



NSW GOVERNMENT
Department of Planning

**MAJOR PROJECT ASSESSMENT:
*Glennies Creek Underground Coal
Project (MP 06_0213)***



Director-General's
Environmental Assessment Report
Section 75I of the
Environmental Planning and Assessment Act 1979

May 2008

Cover Photo: south westerly view across the site from Forest Road

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EXECUTIVE SUMMARY

Integra Coal Operations Pty Ltd (Integra) operates the Integra Mining Complex, which is located approximately 12 kilometres northwest of Singleton in the Upper Hunter Valley (see Figure 1).

This complex is comprised of the former Glennies Creek underground and Camberwell open cut mines, which have now been integrated into one mining operation, and is located in an area that is dominated by intensive mining activity.

Under its existing approvals, Integra is allowed to extract 8.3 million tonnes from the complex each year, process it on site at the Camberwell coal handling and preparation plant, and export to export and domestic markets by rail.

Integra now proposes to extend its existing underground mining operations to extract a further 15 million tonnes of coal from the Middle Liddell seam. Essentially, this proposal represents a continuation of existing mining activities within an existing mining lease area, which would not increase the intensity of the approved mining operations at the Integra mining complex.

The proposal has a capital investment value of \$7 million, would provide continued employment for up to 170 people at the complex, and is classified as a 'major project' under Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act). Consequently, the Minister is the approval authority for the project.

The Department exhibited the Environmental Assessment of the project from 4 October 2007 until 5 November 2007, and received 9 submissions on the proposal, including 7 from government authorities and 2 from the general public. None of the public authorities objected to the project, however both of the submissions from the general public objected to the project on the basis of the wider cumulative impacts arising from mining in the region, in particular traffic, air quality, noise and greenhouse gas.

The Department has assessed the project application, EA, submissions on the project, and Integra's response to submissions in accordance with the relevant requirements of the EP&A Act, including the objects of the Act and the principles of ecologically sustainable development.

This assessment has found that the proposed extension of the existing underground mining operations would cause subsidence which, in turn, would result in impacts to surface and groundwater water resources and existing natural and man-made features. The Department is satisfied that these impacts can be adequately managed through the Subsidence Management Plan process and the imposition of appropriate conditions of approval.

It has also found that the surface impacts associated with the processing, stockpiling and processing of the coal extracted from the project area would be much the same as the surface impacts of the existing underground mining operations at the Integra mining complex. Consequently, the Department has recommended that Integra be required to comply with all the existing controls that regulate these surface impacts.

Finally, this assessment has found that the project offers a number of social and economic benefits for the region, as it would:

- extend the life of the Integra mining complex;
- use existing facilities at the mining complex more efficiently;
- provide jobs for up to 170 people over 15 years;
- attract \$7 million worth of capital investment to the region; and
- induce additional regional economic benefits through the increased spending of both Integra and its employees;
- generate significant royalty and tax income for the Government.

In summary, the Department believes that the project represents a logical extension of Integra's existing mining operations, and is satisfied that its benefits sufficiently outweigh its costs. Consequently, it believes the project is in the public interest, and should be approved subject to conditions.

1. BACKGROUND

Integra Coal Operations Pty Ltd (Integra) operates the Integra Mining Complex, which is located approximately 12 kilometres northwest of Singleton in the Upper Hunter Valley (see Figure 1).

This complex is comprised of the former Glennies Creek underground and Camberwell open cut mines, which have now been integrated into one mining operation, and is located in an area that is dominated by intensive mining activity including the Mt Owen and Ravensworth East coal mines to the north-west, Glendell and Ashton coal mines to the west and Rix's Creek coal mines to the south west (see Figure 1).

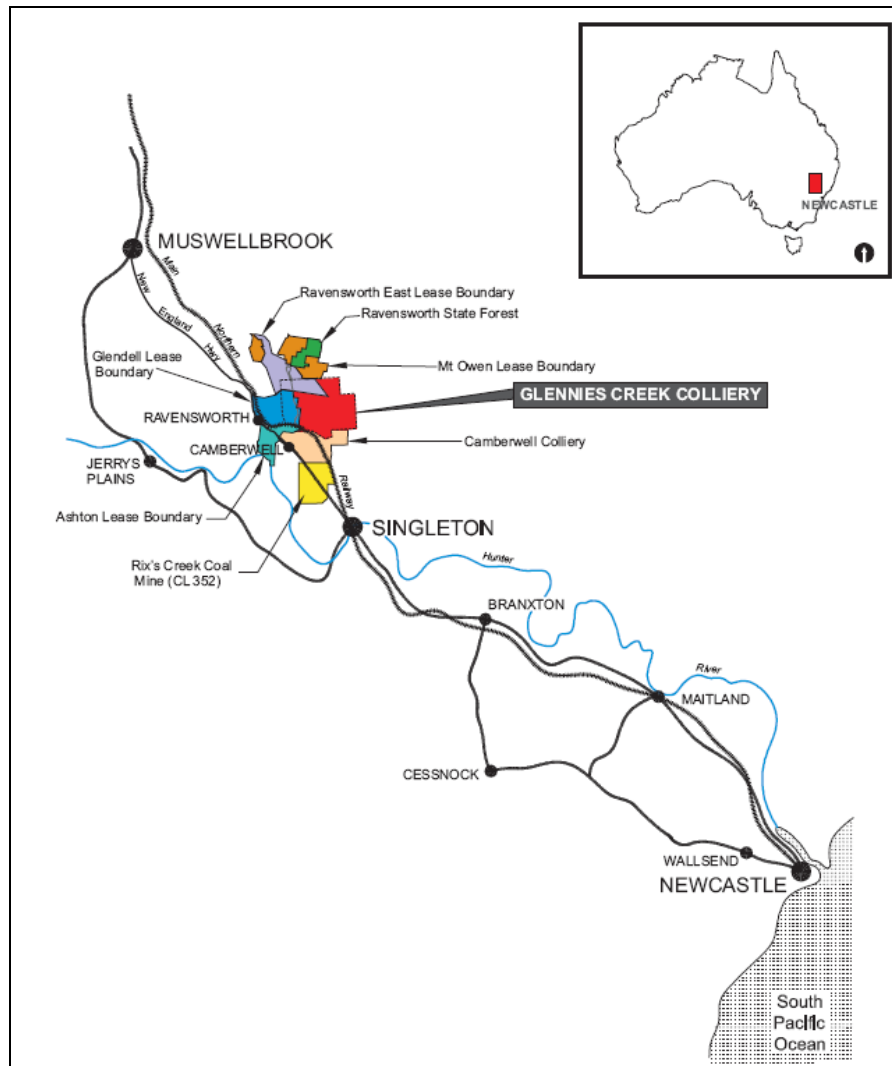


Figure 1: Regional Context

The mining operation at the complex is regulated by three consents/approvals:

- DA 86/2889 for the Camberwell open cut mining operations and use of associated surface facilities, including coal handling and preparation plant (CHPP) and coal loader;
- DA 105/90 for the Glennies Creek underground colliery and associated infrastructure; and
- MP 06_0057 for the use of the underground surface facilities (see Figure 3 overleaf).

These consents/approvals allow Integra to:

- extract up to 3.8 million tonnes per annum from its open cut mining operations;
- extract up to 4.5 million tonnes per annum from its underground mining operation;
- process this coal at the Camberwell CHPP before loading it onto trains and dispatching it to export and/or domestic markets.

