 (DERM, 2011a). The main difference between the 2011 assessment and SCL guidelines is the type of field observations made; specifically the DERM 2011a guidelines identify four types of observation site (exclusion, detailed, analysed and check) each with specific information requirements, and prescribe the required number and types of observation required to identify/disprove SCL.

As the DERM 2011a guidelines were not available at the time of the survey, the 2011 survey could not be specifically designed to meet the observation structure in the DERM 2011a guidelines. However, the data collected is valid and the conclusions drawn are accurate to the previous SCL requirements. As such, a map of SCL based on the site investigation (referred to as the 'preliminary site investigation') is provided in **Figure 14-9**.

Within the project area there are:

- 4,128 ha of potential SCL
- 1,902 ha of SCL per the preliminary site investigation in June 2011



Legend

- Project Area
- Waste Rock Dumps and Pits
- Mine Infrastructure

GQAL Class

A	B	C	Other
A (1)	B (0)	C (1)	D (1)
A1 (0)	B1 (0)	C1 (0)	W (0)
A2 (0)	B2 (0)	C2 (0)	
		C3 (0)	

GQAL as Mapped under State Planning Policy 1/92

QCOAL GROUP

Figure 14-6 — **Byerwen Coal Project**

elp environmental and licensing professionals pty ltd

Date: *4/02/2013*

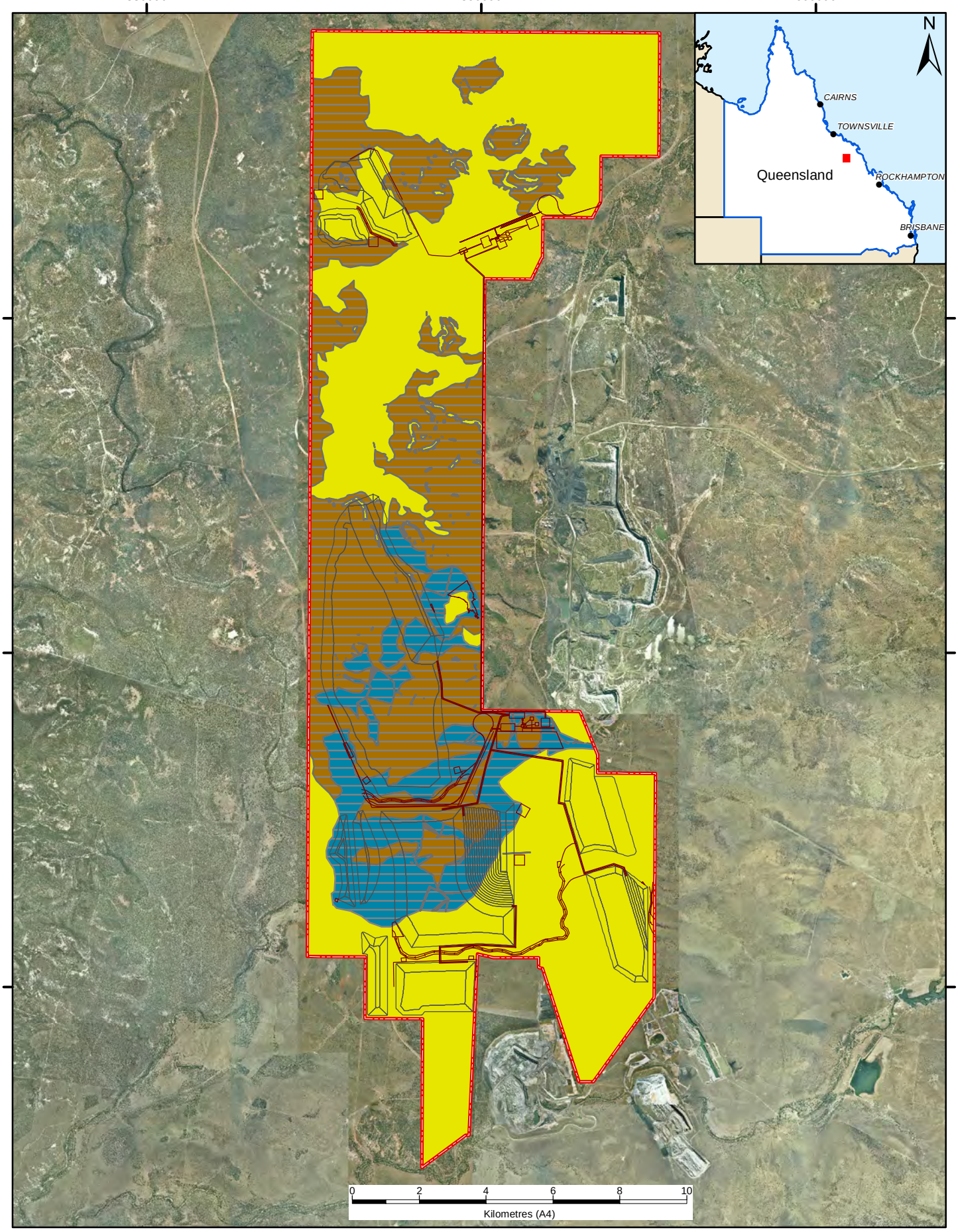
Author: samuel.ferguson

Map Scale: 1:150,000

Revision: R1

Coordinate System: GDA 1994 MGA Zone 55

G:\CLIENT\SA-TO-D\BYEGEN - Byerwen EIS\GIS\Maps\EIS Chapters\EIS_Chpt_14_LandUse\BYEGEN_GQAL_DNRM.mxd



