

Donaldson Coal Pty Limited

**ABEL UNDERGROUND MINE
PART 3A ENVIRONMENTAL
ASSESSMENT**

Appendix M
Visual Assessment





Abel Underground Mine Visual Assessment

Final Report

prepared by
Domain P/L
for

Donaldson Coal

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Introduction

This report has been prepared to document the visual assessment of the proposed Abel Underground Mine (the Proposal). It has been prepared by Domain Pty Ltd for Donaldson Coal Pty Ltd for inclusion in the Environmental Impact Assessment, as required under Part 3A of the Environmental Planning and Assessment Act, 1979 (EPAA).

The visual impact assessment identifies the potential visual impacts of the proposed works on the visual environment of surrounding areas. It also addresses the options to mitigate any impacts that are identified.

Study Method

This study is based on a review of existing site conditions and the Part 3A Project Application prepared for the Proposal in December 2005. The preparation of this report has involved:

- site investigations;
- review of background information, including
 - the Part 3A Project Application;
 - the Environmental Assessment Requirements for the Proposed Abel Underground Coal Mine (prepared by the NSW Department of Planning);
 - the Determination of the Application for the Donaldson Mine by the Minister for Urban Affairs and Planning Andrew Refshauge, 14 October 1999;
 - conceptual layouts for the expansion of the Bloomfield Coal Handling and Processing Plant;
 - relevant correspondence from Cessnock City Council, the City of Newcastle and Maitland City Council; and
- discussions with the Donaldson Coal project team members to identify the range of possible issues relating to the proposed works.

The visual impact assessment involves the analysis of the study area in terms of the visual quality of the proposed mine site and its setting, the visual catchment of the proposed works, the range of surrounding land uses, the sensitivity of viewers to change in the area and the visual character and prominence of the Proposal. Based on this analysis, any potential visual impacts are defined and any necessary impact mitigation measures are recommended. A detailed description of the visual assessment method is provided later in this report.

Background

The proposed Abel Underground Mine site is located approximately 23 kilometres north-west of Newcastle and within the Newcastle, Cessnock and Maitland Local Government Areas (LGAs), with the majority of the mine located in the Cessnock LGA. It adjoins the existing mining lease at the Donaldson Open Cut Mine, located to the north of John Renshaw Drive and approximately six kilometres west of the F3 (Sydney to Newcastle) Freeway. John Renshaw Drive is a State Road linking Cessnock and Kurri Kurri with the northern end of the F3 Freeway near Beresfield, as well as the start of the New England and Pacific Highways near Hexham (refer to Illustration 01). It carries significant and rapidly growing amounts of traffic and together with other roads it also provides an important connection to areas further east, particularly to Newcastle.

Donaldson Coal proposes to access underground coal seams in the Abel Project Area through a new portal to be constructed in the high wall of the Donaldson Open Cut Mine, approximately 50 metres north of John Renshaw Drive. Coal would be transported to the surface by conveyor belts and then transported to the Bloomfield Coal Handling and Preparation Plant, utilising areas of existing mining disturbance within the Donaldson Mine Lease. In order to process coal from the Abel Underground Mine an expansion of the capacity of the Bloomfield Plant would also be required, in the order of an increase of 30 % from the existing plant capacity. The required changes to the Bloomfield CHPP to accommodate the Abel Coal and the use of the Bloomfield CHPP in general, form part of the project subject to this Environmental Assessment and these are assessed in this report. The Abel Surface Infrastructure in the Donaldson Open Cut Mine and the increased Bloomfield Plant would be the main items associated with the proposal that would be visible from above ground. This report assesses the potential visual impact associated with these structures, as well as other minor surface infrastructure elements.

The Visual Character of the Study Area

The Abel underground mining area has a surface area of approximately 2,750 hectares, extending south from John Renshaw Drive towards George Booth Drive. It is bound by the F3 Freeway in the east and extends to approximately Buttai Creek in the west.

The underground mining area is characterised by a mix of low undulating hills covered by native bushland vegetation and areas cleared for grazing or other agricultural activities, as well as rural-residential properties (refer to Illustration 02). Rural-residential properties are relatively small in general and occur predominantly in the northern and eastern parts of the project area, clustered along local access roads such as Black Hill Road, Browns Road, and Dog Hole Road. Other infrastructure in the area includes a water pipeline, a number of transmission lines and associated easements (refer to Illustration 03).

The dominant landform feature in the area is the Black Hill ridgeline, which runs in approximately east-west direction through the underground mining area. Its steep northern face in particular is in contrast to the gently undulating landscape of much of the surrounding area and properties along the ridge enjoy panoramic views to the north and east as a result (refer to Illustration 04).

