



Planning & Infrastructure

***MAJOR PROJECT ASSESSMENT
NRE No. 1 Colliery
Preliminary Works Project
(MP 10_0046)***



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

October 2011

Cover Photo: NRE No. 1 Colliery / Source:<http://www.longwalls.com/storyview.asp?storyid=1133373#>

The original version of this report was dated 24 August 2011. This version has been revised to respond to a number of issues raised by the Planning Assessment Commission and to update recommended conditions of approval.

© Crown copyright 2011
Published October 2011
NSW Department of Planning
www.planning.nsw.gov.au

Disclaimer:

While every reasonable effort has been made to ensure that this document is correct at the time of publication, the State of New South Wales, its agents and employees, disclaim any and all liability to any person in respect of anything or the consequences of anything done or omitted to be done in reliance upon the whole or any part of this document.

EXECUTIVE SUMMARY

The NRE No. 1 Colliery is an existing underground coal mine owned and operated by Gujarat NRE Coking Coal Ltd (Gujarat) and located approximately 8 kilometres north of Wollongong. The NRE No. 1 Colliery Preliminary Works Project involves the continuation of existing operations at NRE No. 1, which would extend the life of mining operations by up to 3 years. It would involve the extraction of 1 million tonnes of run-of-mine coking coal a year from the Bulli and Wongawilli Seams, as well as upgrading the existing infrastructure at the mine's surface facilities site.

The proposal has a capital investment value of \$122 million and would result in the continued employment of 337 employees (plus an additional 25 contractors during the proposed construction and upgrades). As the vast majority of these employees reside within the region, the majority of payments to employees, suppliers and contractors would be paid into the regional economy. Additional social and economic benefits would be derived from the taxes paid by Gujarat, its suppliers and employees and royalty payments from the coal produced.

The project application area covers over 6,500 hectares and the majority of this comprises an extensive underground lease area, which lies under the Woronora Plateau west of the Illawarra Escarpment. The surface facilities site occupies approximately 100 hectares, located on the lower slopes east of the Illawarra Escarpment at Russell Vale.

The proposal constitutes a major project under Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act) as it is development for the purpose of coal mining, and consequently requires the Minister's approval. The Planning Assessment Commission (PAC) must determine the application under the Ministerial delegations of 25 January 2010 and 28 May 2011.

The Department exhibited the project from 28 October 2010 until 29 November 2010. The Department received a total of 23 submissions during the exhibition period, of which 15 objected to, or raised concerns about, the proposal.

The key areas of concern raised in submissions were air quality and noise impacts from activities at the surface facilities site, surface water issues relating to Bellambi Gully Creek, and impacts related to trucking of coal off-site. The Office of Environment and Heritage and Wollongong City Council also raised concerns about the loss of habitat for the Green and Golden Bell Frog.

The Department has assessed the project application, the environmental assessment, submissions on the project and Gujarat'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.

The Department has assessed the potential noise and air quality impacts resulting from the proposal, and considers that they are generally minor in nature and similar to existing levels of impact, as the proposal does not involve any increase in coal production. The upgrades at the surface facilities site also lead to future reductions in noise and air quality impacts, which the Department has sought to confirm through strict conditions of approval.

Similarly, the Department is satisfied that the project's proposed upgrades to water management at the surface facilities site would improve existing operations and prevent further instances of pipeline blockages and on-site flooding.

The Department has considered the potential traffic impacts of the proposal and considers that they are unlikely to be significant given that coal production would not be increased, and that the trucking of coal off-site does not significantly contribute to daytime traffic noise. In relation to trucking at night-time and on Sundays, the Department has included a condition of approval that restricts the amount of coal transported at these times to a maximum of 20% of the total coal transported. As there is currently no such restriction, the Department believes that this would reduce potential truck impacts at night.

In relation to the Green and Golden Bell Frog, the Department accepts that the project would result in some loss of potential habitat due to the removal of a dam at the surface facilities site. However, despite a number of repeated, targeted surveys, there has been no confirmed recording of the frog at NRE No. 1. The Department is satisfied that the potential impacts on potential frog habitat can be minimised, mitigated or managed through conditions of approval.

On balance, the Department believes that the project represents a logical progression of Gujarat's existing mining operations at NRE No. 1, is satisfied that its benefits sufficiently outweigh its costs and it is able to be conducted in a manner consistent with the objects of the EP&A Act. Consequently, it believes the project is in the public interest and should be approved, subject to strict conditions.

1 BACKGROUND

1.1 Project Location

Gujarat NRE Coking Coal Ltd (Gujarat) owns and operates the NRE No. 1 Colliery (NRE No. 1), located in the Illawarra region, approximately eight kilometres (km) north of Wollongong and 70 km south of Sydney (refer to Figure 1).

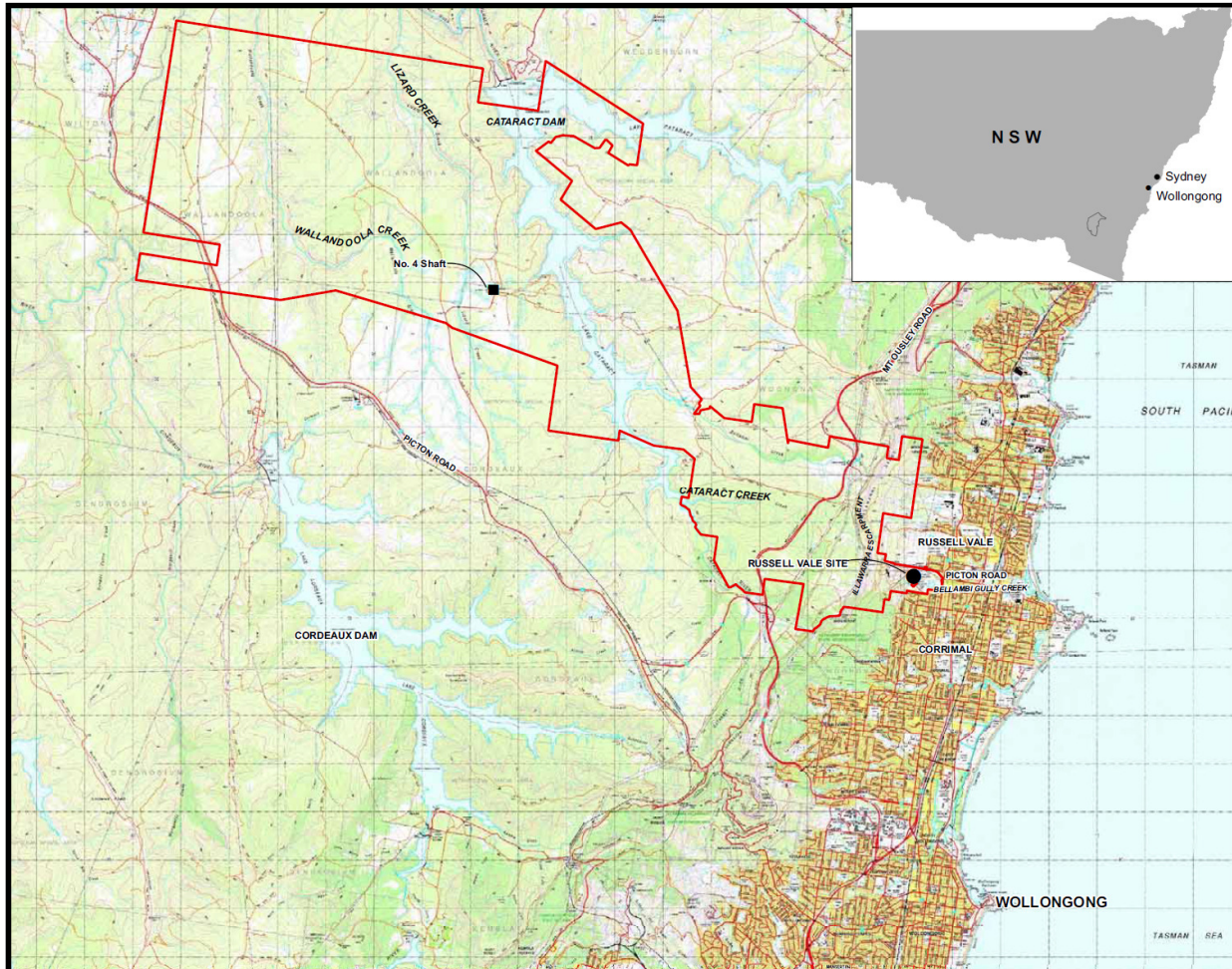


Figure 1 – Regional Location and Project Application Area (project application area marked in red)

1.2 Project Setting

The NRE No. 1 Colliery Preliminary Works Project is located within the Wollongong and Wollondilly local government areas (LGAs). The project application area covers over 6,500 hectares (ha) and the majority of this comprises an extensive underground lease area, which lies under the Woronora Plateau west of the Illawarra Escarpment (see Figure 2 below).

The surface facilities site occupies approximately 100 ha, located on the lower slopes east of the Illawarra Escarpment at Russell Vale, west of the Princes Highway. Residential areas in Russell Vale and Corrimal are located to the east and south of the site respectively. Site access is via a private driveway from the Princes Highway, at a signalised intersection with Bellambi Lane.

In addition to the surface facilities site, NRE No. 1 has four ventilation shafts (Shaft Nos 1, 2, 3 and 5) and a shaft to provide personnel and materials access to the workings (No. 4 Shaft), which is located approximately 20 km to the northwest, and accessed from Picton Road.

The area of proposed mining is mostly covered by native bushland and includes creeks, tributaries and, upland swamps. It is within the Metropolitan Special Area water catchment and contains much of the reservoir behind Cataract Dam, which supplies potable water to Sydney. It also includes part of the Southern Freeway (ie Mount Ousley Road), a Telstra fibre optic cable, fire trails and various electrical transmission lines. Other key features close to the area of proposed mining include Picton Road and Bellambi Gully Creek.

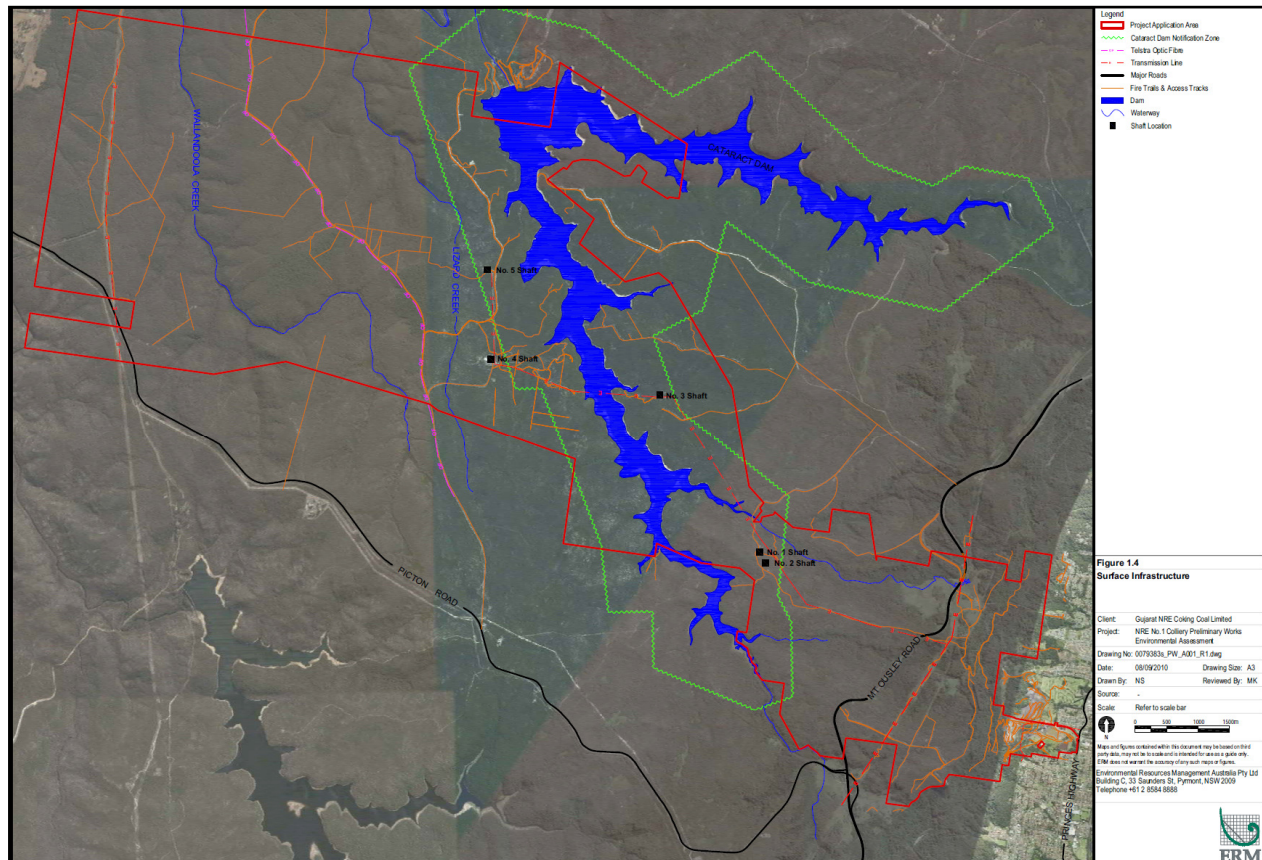


Figure 2 – Aerial Photograph of Project Application Area and Surrounds

1.3 Existing Operations

Gujarat is currently mining high quality coking coal in the Bulli and Wongawilli Seams at NRE No. 1 with a production rate of approximately 1 million tonnes per annum (Mtpa). Current workings in the Bulli Seam include pillar extraction in the T and W Mains area, first workings in the P Panel in the central portion of the site and the P & R drifts driveage. There are no current workings in the Balgownie Seam, although longwall mining of this seam has occurred in the past. Coal from NRE No. 1 is trucked to the Port Kembla Coal Terminal from where it is primarily shipped for use as metallurgical (ie coking) coal in India. No coal is washed at NRE No. 1, ie the coal that is exported is run-of-mine (ROM) coal.

