



# Bylong Coal Project

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KEPCO Australia

*Presentation to the Sydney Mining Club*

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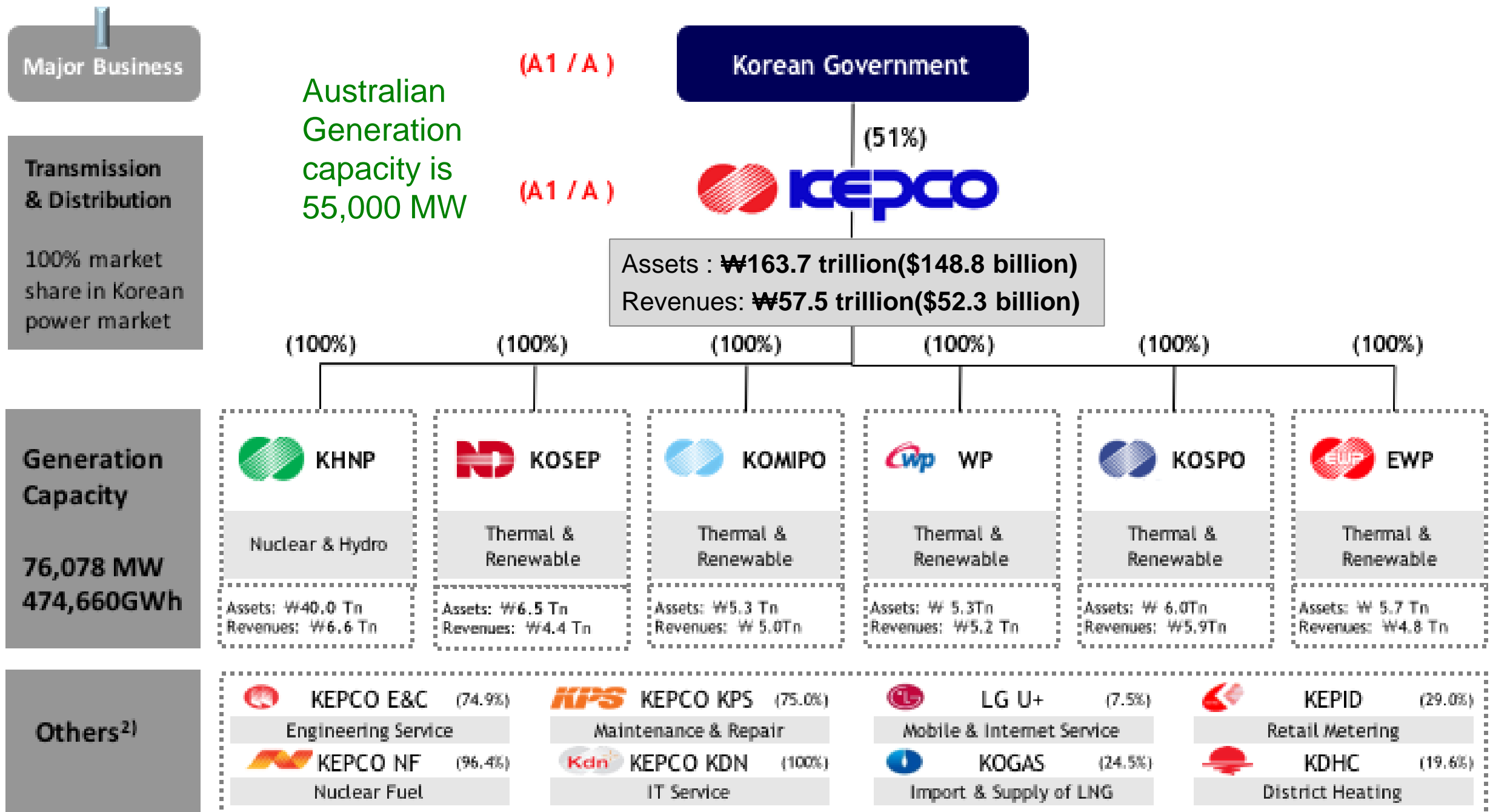


- ▶ About KEPCO
- ▶ Why Bylong?
- ▶ Project Overview
- ▶ Project Key Challenges
- ▶ Discussion

*Bylong Valley Way crossing of Sandy Hollow-Gulgong Railway Line*



- ▶ Korea Electric Power Corporation (KEPCO) is South Korea's largest power generator and distributor, and one of the top ten consumers in the world of coal importing over 90 million tonnes of coal per annum.
- ▶ KEPCO is the largest company in Korea in terms of asset value, with an asset base of approximately US\$67.6 billion.
- ▶ KEPCO has a 51.1% South Korean Government shareholding and approximately 45,000 employees worldwide.
- ▶ KEPCO has secured 24 million tonnes of thermal coal per year by acquiring minority stakes in Cockatoo Coal, the Yancoal Moolarben Coal Complex, and a 100% investment in the Bylong Coal Project. Other international investments include a 20% stake in the PT Bayan Resources in Indonesia.
- ▶ By 2020, KEPCO expects to have the capability to supply 60% of its coal and uranium fuel needs from mines and companies directly invested in by KEPCO.



1) Generation mix in Korea for 2011 : 88.4% or 438,699GWh was generated by 6 GENCOs & KEPCO and 11.6% or 57,287GWh by IPPs.

2) Others include only major subsidiaries and affiliates of KEPCO other than 6 GENCOs

## Opportunities

- ▶ Stable and secure Parent Company committed to developing the Bylong Project
- ▶ Benign geological conditions for opencut and underground coal mining with immediate access to rail
- ▶ Generation of cash flow with shallow open cuts preceding underground operations
- ▶ Current industry status allows increased access to resources and improved pricing of services

## Risks

- ▶ Project viability heavily influenced by external factors (i.e. coal price and exchange rate)
- ▶ Uncertainty in project approvals/challenges etc.
- ▶ Project approval timeline can be influenced through many factors – governs ultimate start date
- ▶ Pre commitment to take-or-pay contracts (i.e. port and rail) can introduce liability if project delayed for any reason
- ▶ Increased public scrutiny going forward



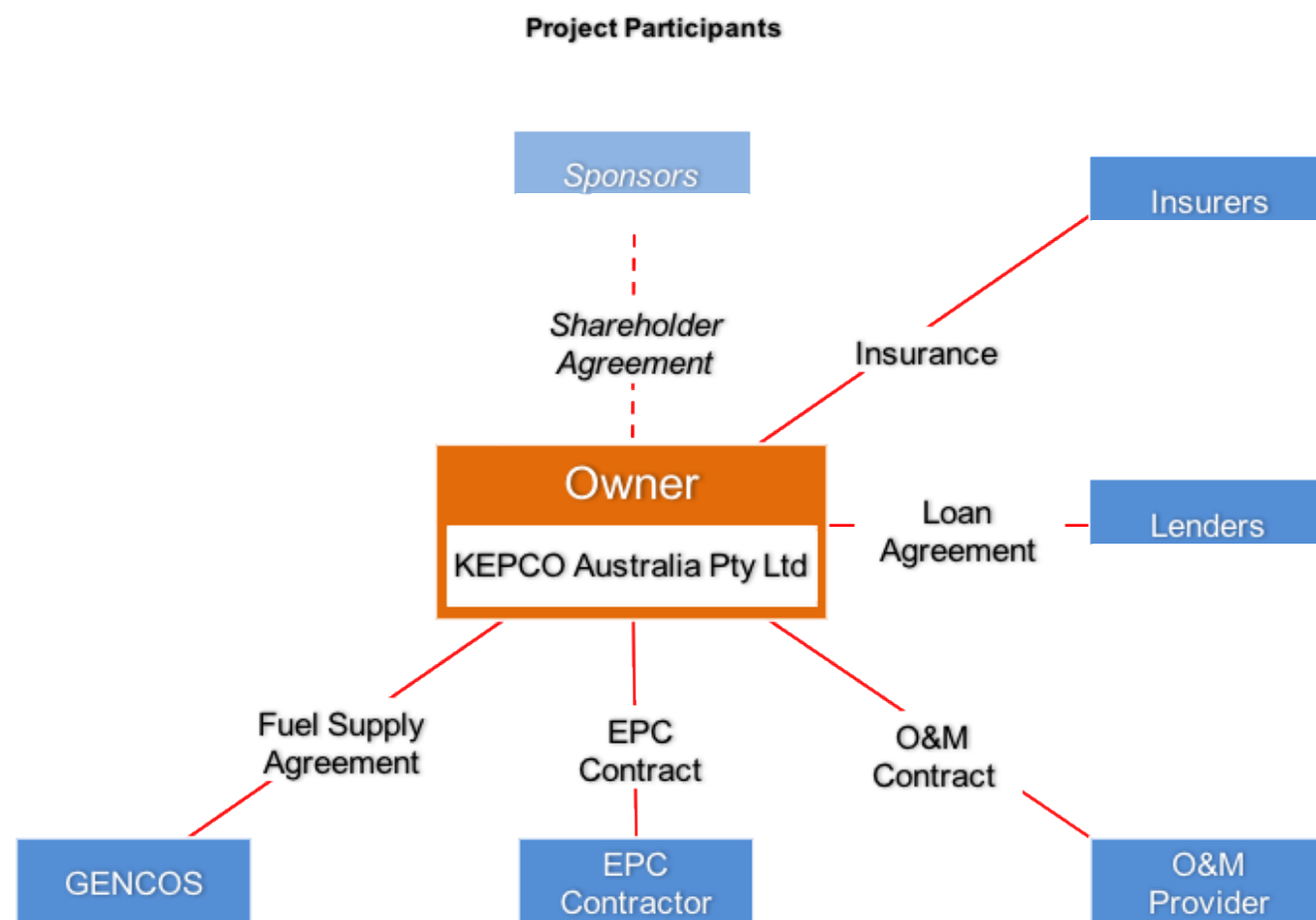
**Credit Rating**

Moody's	S&P	Fitch	rating description
Aaa	AAA	AAA	Prime
Aa1	AA+	AA+	High grade
Aa2	AA	AA	
Aa3	AA-	AA-	
A1	A+	A+	Upper medium grade
A2	A	A	
A3	A-	A-	
Baa1	BBB+	BBB+	Lower medium grade
Baa2	BBB	BBB	
Baa3	BBB-	BBB-	
Ba1	BB+	BB+	Non-investment grade speculative
Ba2	BB	BB	
Ba3	BB-	BB-	
B1	B+	B+	Highly speculative
B2	B	B	
B3	B-	B-	
Caa1	CCC+	CCC	Substantial risks
Caa2	CCC		Extremely speculative
Caa3	CCC-		Default imminent with little prospect for recovery
Ca	CC		
	C		
C	D	DDD	In default
/		DD	

- ▶ Moody's, S & P and Fitch has upgraded the issuer and senior unsecured ratings of KEPCO and its six wholly-owned power generation subsidiaries (Gencos) to Aa3 from A1 which is High Grade or 'Rated as high quality and very low credit risk'
- ▶ The project is deemed as strategic to increase self reliance of energy supplies for the company and to smooth cyclic price shocks
- ▶ By 2020, KEPCO expects to have the capability to supply 60% of its coal and uranium fuel needs from mines and companies invested in directly by KEPCO
- ▶ With Bylong, KEPCO have the ability to better manage the vertical integration of all aspects of mine to supply chain
- ▶ Other tangible benefit is that KEPCO will generate income from this investment

## Project Finance

- A funding structure that relies on future cash flows from a specific development as the primary source of repayment, with development assets, rights and interests held as collateral security