In contrast, the proposed surface infrastructure area of the Abel Underground Mine is situated within the existing Donaldson and Bloomfield Open Cut Mines, to the north of John Renshaw Drive. This area is largely characterised by the two open cut mines at Bloomfield and Donaldson, as well as the associated infrastructure, such as the Bloomfield Coal Handling and Preparation Plant (CHPP), the rail loader and rail loop. The landscape setting consists of low undulating hills which retain a cover of native bushland in areas not affected by mining operations and infrastructure (refer to Illustration 05). The low point of this area is around Four Mile Creek. From here, the land rises gently towards Ashtonfield in the north and towards the rail loop and Four Mile Creek Road in the south. A ridgeline south of Four Mile Creek Road visually separates the Donaldson Open Cut Mine pit from areas to the north and west. However, the elevation of residential subdivisions in Ashtonfield relative to the CHPP, permits views of the structures associated with the processing plant from some of these areas, particularly at night, when glow of the overhead lighting is visible over a great distance (refer to Illustration 06).

The generally undulating landscape character of the area means that views are generally well contained within small visual catchments. Long distance views are limited to prominent highpoints such as along the Black Hill ridgeline. Even from these, mining activities and associated infrastructure are not easily seen as they are concealed by the intervening cover of



Illustration 01: Location of the study site



Illustration 02: Visual character of the Abel underground mine lease area



Illustration 03: The Hunter Water Corporation pipeline adjacent to John Renshaw Drive



Illustration 04: Panoramic views over the mine lease areas from the Black Hill Ridge line (off Browns Road)



Illustration 05: Landscape around the Bloomfield rail loop.



Illustration 06: Views of the Bloomfield Coal Handling and Processing Plant from Ashtonfield.

vegetation retained on some of the ridgelines within the existing mining leases. As a result, the visual character of the area has remained primarily rural character, despite the presence of open cut mining operations (refer to Illustration 04).

John Renshaw Drive separates the Abel underground mining area and the surface infrastructure area. Despite the proximity and extent of mining in the area, motorists along John Renshaw Drive are not currently able to view mining areas and associated infrastructure. Instead, the character of John Renshaw Drive reflects the generally rural character of the area, with dense stands of vegetation lining much of the road corridor, both within and beyond the road reservation (refer to Illustration 07). This visual character is interrupted in some areas by the location of utilities in relation to the road, including the Hunter Water Corporation pipeline and a number of transmission line easements (refer to Illustration 03).

The Proposed Works

Visual Assessment Method

The purpose of this report is to assess the visual impact of the proposed Abel Underground Coal Mine, the associated expansion of the Bloomfield Coal Handling and Processing Plant (CHPP) and any associated infrastructure on the existing visual environment.

The visual impact of the proposed works is determined by evaluating the visual effect of the development in the context of the visual sensitivity of the surrounding land use areas from which the proposed development may be visible. This method is described in the following sections.

Visual Effect

The visual effect is the expression of the visual interaction between the proposed works and the existing visual environment in and around the study area. It can also be expressed as a level of visual contrast between the proposed works and the visual setting within which they are placed.

A high visual effect would result if a proposed development was a major element and contrasted strongly with the existing landscape, either as a result of poor integration or the lack of screening such as provided by vegetation or topography. In situations where the existing environment is heavily modified by the proposed development, a high visual effect would also result.

A moderate visual effect occurs if the proposal is visible and contrasts with the landscape, but is integrated with it to some degree. This would occur if some form of visual screening or of visual integration with the surrounding setting was provided.

A low visual effect would occur if there was minimal visual contrast and a high level of integration of form, line, shape, pattern, colour or texture values between the development and the existing environment. This would occur if there is a high degree of visual integration of the development with the surrounding landscape, or if a low level of visual modification of the existing visual setting is achieved.

Visual Sensitivity

Visual sensitivity is a measure of how critically a change to the existing landscape would be viewed from various areas and by various users of the area or viewers. The visual sensitivity of a proposed development therefore depends on the visual characteristics of the existing environment, the type of viewers and surrounding land uses likely to see the proposed development, as well as on the distance between the viewer and the development, which would determine the extent of detail the viewers are able to perceive. The distance between the viewer and the development would also contribute to the dominance of the development, as the

portion of the viewer’s outlook affected by a development would decrease when viewed from a greater distance.

As an example, people using recreational areas, would use the surrounding landscape as part of their leisure experience and will view change to the landscape more critically than for example industrial or agricultural workers. Similarly, viewers are likely to be highly sensitive to development in natural or previously undeveloped areas, and less sensitive to developments in areas which are already highly developed or widely considered to be of lesser scenic quality, such as industrialised areas.

Visual Impact

The visual impact of a proposed development is determined by considering both its visual effect and the visual sensitivity of viewers in surrounding areas. The following table illustrates how various combinations of visual effects and visual sensitivities will produce high, moderate or low impact levels.

		VISUAL EFFECT LEVEL		
		High	Moderate	Low
VISUAL SENSITIVITY LEVEL	High	High impact	High impact	Moderate impact
	Moderate	High impact	Moderate impact	Low impact
	Low	Moderate impact	Low impact	Low impact

Mitigation Measures

Mitigation measures are visual treatments that are recommended to mitigate the visual impacts of a proposed development. They include ways to lessen the visual effect of the construction and identify treatments near critical view areas to reduce the lasting visual impacts of a proposed development. When determining the predicted visual impact, the identified mitigation measures are considered to have been incorporated into the proposed works.