Legend

- Project Area
- Waste Rock Dumps and Pits
- Mine Infrastructure

GQAL Class

A	B	C	Other
A	B	C	D
A1	B1	C1	W
A2	B2	C2	
		C3	

GQAL as Mapped by Site Inspection

QCOAL GROUP

Figure 14-7 — **Byerwen Coal Project**

environmental and licensing professionals pty ltd

Date: *4/02/2013*

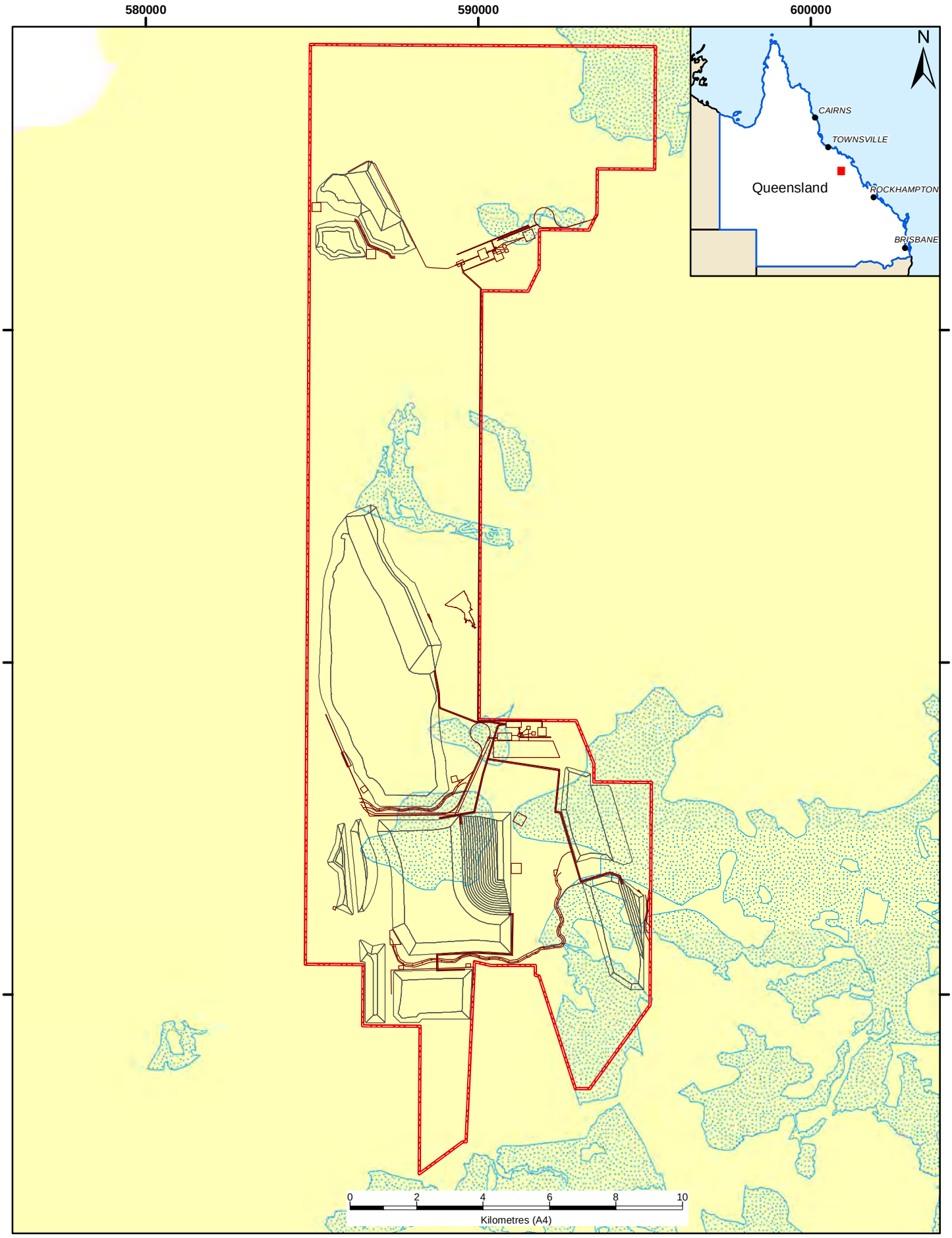
Author: samuel.ferguson

Map Scale: 1:150,000

Revision: R1

Coordinate System: GDA 1994 MGA Zone 55

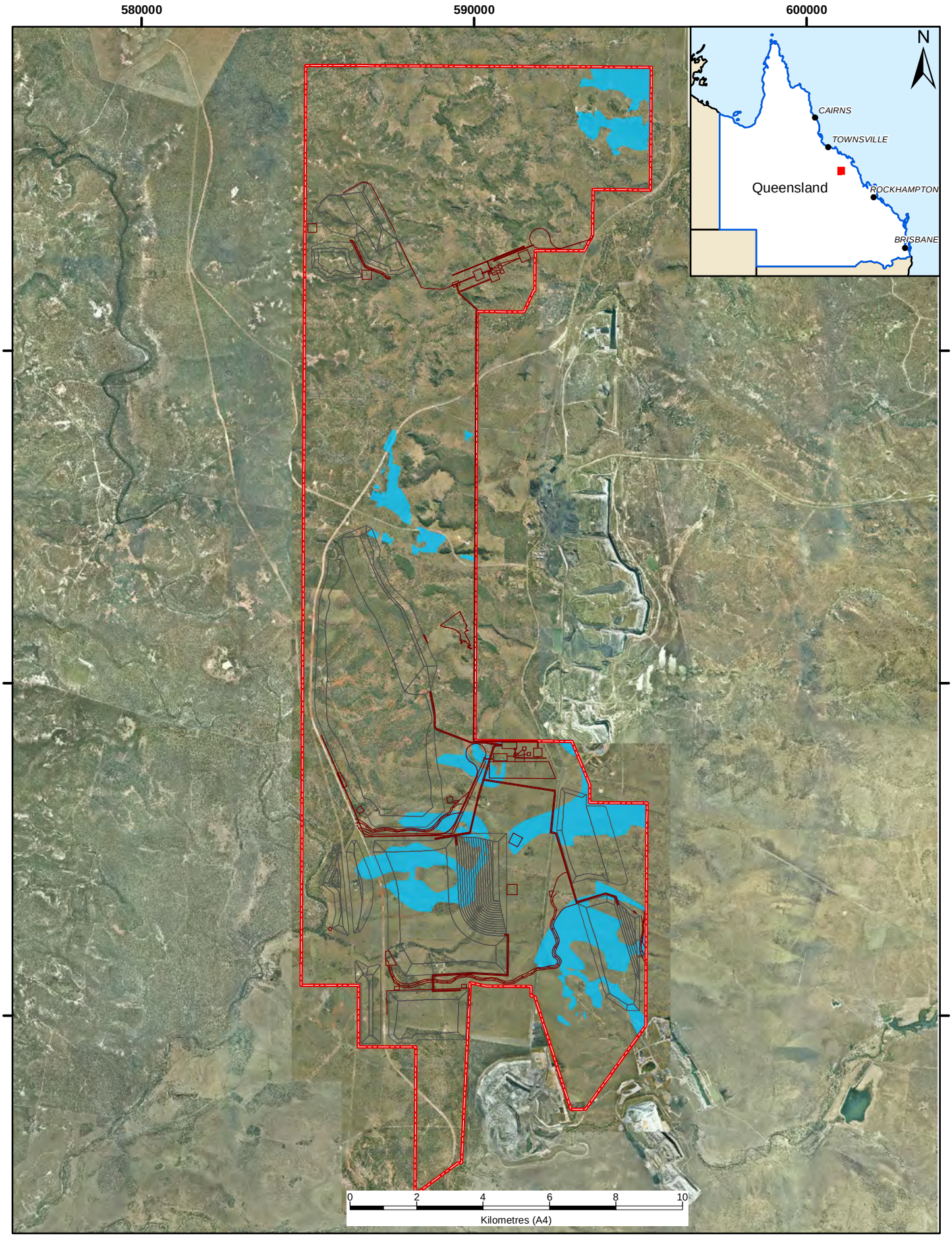
G:\CLIENT\SA-TO-D\BYEGEN - Byerwen EIS\GIS\Maps\EIS Chapters\EIS_Chpt_14_LandUse\BYEGEN_GQAL_NRA.mxd



Legend

- Project Area
- Waste Rock Dumps and Pits
- Mine Infrastructure
- Strategic Cropping Trigger Area
- Strategic Cropping Management Area

Potential SCL as Mapped by the Queensland Government	QCOAL GROUP
Figure 14-8	**Byerwen Coal Project**
Date: *4/02/2013*	**Author:** samuel.ferguson
	Map Scale: 1:150,000
Revision: R1	**Coordinate System:** GDA 1994 MGA Zone 55
G:\CLIENT\SA-TO-D\BYEGEN - Byerwen EIS\GIS\Maps\EIS Chapters\EIS_Chpt_14_LandUse\BYEGEN_SCL.mxd	



Legend

- Project Area
- Waste Rock Dumps and Pits
- Mine Infrastructure
- SCL per Preliminary Site Investigation

SCL per Preliminary Site Investigation	QCOAL GROUP
Figure 14-9	**Byerwen Coal Project**
Date: *4/02/2013*	**Author:** samuel.ferguson
	Map Scale: 1:150,000
Revision: R1	**Coordinate System:** GDA 1994 MGA Zone 55
G:\CLIENT\SA-TO-D\BYEGEN - Byerwen EIS\GIS\Maps\EIS Chapters\EIS_Chpt_14_LandUse\BYEGEN_SCL_NRA.mxd	

For land to be considered SCL it must have the required cropping history, being the production of at least three crops between 1 January 1999 and 31 December 2010.

An assessment of cropping history using field evidence from the 2011 soil and land assessment and remote sensing images (Landsat and recent aerial images) indicates that most of the lots within or intersected by project area are unlikely to have the required cropping history, and therefore are unlikely to contain SCL (notably even for land that meets all current 'on ground' criteria). The only identified land with the potential for a cropping history was in Lot 682 CP906890, in the south-east of the project area, which may have been cropped (as demonstrated by Landsat images and field evidence). It appears that approximately 480 ha of the land within, and adjacent to, the project area may have been cultivated for cotton. Of this, about half occurs within the project area (i.e. the mine lease application boundaries).

The cultivation appears to have ceased in 2004–2005 with the development of Xstrata's Suttor Creek coal mine, which is understood to have made the scale of cotton production uneconomical. The number of crops produced between 1 January 1999 and the cessation of cropping cannot be definitively established from the Landsat images, and correspondingly, the cropping history of Lot 682 CP906890 is unclear. It should be noted that both the SCL trigger mapping and the 2011 on-ground SCL assessment identify potential SCL in Lot 682 CP906890, albeit inconsistently. Mine related disturbance is proposed in Lot 682 CP906890, although this does not overlap with the area of potential historical cropping.

The proponent will undertake the necessary process and procedures under the *Strategic Cropping Land Act 2011* (SCL Act) to validate SCL, consistent with the guidelines (DERM, 2011a). Depending on the findings of the validation assessment, the proponent may apply for a protection decision for a temporary or permanent impact to SCL in the SCMA.

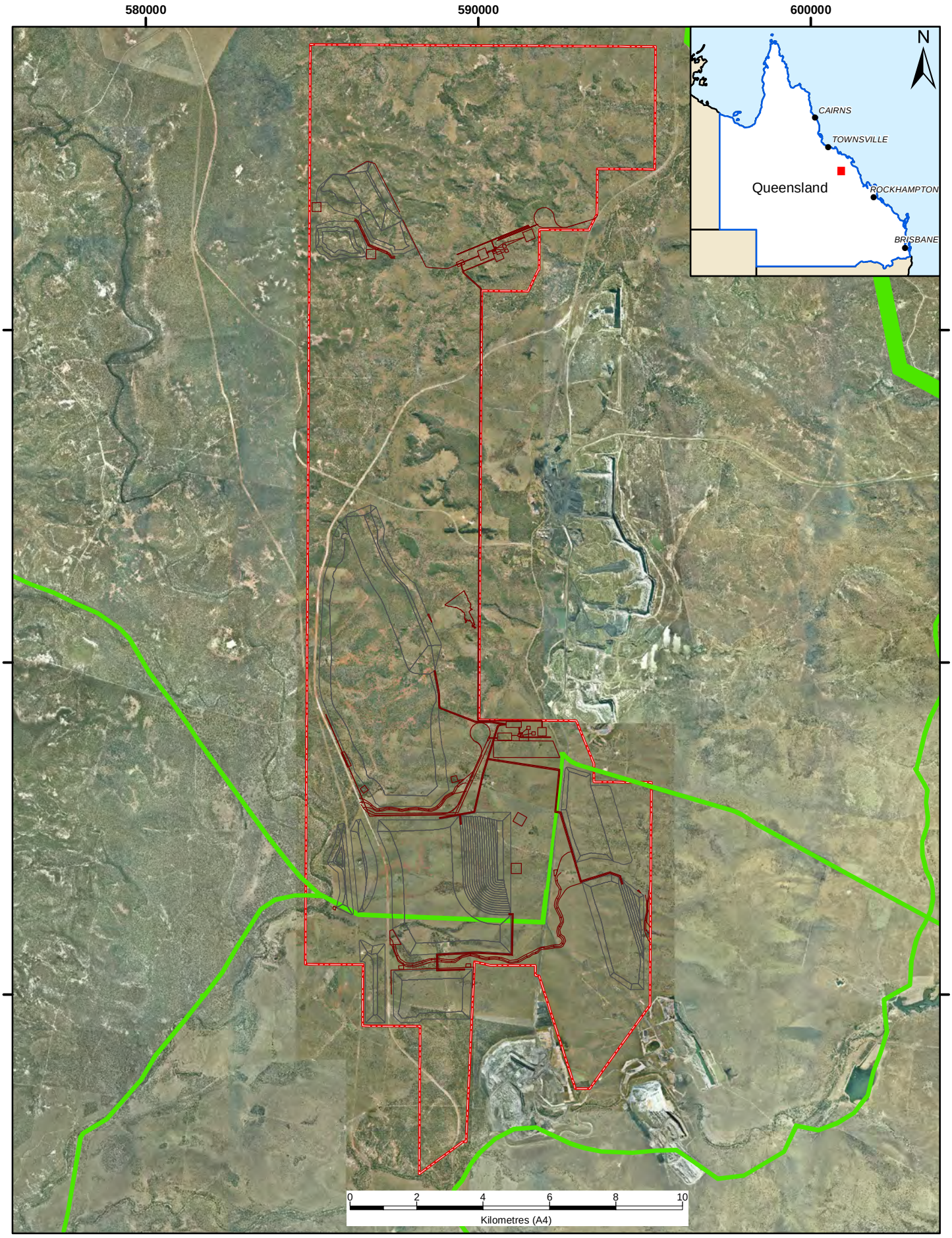
14.3.8 Stock Routes

Figure 14-10 shows the stock routes in the vicinity of the project. There is one stock route which is designated as unused or inactive by the Queensland government that intersects South Pit 1 in the southern tenement areas of the project and which follows property boundaries. The portion of the stock route within the MLAs that runs north – south is within or parallel to Xstrata Coal Queensland's mining lease for transport application.

14.3.9 Key Resource Areas and Declared Water Storage Catchments

There are no state-declared Key Resource Areas in the project area.

The project site is not within a declared catchment area. The nearest declared catchment area is Eungella Dam, approximately 48 km east.



Legend

- Project Area
- Mine Infrastructure
- Waste Rock Dumps and Pits

Stock Route Category

- Unused/Inactive

Stock Routes		QCOAL GROUP
Figure 14-10	**Byerwen Coal Project**	elp environmental and licensing professionals pty ltd
Date: *4/02/2013*	**Author:** samuel.ferguson	
	Map Scale: 1:150,000	
Revision: R1	**Coordinate System:** GDA 1994 MGA Zone 55	
G:\CLIENT\SA-TO-D\BYEGEN - Byerwen EIS\GIS\Maps\EIS Chapters\EIS_Chpt_14_LandUse\BYEGEN_stockroutes.mxd		

14.3.10 Environmentally Sensitive Areas

The Terms of Reference for the EIS requires the identification of 'environmentally sensitive areas'. This can be interpreted as:

- Category A and B Environmentally Sensitive Areas (ESAs) are defined under the *Environmental Protection Regulation 2008*
- Category C ESAs as defined in EHP's Code of environmental compliance for exploration and mineral development projects (DERM, 2011b) or
- more broadly applying to any area that could be categorised as 'environmentally sensitive'.