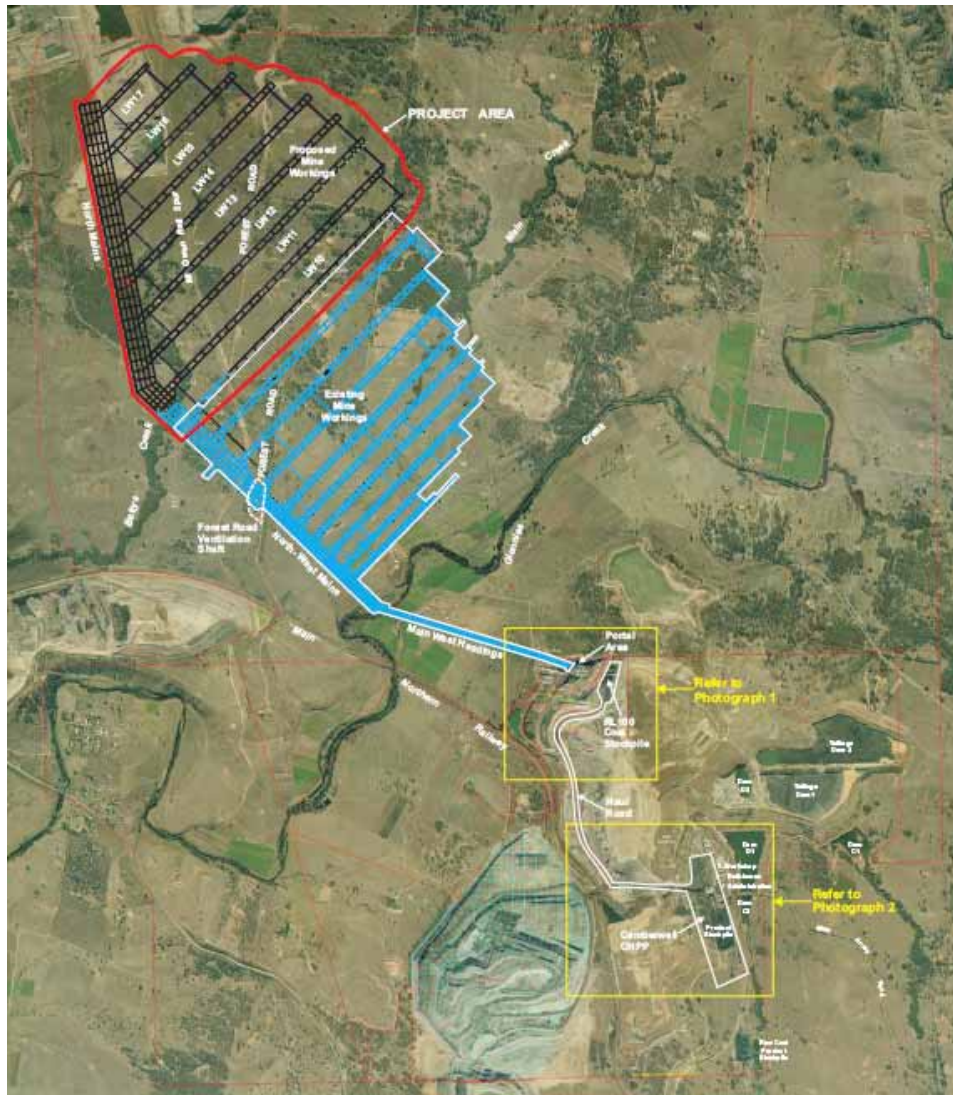


Figure 2: Project Layout Plan



Figure 3: Integra Underground Surface Facilities

Integra now proposes to extend its existing underground mining operations, and is seeking approval for this extension under Part 3A of the *Environmental Planning and Assessment Act 1979*.

PROPOSED PROJECT

2.1 Project Description

The major components of the project are summarised in Table 1, depicted in Figures 2 and 4, and described in full in Glennies Creek Environmental Assessment (EA), which is attached as Appendix F.

Table 1: Major Components of the Project

Aspect	Description
Project Summary	<ul style="list-style-type: none"> Extraction of approximately 15 million tonnes of ROM coal from Longwall Panels 10 to 17. No increase in production rate or variation to existing mining methods is required.
Mining and Reserves	<ul style="list-style-type: none"> First workings – an extension of the existing North-West Mains, the development of the North Mains and the development of gate roads for each longwall panel. Secondary extraction - retreating longwall methods, a continuation of the current system.
Vehicular Access	<ul style="list-style-type: none"> Middle Falbrook Road will continue to be utilised for site access.
Surface Facilities and Infrastructure	<ul style="list-style-type: none"> Continued use of underground surface facilities and infrastructure including the Pit Top area and the Forest Road ventilation shaft. Installation of 28 gas drainage boreholes over the life of the project.
Coal Processing	<ul style="list-style-type: none"> The CHPP will continue to process all coal produced from the underground operations. No modifications or changes are required to the existing processing facilities – the CHPP has an approved capacity of 1,200tph.
Coal Transport	<ul style="list-style-type: none"> Product coal will continue to be railed from the CHPP to the Port of Newcastle via the Main Northern Railway Line.
Hours of Operation	<ul style="list-style-type: none"> Ongoing 24 hours a day, 7 days a week.
Employment	<ul style="list-style-type: none"> Continued employment for 170 full time employees.
Project Life	<ul style="list-style-type: none"> An overall project life of 15 years (from 2008 to 2023).
Capital Investment Value	<ul style="list-style-type: none"> \$7 million

2.2 Project Need

The project will enable the extraction of a large reserve of quality coking coal in accordance with the mining lease for the area.

The Department recognises that the proposed area of coal extraction is surrounded by existing coal mining operations. The project is able to be undertaken using existing mining equipment, facilities and infrastructure currently in operation. In this regard, it is acknowledged that the project represents a logical extension to existing coal mining activities in the area.

From the State's perspective, the project would deliver a number of key benefits, including continuing employment opportunities for the 170 people employed as part of Integra's underground mining operation, flow-on regional economic benefits, as well as royalty and tax income.

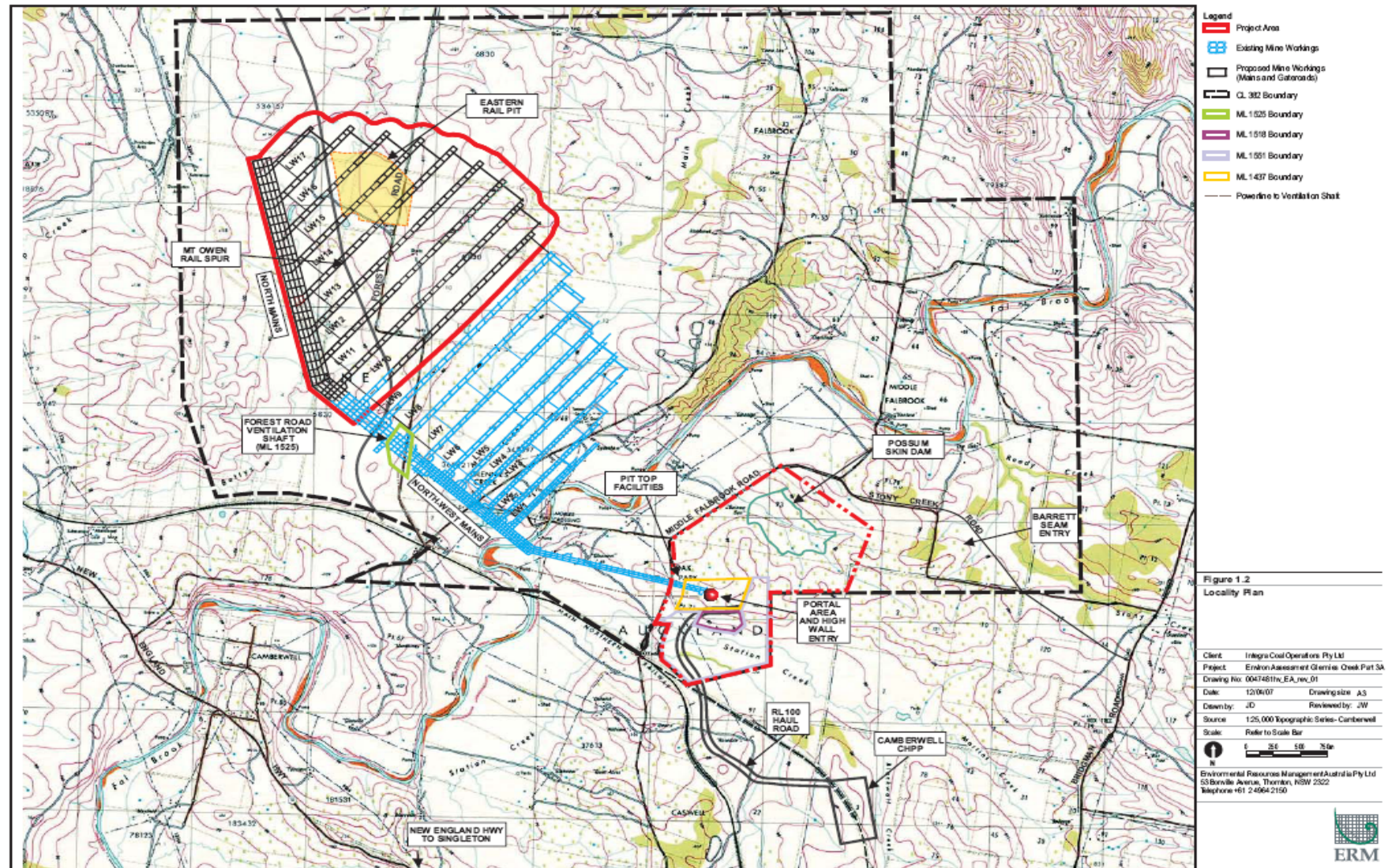


Figure 4: Project Layout Plan and Surrounds

3. STATUTORY CONTEXT

3.1 Major Project

The proposal is classified as a major project under Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act), because it is development for the purpose of coal mining, and therefore triggers the criteria in Clause 5 of Schedule 1 of *State Environmental Planning Policy (Major Projects) 2005* (Major Projects SEPP).

