West Cliff Mine
Water Supply

Environmental Assessment

under Part 3A of the Environmental Planning and Assessment Act, 1979

April 2007

Prepared by Olsen Environmental Consulting Pty Limited

Information Statement

David Olsen, Director of Olsen Environmental Consulting Pty Limited prepared this Review of Environmental Factors. David holds a Bachelors Degree in Agricultural Science with Honours.

CERTIFICATION

I certify that I have prepared this Environmental Assessment for the modification to an existing water pipeline to provide a water supply for the West Cliff Mine and associated plant. To the best of my knowledge, it is true in all material particulars and does not, by its presentation or omission of information, materially mislead.

David Olsen	David Philip Olsen	30.04.07
Signature.	**Name.**	**Date**

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FIGURE DP-3526C

Pipeline Route, Appin Mine - West Cliff Mine. Dated 27.02.07. OEC Pty Ltd

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EXECUTIVE SUMMARY

BHPBIC Illawarra Coal (BHPBIC) is proposing to modify an existing pipeline between Appin Mine and West Cliff Mine. The project is planned to provide a fresh water supply to the mine and associated plant. An increased need for fresh water supply to the mine is related to the recent construction of a mine ventilation gas utilisation plant (WestVAMP).

The Company is seeking approval under Part 3A of the Environmental Planning and Assessment Act 1979. The proposal involves altering the size of a section of an existing pipe and connecting to existing sections of pipe at both Mine sites.

The upgraded water pipeline will be an integral component of the ventilation gas utilisation activity.

This Environmental Assessment (EA) forms part of the Application to the Minster for Planning.

Section 1 of the EA describes the project and its components

Section 2 of the EA describes the alternatives to the proposal, while Section 3 summarises the Environmental Planning background.

Section 4 describes the likely environmental impact.

Section 5 describes how BHPBIC will manage the proposal with respect to environmental considerations.

Section 6 provides a review of liaison with Government agencies and the community.

Section 7 includes the proposed management commitments BHPBIC have made to ensure environmental protection during the activities associated with the proposal.

Section 8 provides a summary of the Director generals requirements and identifies where in the Environmental Assessment that the highlighted issues are addressed

This assessment concludes that there are no environmental issues that would preclude the implementation of the proposal described in the Development Application and the Environmental Assessment.

This proposal enables the Proponent to use good quality water processed from saline mine waste water using a desalination plant. The good quality water provides cooling for a power generation plant that utilises from methane gas entrained in the mine ventilation gas stream. It enables a positive environmental benefit to be achieved.

1. PROJECT DESCRIPTION

BHPBilliton Illawarra Coal (BHPIC) is constructing a new power plant at West Cliff Mine that will use up to 20% of the available mine ventilation air to provide an environmentally sound energy source. The power plant is the Ventilation Air Methane Project (WestVAMP) or Vocsidizer.

Development Consent for the WestVAMP facility was granted by Wollondilly Shire Council on 17 June 2003. The facility has been constructed and is currently being commissioned.

The power plant requires suitable quality water for the cooling process. Current estimates are that 0.7ML/day of water is required for the commissioning of the plant and 0.6ML/day of water is required from January 2007 to run the plant at its rated capacity. Cooling water will be lost as steam to the atmosphere and will need to be replaced as required.

The proposed work involves upgrading a pipeline connection between Appin Mine and West Cliff Mine. This pipeline is on the surface in some parts and buried in others. This system was installed along a service easement between the two mines when the gas pipeline connecting Appin and West Cliff was constructed.

The restored system will be able to deliver a nominal 3.15ML/day of good quality water to the West Cliff site.

The Douglas desalination plant will provide the base supply of water to be pumped through the upgraded line to West Cliff. The Appin scheme water supply will provide a backup to ensure continuity of supply.

The Douglas desalination plant eliminates saline water discharges from Douglas to the environment. West Cliff's proposed use of the water from the desalination plant would reduce Appin's scheme water consumption. These outcomes combine with the energy generation benefits achieved through operation of the WestVAMP Plant to provide a positive environmental outcome.

The route of the entire overland pipeline from Appin Mine surface to West Cliff Mine surface is shown on drawing DP 3526. However, only one section of the pipeline upgrade requires approval under Part 3A of the Environmental Planning and Assessment Act, 1979. This section is highlighted on the drawing as the hatched area where a new water supply pipeline will be installed to provide increased capacity to the existing water supply system.

The new section of pipe will be installed to meet with existing pipes on both the Appin and West Cliff Mines. The pipe will be buried along its entire length, apart from a section that will be attached to the western abutment of Kings Falls Bridge.

The pumps, tanks, control mechanisms, buildings and support infrastructure already exists at Appin and West Cliff Mines.

The works to be undertaken on the service easement site involve:

- Installing in the easement approximately 900m of 110mm pipe, and,

- Attaching the pipe to the western abutment of Kings Falls Bridge. It will then cross the George's River buried in the same easement as the existing 50mm pipeline. A small section of the pipe in this location may be constructed of 150mm steel pipe to provide greater protection from accidental damage or vandalism.

The new pipes in the service corridor will be joined with butt-welding or electrofusion before being buried. The contractor will provide suitably skilled and experienced operators using specialist machines to undertake the jointing process.

Spoil from the pipe trench excavation in the service corridor will be used as bedding material, if suitable, otherwise imported sand or cracker dust will be used. The pipe bedding material will be spread and compacted at even grades on the trench floor in a 0.075m thick layer and the pipe installed.

The pipe installation procedure to install the new 110mm Poly pipe will include:

- Locating all services in service corridor using "Dial before you dig",
- Excavating a pipe trench beside the existing pipe in progressive 100m lengths,
- Placing bedding material,
- Jointing the new pipeline in 100m lengths and installation in the prepared trench, and,
- Progressive backfilling over installed pipeline.

Electronic control has been established to co-ordinate operation of the new pump at Appin with the WestVAMP plant at West Cliff.

Water will be delivered through the upgraded pipe to an existing 0.25ML water storage head tank on the West Cliff site. Pumps installed beside the 0.25ML water storage head tank will reticulate water by pipeline to the WestVAMP plant. The 0.25ML water storage head tank has an ultrasonic level monitoring system that will control the operation of the water supply pump at Appin.

Preparation for excavation of pipe trenches will include removal of any obstructions on the route that may interfere with the excavation works or pipe laying and the establishment of erosion and sedimentation control measures. These measures can take the form of soil diversion banks across the pipeline routes and installation of silt fencing at strategic locations. Approval for these measures shall be obtained from the Supervising Engineer.

