

Development Consent

Sections 76(A)9 & 80 of the *Environmental Planning and Assessment Act 1979*

I, the Minister for Urban Affairs and Planning, pursuant to Sections 76(A)9 of the Environmental Planning and Assessment Act, 1979 ("the Act") determine the development application ("the application") referred to in Schedule 1 by granting consent to the application subject to the conditions set out in Schedule 2 to 8.

The reasons for the imposition of the conditions are to:

- minimise the adverse impact the development may cause through water and air pollution, noise, vegetation and visual disturbance and subsidence effects;
- provide for environmental monitoring, reporting and independent review; and
- set requirements for mine infrastructure provision.

Andrew Refshauge MP
Minister for Urban Affairs and Planning

Sydney

20 November 2001

SCHEDULE 1

Application Number: DA 60-03-2001

Applicant: BHP Billiton Illawarra Coal Holdings Pty Limited

Consent Authority: Minister for Urban Affairs and Planning

Land: See Appendix 1

Development: Dendrobium Underground Coal Mine and associated surface facilities and infrastructure

As modified by Modification 6 on 8 December 2008

The Department has prepared a consolidated version of the consent which is intended to include all modifications to the original determination instrument.

The consolidated version of the consent has been prepared by the Department with all due care. This consolidated version is intended to aid the consent holder by combining all consents relating to the original determination instrument but it does not relieve a consent holder of its obligation to be aware of and fully comply with all consent obligations as they are set out in the legal instruments, including the original determination instrument and all subsequent modification instruments.

CONSOLIDATED CONSENT

SUMMARY OF MODIFICATIONS

Application Number	Determination Date	Decider	Modification Description
DA60-03-2001-Mod-7	2 April 2015	Director Resource Assessments	Change to biodiversity offset strategy
DA60-03-2001-Mod-8	13 July 2018	Director Resource Assessments	Surface electrical supply upgrade
DA60-03-2001-Mod-9	8 July 2022	Director Resource Assessments	Gas management infrastructure
DA60-03-2001-Mod 10	9 August 2024	Director Energy and Resource Assessments	Coal processing
DA60-03-2001-Mod 11	5 February 2026	Director Energy and Resource Assessments	Slope stabilisation and mining support activities

RECOMMENDATION

CONSOLIDATED CONSENT

TABLE OF CONTENTS

DEFINITIONS	1
ADMINISTRATIVE CONDITIONS	3
Obligation to Minimise Harm to the Environment	3
Terms of Approval	3
Limits on Approval	3
Staged Submission of Management Plans/Monitoring Programs	4
Structural Adequacy	4
Demolition	4
Operation of Plant and Equipment	4
Community Enhancement	4
Costs of Management Measures	4
Strategic Biodiversity Offsets	4
SPECIFIC ENVIRONMENTAL CONDITIONS – MINING AREA	6
Subsidence	6
Aboriginal Heritage	8
Groundwater Monitoring Program	9
Environmental Offsets	9
SPECIFIC ENVIRONMENTAL CONDITIONS – SURFACE FACILITIES	10
Noise	10
Blasting and Vibration	12
Air Quality	12
Meteorological Monitoring	12
Water Management	13
Landscape Management	14
Transport	15
Visual	16
Waste	16
SPECIFIC ENVIRONMENTAL CONDITIONS – OTHER SITE COMPONENTS	17
Coal Washery	17
West Cliff Emplacement	17
SPECIFIC ENVIRONMENTAL CONDITIONS – EXTENDED SITE	18
Greenhouse Gases & Energy Efficiency	18
ADDITIONAL PROCEDURES FOR AIR QUALITY AND NOISE MANAGEMENT	19
Notification of Landowners	19
Independent Review	19
Land Acquisition	20
ENVIRONMENTAL MANAGEMENT, MONITORING, REPORTING & AUDITING	21
Environmental Management Strategy	21
Revision of Strategies, Plans and Programs	21
Reporting	22
Independent Environmental Audit	23
Community Consultative Committee	23
Access to Information	24
APPENDIX 1: SCHEDULE OF DEVELOPMENT LAND – EXTENDED SITE	25
APPENDIX 2: SITE MAPS OF THE DEVELOPMENT	27
APPENDIX 3: WEST CLIFF COAL WASH EMPLACEMENT STATEMENT OF COMMITMENTS	33
APPENDIX 4: STATEMENT OF COMMITMENTS	38
APPENDIX 5: Deleted	47

CONSOLIDATED CONSENT

DEFINITIONS

AEMR	Annual Environmental Management Report
Annual Review	The review required by condition 5 of Schedule 8
Affected councils	Wingecarribee Shire Council, Wollondilly Shire Council and Wollongong City Council
Applicant	BHP Billiton Illawarra Coal Holdings Pty Ltd, or its successors
BC Act	<i>Biodiversity Conservation Act 2016</i>
BCA	Building Code of Australia
CPHR	Conservation Programs, Heritage and Regulation Group within NSW DCCEEW.
CCC	Community Consultative Committee
Coal washery	Dendrobium coal washery and drying facility located within the Steelworks
Consent	This development consent
Construction	The demolition of buildings or works, carrying out of works and erection of buildings covered by this consent
CPI	Consumer Price Index, as published by the Australian Bureau of Statistics
DA	Development application
Day	The period from 7am to 6pm on Monday to Saturday, and 8am to 6pm on Sundays and Public Holidays
Department	Department of Planning, Housing and Infrastructure
Development layout	The plan/s in Appendix 2 of this consent
DSC	Dams Safety Committee
EA	<i>Dendrobium Colliery Modification to Dendrobium Area 3 Environmental Assessment</i> (including Attachments A to I), prepared for the Applicant by Cardno Forbes Rigby and dated November 2007
EIS	<i>Environmental Impact Statement for the Dendrobium Underground Coal Mine</i> , prepared for the Applicant by Olsen Environmental Consulting and dated March 2001, including the Species Impact Statement prepared by Biosis Research and dated April 2001
Environmental consequences	Environmental consequences of Subsidence Impacts, including loss of surface flows to the subsurface, loss of standing pools, adverse water quality impacts, development of iron bacterial mats, cliff falls, rock falls, damage to Aboriginal heritage sites, impacts on aquatic ecology, ponding, etc
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EP&A Regulation	<i>Environmental Planning and Assessment Regulation 2021</i>
EPA	Environment Protection Authority
EPL	Environment Protection Licence issued under the <i>Protection of the Environment Operations Act 1997</i>
Evening	The period from 6pm to 10pm
Extended site (or site)	All land to which the development application applies, comprising the mining area, surface facilities and coal washery (see Appendix 1).
First workings	Development of main workings and gateroads to establish access within the mining area
Land	Land means the whole of a lot, or contiguous lots owned by the same landowner, in a current plan registered at the Land Titles Office at the date of this approval
KVCLF	Kemira Valley Coal Loading Facility and coal sizer
Kemira Valley rail line	The rail line and associated infrastructure between the KVCLF and the coal washery
Material harm	Is unauthorised harm that: <ul style="list-style-type: none">• involves actual or potential harm to the health or safety of human beings or to the environment that is not trivial, or• results in actual or potential loss or property damage of an amount, or amounts in aggregate, exceeding \$10,000, (such loss includes the reasonable costs and expenses that would be incurred in taking all reasonable and practicable measures to prevent, mitigate or make good harm to the environment) Note: This definition excludes "harm" that is authorised under either this consent or any other statutory approval'
Mining operations	First workings and second workings
Mining area	Area 1, Area 2, Area 3A, Area 3B and Area 3C, as shown in Appendix 2
Mining Panel	Independent Advisory Panel for Underground Mining
Minister	Minister for Planning and Public Spaces, or delegate

CONSOLIDATED CONSENT

Modification 7	The modification to the development as described in modification application 60-3-2001 MOD 7 and accompanying letter report dated 18 March 2015 from Illawarra Coal Holdings Pty Limited
Modification 8	The modification to the development as described in the modification application dated 26 February 2018 and accompanying letter report and attachments dated 19 June 2018 from Illawarra Coal Holdings Pty Ltd
Modification 9	The modification to the development as described in the Modification Report titled 'Dendrobium Mine Modification – Gas Management Infrastructure Modification Report', dated 11 February 2022, prepared by South32 Illawarra Metallurgical Coal, 'Dendrobium Mine Modification – Submissions Report', dated 26 April 2022, prepared by South32 Illawarra Metallurgical Coal and letter titled 'Dendrobium Mine Modification – Response to RFI', dated 16 May 2022, prepared by South32 Illawarra Metallurgical Coal
Modification 10	The modification to the development as described in the Modification Report titled "Dendrobium Mine/Appin Mine Modification – Coal Transport Modification Report", dated 30 October 2023, prepared by South32 Illawarra Metallurgical Coal, letter titled "Dendrobium Mine/Appin Mine Modification – Coal Transport Amended Modifications", dated 11 April 2024, prepared by South32 Illawarra Metallurgical Coal, "Dendrobium Mine/Appin Mine Modification – Coal Transport Modification Submissions Report". Dated 11 April 2024, prepared by South32 Illawarra Metallurgical Coal
Modification 11	The modification to the development as described in the Modification Report titled "Dendrobium Mine Modification 11–Modification Report", dated August 2025, prepared by GM3, and "Dendrobium Mine Modification 11 – Submissions Report", dated November 2025, prepared by GM3.
Mtpa	Million tonnes per annum
Night	The period from 10pm to 7am on Monday to Saturday, and 10pm to 8am on Sundays and Public Holidays
NSW DCCEEW	NSW Department of Climate Change, Energy, the Environment and Water
NSW DCCEEW – Water Group	Water Group within the NSW Department of Climate Change, Energy the Environment and Water
Privately-owned land	Land that is not owned by a public agency, or a mining company (or its subsidiary)
Reasonable and feasible	Reasonable relates to the application of judgement in arriving at a decision, taking into account: mitigation benefits, cost of mitigation versus benefits provided, community views and the nature and extent of potential improvements. Feasible relates to engineering considerations and what is practical to build
Response to Submissions	The Applicant's response to issues raised in submissions, dated 24 April 2008
ROM coal	Run-of-mine coal
Resources Regulator	NSW Resources Regulator
SA NSW	Subsidence Advisory NSW
Second workings	Extraction of coal from longwall panels, miniwall panels or pillar extraction
Secretary	Planning Secretary under the EP&A Act, or nominee
SMP	Subsidence Management Plan
Statement of Commitments	The Applicant's Statement of Commitments for Area 3A – 3C (see Appendix 4)
Steelworks	Port Kembla Steelworks
Subsidence or subsidence effects	Deformation of the ground mass due to mining, including all mining-induced ground movements, including both vertical and horizontal displacement, tilt, strain and curvature
Subsidence impacts	Physical changes to the ground and its surface caused by Subsidence Effects, including tensile and shear cracking of the rock mass, localised buckling of strata caused by valley closure and upsidence and surface depressions or troughs
Surface facilities	Pit top facilities, mine access drift portal, conveyors, three ventilation shafts and fans, ROM coal stockpile, Kemira Valley Coal Loading Facility, Kemira Valley rail line, Cordeaux Pit Top, Corrimal No 3 Shaft and Coal Bins, access roads and all associated development allowed to be constructed under the consent.
TARP	Trigger, Action, Response Plan
WCC	Wollongong City Council
West Cliff Coal Wash Emplacement	Stage 3 of the West Cliff Coal Wash Emplacement, located at West Cliff Coal Mine

CONSOLIDATED CONSENT

SCHEDULE 2 ADMINISTRATIVE CONDITIONS

Obligation to Minimise Harm to the Environment

1. The Applicant **must** implement all reasonable and feasible measures to prevent and/or minimise any harm to the environment that may result from the construction, operation, or rehabilitation of the development.

Terms of Consent

2. The Applicant **must** carry out the development generally in accordance with the:
 - (a) Development Application (DA 60-03-2001), EIS and associated submissions to the Dendrobium Underground Coal Mine Project Commission of Inquiry, and in particular its:
 - Primary Submission (the Dendrobium Project, dated 30 July 2001);
 - Submission in Reply (the Dendrobium Project, undated); and
 - Environmental Effects of Subsidence Associated with the Dendrobium Project, prepared by National Environmental Consulting Services and dated August 2001;
 - (b) Modification Application dated 12 February 2002 and supporting information dated 27 January 2002;
 - (c) Modification Application and supporting information dated 24 May 2002 and additional supporting information dated 14 June 2002;
 - (d) Modification Application and Statement of Environmental Effects for the Dendrobium Coal Sizer, prepared by Olsen Environmental Consulting and dated March 2005;
 - (e) *deleted*
 - (f) Modification Application – Modification of Area 3 Footprint and Review of Conditions of Consent dated 27 November 2007, EA and associated Statement of Commitments (see Appendix 4); and
 - (g) *Modification 7, Modification 8, Modification 9, Modification 10 and Modification 11.*
- 2A. The Applicant **must** carry out the development in accordance with the conditions of this consent.
- 2B. The Applicant **must** carry out the development generally in accordance with the development layout shown in Appendix 2.
3. If there is any inconsistency between the above documents, the most recent document shall prevail to the extent of the inconsistency. However, the conditions of this consent shall prevail to the extent of any inconsistency.
4. The Applicant **must** comply with any reasonable and feasible requirement/s of the **Secretary** arising from the Department's assessment of:
 - (a) any reports, strategies, plans, programs, reviews, audits or correspondence that are submitted in accordance with the conditions of this consent;
 - (b) any reviews, reports or audits undertaken or commissioned by the Department regarding compliance with the conditions of this consent; and
 - (c) the implementation of any actions or measures contained in these documents.

Limits on Consent

5. Mining operations may take place in the mining area until 31 December 2030.

Note: Under this consent, the Applicant is required to rehabilitate the site in accordance with the conditions of this consent and those imposed on the mining lease(s) associated with the development under the Mining Act 1992. Consequently this consent will continue to apply in all other respects other than the right to conduct mining operations until the site has been rehabilitated to a satisfactory standard.

6. The Applicant **must** not extract more than 5.2 million tonnes of ROM coal a year from the mining area.
7. The Applicant **must** only transport coal from the surface facilities by rail.

Staged Submission of Management Plans/Monitoring Programs

8. With the approval of the **Secretary**, the Applicant may submit any management plan or monitoring program required by this consent on a progressive basis.

