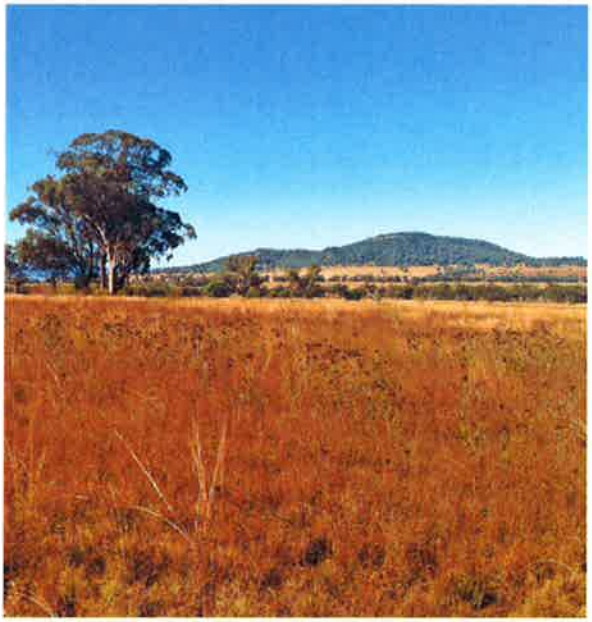
NSW GOVERNMENT | Planning & Environment

STATE SIGNIFICANT DEVELOPMENT ASSESSMENT
Watermark Coal Project (SSD-4975)



Secretary's
Environmental Assessment Report
Section 89E of the
Environmental Planning and Assessment Act 1979
May 2014

Cover Photos: Liverpool Plains and coal core samples.

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EXECUTIVE SUMMARY

Shenhua Watermark Coal Pty Limited (Shenhua) is proposing to develop the Watermark Coal Project, a new open cut coal mine located 3 kilometres west of the village of Breeza and 25 kilometres south-east of Gunnedah on the Liverpool Plains.

In October 2008, the Minister for Mineral Resources granted Shenhua an exploration licence (EL 7223) over the Mt Watermark area of the Liverpool Plains. The Watermark EL area is immediately to the north of BHP Billiton's Caroona exploration licence area (EL 6505), which was granted by the Minister for Mineral Resources in April 2006.

The granting of the Watermark and Caroona ELs has generated very strong community concern, particularly about the potential land use conflicts between mining and farming on the Liverpool Plains and the potential impacts on groundwater resources. The rich 'black soils' and high quality water resources of the Plains make the area one of NSW's most fertile and productive agricultural regions.

In September 2011, the Minister for Resources and Energy announced tough new conditions on the renewal of the Watermark EL. These included a prohibition from open cut mining or longwall mining on or under the areas of the alluvial flood plain and the black soils of the Liverpool Plains. Similar conditions have been placed on BHP's Caroona EL.

Shenhua has since developed the Watermark Coal project in accordance with these conditions, and in February 2013, lodged its Environmental Impact Statement (EIS) for the project[1].

The project involves extracting coal via open cut methods from 3 separate pits in the area surrounding Mt Watermark, on higher ground above the Liverpool Plains and the black soils. This area has historically supported grazing and cropping land uses.

Coal would be extracted at up to 10 million tonnes of coal a year over 30 years, recovering a coal reserve of about 268 million tonnes of run-of-mine coal. Extracted coal would be processed (washed) on site before being loaded onto trains and railed to the Port of Newcastle for export. Approximately 159 million tonnes of product coal would be produced, including 133 million tonnes of metallurgical coal and 26 million tonnes of thermal coal.

The project involves the construction of a range of necessary infrastructure to support the new mine, including a coal handling and preparation plant (CHPP), administration and workshop facilities, rail spur and rail loop, railway overpass and deviation of the Kamilaroi Highway, mine access road, water management infrastructure and power and communications infrastructure.

The project has a capital investment value of $850 million, and would generate about 600 jobs during the 18 month construction period and 600 jobs during operations.

In total, the project would disturb some 4,084 hectares of land. Of this, about 789 hectares comprises listed endangered ecological communities (EECs), and 96 hectares within the mining areas comprises Biophysical Strategic Agricultural Land (BSAL) as identified under the *New England North West Strategic Regional Land Use Plan* (SRLUP).

The project is classified as a State Significant Development (SSD) under Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act), and consequently requires approval from the Minister for Planning. However, under the Minister's delegations, the development application must be determined by the Planning and Assessment Commission (PAC) due to the number of objections received. Prior to this determination, the Minister has directed that the PAC undertake a detailed review of the merits of the project, with the review to include public hearings.

The NSW Department of Planning and Environment (the Department) exhibited the EIS of the project for 2 months from 28 February 2013 until 26 April 2013, and received some 133 submissions: including 12 from government authorities, 14 from special interest groups and 107 from the general public. The Department also received correspondence from the Commonwealth Department of the

[1] BHP Billiton is yet to lodge its Environmental Impact Statement for the Caroona project.

Environment (DOE)[2], as part of its parallel assessment of the project under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*, and also received advice from the newly established NSW Mining and Petroleum Gateway Panel.

None of the government authorities object to the project, although most raised concerns and/or made comments and recommendations. The vast majority of the special interest group and general public submissions objected to or raised concerns about the project.

The key issues raised in the submissions and/or identified in the Department's assessment of the project include:

- *water resources* – particularly impacts to the significant groundwater aquifer resource of the Upper Namoi catchment;
- *noise and dust* – including health and amenity impacts and impacts on agricultural land uses in the area;
- *biodiversity* – particularly impacts on the Box Gum Woodland endangered ecological community (EEC) and the Koala;
- *Aboriginal heritage*;
- *visual amenity*; and
- *socio-economics* – particularly potential impacts on surrounding agricultural resources on the site and in the surrounding area.

Shenhua has prepared detailed responses to the issues raised in submissions, in consultation with relevant authorities, and has made some amendments to the project to further avoid and/or mitigate the identified impacts, including:

- using an 'optimised' mining fleet to reduce noise and dust emissions; and
- amending the biodiversity offset strategy to avoid higher value agricultural land and increase ecological benefits.

The Department has assessed the development application, EIS, submissions on the project and Shenhua's responses to these submissions, in accordance with the objects of the EP&A Act and the principles of ecologically sustainable development. As part of this assessment, the Department has commissioned independent experts to review the project's potential groundwater and surface water impacts. The assessment also benefits from the comprehensive Namoi Catchment Water Study, commissioned by the NSW Government in 2010 to investigate the potential cumulative impacts of mining and coal seam gas projects in the region.

Based on this assessment, the Department is satisfied that the project is unlikely to have any significant impact on the water resources of the Namoi catchment, and can be undertaken in a manner that is consistent with the water sharing principles established under the *Water Management Act 2000*. In this regard, groundwater assessment indicates that the project's 'water take' from the valuable Upper Namoi alluvial aquifer would peak at 103 megalitres a year, which is less than the usage from a single licensed agricultural bore in the region, which averages 142 megalitres a year. A key reason for this relatively minor impact is the restriction of mining to the higher ground away from the black soil plains.

The Department has recommended a broad range of conditions to ensure that water resources are appropriately managed, including requirements on Shenhua to: obtain water licences prior to mining; to provide compensatory water supplies to surrounding water users in the unlikely event that their water supplies are affected by the project; to not discharge any mine (saline) water from the site under any circumstances; to appropriately manage other run-off to minimise increases in salt loads in local creeks; to meet a number of water performance objectives; and to prepare and implement a comprehensive water management plan.

With regard to noise and dust, the assessment indicates that the project would result in significant residual impacts on 6 privately-owned residences (on 5 properties), with a further 6 privately-owned properties predicted to be significantly affected over more than 25% of the property area. A further 10 privately-owned residences are predicted to be marginally to moderately affected. Whilst this number

[2] Including advice from the Commonwealth's Independent Expert Scientific Committee on Coal Seam Gas and Large Coal Mining Development (IESC).

of affected properties is not insignificant, it is similar to contemporary mining projects in the Gunnedah and Hunter coalfields, particularly for greenfield projects (ie. new mines).

The Department has recommended conditions requiring Shenhua to acquire the significantly affected properties and to undertake additional noise and dust mitigation measures (eg. insulation, air conditioning) on all affected residences, at the request of the landowner. The recommended conditions also require Shenhua to maintain the agricultural productivity of any properties that it does acquire, and to prepare and implement detailed noise and air quality management plans, including provision for real-time monitoring and active (or adaptive) management of day-to-day operations to minimise emissions.

With regard to biodiversity, the Department and the NSW Office of Environment & Heritage (OEH) are satisfied that Shenhua's revised biodiversity offset strategy would adequately compensate for the impacts of the project on EEC's and threatened species of the locality, including the Koala. In this regard, the offset strategy would ultimately provide for the long term (in perpetuity) conservation of almost 11,200 hectares of land (including almost 8,000 hectares of EEC), to compensate for the 789 hectares of EEC and 148 hectares of other woodland that would be cleared for the project.

The Commonwealth Department of the Environment (DOE) is also satisfied that the offset strategy would adequately compensate for the impacts on Commonwealth-listed threatened species, subject to some additional offsets being provided for the 'Grey Box' EEC.

The Department has recommended conditions requiring Shenhua to: implement the biodiversity offset strategy; to supplement the strategy to meet DOE's Grey Box EEC offset requirements; to establish over 8,000 hectares of Koala habitat within the offset areas (to compensate for the 847 hectares of Koala habitat that would be affected by the project); to provide for the conservation of the offsets in perpetuity; and to prepare and implement comprehensive biodiversity and Koala management plans.

The project would affect 29 Aboriginal sites in the project disturbance area, including 2 sites of high archaeological significance (ie. an artefact scatter and an axe grinding groove site) which Shenhua proposes to salvage and/or relocate in consultation with local Aboriginal groups. A number of other Aboriginal sites have been identified outside the project disturbance area, including 6 sites of high significance. Shenhua proposes to protect these sites, and establish 2 cultural heritage conservation areas (totalling over 200 hectares) to conserve sites of high significance. The Department (including OEH) is satisfied with this approach, and the Department has recommended conditions requiring Shenhua to establish the conservation areas and to prepare and implement a detailed heritage management plan in consultation with the local Aboriginal groups.

The project would have some residual visual impacts on surrounding residents and commuters on the Kamilaroi Highway and other local roads. These impacts would be mitigated to some degree through the avoidance of disturbance of Mt Watermark, backfilling 2 of the 3 mining areas, and prompt rehabilitation of overburden emplacement areas. The Department has also recommended conditions requiring Shenhua to provide additional visual impact mitigation measures to landowners with direct views to the site, and to undertake landscaping along local roads.

With regard to socio-economic impacts, the Department's assessment indicates that the project is unlikely to have any significant impact on agricultural operations and agricultural productivity in the area surrounding the mine, or have any significant adverse impacts on community infrastructure and services in the wider area. Indeed, the project is predicted to generate very significant benefits to the regional economy, including over 1,000 jobs and almost $1 billion in annual business turnover. This far exceeds the regional benefits associated with continued use of the site for agricultural land use (ie. about 40 jobs and $5 million in annual business turnover).

The project would affect 96 hectares of BSAL, however the Department is satisfied that this area represents a negligible (and fragmented) portion of the 1.5 million hectares of mapped BSAL in the region, and acknowledges that Shenhua has committed to re-establishing 100 hectares of BSAL (or equivalent) in the rehabilitation for the project.

The Department has recommended a comprehensive and precautionary suite of conditions to ensure that the project complies with the relevant criteria and standards, and to ensure that the predicted residual impacts are effectively minimised, mitigated and/or at least compensated for. The

Department believes that the conditions reflect current best practice for the regulation of mining projects in NSW.

The Department has carefully weighed the impacts of the project against the significance of the resource and the socio-economic benefits. On balance, the Department believes that the project's benefits outweigh its residual costs, and that it is in the public interest and should be approved, subject to stringent conditions.

1. INTRODUCTION

1.1 Background

Shenhua Watermark Coal Pty Limited (Shenhua) is proposing to develop the Watermark Coal Project, a new open cut coal mine located 3 kilometres west of the village of Breeza and 25 kilometres south-east of Gunnedah on the Liverpool Plains of NSW (see Figure 1).

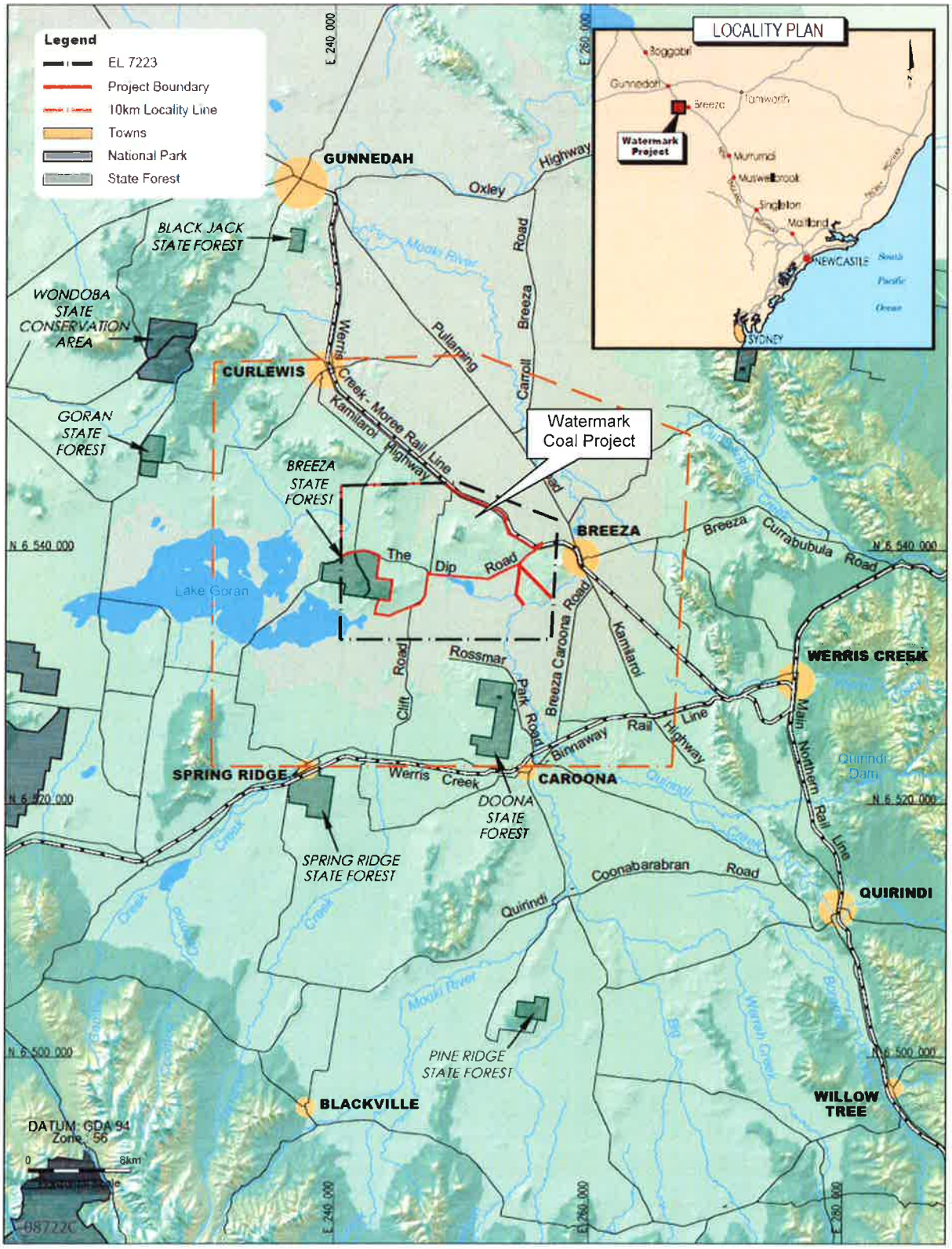

Figure 1: Location of the Watermark Coal Project

Shenhua is a wholly owned subsidiary of the Shenhua Group Corporation Limited (Shenhua Group), the world's largest coal supplier and one of the world's largest integrated energy companies with interests in power generation, railway and port infrastructure, shipping and downstream coal processing (coal to liquids and coal to chemicals). In 2011, Shenhua Group produced over 400 million tonnes of coal from 62 operating mines.

In October 2008, the Minister for Mineral Resources granted Shenhua an exploration licence (EL 7223) over the Mt Watermark area of the Liverpool Plains (see Figure 2). Shenhua paid a record price of $300 million to secure the EL, which followed a public tender process.

The Watermark EL area is immediately to the north of BHP Billiton's Caroona exploration licence area (EL 6505) also on the Liverpool Plains, which was granted by the Minister for Mineral Resources in April 2006.

The granting of the Watermark and Caroona ELs has generated very strong community concern, particularly about the perceived land use conflicts between mining and farming on the Liverpool Plains and the potential impacts on groundwater resources. In summary, the farmers contend that the 'black soils' of the Plains, together with the dependable high quality water supply in the underlying alluvial aquifer, make the area one of Australia's most fertile and productive agricultural regions, and that this agricultural resource should not be destroyed for the sake of coal mining.

In September 2011, the Minister for Resources and Energy announced strict new conditions on the renewal of the Watermark EL. These included a prohibition from open cut mining or underground longwall mining on or under the areas of the alluvial floodplain and the black soil of the Liverpool Plains. Similar conditions have been placed on BHP's Caroona EL.

Shenhua has since developed the Watermark Coal project in accordance with these conditions, and in February 2013, lodged its Environmental Impact Statement (EIS) for the project[3]. As detailed in Section 2 below, the project involves extracting coal via open cut methods from 3 separate pits in the area surrounding Mt Watermark, within the 'red soils' of higher ground above the black soils of the Liverpool Plains.

The project would produce mainly (85%) metallurgical coal (semi-soft coking coal) which is used mainly in steel and other metal manufacture, as well as some (15%) thermal coal which is used in electricity generation.

1.2 Location and Setting

The project site is located within the Liverpool Plains, a vast area of grassland plains located in the North West Slopes region of NSW. The Plains cover a total land area of approximately 1.2 million hectares, bordered by the Nandewar Range to the north, the Great Dividing Range to the east, the Liverpool Ranges to the south, and the Warrumbungle Range to the west (see Figure 2).

The area is drained by the Namoi River and its tributaries, including the Mooki River which drains the project site (see Figure 3). These rivers flow generally in a northerly to north-westerly direction, with the Namoi flowing through Gunnedah and Narrabri before turning west to join the Darling River system. There are a number of depressions across the Plains which remain as lakes for long periods after heavy rains. One such ephemeral lake, Lake Goran, is located immediately to the west of the project site and EL (see Figure 1).

The Plains also comprise a number of localised hills and high points, which arise as islands out of the grassland plains. The project site is largely centred around one of these topographic high points, taking in the areas of Mt Watermark, Black Mountain, Smokey Point and Springhurst Hill (see Figure 4). Mt Watermark has an elevation of 512 metres AHD, whereas the surrounding plains areas have an elevation of around 270 metres AHD.

[3] BHP Billiton is yet to lodge its Environmental Impact Statement for the Caroona project.