Underground mining at NRE No. 1 (formerly the South Bulli Colliery) commenced in the mid-to-late nineteenth century and has occurred almost continuously since then. In August 2004, production temporarily ceased and the mine was placed on care and maintenance until December of that year. It was then sold to Gujarat by Bellpac Pty Ltd and mining recommenced in July 2005.

NRE No. 1 currently operates under various forms of 'continuing use rights', without any development consent. This is because it has been in operation since before the commencement of the *Environmental Planning & Assessment Act 1979* (EP&A Act), and provisions in local planning instruments and the *Mining Act 1992* allowed the continuation of mining operations in an existing mining lease without the need for development consent. However, these provisions have now been amended or removed and all mining operations in existing mining leases require approval under the EP&A Act by 31 December 2011.

2 PROPOSED PROJECT

The project involves a short-term continuation of existing operations at NRE No. 1, which would extend the life of mining operations by up to 3 years. It also involves upgrading the existing mining infrastructure at the surface facilities site and has a capital investment value of \$122 million. The major components of the project are summarised in Table 1, and depicted on Figures 3, 4 and 5. The project is described in full in Gujarat's Environmental Assessment (EA), attached as Appendix A.

Pillar extraction of remnant coal reserves is proposed in two areas of the Bulli Seam (the V Mains and the 309 Panel) and first workings are proposed in one small panel of the Bulli Seam (the H Panel). First workings are also proposed in the Wongawilli Seam, including the development of gateroads for potential future longwall extraction (refer to Figure 3).

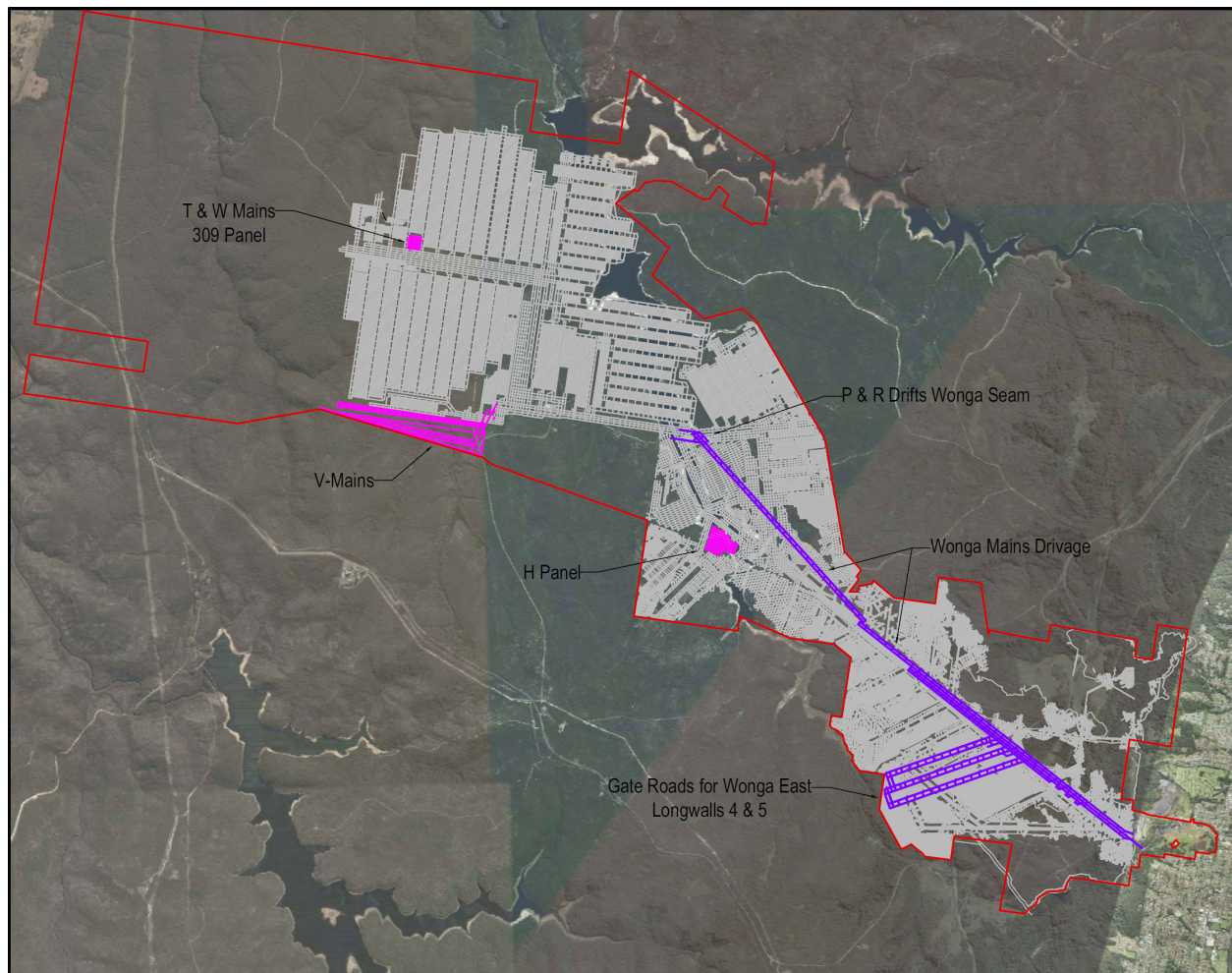


Figure 3 – Current and Proposed Workings



Figure 4 – Surface Facilities Site

Gujarat is also currently planning a significant expansion of NRE No. 1 (the 'Underground Expansion Project') involving longwall mining in the western areas of the mining leases (Wonga West) and beneath existing mine workings in the eastern areas (Wonga East). This latter project has an estimated capital investment value of \$250 million and would extend the life of mining by approximately a further 18 years.

Gujarat is seeking a separate approval for the Underground Expansion Project. The key reason for this separation is that Gujarat did not previously hold sufficient baseline and monitoring data to fully describe and assess the potential impacts of the larger project. In addition, a short-term project approval for 'continued operations' at NRE No 1 was required by 31 December 2011, if Gujarat was to avoid cessation of operations at that date due to the planned expiry of its exemption from the need to obtain development consent. While the Preliminary Works Project application, largely involving the continuation of existing mining operations and surface facilities upgrades, has been under assessment, Gujarat has had the opportunity to gather this baseline and monitoring information and to prepare an adequate EA for the expansion project.

The Department is satisfied that this approach is appropriate in the circumstances, since it will result in full and comprehensive assessment of the potential impacts of the proposed expansion, while also allowing continuity of mining operations at NRE No. 1.

The environmental assessment for the Underground Expansion Project has not yet been completed or publicly exhibited.



Table 1: Summary of Preliminary Works Project

Aspect	Summary
Project Summary	- The project involves: - augmenting, upgrading and using the existing infrastructure; - extracting up to 1 million tonnes (Mt) of run-of-mine (ROM) coking coal a year from the Bulli and Wongawilli Seams for a period of three years; and - trucking ROM coal from NRE No. 1 to Port Kembla Coal Terminal (PKCT);
Mining and Reserves	- The project application area covers approximately 6,545 ha, encompassing CCL 745, MPL 271 and ML 1575. - Current production at NRE No.1 is approximately 1 Mtpa. - More than 300 Mt of coking coal resources remain within the project application area in the Bulli, Balgownie and Wongawilli Seams. - It is estimated that a total of approximately 2.2 Mt of ROM coking coal will be recovered as part of this project.
Production	Up to 1 Mt of ROM coal a year (equivalent to historical production levels).
Project Life	Up to 3 years.
Coal Processing	- The coal washery ceased operation in March 2003, and is no longer in use. All ROM coal is now transported unwashed to PKCT for shipment to India. - There is an emplacement area to the north of the NRE No. 1 site, which operates under a separate development consent from Wollongong Council. This area is outside the project application area and is not used by Gujarat.
Coal Stockpiling	- There are currently two stockpiles on-site – the Bulli bin stockpile and the Wongawilli stockpile – which are managed with dust suppression sprays. The stockpiling capacity is 60,000 to 80,000 tonnes. - A temporary stockpile located to the east of the ROM stockpile is used for the storage of high ash coal which has minimal coking properties. This temporary stockpile is being progressively removed from the site. After its removal, higher ash coal would be stored and blended underground.
Surface Infrastructure	In addition to the Russell Vale surface facilities site, Gujarat has surface mining leases at one access shaft (No.4 Shaft) and four ventilation shaft sites (No. 1, 2, 3 and 5 Shafts) and easements for power and water supply.
Product Coal Transport	- All coal is trucked off-site to PKCT. - Trucking would occur between 7 am to 10 pm Monday to Friday and 8 am to 6 pm on Saturdays, Sundays and public holidays.
Water Demand and Supply	- Potable water demands at the Russell Vale site are met by connection to Wollongong's reticulated water supply. - Water demands at No. 4 Shaft are met by a combination of raw water purchased from SCA and recycled process water.
Employment	- Gujarat currently employs approximately 259 permanent staff and 78 contractors. No additional operational staff would be required for the project. - It is estimated that an additional 25 construction contractors would be required during a nine-month construction phase for the proposed capital works.
Mine Access	- Personnel and materials would continue to access the underground mine via the No. 4 Shaft and winder and the portals at the Russell Vale site. The No. 4 Shaft would continue to be the primary access for personnel. - There are also three recently-constructed portal entries – one in the Wongawilli Seam and two in the Balgownie Seam.
Hours of Operation	24 hours/day, 7 days/week.
Capital Value	\$122 million.
Rehabilitation	- The proposed mining is not expected to require significant rehabilitation or remediation due to the low predicted subsidence impacts. - Rehabilitation of the surface facilities site would continue to be carried out.

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 Development) 2005*.

Consequently, the Minister for Planning and Infrastructure is the approval authority for the project. The Planning Assessment Commission must determine the application under the Ministerial delegations of 25 January 2010 and 28 May 2011, because Gujarat has declared reportable political donations.

3.2 Permissibility

The land subject to the application is covered by two local environmental plans (LEPs) – the *Wollongong Local Environmental Plan 2009* and the *Wollondilly Local Environmental Plan 2011*.

Under the Wollongong LEP 2009, the project application area is subject to a number of different zones including Zone RU1 Primary Production, E2 Environmental Conservation, and SP2 Infrastructure. Extractive industries are permissible with development consent in RU1 but prohibited in both zones E1 and SP2. A small section of the project application area is E2 – Environmental Conservation under the Wollondilly LEP 2011, and the proposed project is prohibited in this zone.

However, clause 7(1)(a) of the *State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007* makes underground mining permissible with consent on any land. Consequently, all aspects of the project are permissible with development consent.

3.3 Other Approvals

A subsidence management plan (SMP) was approved by the Division of Resource and Energy (DRE) within the Department of Trade, Investment, Regional Infrastructure and Services, on 23 August 2010, for first workings and pillar extraction from the V Mains within the Bulli Seam.

Section 75U of the EP&A Act provides that a number of other statutory approvals are integrated into the Part 3A assessment and approval process, and are therefore not required to be separately obtained for the project. These include:

- water-related approvals under the *Water Management Act 2000*; and
- heritage-related approvals under the *National Parks and Wildlife Act 1974* and *Heritage Act 1977*.

Under Section 75V of the Act, a number of other approvals are required to be obtained, but these approvals cannot be refused and must be “substantially consistent with” any Part 3A approval for the project. These include:

- mining leases under the *Mining Act 1992*;
- approvals under the *Mine Subsidence Compensation Act 1961*;
- environment protection licences under the *Protection of the Environment Operations Act 1997*; and
- consents under section 138 of the *Roads Act 1993*.

The Department has consulted with the relevant government authorities responsible for these other approvals, and considered the relevant issues relating to these approvals in its assessment of the project. None of the relevant authorities object to the project.

3.4 Exhibition and Notification

Under Section 75H(3) of the EP&A Act, the Director-General is required to make the environmental assessment (EA) for a project publicly available for at least 30 days. After accepting the EA for the project (see Appendix A), the Department:

- notified relevant State government agencies, Wollongong City Council and Wollondilly Shire Council;

- made the EA publicly available from 28 October 2010 until 29 November 2010:
 - on the Department's website
 - at the Department's Information Centre, Wollongong City Council and Wollondilly Shire Council; and
 - at the offices of the Nature Conservation Council.

During the assessment process the Department also made a number of documents available on the Department's website for viewing or download. These documents included the:

- project application;
- Director-General's environmental assessment requirements;
- all submissions;
- Gujarat's EA; and
- Gujarat's responses to issues raised in submissions.

3.5 Environmental Planning Instruments

Under Section 75(2)(d)&(e) 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 (EPIs) that substantially govern (or would substantially govern, if not for the provisions of Part 3A) the carrying out of the project and that have been taken into consideration in the environmental assessment report.

The Department has reviewed section 5 and Annexure D of the EA and is satisfied that they fully summarise the provisions of all such EPIs. The Department is satisfied that there are no State Environmental Planning Policies (other than the *State Environmental Planning Policy (Major Development) 2005*) which substantially govern the carrying out of the project. The Department is satisfied that no other relevant EPI requires to be specifically taken into consideration in this assessment report.