CONSOLIDATED CONSENT

9. The Applicant **must** ensure that monitoring programs, management plans and the Environmental Management Strategy, as in existence at the date of modification of consent in November 2008, continue to be implemented (to the satisfaction of the **Secretary**) until replaced by monitoring programs and management plans approved in accordance with the conditions of this consent.

Structural Adequacy

10. The Applicant **must** ensure that all new buildings and structures, and any alterations or additions to existing buildings and structures, are constructed in accordance with the relevant requirements of the BCA.

Notes:

- Under Part 6 of the EP&A Act, the Applicant is required to obtain construction and occupation certificates for the proposed building works.
- *Environmental Planning and Assessment (Development Certification and Fire Safety) Regulation 2021* sets out the requirements for the certification of the development.

Demolition

11. The Applicant **must** ensure that all demolition work is carried out in accordance with *Australian Standard AS 2601-2001: The Demolition of Structures*, or its latest version.

Operation of Plant and Equipment

12. The Applicant **must** ensure that all plant and equipment used on site is:
- (a) maintained in a proper and efficient condition; and
 - (b) operated in a proper and efficient manner.

Community Enhancement

13. The Applicant **must** contribute \$0.03 per tonne of saleable coal production each financial year to fund the provision of significant present and future benefits to local communities directly affected by the development. These funds **must** be:
- (a) administered and expended in accordance with procedures which are to the satisfaction of WCC and the **Secretary**;
 - (b) provided by 30 September each year over the life of the consent;
 - (c) based on saleable coal production in the previous financial year; and
 - (d) indexed in accordance with the CPI, with April 2005 used as the commencement date for indexation calculations.

Any dispute over the operation of this fund **must** be referred to the **Secretary** for resolution.

Costs of Management Measures

14. The Applicant **must** be responsible for the costs of all management measures (including measures to minimise, mitigate, offset or remediate impacts of the development which are not recoverable by a third party through the *Coal Mine Subsidence Compensation Act 2017* or the *Mining Act 1992*) including but not limited to remediation of natural features, rehabilitation of ecological systems, the provision of supplementary waters and monitoring of the effectiveness of the works, as determined by the **Secretary**.

Strategic Biodiversity Offsets

15. If the Applicant is required to provide a biodiversity offset pursuant to this consent (including any biodiversity offset that is required under the conditions of a subordinate approval issued in accordance with this consent), the **Secretary**, in consultation with **CPHR**, may accept in satisfaction of the requirement for the biodiversity offset, the provision of land that has conservation values which exceed the conservation values required to meet the relevant offsetting requirement.

If the **Secretary** accepts such an offset under this condition, the **Secretary** **must** issue a written statement to the Applicant advising:

- (a) the details of the proposed offset land;

CONSOLIDATED CONSENT

- (b) the offset requirements that are being met;
- (c) the conservation values that have been relied upon to meet the offsetting requirements; and
- (d) that in the opinion of the Secretary:
 - (i) the land has offsetting values in addition to those that have been relied upon to meet the offsetting requirement in condition 15(b); or
 - (ii) if the land has been subject to a previous statement from the Secretary under this condition, confirmation that the land continues to have conservation values in addition to those that have been relied upon to meet the previous offsetting requirement, or that there are no further conservation values available in respect of the land.

If the Secretary has issued a statement under this condition, the Applicant can rely on that statement and the residual conservation values that the land subject to the statement may hold, to meet further offsetting requirement(s) that may be required under this consent.

The Secretary's statement under this condition can be relied on a number of times in respect of the same land until all of the conservation values of the land the subject of the Secretary's statement have been relied upon to meet offsetting requirements under this consent.

The Applicant **must** make suitable arrangements to provide appropriate long-term security for the biodiversity offset area(s) accepted under this condition, within 2 years of the date of the Secretary's statement in respect of that land, unless otherwise agreed with the Secretary.

Surrender of Existing Consents

16. Within 12 months of the granting of consent for Modification 11 unless otherwise agreed with the Secretary, the Applicant must surrender D74/134 (granted by Wollongong City Council in 1974) in accordance with section 68 of the EP&A Regulation.

Note: Condition 16 does not extend to the surrender of construction or occupation certificates for existing and proposed building works. The surrender required by this condition should not be understood to mean that works legally constructed under a valid consent or approval can no longer be legally maintained or used.

17. Before the surrender of the existing development consent specified in condition 16, the conditions of this consent prevail to the extent of any inconsistency.

CONSOLIDATED CONSENT

SCHEDULE 3 SPECIFIC ENVIRONMENTAL CONDITIONS – MINING AREA

SUBSIDENCE

Note: These conditions should be read in conjunction with the Statement of Commitments.

Watercourse Impact Management

1. The Applicant **must** ensure that, as a result of the development:
 - (a) no rock fall occurs at Sandy Creek Waterfall or from its overhang;
 - (b) the structural integrity of the waterfall, its overhang and its pool are not impacted;
 - (c) cracking in Sandy Creek within 30 m of the waterfall is of negligible environmental and hydrological consequence; and
 - (d) negligible diversion of water occurs from the lip of the waterfall to the satisfaction of the **Secretary**.
2. The Applicant **must** ensure that underground mining operations do not cause subsidence impacts at Sandy Creek and Wongawilli Creek other than “minor impacts” (such as minor fracturing, gas release, iron staining and minor impacts on water flows, water levels and water quality) to the satisfaction of the **Secretary**.

Note: In this condition, “minor impacts” are those defined as minor triggers in Table 23.2 of the draft SMP submitted by the Applicant for Dendrobium Area 3A.

3. The Applicant **must** ensure the development does not result in reduction (other than negligible reduction) in the quality or quantity of surface water or groundwater inflows to Lake Cordeaux or Lake Avon or surface water inflow to the Cordeaux River at its confluence with Wongawilli Creek, to the satisfaction of the **Secretary**.
4. Prior to carrying out any underground mining operations that could cause subsidence in either Area 3A, Area 3B or Area 3C, the Applicant **must** prepare a Watercourse Impact Monitoring, Management and Contingency Plan to the satisfaction of the **Secretary**. Each such Plan must:
 - (a) demonstrate how the subsidence impact limits in conditions 1 - 3 are to be met;
 - (b) include a monitoring program and reporting mechanisms to enable close and ongoing review by the Department and **Resources Regulator** of the subsidence effects and impacts (individual and cumulative) on Wongawilli Creek, Sandy Creek and Sandy Creek Waterfall;
 - (c) include a general monitoring and reporting program addressing surface water levels, water flows, water quality, surface slope and gradient, erodibility, aquatic flora and fauna (including Macquarie Perch, any other threatened aquatic species and their habitats) and ecosystem function;
 - (d) include a management plan for avoiding, minimising, mitigating and remediating impacts on watercourses, which includes a tabular contingency plan (based on the Trigger Action Response Plan structure) focusing on measures for remediating both predicted and unpredicted impacts;
 - (e) address third and higher order streams individually but address first and second order streams collectively;
 - (f) be prepared in consultation with **CPHR**, **WaterNSW** and **Resources Regulator**;
 - (g) incorporate means of updating the plan based on experience gained as mining progresses;
 - (h) be approved prior to the carrying out of any underground mining operations that could cause subsidence impacts on watercourses in the relevant Area; and
 - (i) be implemented to the satisfaction of the **Secretary**.

Notes:

- *Should review by the Department of reports by the Applicant under paragraph (b) indicate that subsidence impacts have exceeded or threaten to limits imposed in conditions 1-3, then under condition 4 of Schedule 2 the **Secretary** may instruct the Applicant to implement reasonable and feasible requirements, which may include to cease mining within the operative longwall, shorten the length of that longwall or shorten the length and/or width of future longwalls.*
- *Requirements under paragraphs (a) and (b) in respect of Sandy Creek and Sandy Creek Waterfall relate only to the Watercourse Impact Monitoring, Management and Contingency Plan for Area 3A.*

Swamp Impact Management

5. The Applicant **must** ensure that subsidence does not cause erosion of the surface or changes in ecosystem functionality of Swamp 15a and that the structural integrity of its controlling rockbar is maintained or restored, to the satisfaction of the **Secretary**.
6. Prior to carrying out any underground mining operations that could cause subsidence in either Area 3A, Area 3B or Area 3C, the Applicant **must** prepare a Swamp Impact Monitoring, Management and Contingency Plan to the satisfaction of the **Secretary**. Each such Plan must:
 - (a) demonstrate how the subsidence impact limits in condition 5 are to be met;
 - (b) include a monitoring program and reporting mechanisms to enable close and ongoing review by the Department and **Resources Regulator** of the subsidence effects and impacts (individual and cumulative) of each Area 3A longwall on Swamp 15a;
 - (c) include a general monitoring and reporting program addressing surface water levels, near-surface groundwater levels, water quality, surface slope and gradient, erodibility, flora and ecosystem function;
 - (d) include a management plan for avoiding, minimising, mitigating and remediating impacts on swamps, which includes a tabular contingency plan (based on the Trigger Action Response Plan structure) focusing on measures for remediating both predicted and unpredicted impacts;
 - (e) address headwater and valley infill swamps separately and address each swamp individually;
 - (f) be prepared in consultation with **CPHR**, **WaterNSW** and **Resources Regulator**;
 - (g) incorporate means of updating the plan based on experience gained as mining progresses;
 - (h) be approved prior to the carrying out of any underground mining operations that could cause subsidence impacts on swamps in the relevant Area; and
 - (i) be implemented to the satisfaction of the **Secretary**.

Notes:

- *Should review by the Department of reports by the Applicant under paragraph (b) indicate that subsidence impacts have exceeded or threaten to exceed limits imposed in condition 5, then under condition 4 of Schedule 2 the **Secretary** may instruct the Applicant to implement reasonable and feasible requirements, which may include to cease mining within the operative longwall, shorten the length of that longwall or shorten the length and/or width of future longwalls.*
- *Requirements under paragraphs (a) and (b) relate only to the Swamp Impact Monitoring, Management and Contingency Plan for Area 3A.*

Subsidence Management Plans

7. Prior to carrying out any underground mining operations that could cause subsidence in either Area 3A, 3B or 3C, the Applicant **must** prepare a Subsidence Management Plan (SMP) to the satisfaction of the **Secretary** and the **Resources Regulator**. Each such SMP must:
 - (a) integrate ongoing management of Areas 1 and 2;
 - (b) integrate the Watercourse and Swamp Impact Monitoring, Management and Contingency Plans required under conditions 4 and 6;
 - (c) include monitoring of subsidence effects;
 - (d) include a **WaterNSW** Assets Protection Plan;
 - (e) include monitoring, management, and contingency plans for all other significant natural features and all significant man made features which may be impacted by subsidence, including:
 - landscape (including cliffs and steep slopes);
 - groundwater (see condition 13);
 - terrestrial flora and fauna and ecology (including all threatened species assessed as being likely to be significantly affected by the development and their habitats);
 - Aboriginal and other cultural heritage (see condition 12); and
 - electrical, communications and other infrastructure;
 - (f) be prepared in consultation with **CPHR**, **WaterNSW** and **Resources Regulator**;
 - (g) be approved prior to the carrying out of any underground mining operations that could cause subsidence in the relevant Area; and
 - (h) be implemented to the satisfaction of the **Secretary** and the **Resources Regulator**.

Notes:

- *The **WaterNSW** Assets Protection Plan required under this condition must also be prepared and implemented to the satisfaction of the **WaterNSW**.*
- *The contingency plans required under paragraph (e) must address remediation (as appropriate) and be based on a TARP structure.*

CONSOLIDATED CONSENT

8. The SMPs prepared under condition 7 for Areas 3B and 3C must:
- include a mine plan for the relevant Area;
 - include a detailed subsidence impact assessment, clearly setting out all predicted subsidence effects, subsidence impacts and environmental consequences;
 - include a minimum of 2 years of baseline data, collected at appropriate frequency and scale, for all significant natural features;
 - identify and assess the significance of all natural features located within 600 m of the edge of secondary extraction;
 - distinguish between, clearly describe and adequately quantify all subsidence effects, subsidence impacts and environmental consequences;
 - propose limits on subsidence impacts and environmental consequences to be applied within the relevant Area;
 - be otherwise prepared in accordance with any guidelines for SMPs developed by the Department and/or [Resources Regulator](#);
 - be approved prior to the carrying out of any underground mining operations that could cause subsidence in the relevant Area; and
 - be implemented to the satisfaction of the [Secretary](#) and the [Resources Regulator](#).

Note: In approving an SMP, the [Secretary](#) may impose conditions containing subsidence impact limits (similar to conditions 1- 3 & 5), subsidence management mechanisms (similar to conditions 4 & 6) or other conditions.

End of Panel Reporting

9. Within 4 months of the completion of each longwall panel, or as otherwise permitted by the [Secretary](#), the Applicant **must**:
- prepare an end-of-panel report:
 - reporting all subsidence effects (both individual and cumulative) for the panel and comparing subsidence effects with predictions;
 - describing in detail all subsidence impacts (both individual and cumulative) for the panel;
 - discussing the environmental consequences for watercourses, swamps, water yield, water quality, aquatic ecology, terrestrial ecology, groundwater, cliffs and steep slopes; and
 - comparing subsidence impacts and environmental consequences with predictions; and
 - submit the report to the Department, [Resources Regulator](#), [WaterNSW](#), [CPHR](#), [NSW DCCEE](#) – [Water Group](#) and any other relevant agency to the satisfaction of the [Secretary](#).
10. The Applicant **must** include a comprehensive summary, analysis and discussion of the results of monitoring of subsidence effects, subsidence impacts and environmental consequences in each [Annual Review](#).

Note: Conditions 9 and 10 apply to Area 2, as well as to Areas 3A, 3B and 3C.

Subsidence Expert Assessments

11. The Applicant **must** pay the reasonable costs of the Department in engaging independent experts to advise it when it assesses SMPs prepared under condition 7 for Areas 3B and 3C.