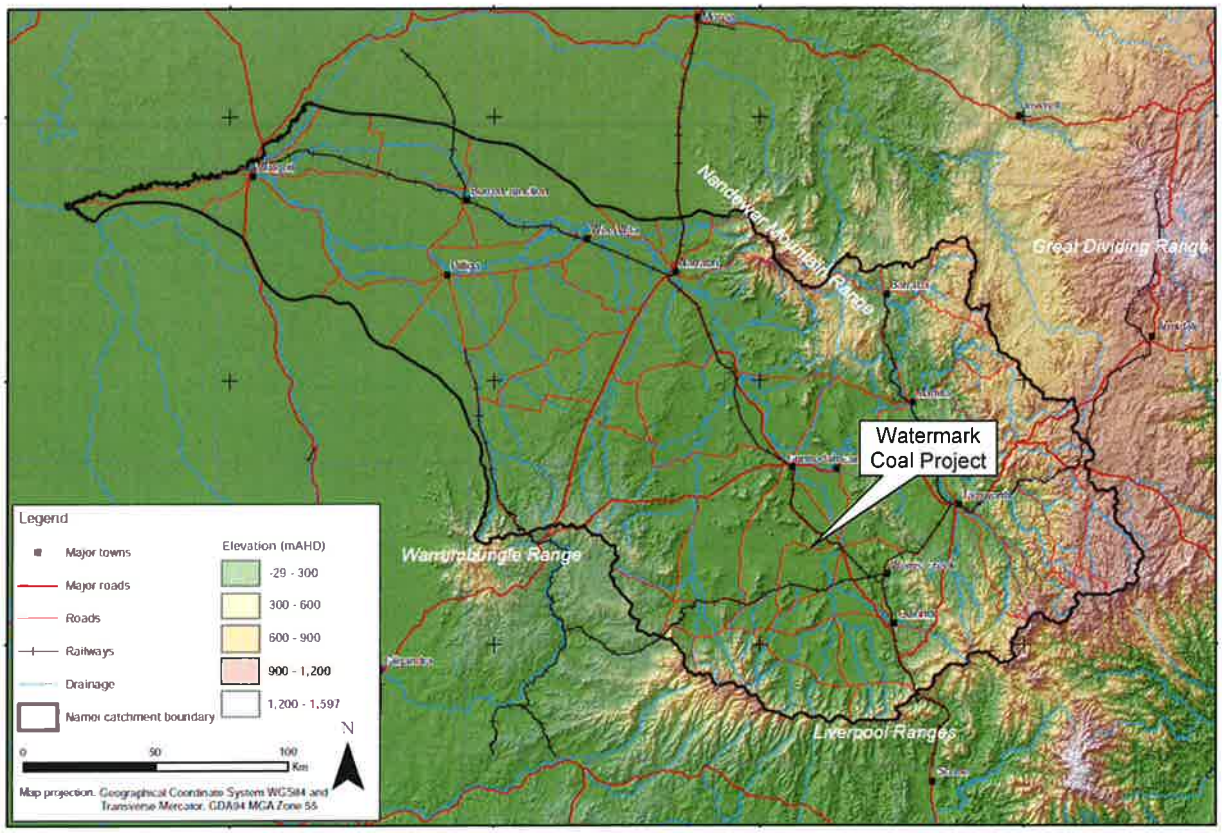

Figure 2: Regional Topography (Source: Namoi Water Study)

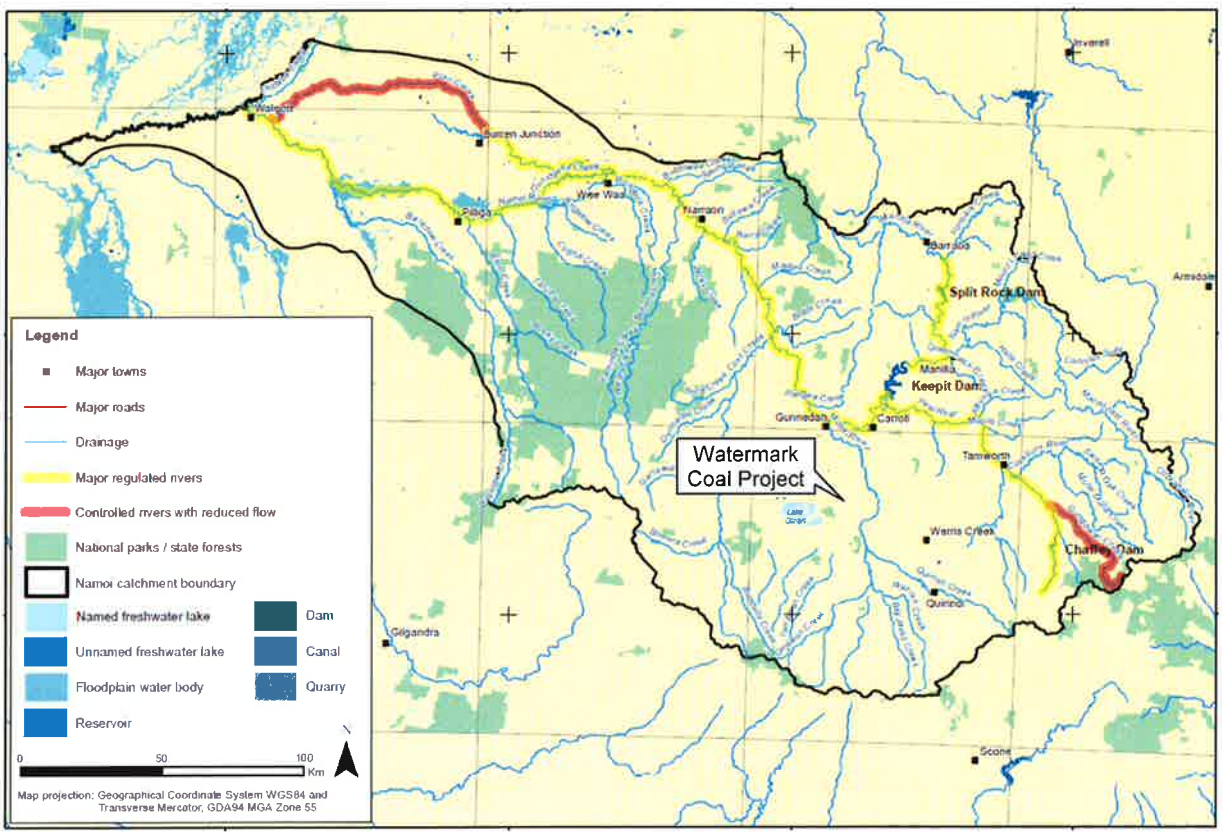

Figure 3: Namoi Catchment and Waterbodies (Source: Namoi Water Study)

The main urban centres in the Liverpool Plains include Gunnedah, Narrabri, Quirindi, Werris Creek and Tamworth. The closest urban settlement to the project site is the small village of Breeza, located on the Kamilaroi Highway approximately 3 kilometres east of the project site. The village has a population of approximately 63 and has only limited services and facilities, including a community hall, fire station, playground, Cenotaph, cemetery and grain silos. It does not have any commercial facilities, although the abandoned general store is still a landmark in the town.

The dominant land use on and surrounding the project site is agriculture, with cropping dominant on the heavily textured black soils of the floodplain and grazing more prevalent on the lightly textured red soils of the higher ground. Cropping includes a range of cereal grains such as wheat, sorghum and barley, along with cotton which is grown widely throughout the district. Land use in the surrounding area is shown on Figure 5, and land ownership is shown on Figure 6.

Breeza State Forest is located immediately to the south-west of the project site, and covers an area of approximately 1,364 hectares. The Forest is currently used for production of white cypress pine, white box and iron bark logs, with the pines last logged in the 1980s. The Forest is not proposed to be directly disturbed by the project.

Shenhua owns all of the land within the project disturbance area, and all land within the wider project boundary, except for a parcel of Crown land on Mt. Watermark.

There are no other mines currently operating in close proximity to the project site, although there are a number of coal mines in the region (as discussed in Section 3.1). Some historical coal mining occurred within the eastern portion of the project site between 1914 and 1916, although this was limited in scale.

BHP Billiton's Caroona EL is located directly to the south of the Watermark EL. Although BHP is yet to finalise its Environmental Impact Statement for the Caroona project, it is understood that the project would be an underground mining operation targeting coal from the ridge country surrounding Caroona and Spring Ridge.

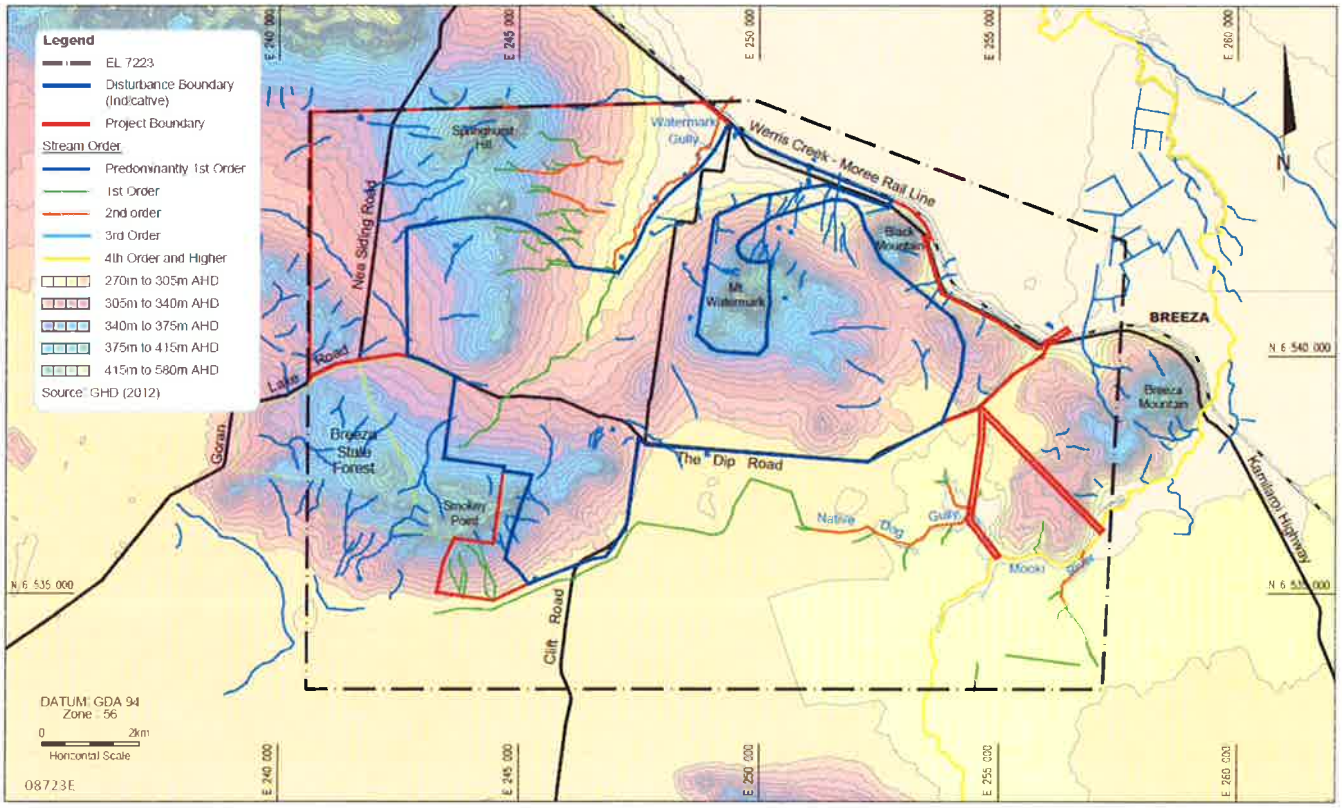

Figure 4: Local Topography and Drainage

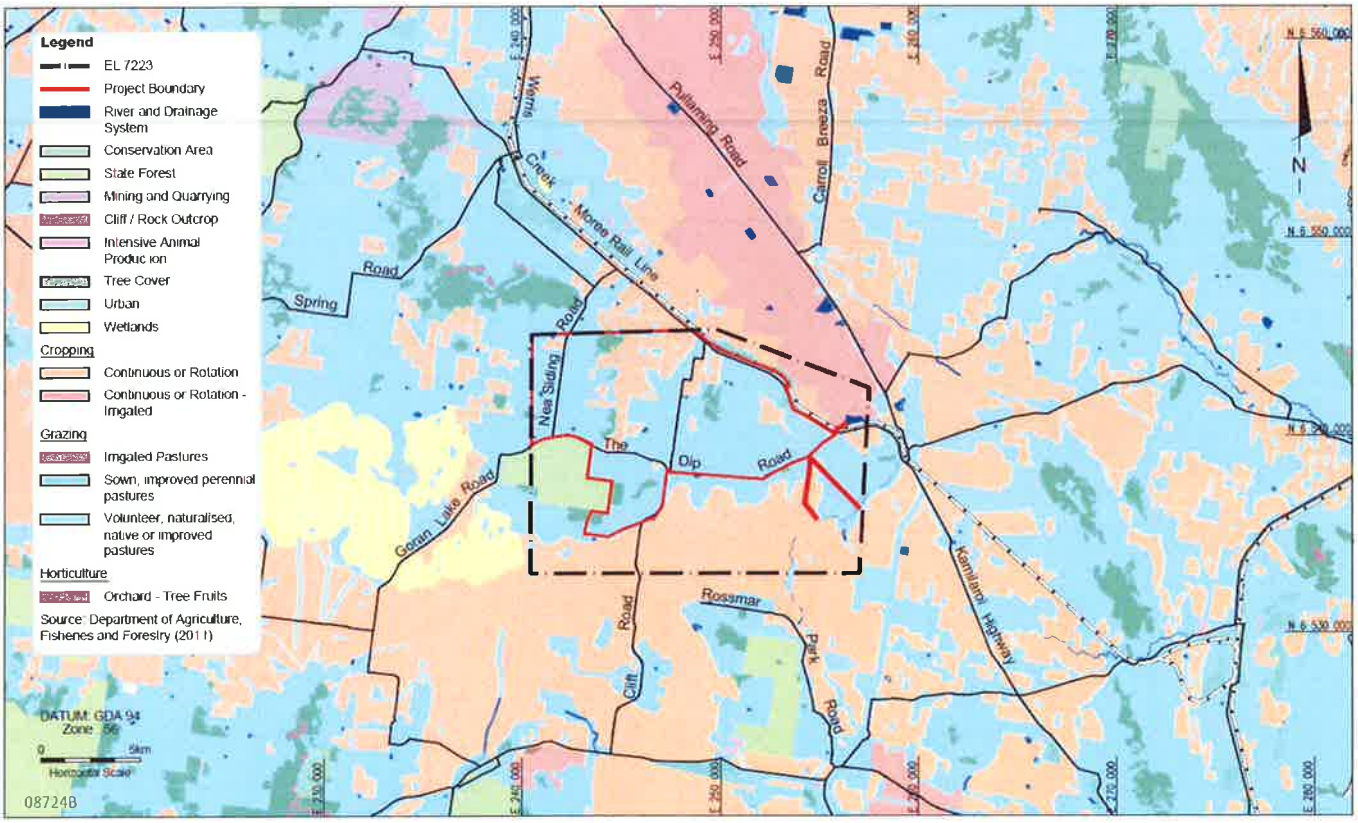

Figure 5: Land Use

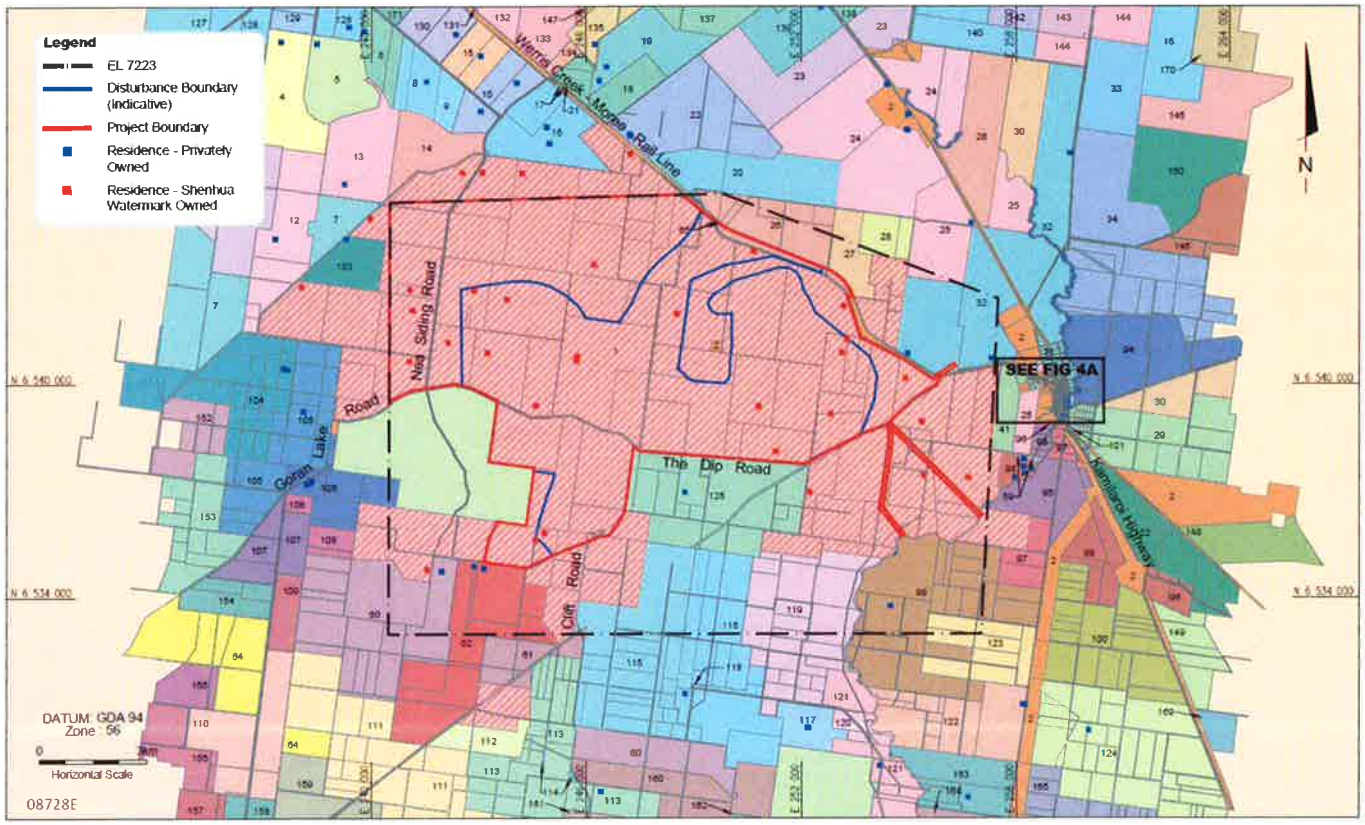

Figure 6: Land Ownership

2. PROPOSED PROJECT

Shenhua is proposing to develop a new open cut mine in the area surrounding Mt Watermark on the Liverpool Plains. Extracted coal would be processed in an on-site Coal Handling and Preparation Plant (CHPP) before being transported to the Port of Newcastle for export via a new rail spur from the Werris Creek – Moree Rail Line.

