



Illawarra Coal



Dendrobium Mine Lighting Management Plan





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VERSION HISTORY

VERSION	DESCRIPTION OF CHANGES	DATE
1.0	Original Document	November 2004
2.0	Three yearly review as required by Development Consent	October 2006
3.0	Review as required by the revised Development Consent (issued 8 December 2008)	April 2009
4.0	Three yearly review of Management Plan as required by the Development Consent. Minor changes to Roles and Responsibilities section.	March 2012
5.0	The following changes have been made: <ul style="list-style-type: none"> • Updated roles and responsibilities • Reference to parent company changed • Review as required by Development Consent 	Jan 2018
6.0	<ul style="list-style-type: none"> • Updated roles and responsibilities • Reference to parent company changed • Review as required by Development Consent 	August 2018

PERSONS INVOLVED IN THE REVIEW OF THIS PLAN INCLUDE:

NAME	TITLE	EXP (YRS)
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1 INTRODUCTION

1.1 Scope

The scope of this Lighting Management Plan (LMP) includes the following sites and facilities:

- Dendrobium Pit Top;
- Kemira Valley Coal Loading Facility; and
- Kemira Valley Rail Line.

1.2 Objectives

The objectives of the Dendrobium LMP are to:

- Comply with the Conditions of Consent, Australian Standards and Legislation with regards to lighting;
- Avoid adverse lighting impacts on the local community.

The strategies adopted to achieve the objectives include:

- Minimise light emissions, light pollution and total night time glow from the mine, associated sites and activities through the use of appropriate control measures, design and technical solutions;
- Maintain lighting levels and lighting fixtures sufficient to provide the necessary security and safe working environment without adversely affecting community amenity;
- Minimise the adverse visual impact of stationary lighting intensity through the appropriate selection and positioning of lighting fittings;
- Prevent mine vehicle headlights and train headlights from directly shining into residential dwellings through strategic screening; and
- Respond promptly and courteously to any lighting issues raised by the community.

2 ROLES AND RESPONSIBILITIES

It is the responsibility of all employees and contractors working for or on behalf Company to conform with the objectives of this Plan.

Particular responsibilities in relation to the implementation and maintenance of this Plan are presented below.

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**Table 1: Roles and Responsibilities**

Role	Responsibility
Environmental Supervisor -ICH	Implementation and periodic review of this Management Plan.
Environmental Supervisor -ICH	Meeting the commitments contained within this management plan for the operational areas, including periodic noise monitoring and inspections
Manager External Affairs & Communication	Meeting the commitments contained within this management plan for stakeholder engagement
IC Lead of HSE Environmental Supervisor General Manager Dendrobium	Provide the necessary resources and systems to ensure that requirements of this Management Plan are met
Site Engineering and Technical Staff	Lighting system design, selection, installation and maintenance.
Logistics Coordinator	Management of lighting issues relating to the loading of coal at Kemira Valley Coal Loading Facility and train line.

3 LEGISLATION AND PLANNING

3.1 Legislative Requirements

By definition, lighting which materially affects the reasonable comfort and convenience of a section of the public is classed as public nuisance under section 125 of the *Local Government Act 1993*. Under this Act, a council may abate a public nuisance or order a person responsible for a public nuisance to abate it.

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3.2 Development Consent Conditions

Schedule 4 of the Development Consent specifies the operational requirements with which Dendrobium must comply. The following conditions apply to this Management Plan:

Schedule 4

Visual – Visual Amenity

28. The Applicant shall minimise the visual impacts of the surface facilities to the satisfaction of the Secretary.

Visual – Lighting Emissions

29. The Applicant shall:

- a. ensure that all external lighting associated with the surface facilities complies with *Australian Standard AS4282 (INT) 1995 – Control of Obtrusive Effects of Outdoor Lighting*;
- b. take all practicable measures to mitigate off-site lighting impacts from the surface facilities;
- c. ensure that light emitted from headlights of locomotives operating on the Kemira Valley rail line are screened from residences; and
- d. report on the effectiveness of lighting emission controls in the Annual Review to the satisfaction of the Secretary.

3.3 Australian Standards

Australian Standards relevant to the management of light spread are *AS/NZS 1158.0:2005 Lighting for Roads and Public Spaces*, other Standards in the 1158 series and *AS 4282-1997 (supersedes-1995) Control of Obtrusive Effects of Outdoor Lighting*. These standards are adhered to at all required surface facilities.

AS/NZS 1158.0:2005 sets out definitions and lighting categories applicable to roads and outdoor public areas, and for the movement of vehicles and pedestrians. It also serves as a general introduction to other Standards in the AS/NZS 1158 series, which refer to the performance and installation design requirements for roads and thoroughfares.

AS 4282-1997 Control of Obtrusive Effects of Outdoor Lighting sets out guidelines for the control of the obtrusive affects of outdoor lighting and gives recommended limits for the relevant lighting parameters to contain these effects within tolerable levels. This standard also refers to the potential effects of lighting systems on nearby residents, and users of adjacent roads and transport signaling systems, and on astronomical observations. It does not apply to road lighting; internally illuminated advertising signs; brightly-lit surfaces (e.g. floodlit buildings and advertising signs); lighting systems installed for the purposes of television broadcasting; or lighting systems that are of a cyclic or flashing nature.

