



DRAYTON MINE

PROJECT APPROVAL MODIFICATION ENVIRONMENTAL ASSESSMENT

for

Anglo Coal (Drayton Management) Pty Limited

July 2009

Hansen Bailey

ENVIRONMENTAL CONSULTANTS

ANGLO COAL (DRAYTON MANAGEMENT) PTY LIMITED

DRAYTON MINE
PROJECT APPROVAL MODIFICATION

ENVIRONMENTAL ASSESSMENT

Prepared by:

HANSEN BAILEY

6 / 127-129 John Street

SINGLETON NSW 2330

July 2009

for:

ANGLO COAL (DRAYTON MANAGEMENT) PTY LIMITED

PMB 9

MUSWELLBROOK NSW 2333

ENVIRONMENTAL ASSESSMENT STATEMENT

Submission of Environmental Assessment (EA)

Under Section 75W of the *Environmental Planning and Assessment Act 1979*

EA Prepared by	
Name:	James Bailey
Qualifications:	B. Natural Resources, MBA
Address:	Hansen Bailey PO Box 473 SINGLETON NSW 2330
In Respect Of:	Drayton Mine Project Approval Modification
Applicant Name:	Anglo Coal (Drayton Management) Pty Limited
Applicant Address:	Thomas Mitchell Drive MUSWELLBROOK NSW 2333
Land to be Developed:	As per the Drayton Mine Extension Environmental Assessment (2008)
Proposed Development:	Minor extension to mining operations as outlined in **Section 3.0** of the attached Environmental Assessment.
Environmental Assessment:	An Environmental Assessment for the Project is attached.
Certification:	I certify that I have prepared the contents of this EA, and to the best of my knowledge: • it is in accordance with Sections 75E and 75F of the *Environmental Planning and Assessment Act 1979*; • it contains all available information that is relevant to the environmental assessment of the activity to which the statement relates; and • the information contained in the statement is neither false nor misleading.
Signature:	
Name:	James Bailey Director
Date:	July 2009

EXECUTIVE SUMMARY

BACKGROUND

Project Approval 06_0202 was granted by the Minister for Planning on 1 February 2008 under the *Environmental Planning & Assessment Act 1979* to allow the extension of open cut coal mining operations at Drayton Mine and a range of associated infrastructure upgrades and modifications. Project Approval 06_0202 is supported by the Drayton Mine Extension Environmental Assessment (Hansen Bailey, 2007).

Drayton Mine is operated by Anglo Coal (Drayton Management) Pty Ltd and is located in the Upper Hunter Valley, approximately 13 kilometres south of Muswellbrook. Project Approval 06_0202 allows Drayton Mine to extract coal via open cut methods at a maximum rate of up to 8 Million tonnes per annum run of mine to the year 2017.

THE MODIFICATION

Anglo Coal (Drayton Management) Pty Ltd seeks approval from the Minister for Planning for a Modification to Project Approval 06_0202 under Section 75W of the *Environmental Planning & Assessment Act 1979*. Specifically, this Modification is sought to allow a minor 8 hectare extension of the approved mining disturbance footprint to the north and the establishment of a new conservation area to provide an appropriate offset for this additional disturbance.

No other changes to Drayton Mine's operations are sought. The Modification extension area will be developed generally in accordance with Project Approval 06_0202.

STAKEHOLDER CONSULTATION

A stakeholder consultation process was undertaken for the Modification including with the relevant regulators. The stakeholder consultation process included personal briefings, presentations and correspondence with relevant stakeholders including the Department of Planning and Department of Environment and Climate Change, with all issues raised in relation to the Modification included in this Environmental Assessment.

Notification of the Modification is being provided to Drayton's near neighbours via the distribution of a brief letter outlining the Modification and providing relevant contact details to discuss the Modification further. Notification of the Modification was also provided to Drayton's Community Consultative Committee. Drayton will continue the ongoing consultation process through maintaining contact with regulatory and community stakeholders via regular meetings and the release of public documents reporting on environmental performance.

IMPACT ASSESSMENT

Relevant environmental impact assessments were undertaken in relation to air quality and greenhouse, noise, ecology, groundwater, surface water, heritage (both Aboriginal and Non-Aboriginal), soil and land capability, traffic management, rehabilitation and final landform, spontaneous combustion, visual and waste. These assessments were undertaken in accordance with relevant State Government technical and policy guidelines and where necessary, involved the review of the relevant assessments undertaken for the Drayton Mine Extension Environmental Assessment.

The minor extension to the mining disturbance footprint will result in the removal of 7.5 hectares of vegetation consisting of a fragmented Hunter Lowland Redgum Forest (listed as an Endangered Ecological Community under the *Threatened Species Conservation Act 1995*) and disturbed grassland that may potentially provide foraging habitat for

nine threatened fauna species. This ecological impact is proposed to be offset through the establishment of an additional 12 hectare area of vegetation adjacent to the Drayton Wildlife Refuge, which would exceed a 2:1 offset ratio for the woodland area that is proposed to be removed.

The impact assessments undertaken for the remaining environmental issues determined that the activities associated with the Modification are generally consistent with those approved in the Drayton Mine Extension Environmental Assessment and Project Approval 06_0202. For the matters assessed, it is anticipated that the existing management and mitigation measures developed for the Drayton Mine Extension Environmental Assessment would be effective in minimising environmental impacts created from the Modification.

CONCLUSION

The Modification sought relates to the minor extension of the approved Drayton mining disturbance footprint consistent with the currently approved operations and is required primarily to provide additional flexibility for haul road alignment and safety batters off the highwall. The Modification will also result in the recovery of an addition 1.0 Million tonnes of Run of Mine Coal that would otherwise be sterilised, although this coal extraction is supplementary to the main objective of the Modification, being additional flexibility for haul road infrastructure.

The review of the environmental impact assessments and principles of ecologically sustainable development completed for this Environmental Assessment have confirmed that the impacts from the activities described for this Modification are minor in nature and are consistent with those already approved by the Drayton Mine Project Approval 06_0202.

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1.0 BACKGROUND

1.1 INTRODUCTION

Drayton Mine (Drayton) is an open cut coal mine operated by Anglo Coal (Drayton Management) Pty Limited. Drayton is located approximately 13 kilometres (km) south of Muswellbrook and approximately 120 km north-west of Newcastle in New South Wales (NSW). Drayton is located west of the New England Highway, north-west of Liddell and Bayswater Power Stations and south-west of the rural-residential Estate of Antiene (Antiene). Drayton is located immediately to the east of Mt Arthur Coal (MAC), which encompasses Mount Arthur North Mine, Bayswater No. 2 Mine, Bayswater No. 3 Mine, the South Pit Extension Project and its Underground Project. Drayton is within the Muswellbrook Local Government Area (LGA) (see Figure 1).