The project is outlined in the Environmental Impact Statement (EIS) for the development (see Appendix I). The project as originally proposed includes a number of measures to avoid and/or minimise key environmental impacts, including:

- avoiding disturbance of the black soil plains, with a minimum buffer of 150 metres provided to any alluvial black soils;
- avoiding disturbance of the Upper Namoi alluvial aquifers, with a minimum of 900 metres horizontal buffer provided to the highly productive Gunnedah Formation;
- avoiding disturbance of Mt Watermark and Breeza State Forest;
- minimising final voids, with 2 of the 3 mining pits backfilled and the residual void located distant from the black soils and Gunnedah Formation; and
- reducing impacts on biodiversity, Aboriginal sites and agricultural land, and reducing noise and dust impacts, through mine plan adjustments and other measures.

Since the exhibition of the EIS, Shenhua has made some additional changes to further reduce the project's environmental impacts. These are detailed in the Response to Submissions (RTS) for the project (see Appendix G), and include:

- using an 'optimised' mining fleet comprising larger and fewer mining trucks to reduce noise and dust emissions; and
- amending the biodiversity offset strategy to avoid higher value agricultural land and increase ecological benefits.

The major components of the project as amended are summarised below in Table 1, and depicted in Figures 7 to 14.

Table 1: Key Components of the Project

Aspect	***Description***
Project Summary	**Development of an open cut coal mine, involving:** • **extracting coal from 3 open cut pits, identified as the Eastern Mining Area, Southern Mining Area and Western Mining Area;** • **constructing and operating a range of infrastructure to support the mine including a coal handling and preparation plant (CHPP);** • **transporting product coal to the Port of Newcastle for export via a new rail loop, rail spur and related infrastructure;** • **progressively rehabilitating the site; and** • **establishing and maintaining biodiversity offset areas and conservation areas to address biodiversity and heritage impacts**
Project Life	30 years
Mining and Reserves	Extraction of 268 million tonnes of run-of-mine coal to produce about 159 million tonnes of product coal, comprising: • 133 million tonnes of metallurgical coal with a low ash content (10%); and • 26 million tonnes of thermal coal with a high ash content (18%). The total coal resource in the EL is estimated at 1.8 billion tonnes (including coal under the black soil plains)
Target Coal Seams	Hoskissons and Melvilles Seams. There are deeper coal seams present on the site which are beyond the 30 year mining life (and are not subject to extraction in the current project). There are also shallower coal seams present, however these have a high ash content and are considered uneconomic
Mining Method	Truck and shovel, with cast blasting
Production Rate	Up to 10 million tonnes of run-of-mine coal a year, for up to 6.3 million tonnes of product coal a year

Aspect	Description
Coal Processing & Transport	Coal would be processed on site in the CHPP. Product coal would be transported by rail to the Port of Newcastle for export, via a rail spur and loop from the Werris Creek – Moree Rail Line. The project would generate an average of 8 (and a peak of 16) train movements a day (in + out)
Overburden and Waste Management	Up to 1,629 million bank cubic metres of overburden material would be moved and 108 million tonnes of coal reject and tailings produced. Overburden would initially be placed in out-of-pit emplacements adjacent the mining areas, followed by in-pit emplacement. Coal reject and tailings from the CHPP would be dewatered and co-disposed in the overburden emplacement areas
Infrastructure	Key infrastructure includes: • the CHPP (with a throughput capacity of 10 million tonnes of ROM coal); • administration, workshop and related facilities; • 5 km rail spur and rail loop from the site to the Werris Creek – Moree Rail Line; • 5 km mine access road from the site to the Kamilaroi Highway (generally adjacent to the rail spur), including a 2 km deviation of the Kamilaroi Highway and overpass over the mine rail spur; • water management infrastructure, including a pipeline and pumping station/s to transfer water from the Mooki River and/or a licensed borefield; and • power and communications infrastructure
Roadworks	Kamilaroi Highway deviation and railway overpass. Closure of some local roads including Court Lane, Rowarth Road, Whitby Road, part of The Dip Road and other unnamed paper roads in the project boundary
Employment	600 operational staff and 600 construction workers (during 18 month construction period)
Capital Investment Value	$850 million
Hours of Operation	24 hours a day, seven days a week (construction and operation)
Rehabilitation and Biodiversity Offsets	The project would disturb 4,084 hectares of land. Of this, about 789 hectares comprises listed endangered ecological communities (EECs), 148 hectares comprises other native woodland and 96 hectares is assessed as comprising Biophysical Strategic Agricultural Land (BSAL). The project disturbance area would be progressively rehabilitated, including the complete backfilling of the Eastern and Southern mining areas, and partial backfilling of the Western Mining Area. The final void in the Western Mining Area (with a depth of 80 metres) would be strategically located to be remote from the black soil plains and to enable access for potential future underground mining (subject to separate approval). The rehabilitated project disturbance area would comprise 2,057 hectares of constructed EEC, 327 hectares of other native woodland vegetation, at least 1,000 hectares of Class III land dedicated to agriculture, and a 100 hectare final void. The rehabilitation strategy and biodiversity offset strategy would ultimately provide for the long term conservation of some 11,186 hectares of land, including 7,972 hectares of EEC