Consequently, the Minister for Planning is the approval authority for the project.

3.2 Permissibility

The land subject to the application is zoned 1(a) (Rural) under the *Singleton Local Environmental Plan 1996*, and mining is permissible in this zone with consent. Consequently, the Minister can approve the project.

3.3 Exhibition and Notification

Under Section 75H(3) of the EP&A Act, the Director-General is required to make the Environmental Assessment (EA) of a project publicly available for at least 30 days.

After accepting the EA for the project, the Department:

- made it publicly available from 4 October 2007 until 5 November 2007:
 - on the Department's website, and
 - at the Department's Information Centre and at the offices of the Nature Conservation Council and Singleton Shire Council;
- notified landowners in the vicinity of the site about the exhibition period by letter;
- notified relevant State government authorities and Singleton Shire Council by letter; and
- advertised the exhibition in the Singleton Argus.

This satisfies the requirements in Section 75H(3) of the EP&A Act.

3.4 Environmental Planning Instruments

Under Section 75I of the EP&A Act, the Director-General's report is required to include a copy of or reference to the provisions of environmental planning instruments that substantially govern the carrying out of the project.

The Department has considered the project against the relevant provisions of several *State Environmental Planning Policies* (SEPPs) and other environmental planning instruments, and is satisfied that none of these instruments substantially govern the carrying out of this project.

Nevertheless, the Department has included a consideration of applicable SEPPs (including SEPPs 33, 44, 55) which is set out in Appendix C. Whilst the Mining SEPP does not strictly apply to this project, the Department has nonetheless assessed the project against the aims, objectives and provisions of the SEPP.

3.5 Objects of the Environmental Planning and Assessment Act 1979

The Minister is required to consider the objects of the EP&A Act when he makes decisions under the Act. These objects are detailed in Section 5 of the Act, and include:

'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.'*

The objects of most relevance to the Minister's decision on whether or not to approve this project are those under Section 5(a)(i), (ii), (vi) and (vii).

3.6 Statement of Compliance

Under Section 75I of the EP&A Act, the Director-General's report is required to include a statement relating to compliance with the environmental assessment requirements with respect to the project.

The Department is satisfied that the environmental assessment requirements have been complied with.

4. ISSUES RAISED IN SUBMISSIONS

During the exhibition period, the Department received 9 submissions on the project, including:

- 7 from public authorities; and
- 2 from the general public.

None of the public authorities objected to the project, however both of the public submissions objected to the project. A summary of the issues raised in submissions is provided below. A full copy of the submissions is attached in Appendix D.

4.1 Public Authorities

The **Department of Primary Industries** (DPI) noted that the project would be subject to DPI's Subsidence Management Plan (SMP) process and recommends that any surface water management improvement or rehabilitation works should be approved by DPI. Integra would be required to amend its rehabilitation and environmental management reporting to reflect the extension area.

The **Department of Environment and Climate Change** (DECC) does not object to the project, and is satisfied that the impacts of the project in relation to noise, Aboriginal cultural heritage and gas venting and electricity generation are manageable. DECC recommended a number of conditions to manage these environmental impacts, some of which the Department has incorporated into the recommended conditions of approval.

The **Department of Water and Energy** (DWE) does not object to the project per se but raised a number of issues in relation to water resource management as a result of subsidence impacts. These matters are discussed in more detail within Section 5.2 of this report.

The **Heritage Office of New South Wales** (Heritage Office) does not object to the project and is of the view that no conditions of consent for non-indigenous heritage matters are considered necessary.

The **Department of Lands** (DoL) supports the application provided the potential impacts on Crown Roads is monitored and managed on the basis set out within the EA.

The **Mine Subsidence Board** (MSB) does not object to the project, but noted that the erection of surface improvements will require the approval of the MSB prior to development.

The **Roads and Traffic Authority** (RTA) has no objections to or requirements for the project but recommends that the Department seek comments from Council in relation to potential transport impacts arising on local roads.

4.2 Community and Interest Groups

Two submissions were received from members of the public who both objected to the project on the basis of the following wider cumulative impacts arising from mining in the region:

- traffic;
- air quality;
- noise; and
- global warming.

4.3 Response to Submissions

Integra has provided responses to the issues raised in submissions (see Appendix E), as well as a revised statement of commitments for the project. The Department has considered the issues raised in submissions, and Integra's responses to these issues, in its assessment of the project.

5. ASSESSMENT

5.1 Subsidence

Issue

Subsidence impacts from underground mining could affect a range of man-made and natural features overlying the project area.

Consideration

The EA contains a detailed assessment of the potential subsidence impacts of the project on these features undertaken by Strata Control Technology (SCT) (Appendix F).

This assessment predicts that, given the thickness of cover (380m to 500m) and proposed coal seam extraction height (between 2.2m to 2.4m) and panel width (256m), the land surface overlying the proposed underground mining operations would vertically subside by a maximum of 1.6m above the longwall panels and up to 1.5m above the chain pillars.

Systematic ground tilt and strain is likely to be fairly regular and may increase with maximum vertical subsidence. A maximum tilt of 12mm/m is predicted. The maximum tilt measured to date over Longwall Panels 1 to 5 is 5mm/m. On the basis of previous measurements at Integra Underground, the maximum strains anticipated are up to 6mm/m in tension and 9mm/m in compression.

Subsidence will cause a trough which is centered above each longwall panel, and, as each trough is formed, the ground surface will be subjected to varying tilts and strains depending on the geology, depth of cover, panel dimensions and position above the panel. Strains will likely pull on structures commonly damaging inflexible material by stretching and rupturing. In this instance, the vertical displacement of the surface and associated tilts and strains are expected to affect the existing man-made and natural features set out above to varying degrees.

Integra's assessment reveals that subsidence is likely to be most prevalent during the early stages of the project life. The variation and subsidence effect across individual panels is expected to decrease in the later longwalls due to increasing overburden depth.

Subsidence impacts are predicted to occur to a number of surface and sub-surface features, including natural features, public utilities, farm land and facilities, infrastructure and archeological areas, including (see Figure 5 overleaf):

- parts of Xstrata's mining operations (i.e. Mt Owen, Glendell and Ravensworth East);
- Mt Owen Railway Spur and other mining related infrastructure (e.g. water pipeline);
- farming land and facilities, including dams, buildings and fences;
- telecommunications and public utility infrastructure (e.g. Telstra assets); and
- Bettys Creek (including approved diversion works) and tributaries (see Section 5.2).

