



Warkworth Continuation 2014

1

Environmental Impact Statement

Prepared for Warkworth Mining Limited | June 2014

VOLUME 1 — Main Report



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EMGA Mitchell McLennan

VOLUME 1 — MAIN REPORT

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ENVIRONMENTAL IMPACT STATEMENT CERTIFICATION

For submission of an environmental impact statement (EIS) under Part 4, Division 4.1 of the *Environmental Planning and Assessment Act 1979*.

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Applicant

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Proposed development

Warkworth Continuation 2014
Refer to Chapter 2 of the EIS for a detailed description of the proposed development

Land to be developed

Refer to Appendix A of EIS

Certification

We certify that we have prepared this EIS in accordance with the Secretary's requirements and to the best of our knowledge the information contained in this EIS is neither false or misleading



Luke Stewart
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15 June 2014



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15 June 2014



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Warkworth Continuation 2014

Final

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Date 15 June 2014

Date 15 June 2014

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Executive summary



Executive Summary

ES1 Context to the proposal

Development consent for Warkworth Continuation 2014 (the proposal) is required to enable continuation of operations at Warkworth Mine in 2015 and beyond.

Mining in West Pit at Warkworth Mine is forecast to reach consent limits in 2015 which would significantly reduce the length of mining (strike length) in West Pit. This reduced strike length would mean that a dragline could no longer be used to efficiently remove overburden material. The inability to use a dragline to remove overburden material in West Pit would require alternative methods that are more costly and slower. This means the cost of production would increase while revenue decreases from a reduced rate of coal produced, affecting the viability of the mine.

The purpose of the proposal is therefore to extend the spatial limit approved under the current development consent to enable mining in West Pit along the required strike length and, subsequently, enable the two main pits, North and West Pit, to advance down dip to the west.

The resource can be extracted efficiently and effectively by the applicant, Warkworth Mining Limited (WML), because of the hundreds of millions of dollars invested in the mine since it commenced operations in 1981 and, that as an existing mine, it has established access to product transport and distribution infrastructure such as road, rail and port. Extraction of the resource would enable the mine to continue to be a major employer in the Singleton Local Government Area (LGA).

The economic significance of the resource attributable to Warkworth Mine includes:

- the continuation of approximately 1,187 jobs on average in the long-term;
- the payment of \$567million in royalties to the state; and
- the making of approximately \$75million in additional income in net present value terms (NPV) and additional employment of 57 full-time people in the Singleton LGA.

It is recognised that the proposal has some residual social and environmental impacts some of which would be experienced locally, but as discussed below the impacts meet all current government policies and would be managed in accordance with industry best practice.

ES2 Background to the proposal

Warkworth Mine is an existing open cut coal mine approximately 8 kilometres (km) south-west of Singleton in the Hunter Valley. It has been continuously operating since 1981. It is situated in an area where the dominant land use is mining.

Warkworth Mine and the adjacent Mount Thorley Operations (MTO), although being owned by different entities, have both been managed by Coal & Allied since 2004 to realise cost savings through synergies of sharing equipment, personnel, water, rejects and coal preparation across both operations. The separate ownership is reflected in each mine having its own standalone mining leases and development consent. The integrated operation; namely, Mount Thorley Warkworth (MTW), has a workforce of approximately 1,300 persons on average, which includes full-time contractors.

A separate development application (DA), under Part 4, Division 4.1 of the EP&A Act, referred to as Mount Thorley Operations 2014 has been lodged at the same time as the DA for the proposal. The Mount Thorley Operations 2014 application relates to a continuation of the development consent beyond its current 2017 expiry to enable more time for the completion of existing approved mining, while aligning the consent life with the timeframe contemplated under the proposal to enable the continued integration of the two operations. The current operational integration at MTW is critical to Warkworth Mine's future operation.

The existing Warkworth Mine contains three pits, North Pit, West Pit and South Pit with South Pit nearing completion. Extending the spatial limits of the development consent is required because:

- Between 2015 and the end of the development consent period (2021), mining activity at Warkworth Mine will be severely restricted by approved spatial limits being reached. In addition, MTO's development consent is due to expire in 2017. Securing timely new long-term approvals for the integrated operations is critical to the viability of MTW. The existing mining approvals do not provide adequate longevity to support further capital investment into the MTW business and the extraction of the remaining resource already approved for mining. Without these approvals, MTW would be required to commence closure planning in the very near term.
- MTW is a high strip ratio operation. Given the associated high cost of the operations, the choice of mining method is critical to ensuring the ongoing viability of the operation through changing economic environments. For the MTW operation, draglines are the most efficient mining method used to offset a proportion of the overall higher cost of mining. Draglines move waste material for approximately one third the cost of load and haul mining systems.
- The Warkworth Mine and MTO have high fixed costs and require production to be approximately 18 million tonnes per annum (Mtpa) of Run of Mine (ROM) coal to remain profitable in the current economic environment.
- MTW currently operates three draglines with a total available strike length of 6.65km. The closure of South Pit in approximately 2016 and Loders Pit at MTO in approximately 2020 (subject to approval of the Mount Thorley Operations 2014 application) further reduces dragline strike length, to 3.8km. This represents a 43 per cent reduction from the current strike length and a 61 per cent reduction since 2004. At this point, MTW's only two operating pits would be North Pit and West Pit. To remain a viable operation, Warkworth and MTO require dragline strike length to be maximised. This would enable operating costs to be kept lower given draglines move waste material at a much lower cost compared with load and haul mining systems, as well as maintaining a production profile of approximately 18Mtpa of ROM coal across the two mines. This level of extraction is the critical threshold to ensuring that the coal preparation plants at the respective mines have sufficient coal supply available for processing as well as generating sufficient revenue to offset the high cost of mining the MTW resource.

The proposal seeks to extend West Pit to the south and west into Saddleback Ridge and then both North Pit and West Pit would advance down dip, across Wallaby Scrub Road. North Pit would advance through an area of Warkworth Sands Woodland west of Wallaby Scrub Road.

It is recognised that Saddleback Ridge and Warkworth Sands Woodlands (WSW) are features of interest to a range of stakeholders. Avoidance of these areas is not possible for the continuation of viable mining at Warkworth Mine.

As described above, maximising the dragline strike length is critical to the efficient operation of the mine. Under the current development consent, a dragline would not be able to extract the lower overburden pass in West Pit as the area to the west (Saddleback Ridge) could not be incorporated into the pit. This is because the strike length would decrease to the point where draglines can no longer operate due to insufficient working room for the dragline and the spoil. Further, there would be no room for access ramps so haul trucks would not be able to access extracted coal. The reduced strike length and inadequate physical working area would not allow the required 18Mtpa of ROM coal to be produced across the operation.

Avoidance of WSW in North Pit would have a similar effect that Saddleback Ridge would have on West Pit. This would result in a reduced strike length of up to approximately 60 per cent in some places. The reduced strike length and inadequate physical working area would not allow the required 18Mtpa of ROM coal to be produced across the operation.

ES3 Approval history

Warkworth Mine currently operates under Development Consent No. DA 300-9-2002-i issued in May 2003 by the then Minister for Planning (the development consent) under Part 4 of the EP&A Act. It also operates under Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) approvals EPBC 2002/629 and EPBC 2009/5081.

In 2010 an application was made for an extension of Warkworth Mine to the west of the current pit wall (Warkworth Extension 2010). Project approval (PA 09_0202) was issued on 3 February 2012 by the Planning Assessment Commission (PAC), as delegate of the Minister.

The Commonwealth Minister for the Environment also approved the Warkworth Extension 2010 under the EPBC Act on 9 August 2012 (EPBC 2009/5081). This approval is for the activities and the spatial extent the subject of the proposal. No further approval is required under the EPBC Act for the proposal.

Subsequently, the NSW project approval was appealed in the NSW Land and Environment Court (L&E Court). On 15 April 2013, the appeal was upheld by the L&E Court and the application was disapproved. The L&E Court judgment was appealed on administrative law grounds by WML in the Court of Appeal however was dismissed on 7 April. Notwithstanding, Warkworth Mine retains Commonwealth approval for the Warkworth Extension 2010.

The L&E Court judgment resulted in the inability of Warkworth Mine to operate along the required strike length in West Pit to maintain viable production rates. Accordingly, a 350m extension referred to as Modification 6 was sought and approved in early 2014, to enable mining to continue in the very short-term whilst enabling longer term mine planning for Warkworth Mine to continue regarding its future.

ES4 Improvements and differences to the Warkworth Extension 2010

The proposal is submitted with consideration of the outcomes of the L&E Court judgment and Warkworth Mine's long-term mine planning requirements. While the proposal has similarities to the Warkworth Extension 2010 there are a number of important improvements and differences which are summarised below.

- Operational improvements in response to ongoing stakeholder engagement particularly regarding the proactive and reactive management of noise and dust resulting in changes to operations.

- Changed legislative and policy environment. Of importance, this includes the introduction of Clause 12AA of the State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007 (the Mining SEPP) which operates to make the 'significance of the resource' the principal consideration of the matters the Minister is to consider under Part 3 of the Mining SEPP. Non-discretionary development standards for mining were also introduced through the operation of Clause 12AB.
- Additional commitments, for example: the inclusion of an additional area within the Wollombi Brook Aboriginal Cultural Heritage Conservation Area (WBACHCA); and establishment of local historic heritage conservation initiatives.
- Design elements, such as a more undulating landform and optional underpass of Putty Road.
- Key matters raised in the L&E Court judgement have been addressed, namely:
 - Noise:
 - Background noise levels in Bulga have been confirmed through further detailed studies enabling a thorough and advanced way of allocating background noise levels to each individual receiver, which was discussed with the NSW Environment Protection Authority (EPA).
 - All residences in Bulga are below the Mining SEPP's cumulative noise limit from all industrial noise sources. Compliance with the Mining SEPP's cumulative noise limit is accepted as providing significant protection against noise impacts. This means that the total impact from all mines in the locality would not result in reduced amenity.
 - Ecology:
 - The proposed offset strategy fully satisfies contemporary policies and provides a significant ecological benefit in the long-term.
 - An assessment of impacts on biodiversity has been undertaken in accordance with new government policies which were not in place for Warkworth Extension 2010. These include the principles and strategies in the *Draft NSW Biodiversity Offsets Policy for Major Projects* (OEH 2014a) and the *Upper Hunter Strategic Assessment* (UHSA) – Interim Policy. These new policies have been developed to encourage a transparent methodology for calculating biodiversity loss and gain and support the strategic management of biodiversity.
 - The calculation of impact credits using the biodiversity certification assessment methodology (BCAM).
 - Warkworth Sands Woodland (WSW) communities impact credits would be retired using a combination of land based offsets and supplementary measures.
 - Non-WSW communities' impact credits would be retired in accordance with the provisions of the UHSA or by providing land based offsets or purchasing credits on the open market.

- Economics:
 - New models have been provided to assist the consent authority in understanding the economics of the proposal. The models used rely on market-based and revealed preference techniques for valuing the external effects associated with the proposal as opposed to choice modelling as it is considered to be a more reliable indicator of people's preferences. It is noted that these are tools only, and do not replace the decision-making task of the consent authority, but are as robust as current economic modelling permits.
 - The resource within the proposed 2014 disturbance area, approximately 230 million tonnes is economically significant as per the matters outlined in clause 12AA(2) of the Mining SEPP.
 - It is clear that the proposal provides significant economic benefits. The benefits of MTW include annual average employment of almost 1,300 full time people, approximately \$6.1billion in additional expenditure (including capital investment), and over \$617million in royalties (see Section ES5.5). The benefits attributable solely to Warkworth Mine include annual average employment of approximately 1,187 full time people, approximately \$5.8billion in additional expenditure (including capital investment), and over \$567million in royalties.

- Social:
 - A detailed social impact analysis has been undertaken. The results of which are that, while immediate neighbours have expressed subjective concerns in respect of the proposal, the objective evidence demonstrates that the actual impacts meet the levels prescribed in various government policies. Therefore, while not wanting to minimise the subjective concerns of immediate neighbours, the impacts of the proposal need to be considered in this light.

Further, it should be noted that the decision by the L&E Court in respect of the Warkworth Extension 2010 was a merits based appeal determined on those particular facts the subject of the appeal. Accordingly, it is not a binding legal precedent that limits the discretion of future decision makers in respect of the proposal.

ES5 Impact assessment

A summary of predicted impacts from the proposal after the implementation of proposed avoidance, mitigation and compensatory measures is provided below.

ES5.1 Noise and vibration

Acoustic engineers worked collaboratively with mine planners to ensure noise amelioration measures were incorporated into the mine design where feasible and reasonable. The effectiveness of these measures was continually tested in an iterative process with mine planners until adverse modelling predictions at assessment locations were minimised to the maximum extent that is feasible and reasonable.

A full assessment of noise and vibration was carried out in accordance with the *Industrial Noise Policy* (the INP, EPA 2000). The study was independently peer reviewed with the outcomes reflected in the final study. The findings of the study were:

- all reasonable and feasible measures have been applied to control noise from Warkworth Mine;
- the Mining SEPP's non-discretionary standard for cumulative amenity noise levels at privately-owned residential dwellings is met for Bulga village and, therefore, noise impacts are below the acceptable noise levels and amenity of the village as a rural area would be maintained;
- the determining factor for the project specific noise levels (PSNLs) for all residences is the intrusiveness criteria. Background levels have been determined in full compliance with the required processes in the INP for setting background levels;
- four significant exceedances (>5dB(A)) of the PSNLs are predicted to occur and require the provision of acquisition rights with three at Warkworth village (77, 102 and 264) and one to the north of Bulga village (34). Assessment location 34 is the only residence that would be subject a significant exceedance due to the proposal, the other three already being subject to a significance exceedance of noise. Assessment location 77 is currently afforded acquisition rights from Wambo Mine. Assessment location 264 is inferred to have acquisition rights from Wambo Mine but is not currently included in its approval. Assessment location 102 is Warkworth Hall, which is a non-residence;
- noise levels would be within 1 or 2dB(A) of the PSNLs for the majority of the residences at Bulga village. Current government practice is not to accord mitigation rights to residences unless noise levels are greater than 3dB(A) above PSNLs;
- low frequency noise levels predicted from the proposal meet current government policy requirements. Noise levels are predicted to meet relevant Broner criteria for low frequency noise and INP criteria for sleep disturbance at representative assessment locations;
- cumulative noise levels would satisfy the INP (and Mining SEPP) night time criterion at all but two residential assessment locations in Warkworth village (77 and 264). However, it should be noted that the exceedance of cumulative noise criteria at these assessment locations is predominantly caused by the nearby Wambo Mine. Furthermore, as noted above, assessment location 77 is currently afforded acquisition rights from Wambo Mine, and assessment locations 264 would be afforded acquisition rights from Wambo Mine had it been previously assessed;
- appropriate management of blasts would ensure blast noise overpressure and ground vibration limits (and Mining SEPP non-discretionary standards) are satisfied;
- the closure of Wallaby Scrub Road and resulting increased traffic on detoured roads would not result in an exceedance of relevant noise criteria; and
- the removal of Saddleback Ridge (initially assessed in indicative Year 9 mine plan) is accounted for in modelled and predicted noise levels for the proposal. At this stage of mining, noise generated from Warkworth Mine would be managed through different combinations of equipment attenuation and onsite operational noise controls such as plant relocation and shutdown to achieve relevant noise criteria.

Overall, only one additional privately-owned residence, that is not within either Warkworth Mine's or a neighbouring mine's existing acquisition zone, would be afforded acquisition rights under the proposal. Furthermore, given that the cumulative noise levels have been met at the majority of assessment locations, and it is unlikely there would be additional noise sources nearby in the future, the residences at Bulga generally have a rural level of amenity as per the INP.

It should be noted that noise limits at some residences are slightly higher than those predicted in the *Warkworth Extension 2010 Environmental Assessment* (EMM 2010a). In 2010, manufacturers indicated that 113dB(A) was a continually achievable sound power level (SWL) for trucks. Measurements taken since that time indicate that, while this level is achievable, it is unlikely to be sustainable in service for the entire operation. Therefore, a more conservative SWL of 115dB(A) was adopted for modelling purposes.

A noise management system is currently implemented at Warkworth Mine which consists of real-time and attended noise monitoring, administration, substitution and elimination controls, engineering measures, and a commitment to continuous improvement. These management practices would continue under the proposal. Compliance assessment monitoring for Warkworth Mine, including independent reviews, has demonstrated a high level of compliance with noise criteria.

ES5.2 Air quality

Consistent with noise, air quality engineers worked collaboratively with mine planners to ensure dust management measures were incorporated into the mine design where feasible and reasonable. The effectiveness of these measures was continually tested in an iterative process with mine planners until adverse modelling predictions at assessment locations were minimised to the maximum extent that is feasible and reasonable.

The air quality and greenhouse gas study was undertaken for the proposal in accordance with the *Approved Methods for the Modelling and Assessment of Air Pollutants in NSW* (DEC 2005). The findings of the study were:

- all reasonable and feasible measures have been applied to control dust from Warkworth Mine;
- significant air quality impacts would be primarily experienced at Warkworth village due to mining activities moving closer as the mine plan progresses westwards;
- the Mining SEPP's non-discretionary standard for cumulative air quality is met at all but two privately-owned residential dwellings (assessment locations 77 and 264) which are in Warkworth village. These assessment locations, and one non-residence (102 – Warkworth Hall), may experience concentrations above the relevant air quality goals for 24-hour average and annual average PM₁₀ (particulate matter with a diameter of 10µm or less). Assessment location 77 is currently afforded acquisition rights from Wambo Mine. Assessment location 264 is inferred to have acquisition rights from Wambo Mine but is not currently included in its approval;
- the Mining SEPP's non-discretionary standard for cumulative air quality at privately-owned residential dwellings is met for Bulga village and, therefore, air quality impacts are below the acceptable air quality concentrations and amenity of the village should not be reduced;
- dust from mining is generally coarse in fraction (> PM_{2.5}) whereas the fine fraction dust (< PM_{2.5}) of concern to human health typically originates from combustion sources;

- cumulative PM_{2.5} (particulate matter with a diameter of 2.5µm or less) concentrations would be below the National Environment Protection Measure (NEPC 2003) advisory reporting standards at all of the assessment locations where the concentrations of other pollutants are below the relevant air quality goals;
- no air quality impacts are predicted to result from diesel emissions (NO₂ and CO) and blast fume emissions; and
- annual average greenhouse emissions over the 21 year life of the proposal are conservatively estimated at 1.038Mt CO₂-e (Scope 1 and 2), which represents approximately 0.18 per cent and 0.65 per cent of Australia's and NSW emissions, respectively.

Air quality and greenhouse gas impacts are currently managed at Warkworth Mine through an existing integrated management system which involves the implementation of a monitoring network, best practice mitigation measures, and operational control strategies and measures with the objective of continuous improvement. Recent air quality monitoring results for 2012 and 2013 have shown that the Warkworth Mine is complying with the relevant air quality criteria.

The objectives of MTW's climate change programme are integrated into existing business processes and funding is provided for a number of research projects related to the research of low emissions coal technologies. These practices would continue under the proposal.

ES5.3 Ecology

The biodiversity assessment and offsetting approach for the proposal follows the principles and guidelines outlined in the *Draft NSW Biodiversity Offsets Policy for Major Projects* (OEH 2014a) and the accompanying *Draft Framework for Biodiversity Assessment* (OEH 2014b). This is the new Biodiversity Policy introduced by the government since the L&E Court judgment. Relocation of existing options, impacts and offsets have been assessed in accordance with these policies.

In accordance with these policies avoidance and minimisation measures have been implemented through the design of the proposal, including the decision to close rather than relocate Wallaby Scrub Road to reduce further impacts on EECs that would occur if the road was relocated.

The resultant proposal would require the progressive clearing of 611ha of native vegetation, including approximately 72ha of WSW endangered ecological community (EEC), 372ha of Central Hunter Grey Box – Ironbark Woodland EEC and 15ha of Central Hunter Ironbark – Spotted Gum – Grey Box Forest EEC (including regenerating vegetation).

In accordance with the principles and guidelines of contemporary government policy, measures to mitigate and compensate for the loss of biodiversity features, including EECs and associated woodland habitat, have also been identified. These measures include:

- establishing offset sites; and/or
- undertaking mine site rehabilitation; and/or
- undertaking supplementary measures (for WSW only given its restricted distribution); and/or
- retiring of credits under the UHSA or purchasing credits on the open market.

Residual impacts on biodiversity would be compensated for by the provision of offsets in the SBA and Northern Biodiversity Area (NBA). The clearing of WSW EEC for the proposal would be offset by the provision of 75.5ha of WSW in the SBA and NBA, as well as the re-establishment of approximately 159ha of this community. In addition, a range of supplementary measures would be implemented for this community including the conservation of previously un-protected Warkworth Sands Grassland to be re-established under the 2003 consent, preparation of an Integrated Management Plan for WSW and the development of completion criteria for rehabilitation.

The proposal's impacts on non-WSW vegetation were assessed using BCAM to calculate the credit requirements under the *Draft NSW Biodiversity for Offsets Policy for Major Projects* (OEH 2014). These credits would be either retired through WML's participation in the UHSA or with provision of land-based offsets.

In the future, the SBA and rehabilitated mine area would combine to create a large area (exceeding 2,800ha in size) of treed vegetation in the landscape subject to long-term conservation and would join other conservation initiatives from adjoining mines. The NBA would also be regenerated to form a large patch of woodland and forest of over 300ha. Such vegetation is intended to provide and maintain substantial habitats for native flora and fauna in the long-term.

The proposed mitigation and offset measures presented for the proposal would minimise the impacts on threatened species, populations and ecological communities and compensate for the loss of biodiversity as they would:

- meet the offset requirements of the *Draft NSW Biodiversity Offsets Policy for Major Projects* (OEH 2014a);
- adequately reallocate the offsets for non-WSW vegetation, providing a 'maintain or improve' outcome in accordance with the BCAM;
- provide suitable offsets for the WSW through both land-based and supplementary offsets to maximise the long-term viability of the community;
- adequately compensate for the impacts of the proposal on non-WSW vegetation in accordance with the UHSA;
- provide a net increase in the area of EECs to compensate for the predicted loss as a result of the proposal;
- provide a net increase in habitat available for threatened fauna species such as threatened woodland birds, microchiropteran bats and the Squirrel Glider; and
- provide a connecting corridor of woodland vegetation and fauna habitat across the Site, linking to other rehabilitation areas and remnant vegetation, thus providing large continuous patches of habitat into the future (see Section ES5.11).

ES5.4 Social

A social Impact assessment (SIA) was prepared for the proposal and the Mount Thorley Operations 2014 due to the multifaceted nature of social impacts. The SIA was supported by a comprehensive stakeholder engagement programme.

The proposal would enable operations to continue in 2015 and beyond allowing MTW to maintain 1,300 jobs over the longer term and for it to continue to be a major employer in the Singleton LGA. As a long standing member of the community, with both mines commencing operations in 1981, the greater impacts on the socio-economic environment and community services from the proposal are predicted to occur if the proposal does not proceed. These would include:

- workers and their families moving away from the area;
- workers and their families faced with unemployment and financial difficulties;
- reduced local spending;
- decreased local businesses;
- contribution to population decline;
- reduced viability of services such as local schools; and
- reduced community life and participation.

The stakeholder perceived impacts and opportunities of the proposal, paying particular attention to Bulga village, were determined through consultation and compared to the outcomes of technical studies that form part of the EIS or with external literature. Matters raised related predominately to amenity, the physical environment, health and well-being, the economy, infrastructure and services, and community engagement, relationships and governance.

Since the Warkworth Extension 2010 proposal, based on feedback received from a range of stakeholders, a suite of ongoing and proposal specific strategies have been developed by Coal & Allied to improve communications generally and to manage/ mitigate or enhance proposal-related impacts and opportunities.

In particular, a social impact management plan would be developed for the proposal to further develop these management and mitigation measures and detail a plan of implementation including responsibilities, timing, performance indicators/targets and monitoring measures. The social impact management plan would be prepared in consultation with key stakeholders, following the EIS/SIA, public exhibition and submissions process.

ES5.5 Economic

An economic study, in the form of a cost benefit analysis and regional economic impact assessment, was undertaken to assess the economic benefits of the proposal and address the requirements of the *Guideline for the use of Cost Benefit Analysis in mining and coal seam gas proposals* (NSW Government 2012), the *Guideline for economic effects and evaluation in EIA* (Planning NSW 2002), and the *NSW Government Guidelines for Economic Appraisal* (NSW Treasury 2007).

The economic significance of the resource, as stated in clause 12AA of the Mining SEPP set the context in which the proposal was assessed. Specifically, the matters outlined in clause 12AA(2) are shown in Table E.1.

Table E.1 Matters in clause 12AA(2) of the Mining SEPP regarding the economic significance of the resource

Entity	Employment generation (annual average full time employees)		Incremental expenditure (\$M NPV)	Incremental royalties (\$M NPV)
	Reference case (no approval)	The proposal		
Warkworth Mine	835	1,187	5,723	567
Integrated MTW	987	1,307	6,020	617

Notes: 1. Figures in the table are the difference between the reference case (ie the proposals are not approved) and the proposal.

The study described direct and flow-on economic benefits of the proposal for Singleton LGA, the Mid and Upper Hunter region, NSW and Australia. These economic effects were described as incremental impacts relative to a reference case, which assumed mining at Warkworth Mine continued until the expiry of the development consent in 2021. This is regarded as a conservative assumption as mining in West Pit is forecast to reach consent limits in 2015 which would result in mining along a reduced strike length. This, in turn, would reduce mining below economically viable production rates well before the 2021 expiry of the current development consent (see Section ES1).

In NPV terms, the proposal combined with the Mount Thorley Operations 2014 would deliver net benefits to NSW of around \$1.5billion. Where the economic flow-on effects of the proposal are concerned, the benefits attributable to Warkworth Mine in NPV terms amount to:

- for NSW, the additional disposable income received by employees of \$346million, additional annual employment of 191 full time employees, and a contribution to NSW gross operating surplus of \$406million;
- for the Mid and Upper Hunter region, the additional disposable income received by employees of \$204million, and additional annual employment of 198 full time employees; and
- for the Singleton LGA, the additional disposable income received by employees of \$75million, and additional annual employment of 57 full time employees.

ES5.6 Groundwater

A groundwater study was undertaken to assess the potential impacts of the proposal and address the requirements of NSW Office of Water's *Aquifer Interference Policy* and the Mining SEPP. The study applied a groundwater model which was rigorously calibrated with data from the extensive MTW monitoring network. The groundwater model was independently peer reviewed with the outcomes reflected in the final study. The findings of the study were:

- the groundwater model has predicted a water take from the Permian and alluvial sources less than the currently approved water take;
- no privately-owned water supply bores would be impacted above the minimal harm criteria described in the *Aquifer Interference Policy*;

- the proposal is not predicted to significantly change the water table in alluvium that supports groundwater dependent ecosystems. The water table at the base of the Warkworth Sands is perched and not directly connected with the underlying Permian. Therefore, the proposal is not expected to impact on the Warkworth Sands groundwater system or the associated vegetation community. Nevertheless, monitoring bores would be installed in the western extent of the shallow sands west of the approved mining activities;
- the reduction in saline Permian groundwater discharge to the Wollombi Brook alluvium is predicted to reduce the salinity in the alluvium during the life of the proposal; and
- the final void would be a local 'sink' with groundwater, surface runoff and rainfall inflows slowly filling the void before the water surface reaches an equilibrium level and the groundwater levels in the aquifers begin to recover.

Groundwater and surface water at MTW are currently managed through an overarching water management plan (WMP). The MTW WMP includes a groundwater monitoring programme that would continue under the proposal. No additional mitigation measures, to those already implemented, are required for the proposal.

ES5.7 Surface water

The water management systems (WMS) for Warkworth Mine and MTO are currently integrated across MTW. Water engineers have worked closely with mine planners and operational teams over many years to design a WMS that minimises the risk of adverse impacts occurring on surface water resources.

Water requirements would be predominantly sourced from water collected onsite with some water sourced offsite through water sharing agreements with nearby mines and from the Hunter River in accordance with MTW's current licence entitlements. Water would continue to be discharged from MTW's licensed discharge points. All saline discharges would be controlled to meet the requirements of the Hunter River Salinity Trading Scheme so that offsite water quality impacts are managed. The MTW WMS would capture runoff resulting in a minor reduction (maximum of 0.44 per cent) in the Wollombi Brook catchment area and a negligible reduction in the Hunter River catchment area.

The results of the surface water study indicate that the impacts of the proposal on surface water resources are unlikely to be significantly different to the existing approved operations and would not have a significant impact on surface water quality of the adjacent water features. Surface water would continue to be managed under the MTW WMP and the existing MTW surface water monitoring programme. No additional mitigation measures, to those already implemented, are required for the proposal.

ES5.8 Aboriginal cultural heritage

Previous Aboriginal cultural heritage baseline studies have identified a number of heritage items or places within and around the Site. Within the proposed 2014 disturbance area there are 110 extant items or places primarily consisting of stone artefact(s) in disturbed contexts. These items/places are categorised as 'material cultural heritage' that derive from cultural activities of Aboriginal people and are unlikely to have scientific significance.

The WBACHCA is proposed to compensate for the proposal's impacts on Aboriginal cultural heritage. The WBACHCA is west of the proposed 2014 disturbance area adjacent to the Hunter River. A total of 265 items/places have been identified within this area including the Bulga Bora Ground, a place of very high cultural significance to the Upper Hunter Valley Aboriginal community as well as scientific significance. The development of the WBACHCA, as well as the management of other Aboriginal heritage items/places within the Site and surrounds, has been undertaken in consultation with the Aboriginal community. The Aboriginal community would continue to be involved in the development and implementation of a customised management plan for the WBACHCA as well as overall Aboriginal heritage management at MTW.

ES5.9 Historic heritage

The historic heritage study identified 50 historic features within the surrounding area of the proposal including seven registered and 43 non-registered items or places. Within the proposed 2014 disturbance area there are four non-registered historic features, two with local and State significance (the former RAAF Base Bulga Complex and Great North Road Complex) and two with local significance (P1 huts at 297 and 377 Wallaby Scrub Road).

The study found that while small portions of the former RAAF Base Bulga Complex and Great North Road Complex would be impacted by the proposal, heritage impacts are likely to be minor. Impacts on the P1 Huts are likely to be moderate as these style huts are becoming rare. Other historic features within and in close proximity to the proposed 2014 disturbance area may experience indirect impacts associated with activities such as exploration and blasting. Impacts on these features are mostly negligible.

Where impacts on historic heritage sites or places are unavoidable, mitigation measures would be undertaken in accordance with their heritage value. Conservation management plans have been, or would be, prepared for the Great North Road Complex, former RAAF Base Bulga Complex, the Brick Farm House and Springwood homestead.

Coal & Allied also proposes to implement a Local Community Historic Heritage Conservation Initiative, the key element of which is to establish two historic heritage conservation funds – the Mount Thorley Warkworth Historic Heritage Conservation Fund and the Mount Thorley Warkworth Great North Road Conservation Fund.

ES5.10 Traffic and transport

As there are no changes proposed to the existing average MTW workforce, truck traffic or annual train movements, the proposal's potential traffic impacts are limited to the proposed closure of Wallaby Scrub Road as mining progresses westward. The closure would result in current traffic being detoured via Putty Road and the Golden Highway. The detoured traffic would be subject to some increased daily travel distances and journey times; however, travel safety and travelling conditions are expected to improve due to road construction standards on the Golden Highway. The detoured traffic would not significantly impact the capacity of the detoured roads and relevant intersections.

Construction of an appropriate emergency access road between Putty Road and the Golden Highway would occur prior to the closure of Wallaby Scrub Road which would be constructed in accordance with the NSW Rural Fire Service's (RFS) access standards prescribed in *Planning for Bush Fire Protection* (Rural Fire Service 2006) and NSW Bushfire Coordinating Committee Policy No. 2/2007, in consultation with emergency services. Coal & Allied has consulted with the RFS, who has stated their acceptance of the emergency access road provided it is constructed in accordance with the aforementioned standards.

ES5.11 Final landform and rehabilitation

Rehabilitation of the areas mined under the proposal would continue to be undertaken progressively to create a stable, free draining landform able to maintain viable land uses where mining areas are integrated with the surrounding landscape. The final landform would be developed with recognition of the pre-mining landform features and would incorporate the existing rehabilitated landforms to ultimately be consistent with the surrounding landscape features of both the Warkworth Mine and MTO.

Approximately 2,100ha of EEC woodland is proposed to be rehabilitated within MTW, with around 1,617ha at Warkworth Mine and approximately 483ha at MTO. Woodland and trees over grassland components of the rehabilitation would form a north/south connection corridor of vegetation connecting the planned rehabilitation of the Warkworth Mine, the MTO and Bulga Coal Complex with the Singleton Military Training Area, the Pokolbin State Forest and the Yengo National Park as well as the Southern and Putty Road biodiversity offset areas.

It is noted that the final landform includes a final void. A number of alternatives were considered in relation to the final void; however, all were assessed as unviable and, accordingly, discounted. One of these alternatives was backfilling the final void, this is addressed below.

Backfilling the final void to a similar level as the highwall crest would require over 800 million bank cubic metres of material. As under the proposal Warkworth Mine would have completed mining in 2035, this material would need to be sourced from an alternative location. One option would be to excavate the previously rehabilitated emplacements at Warkworth Mine. This process would take many years and use a large fleet of excavating equipment and trucks. This would initially increase the disturbance footprint of Warkworth Mine, as well as prolong its environmental impacts particularly those related to dust and noise, and would be prohibitively expensive.

Alternatively, material could be transported from elsewhere in the Hunter Valley. Similar to the above, this option is not considered desirable from a social, environmental or economic perspective and, accordingly, was also discounted.

ES5.12 Visual amenity

Existing topography and vegetation would continue to provide screening to Warkworth Mine as mining activities progress westwards. Some residences west of the Site, such as elevated residences around Bulga village, may experience high visual amenity impacts. Progressive rehabilitation of disturbed areas and implementation of visual impact mitigation measures would be undertaken to minimise impacts to visual amenity. In addition, residents of potentially sensitive properties would be able to request site specific visual assessments be undertaken which may identify the need for site specific mitigation measures.

ES5.13 Land and soils capability

The proposed 2014 disturbance area is not mapped as, nor does it meet the requirements for, biophysical strategic agricultural land (BSAL) to which the *Strategic Regional Land Use Policy* (NSW Government 2012) applies. Despite the closest mapped BSAL being approximately 3km from the proposed 2014 disturbance area, a site verification certificate for the proposed 2014 disturbance area confirming the absence of BSAL was provided in June 2014. Due to the proposal, the land and soil capability of the proposed 2014 disturbance area would change from Class 4 and 5 land to Class 7 and 8 land, suitable for wood production, passive tourism, nature conservation or apiary, which is consistent with the proposed final landuse.

ES6 Justification and conclusions

Warkworth Mine and the adjoining MTO are long standing members of the community having commenced operations in 1981. An average workforce of approximately 1,300 people including full-time contractors is employed at MTW.

Overall, while the proposal has some residual social and environmental impacts some of which would be experienced by near neighbours, it should be approved as:

- the resource within the footprint of the proposal is significant (enabling the long-term employment of approximately 1,187 persons, \$5.8billion in expenditure and \$567million in royalties);
- the majority of the Mining SEPP's non-discretionary standards are met;
- impacts on near neighbours have been minimised to the greatest extent possible using all reasonable and feasible measures while maintaining an economically viable mine plan;
- it meets all government policies;
- Warkworth Mine has a long history of minimal non-compliances with government approvals;
- it ensures maximum return on the substantial capital invested in the mine since it commenced in the 1981 and has access to existing infrastructure such as road, rail and port; and
- it provides a state significant economic benefit to the local, regional, state and national economies.

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Chapter 1

Context



Chapter 1 — Context

1 Context

Development consent for the Warkworth Continuation 2014 (the proposal) is required to enable continuation of operations at Warkworth Mine in 2015 and beyond.

Mining in West Pit at Warkworth Mine is forecast to reach consent limits in 2015 which would result in mining along a decreased strike length (ie working room). This in turn would reduce mining below economically viable production rates.

The purpose of the proposal is to extend the spatial limit approved under the current development consent to enable mining in West Pit along the full strike length and, subsequently, enable the two main pits, North and West Pit, to advance down dip to the west.

The resource within the footprint of the proposal is significant. It can be efficiently extracted by Warkworth Mining Limited (WML), the owners of the mine, because of the hundreds of millions of dollars invested in the operation since it commenced in 1981 and its existing access to product transport and distribution infrastructure such as road, rail and port. Extraction of the resource would enable Warkworth Mine, which is a major employer in the Singleton local government area (LGA), to continue.

The continued operation of the Mount Thorley Warkworth (MTW), which is comprised of Warkworth Mine and the adjacent Mount Thorley Operations (MTO), has significant social and economic benefits in the form of continuing employment for a workforce of approximately 1,300 persons on average, net economic benefits of some \$1.5billion and royalties of some \$617million. The economic benefits attributable to the proposal at the Warkworth Mine include continuing employment for a workforce of some 1,187 persons, \$1.34billion in net economic benefits and some \$567million in royalties. The people of Australia would also benefit through the Commonwealth Government in the form of company and income taxes. The need for the proposal is detailed in Chapter 3.

The proposal follows a previous environmental assessment for an extension of mining in a similar area in 2010. The proposal was titled the Warkworth Extension Project and is herein referred to as Warkworth Extension 2010. The Project Approval for Warkworth Extension 2010 was appealed in the NSW Land and Environment Court (L&E Court) and upheld on 15 April 2013. Notwithstanding, Warkworth Mine retains Commonwealth approval for the extension. The approval is for the activities and the spatial extent the subject of the proposal.

The L&E Court decision resulted in the inability of Warkworth Mine to operate along the required strike length in West Pit to maintain viable production rates. Accordingly, a 350m extension referred to as Modification 6 was sought and approved in early 2014, to enable mining to continue in the very short-term whilst enabling longer term mine planning at Warkworth Mine to continue regarding its future.

The decision by the L&E Court in respect of the Warkworth Extension 2010 was a merit appeal determined on those particular facts the subject of the appeal. Accordingly, it is not a binding legal precedent that limits the discretion of future decision makers in respect of the current proposal.

While the proposal has similarities to the Warkworth Extension 2010, there are a number of important differences and improvements. These were developed with consideration to, amongst other matters, feedback received during stakeholder engagement for the proposal and the L&E Court judgement. Further, significant operational improvements, particularly regarding noise and dust management, have been made since the 2010 application (Chapter 4).

Of importance, a number of changes to legislation and policies have occurred since the 2010 application that clarifies the considerations required by decision makers. The most significant of these are the amendments to the State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007 (the Mining SEPP) which operates to make the 'significance of the resource' the principal consideration of the matters the Minister is to consider under Part 3 of the Mining SEPP. The proposal, which has considered and is consistent with the contemporary legislative and policy framework, is described in Chapter 2.

Chapter 2

The proposal



Chapter 2 — The proposal

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- 2.2 **Proposal objectives**
- 2.3 **Purpose of the application and EIS**
- 2.4 **Proposal description**
 - 2.4.1 Avoidance
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 - 2.4.14 Secondary access gates
 - 2.4.15 Workforce and operational hours

2 The proposal

2.1 Background

Warkworth Mine is an open cut coal mine approximately 8 kilometres (km) south-west of Singleton in the Hunter Valley. The mine has been operational for over 30 years, having commenced mining in 1981 and is within the Singleton LGA.

The area immediately surrounding the mine is dominated by coal mines and associated infrastructure and other industry. The Hunter Valley Operations and Redbank Power Station, and Wambo Mine are to the north and north-west, respectively, and the MTO and Bulga Coal Complex are to the south. The village of Bulga and the Wollemi and Yengo National Parks are to the west, and Mount Thorley Industrial Estate (MTIE) is to the east (see Figures 2.1 and 2.2).

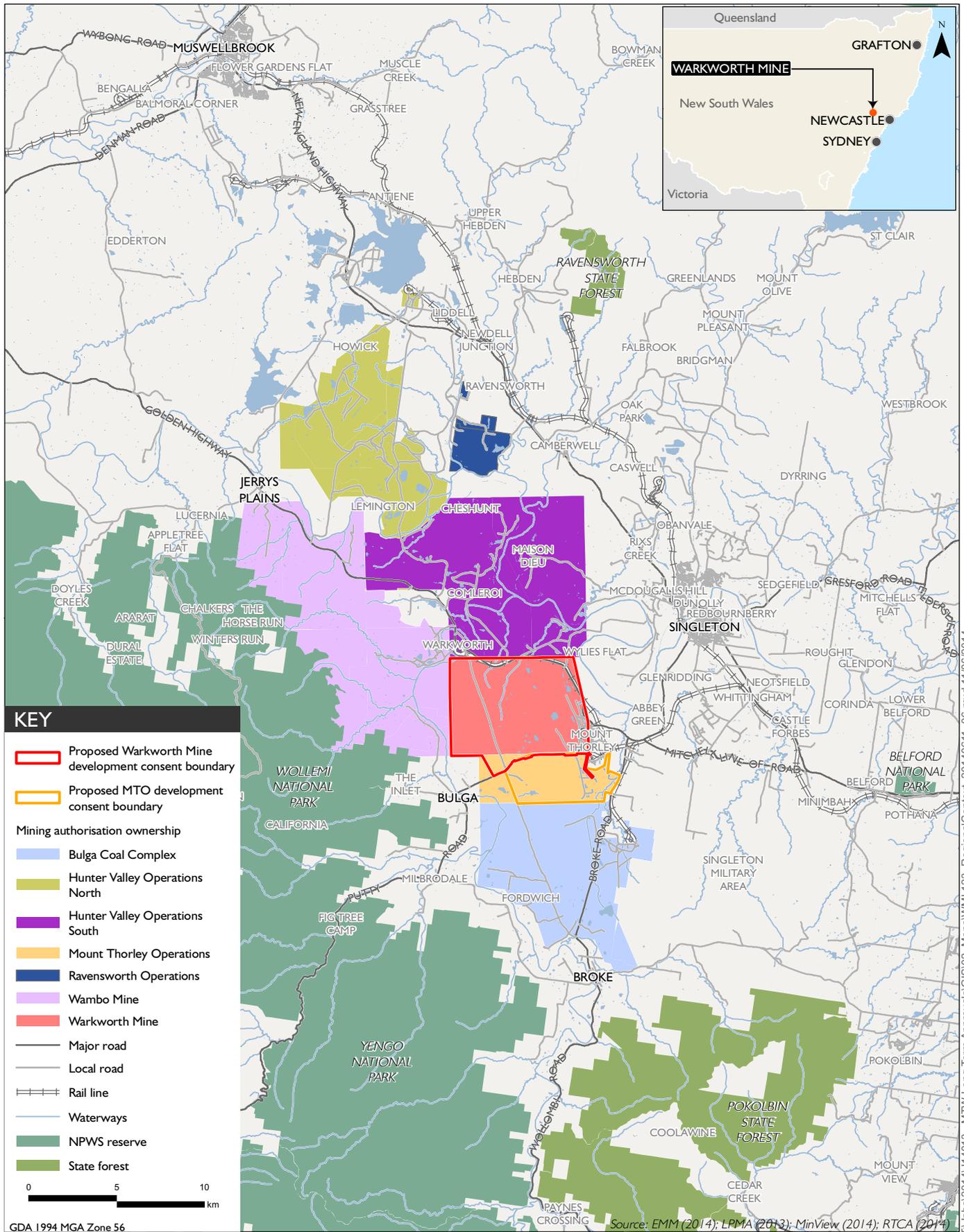
Since 2004, Warkworth Mine and MTO have integrated at an operational level and are known as MTW, with a single management team responsible for all the operations. Ownership of the two mines remains separate, with Warkworth Mine owned by Warkworth Mining Limited (WML). This is reflected by way of each mine having its own standalone mining leases and development consent. A single management team for the adjoining mines permits various cost savings across each operation by way of integration. Equipment, personnel, water, rejects and coal preparation are all shared between the mines. MTW has a workforce of approximately 1,300 persons on average including contractors.