Figure 7: Project Layout

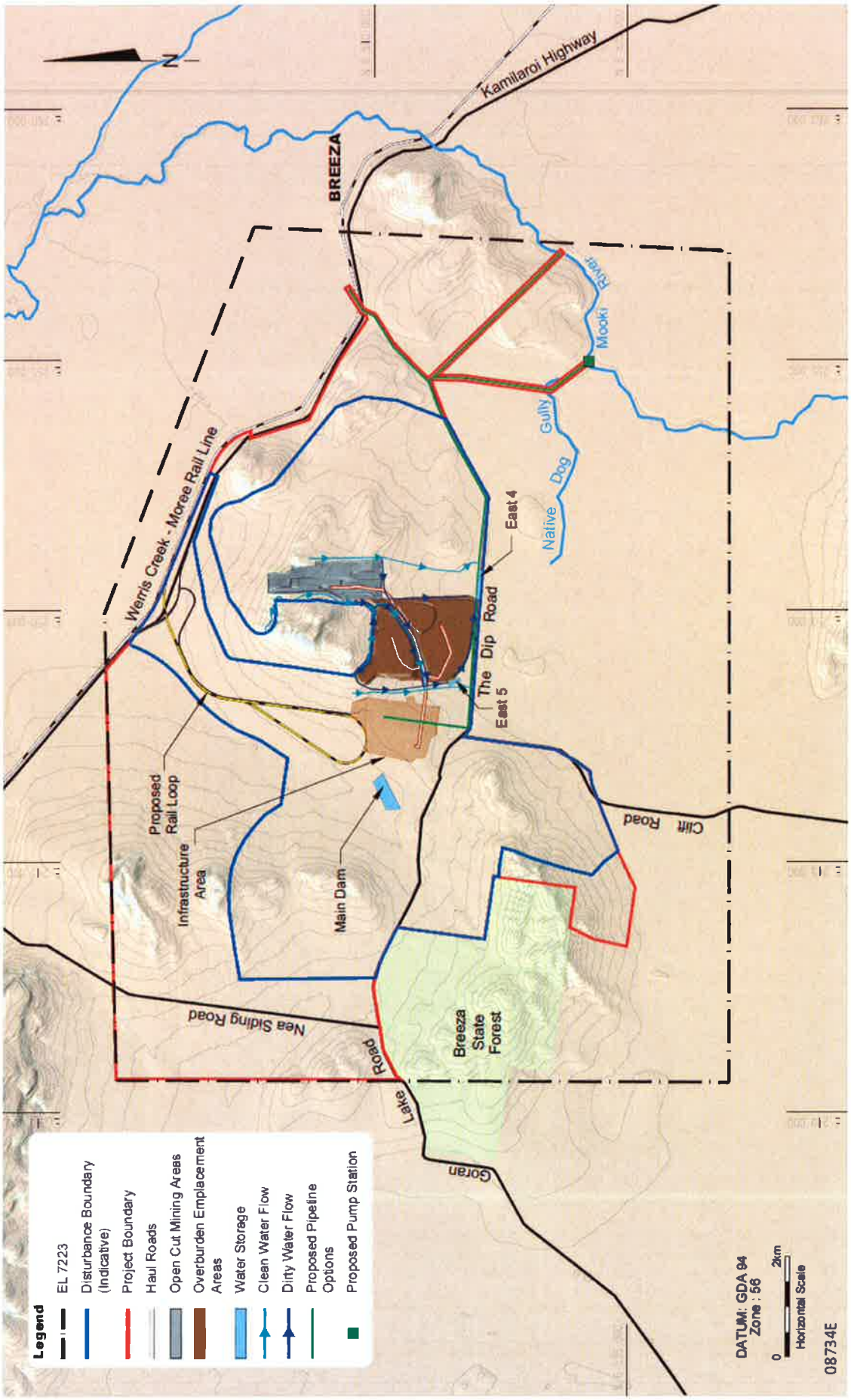

Figure 8: Year 2 Mine Plan

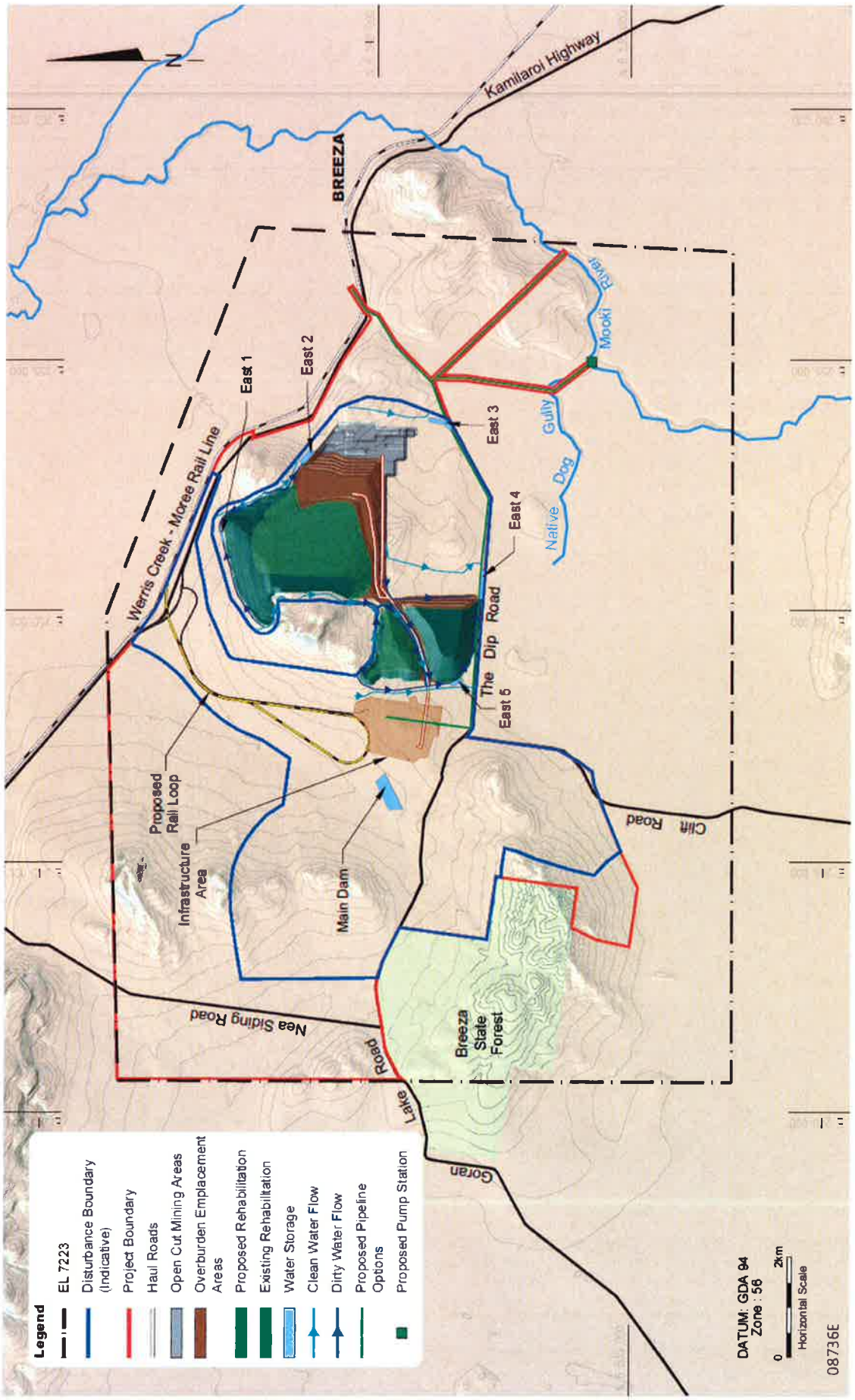

Figure 9: Year 10 Mine Plan

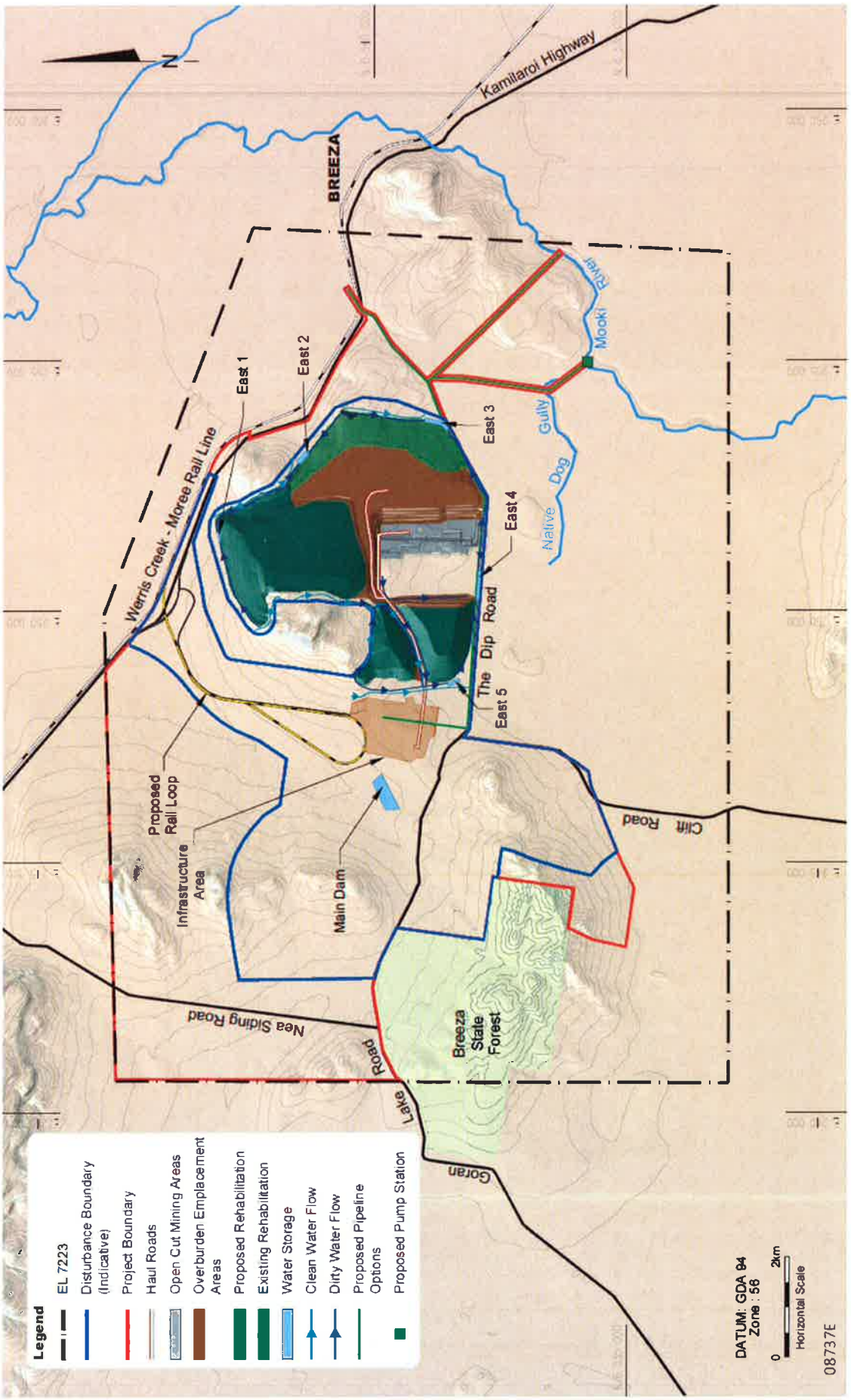

Figure 10: Year 15 Mine Plan

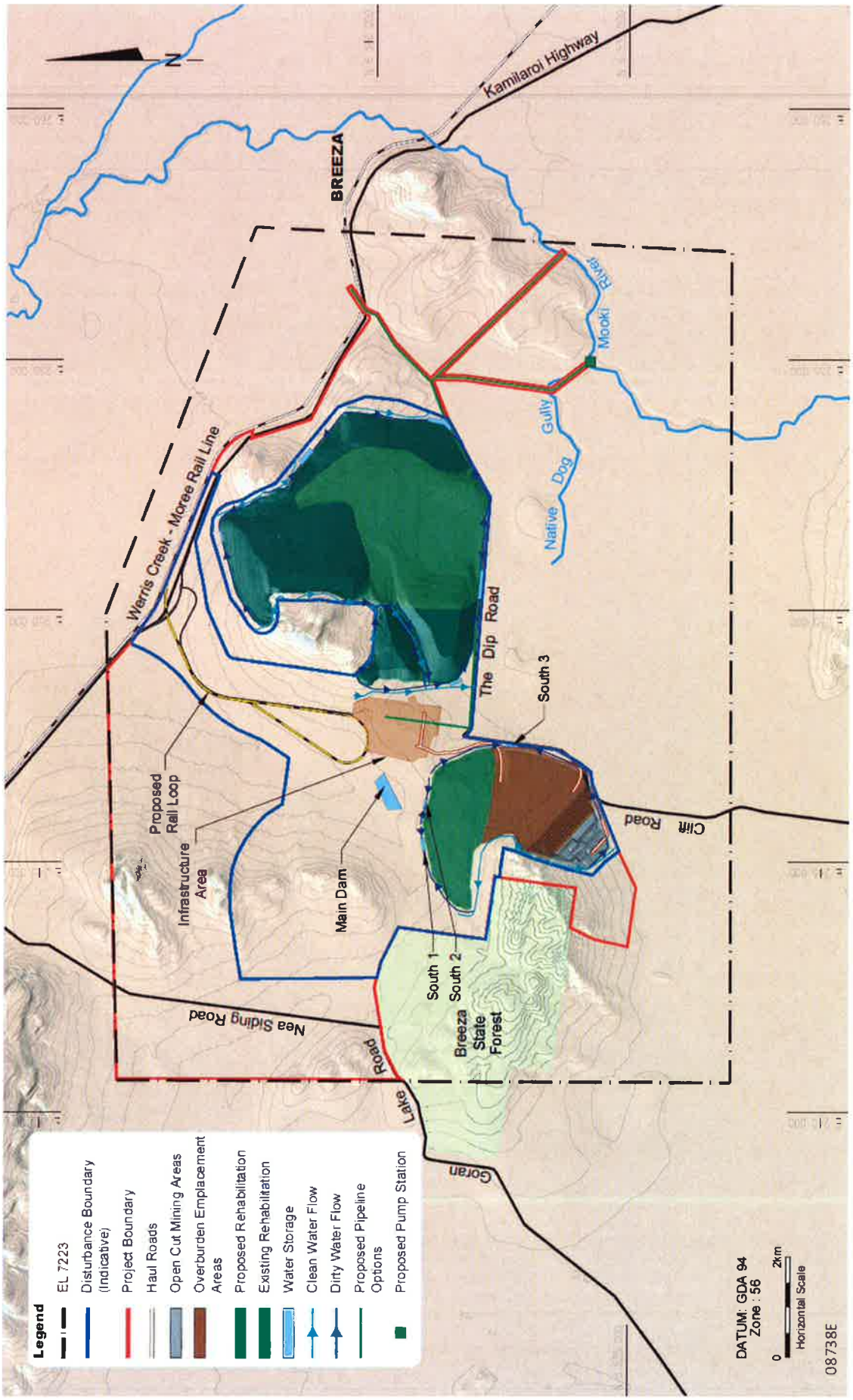

Figure 11: Year 21 Mine Plan

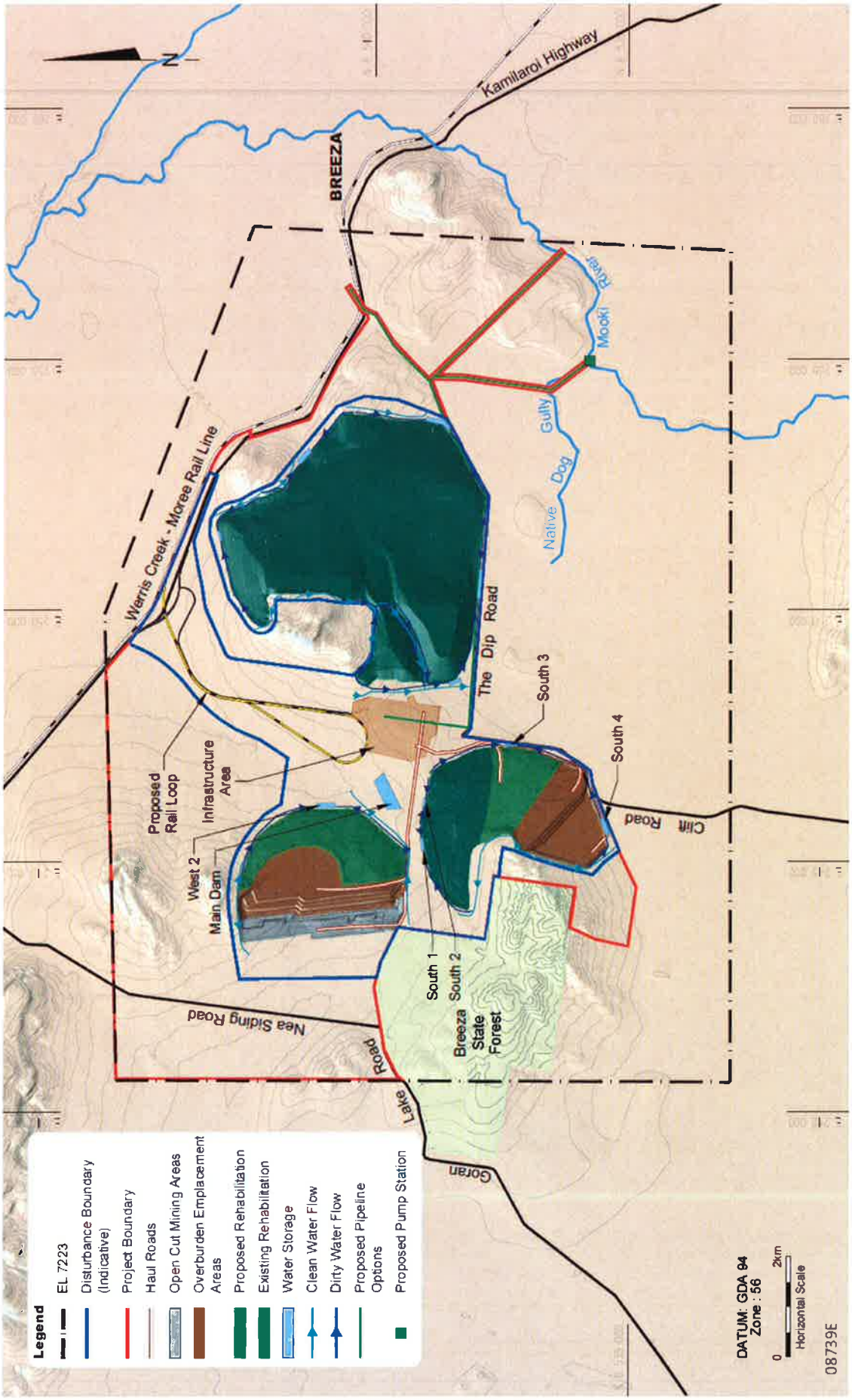

Figure 12: Year 25 Mine Plan

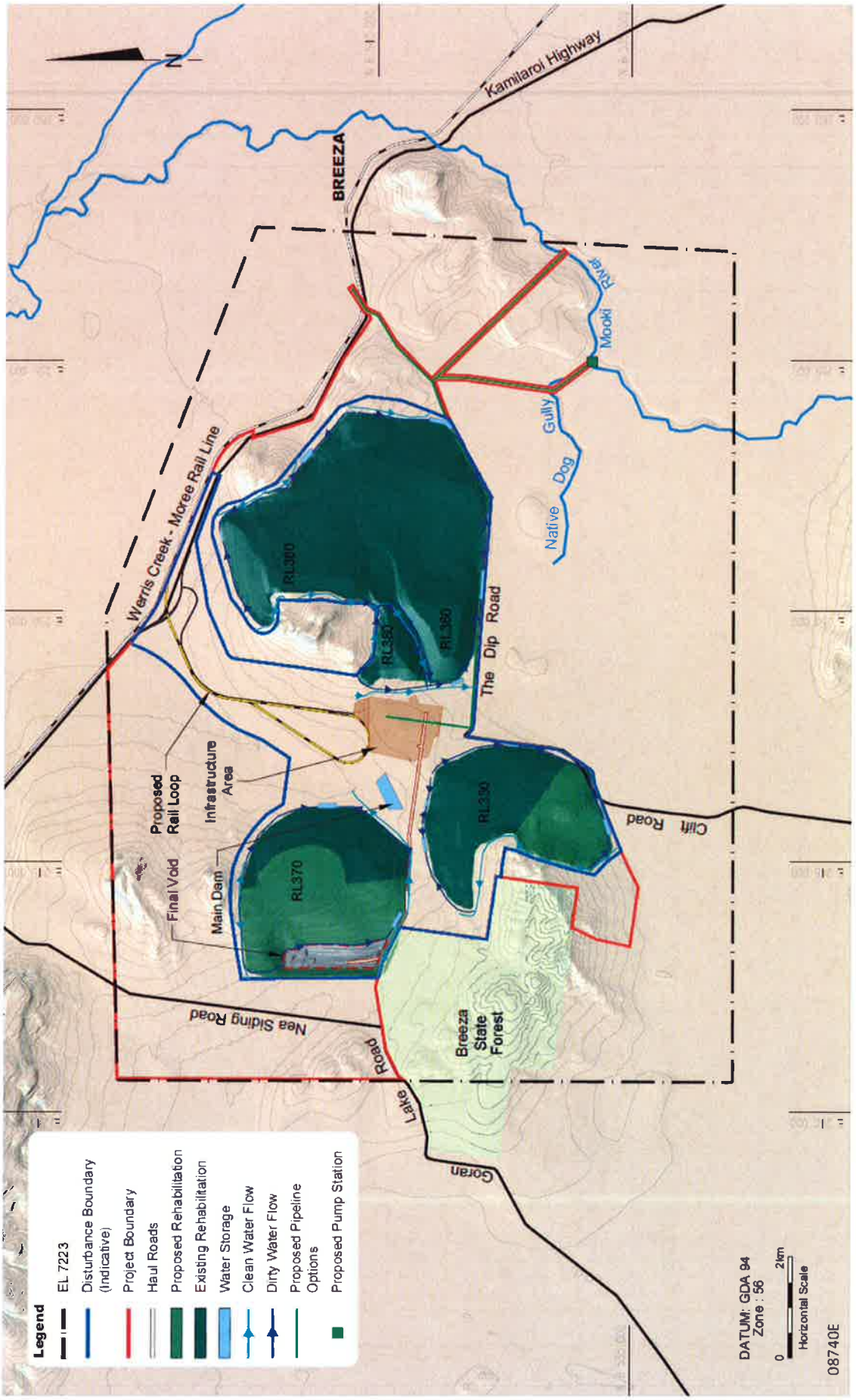

Figure 13: Year 30 Mine Plan

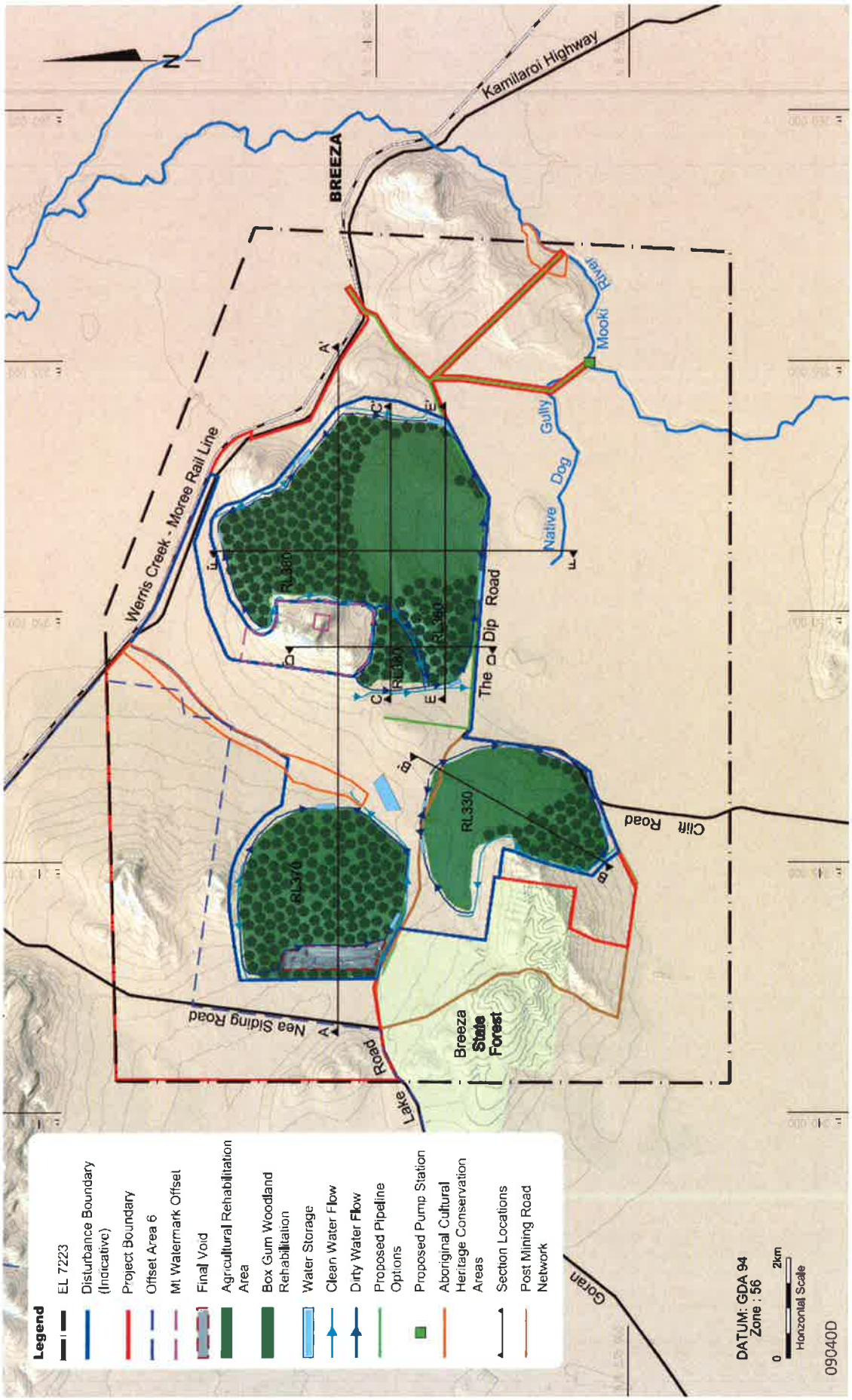

Figure 14: Conceptual Final Landform

3. STRATEGIC CONTEXT

3.1 NSW Coal Industry

Overview

The Department of Planning & Environment (the Department) recognises that society is currently heavily reliant on coal to meet its basic energy needs, both at a domestic and international level. Coal provides around 90% of NSW's electricity needs, 75% of Australia's electricity needs and 40% of the world's electricity needs.

NSW has a large and mature coal industry based around substantial coal resources. These resources are spread over several geological basins, with the key basins forming a broad corridor between the Surat Basin in inland Queensland, through the Gunnedah Basin in the New England region, and to the Sydney Basin which extends to the coast between Newcastle and Wollongong. There are also a number of other small isolated basins, such as the Oakland, Gloucester and Clarence-Moreton Basins (see Figure 15).

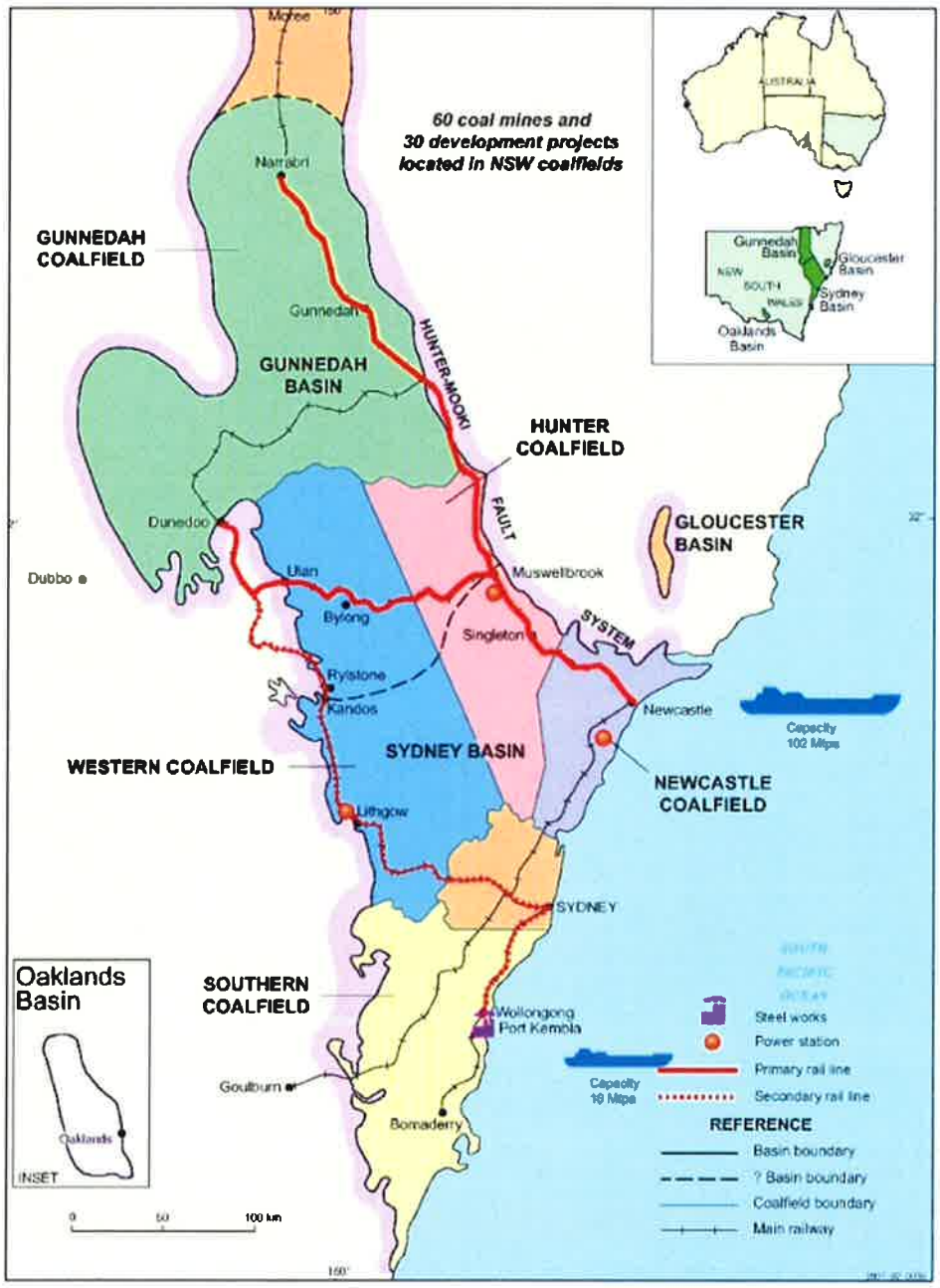

Figure 15: NSW Coalfields and Associated Infrastructure

There are 6 coalfields within these basins where coal is currently being extracted and produced. In 2010-11, these coalfields produced approximately 157 million tonnes of saleable coal, including:

- Hunter Coalfield – approximately 60% of NSW production;
- Western Coalfield – approximately 18% of NSW production;
- Newcastle and Gloucester Coalfields – approximately 12% of NSW production;
- Southern Coalfield – approximately 7% of NSW production; and
- Gunnedah Coalfield – approximately 3% of NSW production.

Coal Quality and Markets

The industry produces mainly thermal coal (80%) for use in power generation, but also the more highly valued metallurgical coal (20%) for use in the steel industry. Thermal coal is also known as steaming coal, and metallurgical coal is also known as coking coal or PCI coal. As outlined in Section 2, most (about 85%) of the coal produced by the Watermark Coal Project would be the more highly valued metallurgical coal.

Over the past decade, NSW coal production has grown steadily due to growing demand from Asian export markets (see Figure 16). The majority of NSW coal is exported, with 122 million tonnes of saleable coal, or around 79% of market production, going overseas in 2010-11. NSW coal is currently exported to around 18 countries, with the top 5 destinations in 2010/11 being:

- Japan – approximately 50.3% of exports;
- Republic of Korea – approximately 17.5% of exports;
- Taiwan – approximately 13.5% of exports;
- China – approximately 9.3% of exports; and
- India – approximately 3.5% of exports.

China has become an increasingly important market for NSW coal exports in recent years, with exports to the country increasing almost tenfold since 2007-08. Most of the coal produced from the Watermark Coal Project is likely to be exported to China, or to other Asian export markets.