Description of the Proposal

The major above-ground works for the Abel Underground Mine include to the construction of access tunnels to the underground coal seams, the expansion of the Bloomfield CHPP, transport or conveyor systems between the two and buildings, infrastructure and services for mine workers and general operations. The remainder of the proposed works would occur underground and, subject to appropriate mine subsidence control, would not result in any visible modifications to the landscape above.

Mine access tunnels

To access the coal reserves in the underground mining area, three tunnels are proposed to be driven underneath John Renshaw Drive. The tunnel portals will be located in the high wall of the existing Donaldson Open Cut Mine pit, within a section of the pit where coal has already been extracted and which will not be backfilled. The high wall is the southern wall of the existing open cut mine pit and is located approximately 50 metres north of John Renshaw Drive. Other infrastructure associated with the access tunnels would include two ventilation fans, compressors and water supply pumps (refer to Illustration 08).

The tunnel portals will face north and be set about 35m below the natural ground level. The size and location of the Donaldson Open Cut Mine pit and high wall would not be affected by the proposal to underground mine within the Abel Mine Lease.

Coal Transport System

It is proposed that coal would be transported by conveyor from underground production areas to a surge stockpile within the Donaldson mine pit, the top of which would remain 8m below the top of the cut. From here, the coal would initially be hauled by trucks to the CHPP, using internal haul roads within existing operation areas of the Donaldson and Bloomfield Mining Leases. It is proposed that an overland conveyor would replace truck haulage as production levels increase. Construction of the conveyor would require a maximum 12m wide cleared corridor (refer to Illustration 08). However, it is anticipated that the majority of the surface area would not be disturbed by the Abel mine activities and associated infrastructure. The height of the conveyor system would remain below a maximum of 15m, so that much of the structure would be concealed from views by the surrounding tree cover. The majority of the overland conveyor system would be located within the mine pit or follow existing haul roads, reducing the amount of clearing required.

Expansion of the Bloomfield CHPP

The Bloomfield CHPP currently handles coal from the Donaldson, Bloomfield and Tasman Mines. In order to accommodate processing of Abel coal, an increase in capacity of 30% would be required. In order to meet this increase, the following modifications would be required (refer to Illustration 09):