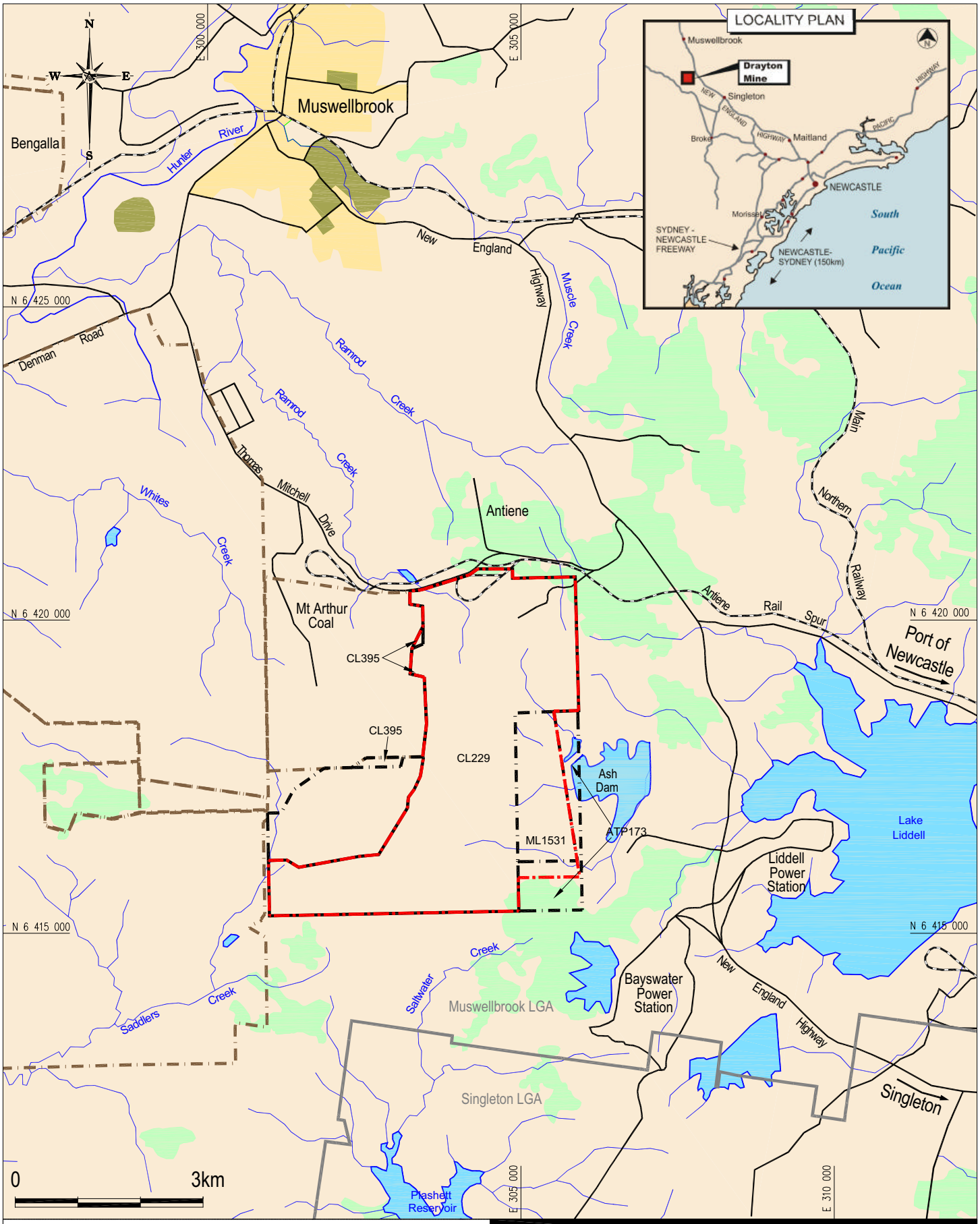
Drayton commenced production in 1983 and currently has Project Approval (PA) 06_0202 (approved 1 February 2008) to provide predominantly steaming coal to export and domestic markets at a maximum of 8 Million tonnes per annum (Mtpa) of Run-of-Mine (ROM) coal to 2017. The supporting document to the Project Approval is the *Drayton Mine Extension Environmental Assessment* (Drayton EA) dated August 2007 (Hansen Bailey, 2007). An overland conveyor transports domestic coal to Macquarie Generation for electricity production, whilst the Antiene Rail Spur (approved under Development Consent 106-04-00) (Antiene Rail Spur DA) is utilised to transport export steaming coal to the Port of Newcastle via the Main Northern Railway Line.

1.2 PROPONENT

Drayton is operated by Anglo Coal Australia Pty Ltd (ACA), which is the management company for the Drayton Joint Venture Partnership. This consists of:

- Anglo Coal Australia Pty Ltd (88.17%);
- Mitsui Coal Development (Australia) Pty Limited (3.83%);
- Mitsui Mining Australia Pty Limited (3.0%);
- Hyundai Australia Pty Limited (2.5%); and
- Daesung Australia Limited (2.5%).

ACA is one of Australia's largest coal producers and has extensive coal mining interests and development prospects in both QLD and NSW.



Legend

- EA Boundary
- Drayton Mining Tenements
- Other Mining Tenements
- Roads
- Railways
- Creeks
- Local Government Boundary

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ANGLO COAL

DRAYTON

Co-ordinate System: MGA Zone 56

DRAYTON MINE MODIFICATION

Regional Location

Cad File: 03961B.dwg	Date: 12.06.2009	Drawn: CP	Figure 1

1.3 DOCUMENT PURPOSE

Drayton seeks approval from the Minister for Planning for a modification to PA 06_0202 under Section 75W of the *Environmental Planning & Assessment Act 1979* (EP&A Act) to allow a minor extension of operations of 7.5 hectares (ha) into an area located to the north of the currently approved disturbance footprint (the Modification).

This Environmental Assessment (EA) has been prepared to support the Application which will be lodged with the Department of Planning (DoP) for determination by the Minister for Planning (or delegate). A description of the activities that this Modification Application seeks approval for is provided in **Section 3.0** and includes:

- A minor extension of the approved Drayton mining disturbance footprint in an area of 7.5 ha to the north; and
- The addition of 12 ha to the Drayton Wildlife Refuge to provide an offset for the extended mining disturbance footprint.

The Modification as sought is otherwise consistent with Drayton PA 06_0202. The schedule of land to which this EA applies is also consistent with the Drayton EA and PA 06_0202.

Correspondence with the Department of Planning regarding the Modification is provided in **Appendix A**.

1.4 DOCUMENT STRUCTURE

This EA includes the following sections:

- **Section 2.0** provides detail on the existing approved operations at Drayton;
- **Section 3.0** includes a description of the various components of the Modification;
- **Section 4.0** discusses the regulatory framework relevant to this Modification as sought;
- **Section 5.0** summarises the stakeholder consultation undertaken and any issues raised during that process;
- **Section 6.0** provides the findings of the risk assessment adopted to rank all identified environmental issues;
- **Section 7.0** outlines impacts identified in relation to the Modification and provides management and mitigation measures to be implemented by Drayton in response;
- **Section 8.0** lists a series of additional management commitments to be implemented as a result of the Modification;
- **Section 9.0** provides a justification for the Modification as sought;
- **Sections 10.0** provides a list of abbreviations referenced in this EA; and
- **Section 11.0** provides a list of documents referenced in this EA.

2.0 EXISTING OPERATIONS & ENVIRONMENT

This section of the EA provides a summary of the existing operations of Drayton as approved under Project Approval 06_0202.

2.1 APPROVED MINING ACTIVITIES

Mining activities at Drayton are undertaken in accordance with PA 06_0202 granted in February 2008 and the Drayton EA document which supports the approval. Drayton has approval to mine up to 8 Mtpa of ROM coal until 2017. Drayton holds three mining tenements relevant to the mining operation, being Mining Lease (ML) 1531 and Coal Leases (CL) 229 and CL 395 as shown on **Figure 1**.

Drayton is an open cut mining operation where mining advances based on dragline strips. Pre-stripped overburden is removed by loader and/or excavator and trucks in advance of the dragline operation. Loaders and/or excavators are utilised for subsequent coaling from the Brougham, Grasstrees, Thiess, Puxtrees and Balmoral target seams of the Greta coal measures up to a depth of 110 m below the surface. Mining is conducted 24 hours per day, 7 days a week.

Drayton produced 4.2 Mt of ROM coal in 2008 and employed approximately 332 personnel, including contractors. Approximately 80% of all current Drayton employees reside within the Muswellbrook or immediately adjacent Shires.

The integration of the Modification with the existing approved mining operations at Drayton is discussed in **Section 3.0** and shown on **Figure 3**.

2.2 INFRASTRUCTURE & COAL HANDLING

Drayton is serviced by surface facilities as shown on **Figure 2** which includes an administration office, bathhouse, workshop, warehouse facilities, Coal Handling Plant (CHP), stacker, stockpile reclaimers, rail facilities and an overland conveyor to Bayswater Power Station.