Pipe trenches will be excavated for installation of the assembled pipe lengths. The minimum size of trench shall be 0.36m wide x 0.60m deep (except at river crossing) with generally vertical sidewalls. Care will be taken to achieve the trench size specified with minimum over break. All loose rocks and tree roots would be removed from excavations. Trenches will be excavated wide enough for adequate compaction of bedding material on either side of the pipe. The minimum depth of trench specified will provide adequate cover for the expected imposed loads. The depth shall also be governed by the pipe curvature limits. To prevent over stressing or kinking the pipe, the trench shall be excavated to a depth that will ensure vertical curves in the pipeline are limited to a minimum radius of 6.0m.

Trenches shall be excavated in materials that will include areas of both solid sandstone and soil strata. In areas of unstable soils it may be necessary to shore the trench. Trench excavations would be limited to the sizes specified to minimise external loading on the pipeline. Spoil from the trench would be placed in a windrow on the side not being used for pipe assembly and installation.

The use of a rock saw will be considered where the trench excavation is across solid sandstone strata. The trench width and depth under these circumstances may be reduced to 0.25 wide x 0.3m deep. Backfilling in these areas will be with mass concrete.

The jointing crew will start the butt-welding or electrofusion jointing from the end of the pipe last laid. The Contractor will hydrostatically test the pipeline in stages, as the assembly proceeds.

The pipe installation procedure will involve delivering the pipe to the trench site, jointing the pipes, hydrostatic testing and installation in the prepared trench. The number of pipes that are joined, tested and installed in an assembled length shall be limited by the overall length that can be installed in the trench and backfilled in one shift. Only the number of pipe lengths that can be assembled and installed during a shift shall be delivered to the work area and laid out along the route.

Operations to excavate the pipe trench and install the pipeline will be restricted to a corridor approximately 10m wide along the pipe route. Equipment will not be permitted to operate outside this area unless for the establishment of erosion or sediment control measures. The pipe installation procedure will involve:

- Route survey,
- Temporary relocation of items stored on either mine site that may obstruct the work,
- Establish erosion and sediment control measures,
- Excavate a section of the pipe trench,
- Place bedding material,
- Assemble and install a corresponding length of pipeline in the trench, and,
- Complete the pipe bedding and backfill.

When the bedding layer has been placed in the trench the pipeline would be gradually moved across and positioned generally along the centre of the trench. The bedding material to be placed over the pipeline would be spread and compacted on both sides of the pipe in 75mm layers and brought up to 150mm above the pipe. The remainder of the trench would be backfilled with spoil from the trench excavation that is free of large rocks or other debris.

Where the pipe trench grade exceeds 1 in 6, bulkheads will be constructed in the trench at approximately 15.0m intervals to prevent scouring of the bedding and backfill materials. The bulkheads be will mass concrete barriers, constructed across the trench on a 75mm layer of 20mm blue metal. The bulkheads will be a minimum of 250mm thick and encase the pipe.

If excess trench spoil remains after the pipe has been laid it shall be spread over the disturbed easement area and track rolled with the excavation equipment to blend with the surrounding ground profile. If, in the opinion of the Supervising Engineer, the quantity of excess material is too large to be disposed of on site, the Contractor shall remove it from the easement.

The proposed upgrade of the pipe is planned to take 4 weeks and involve a workforce of up to 6 people (maximum) at any one time.

2. PROJECT ALTERNATIVES

In addition to the selected proposal, two alternative options for the supply of water for the West Cliff Mine. These options included water supplied from Cataract Reservoir, and Brennan's Creek Dam. The two options are described below.

2.1 Pipeline from Cataract Reservoir to West Cliff Mine

This option included construction of a raw water reticulation system from the Cataract Reservoir to West Cliff Mine, an approximate distance of 5.5km. Water supplied by this option would not been subject to any form of treatment and consequently would be in its raw state.

This option was not favoured because of environmental issues associated with the construction of the 5.5km pipeline and cost implications.

2.2 Brennan's Creek Dam

Option 2 was to source the cooling water supply from Brennan's Creek Dam. Brennan's Creek Dam currently discharges 427 ML/year of excess water to Brennan's Creek which subsequently flows into the Upper George's River.

This option was rejected primarily on the basis that historic data showed prolonged periods of low dam storage, when supply to the West Cliff Mine would be jeopardised.

In addition, the Department of Land and Water Conservation requires a base flow to be maintained in Brennan's Creek downstream of the Dam to maintain the integrity of the watercourse. This would be difficult to achieve while supplying additional water to the West Cliff Mine.

The current water quality within Brennan's Creek Dam is not compatible with the requirements of the WestVAMP plant.

3. ENVIRONMENTAL PLANNING BACKGROUND

3.1 Development Consents

Development consents are in place for the WestVAMP plant and the existing water supply line between Appin and West Cliff. Both consents were granted by Wollondilly Shire Council.

3.2 Wollondilly Local Environmental Plan

The Wollondilly Local Environmental Plan 1991 (LEP91) controls development activity within Wollondilly Shire Council. Under LEP91, the area between West Cliff and Appin Mines on which the pipe is located is zoned Rural 1(a1).

The proposed development is permitted only with development consent in this zone.

The land to the west of the Georges River is located within the Appin Mine Subsidence District within the meaning of Section 15 of the Mine Subsidence Compensation Act 1969. The major section of the pipeline to the east of the Georges River is not within a mine subsidence district. BHPBilliton has consulted with the Mine Subsidence Board in relation to the project. Longwall extraction in the Bulli Seam has occurred in the area beneath the proposed works.

3.3 Greater Metropolitan Regional Environmental Plan No 2, George's River Catchment

The land is subject to the provisions of Greater Metropolitan Regional Environmental Plan No 2, George's River Catchment. This REP aims to:

- Maintain and improve the water quality and river flows of the George's River and its tributaries.
- Protect and enhance the environmental quality of the Catchment for the benefit of all users, and,
- Ensure consistency in the delivery of the principles of ecologically sustainable development within the Catchment and promote integrated catchment policies.

The REP has a number of general and specific planning principles that guide development assessment in the Catchment.

In relation to the general planning principles:

- The management and operation of the Project is consistent with the aims, objectives and planning principles of the REP;
- There is not likely to be any effect on adjacent or downstream Local Government Areas from the Project;
- Cumulative impacts from the Project on the George's River is likely to be minimal or not measurable;

- All relevant plans, strategies and guidelines have been followed in the preparation of this Environmental Assessment; and

- This is the only feasible alternative that provides a suitable supply of additional water for the West Cliff Mine including the WestVAMP plant.