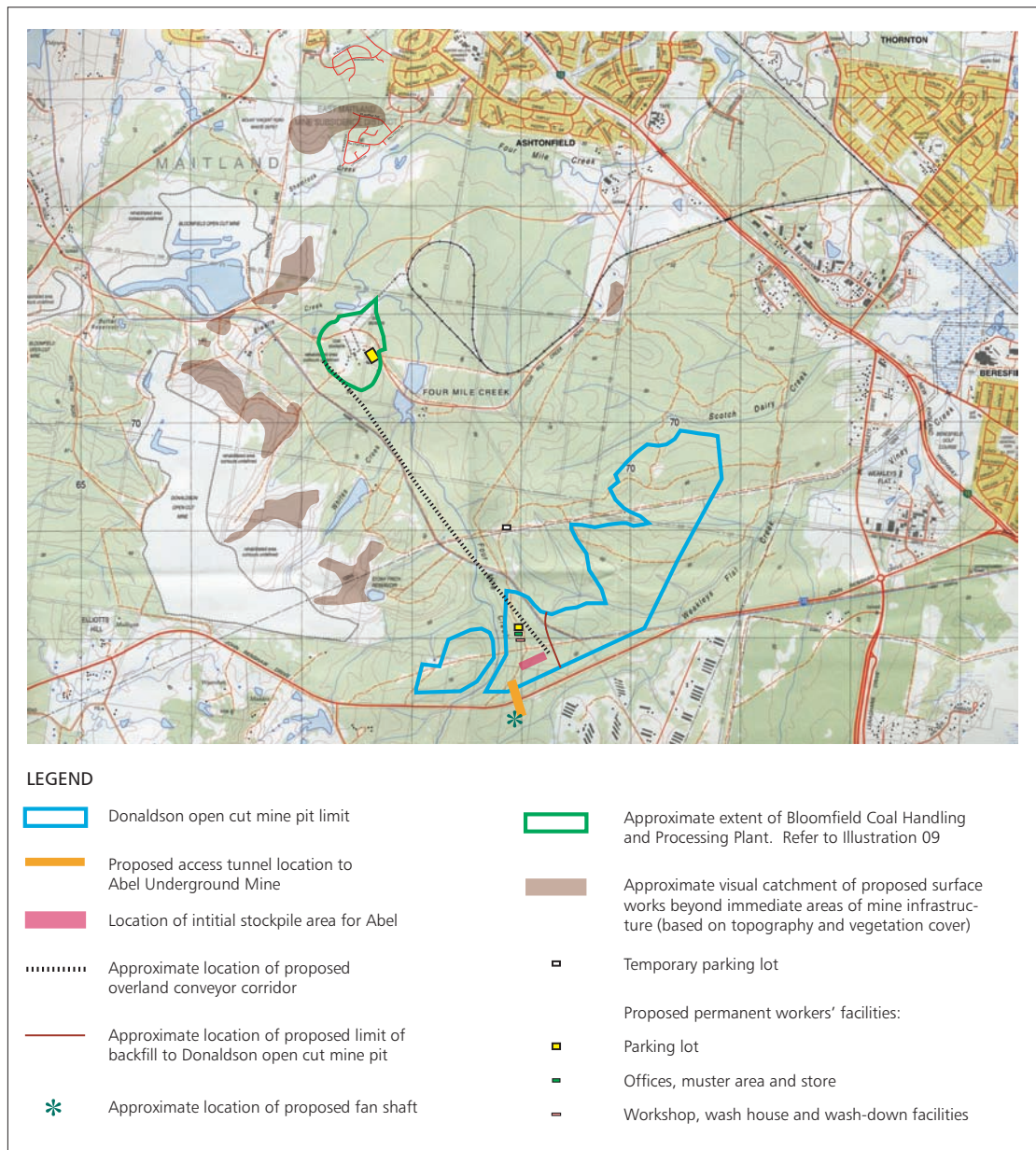
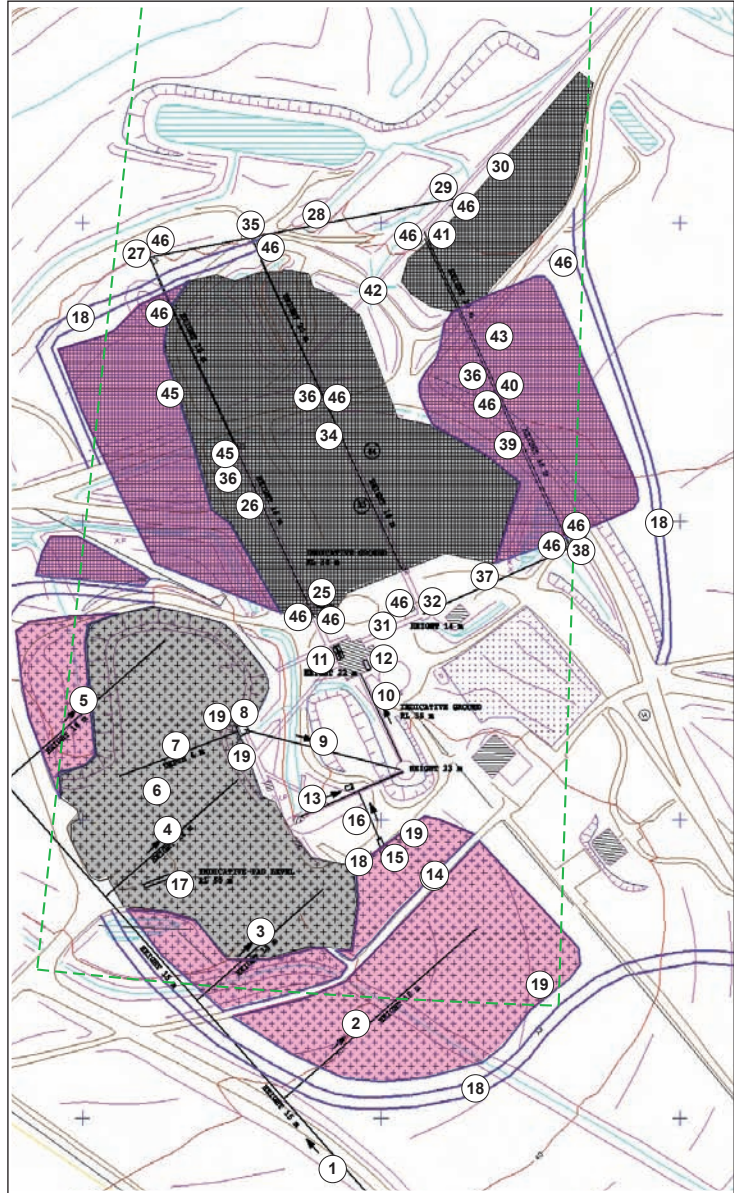


Illustration 08: Proposed above-ground works and their visual catchment

Illustration 09:
Plan of proposed modifications to the Bloomfield Coal Handling and Processing Plant



LEGEND

- Existing stockpile
- Proposed stockpile

--- View angle currently affected by mining infrastructure when seen from East Maitland

- 1 Aerial conveyor with fixed trippers
- 2 Stack out or luffing conveyors with moveable trippers and tail drives
- 5 Dozer to push ROM into stockpiles
- 6 Dozer to push ROM into stockpiles
- 7 Slot and plate feeder – below ground
- 8 Primary process plant
- 9 Elevating conveyors
- 10 CHPP feed conveyor
- 11 Revised updated CHPP. Increased screen sizes not numbers
- 12 Additional floatation system

- 13 Revised existing conveyor C2 with wider belt and larger drive
- 14 Stockpile loader
- 15 Crushing system
- 16 Raw coal belt conveyor to C2
- 17 Weighbridge
- 18 Re-aligned service road (light traffic)
- 19 ROM stockpile lighting
- 25 Aerial high ash conveyor with moveable tripper
- 26 Tunnel conveyors
- 34 Tunnel conveyors
- 39 Transfer station
- 27 Surface transfer conveyer
- 28 Drive station
- 29 Existing overland belt conveyor