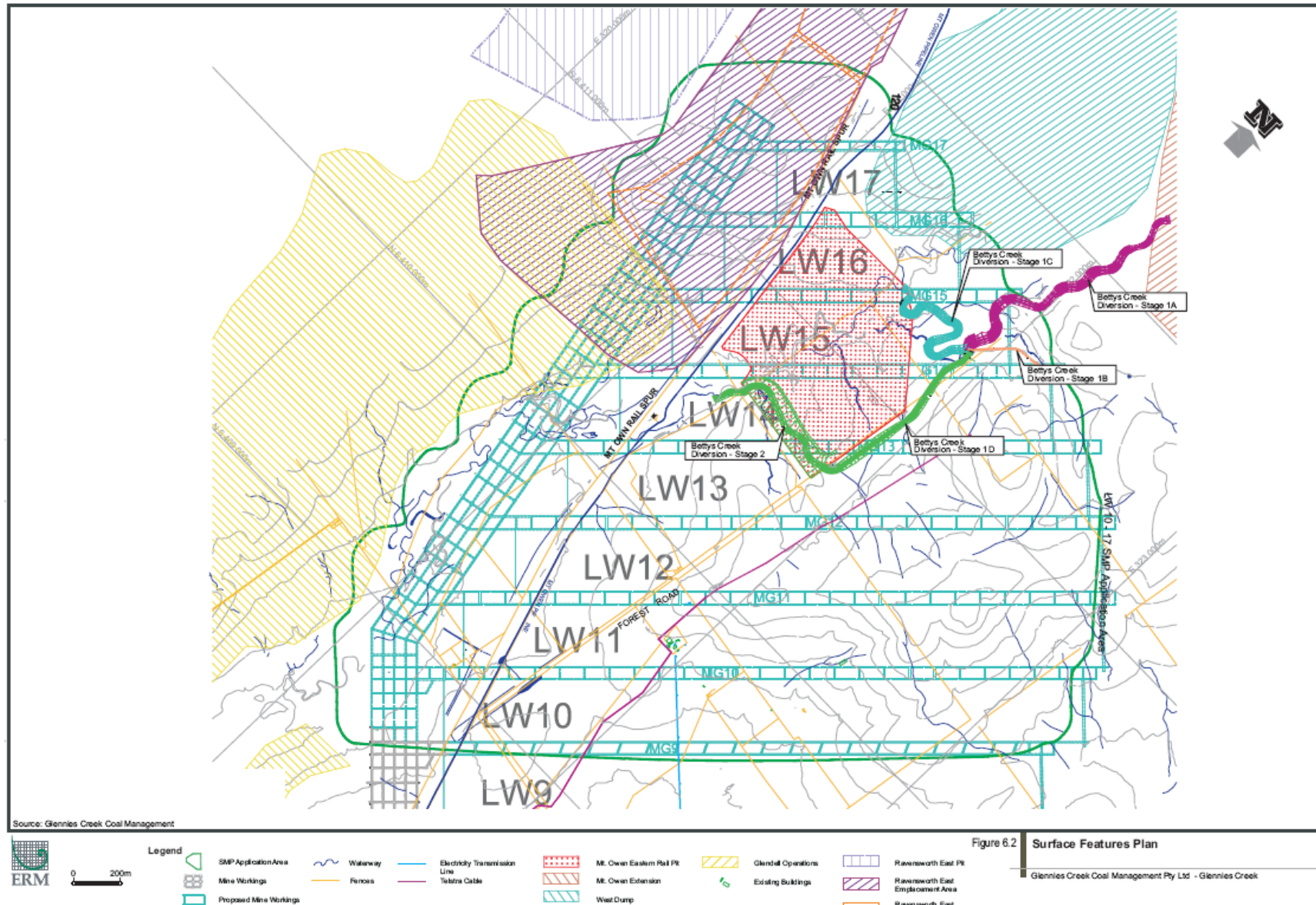


Figure 5: Mine Layout and Surface Features

Integra lodged a Subsidence Management Plan (SMP) to DPI in January 2007 which characterises all surface and sub-surface features within the application area and assesses them against subsidence predictions. A series of management plans have been produced for each feature setting out how each one will be managed during the life of the project. The Department and DPI have reviewed the SMP and are of the view that the subsidence impacts associated with the project can be appropriately managed through the SMP process.

Conclusion

Notwithstanding this, the Department recommends that Integra should be required to:

- minimise the likelihood of subsidence damage to a range of surface and natural features both over and in close proximity to the proposed underground mining operations;
- prepare and implement an SMP for Longwall Panels 10 to 17 to the satisfaction of DPI (to date, first workings for Longwalls 10 and 11 only has been approved); and
- prepare a detailed report following extraction of each longwall panel, which analyses the subsidence, surface water and groundwater impacts of the panel, and any cumulative impacts of this panel with any other longwall panels.

5.2 Water Resources

Issue

The project has the potential to cause subsidence-induced impacts to surface and groundwater water resources.

Consideration

Integra prepared technical reports to examine surface and groundwater issues associated with the project. The reports predict the level of impact anticipated and recommend a number of management and mitigation measures to address them. The EA document itself summarises the existing water management strategy, surface water controls and contingency measures that that are currently in operation to contain dirty water.

Surface Water

Bettys Creek, together with Yorks Creek and Swamp Creek feed Bowmans Creek (or Foy Brook), the catchment of which drains an area of approximately 26,600ha, before entering the Hunter River.

Bettys Creek has a total catchment area of 1,750ha and is an ephemeral creek system given that the waterbody only flows during storm events or following heavy periods of rain. Several first order streams also traverse the catchment and have catchment areas of up to 50ha. The majority of the project lies within the sub-catchment of Bettys Creek, aside from a small area, which falls within the 84ha Main Creek sub-catchment and drains directly into the Hunter River.

Although the subsidence zone extends into the Main Creek catchment, no impact to Main Creek itself or its drainage network is anticipated. However, the assessment indicates that some indirect loss of stream flow in Bettys Creek would take place due to subsidence related cracking through lowering of the coal measures, reduction in spring seep flow to the creek or reduction in overland runoff due to interception and infiltration into cracked soil.

Stream water quality, flow volumes and creek stability are not anticipated to be adversely affected as a result of extracting Longwall Panels 10 to 17. However, there would be some additional ponding that may occur within subsidence troughs within the creek.

No significant erosion or bedload sediment transport has been observed to date in Bettys Creek over the project area due to the stabilising effect of riparian vegetation. Post-subsidence erosion and deposition rates are not expected to significantly increase as the existing and post-subsidence stream velocity, shear stress and stream power are similar, and not sufficiently high to cause erosion. Subsidence would increase the left and decrease right overbank flows downstream of the Mt Owen Rail Spur for the 100 Year ARI design flood. However, this change is not anticipated to cause major channel erosion in the short or long term.

DWE recommended that Integra be required to extend its surface water monitoring programme above and beyond what currently exists within the existing site water management plan. Integra has incorporated a number of these requirements into their revised statement of commitments,

but the company considered a number of them to be excessive and/or unwarranted. The Department has consulted further with DWE and Integra and it has been agreed that these outstanding matters can be resolved during the preparation of any subsequent water management plan for the project. The Department has recommend conditions accordingly.

