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Summary of Revised Environmental Impacts

BYLONG COAL PROJECT
Supplementary Information

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1. SUMMARY OF REVISED ENVIRONMENTAL IMPACTS

Table 1 *provides a summary of the key environmental impacts of Revised Mine Plan against the EIS Mine Plan for the Bylong Coal Project.*

Table 1
Revised Environmental Impacts of the Bylong Coal Project

Environmental Risk/Aspect	Project (EIS Mine Plan)	Revised Mine Plan
WORKFORCE	• The EIS assessed a workforce of up to 800 people at peak construction (in Project Year 2) and an up to 470 during peak production in Project Year 9.	• Peak construction employees have dropped to 645 in Project Year 2 (consistent with the RTS, however without a workforce accommodation facility) and up to 450 personnel at peak production in Project Year 8 (i.e. one year earlier as a result of reduced open cut mine life)
COAL EXTRACTION	• 23 years of mining operations including, open cut operations from Project Year 3 to Project Year 10, underground longwall extraction commencing in Project Year 9 to Project Year 25 • 124 Mt of ROM coal from open cut (33 Mt) and underground (91 Mt) operations to produce approximately 90 Mt product coal • Extraction at a rate of up to 6.5 Mtpa ROM coal at peak production • CHPP processing up to 6 Mtpa ROM coal	• No change in the 23 years of mining operations • Open cut mining operations are shortened by around one year to run from Project Year 3 to Project Year 9 • Underground mining operations do not change from the EIS Mine Plan, including the recovery of 91 Mt of ROM coal • Reduced ROM coal recovery of approximately 4.6 Mt (or 13.9%) by open cut mining methods to 28.3 Mt • Reduced overburden handling by 23.9%, from 22.8 Mbcm to 17.3 Mbcm • Maximum ROM coal production of 6.5 Mtpa • CHPP processing capacity to remain consistent to EIS Mine Plan
DISTURBANCE	• Project Disturbance Boundary is approx. 1,160 ha • Tarwyn Park Impacts • Project Disturbance Boundary covers approx. 192.2 ha of Tarwyn Park o 71 ha in relation to open cut operations (plus 19.5 ha for haul road and buffer = 90.5 ha) o 101.7 ha for mine infrastructure including CHPP, rail loop and East Link Road (including buffer areas) o Borefield and other ancillary infrastructure • Underground Extraction Area covers approximately 27.3 ha of Tarwyn Park property (with approx. 15 ha within subsidence study area)	• Revised Project Disturbance Boundary is approx. 1,047 ha, which represents a 113 ha reduction in surface disturbance footprint • No open cut mining or overburden emplacement on the Tarwyn Park property. Mine infrastructure to remain • Removal of 90.5 ha (or 47%) of disturbance to the Tarwyn Park property • Removal of 22.5 ha of disturbance associated with the contracted Western Open Cut Mining Area
SUBSIDENCE	• The Subsidence Study Area covers an area of approx. 1,714 ha • Land predominantly owned by KEPCO, MWRC, State Forest and the Crown - Bylong Quarry only privately owned land within the Subsidence Study Area • Approx. 15 ha of land in North East of Tarwyn Park affected by subsidence	• No change to underground mining operations and associated subsidence effects
ECOLOGY	• 753 ha of native vegetation within the Project Disturbance Boundary o 251 ha of vegetation conforming to Box Gum Woodland (EEC/CEEC) o 232 ha of Remnant woodland with 13 ha of this conforming to Hunter Valley Footslopes Slaty Gum Woodland (EEC) o 521 ha of Native Grassland o Various threatened flora and fauna species (BC Act/EPBC Act) are known/have the potential to occur within the Project Disturbance Boundary • Biodiversity Offset Strategy comprising seven land-based offset areas (approximately 4,100 ha of land) has been developed for the Project; o 3,800 ha of native vegetation; o 1,765 ha of Box Gum Woodland (EEC/CEEC).	• Revised Project Disturbance Boundary now comprises 691.1 ha (or 8.2% reduction) in native vegetation: o Reduced disturbance to approx. 4.4 ha (or 1.8%) of Box Gum Woodland o A reduction of approx. 24.8 ha (or 10.7%) of remnant woodland vegetation, with 0.4 ha (or 3.1%) reduction in disturbance to woodland conforming to Hunter Valley Footslopes Slaty Gum Woodland (EEC) o A 30.7 ha (or 5.9%) reduction in disturbance to native grassland o Various threatened flora and fauna species (BC Act/EPBC Act) are known/have the potential to occur within the Project Disturbance Boundary • No changes to the Biodiversity Offset Strategy