In relation to specific planning principles:

- There are no acid sulfate soils present on the site;

- The bank of the George's River will be affected minimally by the Project. The pipeline will cross the George's River in an existing service easement;

- The site will not be subject to, or affect flooding of the George's River. No construction will be undertaken during floods;

- Industrial discharges are not part of this Project;

- Land degradation issues will be addressed during construction by implementation of revegetation and sediment control measures;

- On-site sewage management will be affected by collection and off-site disposal at an appropriately licensed facility;

- No river-related uses are proposed;

- Sewer overflows will not occur with this Project;

- Stormwater runoff will be managed in accordance with guidelines detailed in the Landcom Publication, "Soils and Construction" Volume 1, 4th Edition, dated March 2004;

- The Project does not include any urban development;

- Part of the Project is located adjacent to and beneath the bed of the George's River utilising an existing service corridor. This cannot be avoided, however measures will be taken to ensure the River is not adversely affected during construction. Once in operation, the pipeline will be conveying high quality water.

- The Project will not adversely affect water quality, river flows or any wetlands.

The REP includes a section that contains requirements for consent and consultation when assessing certain developments and activities within the catchment. This section defines consultation requirements and planning controls for specific types of development described in the REP that are likely to significantly affect the water quality or river flows of the George's River or its tributaries and the environment within the Catchment. This section does not apply to this Project because this Project will not have a significant effect.

3.4 Development Control Plans

The relevant planning controls are those set out in the *Wollondilly Local Environmental Plan 1991*. The Project is consistent with those planning controls.

Wollondilly Shire Council has a number of Development Control Plans that apply to land zoned Rural A1 that may be relevant to this Project. These are as follows:

- DCP No 7-Off street Parking,
- DCP No 36-Development in Rural Zoned Areas,
- DCP-Design Code, and,
- DCP-Wollondilly Agricultural Lands.

DCP No 7-Off street Parking. Adequate off-street parking is provided in the existing Appin Mine and West Cliff Mine car parks.

DCP No 36-Development in Rural Zoned Areas. Although this development is located within rural zoned land it is not rural in nature. It should not adversely impact on any agricultural activities.

DCP-Design Code. This DCP addresses issues related to stormwater control from roads especially where the Council is likely to assume ongoing maintenance. The proposals should not affect stormwater control near roadways. The pipeline passes beneath one road only and will be attached to the western abutment of the Kings Falls Bridge on the Appin to Bulli Tops Road. This road is under the control of the RTA.

DCP-Wollondilly Agricultural Lands. This DCP is similar to DCP 36 and it addresses issues related to agricultural developments.

4. ENVIRONMENTAL IMPACT ASSESSMENT

4.1 Air Quality and Dust

The construction of the water supply system should not generate excessive levels of dust. There is potential to generate dust during the excavation of the pipeline trenches. It is planned for construction to occur over a four week period in June and July 2007. This is a relatively short period. In addition, only short sections (typically 100m) of trenching will be open at any particular time.

Once operating, the water supply system should not have any detrimental air quality and dust impacts.

4.2 Surface Water Management

During construction, measures will be taken to control surface water runoff in such a way that minimises soil erosion and sediment generation. Silt stop fences will be used downstream of the disturbed areas of the easement when trenching is occurring. The surface of the trenched areas will be revegetated at the completion of construction. A range of methods will be considered for surface soil protection along the pipeline. These will include brush-matting and the use of woven mulches to provide an immediate protective cover until native vegetation re-establishes on the disturbed areas.

Preparation for excavation of pipe trenches will include removal of any obstructions on the route that may interfere with the excavation works or pipe laying and the establishment of erosion and sedimentation control measures. These measures can take the form of soil diversion banks across the pipeline routes and installation of silt fencing at strategic locations. Approval for these measures shall be sought from the Supervising Engineer.

4.3 Acoustics

Due to the relatively short duration of activities and the isolated nature of them, adverse acoustic impacts are not expected during construction.

Adverse acoustic impacts should not occur during the operation of the buried pipeline.

4.4 Fauna and Flora

Biosis Research Pty Limited were commissioned to undertake a Flora and Fauna assessment of the proposed Appin to West Cliff water supply pipeline. A copy of their report, "Flora and Fauna Assessment: Appin to West Cliff Pipeline" dated February 2007 is included in Appendix I of this Environmental Assessment. The following sections summarise their report and a more detailed description of their assessment is included in the report.

The affected area was assessed using a combination of habitat-based assessment and targeted surveys.

4.4.1 Flora

The pipeline route supports native vegetation in moderate to good condition with disturbances such as Appin Road, tracks and the existing powerline easement impacting the bushland.

Figure 2 in the Biosis Report shows the pipeline route in relation to the existing vegetation. West Cliff Mine and Appin Mine are located at either end of the pipeline. There is dense native vegetation north, south, east and west of the pipeline route.

Biosis recorded three native vegetation communities along the pipeline route. These were:

- Exposed Sandstone Scribbly Gum Woodland,
- Western Sandstone Gully Forest, and,
- Shale Sandstone Transition Forest.

Section 4 in the Biosis Report contains more details of these native vegetation communities.

The proposed pipeline will generally be contained within existing disturbed areas. Where possible, direct disturbances to native vegetation will be avoided. However, some areas of native vegetation will be required to be directly impacted. This includes a patch of Shale Sandstone Transition Forest at the Appin end of the pipeline and a small gully through some Exposed Sandstone Scribbly Gum Woodland between an existing track and the existing powerline easement.

Based on the published vegetation mapping of the area, the proposed works will involve clearing approximately 0.5ha of native vegetation with a further 1.3ha directly impacted. This is considered to be an overestimate of the area likely to be affected. These figures are based on large scale National Parks and Wildlife Service mapping. There are a number of existing clearings in the area associated with an existing track adjacent to the Appin Road, which are mapped as supporting native vegetation. The pipeline will not require clearing of native vegetation in these areas, as it will remain in existing cleared areas. Biosis did not consider this clearing of 2ha of vegetation to be significant because it represents a relatively small proportion (0.01%) of similar habitat types in the local area.

Biosis recorded one Endangered Ecological Community that is listed on the Threatened Species Conservation (TSC) Act and the Environment Protection and Biodiversity Conservation (EPBC) Act. This was the Shale Sandstone Transition Forest.

No threatened plant species listed under the TSC or EPBC Acts were recorded along the pipeline route. However, potential habitat for five threatened plant species were recorded, including suitable habitat for *Acacia bynoeana*, *Epacris purpurescens var. purpurescens*, *Grevillea parviflora ssp. parviflora*, *Persoonia hirsut*a and *Pultanaea aristate*.