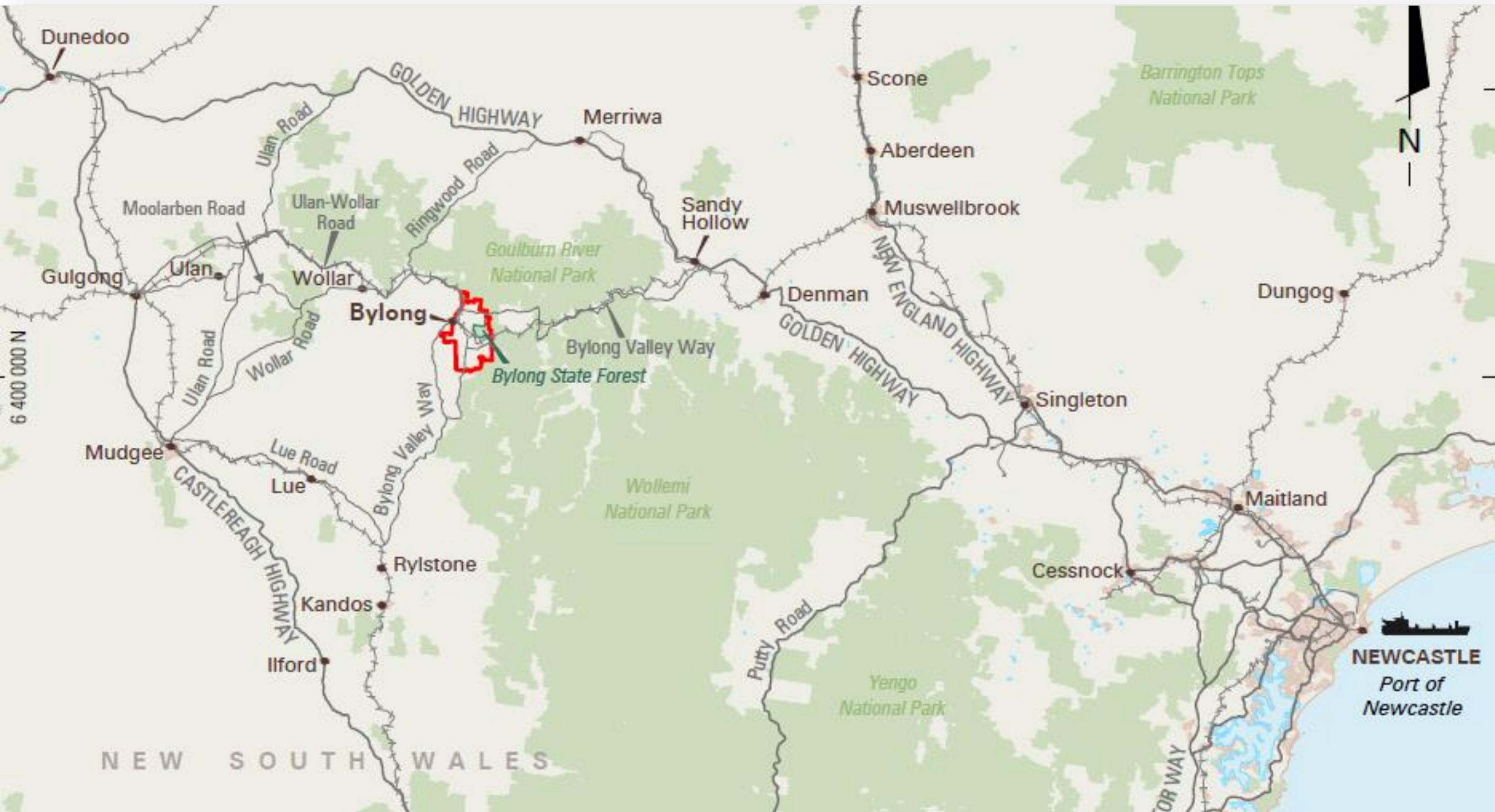
- Being a sovereign owned company (51%) financing options for the Bylong Coal Project are:
  - **Corporate finance**
  - **Project finance**
  - **Hybrid/Structured finance**



# BYLONG

## Coal Project

# Project Location

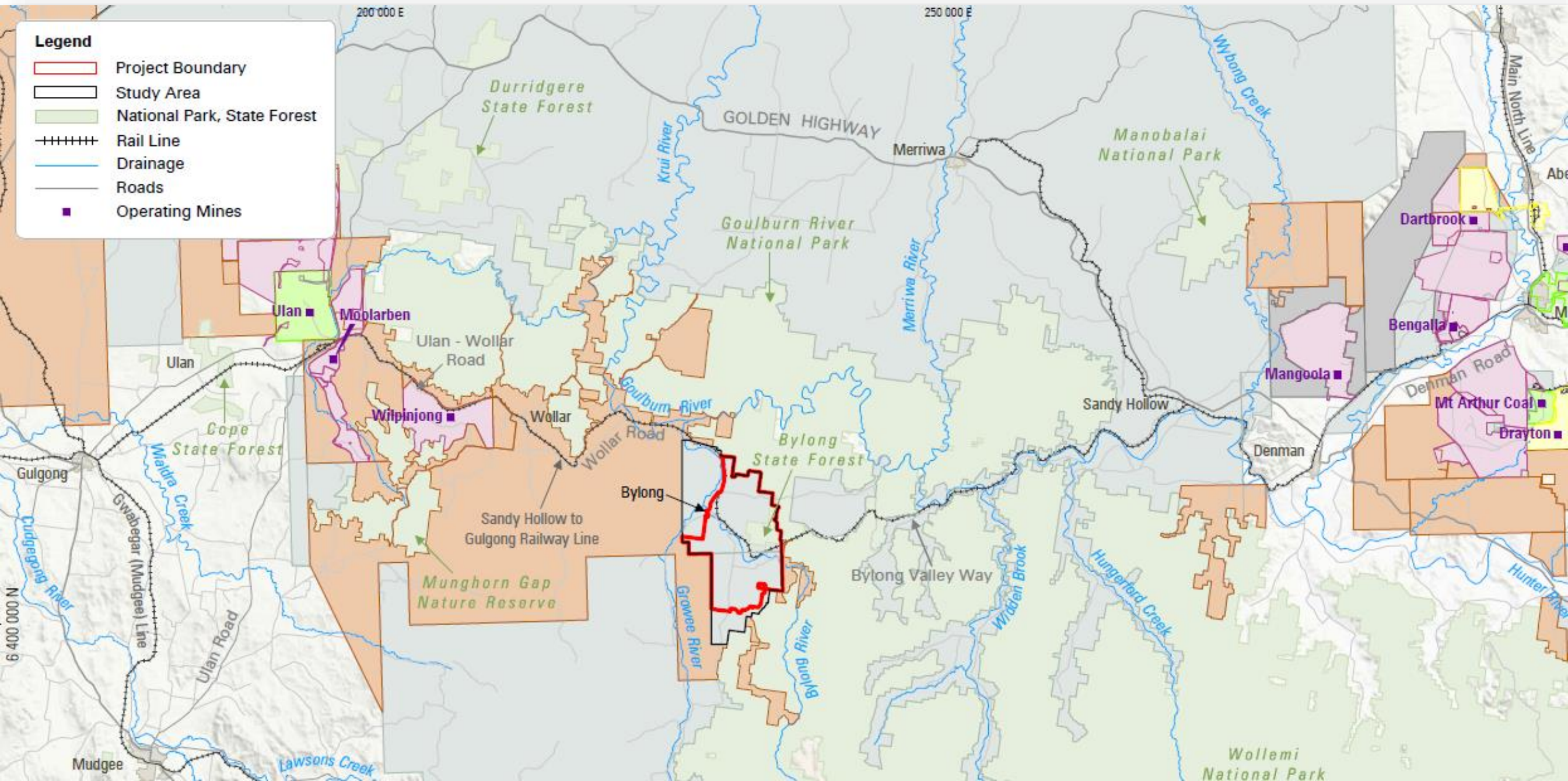


**KEPCO**  
BYLONG AUSTRALIA



# BYLONG Coal Project

## Regional Locality



**KEPCO**  
BYLONG AUSTRALIA



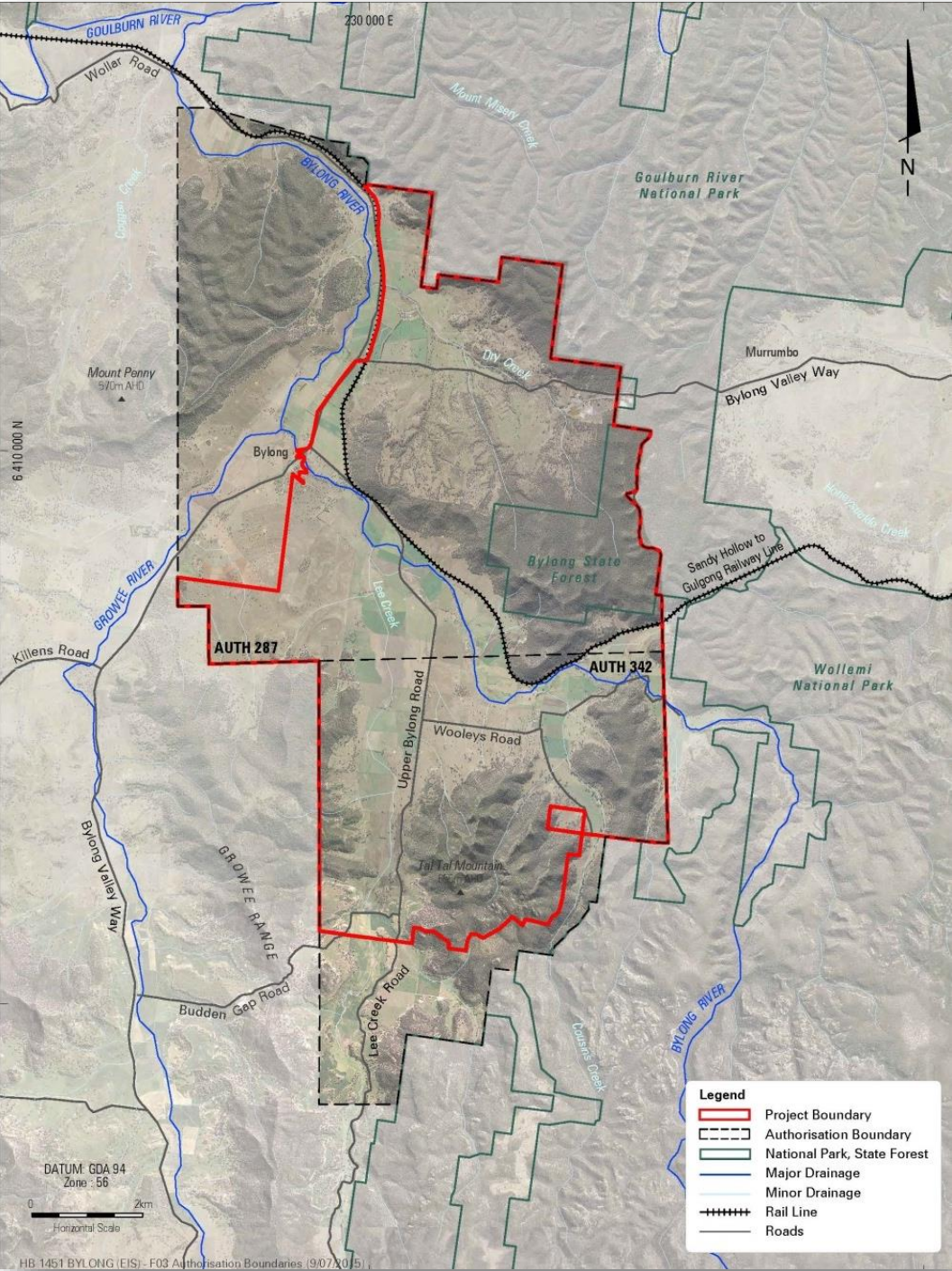
- ▶ Authorisations (A) 287 & A342 were originally granted to Austen & Butta Limited in 1982 and 1984 respectively
- ▶ KEPCO Bylong Australia Pty Ltd acquired the Authorisations in December 2010 which cover approximately 10,317 ha
- ▶ Extensive exploration has been undertaken within the Authorisations since the initial exploration by the NSW Department of Mines in the 1970s
- ▶ Authorisations are nestled in the western coalfields of NSW in the vicinity to but distant from a number of other coal mining operations
- ▶ Approximately 220 km by rail to the Port of Newcastle



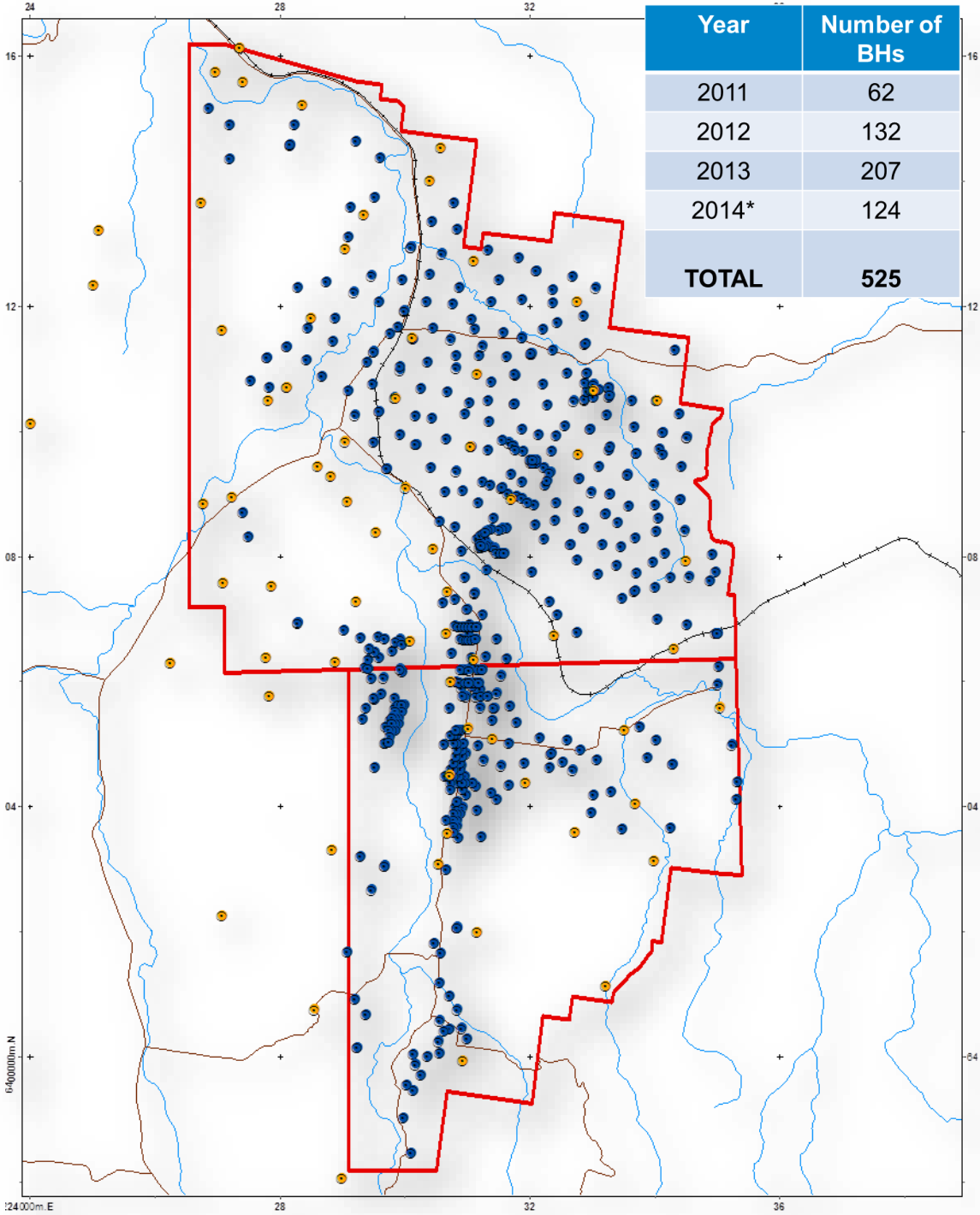
*Exploration drill rig on KEPCO –owned property 'Sunnyside'*