Warkworth Mine currently operates under Development Consent No. DA 300-9-2002-i (the development consent) issued by the then Minister for Planning in May 2003 under Part 4 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act). It also operates under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) approvals – EPBC 2002/629 and EPBC 2009/5081, the latter being for the action the subject of the current development application (DA).

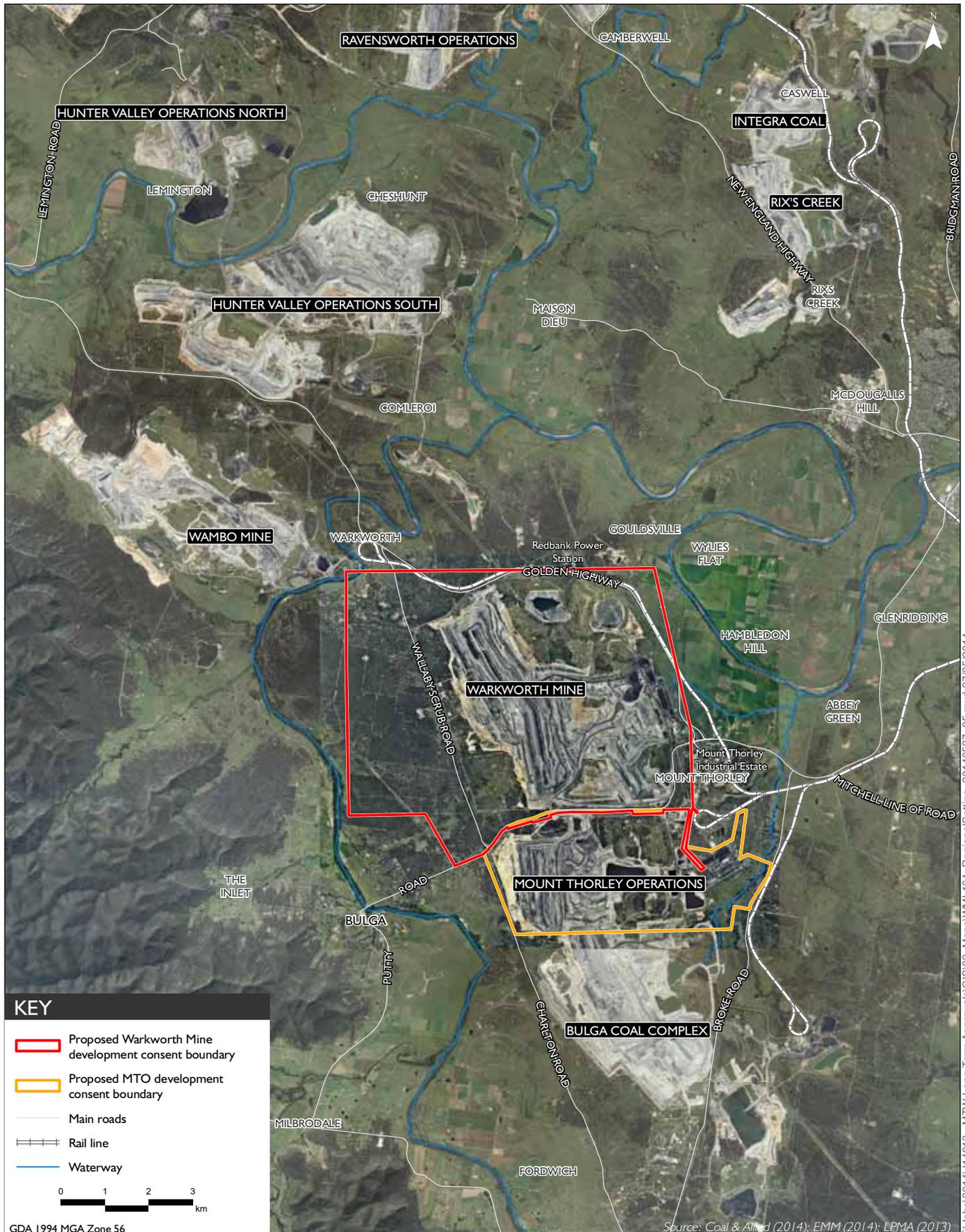
Warkworth Mine currently operates three integrated open cut mining areas, namely North, West and South pits, with the West and North pits being the focus of production. Run-of-mine (ROM) coal from Warkworth Mine is transported to either the Warkworth or MTO coal preparation plants (CPP) for processing. Product coal from the Warkworth CPP is transported via conveyor to either the Mount Thorley Coal Loader (MTCL) or to the Redbank Power Station. Coal loaded onto trains at the MTCL is transported to the Port of Newcastle for export.

The proposal seeks to extend mining beyond the current spatial limits of the development consent to ensure that MTW remains economically viable.

The proposal would enable employment levels at MTW to be maintained in what is a challenging environment for the Australian coal industry, and as substantiated in Chapters 9 and 21, allow the important regional and local economic and social benefits from the mine's operation to continue. It would also provide for the continued accrual of economic benefits to the local area and Hunter Valley region from business expenditure, to the NSW Government in the form of royalties, and to the Commonwealth Government in the form of company and income taxes. The need for the proposal is detailed in Chapter 3.



Regional context
 Warkworth Continuation 2014
 Environmental Impact Statement
 Figure 2.1



As noted in Chapter 1, in 2010 an application was made for an extension of the Warkworth Mine to the west of the current pit wall (North and West pits). This included measures to address biodiversity offset matters. Further detail on the former application is provided in Section 4.2. Project approval (PA 09_0202) was issued on 3 February 2012 by the Planning Assessment Commission (PAC), as delegate of the Minister.

The Commonwealth Minister for the Environment approved the extension under the EPBC Act on 9 August 2012 (EPBC 2009/5081). The EPBC approval (EPBC 2002/629) that covered the 2003 extension was modified on 13 July 2012 as part of the 2010 extension to relocate the 2003 Commonwealth offsets.

Subsequently, the NSW project approval was appealed in the L&E Court. On 15 April 2013, the appeal was upheld by the L&E Court and the application was disapproved. Notwithstanding, Warkworth Mine retains Commonwealth approval for the extension.

Since the L&E Court judgment WML has invested substantial time and effort in reviewing options for Warkworth Mine and planning for its future. Numerous design alternatives have been canvassed, providing consideration to, amongst other matters, feedback received during stakeholder engagement for the mine, Warkworth Extension 2010, the L&E Court judgement and from the PAC determination of the most recent modification of the development consent, Modification 6, approved on 29 January 2014. The proposal incorporates a number of differences and improvements from Warkworth Extension 2010, as described in Chapter 4.

The approval of Modification 6 has enabled the mine to continue to operate as close as possible to current production and employment levels in the short-term. Its approval has also allowed for the planning and development of the current proposal, assessment of its potential impacts, stakeholder engagement and lodgement of this EIS for public exhibition while maintaining the current level of employment.

The proposal is required to enable West Pit to be mined at its full strike length and for both North and West Pit to continue down dip. Mining at full strike length is required to continue mining at economically viable production rates.

This chapter describes the proposal which is the subject of this environmental impact statement (EIS). This EIS has been prepared to accompany a new DA for Warkworth Mine submitted by WML. The DA and EIS have been submitted to NSW Department of Planning and Environment (DP&E).

2.2 Proposal objectives

The proposal seeks a continuation of all aspects of Warkworth Mine as it presently operates and extends or alters them as described in this chapter. Existing operations at Warkworth Mine, for which continued approval is sought, are described in Chapter 6.

The objectives of the proposal are to:

- ensure the economic viability of the mine;
- maintain the current workforce at MTW of 1,300 jobs on average;
- minimise impacts on near neighbours to the greatest extent possible using all reasonable and feasible measures while maintaining an economically viable mine plan;

- maximise return on the substantial capital invested in the mine since it commenced in the 1981 using existing infrastructure such as road, rail and port;
- ensure all government policies are met; and
- continue to provide economic benefits to local, regional, state and national economies.

To enable the objectives to be met, the key components of the proposal comprise:

- an extension of the approved mining disturbance footprint by approximately 698ha to the west of current operations (referred to herein as the proposed 2014 disturbance area);
- the ability to transfer overburden to MTO to complete MTO's final landform;
- the closure of Wallaby Scrub Road;
- an option to develop an underpass beneath Putty Road for the third bridge crossing yet to be constructed (while retaining the current approval for an overpass);
- minor changes to the design of the Northern out-of-pit (NOOP) dam; and
- the continued use of secondary access gates to the mine site and offsets for activities such as drilling, offset management, and equipment shutdown pad access amongst other things.

The proposal would also enable the provision of a fully contemporised development consent for the Warkworth Mine.

Under the development consent granted in 2003, Warkworth Mine has approval to operate until 19 May 2021. The proposal seeks a 21 year development consent period from the date of any approval. If approval is granted in late 2014, operations at Warkworth Mine are forecast to continue to 2035, a 14 year extension over the current approval. Figure 2.3 shows the proposal. It is noted that the proposed 2014 disturbance area includes the proposed western extension of mining (referred to herein as 'proposed extension area') and the services corridor (see Section 2.4.2iv).

Approximately 63ha of land approved to be mined by MTO in accordance with its development consent (DA 34/95) is within the Warkworth Mine's proposal footprint (see Section 2.4.2.i). Given it is already approved to be cleared, and would otherwise be mined by MTO, this area is not included within the disturbance boundary for offsetting purposes in Chapter 12. The area is included within the development consent boundary as amended under the proposal and has been considered in the proposal's noise, air quality and visual assessments. This area is shown in Figure 2.4.

The majority of the area within the proposed development consent boundary (referred to herein as the Site) is owned by WML and Miller Pohang Coal Company Pty Limited. A schedule of lands for the Site is in Appendix A.

A summary of the key components of the proposal compared to current approved mining operations is provided in Table 2.1. Existing operations are shown in Figure 2.5.

Photograph 2.1 shows the current operations looking towards West and North pits in a northerly direction, inclusive of pre-clearing activities for the recently approved Modification 6 area. It illustrates the offset of North and West pits which is a consequence of the delay associated with disapproval of Warkworth Extension 2010.



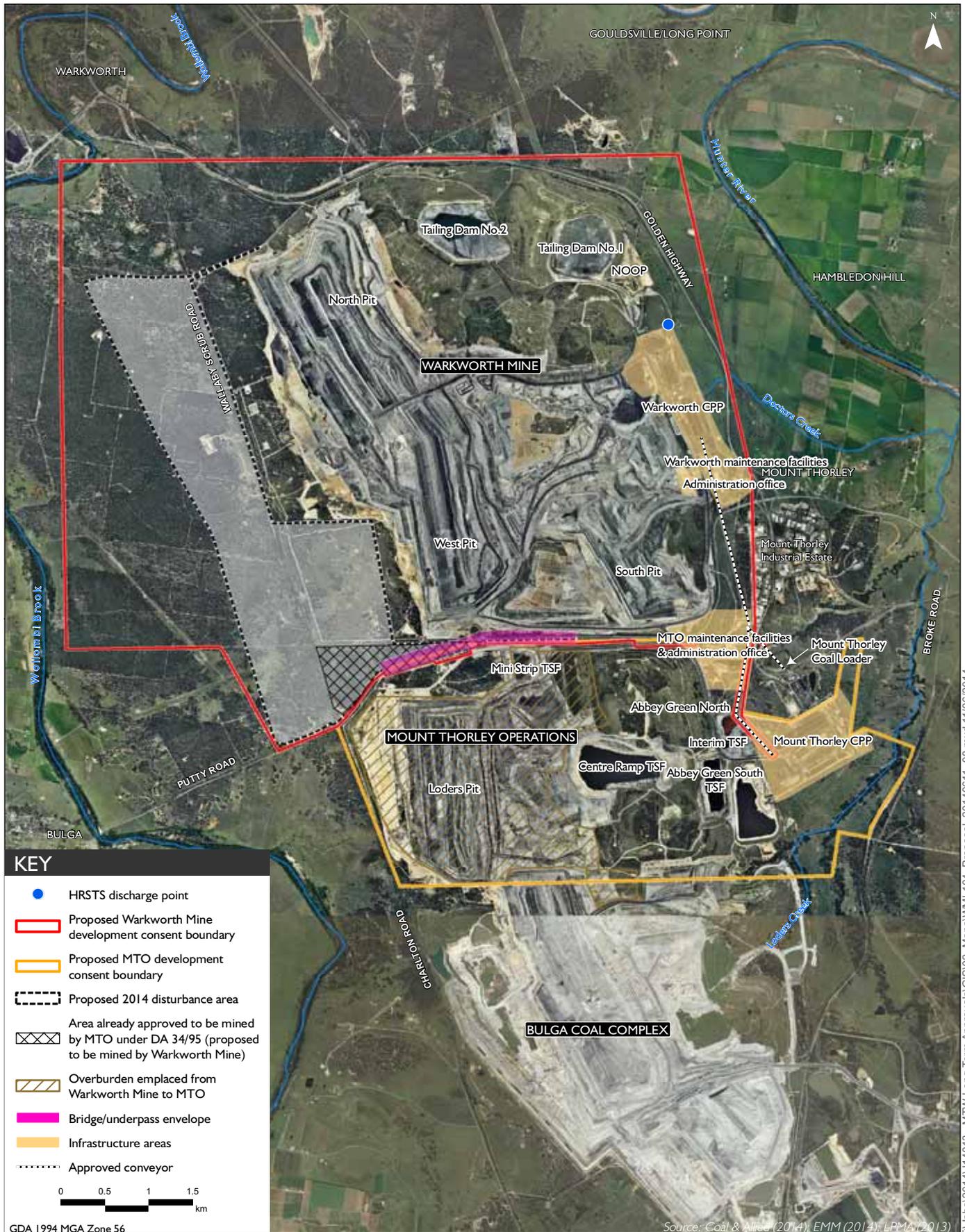
Photograph 2.1 Current operations (February 2014)

Table 2.1 Comparison of key components of the proposal with existing operations

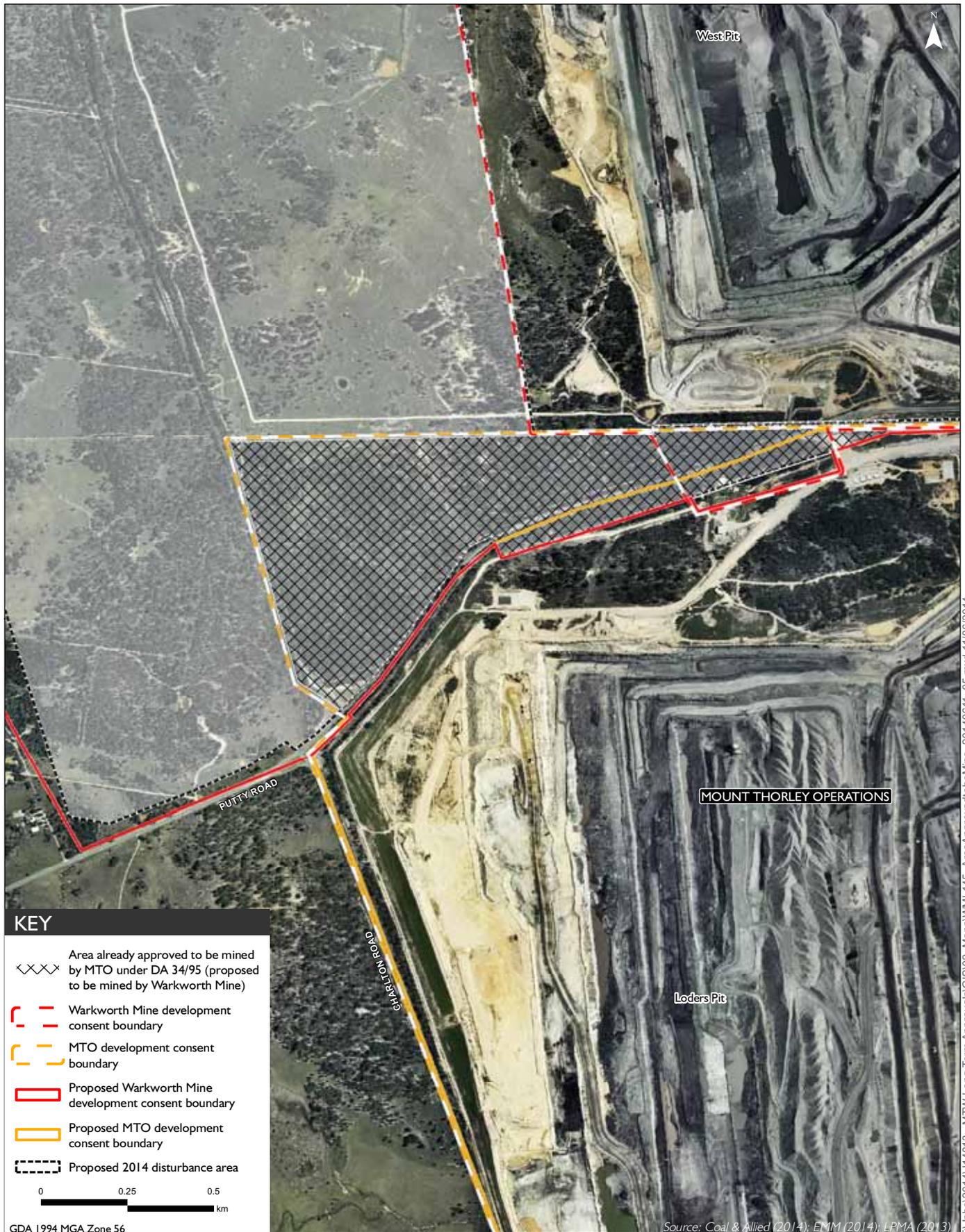
Key component	Existing operations	The proposal
Approval timeframes	<ul style="list-style-type: none"> Operations at Warkworth Mine are approved until 19 May 2021. 	<ul style="list-style-type: none"> Extend operations at Warkworth Mine for a period of 21 years from the date of approval, which would nominally be until 2035 assuming approval is granted in 2014.
Mining areas	<ul style="list-style-type: none"> The extent of approved mining at Warkworth Mine can be seen in Figure 2.5. 	<ul style="list-style-type: none"> Extend mining at Warkworth Mine to the west as shown in Figure 2.3. Surface Mining Lease extensions would be sought by WML (CCL 753) to support the proposal.
Production	<ul style="list-style-type: none"> Warkworth Mine has approval to extract up to 18 million tonnes per annum (Mtpa) of ROM coal. The ROM/product coal may be transported between Warkworth Mine and MTO for processing at either CPP. Product coal may be loaded out via the MTCL or transported to the Redbank Power Station. 	<ul style="list-style-type: none"> No change to the maximum rate of ROM coal extraction. No changes to transport of ROM/product coal. No change to load out of product coal.

Table 2.1 Comparison of key components of the proposal with existing operations

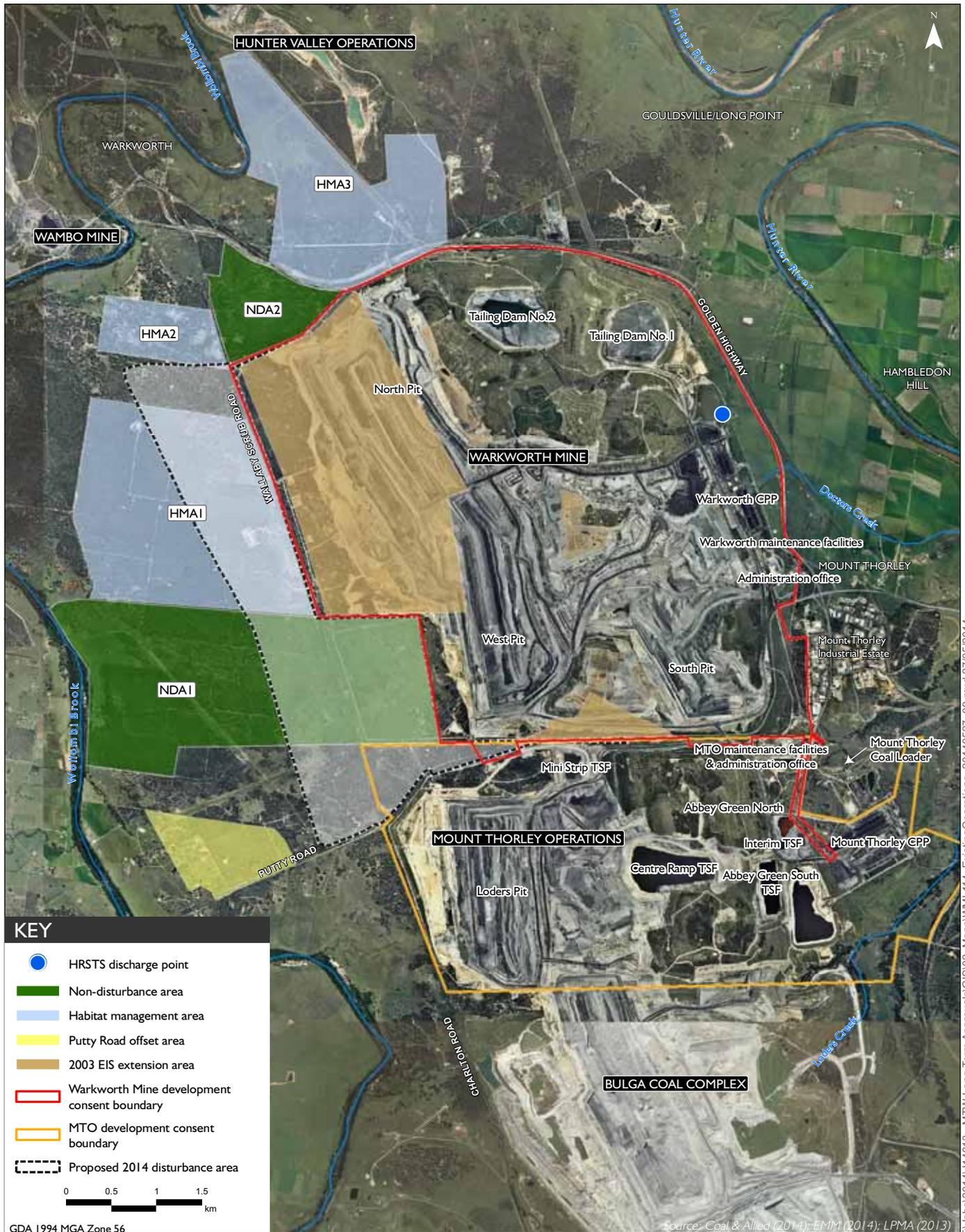
Key component	Existing operations	The proposal
Overburden emplacement	<ul style="list-style-type: none"> Overburden material emplaced within Warkworth Mine. Construction of a third bridge crossing over Putty Road. 	<ul style="list-style-type: none"> Overburden material would continue to be emplaced at Warkworth Mine and, in addition, would be transferred from Warkworth Mine to MTO to assist in the development of the final landform for MTO. An option to develop an underpass beneath Putty Road for the third bridge crossing yet to be constructed (while retaining the current approval for an overpass).
Coal processing	<ul style="list-style-type: none"> Warkworth CPP has the capacity to process up to 13Mtpa of ROM coal. The ROM coal extracted at Warkworth Mine may be transferred for processing at MTO CPP and similarly ROM coal from MTO may be processed at Warkworth CPP. 	<ul style="list-style-type: none"> No change to the maximum Warkworth CPP throughput. Continuation of the movement of ROM coal and processing between Warkworth Mine and MTO.
Coarse reject	<ul style="list-style-type: none"> Coarse reject produced at the Warkworth and MTO CPPs is co-disposed within overburden emplacement areas within MTW, that is, in overburden emplacements in either Warkworth Mine or MTO. 	<ul style="list-style-type: none"> No change to coarse reject management.
Tailings	<ul style="list-style-type: none"> Tailings produced at Warkworth and MTO CPPs is disposed at tailings storage facilities (TSFs) within MTW, that is, tailings can be disposed of at TSFs in either Warkworth Mine or MTO. 	<ul style="list-style-type: none"> No change to tailings management.
Infrastructure	<ul style="list-style-type: none"> Infrastructure includes: workshops; vehicle washing facilities; bulk oil and fuel storages; water management infrastructure; coal bed methane gas wells and ancillary infrastructure; storage hoppers and crushers; coal stockpiles; CPP; erection pads; bathhouse; general stores; office building; and other facilities and incidental activities. 	<ul style="list-style-type: none"> Potential minor upgrades to infrastructure.
Operating hours	<ul style="list-style-type: none"> Continuous operations, 24 hours per day, seven days per week. 	<ul style="list-style-type: none"> No change to operating hours.
Rehabilitation	<ul style="list-style-type: none"> Progressive rehabilitation. Final land use and final landform described in a number of approval documents. 	<ul style="list-style-type: none"> Continuing progressive rehabilitation. Amended proposed final land use and final landform based on a 'whole-of-mine' approach to provide improved agricultural and biodiversity benefits.



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2.3 Purpose of the application and EIS

The purpose of this EIS is to accompany a DA by WML for the continued mining of Warkworth Mine beyond current consent limits in accordance with Part 4, Division 4.1 of the EP&A Act.

This document provides a description of the existing environment, an assessment of the potential impacts resulting from the proposal and details measures that would be implemented, subject to approval, to avoid, minimise and/or compensate potential impacts. The EIS provides information to allow DP&E, in consultation with NSW Government authorities, to assess the merits of the proposal and make a recommendation to the Minister for Planning as to whether or not to grant approval.

This EIS was prepared by EMGA Mitchell McLennan Pty Limited (EMM), with input from a number of external technical specialists. The study team is provided in Appendix B.

A separate DA for MTO under Part 4, Division 4.1 of the EP&A Act is to be lodged concurrently with the DA for the proposal. This application, referred to as Mount Thorley Operations 2014, relates to a continuation of the development consent beyond its current 2017 expiry to enable more time for the completion of existing, approved mining, while aligning the consent life with the timeframe contemplated under the proposal to enable the continued integration of infrastructure and other operations at MTW.

2.4 Proposal description

2.4.1 Avoidance

Open cut mining projects cannot readily avoid impacts as mineral resources are in fixed locations. However, wherever possible and consistent with the L&E Court judgement (par. 69), avoidance was applied as a guiding principle for the proposal's development.

As was the case with the Warkworth Extension 2010, development of the proposal considered different options and alternative plans to avoid or minimise impacts on sensitive features, including those on ecology, whilst needing to satisfy the economic and financial viability requirements of the operation in the longer term.

In this context, the development of the proposal design has incorporated features of the Warkworth Extension 2010 and, importantly, includes some key differences and improvements. These are outlined in Chapter 4. Options considered, but not included for various reasons as part of the proposal in the design process are described in Chapter 23.

The design of the proposal has considered avoidance of environmental impacts where feasible. Technical specialists for aspects such as ecology, noise, air quality and surface water worked closely with Rio Tinto Coal Australia's mine planners to test a range of design approaches and measures to avoid off-site impacts in the first instance, before mitigation and monitoring were considered. For example:

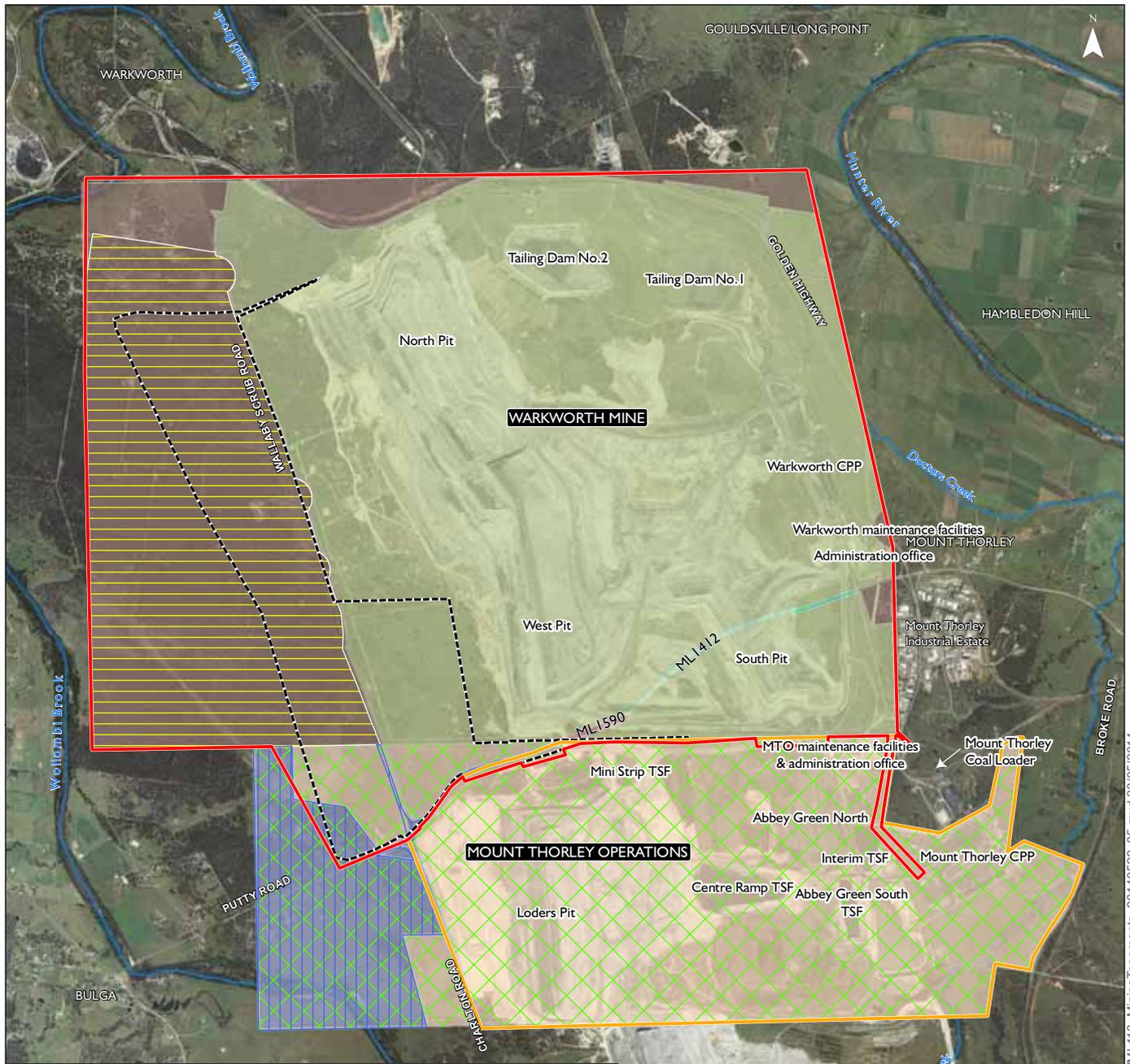
- The proposed closure of Wallaby Scrub Road, rather than its relocation. This option has resulted in the reduction of the level of clearing associated with the proposal by approximately 30ha, resulting in avoidance to the Warkworth Sands Woodland (WSW) endangered ecological community (EEC) and other listed vegetation communities.

- While economic coal is known to be north beyond the current approved mining limit, this area has been avoided. In isolation, the volume of coal does not provide sufficient replacement to the proposal and, therefore, the mine would not be economically viable under this scenario if it were to replace the proposal. It is noted, however, that it could provide a source of additional coal to that proposed for extraction under the proposal. This area does not form part of the proposal to enable its continued use as offsets as part of the Southern Biodiversity Area (SBA) and, therefore, avoids impacts on ecology (including an area of WSW) and items of Aboriginal cultural significance.
- The majority of the proposed mining would be within the footprint of CCL 753, while the south part of West Pit would be within CL 219 (MTO mining lease). As noted in Section 2.2 and shown in Figure 2.4, a portion of this southern area (generally an area bounded by CCL 753 in the north, Putty Road in the south and Wallaby Scrub Road to the west) has planning approval for mining operations as part of the development consent for MTO (ie DA 34/95). Accessing this coal from Warkworth Mine under the proposal would avoid the need to relocate Putty Road, as approved under DA 34/95, if the coal was to be accessed by MTO. The existing mining leases for Warkworth Mine and the adjacent MTO are shown in Figure 2.6 and described in Table 2.2.
- Acoustic and air quality amelioration measures were incorporated into the mine design where practicable. The effectiveness of these measures was continually tested in an iterative process with mine planners until adverse modelling predictions were avoided and an appropriate outcome achieved.
- A water management system (WMS) has been developed that minimises the risk of adverse impacts occurring; for example, managing catchments to ensure the diversion of clean surface water runoff away from disturbed areas to minimise the volume of water captured in the Site and, thereby, reducing the potential requirement for discharges.

From an operational perspective avoidance is inherently linked to MTW's noise and dust management regime. For example, through a range of existing acoustic management and monitoring procedures which are implemented on a continuous (standard) basis, the requirement to modify operations to avoid potential impacts is identified.

In 2014, year to date, this includes equipment stoppage on 43 separate nights, (resulting in over 8,000 hours of equipment stoppage), and eight site shutdowns (with the exception of dragline operations and some ancillary equipment activity) equating to millions of dollars in lost working time. This significant level of operational disruption demonstrates MTW's commitment to minimising impacts and maintaining compliant operations.

An assessment of monitoring data (publically available via the Rio Tinto Coal Australia website www.riotintocoalaustralia.com.au) demonstrates that a high level of compliance with noise criteria has been achieved throughout the life of the mine. Non-compliant noise measurements account for only 0.39 per cent of the monitoring dataset (10 non-compliances measured from 2,540 individual assessments undertaken).



KEY

- Mining leases**
- CCL 753: surface to unlimited depth
 - CCL 753:20 m to unlimited depth
 - CL 219: 20m to 100m below AHD or 30m above Bayswater, whichever is deeper
 - CL 219: surface to 100m below AHD or 30m above Bayswater, whichever is deeper
 - ML 1412: Surface to 20m
 - ML 1590: Surface to 20m
 - EL 7712: 100m below AHD or 30m above Bayswater, whichever is deeper to 10m below Bayswater
 - MLA 352: surface to 20 m
 - MLA 353: surface to 20 m
 - Proposed Warkworth Mine development consent boundary
 - Proposed MTO development consent boundary
 - Proposed 2014 disturbance area
- 0 0.5 1 1.5
km
- GDA 1994 MGA Zone 56



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Source: Coal & Allied (2014); EMM (2014); LPMA (2013)

Both proactive and reactive operational control strategies and measures are implemented to effectively manage air quality impacts from the mine. Proactive measures would be further enhanced following the implementation of a predictive dust risk forecasting tool to assist operational personnel to make the optimal management decisions on a day to day basis. The tool utilises predictive meteorological forecast data coupled with detailed mine activity (mine plan) data to determine the most likely times during the upcoming day that dust lift off and air dispersion conditions may be unfavourable. This advance warning allows mine staff time to be better prepared in the event that such conditions occur. The tool is currently being developed, and would be integrated into day-to-day operations during 2014. This would further assist in avoiding potential dust impacts.

A description of the proactive and reactive operational noise and air quality management measures implemented at Warkworth Mine is given in Sections 10.3 and 11.2.3, respectively.

2.4.2 Indicative mine plans

i Overview

Current operations, inclusive of the recent Modification 6, are close to the development consent limits in West Pit. This proposal is seeking to extend the spatial limit approved under the development consent to enable the mining in West Pit along the full strike length and, subsequently, enable the two main pits, North and West Pit, to advance down dip to the west. Rather than seek piecemeal changes to environmental planning approvals over time, the proposal has been developed based on a footprint (at maximum production rate) for a 21 year development consent period.

The North and West pits would continue west beyond current consent limits across Wallaby Scrub Road. West Pit would also continue south to, but would not impact on, Putty Road (see Figure 2.3).

The majority of the proposed mining would be within the footprint of CCL 753, while the south part of West Pit would be within CL 219 (MTO's mining lease). As noted in Section 2.2, a portion of this southern area has planning approval for mining operations as part of the development consent for MTO (ie DA 34/95). Accessing this coal from Warkworth Mine under the proposal would avoid the need to relocate Putty Road, as approved under DA 34/95, if the coal was to be accessed by MTO. The existing mining leases for Warkworth Mine and the adjacent MTO are shown in Figure 2.6 and described in Table 2.2.

Figure 2.6 also depicts MLA 352 and MLA 353, which are the current mining lease application from surface to 20m below for Warkworth Mine and MTO, respectively.

Table 2.2 Mining leases

Mining leases	Description	Date of issue	Date of expiry
CCL 753	Consolidated coal lease (comprised of CL 276 granted on 23 April 1986 and CL 205 granted on 18 February 1981)	Granted 23 May 1990 Renewed 18 February 2002	17 February 2023
CL 219	Coal lease	23 September 1981	22 September 2023
ML 1412	Prospecting and mining coal	11 January 1997	10 January 2018
ML 1590	Prospecting and mining coal	27 February 2007	26 February 2028

The proposal would continue existing operational practices including use of draglines, shovels, excavators, loaders, dozers and truck fleets. These practices have proved appropriate for the geological conditions encountered at the mine and the required production rates for economic operations. In addition, Warkworth Mine has, in recent years, made substantial capital investment in fleet and equipment (see Chapter 4), and the drill, truck, dozer and excavator fleet would continue to be sound attenuated with completion expected by the end of the 2016 calendar year.

The North and West pits are managed as an integrated pit, typically utilising draglines to make best use of the available strike length. North and West pits would progress westward in a manner so that the highwalls are generally on a north-west to south-east axis parallel to the strike of the coal seams. Mining would continue to progress down dip towards the west.

The western surface disturbance limit of mining (ie the highwall crest) is defined by a 14 year mine plan at maximum production rates with a proposed 21 year mine life to allow for deeper mining within the footprint (ie pre-strip reaches western limit at 14 years and then mining progresses deeper to established highwall spatial limits), production rate flexibility as well as progressive rehabilitation and final landform shaping of disturbed areas within the development consent life. The northern limit of mining is defined by the general alignment of existing operations (see Section 2.4.1). The southern limit is defined by Putty Road.

ii Indicative mine plans

Indicative mine plan snapshots showing the proposal's operations in Year 3 (nominally 2017), Year 9 (nominally 2023) and Year 14 (nominally 2028) can be seen in Figures 2.6, 2.7 and 2.8, respectively. Figure 2.9 shows the Year 21 (nominally 2035) mine plan. The final landform is shown in Figure 2.15.

The indicative Year 3, 9 and 14 mine plans were chosen as representative mining snapshots as the basis for technical assessments. The mine plans show the different activities being undertaken within the footprint during that indicative year, including mining, emplacement and rehabilitation. Overburden would be emplaced at either Warkworth Mine or MTO to create an undulating final landform as shown in each snapshot. Overburden transferred to MTO would also assist in filling the Loders Pit void.

There are three types of rehabilitation areas shown on mine plans: rehabilitation to final landform; active rehabilitation which includes rehabilitation activities for all years between each indicative mine plan snapshot year; and temporary rehabilitation which is rehabilitation on areas which are not yet constructed to final landform but have been temporarily rehabilitated for other reasons, such as dust and visual management purposes.

Indicative Year 3 mine plan (nominally 2017) is early in the proposal timeframe when operations in West Pit have started to encroach on Saddleback Ridge and the western progression of North Pit necessitates the closure of Wallaby Scrub Road. It is generally representative of current operations when residences to the east and north-east are potentially most affected by the proposal. The indicative Year 3 mine plan also includes the mining/construction of the NOOP dam. This water storage has been included as 'mining' as its construction would win a very small amount of coal. It has been incorporated in the indicative Year 3 mine plan to conservatively be representative of the potential worst case impacts on east and north-eastern residences. However, it could be mined and constructed at any time over the life of the proposal. Areas to the north-east of North Pit have generally been rehabilitated to final landform with the exception of the Tailing Dams No. 1 and 2. Active rehabilitation is occurring in areas to the south.

Indicative Year 9 mine plan (nominally 2023) is approximately the halfway point of the proposal timeframe and represents the stage when mining in West Pit is predicted to have progressed through Saddleback Ridge and both North and West pits have progressed across Wallaby Scrub Road. Active rehabilitation is focussed on the eastern portion of the Site and large areas have been rehabilitated to final landform. This indicative mine plan is generally representative of when residences to the west are potentially most affected by the proposal.