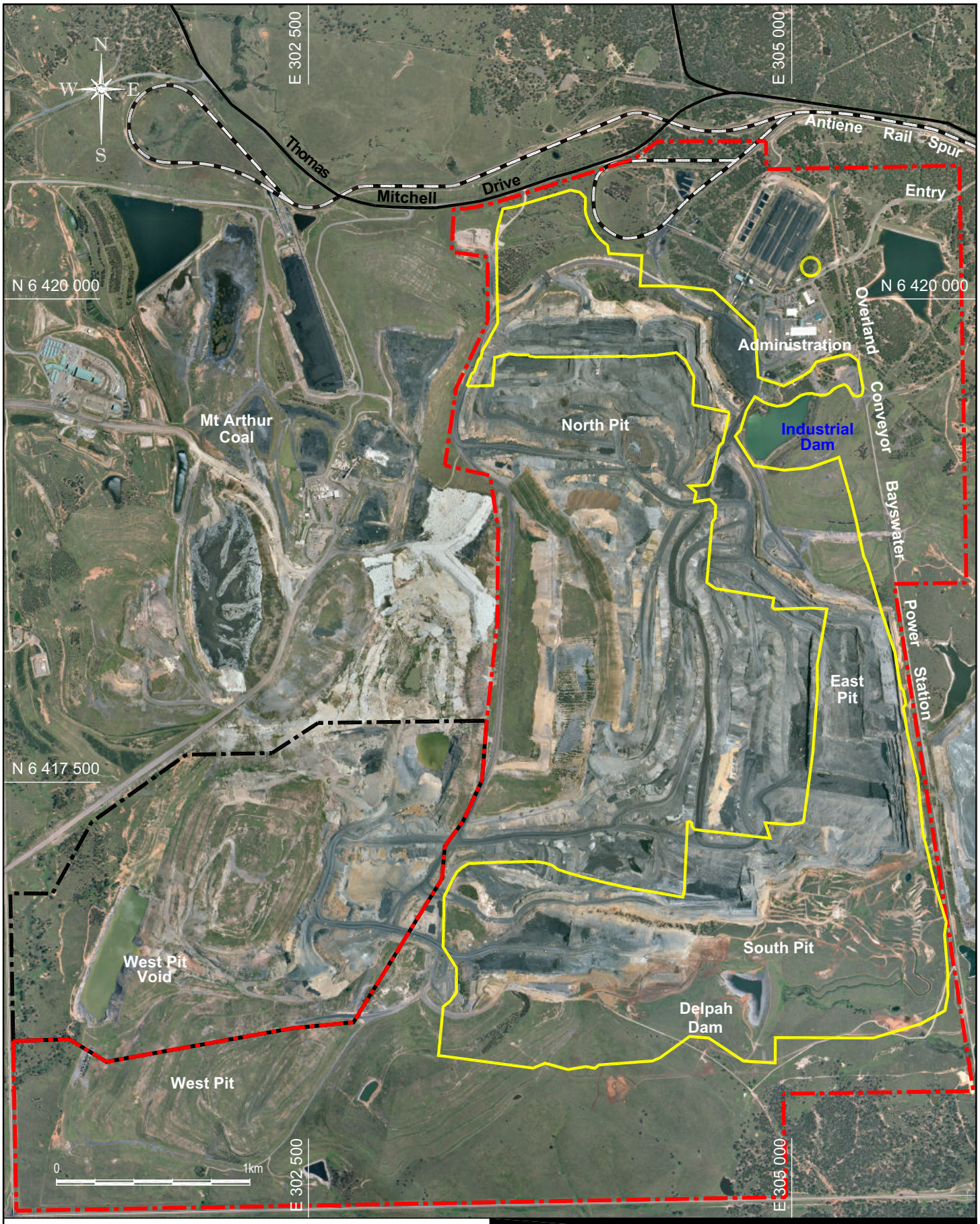
2.3 ENVIRONMENTAL MANAGEMENT SYSTEM

Drayton operates under a Safety, Health, Environment and Community Management System (SHECMS) accredited to International Standards Organisation 14001 standards. The SHECMS is designed to enable Drayton to:

- Effectively manage its environmental issues;
- Ensure compliance with regulatory requirements;
- Continually improve its environmental performance; and
- Satisfy the expectations of stakeholders.

Drayton's SHECMS is founded on the ACA Safety and Sustainable Development policy, the ACA SHECMS, a series of regulatory required management plans and external and internal environmental Standards and Procedures.

Drayton also has a comprehensive Environmental Monitoring Program (EMP) in place as shown in **Figure 3**. This EMP ensures that Drayton meets regulatory expectations and allows for the identification and management of environmental risks. The EMP incorporates requirements of Drayton's Environmental Protection Licence (EPL) 1323 and a number of SHECMS procedures.



Legend

- EA Boundary
- MAC Sub-lease
- Approved Mining Disturbance Footprint

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Co-ordinate system: MGA Zone 56 Aerial: May 2009

DRAYTON MINE MODIFICATION

Approved Mining Operations

Cad File: 03962B.dwg	Date: 12.06.2009	Drawn: CP	Figure 2

Legend

- Proposed Modification Area
- EA Boundary
- MAC Sub-lease
- Approved Mining Disturbance Footprint
- Background Noise Monitor
- Blast Monitor
- Monthly Water Sampling Site
- Dust Deposition Gauge
- High Volume Air Sampling Site
- Meteorological Station
- Ground Water Monitor

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Co-ordinate System: MGA Zone 56 Aerial: May 2009

DRAYTON MINE MODIFICATION

Environmental Monitoring Network

Cad File: 03963F.dwg	Date: 15.07.2009	Drawn: CP	Figure 3

As a requirement of PA 06_0202, Drayton has revised its EMS and a number of management documents to ensure consistency with the Drayton EA, including:

- A Noise Monitoring Program, which is currently being finalised to the satisfaction of DoP;
- A Road Closure Management Plan for Thomas Mitchell Drive, which is currently being finalised to the satisfaction of Muswellbrook Shire Council;
- A Blast Monitoring Program, which has been approved by DoP in consultation with DECC;
- A Spontaneous Combustion Management Plan, which has been approved by DoP in consultation with DECC and DPI;
- An Air Quality Monitoring Program, which has been approved by DoP in consultation with DECC;
- A Site Water Management Plan, upon which consultation has occurred with DECC and DWE and the final management plan is being finalised to the satisfaction of DoP;
- An Aboriginal Archaeology & Cultural Heritage Management Plan which has been approved by DoP in consultation with DECC;
- A Flora and Fauna Management Plan, which has been approved by DoP;
- A Greenhouse and Energy Efficiency, which has been approved by DoP;
- A Mine Closure Plan (as part of the overall Landscape Management Plan), which has been approved by DoP in consultation with the DPI; and
- A Final Void Management Plan (as part of the overall Landscape Management Plan), which has been approved by DoP in consultation with the DPI.

In addition to these, Drayton is also currently preparing a consolidated Offset Strategy (presenting both offset areas for the Drayton Extension EA and this Modification) and Rehabilitation & Offset Management Plan.

2.4 LAND OWNERSHIP

Table 1 lists property ownership surrounding the EA Boundary and indicates if a receiver (residence) is located on the property with a square. **Table 1** should be read in conjunction with **Figure 4** which illustrates land ownership and receivers adjacent to the EA Boundary.

The majority of land within the EA Boundary is owned by ACA (and its subsidiaries). A small area of land in the south-east of the EA Boundary is owned by Macquarie Generation. The schedule of land to which this EA applies is also consistent with the Drayton EA and PA 06_0202.

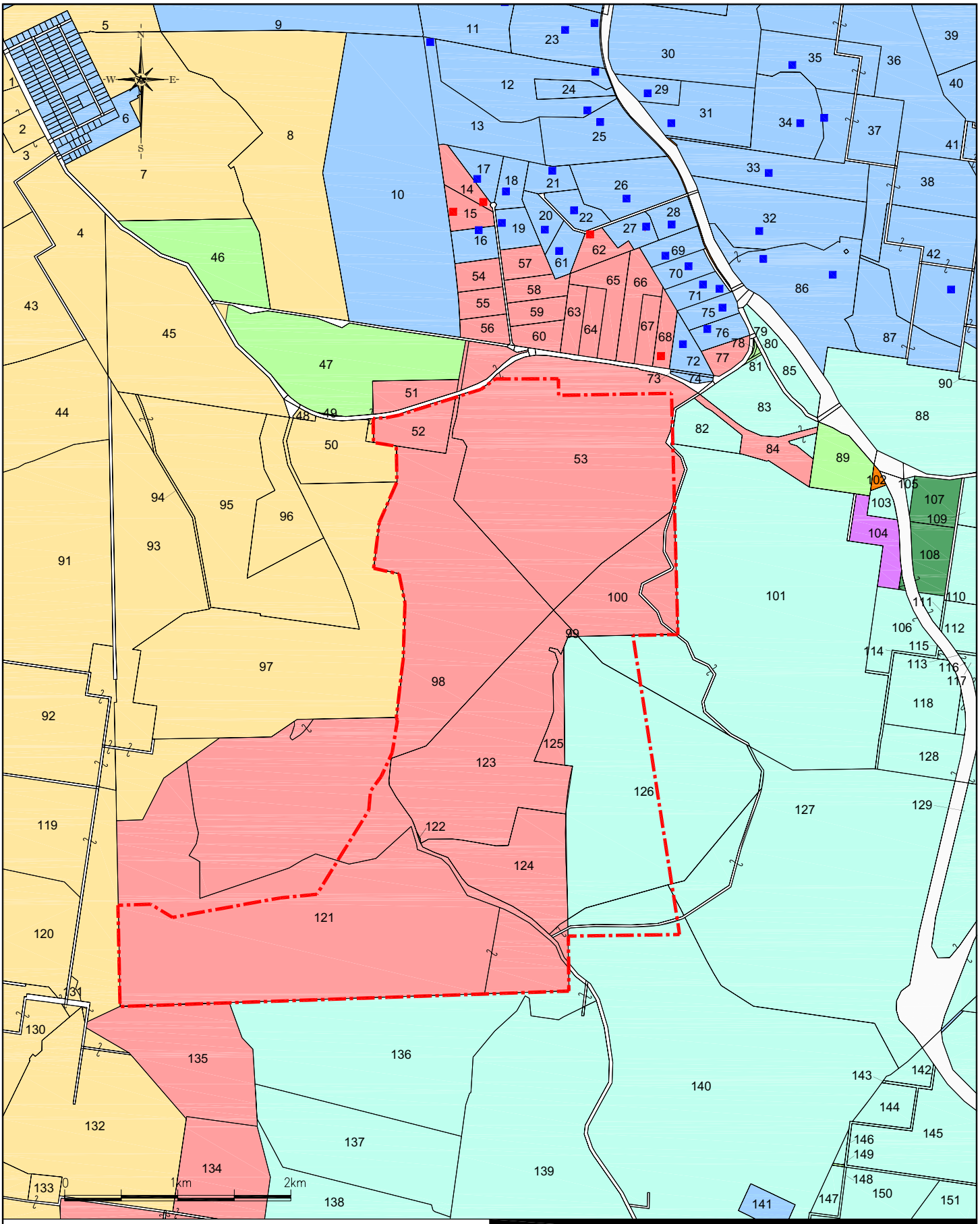
Table 1
Land Ownership

ID	Name	Receiver	ID	Name	Receiver	ID	Name	Receiver
1	Coal Operations Australia		54	Drayton Coal		106	Macquarie Generation	
2	Coal Operations Australia		55	Drayton Coal		107	Electricity Commission of NSW	
3	Coal Operations Australia		56	Drayton Coal		108	Electricity Commission of NSW	
4	Coal Operations Australia		57	Drayton Coal		109	Macquarie Generation	
5	Coal Operations Australia		58	Drayton Coal		110	Macquarie Generation	
6	Muswellbrook Shire Council		59	Drayton Coal		111	Macquarie Generation	