Biosis considered Significant Impact Criteria for these threatened species and ecological communities that are listed under the EPBC Act. They determined that the proposed pipeline was not likely to have a significant impact and a Referral under the EPBC Act was not recommended.

Biosis noted that the proposal is being assessed under Part 3A of the Environmental Planning and Assessment Act and consequently Assessments of Significance under the TSC Act are not required. However, they did undertake an assessment of the impacts on potential habitat for threatened species listed on the TSC Act. They deemed potential impacts to be insignificant given the small area of impact and the extensive quantity of similar habitat types in the local area.

4.4.2 Fauna

Fauna habitat along the pipeline route largely consists of Woodland habitat with two water bodies, the George's River and an un-named ephemeral tributary. Although parts of these habitats have been previously disturbed within the area affected by the pipeline, Biosis considered them to be in good condition.

No threatened animal species were recorded within the pipeline route. A total of 40 threatened or migratory animal species or their habitat have been previously recorded within the local area around. The potential habitat for 19 threatened species does occur along the pipeline route. These species include the Green and Golden Bell Frog (*Litoria aurea*), Red-crowned Toadlet (*Pseudophryne australis*), Gang-gang Cockatoo (*Callcephalon fibriatum*), Glossy Black-cockatoo (*Calyptohynchus lathami*), Black-faced Monarch (*Monarcha melanopsis*), Rufous Fantail (*Rhipidura rufifrons)*, Regent Honeyeater (*Xanthomyza phrygia*), Swift Parrot (*Lathamus discolour*), Turquoise Parrot (*Neophema pulchella*), Barking Owl (*Ninox connivens*), Powerful Owl (*Ninox strenua*) Eastern Pygmy-possum (*Cercartetus nanus*), Eastern Freetail Bat (*Mormopterus norfolkensis*), Southern Brown Bandicoot (*Isoodon obesulus*), Grey-headed Flying-fox (*Pteropus poliocephalus*), Eastern Bent-wing Bat (*Miniopterus schreibersii oceanensis*), Large-eared Pied Bat (*Chalinolobus dwyeri*), Eastern False Pipistrelle (*Falsistrellus tasmaniensis*), Large-footed Myotis (*Myotis adversus*), Broad-headed Snake (*Hoplocephalus bungaroides*) Rosenberg's Goanna (*Varanus rosenbergi*).

The proposed pipeline works are likely to remove or modify potential breeding and foraging resources within the area affected. Given the extent of potential habitat in the local area (13,365ha) for these species and the fact that the disturbed areas will be regenerated post works, Biosis concluded that it is unlikely that the proposal would result in the loss or disturbance of limiting foraging resources, and/or loss or disturbance of limiting breeding resources for these species. Furthermore, with suitable mitigation measures such as site rehabilitation and sedimentation control devices, impacts on fauna will be minimised.

Five bat species were detected, including the Southern Myotis, which is listed as Vulnerable on the TSC Act. In addition another species of bat was recorded, but its identity was difficult to determine. Biosis considered a number of possibilities for this unidentified bat species, a number of which are listed as Threatened on the TSC Act. The Southern Myotis and these possible bat species would occur in the woodland habitat around the pipeline route. These woodland habitat features are widely represented in the area and hence it is unlikely the proposed works would have a significant impact on that habitat.

4.4.3 Recommendations

Biosis concluded that the proposed works are unlikely to have a significant impact on threatened species, endangered ecological communities or populations. However, Biosis recommended the following range of mitigation measures to ameliorate impacts on terrestrial flora and fauna.

- Where possible trees should be retained, particularly those with hollows,
- Appropriate sediment/erosion and drainage control devices should be utilised during and after excavation works,

- To minimise the likelihood of weed spread or the introduction of disease, vehicles should be cleaned prior to use in the study area,

- *Acacia bynoena* and *Persoonia hirsute* specimens within and adjacent to the study area should be identified and flagged prior to works commencing and where possible, damage to these specimens should be avoided,

- Any landscaping, revegetation or rehabilitation works should use locally endemic tubestock,

- Bush regeneration techniques such as brush matting and spread of cleared native biomass over disturbed areas and weed control should be used to encourage native regeneration. These techniques should be implemented by suitably qualified and experienced people.

4.5 Traffic

The workforce is predicted to be a maximum of 6 people. This number will not affect traffic numbers in the vicinity. Pipes will be delivered to site as required and this is expected to require a maximum of six semi-trailer deliveries for the duration of the construction period. There will be a small amount of vehicle movements associated with establishing and removing construction activities.

Attaching the pipeline to the western abutment of the Kings Falls Bridge should not interfere with traffic flow on the Appin-Bulli Road. Appropriate safety measures will be implemented to ensure workforce and public safety during that operation.

4.6 Waste Management

The site is not connected to a Town Sewage Scheme. During construction, port-a-loo facilities will be provided for the workforce when distant from Appin and West Cliff Mines. The systems in place at West Cliff and Appin are capable of handling the additional workforce during construction. Ongoing operations of the pipeline will not increase workforce numbers at either Appin or West Cliff Mines.

Putrescible wastes are currently handled by a licensed contractor and this will continue after the water supply system is installed. Wastes will not be disposed on site.

During construction there may be waste generated from building materials and general packaging. Exact quantities will not be known until orders are placed for the equipment. The ordering process will address recycling of packaging materials.

As pipes are delivered to site they will be unpacked prior to installation. Packaging waste will consist of a mix of metals, timber and protective packing. The metals will be recycled in the current system. Potential for timber to be recycled will be investigated, otherwise this material, which is classified as builders waste, will be sent to an appropriate landfill. The protective packing materials will be recycled.

4.7 Archaeology, History and Heritage

Biosis Research Pty Limited were commissioned to undertake an Archaeological Assessment of the proposed pipeline route. A full copy of their assessment report titled, "Archaeology Assessment: Appin to West Cliff Pipeline", dated February 2007 is included in Appendix II.

A number of Aboriginal archaeological sites have been previously recorded along the George's River and nearby Brennan's Creek, however, none are situated within the immediate area of the pipeline.

During the filed survey undertaken as part of this assessment, one new Aboriginal site was recorded. This was an isolated artefact occurrence on the top of the ridge line overlooking George's River to the north. It is located at the edge of the proposed water pipeline alignment, beneath the existing overhead powerline easement on the eroded access track. Details of this artefact are described in Section 7.3.3 of the Biosis Report. Figure 3 of the Biosis Report shows the location of this isolated artefact.