Mining has extended to its western most point at indicative Year 14 mine plan (nominally 2028). Rehabilitation to final landform has been completed in South Pit with the exception of its southern most extent (see Section 2.4.2.iii below). Rehabilitation to final landform has also been completed for large areas of North and West pits, with active rehabilitation also occurring. The indicative Year 14 mine plan was the latest year selected for assessment purposes as it is generally representative of the closest extent of mining to residences to the west under the proposal and the majority of equipment and mining activities are at a higher elevation than later in the mine life and, accordingly, afforded less shielding. This enables the assessment of worst case impacts.

For the remaining seven years of the development consent period, mining would continue within the same footprint mining the deeper seams. As shown in the indicative Year 21 mine plan (Figure 2.10), mining has ceased and rehabilitation to final landform has been completed across the majority of the Site.

The mine plans are based on the maximum mining rate of 18Mtpa of ROM coal. If further extensions were not sought and granted, mining activities would decrease from approximately 2030 towards closure in 2035.

During operations, alternative mine plans to the indicative plans above may be used, provided that the environmental impacts remain within the envelope of effects assessed in this EIS. This enables the mining operations to retain some flexibility within the constraints of the identified and assessed environmental envelope.

iii Finalisation of South Pit

A dragline and supporting mining fleet operate in South Pit, in accordance with the current development consent. By approximately the end of Year 1 of the proposal (nominally 2015), dragline operations are scheduled to cease in this area. The southern-most area in South Pit would remain open to enable optionality should future studies into the feasibility of underground mining determine that coal extraction of deeper coal seams at MTW is viable. This matter is discussed further in Chapter 23.

iv Services corridor

A services corridor is proposed west of the highwall, as shown in Figure 2.9. This area could enable the provision of ancillary mining infrastructure including access roads, water management and power reticulation infrastructure and other services. This includes the construction of an appropriate emergency access road between Putty Road and the Golden Highway of the corridor which would occur prior to the closure of Wallaby Scrub Road. This road would be constructed in accordance with the NSW Rural Fire Service's (RFS) access standards prescribed in *Planning for Bush Fire Protection* (RFS 2006) and the NSW Bushfire Coordinating Policy No. 2/2007, and in consultation with emergency services. For the purpose of this EIS, it is assumed the full width which would require clearing.

2.4.3 Coal resources

Mineable coal within the Warkworth Mine is part of the Whittingam Coal Measures. These strata consist of approximately 20 coal seams which are interbedded with shales, siltstones, sandstones and conglomerates (see Figure 2.11). Different seams are suitable for production of either thermal or semi-soft coking coal.

Reserves and resources at the end of 2013 estimated in accordance with the JORC Code 2004 are presented in Table 2.3. The proposal would enable approximately 358Mt of ROM coal to be mined over the life of the operations, approximately 230Mt of which is within the proposed 2014 disturbance area.

Table 2.3 Reserves and resources at the end of 2013

Reserves at end of 2013			Resources at end of 2013			
Proved Mt	Probable Mt	Total Mt	Measured Mt	Indicated Mt	Inferred Mt	Total Mt
203.7	154.7	358.3	6.2	39.2	133.2	178.6

Note: Totals may differ due to rounding.

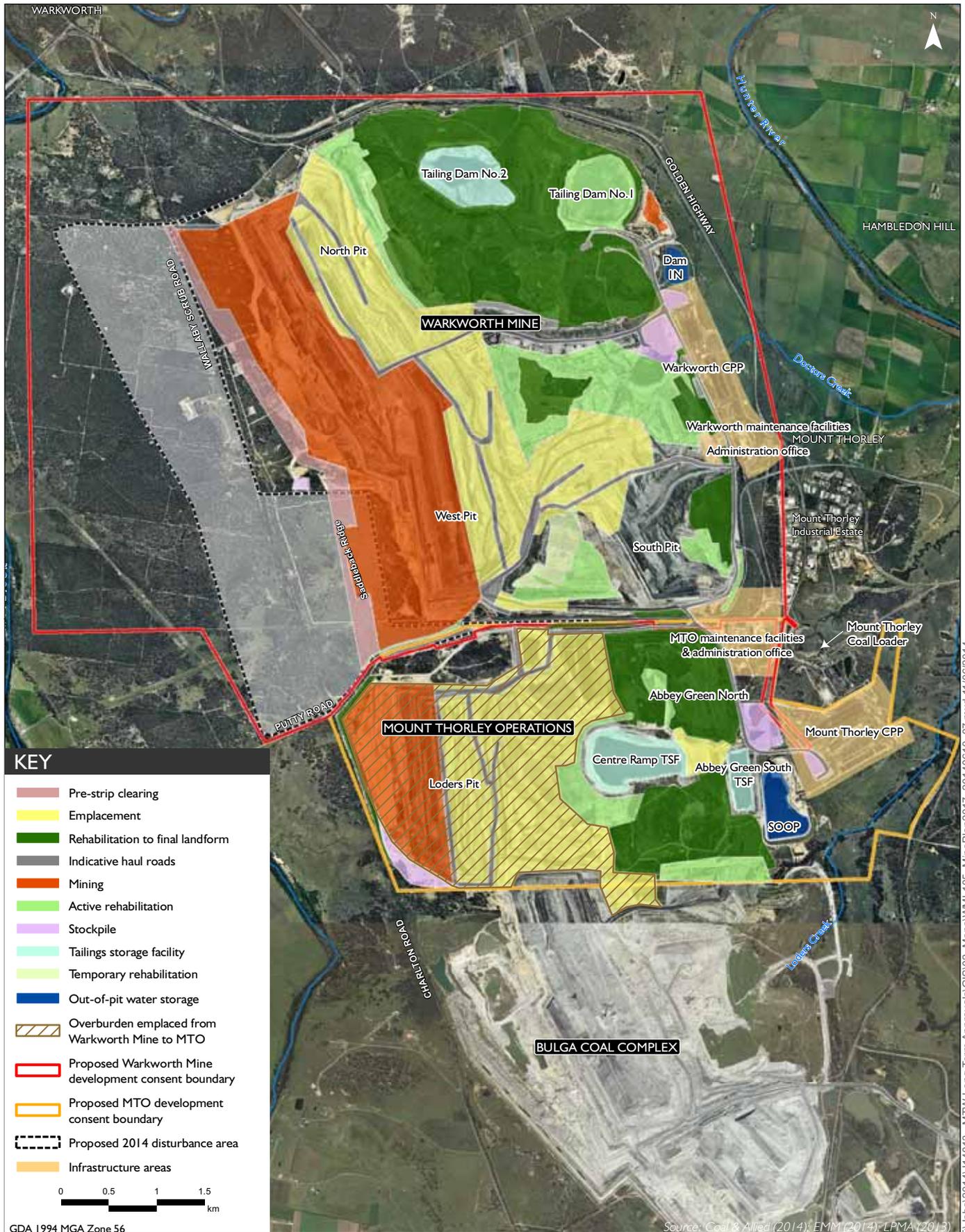
2.4.4 Mining method

i Vegetation clearing and topsoil management

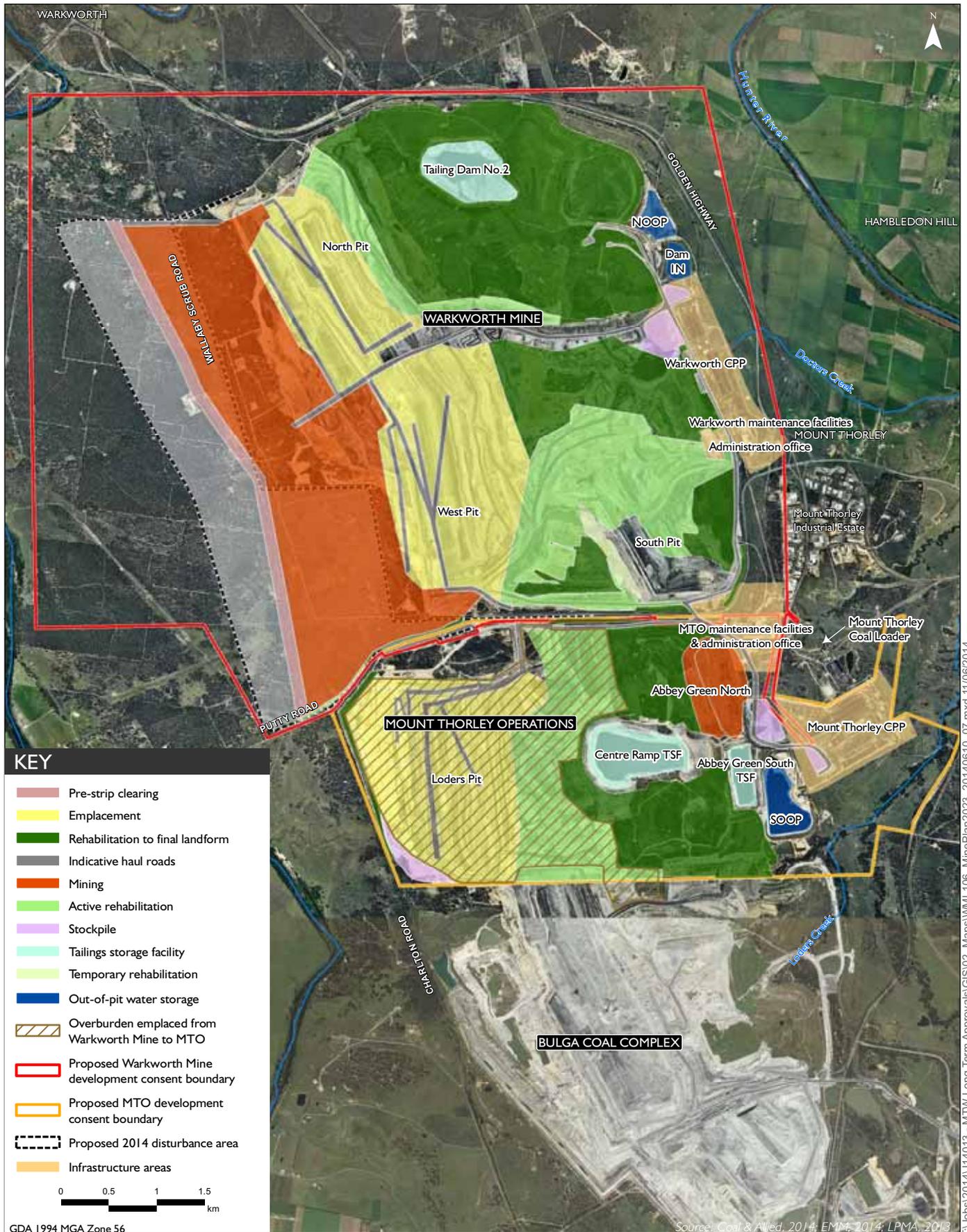
Vegetation removal and topsoil stripping precede mining operations and are implemented in accordance with Coal & Allied's Environmental Management System (EMS), namely the Flora and Fauna procedure and the Topsoil Stripping and Stockpiling Management procedure. Procedure objectives include the appropriate management of any significant flora and fauna species and communities, and to maintain the quality of the topsoil for subsequent use in rehabilitation. The procedures include requirements for flora and fauna impact assessments in pre-development and mining approvals, protocols for pre-clearing and clearing activities, and management measures for weed and pest control.

A pre-clearance survey is undertaken before vegetation is removed and topsoil stripped. The purpose of the pre-clearance survey is to identify habitat trees and understory habitats such as fallen logs. Before clearing, trees suitable for timber are selectively marked and removed. Tree stands providing a viable seed source are harvested where practical. Vegetation may be chipped for rehabilitation mulch.

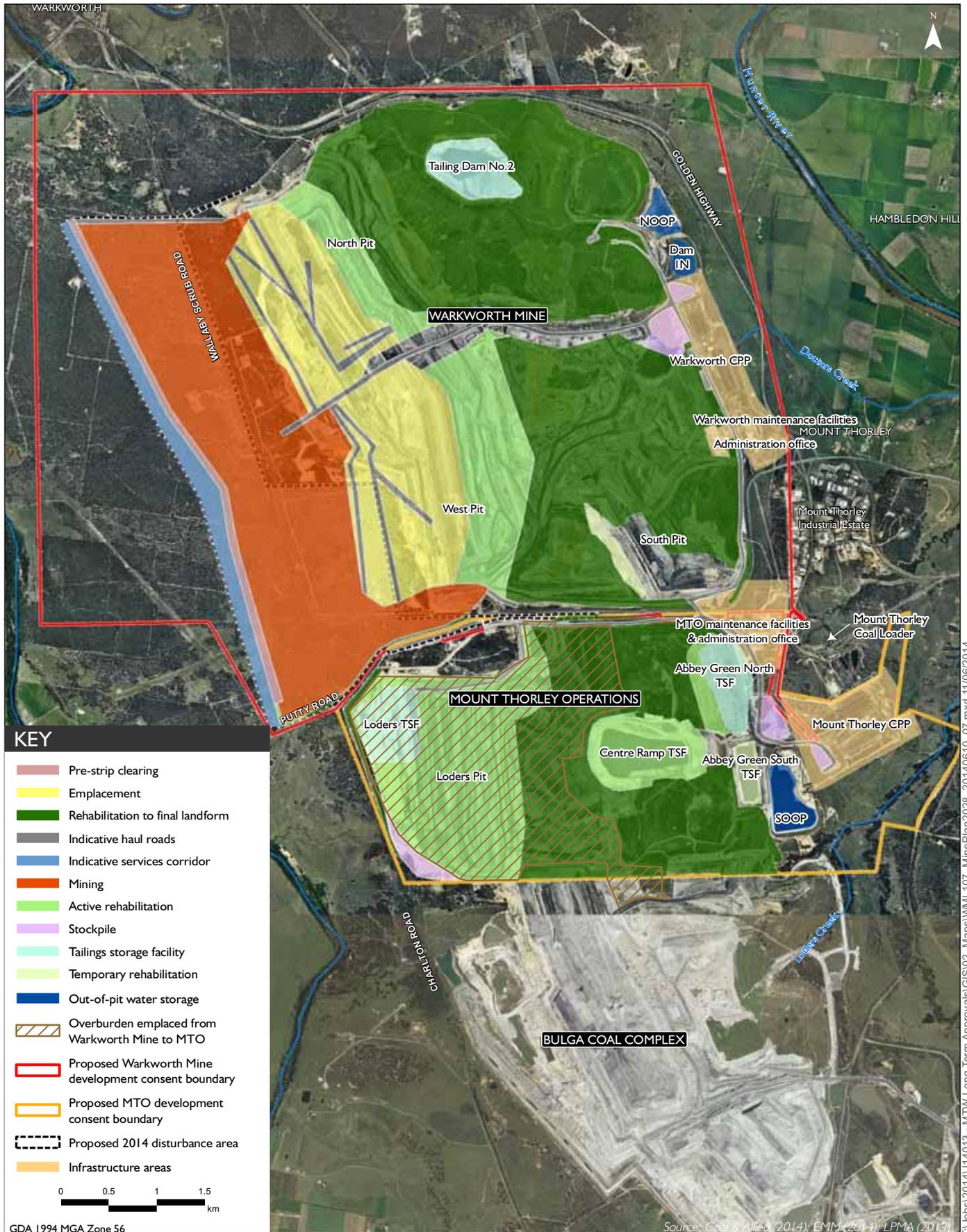
A Mining Operations Plan (MOP) requires mining operators to actively consider the environmental and rehabilitation aspects and to provide management systems for integration with mine planning and production (Environmental Sustainability Unit – Mineral Resources 2013). Further information on the function of a MOP is provided in Section 13.4.6. An integrated MOP applies across MTW.



Indicative Year 3 mine plan
Warkworth Continuation 2014
Environmental Impact Statement
Figure 2.7

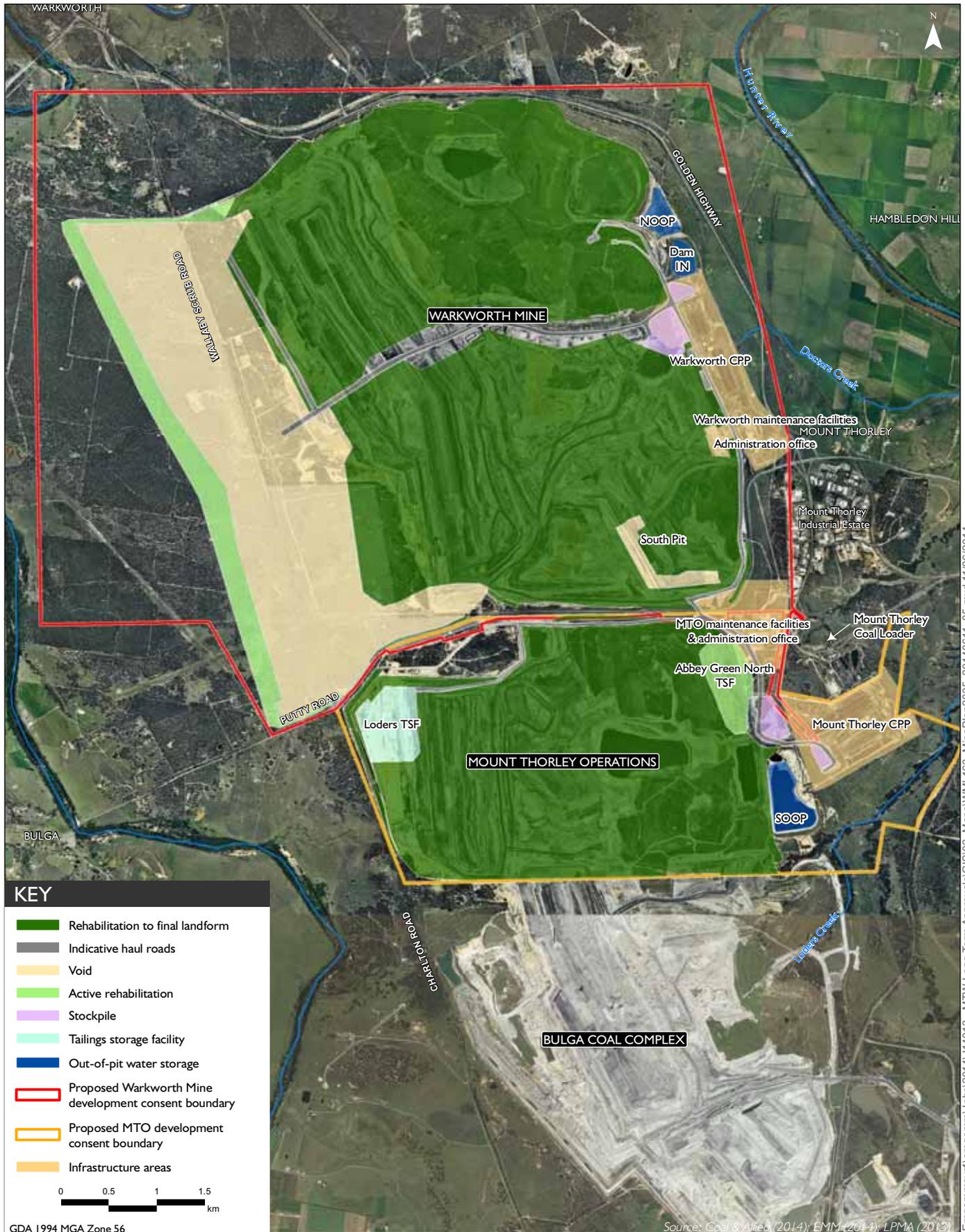


Indicative Year 9 mine plan
Warkworth Continuation 2014
Environmental Impact Statement
Figure 2.8



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Indicative Year 14 mine plan
 Warkworth Continuation 2014
 Environmental Impact Statement
 Figure 2.9



Indicative Year 21 mine plan
Warkworth Continuation 2014
Environmental Impact Statement
Figure 2.10

Singleton Super Group	Wollombi Coal Measures	Glen Gallic Subgroup	Greigs Creek Coal			
			Redmanvale Creek Formation			
			Dights Creek Coal	Hillsdale Coal Member Nalleen Tuff Hobden Gully Coal Member		
			Waterfall Gully Formation			
		Doyles Creek Subgroup	Pinegrove Formation		Hambleton Hill Sandstone Wyllies Flat Coal Member Glenrowan Shale	
			Horseshoe Creek Subgroup		Lucemia Coal	Eyriebower Coal Member Longford Creek Siltstone Rombo Coal Member Hillsdale Claystone Carramere Coal Member
		Strathmore Formation				
		Alcheringa Coal				
		Clifford Formation		Apple Tree Flat Subgroup		
		Charlton Formation				Stafford Coal Member Monkey Place Creek Tuff
	Abbey Green Coal		Watts Sandstone			
	Whittingham Coal Measures	Denman Formation		Jerrys Plains Subgroup		
		Mount Leonard Formation				Whybrow Seam
		Althorpe Formation		Malabar Formation		
		Malabar Formation				Redbank Creek Seam Warbo Seam Whynot Seam Blakefield Seam
		Mount Ogilvie Formation				Saxonvale Member Glen Munro Seam Woodlands Hill Seam
		Milbrodale Formation		Mount Thorley Formation		
		Mount Thorley Formation				Arrowfield Seam Bowfield Seam Warkworth Seam
		Fairford Formation		Burnamwood Formation		
		Burnamwood Formation				Mount Arthur Seam Pierrefield Seam Vaux Seam Broonie Seam Bayswater Seam
		Archerfield Sandstone				Vane Subgroup
		Bulga Formation		Foybrook Formation		
		Foybrook Formation				Lemington Seam Pikes Gully Seam Arties Seam Liddell Seam Barrett Seam Hebden Seam
Saltwater Creek Formation		Vane Subgroup				
Saltwater Creek Formation				Vane Subgroup		
Saltwater Creek Formation		Vane Subgroup				
Saltwater Creek Formation				Vane Subgroup		

Source: Coal & Allied (2010)

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ii Open cut mining process

Coal extraction at Warkworth Mine uses typical open cut methods incorporating dragline and truck/shovel operations. Overburden is removed using electric rope shovels and excavators, before coal is extracted using front end loaders and excavators. Depending upon thickness, interburden is removed using shovels, excavators or draglines. Draglines are typically tasked with removal of the deeper and thicker interburden zones to expose the deepest coal seam extracted.

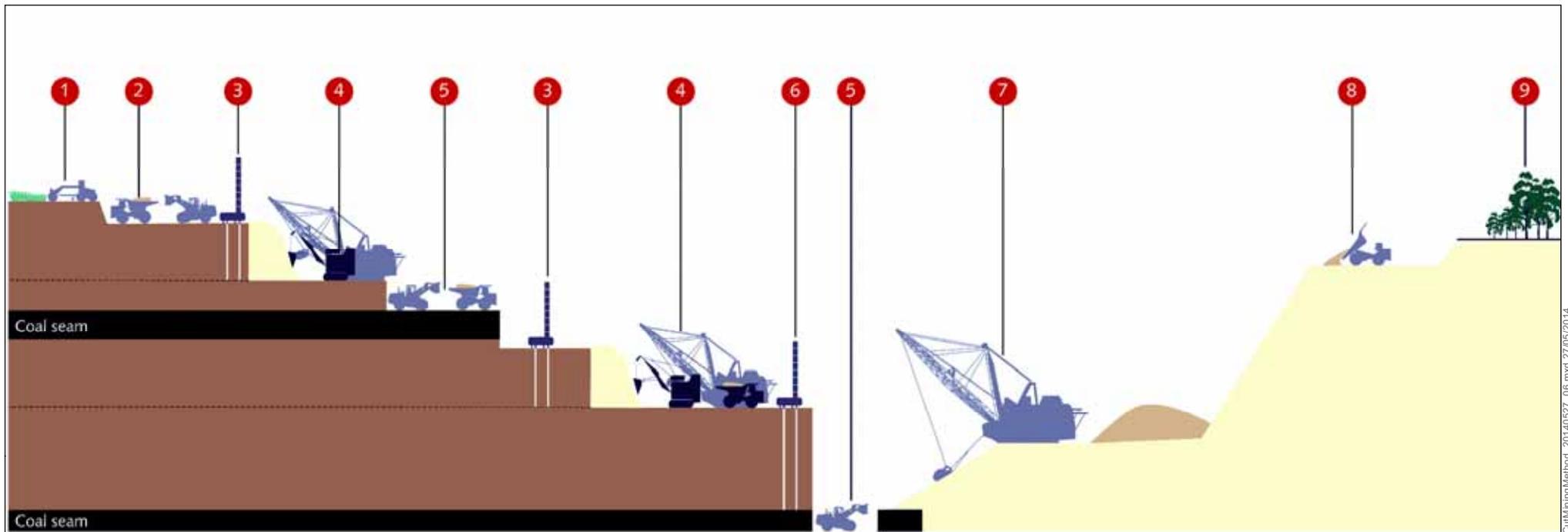
The typical open cut mining process is shown in Figure 2.12.

iii Overburden management

Overburden is the strata between the top-most coal seam and the land surface. Almost all overburden is drilled and blasted. Interburden is a layer of rock between coal seams. Interburden is either ripped or drilled and blasted. Both overburden and interburden are removed by dragline, shovel, excavator or front end loader, depending on the thickness, for haulage to designated emplacements. For the purposes of this EIS, references to overburden generally include both overburden and interburden.

Overburden is transported and disposed of within mined out sections of the open cut pits to create a final landform. The elevation of the final landform is generally higher than the pre-mined elevation due to swelling of the excavated soil that is disposed, which is typically in the order of 20 to 30 per cent of the in-situ volume. The placement of overburden occurs in accordance with the mine plans for each of the pits at Warkworth Mine. Overburden material may also be transferred to MTO, via the bridge/underpass crossings of Putty Road, to assist in creation of the final landform.

Overburden containing potentially acid forming materials, when exposed to oxygen, can lead to acidification of surface water runoff. Net acid producing potential, pH and total sulphur are used to determine the acid generating potential. Testing at MTW indicates that although sulphide materials as pyrite (FeS_2) are known to occur, their content is relatively low (average sulphur content 0.46 per cent). With natural buffering capacity, these materials have low acid forming potential and are within specified acceptable ranges for use as a plant growth medium as part of the rehabilitation of the final landform (see Appendix Q). Overburden management at MTW under the proposal would include the ongoing geochemical characterisation of mined materials and void wall rock to accurately predict risk factors and develop management measures where required. In addition, the proposal would continue the ongoing monitoring of runoff and seepage waters during operations to validate these predictions.



1 Vegetation clearing and topsoil removal.

2 Overburden removal using front-end loader, shovel or excavator and trucks.

3 Overburden drilling and blasting.

4 Overburden removal using shovel or excavator and trucks or dragline.

5 Coal will be either drilled and blasted or ripped with dozers, depending on the thickness.
Coal removal using front-end loader or excavator and trucks.

6 Overburden drilling and blasting, including highwall pre-split and throw blasting.

7 Dragline, shovel, excavator or front-end loader and truck operations.

8 Overburden placed into completed mine areas by trucks.

9 Shaping, topsoiling and revegetation.

Note: only two coal seams shown for indicative purposes

Source: Coal & Allied (2010)

2.4.5 Mining schedule and fleet

Production at Warkworth Mine would continue at a level of around 18Mtpa ROM coal until approximately Year 16 (nominally 2030). Mining activities would decrease beyond Year 16 before concluding in Year 21 (nominally 2035).

An estimate of the indicative fleet required for each snapshot of the proposal (ie indicative Years 3, 9 and 14) used for assessment purposes is provided in the noise and vibration study, Appendix F.

In 2011, Warkworth Mine invested substantial capital for fleet upgrades and replacements (see Chapter 4) to prepare for the anticipated approval of the (now disapproved) Warkworth Extension 2010. As noted in Chapter 4, all drill, truck, dozer and excavator fleet would now be sound attenuated by the end of the 2016 calendar year to minimise noise emissions.

2.4.6 Infrastructure

The proposal is based on the continued use of existing infrastructure. Infrastructure for Warkworth Mine is predominantly at the eastern side of the Site. Most existing infrastructure is within the 'infrastructure envelopes' as shown in Figure 2.3. These facilities include:

- workshops to provide servicing and repair services to the mining fleet;
- vehicle washing facilities for both heavy and light vehicles;
- bulk oil and fuel storages for handling new and waste oil;
- water management infrastructure;
- coal bed methane gas wells and ancillary infrastructure;
- storage hoppers and crushers;
- coal stockpiles;
- CPP;
- erection pads;
- bathhouse;
- general stores;
- office building (including but not limited to the Warkworth Administration, technical services, MTW health centre); and
- other facilities and incidental activities.

Mobile crib and amenity facilities (including sewage treatment facilities) are in open cut areas for employees working in these areas. The facilities are trailer-mounted and near active working areas and are relocated as required as mining progresses.

Other in-pit facilities include water cart fill points, explosives magazine and reload facilities, mobile sub stations, powerlines, fuel storages and other equipment. These in-pit facilities are also positioned near active working areas and would continue to be moved as required as mining progresses under the proposal. The proposal may require the addition or modification of existing infrastructure and mobile and in-pit facilities as described above, as required within the current mining and infrastructure areas for the efficient operation of Warkworth Mine.

The third bridge over Putty Road was approved in 2003 but has yet to be constructed. It is proposed to include the option of constructing an underpass rather than a bridge as well as extend the envelope westward where this bridge or underpass may be constructed. While the final location is yet to be determined, it would be within the envelope shown in Figure 2.3. The underpass or bridge is likely to be a double lane and of reinforced concrete construction capable of accommodating fully laden haul trucks.

2.4.7 Coal washing and processing

Under the proposal, the Warkworth and MTO CPPs would continue to wash and process coal in preparation for its transport to the Port of Newcastle via the MTCL with a small volume transported to Redbank Power Station. A small portion of ROM coal is bypassed and not washed, as further discussed in Section 2.4.8).

These CPPs contain processing equipment that separates the ROM feed coal into various saleable products and rejects. The coal is processed and washed in accordance with market requirements. Washing relies on the physical properties of the coal which has a lower specific gravity than non-coal material and the difference in densities allows the materials to be separated by floatation or centrifugal action. The CPPs separate the raw coal into low ash and high ash products, coarse rejects and fine rejects.

The coarse coal circuit relies on relatively simple gravity separation, with coal particles floating in a magnetite and water mixture known as a dense medium. The heavier non-coal material sinks while the coal remains in solution. The separation is enhanced for coarse coal particles by pumping dense medium and ROM coal together through dense medium cyclones. The Warkworth CPP also comprises a beneficiated dewatered tailings (BDT) plant which further extracts fine coal fraction through a floatation process.

Fine ROM coal is cleaned in a process circuit that does not use a dense medium. It is mixed with water and pumped through classifying cyclones to remove the very fine particles, which generally contain a very high proportion of non-coal materials including clays. It is then fed into spiral separators, which separate materials by gravity, taking advantage of the differing centrifugal effects produced by coal and non-coal particles as they wind their way down the spiral pathways.

After thickening in coal cyclones, the coal product streams are de-watered in centrifuges prior to stockpiling. Stockpiles are located within the infrastructure areas identified in Figures 2.7 to 2.10.

2.4.8 Coal transport

i ROM coal

The currently approved maximum extraction rate of 18Mtpa of ROM coal would be maintained under the proposal. Extracted coal would continue to be transported from the active working areas to the handling facilities at the Warkworth and MTO CPPs by truck. It would also continue to be transferred between Warkworth Mine and MTO via internal haul roads utilising one of two existing bridge crossings over Putty Road (it may also be transferred over the third approved crossing that is not presently constructed). The coal would be delivered directly to the ROM dump hoppers or the ROM stockpile (see Figure 2.13).

Coal would continue to be generally delivered directly to ROM receipt dump hoppers which have been upgraded at the Warkworth CPP to incorporate dust hoods over the hoppers. A hardstand area adjacent to the dump hoppers is used as a contingency stockpile area for ROM coal, to minimise the effect of production variations or inclement weather on the continuity of supply to the CPPs. Coal is transferred from the contingency ROM coal stockpile by truck/front-end loader to the dump hoppers as required.

The raw coal in the dump hoppers would then be crushed before being either fed directly into the CPPs or selective stockpiling on the raw product stockpiles. Upon reclaiming, the raw coal can be blended before being conveyed to surge bins.

Some ROM coal which is suitable to be sold without washing can bypass the CPP directly to product stockpiles. The process is shown in Figure 2.13.

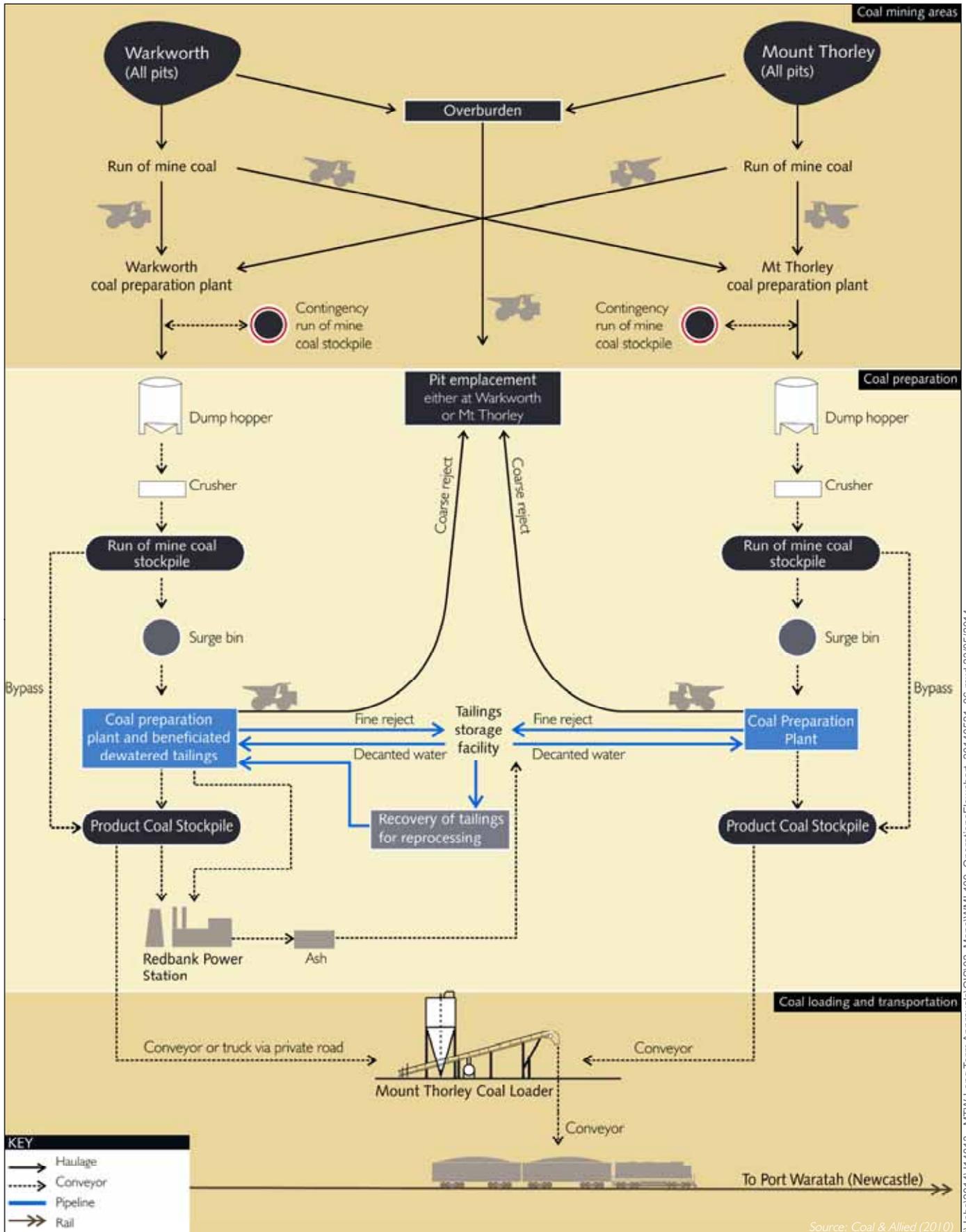
ii Product coal

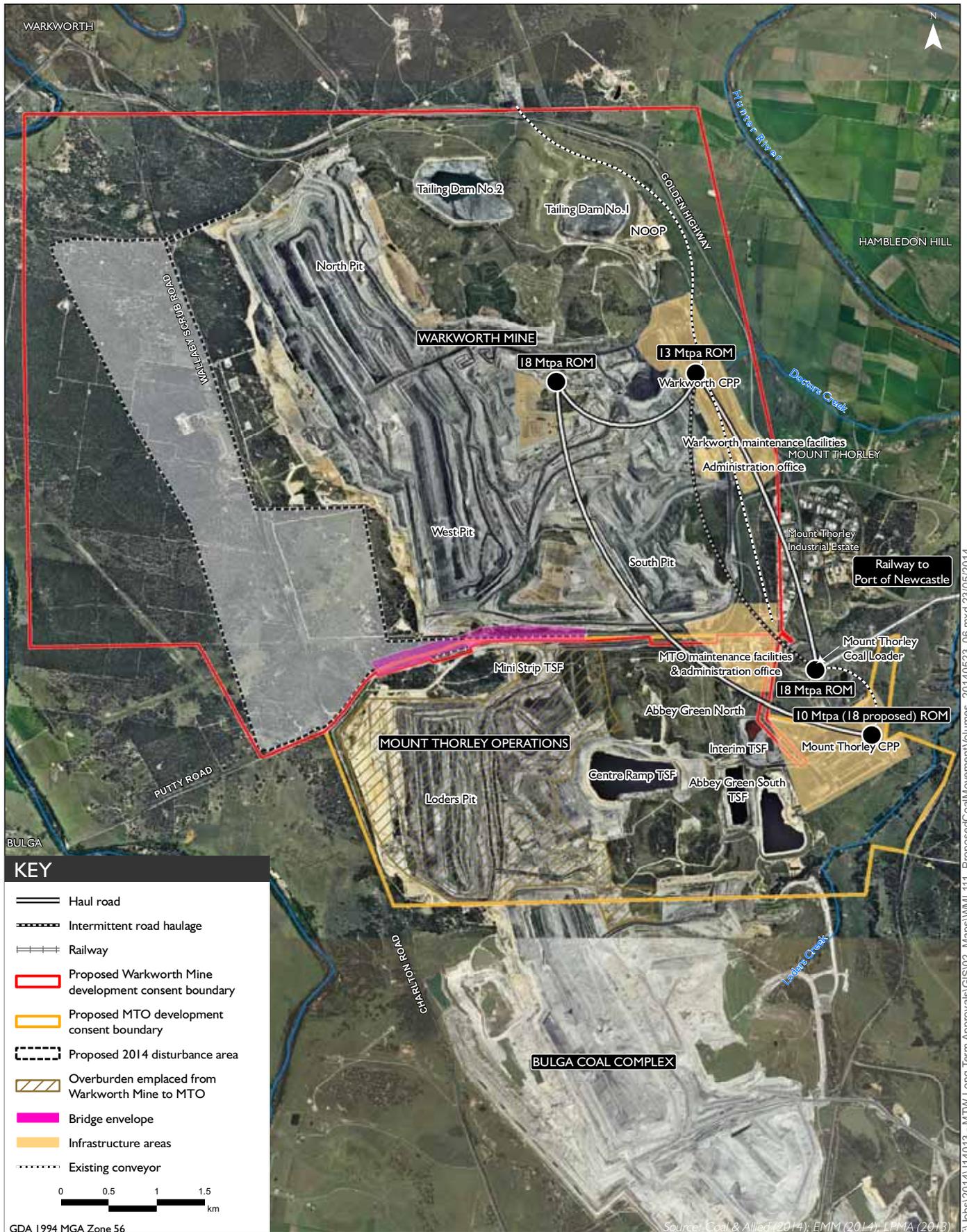
Under the proposal, product coal from Warkworth CPP would continue to be transported to the locations listed below as shown in Figure 2.14:

- product coal stockpiles by conveyor;
- MTCL via overland conveyor;
- MTCL by truck using internal haul roads; and
- Redbank Power Station by overland conveyor.

With the exception of coal delivered to Redbank Power Station for domestic purposes, all product coal would be loaded and transported via MTCL. In case of emergency, such as conveyor failure, coal may be transported to Redbank Power Station via road for short periods, subject to regulatory approval in each instance.

The majority of the product coal from Warkworth CPP would continue to be transported approximately 2km by overland conveyor to the MTCL for transport to the Port of Newcastle, with some product coal transported by truck along internal haul roads. At the MTCL, coal is fed into rail loading storage silos owned by Warkworth Mine. The coal is then dispatched to the Warkworth Mine train loading bin situated on the nearby rail loop. Trains of varying capacity from 2,000 tonnes (t) to 8,000t are then loaded with coal for transport to ship loading facilities at the Port of Newcastle.





Proposed coal movement volumes
 Warkworth Continuation 2014
 Environmental Impact Statement
 Figure 2.14

The existing and approved bridge crossings of Putty Road between Warkworth Mine and MTO would continue to be used under the proposal. This includes the existing smaller bridge over Putty Road designed for B-double vehicles, but not for heavy mining equipment fleet, and provides for the transport of product coal from the Warkworth CPP to the MTCL via internal haul roads.

A second bridge over Putty Road has been constructed and a third crossing over Putty Road which has been approved but not yet constructed may be used to facilitate the haulage of coal and also the transfer of mining equipment and overburden between Warkworth Mine and MTO. Both of these crossings are designed for heavy mining equipment fleet. As described in Section 2.4.6, the proposal includes the option of constructing an underpass rather than the third bridge over Putty Road.

The use of conveyors to transport coal from the two CPPs would continue under the proposal. A 3.7km conveyor is used to transport product coal from Warkworth CPP to the Redbank Power Station. The conveyor passes under the Golden Highway. Product coal from MTO CPP is transported directly to MTCL by conveyor.

Both the Warkworth and MTO CPPs would continue to operate continuously 24 hours per day, seven days per week.

2.4.9 Waste management

i Overview

Waste is classified and segregated into separate streams onsite and Coal & Allied environmental management protocols and procedures are implemented to ensure they are managed appropriately. The implementation of these would continue under the proposal.