- 31 Conveyor C5 aerial
- 32 200t storage bin
- 33 Aerial conveyor
- 35 Drive station and transfer chute
- 36 Surface/ stockpile management by dozer push
- 37 Extension conveyor
- 38 Transfer tower. Aerial
- 40 Aerial stackout conveyor with moveable tripper
- 41 Transfer drive station
- 42 Truck dump hopper
- 43 Front end loaders loading trucks
- 45 Mitigated stockpile lighting
- 47 Clean coal stockpile lighting

- the combined unprocessed and processed coal stockpile pad areas would increase in size by 104% (from an area of 4.39ha to 8.97ha). The height of the stockpiles would remain consistent with their current height and coal would be transported to them via up to four stackout conveyors with a maximum height of 18m, similar to existing conveyors;
- increasing the stockpile pad areas will require some tree clearing as well as relocation of existing service roads to divert around the edges of the new pad area;
- a second tailings thickener may be needed and would be located adjacent to the existing tailings thickener in the centre of the plant area. It would be a tank-like structure 24m in diameter and 4m tall;
- an additional clean coal tunnel and aerial stackout conveyor would be required over the expanded clean coal stock pile. Similar to existing conveyors, the height of these structures would be 18m;
- additional lighting will be required to new stockpile areas and conveyors. Lighting would be directional to reduce the amount of light spill and associated impacts; and
- existing floodlighting would be modified to reduce the amount of light spill affecting residents in the East Maitland and Ashtonfield area.

Ventilation Shaft

A ventilation shaft is proposed to be erected in a valley approximately 150m south of John Renshaw Drive, on land owned by Donaldson (refer to Illustration 08). As a result of the topography of the area, the shaft would be situated approximately 20m below the level of John Renshaw Drive. It would consist of a small group of buildings, fans, ducts and other structures, with an overall height of about a three-storey building, including the vents. It would take up an overall area about 20m x 15m in size (refer to Illustration 10 and 11).

Workforce-related Infrastructure

The Abel Underground Mine would require additional facilities for approximately 375 workers and associated administration. Additional facilities would be located within the surface infrastructure area and generally sited to fall within existing cleared or disturbed areas. The additional facilities proposed are (refer to Illustration 09):

- car parking, vehicle garage and storage areas,
- administrative building/ mine offices,
- other buildings including a bathhouse for approximately 400 people, workshops, lamp room and first aid room, and
- lighting and potable and process water supplies.



Illustration 10: Photograph of the type of ventilation shaft proposed for the underground mine.

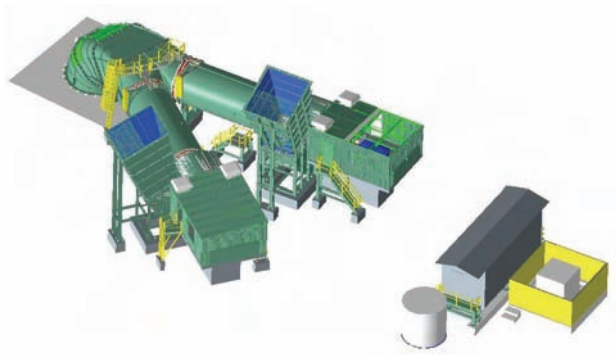


Illustration 11: Three-dimension illustration of the proposed group of structures that make up the ventilation shaft

Services Infrastructure

A number of modifications to existing infrastructure would be required, including (refer to Illustration 08):

- provision of 33kV electricity supply from Beresfield Substation,
- construction of a mine 33kV/11 kV substation,
- a new connection to the existing Donaldson dirty water dam,
- a new connection to the Hunter water Corporation's potable water supply pipeline,
- a new water pipeline connecting with the CHPP, and
- waste water disposal systems.

Amendments to Donaldson Rehabilitation Plans

The proposed mine would require some amendments to the final landform and rehabilitation plans for the Donaldson Open Cut Mine, in order to cater for the Abel Underground Mine and associated infrastructure. While the original Donaldson Rehabilitation Plan envisaged backfilling and rehabilitation/ revegetation of the Donaldson open cut mine pit, the sections of the pit near John Renshaw Drive which would contain the access tunnels to the Abel mine and ROM stockpile would not be backfilled and rehabilitated under the proposal to mine underground. At this stage, it is not envisaged that the pit would be backfilled and revegetated following the completion of mining in the Abel Underground Mine. Rehabilitation works would be limited to battering back and stabilising slopes, sides and surrounding areas with vegetation.

Visual Effects of the Proposal

Most of the proposed works would bring about only relatively minor changes in the visual environmental of the study area, including both the surface study area and the underground mining area. The following sections give an overview of the likely visual effect of the different components of the proposed works.