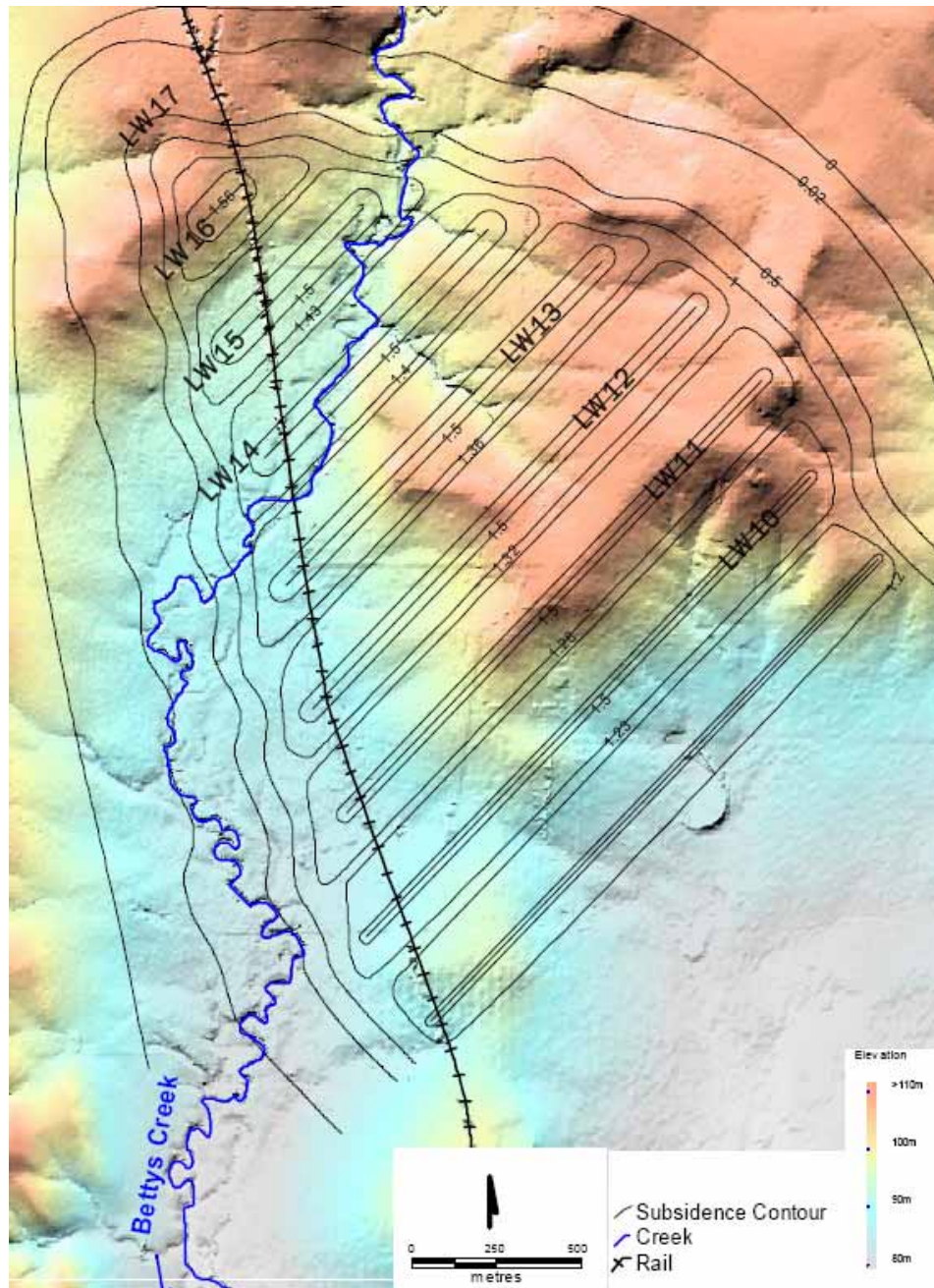


Figure 6: Bettys Creek and Predicted Subsidence Contours

The primary issue that has been raised in relation to surface water is the apportionment of responsibility between Integra (as project Proponent) and Xstrata Mt Owen Pty Ltd (as holder of the approved water licence for the diversion) for the remediation of Bettys Creek diversion works when it is subsided during the latter period of the project. There is currently no formal agreement that exists between the two companies in respect to this issue.

The Department and DWE accept that any diversion remediation works required prior to any subsidence influence from the project, and maintenance of those works until stability is achieved, is the responsibility of Xstrata Mt Owen, not Integra. Similarly, it is noted that Integra is unwilling to accept long term liability for damage to the licensed works that has not been caused by project-induced subsidence.

It is recommended that a condition be imposed stipulating that Integra is to commission a suitably qualified and independent expert to carry out a detailed survey of the Bettys Creek Diversion prior to carrying out any mining that could subside the diversion to establish the geotechnical and geomorphic baseline condition of the diversion. A further survey would then be required to be carried out within 6 months of completing the mining that could subside the creek diversion to accurately establish the geotechnical and geomorphic condition of the creek diversion following this mining. Following this, and if necessary, Integra is then required to rehabilitate the creek diversion to the same condition it was in prior to any underground mining.

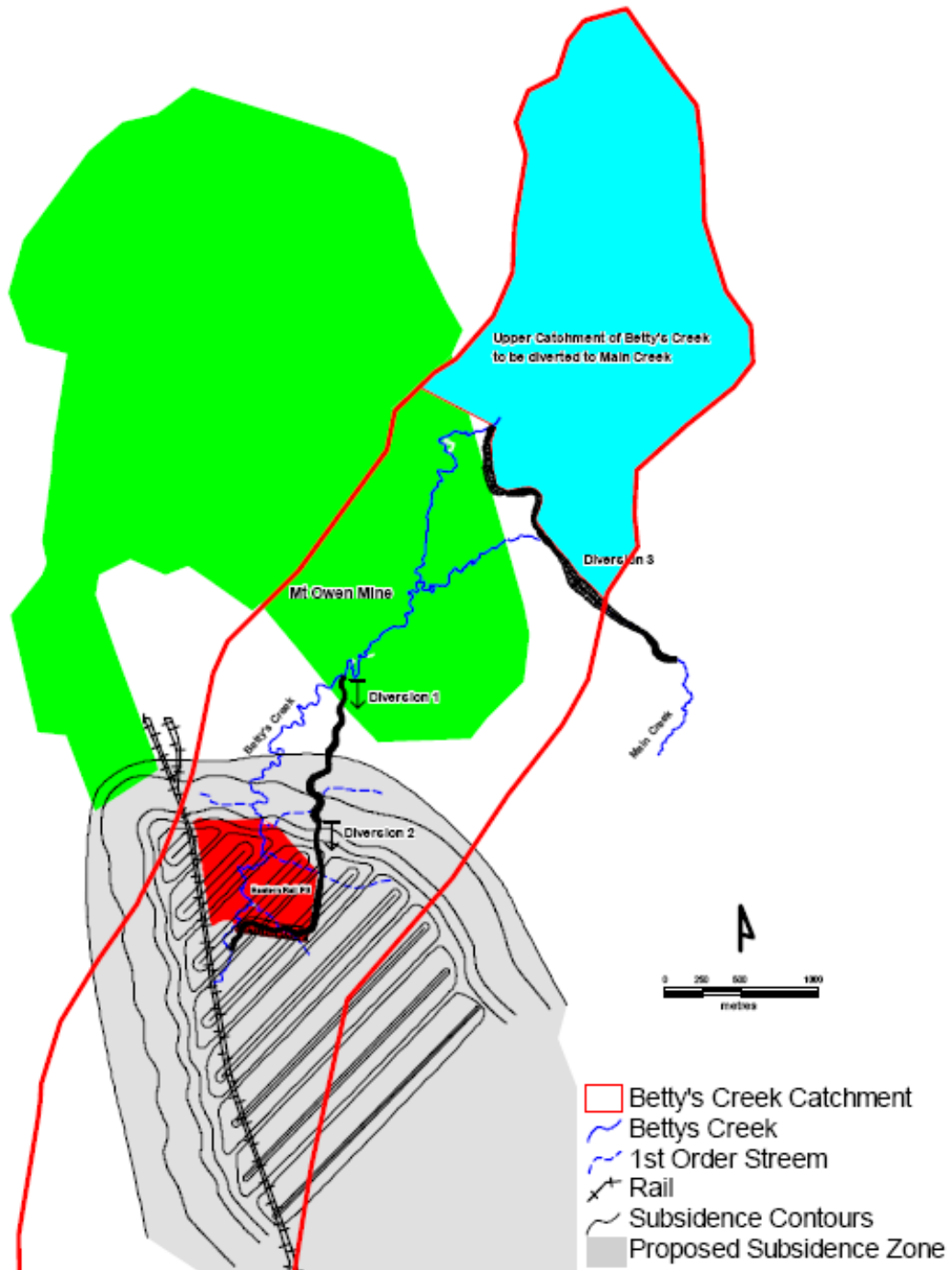


Figure 7: Location of Bettys Creek Diversion Works

Groundwater

The project area is situated on the Jerrys Plains and Vane Subgroups of the Permian period Wittingham Coal Measures, with Quaternary alluvium present in association with Bettys Creek. Material types in these sub-groups include tuffaceous claystone, siltstone, sandstone, conglomerate, shale, silt, sands and gravels.

There are two types of aquifer systems within the area of the project, firstly, unconsolidated alluvium associated with Bettys Creek and secondly, basement coal measures comprising a variable sequence of aquicludes (mudstone and shales), aquitards (sandstones) and low yielding aquifers (coal seams). There are no beneficial aquifers within the project area; neither supports no groundwater dependent eco-systems and is suitable for local use in coal washeries only.

Existing mining operations within the locality have had a significant impact upon local and regional groundwater (e.g. Ashton). Other open cut mines that are proposed within the locality will have a further impact upon the existing groundwater system, such as Mt Owen Open Cut (Pit "C") and, to a lesser extent, Ravensworth East. As a result, the quality of alluvial groundwater is brackish whilst groundwater over coal measures is brackish to saline.

The results of the modelling indicate that groundwater depressurisation may occur within the confined Middle Liddell Seam, as well as overlying goaf and highly fractured overburden. The reduction in groundwater head depressurisation with increasing height in the stratigraphy, results from the change in brittle to ductile sagging of the overburden and the resultant variation in fracture development and connection. No active registered groundwater extraction bores are located within the modeled drawdown area and consequently no adverse impacts are anticipated on groundwater users extracting from the coal measures overburden.

No measurable adverse impact is anticipated upon the Bettys Creek alluvial system or stream baseflow through increased subsurface aquifer hydraulic permeability changes or coal measure groundwater level reduction. Whilst there may some loss of stream flow in Bettys Creek due to subsidence cracking as referred to above, this is not anticipated to adversely affect the alluvial groundwater system, and should not result in a loss of alluvial groundwater if cracking enables enhanced vertical or lateral connection to adjacent strata. The degree of loss will relate to the balance of upstream inflow from the creek compared to vertical or lateral outflow from the alluvium.