The waste management systems at Warkworth Mine and MTO are integrated. Waste streams at MTW include overburden, rejects and tailings, liquid waste, hazardous waste, general waste (both putrescibles and non-putrescibles), vegetation waste and minor amounts of special waste (such as tyres).

The MTW waste management strategy includes the following commitments:

- all sampling and classification results are retained for the life of the operations in accordance with the EPA's *Waste Classification Guidelines* (DECCW 2009). It should be noted that most waste classifications for the operations are clear and do not require a sampling regime, however where unidentifiable waste is encountered (ie liquid waste), testing would be undertaken prior to acceptance and disposal;
- where relevant and in accordance with EPA's requirements, notification and tracking of waste is undertaken;
- all waste management protocols and procedures are regularly updated to include relevant contemporary legislative requirements (for example, Resource Recovery Exemptions); and
- contingency planning is undertaken for events that affect operations at the mines that may result in environmental harm, such as hazardous substances spills or failure of TSFs. These are detailed in the MTW Environmental Pollution Incident Response Management Plan.

The following sections describe the waste management strategy for MTW that would continue under the proposal. Appendix R provides relevant waste management protocols and procedures implemented at MTW as well as the reported waste recycled (86 per cent) and disposal (14 per cent) quantities for 2013, which are considered to be representative of waste streams expected during the life of the proposal.

ii Overburden emplacement

Overburden material would continue to be placed at Warkworth Mine and, in addition, would be transferred from Warkworth Mine to MTO to assist in the development of an improved final landform for MTO. Overburden would be transferred to MTO via existing road crossings over Putty Road and either the yet to be constructed bridge or underpass.

Overburden emplacement methods are described in Section 2.4.3.iii.

iii Rejects and tailings disposal

The integrated management (ie generation and disposal) of rejects and tailings for MTW would continue under the proposal. It is managed through implementation of Coal & Allied's environmental procedure *EP6.02 – Coarse Rejects and Tailings Disposal*, which is provided in Appendix R. The TSFs, shown in Figure 2.3, are designed to ensure that rejects and tailings are adequately managed, handled and disposed of in a manner that would minimise potential effects on the surrounding environment. These design measures include selecting appropriate locations (in-pit locations are preferred) that take into account topography, including drainage lines, groundwater and downstream infrastructure. The TSFs also include appropriate erosion, sediment and leachate control measures which are detailed in the MTW WMS.

Reject material is produced as a by-product of the coal washing process. Extracted coal contains part of the rock strata above and below the coal seam. This rock is removed from the product coal through the washing process in the CPPs. As a result, two types of rejects are generated: coarse and fine reject.

Coarse reject is made up of larger rock which is drained, rinsed and directed to a rejects bin. The reject would continue to be transported by haul truck and disposed at in-pit emplacement areas. The emplacement areas are capped by overburden material.

Fine reject (or tailings) has a high water content and is pumped to TSFs across MTW for settling and dewatering. Water from the TSFs would be retrieved and reused in the integrated WMS, such as water supply for the CPPs and dust suppression for haul roads and other exposed areas. When these TSFs reach capacity, they would be allowed to dry out and consolidate. When the TSFs are no longer required they would be capped with overburden and rehabilitated.

Under the proposal, ash generated by Redbank Power Station would continue to be delivered to Warkworth Mine by pipeline and deposited at TSFs. The BDT plant at the Warkworth CPP may continue recovery of fine coal that would otherwise be lost in the waste stream. The BDT plant may also be used to reprocess rejects (and recover fine coal) extracted from historical TSFs. To recover the fine coal fraction, fine rejects can be extracted from TSFs using a range of processes including truck/excavator, dredging or through a process known as hydromining. Hydromining is undertaken by using a high pressure water cannon to generate a slurry inside the TSF that can then be pumped directly from the TSF to the BDT plant. All three processes have been used at Warkworth Mine.

iv Hazardous waste and dangerous goods

Hazardous waste and dangerous goods are regulated under the NSW *Work Health and Safety Act 2011* and NSW *Explosives Act 2003*. Warkworth Mine would continue to comply with regulatory requirements in relation to dangerous goods management. The storage of explosives or explosive precursors is managed in accordance with MTW's *Major Hazard Management Plan - Explosives and security sensitive dangerous substances (SSDS) security plan*, prepared in accordance with the requirements of NSW Workcover. These internal MTW documents are regularly updated and would incorporate the proposal should approval be granted.

v Other waste

The management of other waste, inclusive of construction waste, putrescibles and non-putrescibles waste, liquid and special waste (such as tyres) is undertaken through the implementation of Coal & Allied's environmental work instruction *CNA-10-EWI-SITE-E7-008 – Non-mineral Waste Management*, which is provided in Appendix R.

Non-mineral waste management at the mines meets all regulatory requirements and relevant Rio Tinto standards. The management of non-mineral waste is guided by planning, process design and purchasing that result in the maximum reuse and recycling of materials. Each category of non-mineral waste is subject to appropriate segregation, collection, handling, transport and disposal to minimise environmental impacts. These non-mineral wastes are stockpiled in accordance with the environmental work instruction (see Appendix R), such as waste liquids stored in tanks or sumps.

It should be noted that only minor construction activity (ie activities not associated with continued mining at MTW) would result from the proposal (see Section 2.4.6), with the exception of the underpass/bridge over Putty Road. Construction of this crossing is not expected to generate large volumes of construction waste relative to waste currently managed onsite. Waste generated from this activity would be managed in accordance with the relevant MTW waste management protocols and procedures.

vi Offsite waste transportation

All transportation of regulated wastes is managed strictly in accordance with EPA's requirements to ensure that it does not pose a risk to human health or the environment. Waste transport certificates are issued and uploaded electronically to EPA by MTW's waste contractor. These records are kept in secure storage for the life of the operations in compliance with EPA's *Waste Classification Guidelines* (DECCW 2009). Details regarding the transportation of waste offsite are provided in Appendix R.

2.4.10 Public safety

i Site access

Public safety at MTW would continue to be managed primarily through the implementation of Rio Tinto's Health, Safety, Environment and Quality (HSEQ) standards, procedures and daily security inspections. Fencing, signposting, restricted access areas and locked external gates form part of the safety measures to ensure the safety of the public. In addition, there is no public access from the mine entrance to pit areas as part of the constraint on public access.

ii Bushfire management

Bushfire hazard management onsite is currently monitored and managed onsite through implementation of the MTW Bushfire Management Plan and regular communications and consultation with the NSW RFS. The RFS communicate regularly with mining operations in the Hunter Valley regarding bushfire hazard management, including fuel load (ie management of vegetation).

In 2012, the RFS advised mining operations in the Hunter Valley to undertake a programme of fuel load reduction to manage bushfire risk in the region. This programme was implemented by MTW on Coal & Allied-owned land, excluding areas within the mining footprint and areas designated as biodiversity offsets). These Coal & Allied-owned lands include areas west of the current operations. It should be noted that bushfire hazard management within biodiversity offset areas are managed through the implementation of the Green Offsets Strategy (ERM 2002a).

Annual inspections of Coal & Allied-owned lands, including those leased to residential and commercial tenants are undertaken to identify and assess bushfire risk for public safety and, if required, implement appropriate risk reduction measures such as vegetation pruning or establishment of fire breaks.

As described in Section 2.4.4, measures such as vegetation removal and topsoil stripping precede mining operations and in-pit use of equipment such as explosives magazine and reload facilities and fuel storages would continue to be implemented under the proposal. These activities also reduce bushfire risk resulting from mining operations.

The MTW Bushfire Management Plan is reviewed regularly and would continue to be implemented under the proposal and updated to incorporate the proposal, should approval be granted.

iii Offsite

Public safety offsite would continue to be managed in accordance with industry best practice primarily through the implementation of Rio Tinto's HSEQ standards, procedures and daily security inspections. The proposal has specifically assessed the following elements of offsite public safety:

- vibration (see Section 10.4.9);
- dust (see Section 11.3);
- blast fume (see Section 11.3); and
- traffic (see Section 20.3.2.iii.d).

These technical studies concluded that the proposal, with the continued implementation of existing mitigation measures, would not affect public safety offsite.

2.4.11 Rehabilitation

Rehabilitation would continue to be undertaken progressively across the mined area under the proposal. The requirements for rehabilitation would be determined in consultation with relevant government agencies and stakeholders and be concluded in accordance with the MTW MOP as required by the NSW *Mining Act 1992* (Mining Act).

Rehabilitation objectives and the domain types are provided in Chapter 13.

i Final landform

The existing Warkworth Mine has resulted in alterations to the local landform and includes overburden emplacements, final voids, TSFs, roads and infrastructure. Some of the overburden emplacement areas have already been rehabilitated to pasture and trees.

The proposal requires revision of previously planned and approved final landforms described in past environmental impact assessments and MOPs. The final landform considered these previous landform designs and surrounding land uses, external and internal planning requirements, existing management measures and the existing rehabilitated landforms. Final landform cross-sections are provided in Figure 2.15. Ecological and sustainability values were also an important consideration in the development of the conceptual final landform shown in Figure 2.16. Figure 2.16 also shows the cross-section locations provided in Figure 2.15.

The indicative post-mining landform is described further in Chapter 13.

ii Final landuse

The applicant acknowledges that final landuses need to integrate with the rehabilitation undertaken by the surrounding mining operations, existing agricultural land and areas containing remnant vegetation, ultimately providing for sustainable end land uses agreed by a range of stakeholders. The conceptual final landuse is shown in Figure 2.16.

The final landuse under the proposal aims to provide ongoing agricultural benefits, with cattle grazing permitted in areas of rehabilitated grassland, whilst creating complementary areas of biodiversity. This would enable productive agriculture, an increase in habitat and biodiversity values and the establishment of vegetation cover that creates corridors to link surrounding native vegetation. This would enhance local and regional ecological linkages to provide for a sustainable final land use.

The indicative location of the biodiversity corridor is shown in Figure 2.17. It is compatible with long-term rehabilitation plans for adjacent land uses in the vicinity of Warkworth Mine. The final landuse forms a north/south connecting corridor of vegetation between the existing vegetation to the north of the proposed 2014 disturbance area, through the rehabilitation areas of MTO and Bulga Coal Complex, and remnant vegetation within the Singleton Military Area further south.

Final landuse is discussed further in Chapter 13.

2.4.12 Water management

Potential surface water effects of the proposal would be managed in accordance with the MTW Water Management Plan (WMP), prepared in consultation with the NSW Office of Water (NOW) and NSW EPA for the integrated MTW operations. The plan requires:

- diversion of clean water runoff around areas of mining disturbance;
- collection and treatment of sediment-laden runoff from disturbed areas prior to discharge;
- collection of groundwater inflows and runoff from active mining areas within the MTW WMS;
- collection and treatment storage of potentially contaminated mine water prior to discharge to the MTW WMS;

- minimisation of water supply requirements from external sources by utilising on-site water for dust suppression and coal processing; and
- discharging excess mine water from the site based on existing entitlements under the Hunter River Salinity Trading Scheme (HRSTS).

Minor changes to the design of the NOOP dam (a saline water storage located to the south-east of Tailings Dam No.1) to support a capacity of approximately 740ML are proposed. This and other changes to the MTW WMS as a result of the proposal are described in Chapter 17.

2.4.13 Closure of Wallaby Scrub Road

Wallaby Scrub Road is managed and maintained by Singleton Council. Continuation of mining westwards would necessitate the closure of Wallaby Scrub Road. By Year 2 (nominally 2016) mining would be within 500m of the road, requiring its closure.

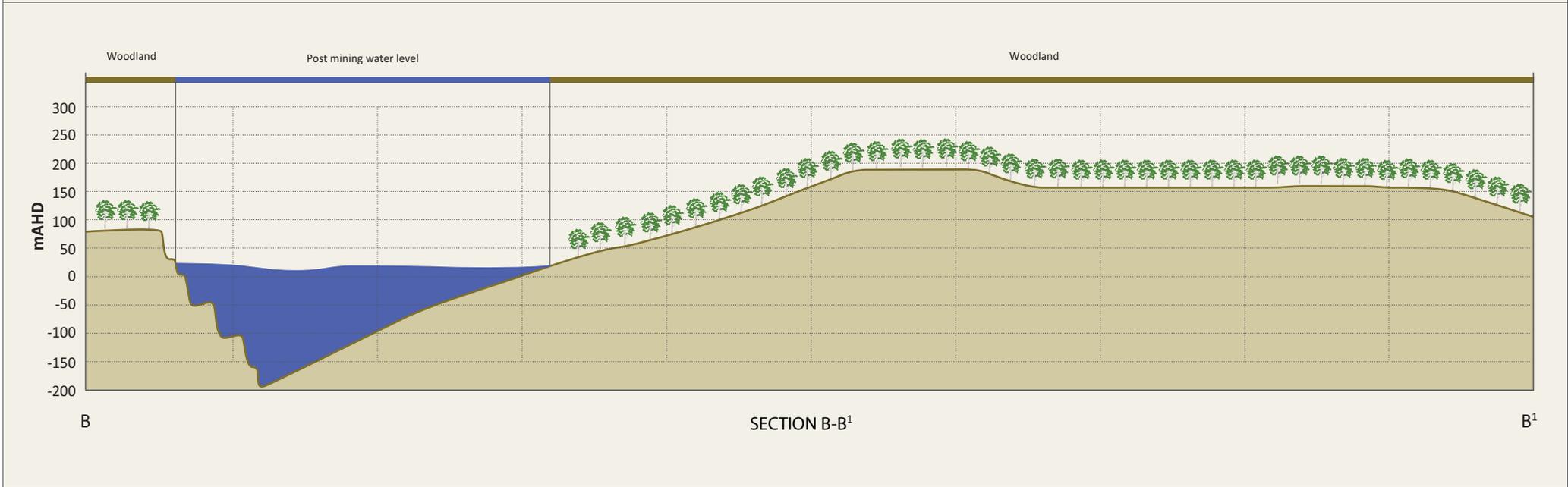
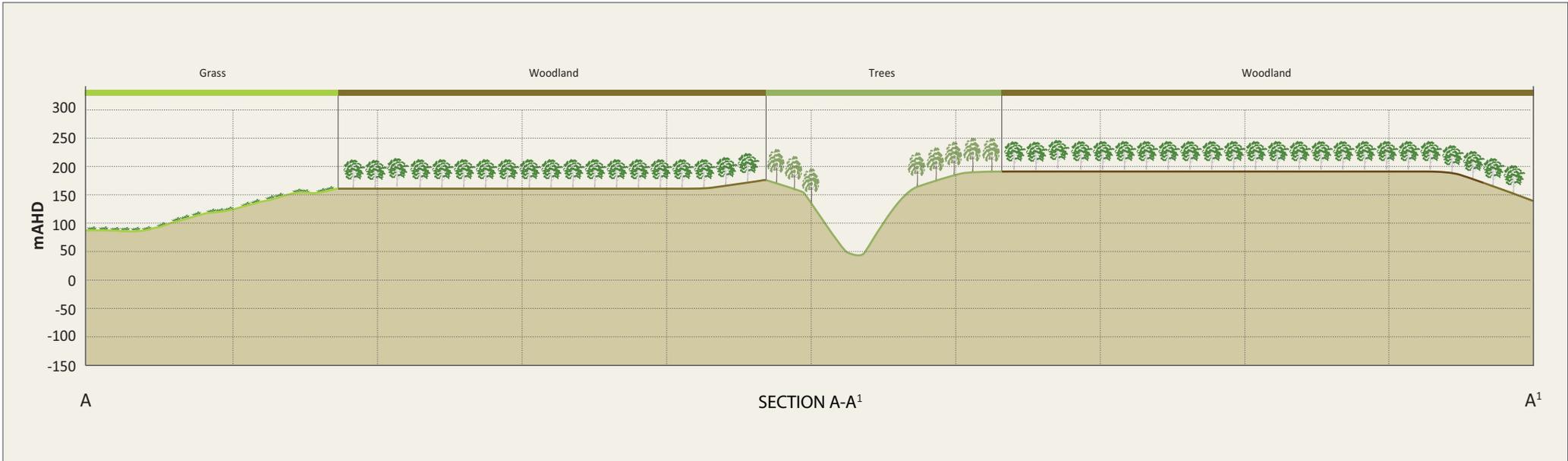
The applicant would engage with Singleton Council in relation to closure of the road.

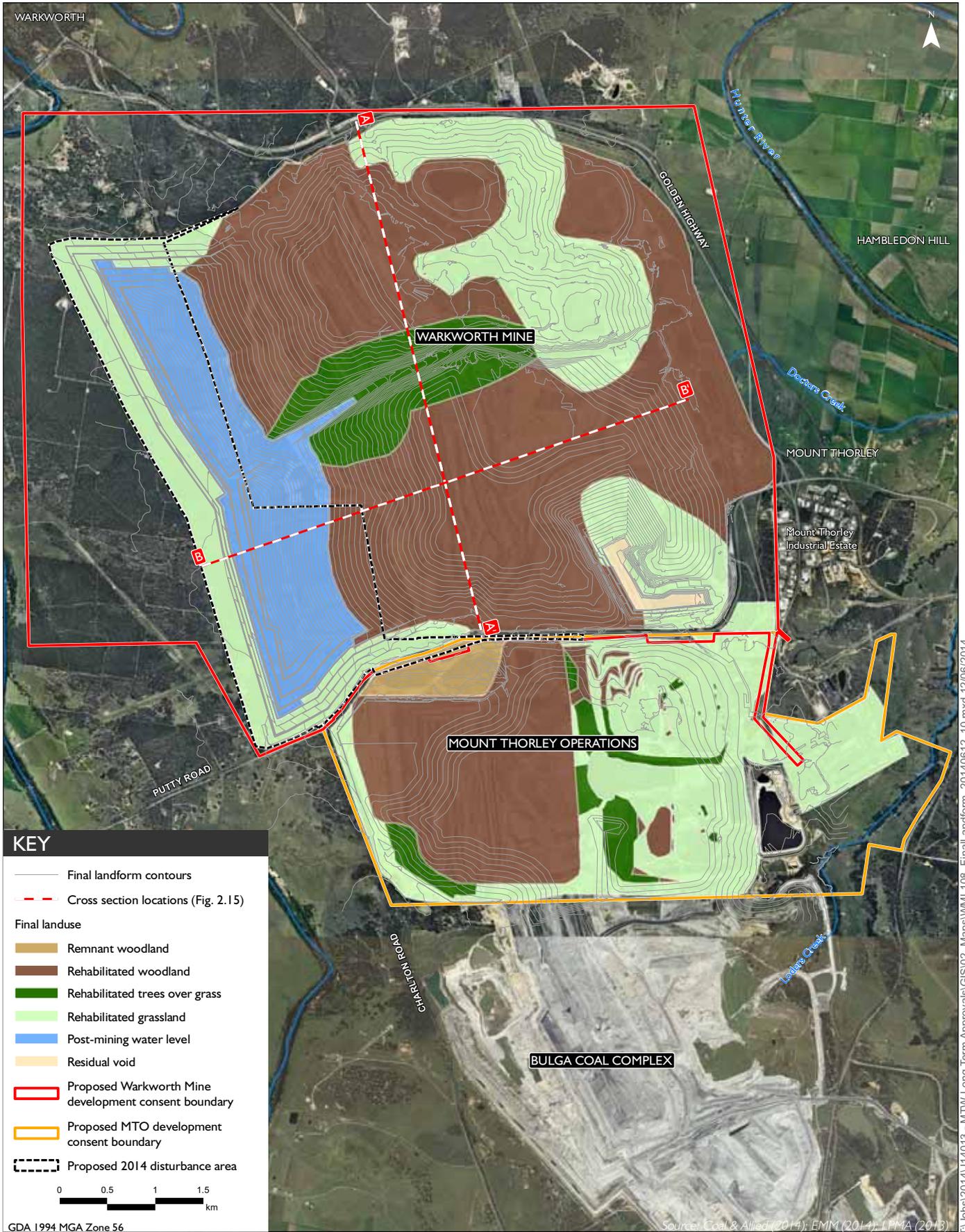
As noted in Section 2.4.2.iv, an appropriate emergency access road between Putty Road and the Golden Highway would be constructed prior to the closure of Wallaby Scrub Road in accordance with the RFS's relevant access standards, and in consultation with emergency services.

Closure of the road is addressed in Chapter 20.

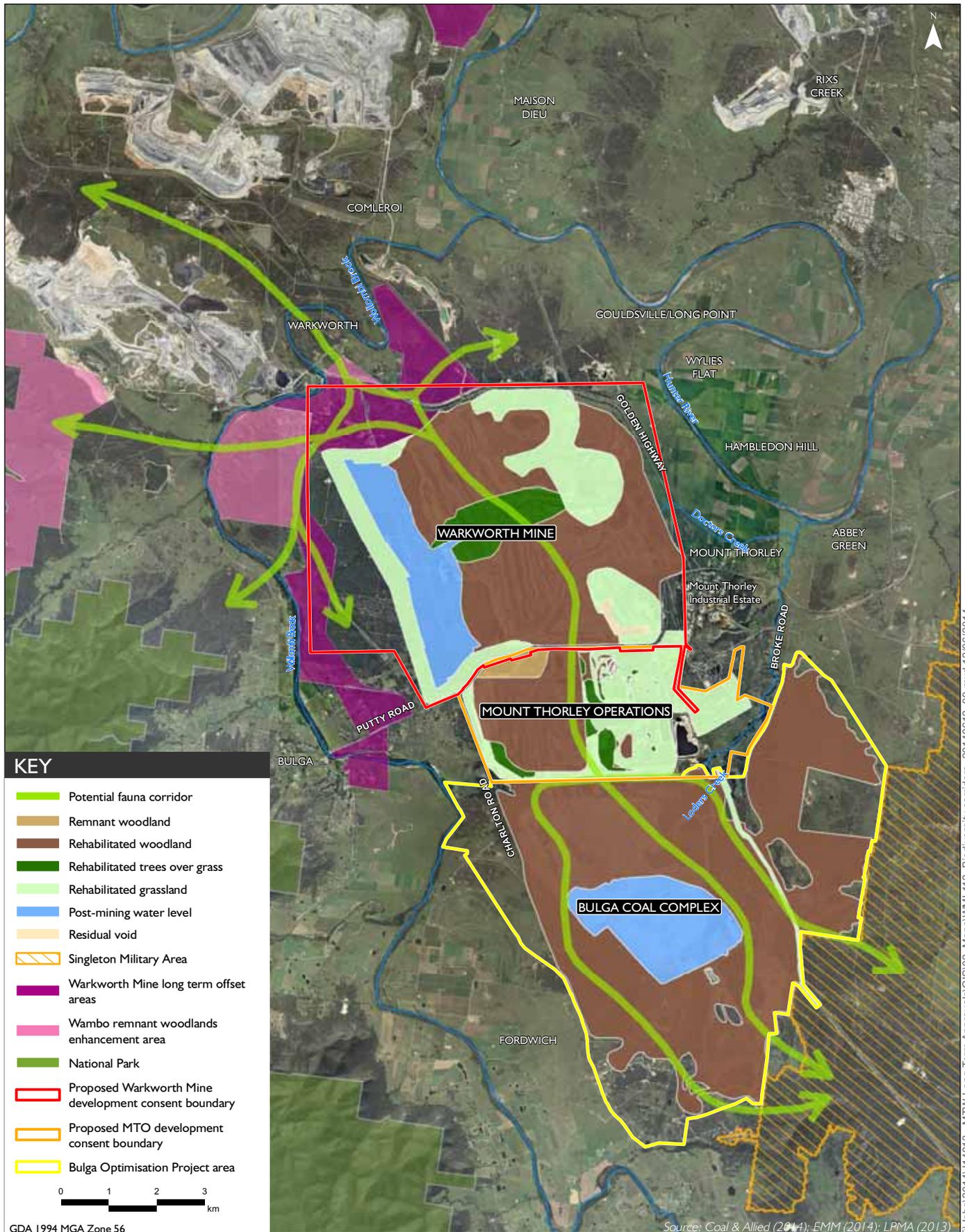
2.4.14 Secondary access gates

The proposal also includes the maintenance of existing secondary access gates to Warkworth Mine from Wallaby Scrub Road, Golden Highway and Putty Road to allow for infrequent traffic movements in and out. It is expected that these access gates would be used to enable activities such as drilling, shutdown equipment, pad access and transportation of equipment. Similarly, existing secondary access gates to biodiversity offset areas would also be maintained as part of the proposal. Access would allow for biodiversity offset management activities.





Final landuse and contours
 Warkworth Continuation 2014
 Environmental Impact Statement
 Figure 2.16



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Biodiversity corridors
 Warkworth Continuation 2014
 Environmental Impact Statement
 Figure 2.17

2.4.15 Workforce and operational hours

i Operational workers

The average workforce currently employed at MTW is approximately 1,300 persons. Although Warkworth Mine and MTO are integrated at an operational level and workforce numbers are difficult to assign to the respective development consents, an estimate of 63 per cent (819 persons on average) could be attributed to activities under the Warkworth Mine development consent and 37 per cent (481 persons on average) under the MTO development consent.

The total long-term workforce for the continuation of MTW is estimated to be the same, ie a workforce of 1,300 persons on average. Again although difficult to assign workforce numbers to respective development consents, the development applications for the proposal and Mount Thorley Operations 2014 proposal would result in similar workforce proportions as presently occur until completion of mining at MTO. At this time, an estimate of 96 per cent (around 1,187 persons on average) would be attributable to the Warkworth Mine development consent and 4 per cent (52 persons on average) attributed to the MTO development consent.

The actual workforce numbers would vary from year to year depending on the mine planning and market requirements.

The economic study, Appendix E, considers a proposal case with a reference case. The proposal case reflects the long-term average and proportions as described above. The reference case is based on operations at Warkworth Mine and MTO concluding in 2021 and 2017, respectively. The average workforce under the reference case is lower than the proposal case as it assumes the respective mines decrease mining activities to closure. The average workforce under the reference case is approximately 987 persons.

The reference case is provided as a basis for conservatively evaluating the incremental value of the project. However, the reference case is not likely to eventuate as mining under this scenario would not be economically viable due to extraction constraints from the reduced strike length in West Pit.

ii Construction workers

With the exception of the Putty Road underpass/bridge crossing, no new infrastructure is anticipated. Construction of the underpass/bridge crossing would require a small construction force only.

As noted in Section 2.4.6, changes to infrastructure within the infrastructure areas shown in Figures 2.7 to 2.9 may be required during the proposed development consent period. These changes would be minor and not necessitate construction workforce beyond current workforce numbers.

iii Operational and construction hours

Warkworth Mine would continue to operate 24 hours a day, seven days a week and any construction activities would also be conducted during these operational hours.

Chapter 3

Proposal need



Chapter 3 — Proposal need

- 3.1 **Overview**
- 3.2 **Background**
 - 3.2.1 Mining slowdown
 - 3.2.2 Regional impacts
- 3.3 **Mining constraints**
- 3.4 **Employment and other economic and social benefits**
- 3.5 **Importance of the resource**
 - 3.5.1 Electricity
 - 3.5.2 Steel
 - 3.5.3 Global energy demand

3 Proposal need

3.1 Overview

Warkworth Mine has been operating for over 30 years in the Hunter Valley. It is a large-scale business built on hundreds of millions of dollars of investment, which requires the efficient extraction of 18Mt of ROM coal to remain viable in the current economic environment. The MTW operation has a workforce of approximately 1,300 persons on average, which includes full-time contractors.

The proposal is needed to:

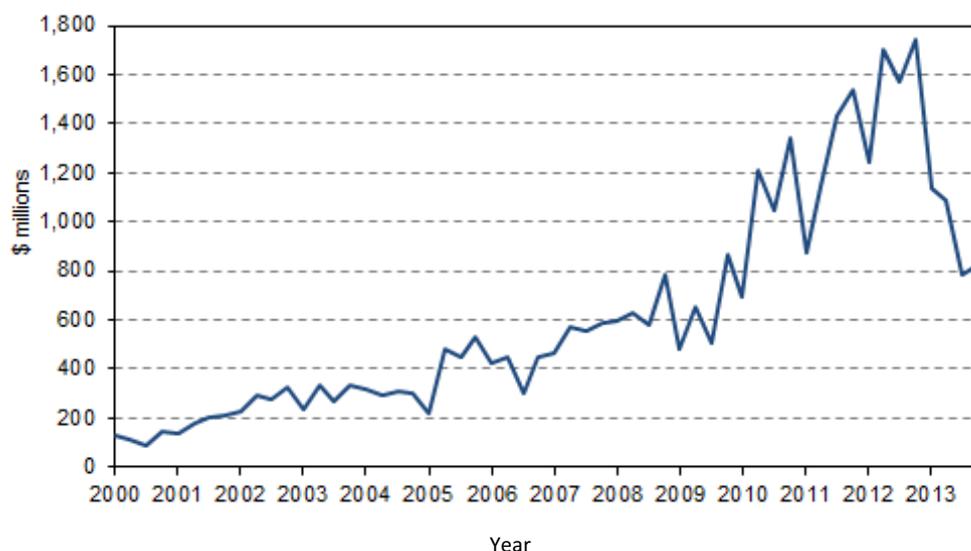
- maintain strike length to enable the mine to remain economically viable in 2015 and beyond;
- maintain jobs and ensure the mine's economic and social benefits continue; and
- enable continued supply of a resource necessary for energy generation and steel production.

These matters are discussed in the sections below.

3.2 Background

3.2.1 Mining slowdown

The economic study (Chapter 9 and Appendix E) suggests through a number of indicators that while mining activity has been historically very high, significant declines in Australian thermal coal prices over the past two years, amongst other factors, have had a negative impact on capital expenditure in NSW. This is shown in Figure 3.1. Investment in new tangible assets has fallen by more than half between December 2012 and December 2013. These trends are consistent with the expectation by the Hunter Valley Research Foundation (HVRF 2013a,b) that few additional mining investment proposals will progress in the medium term, except extension of existing mines to remain viable and that require little capital.



Source: ABS (2014)

Figure 3.1 New capital expenditure in the NSW mining industry (current prices)

The effects of the mining slowdown are also being observed in the labour market. In a reversal of trend of the recent past, there is now an excess of qualified mining engineers in NSW (Australian Journal of Mining 2014), as well as a shortage of positions for mining apprentices and trainees in the Hunter Valley (Australian Mining 2013). This is reflected in the unemployment rate in the Hunter Valley which has increased notably since 2011: 5.2 per cent in 2011 to 5.6 per cent in September 2013.

3.2.2 Regional impacts

The HVRF's measure of employment intentions suggest that further weakness in the Hunter Valley labour market can be anticipated. Employment intentions have declined since December 2011 with HVRF's most recent measures lower than those during the Global Financial Crisis of 2008. Similar trends are also evident in the HVRF's (2013b) Household Survey, which suggests that consumer confidence and purchasing intentions in the Hunter Valley remains negative. Overall, HVRF (2013b) conclude that the economic outlook for the Hunter Valley reflects the end of the previous expansion phase combined with a drive to achieve efficiencies, the effects of which are now being felt by local suppliers, contractors and operational employees.

Recent job losses have also occurred in the wider industry, with approximately 1,500 direct mining jobs lost in the Hunter Valley over the last 18 months (NSW Mining 2014) including the recent announcement of a further 500 job losses at Integra Coal Operations. These job losses and their respective flow-on effects are representative of the indicators described above.

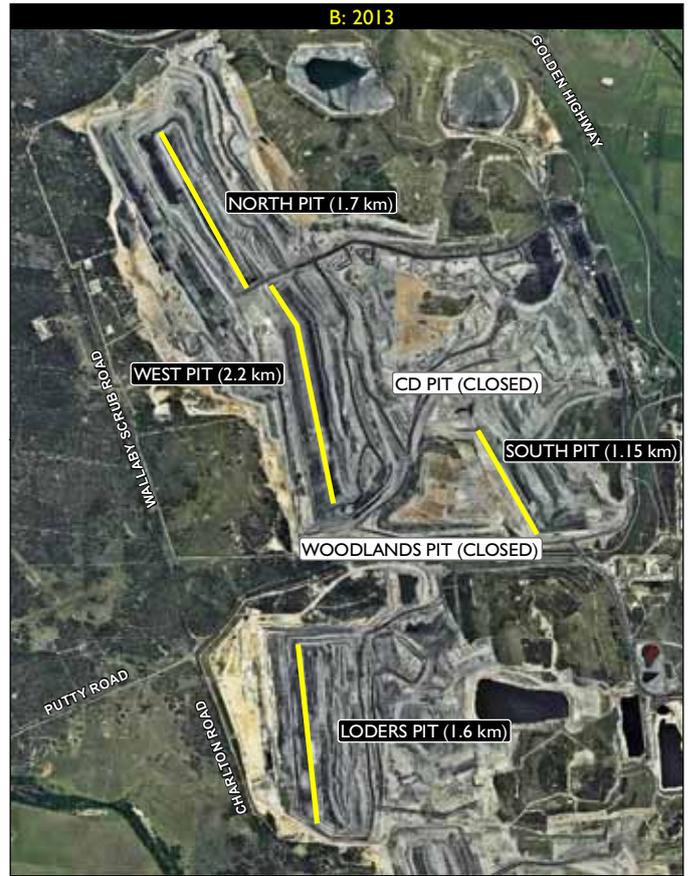
3.3 Mining constraints

As described in Section 2.1, Warkworth Mine and MTO commenced mining in 1981 as separate operations. Warkworth Mine commissioned a Bucyrus 1370 dragline in 1981 and MTO commissioned a Marion 8200 dragline in 1983. The primary reason for the selection of draglines as the preferred mining method was their low operating costs. Draglines are high capital investments but have relatively short payback periods due to their low operating costs. In 1999, Warkworth Mine commissioned a second dragline, a P&H 9020. All of these draglines are still in operation.

As Warkworth Mine progresses down-dip, the strip ratio (ratio of waste material to coal) increases steadily over time. To keep the Warkworth Mine (and MTW as a whole) profitable, the draglines form a vital part of the operation as they move overburden significantly cheaper than conventional truck and shovel methods, enabling extraction costs to be minimised. In addition to the above, the coal seams mined at MTW are regular and dip to the west at a consistent, relatively shallow grade, lending them to the dragline operation as the primary overburden stripping method.

The available strike length of the two mines makes them suitable for dragline operations. Strike length refers to the total horizontal distance (or strike) available for the draglines to work. Longer strike length allows time for other operations above to release strips for draglines to dig (for example, drill and blast of overburden, truck and shovel overburden stripping and decoaling operations) (see Figure 2.12), thereby keeping the draglines highly utilised with minimal or no park idle or 'park up' time.

The drawback of dragline operations is their inflexibility with relation to mining method. To maximise utilisation of the dragline fleet the deposit needs to be mined in strips, with truck and shovel fleets pushing back upper benches as far as required to release strips for draglines to dig. A shorter strike length means the dragline will have periods of poor utilisation while it waits for these other processes to occur. This increases unit costs for each tonne of coal produced.



Historic and proposed MTW dragline strike lengths
 Warkworth Continuation 2014
 Environmental Impact Statement
 Figure 3.2

Through years of technical analysis by mine planning engineers it has become evident that to remain a profitable, Warkworth Mine and MTO need to maintain as much dragline strike length as possible. This enables operating costs to be kept low, as well as maintaining a production profile of at least 18Mtpa of ROM coal across the two mines. This level of extraction is the threshold critical to generate sufficient revenue to offset high fixed costs (including labour, fuel, explosives, parts and consumables) in the current economic environment.

MTW currently operates three draglines that move approximately 25 per cent of the mines’ total prime waste (overburden not including rehandle waste), with a total available strike length of 6.65km. In 2004, the three draglines moved approximately 75 per cent of MTW’s prime waste, with an available strike length of 9.8km (Figure 3.2a).

As shown in Figure 3.2b, by the end of 2013 dragline strike length had been reduced to 6.65km, due to the closure of CD Pit and Woodlands Pit. Analysis at MTW has shown that maintaining as much strike length as possible is the best mechanism to sustain a viable, economic operation into the future.

The closure of South Pit in approximately 2016 and Loders Pit in approximately 2020 reduces dragline strike length further, to 3.8km. At this point, MTW’s only two operating pits are North Pit and West Pit. Figure 3.2c shows MTW’s dragline strike length in Year 14, nominally 2023 under the proposal.

Figure 3.2d shows the total dragline strike length available should the Warkworth Mine stay within the spatial limits approved under the existing development consent (which includes Modification 6). South Pit will close in approximately 2016 and Loders Pit in approximately 2020. By 2021, the strike length has decreased to 2.25km. At the point where West Pit strike length reduces, the lower dragline horizon is no longer viable. This would result in one of the draglines parking up as there is not enough overburden available for mining to keep it operational.

The steady decline of dragline strike length over the last ten years is illustrated in Figure 3.3. The figure also shows the increase in saleable coal required to offset the declining dragline strike length and associated lower operating costs as well as the high fixed costs of MTW.

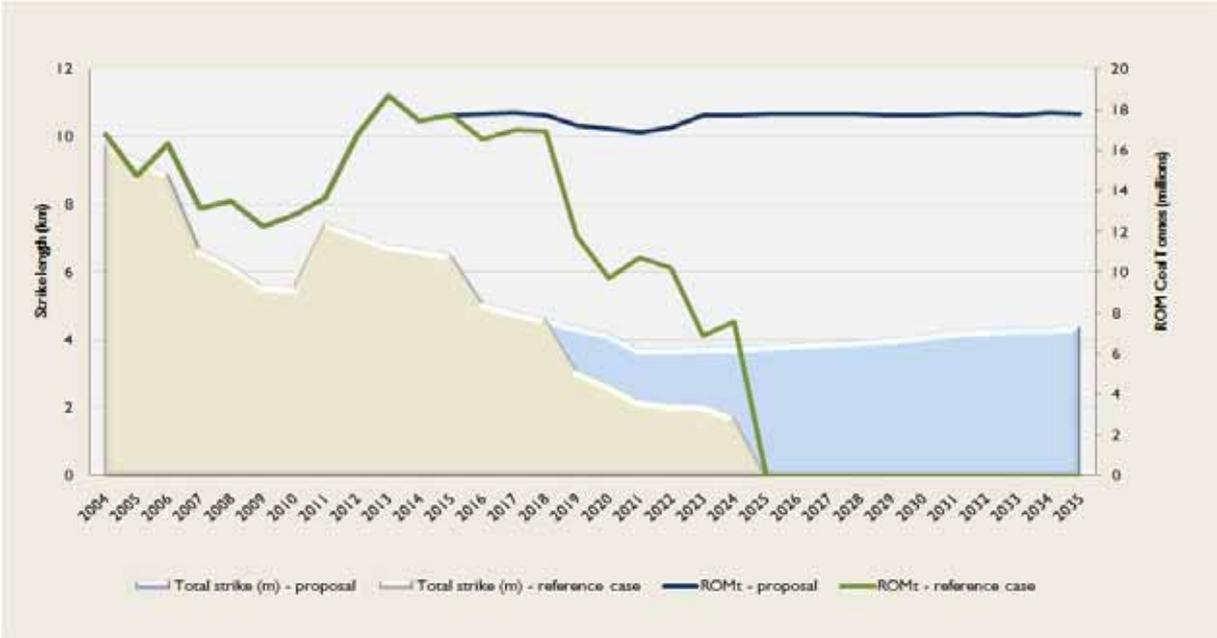


Figure 3.3 Strike length and extraction volumes

While the dragline component of prime waste movement at MTW has declined over the past decade, they form a vital part of the operation as waste removal by this method is significantly cheaper than truck and shovel methods and, therefore, minimises operating costs at MTW. The draglines access the two lowest seams mined at MTW, Bowfield and Warkworth/Mount Arthur in North Pit and West Pit. Mining of the upper benches by truck and shovel takes approximately two years to allow sufficient working room for draglines.

To reduce operating costs and maintain extraction at 18Mtpa of ROM coal with existing fleet in 2020 and beyond, strike length under the proposal would be maximised by ‘fanning out’ the North Pit and West Pit endwalls. This would allow higher utilisation of the draglines and hence lower operating costs. If, for example, the existing North and West Pit endwall alignments were maintained and not fanned out, additional truck and shovel resources would be required to enable extraction of 18Mtpa of ROM coal. Under this scenario MTW is not economically viable as draglines would be utilised less due to insufficient strike length, resulting in much higher operating costs.

With the completion of Loders Pit in 2020, one of the draglines would be parked up with not enough strike length to feasibly remain operational, which would occur regardless of the outcome of the proposal and the Mount Thorley Operations 2014, however the operation would still remain economically viable. This leaves the two remaining draglines cycling between North and West Pits. In North Pit the draglines would dig one overburden pass (i.e. the waste material between two coal seams), and in West Pit two overburden passes. The coal uncovered by these overburden passes represents approximately one third of the total coal uncovered across the Warkworth Mine operation per year at an extraction rate of 18Mtpa of ROM coal and is the lowest cost coal uncovered at Warkworth Mine.

Should the proposal in its current form not be approved, strike length drops dramatically in West Pit to the point that the draglines can no longer dig the lower overburden pass in West Pit due to insufficient working room for the dragline, dragline spoil emplacement limitations and the inability to access the coal due to no room for an access ramp for coaling trucks.

At this time another dragline would be parked up because there would not be enough strike length to keep it utilised at a reasonable level. This is best illustrated by Figure 3.4.