14.3.10.1 Category A, B and C ESAs

The project will not impact any category A ESAs, but may impact the following category B ESAs:

- a place of cultural heritage significance or a registered place under the *Queensland Heritage Act 1992* (QH Act)
- an area recorded in the Aboriginal Cultural Heritage Register established under the *Aboriginal Cultural Heritage Act 2003* (ACH Act)
- an endangered regional ecosystem (ERE) identified in the database known as the 'Regional ecosystem description database'.

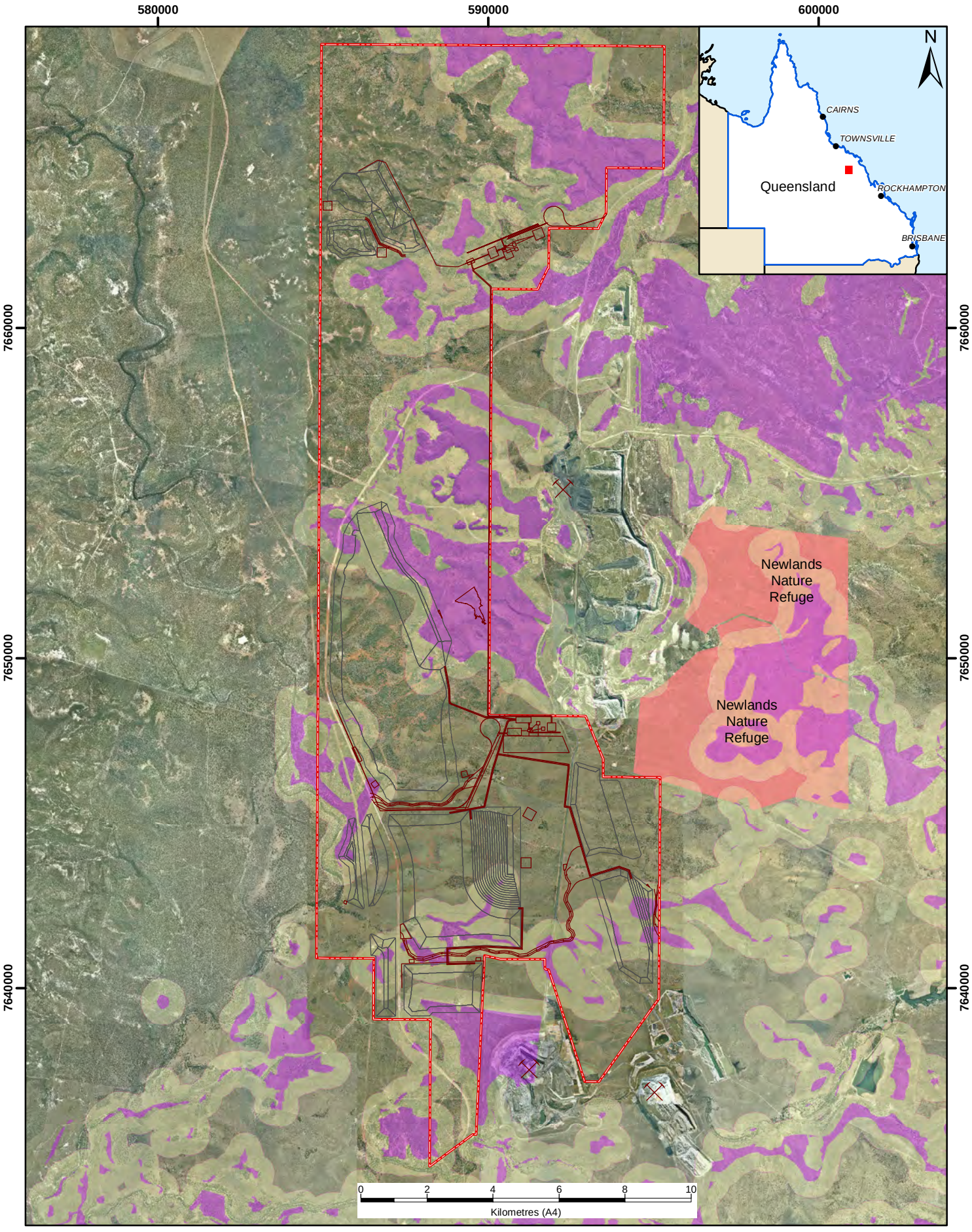
Figure 14-11 shows the EREs that may be impacted by the project. **Chapter 18** (Terrestrial Ecology) describes the actual extent of EREs, based on surveys undertaken for this EIS. Further details on the EREs potentially impacted by the project and measures to mitigate impacts are provided in the **Chapter 18**.

There are no registered places under QH Act on the Queensland Heritage Register or on any international, Commonwealth, or Australian heritage lists. Additionally, there are no places registered on the former Register of the National Estate or in any local government registers and planning schemes. There are places of cultural heritage significance, identified through an assessment of historical cultural heritage, and these are described and likely impacts are addressed in **Chapter 29** of this EIS.

There are 90 indigenous heritage values identified within the project area on the Department of Aboriginal and Torres Strait Islander and Multicultural Affairs (DATSIMA) Cultural Heritage Database, which are protected under the ACH Act. Additionally, further heritage values were identified by field surveys conducted with the Aboriginal Parties and an archaeologist. Cultural Heritage Management Plans have been signed by the proponent and the Aboriginal Parties to ensure appropriate management of known indigenous cultural heritage values and potential discoveries.

There is the possibility of previously unregistered places or sites being identified during site clearance surveys or ground disturbing activities. Management strategies to ensure full compliance with the ACH Act and the QH Act have been developed and will be applied in the event any of these are discovered (see **Chapter 28 and 29**).

The project will not directly impact any Category C ESAs. One category C ESA (Newlands Nature Refuge) is located to the east of the project and largely separated from the project area by Xstrata's Newlands mine site (refer **Figure 14-11**).



Legend

- Project Area
- Waste Rock Dumps and Pits
- Mine Infrastructure
- Existing Mine Site

ESA CATEGORY B

- Endangered Regional Ecosystems (Biodiversity Status)
- Category B Buffer (500m)

ESA CATEGORY C

- Nature Refuges

Environmentally Sensitive Areas	
Figure 14-11	**Byerwen Coal Project**
Date: *4/02/2013*	**Author:** samuel.ferguson
	Map Scale: 1:150,000
Revision: R1	**Coordinate System:** GDA 1994 MGA Zone 55
G:\CLIENT\SA-TO-D\BYEGEN - Byerwen EIS\GIS\Maps\EIS Chapters\EIS_Chpt_14_LandUse\BYEGEN_ESA.mxd	

14.3.10.2 Broadly Defined Environmentally Sensitive Areas

Broadly defined environmentally sensitive areas include those aspects of the environment within and surrounding the project area that are described in detail in other EIS chapters, including identification with maps. These areas, and the chapters in which they are described are:

- designated protected areas (none in the project area), remnant vegetation and biodiversity corridors – **Chapter 18** and **Chapter 19**
- Catchments, watercourses, creeks and drainage features – Chapter 15 and Chapter 16
- Soils – **Chapter 13**

14.3.11 Native Title

The Birriah People currently have a registered Native Title Claim which overlaps part of the project area, being MLAs 10355, 10356, and 10357 (refer **Figure 14-12**). The rights and interests claimed by the Birriah People are as set out in the Form 1 filed in the Federal Court of Australia. Under the ACH Act the Birriah People are also the relevant Aboriginal party for that part of the project area and a Cultural Heritage Management Plan (CHMP) has been approved and registered (refer **Chapter 28**) .

On the 9 October 2012, the Federal Court made a Native Title Consent Determination recognising the Jangga People's largely non-exclusive native title rights over the Determination Area. This area also overlaps part of the project area, namely MLA 70434 and 70436 (refer **Figure 14-12**). The project area is located in an area where non-exclusive rights and interests have been recognised. The Jangga People are also the relevant Aboriginal party for that part of the project area and a CHMP has been approved and registered (refer **Chapter 28**).

MLAs 70434, 70436, 10355, 10356 and 10357 progressed through the Right to Negotiate process under the *Native Title Act 1993 (Cth)* (NT Act). As the area of MLA 70435 is comprised of freehold tenures where native title has been extinguished, no native title process was required.

A Future Act Notice under section 29 of the NT Act for MLAs 70434, 70436, 10355, 10356, and 10357 was published on 01/12/2010. The proponent entered into negotiations with the Jangga People in respect of MLAs 70434 and 70436 which resulted in the execution of a State Deed under section 31 of the NT Act and an ancillary agreement between the proponent and the Jangga People, which included agreement on how impacted native title rights and interests would be managed, which was in addition to the matters of cultural heritage set out in the CHMP.

The proponent also entered into negotiations with the Birriah People in respect of MLAs 10355, 10356 and 10357, however no agreement was reached. A Future Act Determination Application was filed, to which the Birriah People did not provide any submissions addressing the matters in section 39 of the NT Act (as to impacts of the MLAs on native title rights and interests). The National Native Title Tribunal determined that the Future Act (the granting of MLA 10355, 10356, and 10357) could proceed to grant (Drake Coal Pty Ltd, Byerwen Coal Pty Ltd / Grace Smallwood & Ors (Birri People) / State of Queensland, [2012] NNTTA 31 (26 March 2012)) on the basis that there was no evidence of the impact of the project on native title rights and interests claimed by the Birriah People. Cultural heritage will continue to be managed in accordance with the terms of the CHMP.