Authorisations 287 and 342



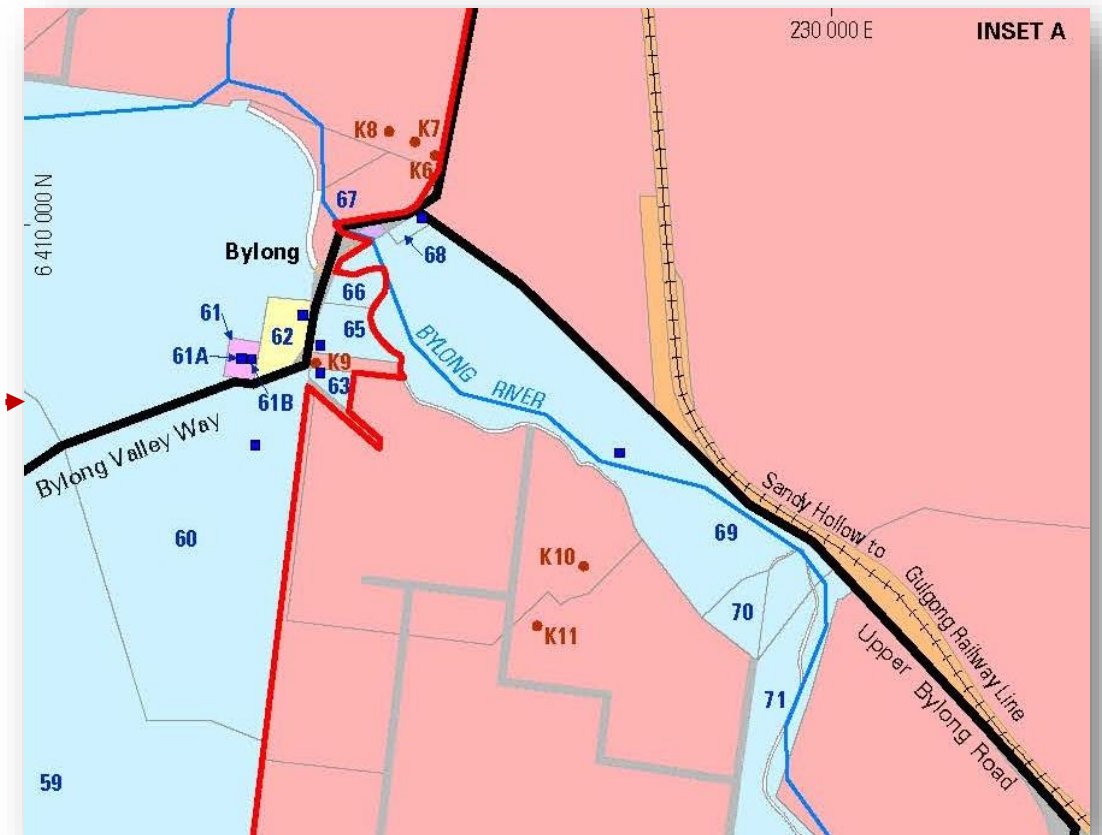
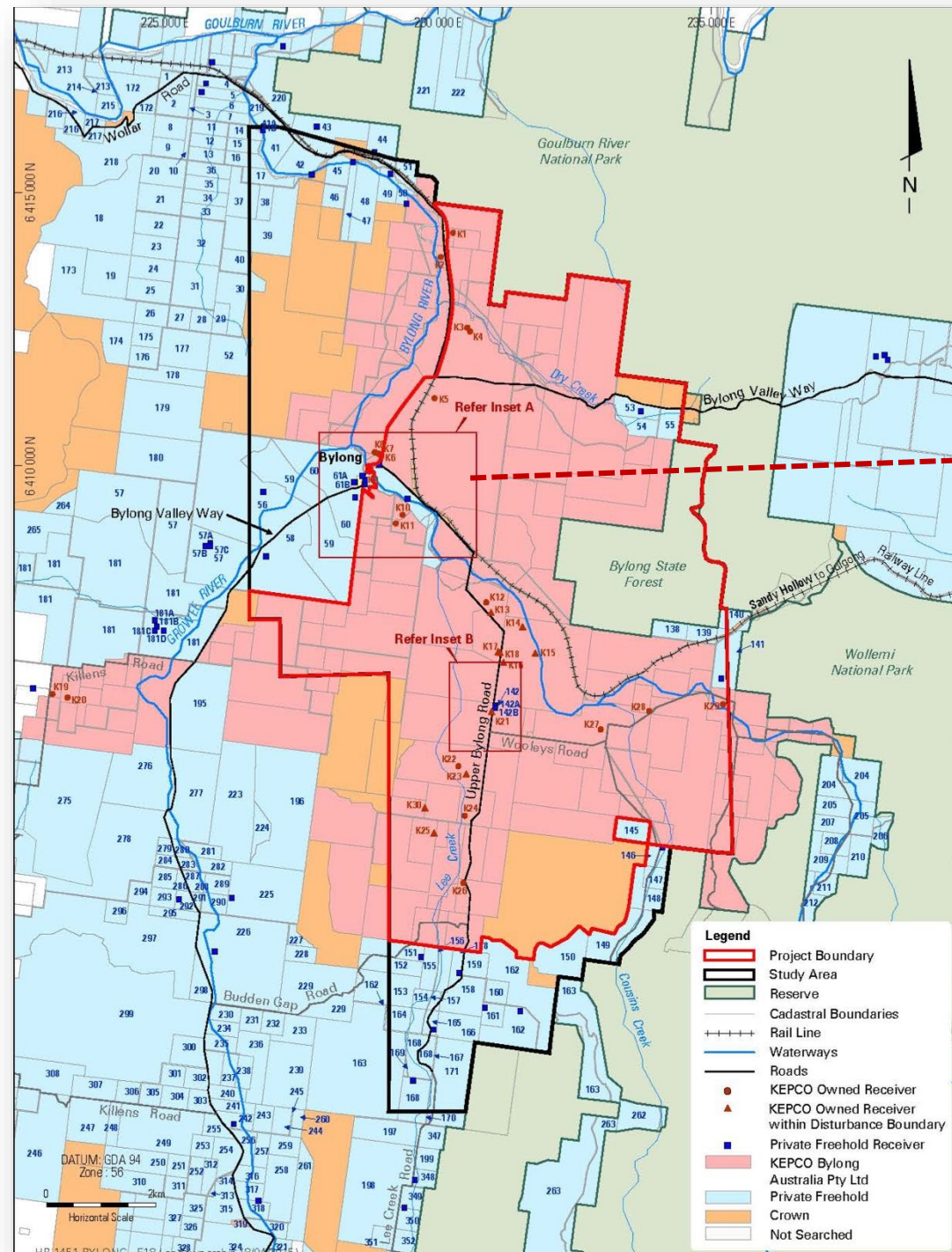
Completed boreholes by KEPCO



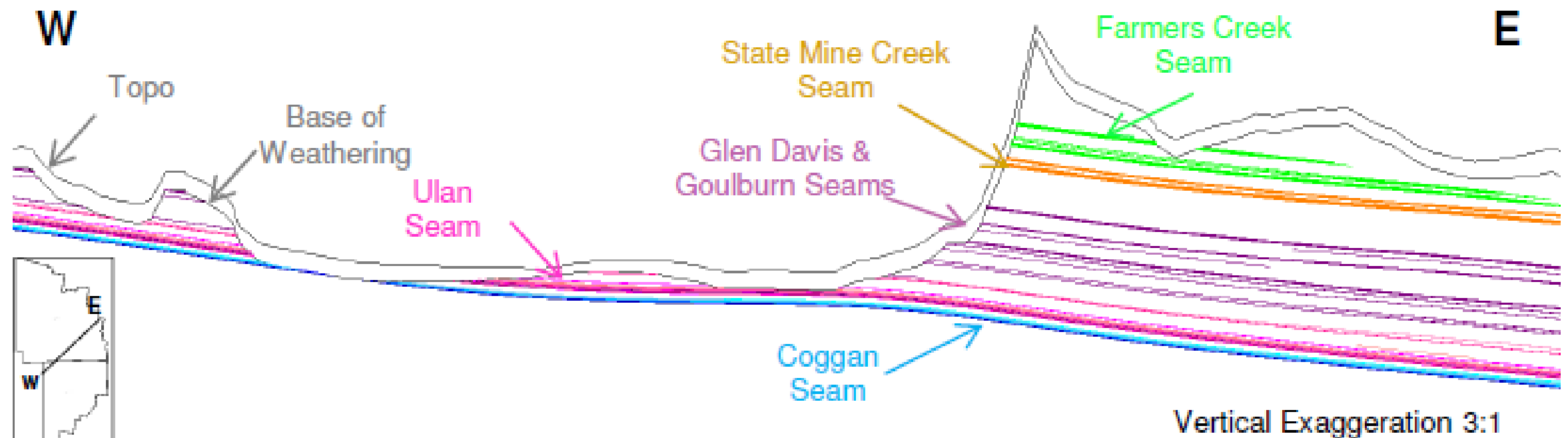


# BYLONG Coal Project

## Landownership Status



- ▶ Coal seams form part of the Illawarra Coal Measures within the Western Coalfield of the Sydney basin
- ▶ Six (6) main seams exist within authorisations, including Farmers Creek; State Mine Creek; Goulburn; Glen Davis; Ulan; Coggan
- ▶ Ulan Seam and Coggan Seam are the primary targets for the Project as most economic seams
  - Farmers Creek, State Mine Creek, Goulburn, Glen Davis seams are typically highly interbedded with reduced quality within the leases



## Coggan seam

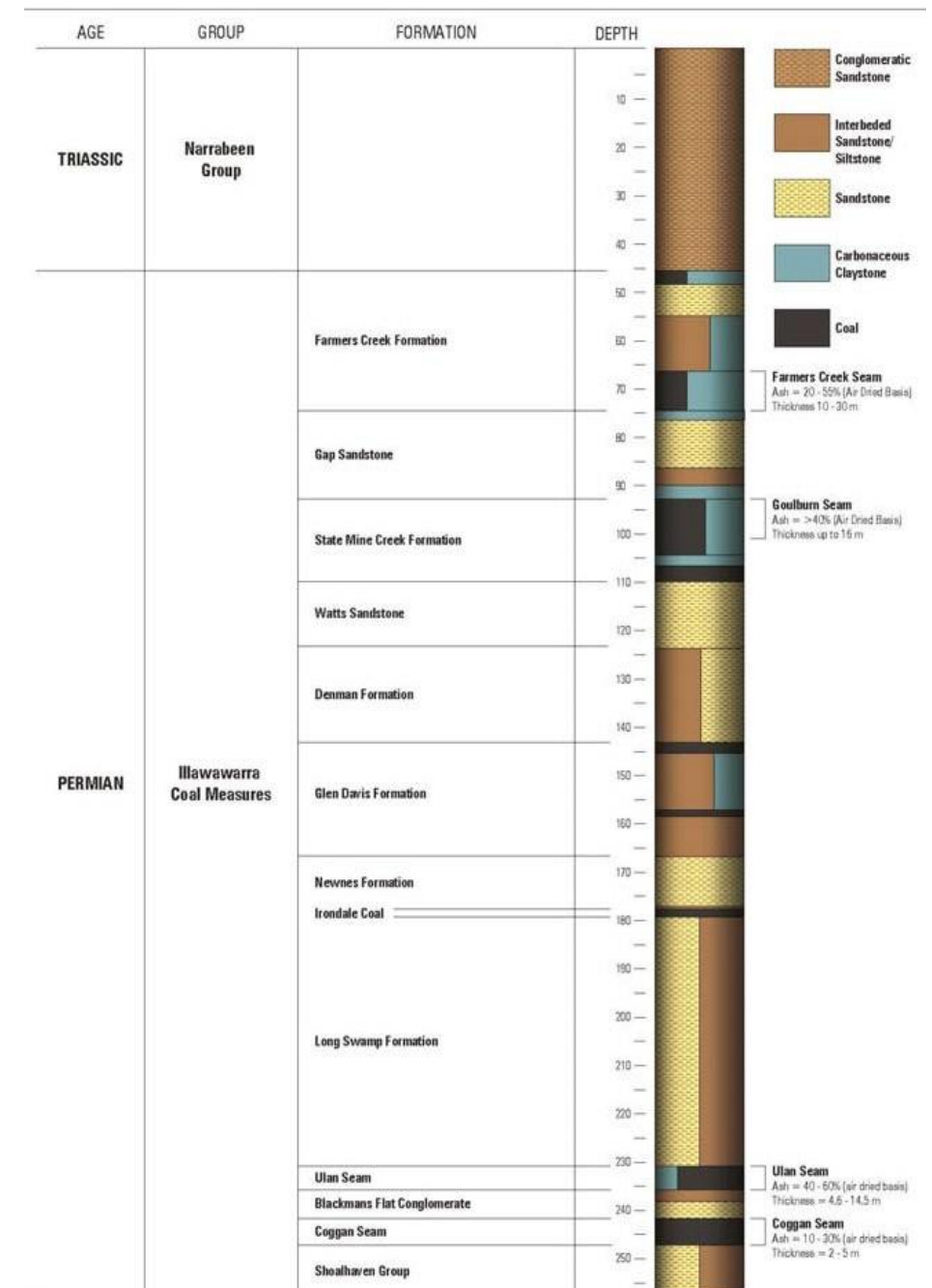
- ▶ Relatively thick continuous seam (2 m to 5.5 m)
- ▶ Relatively good quality throughout – suitable for full seam extraction for one working section
- ▶ Low gas (<2-3m<sup>3</sup>/t)
- ▶ Mod-high spontaneous combustion propensity
- ▶ Suitable for both open cut and underground extraction (high productivity target seam)