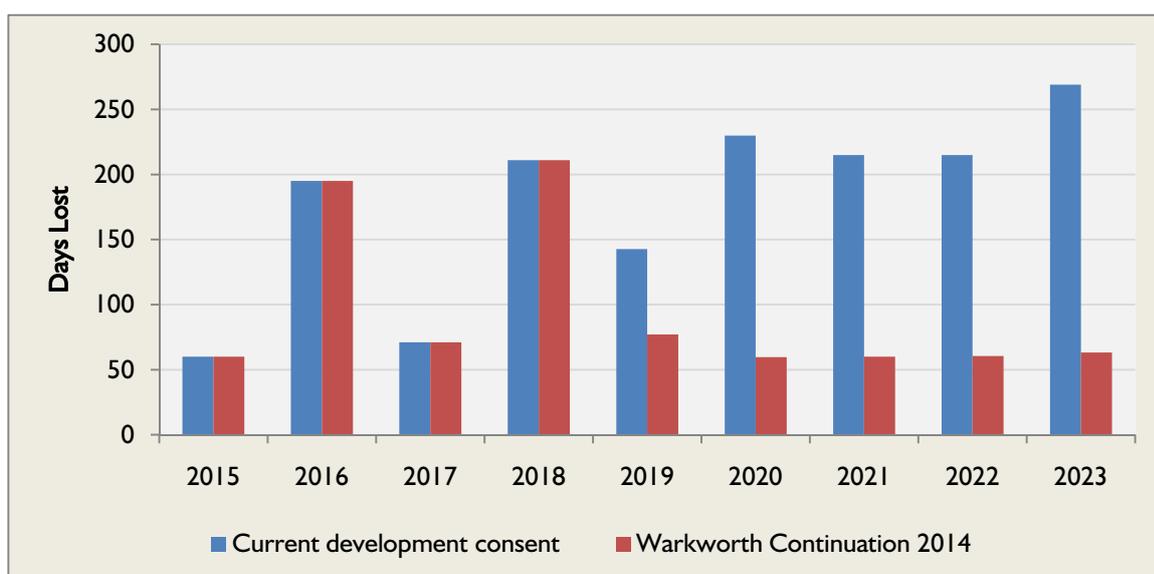


Figure 3.4 Total dragline park-up days due to unavailability of dig areas

Under the proposal there are spikes of around 200 parked up days for the draglines in 2016 and 2018. This is due to the inability to mine through the Saddleback Ridge as part of the current consent conditions over the past two years. This is the direct consequence of the disapproval of the Warkworth Extension 2010. The ramifications of not being able to lay the prestrip benches back in this area are not projected to materialise for approximately two years. This is the amount of time it takes the prestrip fleet to expose one dragline strip in West Pit.

Should the proposal be approved, the layback of the prestrip benches gets to steady state and the two draglines would be able to progress with minimal delays post 2018 (as shown in Figure 3.4).

Should the proposal not be approved and, accordingly, the applicant is unable to mine through the Saddleback Ridge area in West Pit South, on average dragline parked up days are projected to be over 200 per year from 2018 to 2023 (hypothetically adopted for comparison purposes). As such, the amount of coal uncovered by draglines would decrease dramatically (as shown by Figure 3.5) and, in turn, additional prestrip capacity would be required to make up the deficit at a much higher cost. Critically, this would reduce mining below economically viable production rates.

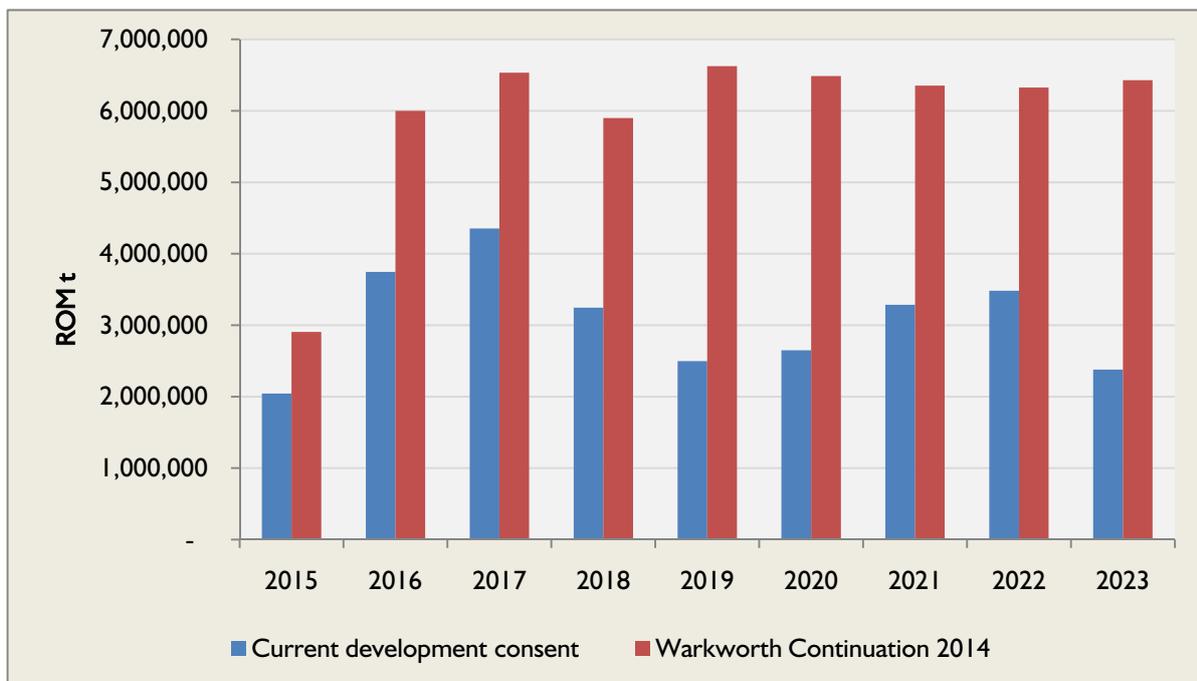
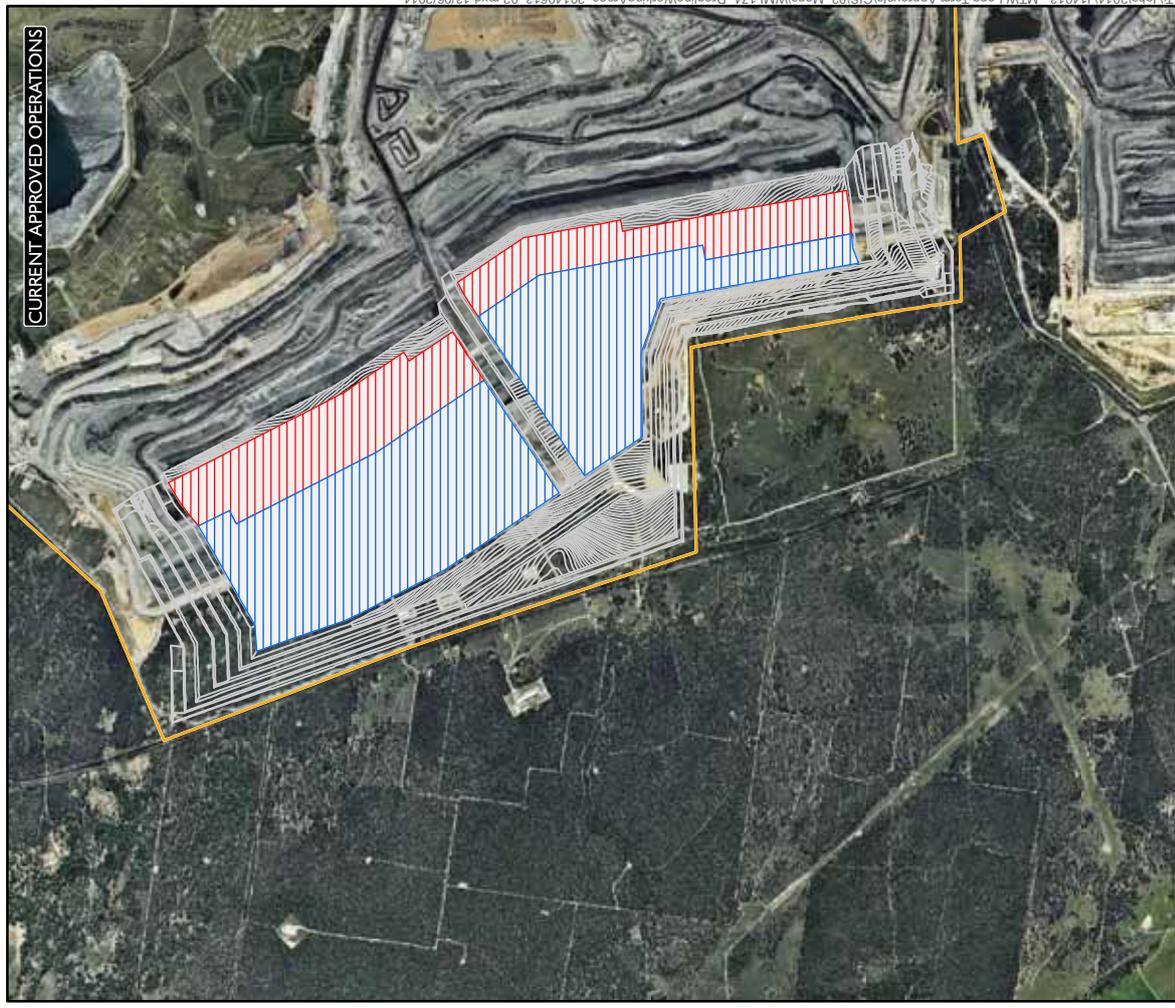
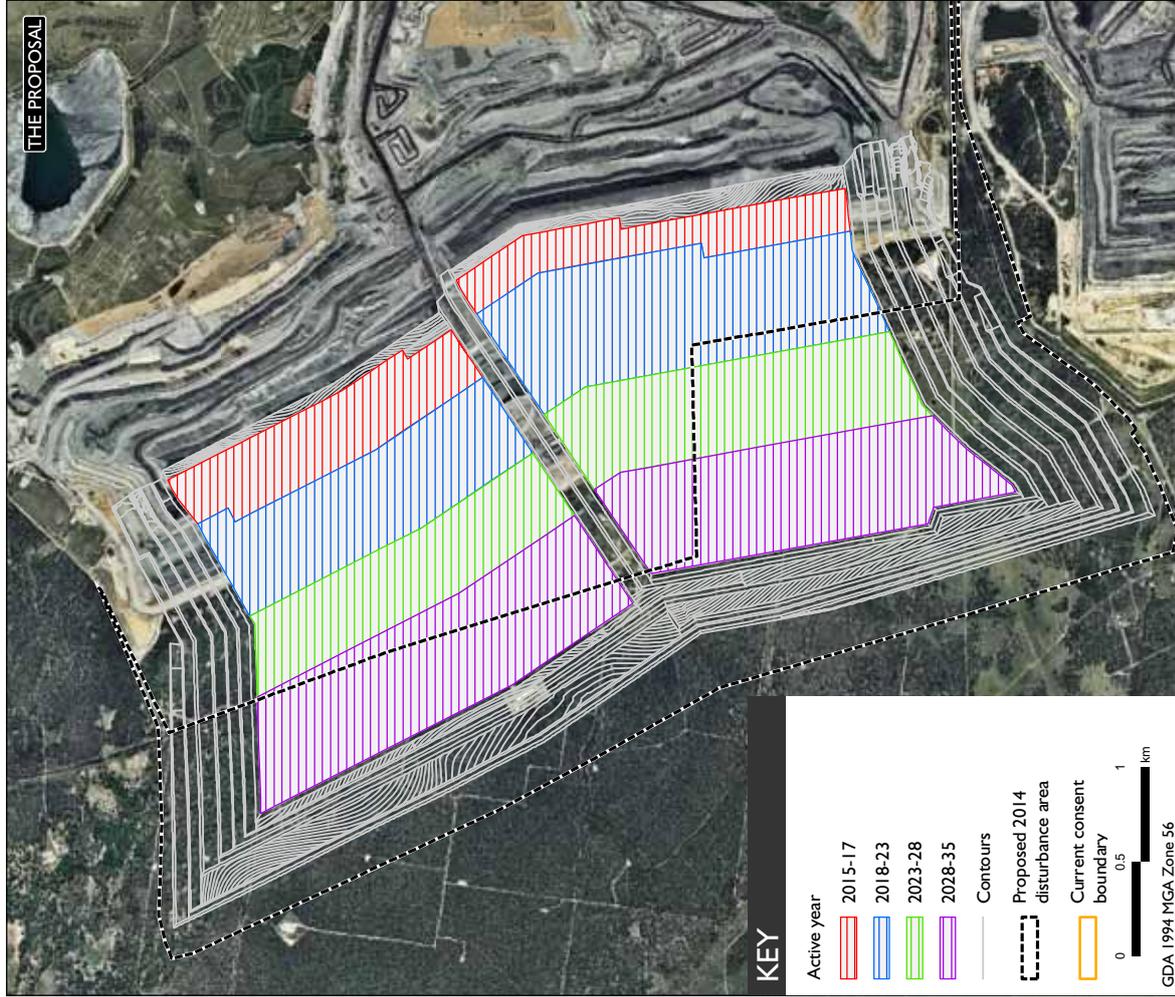


Figure 3.5 ROM coal tonnes uncovered by draglines

Figure 3.6 shows the impact on dragline working areas available should the proposal not be approved. Draglines working areas as proposed are shown in the left hand image and those currently approved in the right hand image. By 2019, MTW would be operating with a single dragline and producing significantly less coal at much greater cost. As described above, it is unlikely that the operation would continue to the western limit of the existing development consent boundary due to significant cost in getting the prestrip wall out to the final highwall limit in North Pit.

The economic study (see Chapter 9 and Appendix E) compares the reference case (or proposal disapproved case) to the proposal approved case. Under the reference case, coal production would decline from 2016 onwards and would end by 2021.



Dragline working areas under the proposal and as currently approved
 Warkworth Continuation 2014
 Environmental Impact Statement
 Figure 3.6

It is important to note that the economic study is a conservative assessment against a reference case. As described above, the reference case is not likely to eventuate as mining under this scenario would not be economically viable due to extraction constraints from a reduced strike length in West Pit.

3.4 Employment and other economic and social benefits

The continued operation of MTW has significant social and economic benefits in the form of continuing employment for a workforce of approximately 1,300 persons on average, net economic benefits of some \$1.5billion and royalties of some \$617million. The economic benefits attributable to the Warkworth Mine include continuing employment for a workforce of some 1,187 persons, \$1.34billion in net economic benefits and some \$567million in royalties. These include additional annual employment of around 191 full-time equivalent workers in NSW and 198 full-time equivalent workers in the Mid and Upper Hunter region, and an increase in the gross state product by approximately \$406million beyond the reference case. Further, the Commonwealth Government would benefit from company and income taxes generated under the proposal. The proposal's economic benefits are discussed further in Chapter 9.

The proposal would support the continuation of initiatives such as the Coal & Allied Community Development Fund (CDF) which has committed \$4.5million for eligible community projects between January 2012 and December 2014 and the MTW Site Donation Committee. The aim of the CDF fund is to support projects and programmes that will create opportunities with a long lasting benefit to the wider community. The proposal's social benefits and disbenefits are discussed in Chapter 21.

The proposal incorporates significant improvements and a number of changes from the Warkworth Extension 2010 which take account of, amongst other matters, feedback received during stakeholder engagement for the mine and L&E Court judgement of the previous application and also feedback from the PAC determination of Modification 6. These improvements are discussed in Chapter 4. Certainty provided by the proposal's approval, would ensure these improvements are implemented, such as the programme of mining fleet noise attenuation, with all drills, trucks, dozers and excavators to be attenuated by the end 2016.

The proposal would also enable the provision of a fully contemporised development consent for the Warkworth Mine.

In summary, the proposal would provide the best opportunity for the continuation of direct and indirect employment associated with Warkworth Mine and would enable the operations local, State and National benefits to continue.

3.5 Importance of the resource

The proposal would enable extraction of additional ROM coal of approximately 230Mt at Warkworth Mine during the proposed consent period. Approximately 75 per cent and 25 per cent of coal produced at the mine is thermal and semi-soft coking coal (metallurgical coal), respectively. These types of coal are important for energy generation and steel making. The need for these resources is discussed below.

The proposal would allow continued supply of these important resources and contribution to export sales and associated earnings for Australia.

Approximately 0.5Mtpa of product coal processed at the Warkworth CPP is currently conveyed to the nearby Redbank Power Station for domestic purposes.

3.5.1 Electricity

Electricity is essential for modern life providing light for houses, buildings and street, domestic and industrial heat, and powers most equipment used in homes, offices, machinery in factories and electric cars. Improving access to electricity worldwide is critical to alleviating poverty and improving quality of life.

Coal plays a vital role in electricity generation worldwide. It provides just under 30 per cent of global primary energy needs. In 2012, coal-fired power plants fuelled 41 per cent of global electricity (World Coal Association 2013b) with a much higher percentage in some countries as shown in Table 3.1.

Table 3.1 Coal in electricity supply

Country	Percentage	Country	Percentage	Country	Percentage
Australia	69	Poland	86	China	81
South Africa	94	Israel	59	India	68
Mongolia	98	Indonesia	44	United Kingdom	29
Japan	27	USA	43	Germany	43

Source: International Energy Agency 2012b.

There are strong incentives to develop alternative sources of energy. By 2040, the International Energy Agency (2012a) reports that global energy demand will be around a third greater than current levels with China, India and the Middle East expected to account for 60 per cent of the increase.

3.5.2 Steel

Steel is an essential material for modern life. The manufacture of steel helps deliver the goods and services that our society needs including healthcare, telecommunications, improved agricultural practices, better transport networks, clean water and access to reliable and affordable energy.

Seventy per cent of the steel produced today uses coking coal which is a vital ingredient in the steel making process. Global steel production is dependent on coal of which approximately 1.4 billion tonnes was produced in 2011. Around 721Mt of coking coal was used in the steel production (World Coal Association 2013a).

Despite current difficulties, future scenarios for the steel industry have an optimistic starting point. Urbanisation and population growth will support industry growth for a considerable time. The world's population is increasingly urban with around half of the world's population living in towns or cities in 2010. According to the World Steel Association (2012), by 2050 the world's population will be more than nine billion (an increase of approximately 1.8 billion people from today's levels) and it is expected that approximately 70 per cent of the population will live in cities. To handle this migration, expanding cities will require substantial volumes of building materials, including steel.

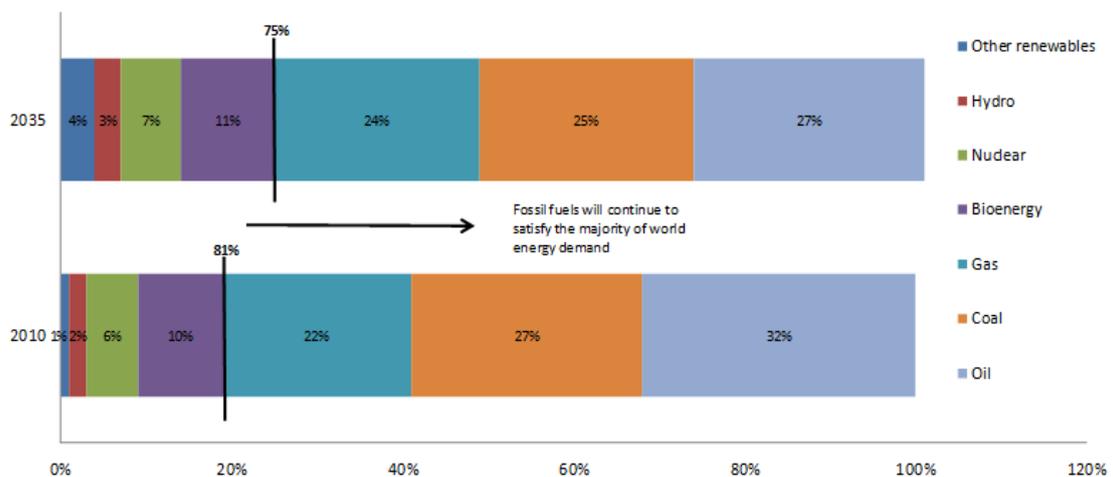
Opportunities to expand coking coal exports to a number of countries are strong with imports forecast to increase in many countries. As reported by Ernst and Young (2014), these include:

- in China, coking coal imports from 2012 are forecast to increase at an average rate of 12 per cent per year to reach 80Mt by 2018;
- in India, consumption of coking coal between 2013 and 2017 is set to increase by 30 per cent to 59Mt of which almost 70 per cent will be imported; and

- in Brazil, it is expected that average growth in steel production will be around 3.3 per cent per year. As a result, imports of coking coal will increase over the same period at an average rate of 6 per cent per year to reach 16Mt in 2018.

3.5.3 Global energy demand

Despite efforts to diversify energy sources, coal remains an important resource for many economies. Since 2000, apart from renewable energy sources, it has been the fastest growing global energy source. Coal is the second largest source of primary energy after oil providing 27 per cent of global primary energy needs in 2010. Coal is expected to remain an important source, supplying a projected 25 per cent of global energy needs in 2035 as shown in Figure 3.7 (Oxley and Rae 2013). It is noted that, owing to rounding, the fossil fuel percentage shares in 2035 do not sum to 75 per cent.



Source: IEA, World Energy Outlook 2012, Table 2.2

NB: that owing to rounding the fossil fuel percentage shares in the right hand bar do not sum to 75 per cent

Figure 3.7 Global energy mix – primary demand in 2010 and 2035

Chapter 4

Improvements and differences from the Warkworth Extension 2010



Chapter 4 — Improvements and differences from the Warkworth Extension 2010

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4 Improvements and differences from the Warkworth Extension 2010

4.1 Introduction

This chapter provides a summary of the proposal's differences to the Warkworth Extension 2010 lodged with the former Department of Planning (now DP&E) in 2010, and disapproved by the L&E Court in 2013, and outlines operational improvements at MTW made since. It also describes changes in government policy and legislation made since 2010 that apply to the proposal.

4.2 Warkworth Extension 2010

In 2010, an extension of the Warkworth Mine to the west of the current pit wall (North and West pits) was sought. The project application comprised the following key activities:

- an extension of the mine in a westward progression from the currently approved mining area;
- mining through some areas that have previously been established as habitat management areas (HMAs) and non-disturbance areas (NDAs) (see Section 4.4.2.i);
- incorporation of other areas previously established as HMA/NDA into a wider series of biodiversity conservation areas;
- the relocation or closure of Wallaby Scrub Road;
- transfer and disposal of overburden to MTO after coal is mined under the existing MTO development consent;
- replacement of ageing equipment fleet to allow for improved mining efficiencies; and
- upgrading some support infrastructure within existing or proposed disturbance footprints such as a vehicle bridge over Putty Road and potentially the Warkworth Mine workshop.

As described in Chapter 1, the Warkworth Extension 2010 was approved by the PAC in February 2012 and received approval under the EPBC Act from the Commonwealth Minister for the Environment in mid 2012. Subsequently, the project approval was appealed in the L&E Court. On 15 April 2013, 14 months after the approval was granted by the PAC, the appeal was upheld by the L&E Court and the application was disapproved. The decision was appealed on administrative law grounds by WML and in April 2014 the NSW Supreme Court rejected this appeal, effectively upholding the original decision by the L&E Court. It should be noted that the appeal to the NSW Supreme Court was limited to points of law and, accordingly, while it was found that the process undertaken by the L&E Court was lawful they did not comment on or find anything further in respect of the merits of the L&E Court judgement. Notwithstanding, Warkworth Mine retains Commonwealth approval for the extension.

4.3 Review of changes to legislation and government policy

Since the preparation and assessment of the Warkworth Extension 2010 and its disapproval by the L&E Court on 15 April 2013 there have been a number of important changes to legislation and government policies that apply to the proposal, namely:

- repeal of Part 3A of the NSW EP&A Act;

- amendments to the Mining SEPP;
- introduction of the *Draft NSW Biodiversity Offsets Policy for Major Projects* (OEH 2014a) and the *Draft Framework for Biodiversity Assessment* (the FBA, OEH 2014b) and the *Upper Hunter Strategic Assessment Interim Policy* (UHSA);
- release of the *Strategic Regional Land Use Policy* (SRLUP) (DP&I 2012a) and sub-plans, including the Upper Hunter Strategic Regional Land Use Plan; and
- introduction of the *NSW Aquifer Interference Policy* (AIP).

Each of these is addressed below.

4.3.1 Repeal of Part 3A

In 2011 the NSW Government repealed Part 3A of the EP&A Act and stopped accepting any new projects in the Part 3A assessment system. This system was replaced by the State significant development (SSD) and infrastructure assessment systems under Division 4.1 of Part 4 (SSD) and Part 5.1 (State significant infrastructure) which commenced on 1 October 2011.

A range of development types such as mines and manufacturing plants as well as warehousing, waste, energy, tourist, education and hospital facilities are considered to be SSD if they are over a certain size or in an environmentally sensitive area. Some projects are also considered SSD because they are in precincts regarded as important by the NSW Government (ie Sydney Olympic Park).

A full list of SSD development types and specified sites can be found in Schedules 1 and 2 of the State Environmental Planning Policy (State and Regional Development) 2011 (the SRD SEPP).

The key differences between Part 3A and SSD are:

- the matters for considerations in section 79C of the EP&A Act are now relevant (whereas they were not relevant under Part 3A) except for council's development control plans;
- the development must be at least partly permissible under the applicable environmental planning instruments. If it is wholly prohibited then the PAC will be involved in considering any concurrent rezoning;
- that modifications to any approval must be 'substantially the same development'; and
- an EIS must be prepared in accordance with the Environmental Planning and Assessment Regulation 2000 (EP&A Regulation) and the Director-General's requirements.

The legislative framework relevant to the proposal is detailed in Chapter 7.

4.3.2 Mining SEPP

The Mining SEPP provides that a consent authority must consider various matters when determining a development application for a mining development. These provisions did not apply to applications under Part 3A of the EP&A Act but now apply to development applications under the SSD provisions.

Further, in July 2013, the NSW Government exhibited proposed amendments to the Mining SEPP aimed to:

- ensure the significance of the resources (major or minor) must be considered;
- stipulate the key environmental, ecological and amenity criteria to protect water resources, habitat and amenity;
- require the economics and environmental issues mentioned above are properly balanced; and
- evaluate the importance of the NSW Office of Environment and Heritage (OEH) in the assessment process, by ensuring that a consent authority must consider OEH's certification of biodiversity mitigation and offset measures.

The NSW Government stated that the amendments aim to increase confidence for investors and the community about how decisions are made on mining. These exhibited amendments were gazetted on 4 November 2013.

Section 7.2.3 provides further details as to the operation of these provisions.

4.3.3 NSW Biodiversity Offsets Policy for Major Projects, the Framework for Biodiversity Assessment and the Upper Hunter Strategic Assessment Interim Policy

In March 2014, OEH released the *Draft NSW Biodiversity Offsets Policy for Major Projects* (OEH 2014a) to clarify, standardise and improve biodiversity offsetting for major project approvals under the NSW planning system. Previously, there was no standard method for assessing impacts of major projects on biodiversity, which had the potential to lead to subjective assessments around the adequacy of offsets and its outcomes. The policy has three key objectives:

- to provide clear, efficient and certain guidance for stakeholders;
- to improve outcomes for the environment and communities; and
- to provide a practical and achievable offset scheme for applicants.

The policy is in draft form and has recently completed its public exhibition period with an anticipated transitional period likely to commence in the latter half of 2014 prior to its full implementation.

The FBA (OEH 2014b) was also released in March 2014 and it sets out the detailed operation of the *Draft NSW Biodiversity Offsets Policy for Major Projects* (OEH 2014a). The FBA contains the assessment methodology to quantify and describe the impact assessment requirements and offset guidance that applies to major projects, such as the proposal.

The FBA comprises three broad stages under the offset policy that set out the biodiversity assessment requirements and offset practices for the proposal:

- Stage 1 – Biodiversity assessment requirements – this sets out the requirements and survey methods to be undertaken to identify and characterise the ecology of the proposal site and, if proposed, the offset site.

- Stage 2 – Impact assessment of a major project – this describes the methods to quantify, expressed as biodiversity credit requirements, the direct and indirect effects to biodiversity from the proposal.
- Stage 3 – Biodiversity offset strategy requirements – this provides guidance on available options to fulfil offset requirements. These include establishing an offset site, rehabilitate degraded land and purchasing biodiversity credits generated by a landowner with an offset site.

In addition, the proposal intends to use the UHSA as part of the biodiversity offset strategy. The UHSA was initiated by the NSW and Commonwealth governments in 2012 to provide a strategic biodiversity assessment process for acquiring and managing future mining offsets for the Upper Hunter Valley coalfields.

Specifically, the purpose of the UHSA is to implement a coordinated assessment of the current biodiversity values and current and future impacts of coal mining in the Upper Hunter Valley coalfields, in order to inform the Upper Hunter Biodiversity Plan, to be prepared pursuant to section 146 of the EPBC Act. It is intended that the Upper Hunter Biodiversity Plan would fulfil all biodiversity impact assessment requirements at both the State and Commonwealth levels. It should be noted that the proposed 2014 disturbance area already has Commonwealth approval (EPBC 2009/5081).

This is a voluntary process, of which Coal & Allied is a participant, and is required to survey and assess the area of land nominated as a 'Biodiversity Assessment Area' (BAA). The DP&E has issued the *Upper Hunter Strategic Assessment Interim Policy* (October 2012) to provide guidance for preparation of assessments for development applications of participants relevant to the UHSA, such as the proposal. The proposal is included within Warkworth Mine's BAA and a Biodiversity Assessment Report is being prepared, and would be submitted to OEH for review. All Biodiversity Assessment Reports and data layers created would be incorporated into the Upper Hunter Biodiversity Plan to set out the offsetting framework for future mining proposals of participating companies in the Upper Hunter Valley. This is expected to largely comprise the establishment of and contribution to, the Upper Hunter Offset Fund that would be used to secure offset lands and fund ongoing management.

The proposal has considered the principles and strategies specified in the *Draft NSW Biodiversity Offsets Policy for Major Projects* (OEH 2014a), the FBA (OEH 2014b) and the UHSA.

Further information is provided in Chapter 12 and Appendix H.

4.3.4 Strategic Regional Land Use Policy

The NSW Government released the SRLUP (DP&I 2012a) which aims to protect strategic agricultural land and valuable water resources in areas of regional NSW where mining and coal seam gas resources are prevalent. Under the SRLUP, the Upper Hunter SRLUP was prepared and released in September 2012 and applies to the proposal.

The proposal includes land that requires a mining lease (surface to 20m depth) for the majority of the proposed 2014 disturbance area. In accordance with clause 50A of the EP&A Regulation, either a gateway certificate or site verification certificate is required before lodgement of a development application. The closest mapped biophysical strategic agricultural land (BSAL) is greater than 3km away from the proposed 2014 disturbance area.

A site verification certificate report was prepared for the area requiring a mining lease (surface to 20m depth). The report was prepared in accordance with the *Interim protocol for site verification and mapping of biophysical strategic agricultural land* (OEH 2013), which concluded the land did not satisfy the requirements for biophysical strategic agricultural land. A site verification certificate was issued by the Secretary in June 2014 enabling the lodgement of the DA for the proposal, and is provided in Appendix D. Therefore, a gateway certificate is not required for the proposal.

Further information is provided in Chapter 14.

4.3.5 Aquifer Interference Policy

The AIP was released by the NOW in September 2012. The policy requires that aquifer interference activities obtain the relevant approvals under the NSW *Water Management Act 2000* (WM Act) or NSW *Water Act 1912* (Water Act) where a water sharing plan is not in place under the WM Act.

As described in Chapter 7, the AIP requires applicants to provide specific information to assess the proposal's aquifer interference activities.

The groundwater study of the proposal has been prepared in accordance with the requirements of the AIP. This is described further in Chapter 16 and Appendix K.

4.4 Proposal differences

Subsequent to the disapproval of the Warkworth Extension 2010, planning for the future of Warkworth Mine was undertaken in an effort to ensure the economic viability of the operations and maintain current levels of employment. An objective of the mine planning has been to maximise efficient and economic resource extraction in accordance with WML's obligations with respect to the existing mining leases (CCL 753, ML 1412 and ML 1590).

As noted in Section 2.1, many design alternatives have been canvassed, providing consideration to, amongst other matters, feedback received during stakeholder engagement for the mine and the L&E Court judgement made in 2013. The proposal incorporates a number of differences from the Warkworth Extension 2010. A number of important operational improvements have also been implemented at the mine since the previous application was lodged. These are described in the sections below.

4.4.1 Proposal components

The components of the proposal (see Chapter 2) different to those in the Warkworth Extension 2010 are:

- Mining method – the mining method to be employed in North and West pits would be different, employing a dragline tandem offset method rather than a continuous dragline operation. The pits were aligned at the time of the previous application. The loss of pit alignment enabling contiguous dragline operations identified in the Warkworth Extension 2010 has materialised, resulting in a strip-misalignment of the North and West pits. This means the dragline tandem offset method must now be implemented at the Site.
- Underpass of Putty Road – the proposal includes the option of constructing an underpass of Putty Road instead of the approved but yet to be constructed bridge crossing. Only one of the approved bridge crossing or proposed underpass would be built as part of the proposal. If the underpass was built it would be less visible to traffic on Putty Road when compared to the bridge crossing. The proposal also seeks to extend the envelope further westwards than its currently approved and previously proposed location.

- South Pit open void – the proposed mine plan would leave a small open void in South Pit to provide the potential for future underground mining access of deeper seams. Investigative studies of these deeper seams, including exploration drilling are ongoing regarding the potential for future underground mining at MTW. Long-term mine planning requires that potential access point be accessible in the proposal’s mine plan should these investigations demonstrate feasibility and planning approval is ultimately achieved. If the South Pit open void is not required for underground mining access, it would be used for emplacement of overburden and/or tailings.
- Waste management – the proposal includes changes to the integrated MTW management of tailings. A section of Loders Pit at MTO is proposed to be used as a TSF following its completion of mining.
- Water management – the proposal includes changes to the integrated MTW management of water. The proposal seeks an increase in the size of the NOOP dam and other minor changes to water management infrastructure. The components increase flexibility in water management across MTW as well as reduce the operational risk of uncontrolled spillages and storage of water in active mining areas following high rainfall events.
- Final landform – the proposed final landform includes more rehabilitated land at Warkworth Mine (2,673ha) than that previously proposed (2,311.5ha), with a more undulating landform in general, at both Warkworth Mine and MTO.

It is also noted that a separate development application for Warkworth Mine’s continuation of mining has been prepared rather than a combined development application with MTO. A separate development application has also been prepared for MTO’s continuation of operations which, if both are approved, will align the development consent life of the two operations. Two separate development consents would be retained due to separate ownership.

As described in Chapter 2, the two operations have integrated management of tailings, coal and water which is proposed to continue under both proposals. A further aspect of integration, the management and transfer of overburden, is proposed with each development application. Notwithstanding the existing integrated aspects of the two operations, the two development applications will be assessed separately by the consent authority.

4.4.2 Proposal assessment and commitments

i Ecology study

a. Policy considerations

The ecology study, provided in Chapter 12 and Appendix H, varied from that previously undertaken in a number of ways. Specifically, the study:

- used the recently released *Draft NSW Biodiversity Offsets Policy for Major Projects* (OEH 2014a) and FBA (OEH 2014b), including its primary tools the Biodiversity Certification Assessment Methodology (BCAM) and BioBanking Assessment Methodology (BBAM), in developing the offset strategy;
- assessed an offset strategy comprising three discrete components:
 - reallocation of the Green Offsets from the current development consent;

- offsetting the impacts of the proposed 2014 disturbance area; and
- offsetting the non-WSW vegetation impacts of the proposed 2014 disturbance area.

The FBA, a subset of the policy, outlines where further consideration is given to impacts that are complicated and cannot be easily offset, such as those to WSW and the reallocation of the Green Offsets. In these cases, supplementary measures can be provided to mitigate the impact.

As outlined above, the proposal involves the removal of areas designated as offsets, known as Green Offsets, solely for biodiversity purposes as part of the currently approved operations. These Green Offsets consist of areas termed NDAs and HMAs, west of the Warkworth Mine. The intent of the HMAs was for the temporary preservation of ecological values as economic coal resources were known to occur beneath these areas. The intent of the NDAs was for long-term preservation. Both are managed in accordance with the Green Offsets Strategy (ERM 2002a).

The Green Offsets compensated for impacts on WSW and non-WSW vegetation mainly consisting of ironbark communities. The offset for the WSW (approximately 78ha) are secured locally within the SBA and Northern Biodiversity Area (NBA). These WSW offsets would be unaffected and remain as part of the proposal.

It is proposed to reallocate the Green Offsets for non-WSW vegetation to ensure their biodiversity values are protected in the long-term and that coal reserves are not sterilised. The proposed reallocation of these offsets has been assessed using BCAM. In addition, the BBAM has been used to confirm the suitability of the reallocated offset sites. It is anticipated that this process would be included in Warkworth Mine's BAA and used for the UHSA under that process.

The proposal includes the removal of 72ha of WSW. As described in Chapter 12, the proposal would conserve the remaining 75.5ha of WSW and 159ha of Warkworth Sands Grassland (WSG) in both these biodiversity offset areas. Chapter 12 describes the adequacy of the offsets for the proposed 2014 disturbance area in accordance with contemporary government policy including the principles and strategies of the *Draft NSW Biodiversity Offsets Policy for Major Projects* (OEH 2014a). With respect to the WSW, additional supplementary measures proposed include preparation of an integrated management plan for the WSW and the development of completion criteria for the re-establishment of this community.

ii Noise and vibration study

The approach to the noise study, provided in Chapter 10 and Appendix F, varied from that previously undertaken in a number of ways. Specifically, the study:

- applied the outcomes of further background assessments for Bulga village to determine background noise levels in accordance with the NSW Industrial Noise Policy (INP);
- defined intrusive criteria, ie background plus 5dB, from the INP. When compared to the amenity criteria, the intrusive criteria are the limiting criteria or project specific noise levels (PSNL) for the proposal. The PSNL are assessed for the Warkworth Mine as opposed to the MTW complex criteria outlined in the Warkworth Extension 2010;
- provided a complete INP assessment of noise levels to be experienced by surrounding assessment locations, as well as specific assessments for low frequency noise and sleep disturbance. The assessment of low frequency noise used a variety of different methods, including the INP-prescribed method;

- assessed residual impacts of the proposal (ie those levels above PSNL) in accordance with Section 8.2.1 of the INP. The operational noise levels were predicted to comply with the INP's PSNLs for all but two assessment locations during calm meteorological conditions for day, evening and night periods. During prevailing meteorological conditions, operational noise levels are predicted to significantly exceed the PSNL at four assessment locations;
- modelled mine plan scenarios applying all reasonable and feasible mitigation measures, including plant attenuation on all trucks, drills, dozers and excavators, as well as utilisation of recently implemented operational controls/ measures, all of which incur an economic cost to the operations;
- incorporated more recent meteorological data in the assessment of noise generation from the proposal under all weather conditions; and
- assessed the proposal's impacts on the surrounding environment with an updated sensitive assessment location identification list.

The noise and vibration study has also undergone a third party peer review. The peer review is appended to the noise study.

iii Air quality and greenhouse gas study

The air quality and greenhouse gas study, provided in Chapter 11 and Appendix G, comprised a number of differences and additional elements to that previously undertaken. Specifically, the assessment:

- developed an air dispersion model, using a combination of the CALPUFF Modelling System and TAPM (a meteorological model), in accordance with the *Generic Guidance and Optimum Model Setting for the CALPUFF Modelling System for Inclusion into the Approved Methods for Modelling and Assessment of Air Pollutants in NSW* (TRC Environmental Corporation 2011). This contemporary model represents an improvement in modelling technology and was used instead of the previously applied ISCMOD. The CALPUFF model is an advanced 'puff' model which can better deal with the effects of complex local terrain on the dispersion meteorology over the entire modelling domain in a three-dimensional, hourly varying time step. This capability, which was not readily available in 2010, is particularly suited to this proposal, given the complex surrounding environment;
- incorporated more recent and representative meteorological data in the assessment of dust generation from the proposal under all weather conditions; and
- assessed the proposal's impacts on the surrounding environment with an updated larger sensitive assessment location identification list.

iv Groundwater study

The groundwater study, provided in Chapter 16 and Appendix K, was prepared in accordance with the AIP (see Section 4.3.5) and included the following additions in comparison to the previous application:

- update of the existing groundwater numerical model generally in accordance with the *Australian Modelling Guidelines* (Barnett *et al.* 2012) to produce required modelled outputs to measure effects on regional and local groundwater systems resulting from the proposal; and

- preparation of an uncertainty analysis of the model predictions sensitivity to changes in the calibrated parameters of the numerical model.

The groundwater study has also undergone a peer review by a third party in accordance with the requirements of the AIP (see Chapter 16 for further information).

v Aboriginal cultural heritage study

The Aboriginal cultural heritage study, provided in Chapter 18 and Appendix M, included the outcomes of the assessment and continued consultation process undertaken by the applicant regarding the proposal. As described in the study, the proposal includes additional area within the Wollombi Brook Aboriginal Cultural Heritage Conservation Area (WBACHCA). The area provides the Aboriginal community with a measure of surety for the integrity and protection of the eastern portion of the Bulga Bora Ground and other regionally important cultural heritage places associated with the Wollombi Brook (see Chapter 18).

vi Historic heritage study

The historic heritage study, provided in Chapter 19 and Appendix N, was undertaken to understand the historic heritage values of the local area in response to feedback from a variety of stakeholders. This included completing background research and a five day field survey to document all historic heritage features within the Warkworth Mine and MTO mining lease areas and their surrounds. A number of Conservation Management Plans (CMPs) have also been prepared for the former RAAF Base Bulga Complex and Great North Road Complex have been completed. Archival recording has also been undertaken of the historic features of the former RAAF Base Bulga Complex. As part of the proposal, Coal & Allied has committed to:

- implementing the measures of existing CMPs for the former RAAF Base Bulga Complex and the Great North Road Complex;
- preparing a new CMP for Springwood, a timber slab building constructed in the mid 1800s, on top of Wollombi Brook and the Brick Farm House;
- ongoing consultation through the Coal & Allied Community Heritage Advisory Group (CHAG); and
- implementation of a Local Community Historic Heritage Conservation Initiative comprising two historic heritage conservation funds; the Mount Thorley Warkworth Historic Heritage Conservation Fund and the Mount Thorley Warkworth Great Northern Road Conservation Fund.

vii Traffic and transport study

The traffic and transport study, provided in Chapter 20 and Appendix O, considered the current road network surrounding the proposal, inclusive of recently proposed large traffic-generating developments such as the nearby proposed Bulga Optimisation Project at the Bulga Coal Complex. The study included recent traffic count data for the affected roads in the local network, including Wallaby Scrub Road, and an origin-destination survey. Emergency vehicle access to areas west of Wallaby Scrub Road would be maintained by the construction of an appropriate emergency access road/fire trail between Putty Road and the Golden Highway (see Section 2.4.13).