Extensional crack formation would develop in the surficial layer, up to 20m beneath the alluvial/colluvial layer, occurring as faceline or ribline cracks, which would significantly enhance the vertical and horizontal permeability and lower the standing water table with increased interconnection of aquifers, aquicludes and aquitards in the cracked horizon. However, due to the depth of cover, the anticipated depth of surface cracking at 20m, the anticipated height of goafing above the extracted seam (30m to 60m) and past experience over Longwalls 1 to 9, it is not anticipated that water will enter workings from above the goaf.

Groundwater levels within the Middle Liddell Seam aquifer would be drawn down to seam floor level, with the overburden being significantly affected within the goaf and overlying highly fractured strata between 30m and 60m above the workings. Partial dewatering would occur above the highly fractured zone, which is within dilated strata that may extend between 100m and 150m above the workings. However, there are no aquifers that provide a beneficial use or sustain groundwater dependent ecosystems within the subsidence zone.

Stream flows in Bettys Creek, Main Creek or Glennies Creek will not be observably reduced nor would there be any adverse effect on the Bettys Creek stream, alluvial or coal measures water quality as a result of the project.

In terms of regional and cumulative impacts, drawdown due to subsidence over Longwall Panels 10 to 17 will combine with the drawdown effect from other regional mines (e.g. Mt Owen, Eastern Rail and Ravensworth East) and is considered to be insignificant in comparison to the impacts from these surrounding mines. The project will not affect the beneficial use of the groundwater system to either water users or the environment.

DWE recommended a number of requirements for the management of groundwater. These include verification of annual deep groundwater extraction, extension of groundwater modeling

to determine the extent of longwall mining induced depressurisation, pressure head loss and loss of saturated thickness in Betty's Creek alluvium, confirmation that there would be no connective loss of groundwater from Betty's Creek alluvium and verification of groundwater modeling outcomes for each longwall.

Integra has incorporated some of these requirements into the revised statement of commitments whilst those matters outstanding can be more appropriately dealt with at detailed design stage as environmental management plans are developed as part of post-approval environmental management and monitoring requirements. The Department has recommend conditions accordingly.

Water Management

Integra operates an integrated water management system. This includes mine water storage, clean and dirty water separation, clean water release and runoff control and will continue and will serve any operations associated with the project. This system allows total containment of dirty water without disruptions to the mining operation. In the event of extreme events (greater than ARI 50), temporary storage in the south pit or Integra Open Cut may be required for the temporary storage of dirty water to prevent flooding of the underground workings. The Department is satisfied that the existing water management system can incorporate the requirements of the project.

Water Balance

The water balance assessment considers the average annual water balance for the combined Integra operation, including the underground mining project, as well as for situations with and without the proposed North Open Cut. This indicates that the overall water balance would remain in equilibrium for the life of the project in both instances.

The reason for this is that whilst the volume of water being supplied to the mine (inflow) would increase as a result of the open cut by some 219ML/Year, water demand (outflow) would increase by the same amount as a result of more haul road dust suppression and export to other mines (Rix's Creek and Ashton).

The Department is satisfied that the project would not have a significant impact upon water availability and water sharing in the locality.

Conclusion

Subject to the imposition of conditions, the Department is satisfied that the impacts of the project upon existing water resources are manageable.

5.3 Aboriginal Cultural Heritage

Issue

The project has the potential to impact upon existing Aboriginal heritage values due to mine subsidence and surface disturbance.

Consideration

ERM was commissioned to undertake a cultural heritage study in support of the application. The project area situated above and adjacent to Longwall Panels 10 to 17 comprises some 600ha. The study area included all areas of potential subsidence associated with the mining of the longwall panels, defined by a 26.5° angle of draw, together with areas of surface disturbance associated with the installation of gas drainage boreholes.

A number of other cultural heritage studies have been conducted over the last five years within certain portions of the study area in support of other project applications to mine in the wider area, such as Mt Owen, Ravensworth and Glendell operations. Integra and DECC agreed that these portions of the study area (comprising approximately 460ha) do not need to be resurveyed and, as such, they were excluded. A field survey of the remaining 140ha of the study area was carried out on 14 February 2006. This revealed 4 Aboriginal sites, of which 3 have been identified within former studies (GCS8, GCS9 and GCS10), and 1 new site was recorded (GCM1).

In addition, a search of DECC records revealed a further 22 sites that were either registered under the Aboriginal Heritage Information Management System (AHIMS) or have been recorded within other studies, but are not yet registered on the AHIMS. 14 sites have been the subject of collection or salvage under approved Section 90 consents. The remaining 8 sites have been previously classified as low to medium significance and arrangements are in place to manage and mitigate potential impacts to them. All of the sites identified within the project area through previous studies and during the field survey are collectively shown in Figure 8.

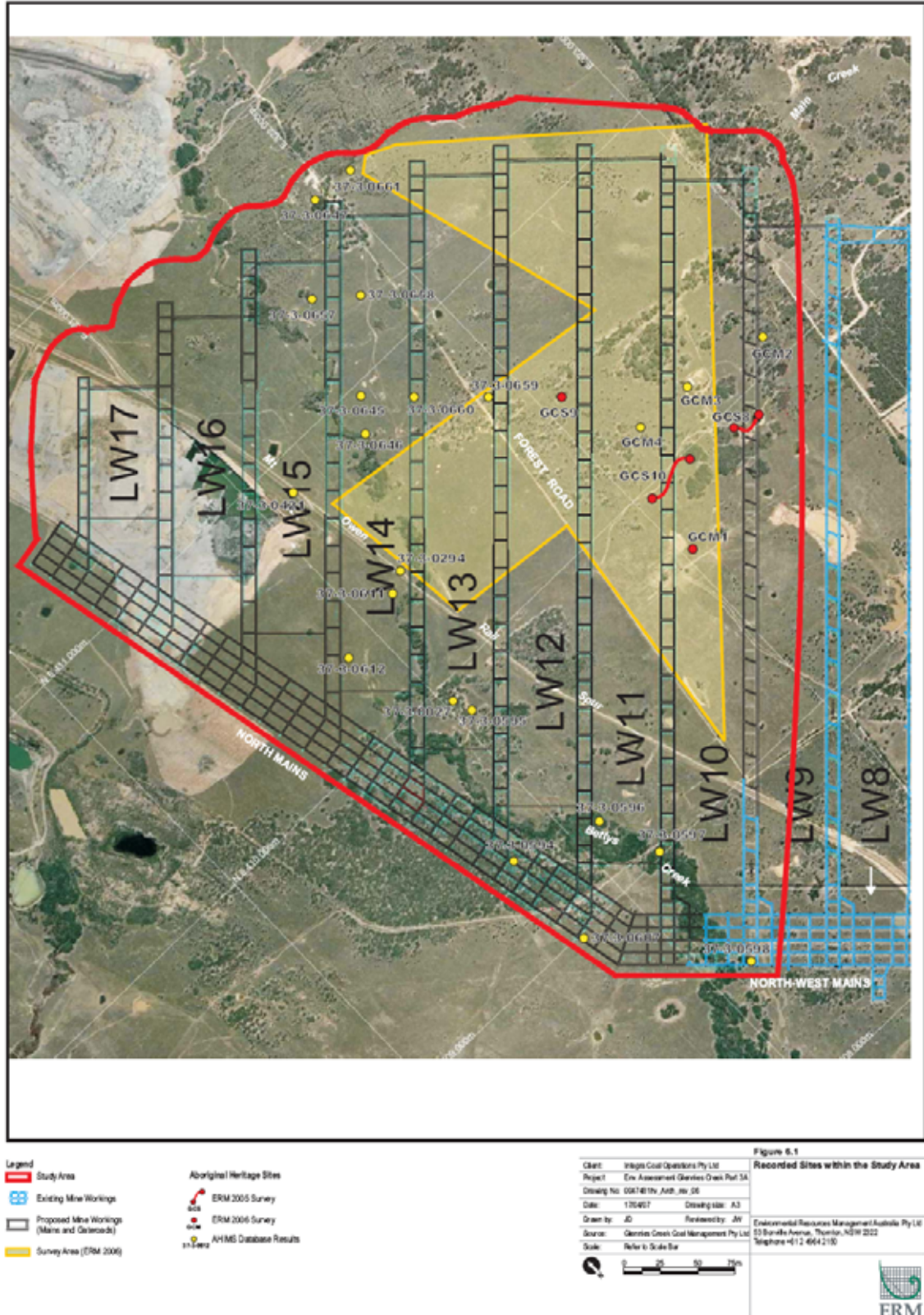


Figure 8: Identified Cultural Heritage Sites

The field study process included an examination of areas of flats, slopes, crests, alluvial flats, creeklines and drainage lines. Due to the level of vegetation coverage, the survey focused on areas of exposure and did not include total coverage of the study area. This meant that the area physically surveyed was reduced to 38ha (or 23%) of the total survey area (164ha). Low exposure and visibility meant that effective coverage was further reduced to just 0.39ha (or 0.24%) of the total survey area (or 10% of the surveyed area).