3.6 Objects of the *Environmental Planning and Assessment Act 1979*

The Minister is required to consider the objects of the EP&A Act when making decisions under the Act. The objects of most relevance to the Minister's decision on whether or not to approve the proposed modifications are found in Section 5(a)(i),(ii), (vi) and (vii). They are:

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; ...*
- (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.*

The Department is satisfied that the project encourages the proper use of resources (Object 5(a)(i)) and the promotion of orderly and economic use of land (Object 5(a)(ii)), particularly as the subject coal resources are located within existing mining leases currently being mined by Gujarat. In addition, the project would represent a sound economic use of Gujarat's existing mining facilities and infrastructure. The encouragement of environmental protection (Object 5(a)(vi)) is considered in detail in Section 5 of this report.

The Department has fully considered the encouragement of ecologically sustainable development (ESD) as required by Object 5(a)(vii), and has sought to integrate all significant environmental and economic considerations and avoid any irreversible damage to the environment based on risk-weighted

consequences. Based on these considerations, the Department is satisfied that the project can be carried out in a manner that is consistent with the principles of ESD.

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

4 CONSULTATION

4.1 Summary of submissions

Following exhibition of the project's EA from 28 October 2010 until 29 November 2010, the Department received a total of 23 submissions comprising:

- 8 from public authorities,
- 12 from special interest groups; and
- 3 from the general public.

All 15 of the submissions from special interest groups and the general public objected or raised concerns about the proposal. A full copy of these submissions is attached in Appendix B. Gujarat provided a response to submissions from both the public authorities and the general public (see Appendix C). A summary of the key issues raised in these submissions is provided below in Figure 6. All of these issues are addressed in the Department's assessment of the project in Section 5 below.

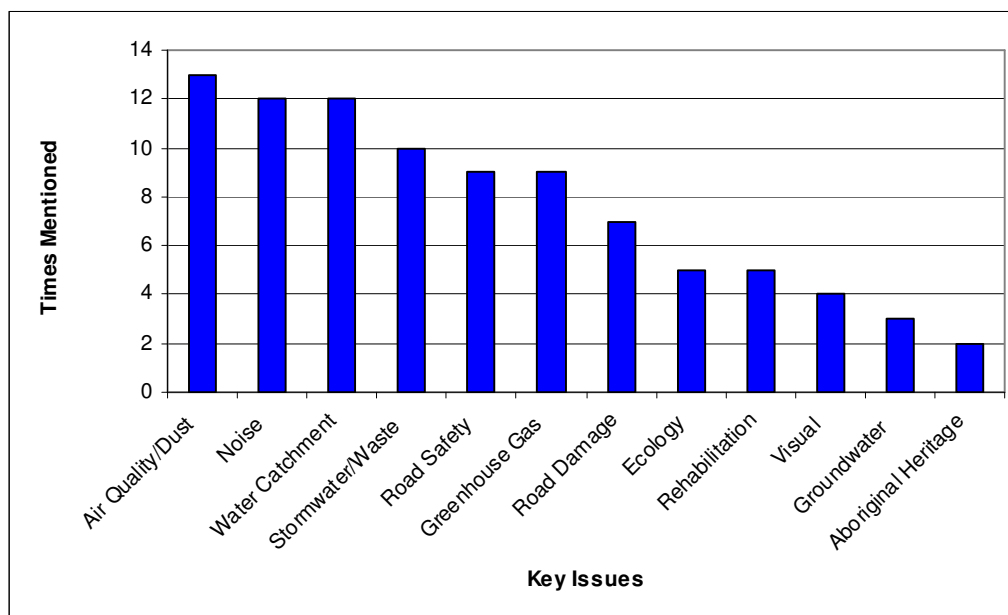


Figure 6 – Key Issues raised in submissions

A number of public submissions also raised concerns about the proposed future expansion of NRE No. 1 and potential associated impacts. As noted above, Gujarat is seeking a separate approval for the Underground Expansion Project and the environmental assessment for that proposal has not yet been publicly exhibited. The Department is aware that there are likely to be greater impacts associated with the Underground Expansion Project, however the Department can only assess the merits of the current proposal (ie the Preliminary Works Project). The Underground Expansion Project will be subject to a separate, comprehensive assessment at a later date, and the public will have opportunities to make submissions about this proposal during that assessment process.

4.2 Agency Submissions

The **Office of Environment and Heritage (OEH)**, formerly the Department of Environment, Climate Change and Water) does not object to the proposal but provided comments on Gujarat's response to submissions, which raised concerns about a number of residual issues, including subsidence impacts, noise, trucking, air quality and biodiversity. OEH also noted that the project application area extends beyond the proposed mining operations and surface facilities activities, in particular with regard to further development of the existing main headings driveage in the Wongawilli Seam (the 'Wonga Mains', see Figure 3). Gujarat has indicated that it sees continued development of the Wonga Mains as essential, in order to avoid delays of up to 18 months in development of the proposed western series of longwall panels in the Wongawilli Seam, should its Underground Expansion Project be approved. Gujarat has also acknowledged that development of the Wonga Mains is at its own business risk, should approval of the Underground Expansion Project be either refused or delayed. The Department also notes that Gujarat would be restricted (in terms of development requiring consent) to undertaking activities that are specifically permitted in the proposed conditions of approval and described in the EA.

In relation to biodiversity, OEH is particularly concerned about the potential impacts of the proposal on the Green and Golden Bell Frog (GGBF) and its habitat, and has recommended that Gujarat undertake further surveying for this species, prepare a management plan and provide an offset. Gujarat has since provided further information to the Department dated 8 June 2011, which outlines further surveying that was undertaken in response to a similar request from the Commonwealth Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC). In addition to the surveying that was undertaken during May and September 2010 as outlined in the EA, further surveying was undertaken in November 2010 and January and March 2011 in accordance with the Commonwealth guidelines. The GGBF has not been detected in any of these surveys.

In relation to noise, OEH recommended that Gujarat implement best practice management across the surface facilities site and discussed the potential location of mitigation barriers. OEH also made a number of recommendations about trucking including that it be restricted to Monday to Friday, 7am to 6pm, that internal haul roads are sealed and that trucks are not washed when exiting the site. Gujarat has since provided additional information stating that some sections of the internal haul roads cannot reasonably be sealed at this time since their locations would be temporarily varied to accommodate the proposed upgrades of the surface facilities. OEH accepted this justification for not sealing the internal haul roads at this time and instead made recommendations relating to the maintenance of unsealed roads.

OEH's only recommendation in regards to subsidence was that the conditions of the SMP for V Mains are applied to all proposed mining across the proposed project.

Wollongong City Council (WCC) does not object to the proposal but also provided comments on the response to submissions, which addressed its residual concerns and made numerous recommendations. WCC raised a number of similar issues to OEH including the need for a management plan and consideration of an offset for disturbance to GGBF habitat, the restriction of off-site trucking hours and issues relating to noise and air quality impacts from trucking.

WCC also raised concerns about potential water loss in Wallandoola Creek above the proposed mining area at V Mains, as well as potential impacts of discharges into Bellambi Gully Creek at the surface facilities site. WCC recommended the implementation of a Catchment Monitoring Program, which would require updates and ongoing consultation with both Council and OEH's Heritage Branch. WCC also made a number of recommendations about community consultation and various mitigation measures including the implementation of a greenhouse gas emission reduction program.

Sydney Catchment Authority (SCA) does not object to the proposal but has also provided additional comments on the response to submissions outlining its residual issues. SCA has made similar recommendations to OEH and WCC in regards to potential impacts on Wallandoola Creek and the need for a Catchment Monitoring Program and Rehabilitation Plan.

SCA also raised concerns about certain perceived uncertainties regarding the potential subsidence impacts including cumulative impacts and the additional effect of a known igneous dyke. It has requested that certain performance measures be included in the conditions of approval and that Gujarat provide monthly subsidence reports. The Department has taken these issues into consideration but considers that many of SCA's concerns are more relevant to the separate project application for the Underground Expansion Project.

SCA also raised concern about the separation of proposed mining activities at NRE No. 1 into two separate project applications (ie the Preliminary Works Project and the Underground Expansion Project). As indicated above, the key reason for this separation is that Gujarat did not previously hold sufficient baseline and monitoring data to fully describe and assess the potential impacts of the proposed Underground Expansion Project.

The **Division of Resources and Energy (DRE)** within the Department of Trade, Investment, Regional Infrastructure and Services (formerly Industry and Investment, I&I) originally raised a number of concerns about rehabilitation and subsidence, but was satisfied with Gujarat's response to submissions. DRE noted that there are a number of major concerns regarding subsidence for the separate project application for the Underground Expansion Project.

The **Dam Safety Committee (DSC)** stated that it had no further comments to Gujarat's response to submissions and noted that Gujarat is required to seek its approval to mine within its Cataract Dam Notification Area.

The **Roads and Traffic Authority (RTA)** does not object to the proposal, as there is no increase in traffic generation but noted that it is currently in consultation with Gujarat in relation to the Underground Expansion Project and Mount Ousley Road.

The **NSW Heritage Branch** (now part of OEH) raised no objection to the proposal.

The former **Land and Property Management Authority (LPMA)**, now part of the Department of Primary Industries) raised no concerns as there is no Crown land (not managed under a mining lease) affected by the proposal.

Wollondilly Shire Council (WSC) initially requested an extension of time to provide a response to the Department, which was granted, but no submission has been received.

4.3 Petition

After the period of public exhibition, the Department received a copy of a letter and accompanying petition signed by 750 people, sent to the former Member for Keira (see Appendix E). This letter raised concerns about water security, trucking impacts, the implementation of a community consultative committee and the proposed future expansion of NRE No. 1. The Department has taken each of these issues into consideration in assessing the project application.

In relation to water impacts, the Department is satisfied that there is likely to be no greater than negligible impacts on surface water features and groundwater resources within the proposed mining areas. Furthermore, OEH has no residual concerns about surface water or groundwater impacts. In relation to trucking impacts, the Department notes that the proposal does not involve an increase in coal production or the number of truck movements. The Department has also introduced a restriction on the amount of coal transported at night-times and on Sundays.

The Department has included a condition of approval requiring the implementation of a community consultative committee. In relation to the proposed future expansion of NRE No. 1, the Department emphasises that the current application involves only a short-term continuation of existing mining operations, with a major (beneficial) upgrade to surface facilities. Gujarat is seeking a separate approval for long-term future mining, via its proposed Underground Expansion Project.

5 ASSESSMENT

5.1 Subsidence Effects

The EA includes a subsidence impact assessment (SIA) undertaken by Seedsman Geotechnics Pty Ltd (Seedsman). The majority of the mining operations proposed in the project are first workings, with two limited areas of pillar extraction (or second workings). There is no longwall mining proposed under the current project.

First workings are proposed in the H Panel, the Wonga Mains, the P and R Drifts and the gateroads for future potential longwall panels in Wonga East (see Figure 3). There is negligible predicted vertical subsidence associated with first workings (less than 20 millimetres (mm)), as they are designed to leave the coal pillars intact, the underground roadways open and the overlying strata fully supported. The subsidence-related impacts of the project are therefore focused entirely on two small remnant blocks of coal where *pillar extraction* is proposed, ie the V Mains and the 309 Panel.

The seam thickness in the V Mains and the 309 Panel is 2.5 m and the depth of cover is 450 – 460 m. The V Mains area is 2 km long and between 75 and 300 m wide, while the 309 Panel is 190 m by 290 m. Neither the V Mains nor the 309 Panel are located in areas unaffected by previous mine subsidence. Seedsman therefore extrapolated subsidence predictions for the V Mains and the 309 Panel from the results of extensive monitoring of subsidence for previous mining operations undertaken in adjacent areas. To the immediate north of V Mains in NRE No.1 (see Figure 3), the 200 series longwalls were extracted, with vertical subsidence mostly between 1.05 – 1.20 metres (m) and a maximum of 1.3 m. A very similar longwall layout further north (the 300 series, also in NRE No 1) resulted in maximum vertical subsidence of about 0.9 m. To the east of the V Mains, in the adjacent but closed Cordeaux Colliery, previous longwall mining has resulted in maximum vertical subsidence of 1.1 m, and to the southwest, also in Cordeaux Colliery, vertical subsidence from longwall mining is estimated to have been in the order of 1.2 m to 1.3 m. The 309 Panel is a small remnant block within NRE No 1's 300 series of longwalls, adjacent to the existing main gate roads (see Figure 3).

The maximum predicted subsidence parameters for the V Mains and the 309 Panel is outlined in Table 2 below.

Table 2 – Predicted Maximum Total Vertical Subsidence, Tilt and Strain

Mining Area	Maximum Predicted Vertical Subsidence (m)	Maximum Predicted Total Tilt (mm/m)	Maximum Predicted Horizontal Strain (mm/m)	
			Tensile	Compressive
V Mains	1.02	6.1 mm/m	3.3	6.5
309 Panel	0.4	1 mm/m	1	1

The most relevant potential impact is fracturing of the surface zone, which can occur as a result of strains. There are two types of strain in rocks associated with subsidence – tensile and compressive – and they result in two corresponding types of curvature of the ground. Curvature in an outwards direction results in the ground swelling or “hogging”, which occurs when the ground is subjected to tensile strain. Curvature in an inwards direction results in the ground “sagging”, which occurs when the ground is subjected to compressive strain.

Fracturing from strains in stiff surface rocks (such as sandstones) has the potential to fracture stream beds and perched water tables, to increase the permeability of the surface zone, to connect near-surface water to deeper aquifers and to provide an enhanced flow path for near-surface water to report to upsidence fracture networks in stream beds. Fracturing has generally only been observed in the Southern Coalfield where tensile and compressive strains have exceeded 0.5 mm/m and 2.0 mm/m, respectively. The Department notes that considerably higher strains are predicted to result from the proposed mining, particularly in the V Mains (see Table 2).

The EA predicts that, tilt and vertical subsidence are not expected to have any significant impacts due to the relatively high depth of cover and the localised areas of predicted subsidence.