A rail study using the latest Australian Rail Track Corporation (ARTC) strategy documentation assessed the proposal's continued transportation of produced coal to the Port of Newcastle via the MTCL.

viii Visual amenity study

In response to stakeholder feedback, the proposal includes a commitment to undertake site-specific visual assessments (SSVAs) of residences in Bulga village upon request from the landowner to establish the need for and design of appropriate site visual screening if impacts are assessed as high. As the extent of existing screening is specific to each residence due to its elevation, orientation and layout, it is not possible to determine with any certainty the extent of impact on any individual residence without undertaking SSVAs. These assessments would determine the level of significance of the visual impact and potential suitable mitigation measures, if any, to reduce the impact on the view.

When vegetation screens are deemed necessary, the design would be undertaken in consultation with the property owner. Designs would be in keeping with the character and design of the residence. All designs would be agreed and signed-off by the landowner prior to implementation. The screening would be implemented as early as practicable during the proposal life so as to allow a period for establishment of an effective screen. Plant species would be selected for their suitability for the local area as well as their aesthetic properties.

Further discussion on visual mitigation measures is provided in Chapter 15 and Appendix J.

ix Economic study

The economic study of the proposal, provided in Chapter 9 and Appendix E, included a cost benefit analysis (CBA) and regional economic impact assessment (REIA). The CBA is considered to be the centrepiece of an economic impact assessment, and was prepared in accordance with the NSW Government Guideline for the use of *Cost Benefit Analysis in Mining and Coal Seam Gas Proposals* (2012).

Within the study, identified proposal externalities are considered in terms of their materiality and explained succinctly in the CBA. No choice modelling was undertaken as part of the study.

x Social study

A detailed social study of the proposal, provided in Chapter 21 and Appendix P, used a variety of data collection techniques. The assessment considered:

- a socio-economic profile comprising objective evidence on the proposal, operational and community context, together with a series of one-on-one consultation sessions to gather experiential evidence on current operations and potential impacts from the proposal;
- intended or unintended changes to one or more aspects of people's lives as a result of the proposal: people's way of life, their culture, community, political systems, environment, health and well-being, personal and property rights, fears and aspirations;
- changes to the make-up of the existing community based on objective and experiential evidence – also considering impacts if the proposal does not proceed; and
- a suite of ongoing and proposal specific strategies to improve communications generally and to manage/ mitigate or enhance these proposal-related impacts and opportunities.

4.5 Ongoing operational improvements

Important ongoing operational improvements that have been implemented or are being implemented by programmes established since 2010 are described below.

The proposal includes a number of social impact management/mitigation measures which are in addition to, or build on, current measures undertaken by Coal & Allied as part of existing MTW operations. In particular, a social impact management plan (SIMP) would be developed for the proposal to further develop these management and mitigation measures and detail a plan of implementation including responsibilities, timing, performance indicators/targets and monitoring measures. The SIMP would be prepared in consultation with key stakeholders, following the EIS/SIA, public exhibition and submissions process.

4.5.1 Noise

As described earlier, attenuation of the mine's existing truck, drill, dozer and excavator mining fleet has continued and all new haul trucks purchased for use at MTW are noise suppressed (or attenuated) units with attenuation of all heavy mining fleet a commitment of this proposal. As per the current MTW noise management plan, the operation also undertakes identification and rectification of defects to sound attenuation equipment through the normal maintenance process.

The following measures are adopted at MTW:

- operational management supported by real-time monitoring and predictive modelling, as well as dedicated community response officers on each night shift;
- active dump management to respond to current and predictive meteorological conditions;
- continued use of hydraulic snubbers to electric rope shovels to reduce specific noise generated by shovel doors; and
- noise attenuated plant deployed preferentially to locations relevant to sensitive locations.

As of 2012, all mining fleet comprised 'quacker' style reverse alarms, eliminating the traditional tonal versions.

Warkworth Mine has also implemented a range of operational control strategies and measures to effectively manage noise to achieve compliance with noise criteria at residences. A hierarchy of control is followed by MTW's operational staff.

A part of the hierarchy of control is the successful implementation of a real-time noise alarm system which uses a set of rules to alert operational personnel to emerging noise levels in real-time. A programme of targeted supplementary attended noise monitoring is operated at Warkworth Mine to support the real-time directional monitoring network and ensure the highest level of noise management is maintained.

As part of the Warkworth Extension 2010, MTW committed to investigation of alternate noise monitoring technologies. During 2012 MTW committed capital funding to build and install a first of class directional noise monitor, known as an 'environmental noise compass' (ENC) in the Bulga village area, which was completed in late 2013.

The ENC aims to accurately pinpoint and identify noise emissions from multiple sources in real-time, to a greater level of accuracy than existing directional noise monitoring technology. This technology is expected to provide additional noise management value to MTW and is considered a first in noise management in NSW.

Predictive modelling interface (PMI), which allows for proactive planning of mining operations and weather conditions as a leading measure for managing noise emissions, is in the process of being developed at MTW. The PMI utilises predictive meteorological forecast data coupled with detailed mine plans and equipment sound power level information to predict noise levels at residences. The PMI is currently being refined and is expected to be fully integrated into day-to-day operations. Further discussion on these aspects and their role in the proposal is provided in Chapter 10 and Appendix F.

4.5.2 Air quality

Operational control strategies and measures to effectively manage air quality impacts are detailed in the MTW air quality management plan. A number of improvements were introduced, or continued to be implemented, in 2012 which included:

- installation of ROM dump hopper barrier hoods and water sprays at the Warkworth CPP;
- installation of dust aprons on drill rigs;
- construction of six new high flow, high capacity water cart fill points designed and located to maximise time available for water spraying to active mining areas;
- acquisition of four new water carts to replace older, smaller water carts and to increase the overall number onsite;
- continuation of the aerial seeding programme to provide temporary rehabilitation to active mining areas pending their full rehabilitation;
- continuation of operational management systems supported by real-time and predictive monitoring networks, including dedicated community response officers on each night shift;
- continuation of active dump management to respond to current and predicted meteorological condition; and
- commencement of capping of Tailings Dam No.1.

A focus of improvements in 2013 were activities associated with EPA's (2011) *Coal Mine Particulate Matter Control Best Practice – Site-specific Determination Guideline* (dust pollution reduction programme), which targeted wheel generated dust.

During 2013, a proactive air quality management system (Dust Risk Management System) was also implemented. Use of a proactive system is considered industry leading practice and Stage One of the Dust Risk Management System was successfully tested by Coal & Allied Environmental Services staff in mid 2013. Further stages involving predictive forecasting tools would be implemented in 2014.

A network of early warning units (EWUs) is used for supplementary monitoring. The EWUs are semi-portable, and able to be relocated as required to support operational control. In addition, MTW has installed two cameras (one on the Warkworth maintenance building and the other on Charlton Ridge) to observe dust on Putty Road. These cameras are streamed onsite via wireless telemetry, operate remotely and may be rotated 360 degrees to monitor/view dust emissions and sources to enable operational control by MTW staff.

Coal & Allied is in the process of implementing a predictive dust risk forecasting tool to assist operational personnel to make the optimal management decisions on a day to day basis. The tool utilises predictive meteorological forecast data coupled with detailed mine activity (mine plan) data to determine the most likely times during the upcoming day that dust lift off and air dispersion conditions may be unfavourable.

Further discussion on these aspects and their role in the proposal is provided in Chapter 11 and Appendix G.

4.6 Summary

The proposal represents the outcomes of the planning and development for the future of Warkworth Mine following the disapproval of the previous application in April 2013. This planning and development has resulted in changes in the mine design and commitments aimed at minimising and offsetting the proposal's interactions with the community and environment and making a positive contribution where possible.

As described, a number of important changes to legislation and government policy have been made since the Warkworth Extension 2010. The proposal has considered and as is consistent with the changed legislative framework.

Chapter 5

The applicant and assessment requirements



Chapter 5 — The applicant and assessment requirements

- 5.1 **The applicant**
- 5.2 **Secretary's requirements**
- 5.3 **Environmental risk assessment**
 - 5.3.1 Method
 - 5.3.2 Environmental issue prioritisation

5 The applicant and assessment requirements

5.1 The applicant

The applicant for the proposal is WML, the operator of Warkworth Mine as appointed by the participants in the Warkworth Joint Venture.

Ownership of WML is as follows:

- CNA Warkworth Australasia Pty Limited (26.824 per cent);
- CNA Resources Limited (28.750 per cent);
- Mitsubishi Development Pty Limited (28.898 per cent);
- Nippon Steel Australia Pty Limited (9.528 per cent); and
- Mitsubishi Materials (Australia) Pty Limited (6 per cent).

The WML is managed by Coal & Allied, which in turn receives management services from Rio Tinto Coal Australia Pty Ltd. The ownership and management structure for Warkworth Mine is shown below.

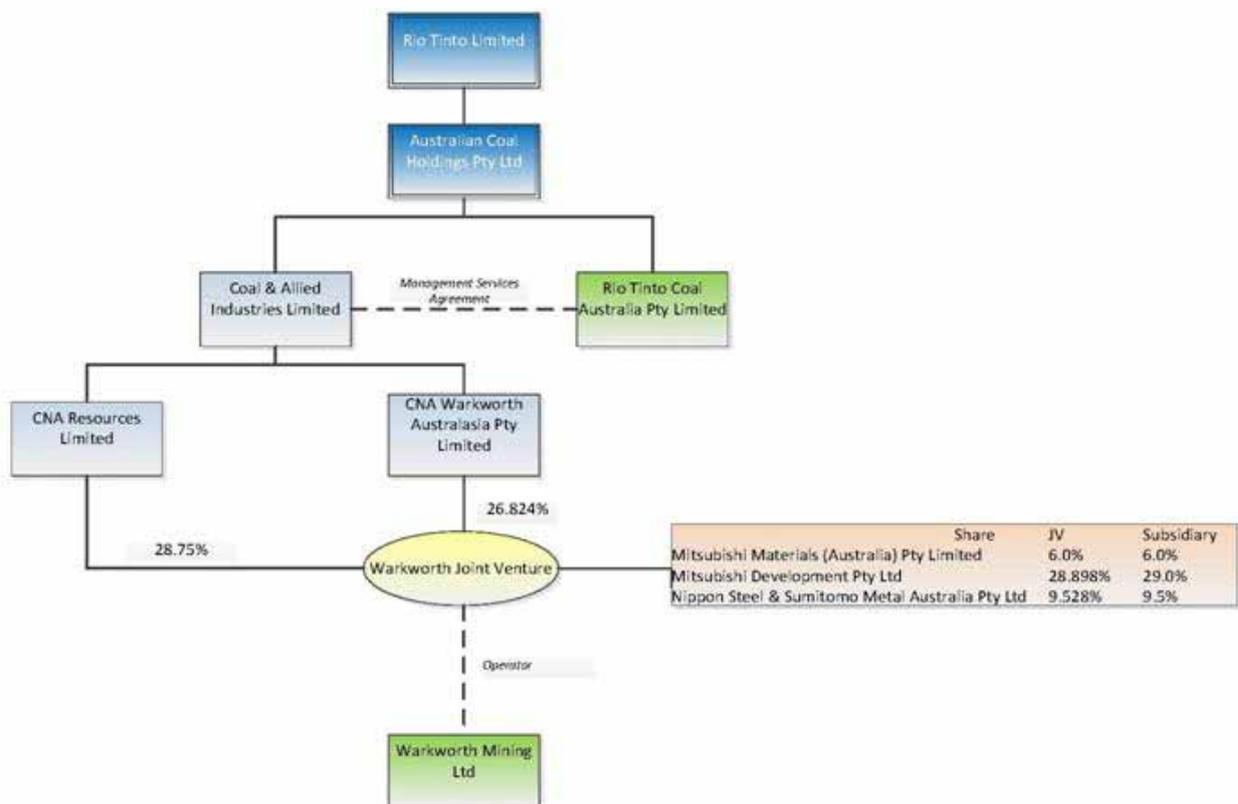


Figure 5.1 Warkworth Mine ownership and management structure

5.2 Secretary's requirements

A request for environmental assessment requirements was submitted to the Director-General of the DP&E on 1 April 2014. The Secretary's requirements were issued on 22 May 2014 and are attached as Appendix D of this EIS.

As required under section 78A of the EP&A Act, this EIS has been prepared in accordance with the Secretary's requirements and matters raised during stakeholder engagement; however, it also addresses matters raised in the L&E Court judgement. It is noted that the EIS, inclusive of technical studies, was progressed on the basis of contemporary environmental assessment requirements for open cut mining projects in the Hunter Valley, environmental assessment requirements issued for the Warkworth Extension 2010, and contemporary policies. Prior to finalisation the EIS, inclusive of technical studies, was considered against the proposal specific Secretary's requirements. A list of matters that must be addressed, as prescribed in the Secretary's requirements, and the relevant sections of the EIS where these have been considered are provided in Table 5.1. It is noted that 'haulage of sand and gravel from the site' referenced under 'traffic' does not form part of the proposal.

Table 5.1 Summary of Secretary's requirements

Requirement	EIS reference
General requirements	
The Environmental Impact Statement (EIS) for the development must comply with the requirements in Clauses 6 and 7 of Schedule 2 of the Environmental Planning and Assessment Regulation 2000.	Table 7.1
In particular, the EIS must include:	
<ul style="list-style-type: none"> • a full description of the development, including: <ul style="list-style-type: none"> - the resource to be extracted, demonstrating efficient resource recovery within environmental constraints; - the mine layout and scheduling; - minerals processing; - a waste (overburden, tailings, etc.) management strategy, dealing with the EPA's requirements (see Attachment 2); - a water management strategy, dealing with the EPA's and NSW Trade and Investment's requirements (see Attachment 2); - a rehabilitation strategy, dealing with NSW Trade and Investment's requirements (see Attachment 2); and - the likely interactions between the development and any other existing, approved or proposed mining development in the vicinity of the site; • a list of any approvals that must be obtained before the development may commence; • an assessment of the likely impacts of the development on the environment, focussing on the specific issues identified below, including: <ul style="list-style-type: none"> - a description of the existing environment likely to be affected by the development, using sufficient baseline data; - an assessment of the likely impacts of all stages of the development, including any cumulative impacts, taking into consideration any relevant laws, environmental planning instruments, guidelines, policies, plans and industry codes of practice; - a description of the measures that would be implemented to mitigate and/or offset the likely impacts of the development, and an assessment of: <ul style="list-style-type: none"> ○ whether these measures are consistent with industry best practice, and represent the full range of reasonable and feasible mitigation measures that could be implemented; 	<ul style="list-style-type: none"> Chapter 2 Section 2.4.3 Section 2.4.2 Section 2.4.7 Section 2.4.9 Sections 2.4.12 and 17.3.2, Appendix L Section 13.4 Sections 2.4 and 6.3 Section 7.6 Chapters 9 to 21

Table 5.1 Summary of Secretary’s requirements

Requirement	EIS reference
<ul style="list-style-type: none"> ○ the likely effectiveness of these measures; and ○ whether contingency plans would be necessary to manage any residual risks; - a description of the measures that would be implemented to monitor and report on the environmental performance of the development if it is approved; • a consolidated summary of all the proposed environmental management and monitoring measures, identifying all the commitments in the EIS; • consideration of the development against all relevant environmental planning instruments (including Part 3 of the State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007); and • the reasons why the development should be approved having regard to biophysical, economic and social considerations, including the principles of ecologically sustainable development. 	<p>Table 22.1</p> <p>Section 7.2.3</p> <p>Section 24.1</p>
<p>In addition to the matters set out in Schedule 1 of the Environmental Planning and Assessment Regulation 2000, the development application must be accompanied by a signed report from a suitably qualified expert that includes an accurate estimate of the:</p> <ul style="list-style-type: none"> • capital investment value (as defined in Clause 3 of the Environmental Planning and Assessment Regulation 2000) of the development, including details of all the assumptions and components from which the capital investment value calculation is derived; and • jobs that would be created during each stage of the development. 	<p>The signed report by a suitably qualified expert is provided separately to DP&E and not included in the EIS documentation</p>
<p>Specific issues The EIS must address the following specific issues:</p>	<p>Appendix F, Chapter 10</p>
<ul style="list-style-type: none"> • Noise & Blasting – including: <ul style="list-style-type: none"> - an assessment of the likely operational noise impacts of the development (including construction noise) under the NSW Industrial Noise Policy, paying particular attention to establishing accurate background noise levels in the surrounding area, the effect of removing Saddleback Ridge and the obligations in chapters 8 and 9 of the policy; - if a claim is made for specific construction noise criteria for certain activities, then this claim must be justified and accompanied by an assessment of the likely construction noise impacts of these activities under the Interim Construction Noise Guideline; - an assessment of the likely road noise impacts of the development under the NSW Road Noise Policy; and - an assessment of the likely blasting impacts of the development on people, animals, buildings and infrastructure, and significant natural features, having regard to the relevant ANZEC guidelines; 	<p>Appendix F, Chapter 10</p>
<ul style="list-style-type: none"> • Air – including: <ul style="list-style-type: none"> - an assessment of the likely air quality impacts of the development in accordance with the Approved Methods for the Modelling and Assessment of Air Pollutants in NSW and the EPA’s additional requirements (see Attachment 2); and - an assessment of the likely greenhouse gas impacts of the development, dealing with the EPA’s requirements (see Attachment 2); 	<p>Appendix G, Chapter 11</p>
<ul style="list-style-type: none"> • Biodiversity – including: <ul style="list-style-type: none"> - an assessment of the likely biodiversity impacts of the new development, having regard to the principles and strategies in the draft NSW Biodiversity Offsets Policy for Major Projects and the Upper Hunter Strategic Assessment – Interim Policy, using the Biodiversity Certification Assessment Methodology as amended by the Upper Hunter Strategic Assessment for credit calculation, and the Biobanking Assessment Methodology as amended by the Upper Hunter Strategic Assessment for calculating the credits of any offsets; 	<p>Appendix H, Chapter 12</p>

Table 5.1 Summary of Secretary’s requirements

Requirement	EIS reference
<ul style="list-style-type: none"> - specific assessment of the likely impacts of the new development on the Warkworth Sands Woodland endangered ecological community; and - the provision of alternate offsets for the disturbance area approved under the 2003 development consent, using the Biodiversity Certification Assessment Methodology as amended by the Upper Hunter Strategic Assessment for credit calculation and the Biobanking Assessment Methodology as amended by the Upper Hunter Strategic Assessment for calculating the credits of any offsets; 	
<ul style="list-style-type: none"> • Water – including: <ul style="list-style-type: none"> - an assessment of the likely impacts of the development on the quantity and quality of the region’s surface and groundwater resources, having regard to the EPA’s and NSW Trade and Investment’s requirements (see Attachment 2); - an assessment of the likely impacts of the development on aquifers, watercourses, riparian land, water-related infrastructure, and other water users; and - an assessment of the likely flooding impacts of the development; 	<p>Appendices L and M, Chapters 16 and 17</p>
<ul style="list-style-type: none"> • Land – including: <ul style="list-style-type: none"> - an assessment of the likely impacts of the development on the soils, land capability, and landforms (topography) of the site; and - an assessment of the compatibility of the development with other land uses in the vicinity of the development in accordance with the requirements in Clause 12 of State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007; 	<p>Chapters 7 and 14</p>
<ul style="list-style-type: none"> • Heritage – including an assessment of the likely Aboriginal and historic heritage (cultural and archaeological) impacts of the development having regard to OEH’s requirements (see Attachment 2), and paying particular attention to the likely impacts on the Bulga Bora Ground, Great North Road, and former air strip on the site; 	<p>Appendices N and O, Chapters 18 and 19</p>
<ul style="list-style-type: none"> • Traffic – including: <ul style="list-style-type: none"> - an assessment of the likely impacts of the closure of Wallaby Scrub Road, particularly on the provision of emergency services; and - an assessment of the likely traffic impacts of the development on the capacity, condition, safety and efficiency of the local and State road network, including the impacts associated with the potential tunnel under Putty Road and the haulage of sand and gravel from the site; 	<p>Appendix O, Chapter 20</p>
<ul style="list-style-type: none"> • Visual – including an assessment of the likely visual impacts of the development on private landowners in the vicinity of the development and key vantage points in the public domain, paying particular attention to the removal of Saddleback Ridge, the creation of new landforms (overburden dumps, bunds, etc.), and minimising the lighting impacts of the development; 	<p>Appendix J, Chapter 15</p>
<ul style="list-style-type: none"> • Public Safety – including an assessment of the likely risks to public safety off-site, paying particular attention to bushfire risks and the handling and use of any dangerous goods; 	<p>Section 2.4.10</p>
<ul style="list-style-type: none"> • Social & Economic – including: <ul style="list-style-type: none"> - an assessment of the likely social impacts of the development (including perceived impacts), paying particular attention to any impacts on Bulga village; and - an assessment of the likely economic impacts of the development, paying particular attention to: <ul style="list-style-type: none"> ○ the significance of the resource; ○ economic benefits of the project for the State and region; and ○ the demand for the provision of local infrastructure and services. 	<p>Appendices F and Q, Chapters 9 and 21</p>

Table 5.1 Summary of Secretary’s requirements

Requirement	EIS reference
Consultation	
During the preparation of the EIS, you must consult with relevant local, State or Commonwealth Government authorities, service providers, community groups and affected landowners.	Chapter 8
The EIS must describe the consultation that was carried out, identify the issues raised during this consultation, and explain how these issues have been addressed in the EIS.	

5.3 Environmental risk assessment

5.3.1 Method

In accordance with the Secretary’s requirements and Rio Tinto Coal Australia’s standard practices, an environmental risk assessment was completed for the proposal.

Numerous workshops were held between relevant internal stakeholders subsequent to the disapproval of the Warkworth Extension 2010 to develop a proposal that meets WML’s objectives and ensure environmental risks were considered during its design.

Following the preparation of the preliminary mine design an information gap analysis was completed by the study team to aid in the definition of technical study scopes and enable an informed preliminary risk assessment workshop.

A preliminary environmental risk workshop was held and attended by Rio Tinto Coal Australia, EMM and project approval, social and communications specialists, mine planners and technical specialists for all of environmental attributes. The key objective of the workshop was to determine the proposal’s potential environmental impacts, the likelihood of them occurring and the consequences of occurrence.

Risks were determined using standard safeguards, design or management measures applied at all Coal & Allied operations. Three levels of risk rating were established: low, medium and high. Each of the risk sources were then allocated an issue prioritisation category based on their considered likelihood and consequence of occurrence. Together with the Secretary’s requirements and the outcomes of stakeholder engagement (see Section 4.2 and Chapter 8, respectively) these were used to determine environmental impact assessment priorities for this EIS.

The risk workshop also enabled the identification of further amelioration measures that could be incorporated into the proposal design to reduce the level of risk.

5.3.2 Environmental issue prioritisation

Based on the outcomes of the workshop, the following broad qualitative risk prioritisation categories were assigned to each environmental attribute:

- High – noise and vibration, air quality and greenhouse gases and ecology;
- Medium – traffic and transport, surface water, groundwater, Aboriginal cultural heritage and visual; and
- Low – land and soils capability, historic heritage, final landform and rehabilitation.

Assessments for each of the attributes listed above have been undertaken as part of this EIS, commensurate with risk. The risk assessment process only considered potentially adverse incremental environmental impacts; however, the proposal would have a number of substantial benefits, including economic and social benefits which are further detailed in the respective chapters.

Chapter 6

Existing operations



Chapter 6 — Existing operations

- 6.1 **Approvals history**
- 6.2 **Approved operations**
- 6.3 **Existing interactions with associated facilities and other operations**
 - 6.3.1 Warkworth Mine and Mount Thorley Operations
 - 6.3.2 Warkworth Mine and Hunter Valley Operations
 - 6.3.3 Warkworth Mine and Bulga Coal Complex
 - 6.3.4 Warkworth Mine and Wambo Mine
 - 6.3.5 Warkworth Mine and Redbank Power Station
- 6.4 **Environmental management**

6 Existing operations

6.1 Approvals history

A brief overview of the Warkworth Mine's approval history is given in Section 2.1. As noted, approval for an extension of mining activities (DA 300-9-2002-i) was granted on 19 May 2003 by the then Minister for Planning. The main elements of that extension comprised:

- the extraction of approximately 160Mt of ROM coal by open cut mining at a maximum rate of 18Mtpa;
- an extension of two pits (North and West pits) westwards towards Wallaby Scrub Road, and one pit (Woodlands Pit) southwards towards Putty Road;
- the construction of a conveyor to the MTCL and the MTO CPP;
- the construction of two bridges over Putty Road between the two mines to transfer coal, tailings, coarse rejects and mining equipment; and
- the identification of Green Offsets.

Six modifications have been subsequently made to the development consent, with the most recent granted 29 January 2014. An overview of the modifications is provided in Table 6.1 below.

Table 6.1 Overview of modifications to DA 300-9-2002-i

Project	Year	Overview	Supporting information
Modification 1	2004	To allow for construction of a new reject bin and alterations of the rejects conveyor from the CPP to allow for rejects to be directly loaded onto the fleet.	SEE
Modification 2	2007 (February)	To allow for revision of the land schedule.	SEE
Modification 3	2007 (October)	To allow for upgrade of the electrical switching yard comprising the replacement of redundant equipment to ensure the ongoing supply of electricity to the operation.	SEE
Modification 4	2008	To allow for installation and operation of up to six gas wells and flaring equipment in areas ahead of mining for the extraction of coal bed methane prior to future mining.	EA
Modification 5	2009	To allow for relocation of the explosives reload facility and light vehicle wash bay.	Letter, with supporting documentation
Modification 6	2014	To allow for a 350m extension of West Pit's disturbance limit.	EA

Notes: SEE: Statement of Environmental Effects.

EA: Environmental Assessment.

All activities proposed under DA-300-9-2002-I via the original application and the subsequent modifications and supporting documents listed above are continued under this proposal. It is assumed that a condition would be included in any approval for the proposal requiring the surrender of DA-300-9-2002-I at an appropriate time.

6.2 Approved operations

Chapter 2 provides detail on the existing operations at Warkworth Mine that would be continued under the proposal including mining methods, infrastructure, coal washing and processing, coal transport, waste management, final landuse, final landform and rehabilitation. Therefore, this information is not repeated here.

6.3 Existing interactions with associated facilities and other operations

6.3.1 Warkworth Mine and Mount Thorley Operations

As noted previously, Warkworth Mine and MTO are integrated at an operational level with a single management team responsible for the management of all operations on either side of Putty Road and a single workforce and equipment fleet which may be allocated across any part of MTW as required. Interactions between the two mines are described in Chapter 2.

6.3.2 Warkworth Mine and Hunter Valley Operations

Hunter Valley Operations is a coal mine north of Warkworth Mine, approximately 20km north-west of Singleton. The mining and processing activities at Hunter Valley Operations are geographically divided by the Hunter River into Hunter Valley Operations North and Hunter Valley Operations South. While Hunter Valley Operations is managed as one operation, Hunter Valley Operations North and Hunter Valley Operations South each have separate planning approvals.

Warkworth Mine and Hunter Valley Operations are separate operations with different ownership, although both are managed by Coal & Allied. Interactions between the operations are limited to the transfer of water and the movement of heavy equipment including draglines, trucks, shovels and dozers. This is made possible through the Hunter Valley Operations South Project Approval 06_0261 as described in the ERM (2008) *Hunter Valley Operations South Environmental Assessment*.

The South Lemington Pit 1 void at Hunter Valley Operations is currently used for temporary storage of mine water from both Hunter Valley Operations and Warkworth Mine (together with MTO). A water main links the operations allowing for water to be pumped in either direction and this occurs on a routine basis.

Approximately three haul trucks per year, on average, are transferred between the operations. Trucks are driven between the mines via a bridge over the Wambo rail spur (at the end of the private Lemington haul road).

6.3.3 Warkworth Mine and Bulga Coal Complex

Bulga Coal Complex is a coal mine south-east of Warkworth Mine, approximately 12km south-west of Singleton. Mining activities at Bulga Coal Complex are split between the open cut operations (Bulga Surface Operations) and the underground operations (Bulga Underground Operations), with shared coal preparation and rail loading infrastructure.

Water transfer has historically occurred between the Bulga Coal Complex void and MTO, as documented in the Mount Thorley Operations 2002 SEE (ERM 2002c), as is set to continue as part of the Mount Thorley Operations 2014 proposal. As noted previously, Warkworth Mine and MTO are integrated at an operational level, which includes water management across the sites. Thus, water transfer between Warkworth Mine and Bulga Coal Complex may occur as a result of the integrated WMS.

As described in Chapter 2, overburden from both MTO and Warkworth Mine would be emplaced at MTO throughout the life of the development consent (ie 21 years) as part of the proposal and the Mount Thorley Operations 2014 proposal. The development consent for the surface operations at the Bulga Coal Complex (DA 41-03-1999, as modified) allows for the development of a common landform with MTO and may require emplacement of overburden from the surface operations at Bulga Coal Complex to MTO and overburden from MTO to the Bulga Coal Complex. This exchange of overburden between MTO and Bulga Coal Complex is the subject of the DA for the Bulga Optimisation Project (SSD-4960) currently being assessed by DP&E (also contemplated under the subject proposal and the Mount Thorley Operations 2014 proposal).

6.3.4 Warkworth Mine and Wambo Mine

Wambo Mine is an open cut and underground coal mining operation north-west of Warkworth Mine, approximately 15km west of Singleton. Subject to agreement and regulatory approval Warkworth Mine proposes to import mine water from neighbouring operations, including Wambo Mine. The transfer of water from Wambo is addressed in DA 305-7-2003 and Sections 2.10 and 4.6.1 of the associated EIS. Transfer from Wambo Mine would be via Hunter Valley Operations by an existing pipeline.

6.3.5 Warkworth Mine and Redbank Power Station

The Redbank Power Station was commissioned in September 2000. Coal from Warkworth Mine is transferred by a 3.7km overland conveyor to the Redbank Power Station for use in power generation. The total annual fuel requirement for Redbank Power Station is in the order 13 million gigajoules (MGJ). Ash generated from the power station is disposed in the Warkworth Mine Tailings Dam No.2 via a pipeline, as described in Section 2.4.9.

6.4 Environmental management

Environmental aspects of the integrated operations are managed under Rio Tinto Coal Australia's accredited ISO 14001 EMS which forms part of the HSEQ Management System.

The HSEQ Management System enables the operations to apply specific tools that support the implementation, execution and effectiveness of the Rio Tinto health, safety and environmental performance standards.

The HSEQ Management System is designed on the principles of continuous improvement and generally follows the layout of common international standards (including ISO14001) and the Plan, Do, Check and Review cycle:

- Plan – identify what is required;
- Do – implement the activities;
- Check – monitor performance through checking and corrective action; and
- Review – evaluate the suitability, adequacy and effectiveness of the system through the management review.

The EMS relies upon an environmental policy, risk register, objectives and targets, a series of regulatory required management plans, a monitoring programme and environmental standards and procedures. The EMS forms the basis for rigorous and consistent environmental management. The EMS is subject to independent compliance audits every three years. The effectiveness of the system has been demonstrated through audits, which have shown a consistent trend in environmental improvement throughout the business, including Warkworth Mine.

As part of the EMS, the mining operations at Warkworth Mine are managed and monitored as the integrated MTW operations. An overview of existing management and monitoring procedures for the various environmental attributes are provided as appropriate in respective chapters in this EIS. This includes Sections 10.8 and 11.5 which describe operational management of noise and dust emissions, respectively.

Independent environmental audits are to be undertaken every three years (with the first by 31 December 2015) to assess the environmental performance of the development and determine whether it is complying with the requirements of the development consent and any other relevant approvals, EPLs and mining leases, including any assessment, plan or programme required under these approvals. The audits are also to review the adequacy of any strategy, plan or programme required under the abovementioned approvals and recommend measures or actions to improve the environmental performance of the development and/or any strategy, plan or programme. The audits are to be conducted by a suitably qualified, experienced and independent team of experts whose appointment has been endorsed by the Director-General and include consultation with relevant agencies.

An annual review is produced each calendar year in accordance with the existing consent conditions. The operations environmental performance with respect to the relevant monitoring requirements is documented in the annual review and made available to the community on the Coal & Allied website.

Some of the environmental improvement initiatives at MTW in recent years are described in Chapter 4.

Chapter 7

Legislative considerations



Chapter 7 — Legislative considerations

- 7.1 **Overview**
- 7.2 **Environmental Planning and Assessment Act 1979**
 - 7.2.1 State significant development provisions
 - 7.2.2 Objects of the Act
 - 7.2.3 Section 79C matters for consideration
 - 7.2.4 Non-discretionary development standards
 - 7.2.5 Other relevant sections of the EP&A Act to the assessment and determination of the proposal
- 7.3 **Other State legislation**
 - 7.3.1 Mining Act 1992
 - 7.3.2 Protection of the Environment Operations Act 1997
 - 7.3.3 Protection of the Environment Operations (Hunter River Salinity Trading Scheme) Regulation 2002
 - 7.3.4 Roads Act 1993
 - 7.3.5 Dams Safety Act 1978
 - 7.3.6 Water Act 1912 and Water Management Act 2000
 - 7.3.7 National Parks and Wildlife Act 1974
 - 7.3.8 Threatened Species Conservation Act 1995
 - 7.3.9 Native Vegetation Act 2003
- 7.4 **State plans and policies**
 - 7.4.1 Strategic Regional Land Use Policy
 - 7.4.2 Aquifer Interference Policy
 - 7.4.3 Hunter–Central Rivers Catchment Action Plan
- 7.5 **Commonwealth legislation**
 - 7.5.1 Environment Protection and Biodiversity Conservation Act 1999
 - 7.5.2 Native Title Act 1993
- 7.6 **Summary of approval requirements**

7 Legislative considerations

7.1 Overview

This chapter describes the relevant State and Commonwealth legislation and regulatory framework under which the proposal will be assessed and determined.

7.2 Environmental Planning and Assessment Act 1979

The EP&A Act and the EP&A Regulation form the statutory framework for planning approval and environmental assessment in NSW. Implementation of the EP&A Act is the responsibility of the Minister for Planning, statutory authorities and local councils. It contains three parts that impose requirements for planning approval:

- Part 4 which provides for control of 'development' that requires development consent from the relevant consent authority. A division of Part 4 (Division 4.1) provides for control of SSD where the Minister for Planning (or delegate) is the consent authority.
- Part 5 which provides for control of 'activities' that do not require approval or development consent under or Part 4.
- Part 5A which provides for control of State significant infrastructure that do not require approval or development consent under Part 4.

The requirement for development consent is set out in environmental planning instruments (EPIs); SEPPs, regional environmental plans (REPs) or local environmental plans (LEPs).

7.2.1 State significant development provisions

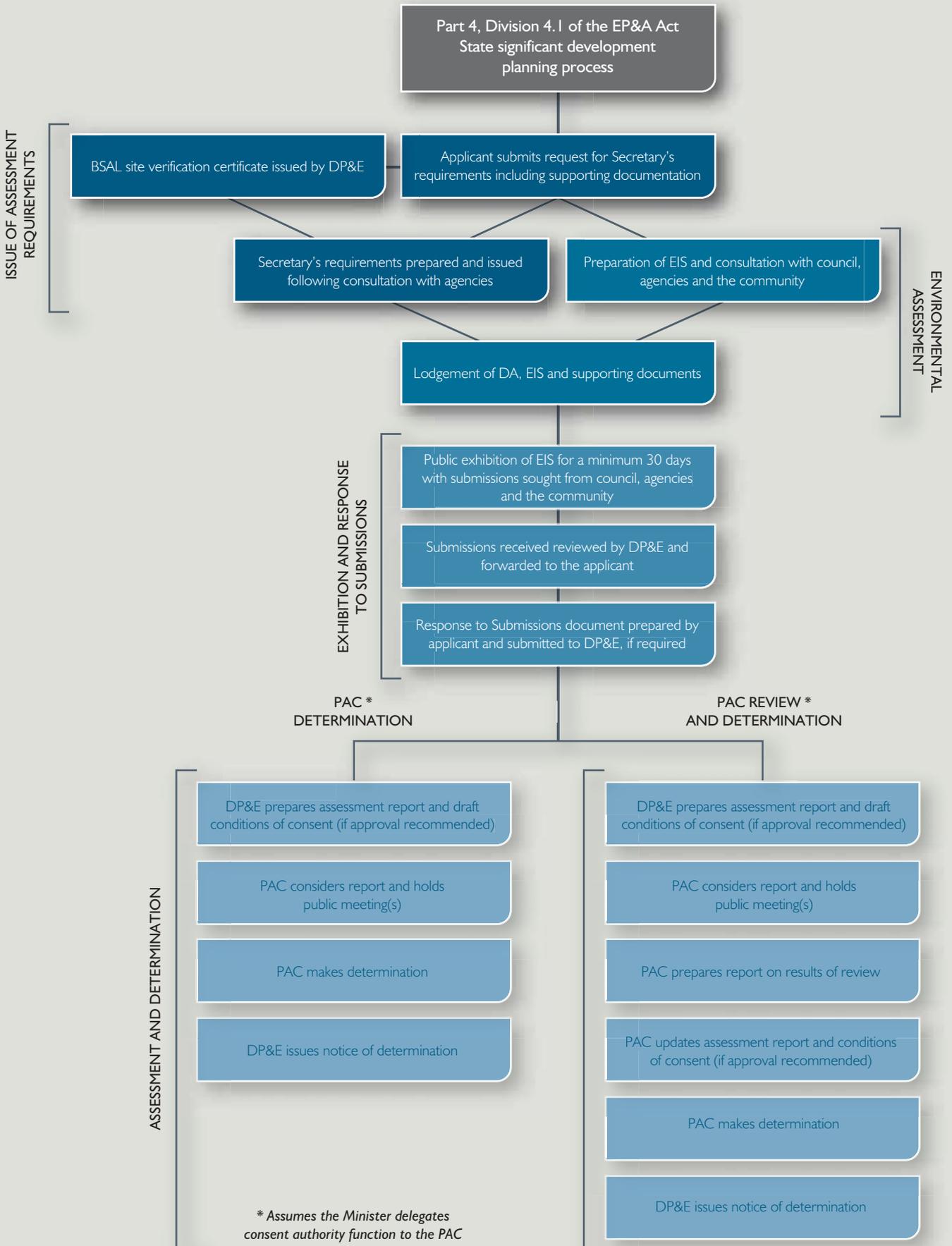
Division 4.1 of the EP&A Act specifically relates to the assessment of development deemed to be significant to the State (ie SSD). The planning process under this part of the EP&A Act is presented in Figure 7.1.

Section 89C(2) of the EP&A Act states that a:

State environmental planning policy may declare any development, or any class or description of development, to be State significant development.

Schedule 1 of the SRD SEPP declares certain categories of development to be SSD. Relevantly, development for the purpose of coal mining is declared as SSD and, accordingly, Part 4.1 of the EP&A Act applies to the proposal.

Under section 89D of the EP&A Act, the Minister for Planning is the consent authority for SSD. However, it should be noted that pursuant to section 23 of the EP&A Act, the Minister may delegate the consent authority function to the PAC, the Director-General or to any other statutory authority.



A DA for SSD must be accompanied by an EIS, prepared in accordance with the EP&A Regulation. Before lodging an EIS, an applicant must request Secretary's requirements which are essentially terms of reference that specify what must be addressed in an EIS. The Secretary's requirements for the proposal were issued on 22 May 2014 and are provided in Appendix D. The sections of the EIS where the Secretary's requirements have been addressed are identified in Table 5.1.

Section 89E of the EP&A Act is the primary provision in the Act giving the Minister (or delegate) the power to determine a DA for SSD. Section 89E(1) states:

The Minister is to determine a development application in respect of State significant development by:

- (a) granting consent to the application with such modifications of the proposed development or on such conditions as the Minister may determine, or
- (b) refusing consent to the application.

The relevant factors in the assessment and determination of the proposal are addressed below.

7.2.2 Objects of the Act

The objects of the EP& Act are specified in section 5. It states:

The objects of this Act are:

- (a) 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,
 - (iii) the protection, provision and co-ordination of communication and utility services,
 - (iv) the provision of land for public purposes,
 - (v) the provision and co-ordination of community services and facilities, and
 - (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, and
 - (viii) the provision and maintenance of affordable housing, and
- (b) to promote the sharing of the responsibility for environmental planning between the different levels of government in the State, and
- (c) to provide increased opportunity for public involvement and participation in environmental planning and assessment.

An assessment of the proposal against the objects of the EP&A Act is provided below.

To encourage 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.

Warkworth Mine and MTO contain a substantial coal resource supported by existing extensive physical and human infrastructure. The proposal would facilitate proper development and the orderly use of these resources, thus promoting social and economic welfare. It would also not unduly compromise or prejudice the conservation of natural resources.

To encourage the promotion and co-ordination of the orderly and economic use and development of land.

The proposal is for the continued development of a natural mineral resource on land within the footprint of existing mining leases owned by WML and Miller Pohang Coal Pty Limited. It would constitute an orderly and economic use of land and the resources contained within it.

To encourage the protection, provision and co-ordination of communication and utility services.

This object is not applicable to the proposal.

To encourage the provision of land for public purposes.

With the exception of the Wallaby Scrub Road corridor, all the elements of the proposal would be constructed on privately-owned land within the footprint of existing mining leases. Contributions would be agreed to with Singleton Council regarding closure of the road. The conservation areas proposed to offset ecological and heritage impacts provide land for public purposes.

To encourage the provision and co-ordination of community services and facilities.

The proposal enables jobs to be maintained; it does not seek to increase MTW's workforce. Accordingly, there is unlikely to be any demand for additional community services. Ongoing operations would enable continued support of the community through initiatives such as the Coal & Allied Community Development Fund. Royalties generated by the continued operation of MTW (estimated to be around \$617million in net present value (NPV) terms) go to State revenue to provide for community services and facilities.