## Ulan Seam

- ▶ Relatively thin interbedded plies – multiple thin working sections required
- ▶ Mod-high spontaneous combustion propensity
- ▶ More suited to selective mining via open cut

## Coal Quality

- ▶ Two products: 16% and 22% ash at just below Newcastle benchmark of 6,300 kcal





Item	Characteristics
Ash	A global projection of 4% air dry moisture for product ashes between 14% and 22% appears reasonable
Volatile Matter	A high volatile matter bituminous coal, with dry mineral matter free volatile matter averaging around 36.3% for Ulan and 36.5% for Coggan
Sulphur	0.4% (ad)
Calorific Value	A 16% ash (ad) product will have an average gross air-dry energy level around 6370 kcal/kg
Calorific Value	A 22% ash (ad) product will have an average gross air-dry energy level around 5800 kcal/kg
CSN	0 ~ 0.5 (ad)
Phosphorous	0.03% (ad)
Trend	There is a trend of increasing rank to the north and north east
HGI	Hardgrave grindability index values average around 50

Overall, Bylong coal has following characteristics:

- ▶ Bituminous coal of Permian age, extension of the Lithgow Seam prevailing in the Western Coalfield of NSW
- ▶ High energy content circa 6370kcal AD for 16% ash product, circa 5800kcal AD for 22% ash product
- ▶ High volatile matter (VM) content circa 36.5%
- ▶ Low sulphur (0.4% AD or less) and phosphorous contents (0.03%) i.e. lower sulphur content than typical Hunter Valley thermal coal (0.5%)
- ▶ Moderate HGI of 50, which strikes a good balance between grindability and handling characteristics (i.e. reduced powder coal generation)



- ▶ A robust mine planning process has been implemented in order to develop the most appropriate mine plan and project description to proceed with for the Bylong Coal Project, including:
  - Exploration activities (1984 to current)
  - Concept study (commenced March 2011)
  - Extensive environmental monitoring program (2011 to current)
  - Pre-feasibility study (completed July 2012)
  - Preliminary environmental constraints analysis (completed November 2012)
  - Options study (completed October 2013)
  - Feasibility study (completed in September 2014)
- ▶ Environmental Impact Statement (lodged July 2015) illustrated the preferred Mine Plan option that was derived from Feasibility Study

- ▶ KEPCO is currently seeking approval for:
  - Open cut and underground mining
  - 25 year Project life - 2 year construction period and 23 year operational period
  - Combined maximum extraction rate of 6.5Mtpa of Run of Mine (ROM) coal
  - Coal handling and processing capability of 6Mtpa
  - Rail loop and load out facility and connection to Sandy Hollow-Gulgong Railway Line
  - Temporary workforce accommodation facility (WAF)
  - Access roads
  - Communication and electrical infrastructure
  - Upgrade and realignment of Upper Bylong Road

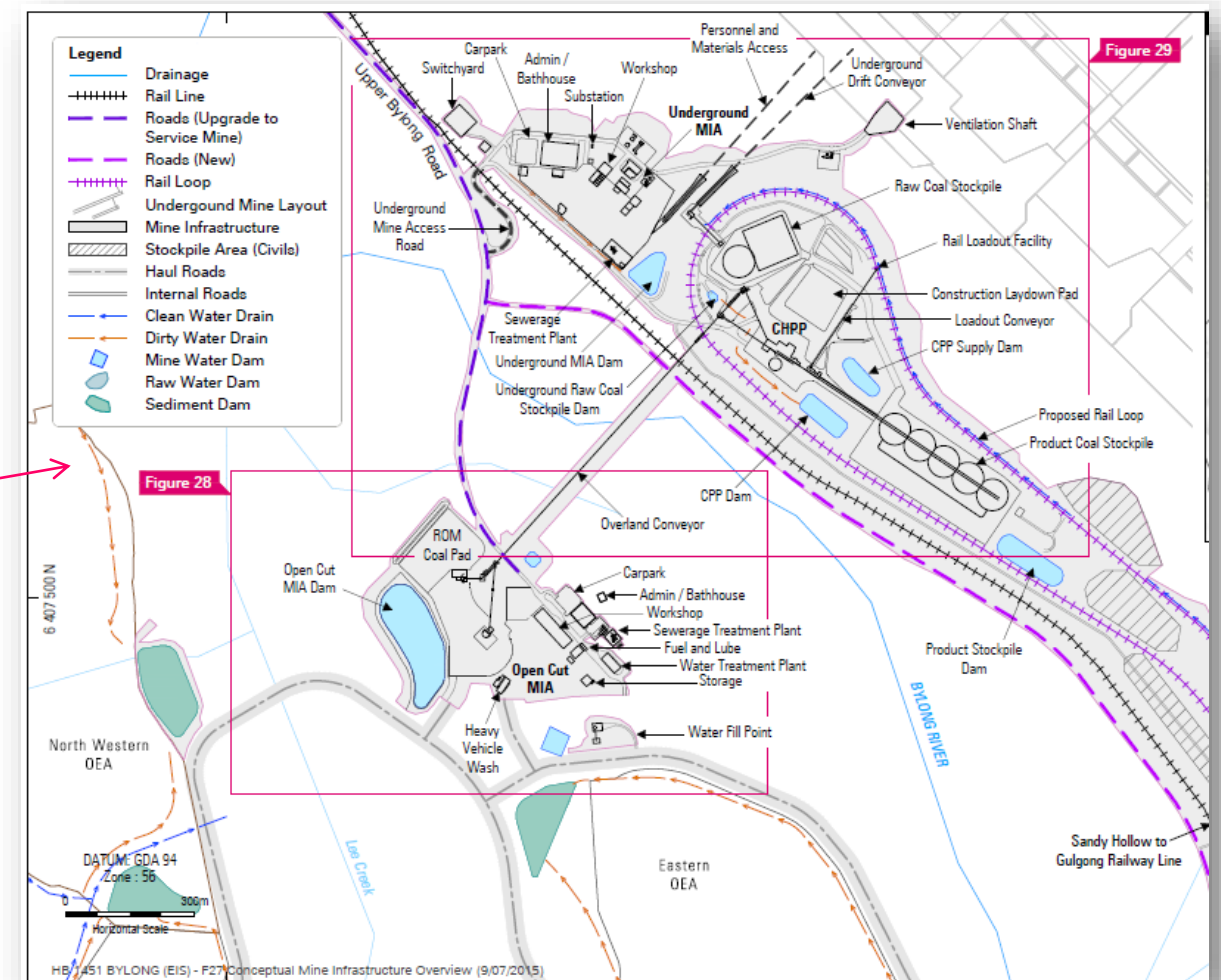
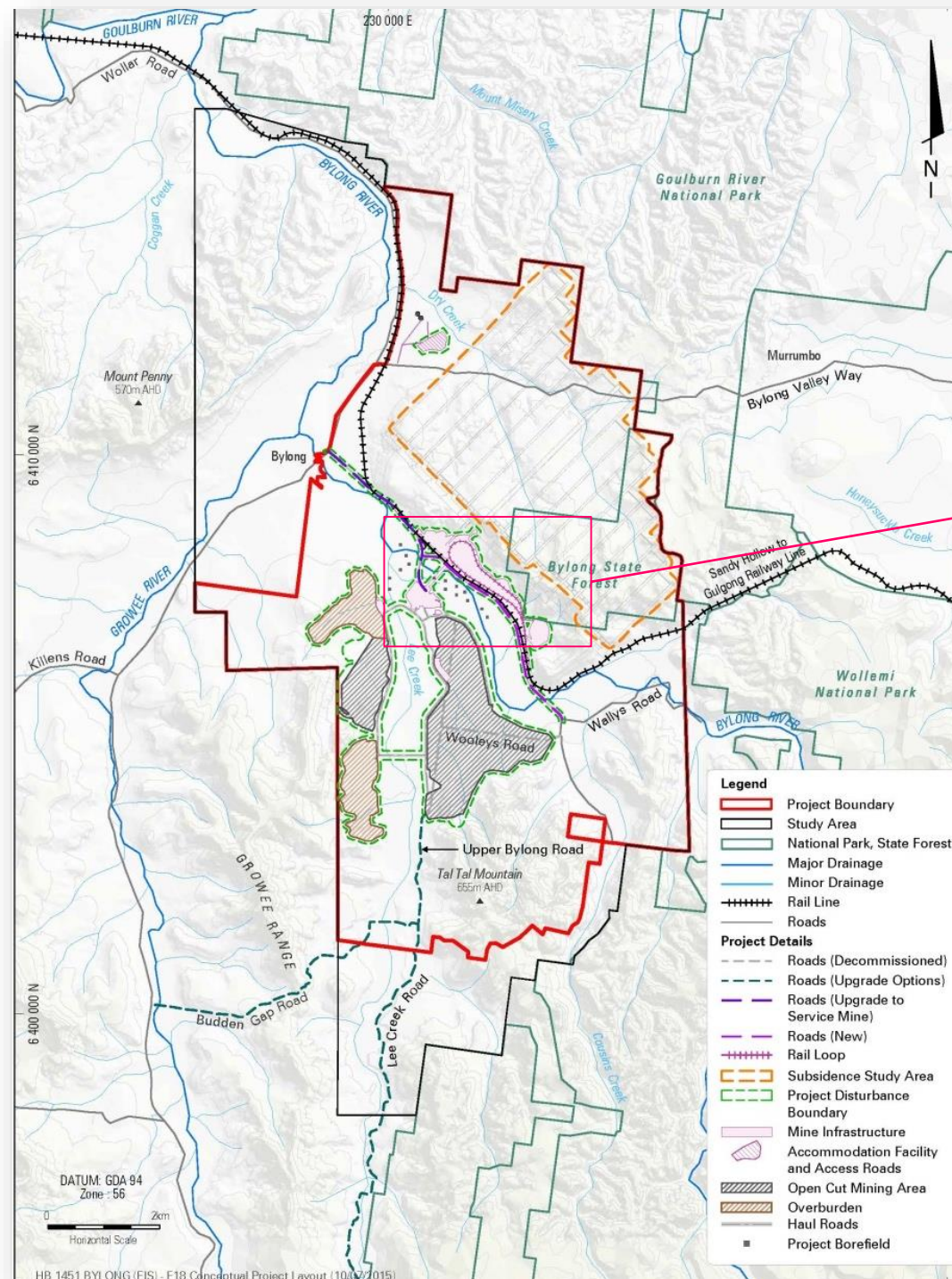