The SIA concludes that the predicted subsidence is similar in magnitude to that which has already developed over adjoining areas, and predicts that, consequently, impacts will also be similar. However, the SIA does not consider these impacts in detail. Instead, they are considered under other specialist reports in the EA. Partly for this reason, the potential impacts of subsidence on watercourses and swamps are addressed under section 5.2 below.

V Mains

The SIA indicates that tensile strains are unlikely to cause cracking in 'solid' rock, leaving open the risk of existing joints expanding. It is also silent about the risk of compressive strain causing cracking within watercourses or delamination of layered rock types (such as cross-bedded sandstones). The EA concludes that the predicted strains in the V Mains may cause existing joints to open slightly but only to a relatively shallow depth.

A Subsidence Management Plan (SMP) for the extraction of coal within the V Mains has already been approved by DRE, on 23 August 2010. The Department was consulted during this SMP approval process and provided comments to DRE which were taken into consideration in drafting the conditions of approval. DRE considered the subsidence levels predicted by Seedsman for the V Mains area and was satisfied that potential subsidence impacts could be adequately dealt with through the conditions of the SMP. The SMP therefore provides an existing framework for the management of potential subsidence impacts in the V Mains. The SMP includes performance measures relating to significant features and also requires Gujarat to prepare a number of sub plans including:

- a subsidence monitoring program;
- a terrestrial and aquatic ecology subsidence management plan;
- a surface and groundwater subsidence management plan;
- a fire trail subsidence management plan;
- an archaeology subsidence management plan;
- a Telstra subsidence management plan; and
- a public safety subsidence management plan.

To ensure that there are no impacts greater than negligible impacts at the surface above the V Mains, the Department has included 'negligible environmental consequences' as a performance measure in the conditions of approval for the significant features located in the vicinity of the V Mains.

309 Panel

The EA states that the predicted subsidence from the 309 Panel is expected to be minor, with an estimated 200 mm of vertical movement, and associated tilts of approximately +/- 1 mm/m. When added to the subsidence induced from previously-mined nearby longwall panels, the total vertical movement is predicted to be between 150 mm to 400 mm.

The Department notes that there is no empirical data on vertical subsidence resulting from the extraction of small pillar panels, like the 309 Panel, in the Southern Coalfield. Therefore, as stated in the Seedsman report, the predictions for the 309 Panel *"have a high degree of uncertainty attached to them and should not be relied upon"*. The Department notes this uncertainty. Notwithstanding, given the small amount of proposed mining and the presence of only one small stream tributary near the 309 Panel, the Department is satisfied that only very minor subsidence-related impacts additional to those already resulting from the 300 series and 200 series of longwalls are likely to result. To ensure that this is the case, the Department has included appropriate performance measures in the conditions of approval.

5.2 Water Resources

5.2.1 Surface water impacts within proposed mining areas

The EA includes a surface water assessment undertaken for the project by GeoTerra Pty Ltd which focuses on the potential subsidence-related impacts from the proposed mining in the V Mains and the 309 Panel. In addition, the EA includes a surface water assessment specifically prepared for the V Mains area, which was submitted by Gujarat with its previous SMP application.

The EA has identified two creeks and a number of upland swamps that may be affected by proposed mining in the V Mains and the 309 Panel. Wallandoola Creek is located above the V Mains mining area and is characterised by valley infill upland swamps (refer to Figure 7). Lizard Creek is located to the east of the V Mains mining area, with one tributary above the 309 Panel (refer to Figure 8). The closest swamp to the 309 Panel is located approximately 320 m to the west and would not be affected by subsidence.

Wallandoola Creek

Wallandoola Creek generally flows in a north-westerly direction over the V Mains (see Figure 7). Its main channel is classified as a Schedule 2 stream with third or higher order channels. Wallandoola Creek was identified as a 'waterway of special significance' by the PAC in its review of the Bulli Seam Operations Project. According to the EA, within the V Mains area, Wallandoola Creek is characterised by extended pools backed up behind isolated exposed sandstone ledges. Wallandoola Creek contains a significant valley infill swamp (WCvfs1) which overlies the V Mains area. WCvfs1 is up to approximately 120 m wide.

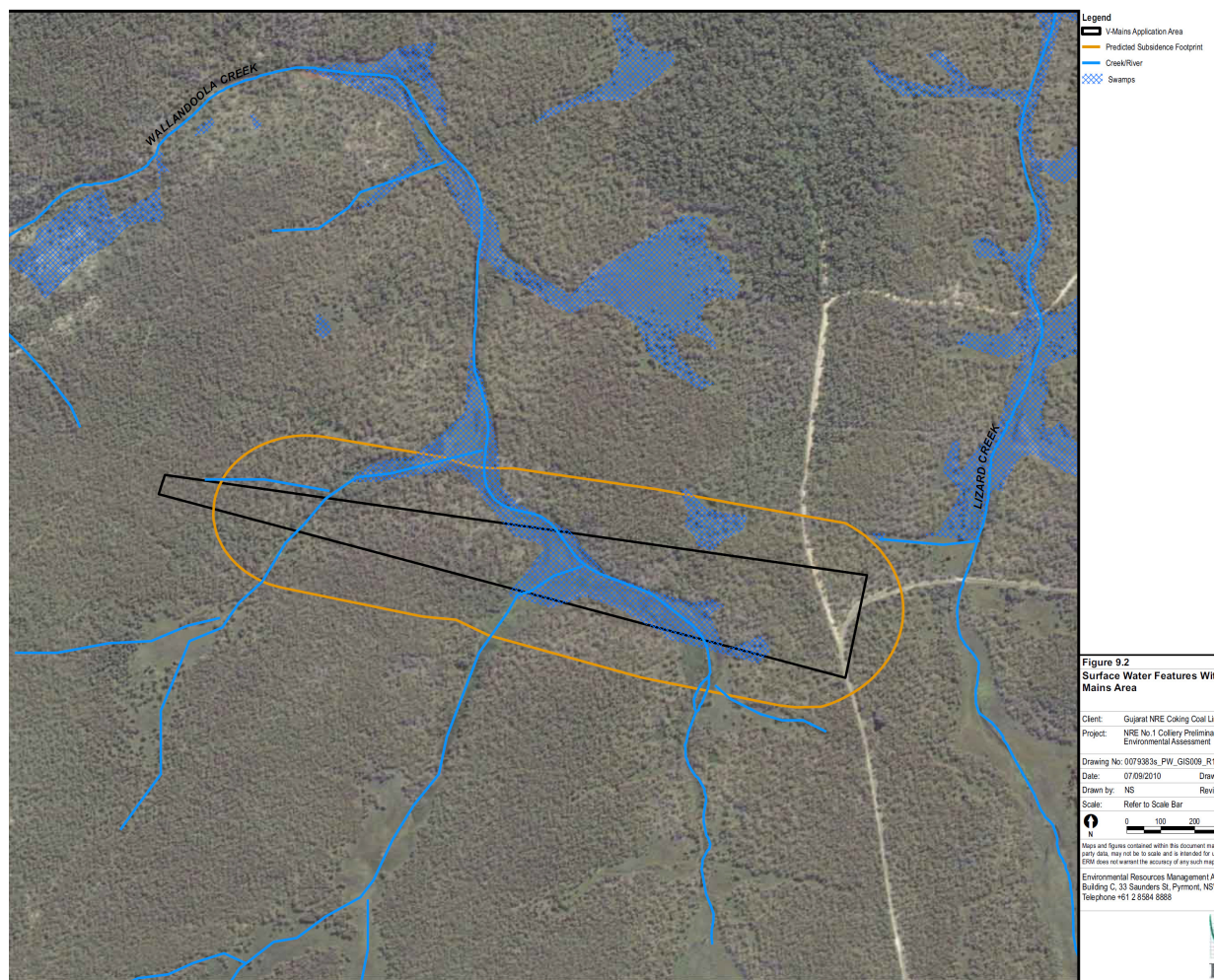


Figure 7 – Surface water features in the vicinity of the V Mains

Wallandoola Creek has a very low slope ($<1\%$) and the sandstone ledges are generally < 0.5 m in height. A second order, ephemeral tributary drains northwards into the Creek in the middle of the V Mains area. The EA states that pool height water level monitoring has been conducted at sites up and downstream of the V Mains in Wallandoola Creek, in order to provide a set of baseline observations to measure any potential change in stream flow. However, as there is no distinctive channel within WCvfs1, volumetric stream monitoring of Wallandoola Creek is not feasible within the V Mains area itself.

The EA does not predict fracturing above the V Mains (only that tensile strains may cause existing joints to open), and that therefore there would be no observable loss of stream flow in Wallandoola Creek or its tributaries, and negligible environmental consequences on swamp WCvfs1. Predicted subsidence at Wallandoola Creek is expected to be approximately 0.8 m, with tensile and compressive strains of 3.3 and 6.5 mm/m, respectively. The SIA contains diagrams which indicate that maximum compressive strains are likely to occur in a linear alignment generally along the mid-line of the V Mains panel, and maximum tensile strains are likely to develop in similar linear alignments to both the north and south of the panel. Maximum tilts are likely to occur midway between these alignments.

The Department is not fully convinced that the high levels of strain predicted at Wallandoola Creek are likely to eventuate. One reason why it holds these doubts is that the SIA assesses potential subsidence for the V Mains on the basis of an 'isolated panel'. Clearly, it is not an isolated panel, and sits as a remnant within a broad landscape already subsided by large-scale longwall mining in the same seam, both to the north (the 200 series, see Figure 3) and to the east and south (at Cordeaux Colliery). It is likely, therefore, that a large amount of pre-existing strain within the Hawkesbury Sandstone has already been 'released' through the adjoining subsidence. Nevertheless, the Department must record that, if these predicted strains eventuate, then on the basis of previous experience in the Southern Coalfield, they are likely to lead to significant stream bed cracking. This has the additional potential to impact on WCvfs1.

Wallandoola Creek has a stream bed gradient of 0.8 mm/m over the V Mains, which is substantially less than the maximum predicted tilt of 6.1 mm/m. However, the EA states that tilt would be oriented perpendicular to the stream channel of the stream, and would not affect the stream in terms of pool volume or retention time. The Department accepts that the orientation of Wallandoola Creek is likely to substantially reduce the potential effect of tilting (tilts of 3 – 6 mm/m are predicted close to various parts of the stream alignment where it trends to the north and south). However, tilts may still cause potential impacts on the slope of Wallandoola Creek (potentially leading to stream bed cutbacks) where the alignment of maximum tilt intersects with the stream bed (especially where the southern portion of the Creek reaches the V Mains footprint).

Finally, the Department notes that aerial inspections of Lizard Creek by the PAC, undertaken in conjunction with both the Southern Coalfield Inquiry and the Bulli Seam Operations Project, revealed very significant impacts caused by mining the 200 and 300 series of longwalls to the north. These impacts are only peripherally noted and poorly reported in the EA. It is also likely that the reaches of Wallandoola Creek both upstream and downstream of the V Mains have already been impacted by the broadscale longwall mining that has already taken place beneath them. Potential cumulative impacts from mining both to the north and the south of the V Mains are not considered in the EA.

In this environment of considerable doubt as to the accuracy of prediction of both subsidence effects and subsidence impacts, the Department recommends a precautionary approach, proposing that the approval contain conditions which require Gujarat to achieve performance measures of negligible environmental consequences within both Wallandoola Creek and its associated valley infill swamps.

Lizard Creek

The main channel of Lizard Creek generally flows in a northerly direction and is classified as a Schedule 2 stream, with third or higher order channels (see Figures 7 and 8). Lizard Creek does not directly overlie either the V Mains or 309 Panel. There is only one unnamed 1st order tributary of Lizard Creek overlying the western edge of the 309 Panel. This tributary flows north into a 2nd order tributary, and then into Lizard Creek. This unnamed tributary is ephemeral. Volumetric stream flow monitoring has been

conducted in Lizard Creek in the vicinity of V Mains since mid September 2009. As Lizard Creek is located outside the potential subsidence footprint for V Mains, there would also be no associated subsidence impacts. The EA also states as there is only a minor, first order tributary overlying the 309 Panel, there would be no loss of stream flow in Lizard Creek from this mining.