The pipeline route contains one previously recorded historical archaeological site. This is the Kings Falls Bridge that crosses the George's River at the north western end of the pipeline route. The location of the Bridge is also shown on Figure 3 of the Biosis Report.

Biosis Research made a number of recommendations to manage the potential impact of the proposed pipeline on the archaeological material identified along the route. These recommendations will be implemented.

In relation to the isolated artefact, Biosis developed the following recommendations in consultation with the Aboriginal representatives present during the field assessment.

Recommendation 1. All attempts should be made to avoid the recorded Appin Pipeline 1 Aboriginal site by the construction works associated with the proposed pipeline. The site should be flagged prior to the commencement of ground disturbance works to ensure this. The relevant Aboriginal stakeholders should be given the opportunity to inspect the initial ground disturbance works within 50m of the site.

Recommendation 2. The areas that have been identified as being of moderate Aboriginal archaeological potential, on the banks of the George's River and within 50m of recorded site Appin Pipeline 1, should also be inspected during initial ground disturbance by relevant Aboriginal stakeholders.

Should any Aboriginal artefacts be identified at these locations, the sites will need to be registered with the DEC. Following this, an application would need to be made to DEC to continue disturbance to the relics, or the project will need to be modified to avoid further disturbance to the relics.

In addition to their recommendations, Biosis also noted that all Aboriginal objects and places are protected under the NSW National Parks and Wildlife Act 1974. Should any Aboriginal relics be encountered during work associated with the pipeline proposal, works must cease within the vicinity of the find and the DEC and Aboriginal stakeholders notified. A qualified archaeologist may also be required to assess the find. It is an offence to knowingly disturb an Aboriginal site without a consent permit issued by the DEC.

Discussions have been held with the RTA in relation to attaching the pipeline to the western abutment of the Kings Falls Bridge. These discussions are ongoing.

The Bridge is a continuous concrete beam bridge that has previously been assessed as being of local heritage significance. The proposed pipeline is partly entrenched within the identified heritage curtilage of the bridge and a small section of the pipeline will be externally fixed to the Appin (western) abutment.

An impact assessment undertaken by Biosis and included in their report (Appendix II), has identified that the proposed works will have a negligible impact to the heritage value of the bridge and its immediate environment. Given their finding, Biosis state that the proposed works may proceed subject to the following recommendations.

Recommendation 3. Their report and statement of heritage impact should be forwarded to the Heritage Branch of the RTA for review.

Recommendation 4. The proposed works will require the excavation of a trench within the bridge curtilage and installation of an externally mounted pipeline along the Appin abutment. Trenched sections of the pipeline are considered to have no heritage impact to the bridge and its setting. The externally mounted section of the pipeline, while having a minor impact to the fabric of the bridge, is considered acceptable by Biosis based on their assessment and statement of heritage impact. Biosis recommended that the proposed works may proceed provided any conditions that the RTA Heritage Branch may impose as owners of the impacted asset are taken into account.

Recommendation 5. All historical archaeological sites greater than 50 years of age are protected under the relics provision of the NSW Heritage Act 1977. Should any historical relics be uncovered during works associated with the proposed pipeline, works should cease in the immediate vicinity of the find and the NSW Heritage Office be notified. A qualified archaeologist may also be required to assess the find. It is an offence to disturb an historical archaeological site without an excavation permit issued by the NSW Heritage Office.

4.8 Visual Impact

Significant visual impact is not predicted. The short duration of construction will minimise the opportunity for adverse visual impact and large sections of the proposal are not visible from public vantage points.

4.9 Avoiding Current Services

The existing 50mm section of pipeline, in the services easement adjacent to the Bulli/Appin Road, will be located and marked by the Contractor using the “dial before you dig” service. No excavation works will take place on the easement until the location of the pipeline is identified. Similar investigations to determine the location of existing services that may be affected by the installation of pipe work on the Appin and West Cliff sites will to be carried out by mine site personnel before any excavation work takes place.

The pipe routes on both mine sites will be set out and clearly marked by a surveyor so the location is accurately established before installation commences. The surveyor shall be on call during the construction to clarify alignment issues, assess critical grades and curvatures and replace lost pegs, as required.

4.10 Pipe Failure

During operations, the pipeline will be carrying high quality water from either the Douglas desalination plant or the Appin town water supply scheme. Consequently, any line breaks would not result in poor quality water being discharged to the environment.

Existing system monitoring at West Cliff and Appin can detect pipe failure and result in system close down.

5. PROJECT ENVIRONMENTAL MANAGEMENT

BHPBIC maintain responsibility for the environmental management of the proposal.

The BHPBIC EMS is certified to the ISO 14001 standard.

The successful water supply installation contractor will prepare a safe working method statement, which will include details of environmental controls for the worksite. The following details will be included as a minimum:

- All staff will be briefed on the environmental controls prior to work commencing,
- Requirements to manage noise, dust generation and water pollution as well as any additional local environmental aspects,
- Plant will receive an inspection prior to commencing work on site to ensure it is safe and fit for purpose, and,
- Plant will be inspected daily to ensure appropriate standards are maintained.

5.1 Construction Safety

All work must be covered by a Permit to Work, which will be issued by Mine Site Safety Personnel. The Permit covers all aspects of safety management and includes a risk assessment. The contractor will be required to complete this risk assessment prior to issue of the Permit.

All of the Contractor's workforce will be required to undertake Appin Colliery and West Cliff Colliery Safety and Environmental Training prior to commencing work on site.

The Contractor's entire site workforce is required to wear a safety helmet, safety glasses and steel capped footwear.

In addition to the colliery induction and site safety regulations, the Contractor will be required to take all necessary precautions for the safety of his employees and his sub-Contractor's employees and comply with all safety regulations applicable to the site.

The Contractor will ensure all equipment is maintained in a safe and secure condition during the project period.

The Contractor will be required to immediately report to the Site Engineer any reportable incident or serious bodily injury as defined in the Coal Mine Health and Safety Regulations 2006. The Contractor will assist the Site Engineer in completing a colliery Accident/Incident investigation form for any accident requiring first aid treatment or incident which has the potential to injure persons or damage equipment occurring on the site.

The Contractor will provide all necessary first aid equipment for the site and establish a method of emergency communication so that emergency services can be readily contacted.

5.2 Statutory Equipment Inspection

All motorised plant to be used by the Contractor and his sub-contractors for execution of the works will be subject to Statutory Inspection by the Mine Electrical and Mechanical Engineers. If an inspection concludes that any equipment does not comply with the Act it is not to be used on the site. Vehicles on site for short periods, such as delivery trucks and concrete trucks, will be excluded from this requirement. The motorised equipment shall also comply with WorkCover requirements.