ABORIGINAL HERITAGE

12. The SMPs prepared under condition 7 must include an Aboriginal Heritage Plan, which must include a:
- description of known Aboriginal heritage sites;
 - protocol for the ongoing consultation and involvement of the Aboriginal community in the conservation and management of Aboriginal heritage;
 - description of the measures that would be implemented to protect Aboriginal sites generally, including measures that would be implemented to secure, analyse and record sites at risk of subsidence;
 - description of the measures that would be implemented to protect Aboriginal site 52-2-1646, including:
 - a full recording and assessment of the site's rock art;
 - a more detailed subsidence assessment for the site;
 - measures which seek to avoid any significant impact on the site and any necessary contingency plans to protect the site against collapse or substantial impact on its rock art; and

CONSOLIDATED CONSENT

- (e) description of the measures that would be implemented if any new Aboriginal objects or skeletal remains are discovered during the development.

GROUNDWATER MONITORING PROGRAM

- 13. The SMPs prepared under condition 7 must include a Groundwater Monitoring Program, which must include:
 - (a) proposals to develop a detailed regional and local groundwater model, with special reference to flows to and from nearby water storages;
 - (b) detailed baseline data to benchmark the natural variation in groundwater levels, yield and quality;
 - (c) groundwater impact assessment criteria;
 - (d) a program to monitor the impact of the development on:
 - groundwater levels, yield and quality (particularly any potential loss of flow to, or flow from, WaterNSW water storages);
 - coal seam aquifers and overlying aquifers; and
 - groundwater springs and seeps; and
 - (e) consideration of the requirements of the latest version (or subsequent replacement) of WaterNSW's *The Design of a Hydrological and Hydrogeological Monitoring Program to Access the Impacts of Longwall Mining in SCA Catchment*.

ENVIRONMENTAL OFFSETS

- 14. The Applicant **must** provide suitable offsets for loss of water quality or loss of water flows to WaterNSW storages, clearing and other ground disturbance (including cliff falls) caused by its mining operations and/or surface activities within the mining area, unless otherwise addressed by the conditions of this consent, to the satisfaction of the Secretary. These offsets must:
 - (a) be submitted to the Secretary for approval by 30 April 2009;
 - (b) be prepared in consultation with WaterNSW;
 - (c) provide measures that result in a beneficial effect on water quality, water quantity, aquatic ecosystems and/or ecological integrity of WaterNSW's special areas or water catchments.

HELICOPTER OPERATIONS

- 15. The Applicant must notify WaterNSW prior to the use of helicopters within the Metropolitan Special Area.

CONSOLIDATED CONSENT

SCHEDULE 4 SPECIFIC ENVIRONMENTAL CONDITIONS – SURFACE FACILITIES

NOISE

Noise Impact Assessment Criteria

- The Applicant **must** ensure that the noise generated at the surface facilities does not exceed the noise impact assessment criteria in Table 1 at any residence on privately-owned land, or on more than 25% of any privately-owned land. The applicable criteria for any residence not listed in Table 1 shall be the criteria applying at the nearest listed residence.

Table 1: Noise impact assessment criteria dB(A)

Day <i>L_{Aeq}(15 min)</i>	Evening <i>L_{Aeq}(15 min)</i>	Night		Residence <i>(as shown in the Noise Monitoring Program)</i>
		<i>L_{Aeq}(15 min)</i>	<i>L_{A1}(1 min)</i>	
42	42	38	48	R2
41	41	40	50	R22
40	40	39	49	R1 R9 R15a
40	40	37	47	R3a R5a R6a&b
37	35	35	45	R39a

Notes:

- To determine compliance with the *L_{Aeq}(15 minute)* limit, noise from the development is to be measured at the most affected point within the residential boundary, or at the most affected point within 30 metres of a dwelling (rural situations) where the dwelling is more than 30 metres from the boundary. Where it can be demonstrated that direct measurement of noise from the development is impractical, EPA may accept alternative means of determining compliance.
- To determine compliance with the *L_{A1}(1 minute)* limit, noise from the development is to be measured at 1 metre from the dwelling façade. Where it can be demonstrated that direct measurement of noise from the development is impractical, EPA may accept alternative means of determining compliance (see Chapter 11 of the NSW Industrial Noise Policy).
- The noise emission limits identified in the above table apply under meteorological conditions of:
 - wind speeds of up to 3 m/s at 10 metres above ground level; or
 - up to 3°C/100 m temperature inversion strength for all receivers, plus a 2 m/s source-to-receiver component drainage flow wind at 10 metres above ground level for those receivers where applicable.
- These limits do not apply if the Applicant has an agreement with the relevant owner/s of these residences to generate higher noise levels, and the Applicant has advised the Department and EPA in writing of the terms of this agreement.

Land Acquisition Criteria

- If the noise generated at the surface facilities exceeds the relevant criteria in Table 2 at any residence on privately-owned land or on more than 25% of any privately-owned land, the Applicant **must**, upon receiving a written request for acquisition from the landowner, acquire the land in accordance with the procedures in conditions 8 - 10 of schedule 4. The applicable criteria for any residence not listed in Table 2 shall be the criteria applying at the nearest listed residence.

Table 2: Noise acquisition criteria dB(A)

Day <i>L_{Aeq}(15 min)</i>	Evening <i>L_{Aeq}(15 min)</i>	Night <i>L_{Aeq}(15 min)</i>	Residence <i>(as shown in the Noise Monitoring Program)</i>
47	47	43	R2
46	46	45	R22
45	45	44	R1 R9

CONSOLIDATED CONSENT

			R15a
45	45	42	R3a
			R5a
			R6a&b
42	40	40	R39a

Note: Noise generated by the development is to be measured in accordance with the notes to Table 1.

Rail Haulage Impact Assessment Criteria

- The Applicant **must** ensure that noise generated by locomotives using the Kemira Valley rail line does not exceed the rail noise impact assessment criteria in Table 3.

Table 3: Rail noise impact assessment criteria

Operating Condition	Measurement Conditions	Criteria <i>L_{A1(t min)}</i>
Locomotive at idle, with compressor radiator fans and air conditioning operating at maximum load	Stationary 15 metre contour	70 dB(A)
All other throttle settings under self-load, with compressor radiator fans and air conditioning operating at maximum load	Stationary 15 metre contour	87 dB(A) 95 dB(Lin)
All service conditions	Up to 50 kilometres per hour, 15 metres from centreline of rail track	87 dB(A) 95 dB(Lin) Must be non-tonal Linear noise levels must not exceed A-weighted noise levels by more than 15 dB

Note: All measured noise levels must be assessed for tonality in accordance with the NSW Industrial Noise Policy, unless otherwise specified.

Continuous Improvement

- The Applicant **must**:
 - continue to investigate ways to reduce the noise generated by the development (including off-site road noise, noise and vibration impacts from the operation of the Kemira Valley rail line and maximum noise levels which may result in sleep disturbance);
 - continue to implement all reasonable and feasible best practice noise mitigation measures; and
 - report on these investigations and the implementation and effectiveness of these measures in the **Annual Review**, to the satisfaction of the **Secretary**.
- The Applicant **must** use its best endeavours to minimise wheel squeal, brake squeal and locomotive wheel slippage arising from rail haulage on the Kemira Valley rail line.

Additional Noise Mitigation Measures

- Upon receiving a written request from the owner of any residence where subsequent noise monitoring shows the noise generated by the development is 3 dB(A) greater than the noise impact assessment criteria in Table 1 (except where a negotiated noise agreement is in place) the Applicant **must** implement reasonable and feasible noise mitigation measures (such as double glazing, insulation and/or air conditioning) at any residence on the land in consultation with the landowner.

CONSOLIDATED CONSENT

If within 3 months of receiving this request from the landowner, the Applicant and the landowner cannot agree on the measures to be implemented, or there is a dispute about the implementation of these measures, then either party may refer the matter to the **Secretary** for resolution.

- 6A. The Applicant must take all reasonable steps to minimise noise from construction, mining operations and mine closure activities associated with the development.

Monitoring

7. The Applicant **must** prepare a Noise Monitoring Program for the development to the satisfaction of the **Secretary**. This program must:
- be submitted to the **Secretary** for approval by 30 April 2009;
 - be prepared in consultation with **EPA**;
 - provide for quarterly attended noise monitoring and real-time noise monitoring (where appropriate) to monitor the performance of the development, especially in residential areas close to the surface facilities; and
 - include a noise monitoring protocol for evaluating compliance with the noise impact and land acquisition criteria in this consent.

The Applicant must implement the Noise Monitoring Program as approved by the Secretary.

Note: This program must expressly monitor the modifying factors referred to in the NSW Industrial Noise Policy (such as intermittency, tonality and low frequency)

BLASTING AND VIBRATION

8. The Applicant is not permitted to undertake blasting operations at the surface facilities except with the prior written approval of **EPA** and subject to any conditions which **EPA** may impose.

AIR QUALITY

Impact Assessment Criteria

9. The Applicant **must** ensure that dust generated by the development does not cause additional exceedances of the criteria listed in Tables 4 to 6 at any residence on privately-owned land, or on more than 25 percent of any privately-owned land.

Table 4: Long term impact assessment criteria for particulate matter

Pollutant	Averaging period	Criterion
Total suspended particulate (TSP) matter	Annual	90 µg/m ³
Particulate matter < 10 µm (PM ₁₀)	Annual	30 µg/m ³

Table 5: Short term impact assessment criteria for particulate matter

Pollutant	Averaging period	Criterion
Particulate matter < 10 µm (PM ₁₀)	24 hour	50 µg/m ³

Table 6: Long term impact assessment criteria for deposited dust

Pollutant	Averaging period	Maximum increase in deposited dust level	Maximum total deposited dust level
Deposited dust	Annual	2 g/m ² /month	4 g/m ² /month

Note: Deposited dust is assessed as insoluble solids as defined by Standards Australia, 1991, AS/NZS 3580.10.1-2003: Methods for Sampling and Analysis of Ambient Air - Determination of Particulates - Deposited Matter - Gravimetric Method.

CONSOLIDATED CONSENT

Monitoring

10. The Applicant **must** prepare an Air Quality Monitoring Program for the surface facilities (excepting those surface facilities within the mining area) to the satisfaction of the **Secretary**. This program must:
- be submitted to the **Secretary** for approval by 30 April 2009;
 - be prepared in consultation with **EPA**;
 - use a combination of high volume samplers and dust deposition gauges to monitor the performance of the development; and
 - include an air quality monitoring protocol for evaluating compliance with the air quality impact assessment criteria in this consent.

The Applicant must implement the Air Quality Monitoring Program as approved by the Secretary.

METEOROLOGICAL MONITORING

11. During the development, the Applicant **must** ensure that it has a suitable meteorological station in the vicinity of the site that is generally in accordance with the requirements in the guideline *Approved Methods for Sampling of Air Pollutants in New South Wales*.

WATER MANAGEMENT

Discharges

12. The Applicant **must** ensure all surface water discharges from the surface facilities:
- meet the relevant ANZECC water quality objectives for the protection of aquatic ecosystems and water quality of existing receiving waters; and
 - comply with the discharge limits (both volume and quality) set for the development in any EPL.

Water Management Plan

13. The Applicant **must** prepare a Water Management Plan for the surface facilities to the satisfaction of the **Secretary**. This plan must:
- be submitted to the **Secretary** for approval by 30 April 2009;
 - be prepared in consultation with **EPA**, **WaterNSW** and **NSW DCCEEW – Water Group** by suitably qualified expert/s whose appointment/s have been approved by the **Secretary**; and
 - include a:
 - Site Water Balance;
 - Erosion and Sediment Control Plan;
 - Surface Water Monitoring Program; and
 - Surface and Ground Water Response Plan.

The Applicant must implement the Water Management Plan as approved by the Secretary

Site Water Balance

14. The Site Water Balance must:
- include details of:
 - sources and security of water supply;
 - water use on site;
 - water intercepted by mining operations;
 - water management on site;
 - off-site water transfers and water stored or disposed of underground;
 - reporting procedures; and
 - describe measures to minimise water use by the development.

Erosion and Sediment Control

15. The Erosion and Sediment Control Plan must:
- be consistent with the requirements of the *Managing Urban Stormwater: Soils and Construction Manual* (Landcom 2004, or its latest version);
 - identify activities that could cause soil erosion and generate sediment;
 - describe measures to minimise soil erosion and the potential for transport of sediment to downstream waters;

CONSOLIDATED CONSENT

- (d) describe the location, function, and capacity of erosion and sediment control structures; and
- (e) describe what measures would be implemented to monitor and maintain the structures over time.

Surface Water Monitoring Program

16. The Surface Water Monitoring Plan must include:
- (a) baseline data on surface water flows and quality in streams and other waterbodies that have been or could be affected by the surface facilities;
 - (b) surface water quality and stream health assessment criteria, including trigger levels for investigating any potentially adverse surface water impacts;
 - (c) a program to monitor the impact of the surface facilities on surface water flows and quality, stream health and channel stability; and
 - (d) procedures for reporting the results of this monitoring.

Surface and Ground Water Response Plan

17. The Surface and Ground Water Response Plan must describe what measures and/or procedures would be implemented to:
- (a) respond to any exceedances of the surface water, stream health, and groundwater assessment criteria; and
 - (b) mitigate and/or offset any adverse impacts on groundwater dependent ecosystems, aquatic ecosystems or riparian vegetation.

LANDSCAPE MANAGEMENT

Rehabilitation

18. For rehabilitation works within the Metropolitan Special Area, the Applicant must ensure that these works are carried out to the satisfaction of WaterNSW.

Rehabilitation Objectives

- 18A. The Applicant must rehabilitate the site in accordance with the conditions imposed on the mining lease(s) associated with the development under the *Mining Act 1992*. This rehabilitation must be generally consistent with the proposed rehabilitation strategy described in the documents listed in condition 2 of Schedule 2, and comply with the objectives in Table 7.