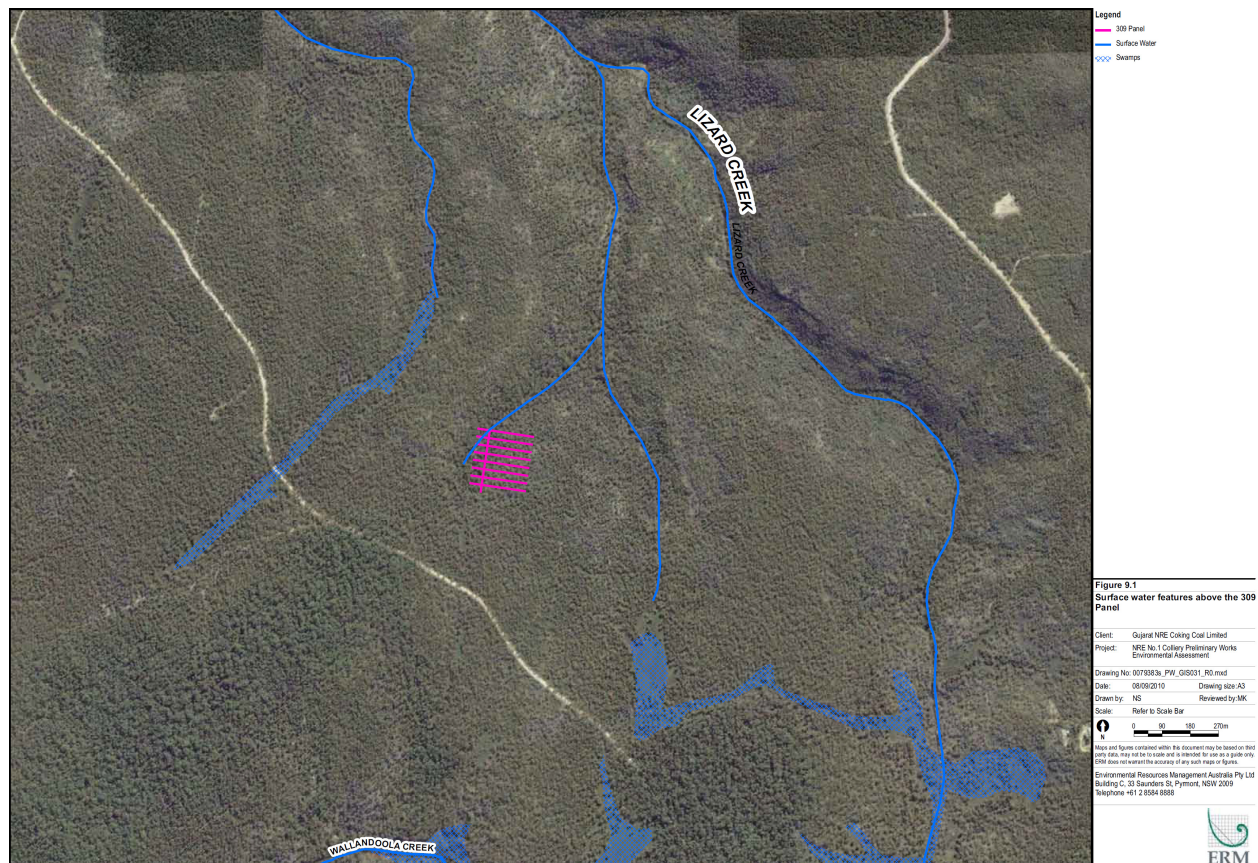


Figure 8 – Surface water features in the vicinity of the 309 Panel

Mitigation and Management

In relation to surface water impacts, conditions recommended by agencies have been imposed where relevant. The Department has included a condition of approval that would require Gujarat to ensure that only 'negligible environmental consequences' occur within Wallandoola Creek. Negligible environmental consequences for Wallandoola Creek are defined to include:

- *negligible* diversion of flows or changes in the natural drainage behaviour of pools;
- *negligible* gas releases and iron staining; and
- *negligible* increase in water cloudiness.

A performance measure of 'negligible environmental consequences' is also proposed for all upland swamps adjacent to Wallandoola and Lizard Creeks (including valley fill swamp WCvfs1). For swamps, negligible environmental consequences include:

- *negligible* change in the size of swamps;
- *negligible* change in the functioning of swamps;
- *negligible* change to the composition or distribution of species within swamps; and
- *negligible* drainage of water from swamps, or redistribution of water within swamps.

These conditions also require a detailed monitoring regime designed to inform Gujarat whether subsidence effects were such that greater-than-negligible environmental consequences might result.

Gujarat would have to then apply adaptive management measures (such as limiting the amount of coal taken in pillar extraction) to avoid breaching the performance measures in its conditions of approval.

Apart from Wallandoola Creek, conditions of approval are recommended to ensure no greater subsidence impacts or environmental consequences than predicted in the EA for all other watercourses. The Department has also included a condition of approval that would require Gujarat to implement a Surface Water Management Plan prepared by suitably qualified experts, in consultation with DRE, NOW, WCC and OEH. The plan must include a comprehensive water balance and a Surface Water Management plan, as well as a Surface and Ground Water Response Plan.

The Department is satisfied that loss of surface water to the underlying mine workings is highly unlikely, since the predicted low levels of strain are unlikely to cause the type of tensile cracking that would create interconnectivity between the surface and the mine workings. The Department is satisfied that the conditions proposed would provide appropriate protection for surface water within the mining area. The Department also notes that an advantage of the pillar extraction method is that progressive monitoring can be used to limit further extraction should the need arise.

Due to the previous longwall workings in the Bulli Seam (ie the 200 series and the 300 series) and the associated subsidence that has previously occurred, the EA predicts that the proposed mining in V Mains and 309 Panel would have negligible impacts on potential gas emissions in both creeks.

5.2.2 Water management at the surface facilities site

The EA includes a water assessment undertaken by Beca Pty Ltd and a geotechnical assessment by Coffey Geotechnics Pty Ltd, which both focus on potential impacts at the surface facilities site.

Existing water management

The existing drainage of the surface facilities site includes a stormwater pipeline which directs clean water flows in Bellambi Gully Creek beneath the site below the existing ROM stockpile. In the past, blockages in the pipeline have resulted in overflowing and flooding of residential areas further downstream in Bellambi Gully Creek, particularly in 1998. The potential for flooding is of particular concern as it has the potential to be mixed with coal and other sediment on-site.

Gujarat currently holds an Environmental Protection Licence (EPL 12040) that allows discharge of up to 2.5 megalitres per day (ML/d) of treated water from a single licensed discharge point (Russell Vale LDP2) into Bellambi Gully Creek under dry weather conditions. The proposed project would not involve a change to the amount of water discharged into Bellambi Gully Creek.

The EA provides monitoring results that indicate that the water quality at the discharge point in the surface facilities site sometimes exceeds Australia and New Zealand Environment and Conservation Council's (ANZECC's) freshwater guidelines for lowland rivers. However it complies with the EPL requirements and has a similar water quality to the background water quality in the creek (refer to Table 3 below).

Table 3: Water Quality in Bellambi Gully Creek

Analyte	Bellambi Gully Creek 1	Russell Vale Discharge LDP2	ANZECC 2 Guidelines	EPL limits
pH	8.1-9.2	7.1-9	6.5-8(9)	6.5-9.2
Oil & Grease mg/L	<0.1	<0.1	-	10
Total Dissolved Solids mg/L	1220-1900	1100-1900	125-2200	-
TKN mg/L	0.4-0.9	0.4-1.1	0.5	-
TP mg/L	0.08-0.3	0.03-0.12	0.05	-
TSS mg/L	1-52	13-27	-	50

Proposed upgrades to water management

The project would involve removing the existing stormwater pipeline and replacing it with an open channel constructed on the southern side of the coal stockpile area (refer to Figure 5 above). This would ensure that Bellambi Gully Creek bypasses the stockpile area in normal and extreme weather conditions, and reduces the risk of blockages in the stormwater system. Construction of the channel would also require the removal of Dam 6 and regrading of surrounding areas.

The stability of the adjacent slopes near the proposed new channel varies considerably from low risk at the eastern end, to high or very high risk over the elevated western end. These high slopes represent an erosion and slumping risk. The EA states that the proposed new channel has been designed with consideration of the recommendations in both *The Blue Book – Managing Urban Stormwater: Soils and Construction – Volume 1* (Landcom, 2004) and *Managing Urban Stormwater: Soils and Construction Volume 2E Mines and Quarries* (OEH, 2008). Erosion controls would also be installed in accordance with the *Blue Book*.

Gujarat has proposed a number of mitigation measures to ensure stability of the new channel, and the surface facilities site as a whole. These include:

- lining sections of the channel with reno-mattresses, reinforced concrete and energy dissipation structures at culverts;
- construction of concrete or gabion walls stepped up the banks and tied into the concrete base;
- lining with large durable sandstone boulders embedded into the concrete base for energy dissipation;
- construction of a new dam wall at the mouth of the channel;
- reshaping and revegetation of the hillside above and below the channel to reduce the thickness and extent of soil; and,
- construction of retaining walls along the uphill side and where appropriate.

The Department believes that the proposed new channel would fundamentally improve water flow across the surface facilities site, and provide an appropriate means of separating clean and dirty water across the site. Given the measures outlined in the EA in regards to mitigation of stability and erosion impacts, the Department is satisfied that the proposed new channel would be a significant improvement to the existing pipeline, which has previously been subject to blockages, resulting in previous major flooding impacts and a continuing flooding risk. In relation to water management at the surface facilities site, conditions recommended by agencies have been imposed where relevant.

5.2.3 Groundwater impacts within proposed mining areas

The EA includes an assessment of the potential groundwater impacts prepared by ERM for all of the proposed mining areas. The groundwater assessment is based on a range of groundwater monitoring sites within the project application area, including 6 swamp piezometers, 7 open standpipe and 6 vibrating wire array piezometers with drilling extending to 325 m below surface. Gujarat has also previously commissioned a groundwater assessment for the V Mains area for the purposes of the previous SMP application, prepared by GeoTerra.

Three main aquifer systems are present within the project application area, including:

- unconsolidated, perched ephemeral aquifers within upland swamps (including WCvfs1);
- perched ephemeral aquifers within the shallow Hawkesbury Sandstone; and
- deeper Hawkesbury Sandstone aquifers.

Piezometer monitoring at NRE No.1, as well as across the Southern Coalfield, indicates that, generally, there is little chance of interconnectivity of aquifers (whether surface water, shallow perched or the regional Hawkesbury Sandstone) into underlying aquifers or the mine workings. Vertical continuity within the Narrabeen Group (which underlies the Hawkesbury Sandstone) is interrupted by the Bald Hill Claystone, an aquitard which retards vertical flow from the Hawkesbury Sandstone. In addition, the base of the Narrabeen Group, at the top of the Bulli Seam, is marked by the Wombarra Claystone, which also acts as an aquitard, providing it remains intact following mining.

There is expected to be negligible impacts on groundwater inflow or outflow, to or from Wallandoola Creek and swamp WCvfs1 over V Mains, or the first order tributary over the 309 Panel. This is due to the relatively small areas of proposed mining by pillar extraction (as opposed to longwall mining), the depressurisation from previous mining within the Bulli Seam, and the general lack of interconnectivity in the underlying geology. Furthermore, as discussed above, the Department has included conditions of approval requiring negligible subsidence-related environmental consequences for Wallandoola Creek and WCvfs1, and no greater subsidence impact or environmental consequences than predicted in the EA for all other watercourses, which would also limit impacts on near surface aquifers.

Although the proposal includes mining operations beneath stored waters within the reservoir of Cataract Dam (ie the Wonga Mains and H Panel), these mining areas involve only first workings, which would result in negligible subsidence. There is not expected to be any impacts on the Cataract Reservoir and the Department has included a condition of approval requiring negligible leakage from the reservoir and negligible reduction in the water quality of the reservoir.

The Department has also included a condition requiring a Water Management Plan that must include a Groundwater Monitoring Program. In addition, the V Mains SMP requires various groundwater monitoring programs which must be reviewed once per year after mining operations have been completed. The V Mains SMP also requires an updated ongoing monitoring and remediation program, which must be developed in association with DRE, NOW and the SCA.

5.3 Noise

The EA includes a noise impact assessment prepared by ERM which addresses operational noise, noise associated with coal haulage, vibration and construction noise. Noise monitoring was undertaken by ERM using continuous noise loggers from 1 December 2008 to 25 December 2008 to determine the existing ambient noise environment at the receiver locations. Unattended noise monitoring was undertaken to determine existing road traffic noise levels along Bellambi Lane.

Operational noise

The EA reports that sources of operational noise at the surface facilities include a bulldozer, excavator, existing conveyors, proposed conveyor, new coal sizer, existing truck loader and ROM loading from the stockpile.

The acoustic environment is classified as suburban under the *NSW Industrial Noise Policy* (see Figure 9). Therefore the noise impact assessment in the EA has adopted 'suburban' assessment criteria at the potentially-affected receivers nearest the proposed development area in formulating the project specific noise levels (PSNLs). The Department has reviewed the PSNLs adopted in the EA and is satisfied that they are appropriate in the circumstances.

Mitigation of operational noise

The EA proposes the installation of two new noise barriers, including a 3 m high barrier on the north side of the haul route to the south of Broker Street and a 3.6 m high roadside barrier on the north side of the haul route from the weighbridge to the Princes Highway (refer to Figure 9). The predicted noise levels in the EA reflect the inclusion of these proposed barriers.

After inspecting the sites of the proposed barriers, the Department doubts their likely effectiveness in terms of noise mitigation. The Department also believes that noise barriers should only be installed when all reasonable and feasible source control measures have been identified and applied, since they can be visually intrusive, cause drainage problems and only reduce noise impacts for a defined set of receivers.

Therefore the Department has recommended conditions of approval requiring that Gujarat undertake a noise audit to determine whether there are any source control options available which can be used to achieve the same level of noise mitigation. The Department has also proposed conditions of approval that would require the decommissioning and replacement of the existing conveyor, which is a key noise

source, by 31 December 2012. The Department has set a completion date of 31 December 2012 for the noise audit, and a date of 31 December 2013 to achieve the noise criteria presented in Table 4 below.

Table 4: Existing and proposed noise levels

	PSNL dB(A)			Existing Noise Levels dB(A)			Proposed Noise Levels dB(A)			Minimum reduction to be achieved dB(A)		
	Day	Evening	Night	Day	Evening	Night	Day	Evening	Night	Day	Evening	Night
C1	42	41	37	38	37	37	38	37	37	-	-	-
C2	42	41	37	39	38	38	39	38	38	-	-	-
C3	42	41	37	38	37	36	39	37	36	-	-	-
C4	42	41	37	37	37	36	37	37	36	-	-	-
C5	44	43	40	40	40	40	40	40	40	-	-	-
C6	44	43	40	37	36	36	37	36	36	-	-	-
R1	43	39	37	45	43	41	43	40	39	2	3	2
R2	43	39	37	46	43	42	44	40	39	2	3	3
R3	43	39	37	44	41	40	43	40	40	1	1	0
R4	43	39	37	44	40	38	42	39	38	2	1	0



Figure 9 – Sensitive noise receivers

In summary, the Department has recommended conditions requiring Gujarat to:

- comply with interim operational noise criteria, based on the PSNLs, OEH's recommendations and modelled noise predictions;
- complete a detailed noise audit by 31 December 2012, to investigate and identify additional noise mitigation measures;
- achieve compliance with medium term noise criteria by 31 December 2013; and
- make continual endeavours to reduce noise, with the aim of complying with long term noise targets.