ID	Name	Receiver	ID	Name	Receiver	ID	Name	Receiver
7	Coal Operations Australia		60	Drayton Coal		112	Macquarie Generation	
8	Coal Operations Australia		61	RC & LT Skinner		113	Macquarie Generation	
9	F & I Webber		62	Anglo Coal (Drayton Management) Pty Limited		114	Macquarie Generation	
10	EM Casben		63	Drayton Coal		115	Macquarie Generation	
11	Yarramalong Stud Pty Ltd		64	Drayton Coal		116	Macquarie Generation	
12	K Newton		65	Drayton Coal		117	Macquarie Generation	
13	CS Jacobsen		66	Drayton Coal		118	Macquarie Generation	
14	Anglo Coal (Drayton Management) Pty Limited		67	Drayton Coal & Anglo Coal		119	Hunter Valley Energy Coal Ltd	
15	Drayton Coal		68	Drayton Coal		120	Hunter Valley Energy Coal Ltd	
16	MF & AV Doherty		69	P & K Clifton		121	Drayton Coal & Anglo Coal	
17	BC & SR Page		70	BD & B Jones		122	Drayton Coal	
18	SR Page		71	DW & LM Hunter		123	Drayton Coal & Anglo Coal	
19	CJ & LE Duck		72	BJ & NH Robertson		124	Drayton Coal	
20	RD & DA Osborn		73	Muswellbrook Shire Council		125	Drayton Coal	
21	WJ Reynolds		74	Muswellbrook Shire Council		126	Macquarie Generation	
22	RB & LJ Halloran		75	EJ & MC Sharman		127	Macquarie Generation	
23	SJ & J Jackson		76	PG Horder		128	Macquarie Generation	
24	J Newton		77	Drayton Coal		129	Macquarie Generation	
25	PJ & KJ Collins		78	The State of NSW		130	Hunter Valley Energy Coal Ltd	
26	RE & ID Baxter		79	The State of NSW		131	Hunter Valley Energy Coal Ltd	
27	GJ & PH De Boer		80	The State of NSW		132	Hunter Valley Energy Coal Ltd	
28	MJ Bird		81	The State of NSW		133	Hunter Valley Energy Coal Ltd	
29	MJ & EJ Wallman		82	Macquarie Generation		134	Anglo Coal Australia Pty Ltd	
30	JM & BB & PS Mitchelhill & HB Rivett & IB Vineburg		83	Macquarie Generation		135	Anglo Coal Australia Pty Ltd	
31	RJ & IA Summerville		84	Drayton Coal		136	Macquarie Generation	
32	K & KI Cross		85	Macquarie Generation		137	Macquarie Generation	
33	CL & JA Fisher & CI Dennis		86	Wild Group Pty Ltd		138	Macquarie Generation	
34	BT & JE Davis		87	P Wild		139	Macquarie Generation	
35	GM Wilson		88	Macquarie Generation		140	Macquarie Generation	
36	JM Mitchelhill & HB Rivett & IB Vineburg		89	The State of NSW		141	TransGrid	
37	BJ & TL King		90	Macquarie Generation		136	Macquarie Generation	
38	NP & CJ O'Brien		91	Coal Operations Australia		137	Macquarie Generation	
39	CR & CP Stewart		92	Coal Operations Australia		138	Macquarie Generation	
40	PS & TG Adams		93	Hunter Valley Energy Coal Ltd		139	Macquarie Generation	
41	M & P Clifton		94	Bayswater Colliery Company		140	Macquarie Generation	
42	H Ray		95	Bayswater Colliery Company		141	TransGrid	
43	Coal Operations Australia		96	Bayswater Colliery Company		142	Macquarie Generation	
44	Coal Operations Australia		97	Bayswater Colliery Company		143	Macquarie Generation	
45	Coal Operations Australia		98	Drayton Coal & Anglo Coal		144	Macquarie Generation	
46	The State of NSW		99	Drayton Coal		145	Macquarie Generation	
47	The State of NSW		100	Drayton Coal		146	Macquarie Generation	
48	Hunter Valley Energy Coal Ltd.		101	Macquarie Generation		147	Macquarie Generation	
49	Hunter Valley Energy Coal Ltd.		102	The Commissioner for Main Roads		148	Macquarie Generation	
50	Coal Operations Australia		103	Macquarie Generation		149	Macquarie Generation	
51	Drayton Coal		104	RTA NSW		150	Macquarie Generation	
52	Drayton Coal		105	Macquarie Generation		151	Macquarie Generation	
53	Drayton Coal & Anglo Coal							

** A coloured square denotes a receiver on the property.*

*Each colour correlates to the shading used on **Figure 4**.*



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DRAYTON MINE MODIFICATION

Land Ownership

Cad File: 04041A.dwg	Date:15.07.2009	Drawn: CP	Figure 4

3.0 THE MODIFICATION

This section of the EA provides a description of the various components of the Modification for which Drayton is applying to the Minister of Planning to allow the Modification of PA 06_0202 under Section 75W of the EP&A Act.

3.1 MODIFICATION EXTENSION AREA

Drayton proposes to extend its operations into a small area to the north of the approved disturbance footprint, within the EA Boundary presented in the Drayton EA and approved under PA 06_0202 (see **Figure 5A** and **Figure 5B**). The Modification is primarily required to provide additional flexibilities for the development of haul road infrastructure and highwall batters; however coal extraction activities will also be undertaken within the Modification extension area to prevent the sterilisation of a known coal resource. The additional mining operations are anticipated to commence during late 2010 and will access a coal resource of approximately 1 Million tonnes (Mt).

This extension will create a total additional disturbance area of 7.5 ha that is proposed to consist of the following components:

- 3.7 ha for active mining operations;
- 1.5 ha for highwall batters; and
- 2.3 ha for an extended haul road and associated infrastructure.

Due to the constrained nature of approved mining operations and the stability of highwall batters in the areas adjacent to the Modification extension area, the Modification as described above is primarily required to ensure the safe and efficient extraction of the previously identified and approved coal resource in the North Pit.