Table 7: Rehabilitation Objectives

Feature	Objective
All areas of the site affected by the development	<ul style="list-style-type: none"> • Safe, stable and non-polluting • Fit for the intended post-mining land use/s • Establish the final landform and post-mining land use/s as soon as practicable after cessation of mining operations • Minimise post-mining environmental impacts
Areas proposed for native ecosystem re-establishment	<ul style="list-style-type: none"> • Establish/restore self-sustaining native woodland ecosystems • Establish local plant community types • Establish: <ul style="list-style-type: none"> – riparian habitat within any diverted and/or re-established creek lines and retained water features; – habitat, feed and foraging resources for threatened fauna species; and – vegetation connectivity and wildlife corridors, as far as is reasonable and feasible
Final Landform	<ul style="list-style-type: none"> • Stable and sustainable for the intended post-mining land use/s • Integrated with surrounding natural landforms and other mine rehabilitated landforms, to the greatest extent practicable • Incorporate micro-relief and drainage features that mimic natural topography and mitigate erosion, to the greatest extent practicable
Rehabilitation materials	<ul style="list-style-type: none"> • Soil and vegetative materials from areas disturbed under this consent (including topsoils, substrates and seeds) are recovered, managed and used as rehabilitation resources

CONSOLIDATED CONSENT

<i>Feature</i>	<i>Objective</i>
Surface facilities sites	<ul style="list-style-type: none"> • To be decommissioned and removed, unless the Resources Regulator agrees otherwise • All surface facilities sites are to be revegetated with suitable local native plant species to a landform consistent with the surrounding environment or the intended post mining land use(s)
Portals and vent shafts of the development	<ul style="list-style-type: none"> • To be decommissioned and made safe and stable • Retain habitat for threatened species (e.g. bats), where practicable
Watercourses subject to approved mine water discharges	<ul style="list-style-type: none"> • Hydraulically and geomorphologically stable • Aquatic ecology and riparian vegetation that is the same or better than prior to grant of this consent
Mine water discharges following mine closure (from any location)	<ul style="list-style-type: none"> • Negligible environmental consequence
Watercourses subject to subsidence impacts	<ul style="list-style-type: none"> • Remediate physical damage as soon as reasonably practicable, unless the environmental impacts of remediation exceed the environmental benefits
Water quality	<ul style="list-style-type: none"> • Water retained on the site is fit for the intended post-mining land use/s • Water management is consistent with the regional catchment management strategy
Built features damaged by mining operations	<ul style="list-style-type: none"> • Repair to pre-mining condition or equivalent unless the: <ul style="list-style-type: none"> – owner agrees otherwise; or – damage is fully restored, repaired or compensated for under the <i>Coal Mine Subsidence Compensation Act 2017</i>
Cliffs, minor cliffs, rock face features and steep slopes	<ul style="list-style-type: none"> • No additional risk to public safety compared to prior to mining
Community	<ul style="list-style-type: none"> • Ensure public safety • Minimise adverse socio-economic effects associated with mine closure

Progressive Rehabilitation

- 18B. The Applicant must carry out the rehabilitation of the site progressively, that is, as soon as reasonably practicable following disturbance.
- 18C. When undertaking slope stabilisation activities within the extended disturbance footprint associated with Modification 11, the Applicant must implement measures that:
- (a) promote staged vegetation clearing which considers the timing of rehabilitation activities to minimise erosion potential and visual impacts;
 - (b) avoids clearing vegetation where it performs a screening function unless necessary to ensure site safety or slope stability; and
 - (c) ensure the prompt rehabilitation of any exposed soil areas using native species following completion of the works.

Landscape Management Plan

19. Deleted.

Rehabilitation Management Plan

20. The Applicant must prepare a Rehabilitation Management Plan for the development, in accordance with the conditions imposed on the mining lease(s) associated with the development under the *Mining Act 1992*.

Mine Closure Plan

21. The Applicant must prepare a Mine Closure Plan to the satisfaction of the Secretary. The plan must:
- (a) be prepared:

CONSOLIDATED CONSENT

- (i) by a suitably qualified and experienced person/s whose appointment has been endorsed by the Secretary;
- (ii) in consultation with the Department, WaterNSW, NSW DCCEE – Water Group, Resources Regulator, WCC and (if requested by the Secretary) the Mining Panel;
- (iii) in accordance with any relevant Resources Regulator Guideline; and
- (b) be subject to peer review and submitted for approval at a date agreed by the Secretary, provided that this date is at least 2 years prior to the planned cessation of mining at the site;
- (c) include detailed consideration of best practice measures and emerging technologies to mitigate post mining greenhouse gas emissions from the mine, including consideration of how such measures will be integrated into the mine closure strategy;
- (d) include a stakeholder engagement plan to guide mine closure planning processes and outcomes;
- (e) investigate ways to minimise adverse socio-economic effects associated with mine closure;
- (f) contain a detailed mine closure strategy, which includes:
 - (i) detailed consideration of all issues associated with sealing or not sealing mine entrances, with particular reference to groundwater re-pressurisation, developing hydraulic pressure heads within main headings and long-term emergence of mine waters within the Metropolitan Special Area and/or the Illawarra Escarpment;
 - (ii) consideration of other underground mines hydraulically connected to Dendrobium Mine (including options regarding isolating those other mines);
 - (iii) include details of any measures necessary to ensure that mine workings do not impact on stored waters or dams;
 - (iv) consideration of the most up-to-date groundwater and surface water inflow modelling for Dendrobium Mine, including improved modelling of points of anticipated groundwater outflow;
 - (v) a robust risk assessment that fully and objectively identifies the potential hazards associated with mine closure, the likelihood and consequences associated with these hazards materialising, the extent to which consequences can be controlled should the hazards materialise, and the residual risks after control measures have been put in place; and
 - (vi) options for managing residual risks, such as ongoing mine water discharges and surface leakages of contaminated mine water, should the Dendrobium Mine not be able to be effectively sealed, and any requirement for water treatment prior to discharge; and
- (g) be fully reviewed and revised every three years following approval, unless the Secretary agrees otherwise.

The Applicant must implement the Mine Closure Plan as approved by the Secretary.

Notes:

- *The Mine Closure Plan should address all land impacted by the development.*
- *The Rehabilitation Plan and Mine Closure Plan require substantial integration to achieve all objectives for the rehabilitated site.*

Bushfire Management Plan

22. The Applicant **must** prepare and implement a Bushfire Management Plan for the site, with particular reference to the mining area, in consultation with WaterNSW and to the satisfaction of the Rural Fire Service.

Photographic Archival Recording

- 22A. The Applicant must undertake photographic archival recording of significant built and landscape elements affected by Modification 8 and Modification 11 prior to the commencement, during the works and after the completion of works, in accordance with the NSW Heritage Division publications 'How to prepare archival records of heritage items and Photographic Recording of Heritage Items using Film or Digital Capture'. A copy of these archival recordings must be provided to the Heritage Council of NSW and WCC.

Unexpected Historical Archaeological Relics

- 22B. In the event that unexpected archaeological artefacts are uncovered during ground disturbing works, the Applicant must ensure work ceases in the subject area and a suitably trained archaeologist should attend the site to inspect the find. Should archaeological material be identified as having heritage significance, the Applicant must **notify Heritage NSW and WCC** and obtain any necessary further approvals before works can proceed.

CONSOLIDATED CONSENT

Demolition of Bulk Warehouse

- 22C. Removal of the bulk warehouse concrete slab, transformer and transformer compound must be supervised by a suitably qualified archaeologists to ensure that all requirements of the Heritage Act 1997 are met and that compliance with Section 139(4) of the Heritage Act 1997 is maintained. This must include the preparation of an archaeological research design specific to these works and stop work procedures.

Aboriginal Heritage Management Procedures

- 22D. In the event that previously unidentified Aboriginal objects are discovered in the proposed extended disturbance footprint associated with slope stabilisation works for Modification 11, the following procedure is to be adopted:
- (a) All works must cease immediately in the area to prevent any further impacts to the Aboriginal object(s).
 - (b) Heritage NSW must be notified of the identified Aboriginal object(s).
 - (c) An appropriately qualified archaeological consultant is to be engaged to determine the nature, extent and significance of the object(s).
 - (d) The appropriately qualified archaeologist must prepare a management strategy for the identified Aboriginal object(s).

TRANSPORT

Rail Transport of Coal and Materials

23. The Applicant **must** ensure that trains do not travel on the Kemira Valley rail line:
- (a) between 12 midnight and 6 am, until 29 April 2010; and
 - (b) between 11 pm and 6 am, from 30 April 2010
- unless written approval is obtained from EPA for emergency use of the rail line.
24. The Applicant **must** record the:
- (a) date and time of each train movement on the Kemira Valley rail line; and
 - (b) amount of coal **and any waste materials** transported from the KVCLF each year and include a comprehensive summary and discussion of the results of this monitoring in each **Annual Review**.
- 24A. Transporting any waste materials via the Kemira Valley rail line must be undertaken in accordance with Conditions 23 and 24 of Schedule 4 of this consent and be managed to ensure there is no perceptible intensification of rail movements.

Road Transport

25. The Applicant **must** prepare a Traffic Management Plan for the development to the satisfaction of the **Secretary**. This plan must:
- (a) be submitted to the **Secretary** for approval by 30 April 2009;
 - (b) be prepared in consultation with the WCC, Mt Kembla Primary School and the CCC;
 - (c) include traffic control measures for truck movements through residential areas, including Stones Road and its intersection with Cordeaux Road;
 - (d) provide that mine shift changeover times and deliveries by heavy vehicle to the pit top facilities and KVCLF do not conflict with pick-up and drop-off times for Mt Kembla Primary School students;
 - (e) provide heavy vehicle speed limits;
 - (f) include a Driver's Code of Conduct to be applied to the Applicant's employees and contractors working at the development and measures for the enforcement of this code; and
 - (g) include procedures for regular monitoring of compliance with this plan.

The Applicant must implement the Traffic Management Plan as approved by the Secretary.

Road Maintenance

26. The Applicant **must** enter into an agreement with **WaterNSW**, to the satisfaction of the **Secretary**, to share the reasonable costs of maintenance of all access roads, bridges and creek crossings located on land controlled by **WaterNSW** and used by the Applicant.
27. The Applicant **must** establish an agreement with WCC to share the reasonable costs of maintenance of Stones Road for the life of the development. Prior to decommissioning of the mine, Stones Road must be

CONSOLIDATED CONSENT

inspected, to the satisfaction of WCC, and the road restored by the Applicant to a standard not less than its condition prior to the development's approval. If roadworks are not carried out by the Applicant within one month of being informed by WCC that these works are required under the maintenance agreement, WCC shall be entitled to carry out such maintenance work at the Applicant's cost. Any dispute over implementation of this condition is to be referred to the **Secretary** for resolution.

VISUAL

Visual Amenity

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

Lighting Emissions

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

WASTE

30. The Applicant **must**:
- take all reasonable and feasible steps to minimise the waste (including coal rejects and tailings) generated by the development;
 - classify all waste in accordance with the Waste Classification Guidelines (EPA, 2014);
 - dispose of all waste at appropriately licensed waste facilities;
 - monitor and report on the effectiveness of the waste minimisation and management measures in the Annual Review.
- 30A. Except as expressly permitted in an EPL, specific resource recovery order or exemption under the Protection of the Environment Operations (Waste) Regulation 2014, the Applicant must not receive waste at the site for storage, treatment, processing, reprocessing or disposal.

BIODIVERSITY

Biodiversity Credit Requirements

- 31 Unless otherwise agreed by the Secretary, the Applicant must retire the biodiversity credits specified in Table 8, prior to commencing vegetation clearing associated with Modification 9. The retirement of credits must be carried out in consultation with CPHR and in accordance with the Biodiversity Offsets Scheme of the BC Act.

Table 8: Biodiversity Credit Requirements

Credit Type	Credits Require
Ecosystem Credits	
PCT 1083 - Red Bloodwood -scribbly gum heathy woodland on sandstone plateaux of the Sydney Basin Bioregion	17
Species Credits	
<i>Caladenia tessellata</i>	33
<i>Genoplesium baueri</i>	33

CONSOLIDATED CONSENT

31A. The biodiversity credits specified in Table 8A below must be retired in accordance with the Biodiversity Offsets Scheme of the BC Act. Evidence must be provided to the Department that the correct number and class of credits has been retired prior to undertaking the disturbance.

Table 8A: Biodiversity Credit Requirements

Credit Type	Credits Required
Ecosystem Credits	
PCT 3153 - Illawarra Escarpment Bangalay x Blue Gum Wet Forest	27

RECOMMENDATION

CONSOLIDATED CONSENT

SCHEDULE 5 SPECIFIC ENVIRONMENTAL CONDITIONS – OTHER SITE COMPONENTS

COAL WASHERY

Hot Gas Exhaust Stack Discharges

1. The Applicant **must**:
 - (a) ensure that the concentration of pollutants discharged from the coal dryer hot gas exhaust complies with discharge limits set for the development in any EPL;
 - (b) regularly monitor the concentration of pollutants discharged from the coal dryer hot gas exhaust; and
 - (c) report on waste management and minimisation in the **Annual Review**, to the satisfaction of the **Secretary**.

Fuel Source

2. The Applicant **must** ensure the coal drying plant only uses blast furnace offgas or natural gas as fuel for the drier.

CONSOLIDATED CONSENT

SCHEDULE 6 SPECIFIC ENVIRONMENTAL CONDITIONS – EXTENDED SITE

GREENHOUSE GASES & ENERGY EFFICIENCY

1. The Applicant **must** prepare a Greenhouse and Energy Efficiency Plan for the development. This plan must:
 - (a) be prepared in consultation with **EPA** and generally in accordance with the Guidelines for Energy Savings Action Plans (DEUS 2005, or its latest version);
 - (b) be submitted to the **Secretary** by 30 April 2009 for approval;
 - (c) include a program to monitor greenhouse gas emissions and energy use generated by the development;
 - (d) include a framework for investigating and implementing measures to reduce greenhouse gas emissions and energy use at the development;
 - (e) include a research program to inform the continuous improvement of the greenhouse gas minimisation measures at the development;
 - (f) describe how the performance of these measures would be monitored over time; and
 - (g) report on the development's greenhouse gas emissions and minimisation measures in the **Annual Review**,to the satisfaction of the **Secretary**.

The Applicant must implement the Greenhouse and Energy Efficiency Plan as approved by the Secretary.

Note: The Applicant may consider the Dendrobium Mine's greenhouse gas minimisation measures within its overall greenhouse gas minimisation measures across its Southern Coalfield mines and related operations.

2. The Applicant **must** implement all reasonable and feasible measures to minimise the greenhouse gas emissions from the development to the satisfaction of the **Secretary**.