The Department has also recommended a number of other conditions requiring Gujarat to:

- comply with applicable 'amenity' criteria for all residences;
- develop a detailed Noise Management Plan that continually strives to achieve long term noise objectives, which are expressly provided in the conditions;
- independently investigate noise complaints and undertake applicable management measures; and
- communicate mining operations with the community, including publicly reporting all monitoring results, and prompt and efficient responding to enquiries and complaints.

With the implementation of these measures, the Department is satisfied that the project's operational noise impacts can be adequately minimised and managed.

The EA includes an assessment of the potential for sleep disturbance, associated with the mining operations within the night-time period. The assessment indicates that predicted noise levels are less than 47 dB(A) at all receivers during night time periods, which complies with the sleep disturbance criteria.

Construction noise

The proposed construction activities would involve short-term activities over a period of nine months for the upgrade of surface facilities, including earthworks, construction of access roads and site facilities. The EA states that construction would be limited to Monday to Friday, 7am to 6pm, and 8am to 1pm Saturday. The EA also states that, where feasible, silenced equipment would be used to minimise environmental noise emissions and that any complaints would be investigated and responded to in an appropriate manner. The Department is satisfied that the proposed construction activities would comply with OEH's *Interim Construction Noise Guidelines*.

Vibration

The EA concludes that, based on historical assessments for similar vehicle movements and receiver offset distances, vibration levels in areas of the surface facilities site are expected to be less than 0.2 mm/s, which is the human threshold of perception of vibration. Therefore vibration impacts associated with truck movements are predicted to comply with the relevant OEH criteria. The Department is satisfied that vibration levels are very low and would have minimal impact on the community.

5.4 Traffic and Transport

Gujarat currently delivers coal by public road from NRE No. 1 to PKCT using articulated vehicles or truck and trailer combinations. The majority of coal transportation occurs between 7 am and 6 pm Monday to Friday, and 8 am and 6 pm on Saturday. A small amount of trucking occurs outside these hours, between 6 pm and 10 pm Monday to Friday, and 8 am and 6 pm on Sundays and public holidays. Gujarat proposes to continue these existing hours for trucking.

Coal trucks travel east from the surface facilities site at Russell Vale along Bellambi Lane across the Princes Highway to the Northern Distributor, then south along the distributor to the Southern Freeway. From the freeway, the trucks travel east along Masters Road and Springhill Road to PKCT (refer to Figure 10 below). The average round trip between NRE No. 1 and PKCT is between 45 minutes to an hour, depending on traffic conditions.

The EA includes results from an analysis by Cardno Eppell Olsen based on September 2010 traffic counts. The key intersections along the haulage route (including Bellambi Lane with the Princes Highway and the Northern Distributor) were assessed using the *Signalised & Unsignalised Intersection Design and Research Aid* (SIDRA) software. This modelling was carried out to determine the degree of saturation, average delay (in seconds) and level of service (LoS) at each intersection.

The Cardno analysis concluded that all intersections along the coal haulage route performed satisfactorily under the current configuration. In addition, a road safety audit of the road haulage route from NRE No. 1 to PKCT undertaken by Cardno did not identify any unsafe conditions along the route.

Bellambi Lane

The majority of the coal haulage route comprises major highways where there are not likely to be any adverse road noise impacts. The only section of uncontrolled access road is the 700 m along Bellambi Lane from NRE No. 1 to the Northern Distributor. A number of submissions from government agencies and members of the public raised concerns about trucking along this stretch of road, particularly between the hours of 6 pm and 10 pm Monday to Friday, and also during the day on Sundays and public holidays.

Bellambi Lane is a four lane, single carriageway road that links NRE No. 1 with the Northern Distributor. This road has a long history of coal transport and heavy vehicle use. For example, the northern side of the road, which adjoins the back of Keerong Avenue residences, previously contained a rail line that carried coal from the mine to a now-demolished jetty at Bellambi for transport by sea. More recently Bellambi Lane has been part of State Highway 1 (Princes Highway) which links Brisbane, Sydney and Melbourne.

All the properties fronting Bellambi Lane are zoned IN2 Light Industrial and many of these are small businesses with associated residences. The Department considers that the current levels of road traffic noise on Bellambi Lane are not inconsistent with those expected for an industrial area.

In late 2009, the Northern Distributor Extension (NDE) opened, which significantly reduced traffic volumes on Bellambi Lane, particularly at night (ie between 10 pm and 7 am). Traffic studies undertaken in 2009 measured weekday traffic volumes of around 14,400 vehicles per day (VPD). Subsequent monitoring in 2010 found that, after the NDE opened, traffic volumes reduced to less than 6,000 VPD, with only around 600 of these vehicle movements taking place during the Night hours. Comparison of noise monitoring undertaken for an earlier PKCT project (Table 5) to that undertaken for the current proposal (Table 6) indicates that, as a consequence of traffic volume reductions on Bellambi Lane, there has been a decrease of approximately 6 decibels in road traffic noise since the opening of the NDE.

Table 5: 2008 Road traffic noise levels

Location	Day (7 am to 10 pm) L _{eq(15h)} dB(A)	Night (10 pm to 7 am) L _{eq(9h)} dB(A)
77 Bellambi Lane	71	64

Table 6: 2010 Road traffic noise levels

Location	Day L _{eq(15h)} dB(A)	Night L _{eq(9h)} dB(A)
63 Bellambi Lane	65	58
99 Bellambi Lane	63	55

Relevant noise criteria

When the current project application was made, the relevant road traffic noise criteria were set by OEH's *Environmental Criteria for Road Traffic Noise* (1999). This document delineates only two noise periods, Day and Night, at 7 am and 10 pm, and requires that the project not increase the existing day-time (ie 7 am to 10 pm) or night-time (ie 10 pm to 7 am) noise levels by more than 2 decibels. A revised OEH *Road Noise Policy* (2011) came into effect on 1 July 2011, but still contains similar requirements for projects to limit increases to existing road traffic noise levels and still delineates the Day and Night periods at 7am and 10pm.

While it is noted that some submissions raised issues with road traffic noise levels during the hours of 6 pm to 10 pm on weekdays, the Department must place considerable reliance on the relevant structure of and criteria in the *Road Noise Policy*. Under these criteria, the period of 6 pm to 10 pm on weekdays is not separately identified, but is simply part of the Day period. It would be unreasonable if any other users of Bellambi Lane (or other similar roads) were able to operate within the terms of this policy, but Gujarat could not. Therefore the Department has assessed the potential road traffic noise impacts for the project in respect of the policy's defined day-time (7 am to 10 pm) and the night-time (10 pm to 7 am) periods.

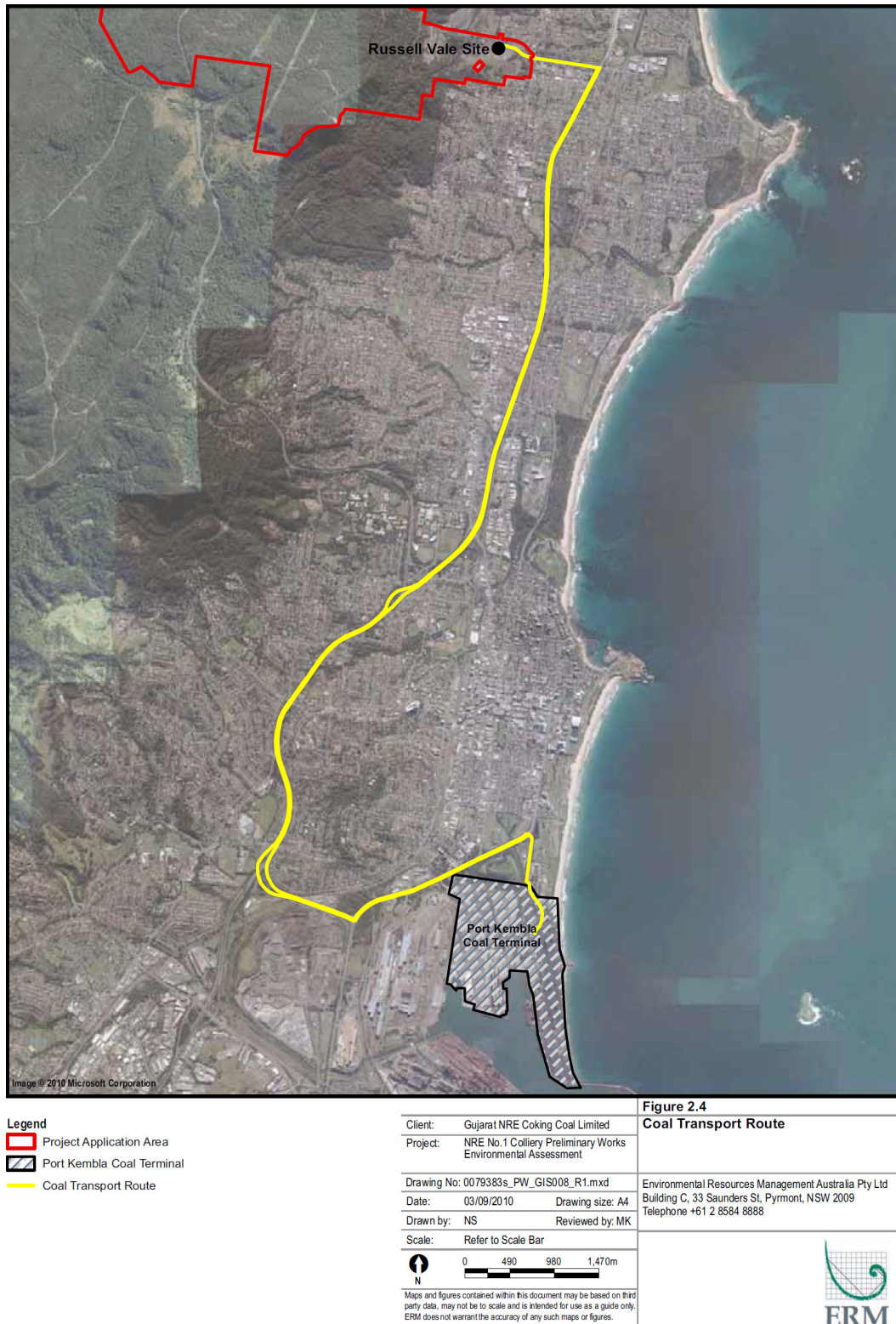


Figure 10 – Coal truck haulage route

The EA includes an assessment of potential road traffic noise impacts during the day-time along Bellambi Lane, based on traffic counts and noise logging undertaken in accordance with the procedures set out in OEH's 1999 policy. This assessment concluded that truck movements do not contribute significantly to daytime traffic noise along Bellambi Lane. The current proposal does not seek to increase coal production or truck volumes on Bellambi Lane, therefore the Department is satisfied that there would not be any increase in daytime road traffic noise.

Trucking conditions

Notwithstanding the substantial decreases in road traffic noise recently achieved on Bellambi Lane, the Department has sought to ensure that the sensitive night-time period does not experience any noise impacts from project-related coal truck movements. The Department has therefore recommended conditions restricting the haulage of coal from the site to 7 am and 10 pm Monday to Friday, and 8 am and 6 pm on Saturday, Sunday and public holidays. This is consistent with the existing major project approval for PKCT, which expressly permits the terminal to only receive coal that is dispatched from NRE No. 1 during these hours.

To ensure that there are no adverse road noise impacts during the hours of 6 pm and 10 pm Monday to Friday, and 8 am and 6 pm on Saturday, Sunday and public holidays, Gujarat has committed to restricting the amount of coal transported during these hours to a maximum of 20% of the total coal transported. As there is currently no such restriction on the amount of trucking at nights and on Sundays and public holidays, the Department believes that this would reduce any potential noise impacts during these hours.

The Department has also recommended a condition of approval requiring Gujarat to prepare and implement a Traffic Management Plan (TMP). The TMP would require consultation with RTA, OEH, WCC and PKCT and must include a traffic management protocol, which considers appropriate speed limits and truck separation distances.

The TMP should be specifically required to consider the minimisation of compression braking and other noisy practices, especially on the approach to the Port Kembla Road/Springhill Road traffic lights when entering or exiting PKCT. The NMP must also include a Traffic Noise Management Strategy, which must consider movement scheduling to reduce noise impacts during sensitive times of the day and procedures to minimise impacts at identified sensitive areas along the haulage routes.

On this basis, the Department is satisfied that the project's operational noise impacts will not increase above existing levels and for some receivers will be reduced through the recommended conditions of approval.

5.5 Air Quality

The EA includes an air quality assessment prepared by ERM which addresses operational activities at the surface facilities site. The existing and proposed activities likely to generate particulate emissions include ROM coal stockpiling, loading haul trucks, using on-site unsealed haul roads, and transfer and handling of coal by mobile plant.

The air quality assessment is based on two existing dust monitoring locations (G7 and G8) located at the corner of Bellambi Lane and Princes Highway and at 95 Keerong Ave, as well as a representative sample of nearby residences as discrete receptors used for modelling purposes. The assessment also used climatic data recorded from a Bureau of Meteorology weather station located approximately 6 km south of the site. Vent shafts for the mine have not been included in the assessment, as they are located on the plateau well removed from sensitive receivers, and are not expected to result in any significant emissions or impacts.

Dust-related emissions

The assessment includes consideration of total suspended particulates (TSP), fine particulate matter <10 microns (PM10) and deposited dust, with reference to relevant 24-hour, monthly and annual air quality criteria. The EA notes that the coal extracted at NRE No. 1 has an inherently high moisture content

(estimated at 7%), which generally reduces the potential for dust emissions into the atmosphere compared to other extracted materials.