5.3 Construction Works Pollution Control Measures

The Contractor will be required to ensure that appropriate protection, in the form of silt fencing and diversion drains, are in place to control contaminated stormwater and waste water run-off from his works. The George's River runs along the eastern boundary of Appin Colliery and is included in the construction area. Uncontrolled run-off from the construction works is likely to flow into the River and appropriate protection is required as it is an offence under the Clean Waters Act to discharge contaminants into the waterway.

The Contractor will prepare an Environmental Management Plan (EMP) which addresses the physical barriers, standard procedures and emergency response planned to be established on the site during the construction period. This EMP is to be in place prior to work commencing.

5.4 Site Establishment and Demobilisation

A nominated area on each of the mine sites will be made available for the Contractor to establish a site shed. The Contractor shall make arrangements for the provision of rubbish bins and for their regular replacement when full.

When the project is complete the shed and all rubbish, damaged vegetation and construction debris is to be removed from all areas disturbed by the works and the surface graded to smooth contours. The cleanup shall be to the satisfaction of the Site Engineer.

5.5 Site Services

The Contractor will be responsible for locating existing services, which may interfere with the works, by site inspection, engaging "dial before you dig" and with the cooperation of the Site Engineer.

The Contractor will ensure that existing site services are not disrupted unless unavoidable. Where disruption to a service line is necessary the Contractor is to give at least 24 hours notice of the requirement to the Site Engineer. The Contractor will liaise with the Site Engineer as to the most appropriate method of managing the disruption.

A Permit to Excavate from the collieries is required for all excavations on site. The Contractor is to give 24 hours notice to the Site Engineer of the requirement to obtain this Permit.

5.6 Access to Construction Sites

Access to the overland pipeline services easement, beside the Bulli/Appin Road, will be from a turnoff near the Kings Falls Bridge. The Contractor will ensure that his employees, delivery trucks and sub-contractors do not park on the Bulli/Appin Road when working on the project.

The Contractor will also ensure that trucks and machinery leaving the site do not spill any waste materials on the Road. If this occurs it will be the Contractor's responsibility to clean up the spillage.

The Supervising Engineer shall assign areas on the Appin and West Cliff Mine sites where the Contractor can store pipes and equipment.

6. CONSULTATION

Consultation for this project commenced prior to the preparation of the Environmental Assessment and has continued throughout the preparation of the Environmental Assessment. The following section describes the consultation process and the issues raised for relevant local, state and commonwealth government authorities, service providers, community groups and affected landowners. A summary of specific consultation with Department of Environment and Conservation, Department of Natural Resources, Department of Primary Industries, NSW Roads and Traffic Authority, and Wollondilly Council, as required in the DGRs are included in Table 6.1.

Table 6.1. Consultation Process and Issues

Party	Process	Issue
Department of Environment and Conservation Contacts: Kate Hopkins and Craig Pattison, Operations Officers	Telephone conversation to arrange meeting and confirm they had PA Meeting with IC Manager Environment, IC Manager Approvals and Director of OEC 30.1.07 Reviewed PA and discussed progress with EA	Within existing transmission line easement Route in ground already disturbed by other services Sediment control focus Provide DEC copy of EA
Department of Natural Resources Contact: D Goldrick Senior Natural Resource Officer	Telephone conversation 31.1.07 e-mail Provided Preliminary Assessment 31.1.07 e-mail Response 2.2.07	Erosion and sediment control. Rehabilitation of disturbed areas Design of trenching across the Georges River. Finished surface to be the same as the existing bedrock shelf
Department of Primary Industries Contact: J Egan Manager Regional Operations (Southern)	Meeting with IC Manager Environment, IC Manager Approvals and Director of OEC 29.1.07 Reviewed PA and discussed progress with EA	No issues
NSW Roads and Traffic Authority Contact C Millet Manager Land Use Development Impacts	Numerous discussions to arrange suitable route and crossing.	Pipeline design and route discussed and agreed with RTA officers.
Wollondilly Shire Council Contact: M Kelly, Supervisor Development	Meeting with IC Engineering Manager, IC Project Manager and IC Manager Approvals. 17.1.07	Correct Zoning is 1(a1) Minimising Disturbance Sediment and Erosion Control Revegetation

Assessment B Stag, Environment Manager		Threatened species in the Area, identified in earlier studies. Provide 2 copies of EA
Mine Subsidence Board Contact D Bullock Picton District Manager	Provided copies of Preliminary Assessment 17.1.07 Telephone conversation 9.2.07 e-mailed confirmation 9.2.07	Provide copy of EA Pipeline east of the Georges River outside the MSB District
Appin Area Community Working Croup	Meeting with IC Manager Environment, IC Manager Approvals 21.11.06 Reviewed PA and discussed progress with EA	Clearing of vegetation

The Director General's Requirements have attached to them letters from various Government Departments on matters that they wished to see addressed in the Environmental Assessment for this Project (Refer Appendix III). In addition, specific meetings were held with those Government Departments listed in the Director Generals Requirements as well as Wollondilly Shire Council officers.

The following sections describe the matters discussed at those meetings and the issues identified as requiring assessment.

6.1 Wollondilly Shire Council

A meeting to describe the proposal was held with Planners from Wollondilly Shire Council. The Planners agreed with proposal to seek approval for the Water Supply under Part 3A of the Environmental Planning and Assessment Act, 1979.

They requested BHPIC to correctly identify the zoning of the affected land as Rural 1(a1) and requested details and commitments to proper revegetation of any disturbed areas.

6.2 Department of Planning

Discussions have been held with Departmental Officers from the Major Developments Assessment Branch, located in Sydney. These discussions clarified the planning approval process.

6.3 Roads and Traffic Authority

Due to the low predicted traffic numbers during construction and operation, it is unlikely that any approval will be required from the Roads and Traffic Authority. However, the proposals have been discussed with the Authority.

Project design options and potential pipeline routes were discussed and agreed with officers from the RTA. Biosis also made contact with the RTA Heritage Branch to discuss attaching the pipeline to the western abutment of Kings Falls Bridge which is classified as having local heritage significance. The Heritage Branch has requested that a copy of the Biosis Heritage Assessment be sent to them for review.

6.4 Mine Subsidence Board

Only the section of the proposal west of the Georges River will be undertaken within a Mines Subsidence District. The majority of the pipeline (east of the Georges River) is not within a Mine Subsidence District. The Board has been advised of the proposals.