CONSOLIDATED CONSENT

SCHEDULE 7 ADDITIONAL PROCEDURES FOR AIR QUALITY AND NOISE MANAGEMENT

NOTIFICATION OF LANDOWNERS

1. If the results of monitoring required in Schedule 4 identify that the impacts generated by the development are greater than the relevant impact assessment criteria in Schedule 4, except where this is predicted in the documents listed in condition 2 of schedule 2 or where a negotiated agreement has been entered into in relation to that impact, then the Applicant **must** notify the **Secretary** and the affected landowners and/or existing or future tenants (including tenants of mine-owned properties) accordingly, and provide quarterly monitoring results to each of these parties until the results show that the development is complying with the criteria in Schedule 4.

INDEPENDENT REVIEW

2. If a landowner considers the development to be exceeding the impact assessment criteria in schedule 4, except where this is predicted in the EA, then he/she may ask the **Secretary** in writing for an independent review of the impacts of the development on his/her land.

If the **Secretary** is satisfied that an independent review is warranted, the Applicant **must** within 2 months of the **Secretary**'s decision:

- (a) consult with the landowner to determine his/her concerns;
 - (b) commission a suitably qualified, experienced and independent person, whose appointment has been approved by the **Secretary**, to conduct monitoring on the land, to:
 - determine whether the development is complying with the relevant impact assessment criteria in schedule 4; and
 - identify the source(s) and scale of any impact on the land, and the development's contribution to this impact; and
 - (c) give the **Secretary** and landowner a copy of the independent review.
3. If the independent review determines that the development is complying with the relevant impact assessment criteria in schedule 4, then the Applicant may discontinue the independent review with the approval of the **Secretary**. If the landowner disputes the results of the independent review then either the Applicant or the landowner may refer the matter to the **Secretary** for resolution.
 4. If the independent review determines that the development is not complying with the relevant impact assessment criteria in Schedule 4, and that the development is primarily responsible for this non-compliance, then the Applicant **must**:
 - (a) take all reasonable and feasible measures, in consultation with the landowner, to ensure that the development complies with the relevant criteria and conduct further monitoring to determine whether these measures ensure compliance; or
 - (b) secure a written agreement with the landowner to allow exceedances of the relevant criteria; or
 - (c) offer to acquire all or part of the landowner's land in accordance with the procedures in conditions 6-8 belowto the satisfaction of the **Secretary**.
 5. If further monitoring under condition 4(a) determines that the development is complying with the relevant impact assessment criteria, then the Applicant may discontinue the independent review with the approval of the **Secretary**.

If further monitoring under condition 4(a) determines that measures implemented under that condition have not achieved compliance with the impact assessment criteria in schedule 4, and the Applicant cannot secure a written agreement with the landowner under condition 4(b) to allow these exceedances, then the Applicant **must**, upon receiving a written request from the landowner, acquire all or part of the landowner's land in accordance with the procedures in conditions 6-8 below.

LAND ACQUISITION

6. Within 3 months of receiving a written request from a landowner with acquisition rights, the Applicant **must** make a binding written offer to the landowner based on:
- (a) the current market value of the landowner's interest in the property at the date of this written request, as if the property was unaffected by the development the subject of the development application, having regard to the:
 - existing and permissible use of the land, in accordance with the applicable planning instruments at the date of the written request; and
 - presence of improvements on the property and/or any approved building or structure which has been physically commenced at the date of the landowner's written request, and is due to be completed subsequent to that date, but excluding any improvements that have resulted from the implementation of the 'additional noise mitigation measures' in condition 6 of schedule 4;
 - (b) the reasonable costs associated with:
 - relocating within the local government areas of the affected Councils, or to any other local government area determined by the **Secretary**;
 - obtaining legal advice and expert advice for determining the acquisition price of the land, and the terms upon which it is required; and
 - (c) reasonable compensation for any disturbance caused by the land acquisition process.

If, within 28 days of the Applicant making this offer, the Applicant and landowner cannot agree on the acquisition price of the land and/or the terms upon which the land is to be acquired, then either party may refer the matter to the **Secretary** for resolution.

Upon receiving such a referral, the **Secretary must** request the President of the NSW Division of the Australian Property Institute (the API) to appoint a qualified independent valuer to:

- consider submissions from both parties;
- establish a fair market valuation for the land and determine reasonable costs and compensation for the acquisition, in accordance with paragraphs (a)-(c) above and any guidance or guidelines that the **Secretary** may prepare relating to this condition; and
- propose any appropriate fair and reasonable terms of acquisition.

The appointed valuer is to provide a full report and explanation of their valuation, determinations and proposed terms of acquisition to the **Secretary**, the Applicant and the landowner. The **Secretary must** consider the report and decide whether the valuation, determinations and any proposed terms of acquisition are fair and reasonable and advise the parties accordingly.

Within 14 days of receiving the **Secretary's** decision that the independent valuer's report is fair and reasonable, the Applicant **must** make a written offer to purchase the land at a price and according to terms not less than set out in the independent valuer's report.

If the **Secretary** is of the opinion that the valuation and/or determination is not fair and/or reasonable, they **must** give notice to the parties that a further independent valuation and determination will be undertaken in accordance with this condition and duly request a further appointment by the API.

If the landowner refuses to accept within 6 months a written offer duly made by the Applicant under this condition, then the Applicant's obligations to acquire the land shall cease, unless otherwise agreed by the **Secretary**.

7. The Applicant **must** bear the full costs of any independent valuer's valuation, determination and report.
8. If the Applicant and landowner agree that only part of the land shall be acquired, then the Applicant **must** pay all reasonable costs associated with obtaining Council approval for any plan of subdivision (where permissible), and registration of the plan at the Office of the Registrar-General.

CONSOLIDATED CONSENT

SCHEDULE 8

ENVIRONMENTAL MANAGEMENT, MONITORING, AUDITING AND REPORTING

ENVIRONMENTAL MANAGEMENT STRATEGY

1. The Applicant **must** prepare an Environmental Management Strategy for the development to the satisfaction of the **Secretary**. This strategy must be submitted to the **Secretary** for approval by 30 April 2009, and:
 - (a) provide the strategic framework for environmental management of the development;
 - (b) identify the statutory requirements that apply to the development;
 - (c) describe in general how the environmental performance of the development would be monitored and managed for the:
 - mining area;
 - surface facilities;
 - other site components; and
 - extended site;
 - (d) describe the procedures that would be implemented to:
 - keep the local community and relevant agencies informed about the operation and environmental performance of the development;
 - receive, handle, respond to, and record complaints;
 - resolve any disputes that may arise during the course of the development;
 - respond to any non-compliance;
 - manage cumulative impacts; and
 - respond to emergencies;
 - (e) describe the role, responsibility, authority and accountability of all key personnel involved in the environmental management of the development; **and**
 - (f) **include:**
 - references to any strategies, plans and programs approved under the conditions of this consent; and
 - a clear plan depicting all the monitoring to be carried out under the conditions of this consent.

The Environmental Management Strategy approved by the Secretary must be implemented.

Management Plan Requirements

2. Management plans required under this consent must be prepared in accordance with relevant guidelines, and include:
 - (a) a summary of relevant background or baseline data;
 - (b) details of:
 - (i) the relevant statutory requirements (including any relevant approval, licence or lease conditions);
 - (ii) any relevant limits or performance measures and criteria; and
 - (iii) the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the development or any management measures;
 - (c) a description of the measures to be implemented to comply with the relevant statutory requirements, limits, or performance measures and criteria;
 - (d) a program to monitor and report on the:
 - (i) impacts and environmental performance of the development; and
 - (ii) effectiveness of the management measures set out pursuant to condition 2(c);
 - (e) a contingency plan to manage any unpredicted impacts and their consequences and to ensure that ongoing impacts reduce to levels below relevant impact assessment criteria as quickly as possible;
 - (f) a program to investigate and implement ways to improve the environmental performance of the development over time;
 - (g) a protocol for managing and reporting any:
 - (i) incident and any non-compliance (specifically including any exceedance of the impact assessment criteria and performance criteria);
 - (ii) complaint;
 - (iii) failure to comply with statutory requirements; and
 - (h) a protocol for periodic review of the plan.

CONSOLIDATED CONSENT

Note: The Secretary may waive some of these requirements if they are unnecessary or unwarranted for particular management plans.

REVISION OF STRATEGIES, PLANS AND PROGRAMS

- 2A. Within three months of the:
- submission of an incident report under condition 4 of Schedule 8;
 - submission of an Annual Review under condition 5 of Schedule 8;
 - submission of an Independent Environmental Audit under condition 6 of Schedule 8; or
 - approval of any modification of the conditions of this consent,
- the suitability of existing strategies, plans and programs required under this consent must be reviewed by the Applicant.

If necessary, to either improve the environmental performance of the development or cater for a modification, the strategies, plans and programs required under this consent must be revised, to the satisfaction of the Secretary and submitted to the Secretary for approval within six weeks of the review.

Note: This is to ensure strategies, plans and programs are updated on a regular basis and to incorporate any recommended measures to improve the environmental performance of the development.

REPORTING

Incident Reporting

- Within 24 hours of detecting the occurrence of an incident that causes (or may cause) material harm to the environment, the Applicant **must** notify the Department and other relevant agencies of the incident.
- Within 7 days of notifying the Department and other relevant agencies of such an incident, the Applicant **must** provide the Department and these agencies with a written report that:
 - describes the date, time, and nature of the incident;
 - identifies the cause (or likely cause) of the incident;
 - describes what action has been taken to date; and
 - describes the proposed measures to address the incident.

Annual Review

- By the end of September each year (or other such timing as may be agreed by the Secretary), and for at least 3 years following the cessation of mining at the development, the Applicant **must** submit an **Annual Review** to the **Secretary**, CCC and all relevant agencies **reviewing the environmental performance of the development to the satisfaction of the Secretary**. This report must relate to the previous financial year and:
 - identify the standards and performance measures that apply to the development;
 - describe the development (including any rehabilitation) that was carried out in the previous financial year;
 - describe the development (including any rehabilitation) that is proposed to be carried out over the current financial year;
 - include a summary of the complaints received during the past year, and compare this to the complaints received in previous years;
 - include a summary of the monitoring results for the development during the past year;
 - a comprehensive review of the monitoring results and complaints records of the development over the previous financial year, including a comparison of these results against the:
 - relevant statutory requirements, limits or performance measures/criteria;
 - requirements of any plan or program required under this consent;
 - monitoring results of previous years; and
 - relevant predictions in the documents listed in condition 2 of Schedule 2.
 - identify any non-compliance or incident which occurred in the previous financial year, and describe what actions were (or are being) taken to rectify the non-compliance and avoid reoccurrence;
 - evaluate and report on:
 - the effectiveness of the noise and air quality management systems; and
 - compliance with the performance measures, criteria and operating conditions in this consent;
 - identify any trends in the monitoring data over the life of the development;
 - identify any discrepancies between the predicted and actual impacts of the development, and analyse the potential cause of any significant discrepancies; and

CONSOLIDATED CONSENT

- (k) describe what measures will be implemented over the next financial year to improve the environmental performance of the development.

Copies of the Annual Review must be submitted to the affected Councils and made available to the CCC and any interested person upon request.

INDEPENDENT ENVIRONMENTAL AUDIT

6. By 31 December 2011, and every 3 years thereafter, unless the **Secretary** directs otherwise, the Applicant **must** commission and pay the full cost of an Independent Environmental Audit of the development. This audit must:
- be conducted by suitably qualified, experienced and independent team of experts whose appointment has been endorsed by the **Secretary**;
 - include consultation with the relevant agencies **and the CCC**;
 - assess the environmental performance of the development and assess whether it is complying with the relevant requirements in this **consent** and any relevant EPL or mining lease (including any strategy, plan or program required under these approvals);
 - review the adequacy of strategies, plans or programs required under these approvals;
 - recommend measures or actions to improve the environmental performance of the development, and/or any strategy, plan or program required under these approvals; **and**
 - be conducted and reported to the satisfaction of the Secretary.**

Note: This audit team must be led by a suitably qualified auditor and include experts in the fields of a) mine subsidence impacts and remediation and b) stream hydrology and water quality.

7. Within three months of commencing an Independent Environmental Audit, or within another timeframe agreed by the Secretary, the Applicant must submit a copy of the audit report to the Secretary, and any other NSW agency that requests it, together with its response to any recommendations contained in the audit report, and a timetable for the implementation of the recommendations. The recommendations must be implemented to the satisfaction of the Secretary.

Note: The audit team must be led by a suitably qualified auditor and include experts in any fields specified by the Secretary.

Monitoring and Environmental Audits

8. Any condition of this consent that requires the carrying out of monitoring or an environmental audit, whether directly or by way of a plan, strategy or program, is taken to be a condition requiring monitoring or an environmental audit under Division 9.4 of Part 9 of the EP&A Act. This includes conditions in respect of incident notification, reporting and response, non-compliance notification, compliance report and independent audit.

Note: For the purposes of this condition, as set out in the EP&A Act, "monitoring" is monitoring of the development to provide data on compliance with the consent or on the environmental impact of the development, and an "environmental audit" is a periodic or particular documented evaluation of the development to provide information on compliance with the consent or the environmental management or impact of the development.

COMMUNITY CONSULTATIVE COMMITTEE

9. The Applicant **must** maintain a Community Consultative Committee (CCC) for the development to the satisfaction of the **Secretary**. This CCC must be operated in general accordance with the **Department's Community Consultative Committee Guidelines: State Significant Projects (2016)** to the satisfaction of the **Secretary**.

Notes:

- The CCC is an advisory committee only.*
- In accordance with the guidelines, the committee should comprise an independent chair and appropriate representation from the Applicant, Council and the local community.*

10. If required by the CCC, the Applicant **must** establish and maintain a trust fund, or other funding arrangement that may be agreed between the Applicant and the CCC. This fund **must** be:
- managed by the Chair of the CCC to facilitate the functioning of the CCC;
 - used only if required for the engagement of consultants to interpret technical information and the like;
 - provided with \$8,000 per annum (indexed according to the CPI) by the Applicant for the duration of mining operations and other activities under the consent, or as otherwise directed by the **Secretary**;

CONSOLIDATED CONSENT

- (d) managed so that any monies unspent during each year are returned to the Applicant;
- (e) managed so that the Chair of the CCC causes a record of the finances of the fund to be kept and provided to the Applicant and the **Secretary** at the end of each year the fund is used.