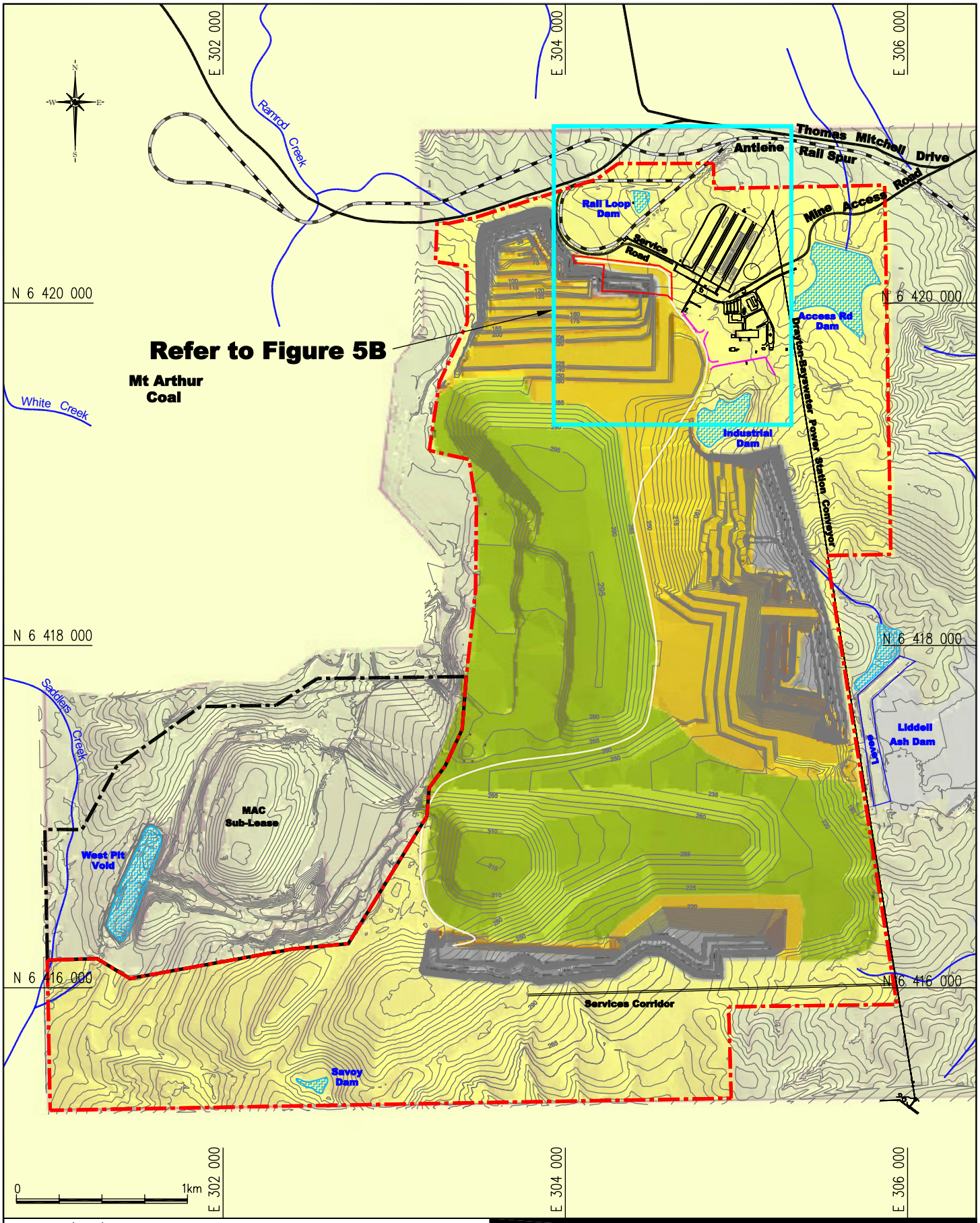
No changes to Drayton's currently approved mining operations, extraction limits or transport arrangements are sought for the Modification. Mining activities to be undertaken within the Modification extension area shall be carried out generally in accordance with the current methods in place at Drayton as approved under PA 06_0202 and the management requirements of the SHECMS. The SHECMS will be modified to ensure consistency with the Modification, as required.

Following the completion of mining activities, the Modification extension area will be incorporated into the existing rehabilitation and conceptual final landform schedules developed for the site as presented in Figure 24 of the Drayton EA.

3.2 MODIFICATION OFFSET AREA

To provide an offset for the ecological impacts predicted for the Modification (see Section **7.3**) which includes the removal of native woodland vegetation, Drayton proposes to establish an additional offset area of 12 ha (the Modification offset area). This represents a 2:1 offset ratio that will complement the proposed offset area of 88 ha in the south-west of Drayton near Saddlers Creek established for the Drayton Extension EA and the 114 ha area set aside for the Drayton Wildlife Refuge.

An ecological impact assessment was completed for both the Modification extension and offset areas. This assessment is summarised in **Section 7.3** and provided in full in **Appendix D**.



Legend

- Proposed Modification Area
- EA Boundary
- MAC Sub-lease
- Rail
- Roads
- Creeks
- Haul Roads
- ROM Stockpile Wall & Berm
- Water bodies
- Active Pit
- Unshaped Overburden
- Proposed Rehabilitation

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ANGLO COAL

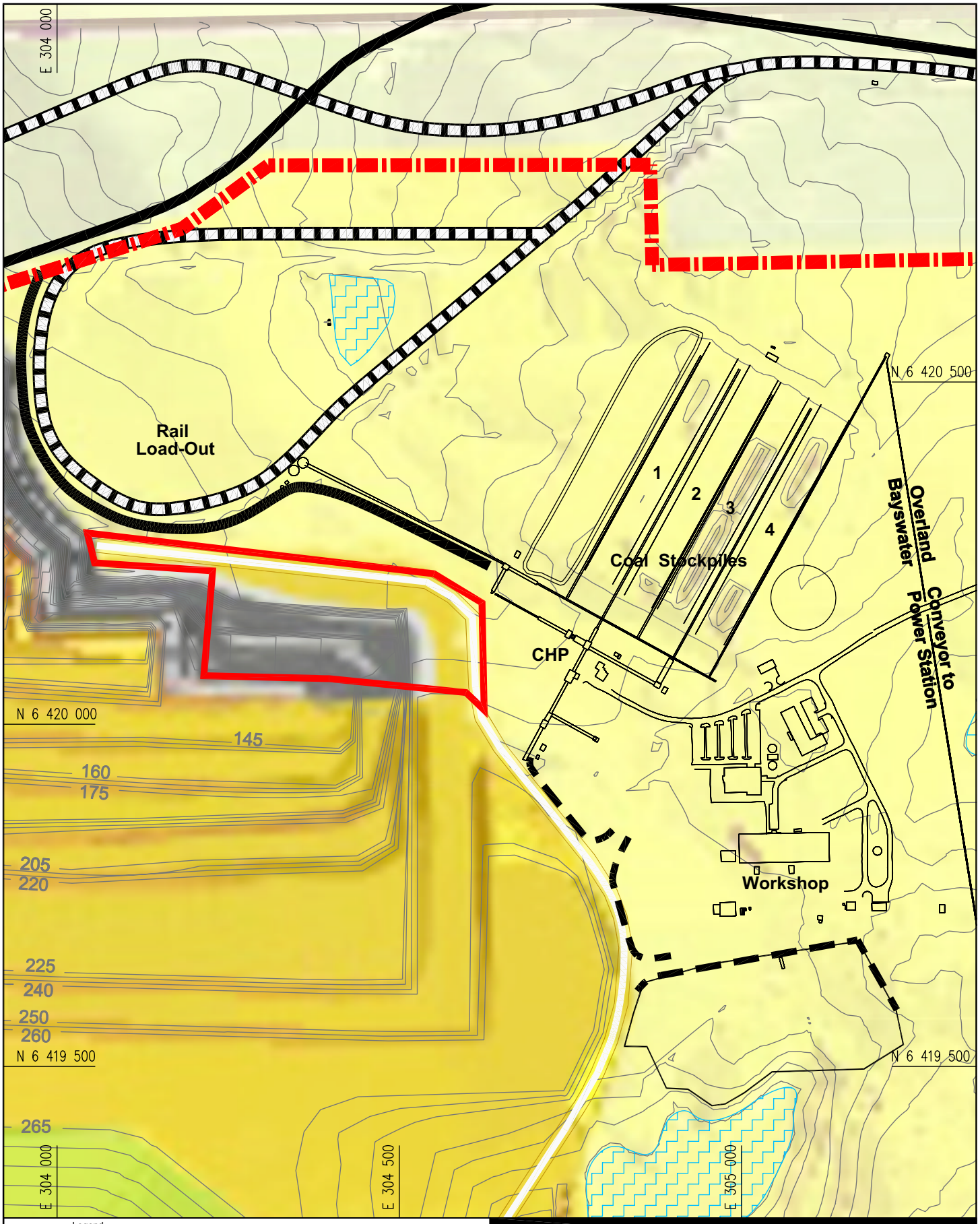
DRAYTON

Co-ordinate System: MGA Zone 56
Source: Pegasus Technical (2007)

DRAYTON MINE MODIFICATION

Proposed Modification

Cad File: 03964E.dwg	Date: 17.07.2009	Drawn: CP	Figure 5A



Legend

- Proposed Modification Area
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- Water bodies
- Active Pit
- Unshaped Overburden
- Proposed Rehabilitation

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Co-ordinate System: MGA Zone 56
Source: Pegasus Technical (2007)

DRAYTON MINE MODIFICATION

Proposed Modification Mine Plan

Cad File: 03965F.dwg	Date: 16.07.2009	Drawn: CP	Figure 5B

4.0 REGULATORY FRAMEWORK

This section of the EA describes the regulatory framework relevant to the Modification of PA 06_0202 as sought and provides detail in relation to the legislative considerations relevant to the Modification.

4.1 ENVIRONMENTAL PLANNING & ASSESSMENT ACT 1979

This application seeks to modify PA 06_0202 which was originally granted for the purpose of carrying out surface coal mining activities at Drayton under Part 3A of the EP&A Act.