6.5 Department of Environment and Conservation

The DEC's main concern related to sediment and erosion control, along the pipeline route, during construction. The potential for noise impacts was discussed at length during the meeting and it was agreed that it was not likely to be an issue giving the relatively isolated location of the proposed development activity.

6.6 Department of Primary Industry (Mineral Resources)

The main issues raised by Mineral Resources related to archaeology and potential noise. The Biosis Archaeological Report (Appendix II) addresses Archaeological issues in detail. The isolated location makes acoustic impacts highly unlikely and previous discussions with DEC had concluded that noise was not likely to be an issue (Refer 6.5).

6.7 Department of Natural Resources

DNR requested that an Environmental Management Plan be developed for the construction of the pipeline. They assumed that it would be a condition of consent to prepare an EMP.

They also requested that should the RTA not agree to attaching the pipeline to the western abutment of Kings Falls Bridge any trenching in the base of the George's River should be done in a way that avoids creation of a weir effect upstream of the trench.

6.8 Local Community

BHPBIC operates a very extensive community consultation programme for its mining activities in this area. BHPBIC supports the operation of the Appin Area Community Working Group (AACWG) and participates in the meetings of this Group.

BHPBIC also operates an office in the Appin Business and Shopping Precinct. This office provides information to the community and operates as a meeting room for the community to discuss developments at Douglas, Appin and West Cliff Mines.

BHP Billiton has installed a 24-hour contact telephone line for the community to be able to contact the Mines as required.

These facilities ensure timely community input into the approval, construction and monitoring of the development.

7. PROPONENT COMMITMENTS

This Section lists all the commitments in this Environmental Assessment that BHPBilliton Illawarra Coal (BHPIC) has made and will undertake to minimise impacts on the environment if the Project is approved and proceeds.

- BHPIC will continue to operate its office in the Appin Business and Shopping Precinct during the construction of the pipeline.

- BHPIC will continue to operate a 24-hour contact telephone line.

- BHPIC will continue to support the operation of the Appin Area Community Working Group and associated community liaison activities.

- Operations to excavate the pipe trench and install the pipeline will be restricted to a corridor approximately 10m wide along the pipe route. Equipment will not be permitted to operate outside this area unless for the establishment of erosion or sediment control measures.

- If excess trench spoil remains after the pipe has been laid it shall be spread over the disturbed easement area and track rolled with the excavation equipment to blend with the surrounding ground profile.

- Stormwater runoff will be managed in accordance with guidelines detailed in the Landcom Publication, "Soils and Construction" Volume 1, 4th Edition, dated March 2004.

- Construction will not occur in the bed of the George's River during flooding.

- Only short sections (typically 100m) of trenching will be open at any particular time.

- Silt stop fences will be used downstream of the disturbed areas of the easement when trenching is occurring.

- The surface of the trenched areas will be revegetated at the completion of construction.

- The Contractor will be required to ensure that appropriate protection, in the form of silt fencing and diversion drains, are in place to control contaminated stormwater and waste water run-off from his works.

- Where possible trees will be retained, particularly those with hollows.

- Appropriate sediment/erosion and drainage control devices will be utilised during and after excavation works.

- To minimise the likelihood of weed spread or the introduction of disease, vehicles will be cleaned prior to use in the works area,

- Acacia bynoena and Persoonia hirsute specimens within and adjacent to the pipeline will be identified and flagged prior to works commencing and where possible, damage to these specimens will be avoided.

- Any landscaping, revegetation or rehabilitation works requiring tree planting will use locally endemic tubestock.

- Bush regeneration techniques such as brush matting and spread of cleared native biomass over disturbed areas and weed control will be used to encourage native regeneration. These techniques should be implemented by suitably qualified and experienced people.

- Appropriate safety measures will be implemented to ensure workforce and public safety during the time when works are being carried out around Kings Falls Bridge.

- Wastes will not be disposed on site. Port-a-loo facilities will be used on site. Packaging wastes will be recycled or sent to appropriate existing land fill sites.

- Appin Pipeline 1 Aboriginal site will be flagged prior to the commencement of ground disturbance works. The relevant Aboriginal stakeholders will be given the opportunity to inspect the initial ground disturbance works within 50m of the site.

- The relevant Aboriginal stakeholders will be given the opportunity to inspect areas of moderate Aboriginal archaeological potential, on the banks of the George's River and within 50m of recorded site Appin Pipeline 1, during initial ground disturbance.

- Should any Aboriginal relics be encountered during work, the work will cease within the vicinity of the find and the DEC and Aboriginal stakeholders notified. A qualified archaeologist may also be required to assess the find.

- The Biosis Archaeological report and statement of heritage impact will be forwarded to the Heritage Branch of the RTA for review.

- Should any historical relics be uncovered during works associated with the proposed pipeline, works will cease in the immediate vicinity of the find and the NSW Heritage Office will be notified. A qualified archaeologist may also be required to assess the find.

- No excavation works will take place on the easement until the locations of all services including the existing pipeline are identified.

- The successful water supply installation contractor will prepare a safe working method statement, which will include details of environmental controls for the worksite.

- All of the Contractor's workforce will undertake Appin Colliery and West Cliff Colliery Safety and Environmental Training prior to commencing work on site.

- The Contractor will ensure all equipment is maintained in a safe and secure condition during the project period.

- The Contractor will prepare an Environmental Management Plan (EMP) which addresses the physical barriers, standard procedures and emergency response planned to be established on the site during the construction period. This EMP is to be in place prior to work commencing and will be approved by BHPBIC.

- When the project is complete the site shed and all rubbish, damaged vegetation and construction debris will be removed from all areas disturbed by the works and the surface graded to smooth contours. The cleanup shall be to the satisfaction of BHPBIC's Site Engineer.

- The Contractor will ensure that employees, delivery trucks and sub-contractors do not park on the Bulli/Appin Road when working on the project.

- The Contractor will also ensure that trucks and machinery leaving the site do not spill any waste materials on the Appin to Bulli Road. If this occurs it will be the Contractor's responsibility to clean up the spillage.

8. DIRECTOR GENERALS REQUIREMENTS

The Director General's Requirements (DGRs) are included in full in Appendix III. Table 8.1summarises the DGRs and details which sections of the Environmental Assessment address the DGRs.