Table 7 below outlines the dust monitoring data from August 2009 to July 2010. The existing dust deposition levels in the vicinity of the surface facilities site are significantly lower than the OEH annual monthly average criterion, with the exception of certain spikes, which are attributed to a dust storm in 2009 and isolated incidents of vandalism (shown in bold).

Table 7: Dust monitoring data August 2009 to July 2010 (gm/m²)

Monitor	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Annual Monthly Average
G1	1.7	5.8	1.4	10.9	3.2	3.5	1.1	3.1	1.6	0.9	0.8	1.5	2.9
G2	2.0	5.2	11.7	2.1	2.0	1.4	1.3	1.0	1.3	0.3	0.9	0.4	2.5
G3	7.9	4.6	1.1	3.4	2.1	3.1	1.5	2.0	0.9	0.4	0.8	0.5	2.4
G4	0.9	5.0	0.4	2.4	1.2	1.4	0.7	1.2	1.0	0.3	1.0	0.5	1.3
G5	1.0	6.5	0.7	1.8	1.9	1.1	0.9	1.1	1.3	0.6	0.4	0.8	1.5
G6	3.9	5.0	1.0	10.8	1.6	2.4	1.1	1.9	0.9	0.6	0.5	0.6	2.5
G7	1.9	6.0	0.7	4.6	3.4	2.5	1.5	2.5	2.3	1.5	1.1	1.0	2.4
G8	1.7	2.7	0.9	3.9	4.4	2.4	0.7	2.3	1.7	2.0	0.7	0.9	2.0

In general, the predicted concentration contours for TSP, PM10 and deposited dust are localised around the surface facilities site and decrease rapidly away from the site. Table 8 below outlines the maximum predicted incremental ground level concentrations for the modelled receptor where the highest concentrations are predicted.

In terms of short-term (24-hour) impacts, the modelling predicts that the PM10 24-hour criterion is exceeded on four occasions over the year when emissions are considered in conjunction with existing background concentrations. However this complies with the relevant criterion which allows 5 exceedances per calendar year. In terms of long-term (annual) impacts, the modelling predicts that ground level concentrations of TSP (annual average) would comply with the criterion of 90 µg/m³ at existing sensitive receptors at all times. In terms of dust deposition, the predicted incremental ground level dust deposition rate has been added to the annual monthly average of existing monitoring data, which creates a conservative figure. Notwithstanding this, the predicted levels comply with the OEH criteria and represent 77% of the cumulative annual average criterion of 4 g/m²/month.

Table 8: Maximum incremental ground level concentrations

Sensitive Receptors	Maximum Increment	Background	Cumulative	Criterion	% of Criterion
PM10 – 24 hour (µg/m ³)	2.28	49.00	51.28	50	103%
PM10 – 24 hour (µg/m ³)	26.17	19.10	45.27	50	90.5%
PM10 – Annual (µg/m ³)	4.71	19.7	24.41	30	81.4%
TSP – Annual (µg/m ³)	14.7	50.6	65.30	90	72.6%
Dust Deposition – Annual (g/m ² /month)	0.16	2.9	3.06	2 (incremental) 4 (cumulative)	8%

Drip waste

OEH and numerous members of the public have raised concern that some trucks travelling along Bellambi Lane drip water containing coal and dust particles onto the road. In the past, coal trucks were wheel washed prior to leaving the surface facilities site. As the water dried, a dusty layer was left on the road, which has the potential to be kicked up by other trucks, vehicles or the wind.

Notwithstanding the fact that Gujarat has complied with all relevant air quality criteria and it is predicted that this would continue under the proposed project, the Department has residual concerns about the potential impacts of trucking on air quality and has proposed appropriate mitigation measures (see below).

Non-dust related emissions

The air quality assessment does not include quantitative assessment of other non-dust related emissions such as sulphur dioxide (SO₂) and oxides of nitrogen (NO_x) associated with diesel use. However, based on assessments undertaken for similar projects and the distance to sensitive receivers, the Department is satisfied that SO₂ and NO_x emissions would be very minor. Notwithstanding, the Department has recommended conditions requiring NRE to implement all reasonable and feasible measures to minimise off-site odours and fumes.

Internal haul roads

OEH undertook a dust audit at NRE No. 1 that indicated that one of the key sources of dust is the internal movement of trucks on site. OEH therefore initially recommended that all internal haul roads are sealed. However, as the location of some internal roads would periodically change during the process of the proposed site upgrades, OEH accepted that sealing of all internal roads is not possible or appropriate at this time.

OEH instead made recommendations relating to the design, construction and maintenance of unsealed roads. The Department has considered these recommendations and is satisfied that they have been addressed in the recommended conditions of approval. In particular, the proposed conditions of approval require the implementation of “best practice air quality management on site” and a range of mitigation measures. The Department expects that OEH’s recommendations will be included in Gujarat’s Air Quality Management Plan for the project.

Mitigation and management measures

The current and proposed methods of mitigating potential air quality impacts include covering trucks before leaving the site to reduce product loss through wind erosion, and requiring drivers to abide by a Driver’s Code of Conduct. The Department accepts that the proposed project does not seek to increase production at the mine and is satisfied that the current mitigation measures are appropriate in maintaining compliance with the relevant air quality criteria.

Gujarat is currently trialling not washing coal trucks prior to departure at all, and instead attempts to keep the trucks clean while on site. OEH has reported that not washing trucks has yielded better results and has supported this approach. The Department has taken OEH’s recommendation and the other submissions into account in drafting conditions of approval relating to air quality and trucking. The Department supports Gujarat’s attempts to find alternative ways of reducing air quality impacts on Bellambi Lane from coal trucking, including not washing, and also washing trucks as they arrive on site so that they can either drip or dry on-site prior to leaving. The Department has drafted conditions of approval that require Gujarat to consider all such options and provide a report within 6 months that analyses the effectiveness of the various approaches.

5.6 Terrestrial Ecology

The EA includes an impact assessment for both aquatic and terrestrial ecology undertaken by ERM. This assessment was based on field investigations and a desktop survey, including analysis of relevant literature, databases and existing vegetation mapping. In addition, the EA includes a report on the Green and Golden Bell Frog undertaken by Biosis Research Pty Ltd. The EA also refers to a terrestrial ecology assessment of the V Mains area undertaken by ERM in 2009 for the purposes of the SMP application, and an assessment of the area of the 309 Panel prepared by Umwelt in 2004.

ERM undertook field surveys in November 2008, February 2009, March 2009, October 2009, January 2010 and April 2010. Biosis also undertook field surveys targeting the Green and Golden Bell Frog at Dam 6 and more widely at a number of dams that contain suitable habitat on 4 and 6 May 2010.

V Mains

Transitional Shale Stringybark Forest vegetation community was recorded within the V Mains area (refer to Figure 11 below). This community forms part of the Shale Sandstone Transition Forest listed as an endangered ecological community under the *Threatened Species Conservation Act 1995* (TSC Act) and as critically endangered under the Commonwealth's *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). No threatened flora species were recorded within the V Mains area during field surveys, although it is recognised that potential habitat is available for nine threatened flora species.

A total of 19 mammal species, 63 bird species and a range of insectivorous bats were recorded across the V Mains area. A number of threatened fauna species have been previously recorded within 10 km of the V Mains area, with eight species having been confirmed to occur within the V Mains area, including Eastern Pygmy Possum, Brown Treecreeper, Gang-gang Cockatoo, Powerful Owl, Eastern Bentwing-bat, Eastern False Pipistrelle, Eastern Freetail Bat and Greater Broad-nosed Bat.

Searches of OEH's Atlas of NSW Wildlife database returned five records of Koalas from within 10 km of the V Mains. Field surveys did not record any observations, scats, tree scratches or vocalisations of Koalas in the area. The V Mains area is potential Koala habitat under SEPP 44 of the EP&A Act, however the area is not 'Core Koala Habitat' as there is no evidence to indicate the presence of a resident population of Koalas or recent sightings or historical records of a resident population.

309 Panel

No targeted searches were undertaken for threatened fauna or flora within the vicinity of the 309 Panel. However, based on the vegetation present in the area there are three threatened flora species that have potential to occur, including the Woronora Beard-heath, *Epacris purpurascens* and the Prickly Bush-pea.

There are 11 threatened fauna species that have the potential to occur within the 309 Panel area including the Giant Burrowing Frog, Red-crowned Toadlet, Eastern Pygmy Possum, Brown Treecreeper, Gang-gang Cockatoo, Powerful Owl, Large-footed Myotis, Eastern Bent-wing Bat, Eastern False Pipistrelle, Eastern Freetail Bat, Large-eared Pied Bat and Greater Broad-nosed Bat.

No targeted field surveys were undertaken within the 309 Panel area for signs of Koalas. Consequently, there is a small but unresolved potential for the area to constitute Core Koala Habitat. However, the minimal impacts from subsidence would not be expected to affect the habitat resources of either resident or foraging Koalas.

Impacts and recommended conditions

In the EA, all species of fauna that were recorded or had the potential to occur within the V Mains and 309 Panel areas were assessed using the seven-part test of significance. The EA concluded that the proposal was unlikely to significantly impact any of these species.

To ensure that there are no adverse impacts, the Department has included a condition of approval that requires no greater than negligible environmental consequences on any threatened species or population or their habitats or on endangered ecological communities. Furthermore, Gujarat would be required to prepare and implement a Biodiversity Management Plan for the project to the satisfaction of the Director-General that includes management measures, monitoring procedures, performance indicators and reporting frameworks to demonstrate achievement of the negligible consequences performance criterion.

Surface facilities site

The proposed works within the Bellambi Gully Creek corridor at the surface facilities site have the potential to impact a small area of Moist Box Foothills Redgum Forest. However, within the site this vegetation is highly modified through weed invasion and erosion of the creek banks, and the Department is satisfied that these impacts are acceptable in the circumstances.

Green and Golden Bell Frog

The key potential impact from the proposed works at the surface facilities site relates to potential habitat for the Green and Golden Bell Frog (GGBF), which was recorded in a number of locations across the Russell Vale site. The GGBF is listed as endangered under both the TSC Act and the EPBC Act.

The proposed construction of the new stormwater diversion channel for Bellambi Gully Creek across the surface facilities site involves the removal of a small, disused on-site water storage facility (Dam 6). This has the potential to impact the GGBF, as it involves the removal of up to 0.19 ha of what has been judged by the EA and OEH to be suitable breeding foraging and sheltering habitat for the frog. This may in turn disrupt the movement of GGBF between other suitable areas of habitat. The EA states that the removal of this habitat represents 17% of such habitat available at the Russell Vale site and 0.98% of habitat available in the locality.



Figure 11 – Green and Golden Bell Frog habitat, corridors and movements

The EA reports that two surveys for GGBF were undertaken by Biosis in May and September 2010 (both diurnal and nocturnal and totalling 6 days) but did not confirm the presence of the species, although one unconfirmed call was recorded at the Pit Top dam. There is also a previous record of the species at the Pit Top dam in 1997, which is located approximately 650 m to the west of Dam 6, and would not be impacted by the project (refer to Figure 11 above).

At the request of the Department, OEH and DSEWPaC, three additional nocturnal surveys were undertaken during suitable seasons (November 2010, January 2011 and March 2011, totalling 11 days) to detect the species. That means that targeted surveys have now been undertaken over 17 days during 5 periods over one year and across all seasons. No evidence of the GGBF (including calls) has been detected in any of these surveys at Dam 6.

OEH has recommended conditions of approval that would require Gujarat to undertake further surveying, prepare a management plan for this species and provide an offset. Given the number of targeted surveys already undertaken and the lack of a confirmed record of the GGBF, the Department does not consider further surveying or a specific management to be necessary in the circumstances.

However, the Department considers it appropriate to ensure the ongoing protection of the GGBF and has drafted conditions of approval that require no greater than negligible environmental consequences to occur to the GGBF. As discussed above, Gujarat would also be required to prepare and implement a Biodiversity Management Plan for the project to the satisfaction of the Director-General that includes management measures, monitoring procedures, performance indicators and reporting frameworks to demonstrate achievement of the negligible performance criterion, with particular reference to the GGBF. In effect, these conditions would require a review of the proposed site works (including the loss of Dam 6) should evidence of the GGBF emerge before or during construction.

5.7 Heritage

Aboriginal heritage

The EA includes an Aboriginal heritage assessment undertaken by ERM for the surface facilities upgrade site, and the V Mains and 309 Panel mining areas. This study included field inspections involving Aboriginal community representatives, a literature review of the OEH library and a search of OEH's Aboriginal Heritage Information Management System (AHIMS) database.

No Aboriginal heritage sites were identified at the surface facilities site. To the west of the surface facilities site on the Woronora Plateau, there are three registered sites (52-2-1147, 52-3-0313 and 52-3-0324) which are all open artefact scatters at the top of the slope. The Aboriginal representatives that attended the field inspections considered that there is no concern that any of these sites may be harmed by the proposal as they have already been extensively modified. The Aboriginal representatives advised that no monitoring of works would be required for these sites but recommended that a management plan should be implemented.

There is only one Aboriginal heritage site located within the potential subsidence footprint (52-2-1223). The heritage impact assessment determined that this site does not require active management, but proposed that monitoring be undertaken before, during and after mining by a qualified archaeologist with involvement by the Aboriginal community. The Department has included a condition of approval requiring the implementation of a Heritage Management Plan (HMP) that addresses both Aboriginal and non-Aboriginal heritage, including monitoring of site 52-2-1223. The proposed conditions of approval also require that subsidence has only "negligible impact or environmental consequences" on site 52-2-1223.