In addition, the proposal includes the establishment of a Local Community Historic Heritage Conservation Initiative, comprising two conservation funds; the Mount Thorley Warkworth Historic Heritage Conservation Fund and the Mount Thorley Warkworth Great North Road Conservation Fund.

To encourage 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.

The proposal takes into account this objective. Mining the coal resources would require the progressive clearing of threatened woodland and open forest communities which provide habitat for several threatened fauna species, the disturbance of Aboriginal sites and the take of water from groundwater and surface water sources. However, to offset ecological and heritage impacts, conservation areas are proposed which would provide long-term protection and conservation of native animals, plants and cultural heritage. Additional water entitlements would be sourced to offset take from groundwater sources.

To encourage ecologically sustainable development.

The Commonwealth Government's (1992) *National Strategy for Ecologically Sustainable Development* defines ESD as 'using, conserving and enhancing the community's resources so that ecological processes, on which life depends, are maintained, and the total quality of life, now and in the future, can be increased'.

The proposal would enhance community resources by providing considerable employment and public revenues through royalties and taxes. In this way it would contribute to improvements in the local, State and National economies and contribute to an overall increase in quality of life. Also, the proposal would conserve community resources directly through the establishment of conservation areas and indirectly through effective impact mitigation.

Proposed rehabilitation of disturbed land, in combination with the protection of nearby areas for biodiversity and cultural heritage, would improve and maintain environmental quality now and for the future. The proposal would make a negligible contribution to global greenhouse gases (Scope 1 and 2). Less efficient energy production from low quality coal and/or less efficient mining would involve a higher contribution.

The principles of ESD are outlined in section 6 of the POEO Act and Schedule 2 of the EP&A Regulation. The proposal is consistent with ESD and its principles as discussed in Section 24.1.3.

To encourage the provision and maintenance of affordable housing.

As the proposal utilises the same workforce, there would not be an increase in the demand on housing.

To promote the sharing of the responsibility for environmental planning between the different levels of government in the State.

All relevant State and local government agencies have been consulted during the preparation of the EIS. Further consultation will occur during the response to submissions following exhibition and pre-determination phases.

To provide increased opportunity for public involvement and participation in environmental planning and assessment.

Extensive community consultation was undertaken as part of the social impact study for the proposal. Feedback received through the consultation process has been considered in the preparation of the EIS. Public involvement and participation will also be provided through the public exhibition process of this EIS.

7.2.3 Section 79C matters for consideration

i General

When assessing a DA for SSD, the consent authority is required to take into consideration the matters outlined in section 79C of the EP&A Act. This states:

(1) Matters for consideration – general

In determining a development application, a consent authority is to take into consideration such of the following matters as are of relevance to the development the subject of the development application:

(a) the provisions of:

(i) any environmental planning instrument, and

(ii) any proposed instrument that is or has been the subject of public consultation under this Act and that has been notified to the consent authority (unless the Director-General has notified the consent authority that the making of the proposed instrument has been deferred indefinitely or has not been approved), and

(iii) any development control plan, and

(iiia) any planning agreement that has been entered into under section 93F, or any draft planning agreement that a developer has offered to enter into under section 93F, and

(iv) the regulations (to the extent that they prescribe matters for the purposes of this paragraph), and

(v) any coastal zone management plan (within the meaning of the Coastal Protection Act 1979),

that apply to the land to which the development application relates,

(b) the likely impacts of that development, including environmental impacts on both the natural and built environments, and social and economic impacts in the locality,

(c) the suitability of the site for the development,

(d) any submissions made in accordance with this Act or the regulations,

(e) the public interest.”

(2) Compliance with non-discretionary development standards—development other than complying development.

If an environmental planning instrument or a regulation contains non-discretionary development standards and development, not being complying development, the subject of a development application complies with those standards, the consent authority:

(a) is not entitled to take those standards into further consideration in determining the development application, and

- (b) must not refuse the application on the ground that the development does not comply with those standards, and
 - (c) must not impose a condition of consent that has the same, or substantially the same, effect as those standards but is more onerous than those standards,
- and the discretion of the consent authority under this section and section 80 is limited accordingly.
- (3) If an environmental planning instrument or a regulation contains non-discretionary development standards and development the subject of a development application does not comply with those standards:
 - (a) subsection (2) does not apply and the discretion of the consent authority under this section and section 80 is not limited as referred to in that subsection, and
 - (b) a provision of an environmental planning instrument that allows flexibility in the application of a development standard may be applied to the non-discretionary development standard.

The above matters are considered below and throughout this EIS. Notwithstanding the contents of section 79C(1)(iii), clause 11 of the SRD SEPP states that development control plans do not apply to SSD.

ii Environmental planning instrument framework

a. State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007

Aims

Clause 2 of the Mining SEPP sets out its aims. It states:

The aims of this Policy are, in recognition of the importance to New South Wales of mining, petroleum production and extractive industries:

- (a) to provide for the proper management and development of mineral, petroleum and extractive material resources for the purpose of promoting the social and economic welfare of the State, and
- (b) to facilitate the orderly and economic use and development of land containing mineral, petroleum and extractive material resources, and
- (b1) to promote the development of significant mineral resources, and
- (c) to establish appropriate planning controls to encourage ecologically sustainable development through the environmental assessment, and sustainable management, of development of mineral, petroleum and extractive material resources, and
- (d) to establish a gateway assessment process for certain mining and petroleum (oil and gas) development:
 - (i) to recognise the importance of agricultural resources, and
 - (ii) to ensure protection of strategic agricultural land and water resources, and
 - (iii) to ensure a balanced use of land by potentially competing industries, and

- (iv) to provide for the sustainable growth of mining, petroleum and agricultural industries.

For the reasons set out in the chapter, the proposal is considered to be consistent with these aims.

Permissibility

The proposal is permissible with consent by virtue of clause 7(1)(b) of the Mining SEPP which states that development for the purposes of mining may be carried out:

- (i) on land where development for the purposes of agriculture or industry may be carried out (with or without development consent), or
- (ii) on land that is, immediately before the commencement of this clause, the subject of a mining lease under the *Mining Act 1992* or a mining licence under the *Offshore Minerals Act 1999*,

The proposal would be carried out on land where development for the purposes of agriculture or industry may be carried out with consent. This is because the Site is zoned RU1 Primary Production under the Singleton Local Environmental Plan 2013 (LEP 2013). Development permitted with consent in this zone includes open cut mining, as well as agriculture and industry.

Matters for consideration

Part 3 of the Mining SEPP sets out a number of matters the consent authority must consider before determining an application for consent for development for the purposes of mining. These matters include the significance of the resource (clause 12AA), non-discretionary development standards for mining (clause 12AB), the compatibility of the mine with other land uses (clause 12), compatibility of proposal with mining (clause 13), natural resource management and environmental management (clause 14), resource recovery (clause 15), transport (clause 16) and rehabilitation (clause 17).

These matters are addressed below.

Significance of the resource

Clause 12AA of the Mining SEPP states:

- (1) In determining an application for consent for development for the purposes of mining, the consent authority must consider the significance of the resource that is the subject of the application, having regard to:
 - (a) the economic benefits, both to the State and the region in which the development is proposed to be carried out, of developing the resource, and
 - (b) any advice by the Director-General of the Department of Trade and Investment, Regional Infrastructure and Services as to the relative significance of the resource in comparison with other mineral resources across the State.
- (2) The following matters are (without limitation) taken to be relevant for the purposes of subclause (1)(a):
 - (a) employment generation,
 - (b) expenditure, including capital investment,

- (c) the payment of royalties to the State.
- (3) The Director-General of the Department of Trade and Investment, Regional Infrastructure and Services is, in providing advice under subclause (1)(b), to have regard to such matters as that Director-General considers relevant, including (without limitation):
 - (a) the size, quality and availability of the resource that is the subject of the application, and
 - (b) the proximity and access of the land to which the application relates to existing or proposed infrastructure, and
 - (c) the relationship of the resource to any existing mine, and
 - (d) whether other industries or projects are dependent on the development of the resource.
- (4) In determining whether to grant consent to the proposed development, the significance of the resource is to be the consent authority's principal consideration under this Part.
- (5) Accordingly, the weight to be given by the consent authority to any other matter for consideration under this Part is to be proportionate to the importance of that other matter in comparison with the significance of the resource.

(emphasis added)

Clause 12AA of the Mining SEPP operates to make the 'significance of the resource' the principal consideration of the matters the Minister is to consider under Part 3 of the Mining SEPP. The operation of clause 12AA is therefore limited to considerations under Part 3 of the Mining SEPP. Clause 12AA does not operate to make the 'significance of the resource' the principal consideration of the matters contained within section 79C.

Matters relating to the economic benefits, both to the State and the region in which the development is proposed to be carried out, of developing the resource are detailed in Chapter 9. This chapter provides a summary of an economic study that has been prepared which describes the direct and flow-on economic benefits of the proposal as well as the aggregated benefits with the Mount Thorley Operations 2014. It considers the incremental, or net, impacts relative to the counterfactual that both proposals are not approved and MTW ceases operating at the end of the respective development consents.

The economic study has two components, a CBA and a REIA. The CBA considers the direct costs and benefits accruing in NSW from the proposals, for instance, from additional value added in the form of wages and salaries paid to employees and contractors. Flow-on effects of the proposals, such as the effects on regional income, employment or value added, are assessed in the REIA.

As clause 12AA(2) states, the matters relevant in considering economic benefits, both to the State and the region in which the development is proposed to be carried out, of developing the resource are employment generation, expenditure, including capital investment, and the payment of royalties to the state. These matters are addressed below.

- **Employment generation:** As stated in Chapter 2, the current integrated Warkworth Mine and MTO workforce is approximately 1,300 people, on average. The annual average employment directly attributable to Warkworth Mine approximately 1,187 persons. The proposal would provide the mine with its best opportunity of maintaining its current workforce and extending it for a further 14 years beyond the existing approval period (ie from 2021, assuming the project is determined by end of 2014 to 2035).

The economic study demonstrates that the proposal is expected to have positive flow-on effects on the NSW, regional and local economies based on the significant projected expenditures on wages and salaries, as well as other mining inputs by MTW. The initial aggregated flow-on effects are estimated to generate additional annual employment of around 206, 214, and 61 full-time equivalent workers in NSW, the Mid and Upper Hunter region, and Singleton LGA, respectively. Of these, Warkworth Mine would contribute 191, 198 and 57 full-time equivalent workers for NSW, the Mid and Upper Hunter region, and Singleton LGA, respectively.

- **Expenditure, including capital investment:** Note: that the BCA estimates operating expenditures for Warkworth Mine at around \$3.7billion in NPV terms. The aggregated operating expenditures for the proposals are estimated at \$3.8billion in NPV terms. This excludes capital expenditure. The economic impact has been evaluated with reference to its contribution to NSW gross state product (GSP). In calculating GSP, the income flows accruing to the factors of production are required, including the share of income from production that can be attributed to capital inputs for incorporated businesses, which is also known as the gross operating surplus (GOS). GOS is calculated as output valued at producer prices, net of intermediate consumption (operating expenditure), net of employee compensation, and net of taxes on production (ABS 2013). Calculating the GOS requires that certain Australian System of National Accounts (ASNA) conventions are followed. Expenditures on assets that are not 'used up' in the course of the production process and which yield benefits beyond the period in which they are purchased (ie capital expenditure) are not included in the calculation to derive GOS.
- **The payment of royalties to the State:** The economic study demonstrates that in NPV terms, the proposal would deliver net benefits to NSW of around \$1.34billion, including around \$567million in additional coal royalties paid to the NSW Government. The aggregated net benefits of the proposals to NSW would be around \$1.5billion, including around \$617million in additional coal royalties paid to the NSW Government and about \$259million in payroll taxes, council rates and other payments that accrue to different levels of Government.

Matters relating to the significance of the resource are detailed in Chapters 2 and 6. They are summarised below.

- **Size, quality and availability of the resource:** At the end of 2013, measured, indicated and inferred open cut coal resources estimated were 6.2, 39.2 and 133.2Mt, respectively, with a total of 178.6Mt. The proved and probable open cut coal reserves were estimated at 203.7 and 154.7Mt, respectively, with a total of 358.3Mt. The proposal would enable approximately 358Mt of ROM coal to be mined over the life of the operations, approximately 230Mt of which is located within the proposed 2014 disturbance area.

Mineable coal consists of approximately 20 coal seams which are suitable for production of either thermal or semi-soft coking coal. This coal is mineable by an extension of existing open cut mining practices, including the use of draglines, shovels, excavators, loaders, dozers and truck fleets. These practices have proved appropriate for the geological conditions encountered at the mine and the required production rates.

- **Proximity and access to existing or proposed infrastructure:** The land to which the application relates is owned by WML and Miller Pohang Coal Pty Limited and contained within the footprint of existing mining leases (predominantly CCL 753 and CL 219). The land is contiguous with existing mining areas and has direct access to existing infrastructure. This infrastructure has been listed in Section 2.4.6 and includes everything required for the processing and transportation of coal.

- **Relationship of the resource to any existing mine:** The resource proposed to be mined is associated with Warkworth Mine and MTO and enables the continued integrated operation of MTW.
- **Other industries or projects are dependent on the development of the resource:** There are a number of other industries that would be adversely impacted if the proposal does not proceed. These include upstream industries that supply goods and services to Warkworth Mine and downstream industries that utilise the coal produced at the mine.

In 2013, MTW spent \$573million with 803 suppliers in Australia. Of this, \$147million was spent on 377 suppliers in NSW, and \$188million was spent on 228 local suppliers (ie from Upper Hunter, Muswellbrook, Singleton, Maitland and Cessnock LGAs). This correlates to an average spend of \$820,000 per local supplier.

Downstream industries that utilise the coal include domestic (Redbank Power Station) and overseas energy producers and steel makers.

Non-discretionary development standards

Clause 12AB of the Mining SEPP sets out a number of non-discretionary development standards for the purposes of section 79C(2) and (3) of the EP&A Act in relation to the carrying out of development for the purposes of mining. These standards relate to cumulative noise level, cumulative air quality level, airblast overpressure, ground vibration and aquifer interference. These standards are addressed in Section 7.2.1.iii.d.

Compatibility of the mine with other land uses

Clause 12 of the Mining SEPP states that:

Before determining an application for consent for development for the purposes of mining, petroleum production or extractive industry, the consent authority must:

- (a) consider:
 - (i) the existing uses and approved uses of land in the vicinity of the development, and
 - (ii) whether or not the development is likely to have a significant impact on the uses that, in the opinion of the consent authority having regard to land use trends, are likely to be the preferred uses of land in the vicinity of the development, and
 - (iii) any ways in which the development may be incompatible with any of those existing, approved or likely preferred uses, and
- (b) evaluate and compare the respective public benefits of the development and the land uses referred to in paragraph (a)(i) and (ii), and
- (c) evaluate any measures proposed by the applicant to avoid or minimise any incompatibility, as referred to in paragraph (a)(iii).

These matters are addressed below.

Consider the existing uses and approved uses of land in the vicinity of the development.

The area immediately surrounding Warkworth Mine is dominated by coal mines and associated infrastructure and other industry. This includes the Hunter Valley Operations, Wambo Mine and Redbank Power Station to the north and north-west, MTO and Bulga Coal Complex to the south, and MTIE to the east. There is also extensive rail and electricity infrastructure in place. Bulga Coal has applied to the Minister for Planning for development consent to continue operations at the Bulga Coal Complex (referred to as the Bulga Optimisation Project).

There are number of rural and rural/residential properties located to the north-east and south-west of the mine. The villages of Bulga and Warkworth are located to the south-west and north-west, respectively. Further to the west are the Wollemi and Yengo national parks.

In light of the surrounding land uses it is considered that the proposal is appropriate to the existing and approved uses of land in the vicinity.

Consider whether or not the development is likely to have a significant impact on the uses that, in the opinion of the consent authority having regard to land use trends, are likely to be the preferred uses of land in the vicinity of the development.

It is a matter for the consent authority to determine the preferred uses of land in the vicinity of the proposal, having regard to land use trends. This EIS has considered the likely impacts of proposal on the existing land uses, particularly on the rural/residential land uses identified above. As discussed in Chapter 24, subject to the application of the commitments, the proposal is unlikely to have a significant impact on these existing land uses.

Consider any ways in which the development may be incompatible with any of those existing, approved or likely preferred uses.

The proposal is a continuation of an existing mining operation which has been in operation since 1981. It is considered to be broadly compatible with surrounding land uses, particularly the mining and industrial land uses.

Evaluate and compare the respective public benefits of the development and the land uses referred to in paragraph (a)(i) and (ii).

The evaluation and comparison of the respective public benefits of the development and existing, approved and preferred land uses is a matter for the consent authority. However, there are clear public benefits associated with the continuation of mining within the footprint of existing mining leases. One tool the consent authority can use in making this evaluation and comparison is the economic study which describes the direct and flow-on economic benefits of the proposal and the Mount Thorley Operations 2014 (aggregated) for the Singleton LGA, Mid and Upper Hunter region and for NSW. As previously stated, it considers the incremental or net impacts relative to the counterfactual that both proposals are not approved and MTW ceases operating at the end of 2021.

In NPV terms, the proposal would deliver net benefits to NSW of around \$1.34billion. These net benefits take the form of:

- the additional disposable income received by employees and long-term contractors who live in NSW, around \$346million;
- the additional coal royalties paid to the NSW Government of around \$567million; and
- additional payroll taxes, council rates and other payments that accrue to different levels of government, and which amount to around \$225million.

Almost three quarters of MTW employees and long-term contractors live in the Mid and Upper Hunter region. Around \$227million in NPV terms in additional disposable income would flow to that region.

In addition to the direct effects described above, the proposal is expected to have positive flow-on effects on the NSW, regional and local economies. These flow-on effects are a reflection of the significant projected expenditures on wages and salaries, as well as other mining inputs by Warkworth Mine. The initial flow-on effects are estimated at:

- around \$346million, \$204million and \$75million in additional income (in NPV terms) for NSW, the Mid and Upper Hunter region and Singleton LGA, respectively;
- additional annual employment of around 191, 198, and 57 full-time equivalent workers in NSW, the Mid and Upper Hunter region and Singleton LGA, respectively; and
- an increase in the GSP of NSW of around \$450million in NPV terms (\$39million annually).

Evaluate any measures proposed by the applicant to avoid or minimise any incompatibility, as referred to in paragraph (a)(iii).

A range of commitments have been made by WML to mitigate potential impacts of the proposal on surrounding land uses. These commitments are summarised in Chapter 22. Subject to the application of the commitments, the proposal is unlikely to have a significant impact on these land uses.

Compatibility of proposal with mining

Clause 13 of the Mining SEPP relates to matters a consent authority must take into consideration when determining applications for development that is:

- in the vicinity of an existing mine, petroleum production facility or extractive industry;
- identified on a map as being the location of State or regionally significant resources of minerals, petroleum or extractive materials; or
- identified by an environmental planning instrument as being the location of significant resources of minerals, petroleum or extractive materials.

Clause 13(2) states:

Before determining an application to which this clause applies, the consent authority must:

- (a) consider:
 - (i) the existing uses and approved uses of land in the vicinity of the development, and
 - (ii) whether or not the development is likely to have a significant impact on current or future extraction or recovery of minerals, petroleum or extractive materials (including by limiting access to, or impeding assessment of, those resources), and
 - (iii) any ways in which the development may be incompatible with any of those existing or approved uses or that current or future extraction or recovery, and
- (b) evaluate and compare the respective public benefits of the development and the uses, extraction and recovery referred to in paragraph (a) (i) and (ii), and

- (c) evaluate any measures proposed by the applicant to avoid or minimise any incompatibility, as referred to in paragraph (a) (iii).

Therefore, this clause requires the consent authority to consider the proposal's potential impact on other mining, petroleum production and extractive industries within the local area.

The proposal would be undertaken within the footprint of existing mining leases. Mine planning has ensured that it maximises the extraction of coal resources. It would not impact on surrounding mines, or their ability to extract target resources. Further, it is noted that the Mount Thorley Operations 2014 proposal is critical to the viability of Warkworth Mine as it would enable the ongoing provision of integrated services. Similarly, the proposal is critical to the viability of MTO as it would provide the necessary overburden volumes to complete the final landform.

Natural resource and environmental management

Clause 14 of the Mining SEPP relates to natural resource and environmental management. It states:

- (1) Before granting consent for development for the purposes of mining, petroleum production or extractive industry, the consent authority must consider whether or not the consent should be issued subject to conditions aimed at ensuring that the development is undertaken in an environmentally responsible manner, including conditions to ensure the following:
 - (a) that impacts on significant water resources, including surface and groundwater resources, are avoided, or are minimised to the greatest extent practicable,
 - (b) that impacts on threatened species and biodiversity, are avoided, or are minimised to the greatest extent practicable,
 - (c) that greenhouse gas emissions are minimised to the greatest extent practicable.
- (2) Without limiting subclause (1), in determining a development application for development for the purposes of mining, petroleum production or extractive industry, the consent authority must consider an assessment of the greenhouse gas emissions (including downstream emissions) of the development, and must do so having regard to any applicable State or national policies, programs or guidelines concerning greenhouse gas emissions.
- (3) Without limiting subclause (1), in determining a development application for development for the purposes of mining, the consent authority must consider any certification by the Chief Executive of the Office of Environment and Heritage or the Director-General of the Department of Primary Industries that measures to mitigate or offset the biodiversity impact of the proposed development will be adequate.

The drafting of any prospective conditions aimed at ensuring that the development is undertaken in an environmentally responsible manner in relation to water resources, threatened species and biodiversity and greenhouse gases is a matter for the consent authority.

The results of the surface water and groundwater studies indicate that impacts are likely to be minor and manageable through licensing arrangements.

The proposal would require the progressive clearing of threatened woodland and open forest communities, which provide habitat for several threatened fauna species. In accordance with the Draft NSW Biodiversity Offsets Policy for Major Projects (OEH 2014a), to offset these impacts, conservation areas are proposed which would provide long-term protection and conservation of threatened species and biodiversity.

The greenhouse gas assessment has estimated that annual average greenhouse emissions over the 21 year life of the proposal (Scope 1 and 2) are negligible, representing approximately 0.18 per cent and 0.63 per cent of Australia's and NSW emissions, respectively.

Details on potential impacts on groundwater and surface water resources are provided in Chapters 16 and 17. Details on potential impacts on threatened species and biodiversity are provided in Chapter 12. Details on greenhouse gas emissions are provided in Chapter 11.

Resource recovery

Clause 15 of the Mining SEPP states:

- (1) Before granting consent for development for the purposes of mining, petroleum production or extractive industry, the consent authority must consider the efficiency or otherwise of the development in terms of resource recovery.
- (2) Before granting consent for the development, the consent authority must consider whether or not the consent should be issued subject to conditions aimed at optimising the efficiency of resource recovery and the reuse or recycling of material.
- (3) The consent authority may refuse to grant consent to development if it is not satisfied that the development will be carried out in such a way as to optimise the efficiency of recovery of minerals, petroleum or extractive materials and to minimise the creation of waste in association with the extraction, recovery or processing of minerals, petroleum or extractive materials.

Warkworth Mine has been operating for over 30 years. The geology, mining methods and mining equipment required to maximise both the quantum and efficiency of the extraction of the available resources are well understood. Mine plans have been prepared which continue existing mining methods westwards. As previously stated, North and West pits are managed as an integrated pit, typically utilising draglines to make best use of the available strike length. Whilst the ability to enable a continuous dragline operation in these two pits (as previously proposed) has been lost, North and West pits would progress westward in a manner so that the highwalls are generally on a north-west to south-east axis parallel to the strike of the coal seams. This would extend the spatial limit approved under the current development consent to enable mining in West Pit along the full strike length and, subsequently, enable the two main pits, North and West pits, to advance down dip to the west.

Transport

Clause 16(1) of the Mining SEPP states:

Before granting consent for development for the purposes of mining or extractive industry that involves the transport of materials, the consent authority must consider whether or not the consent should be issued subject to conditions that do any one or more of the following:

- (a) require that some or all of the transport of materials in connection with the development is not to be by public road,
- (b) limit or preclude truck movements, in connection with the development, that occur on roads in residential areas or on roads near to schools,
- (c) require the preparation and implementation, in relation to the development, of a code of conduct relating to the transport of materials on public roads.

Existing infrastructure at MTW allows the operations to be undertaken in accordance with the requirements of this clause. All coal produced at Warkworth Mine is transported by conveyor to Redbank Power Station, or rail to the Port of Newcastle. Coal is only transported to Redbank Power Station via road for short periods in the case of emergency, such as conveyor failure. Further details on transport matters are provided in Chapter 20.

Rehabilitation

Clause 17 of the Mining SEPP states:

- (1) Before granting consent for development for the purposes of mining, petroleum production or extractive industry, the consent authority must consider whether or not the consent should be issued subject to conditions aimed at ensuring the rehabilitation of land that will be affected by the development.
- (2) In particular, the consent authority must consider whether conditions of the consent should:
 - (a) require the preparation of a plan that identifies the proposed end use and landform of the land once rehabilitated, or
 - (b) require waste generated by the development or the rehabilitation to be dealt with appropriately, or
 - (c) require any soil contaminated as a result of the development to be remediated in accordance with relevant guidelines (including guidelines under section 145C of the Act and the *Contaminated Land Management Act 1997*), or
 - (d) require steps to be taken to ensure that the state of the land, while being rehabilitated and at the completion of the rehabilitation, does not jeopardize public safety.

The primary objective of final rehabilitation at Warkworth Mine is to create a stable, free draining landform able to maintain viable land uses where the post-mining rehabilitated areas are integrated with the surrounding landscape.

Rehabilitation would continue to be undertaken progressively across the mined area under the proposal. The requirements for rehabilitation would be determined in consultation with relevant Government agencies and stakeholders and in accordance with regulatory requirements. The objectives of the rehabilitation domains of mined areas at Warkworth Mine are to:

- re-create approximately 1,617ha of EEC woodland communities to a standard comparable to similar reference EEC communities (analogue site);
- create approximately 222ha of trees over grass not conforming to any particular community, creating treed corridors to ensure connectivity of woodland community areas;
- recreate some 848ha of grassland;
- establish improved pasture and some productive grazing;
- provide additional habitat for threatened species; and
- create an additional north/south wildlife corridor providing connectivity to other habitat.

Rehabilitation and final landform are discussed further in Chapter 13.

Mining on strategic agricultural land

Part 4AA of the Mining SEPP applies to 'mining or petroleum development' on strategic agricultural land.

Clause 17A provides a definition of mining and petroleum development for the purposes of Part 4AA. It states:

- (1) In this Part, mining or petroleum development means:
 - (a) development specified in clause 5 (Mining) of Schedule 1 to State Environmental Planning Policy (State and Regional Development) 2011, but only if:
 - (i) a mining lease under the Mining Act 1992 is required to be issued to enable the development to be carried out because:
 - (A) the development is proposed to be carried out outside the mining area of an existing mining lease, or
 - (B) there is no current mining lease in relation to the proposed development, or

The proposal is development specified in clause 5 of the SRD SEPP (see below) and an extension to mining leases are required because the proposal is to be carried out outside of the vertical extent of existing mining leases. As previously stated, the majority of proposal area is within CCL 753, with the southern part within CL 219. Within the proposed extension area, CCL 753 and the section of CL 219 are subsurface mining leases granted in 1981. These mining leases do not include the surface to 20m depth. Mining Lease Applications 352 and 353 cover the surface to 20m depth required for the proposal, however these are yet to be approved and cannot be without an appropriate development consent being in place in respect of them.

Therefore, Part 4AA of the Mining SEPP applies to the proposal.

Site verification certificates

Division 3 of Part 4AA relates to site verification certificates. The note to this division states:

Note. Clause 50A of the *Environmental Planning and Assessment Regulation 2000* requires that a development application for consent to mining or petroleum development on certain identified land (including land shown on the Strategic Agricultural Land Map) must be accompanied by:

- (a) a gateway certificate, or
- (b) a site verification certificate that certifies that the land on which the proposed development is to be carried out is not biophysical strategic agricultural land.

Clause 50A of the EP&A Regulation states:

- (1) This clause applies to a development application that relates to mining or petroleum development (within the meaning of Part 4AA of State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007) on the following land:
 - (a) land shown on the Strategic Agricultural Land Map,
 - (b) any other land that is the subject of a site verification certificate.

- (2) A development application to which this clause applies must be accompanied by:
 - (a) in relation to proposed development on land shown on the Strategic Agricultural Land Map as critical industry cluster land—a current gateway certificate in respect of the proposed development, or
 - (b) in relation to proposed development on any other land:
 - (i) a current gateway certificate in respect of the proposed development, or
 - (ii) a site verification certificate that certifies that the land on which the proposed development is to be carried out is not biophysical strategic agricultural land.

The Strategic Agricultural Land Map that covers Warkworth Mine (Sheet STA_004) indicates that a small portion of the eastern portion of CCL753 is biophysical strategic agricultural land (BSAL). The proposed extension area is not mapped as BSAL.

A site verification certificate report was prepared and lodged by the applicant with a certificate issued in June 2014 confirming the absence of BSAL. This application has been made in accordance with clauses 17C and 17D which stipulates the requirements for the applications for site verification certificates and the *Interim Protocol for site verification and mapping of biophysical strategic agricultural land* (the Interim Protocol) (OEH 2013). Details on the Interim Protocol are provided in Section 7.4.1.

Soils and land capability are discussed further in Chapter 14.

b. State Environmental Planning Policy (State and Regional Development) 2011

The SRD SEPP, amongst other matters, defines certain development that is SSD. Clause 8 of the SRD SEPP states:

- (1) Development is declared to be State significant development for the purposes of the Act if:
 - (a) the development on the land concerned is, by the operation of an environmental planning instrument, not permissible without development consent under Part 4 of the Act, and
 - (b) the development is specified in Schedule 1 or 2.

Schedule 1 of the SRD SEPP defines a range of general SSDs, including mining. Clause 5 (Mining) of Schedule 1 states:

- (1) Development for the purpose of mining that:
 - (a) is coal or mineral sands mining, or
 - (b) is in an environmentally sensitive area of State significance, or
 - (c) has a capital investment value of more than \$30million.

The proposal meets both the requirements of clause 8 of the SRD SEPP as it is not permissible without development consent under the Mining SEPP and is development specified in Schedule 1. Therefore, the proposal is declared SSD for the purposes of the EP&A Act.

c. [State Environmental Planning Policy No 33 – Hazardous and Offensive Development](#)

State Environmental Planning Policy No 33 – Hazardous and Offensive Development (SEPP 33) requires the consent authority to consider whether a proposal is a potentially hazardous or offensive industry. While coal handling is identified as a potentially hazardous industry, the existing operations at Warkworth Mine are not classed as hazardous or offensive development under SEPP 33. The proposal does not propose any changes to current operations that would be potentially hazardous or offensive. Therefore, SEPP 33 does not apply to the proposal.

d. [State Environmental Planning Policy No 44 – Koala Habitat Protection](#)

State Environmental Planning Policy No 44 – Koala Habitat Protection (SEPP 44) applies to the extent that a consent authority is restricted from granting approval for a development proposal on land identified as core koala habitat without the preparation of a plan of management. The ecological study found that no areas of core koala habitat exist and, therefore, SEPP 44 does not place any constraints on the proposal (see Chapter 12).

e. [State Environmental Planning Policy No 55 – Remediation of Land](#)

State Environmental Planning Policy No 55 – Remediation of Land (SEPP 55) requires that a consent authority not grant consent to the carrying out of development on land unless it has considered any potential contamination issues. The Site was previously assessed as part of the Warkworth Extension 2010 (EMM 2010a) which did not identify any potential contamination issues. Therefore, SEPP 55 does not place any constraints on the proposal.

f. [Singleton Local Environmental Plan 2013](#)

The Site is zoned RU1 Primary Production under the Singleton LEP 2013. Development permitted with consent in this zone includes open cut mining, as well as agriculture and industry. The objectives of the RU1 zone are:

- to encourage sustainable primary industry production by maintaining and enhancing the natural resource base;
- to encourage diversity in primary industry enterprises and systems appropriate for the area;
- to minimise the fragmentation and alienation of resource lands; and
- to minimise conflict between land uses within this zone and land uses within adjoining zones.

The proposal is considered to be compatible with the above objectives given that it involves the continuation and extension of an existing mining operation.

iii Planning agreements

One of the matters of consideration under section 79C is the relevant provisions of any planning agreements. Section 93F of the EP&A Act relates to planning agreements, which:

... is a voluntary agreement or other arrangement under this Division between a planning authority (or 2 or more planning authorities) and a person (the developer):

- (a) who has sought a change to an environmental planning instrument, or
- (b) who has made, or proposes to make, a development application, or
- (c) who has entered into an agreement with, or is otherwise associated with, a person to whom paragraph (a) or (b) applies,

under which the developer is required to dedicate land free of cost, pay a monetary contribution, or provide any other material public benefit, or any combination of them, to be used for or applied towards a public purpose.

Section 93F enables the applicant to enter into a Voluntary Planning Agreement (VPA) with planning authorities in lieu of a section 94 contribution.

iv The Regulations

As previously stated, a DA for SSD must be accompanied by an EIS, prepared in accordance with the EP&A Regulation. Schedule 2 of the EP&A Regulation stipulates:

- requirements of the Director-General and approval bodies in relation to EISs;
- general provisions relating to EISs; and
- special provisions relating to State significant infrastructure.

The general provisions specify the form (clause 6) and the content (clause 7) of an EIS. Clause 6 states:

An environmental impact statement must contain the following information:

- (a) the name, address and professional qualifications of the person by whom the statement is prepared,
- (b) the name and address of the responsible person,
- (c) the address of the land:
 - (i) in respect of which the development application is to be made, or
 - (ii) on which the activity or infrastructure to which the statement relates is to be carried out,
- (d) a description of the development, activity or infrastructure to which the statement relates,
- (e) an assessment by the person by whom the statement is prepared of the environmental impact of the development, activity or infrastructure to which the statement relates, dealing with the matters referred to in this Schedule,
- (f) a declaration by the person by whom the statement is prepared to the effect that:

- (i) the statement has been prepared in accordance with this Schedule, and
- (ii) the statement contains all available information that is relevant to the environmental assessment of the development, activity or infrastructure to which the statement relates, and
- (iii) that the information contained in the statement is neither false nor misleading.

Clause 7 states that an EIS must also include each of the following:

- (a) a summary of the environmental impact statement,
- (b) a statement of the objectives of the development, activity or infrastructure,
- (c) an analysis of any feasible alternatives to the carrying out of the development, activity or infrastructure, having regard to its objectives, including the consequences of not carrying out the development, activity or infrastructure,
- (d) an analysis of the development, activity or infrastructure, including:
 - (i) a full description of the development, activity or infrastructure, and
 - (ii) a general description of the environment likely to be affected by the development, activity or infrastructure, together with a detailed description of those aspects of the environment that are likely to be significantly affected, and
 - (iii) the likely impact on the environment of the development, activity or infrastructure, and
 - (iv) a full description of the measures proposed to mitigate any adverse effects of the development, activity or infrastructure on the environment, and
 - (v) a list of any approvals that must be obtained under any other Act or law before the development, activity or infrastructure may lawfully be carried out,
- (e) a compilation (in a single section of the environmental impact statement) of the measures referred to in item (d) (iv),
- (f) the reasons justifying the carrying out of the development, activity or infrastructure in the manner proposed, having regard to biophysical, economic and social considerations, including the principles of ecologically sustainable development set out in subclause (4).

Note. A cost benefit analysis may be submitted or referred to in the reasons justifying the carrying out of the development, activity or infrastructure.

The above requirements and where they are addressed in the EIS are set out in Table 7.1.

Table 7.1 Schedule 2 requirements for an EIS

Requirement	Where contained in the EIS
Name, address and professional qualifications of the person(s) who prepared the EIS	Front cover
Name and address of the responsible person (the applicant)	Section 5.1
Address of land	Section 2.1
Description of development	Chapter 2
Assessment of the environmental impact	Chapters 9 – 21
Declaration that the EIS has been prepared in accordance with this Schedule, contains all available information that is relevant to the environmental assessment of the development and that the information contained in the statement is neither false nor misleading	Front cover
Summary of the EIS	Executive summary
A statement of the objectives of the development	Chapter 1
An analysis of feasible alternatives, having regard to its objectives, including the consequences of not carrying out the development	Chapter 23
A full description of the development	Chapter 2
A general description of the environment likely to be affected by the development	Chapters 9 – 21
The likely impact on the environment of the development	Chapters 9 – 21
A full description of the measures proposed to mitigate any adverse effects of the development	Chapters 9 – 21
A list of any approvals that must be obtained under any other Act or law before the development, activity or infrastructure may lawfully be carried out	Section 7.6
A compilation of the measures referred to in item (d) (iv)	Table 22.1
The reasons justifying the carrying out of the development, activity or infrastructure in the manner proposed, having regard to biophysical, economic and social considerations, including the principles of ecologically sustainable development	Chapter 24

v Likely impacts of the development

This EIS comprehensively describes the likely impacts of proposal, including likely environmental impacts on both the natural and built environments, and social and economic impacts in the locality. It also describes commitments proposed by WML to mitigate, manage, offset and/or compensate for these impacts. These descriptions are based on technical studies, prepared by specialists, which are appended to this EIS. The technical studies were prepared using the most recent and accurate scientific data relevant to the proposal, in consideration of current policies and legislation. In addition, they adopted conservative assumptions to enable the upper limit of likely impacts to be determined.

Likely impacts on both the natural and built environments are described in Chapters 10 to 20, based on technical studies appended in Appendices G to P. Likely economic and social impacts are described in Chapters 9 and 21, respectively, based on technical studies appended in Appendices F and Q.

vi Suitability of the site for the development

As previously stated, the area immediately surrounding the mine is dominated by coal mines and other industry, including Hunter Valley Operations, Wambo Mine and Redbank Power Station to the north and north-west, MTO and Bulga Coal Complex to the south, and MTIE to the east. The area also includes associated infrastructure such as rail lines and high voltage electricity powerlines.

The proposal would facilitate the recovery of significant coal reserves within footprint of the existing mining leases granted under the Mining Act and on privately-owned land zoned for open cut mining. It is considered to be broadly compatible with surrounding land uses, particularly the mining and industrial land uses. A range of commitments have been made by WML to mitigate potential impacts of the proposal on surrounding land uses. Subject to the application of the commitments, the proposal is unlikely to have a significant impact on these land uses.

The Site is, therefore, considered suitable for the continuation of the existing mining operations under the proposal.

vii Submissions

This EIS will be placed on public exhibition for a minimum of 30 days by DP&E and submissions will be sought from Singleton Council, government agencies and the community. Any submissions received by DP&E will be reviewed and forwarded to WML to consider and respond to (via a Response to Submissions report).

Following receipt of the Response to Submissions, DP&E will prepare its assessment report considering this EIS, all submissions received during the exhibition process and the Response to Submissions.

viii Public interest

To assist the consent authority in determining whether the proposal is in the public interest, this EIS provides a justification for the proposal, taking into consideration its potential environmental impacts, and the suitability of the Site. It also considers the proposal against the principles of ESD, consistent with the L&E Court judgement (par. 59). The consent authority will also be required to consider all submissions received during the public exhibition of the EIS.

7.2.4 Non-discretionary development standards

i General

Clause 12AB of the Mining SEPP identifies non-discretionary development standards for mining relating to cumulative noise, cumulative air quality, airblast overpressure, ground vibration and aquifer interference.

Clause 12AB(1) states that if a proposed development for the purposes of mining satisfies a development standard set out in this clause, the consent authority cannot require more onerous standards for those matters but does not prevent the consent authority granting consent even though any such standard is not complied with.

Clause 12AB(2) states that the non-discretionary development standards are standards for the purposes of section 79C (2) and (3) of the EP&A Act. These sections of the Act have been provided earlier.

The proposal satisfies the majority of the non-discretionary development standards for mining as detailed below and described further in the relevant chapters and technical studies.

ii Cumulative noise level

Clause 12AB(3) provides non-discretionary development standards relating to cumulative noise. It states:

The development does not result in a cumulative amenity noise level greater than the acceptable noise levels, as determined in accordance with Table 2.1 of the Industrial Noise Policy, for residences that are private dwellings.

A noise and vibration study was prepared (Appendix F) which assessed the potential for noise and vibration impacts on residences surrounding the mine over the lifespan of the proposal. Operational noise at residences was predicted under varying meteorological conditions prevalent at the Site including calm and prevailing winds and temperature gradient conditions. Predictions show that the proposal would not result in a cumulative amenity noise level greater than the acceptable noise levels at all privately-owned assessment locations not already afforded acquisition rights by neighbouring mines due to their predicted incremental impacts.

A detailed assessment of noise impacts of the proposal is provided in Chapter 10.

iii Cumulative air quality level

Clause 12AB(4) provides non-discretionary development standards relating to cumulative air quality. It states:

The development does not result in a cumulative annual average level greater than $30\mu\text{g}/\text{m}^3$ of PM_{10} for private dwellings.

An air quality and greenhouse gas study was prepared (Appendix G) which assessed the potential air quality impacts on residences surrounding the mine over the lifespan of the proposal. The study found that the proposal would not result in cumulative annual average levels greater than $30\mu\text{g}/\text{m}^3$ of PM_{10} at privately-owned dwellings not already afforded acquisition rights by neighbouring mines.

A detailed assessment of the air quality impacts of the proposal is provided in Chapter 11.

The noise and vibration study provided in Appendix F, assessed potential impacts from ground vibration levels under the proposed.

iv Airblast overpressure

Clause 12AB(5) provides non-discretionary development standards relating to air blast overpressure. It states:

Airblast overpressure caused by the development does not exceed:

- (a) 120dB (Lin Peak) at any time, and
- (b) 115dB (Lin Peak) for more than 5 per cent of the total number of blasts over any period of 12 months,

measured at any private dwelling or sensitive receiver.