Bloomfield CHPP

The most significant changes are likely to result from the increase in stockpile size within the Bloomfield CHPP to achieve the 30% capacity increase required to process Abel Coal as well as that from existing mines. However, much of the CHPP is located in a valley and visually concealed from the majority of viewers outside the mine lease area. The exception is formed by some of the plants' buildings as well as the conveyors and tops of the coal stockpiles, which can be seen from a limited number of properties in the Ashtonfield area (refer to Illustration 08). As conveyor structures are not solid in their design and coal stockpiles have a dark colour that tends to be more easily blend in with the vegetation in the background, the existing buildings of the

Bloomfield CHPP are the most visually prominent structures during the day-time (refer to Illustrations 06 and 12), while at night, the existing lighting in the plant represents the visually most significant element.

Due to the angle of viewing, the expansion of the stockpile pad areas within the plant, even though significant, would be difficult to perceive by residents in Ashtonfield. Most of the increased stockpiles would be located in front or behind of the existing stockpiles when seen from these areas and the increase in stockpile depth would be difficult to perceive. The most perceptible stockpile expansion would be the westward expansion of the clean coal stockpile, which would result in a slightly wider front edge of the stockpile when seen from Ashtonfield. However, the increase in width would represent a relatively small modification to the existing stockpile which would not result in a new or significantly different element in the view (refer to Illustration 09). Over the viewing distance, this increase would only affect a small portion of the view. The increase in stockpile size would only result in a low the visual effect.

Additional conveyors (including coal tunnels and aerial stackouts) would also be difficult to perceive from areas beyond the mine lease. As they are not solid structures and due to their dark colour, the structures tend to blend in with the tops of the coal stockpiles and would only have a low visual effect.

New buildings and other structures such as the tailings thickener, road relocations and other workforce-related infrastructure would be located on existing disturbed areas in the centre of the Bloomfield CHPP. They would be only relatively minor structures when compared to the existing mining infrastructure and would generally be concealed behind the stockpiles, therefore having a minor or low visual effect.

Works associated with the Mine Portals

The mine access tunnels, located the in the north-facing high wall of the Donaldson pit and set well below the level of John Renshaw Drive, would only be visible to viewers inside the existing mine area (refer to Illustration 08). In addition, the scale of the portals in relation to the scale of the disturbance caused by the existing open cut mine pit would be small, so that the access tunnels would only have a low visual effect. The height of the surge stockpile within the Donaldson pit would be limited to ensure the top of the stockpile would remain well below the high wall of the pit and would therefore not be visible from John Renshaw Drive. The only perceptible visual effect on people driving along John Renshaw Drive would be that of the thinning of the tree cover as a result of the clearing associated with the approved Donaldson Open Cut Mine. This effect would not be altered or worsened by the proposed Abel Underground Mine.

With regards to viewers within the mine lease area, the visual effect of the Abel stockpile would be no different to that of other stockpiles within the existing Donaldson Open Cut Mine pit. Within the scale of the disturbance caused by the existing pit, the visual effect of the surge



Illustration 12: During the day, buildings are the visually dominant elements in the Bloomfield Plant

stockpile would be low. Further, the Abel surge stockpile is likely to be perceived to be a part of ongoing mining operations rather than a separate element of visual disturbance.

Coal Transport System

The main visual effect associated with the coal transport system will be the clearing associated with the construction of an overland conveyor, which would replace truck haulage once production has increased sufficiently. However, due to the relatively small scale of the infrastructure associated with the conveyor system, the small amount of clearing required and the generally small visual catchment of the identified coal transport corridor (refer to Illustration 08), the visual effect of the system is likely to be low. The conveyor system is likely to be perceived as an extension to the existing mining infrastructure system and where existing disturbed areas can be used in particular, the visual effect would be insignificant compared to the scale of other mining infrastructure. As a result of the low undulating and well vegetated landform (which has a screening effect from many potential viewing locations), the transport system is unlikely to be able to be seen from many areas beyond the Donaldson Mine Lease. The mine lease area is generally well concealed from views from surrounding areas and even properties with elevated and prominent viewing positions, such as along Browns Road, are hardly able to perceive the mine pit (refer Illustration 04).

Ventilation Shaft

With regard to the Ventilation Shaft near the underground mine access roads, this would not be exposed to viewers in the study area (apart from maintenance personnel), due to its location in a valley well below John Renshaw Drive which is densely vegetated with natural bushland providing visual screening from surrounding areas.

Workforce-related and Services Infrastructure

The proposed services infrastructure would consist of a series of small scale works which would complement existing services and infrastructure into the site and would only have a low visual effect. The infrastructure would not be a major visual item and is likely to be perceived as an essential component of normal mine operations. It would not be widely visible, even from within the existing mine leases. Due to the small scale of the works, they would not be able to be perceived from viewers on surrounding properties.

Amendments to Donaldson Rehabilitation Plan

The amendments to the Donaldson Rehabilitation Plan would have a long term visual effect on the experience of driving along John Renshaw Drive, as the visual character of the vegetation buffer between the mine pit and the road would differ from that of a "solid" cover of bushland which will be provided in other areas where the mine pit is being backfilled and revegetated. The relatively thin strip of vegetation (the 50m landscape buffer) between the residual mine pit and John Renshaw Drive would not provide the effect of a solid green wall as the buffer would allow

much more light through the tree cover, so that a cleared area beyond the trees is still perceptible. In the long term, sections around the underground mine portal would retain a sparser visual character than those areas where the mine pit will be backfilled and revegetated and which would have a denser bushland character that could be appreciated from the road.