14.3.12 Third Party Infrastructure

This section describes the third party infrastructure that may be affected by the project, including roads, railways, power lines, gas pipelines, water pipelines and telecommunication cables. Existing and proposed infrastructure and infrastructure owners were identified through searches of relevant publically available databases and knowledge of the project area by the proponent and landholders. The identified existing infrastructure in the project area is:

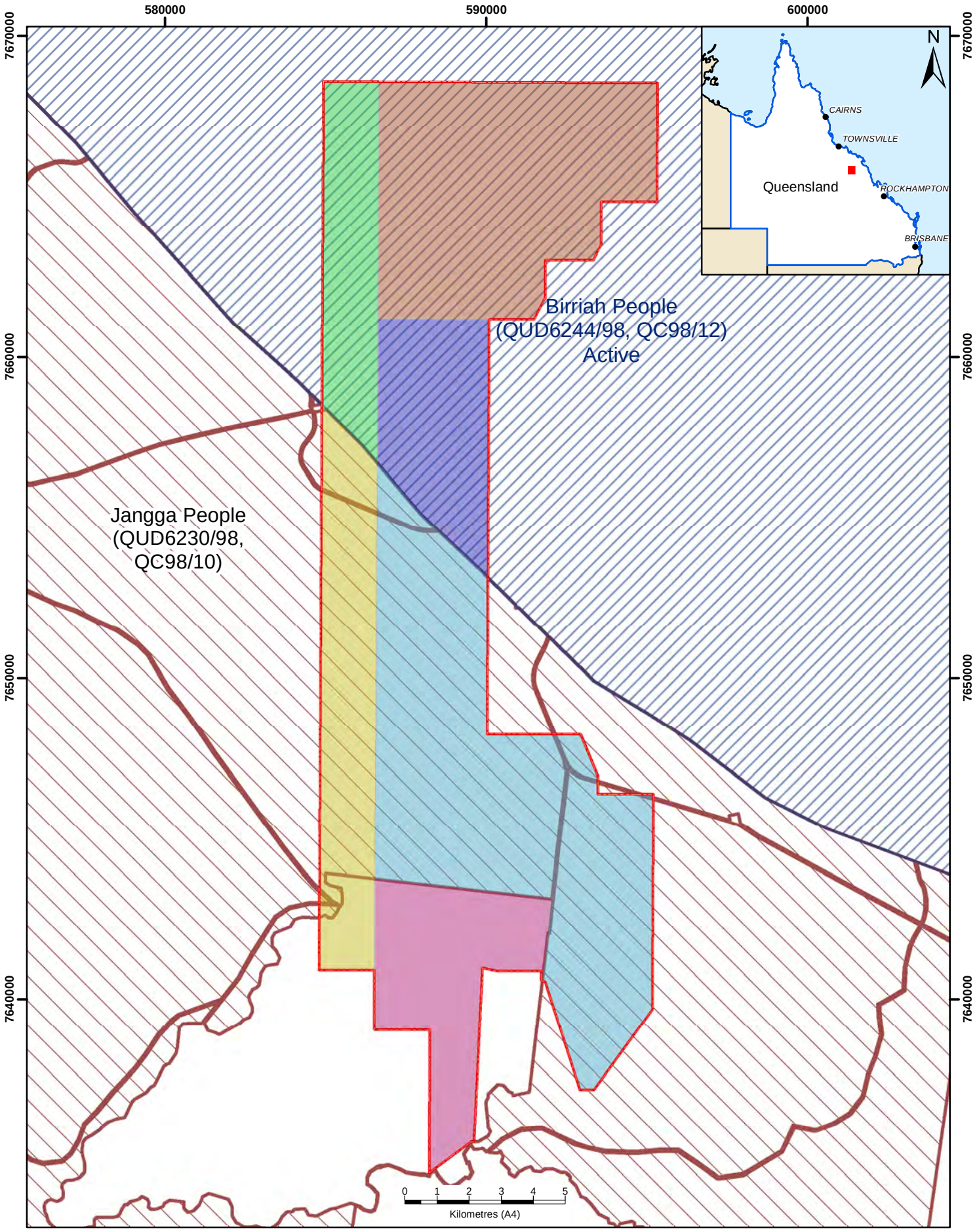
- North Queensland Gas Pipeline - North Queensland Pipeline No 1 Pty Ltd
- Burdekin to Moranbah Pipeline (water) – SunWater
- Newlands Pipeline - SunWater
- Goonyella to Abbot Point (GAP) rail line – Aurizon (formerly QR National)
- Various powerlines – Ergon
- State controlled Collinsville-Elphinstone Road
- Wollombi Road – gazetted and formed road within the IRC
- Gazetted but unformed roads – IRC and WRC

The Alpha Coal Project has been approved by State and Federal governments, including a proposed rail line which traverses the project area in a line mostly parallel to the existing GAP rail line.

Wollombi Road and / or land adjacent to Wollombi Road, is the subject of a mining lease application for transport (MLA 70460) by Xstrata Coal Queensland Pty Ltd. Refer to **Section 14.3.13**.

Impacts and measures to mitigate impacts to the State controlled Collinsville-Elphinstone Road, which bisects the project area, are described in **Chapter 27**.

Figure 14-13 shows the location of existing third party infrastructure that may be impacted by the project.



Legend

- Project Area

Byerwen Mining Leases

- MLA 10355
- MLA 10356
- MLA 10357
- MLA 70434
- MLA 70435
- MLA 70436

NT Claim Determinations

- NT exists in the entire determination area

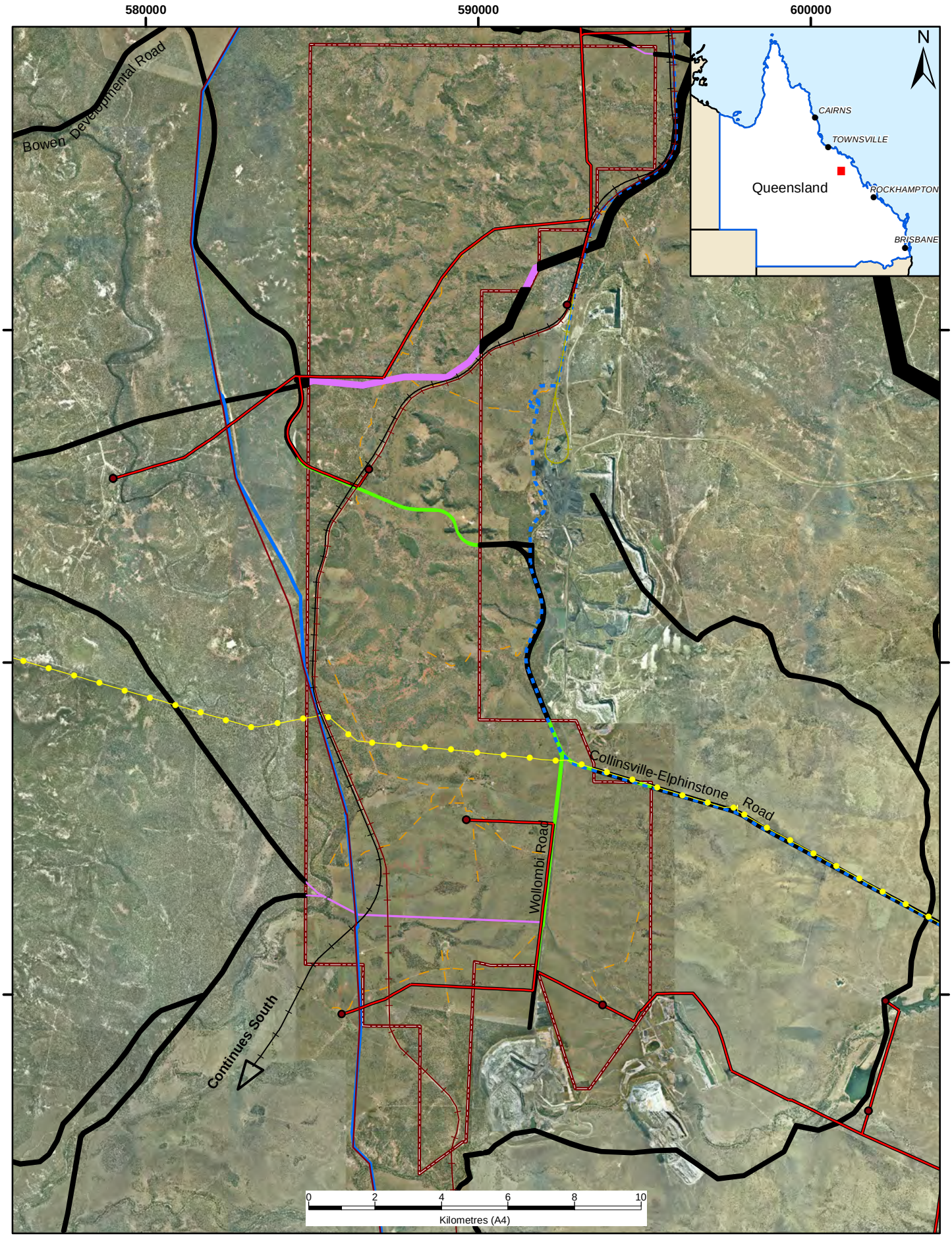
Qld Registered NT Claims

- Birriah People

Aboriginal Cultural Heritage Parties

Figure 14-12	**Byerwen Coal Project**
Date: *30/01/2013*	**Author:** samuel.ferguson
	Map Scale: 1:154,614
Revision: R1	**Coordinate System:** GDA 1994 MGA Zone 55

G:\CLIENT\SA-TO-D\BYEGEN - Byerwen EIS\GIS\Maps\EIS Chapters\EIS_Chpt_14_LandUse\BYEGEN_NT.mxd



Legend

- Project Area
- GAP Rail line
- Newlands Mine Rail Loop
- Alpha Coal Project Rail Line
- North Queensland Gas Pipeline
- Tracks
- Newlands Pipeline (water)
- Burdekin to Moranbah Pipeline

Roads

- Formed Roads (Inside Project Area)
- Unformed Gazetted Roads (Inside Project Area)
- Gazetted Roads (Outside Project Area)

Power

- Power Distribution Substation
- High Voltage (Overhead)
- High Voltage (Underground)
- Sub-transmission (Overhead 66kv)
- Sub-transmission (Underground)

Third Party Infrastructure and Roads	QCOAL GROUP
Figure 14-13	**Byerwen Coal Project**
Date: *30/01/2013*	**Author:** samuel.ferguson
	Map Scale: 1:150,000
Revision: R1	**Coordinate System:** GDA 1994 MGA Zone 55
G:\CLIENT\SA-TO-D\BYEGEN - Byerwen EIS\GIS\Maps\EIS Chapters\EIS_Chpt_14_LandUse\BYEGEN_Thirdparty.mxd	

Table 14-7 lists the third party easements registered over land titles described in **Table 14-2**. These easements correspond to the third party infrastructure described above.

Table 14-7 Third Party Easements

Lot	Plan	Tenure	Description and land use	Council
K	SP175265	Easement Access	Easement: Lots K and L on SP175265. Enertrade: Pipeline 1 (burdening the land), over Lot 1 on CP905226.	Isaac Regional
L	SP175265	Easement Access	Easement: Lots K and L on SP175265. Enertrade: Pipeline 2 (burdening the land), over Lot 1 on CP905226.	Isaac Regional
H	SP195383	Easement Access	Easement: H on SP195383. Sunwater: (burdening the land), over Lot 1 on CP905226	Isaac Regional
I	SP195383	Easement Access	Easement: I on SP195383. Sunwater: (burdening the land), over Lot 1 on CP905226.	Isaac Regional
B	DK119	Easement Access	Easement: Lot B on DK119 - north-south running linear easement to the northeast corner of project area.	Whitsunday Regional
J	SP195384	Easement Access	Easement: Lot J on SP195384. Sunwater A.B.N. 17 020 276 523, (burdening the land).	Isaac Regional
M	SP175266	Easement Access	Easement: Lot M on SP175266. Enertrade (NQ) Pipeline No 1 Pty Ltd A.C.N. 100 946 281, (burdening the land) Easement: Lot M on SP175266. Enertrade (NQ) Pipeline No 2 Pty Ltd A.C.N. 100 946 263, (burdening the land).	Isaac Regional
M	AP19624	Lands Lease	Tenure: Lands Lease Permittee: Sunwater A.C.N. 131 034 985 Tenure Reference PO 0/233789	Isaac Regional
A	AP11665	Lands Lease	Tenure: Lands Lease Permittee: Enertrade (NQ) Pipeline No 1 Pty. Ltd. A.C.N. 100 946 281. Enertrade (NQ) Pipeline No 2 Pty. Ltd. A.C.N. 100 946 263. Tenure Reference Permit to Occupy (PO) 0/231117.	Isaac Regional