SURFACE WATER & FLOOD	• Open Cut mine plan designed to remain outside of the Bylong River floodplain (being the key areas where Natural Sequence Farming (NSF) activities had been undertaken) • The maximum loss of catchment areas throughout the life of the Project represent: o Less than 1.3% of Bylong River Catchment (to a point downstream of Project Boundary); o Approximately 5.8% of the Lee Creek Catchment (to its confluence with the Bylong River); and o Less than 0.1% of the Growee River catchment (to its confluence with the Bylong River). • No discharges are predicted from the water management system throughout the life of the Project • In light of nil discharge, surface water quality within neighbouring stream systems are unlikely to be significantly impacted by the Project	• Revised open cut mine plan further avoids parts of Tarwyn Park where NSF activities have been undertaken • The maximum loss of catchment areas throughout the life of the Project represent: o Less than 1.1% of Bylong River Catchment (to a point downstream of Project Boundary); o Approximately 4.2% of the Lee Creek Catchment (to its confluence with the Bylong River); and o Less than 0.1% of the Growee River catchment (to its confluence with the Bylong River). • Loss of catchment during active mining operations is less than the impact predicted from the EIS mine plan. However, there is no change on the final landform which feeds runoff back into the neighbouring catchment. • No impact on the ability of the Bylong water management system to achieve nil discharge from the mine affected water system • Flooding impacts are found to be generally consistent with the Response to Submissions (RTS) configuration with the exception of reduced disturbance areas on the Tarwyn Park property which will potentially minimise flood impact impacts
GROUNDWATER	• Up to 4,099 ML/year of groundwater inflows to the mining areas	• Peak groundwater inflow rate for the underground mine period (i.e. 4,099 ML/year) remains unchanged

Environmental Risk/Aspect	Project (EIS Mine Plan)	Revised Mine Plan
	• Peak loss of baseflow from Bylong River water source of up to 994 ML/year, predominantly the incidental effect of borefield drawdown within alluvial aquifer o This reduction in baseflow is negligible when compared to the surface flows (which only occur following significant rainfall events) and is unlikely to significantly affect the intermittent flow regime of these ephemeral streams • No privately owned groundwater bores are predicted to exceed the 'minimal impact considerations' within the Aquifer Interference Policy (AIP), with the largest predicted drawdown being no greater than 0.1 m	• The reduced footprint of open cut mining has resulted in a reduction of groundwater inflows to the open cut from a peak of 106 ML/year in PY 5 down to 76 ML/year in PY 7 for the Revised Mine Plan. This represents an approximate 30% reduction in groundwater inflows to the open cut mining area. • Cumulatively, groundwater inflows to the open cut will reduce by approximately 163 ML • Marginal reduction in drawdown (0.1 m) to the Bylong River alluvial aquifer (on KEPCO land) from that predicted for the EIS • No privately owned groundwater bores are predicted to exceed the 'minimal impact considerations' within the AIP
AIR QUALITY & GREENHOUSE GAS	• No predicted exceedances of the air quality criteria for the various staged plans modelled for the Project • The annual average Scope 1 greenhouse gas emissions as a result of the Project (0.09 Mt CO2-e) represents approximately 0.02% of Australia's Commitment under the Kyoto Protocol (591.5 Mt CO2-e).	• No predicted exceedances of the air quality criteria for the various staged plans modelled for the Project • A reduction of particulate emissions by approx. 40% when compared to the EIS Mine Plan • Scope 1 greenhouse gas emissions have been reduced by approximately 3.9% compared to the EIS • The annual average Scope 1 greenhouse gas emissions as a result of the Revised Mine Plan (0.09 Mt CO2-e) represents approximately 0.02% of Australia's Commitment under the Paris Agreement (431 Mt CO2-e by 2030). • Scope 2 greenhouse gas emissions have been reduced by approximately 1.4% compared to the EIS • Scope 3 greenhouse gas emissions have been reduced by approximately 2.7% compared to the EIS
NOISE	• Three privately owned receivers were predicted to experience significant noise impacts as a result of the Project (KEPCO now owns two of these) • Six privately owned receivers were predicted to experience moderate noise impacts as a result of the Project (KEPCO now owns or has agreement to purchase five of these) • Three privately owned receivers (one landowner) were predicted to experience negligible noise impacts as a result of the Project	• Noise impacts for the Revised Mine Plan have generally reduced by less than one decibel to private receivers located to the north of the Project • The receiver (R60) which was predicted to experience significant noise impacts as a result of the EIS Mine Plan is now predicted to experience moderate noise impacts as a result of the Revised Mine Plan • In addition to the above, the receiver (R58) previously predicted to experience moderate noise impacts as a result of the EIS Mine Plan will continue to experience moderate noise impacts as a result of the Revised Mine Plan • One moderately impacted receiver (R158) (which KEPCO has an agreement to purchase) is now predicted to experience negligible noise impacts as a result of the Project • Three privately owned receivers (R56, R57A, 57C) (one landowner) which were predicted to experience negligible noise impacts as a result of the EIS Mine Plan will continue to experience negligible noise impacts as a result of the Revised Mine Plan • No low frequency noise impacts were predicted for any private receivers