However, the short and medium term similar visual character around the mine portal area would have the same visual effect of a sparser bushland cover, irrespective of the proposal to mine coal underground. Further, the speed of motorists travelling along the road will reduce the motorist's ability to perceive the visual difference between fully rehabilitated and residual mine pit areas to a degree. This is also helped by the relatively short distance along John Renshaw Drive which would be affected by this change, resulting in an overall low visual effect.

The main risk for this section of John Renshaw Drive would be the potential for future road widening to occur, if rapid rates of increase in traffic volumes over the past years continue. With a notable portion of the landscape buffer being located within the road reserve, such road widening would require removal of considerable portions of the landscape buffer which are located within the road reservation, reducing the visual effectiveness of the buffer in screening the visual effects of mining and associated works in the area.

Visual Sensitivity of Potential Viewers

There are three main viewer groups that need to be considered:

- people in the surrounding areas, including residents in the Ashtonfield area and residents and workers on rural properties along the Black Hill Ridge;
- people travelling along John Renshaw Drive, who will be in close proximity to the proposed mine; and
- mine workers which would constitute the majority of viewers and who view the mine and its associated infrastructure from within the mine lease areas.

Viewers in Surrounding Areas

As discussed above, views of the existing Donaldson Open Cut Mine pit and Bloomfield CHPP are relatively difficult to obtain from surrounding areas, with views in the area generally being limited to small visual catchments. There are however two main areas from where views of the mine and associated infrastructure are possible. These are the Ashtonfield area and the Black Hill Ridge.

Residential Areas (Ashtonfield)

Residential Areas include both older and recent subdivisions in the suburb of Ashtonfield. The subdivisions in Ashtonfield are generally located at the edges of urban development and viewers are likely to expect views of natural areas and bushland beyond the urban limits to be retained.

They are likely to be sensitive to any proposals that would significantly affect the nature and quality of the outlook from their properties or lead to a greater dominance of mining infrastructure in their view. However, mining is an established land use in the area which means that viewers would be less sensitive to changes to the existing mining infrastructure than they would be towards proposals to mine a pristine natural environment. Further, the distance between residential properties and mining infrastructure exceeds one kilometre in all instances which would render some of the changes difficult to be perceived over this distance. Overall therefore, the visual sensitivity of viewers is considered to be low to moderate.

Views of the Donaldson Mine, and in particular of the Bloomfield CHPP are currently limited to a relatively small number of residences in the more elevated areas such as in Tipperary Drive and Kilshanny Avenue who are currently able to view some of the buildings and infrastructure associated with the Bloomfield CHPP. During the day, this currently affects only a small portion of the view from the residential areas, as much of the plant is concealed by intervening landform and vegetation (refer to Illustrations 06 and 12). However, a larger number of people may be affected throughout the night, as a result of floodlighting employed at the plant. Viewers in the Ashtonfield area are likely to be concerned about the potential visual impact the expansion of the CHPP might bring about, and they could be highly sensitive towards any increase in the current night-time visual impact.

Black Hill Ridge Rural Residential Areas

The Black Hill Ridge area includes rural residential properties and small rural businesses which are concentrated in small groups along Black Hill Road and its side roads, such as Browns Road. Many of these properties enjoy significant elevation above the remainder of the study site, in particular above the surface study area within the Donaldson Mine Lease. As a consequence, some of them have panoramic views towards the north-east and across the Abel surface study area, and would be sensitive to any changes in their outlook. Potential viewers from these properties would be mainly residents who would be concerned about changes to their peaceful outlook over a predominantly rural countryside, in particular to changes that would lead to a more dominant presence of mining and associated infrastructure.

However, despite the prominent position of many of the Black Hill Ridge residences in the landscape, the key areas affected by the Abel Underground Mine are difficult to perceive as they are almost concealed by vegetated ridgelines between the viewers and those key areas (which include John Renshaw Drive and the Bloomfield CHPP) (refer to Illustration 04). Similarly to Ashtonfield, mining is an established land use in the area and, to a degree, the Black Hill residents would be used to seeing some evidence of mining in their view and the distance between them and the surface study area would make small-scale works and details hard to perceive. The overall sensitivity of these viewers is therefore considered to be low to moderate.

Viewers along John Renshaw Drive

Viewers along John Renshaw Drive will be mostly limited to motorists travelling along this route. As discussed earlier, John Renshaw Drive is a State Road and provides a regional link between Cessnock and Kurri Kurri to the F3 Freeway near Beresfield, carrying significant amounts of traffic.