14.3.13 Mining and Petroleum Tenures

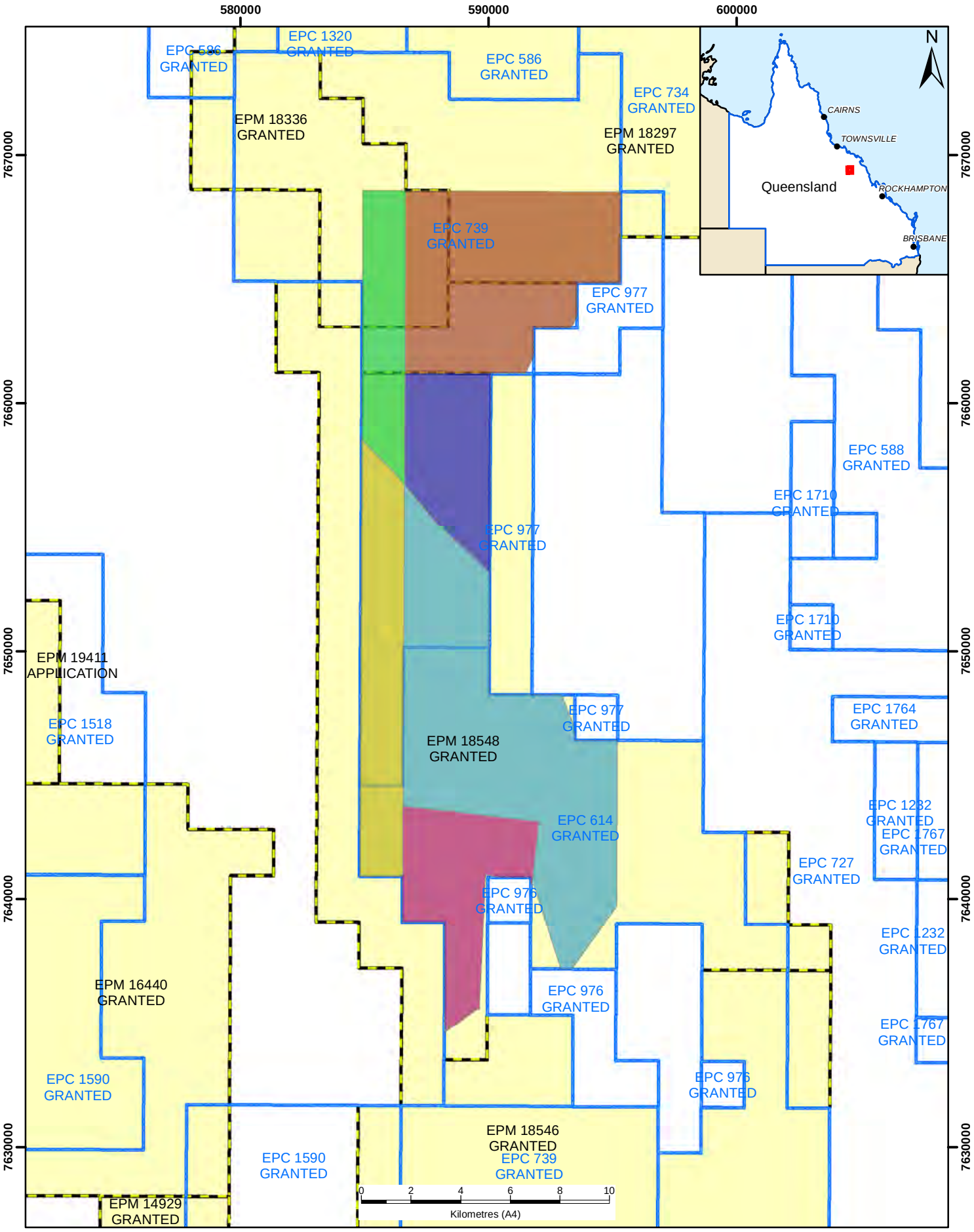
The following figures show overlapping mining and petroleum tenures (granted and under application) in the project area and surrounding region:

- **Figure 14-14** - Exploration Permit Coal (EPC), Exploration Permit Minerals (EPM)

- **Figure 14-15** – Mining Leases (MLs) and Mineral Development Licences (MDLs)
- **Figure 14-16** – Petroleum Leases (PLs), Pipeline Licences (PPLs), Exploration Permit Petroleum (EPP), Petroleum Survey Licence (PSL)

The overlapping tenure parties, other than tenures held by Byerwen Coal or related companies, are:

- EPP 688, BNG (Surat) Pty Ltd, granted 26/02/2003
- EPP 742, CH4 Pty Ltd, application made 19/06/2002, not granted
- MLA 70460 for a transport corridor, Xstrata Coal Queensland Pty Ltd, application 05/10/2011
- EPM 18297, Navaho Gold Ltd, granted 30/01/2012
- EPM 18336, Navaho Gold Ltd, granted 06/02/2012
- PPL 89, North Queensland Pipeline No 1 Pty Ltd, granted 06/03/2003

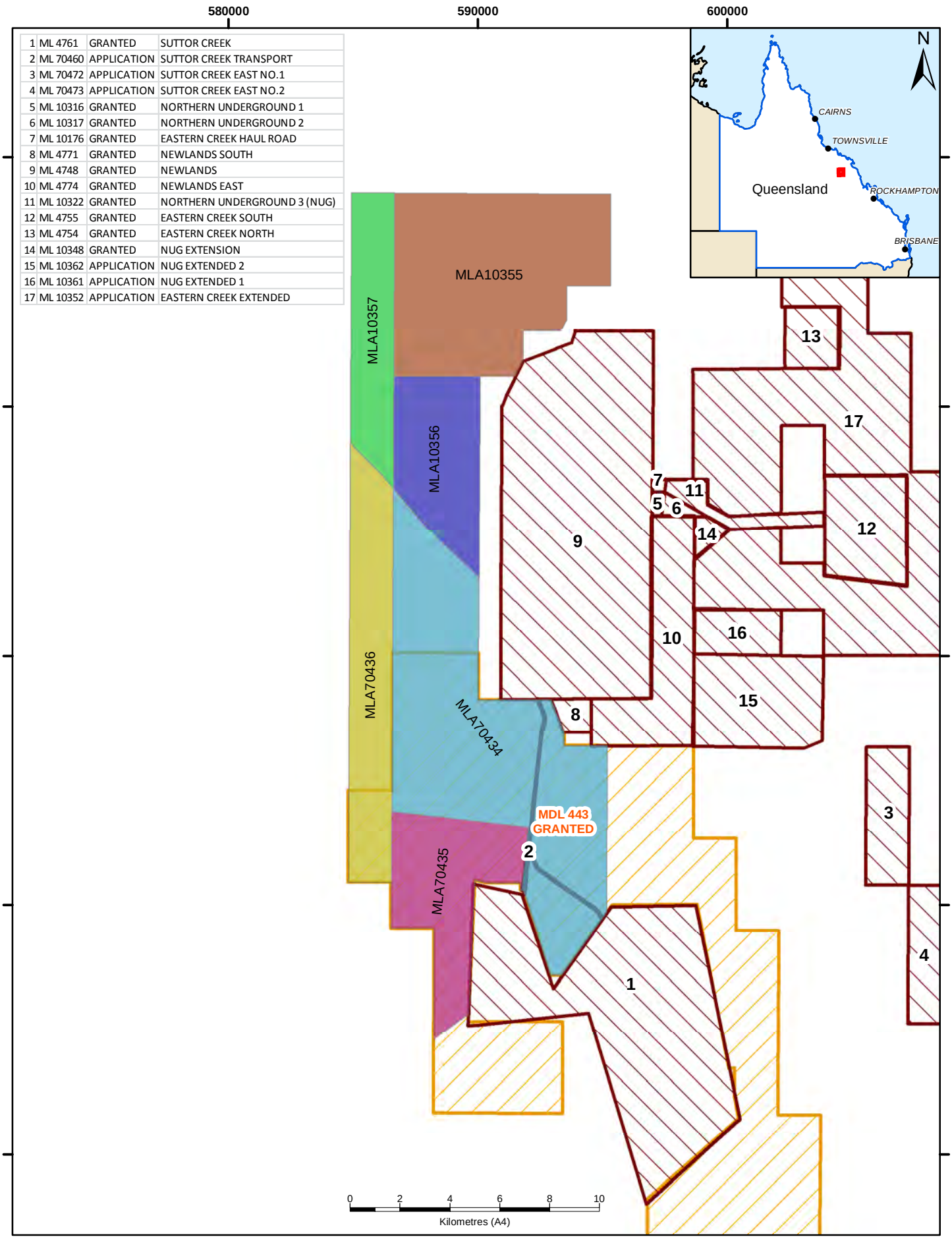


Legend

- MLA 10355
- MLA 10356
- MLA 10357
- MLA 70434
- MLA 70435
- MLA 70436
- EPC
- EPM

Overlapping Mining Tenure - EPCs and EPMs	
Figure 14-14	**Byerwen Coal Project**
Date: *30/01/2013*	**Author:** samuel.ferguson
	Map Scale: 1:200,000
Revision: R1	**Coordinate System:** GDA 1994 MGA Zone 55
G:\CLIENT\SA-TO-D\BYEGEN - Byerwen EIS\GIS\Maps\EIS Chapters\EIS_Chpt_14_LandUse\BYEGEN_OTEN_EPC_EPM.mxd	

1	ML 4761	GRANTED	SUTTOR CREEK
2	ML 70460	APPLICATION	SUTTOR CREEK TRANSPORT
3	ML 70472	APPLICATION	SUTTOR CREEK EAST NO.1
4	ML 70473	APPLICATION	SUTTOR CREEK EAST NO.2
5	ML 10316	GRANTED	NORTHERN UNDERGROUND 1
6	ML 10317	GRANTED	NORTHERN UNDERGROUND 2
7	ML 10176	GRANTED	EASTERN CREEK HAUL ROAD
8	ML 4771	GRANTED	NEWLANDS SOUTH
9	ML 4748	GRANTED	NEWLANDS
10	ML 4774	GRANTED	NEWLANDS EAST
11	ML 10322	GRANTED	NORTHERN UNDERGROUND 3 (NUG)
12	ML 4755	GRANTED	EASTERN CREEK SOUTH
13	ML 4754	GRANTED	EASTERN CREEK NORTH
14	ML 10348	GRANTED	NUG EXTENSION
15	ML 10362	APPLICATION	NUG EXTENDED 2
16	ML 10361	APPLICATION	NUG EXTENDED 1
17	ML 10352	APPLICATION	EASTERN CREEK EXTENDED