BLASTING	• No exceedances of the ANZECC criteria are predicted for private receivers surrounding the Project • Tarwyn Park Homestead & Stables were located within 190 m and 107 m of the nearest blasting activities for the EIS Mine Plan • A specific Blast Management Strategy was prepared to demonstrate how blasting impacts to the Homestead and Stables would be managed	• No exceedances of the ANZECC criteria are predicted for private receivers as a result of the Revised Mine Plan • Blasting activities for the Revised Mine Plan will be located more than 1.4 km away from Tarwyn Park Homestead and Stables • Blast vibration impacts to items of historic heritage (such as the former Upper Bylong Catholic Church and cemetery which is not directly impacted by Revised Mine Plan) will be similar to or less than those assessed for the EIS Mine Plan • Aboriginal heritage sites which will be avoided for the Revised Mine Plan will not be significantly impacted by blasting activities
ABORIGINAL HERITAGE	• 102 Aboriginal heritage sites are located within the Project Disturbance Boundary and would be salvaged prior to mining operations • 42 Aboriginal heritage sites may be indirectly impacted by blasting or subsidence as a result of the Project	• The Revised Mine Plan will avoid direct disturbance to four Aboriginal heritage sites (or 3.9% less impact) (i.e. three artefact scatter sites and one isolated find) when compared to the EIS Mine Plan • Potential for indirect blast vibration impacts for these sites, however unlikely to significantly impact these sites
HISTORIC HERITAGE	• No heritage items are located within the Project Boundary that are listed on any statutory heritage register • Six items of assessed local heritage value are located within the Project Disturbance Boundary and are to be removed as part of the Project: o Bylong Upper Public School o Cheese Factory Remains o Former Upper Bylong Catholic Church and Cemetery o Renfrew Park Remains 1 & 2 o Upper Bylong Post Office and Store o Bylong Upper Hall o Tarwyn Park horse burial location • Indirect impacts, including visual and blasting impacts were predicted for twelve other heritage sites in the vicinity of the Project • Tarwyn Park was assessed to experience visual, vibration, direct impacts to farmland and the horse burials location	• Revised Mine Plan will avoid direct impacts to the Former Upper Bylong Catholic Church and Cemetery • Horse burials location at the gates of Tarwyn Park Farm Complex will be avoided by the Revised Mine Plan • Driveway access off the Upper Bylong Road to Tarwyn Park Homestead will remain • Impacts to farmland (potentially utilised for NSF) on Tarwyn Park will be avoided for the Revised Mine Plan • Revised Mine Plan will result in improved visual and landscape impacts when viewed from Tarwyn Park Homestead and Stables • Revised Mine Plan will result in some improvements to impacts to views from the Upper Bylong Valley (owned by KEPCO) which forms part of the Bylong Landscape Conservation Area as a result of reduced open cut mining footprints
HISTORIC BURIALS	• Former Upper Bylong Catholic Church and Cemetery within Project Disturbance Boundary and was proposed to be removed as a result of the Project	• Former Upper Bylong Catholic Church and Cemetery will remain for the Revised Mine Plan for the Project
SOILS & LAND CAPABILITY	• Project Disturbance Boundary contains land within various Land and Soil Capability (LSC) Classes (3 to 7) (i.e. high capability land to very low capability land) • Approx. 423.1 ha of BSAL within Project Disturbance Boundary and will be directly disturbed as a result of the Project • Approximately 171.8 ha of BSAL within the Subsidence Study Area and will be indirectly impacted by subsidence as a result of the Project.	• Revised Mine Plan will generally result in reduced impacts to o moderate capability land (LSC Classes 4 and 5 ~71.5% of reduced impacts); o low capability land (LSC Classes 6 and 7; ~26.3% of reduced impacts); and o higher capability land (LSC Class 3; ~2.2% of reduced impacts) • Reduced disturbance to approximately 22.7 ha (or 5.4%) of BSAL, reducing disturbance of BSAL to approx. 400.4 ha for the Revised Mine Plan.