4.1.1 Section 75W Power to Modify

Section 75W of the EP&A Act provides for the modification of planning approvals issued under Part 3A of the Act as follows:

> *"(2) The proponent may request the Minister to modify the Minister's approval for a project. The Minister's approval for a modification is not required if the project as modified will be consistent with the existing approval under this Part.*
>
> *(3) The request for the Minister's approval is to be lodged with the Director-General. The Director-General may notify the proponent of environmental assessment requirements with respect to the proposed modification that the proponent must comply with before the matter will be considered by the Minister.*
>
> *(4) The Minister may modify the approval (with or without conditions) or disapprove of the modification."*

4.1.2 Approval Process under Section 75W

Due to the above, the determination of this Modification must follow the process as specified under Section 75W of Part 3A of the EP&A Act where the application must be considered as a 'Project Application'. This requires that all procedural aspects of Part 3A in respect of a Project Application apply to this Modification application.

4.1.3 Consistency of the Modification with Objects of the EP&A Act

This EA has been prepared to ensure that this Modification is consistent with the objectives as specified in Section 5 of the EP&A Act.

Section 7.0 of this EA provides (at least): consideration of the management, development and conservation of resources to promote social and economic welfare of the community; the orderly and economic use of the land; and the protection of the environment. Stakeholder involvement for this Modification has been encouraged throughout the preparation of this EA, with a summary of key issues provided in **Section 5.0**.

The key principals of Ecologically Sustainable Development (ESD) have also been considered throughout the EA process and this Modification is consistent with these principles.

4.1.4 Approvals that do not apply

Section 75U of the EP&A Act provides that certain authorisations normally required under various statutes are not required for "*an approved project*" and that the provisions of any Act that prohibit an activity without such an authority do not apply to "*an approved project*".

4.2 RELEVANT PLANNING INSTRUMENTS

Under Section 75J(3) of the EP&A Act, the Minister for Planning "*may (but is not required to) take into account the provisions of the environmental planning instrument that would not (because of Section 75R) apply to the project, if approved*". Further, the Modification sought under this Application is not prohibited by reason of clause 8O of the EP&A Regulation.

The following sections provide a review of the environmental planning instruments that are relevant to this Modification.

4.2.1 Muswellbrook Local Environmental Plan 2009

The *Muswellbrook Local Environmental Plan 2009* (LEP) is the relevant Environmental Planning Instrument (EPI) applying to the Modification. The EA Boundary is located entirely within Muswellbrook LEP zoning 'Zone RU1 – Primary Production' where mining is permissible with Development Consent. Further, as a result of Section 75J(3) of the EP&A Act, the Minister has the authority to grant the Project Approval as sought.

4.2.2 SEPP (Mining, Petroleum & Extractive Industries)

The objectives of *SEPP (Mining Petroleum & Extractive Industries)* (SEPP Mining) are:

> *(a) "…to provide for the proper management and development of mineral, petroleum and extractive material resources for the purpose of promoting the social and economic welfare of the State, and*
>
> *(b) to facilitate the orderly and economic use and development of land containing mineral, petroleum and extractive material resources, and*
>
> *(c) to establish appropriate planning controls to encourage ecologically sustainable development through the environmental assessment, and sustainable management, of development of mineral, petroleum and extractive material resources".*

As stated above, the land for which this Modification is sought is zoned as RU1 – Primary Production under the Muswellbrook LEP. In accordance with clause 7 of SEPP (Mining), the carrying out of development for the purpose of mining as a use is permissible with development consent on these lands.

This Modification as sought will meet the objectives of SEPP Mining.

5.0 STAKEHOLDER CONSULTATION

A relevant consultation program was undertaken with the aim of identifying stakeholder issues in relation to the Modification and ensuring that these issues were addressed as part of the EA process.

5.1 REGULATORY CONSULTATION

During the preparation of this EA, Drayton have consulted with DoP and the Department of Environment and Climate Change (DECC) with the aim of identifying and responding to specific issues and developing appropriate mitigation strategies to manage impacts associated with the various components of the Modification. During this process, written correspondence from DoP indicated that Environmental Assessment Requirements would not be issued for this Modification (see **Appendix A**).

Drayton will continue to consult with regulators through their environmental management and reporting processes, in accordance with the requirements of PA 06_0202. This includes regular contact with regulators and the preparation of the Drayton Annual Environmental Management Report (AEMR) which provides detailed information on environmental performance.

5.2 COMMUNITY CONSULTATION

Notification of the Modification is being provided to Drayton's near neighbours shown on **Figure 4** via the distribution of a brief letter outlining the Modification and providing relevant contact details to discuss the Modification further. Notification of the Modification was also provided to Drayton's Community Consultative Committee (CCC).

Drayton also maintains a number of formal and informal methods for community consultation to provide ongoing updates on environmental and operational performance. Consultation with the local community is generally undertaken through:

- Quarterly meetings of Drayton's CCC;
- The Drayton AEMR document (discussed with the CCC and released publicly) and community newsletters;
- Presenting environmental data, reports and CCC meeting minutes on the Drayton website;
- A 24-hour hotline for all environmental enquiries; and
- Drayton involvement in and support of a variety of community-based events.

Drayton will continue to engage with all relevant stakeholders on the Modification and Drayton Mine's operations in general.

6.0 RISK ASSESSMENT

A preliminary Environmental Risk Assessment (ERA) was undertaken for the Modification by Hansen Bailey to identify the potential environmental issues.

The primary purpose of the ERA process was to prioritise and focus the environmental assessments that would be required for the Modification in addition to those studies completed for the Drayton EA. Each of the environmental issues was addressed to an extent corresponding to their predicted risk probabilities and potential consequences, with associated management and mitigation options developed, as required. This ERA was subjected to further revision following the stakeholder consultation process and the identification of specific environmental issues.

The key risks identified with the Modification were analysed in accordance with the ACA risk matrix, based on probability and potential consequences. Each potential environmental issue was ranked as either being high, medium, low or very low risk to the environment. The risk rankings were then evaluated and prioritised based on individual risk rankings and findings of the stakeholder consultation program.

The environmental issues considered for the Modification and their respective environmental impact risk rankings are presented in **Table 2** and below in **Section 7.0**.

Table 2
Environmental Impact Risk Rankings

High Risk	Medium Risk	Low Risk
Air Quality & Greenhouse Gas	Groundwater	Traffic & Transport
Noise & Blasting	Surface Water	Waste
Ecology	Rehabilitation & Final Landform	Visual
	Spontaneous Combustion	Socio-Economics
	Soils & Land Capability	Aboriginal Archaeology
		Aboriginal Cultural Heritage
		Non-Aboriginal Heritage

7.0 IMPACTS, MANAGEMENT & MITIGATION

This section of the document provides detail on the potential environmental impacts identified in relation to the Modification and measures for their management and mitigation. The issues considered for the Modification and provided in this section include those assessed for the Drayton EA.

7.1 AIR QUALITY & GREENHOUSE GAS

An air quality impact review was undertaken for the Modification by PAE Holmes (formerly Holmes Air Sciences) (2009) and is included in **Appendix B**.

The assessment reviewed the meteorological conditions in the local area and compared the locations of dust generating activities for the Modification with the locations of equivalent dust sources in Years 1, 5 and 10 considered in the Drayton EA. An assessment of air quality impacts for the Modification was then undertaken for Year 10 of the Drayton EA as this is the most relevant year for assessing the effects of mining in the extension area. A comparison of the areas impacted by the Modification was then undertaken with that approved in the Drayton EA.

An analysis of meteorological data was undertaken for the Drayton EA, with annual and seasonal winds roses prepared from the available hourly meteorological data. The analysis found that over the year, winds are predominantly aligned along a northwest-southeast direction, with winds in summer and autumn being mostly from the southeast. In winter and spring, winds are more frequently from the northwest although southeast winds are still a significant feature in the wind roses. The meteorological analysis indicates that, given the prevailing winds, the Modification extension area is favourably located in relation to the nearby residences. Little of the dust liberated while working this area would be transported towards the residential area of Antiene.

An assessment of impacts as a result of the Modification was undertaken assuming that mining methods, mining equipment and the rate of coal and overburden production in the Modification extension area would be similar to the levels assumed for Year 10 in the Drayton EA. A review of the modelling results for the Modification shows that there would be no predicted exceedances of the DECC's assessment criteria in Year 10 at the nearby privately owned residences as a result of extending mining into Modification extension area.

As the Modification is not proposing to increase the approved maximum ROM coal production at Drayton Mine from 8 Mtpa, there will be no additional greenhouse gases liberated in any one year beyond those approved under PA 06_0202.

Drayton will continue to manage air quality and greenhouse gas emissions in accordance with the SHECMS, approved Air Quality Monitoring Program and Greenhouse and Energy Efficiency Plan. Drayton will continue to monitor and manage spontaneous combustion in accordance with the approved Spontaneous Combustion Management Plan detailed further in **Section 2.3**.

Drayton will continue to review and monitor greenhouse gas emissions, whilst aiming to limit emissions to the minimum practicable level, and maintain the ratio of greenhouse gas emissions per tonne of coal produced as low as practically possible.

ACA is committed to reducing its greenhouse gas emissions and is an active contributor to research programs to develop clean coal technologies such as clean coal combustion, the deployment of carbon capture and storage technologies, improved and extensive coal gasification and the production of liquid fuels and chemicals (Anglo American, 2005).