Non-Aboriginal heritage

The EA also includes an assessment of non-Aboriginal heritage impacts undertaken by ERM. This assessment included analysis of a Conservation Management Plan relating to the heritage aspects of NRE No. 1 prepared by Godden Mackay Logan (GML) in 2004.

There are 10 non-Aboriginal heritage items listed within the overall project application area, including local, regional and State listings. These items include Cataract Dam, Bellambi Creek Dam, the Illawarra Escarpment and various elements of the NRE No. 1 surface facilities such as the main portal and one of the vent shafts. The GML Conservation Management Plan also identified another 15 items of significance within the area, including other historical elements of the mining operations at NRE No. 1.

The proposed surface works are not in the immediate vicinity of any of the heritage items and no heritage items are to be demolished. There are also no predicted subsidence-related impacts on non-Aboriginal heritage items. The Department is satisfied that there is unlikely to be any adverse impacts on items of non-Aboriginal significance. In addition, the HMP required under the proposed conditions of approval must include measures to deal with previously unidentified non-Aboriginal heritage items which may be discovered during the proposed project.

5.8 Greenhouse Gases

The EA includes an assessment of greenhouse gas (GHG) emissions and potential impacts, undertaken by ERM. The assessment was undertaken in accordance with applicable guidelines, including the Commonwealth's *National Greenhouse Accounts Factors, November 2008*.

The Department acknowledges the impacts posed by climate change, but does not believe that these in themselves should necessarily preclude the approval of the project. Rather, the consideration of the project application with regard to GHG impacts needs to be balanced, with due consideration given to:

- the project's contribution to global warming/climate change;
- whether refusing the project application would reduce global GHG emissions;
- the benefits of the project, including job creation and its contribution to the NSW economy;
- the objects of the EP&A Act, including the encouragement of ESD; and
- available GHG impact mitigation measures.

The assessment calculates direct and indirect GHG emissions associated with the project, including 'Scope 1' emissions (ie direct GHG emissions from sources controlled by NRE), 'Scope 2' emissions (ie indirect emissions associated with the import of electricity) and 'Scope 3' emissions (ie other indirect emissions, such as those associated with the downstream combustion of the product coal). The calculated GHG emissions associated with the project are shown in Table 9 below.

Table 9: Direct and indirect greenhouse gas emissions

Scope	GHG source(s)	Annual average GHG emissions (tonnes carbon dioxide equivalent, tCO₂-e)
Scope 1	Coal seam gas venting	2,439,980
	On-site fuel use	5,387
Scope 2	Upstream electricity	282,072
Scope 3	Downstream transport of product coal and other	87,664
	Downstream coal use	6,585,071
Total (excluding Scope 3)		2,727,439
Total (including Scope 3)		9,400,174

The Department is satisfied that the project's contribution to global GHG emissions, even when assessed on a full life-cycle basis (ie including downstream GHG emissions), would be very small. The assessment indicates that the majority (71%) of the total GHG emissions generated as a consequence of the project are those associated with the downstream burning of the product coal for coking purposes – ie Scope 3 indirect emissions. Coking coal is an essential element of the steelmaking process, and the intended market is India, which is on a steep development curve, with high demand for iron and steel.

The other significant contributor to GHG emissions is fugitive coal seam gas emissions, which contribute about 27% of total GHG emissions from the site. The EA's Statement of Commitments includes a commitment to investigate the feasibility of mechanisms and technological processes to capture fugitive coal seam gas. The Department notes that the target coal seams at NRE No. 1 are generally considered 'non-gassy', but supports Gujarat's commitment to investigating coal seam gas capture and use.

The EA proposes a number of other GHG mitigation measures, including upgrading the fleet to 38 tonne trucks to reduce the number of truck movements and undertaking energy audits. The EA also states that the efficiency of all mobile and fixed equipment has been considered during procurement and concludes that there will be fuel efficiency gains associated with upgraded equipment.

The Department has included conditions of approval requiring Gujarat to implement all reasonable and feasible measures to minimise the release of GHG emissions from the site, and to prepare an Air Quality and Greenhouse Gas Management Plan (AQGGMP). This would require Gujarat to describe the measures that would be implemented to minimise the release of GHG emissions from the site.

It must be noted that if the project was not allowed to proceed, the resultant gap in the coking coal supply would be almost certainly filled by another coal resource either in NSW, Australia or overseas. In other words, removing the GHG emissions from the project would not likely result in any decrease in global CO₂ emissions. This point illustrates the reality that the key response to the issue of climate change needs to be made at a policy or strategic planning level, outside and above the project assessment process.

5.9 Other Impacts

The other potential environmental and social impacts of the project are considered in Table 10 below.

Table 10: Other environmental and social Impacts

Impact	Assessment
Aquatic ecology	- There are no areas of potential aquatic habitat within the surface facilities or the predicted subsidence zone of the 309 Panel. - The key potential impacts on aquatic ecology therefore relate to the V Mains mining area, and in particular Wallandoola and Lizard Creeks. Gujarat has previously commissioned Cardno to prepare an aquatic ecology assessment as part of the V Mains SMP application. Wallandoola and Lizard Creeks are both characterised by upland swamp vegetation with only a few small permanent pools. As described above, there are few subsidence-related impacts expected within these creeks in terms of stream flow or water quality. There is a possibility of localised increase in stream gradient resulting from subsidence-related tilts. The EA states that it is unlikely that there would be any observable effects on aquatic ecology in these areas. - However, in order to ensure that aquatic ecology is adequately protected, the Department has proposed conditions requiring not more than negligible subsidence-related environmental consequences on Wallandoola Creek and no greater subsidence impacts or consequences than predicted in the EA for Lizard Creek. The same performance measure is applied to upland swamps and all threatened species and endangered ecological communities. Furthermore, the Department has included a condition of approval requiring the implementation of a Biodiversity Management Plan that demonstrates achievement of these performance criteria.
Visual impacts	- The potential visual impacts of the proposed project were assessed in the EA by evaluating the level of visual modification of the development in the context of the visual sensitivity of relevant surrounding areas from which the project may be visible. The key potential impacts on the visual landscape relate to the proposed upgrades of the surface facilities site, including: - the new Wongawilli decline conveyor, which would be constructed with a steel frame and painted steel sheeting; and - a new screening and sizing plant to be constructed at the end of the decline conveyor, also primarily made of steel and painted steel sheeting. - The EA proposes to mitigate the visual impacts of these works through design including colour of components, the use of areas with existing infrastructure and the placement of facilities to avoid disturbance of vegetation. Other management measures such as appropriate use of lighting equipment directed away from residences, and progressive rehabilitation are also proposed. - The Department notes that NRE No. 1 has existed on the site for over a hundred years with similar (or greater) visual impacts. The Department is satisfied that the proposed changes to the existing visual landscape are minor and acceptable.
Socio-economic	- The key direct socio-economic benefits of the proposed project would be maintaining the current employment of 337 employees (plus an additional 25 contractors during the proposed construction and upgrades). As the vast majority of employees reside within the region, the majority of payments to employees, suppliers and contractors would be paid into the regional economy. - Taxes paid by Gujarat, its suppliers and employees and royalty payments from coal produced would have additional social and economic benefits. - Gujarat has also committed to spending \$100,000 in 2011 on community development programs, and \$150,000 pa between 2012 and 2014. This community funding would directly benefit a range of community activities and groups including schools, churches, musical groups and sporting clubs. - The Department is satisfied that Gujarat has adequately assessed the social and

	economic impacts of the project, and that the economic benefits that would accrue from approval would outweigh the social and environmental impacts that may occur.
Rehabilitation	• Overall, the proposal involves only a limited amount of rehabilitation, due to the short life of the project. The majority of mine infrastructure, particularly vent shafts and mine entries, would not be rehabilitated under the proposed project. • However, a number of minor rehabilitation measures are proposed at the surface facilities site as part of the proposed upgrades, including the removal of gantries, a drainage line and various disused equipment and scrap metal. • The Department has included an approval condition requiring a Rehabilitation Management Plan to be prepared and implemented for the project in consultation with relevant stakeholders. This Plan would be required to meet a series of agreed rehabilitation objectives.

6 RECOMMENDED CONDITIONS

The Department has prepared recommended conditions of approval for the project (refer to Attachment 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.

Gujarat has reviewed and accepts the recommended conditions. The Department believes the conditions reflect current best practice for the regulation of underground coal mines in NSW. They appropriately reflect the concerns and proposals of other agencies, in accordance with the Department's policy.

7 CONCLUSION

The Department has assessed the project application, EA, submissions on the project and Gujarat's response to submissions, in accordance with the relevant statutory requirements of the EP&A Act, including its objects and the principles of ESD.

This assessment has found that the project's noise and air quality impacts would generally be minor in nature and similar to existing levels, since the project does not involve any increase in coal production. The proposed upgrades at the surface facilities site also provide for reductions in noise and air quality impacts, as well as improvements to the existing trucking arrangements.

Similarly, the Department is satisfied that the upgrades to water management at the surface facilities site associated with the proposal would substantially improve existing management and effectively prevent further instances of pipeline blockages and/or on-site and downstream flooding, which is a very substantial benefit to the local community.

In relation to the Green and Golden Bell Frog, the Department accepts that the project would result in a limited loss of potential habitat of the GGBF due to the removal of Dam 6 at the surface facilities site. However, the Department notes that 6 surveys have failed to reveal evidence of the GGBF and is satisfied that potential impacts on the frog can be minimised, mitigated or managed through the imposition of conditions.

The Department acknowledges that the project represents a logical extension of the existing mining at NRE No. 1, and that it would make use of existing infrastructure and facilities. The Department also recognises that the project would provide considerable economic and social benefits for the Illawarra region and to NSW. On balance, the Department believes that the project's benefits would sufficiently outweigh its residual costs, and that it is therefore in the public interest and should be approved, subject to conditions.

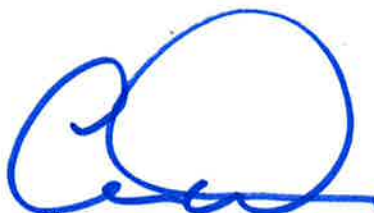
8 RECOMMENDATION

It is RECOMMENDED that the Planning Assessment Commission, as delegate for the Minister:

- consider the findings and recommendations of this report;
- approve the project application, subject to conditions; and
- sign the attached instrument of approval (Attachment A).



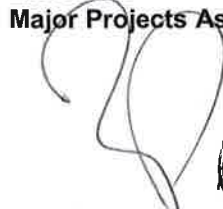
Howard Reed
Manager
Mining Projects 10.10.11



Chris Wilson
Executive Director
Major Projects Assessment 10.10.11



Marcus Ray
A/Deputy Director-General
Development Assessment and Systems Performance 12/10/11



Richard Pearson
A/Director-General 12/10/11

ATTACHMENT A – CONDITIONS OF APPROVAL

See the attached Instrument of Approval.

APPENDIX A – ENVIRONMENTAL ASSESSMENT

APPENDIX B – COPY OF SUBMISSIONS

APPENDIX C – GUJARAT’S RESPONSE TO SUBMISSIONS

APPENDIX D – ENVIRONMENTAL PLANNING INSTRUMENTS

1 SEPP No.33 – Hazardous and Offensive Development

The Department is satisfied that the project is not potentially hazardous or offensive, and that the proposal is generally consistent with the aims, objectives, and requirements of SEPP 33.

2 SEPP No.44 – Koala Habitat Protection

A koala habitat assessment was completed as part of the ecological assessment of the project, and no core koala habitat was identified. The Department is satisfied that the project is unlikely to significantly affect koala habitat, and that the project is generally consistent with the aims, objectives, and requirements of SEPP 44.

3 SEPP No.55 – Remediation of Land

The Department is satisfied that the project area does not have a significant risk of contamination given its historical land use, and that the project 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, the project is permissible with consent.

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 of the project. 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 SEPP (Infrastructure) 2007

Under clause 45 of the Infrastructure SEPP, development in the vicinity of an electricity supply easement is required to be referred to the electricity supply authority for comment. The Department is satisfied that the project would not have any adverse impacts on an electricity supply easement.

In accordance with clause 104 of the SEPP, the application was referred to the RTA, which subsequently confirmed that it does not object to the project (see assessment report).

6 SEPP (Sydney Drinking Water Catchment) 2011

The SEPP requires that consideration be given to the impact of development in Sydney's drinking water catchment on water quality. The Department has considered potential impacts on surface water resources in its assessment report, and is satisfied that the project is able to be managed in a manner that would not impact Sydney's drinking water supply. Based on this assessment, the Department is satisfied that the project is generally consistent with the aims, objectives, and provisions of the SEPP.

7 Illawarra REP No. 1

Part 4 of the REP applies to coal mining, and includes objectives to avoid sterilisation of coal resources, reduce road haulage of coal, and minimising environmental impacts associated with coal washing. Although the project involves road haulage, the Department has carefully considered this in the assessment report and has concluded that the level of road haulage is relatively minor and that any potential impacts can be mitigated through appropriate conditions of approval. The Department is satisfied that the project is generally consistent with the objectives of the REP, particularly as it does not involve coal washing.

Part 12 of the REP applies to development on the Illawarra Escarpment, and includes the objective of protecting the natural environmental and scenic amenity of the escarpment area, while accommodating the needs of the coal industry. The Department is satisfied that the project would not result in any increased impact on the escarpment area.

8 Wollongong Local Environmental Plan 2009 and Wollondilly Local Environmental Plan 2011

The permissibility of the project under these LEPs is discussed in the assessment report. Notwithstanding that the project is prohibited across the majority of the proposed project area, the Department is satisfied that the project is able to be able in a manner that is generally consistent with the aims and objectives of the relevant LEPs, given the relatively minor predicted impacts.

APPENDIX E – LETTER AND PETITION

APPENDIX F – OTHER INFORMATION