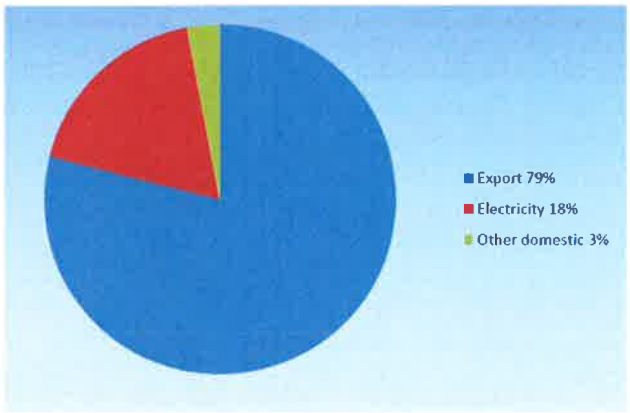

Figure 16: NSW Coal Markets

The main domestic users of coal produced in NSW include 8 power stations near Singleton (Bayswater, Liddell and Redbank), Lithgow (Mt Piper and Wallerawang) and on the Central Coast (Eraring, Vales Point and Munmorah); and the 2 steelworks at Port Kembla and Whyalla in South Australia.

Coal Infrastructure

Infrastructure associated with the NSW coal industry includes a network of railways and rail facilities, and port facilities at Newcastle and Port Kembla. The Hunter Valley Coal Chain – taking in the Port of Newcastle and the mines and infrastructure which deliver coal to the port – is the largest coal export operation in the world. The rail network is shown on Figure 17.

Figure 17: Hunter Valley Coal Chain

Mining Land Use and Water Use

Coal and mineral production titles (including open cut and underground mines and surrounding lease areas) cover approximately 0.48% of the NSW land mass area, or around 385,250 hectares. The actual disturbance area due to mining is estimated at approximately 0.1% of the NSW land area, or just over 80,000 hectares.

The Australian Bureau of Statistics estimates that mining in NSW consumed approximately 1.5% of total water used in NSW in 2010-11, or 78 of the total 5,041 gigalitres consumed during the year. Water use by other land users is detailed in Section 3.2 below.

Economic Significance

NSW is the most important mineral producing State in Australia after Western Australia and Queensland, with NSW generating approximately 12% of the gross value of mineral production in Australia in 2007-08. This contribution has dropped from levels of about 14% in the early 2000's, largely due to higher relative production increases in other States over this time.

The majority of black coal in Australia is produced in NSW and Queensland, with NSW's share of all Australian coal production approximately 37% in 2009-10. This share has decreased from around levels of around 50% in the 1960s, largely due to higher relative production increases in Queensland over this time.

Coal is by far NSW's biggest mineral commodity in terms of value, with the industry generating around 80% of the State's mining income. Total coal production was worth some $16.2 billion in 2010-11, compared to a total production from all minerals in NSW of approximately $20 billion.

Coal is also the single largest export in revenue terms from the State, with exports valued at around $14 billion in 2010-11. This represents around 25% of the State's export revenue. The value of NSW coal exports has more than tripled in the last decade. This is likely continue to grow, particularly with the increasing capacity in port facilities at Newcastle, and increasing demand from Asia.

Domestically, coal supplies 90% of the State's electricity and also provides essential support to the steelworks at Port Kembla and the aluminium smelters in the Hunter.

As at June 2011 the NSW coal mining industry employed 21,000 people. The industry indirectly creates up to another 70,000 jobs in mine and non-mine related industries. Many regional towns and communities are dependent on these jobs.

Coal mining currently makes a significant contribution to public revenue for the Commonwealth, State and local governments. Royalties to the NSW Government generated from coal and exceeded $1.2 billion in 2010-11.

Gunnedah Coalfield

Coal mining has been undertaken in the Gunnedah Basin since the 1880s. Although it is currently one of the lowest producing coalfields in NSW, production has been increasing in recent years, with saleable coal production increasing by 33% year-on-year in 2010-11, to 7.6 million tonnes.

There are currently 6 operating mines in the coalfield, all of which are producing relatively small amounts of coal compared to some of the larger mines in the Hunter coalfield[4]. Current operating mines and proposed mines in the Gunnedah coalfield are shown on Figure 18 and outlined in the following table.

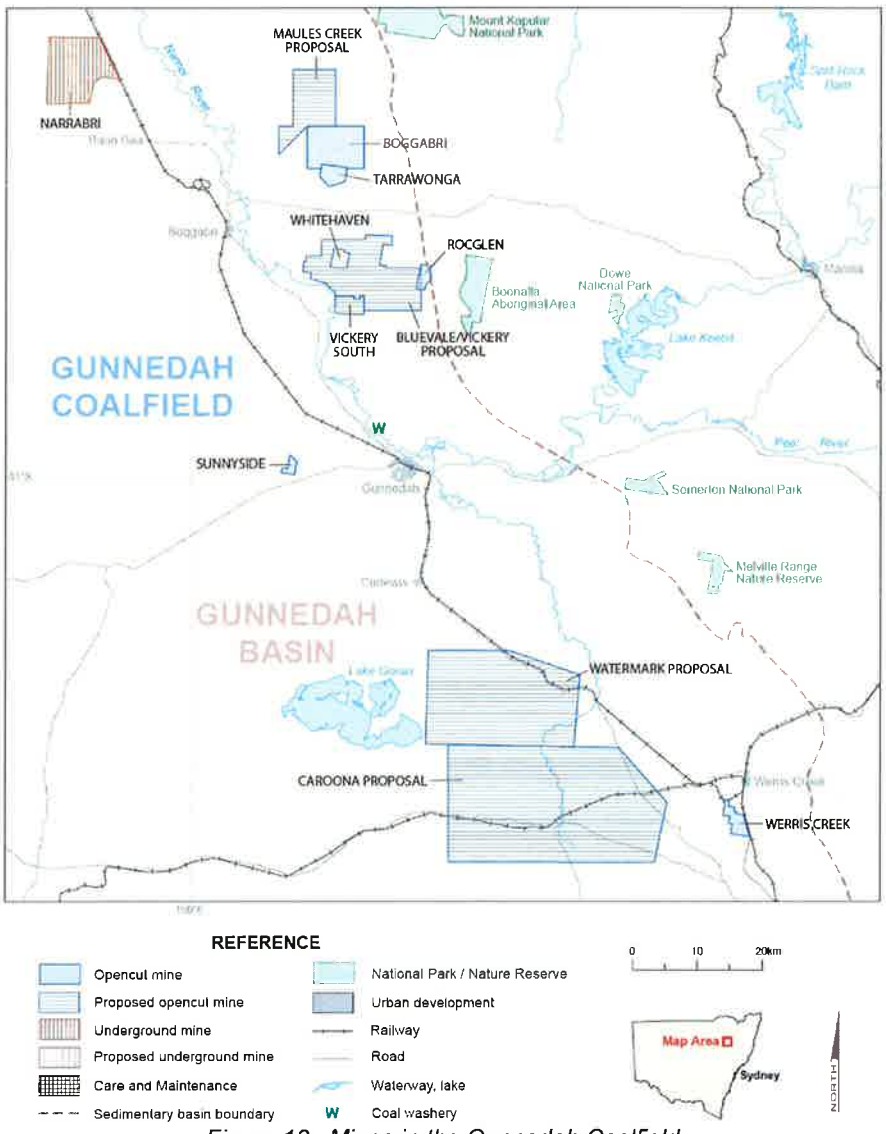

Figure 18: Mines in the Gunnedah Coalfield

[4] For example, the Mt Arthur mine (the Hunter's largest mine by production) produced almost 14 million tonnes of saleable coal in 2010-11.

Table 2: Gunnedah Coalfield Mines and Production[1]

Mine	Saleable Production 2010-11 (Mt)	Coal Reserves 2010-11 (Mt)
Boggabri open cut	2.87	135
Caroona underground proposal	-	na
Maules Creek open cut proposal	-	678
Narrabri underground	0.23	133
Rocglen open cut	0.9	13
Sunnyside open cut	0.28	28
Tarrawonga open cut	1.56	48
Vickery and Vickery south open cut proposal	-	197
Watermark open cut proposal	-	932
Werris Creek open cut	1.8	29

1 Based on DRE's 2013 New South Wales Coal Industry Profile

Within the Namoi catchment, the prospective area for open cut and underground mining (ie. anything within 400 metres of the surface) occurs in the western 60% of the catchment, with the most prospective area for open cut mines occurring in a relatively thin strip through the middle of the catchment (see Figure 19). This area tends to coincide with areas within or close to the Upper Namoi alluvium, as indicated on Figure 19.

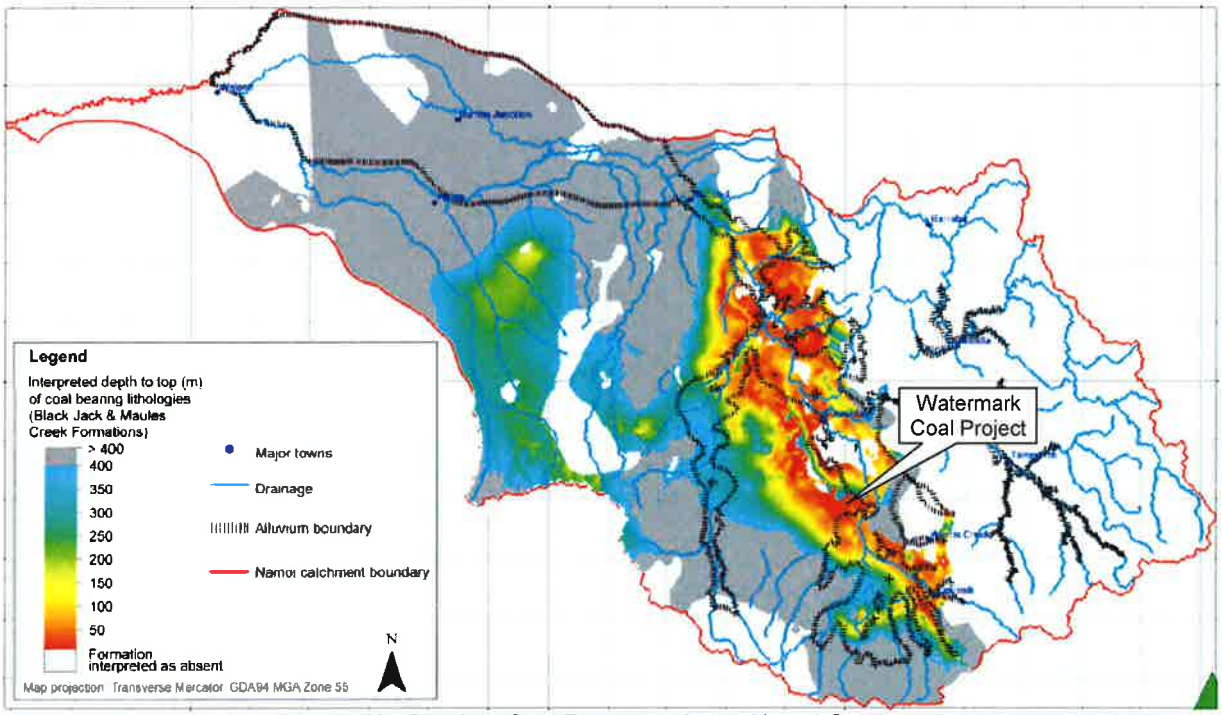

Figure 19: Depth to Coal Resources in the Namoi Catchment

3.2 NSW Agriculture Industry

Overview

The Department also recognises that a sustainable and thriving agricultural industry is critical to satisfy the basic needs of society, and to the strength of the NSW economy.

NSW has a large and diverse agricultural industry, with agricultural production in NSW representing approximately 22.7% of Australia's total agricultural production in 2010-11. NSW's proportion of Australia's total production has decreased marginally since the 1990s, which is likely the result of ongoing drought conditions, particularly between 2002 and 2009.

The gross value of agricultural production in NSW was $14.5 billion in 2010-11, or 3.4% of the NSW economy. Wheat is the most important agricultural crop grown in NSW, covering the largest area of agricultural land and comprising the largest tonnage of crop produced. Other important crops include

sugar cane, barley, sorghum, canola, cotton, oats and rice. Cattle and sheep are NSW's most important agricultural livestock commodities.

Agriculture is by far NSW's largest industry by land area, with the total area of agricultural landholding under production approximately 56.2 million hectares, or approximately 70% of the NSW land mass. Approximately 7 million hectares of this total is under production for crops, vegetables, fruit and nuts. As outlined in Section 3.1 above, active mining areas cover some 80,000 hectares, or 0.1%, of the NSW land area.

Approximately 90,000 people were employed in agriculture, fisheries and forestry in NSW in June 2011, representing approximately 2.5% of the NSW workforce. As outlined in Section 3.1, mining employs about 21,000 people directly, and around 70,000 indirectly.

The agricultural industry is the largest water user in the State, consuming 2,861 gigalitres, or 57% of the total 5,041 gigalitres consumed in 2010-11. Other major water users in NSW include the water supply industry (including supply system losses) at 18% of total consumption, households at 10% and manufacturing at 3% of total consumption in 2010-11. As outlined in Section 3.1 above, mining consumes approximately 1.5% of total water used in NSW.

The distribution of NSW agricultural land across local government areas, by total gross annual revenue for key agricultural commodities (in 2005-06), is shown on Figures 20 to 23 below. The figures show that the highest value grazing and cropping land in NSW (in terms of gross annual revenue) tends to the fairly widely spread through the New England, North West Slopes, Central West, Riverina, Southern and Murray regions. The Gunnedah and Liverpool Plains LGAs are amongst the higher value agricultural areas in the State.

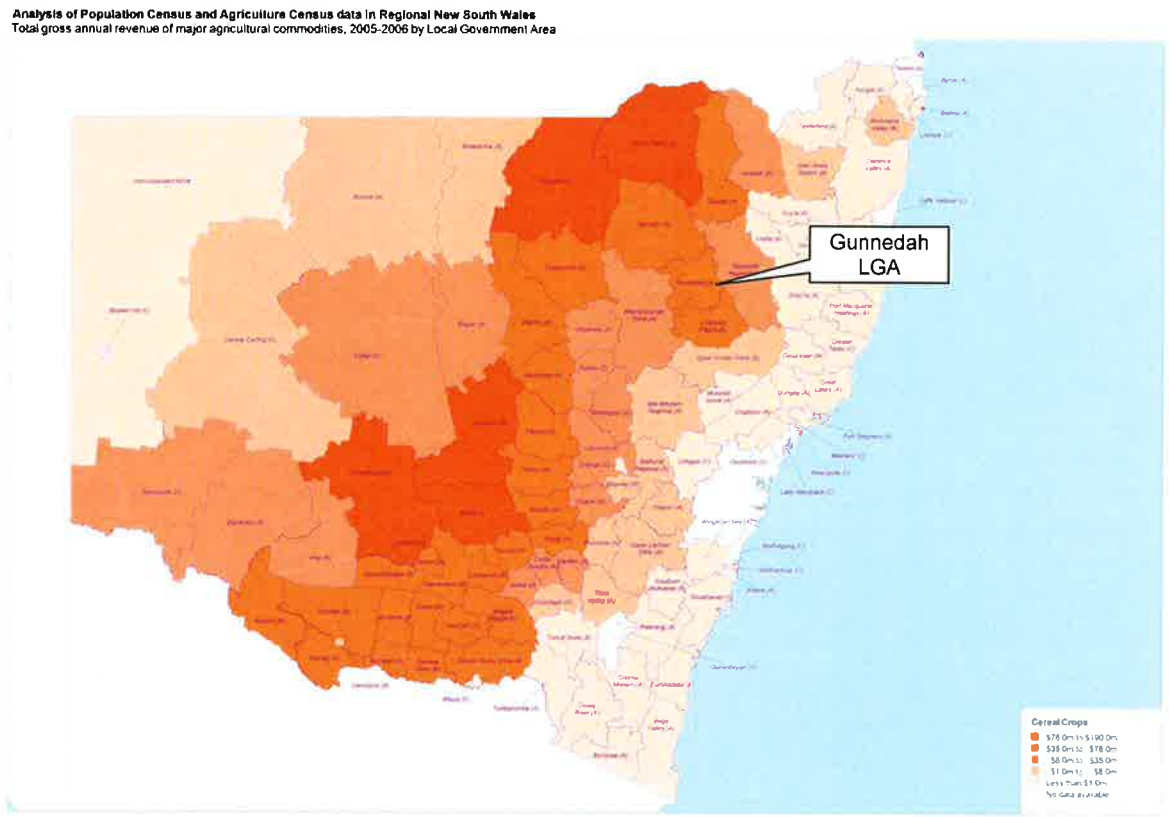

Figure 20: NSW Agricultural Commodity Map – All Agriculture (Source: DPI)

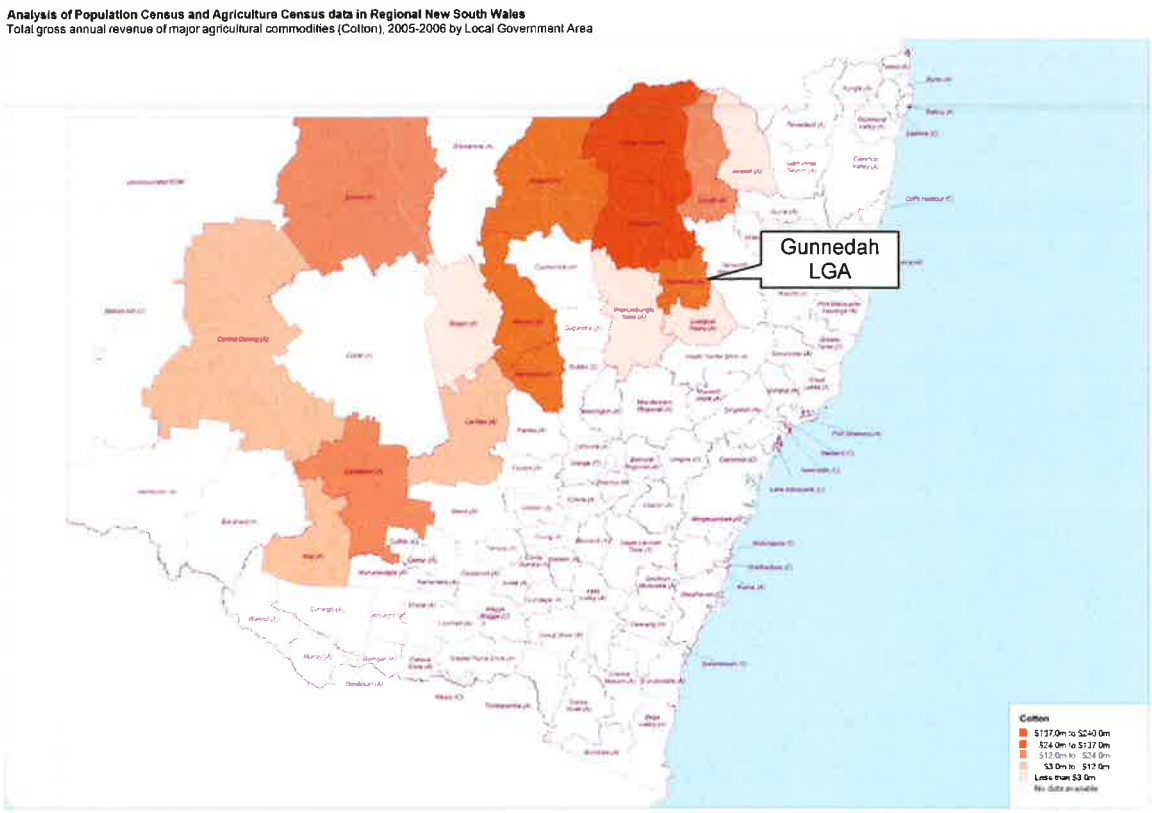

Figure 21: NSW Agricultural Commodity Map – Cotton (Source: DPI)