ACCESS TO INFORMATION

11. Before the commencement of Modification 8 until the completion of all rehabilitation required under this consent, the Applicant must:
- (a) make the following information and documents (as they are obtained, approved or as otherwise stipulated within the conditions of this consent) publicly available on its website:
 - (i) the documents referred to in condition 2 of Schedule 2 of this consent;
 - (ii) all current statutory approvals for the development;
 - (iii) all approved strategies, plans and programs required under the conditions of this consent;
 - (iv) minutes of CCC meetings;
 - (v) regular reporting on the environmental performance of the development in accordance with the reporting requirements in any plans or programs approved under the conditions of this consent;
 - (vi) a comprehensive summary of the monitoring results of the development, reported in accordance with the specifications in any conditions of this consent, or any approved plans and programs;
 - (vii) a summary of the current stage and progress of the development;
 - (viii) contact details to enquire about the development or to make a complaint;
 - (ix) a complaints register, updated monthly;
 - (x) the Annual Reviews of the development;
 - (xi) audit reports prepared as part of any Independent Environmental Audit of the development and the Applicant's response to the recommendations in any audit report;
 - (xii) any other matter required by the Secretary; and
 - (b) keep such information up to date, to the satisfaction of the Secretary.

CONSOLIDATED CONSENT

APPENDIX 1 SCHEDULE OF DEVELOPMENT LAND – EXTENDED SITE

Lot Number	Plan	Site Component
1	DP1190181	Crown Dendrobium Mining Areas
2	DP1190181	Crown Dendrobium Mining Areas
21	DP1190749	Crown Dendrobium Mining Areas
212	DP1176205	Crown Dendrobium Mining Areas
1	DP606434	Dendrobium CPP \ Kemira Valley Rail
216	DP751278	Dendrobium Mining Area
276	DP751278	Dendrobium Mining Area
2	DP196993	Dendrobium Mining Area
1	DP713256	Dendrobium Mining Area
137	DP751278	Dendrobium Mining Area
1	DP920893	Dendrobium Mining Area
285	DP751278	Dendrobium Mining Area
278	DP751278	Dendrobium Mining Area
284	DP751278	Dendrobium Mining Area
1	DP745812	Dendrobium Mining Area
217	DP751278	Dendrobium Mining Area
2000	DP914741	Dendrobium Mining Area
1	DP1000997	Dendrobium Mining Area
1	DP1001210	Dendrobium Mining Area
1	DP191695	Dendrobium Mining Area
1	DP1012600	Dendrobium Mining Area
166	DP751278	Dendrobium Mining Area
275	DP751278	Dendrobium Mining Area
279	DP751278	Dendrobium Mining Area
289	DP751278	Dendrobium Mining Area
1	DP615178	Dendrobium Mining Area
8	DP401354	Dendrobium Mining Area
1	DP196993	Dendrobium Mining Area
18	DP1111734	Dendrobium Mining Area
1	DP1103666	Dendrobium Mining Area
1	DP907377	Dendrobium Mining Area
19	DP1131362	Dendrobium Mining Area
212	DP914738	Dendrobium Mining Area
213	DP914738	Dendrobium Mining Area
115	DP1190868	Dendrobium Mining Area
13	DP751278	Dendrobium Mining Area
2	DP1190181	Dendrobium Mining Area
14	DP1233164	Dendrobium Mining Area \ Cordeaux
2	DP208744	Kemira Valley Rail
2	DP208440	Kemira Valley Rail
1	DP227274	Kemira Valley Rail

CONSOLIDATED CONSENT

1	DP606430	Kemira Valley Rail
102	DP602229	Kemira Valley Rail
25	DP216637	Kemira Valley Rail
4	DP203034	Kemira Valley Rail
68	DP259919	Kemira Valley Rail
1	DP606431	Kemira Valley Rail
2	DP1157196	Kemira Valley Rail
3	DP214572	Kemira Valley Rail
70	DP432516	Kemira Valley Rail
2	DP1061983	Kemira Valley Rail
3	DP203034	Kemira Valley Rail
6	DP867936	Kemira Valley Rail
1	DP1061983	Kemira Valley Rail
1	DP157009	Kemira Valley Rail Surface
137	DP751278	Kemira Valley Rail Surface
1	DP156521	Kemira Valley Rail Surface
115	DP1190868	Kemira Valley Rail Surface
11	DP250762	Kemira Valley Surface
1	DP164689	Kemira Valley Surface
1	DP221602	Kemira Valley Surface
12	DP250762	Kemira Valley Surface
3	DP157009	Kemira Valley Surface
2	DP41756	Kemira Valley Surface
1	DP41756	Kemira Valley Surface
3	DP196371	Kemira Valley Surface
3	DP159797	Kemira Valley Surface
1	DP196406	Kemira Valley Surface
134	DP751278	Kemira Valley Surface
2	DP196371	Kemira Valley Surface
1	DP44334	Kemira Valley Surface
1	DP615178	Kemira Valley Surface
1	DP159797	Kemira Valley Surface
2	DP157009	Kemira Valley Surface
2	DP159797	Kemira Valley Surface
11	DP1101896	Kemira Valley Surface
114	DP1127132	Kemira Valley Surface
138	DP1190404	Kemira Valley Surface
1	DP1190768	Kemira Valley Surface
C	DP161800	Nebo Surface
B	DP161800	Nebo Surface
A	DP161800	Nebo Surface
1	DP593804	Nebo Surface
1	DP560813	Nebo Surface
22	DP1076092	Nebo Surface

CONSOLIDATED CONSENT

1	DP1103781	Nebo Surface
3	DP1103666	Nebo Surface
2	DP1103666	Nebo Surface
1	DP1103666	Nebo Surface
74	DP1218449	Nebo Surface

RECOMMENDATION

**APPENDIX 2
SITE MAPS OF THE DEVELOPMENT**

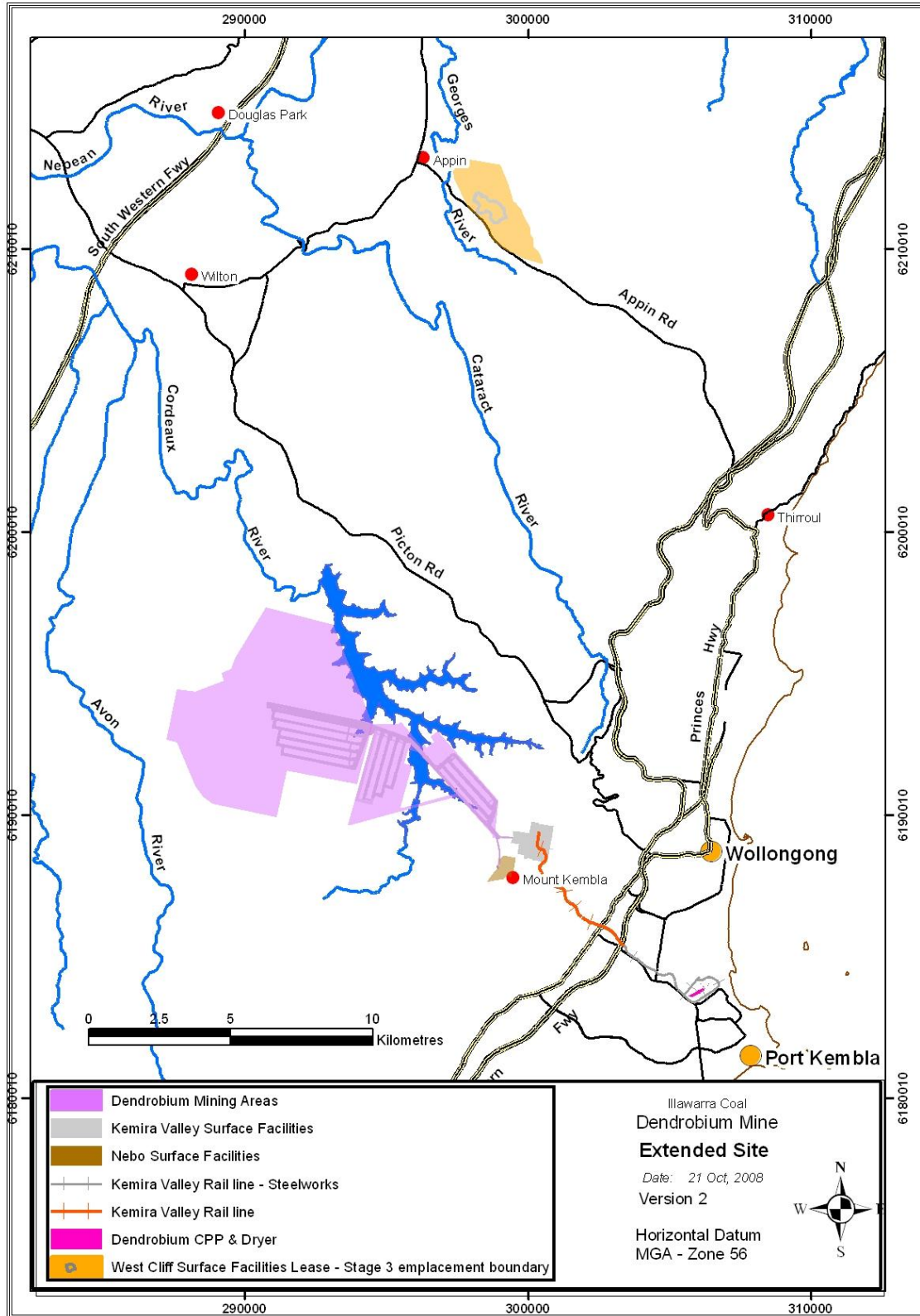


Figure 1 – Extended Site

Note: the 'West Cliff Surface Facilities Lease – Stage 3 emplacement boundary' is no longer covered under this consent.