Environmental Risk/Aspect	Project (EIS Mine Plan)	Revised Mine Plan
	• Suitable soil resources available within the Project Disturbance Boundary to facilitate the achievement of rehabilitation objectives for the Project	• Suitable soil resources available within the Revised Project Disturbance Boundary to facilitate the achievement of rehabilitation objectives for the Revised Mine Plan for the Project
REHABILITATION, FINAL LANDFORM & MINE CLOSURE	• Progressive rehabilitation of OEAs and mining areas as soon as practicable • No final void to remain within the landscape at mine closure • Conceptual Final Landform design developed based on standard mine planning principles and proposed disturbance areas • Primary aim to develop a stables and sustainable final landform which is capable of land uses which are currently (or have historically) occurred • Rehabilitation to reinstate BSAL which will be directly disturbed by mining operations • KEPCO is committed to the establishment of a final landform which blends in with the surrounding topography • DPE's Recommended Development Consent Condition support these objectives and requires micro-relief be incorporated into the final landform design and to integrate with the surrounding natural topography (i.e. to complete further detailed mine planning design at the Rehabilitation Management Plan/Mining Operations Plan stage).	• Consistent rehabilitation objectives for the Revised Mine Plan (i.e. no final void, develop landform which integrates with surrounding natural landform, reinstate BSAL and land capable of land uses similar to those pre mining) • Revised Conceptual Final Landform for Revised Mine Plan developed utilising consistent mine planning principles to EIS Mine Plan o Avoids mining operations on Tarwyn Park property (owned by KEPCO) o Contracts mining operations within the Western Open Cut to retain wooded ridgeline which will now (with the reduced Eastern Open Cut OEA for Revised Mine Plan) be visible from Tarwyn Park Homestead o Reduces maximum landform height within the South-Western OEA to reduce landform slopes on western side o Retains valley within the North Western OEA landform design • A detailed Conceptual Final Landform design has been developed as an indication of the likely outcome for the final landform design which will be determined following more detailed mine planning at the time and subject to approval as part of the Mining Operations Plan and Rehabilitation Management Plan.
AGRICULTURE	• Directly disturb approximately 423.1 ha of BSAL • Directly disturb approximately 700 ha of land mapped as Equine CIC • Approx. 451 ha of classified arable land within Project Disturbance Boundary • Approx. 694 ha of classified grazing land within Project Disturbance Boundary • KEPCO owns 10,100 ha of land o 6,538.3 ha is suitable for agriculture ▪ 3,165 ha will continue to be available for agriculture; ▪ 973.7 ha will be temporarily removed from agriculture, however returned to rehabilitated landscape ▪ 294.8 ha will be retained for agricultural use within the Biodiversity Offset Strategy ▪ 2,104 ha will be within the Biodiversity Offset Strategy and will be progressively removed from agriculture for biodiversity conservation	• Revised Mine Plan avoids impacts to 22.7 ha (or 5.4%) of BSAL (the total disturbance to approx. 400.4 ha) • Revised Mine Plan avoids impacts to 112.8 ha (or 16%) of land mapped as Equine CIC (total disturbance to approx. 587.2 ha) • Reduced impact of approx. 55.75 ha (or 12.4%) of arable land due to reducing the Project Disturbance Boundary, with total impact now being approx. 395.1 ha • Reduced impact of approx. 55 ha (7.9%) of classified grazing land due to reducing the Project Disturbance Boundary, with total impact now being approx. 638 ha • Reduced impact of 2.6 ha (17.3%) of heavily timbered land associated with the ridgeline now retained in the Western Open Cut • Revised Mine Plan will result in a further 92.2 ha (i.e. to 3,258 ha from 3,165.8 ha) of land to be available for agriculture with 881.5 ha (from 973.7 ha) being temporarily removed from agriculture throughout the life of the Revised Mine Plan for the Project.