Legend

MLA 10355 | MLA 70434 | MDL

MLA 10356 | MLA 70435 | ML

MLA 10357 | MLA 70436

Overlapping Mining Tenures - MDLs and MLs

QCOAL GROUP

Figure 14-15 | **Byerwen Coal Project**

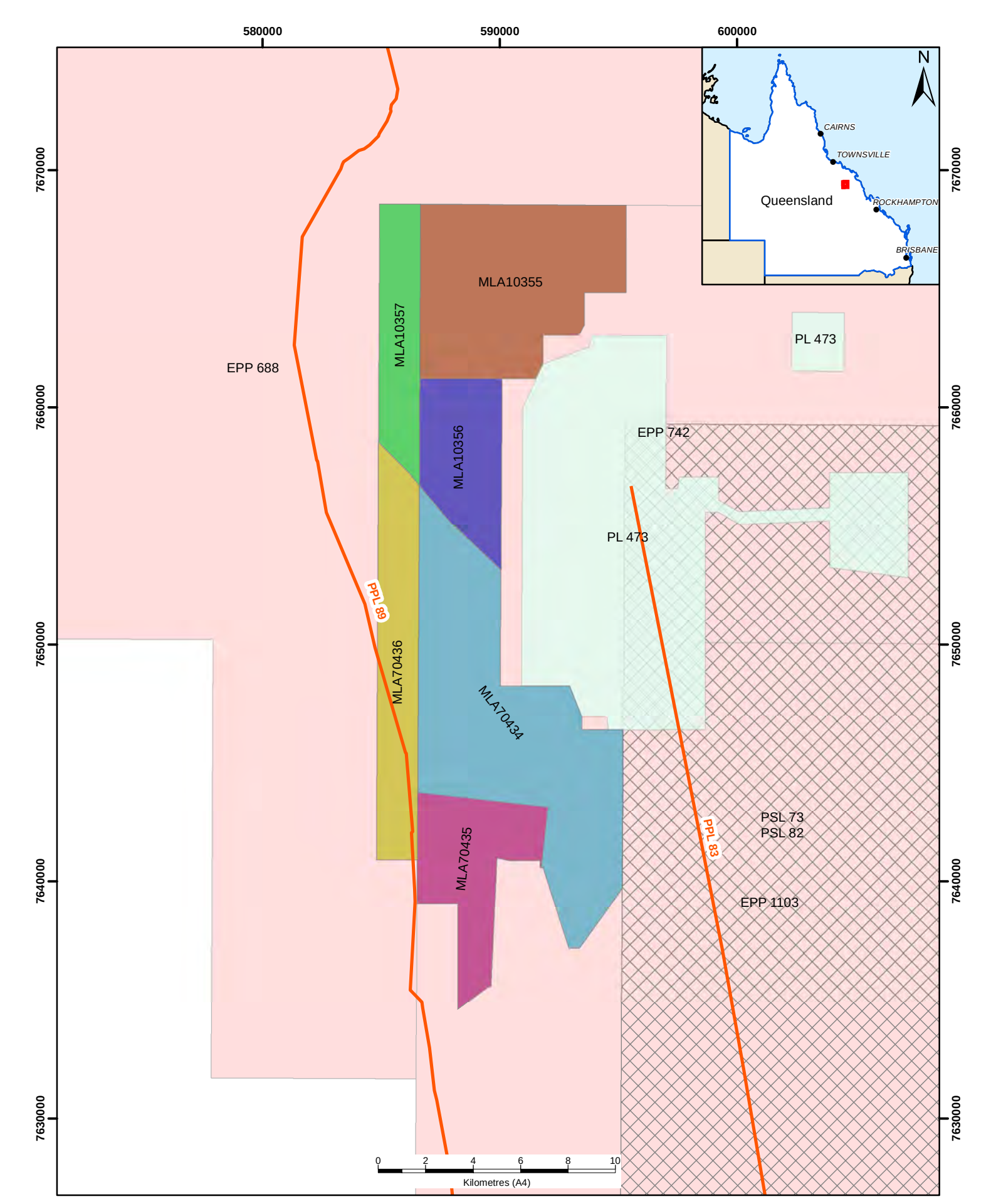
elp environmental and licensing professionals pty ltd

Date: *30/01/2013* | **Author:** samuel.ferguson

Map Scale: 1:200,000

Revision: R1 | **Coordinate System:** GDA 1994 MGA Zone 55

G:\CLIENTS\A-TO-D\BYEGEN - Byerwen EIS\GIS\Maps\EIS Chapters\EIS_Chpt_14_LandUse\BYEGEN_OTEN_ML_MDL.mxd



Legend

- MLA 10355
- MLA 10356
- MLA 10357
- MLA 70434
- MLA 70435
- MLA 70436
- PPL
- PL
- PSL
- EPP

Overlapping Petroleum Tenures	
Figure 14-16	**Byerwen Coal Project**
Date: *30/01/2013*	**Author:** samuel.ferguson
	Map Scale: 1:200,000
Revision: R1	**Coordinate System:** GDA 1994 MGA Zone 55
G:\CLIENTS\A-TO-D\BYEGEN - Byerwen EIS\GIS\Maps\EIS Chapters\EIS_Chpt_14_LandUse\BYEGEN_OTEN_petroleum.mxd	

14.4 Existing Contaminated Land

A preliminary site investigation was conducted to determine the existence of contaminated sites or potentially contaminated sites within and surrounding the project area and assess the potential impacts, if any, from these existing contamination concerns during the mine's construction and operational phases. The results are reported in **Appendix 15** and summarised below.

14.4.1 Methodology

A desktop assessment has been undertaken for each property lot intersected by the project area. The following documents were inspected to establish possible contaminants and any likely locations requiring further investigation, for each lot associated with the proposed development including:

- current land titles
- historical land titles
- Contaminated Land Register (CLR)
- Environmental Management Register (EMR)
- historical aerial photographs
- recent satellite photographs
- current site project personnel interviews
- other publically available documentation (e.g. from similar investigations and development within the local region).

14.4.2 Current and Historical Land Use

There are 7 land parcels underlying the project area, excluding road, watercourse and infrastructure easements, which have had relatively uniform land uses of agricultural grazing. It is apparent that some hard wood lumber harvesting has also occurred in the project area, with steady reductions in the forested areas from 1963 to 1984. The greater region has had considerable mineral exploration over the past 40 years, notably with Xstrata's Newlands and Suttor Creek mines located close to the project area. As a result of the underlying Bowen Basin, coal mining is a major industry across the region, and is planned to develop further over the next 5 to 10 years. Numerous mines have been proposed within the region, and several CSG extraction projects are slated to expand into this area.

Point source contamination from cattle grazing, crop growing, timber harvesting, roads, railways and mining activities can include:

- old plunge dips and more recent spray races, with arsenic and/or organo-pesticide contaminants
- small farm landfills, with heavy metal and/or petroleum hydrocarbon contaminants
- crop pesticide/herbicide storage areas, with organo-pesticides contaminants
- fuel storage tanks, with petroleum hydrocarbon contaminants
- herbicide contaminants from weed control activities along roads and railways
- drilling mud additives, including polymers and lubricants.

All previous and current identified land uses on the project site have occurred only on the land surface or at shallow depths, that is no extractive industries have been conducted within the project area. As such, evidence of any potential contamination would likely be on the surface of the land.

Due to the historical regional focus on livestock and related crops, the main activities identified with the potential to contaminate land were livestock dips, chemical storage areas and crop spraying. These

broad activities can also be each broken down into potential sites posing a risk of contamination and those posing a low or very limited risk of contamination.

Potential sites posing a risk from agricultural operations are traditionally larger commercial sites that have had high throughput and / or which operate dips for the public. Within the project area no evidence was found of large scale dips or chemical storage.

Smaller farm-based dip/spray sites, operated for the private use of the landholder, could have potentially existed on properties in the project area; however, no evidence of these sites was found during the investigation so the presence of these sites is highly unlikely. Furthermore it should be noted that if any small farm dams were ever present their usage and capacity would have been considerably lower than commercial counterparts. As a result, chemical usage and storage would have been very low, producing a very low risk of contamination.

14.4.3 Third Party Infrastructure

The project area is crossed by third party infrastructure and road easements including the GAP rail line, the Burdekin to Moranbah water pipeline, high-voltage power lines and the Collinsville-Elphinstone Road. Within the project area, the land currently used for this infrastructure had previously been used for agricultural and grazing purposes, consistent with the main land parcels identified. It is unlikely that the current uses would form a notable potential contamination source; however, minor localised sources of potential contamination may include the GAP rail line, where use of herbicides to control weed species may occur. This would only affect land within the rail easement corridor and as no interference with this land is expected to occur as part of the project, it is unlikely that contamination from this source will be encountered.

14.4.4 Nearby Receptors

The project has some homesteads located around the project boundaries, however most are more than 2 km from the boundaries on the project area. There are two homesteads within 2 km of the planned project footprint operations, to the south of the site. These are identified as R1 and R4. R1 is currently occupied; however it will be vacated prior to the commencement of construction and will remain vacant for the life of the mine. R4 is currently unoccupied, and will remain vacant for the life of the mine.

14.4.5 Historical Cultural Heritage Sites

A historical cultural heritage investigation was undertaken as part of the EIS process, which is described in **Chapter 29**. Contaminants such as heavy metals and pesticide residues could potentially be located at sites 7 and 8, the old ringers and drovers' camps within the project area. Current mine plans do not indicate that any activities will occur at these sites and as such there is minimal potential to disturb any contaminants located at the sites.

14.4.6 Contaminated Land and Environmental Management Registers

A review of EHP's (formerly DERM's) CLR and EMR revealed that two lots within the proposed development are listed on the EMR. Lot 3 on SP171922 is listed on the EMR as being subjected to the following *Notifiable Activities,* as per Section 374 of the *Environmental Protection Act 1994 (Qld)*:

- Mineral Processing
- Petroleum Product or Oil Storage
- Waste Storage, Treatment or Disposal.

Lot 14 on SP225054 is listed on the EMR as being subjected to the following *Notifiable Activities,* as per Section 374 of the *Environmental Protection Act 1994 (Qld)*:

- Mineral Processing
- Explosives Production or Storage
- Petroleum Product or Oil Storage
- Waste Storage, Treatment or Disposal.

The notifiable activities conducted on Lot 3 on SP171922 and Lot 14 on SP225054 are assumed to be part of the Xstrata's Newlands Mine operation, and therefore on separate mining leases to the project area. As such, the project will not result in any disturbance of the area around these activities.

14.4.7 Site Personnel Surveys

Telephone surveys with project site managers and site personnel, who have covered the entire project area during their extensive time onsite (with a particular focus on areas proposed for disturbance as part of the project), were held to establish the existence of potentially contaminated sites within the project area. During project exploration and planning these site personnel have ongoing contact with the land owners, lessees or farm managers of the properties within and adjacent to the project area, sufficient to provide robust survey data. Information for Lot 4 on SP171921 was less available than the other lots, as the terrain of that lot largely prevents access other than by helicopter; however, the project footprint does not intersect this lot and as such there is no planned disturbance of this area.

Anecdotal evidence obtained during the surveys suggest limited potential for plunge dips and pesticide/herbicide storage within the project area. Existing fuel storages and small quantities of buried general waste could not be conclusively discounted in the project area; however no evidence was found of existing contamination in any lots within the project area. Furthermore areas of potential contamination were reported as being well maintained with no visible contamination effects.