The perceptibility of motorists is an important factor. Travelling at high speed, motorists are unable to perceive a great level of detail, particularly small elements and details. They are more likely to be sensitive to changes that affect long, horizontal elements which are more important in shaping the visual character of a road, as they can be more easily perceived as the motorist drives along the road corridor. Such elements include the stands of native vegetation along the road which take on an almost horizontal nature when seen by the motorist. Because of this and because they reflect the general rural character of the area, motorists are likely to be sensitive to changes which affect the way in which the road is framed by the existing stands of vegetation, but are less likely to be concerned about changes that leave the experience of the Drive largely intact.

Further, the road functions primarily as a link road and a large portion of motorists along John Renshaw Drive would use the road to commute to work (including accessing other industrial and/ or commercial facilities in the region) or to transport goods. This suggests that they would be less sensitive to changes in the visual environment than for example recreational users or tourists. The overall level of visual sensitivity of motorists along John Renshaw Drive is likely to be low to moderate.

Mine Workers

Mine workers represent the vast majority of potential viewers of the proposed Abel Underground Coal Mine. The miners would already be accustomed to the visual impact created by the existing Donaldson and Bloomfield Mines, as well as that of the CHPP. They would therefore be expected to have a low visual sensitivity towards amendments in the mining operations and infrastructure.

Visual Impact of the Proposal

As the bulk of the proposed mining activities will occur underground and above-ground works are mostly limited to amendments to and the expansion of existing mining infrastructure, the overall visual impression of both the underground mining area and the surface study area is unlikely to change substantially. Many of the proposed changes would be insignificant in their visual effect, in particular in comparison to the scale of the existing Donaldson Open Cut Mine. Further, the location of infrastructure associated with underground mining within an area already affected by open cut mining would greatly reduce the visual effect a similar development may have in an area with no previous history of mining or without pre-existing mining and coal processing infrastructure.

The visual impacts of the proposed works can be categorised as either short, medium or long term. Short term visual impacts would result from the construction activities. However, these would be of finite duration and are likely to be insignificant within the context of the visual disturbance caused by the existing Donaldson Open Cut Mine.

Medium term visual impacts would include the mining activities and visual effects of mining infrastructure such as the expansion of the Bloomfield CHPP, the coal transport system, additional buildings and services infrastructure which would be redundant in the long term and be dismantled following the end of mining operations. During the operational period of the mine, these changes are likely to be viewed as a normal part of mine operations where infrastructure would be adjusted as required to meet changing production levels. Therefore the visual effect of these changes would not be able to be widely perceived from areas beyond the Donaldson Mine Lease area, and the visual impact of these works and of the ongoing underground mining activities would be considered to be low.

Medium to long term visual impacts include the changes to the rehabilitation of the Donaldson Open Cut Mine Pit adjacent to John Renshaw Drive. While the bushland buffer between John Renshaw Drive and the mine pit (constructed as part of the Donaldson Mine) would be in place to provide a vegetated edge to John Renshaw Drive and ameliorate the impacts of clearing in the open cut mine pit to a considerable degree, there would still remain a difference in the visual character between fully rehabilitated mine pit sections and areas of the pit which would not be backfilled and revegetated and therefore not provide a dense bushland character along this section of the road in the long term. However, viewers would have become accustomed to this visual character as a result of the clearing and excavation associated with the Donaldson Open Cut Mine Pit, and the visual impact of a failure to fully revegetate this area along a relatively short section of the road would therefore remain low, provided remaining mine pit areas are rehabilitated satisfactorily.

Provided that there would be no significant subsidence, there would be no other long term visual impact as a result of the proposal to mine coal underground in the Abel Mine Lease Area.

Mitigation Measures

While the visual impacts of the Abel Underground Mine would only be low and would not generally require any mitigation measures, it is proposed to implement modifications which would mitigate and reduce the visual impact caused by the existing Donaldson Mine, in particular the Bloomfield CHPP.

The proposed mitigation measures include the re-configuration of existing stockpiles including re-design of the pads, to reduce the visual effect of the stockpiles, as well modifications to existing floodlighting to achieve more directional lighting which avoids lighting areas beyond the

plant and the use of directional shielding to reduce the amount of light spill affecting East Maitland residents at night. New buildings would be painted a dark charcoal colour to reduce their visual prominence in the landscape as much as possible.

Conclusion

The nature of underground mining is such that any visual impacts are generally associated with obtaining access into the mine, with surface transport systems and with the coal processing infrastructure, rather than with the mine itself. In the case of the Abel Underground Mine, a significant portion of the required surface infrastructure is already present on the Donaldson Mine Lease, and any additional infrastructure and works can easily be accommodated on land already disturbed by the Donaldson Open Cut Mine. Further, the siting of additional infrastructure required for the Able Mine is such that it would either not be visible from surrounding areas at all, or would only be perceptible as a modification to the existing mining infrastructure. Further, the mitigation of visual impacts associated with existing mining operations as a part of the Abel Underground Mine would contribute towards an improvement of existing visual impacts from the Bloomfield Coal Handling and Processing Plant.

Overall, the proposal to mine coal underground would not noticeably alter the visual environment of either the underground mining area or of surface study area within the existing Donaldson Mine Lease. The visual impacts of the proposed works are considered to be low.