7.2 NOISE & BLASTING

A noise and blasting impact review was undertaken for the Modification by Bridges Acoustics (2009) and is included in **Appendix C**. This review considered all environmental noise issues associated with the Modification, and was based on the following data:

- The currently approved operation as assessed in the Drayton EA;
- Plans of the approved mining disturbance area approved for the Drayton EA and the proposed disturbance area, including a terrain file in Autocad format showing the mine plan for the Modification as shown in **Figure 5A**; and
- A description of the proposed Modification in accordance with **Section 3.0** of this EA.

The nearest privately owned receivers to the Modification extension area were assessed to determine the level of noise impacts likely to be experienced at surrounding locations, as compared to those currently approved. These receivers, identified as receiver 61 and 72 (shown on **Figure 4**), are located at respective distances of approximately 1,600 m and 1,780 m from the Modification extension area.

Assuming no changes in acoustic shielding, topographic or atmospheric effects outlined in the Drayton EA and that all equipment operates at the most northerly point of the Modification extension area, the Modification will result in the following:

- A maximum increase of approximately 0.6 $LA_{eq,15min}$ at receiver 72, which is subject to existing acquisition upon request by Drayton; and
- A decrease in the range of 0.8 – 1.4 $LA_{eq,15min}$ at receiver 61 when compared to the worst case location within the approved mining disturbance area.

No significant additional noise impacts are therefore predicted as part of the Modification. **Appendix C** provides a detailed table of predicted noise levels for the Modification in comparison to the predicted noise levels approved as part of the Drayton EA. Drayton will continue to manage its operations (including the Modification) to meet the currently approved Project-specific noise criteria listed in PA 06_0202.

The blasting of overburden material and coal required for the Modification extension area will continue to be conducted as approved under the Drayton EA. In addition, Drayton currently has a network of blast monitors in place within the Antiene residential area north east of the EA Boundary as shown on **Figure 3**, which is used to provide feedback on ground vibration and overpressure levels for each blast event. This existing monitoring network shall continue to be utilised for the Modification in accordance with the approved Blast Management Plan (Anglo Coal, 2008) to ensure the implementation of appropriate blast designs that will minimise the potential for any exceedances of noise and vibration criteria.

The mining activities proposed for the Modification would therefore produce similar noise levels and blasting impacts to those currently approved under PA 06_0202, provided that the noise management and mitigation measures described in the Drayton EA (also discussed below) continue to be applied.

Drayton will continue to manage noise and blasting impacts in accordance with the SHECMS, approved Blast Monitoring program, draft Noise Monitoring Program and mitigation measures outlined in the Drayton EA, including:

- One loading unit (excavator or front end loader) will work in the North Pit during the evening or night, primarily to minimise exposed truck movements associated with overburden or coal haulage from the North Pit;
- The North and East Pit overburden trucks will dump in shielded locations during the evening and night;
- The North Pit pre-strip haul roads will be shielded by the pit walls or a berm in the direction of receivers, at least during the evening and night (once the existing northern ring road wall is removed);
- Loading units within the North Pit pre-strip area will be located in a shielded area below the natural surface during the evening and night (once the existing northern ring road wall is removed);
- The coal haul road from the South Pit will be aligned consistent with the mine plans presented in the Drayton EA to the lowest possible elevation, with minimal long straight sections of road directly in line with a receiver, and effective shielding with earth berms along the sides of the road, where practical;
- The new ROM coal stockpile south of the workshop will have a 5 m wall on the northern side and return along part of the eastern and western sides to minimise noise from the loader and trucks working on the stockpile;
- A 4 m berm or wall will be constructed along the eastern side of the coal haul road from the relocated ROM coal stockpile to the existing ROM Hopper wall, including returns alongside roads to minimise the effect of gaps in the barrier;
- A sound power limit no greater than 103 dBA will be applied to each of the three new reclaimers and one raw coal stacker;
- Steel sheeting being installed on the northern face of the secondary crusher building after removal of the rotary breaker and installation of the new screen and crusher; and
- Upgraded exhaust mufflers (to achieve a Sound Power Level of 118 dBL) being fitted to some overburden and all coal haulage trucks.

Drayton will continue to notify residents of pending blasting events as requested. Drayton will also continue to plan blasting activities in liaison with MAC to minimise cumulative impacts on their neighbours.

7.3 ECOLOGY

An ecological assessment of the Modification was undertaken by Cumberland Ecology (2009) and is included in **Appendix D**. This assessment included:

- A review of the baseline ecological information that exists for the proposed Modification and offset areas as presented in the Drayton EA;
- Database analysis of both Commonwealth and State listed threatened flora and fauna species in the local area; and
- A site inspection by Cumberland Ecology in May 2009, including both flora and fauna investigations, to confirm the current condition of these two proposed areas.

No species listed by the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) were assessed as being likely to make significant use of the Modification extension area and the vegetation of this area does not conform to any threatened listing under the EPBC Act.

While the Modification extension area does contain an area of Hunter Lowland Redgum Forest (HLRF), listed as an Endangered Ecological Community (EEC) under the NSW *Threatened Species Conservation Act 1995* (TSC Act), this community has been fragmented by existing roads and mining disturbance and is in a degraded condition. It has been significantly invaded by weeds in parts of the Modification extension area and is also located close to the Drayton Rail Load-Out conveyor belt (see **Figure 5B**) and is therefore exposed to noise associated with this infrastructure and surrounding roads.

The ecological assessment determined that the proposed Modification extension area consisted of the following:

- 1.9 ha of degraded Hunter Lowland Redgum Forest (HLRF);
- 2.1 ha of Grey Box Forest Woodland; and
- 3.5 ha of three-awn Grass Grassland for the remainder of the area, which provides habitat only for common grazing species such as the Eastern Grey Kangaroo (*Macropus giganteus*).

The nine fauna species listed as threatened under the TSC Act that were assessed to have the potential to utilise the Modification extension area will benefit from the establishment of the offset area and its ongoing conservation management, which will be completed in accordance with the SHECMS and the commitments made in the Drayton EA. The threatened fauna recorded in the locality include four bird species, four bat species and one terrestrial mammal species, all of which are highly mobile and are not dependent on specific areas of habitat. Specifically, these species include the:

- Speckled Warbler (*Pyrrholaemus sagittatus*);
- Brown Treecreeper (*Climacteris picumnus*);
- Diamond Firetail (*Stagonopleura guttata*);
- Grey-crowned Babbler (eastern subspecies) (*Pomatostomus temporalis temporalis*);
- Yellow-bellied Sheathtail-bat (*Saccolaimus flaviventris*);
- Eastern Freetail-bat (*Mormopterus norfolkensis*);
- Eastern Bentwing-bat (*Miniopterus schreibersii oceanensis*);
- Large-footed Myotis (*Myotis adversus*); and
- Squirrel Glider (*Petaurus norfolcensis*).