The noise and vibration study provided in Appendix F, assessed airblast over pressure levels under the proposal. Predictions show that the proposal would not result in airblast overpressure levels greater than the above limits at all privately-owned assessment locations.

A detailed assessment of impacts of the proposal relating to air blast overpressure is provided in Chapter 10.

v Ground vibration

Clause 12AB(6) provides non-discretionary development standards relating to ground vibration. It states:

Ground vibration caused by the development does not exceed:

- (a) 10mm/sec (peak particle velocity) at any time, and
- (b) 5mm/sec (peak particle velocity) for more than 5% of the total number of blasts over any period of 12 months,

measured at any private dwelling or sensitive receiver.

The noise and vibration study provided in Appendix F, assessed potential impacts from ground vibration levels under the proposed. Predictions show that the proposal would not result in ground vibration levels greater than the above criteria at all privately-owned assessment locations.

A detailed assessment of vibration impacts of the proposal is provided in Chapter 10.

vi Aquifer interference

Clause 12AB(7) provides non-discretionary development standards relating to aquifer interference. It states:

Any interference with an aquifer caused by the development does not exceed the respective water table, water pressure and water quality requirements specified for item 1 in columns 2, 3 and 4 of Table 1 of the Aquifer Interference Policy for each relevant water source listed in column 1 of that Table.

Note. The taking of water from all water sources must be authorised by way of licences or exemptions under the relevant water legislation.

The standard refers to the AIP's minimal impact considerations for aquifer interference activities on the water table, water pressure and water quality of alluvial water sources. The potential groundwater impacts of the proposal have been assessed against these minimal impact considerations in the groundwater study (Appendix K). The study found that the proposal would take water indirectly from the Wollombi Brook alluvium and the Hunter River alluvium and directly from the Permian coal measures. This take would occur during the proposed mining period and post closure. The applicant would be required to hold relevant licenses from each water source to cover these predicted water takes.

The salinity levels of nearby water courses are not predicted to increase beyond the 1 per cent criteria stipulated in the AIP.

Therefore, the non-discretionary development standards relating to aquifer interference would be met.

A detailed assessment of the proposal's impact on groundwater is provided in Chapter 16.

7.2.5 Other relevant sections of the EP&A Act to the assessment and determination of the proposal

i Threatened species, populations and ecological communities

Section 5A of the EP&A Act relates threatened species, populations and ecological communities. It requires a number of factors to be taken into consideration in deciding whether a proposed action is likely to have a significant effect on threatened species, populations or ecological communities, or their habitats. These factors are listed in section 5A(2), as follows:

- (a) in the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,
- (b) in the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction,
- (c) in the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:
 - (i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or
 - (ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,
- (d) in relation to the habitat of a threatened species, population or ecological community:
 - (i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and
 - (ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and
 - (iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality,
- (e) whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly),
- (f) whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan,
- (g) whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.

ii Authorisations not required or which cannot be refused for State significant development

Under section 89J of the EP&A Act the following authorisations are not required for SSD that is authorised by a development consent:

- (a) the concurrence under Part 3 of the *Coastal Protection Act 1979* of the Minister administering that Part of that Act;

- (b) a permit under section 201, 205 or 219 of the *Fisheries Management Act 1994*;
- (c) an approval under Part 4, or an excavation permit under section 139, of the *Heritage Act 1977*;
- (d) an Aboriginal heritage impact permit under section 90 of the *National Parks and Wildlife Act 1974*;
- (e) an authorisation referred to in section 12 of the *Native Vegetation Act 2003* (or under any Act repealed by that Act) to clear native vegetation or State protected land;
- (f) a bush fire safety authority under section 100B of the *Rural Fires Act 1997*; and
- (g) a water use approval under section 89, a water management work approval under section 90 or an activity approval (other than an aquifer interference approval) under section 91 of the *Water Management Act 2000*.

Should development consent be granted for the proposal, there are two authorisations which would have otherwise been necessary, but are not required due to the operation of section 89J, including:

- an authorisation referred to in section 12 of the *Native Vegetation Act 2003* (or under any Act repealed by that Act) to clear native vegetation; and
- an Aboriginal heritage impact permit under section 90 of the NP&W Act for impacts on number of Aboriginal sites.

While these authorisations are not required, impacts have been assessed in respect of these for the proposal and are provided in Chapter 12 and 18, respectively.

While applications for zero share water access licences are required under section 61(1)(b) of the WM Act, and additional water licence entitlements are required for predicted take from regulated water sources, no approvals are required under sections 89, 90 or 91 of the WM Act.

Further, under section 89K of the EP&A Act, the following authorisations cannot be refused if it is necessary for carrying out SSD that is authorised by a development consent, and are to be substantially consistent with that development consent:

- (a) an aquaculture permit under section 144 of the *Fisheries Management Act 1994*,
- (b) an approval under section 15 of the *Mine Subsidence Compensation Act 1961*,
- (c) a mining lease under the *Mining Act 1992*,
- (d) a production lease under the *Petroleum (Onshore) Act 1991*,
- (e) an environment protection licence under Chapter 3 of the *Protection of the Environment Operations Act 1997* (for any of the purposes referred to in section 43 of that Act),
- (f) a consent under section 138 of the *Roads Act 1993*,
- (g) a licence under the *Pipelines Act 1967*.

Should development consent be granted for the proposal, the following authorisations must be granted consistently with an SSD approval due to the operation of section 89K, including:

- an extension to existing mining leases under the Mining Act to cover the surface to 20m depth required for the proposal (Mining Lease Applications 352 and 353 have already been lodged for these extensions); and
- consents under section 138 of the Roads Act 1993 (the Roads Act) for the construction of an underpass beneath Putty Road and for connection of private access roads to Golden Highway should this option be preferred.

iii Remaining provisions

Other sections of the EP&A Act which may be relevant to the proposal include:

- Section 23D which states the functions of the PAC including a request by the Minister or Director-General to 'review any (or any aspect or part of any) development, activity, infrastructure or project to which this Act applies' and 'hold a public hearing into any matter the subject of any such advice or review';
- Section 80 which states that the consent authority can determine a development application by either granting consent (unconditional or subject to conditions) or refusing consent;
- Section 80A which relates to the impositions of conditions of a development consent. This section provides that conditions may be imposed on a development consent if:
 - it relates to any matter referred to in section 79C(1) of relevance to the development the subject of the consent, or
 - it requires the modification or surrender of a consent granted under this Act or a right conferred by Division 10 in relation to the land to which the development application relates, or
 - it requires the modification or cessation of development (including the removal of buildings and works used in connection with that development) carried out on land (whether or not being land to which the development application relates), or
 - it limits the period during which development may be carried out in accordance with the consent so granted, or
 - it requires the removal of buildings and works (or any part of them) at the expiration of the period referred to in paragraph (d), or
 - it requires the carrying out of works (whether or not being works on land to which the application relates) relating to any matter referred to in section 79C(1) applicable to the development the subject of the consent, or
 - it modifies details of the development the subject of the development application, or
 - it is authorised to be imposed under section 80(3) or (5), subsections (5)–(9) of this section or section 94, 94A, 94EF or 94F.

- Section 94 which enables the consent authority to impose a condition requiring the applicant to provide a development contribution if the consent authority “is satisfied that development for which development consent is sought will or is likely to require the provision of or increase the demand for public amenities and public services within the area”. As noted previously, section 93F enables the applicant to enter into a VPA with planning authorities in lieu of a section 94 contribution;
- Section 97 which states that an applicant who is dissatisfied with a determination can lodge an appeal in the L&E Court within six months after determination. If the appeal is against a deemed refusal under section 82(1), the appeal must commence within six months after the expiration of the relevant period; and
- Section 98 which allows an objector to appeal against a consent authority’s decision to grant consent within 28 days of the notice of determination. Section 23F states that a decision made by the PAC cannot be challenged if it was made after a public hearing.

7.3 Other State legislation

7.3.1 Mining Act 1992

The Mining Act regulates the granting of mining leases and mining activities generally and, amongst other legislative instruments, places controls on methods of exploration and mining, the disposal of mining waste, and rehabilitation and environmental management activities.

The proposal applies to land within the footprint of existing leases under the Mining Act; namely, CCL 753, ML 1412 and ML 1590 held by WML, and CL 219 held by Miller Pohang Pty Limited. The majority of the proposed extension area is within CCL 753, with the southern part within CL 219. Within this area, CCL 753 and the section of CL 219 are subsurface mining leases granted in 1981. These mining leases do not include the surface to 20m depth. Mining Lease Applications 352 and 353 cover the surface to 20m depth required for the proposal; however, these are yet to be approved.

As previously stated, under section 89K of the EP&A Act, an application for a mining lease under the Mining Act cannot be refused if it is necessary for carrying out SSD that is authorised by a development consent.

The existing MOPs for these mining leases would be reviewed and updated as required in accordance with the proposal.

7.3.2 Protection of the Environment Operations Act 1997

The POEO Act is the principal NSW environmental protection legislation and is administered by the EPA. Schedule 1 of the POEO Act lists the ‘scheduled activities’ which are to be regulated by an EPL which includes criteria and monitoring requirements for licensed activities. Warkworth Mine currently holds EPL 1376 under the POEO Act. No variation to this license would be required under the proposal.

7.3.3 Protection of the Environment Operations (Hunter River Salinity Trading Scheme) Regulation 2002

The HRSTS was introduced by the NSW Government to reduce salinity levels in the Hunter River, and operates under the *Protection of the Environment Operations (Hunter River Salinity Trading Scheme) Regulation 2002*. The integrated MTW is currently a Licence Holder and Scheme Participant of the HRSTS. Coal & Allied currently holds 146 credits (68 credits for Warkworth Mine and 78 credits for MTO) which entitles MTW to discharge to the Hunter River 14.6 per cent of the total allowable discharge of salt for a given period. The proposal would not require additional HRSTS credits to be purchased.

7.3.4 Roads Act 1993

The Roads Act regulates activities that may impact on public roads in NSW. Approval is required under section 138 of the Roads Act to carry out works in, on or over a public road. The applicant would require approval under section 138 for the construction of an underpass beneath Putty Road and for connection of private access roads to Golden Highway should this option be preferred. Both Putty Road and Golden Highway are classified roads administered by the Roads and Maritime Services (RMS). As identified above in Section 7.2.5.ii, consents under section 138 of the Roads Act cannot be refused and are to be substantially consistent with a development consent for SSD.

The proposal includes closure of Wallaby Scrub Road between Putty Road and Golden Highway (see Section 2.4.13). Under section 34(1) of the Roads Act, applications for the closure of a public road (other than a freeway) may be made:

- (a) in the case of a Crown road, by any person, and
- (b) in the case of any other public road, by the roads authority for the road or by any other public authority.

Wallaby Scrub Road is a public road for which the roads authority is Singleton Council. Should the proposal be approved, Coal & Allied would request that Singleton Council apply to the Minister for Roads and Ports to close Wallaby Scrub Road.

7.3.5 Dams Safety Act 1978

The NSW *Dams Safety Act 1978* (DS Act) applies to prescribed dams in NSW and establishes the Dam Safety Committee (DSC) responsible for ensuring the safety of such dams. The proposed extension area is outside of the notification areas for prescribed dams at MTW; however, proposed minor upgrades to water management infrastructure are within these notification areas.

7.3.6 Water Act 1912 and Water Management Act 2000

The Water Act regulates the issue and trade of water licences in NSW water sources where water sharing plans have not yet commenced. This includes a water licence or authority to extract groundwater under Part 5 of the Water Act.

The WM Act regulates the use and interference with surface and groundwater in NSW and applies to those water sources which are managed by an operational water sharing plan. The proposal is within the Lower Wollombi Brook water source to which the Water Sharing Plan for the Hunter Unregulated and Alluvial Water Sources 2009 applies.

Water use and water management work approvals under sections 89 and 90, respectively, of the WM Act apply to the Water Sharing Plan for the Hunter Unregulated and Alluvial Water Sources 2009; however, these approvals are not required in respect of SSD. Activity approvals, including aquifer interference approvals, under section 91 of the WM Act do not currently apply to the Water Sharing Plan for the Hunter Unregulated and Alluvial Water Sources 2009.

Water licensing is addressed in Chapters 16 and 17, respectively.

7.3.7 National Parks and Wildlife Act 1974

The NSW *National Parks and Wildlife Act 1974* (NP&W Act), administered by OEH, aims to conserve nature and objects, places or features of cultural value. An Aboriginal heritage impact permit is required under section 90 of the NP&W Act to knowingly destroy, deface or damage or knowingly cause or permit the destruction or defacement of or damage to, a relic or Aboriginal place.

The proposal would impact a number of Aboriginal sites (see Chapter 18). However, as identified above in Section 7.2.5.ii, an Aboriginal heritage impact permit under section 90 of the NP&W Act is not required for SSD.

7.3.8 Threatened Species Conservation Act 1995

The NSW *Threatened Species Conservation Act 1995* (TSC Act) aims to conserve biological diversity in NSW through the protection of threatened and endangered flora and fauna species and EECs. The potential impacts of the proposal on threatened species and EECs listed under the TSC Act are discussed in Chapter 12.

Part 7AA of the TSC Act establishes the biodiversity certification process for land within NSW. The BCAM (DECCW 2011a) was established under section 126S of the TSC Act. An application for biodiversity certification under the TSC Act may be made to the Minister by any planning authority. Further information on the BCAM process in relation to the proposal is provided in Chapter 12.

7.3.9 Native Vegetation Act 2003

The NSW *Native Vegetation Act 2003* (NV Act) frames the way native vegetation is managed in NSW by preventing broadscale clearing unless it improves or maintains environmental outcomes. Section 12 of the NV Act states:

Native vegetation must not be cleared except in accordance with:

- (a) a development consent granted in accordance with this Act, or
- (b) a property vegetation plan.

The proposal would require the clearance of native vegetation (see Chapter 12). However, as identified above in Section 7.2.5.ii, an approval under section 12 of the NV Act is not required for SSD.

7.4 State plans and policies

7.4.1 Strategic Regional Land Use Policy

The NSW Government has released the SRLUP (DP&I 2012a) which aims to protect strategic agricultural land and valuable water resources in areas of regional NSW where mining and coal seam gas resources are prevalent. Seven regions in NSW to which the policy will apply have been identified; with a strategic regional land use plan will be prepared for each of these. The Upper Hunter Strategic Regional Land Use Plan was released in September 2012 and applies to the Site.

The Upper Hunter Strategic Regional Land Use Plan references the gateway process for SSD applications for mining on strategic agricultural land that require a new or extended lease. It states that gateway process is given statutory force through the Mining SEPP.

In April 2013, the NSW Government released the Interim Protocol (OEH 2013) which introduced a site verification process to enable mining and coal seam gas operators, and in some circumstances landowners, to verify if land is classified as BSAL. The Interim Protocol states that it was recognised that the strategic agricultural land map show BSAL at a regional scale, and because of this, it is important that appropriate processes are in place to provide for verification that particular sites are in fact BSAL.

Verification can apply to both mapped and unmapped BSAL areas. For applicants for State significant mining and coal seam gas proposals that are not located on mapped BSAL, the applicant may:

- apply for a site verification certificate to determine if any part of the project area meets the BSAL site criteria and would therefore be subject to the Gateway process; or
- elect to proceed straight to the Gateway process on the basis that their project area or part of the project area does contain BSAL.

The Interim Protocol was produced to outline the process for applying for a site verification certificate.

The strategic agricultural land map (Map 6) within the Upper Hunter Strategic Regional Land Use Plan identifies a small portion of the eastern portion of CCL 753 as BSAL. As stated previously, a site verification certificate was issued confirming that the proposed extension area does not constitute BSAL. This application has been made in accordance with clauses 17C and 17D of the Mining SEPP and the process outlined in the Interim Protocol (OEH 2013).

7.4.2 Aquifer Interference Policy

The NOW released its AIP in 2012 which clarifies the requirements for obtaining water licences for aquifer interference activities under NSW water legislation including the Water Act and WM Act. The AIP considers and defines minimal harm criteria for productive and less productive aquifers. The purpose of the AIP is assist proponents/applicants of aquifer interference activities in preparing the necessary information and studies to be used by the Minister in the assessment of project proposals that have some level of aquifer interference. Furthermore, the AIP forms the basis of the assessment and subsequent advice provided by the Minister (or NOW) at the various stages of an assessment under the EP&A Act. The AIP is associated with the SRLUP, discussed above, and can be used to inform the gateway process. Consideration of the proposal against the requirements of the AIP is provided in Chapter 16.

7.4.3 Hunter-Central Rivers Catchment Action Plan

The Hunter-Central Rivers Catchment Management Authority released its updated Catchment Action Plan in 2013. The Plan aims to deliver healthy and productive catchments and identifies actions to be implemented over a 10 year period. The Hunter-Central Rivers region covers 3.7 million ha and includes the Site. Accompanying the Plan are a number of 'regional assessment maps' which map key focus areas relating to land and soils, freshwater, biodiversity, estuaries and marine areas.

The Site is mapped as a 'Soil Degradation Risk Area', as is a large portion of the region. Soil degradation is taken to mean a reduction in the physical and chemical qualities of the soil which may lead to those soils becoming less useful to agriculture or biodiversity or which may lead to the loss of these soils through erosion. In addition, the degradation and erosive processes may have downstream impacts on water quality and the viability of ecosystems in receiving waters. The proposal's ecological, agricultural, groundwater, and surface water impacts have been assessed in Chapters 12, 14, 16 and 17, respectively.

Part of the Site is also mapped as a 'Vegetation Connectivity Focus Area' which are areas within the region where actions can be undertaken to improve vegetation connectivity. The proposal's impacts on habitat connectivity are assessed in Chapter 12.

7.5 Commonwealth legislation

7.5.1 Environment Protection and Biodiversity Conservation Act 1999

The EPBC Act aims to protect matters deemed to be of national environmental significance (MNES) including:

- world heritage properties;
- places listed on the National Heritage Register;
- Ramsar wetlands of international significance;
- threatened flora and fauna species and ecological communities;
- migratory species;
- Commonwealth marine areas;
- nuclear actions (including uranium mining); and
- actions of development for coal seam gas or large coal mining on water resources.

If an action (or proposal) would, or is likely to, have a significant impact on any MNES, it is deemed to be a Controlled Action and requires approval from the Commonwealth Environment Minister or the Minister's delegate. To determine whether a proposed action would, or is likely to, be a Controlled Action, an action may be referred to the Department of the Environment.

As discussed in Section 2.1, there are two approvals under the EPBC Act in place for Warkworth Mine comprising EPBC 2002/629 and EPBC 2009/5081. Approval of EPBC 2009/5081 was granted for the Warkworth Extension 2010 and its predicted impacts on listed threatened species and communities and listed migratory species. Disturbance and required offsets associated with the proposal are covered by EPBC 2009/5081. The proposal is exempt from requiring approval under the EPBC Act for impacts on water resources as it relates to an action approved by the Minister under Part 9 of the EPBC Act before 22 June 2013. Regardless, the proposal is not likely to have significant impacts on water resources as detailed in Chapters 16 and 17.

7.5.2 Native Title Act 1993

The *Native Title Act 1993* establishes that some Aboriginal and Torres Strait Islander people have rights and interests to their land that comes from their traditional laws and customs. The National Native Title Tribunal is responsible for maintaining a register of native title claimants and bodies to whom native title rights have been granted. Proposed activities or development that may affect native title are called 'future acts'. Claimants whose native title claims have been registered have the right to negotiate about some future acts, including mining and the granting of a mining lease, over the land the subject of their native title claim. All native title claim applications are subjected to a registration test and claims would only be registered if claimants satisfy a number of conditions. Where a native title claim is not registered a development can proceed through the mediation and determination processes, though claimants would not be able to participate in future act negotiations.

There are no native title claims or indigenous land use agreements relating to the Site. There is currently an unregistered claimant application (NC2013/006, NSD 1680/2013) which encompasses the entire Hunter Valley including the Site. As the proposal is within an existing mining lease, the future acts process under the *Native Title Act 1993* would not be triggered if this claim is accepted.

7.6 Summary of approval requirements

In summary, the proposal requires the following approvals:

- development consent under Part 4, Division 4.1 of the EP&A Act and subsequent approval of any management plans required under any development consent;
- new mining leases under the Mining Act to cover the surface to 20m depth required for the proposal (Mining Lease Applications 352 and 353 have already been lodged for these);
- update to the MOPs for mining leases held under the Mining Act in accordance with the proposal;
- additional water access licence entitlements under the WM Act for predicted take from the Hunter Unregulated and Alluvial Water Sources;
- approvals under section 138 of the Roads Act for construction of an underpass beneath Putty Road and for connection of private access roads to Golden Highway should this option be preferred; and
- an application to be made by Singleton Council to the Minister for Roads and Ports for closure of Wallaby Scrub Road.

Chapter 8

Stakeholder engagement



Chapter 8 — Stakeholder engagement

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8 Stakeholder engagement

8.1 Introduction

This chapter provides an overview of the ongoing stakeholder engagement conducted by Coal & Allied and summarises the stakeholder engagement programme developed for both the proposal and the Mount Thorley Operations 2014 and the outcomes of its implementation.

8.2 Overview

There has been a long history of consultation between Coal & Allied and key stakeholders as part of its existing mining operations and previous Warkworth Mine proposals in 2003 and 2010. During this time, Coal & Allied has built robust relationships with the communities in which it operates and has assisted in the contribution to their long-term sustainability.

A comprehensive stakeholder engagement strategy is in place for MTW and is implemented by Rio Tinto Coal Australia's Community Relations team. The key goals of the stakeholder engagement strategy are to ensure the timely provision of relevant and clear information and to create a process that provides opportunities for stakeholders to express their views and allows timely feedback on any matters raised.

Engagement tools implemented by Coal & Allied on an ongoing basis include:

- shopfronts in Singleton and Muswellbrook and a freecall information line (1800 727 745) to provide the community with the opportunity to provide feedback, both positive and negative, relating to Coal & Allied's operations in the Hunter Valley;
- Coal & Allied's website (www.riotintocoalaustralia.com.au) which contains information on mine operations and management, environmental monitoring results, project applications, community engagement and contact details;
- quarterly newsletters distributed to all residents within the Singleton LGA which provide information on Coal & Allied's mining operations in the LGA, including upcoming projects; and
- MTW's Community Consultative Committee (MTWCCC), which meets regularly to discuss mining operations and environmental performance, and comprises representatives of the community, Singleton Council and Coal & Allied.

An extensive consultation programme specifically for the proposals has been carried out. The programme and its outcomes are discussed further in this chapter.

8.3 Consultation requirements

The consultation programme implemented for the proposal was undertaken with consideration of the then Department of Planning's (now DP&E) *Guidelines for Major Project Community Consultation* (2007).

The Secretary's requirements for the proposal also required consultation with relevant local, State or Commonwealth Government authorities, service providers, community groups and affected landowners.

8.4 Stakeholder engagement process

8.4.1 Stakeholder identification

The list of all stakeholders previously engaged through implementation of the MTW stakeholder engagement strategy was updated to include new stakeholders likely to be relevant to the proposal. Key stakeholders engaged as part of the consultation process were:

- near neighbours;
- community/interest groups;
- business groups and local businesses;
- mining industry employees/suppliers;
- Aboriginal/cultural heritage stakeholders;
- environmental groups;
- MTW employees/suppliers;
- local Government;
- State Government;
- non-government organisations (NGOs) and not-for-profit (NFP) organisations;
- media;
- health, education, community, emergency services; and
- other.

Subsequent to the identification of the stakeholders, they were assessed to further understand the extent to which the various parties were likely to be affected by and/or have an interest in the proposal. The results were used to inform the development and timing of appropriately tailored engagement strategies.

8.4.2 Stakeholder engagement

The stakeholder groups identified and the engagement activities used are presented in Table 8.1. A range of formal and informal stakeholder engagement tools were applied, including phone calls, emails, meetings and briefing sessions, community information sessions and a fact sheet. This engagement builds on stakeholder engagement that has been ongoing since August 2009 in relation to extension of mining at Warkworth Mine.

Table 8.1 Stakeholders and engagement activities

Stakeholders	Engagement activities
Near neighbours and communities	<ul style="list-style-type: none"> • One-on-one meetings • Drop-in information sessions • Project fact sheet • Phone and email correspondence • Community information session at Bulga Community Hall
Government agencies	<ul style="list-style-type: none"> • Face-to-face meetings • Briefing sessions • Letter, email and phone correspondence
State and Federal political members	<ul style="list-style-type: none"> • Face-to-face meetings
Local Government (including mayor, individual councillors and council officers)	<ul style="list-style-type: none"> • Face-to-face meetings • Briefing sessions • Email and phone correspondence • Project fact sheet
MTW employees	<ul style="list-style-type: none"> • Employee survey • Face-to-face meetings • Project fact sheet • Drop-in information sessions
Singleton LGA residents, local business and community groups and organisations	<ul style="list-style-type: none"> • Supplier survey • Face-to-face meetings • Drop-in sessions • Project fact sheet • Briefing sessions • Phone correspondence • Community information session at Coal & Allied's Singleton shopfront • Phone correspondence • Community information session
Service providers (utilities, emergency services, employment and training)	<ul style="list-style-type: none"> • Face-to-face meetings • Drop-in information sessions • Email and phone correspondence • Project fact sheet • Community information session
Local environmental groups	<ul style="list-style-type: none"> • Face-to-face meetings • Project fact sheet • Phone correspondence • Community information session
Aboriginal heritage groups	<ul style="list-style-type: none"> • Face-to-face meetings • Briefing sessions • Letter, email and phone correspondence • Community information session • Site visit

Table 8.1 Stakeholders and engagement activities

Stakeholders	Engagement activities
European heritage groups	<ul style="list-style-type: none"> • Face-to-face meetings • Briefing sessions • Letter, email and phone correspondence • Community information session • Site visit
Other NGOs and NfP organisations	<ul style="list-style-type: none"> • Face-to-face meetings • Drop-in sessions • Briefing sessions • Project fact sheet

8.5 Community consultation

8.5.1 General

As outlined in Section 8.2, an engagement programme with the local community was developed by Coal & Allied to promote open and transparent communication and consultation processes throughout the preparation of this EIS.

The engagement programme enabled any stakeholder interested in or with feedback on the proposal or the EIS process to notify Coal & Allied about their matters of interest via a freecall phone number or dedicated email inquiry line, which were advertised on all communication materials. Any matters raised were recorded in a central database and followed up by the Rio Tinto Coal Australia & Allied Communities Relations team, and where relevant, the social impact assessment specialists, to discuss or respond to the matter.

8.5.2 One-on-one consultations

One-on-one consultations were carried out primarily with near neighbours and community members to assess social impacts and opportunities and to help formulate mitigation strategies (see Chapter 21). The one-on-one consultations were carried out during preparation of the EIS.

Matters raised during these sessions can be found in Table 8.3.

8.5.3 Newsletters

An information factsheet on the proposal was developed and distributed to all households in the Singleton LGA from 22 March 2014. The factsheet provided notification and overview of the proposal and assessment process and outlined the forthcoming consultation programme. Complementary to this information fact sheet, regular media releases and articles were also used to notify local communities of the proposal, assessment details and consultation activities.

8.5.4 Local social surveys

Two drop-in sessions were held on 27 March 2014 (between 12pm and 3pm at the Bulga Community Hall and between 5pm to 8pm at the Singleton Library) and on 28 March (between 8.45am and 12pm at the Singleton Library) to enable member of the community to access information on the proposal and to complete surveys to inform the social assessment.

8.5.5 Community information sessions

Two community information sessions were held during April 2014. The sessions offered stakeholders a chance to provide feedback and input into the social impact assessment (SIA) process.

An attendance register was set up at the entrance of the venues to record attendees and feedback forms were distributed to provide a formal mechanism for receiving comments and also to determine the most appropriate method to further engage with the attendees.

a. Bulga community information session

The first community information session was held at the Bulga Community Hall on 15 April 2014. A total of 43 people attended, mainly from the Bulga village. Feedback was captured on the day with details of the attendee's matter(s) of concern.

b. Singleton shopfront community information session

The second community information session was held at the Coal & Allied Shopfront at Singleton on 16 April 2014. There were no attendees to this session.

Matters raised during both community information sessions are discussed in further detail in Section 8.9.

8.5.6 Coal & Allied community shopfront

Coal & Allied maintains a community shopfront in the main street of Singleton (127 John Street). Information provided in the community information sessions was made available at the shopfront and would remain accessible for the duration of the proposal, together with new and updated information as it becomes available, such as copies of this EIS.

The shopfront is open during normal business hours and is continuously staffed. Access to the shopfront outside normal business hours is facilitated by contacting the Coal & Allied freecall information line on 1800 727 745.

8.5.7 Mount Thorley Warkworth Community Consultative Committee

The MTW CCC meets regularly to provide a forum for open discussion between the community, Singleton Council and Coal & Allied representatives. The MTW CCC discusses matters relating to the mining operation and environmental performance, thus keeping the community informed on these matters.

Members of the MTW CCC were personally contacted by Coal & Allied on 19 March 2014 prior to Coal & Allied's media release announcing its intention to lodge a development application for the proposal. The MTW CCC members were advised of the forthcoming consultation programme including the community information sessions and were encouraged to attend the sessions for further information. The proposals were also discussed at a meeting of the CCC on 12 May 2014. Minutes of this meeting are available on Rio Tinto Coal Australia's website.

8.6 Aboriginal community groups

Aboriginal stakeholders were consulted in accordance with OEH's (2010) *Aboriginal cultural heritage consultation requirements for proponents* and (2005c) *Draft Guidelines for Aboriginal cultural heritage impact assessment and community consultation* and under the auspices of the existing CHWG as part of the Aboriginal cultural heritage study for the proposal. This is discussed further in Chapter 18 and Appendix M.

8.7 Employees

Employees of Coal & Allied, including all employees of MTW, were informed of the proposal through a range of briefings, newsletters and toolbox talks.

In addition to the above, the social impact assessment specialists (EMM) carried out a MTW Supplier and Employee Contribution and Participation Surveys (SECAPS) during preparation of the EIS. The primary objective of the surveys was to gain insights into the ways in which MTW employees' and suppliers' contribute to, and participate in, the Hunter community.

The SECAPS were undertaken as part of the SIA process for the proposals and designed to provide further detail on the social impacts and opportunities of the proposals.

In total, 629 employees and suppliers completed the survey. The key findings of the survey are discussed in Section 21.2.2 and Appendix P.

8.8 Government consultation

In accordance with the Secretary's requirements (see Chapter 5), relevant local, State and Commonwealth government agencies and representatives were consulted to identify important matters to be considered in the EIS and seek guidance on assessment approaches and the application of relevant government policies to the proposal. Consultation undertaken with each level of government is described in the below subsections.

8.8.1 Singleton Council

In addition to ongoing regular consultation that occurs between Singleton Council and Coal & Allied, representatives from Coal & Allied have met with Singleton Council on a number of occasions to specifically discuss the proposal during the preparation of the EIS. The matters discussed with Singleton Council include consideration of other mining designs, consideration of a buffer or bund on the western end of the proposal, and exploring opportunities to increase local residency of MTW's workforce in particular. Council have also raised consideration of alternates to the closure of Wallaby Scrub Road, and an appropriate approach to property acquisition in Bulga village.

Table 8.2 outlines summarises matters discussed with Singleton Council.

Table 8.2 Singleton Council consultation – matters discussed

Matters raised	Addressed in the EIS
Amenity impacts (noise and dust)	Sections 10.3 and 11.3
Vitality of Bulga community	Section 21.4
Health impacts (dust and water)	Sections 11.3.2,16.3 and 17.3
Closure of Wallaby Scrub Road (impact on emergency services) and consideration of alternatives	Section 20.3.2
Loss of WSW	Section 12.3
Loss of Aboriginal cultural heritage places, management of historic heritage	Sections 18.3 and 19.3
Potential for continued mining beyond the proposal limits to current mining lease extent	Section 23.2
Consideration of other mining designs (eg underground, buffers)	Section 23.2
Continued employment and flow-on benefits into Singleton	Section 9.4
Consideration of local employment strategy to increase local residency of workforce	Section 21.4
Appropriate acquisition programme that considers people affected	Sections 10.4 and 11.5
Consideration of water quality programme (ie roof and tank cleaning, filters, provision of town water supply)	Sections 16.4 and 17.5
Consideration of buffer/bund construction	Section 23.2
Rehabilitation, final landform (including final void) and post-mining land use	Chapter 13
Methodology and approach of economic assessment	Section 9.2

8.8.2 State government

As described in the Modification 6 EA, following the L&E Court decision WML undertook a review of its options with respect for Warkworth Mine and planning for the future with an objective to maintain production levels at or as close to existing levels. The DP&E has been consulted regularly prior to and during the preparation of the EIS as part of the longer term mine planning process, with initial briefings commencing in 2013. Initial briefings discussed proposal concepts and identification of key matters. The request for environmental assessment requirements was formally lodged with DP&E on 1 April 2014, with DP&E providing Sectary’s requirements on 22 May 2014. Other meetings with DP&E during 2014 have considered and discussed assessment requirements and approach for key matters including ecology, noise, air quality and economics amongst other study areas and also the assessment process, more broadly.

Other agencies have been consulted with as appropriate on key matters including the OEHL for biodiversity and the EPA for noise and air quality. Discussions with OEHL focused on the new government policies for biodiversity offsetting and calculation of impact credits using BCAM, as amended by the UHSA, which have been developed by OEHL to encourage a transparent methodology for calculating biodiversity loss and gain and support the strategic management of biodiversity. Consultation with the EPA has focused on the noise assessment in accordance with the INP, and in particular the determination of background noise levels, and the air quality assessment in accordance with the guidelines.

8.8.3 Commonwealth government

Further approvals under the EPBC Act are not required as the development the subject of this proposal already has EPBC Act approval (EPBC 2009/5081) and, accordingly, consultation with the Commonwealth Government was not undertaken for the proposal. Normal consultation regarding compliance with Warkworth Mine’s EPBC Act approvals (EPBC 2009/5081 and EPBC 2002/629) is ongoing.

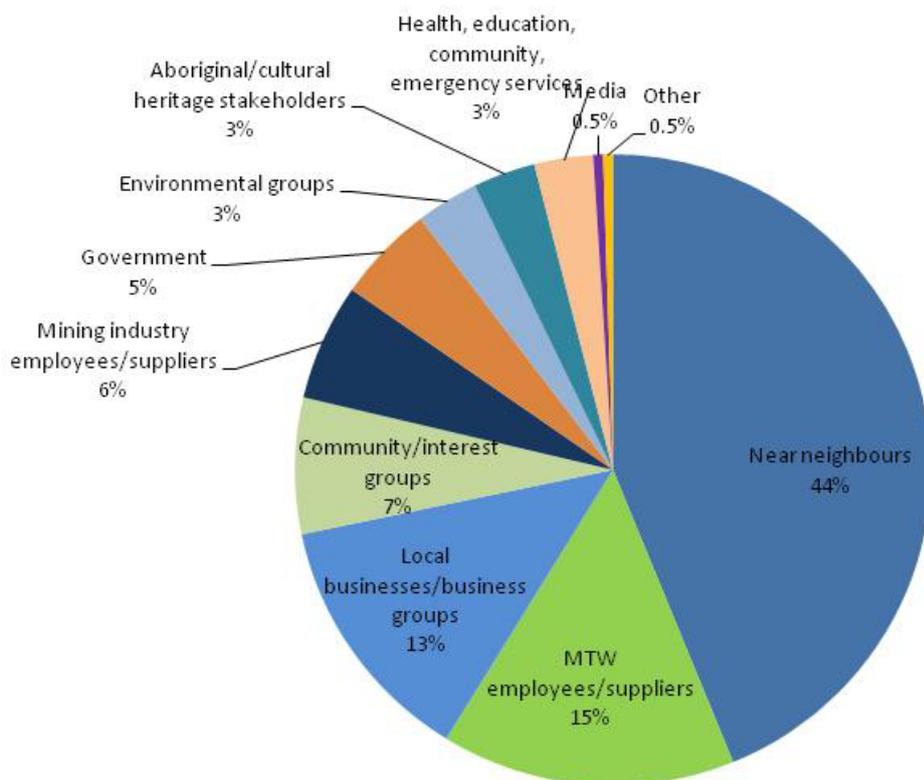
8.8.4 Other stakeholders

In addition to the above, other meetings were held with the following stakeholders:

- various Federal members of Parliament, including the member for Hunter;
- various State members of Parliament, including the member for Upper Hunter;
- neighbouring mines, including Bulga Coal Complex and Wambo Mine; and
- the RFS.

8.9 Matters raised during community consultation

Stakeholder engagement was carried out with a participation of 151 stakeholders. Figure 8.1 shows the range of stakeholder groups who participated in the consultation.



Notes: percentages are based on a total of 151 SIA participants. An individual may represent multiple stakeholder groups.

Figure 8.1 Stakeholder groups represented

A significant portion (51 per cent) of stakeholders that participated in the survey were from Bulga village. Other small villages around Warkworth Mine were also included in the consultation, namely Long Point, Gouldsville, Broke, Milbrodale and Warkworth. Approximately 28 per cent of stakeholders were from the town of Singleton and largely represented by businesses, services or local Government. A total of 21 per cent of the sample were either employees/suppliers of MTW mine or employees/suppliers of other mines in the region.

A summary of the matters raised during consultation and where each matter has been considered in the EIS is provided in Table 8.3.

Table 8.3 Summary of matters raised during consultation

Theme	Matters raised	Addressed in the EIS
Current operations	Effectiveness of noise monitoring, management and mitigation	Sections 10.2, to 10.4
	Noise exceedances	Section 10.4
	Unsuitability of industrial noise limits in a rural area	Section 10.2.1
	Noise modelling and associated acquisition /mitigation zones does not reflect real areas of noise impact	Section 10.3
	Transparency of companies activities within the mining industry	Section 21.4
Social	Opportunities for community through retention of workers (and their families)	Section 21.4
	Inability to sell properties, property values, and related impacts on investments/assets	Section 21.4
	Uncertainty surrounding the acquisition process	Section 21.4
	Destruction of Bulga and Long Point/Gouldsville communities and community history	Section 21.4
	Fracturing of community due to property acquisitions and people moving away	Section 21.4
	Declining availability and use of community facilities due to declining population	Section 21.4
	Uncertainty and fear for the future of expanding mine closer to their homes	Section 21.4
	Reducing sense of place/community cohesion with continued declining population	Section 21.4
	Impacts on rural community sustainability/intergenerational equity	Section 21.4
	Increasing cumulative impacts on residential amenity due to removal of Saddleback Ridge and from current and neighbouring operations	Sections 15.3 and 21.4
Noise and vibration	Impacts on community from road traffic noise as a result of the closure of Wallaby Scrub Road	Section 10.4.6
	Increasing noise impacts and effects from low frequency noise	Section 10.4.4
	Cumulative noise of Warkworth Mine and surrounding mines adversely affecting assessment locations	Section 10.4.5
	Increasing frequency and scale of blasting/vibrations impacts	Section 10.4.7
Air quality	Health impacts from poor air quality (dust) on respiratory illnesses	Section 11.3.2
	Decreasing air quality from increasing dust emissions, unrehabilitated and exposed lands	Sections 11.3.2

Table 8.3 Summary of matters raised during consultation

Theme	Matters raised	Addressed in the EIS
Economic	Decreasing property values or complete devaluation of properties making them worthless to sell	Section 21.4
	Increasing loss in family savings or ability to fund retirement and future aged care needs due to decreasing property values	Section 21.4
	Inability to get local real estate agents to value and market their properties	Section 21.4
	Balancing mining needs with other industries in terms of diverse land use and skills base	Section 21.4
	Ensuring sufficient productive lands remain for future use and productivity	Sections 13.3 and 13.4
	Maintaining employment and training opportunities at MTW	Section 21.4
	Continuing economic sustainability of the Singleton and Hunter region	Section 9.4
	Maintaining community sponsorship and investment at MTW	Section 21.4
Traffic and transport	Increasing travel times due to closure of Wallaby Scrub Road	Section 20.3.2
	Increasing traffic on perceived accident hotspots areas due to closure of Wallaby Scrub Road	Section 20.3.2
Population, housing, infrastructure and services	Maintaining employment to halt declining Singleton LGA population	Sections 1.4.13, 9.4 and 21.4
	Impacts of closure of Wallaby Scrub Road on accessing community services, safety and access	Section 20.3.2
	Increasing population decline and impacts on existing community services	Section 21.4
	Population change and its affect on sense of community and cohesion	Section 21.4
	Increasing numbers of unoccupied dwellings, thus affecting community amenity	Section 21.4
Groundwater	Impacts on groundwater systems	Section 16.3
	Impacts on the general hydrogeological system of the Bulga, Milbrodale and Broke areas	Section 16.3
	Subsidence caused by aquifer changes	Section 16.3
Surface water	Potential for continued deterioration of the Wollombi Brook and affect on agricultural production and recreational activities	Section 17.4
	Increasing affected watercourse through increased salinity, sediment (through erosion and subsidence) and dust deposition	Sections 11.3 and 17.4
Ecology	Loss of WSW	Section 12.3
	Effectiveness of rehabilitation practices	Section 13.4
	Impacts from further land clearing	Section 12.3
	Uncertainty regarding the feasibility of proposed restoration of degraded land in offsets	Section 13.4.2

Table 8.3 Summary of matters raised during consultation

Theme	Matters raised	Addressed in the EIS
Visual and lighting	Increasing visual and lighting impacts, especially on elevated properties from vegetation removal	Section 15.3
	Impacts on surrounding viewpoints – designated tourist roads and main roads	Section 15.3
	Potential impact on the nature of the visual character of the surrounding area	Section 15.3
Aboriginal cultural heritage	Disturbance and loss of Aboriginal cultural heritage	Section 18.3
	Impacts on cultural heritage values	Section 18.3
Historic heritage	Impacts on historic heritage; ie the Great North Road	Section 19.3
Community engagement/relationship	Increasing poor relations between community and Coal & Allied	Section 21.4
	Mistrust with NSW Government and DP&E (eg rescinding Deed of Agreement (2003))	Section 21.4
	Positive steps with consultation associated with SIA	Section 21.4