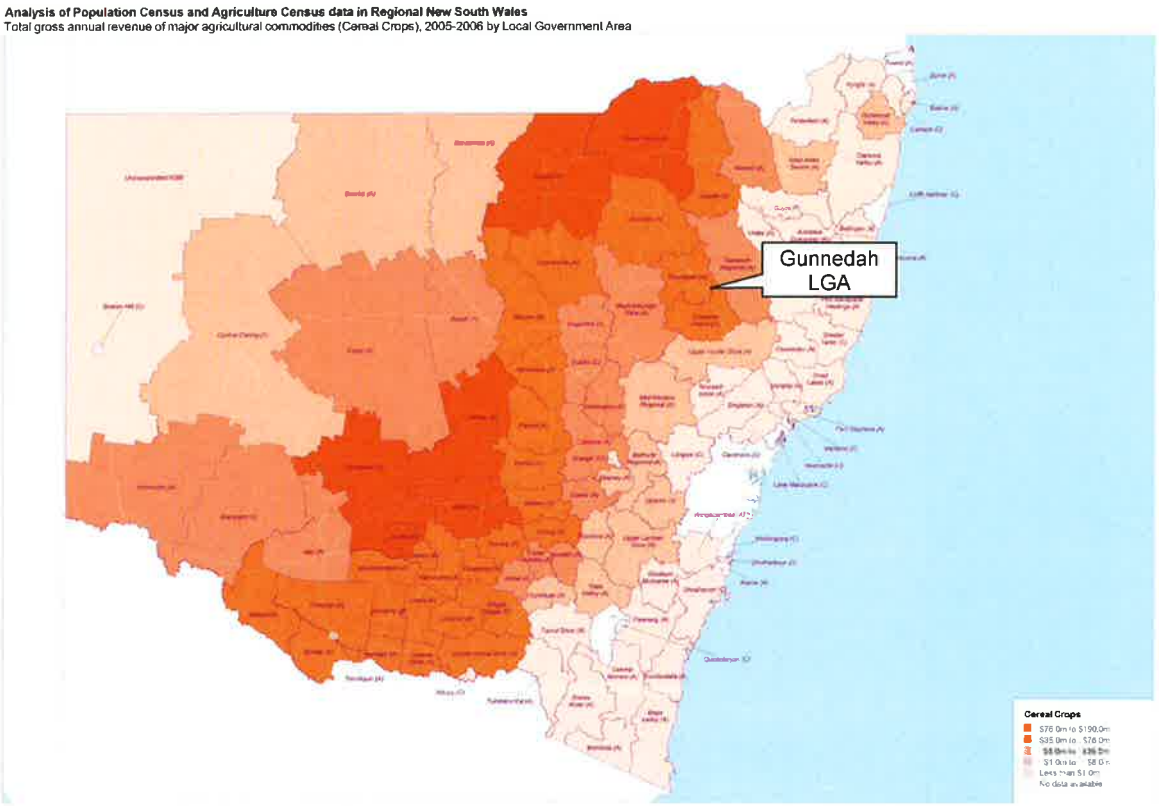

Figure 22: NSW Agricultural Commodity Map – Cereal Crops (Source: DPI)

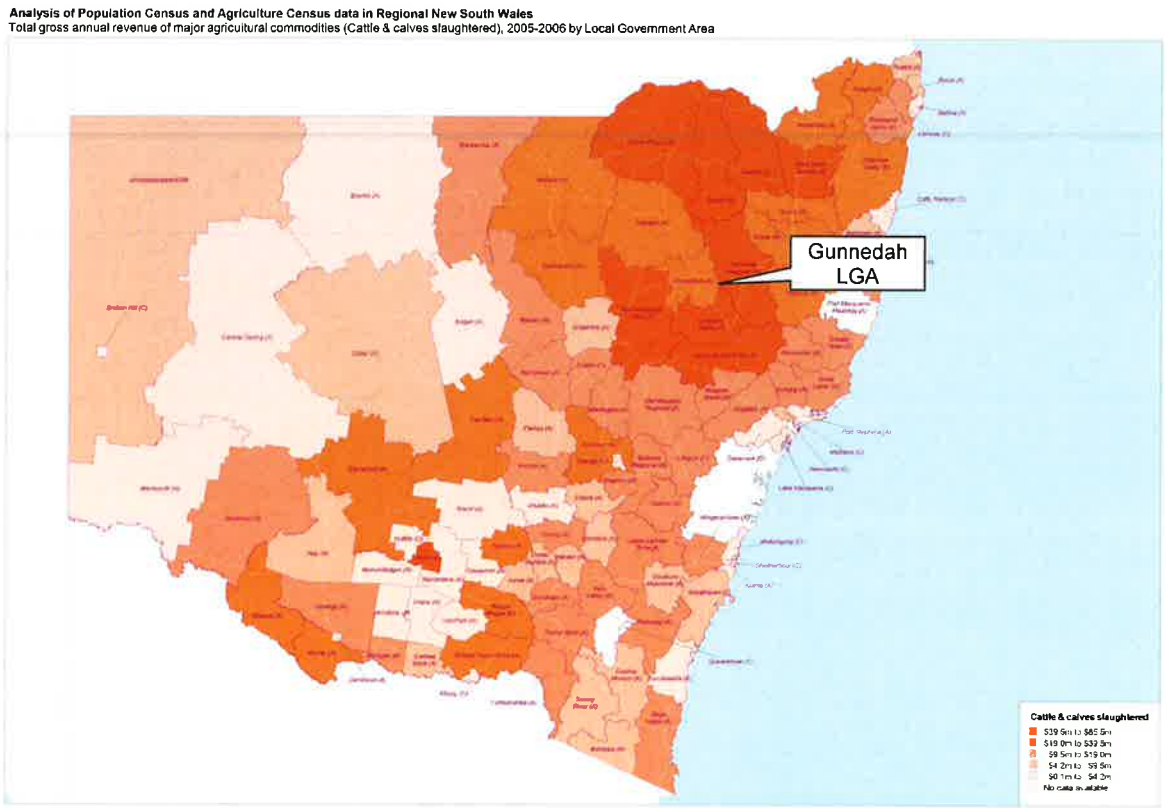

Figure 23: NSW Agricultural Commodity Map – Cattle (Source: DPI)

3.3 Strategic Regional Land Use Policy

In September 2012, the NSW Government released its *Strategic Regional Land Use Policy*, which sets out a range of new policy initiatives aimed at balancing growth in the mining and coal seam gas (CSG) industries with the need to protect important agricultural land and water resources. The policy package consists of:

- a suite of initiatives to better regulate mining and CSG exploration, including requirements for community consultation at the exploration stage;
- creation of a Land and Water Commissioner to oversee the exploration process;
- preparation of comprehensive Strategic Regional Land Use Plans (SRLUPs) for the Upper Hunter and New England North West regions, which amongst other things identify and map strategic agricultural land, including Biophysical Strategic Agricultural Land (BSAL) and Critical Industry Clusters (CICs) for the equine and viticulture industries;
- introduction of a Gateway process, including establishment of an expert Gateway Panel, to independently assess the impacts of mining and CSG projects on strategic agricultural land before proposals can proceed to the DA stage;
- a statewide Aquifer Interference Policy, to protect key groundwater aquifers across the State;
- the requirement for Agricultural Impact Statements (AIS) for all mining and CSG projects; and
- two new codes of practice for the CSG industry, including a ban on the use of BTEX chemicals in drilling and hydraulic fracturing, and a ban on the use of evaporation ponds for the disposal of water associated with petroleum production.

In February 2013, the NSW Government announced a package of additional measures to protect residential areas and CICs from CSG activity. These include:

- prohibition from CSG exploration and production within and under residential areas and CICs, and within 2 kilometres of residential areas;
- establishing the EPA as the lead regulator of environmental and health impacts of CSG activities, with responsibility for compliance and enforcement;
- establishing an office of CSG regulation within the Department of Trade and Investment to enforce other regulations;
- tasking the Chief Scientist and Engineer to conduct an independent review of all CSG activities in NSW; and

- requiring all CSG exploration, assessment and production to hold an Environment Protection Licence.

The Director-General's Requirements (DGRs) for the Watermark Coal Project require the EIS for the project to be prepared in accordance with these new policy requirements (where applicable), including the requirement for an AIS and consideration of the project against the aquifer interference policy and the SRLUP for the New England North West region. Further, the project was referred to the Gateway Panel for advice in accordance with the transitional provisions of the policy.

3.4 New England North West Strategic Regional Land Use Plan

The New England North West SRLUP was published in September 2012, and aims to provide a framework for implementing the NSW Government's commitment to balancing strong economic growth in regional NSW with the protection of the State's most valuable agricultural land and sustainable management of its natural resources.

The SRLUP identifies a total of over 1.5 million hectares of mapped BSAL in the New England North West region, and notes that the region is one of the most highly productive agricultural regions in the State, generating $1.8 billion of agricultural commodities in 2006. It also recognises that the black soils of the Liverpool Plains are some of the most fertile in Australia.

The Plan also recognises that the coal industry is rapidly developing in the region and a key driver for the local economy, with global coal demand reliably forecast to continue to increase significantly. The Plan identifies that, of the 1.5 million hectares of mapped BSAL in the region, some 1 million hectares also contains an available coal resource.

In this regard, the SRLUP acknowledges that the potential for land use conflict exists, and that one of the key challenges facing the region is ensuring an appropriate balance between competing land uses – particularly achieving co-existence where possible between mining, CSG development and agriculture.

To address these challenges, the SRLUP outlines a range of mechanisms and actions, which are generally consistent with the Strategic Regional Land Use Policy (eg. implementation of the Gateway process, requirements for AIS, etc.).

The project has been developed, and assessed, in a manner that is generally consistent with these actions.

3.5 Namoi Catchment Water Study

The Namoi catchment is recognised as an agricultural area of significance within Australia that includes one of the most intensively developed groundwater resources in NSW.

In response to rising levels of concern within the community about the potential impacts of the growing mining and CSG industry on the significant groundwater and surface water resources of the region, in August 2010 the NSW Government commissioned the Namoi Catchment Water Study (the Study). The purpose of the Study was to investigate the potential cumulative effects of coal resource development activities on catchment water resources. The final study report was completed and published in July 2012.

The Study included catchment-wide modelling of the water resource impacts of a number of different coal and CSG development scenarios, as outlined in the following table.

Table 3: Namoi Catchment Water Study Scenarios

Scenario No.	Description	Mines (number)		CSG fields (No.)
		Open-cut	Underground	
0	No current or future mining or CSG	0	0	0
1	Approved mines & CSG production	6	1	Pilot holes only
2	Approved & planned mines & CSG	10	2	2
3	Extensive & widespread mining & CSG	24	7	8
4	Extensive & widespread mining only	24	7	Pilot holes only
5	Extensive & widespread CSG only	6	1	8
6	Half underground mines beneath alluvium	24	7	8

Scenario 2 represents existing known and planned mines in the catchment, including the Watermark and Caroona coal projects. Scenario 3 is the most intense future resource development scenario, and reflects extensive CSG production and around 60 million tonnes of coal production a year for 90 years. Figure 24 shows the location of the modelled projects under this scenario.

A 7th scenario, involving even more intensive coal development than Scenario 3, was commissioned at the request of the study's stakeholder advisory group, and was undertaken as an addendum to the main report. This scenario assumed an additional 8 underground mines, and earlier development of the mining activities, with production of 160 million tonnes of coal a year. The analysis found that, in general the impacts predicted in Scenario 7 are similar to those predicted in Scenario 3, with the main difference then between the scenarios being the timing of the impacts, rather than the magnitude.

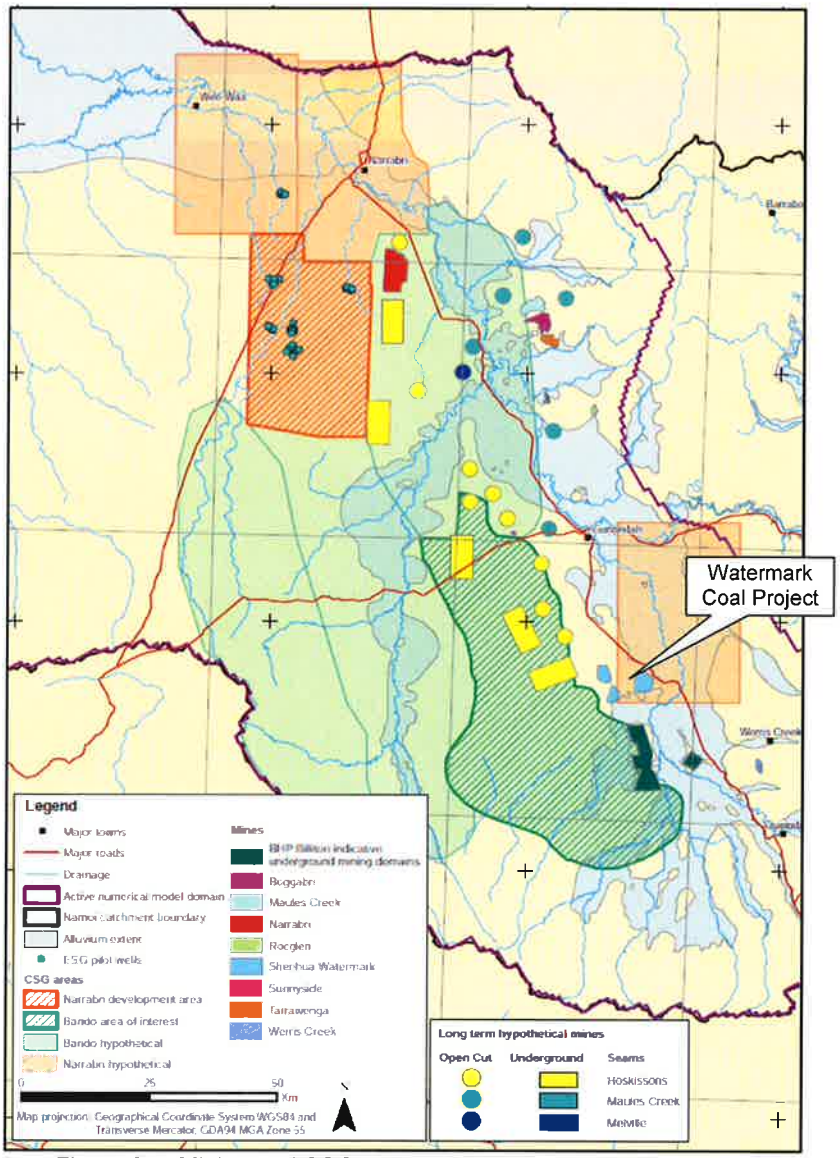

Figure 24: Mining and CSG Projects Modelled in Scenario 3

Water Resources

The Study notes that the key water resources of the Namoi catchment comprise the surface water system of the Namoi River, its tributaries (including the Mooki River which drains the Watermark site), and the alluvial groundwater systems associated with the water courses. The catchment is shown on Figure 3, with overall drainage west towards the Darling River. The Upper Namoi Alluvium (which occurs in the vicinity of the Watermark site) and Lower Namoi Alluvium (which doesn't occur in the vicinity of the Watermark site) form the principal aquifers, and are heavily used for agricultural irrigation (see Figure 25).

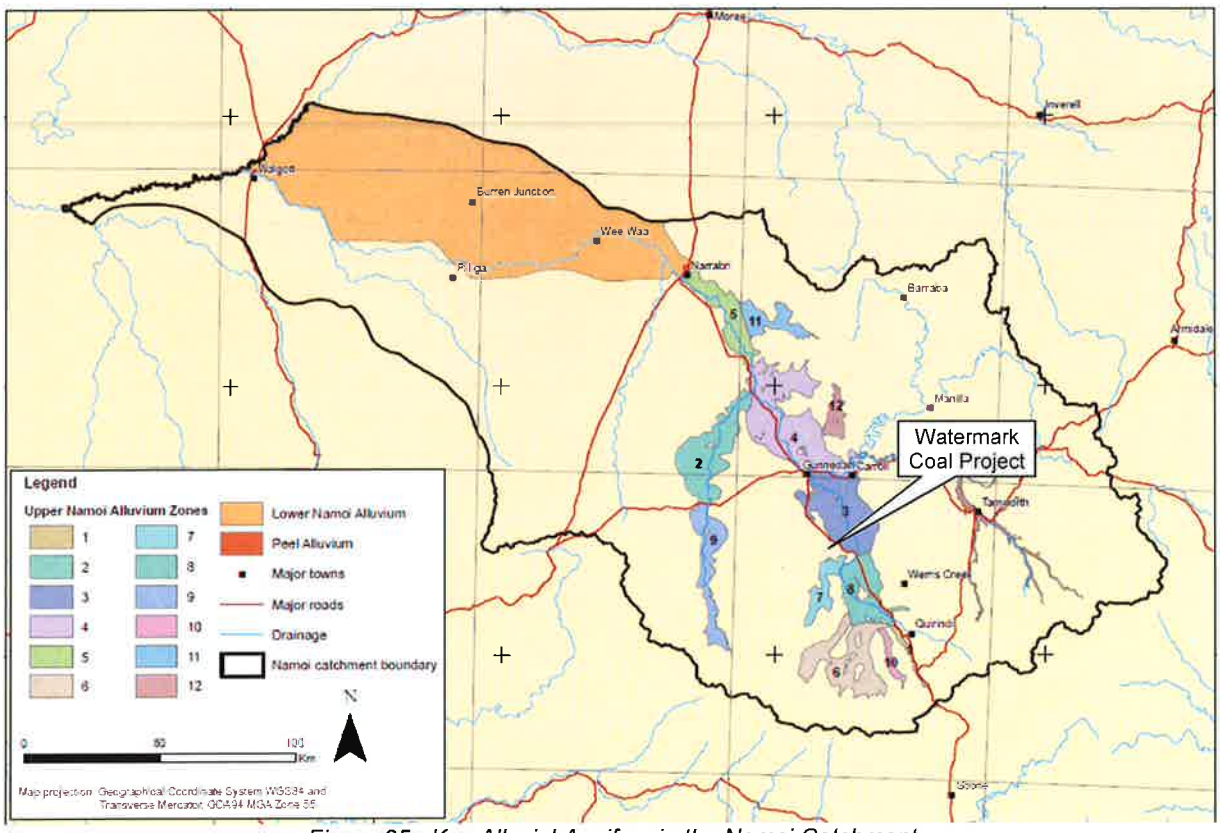

Figure 25: Key Alluvial Aquifers in the Namoi Catchment

The alluvium is characterised by high permeability and storage capacity and good water quality, although it does vary. Smaller scale pumping also occurs from the consolidated or 'hard' rocks that surround and underlie the alluvium.