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4 MANAGEMENT STRATEGIES

4.1 Potential Lighting Impacts – General

Lighting associated with surface operations is mostly fixed lighting for safety, security and operational purposes. Potential lighting impacts from visual stray light are associated with flood lighting of key operational areas such as Pit Top yard and the Kemira Valley Coal Loading Facility (KVCLF). General lighting is provided strategically around main buildings, structures, amenities, key work places and processes.

Lighting is kept to the minimum but at a level sufficient to maintain a safe working environment. Although some lighting and the luminescence from particular areas is evident at night, the control measures are designed to prevent direct adverse amenity impacts on the community.

4.1.1. Dendrobium Pit Top Surface

Lighting is placed along the portal road, general yard working area (traffic area), parking areas, walkways and at the entrance to the mine site to provide safe working conditions and for site security purposes.

Some lights at the Pit Top remain on during the night for operational and safety reasons.

4.1.2. Kemira Valley Coal Loading Facility (KVCLF)

The key lighting features at the KVCLF include the coal stockpile and perimeter lighting (pointed down) including the immediate rail line approach for the facility.

The elevated conveyor gantry has fixed lighting which remains off at night unless required for safety and security purposes.

4.1.3. Rail Operations

Headlight beams of the coal hauling locomotives are prevented from directly impacting residents by the nature of the rail corridor topography and the natural vegetation screening.

4.1.4. Atmospheric Conditions

The awareness of night sky luminescence from particular areas may be increased as a consequence of particular atmospheric conditions (fog, low cloud etc).

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4.2 Implemented Light Management and Control Measures

Lighting management and control measures adopted for particular areas are detailed in the table below.

Table 2: Potential Lighting impacts and controls

Area / Road	Potential Lighting Impacts	Controls
Cordeaux Rd at Dendrobium Surface Entry	Direct light impact from entry lighting, impacting on vehicle movement.	Lighting directed down, height of poles kept to a minimum, shrouding, screening along Cordeaux Road with vegetation (including screening of existing substation).
Lighting along road access to Dendrobium Portal, lighting of Portal	Indirect light impact from fixed lighting	Lighting directed down, height of poles kept to a minimum, shrouding, topographic screening to the west.
Lighting of eastern carpark	Indirect light impact from fixed lighting	Lighting directed down, height of poles kept to a minimum, shrouding.
Surface lighting incl. Sewage Treatment Plant	Indirect light impact, night glow	Lighting directed down, topographic and vegetation screening.
KVCLF	Indirect light impact, night glow from reflected light	Lighting directed down, shrouding.
Stockpile perimeter lighting (KVCLF)	Direct and indirect light impacts	Lighting directed down, shrouding, topographic and vegetation screening.
Conveyor lighting (KVCLF)	Indirect light impact, night glow from reflected light	Lighting directed away from residences and roads, shrouding.
Lighting of train line near stockpile (KVCLF)	Indirect light impact	Lighting directed down, shrouding.
Lighting of Kemira Portal and Road (KVCLF)	Indirect light impact, Direct light impact (from vehicles)	Lighting directed down, height of lighting kept to a minimum, shrouding, vegetation screening.
Train Movement	Indirect and direct light impact	Topographic vegetation screening, operational management (by drivers) if required.
Lighting of other infrastructure (e.g. amenities, sediment ponds and temporary infrastructure)	Indirect light impact, night glow from reflected light	Lighting directed down, height of lighting kept to a minimum, shrouding (where appropriate).

4.3 Lighting Management Strategy Effectiveness

The effectiveness of the surface lighting management strategies to prevent adverse impacts on the local community will be maintained by:

- Maintaining the currency and relevance of this Plan;
- Maintaining lighting facilities and apparatus in good order through the routine, maintenance and inspection regime;
- Responding promptly and effectively to any matter raised by a community member; and
- Selection of light fittings, installation criteria, design and community impacts remain a key consideration for all new and existing surface lighting arrangements.

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5 MONITORING

5.1 Lighting Effectiveness Review

Improvements in lighting management are identified through:

- Inspection;
- Community Complaints (log maintained); and
- Lighting Surveys and Assessments.

5.2 Lighting Management Plan Review

The Lighting Management Plan will be reviewed on a triennial basis or earlier as needed.

6 REPORTING

Non-conformances with this LMP and community complaints are considered as an ‘event’ and are recorded with actions undertaken and responsibilities assigned with status of actions tracked through to completion and sign off.

The ‘event’ records are used to inform internal and external stakeholders.

The review of effectiveness of the LMP and any related community complaints are reflected in the Annual Review provided to government.

The local community representatives are kept informed through the Dendrobium Community Consultative Committee (DCCC).

7 REFERENCES

- *AS4282:1997 – Control of Obtrusive Effects of Outdoor Lighting;*
- *AS/NZS 1158.0:2005 Lighting for Roads and Public Spaces*
- Cardno Lawson Treloar (2008). Dendrobium Mine – Lighting Impact Assessment;
- Illawarra Coal (2018) ICHP0112 Handling Community Complaints Enquiries and Disputes;
- Local Government Act 1993

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