Table 8.1. Director General's Requirements and Environmental Assessment Section Reference

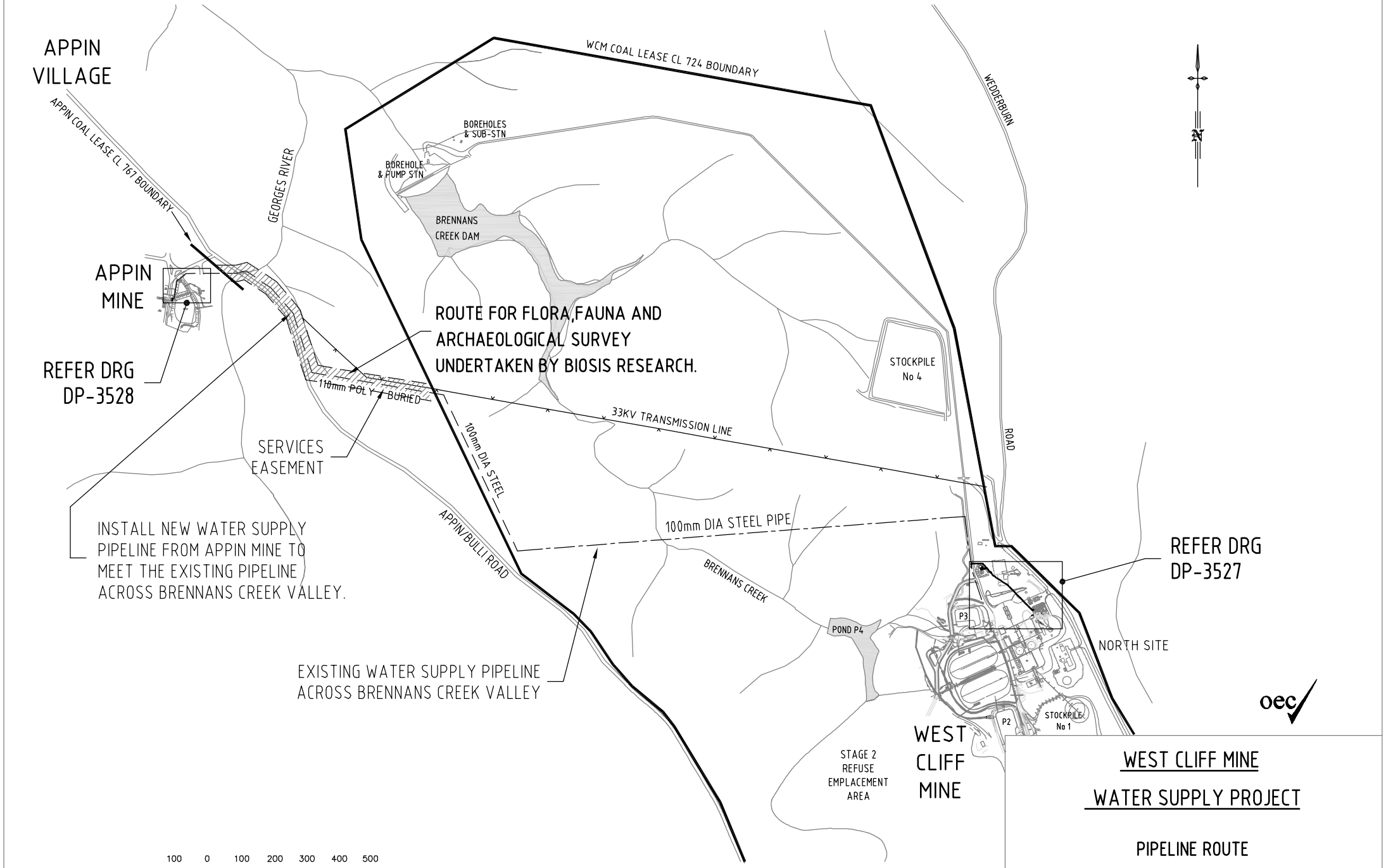
DGR Issue	Comments and Reference in Environmental Assessment
Liaise with Commonwealth Government if proposal has a significant impact on Matters of National Environmental Significance.	No significant impacts predicted. Section 4.4 and Appendix I.
The Environmental Assessment must include an Executive Summary	Included immediately after the Environmental Assessment Index.
The Environmental Assessment must include a detailed description of the project.	Refer Section 1.
The Environmental Assessment must consider relevant statutory provisions.	Refer Sections 3.
The Environmental Assessment must include a general overview of the environmental impacts of the Project, identifying the key issues for further assessment and taking into consideration the issues raised during consultation.	Refer Section 4 and Specialist Reports in Appendices I and II.
The Environmental Assessment must include a detailed assessment of the key issues specified as, Surface Water, Flora and Fauna, and Heritage.	Refer to: Section 4.2 and 5.3 for Surface Water, Section 4.4 and Appendix I for Flora and Fauna, Section 4.7 and Appendix II for Heritage,
The Environmental Assessment must include a description of the measures that would be implemented to avoid, minimise, mitigate, offset, manage and/or monitor the impacts of the project.	Refer Sections 4, 5 and 7.
The Environmental Assessment must include a Draft Statement of Commitments outlining environmental management, mitigation and monitoring measures.	Refer Section 7.
The Environmental Assessment must include a conclusion justifying the project, taking into consideration the environmental impacts of the proposal, the suitability of the site, and the benefits of the project.	Refer Executive Summary and Conclusion. Last paragraph.

The Environmental Assessment must include a signed statement from the author of the Environmental Assessment certifying that the information contained in the report is neither false nor misleading.	Information Statement included in the front of the Environmental Assessment.
The Environmental Assessment must take into account relevant State Government technical and policy guidelines.	Refer various Specialist Consultant reports in Appendices I and II.
During the preparation of the Environmental Assessment, the Proponent must consult with the relevant local, State or Commonwealth Government authorities, service providers, community groups or affected landowners. The consultation process and the issues raised must be described in the Environmental Assessment. In particular, the Proponent must consult with, Department of Environment and Conservation, Department of Natural Resources, Department of Primary Industries, NSW Roads and Traffic Authority and Wollondilly Council. The consultation process and the issues raised must be described in the Environmental Assessment.	Refer Section 3 6. Also submissions from various Government Authorities attached to the DGRs in Appendix III.

FIGURE DP-3526C

Pipeline Route Appin Mine – West Cliff Mine. Dated 27.02.07

Olsen Environmental Consulting Pty Ltd



oec

WEST CLIFF MINE

WATER SUPPLY PROJECT

PIPELINE ROUTE

APPIN MINE - WEST CLIFF MINE

27.02.07

DP-3526C

APPENDIX I

Flora and Fauna Assessment: Appin to West Cliff Pipeline. Dated February 2007

Biosis Research Pty Ltd

APPENDIX II

Archaeological Assessment: Appin to West Cliff Pipeline, Appin, NSW. Dated February 2007

Biosis Research Pty Ltd

APPENDIX III

Director Generals Requirements