Under the relevant water sharing plans (see Section 6.1 for further detail), the Upper Namoi Alluvium is subdivided into 12 separate management zones, and the hard rock units and lesser alluvial aquifers are managed as separate areas. These zones are shown on Figure 26, and the Study adopted the same zones for the purposes of its assessment. The Watermark mining areas are located within the hard rock unit, adjacent to Zone 7 of the Upper Namoi Alluvium, and in proximity to Zones 3 and 8.

The Study notes that most of the Upper Namoi alluvial zones are in close proximity to the coal bearing formations (see Figure 19), with the prospective area for coal mining extending a maximum of 50 kilometres to the west of the Upper Namoi Alluvium. Beyond this, the depth to coal bearing formations is likely to be excessive for mine development.

Potential Impacts

The Study notes that mining and CSG projects have the potential to impact the region's water resources at both the broad scale and local scale, and that the local scale impacts cannot be determined by a catchment wide study. Accordingly, the Study stresses that the model is not designed to replace the need or requirement for project specific detailed investigations, supplemented by comprehensive monitoring and appropriate operational management for approved projects.

The primary broad scale pathways by which mining and CSG projects can impact water resources are identified as:

1. interception of rainfall and runoff – which can result in:
   - (i) reduced recharge to groundwater systems; and
   - (ii) reduced surface water flows and quality changes; and
2. flow of groundwater to mining voids/wells – which can result in:
   - (i) leakage from aquifers;
   - (ii) mixing of different quality groundwater;
   - (iii) reduced flow from groundwater to rivers; and
   - (iv) increased leakage from rivers to groundwater.

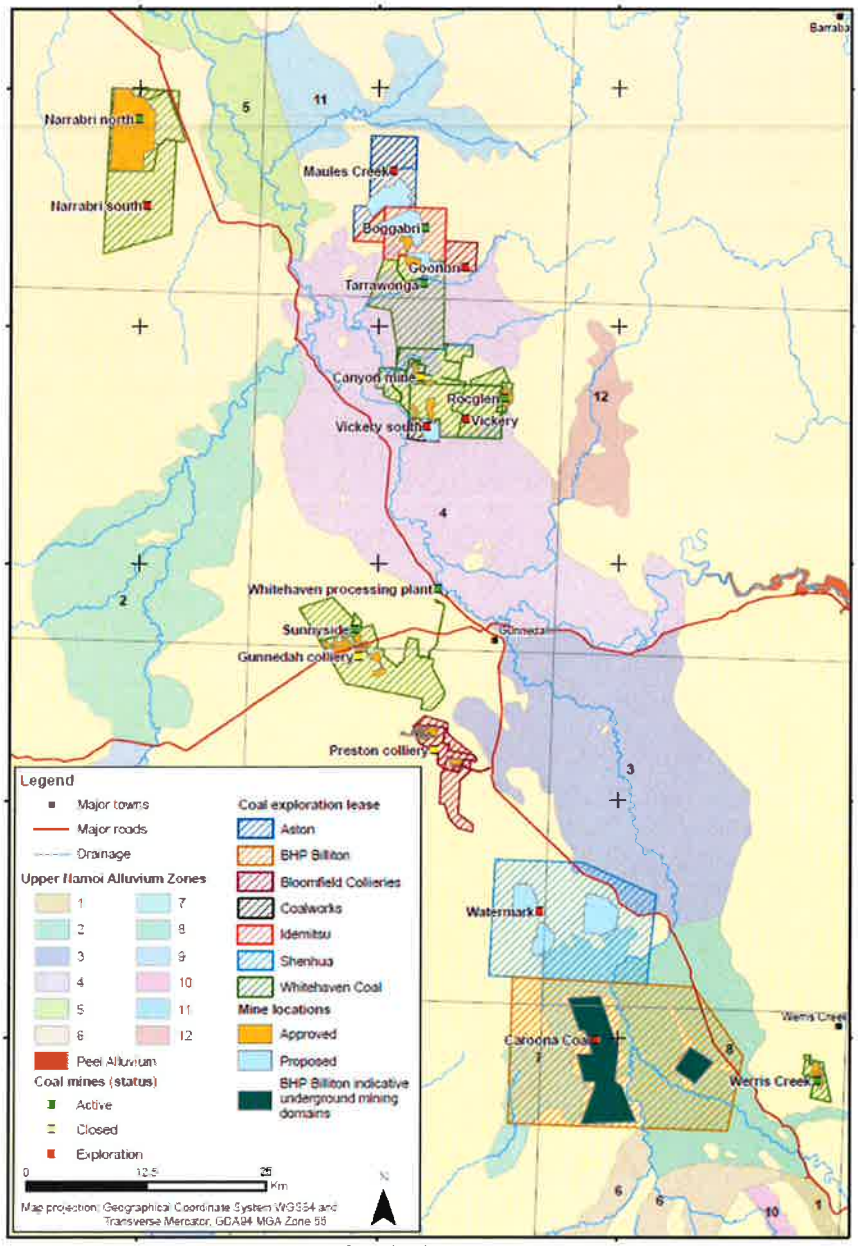

Figure 26: Alluvial Aquifers in the area surrounding the Watermark site

Study Findings

The Study found that mining and CSG developments in the Namoi catchment are unlikely to have significant regional scale impacts on water resources. Local scale impacts are more likely, particularly due to the cumulative effects of numerous developments in close proximity. The impacts would be mainly on the groundwater levels in the hard rock aquifer, and in the local vicinity of the mines or CSG fields. However, some impacts are predicted in Upper Namoi Zone 7 (ie. in the vicinity of the Watermark and Caroona project sites) and Zone 11 where numerous developments are possible.

The predicted impacts on water availability from coal and gas developments compared to non-coal related activities (ie. agriculture and other uses) is shown on Figures 27 and 28.

The modelling indicates that both the Lower and Upper Namoi Alluvium will experience a relatively low impact for both Scenario 2 and 3, when compared to existing anthropogenic water use impacts (ie. background water use for irrigation, stock and domestic, and public supply). However, the hard rock groundwater system is likely to experience a high impact relative to background water use, particularly for Scenario 3.

Detailed consideration of the incremental and cumulative water resources impacts associated with the Watermark Coal Project is provided in Section 6.1 below.

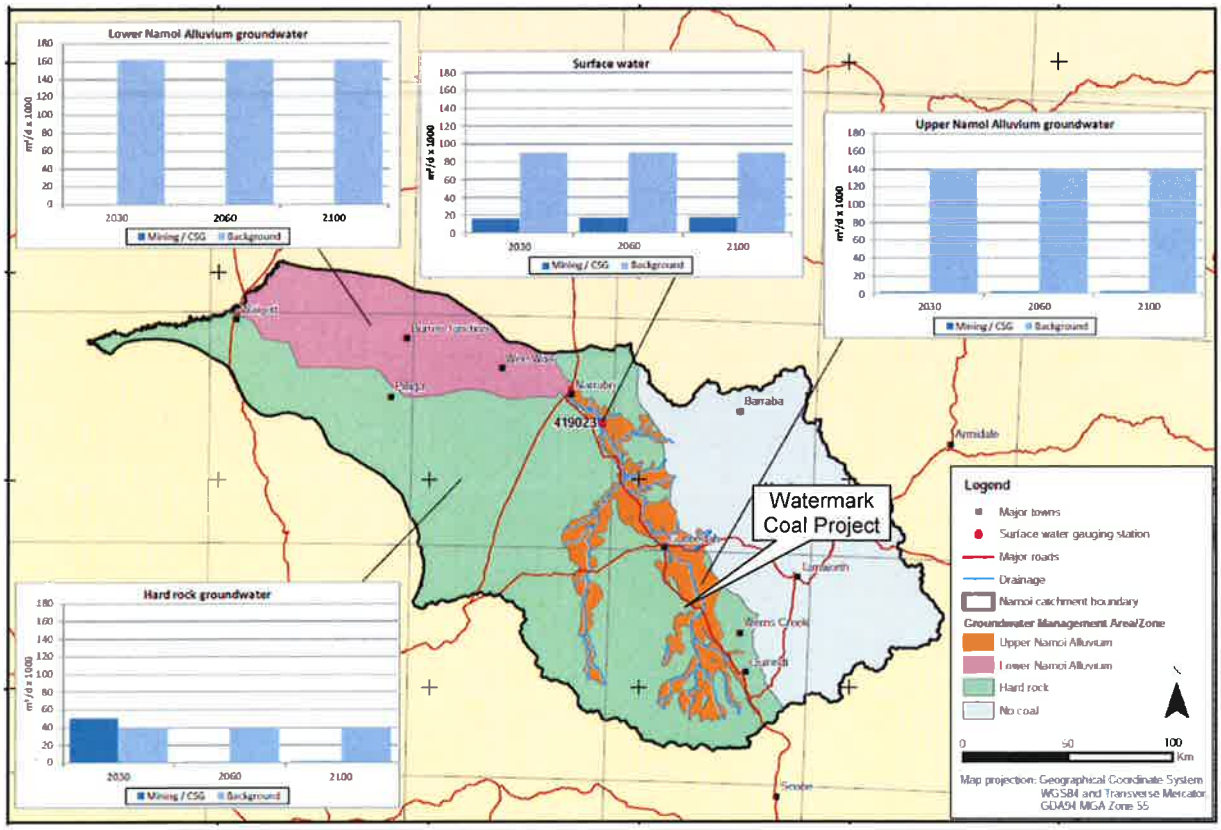

Figure 27: Predicted Impacts on Water Availability – Scenario 2

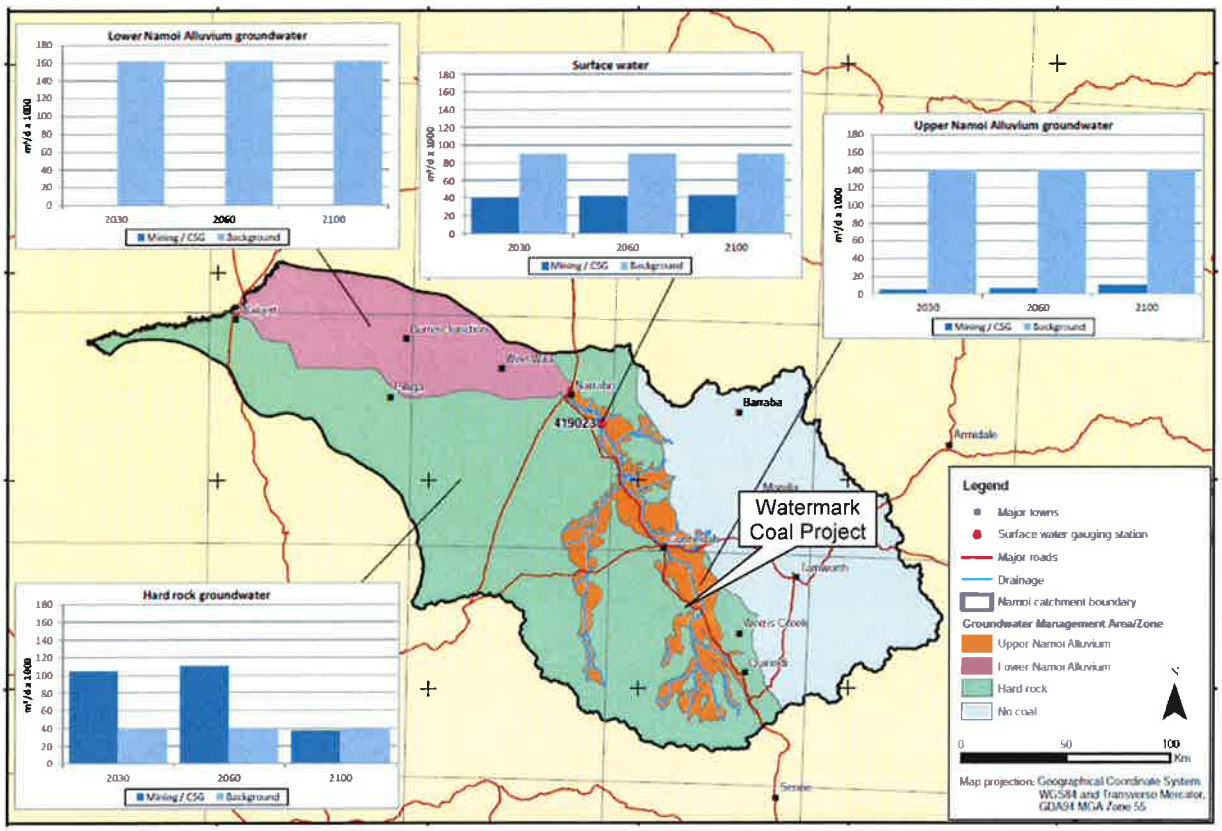

Figure 28: Predicted Impacts on Water Availability – Scenario 3

4. STATUTORY CONTEXT

4.1 State Significant Development

The proposed development is declared to be State Significant Development under Section 89C of the *Environmental Planning & Assessment Act 1979* (EP&A Act) as it is 'development for the purposes of coal mining', which is specified in clause 5 of schedule 1 to *State Environmental Planning Policy (State and Regional Development) 2011*.

Consequently, the Minister for Planning is the consent authority for the development. However, the development application falls within the Minister's delegation to the Planning Assessment Commission (PAC) dated 14 September 2011, because there were more than 25 public submissions in the nature of objections. Consequently, the PAC must determine the application.

4.2 Permissibility

The project site is located in the Gunnedah local government area. Under the *Gunnedah Local Environmental Plan 2012* (Gunnedah LEP) the vast majority of the subject land, including all land within the project disturbance area, is zoned RU1 (Primary Production) (see Figure 29). Open cut mining is permissible with development consent in this zone.

Two small portions of land within the project site, but outside the project disturbance area, are zoned E3 (Environmental Management) under the LEP[5]. Mining is prohibited in the E3 zone. However, *State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007* provides that open cut mining is permissible on any land where agriculture may be carried out, and agriculture may be carried out in the E3 zone.

Consequently, the project is permissible with development consent on all land within the project site and the PAC may determine the application.

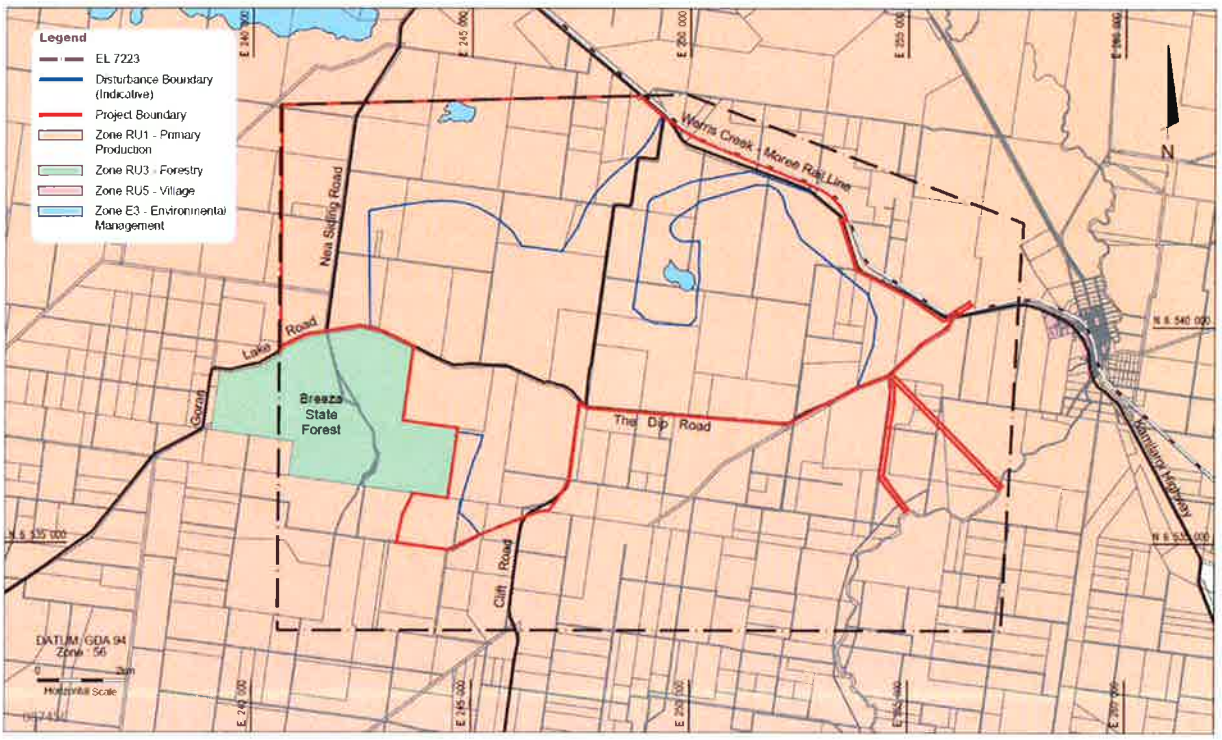

Figure 29: Land Zoning

4.3 Environmental Planning Instruments

Under Section 79C of the EP&A Act the consent authority is required to consider amongst other things the provisions of relevant environmental planning instruments (EPIs), including any exhibited draft EPIs and development control plans.

[5] The portion of E3 zoned land adjacent to Mt Watermark falls within the on-site biodiversity offset area for the project.

The Department has considered the project against the relevant provisions of several EPIs (see Appendix B), as well as Shenhua's consideration of these instruments (see Appendix I). The key instruments include:

- *Gunnedah LEP 2012;*
- *SEPP No.33 – Hazardous and Offensive Development*;
- *SEPP No.44 – Koala Habitat Protection*;
- *SEPP No.55 – Remediation of Land*;
- *SEPP (State and Regional Development) 2011*;
- *SEPP (Infrastructure) 2007* (the Infrastructure SEPP); and
- *SEPP (Mining, Petroleum and Extractive Industries) 2007* (the Mining SEPP).

On 4 November 2013, the NSW Government amended the Mining SEPP to clarify the decision-making process for proposals for the mining of mineral resources, including coal. The amendment introduced a clear statutory requirement that the consent authority must consider the significance of the resource, both to the State and the region where it is located, as part of its decision-making process. While the amendment made clear that the significance of the resource is an important factor in the decision-making process, it is not the only factor, and environmental, social and economic impacts continue to be significant considerations. The Department has included careful consideration of the significance of the project's coal resource in its assessment (see Section 6).

Based on its assessment of these instruments and its broader environmental assessment in Section 6, the Department is satisfied that the Watermark Coal project can be undertaken in a manner that is consistent with the aims, objectives and provisions of these instruments. However, this satisfaction is subject to a range of mitigation, monitoring and management measures, particularly in relation to Koala habitat protection.