*Exploration drilling on the Project*



# BYLONG Coal Project

## Conceptual Project Layout





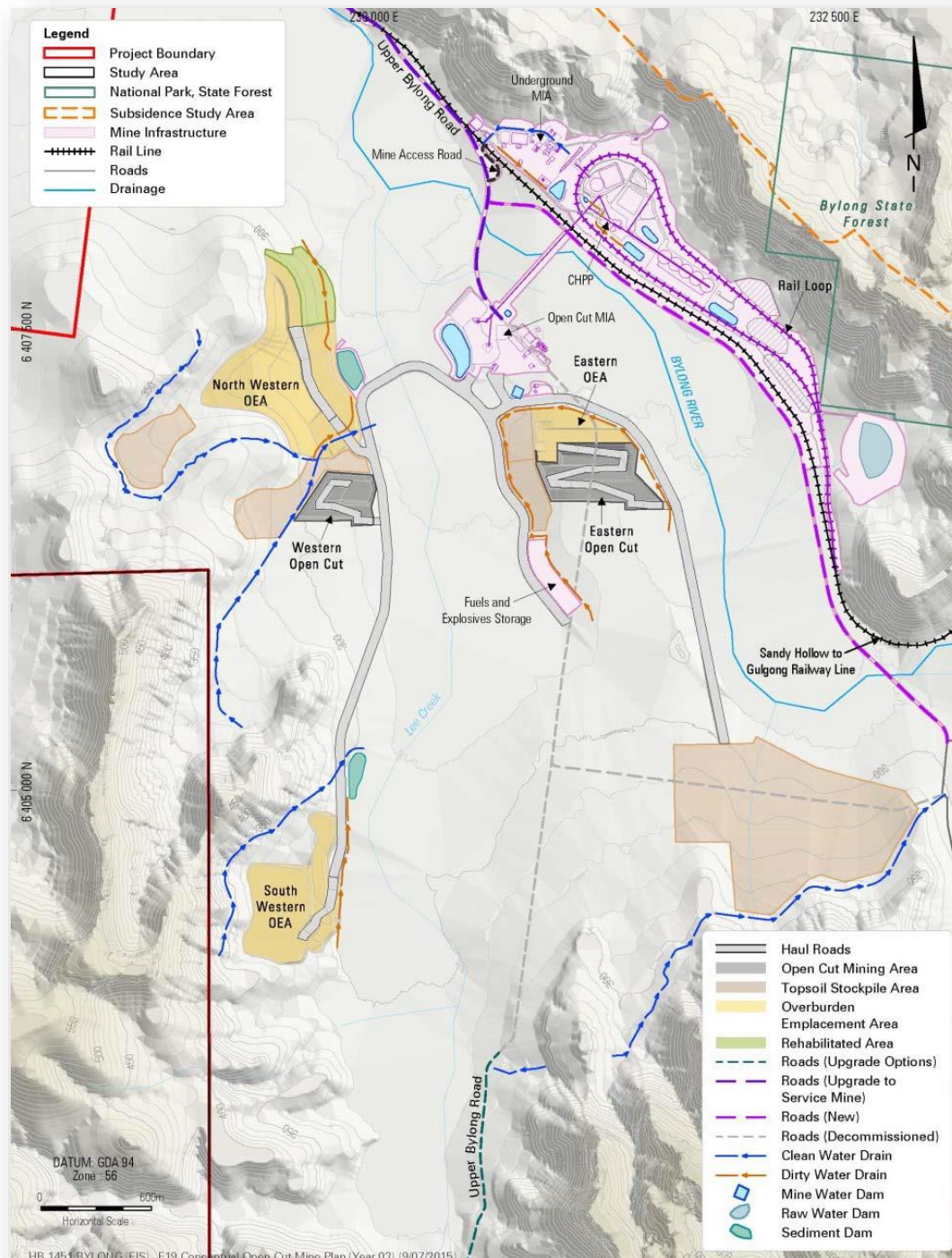
- ▶ Recovery of 33 Mt of ROM coal utilising open cut mining methods
- ▶ Contemporary open cut excavator and truck mining techniques supported by other ancillary mining equipment
- ▶ Coal extraction and related activities operating 24 hours a day, 7 days a week over an approximate 10 year period
- ▶ Two open cut areas will provide storage of coal processing reject materials from underground mining activities
- ▶ Infilling of mining voids and progressive rehabilitation of disturbed areas commencing project year 3



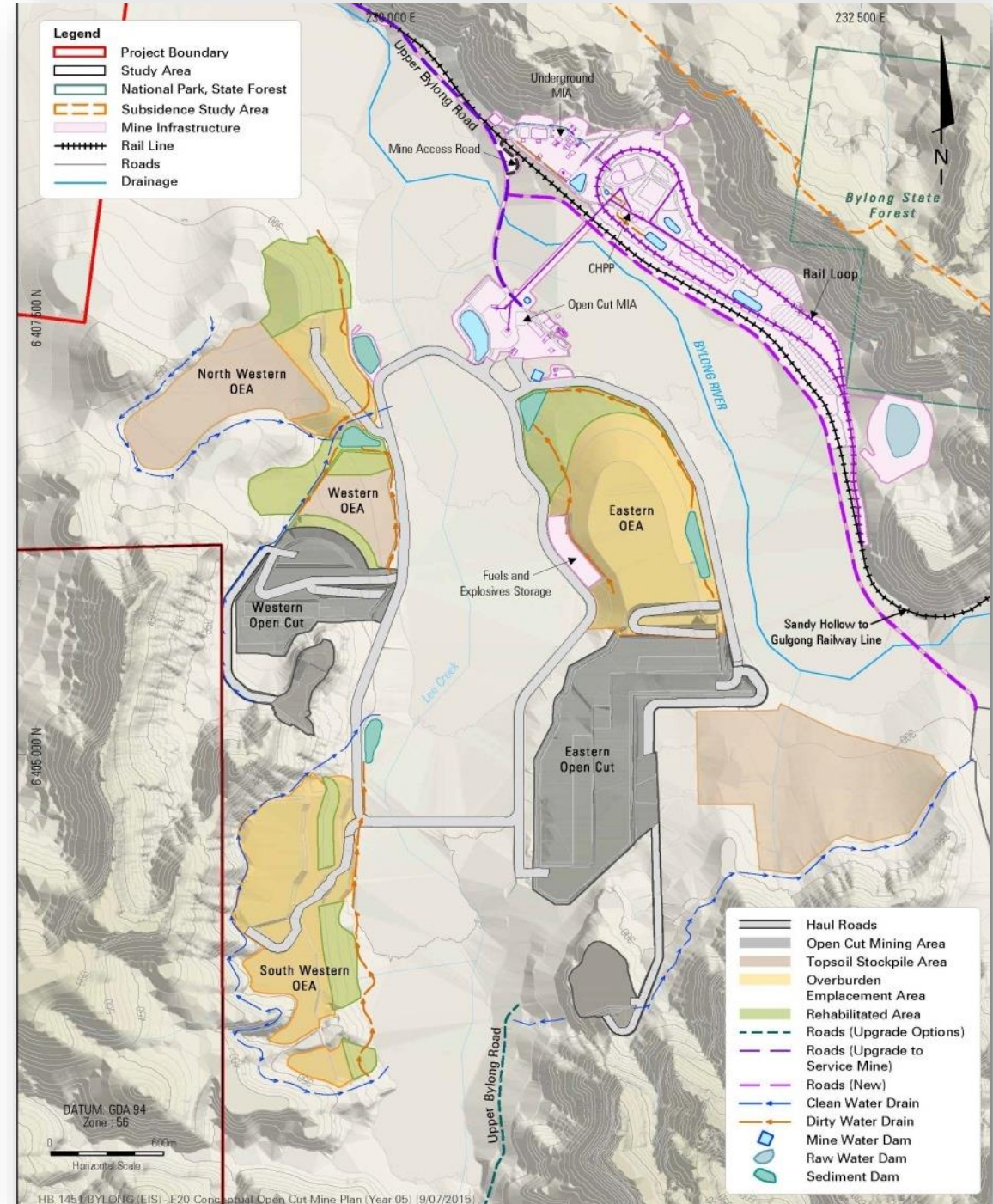
*Example of coal handling and stockpiling facility*