Integra acknowledge that the survey coverage was low due to unavoidable environmental factors, but are of the view that the survey is adequate given that the entire course of Bettys Creek and its associated alluvial flats were surveyed in their entirety given the higher likelihood of Aboriginal sites being located there. However, whilst DECC acknowledges that the survey provides an adequate representative assessment of Aboriginal heritage values within this particular feature, and concurs that the likelihood of tangible cultural heritage material increases in close proximity to waterways, this does not preclude the potential for other Aboriginal sites to be located within other topographical units within the project area (e.g. flats, slopes and crests).

The Department acknowledges that the chances of significant Aboriginal cultural heritage items being discovered away from Bettys Creek is low. This assertion is based upon the conclusions of the cultural heritage study lodged in support of this application which concurs with the conclusions of other cultural heritage studies previously undertaken in this area. That is, that the majority of Aboriginal sites identified by the study are small, with larger sites typically found within 30 metres of existing permanent watercourses such as Bettys Creek and its associated tributaries. A number of other sites were identified at a greater distance from existing water features, these were limited in terms of both number and size and generally constituted a lower density scatter than those found along the creeklines.

Similarly, it is anticipated that subsidence related surface cracking, ponding and alterations to watercourse and landform morphology itself would have a limited impact upon surface and sub-surface artefacts within the study area. The main reason for this is that the sites identified within this area are fairly durable so the predicted level of subsidence is such that it is not anticipated to cause significant impact, aside from some minor disruption as remediation work is undertaken following subsidence events (e.g. draining ponded areas). Furthermore, the risk of impact to existing Aboriginal heritage features has been further reduced as the project area has historically used for grazing purposes and, in some areas, by mining-related activities.

The Department generally accepts the criticisms made by DECC in relation to the low survey coverage but sees little merit in requiring Integra to undertake further surveys across the project area. There are two main reasons for this. Firstly, the nature of the subsidence impacts predicted (up to 1.6m vertical subsidence) and the durable nature of the objects/sites recovered in the region mean that potential resultant impacts to existing Aboriginal cultural heritage objects/sites are expected to be relatively minor. Secondly, there is no guarantee that the level of effective coverage will dramatically improve in the near future unless there is a significant period of dry weather. This is considered unlikely in the context of prevailing meteorological conditions.

Notwithstanding this, the Department is of the view that Integra should be required to carry out additional targeted Aboriginal cultural heritage surveys in areas where the surface and sub-surface will be directly disturbed, namely earthworks associated with the proposed installation of gas drainage boreholes and subsidence remediation. A condition has been recommended on this basis.

As part of the surface disturbance associated with the project, between 1 and 5 gas drainage boreholes are proposed to be installed along each longwall panel resulting in a total of 28 boreholes. The installation and fencing for each borehole would involve clearing approximately 64 metres (8m x 8 m). Three, or possibly four, boreholes would be active at any one time. Indicative locations have been identified at this stage. However, final placement of each gas drainage borehole will be contingent on mine gas levels, operational experience gained during extraction of previous panels and avoidance of specific surface features, including Aboriginal cultural heritage sites.

Integra has made a commitment to protect all identified Aboriginal cultural heritage sites during the installation of the gas drainage boreholes or subsidence remediation works that may occur. In the event that the company deems these impacts to be unavoidable, DECC and the Aboriginal community will be consulted in respect of any management measures or salvage activities to be undertaken. The same commitment has been made with respect to potential Aboriginal deposits located 30 metres either side of Bettys Creek. However, in this case, the company has made an additional commitment to provide the opportunity for the Aboriginal community to conduct salvage activities.

This approach is considered to be acceptable to the Department provided that further survey work is undertaken in proposed areas of surface and sub-surface disturbance in the manner described above.

Finally, DECC was critical of the level of consultation that Integra conducted with the local Aboriginal community during the preparation of the original Aboriginal heritage assessment, and has recommended that it be required to carry out further consultation with this community in the future.

To address this issue, the Department has recommended that Integra be required to prepare and implement an Aboriginal Cultural Heritage Management Plan in consultation with DECC and the Aboriginal community. This plan would include a detailed program for managing Aboriginal objects/sites within the project area (i.e. to incorporate Integra's commitments in respect to the installation of the gas drainage boreholes) as well as a protocol for ongoing consultation and involvement of the Aboriginal community in the conservation and management of the Aboriginal heritage of the site.

Conclusion

The Department is generally satisfied that the Aboriginal cultural heritage impacts of the project can be adequately managed and mitigated by a combination of commitments made by the company together with the imposition of conditions requiring further targeted surveys to be carried out and an Aboriginal cultural heritage plan to be prepared to address other outstanding matters.

5.4 Other Issues

The project is likely to generate a range of other environmental impacts – including noise, air quality (dust and greenhouse gas emissions) and flora and fauna. However, these impacts are not predicted to be significant, and the Department is satisfied that they can be controlled, mitigated or managed either through statements of commitments made by Integra or the imposition of appropriate conditions of approval.

Table 2: Other Impacts

Issue	Features/Impacts	Conclusion/Mitigating Factors
Noise	Potential noise emissions generated during the installation of gas drainage boreholes.	<ul style="list-style-type: none"> No increase in approved production or operational activities is proposed; noise generation from the project will be negligible. Integra will continue to employ its existing noise monitoring and control measures. The approved noise impact assessment criteria for the Glennies Creek – Surface Facilities Project would be extended to include the project.
Air Quality	Potential dust emissions generated during the installation of gas drainage boreholes.	<ul style="list-style-type: none"> No increase in approved production or operational activities is proposed; dust generation from the project will be negligible. Integra will continue to employ its existing air quality monitoring and control measures.

Issue	Features/Impacts	Conclusion/Mitigating Factors
Greenhouse Gas (GHG)	Rise in GHG emissions as a result of extraction and processing, transporting and combusting product coal extracted by the project.	<ul style="list-style-type: none"> ▪ Integra has made a commitment to transfer the material excavated when developing gas drainage boreholes to the Portal Area for disposal in areas awaiting final landform creation. ▪ The approved air quality impact assessment criteria for the Glennies Creek – Surface Facilities Project would be extended to include the project. <hr/> <ul style="list-style-type: none"> ▪ The total GHG emissions arising from the project are minimal (0.78% of the Australian annual total of GHG emissions and 0.017% of annual Global GHG emissions). ▪ Integra will adopt the following existing GHG mitigation strategies for the duration of the project: <ul style="list-style-type: none"> ➢ Methane from drainage boreholes is to be reticulated through the Envirogen power generation plant when operational; ➢ Implementation of initiatives through its membership of Greenhouse Challenge Plus; and ➢ Implementation of actions identified under its Energy Savings Action Plan. ▪ The Department recommends an approval condition requiring the submission of a Greenhouse Gas Minimisation Plan for its approval.
Flora and Fauna	Subsidence-induced impacts upon existing flora and fauna within the project area, particularly threatened species.	<ul style="list-style-type: none"> ▪ No endangered populations or ecological communities have been recorded within the project area and there is no critical habitat listed within the locality. ▪ Mine subsidence will have limited impacts upon the existing vegetation communities and habitats but will reduce the areal extent of vegetation communities. ▪ Integra has made the following commitments to minimise impact on existing flora and fauna: <ul style="list-style-type: none"> ➢ Installing the gas drainage boreholes in consultation with a suitably qualified ecologist; ➢ Once each gas drainage borehole is no longer effective the surface infrastructure will be removed – pre-disturbance landform will be re-established, soil replaced and the area scarified, seeded and fertilised; ➢ Draining any areas of ponding on the creek flats.
Non-Aboriginal Heritage	Potential impact upon existing non-Aboriginal heritage items.	<ul style="list-style-type: none"> ▪ Of the four non-Aboriginal heritage sites identified within the project area, three have extant Section 140 permits for removal and one has no significant heritage value. ▪ Consequently, no non-Aboriginal heritage sites would be affected by the project.