14.4.8 Aerial Photography

A review of the aerial photography of the subject area from 1971, 1983 and 2000 was conducted (refer to **Appendix 15**). It is apparent from the aerial photography records that any dip sites that may have existed were small in size. More recent, higher resolution imagery did not display any larger sites of concern. No large commercial dips or spray sites were identified within the project area or immediate surrounds.

Plunge dips would have been sited near the main stock pens, while chemicals would have generally been stored in the main farm sheds. Both would likely have been sited within a kilometre of the farm house or homestead. In most cases these sites would have been small in area, with limited use and therefore present a very low risk of contaminant migration.

The review of aerial photographs has highlighted that there are few homestead and cattle pen structures on the land within the project area. This low incidence of structures suggests that there is little likelihood plunge dips or significant chemical storage areas have ever existed on the project area.

14.4.9 Mineral Exploration

Exploration operations can contribute to contamination from poor waste management practices and spills. No concerns were raised regarding any wastes or spilt materials left by the exploration operations, indicating that good waste management practice has been in place during the project's drilling programs. All exploration activities conducted by the proponent have been conducted with the Code of environmental compliance for exploration and mineral development projects (DERM, 2011b) or under approved environmental management plans (EMPs) to address and prevent contamination.

14.4.10 Management Measures

The activities to be conducted within the project area have the potential to disturb potential contaminants, if they are present within the boundary of the site. In the unlikely event that contaminants do exist within the project area, they will be contained within the surface layer or the soils immediately below this layer. These surface soil layers and overburden are to be stripped and stockpiled onsite, in order to gain access to the coal or for construction of infrastructure. Any soils that are suspected to be contaminated from visual/odour indications will be captured and contained pending further investigation.

If suspect sites are located, these should be inspected for visual evidence of contamination. Some examples of these visual indicators include:

- soil staining
- un-natural or chemical odour
- vegetation die-off.

If evidence of significant contamination is observed during soil stripping activities, this material should be stockpiled separately pending further investigation. Once stockpiled, the suspected contaminated soil should be strictly managed, including stormwater management, to mitigate the risk of release of contaminants.

Once representative samples of stockpiled material are analysed and interpreted by suitably qualified and experienced personnel a management strategy for any impacted soils will be developed. Potential management strategies may comprise onsite retention, onsite treatment and reuse or offsite disposal to an appropriately licenced facility, pending regulatory approval.

14.5 Potential for the Project to Contaminate Land

The project has the potential to contaminate land from activities such as waste rock management, reject coal management, CHPP operation and spills at chemical and fuel storage and handling areas. **Table 14-8** provides the EIS chapter references where these potential impacts and mitigation measures are addressed.

Table 14-8 EIS Chapters where Potential Land Contamination Described

Potential Source of Contamination	Chapter of EIS
Waste rock management, including the potential for acid generation	**Chapter 9**
Rejects coal management, including the potential for acid generation	**Chapter 7 and 9**
CHPP operations	**Chapter 7**; **Chapter 8 and 15** (management of potentially contaminated runoff); **Chapter 32** (management of hazards)
Chemicals and fuels	**Chapter 7**; **Chapter 8 and 15** (management of potentially contaminated runoff); **Chapter 32** (management of hazards, including management of chemicals and fuels to prevent leaks)
Classification of potential land contamination after project completion	**Chapter 10**

14.6 Potential Impacts and Mitigation Measures

This section describes potential impacts and measures to mitigate impacts for the various land tenures and uses described in **Section 14.3**.

In assessing any of the project's impacts, the project's operational activities are considered the main source of potential impact to land tenures and uses. Construction and decommissioning activities will occur within the project's operational areas and hence any impacts associated with construction and decommissioning are implicitly considered when considering impacts from operations. Project rehabilitation and decommissioning is further described in **Chapter 10**.

14.6.1 Properties, Residences and Receptors

14.6.1.1 Potential Impacts

Properties, residences (dwellings) which may be impacted by the project are described in **Section 14.3.2** and **Section 14.3.3**. The following potential impacts have been identified:

- loss of land area used to support agricultural activities (primarily grazing) within the footprint of project activities or area where access is limited
- disruption of agricultural activities through construction of linear infrastructure across properties or loss of agricultural infrastructure such as fences, dams and tracks
- noise, vibration and dust impacts on receptors and livestock from mining operations
- social and economic impacts (positive and negative)

14.6.1.2 Mitigation Measures

The proponent will negotiate with landholders for ongoing use of land within the project area that is not subject to disturbance, for the continuation of existing land practices such as grazing. Access to land will be limited where there are safety concerns for landholders or livestock, including areas subject to mining or containing mine infrastructure.

Where linear infrastructure intersects landholder properties, crossing points will be established in conjunction with landholders to allow for continued movement of livestock, people and equipment on landholder properties. The design of crossing points will vary depending on the nature of the linear infrastructure (e.g. roads, pipelines, rail lines, power lines) and the frequency of use.

The proponent will negotiate compensation with landholders for impacts to agricultural activities and infrastructure, which may include the provision of alternative infrastructure.

A dam on Lot 689 PH1321 is positioned within the footprint of West Pit 1, and would be removed as part of the pit development. This property is owned by a wholly owned subsidiary of Byerwen Coal Pty Ltd and the dam will not be directly replaced. However, dams constructed as part of the mine water management system, including clean water dams, may provide alternative water supplies by agreement with future landholders.

Rehabilitation and decommissioning, including the process for determining and implementing the preferred post mine land use, is described in **Chapter 10**.

Chapter 24 (Noise and Vibration) describes the potential for noise and vibration to impact receptors. It is concluded that no receptors will experience noise and vibration levels in excess of noise and vibration objectives.

Chapter 22 describes potential impacts to air quality and measures to mitigate impacts so that air quality objectives are not exceeded at receptors.

Social and economic impacts and mitigation measures are described in **Chapter 31** and **Chapter 30** of respectively.

With the implementation of the above mitigation measures, impacts on properties, receptors and residences are expected to be minor.

14.6.2 Land Suitability, Good Quality Agricultural Land and Strategic Cropping Land

Table 14-9 provides the area of GQAL (as mapped by site inspection) by class, land suitability for beef cattle grazing, land suitability broad-acre rain-fed cropping and potential SCL within the project footprint (approximately 7,000 ha within the project area). The project will impact the land classes described below and hence there is potential conflict between these land uses and mining.

Table 14-9 Extent of Agricultural Land Category within Project Footprint

Agricultural land category	Class of land category	Subclass	Area within project footprint (ha)
GQAL per site inspection	A		1,638
	B		0
	C		2,615
	D		2,771
Land Suitability	Beef Cattle Grazing	1	0
		2	3,308
		3	950
		4	2,719
		5	51
	Broad-acre rain-fed cropping	1	0
		2	1,636
		3	0
		4	2,986
		5	2,402
SCL	Potential SCL		1,435

Section 14.3.7 describes the work undertaken to date to identify SCL in the project area. The proponent will undertake the necessary process under the *Strategic Cropping Land Act 2011* (SCL Act) to validate SCL. Depending on the findings of the validation assessment, the proponent may apply for a protection decision for a temporary or permanent impact to SCL in the SCMA, with associated mitigation measures to be determined. The mitigation measures may include avoidance, rehabilitation or, where SCL is permanently lost, payment of 'mitigation costs'.

The process for determining and implementing the preferred post mine land use, is described in **Chapter 10**. The post mine land use is likely to include land suitable for cattle grazing at the same or lower land suitability class. There will be some areas, such as the final voids, where the post mine land use will not be similar to the pre-mining land use.

With the implementation of the above mitigation measures, impacts on land suitability, GQAL and SCL are expected to be minor to moderate.

14.6.3 Stock Routes

Approximately 5.5 km of the unused / inactive stock route will be intersected by South Pit 1 and two associated out of pit waste rock dumps. This section of stock route is unused / inactive and therefore project activities will have a negligible impact on the use of the stock route. The stock route will not be reinstated along its original route following mine closure as it is intersected by waste rock dumps up to 60 m high and the final void of South Pit 1.

14.6.4 Environmentally Sensitive Areas

ESAs are identified in **Section 14.3.10**. Potential impacts and mitigation measures to Category A, B and C ESAs within and surrounding the project area are described in the following chapters:

- Endangered regional ecosystems – **Chapter 18** Terrestrial Ecology, **Chapter 19** Aquatic Ecology
- A place of cultural heritage significance or a registered place under the *Queensland Heritage Act 1992* (QH Act) – **Chapter 29** Historical Cultural Heritage
- an area recorded in the Aboriginal Cultural Heritage Register established under the *Aboriginal Cultural Heritage Act 2003* (ACH Act) – **Chapter 28** Indigenous Cultural Heritage.

Potential impacts and mitigation measures to broadly defined environmentally sensitive areas are identified in the following chapters.

- designated protected areas (none in the project area), remnant vegetation and biodiversity corridors – **Chapter 18** Terrestrial Ecology, **Chapter 19** Aquatic Ecology and **Chapter 21** Environmental Offsets
- Catchments, watercourses, creeks and drainage features – **Chapter 15** Surface Water and **Chapter 16** Hydrology and Hydraulics
- Soils – **Chapter 13** Geology, Topography and Soils

14.6.5 Third Party Infrastructure and Non-statutory Plans

14.6.5.1 Third Party Infrastructure

Table 14-10 describes the third party infrastructure, identifies the owner of the infrastructure and describes how it may be impacted and proposed mitigation measures. With the implementation of proposed mitigation measures, impacts on third party infrastructure are expected to be minor.

Table 14-10 Third Party Infrastructure Description and Owners

Infrastructure Description	Owner	Potential Impacts	Mitigation measures
North Queensland Gas Pipeline	North Queensland Pipeline No 1 Pty Ltd	The pipeline will bisect two out of pit waste rock dumps associated with South Pit 1.	A buffer will be established between the toe of the waste rock dumps and the buried pipeline.

Infrastructure Description	Owner	Potential Impacts	Mitigation measures
		Waste rock will be hauled or conveyed across the pipeline easement.	Any crossings points will be designed and constructed to prevent impacts resulting in failure of the buried pipeline.
		Blasting in nearby pits may result in vibration impacts to the pipeline.	Vibration assessment (refer **Chapter 24 – Section 24.5, Section 24.6**) concludes that vibration will not exceed objectives at pipeline.
		Interaction of pipeline maintenance personnel and Byerwen project activities.	See hazard and risk assessment (**Chapter 32 – Section 32.5, Section 32.6**).
Burdekin to Moranbah Pipeline (water)	SunWater	The pipeline will bisect two out of pit waste rock dumps associated with South Pit 1.	A buffer will be established between the toe of the waste rock dumps and the buried pipeline.
		Waste rock will be hauled or conveyed across the pipeline easement.	Any crossings points will be designed and constructed to prevent impacts resulting in failure of the buried pipeline.
		Blasting in nearby pits may result in vibration impacts to the pipeline.	Vibration assessment (refer **Chapter 24**) concludes that vibration will not exceed objectives at pipeline.
		Interaction of pipeline maintenance personnel and Byerwen project activities.	See hazard and risk assessment (**Chapter 32**).
Newlands Pipeline (water)	SunWater	Newlands Pipeline follows the Collinsville-Elphinstone Road. Limited interaction with project activities other than potential crossing point for site access road.	Any crossings points will be designed and constructed to prevent impacts to the buried pipeline.
Goonyella to Abbot Point (GAP) rail line and Alpha Coal Project rail line	Aurizon (formerly QR National) and Hancock	The rail lines bisects South Pit 1 and two associated out of pit waste rock dumps. The GAP rail line bisects South Pit 2 and associated out of pit waste rock dump.	A buffer will be established between the toe of the waste rock dumps and the rail line easements.