## PROJECT YEAR 3

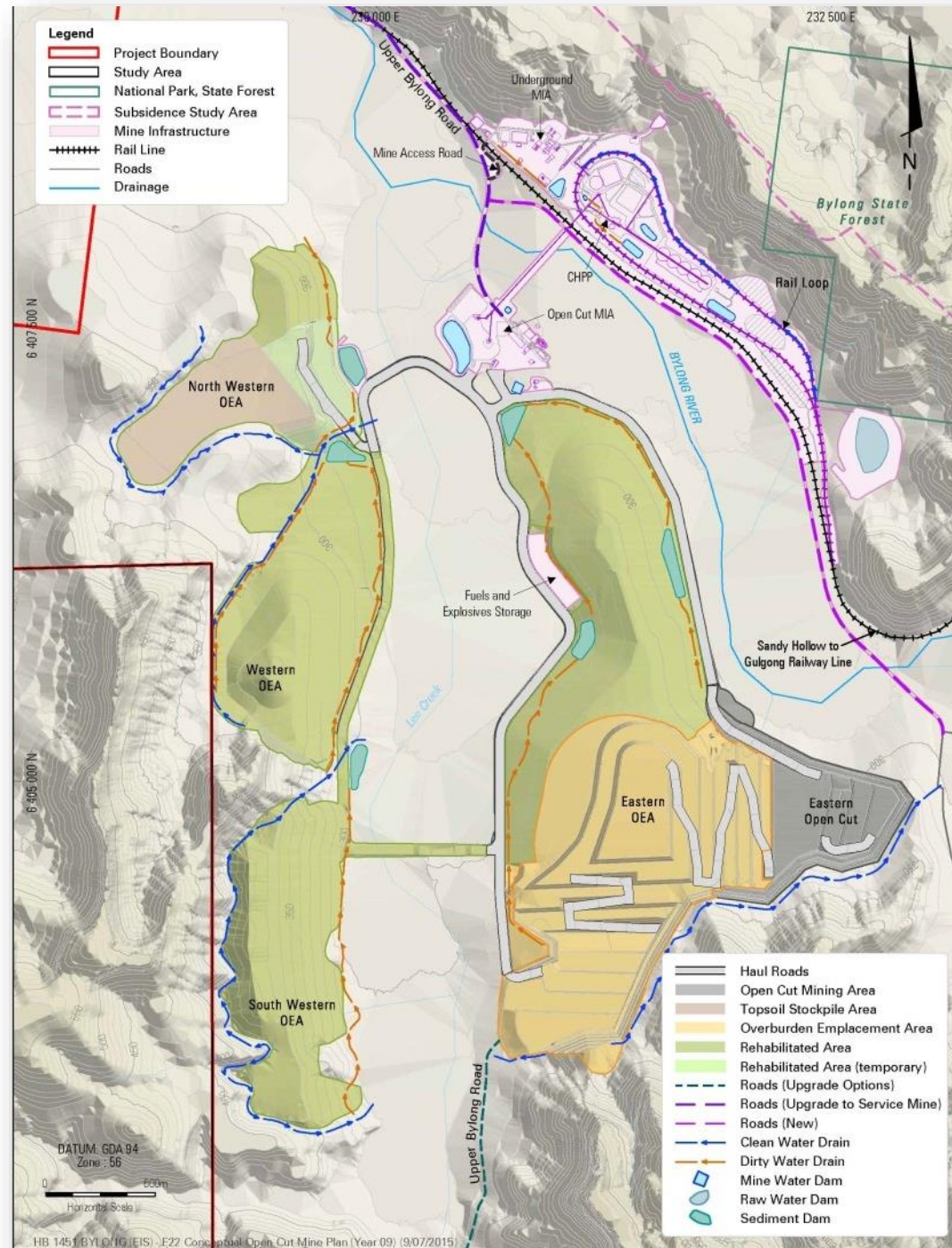


## PROJECT YEAR 5

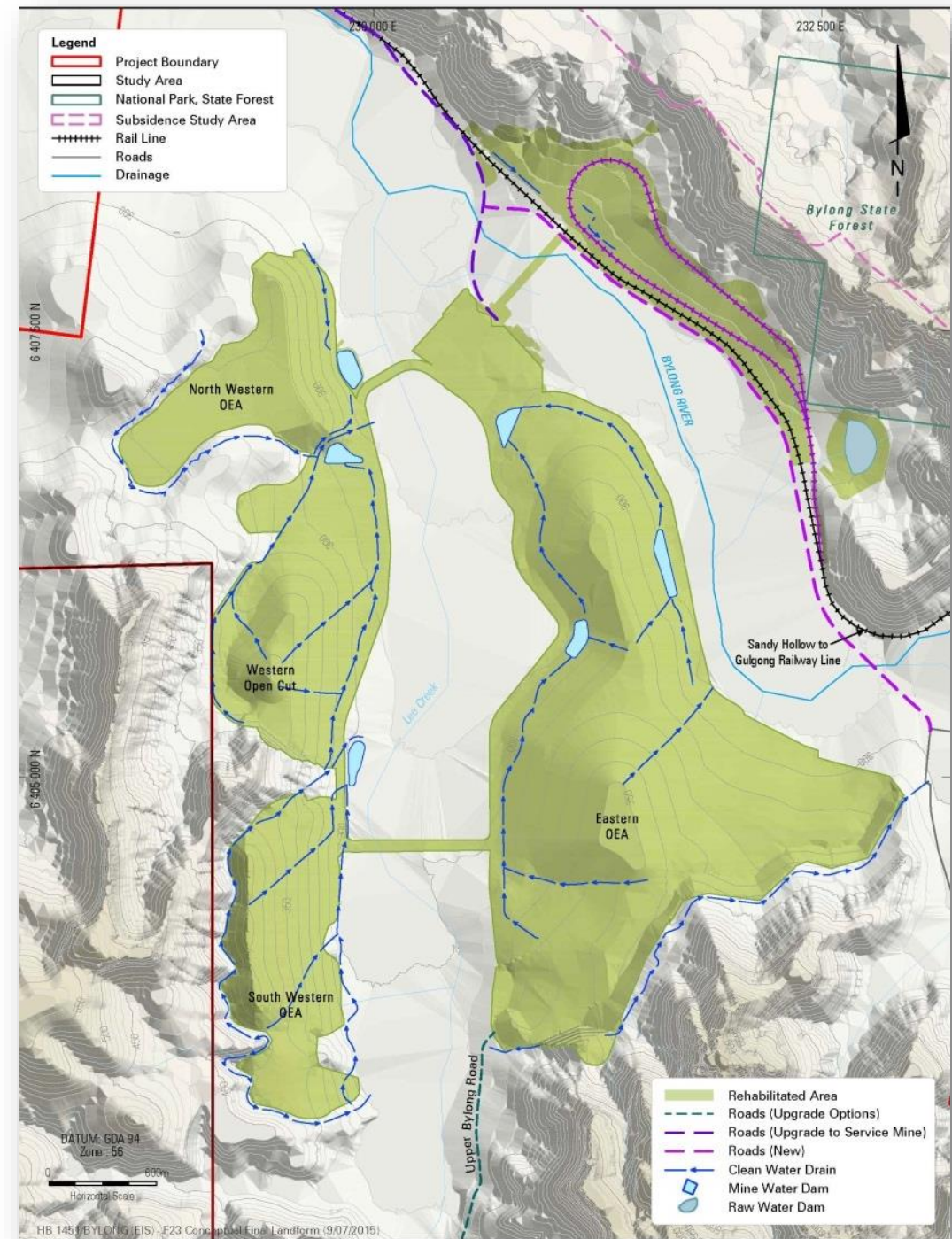




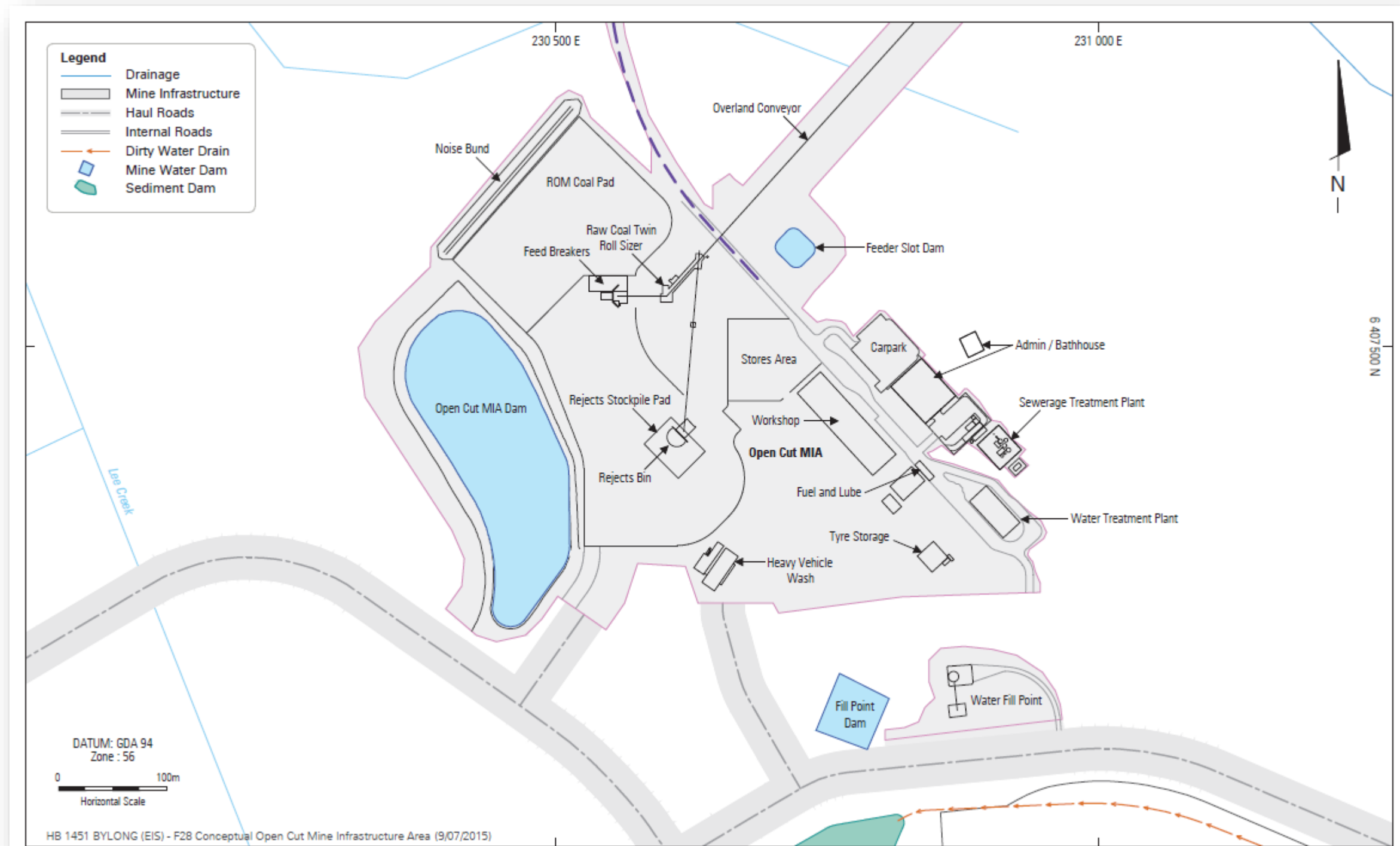
## PROJECT YEAR 9



## FINAL LANDFORM

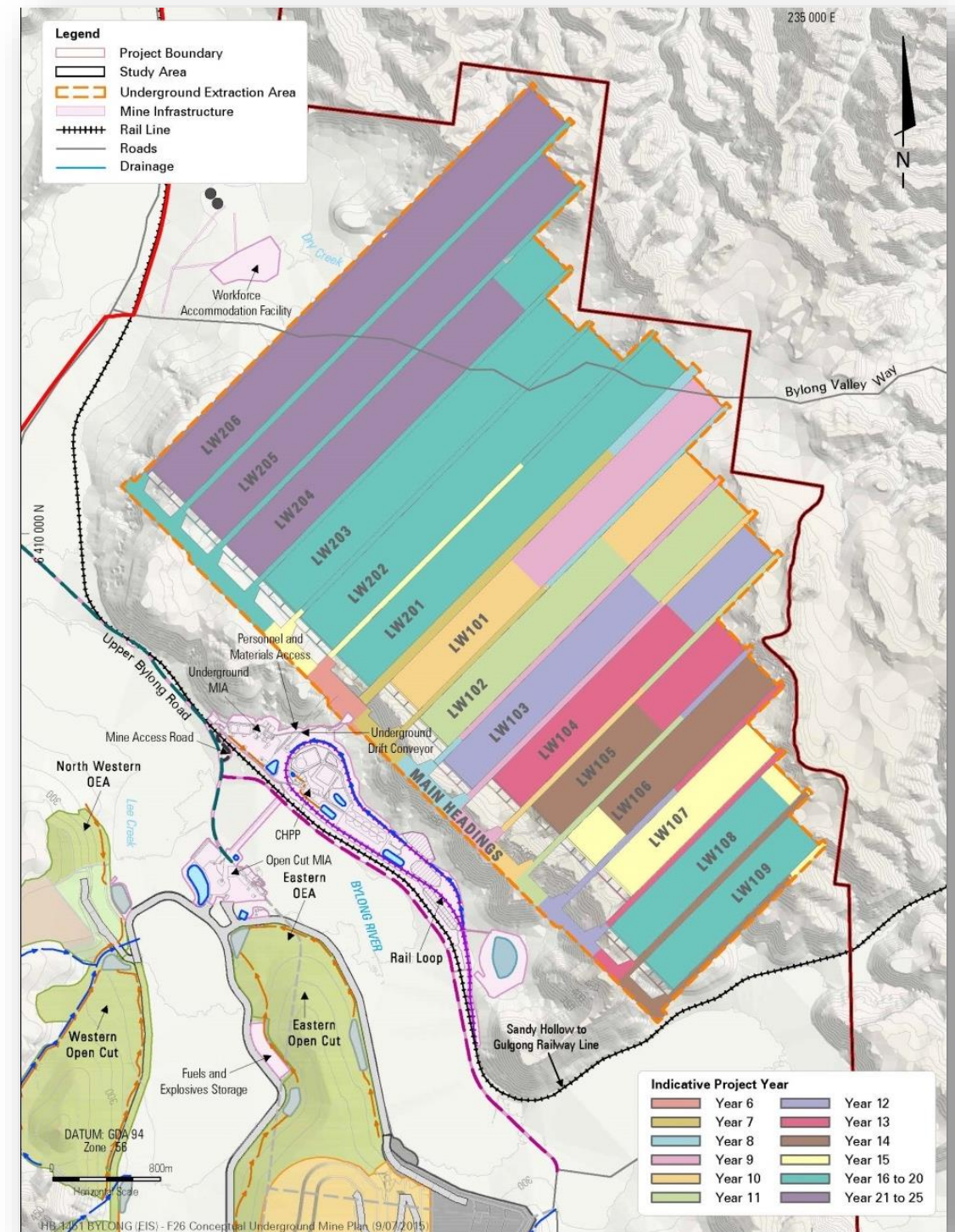


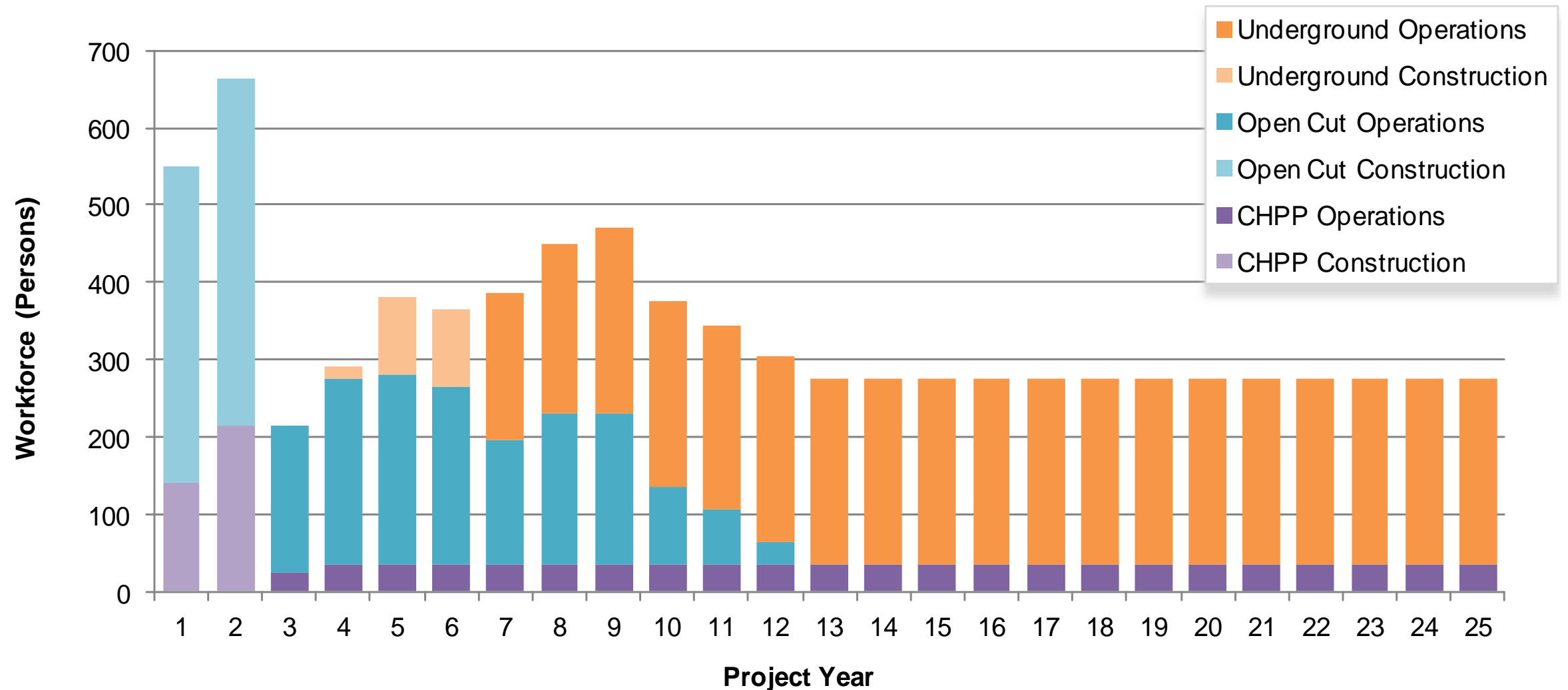






- ▶ Underground mining operations will recover approximately 91 Mt of ROM coal
- ▶ Coal extraction and related activities operating 24 hours a day, 7 days a week over an approximate 20 year period
- ▶ Longwall mining techniques with primary access provided via two drifts
- ▶ Supported by above-ground infrastructure: access for personnel and materials, ventilation shafts, workshop, offices and employee amenities, fuel and gas management facilities