4.4 Integrated and Other NSW Approvals

Under Section 89J of the EP&A Act, a number of other approvals are integrated into the State Significant Development approval process, and consequently are not required to be separately obtained for the proposal. These include:

- various approvals relating to heritage required under the *National Parks and Wildlife Act 1974* and the *Heritage Act 1997*;
- an authorisation under the *Native Vegetation Act 2003* for the clearing of native vegetation; and
- certain water approvals under the *Water Management Act 2000.*

Under Section 89K of the EP&A Act, a number of further approvals are required, but must be substantially consistent with any development consent for the proposal. These include:

- a mining lease under the *Mining Act 1992*;
- an environment protection licence under the *Protection of the Environment Operations Act 1997*; and
- approvals for roads and intersection construction under the *Roads Act 1993.*

Shenhua also requires other approvals for the project which are not integrated into the State Significant Development approval process, including:

- approval under the *Crown Lands Act 1989* for any works on Crown land;
- approvals under the *Roads Act 1993* from Gunnedah Shire Council (as the responsible roads authority) to permanently close roads within the project area;
- approvals under the *Coal Mine Health and Safety Act 2002*, for the the co-disposal of rejects and tailings in the emplacement areas;
- approval for prescribed dams under the *Dams Safety Act 1978*;
- licences to relocate Koalas under the *National Parks and Wildlife Act 1974*; and
- certain water licences under the *Water Act 1912* and the *Water Management Act 2000.*

The Department has consulted the relevant public authorities responsible for granting these integrated and other approvals, and considered the relevant issues relating to these approvals in its assessment of the project (see Section 5 and Section 6).

4.5 Commonwealth Approvals

Shenhua also needs to obtain an approval from the Commonwealth Minister for the Environment under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), because the project is a 'controlled action' under that Act due to the potential for significant impact to listed threatened species and communities and listed migratory species.

The Commonwealth Department of the Environment (DOE) has accredited the State Significant Development approval process for the Watermark Coal Project. This means that assessment of both State and Commonwealth matters has been integrated into a single assessment process. Nevertheless, it is important to recognise that the Commonwealth Minister maintains an independent approval role for the project, and is expected to undertake this determination following the PAC's determination.

4.6 Exhibition and Notification

Under Section 89F of the EP&A Act the Director-General was required to publicly exhibit the Environmental Impact Statement (EIS) for the project for at least 30 days. After accepting the EIS for the project, the Department:

- publicly exhibited the EIS for almost 2 months from 28 February 2013 to 26 April 2013 at the:
  - Department's Information Centre in Sydney;
  - Gunnedah Shire Council, Liverpool Plains Shire Council and Tamworth Regional Council offices, and the Gunnedah Library;
  - Nature Conservation Council's office; and
  - Department's website;
- notified relevant State government authorities and the Councils by letter;
- notified relevant electricity supply and transmission authorities, in accordance with the Infrastructure SEPP;
- notified relevant road authorities, in accordance with the Mining SEPP;
- notified Aboriginal stakeholder groups, in accordance with the Gunnedah LEP; and
- advertised the exhibition in the Namoi Valley Independent, Northern Daily Leader and Sydney Morning Herald newspapers.

In undertaking these processes, the Department has satisfied the notification requirements of Section 89F of the EP&A Act, the Mining SEPP, the Infrastructure SEPP and the Gunnedah LEP.

During the assessment process the Department also made other documents publicly available on its website, including:

- the development application;
- Director-General's environmental assessment requirements;
- EIS;
- submissions received during the exhibition of the EIS; and
- Shenhua's responses to the issues raised in submissions (the Response to Submissions).

4.7 Gateway Panel Advice

The new Gateway process established under the *Strategic Regional Land Use Policy* (see Section 3.3) and the Mining SEPP does not apply to the Watermark Coal Project, as the DGRs for the project were issued prior to the release of the SRLUP in September 2012[6].

Nonetheless, the project was referred to the Mining & Petroleum Gateway Panel for advice in accordance with the provisions of the SRLUP and clause 21 of the Mining SEPP. Specifically, the Director-General sought the Panel's advice on:

- the significance of the project's potential impacts on BSAL; and
- whether any additional reasonable and feasible mitigation measures could be implemented to materially reduce the potential impacts of the project BSAL.

The Panel's advice was received on 10 January 2014 (see Appendix F), and is discussed in Section 5 below[7].

[6] Clause 50A(3) of the *Environmental Planning and Assessment Regulation 2000* provides that a gateway certificate or site verification certificate (verifying that the land is not BSAL) is not required if the DGRs for the development were issued on, or before, 10 September 2012. The DGRs for the Watermark Coal Project were issued in April 2012.

4.8 PAC Review

On 8 May 2013, the then Minister for Planning & Infrastructure asked the PAC to review the merits of the Watermark Coal Project. Due to the level of interest in the project, the Minister also requested that the PAC hold public hearings during the review.

On 15 November 2013, the then Minister revised his request to require the PAC to consider the Department's preliminary assessment report (ie. this report) as part of its review, and also made some minor changes to the PAC's terms of reference.

The terms of reference for the PAC review are reproduced in Table 4 below.

Table 4: Terms of Reference for the Watermark Coal Project PAC Review

1.	*Carry out a review of the Watermark Coal Project, and:* *a) consider the EIS for the project, the issues raised in submissions, the formal response to submissions, any advice from the Gateway Panel on the project, and any other relevant information provided on the project during the course of the review;* *b) consider the [Department's] preliminary assessment report,* *c) assess the merits of the project as a whole, paying particular attention to the:* • *impacts of the project on strategic agricultural land, as identified in the New England North West Strategic Regional Land Use Plan, including the impacts on existing agricultural land use in the areas surrounding the project;* • *water resource impacts of the project, including direct and indirect impacts on the Upper Namoi alluvial aquifer and downstream surface water resources;* • *health and amenity impacts of the project, with a specific focus on whether all reasonable and feasible noise and dust mitigation measures are being employed to avoid and/or minimise these impacts;* • *long term land use impacts of the project and the suitability and feasibility of the proposed rehabilitation strategy, including the final landform, final void and the proposed rehabilitation of agricultural land; and, if necessary,* *d) recommend further measures to avoid, minimise and/or offset the potential impacts of the project.*
2.	*Conduct public hearings during the review as soon as practicable after the [Department] provides a copy of its preliminary assessment report for the project to the Planning Assessment Commission.*
3.	*Submit its final report on the review to the [Department] within 6 weeks of the public hearings, unless the Director-General of the [Department] agrees otherwise.*

Once it receives the PAC's review report, the Department will finalise its assessment of the merits of the project and refer the project application back to the PAC for determination.

4.9 Objects of the EP&A Act

The Minister must consider the objects of the EP&A Act when making decisions under the Act. The objects of most relevance to the Minister's decision on whether or not to approve the project are found in Section 5(a)(i),(ii),(vi) and (vii). They are:

To encourage:

(i) the proper management, development and conservation of natural and artificial resources, including agricultural land, natural areas, forests, minerals, water, cities, towns and villages for the purpose of promoting the social and economic welfare of the community and a better environment;

(ii) the promotion and co-ordination of the orderly and economic use and development of land;

(vi) the protection of the environment, including the protection and conservation of native animals and plants, including threatened species, populations and ecological communities, and their habitats; and

(vii) ecologically sustainable development.

The Department is satisfied that the project encourages the proper development of resources (Object 5(a)(i)) and the promotion of orderly and economic use of land (Object 5(a)(ii)), particularly as the

[7] Prior to the establishment of the Gateway Panel, the Department had engaged Mr Terry Short to undertake an independent review of the project. With Mr Short's subsequent engagement as Panel chair, the independent review was discontinued given that the Panel's advice addressed the matters that were to be considered by the independent review.

project is a permissible land use and the subject coal resource is significant from a State and regional perspective.

However, the Department also recognises the potential conflict with other land uses (particularly agriculture), and has assessed the potential impacts on these land uses in detail in Section 6 of this report.

Consideration of environmental protection (Object 5(a)(vi)) is provided in Section 6 of this report. Following its consideration, the Department is satisfied that the project is able to be undertaken in a manner that would maintain or improve the biodiversity values of the region in the medium to long-term. The Department is also satisfied that the impacts to threatened species and habitats can be managed and/or mitigated by imposing appropriate conditions, including the requirement to implement a comprehensive biodiversity offset strategy and rehabilitation strategy.

The Department has considered the encouragement of ecologically sustainable development (Object 5(a)(vii)) in its assessment of the project. This assessment integrates all significant socio-economic and environmental considerations and seeks to avoid any potential serious or irreversible environmental damage, based on an assessment of risk-weighted consequences. Shenhua has also considered the project in the light of the ESD principles. Following its consideration, the Department is satisfied that the project is able to be carried out in a manner that is consistent with the principles of ESD.

5. CONSULTATION

The Department received a total of 133 submissions on the project in response to the exhibition of the EIS, including:

- 12 from public authorities;
- 14 from special interest groups; and
- 107 submissions from the general public.

The Department also received correspondence from the Commonwealth Department of the Environment (DOE), as part of the accredited assessment process under the EPBC Act. This included correspondence from the Independent Expert Scientific Committee on Coal Seam Gas and Large Coal Mining Development (IESC), established under the EPBC Act to provide independent scientific advice on the potential impacts of large mining and CSG projects on water resources.

Shenhua provided its response to the issues raised in these submissions in November 2013 (see Appendix G).

Since the exhibition of the EIS and receipt of the Response to Submissions, the Department has consulted further with Shenhua and several public authorities and other stakeholders (including the Caroona Coal Action Group), which has included site visits and meetings to discuss key issues. As outlined in Section 4.7, the Department also sought the advice of the newly established NSW Gateway Panel on the project.

A summary of the issues raised in submissions is provided below, focusing on the residual issues where stakeholders have provided additional submissions following the EIS. Full copies of the submissions are provided in Appendix H, and the Gateway Panel's advice is attached in Appendix F.

5.1 Public Authorities

None of the public authorities object to the project. However most of the authorities raised concerns about the potential impacts of the project, and made recommendations as to how these impacts should be avoided or minimised.

Division of Resources and Energy (DRE) (within the Department of Trade & Investment, Regional Infrastructure & Services) noted the general requirement for a mining lease, and requested additional information in relation to rehabilitation, particularly with regard to domain-specific rehabilitation objectives and completion criteria, rehabilitation planning (eg. where agricultural land and woodland areas would be located) and trigger actions for remedial actions and contingency measures. Shenhua provided additional information addressing these matters in its Response to Submissions,

but DRE was still of the view that more detailed information on these matters should be provided. However, it accepted that these matters could be addressed through conditions as part of the detailed Rehabilitation Management Plan for the project.

The Department has assessed the various environmental aspects associated with rehabilitation as part of its detailed consideration of the project, and is satisfied that there is sufficient information for the purposes of development assessment and decision making (see Section 6). The Department has recommended conditions consistent with DRE's recommendations.

Environment Protection Authority (EPA) initially raised a number of concerns related to noise, air quality, water (especially the water balance and obtaining enough water for effective dust control) and justification for the final void. Shenhua addressed many of these issues in its Response to Submissions, which included undertaking a 'mine optimisation review' to reduce noise and dust emissions. Notwithstanding, EPA has noted the following residual concerns and/or issues:

- *Noise:*
  - lack of detail on consultation with the surrounding community on the acceptability of the residual operational noise impacts;
  - lack of discussion on the proposed mitigation to residences to address residual noise impacts above the relevant criteria;
  - noted that there were no predicted operational noise impacts above the criteria until at least Year 5, which allows significant lead time to undertake additional consultation and negotiation, and mitigation at affected residences;
  - recommended a number of operational noise and blasting conditions;
  - recommended that low frequency noise be included in noise monitoring for the project;
  - recommended that only best practice locomotives and rolling stock be used for the project;
- *Air Quality:*
  - recommended that best practice dust control measures be employed, and a comprehensive Air Quality Management Plan be prepared;
  - noted the predicted 1 hr NO_2 criteria exceedances (up to 8 hrs/yr) during blasting events in poor dispersion conditions, and recommended that the Blast Management Plan includes provisions to avoid blasting in these conditions;
- *Surface Water:*
  - noted that the water balance uses very low water application rates (ie. 1.92 mm/day, plus chemical suppressants), which brings into question the ability to achieve the stated 85% dust control efficiency. The EPA cautioned that if this application rate proves ineffective (and more water is required), then there will be significant implications for the water balance;
  - recommends a minimum 80% dust control efficiency, in line with its best practice Dust Stop Pollution Reduction Programs;
  - noted that the stated water for dust control is dependent on obtaining adequate water licences; and
- *Final Void:*
  - recommends continual review of the final void as the project progresses to minimise, and if possible avoid, the need for the final void.

Office of Environment and Heritage (OEH) initially raised concerns about the adequacy of the assessment of groundwater dependent ecosystems, Aboriginal scarred trees, Koalas and particularly the adequacy of the proposed biodiversity offset strategy. Since the EIS, Shenhua has enhanced the offset strategy in consultation with OEH (and the Department and DOE), and sought to address the other issues raised by OEH.

Following this additional work and Shenhua's commitment to the enhanced offset strategy, OEH has confirmed that it is now satisfied that the general biodiversity and cultural heritage impacts have been adequately addressed. However, OEH noted that a number of issues require further attention prior to its endorsement of the Koala Plan of Management.

OEH's Heritage Division (which provided separate submissions) also does not have any significant concerns about the historic heritage impacts of the project, and recommended conditions requiring a detailed Heritage Management Plan, including provisions for:

- protection of the former Watermark Public School site during construction;

- archival recording of all identified historic heritage items prior to construction;
- archaeological excavation works (where required) to be undertaken in accordance with Heritage Council guidelines; and
- that Conservation Management Plans be prepared for identified heritage farm complexes.

Department of Primary Industries (DPI) provided comments from its range of divisions, including the NSW Office of Water (NOW), Office of Agricultural Sustainability & Food Security (OAS&FS), Forestry Corporation NSW (Forestry), Fisheries NSW and Crown Lands.

NOW raised a number of residual concerns following Shenhua's Response to Submissions, including:

- that Shenhua had not secured, or demonstrated the ability to secure, the required water licence entitlements for all but one of the applicable water sources;
- that there were a number of uncertainties associated with the groundwater modelling and impact assessment (including impacts on stygofauna and groundwater dependent ecosystems, salinity budget and floodplain management), and that well designed monitoring and regular model verification would be critical to lessen ongoing uncertainty; and
- that because of the uncertainties, available mitigation and make-good provisions should be considered.

NOW subsequently consulted further with Shenhua in relation to these residual issues, and reviewed the findings of the independent groundwater review commissioned by the Department (see Section 6.1). Following this additional review, NOW confirmed that it was satisfied that its residual issues had been adequately addressed, with key conclusions and recommendations including:

- that the groundwater model is fit-for-purpose and suitable for the assessment of the project;
- that Shenhua should be required to obtain adequate water licences to account for water take prior to commencing mining operations;
- that the groundwater model should be verified and updated on a regular basis;
- that a comprehensive Water Management Plan should be prepared;
- that the flood levee should be designed to prevent inundation of the pit in floods of at least 100 year ARI severity; and
- that proposed flood mitigation measures to reduce impacts on Watermark Gully and the Kamilaroi Highway be developed in consultation with NOW.

OAS&FS also raised a number of residual concerns following the Response to Submissions about the potential impacts on agricultural resources. Its key concerns included:

- incomplete identification of BSAL affected by the project, particularly BSAL in the biodiversity offset areas;
- potential errors in soil stripping calculations, which could affect the amount of soil available for rehabilitation;
- risks and uncertainties around rehabilitation of the disturbance area to agricultural land;
- potential indirect impacts on surrounding agricultural land users, particularly from dust;
- possible risks to agricultural water supplies; and
- management of socio-economic impacts and visual impacts.

OAS&FS subsequently consulted further with Shenhua in relation to these residual issues, which included a site inspection and provision of additional information. Following this additional review and site inspection, OAS&FS confirmed that it accepts Shenhua's analysis of the amount of BSAL on the site, and that it accepts there is a reasonable probability that there would be adequate soil volumes for rehabilitation, subject to careful rehabilitation planning.

Forestry did not raise any concerns about the project, but requested that it be kept advised of the project status given its proximity to Breeza State Forest.

Fisheries NSW did not raise any significant concerns, and recommended that it be consulted regarding rehabilitation of the riparian areas in the Mooki River Biodiversity Offset Area, and in relation to the potential water pipeline and pump station on the Mooki River.

Crown Lands did not raise any significant concerns, and recommended that its standard conditions regarding occupation of Crown land and closure of Crown roads be applied to the project. The

Department notes that Shenhua would be required to obtain these approvals separately to any planning approval for the project.

NSW Health raised a number of issues and/or concerns, relating to:

- *Noise:*
  - that the acceptability of the predicted noise impacts and proposed mitigation measures to the affected residents should be addressed;
  - recommended that a detailed complaints handling mechanism be employed enabling rapid corrective action;
- *Air Quality:*
  - recommended that Shenhua be required to take all reasonable and feasible measures to ensure that particulate emissions from all sources are kept as low as reasonable practicable;
  - questioned the ability to achieve the adopted 85% dust control efficiency;
  - supports measures to address potential impacts to domestic water supplies (eg. through installation of first flush systems on the rainwater tank supplies to affected residences); and
- *Social Impacts:*
  - recommended that the success of community engagement be monitored over time, and noted that it would be useful if it were subject to independent assessment.

Namoi Catchment Management Authority (CMA) initially raised a number of concerns, with key issues relating to:

- *Final Void:*
  - particularly in relation to long term salinity of the void;
- *Water Quality:*
  - recommended that management plans include objectives to maximise clean water runoff;
- *Biodiversity:*
  - recommended that Offset Area 6 be retained for agriculture;
- *Soils and Rehabilitation:*
  - particularly the ability to rehabilitate land to support cropping; and
  - recommended that coal rejects be adequately buried and encapsulated in overburden emplacements.

Following the Response to Submissions, the CMA acknowledged the effort that Shenhua had made to address its issues through changes to the project and provision of additional information.

Roads and Maritime Services (RMS) raised residual concerns relating to:

- the proposed Kamilaroi Highway deviation and overpass, noting that inadequate detail had been provided on the works;
- potential inconsistencies between identified traffic conditions for some intersections; and
- potential flooding impacts on the Watermark Gully causeway on the Kamilaroi Highway.

RMS noted that the proposed road and rail works would require separate approvals under the *Roads Act 1993* and the *Rail Safety (Adoption of National Law) Act 2012*, and that Shenhua would be required to enter into a Works Authorisation Deed (WAD) for the road works and a Surface Interface Agreement (SIA) for the rail over-bridge structure.

Transport for NSW (TfNSW) raised some concerns about the potential impacts and interactions of the project on rail capacity, rail network upgrades and rail traffic interactions with agriculture, and requested that ARTC be consulted in regard to these issues.

Australian Rail Track Corporation (ARTC) raised no concerns about these issues or the project in general.

Australian Astronomical Observatory (AAO) made comment on the potential for the project to affect the Sidings Springs Observatory (located about 120 kilometres from the mine) by way of light, dust and seismic disturbance, and recommended that Shenhua be required to consult with AAO regarding implementation of measures to ensure the observatory is not affected, including:

- monitoring of light and dust levels; and