VISUAL & LANDSCAPE	• Low visual impacts to privately owned receivers within the Bylong Village due to intervening vegetation between the residences and the Project components effectively screening views of the Project • One private residence (R141 – now owned by KEPCO) was predicted to experience high visual impacts as a result of the initial years of open cut mining operations, prior to rehabilitation activities reducing these impacts to moderate to low • Moderate to high visual impacts of the rehabilitated OEAs were predicted for limited views available from Bylong Valley Way and Wollar Road • Conceptual Final Landform design results in a modified landscape to the current landform • The available views of the modified landform would primarily be contained within the Upper Bylong Valley, the majority of which is owned by KEPCO • The mine plan design has enabled no void to remain within the final landform and the rehabilitation will aim to return the land to be capable of supporting agricultural land uses similar to those currently in place prior to mining • The Eastern OEA will screen some views of the Upper Bylong Valley from the Tarwyn Park Homestead and Stables towards the Upper Lee Creek valley and the southern end of the Growee Ranges (and the activities proposed Western Open Cut and South Western OEA)	• Visual impacts as a result of the Revised Mine Plan will be significantly less than those previously assessed for the EIS Mine Plan given the reduced footprint and scale of open cut mining • The reduced mine footprint will retain an existing wooded ridgeline within the Western Open Cut area, which is visible from various locations within and outside the Upper Bylong Valley • The Eastern OEA for the Revised Mine Plan will be developed further to the south (off the Tarwyn Park property) and retain existing views to the Upper Lee Creek valley, Telstra Hill and southern sections of Growee Ranges • The revised landform design for the North Western OEA retains the valley which currently exists within this area • The mine plan design has enabled no void to remain within the final landform and the rehabilitation will aim to return the land to be capable of supporting agricultural land uses similar to those currently in place prior to mining • Rehabilitation objectives set out within the Recommended Development Consent conditions remain appropriate for the final landform to be developed to integrate with the surrounding natural landforms.
TRAFFIC & TRANSPORT	• Construction phase likely to result in the greatest Project-related traffic on the regional road network • Project Year 9 represented the worst case impacts for the operational period • Traffic volumes as a result of the Project are not predicted to materially affect the capacity, performance or safety of the local and regional road network, subject to the various upgrades and works to be conducted	• Revised Mine Plan will result in the following improvements/changes to traffic and transport impacts: o A marginally smaller operations workforce – therefore reduced light vehicles o Reduced production rates, and therefore a marginal decrease in deliveries for the open cut mining operations o Peak operational year for traffic movements will be shifted forward one year due to reduced open cut mine life o Marginally reduce rail movements over the life of the mine due to decreased tonnage recovered
ECONOMIC	• Net production benefit of $315 Million accruing to NSW o $290 Million in royalty payments o $21 Million in company tax allocated to NSW o $4 Million in voluntary contributions • Significant economic benefit from the EIS Mine Plan to the MWRC LGA and the broader NSW economies, including: o Between $5.16 Billion (present value) and $5.34 Billion (present value) in Gross Regional Income to the MWRC LGA economy over the life of the Project o Between $6.91 Billion (present value) and $7.28 Billion (present value) in Gross Regional Income to the NSW economy over the life of the Project	• Net production benefits to NSW are reduced by $13 Million to $302 Million o Primarily due to lost NSW government royalties ($12 Million) from not recovering the 4.6 Mt of ROM coal which would have been recovered by EIS Mine Plan • Whilst the reduced environmental, social and cultural impacts as a result of the Revised Mine Plan are materially important from a local perspective, their values are immaterial from an aggregate CBA perspective • Significant economic benefit from the Revised Mine Plan to the MWRC LGA and the broader NSW economies, including: o Between $4.76 Billion (present value) and $4.95 Billion (present value) in Gross Regional Income to the MWRC LGA economy over the life of the Project o Between $6.39 Billion (present value) and $6.76 Billion (present value) in Gross Regional Income to the NSW economy over the life of the Project