- Peak construction – Approximately 660 employees (avg. = 360)
- Peak operations – Approximately 470 employees (avg. = 290)

- ▶ The Project will provide net production benefits to Australia of approximately \$596 Million (approximately \$315 Million to New South Wales)
- ▶ The Project will deliver material socio-economic benefits to the Mid-Western Regional Council (MWRC) local government area and NSW through the generation of employment, export revenue, taxes and royalties for 23 years, with average annual contributions estimated at:

## STATE

- \$855 million direct and indirect outputs / business turnover
- \$492 million direct and indirect value added
- \$290 million (present value) in royalty payments
- 1,496 direct and indirect jobs

## MWRC

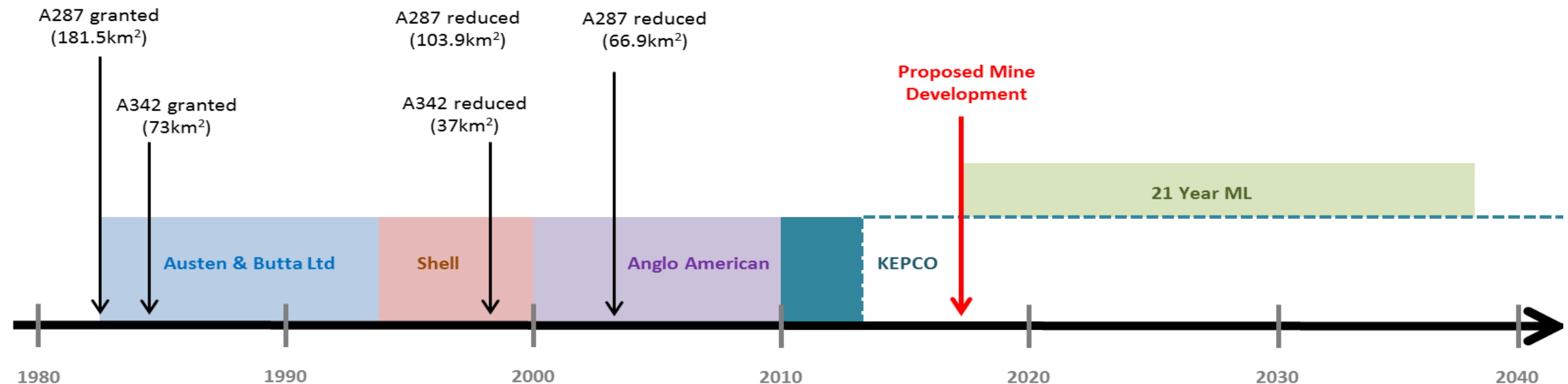
- \$624 million direct and indirect outputs / business turnover
- \$378 million direct and indirect value added
- \$72 million in direct and indirect household income
- 830 direct and indirect jobs





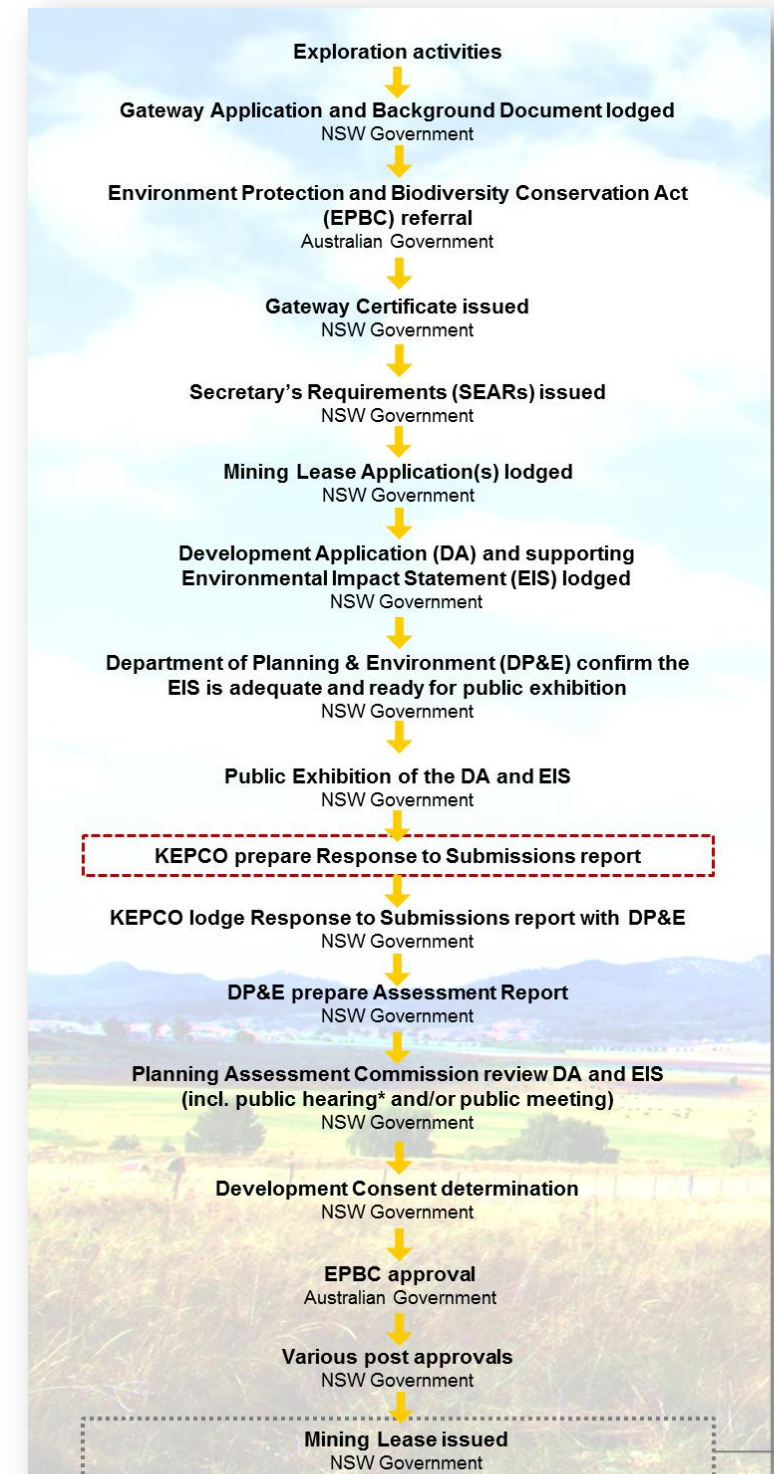
Source: [www.usatoday.com](http://www.usatoday.com)

- ▶ Changing regulatory environment
- ▶ Perception of the industry
- ▶ Land acquisition and ownership
- ▶ Local heritage

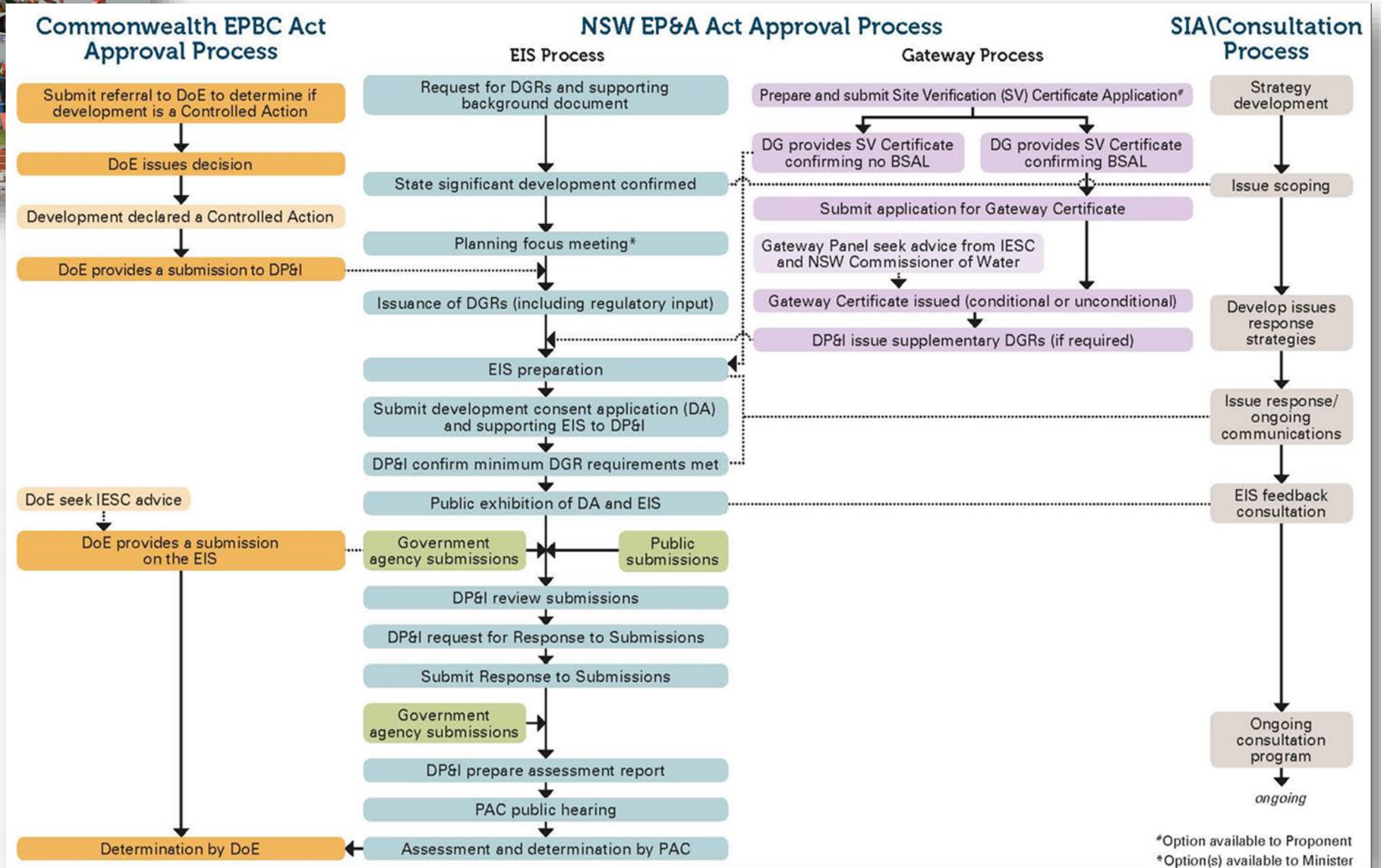


- ▶ Complex and lengthy mine approvals process is underway
- ▶ Gateway Certificate received on 15 April 2014
- ▶ Secretary's Environmental Assessment Requirements (SEARs – formerly DGRs) received on 23 June 2014 and revised on 11 November 2014
- ▶ Extensive environmental monitoring and associated studies currently being conducted for culmination of Environmental Impact Statement (EIS) – incorporates DGR and gateway requirements
- ▶ Lodged EIS July 2015
- ▶ Anticipated mine construction Q1 2017
- ▶ Anticipate mine production (first coal) Q4 2018

- ▶ Response to Submissions report in train
- ▶ Continued engagement with landholders and key stakeholders
- ▶ Project assessed by the Department of Planning and Environment
- ▶ Referred to the Planning Assessment Commission (PAC) for further review and final determination
- ▶ Subject to all necessary approvals, construction begins early 2017







## Technical Assessments – 21 formal reports

Subsidence	Contamination	Social
Stygofauna	Soils and Land Capability	Ecology
Geochemical	Aboriginal Archaeology and Cultural Heritage	Surface Water
European Heritage	Visual and Lightning	Traffic and Transport
Air Quality and Greenhouse	Noise and Blasting	Rehabilitation
Ecology (Vegetation Mapping)	Agriculture	Groundwater
Economics	Burial Heritage	