Infrastructure Description	Owner	Potential Impacts	Mitigation measures
	Coal Pty Ltd	The rail lines intersect the central infrastructure corridor.	Specially designed and constructed infrastructure (e.g. bridges) will be provided for crossing points to prevent interaction between trains on the rail lines and mine vehicles or linear infrastructure.
		Waste rock will be hauled or conveyed across the rail lines.	Specially designed and constructed infrastructure (e.g. bridges) will be provided for crossing points to prevent interaction between trains on the rail lines and mine vehicles or equipment.
		Blasting in nearby pits may result in vibration impacts to the rail lines.	See vibration assessment (**Chapter 24 – Section 24.6**)
		Interaction of rail line maintenance personnel and Byerwen project activities.	See hazard and risk assessment (**Chapter 32 – Section 32.6**).
Various electricity power lines	Ergon	Project open pits (West Pit 1, South Pit 2) will intersect existing power lines.	Power line diversions will be constructed to allow uninterrupted power supply to existing users.
		Project linear infrastructure will intersect existing power lines.	Crossing points will be designed in conjunction with power line operators / owners.
Gazetted but unformed Roads	Isaac and Whitsunday Regional Councils	South Pit 1 will intersect a gazetted but unformed road.	An alternative road alignment (unformed) will be provided in consultation with the relevant Council.
Wollombi Road	Isaac Regional Council	A drainage diversion and ROM coal roads from East Pit 1 and East Pit 2 will intersect Wollombi Road.	Within and / or adjacent to Wollombi Road is the subject of a MLA 70460 for a transport corridor linking Xstrata Suttor Creek mine to the south of the Byerwen project area to the Xstrata Newland's mine. Refer **Section 14.6.6**.

14.6.5.2 Non-Statutory Plans

The BDT NRM Plan sets a range of targets and actions to improve the condition of lands, soils and agriculture within the region. These are primarily focused on agricultural practices and land management. The project, by virtue of its direct footprint impacts, will not result in the improvement of the condition of lands, soils and agriculture in the region. The BDT NRM area covers approximately 133,432 km^2, whilst the project footprint covers approximately 70km^2 (7,000ha), which represents 0.05% of the BDT NRM area. Never-the-less, measures will be implemented to mitigate project impacts through a Soils Management Plan and Erosion and Sediment Control Plan (refer **Chapter 13**). Following decommissioning and final rehabilitation the majority of the disturbance areas will be returned to an agreed post mine land use (refer **Chapter 10**).

14.6.6 Mining and Petroleum Tenures

Overlapping tenure parties are identified in **Section 14.3.13**.

Potential impacts and mitigation associated with PPL 89, the North Queensland Pipeline are described in **Table 14-10**.

The proponent will consult Xstrata Coal Queensland Pty Ltd, the applicant for the mining lease for transport (MLA 70460) that traverses the project area, about all construction and operational issues where there is potential for interaction between project activities. The objectives will be to minimize hazards and risks to people, property and the environment from potential interactions.

The proponent will comply with all requirements of the *Mineral Resources Act 1989*, including notification and or consultation with overlapping exploration (EPMs and EPPs) tenure holders.

14.6.7 Land Use of Adjacent Areas

The adjacent land uses (i.e. on properties adjacent to those that are intersected by the project area) are agricultural, with a mix of cleared areas and areas with remnant vegetation, and coal mining. There are no current adjacent land uses associated with urban development, recreation, tourism or other business, other than mining. Potential impacts of the project on adjacent land use may result from the following:

- Mining activities, such as waste rock dumps and open pit excavations, may result in noise, vibration or dust impacts
- Surface soils, surface water and groundwater may be contaminated from unplanned and uncontrolled releases of mine affected water, sediment affected water, rejects or other contaminants such as hydrocarbons
- Changes to the hydrology of flood flows

Mine planning includes provision for buffers (as described in **Chapter 5**) separating waste rock dumps and open pits from the ML boundaries and the Suttor River.

Soils management is described in **Chapter 13** and the use of soils in rehabilitation is described in **Chapter 10**.

The potential impacts of noise and vibration on sensitive receptors in adjacent lands are described in **Chapter 24**. Noise and vibration modeling indicates that no sensitive receptors on adjacent lands will experience noise and vibration levels in excess of proposed noise and vibration limits.

The potential impacts of dust on sensitive receptors in adjacent lands are described in **Chapter 22**. Air quality modeling indicates, that with the adoption of measures to mitigate dust emissions, sensitive receptors will not experience dust levels in excess of air quality objectives.

The mine water management strategy is described in **Chapter 8**, including the design, construction and operation of mine water management infrastructure (dams, diversion channels, etc). This strategy is designed to prevent uncontrolled release of mine affected water or sediment affected water. Potential impacts to surface water and groundwater, and mitigation measures are described in **Chapter 15** and **Chapter 17** respectively.

Changes to the hydrology of flood flows are described in **Chapter 16**, which concludes that changes will be insignificant.

With the implementation of proposed mitigation measures, impacts on adjacent land users are expected to be minor.

14.6.8 Post Operations Land Use

Chapter 10 describes rehabilitation and decommissioning of project activities, including the potential post mine land uses.

The dominant land use within the project site is beef cattle grazing on areas cleared of remnant vegetation. Approximately 68% of the land within the project footprint is land that has been previously disturbed and modified to allow grazing of cattle. The remaining 32% comprises remnant vegetation, of which approximately 33% is Endangered or Of Concern Regional Ecosystem.

Chapter 14 describes the land suitability assessment for the project area which identified the land classes of the project site for beef cattle grazing as:

- Class 2 – 27%
- Class 3 – 15%
- Class 4 – 56%
- Class 5 – 2%.

The primary rehabilitation objective of the rehabilitation program will be to return the site to a stable and self-sustaining landform requiring no ongoing management or monitoring, with a productivity level that conforms to a defined final land use. This will be achieved through:

- effective mine closure planning
- establishment of key performance indicators
- stabilisation of landforms
- revegetation with suitable species.

The majority of remnant vegetation occurs within the footprint of the open pits and waste rock dumps. Reinstatement of 'natural ecosystems' on waste rock dumps may be feasible in the long term, however in the short term the rehabilitation objective is likely to be to stabilise the waste rock dumps and minimise erosion.

It is considered likely that the rehabilitation strategy for the majority of disturbed areas (waste rock dumps) will be the reinstatement of the previous grazing land use at the same or lower land use suitability ranking. There will be some areas of the mine site, such as the final voids, that are not returned to their previous land use.

Mine closure planning will consider the choice of post-mining land use. The final land use will largely be dependent on pre-mining land suitability, landholder preferences for land use, the potential uses of likely rehabilitated landforms, and the existing use or environmental values of surrounding land.

14.7 Conclusion

The project is located within the boundaries of the Mackay, Isaac, Whitsunday Regional Plan area in an area zoned as 'Regional Landscape and Rural Production Area'. The project area is also zoned as rural under local planning schemes.

There are 7 leasehold properties that are either within or intersected by the project area which have been predominantly used for pastoral activities. The property that will experience the greatest impact relative to property size is owned by a wholly owned subsidiary of Byerwen Coal Pty Ltd. The proponent will negotiate with landholders ongoing use of land within the project area, that is not subject to disturbance, for existing land practices, such as grazing. The proponent will negotiate compensation with landholders for impacts to agricultural activities and infrastructure, including the provision of alternative infrastructure and crossing points where project linear infrastructure intersects properties.

Seven dwellings that will be occupied during project activities have been identified surrounding the project area, with the nearest 1.2 km from the project area boundary and 5.4 km from project activities. Potential impacts to dwellings and receptors from noise and dust are described in the relevant chapters of the EIS. With the implementation of proposed mitigation measures, impacts on properties, receptors and residences are expected to be minor.

The design of the mine water management system, the control of locating project activities (e.g. through the provision of buffer zones) and control of other project emissions (e.g. noise and dust) is expected to result in minor impacts on land users adjacent to the project area.

A land suitability assessment was conducted which demonstrated that 88% of the project area is unsuitable for rain-fed broadacre cropping, 58% is unsuitable for beef cattle grazing and a further 15% requires significant inputs for suitability as beef cattle grazing. GQAL was classified on the basis of land suitability mapping. GQAL per the site investigation indicates that agricultural land quality is lower than mapped by publically available datasets, with 2,666ha of Class A, 6,887 ha of Class C and 13,144 ha of Class D GQAL. A preliminary SCL assessment was conducted in June 2011 as per the SCL requirements at that time. There are 4,128 ha of potential SCL in the project area, with the preliminary SCL assessment indicating 1,902 ha of SCL in the project area.

The project will result in approximately 7,000 ha of land disturbance, including 1,638 ha of Class A GQAL, 4,528 ha of land suitable for beef cattle grazing, 1,636 ha of land suitable for rain-fed broadacre cropping and 1,435 ha of potential SCL. The proponent will undertake the necessary process and procedures under the SCL Act to either validate SCL or apply for a temporary or permanent impact in the Strategic Cropping Management Area. With the implementation of proposed mitigation measures, impacts on land suitability, GQAL and SCL are expected to be minor to moderate.

There is one stock route which is designated as unused or inactive by the Queensland government that intersects South Pit 1 in the southern project area and hence project activities will have a negligible impact on the use of this stock route.

There are no state-declared Key Resource Areas or declared catchment areas in the project area.

A number of third party owned linear infrastructure exists or is proposed within the project area including two rail lines, water pipelines, gas pipelines, power lines and roads. The proponent will provide buffers between third party infrastructure and project activities and / or work closely with third party infrastructure owners where crossing points or other interactions are required. With the implementation of proposed mitigation measures, impacts on third party infrastructure are expected to be minor.

There are six overlapping tenures with mineral exploration, petroleum exploration, pipeline license and mining lease for transport tenement holders. The proponent will comply with all regulatory requirements to notify and consult overlapping tenure holders.

A preliminary site investigation was conducted to determine the existence of existing contaminated or potentially contaminated sites within and surrounding the project area, and to assess the potential impacts, if any, from these existing contamination concerns during the mine's construction and operational phases. No sites of concern were identified. If existing contaminated sites are identified during activities, then measures will be implemented to investigate and, if required, isolate and manage contaminated materials.