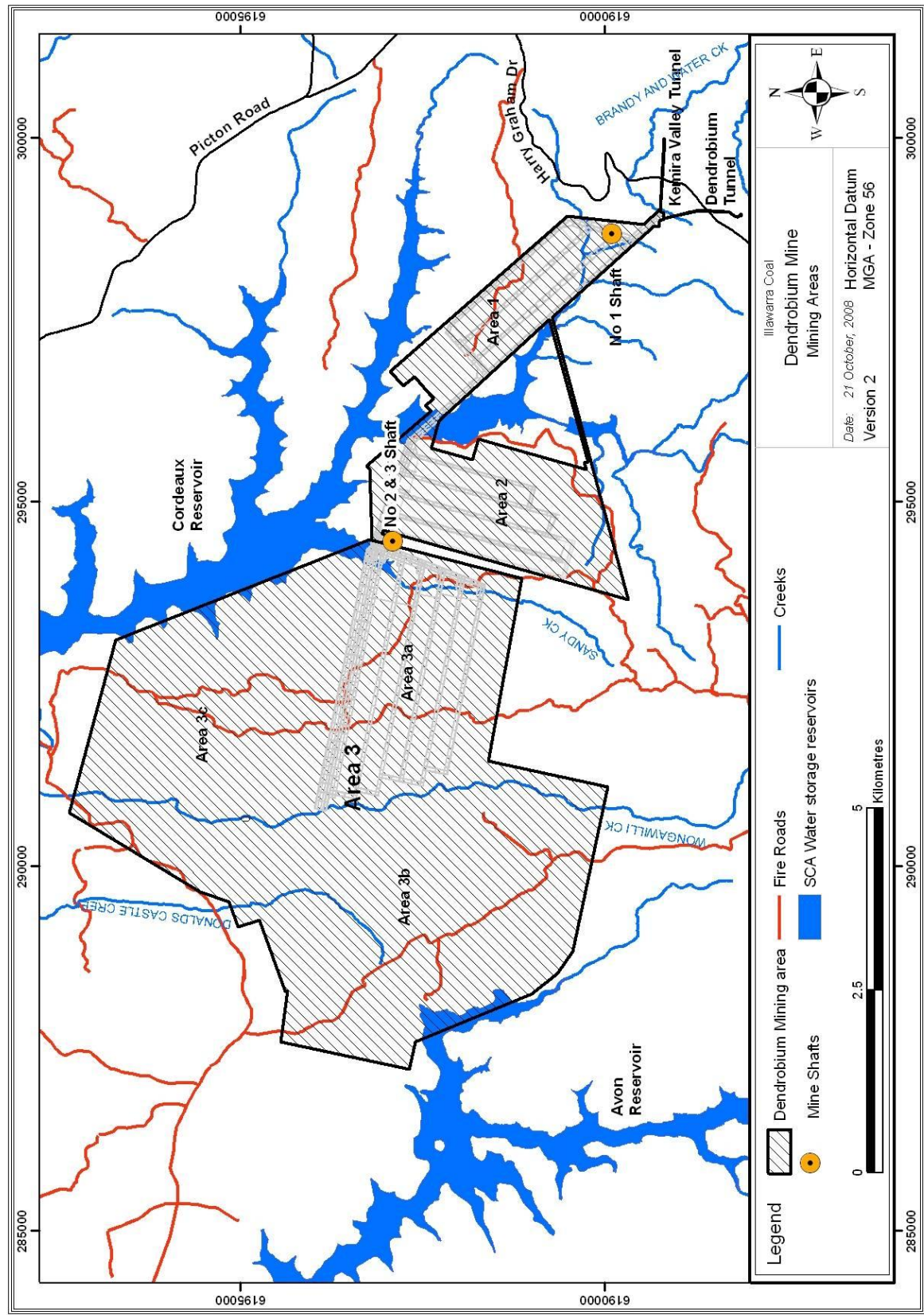


Figure 2 – Mining Area

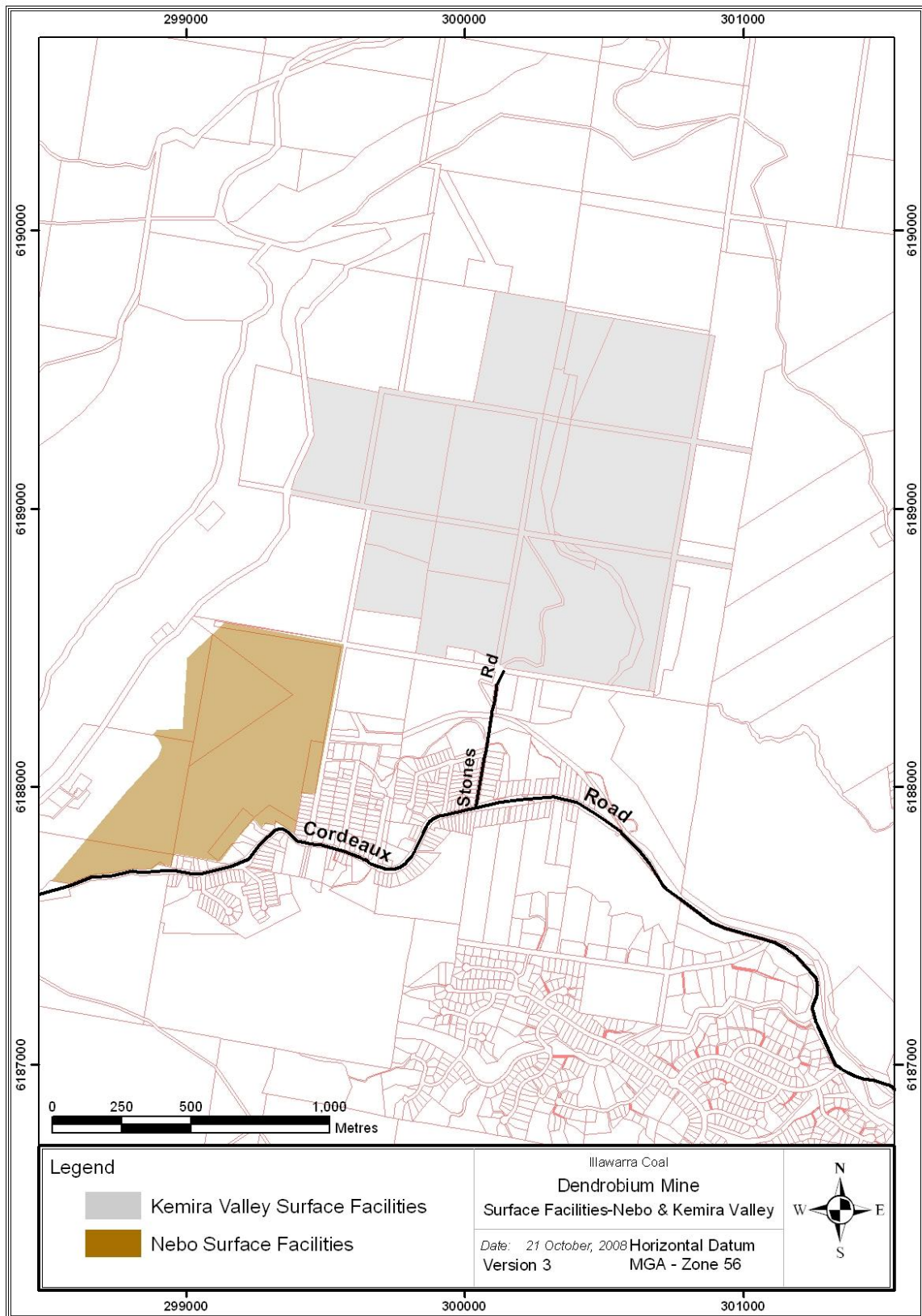


Figure 3 – Surface Facilities

CONSOLIDATED CONSENT

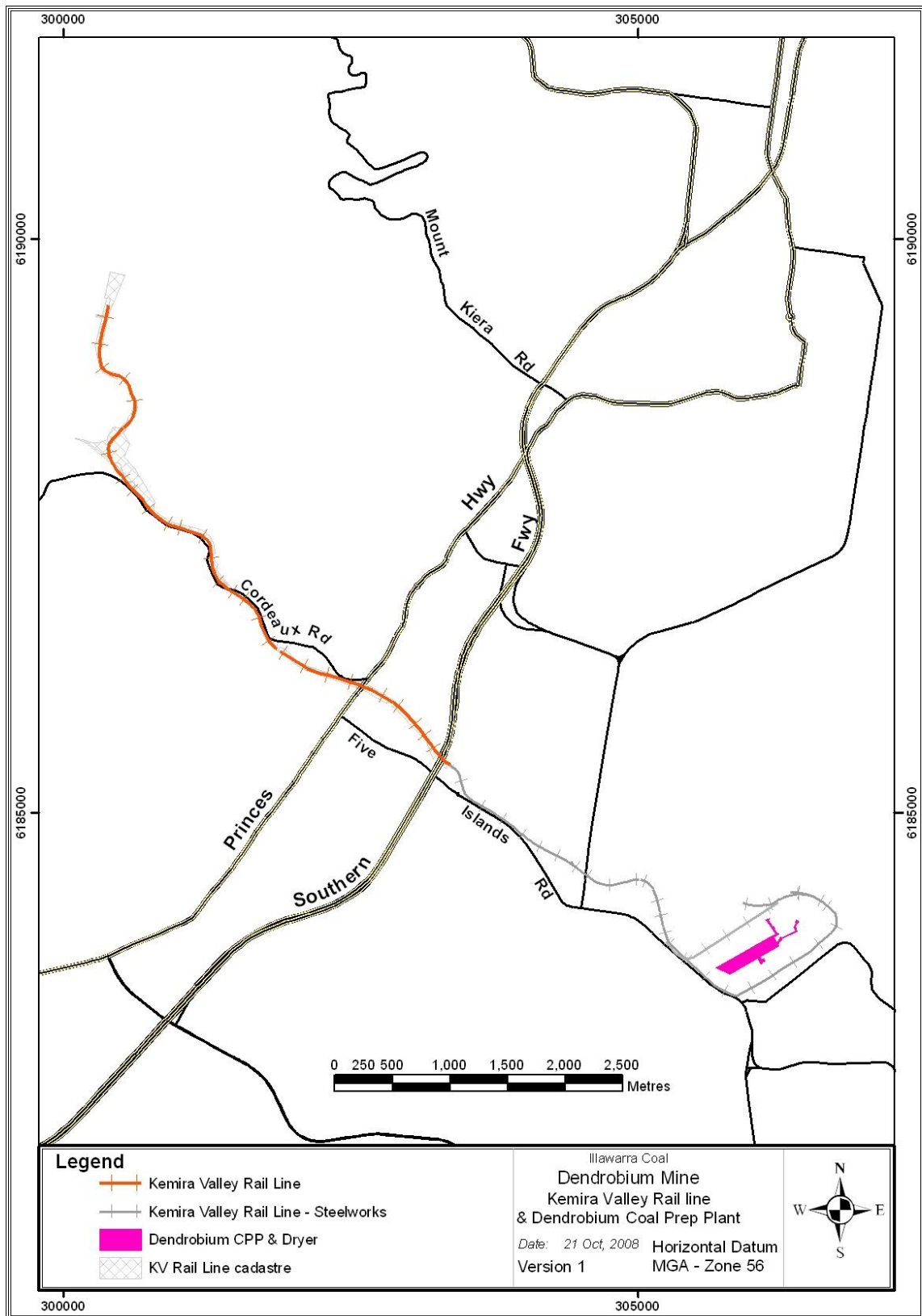


Figure 4 – Kemira Valley Rail Line and Dendrobium Coal Washery & Drying Facility



Source: Geoscience Australia (2006); Department of Industry (2018);
Department Finance, Services & Innovation (2018); South32 (2021)

- LEGEND**
- Mining Lease (ML 1566)
 - Modification Component Indicative Location
 - Area to be Cleared
 - Asset Protection Zone - Vegetation Management
 - Vegetation Management



DENDROBIUM MINE
Dendrobium - Gas Management
Infrastructure General Arrangement

Figure 6 – No. 2 and 3 Shafts site layout

CONSOLIDATED CONSENT

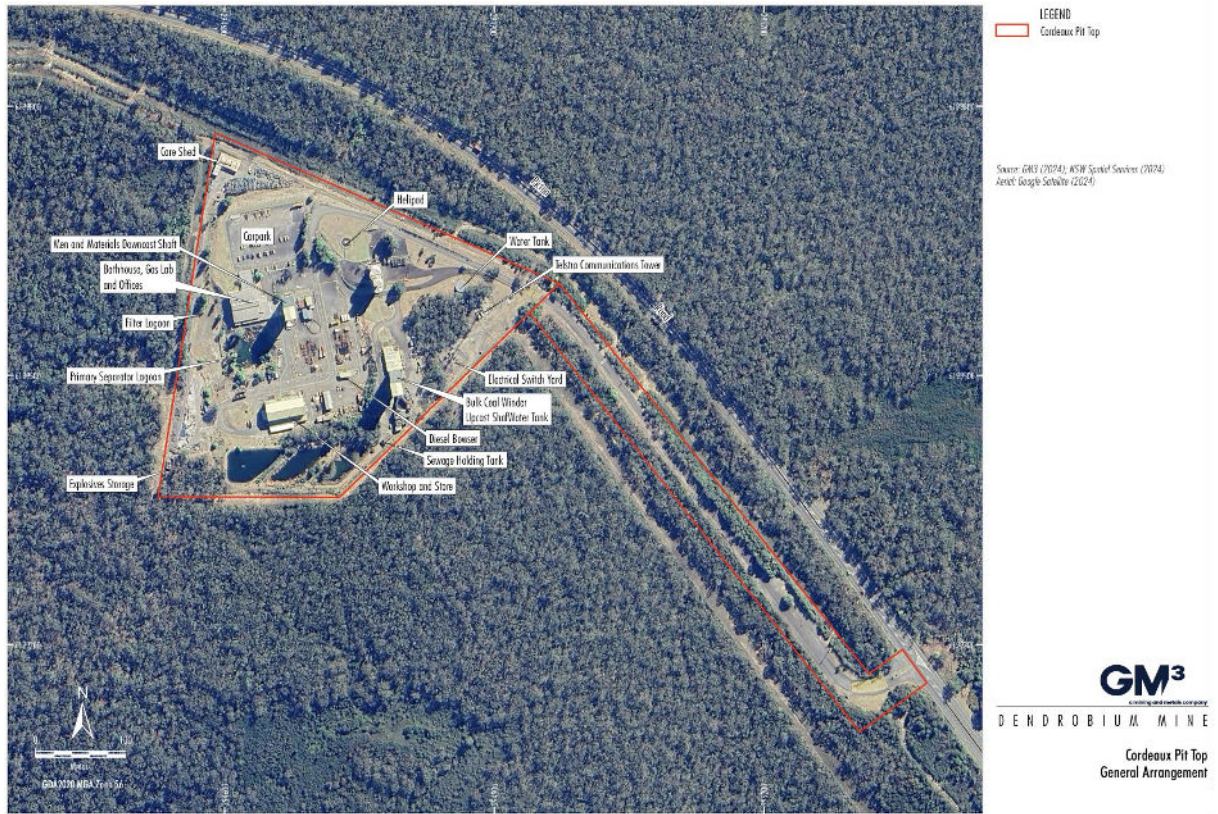


FIGURE 7 – Cordeaux Pit Top General Arrangement

CONSOLIDATED CONSENT



FIGURE 8 – Corrimal No 3 Shaft and Coal Bins

RECOMMENDED

CONSOLIDATED CONSENT

APPENDIX 3:
Deleted

RECOMMENDATION

APPENDIX 4: STATEMENT OF COMMITMENTS

Dendrobium Area 3 Amended Statement of Commitments

1. Longwall layouts in Dendrobium Area 3

Optimal longwall layouts will be designed to achieve the following objectives for Dendrobium Area 3:

- Avoid fracturing in controlling rockbars of Sandy and Wongawilli Creek that is sufficient to result in water loss from pools (e.g. lower pool levels due to increased flow through controlling rockbars due to fracturing),
- Avoid fracturing in the Sandy Creek waterfall that is sufficient to result in increased water flow through the rockmass (e.g. water flowing through the rock overhang at the Sandy Creek waterfall), and
- Minimise volume of sterilised coal which could be efficiently extracted within the mining and environmental constraints of the area.

2. Subsidence Impact – Monitoring

Pre, during and post mining subsidence impact monitoring will be undertaken in accordance with the approved Subsidence Management Plan. The monitoring component of the Subsidence Management Plan includes but is not necessarily limited to:

- Subsidence movement of natural and man made features
- Surface waters
- Groundwater
- Terrestrial flora and fauna
- Aquatic flora and fauna
- Aboriginal cultural heritage sites
- Swamps

3. Subsidence Impact – Avoidance, Mitigation and Rehabilitation

If the monitoring program identifies impacts to natural features that exceed those predicted, the following contingent measures will be implemented.