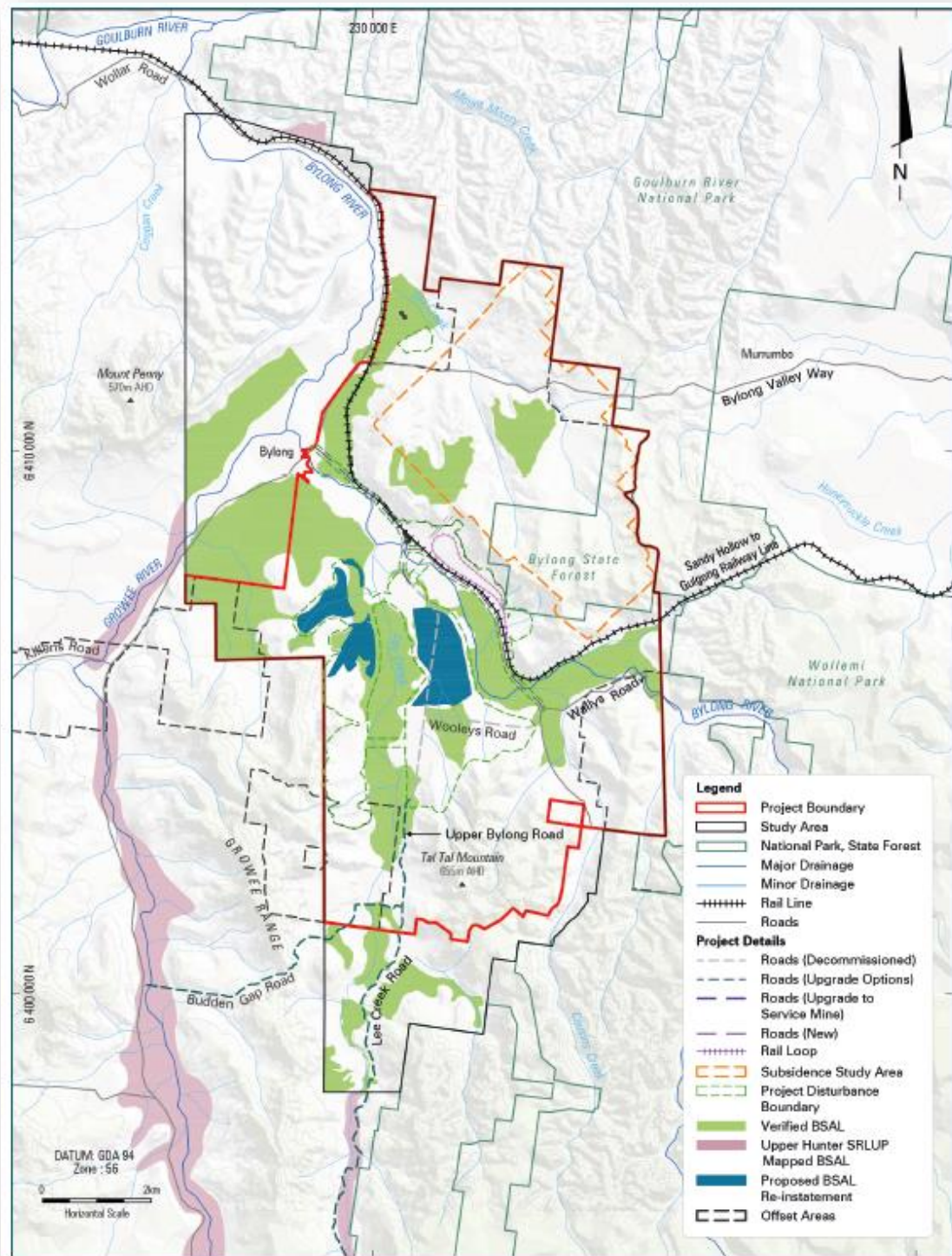
## Legislative Context – 75 + Acts, Legislation and Policies

<i>Aquifer Interference Policy (2012)</i>	<i>Fisheries Management Act 1994</i>	Biodiversity Policy + 14 others
<i>Environmental Protection and Biodiversity Act 1999</i>	<i>Environment Protection and Biodiversity Conservation Act 1999</i>	NSW Water Extraction Monitoring Policy + 3 others
<i>Environmental Planning and Assessment Act 1979</i>	<i>Environment Protection and Biodiversity Conservation Regulations 2000</i>	Air Quality Policy + 9 others
<i>National Parks and Wildlife Act 1974</i>	<i>Mining Act 1992</i>	Waste, Chemicals and Hazardous Materials and Radiation + 4 others
<i>National Parks and Wildlife Regulation 2009</i>	<i>Protection of the Environment Operations Act 1997</i>	Water and Soils Policy + 16 others
<i>Aboriginal Land Rights Act 1983</i>	<i>Petroleum (Onshore) Act 1991</i>	
<i>Threatened Species Conservation Act 1995</i>	NSW State Groundwater Policy Framework + 5 others	
<i>Water Management Act 2000</i>	Aboriginal Cultural Heritage + 5 others	
<i>Heritage Act 1997</i>	Greenhouse Gas Policy + 5 others	



## Stakeholder Consultation - Federal, State, Local + 100 interactions

NSW Department Planning and Environment	Office of Agriculture Sustainability & Food Security	Landholders in Exploration Lease Area
Transport for NSW (Inc. Roads & Maritime Services)	Fisheries NSW	Department of Premier and Cabinet (DPC) <ul style="list-style-type: none"> <li>- Premier of NSW</li> <li>- NSW Treasurer</li> <li>- Minister for Roads and Ports</li> <li>- Minister for Resources &amp; Energy</li> <li>- Minister for Environment</li> <li>- Minister for Trade &amp; Investment</li> <li>- Minister for Regional Infrastructure &amp; Services</li> </ul>
Action and Community Groups <ul style="list-style-type: none"> <li>- Bylong Valley Protection Alliance (BVPA)</li> <li>- Lock the Gate</li> <li>- SHAG</li> <li>- HVPA</li> <li>- + 10 others</li> </ul>	Local and State Media <ul style="list-style-type: none"> <li>- Mudgee Guardian</li> <li>- Singleton Argus</li> <li>- Muswellbrook Chronicle</li> <li>- ABC Upper Hunter, Newcastle, Mid Western</li> <li>- 2NM</li> <li>- Newcastle Herald</li> </ul>	Local State and Federal Members <ul style="list-style-type: none"> <li>- Member for Upper Hunter</li> <li>- Member fro Hunter</li> <li>- Member for Parkes</li> <li>- Minister for Environment</li> <li>- Minister for Resources and Energy</li> <li>- Minister for Infrastructure and Transport</li> </ul>
NSW Department of Trade, Investment, Regional Infrastructure and Services	NSW Office of Water	Department of Health
NSW Office of Environment and Heritage	NSW Division of Resources and Energy (DRE)	Department of Education
NSW Department and Infrastructure	NSW Heritage Council	Department of Housing and Public Works
Commonwealth Department of Environment	Roads and Maritime Services (Western Region)	Catchment Management Authority (CMA)
Mid Western Regional Council	Crown Lands NSW	Mine Subsidence Board Department of Planning and Infrastructure (DP&I)
Musselbrook Regional Council	NSW Resources and Energy	NSW Farmers Association



Amendments to the State Environmental Planning Policy (SEPP) (Mining, Petroleum Production and Extractive Industries) 2007

The role of the PAC has also fundamentally changed the way in which approvals are sought and granted

Major changes to the State's regulatory environment (e.g. Strategic Regional Land Use Policy):

- BSAL and 'Prime Agriculture Land' perception (Liverpool Plains/Breeza is Class 1-2)
- Bylong Valley Land Use Capability is primarily Grazing (Class 4-6) Land with occasional Cropping (Class 3-4)
- No Prime Agriculture land will be impacted Class 3 to 5
- Differences of view between OEH, DPI Agriculture, DRE etc. regarding land use intention



- ▶ Marked increase in well-organised and sophisticated anti-mining lobby groups
- ▶ Changing media landscape
- ▶ Declining population of Bylong and surrounds declining since the 1980s impacting local amenity and services
- ▶ Anti-mining groups and local special interest groups blaming KEPCO for these processes of rural decline
- ▶ KEPCO addressing community concerns transparently and directly



*“Drayton South employees still absorbing shock of mine closure”*

*“Glencore hints at more Hunter Valley coal mine closures...”*

*“Manager of worlds biggest mining funds, Evy Hambro, says mine closures will accelerate in 2016...”*

*“BHP Mount Arthur coal mine on the brink as profits dive...”*

*“The Australian mining industry is bracing for more job losses and...”*

*“Coal towns brace for more job losses...”*

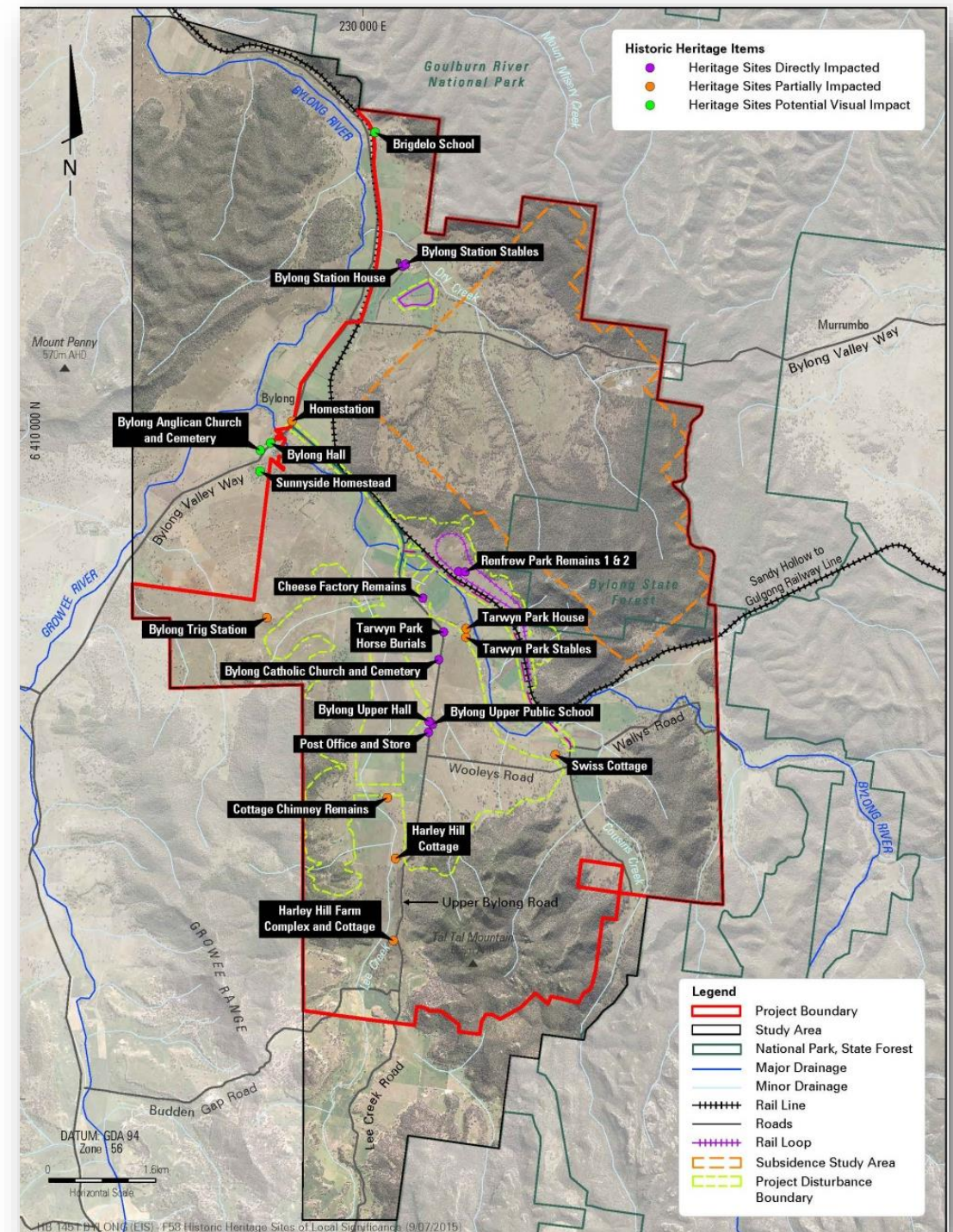
*“Is Australian coal finally having its “oh sh\*t” moment...”*



- ▶ KEPCO owns 7,547 hectares of land within and adjacent to the Project boundary
- ▶ KEPCO objective is to maintain and return to former land capability standard (i.e.) agriculture grazing and occasional cropping status
- ▶ KEPCO has prepared comprehensive studies and management plans to optimise land use.
- ▶ For example:
  - Water resource studies demonstrate KEPCO's existing water access licenses will satisfy all site demands throughout operations, including driest climatic sequence experienced over past 125 years
  - Farming initiatives aimed at maintaining the agricultural viability of purchased properties are active. KEPCO has appointed a Farm Manager to oversee its properties and has developed farm management plans and systems to best utilise the land for the life of the Project
- ▶ KEPCO has a robust community consultation program and on-ground presence to understand and help respond to landholder concerns.



- ▶ The Project will not impact any sites on either the State or Local Heritage Registers, however sites of local significance sit within the Project boundary
- ▶ Sensitivities are heightened where local history and heritage are impacted, particularly in non-traditional mining communities





# BYLONG Coal Project | Community Engagement

- ▶ Discussions with landholders and neighbours within the Bylong Valley (ongoing)
- ▶ Project briefings and presentations provided to relevant regulators
- ▶ Engagement with key service providers within the MWRC LGA
- ▶ 27 Registered Aboriginal Parties have been consulted and involved with preparation of EIS
- ▶ More than 20 Newsletters and Factsheets have been distributed to date, and ongoing Information Briefs also distributed
- ▶ Exploration Information Day (October 2011)
- ▶ Community information sessions and stalls held December 2013, February 2014, November 2014, September / October 2015, February / March 2016
- ▶ KEPCO has established a Community Investment Fund for investment in community projects, events, sponsorships and donations



*Community information session held at Bylong on 29 September 2015*



*Bylong Coal Project's Community Liaison Officer with the Rylstone Hospital Auxiliary; recipients of funding from KEPCO's Community Investment Fund*



# BYLONG | Discussion

Coal Project

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