6. RECOMMENDED CONDITIONS

The Department has prepared recommended conditions of approval for the project (see Appendix B), and summarised these conditions in Appendix A.

These conditions are required to:

- prevent, minimise, and/or offset adverse impacts of the project;
- set standards and performance measures for acceptable environmental performance;
- ensure regular monitoring and reporting; and
- provide for the ongoing environmental management of the project.

Integra has reviewed and accepts the recommended conditions. The Department believes the conditions reflect current best practice for the regulation of coal mines in NSW.

7. CONCLUSION

The Department has assessed the project application, EA, submissions on the project, and Integra's response to submissions in accordance with the relevant requirements of the EP&A Act, including the objects of the Act and the principles of ecologically sustainable development.

This assessment has found that the proposed extension of the existing underground mining operations would cause subsidence which, in turn, would result in impacts to surface and groundwater water resources and existing natural and man-made features. The Department is satisfied that these impacts can be adequately managed through the Subsidence Management Plan process and the imposition of appropriate conditions of approval.

It has also found that the surface impacts associated with the processing, stockpiling and processing of the coal extracted from the project area would be much the same as the surface impacts of the existing underground mining operations at the Integra mining complex. Consequently, the Department has recommended that Integra be required to comply with all the existing controls that regulate these surface impacts.

Finally, this assessment has found that the project offers a number of social and economic benefits for the region, as it would:

- extend the life of the Integra mining complex;
- use existing facilities at the mining complex more efficiently;
- provide jobs for up to 170 people over 15 years;
- attract \$7 million worth of capital investment to the region; and
- induce additional regional economic benefits through the increased spending of both Integra and its employees;
- generate significant royalty and tax income for the Government.

In summary, the Department believes that the project represents a logical extension of Integra's existing mining operations, and is satisfied that its benefits sufficiently outweigh its costs.

Consequently, it believes the project is in the public interest, and should be approved subject to conditions.

8. RECOMMENDATION

It is RECOMMENDED that the Minister:

- consider the findings and recommendations of this report;
- approve the project application, subject to conditions, under Section 75J of the *Environmental Planning and Assessment Act 1979*; and
- sign the attached project approval (Appendix B).

David Kitto
Director, MDA

Chris Wilson
Executive Director, MPA

Sam Haddad
Director-General

APPENDIX A - SUMMARY OF CONDITIONS OF APPROVAL

Aspect	Condition(s)	Requirement
Schedule 2: Administrative Conditions		
<i>Minimising Harm</i>	1	Obligation to minimise harm to the environment
<i>Terms of Approval</i>	2-6	Carrying out of the project in accordance with the conditions of approval for the Glennies Creek – Surface Facilities Project
<i>Limits of Approval</i>	7–8	Restriction on coal extraction to no more than 4.5 million tonnes per annum over a period of 15 years
<i>Staged Submissions</i>	9	Progressive submission of any environmental management plan or monitoring program
Schedule 3: Specific Environmental Conditions		
<i>Subsidence</i>	1	Project to be regulated under the approval process for managing impacts of coal mining subsidence under the Mining Act 1992
	2	Surveys and rehabilitation of Bettys Creek Diversion
	3	Preparation of an end-of-panel report upon completion of each longwall panel
<i>Surface and Groundwater</i>	4	Site Water Management Plan
	5	Offsets and compensatory measures to private owners
<i>Aboriginal Cultural Heritage</i>	6	Scope of additional field surveys
	7	Aboriginal cultural heritage management plan
<i>Greenhouse Gas</i>	8-9	Minimisation of energy use and Greenhouse Gas Minimisation Plan
<i>Rehabilitation</i>	10	Rehabilitation of areas of surface disturbance in conjunction with all other areas within the Integra Underground Complex
Schedule 4: Environmental Management, Monitoring, Auditing and Reporting		
<i>Environmental Management Strategy</i>	1-2	Environmental Management Strategy and monitoring at the Integra Underground Complex
<i>Incident Reporting</i>	3-4	Reporting of incidents at the Integra Underground Complex
<i>Annual Reporting</i>	5	Annual Environmental Management Plan for the Integra Underground Complex
<i>Auditing</i>	6-8	Preparation and submission of periodic independent environmental audits for the Integra Underground Complex
<i>Community Consultative Committee</i>	9	Operation of a Community Consultative Committee
<i>Access to Information</i>	10-11	Public reporting of environmental management plans/programs/strategies and monitoring results

APPENDIX B – CONDITIONS OF APPROVAL

APPENDIX C – CONSIDERATION OF ENVIRONMENTAL PLANNING INSTRUMENTS

1 State Environmental Planning Policy (SEPP) No.33 – Hazardous and Offensive Development

The Department is satisfied that the mine as modified is not potentially hazardous or offensive, and that the proposal is generally consistent with the aims, objectives, and provisions of SEPP 33.

2 SEPP No. 44 – Koala Habitat Protection

The EA indicates that there is no core or potential koala habitat within the project disturbance area. The Department is satisfied that the mine as modified is generally consistent with the aims, objectives, and provisions of SEPP 44.

3 SEPP No. 55 – Remediation of Land

The Department is satisfied that the Glennies Creek coal mine area does not have a significant risk of contamination given its historical land use, and that the mine as modified is generally consistent with the aims, objectives, and provisions of SEPP 55.

4 SEPP (Mining, Petroleum Production and Extractive Industries) 2007

Under clause 7 of the Mining SEPP, development for the purpose of mining is permissible with consent on land where development for the purposes of agriculture or industry may be carried out, or on land that is (immediately before the commencement of the SEPP) the subject of a mining lease under the *Mining Act 1992*. The land the subject of the current application satisfies both these criteria.

Part 3 of the SEPP lists a number of matters that a consent authority must consider before determining an application for consent for development for the purposes of mining, including:

- compatibility with other land uses;
- natural resource management and environmental management;
- resource recovery;
- transport; and
- rehabilitation.

The Department has considered all of these matters in its assessment report. Based on this assessment, the Department is satisfied that the project is able to be managed in a manner that is generally consistent with the aims, objectives, and provisions of the Mining SEPP.

5 Hunter Regional Environmental Plan (REP) 1989

Clause 7 of the Hunter REP requires the Minister to consider content of the Hunter REP background report and the objectives, policies and principles contained in the REP and relevant to the proposal. The objectives of the REP in relation mineral resources are contained in clause 39 of the REP, include to:

- (a) *manage the coal and other mineral resources and extractive materials of the region in a co-ordinated manner so as to ensure that adverse impacts on the environment and the population likely to be affected are minimised,*
- (b) *ensure that development proposals for land containing coal and other mineral resources and extractive materials are assessed in relation to the potential problems of rendering those resources unavailable, and*
- (c) *ensure that the transportation of coal and other mineral resources and extractive materials has minimal adverse impact on the community.*

Clause 41(1) of the REP provides that the Minister, in considering the application:

- (a) *should consider the conservation value of the land concerned and apply conditions which are relevant to the appropriate post-mining or extraction land use,*

- (b) *should, in respect of extraction from river banks or channels, ensure that instability and erosion are avoided,*
- (c) *should consult with officers of the Department of Mineral Resources, and of the Department of Agriculture, to determine appropriate post-mining or extraction land uses,*
- (d) *should ensure the progressive rehabilitation of mined or extracted areas,*
- (e) *should minimise the likelihood and extent of a final void and the impact of any final void, or facilitate other appropriate options for the use of any final void,*
- (f) *should minimise any adverse effect of the proposed development on groundwater and surface water quality and flow characteristics,*
- (g) *should consider any likely impacts on air quality and the acoustical environment,*
- (h) *should be satisfied that an environmentally acceptable mode of transport is available, and*
- (i) *should have regard to any relevant Total Catchment Management strategies.*

The Department has considered these matters in its assessment report. Based on this assessment, the Department is satisfied that project is able to be managed in a manner that is generally consistent with the aims, objectives, and provisions of the REP.

6 Singleton Local Environmental Plan 1996

The land subject to the application is zoned Rural 1(a) under the *Singleton Local Environmental Plan 1996*. Mining is permissible in this zone with consent.

APPENDIX D – INTEGRA’S RESPONSE TO SUBMISSIONS

APPENDIX E – SUBMISSIONS

APPENDIX F – ENVIRONMENTAL ASSESSMENT