Description of Item	Key Potential Impacts	Avoidance, Mitigation and Rehabilitation
<i>Permanently Flowing Creeks (Flow)</i>	Predicted Impacts Minor fracturing in the beds of Wongawilli and Sandy Creeks.	Avoidance & Mitigation Not mining under Wongawilli & Sandy Creeks to avoid major fracturing and loss of surface flow. Commitment to avoid significant impacts to major

CONSOLIDATED CONSENT

Description of Item	Key Potential Impacts	Avoidance, Mitigation and Rehabilitation
	<p>Fracturing in the bed of SC10 leading to pool water level loss in some pools or loss of stream flow at some controlling rockbars.</p> <p>Impacts Exceeding Those Predicted</p> <p>Major fracturing in the beds of Wongawilli and Sandy Creeks leading to pool water level loss or loss of stream flow.</p> <p>Major fracturing in the bed of SC10 leading to pool water level loss in all pools or loss of stream flow at all controlling rockbars.</p> <p>Major fracturing in the rockmass of Sandy Creek waterfall leading to significant flow through the rock overhang.</p>	<p>natural features in Area 3b and 3C</p> <p>Grouting and repair of significant surface water controlling features within SC10, where it is appropriate to do so, in consultation with WaterNSW, DPIM, DECC and other stakeholders.</p> <p>Contingent Measure</p> <p>Grouting and repair of significant surface water controlling features where it is appropriate to do so in consultation with WaterNSW, DPIM, DECC and other stakeholders.</p> <p>Grouting and repair of the waterfall rockmass where it is appropriate to do so in consultation with WaterNSW, DPIM, DECC and other stakeholders.</p>
<p><i>Ephemeral watercourses</i></p> <p><i>(Flow)</i></p>	<p>Predicted Impacts</p> <p>Fracturing of the beds of some minor streams & diversion of flows.</p> <p>Impacts Exceeding Those Predicted</p> <p>Major fracturing in the beds of streams leading to total pool water loss or complete loss of surface flow through controlling rockbars.</p>	<p>Avoidance & Mitigation</p> <p>Not mining under Wongawilli & Sandy Creeks reducing subsidence movements in the more deeply incised parts of the tributaries. Commitment to avoid significant impacts to major natural features in Areas 3B and 3C.</p> <p>Contingent Measure</p> <p>Grouting and repair of significant surface water controlling features where it is appropriate to do so in consultation with WaterNSW, DPIM, DECC and other stakeholders.</p>
<p><i>Lakes</i></p>	<p>Predicted Impacts</p> <p>Negligible impacts.</p>	<p>Avoidance & Mitigation</p> <p>The layout has been designed to avoid or minimise impacts on the lake. Potential impacts are considered negligible.</p>

CONSOLIDATED CONSENT

Description of Item	Key Potential Impacts	Avoidance, Mitigation and Rehabilitation
	<p>Impacts Exceeding Those Predicted</p> <p>Connectivity of the lake with the mining area.</p>	<p>Contingent Measure</p> <p>As per the DSC Contingency Plan.</p>
<i>Cliffs</i>	<p>Predicted Impacts</p> <p>Isolated rockfalls estimated to occur along ~ 10% of the cliff lines.</p>	<p>Avoidance & Mitigation</p> <p>Monthly monitoring during subsidence.</p> <p>Signage & Fencing where they present safety risks.</p> <p>Communication strategy to stakeholders where they present safety risks.</p>
	<p>Impacts Exceeding Those Predicted</p> <p>Rock falls occurring along >10% of the cliff lines or total cliff failure (e.g. entire length of cliff impacted).</p>	<p>Contingent Measure</p> <p>As above.</p> <p>Scaling rocks loosened by subsidence where they present safety risks.</p> <p>Minor civil/earthworks to prevent erosions such as overland flow diversion works, establishment of banks, smoothing and re-contouring, where this is practical.</p> <p>Revegetation works such as planting, seeding, mulching, weed control and plant maintenance, where this is practical.</p>
<i>Steep slopes</i>	<p>Predicted Impacts</p> <p>Some impacts are possible if slopes are marginally stable.</p> <p>Large cracks or compressive ridges. No significant diversion of surface water flow direction or increase in soil erosion/sedimentation of waterways.</p>	<p>Avoidance & Mitigation</p> <p>Monthly monitoring during subsidence.</p> <p>Signage & Fencing where they present safety risks.</p> <p>Communication strategy to stakeholders where they present safety risks.</p> <p>Minor sediment control works such as silt fencing.</p>
	<p>Impacts Exceeding Those Predicted</p> <p>Large cracks, large compressive ridges or mass movements causing</p>	<p>Contingent Measure</p> <p>As above.</p> <p>Minor civil/earthworks to prevent erosions such as</p>

CONSOLIDATED CONSENT

Description of Item	Key Potential Impacts	Avoidance, Mitigation and Rehabilitation
	significant erosion if left untreated.	<p>overland flow diversion works, establishment of banks, smoothing and re-contouring, where this is practical.</p> <p>Revegetation works such as planting, seeding, mulching, weed control and plant maintenance, where this is practical.</p> <p>Erosion control and revegetation establishment where required to prevent further impacts.</p> <p>Infill of surface cracks with soil or other suitable material where appropriate, local regrading or compacting of the surface. Temporary sediment and erosion control measures.</p> <p>Monitoring – event specific mitigation and rehabilitation.</p>
<i>Aquatic fauna and flora</i>	Predicted Impacts	Avoidance & Mitigation
	Impacts on fauna are possible due to 'loss' of water from pools. Impacts on vegetation expected to be very small.	<p>Not mining under Wongawilli & Sandy Creeks to avoid major fracturing and loss of surface flow.</p> <p>Commitment to avoid significant impacts to major natural features in Areas 3B and 3C.</p>
	Impacts Exceeding Those Predicted	Contingent Measure
	<p>Major reduction in pool water level or complete loss of pool water.</p> <p>Major reduction in aquatic habitat for an extended timeframe or complete loss of habitat.</p> <p>Identified mortality of fauna/flora in proximity to identified mining impact.</p>	<p>Grouting and repair of significant surface water controlling features where it is appropriate to do so in consultation with WaterNSW, DPIM, DECC and other stakeholders.</p> <p>Active preservation of life such as relocation of stranded fish.</p> <p>Temporary ecosystem maintenance such as watering aquatic plants until final rehabilitation completed, where this is practical.</p>
<i>Terrestrial fauna and flora</i>	Predicted Impacts	Avoidance & Mitigation

CONSOLIDATED CONSENT

Description of Item	Key Potential Impacts	Avoidance, Mitigation and Rehabilitation
<p><i>including endangered ecological communities</i></p>	<p>Impacts on fauna are possible due to ‘loss’ of water in creeks. Proposal assessed as likely to have a significant local impact on three frog and one dragonfly species.</p>	<p>Monthly monitoring during subsidence.</p> <p>Not mining under Wongawilli & Sandy Creeks to avoid major fracturing and loss of surface flow.</p> <p>Commitment to avoid significant impacts to major natural features in Areas 3B and 3C.</p>
	<p>Impacts Exceeding Those Predicted</p> <p>Large areas of impacted vegetation (by rockfalls, soil slippage) that is unlikely to commence natural regeneration within 6 months.</p> <p>Significant surface soil cracking or rock bar fracturing resulting in loss of standing water and or erosion in creeks or swamps.</p> <p>Gas emissions with extensive vegetation die off and no evidence of self regeneration within 6 months of cessation of gas release.</p>	<p>Contingent Measure</p> <p>Site rehabilitation to reinstate habitat values – increased monitoring.</p> <p>Remediation of subsidence related fracturing or dilation within creek beds and surface cracks where it is appropriate to do so in consultation with WaterNSW, DPIM, DECC and other stakeholders.</p> <p>Minor civil/ earthworks to prevent erosions such as overland flow diversion, establishment of banks, smoothing and re-contouring, where this is practical.</p> <p>Revegetation such as planting, seeding, mulching, weed control and plant maintenance, where this is practical.</p> <p>Active preservation of life such as relocation of stranded fauna and watering of stressed vegetation where this is beneficial and practical.</p> <p>Temporary ecosystem maintenance such as watering plants until final rehabilitation completed, where this is practical.</p>
<p><i>Aboriginal Places of Cultural Significance - Archaeological sites</i></p>	<p>Predicted Impacts</p> <p>Unlikely that the sites will sustain structural impacts. Empirical data suggests the probability of impacts to a site is less than 10%.</p>	<p>Avoidance & Mitigation</p> <p>Baseline, active subsidence and post mining monitoring. Appropriate consultation and approvals.</p>

CONSOLIDATED CONSENT

Description of Item	Key Potential Impacts	Avoidance, Mitigation and Rehabilitation
	<p>Impacts Exceeding Those Predicted</p> <p>Change in shelter conditions not attributable to natural weathering or preservation – cracking or exfoliation of art panel, movement of existing planes and joints at panel, block fall within shelter or overhang, shelter or overhang collapse.</p>	<p>Contingent Measure</p> <p>Site and event specific mitigation and rehabilitation will be developed with appropriate Aboriginal representatives, DECC and WaterNSW.</p> <p>Techniques may involve installing artificial drip lines, detailed recording of art, stabilising and cleaning rock faces. Refer Area 3A SMP section 22.9.</p>
<p><i>Water quality–</i></p> <p>Permanently Flowing Creeks</p> <p>Wongawilli Creek</p> <p>Sandy Creeks.</p>	<p>Predicted Impacts</p> <p>Impacts on water quality are possible due to reduced flow and/or increased interaction of ground and surface water. These impacts are likely to include reduced oxygen, higher dissolved ions and precipitates. There is also a possibility of lower pH and lower temperature variation as a result of groundwater inflows.</p> <p>Impacts Exceeding Those Predicted</p> <p>Major reduction in water quality when comparing baseline period to mining period, i.e. comparing baseline data to mining period:</p> <p>pH drop of >2 EC increase >100 uS/cm ORP* drop >200 mV</p> <p>A > 2 standard deviation reduction in water quality apparent at downstream monitoring site when comparing pre-mining to baseline data.</p>	<p>Avoidance & Mitigation</p> <p>Not mining under Wongawilli & Sandy Creeks to avoid major fracturing and loss of surface flow.</p> <p>Commitment to avoid significant impacts to major natural features in Areas 3B and 3C.</p> <p>Contingent Measure</p> <p>Grouting and repair of surface water controlling features and the beds of streams where fracturing is evident where it is appropriate to do so in consultation with WaterNSW, DPIM, DECC and other stakeholders.</p> <p>Limestone emplacement to raise pH where it is appropriate to do so in consultation with WaterNSW, DPIM, DECC and other stakeholders.</p>
<p><i>Water quality–</i></p> <p>ephemeral streams</p>	<p>Predicted Impacts</p>	<p>Avoidance & Mitigation</p> <p>Monitoring, measurement and reporting.</p>

CONSOLIDATED CONSENT

Description of Item	Key Potential Impacts	Avoidance, Mitigation and Rehabilitation
	<p>Some buckling and fracturing of creek beds & diversion of flows.</p> <p>Impacts on water quality are possible due to reduced flow and/or increased interaction of ground and surface water. These impacts are likely to include reduced oxygen, higher dissolved ions and precipitates. There is also a possibility of lower pH and lower temperature variation as a result of groundwater inflows. However, volumes of pooled water in ephemeral streams are small relative to the entire catchment.</p> <p>Impacts Exceeding Those Predicted</p> <p>Major reduction in water quality when comparing baseline period to mining period, i.e. comparing baseline data to mining period:</p> <p>pH drop of >2 EC increase >100 uS/cm ORP* drop >200 mV</p> <p>A > 2 standard deviation reduction in water quality apparent at downstream monitoring site when comparing pre-mining to baseline data.</p>	<p>Contingent Measure</p> <p>Grouting and repair of surface water controlling features and the beds of streams where fracturing is evident where it is appropriate to do so in consultation with WaterNSW, DPIM, DECC and other stakeholders.</p> <p>Limestone emplacement to raise pH where it is appropriate to do so in consultation with WaterNSW, DPIM, DECC and other stakeholders.</p>
Groundwater quality, quantity and levels	<p>Predicted Impacts</p> <p>Impacts on groundwater are possible due to increased interaction of ground and surface water as well as increased interaction of groundwater with existing and freshly created fractures within the rock and soil mass. These impacts are likely to include reduced oxygen, higher dissolved ions and lower pH. Shallow groundwater systems are likely to be depressed by increased permeability as a result of fracturing.</p>	<p>Avoidance & Mitigation</p> <p>Monitoring, measurement and reporting.</p> <p>Not mining under Wongawilli & Sandy Creeks to avoid major fracturing and loss of surface flow.</p> <p>Commitment to avoid significant impacts to major natural features in Areas 3B and 3C.</p>

CONSOLIDATED CONSENT

Description of Item	Key Potential Impacts	Avoidance, Mitigation and Rehabilitation
	<p>Impacts Exceeding Those Predicted</p> <p>Major reduction (monitoring bore dry where it has not been prior to mining) in groundwater level at the majority of bores within any particular aquifer or swamp system or complete loss of groundwater.</p> <p>High reduction in water quality, i.e. comparing baseline data to mining period: pH drop of >2 EC increase >100 uS/cm ORP* drop >200 mV</p>	<p>Contingent Measure</p> <p>Mitigation of flow-on ecological effects as described above.</p>
<i>Surface of the land</i>	<p>Predicted Impacts</p> <p>Some surface cracking posing safe access constraints.</p> <p>Impacts Exceeding Those Predicted</p> <p>Major surface cracking preventing safe access.</p>	<p>Avoidance & Mitigation</p> <p>Monitoring, measurement and reporting during active subsidence.</p> <p>Signage & Fencing where they present safety risks.</p> <p>Communication strategy to stakeholders where they present safety risks.</p> <p>Fill crack with appropriate material in consultation with infrastructure owner. Install temporary erosion and sediment controls where appropriate.</p> <p>Contingent Measure</p> <p>As above.</p> <p>Establishment of alternative access to critical areas.</p>
<i>Swamps</i>	<p>Predicted Impacts</p> <p>No change in hydrology or ecological function of swamps.</p> <p>Impacts Exceeding Those Predicted</p> <p>Major controlling rockbar cracking leading to water loss in swamp</p> <p>Burning and/or erosion of peat material.</p>	<p>Avoidance & Mitigation</p> <p>Monitoring before, during and after active subsidence.</p> <p>Contingent Measure</p> <p>Implement swamp contingency plan.</p>

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Description of Item	Key Potential Impacts	Avoidance, Mitigation and Rehabilitation

4. Swamp Contingency Plan

Prior to the commencement of mining within Dendrobium Area 3A, 3B and 3C, Illawarra Coal will prepare a swamp remediation contingency plan for all swamps within each area.

5. Water Quality Offset

Illawarra Coal will negotiate an offset with the [WaterNSW](#) to account for the small and unquantifiable water quality impact resultant from the proposal.

6. Sandy Creek Waterfall

Prior to the commencement of longwall mining within Dendrobium Area 3A, Illawarra Coal will:

- establish a "technical committee" that includes BHPB, DPI, MSEC, and independent subsidence and geotechnical experts to advise on Sandy Creek Waterfall,
- develop and implement detailed management outcomes such as a Trigger Action Response Plan (TARP) that identifies detailed monitoring and management triggers, including but not necessarily limited to a decision to stop mining, where Longwalls 6-8 extract coal within 400 m of the Sandy Creek Waterfall.

Illawarra Coal will establish cut throughs at 50 m intervals at the finishing end of Longwalls 6 and 7 in order to be able to comply with any decision to stop mining based on the triggers in the TARP. Consideration will be given in the design of development roads for Longwalls 8-10 in regard to the provision of Longwall take off cut throughs in order to achieve compliance with the triggers in the TARP.

7. Green House Gas Emission - Measuring and Reporting

Illawarra coal is required to monitor and report green house gas emissions from Dendrobium Mine in accordance with the National Greenhouse and Energy Reporting Act 2007. This emissions data will be reported in the [Annual Review](#). The [Annual Review](#) will also discuss current and proposed future action to minimise and/or abate green house gas emissions.

RECOMMENDATION

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APPENDIX 5:
Deleted

RECOMMENDATION