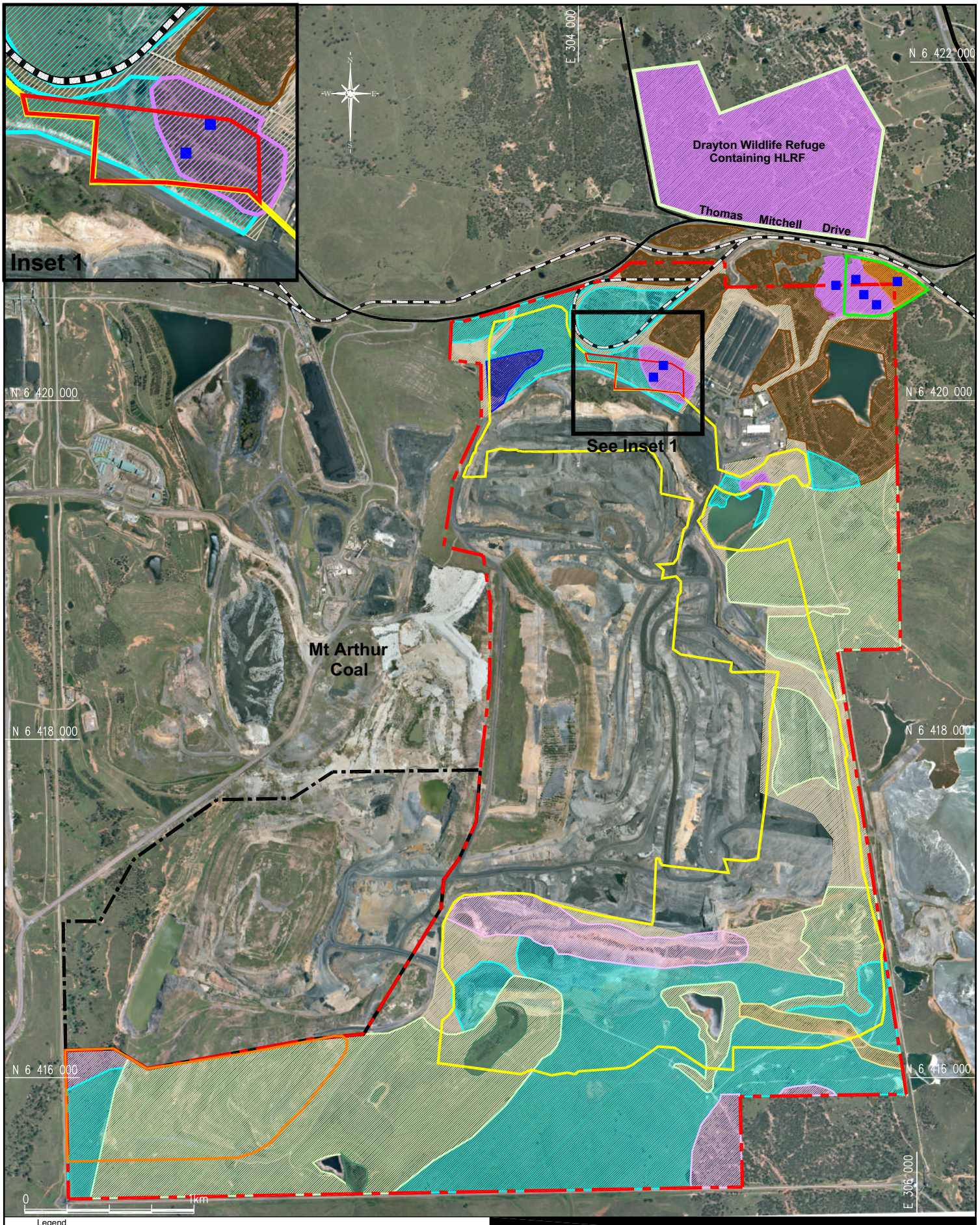
Including the proposed offset areas and existing native vegetation, there are large areas of habitat remaining in the locality for the fauna species likely to utilise the Modification extension area. The removal of a small area of degraded vegetation for the Modification is not anticipated to negatively affect these species.

To offset the removal of the HLRF fragment within the Modification extension area, a 12 ha area of vegetation adjacent to the Drayton Wildlife Refuge shall be reserved as a specific offset, exceeding a 2:1 offset ratio for the 4.0 ha of woodland that is proposed to be removed.

The offset area for the Modification contains HLRF which is of significantly higher quality than that which will be disturbed by the additional mining operations. Further, an area of 88 ha to the southwest of the Drayton Wildlife Refuge that is being protected for conservation as a consequence of a commitment in the Drayton EA also contains areas of high quality HLRF and other related forest and woodland types. This area will also assist in ensuring the long term sustainability of the HLRF.

Drayton will prepare an ecological offset strategy prior to the commencement of mining disturbance in the Modification extension area. This document will describe the establishment and management of the Modification offset area as shown in **Figure 6**. It is anticipated that the Modification offset area shall be incorporated into and managed in accordance with the existing Drayton Wildlife Refuge conservation area. The areas proposed to be conserved and managed as part of the Drayton Wildlife Refuge are shown in **Figure 7**.

Drayton will continue to manage flora and fauna in accordance with the SHECMS and approved Flora and Fauna Management Plan.



Legend

- Proposed Modification Area
- EA Boundary
- MAC Sub-lease
- Approved Mining Disturbance Footprint
- Southern Offset Area
- Modification Offset Area
- Flora Quadrat 2009
- Central Hunter Box-Ironbark Woodland
- Rehabilitation Area (Rhodes Grass-Couch-Kikuyu Open Grassland)
- Revegetation Area (Yellow Box & Grey Gum Woodland)
- Revegetation Area (Acacias)
- Spotted Gum - Grey Box Open Forest & Woodland
- Forest Red Gum Open Forest & Woodland (HLRF)
- Three - Awned Grass Open Grassland
- Spiky Rush - Kikuyu Mixed Sedgeland - Grassland
- Narrow Leaved Ironbark Woodland
- Mining Disturbance

Hansen Bailey

ANGLO COAL

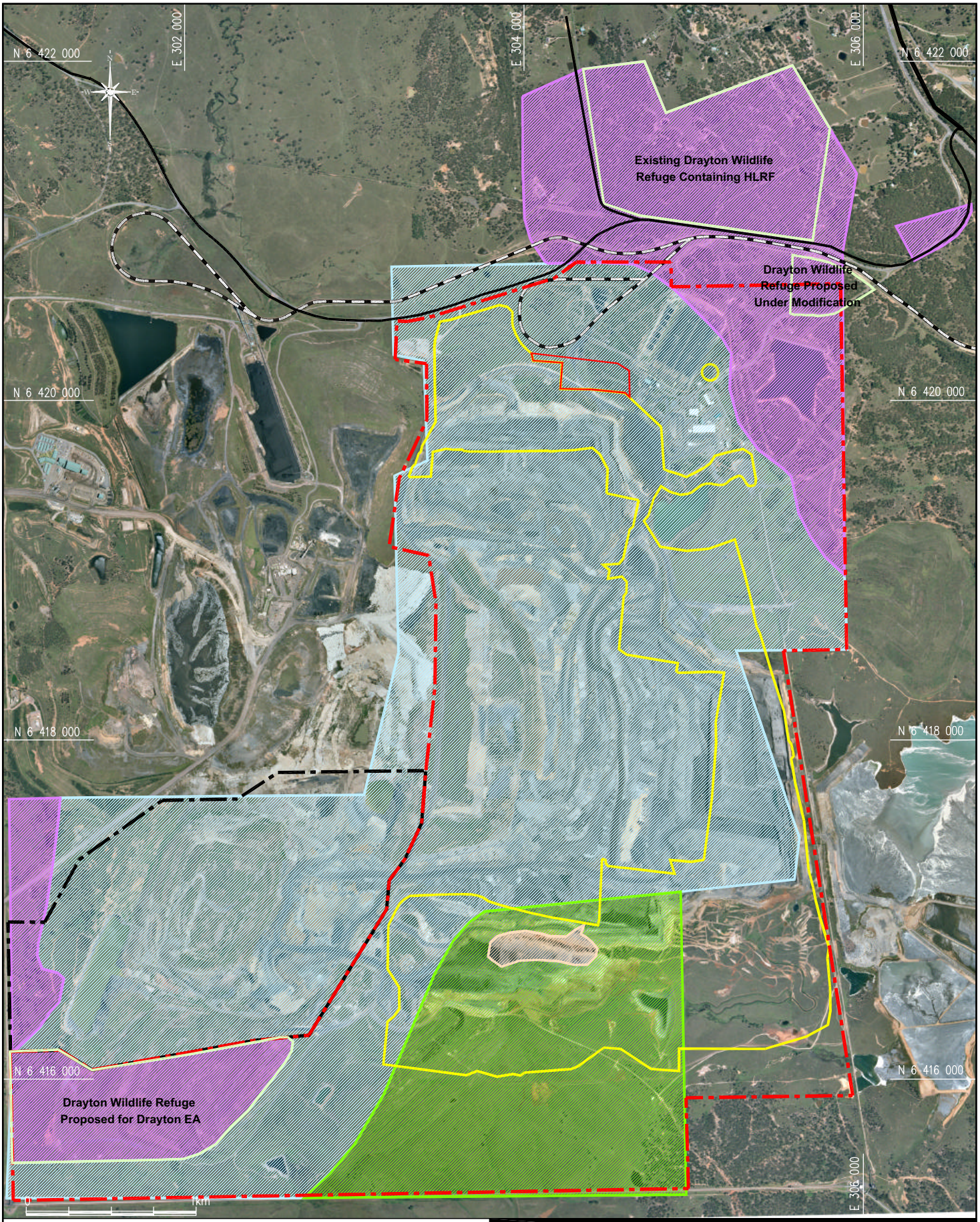
DRAYTON

Co-ordinate System: MGA Zone 56 Aerial Date: Dec 2005
Source: Dames and Moore (1980)

DRAYTON MINE MODIFICATION

Vegetation Communities

Cad File: 03966E.dwg	Date:15.07.2007	Drawn:CP	Figure 6



Legend

- Proposed Modification Area
- EA Boundary
- MAC Sub-lease
- Project Mining Area
- Mining Zone
- Natural Zone
- Erosion Control / Revegetation Zone
- Grazing Zone
- Drayton Wildlife Refuge Conservation Areas

Hansen Bailey

ANGLO COAL

DRAYTON

Co-ordinate System: MGA Zone 56 Aerial Date: Dec 2005
Source: Drayton Coal Wildlife Refuge Plan (1986)

DRAYTON MINE MODIFICATION

Proposed Wildlife Refuge Zonings

Cad File: 03974D.dwg	Date: 15.07.2009	Drawn:CP	Figure 7

7.4 GROUNDWATER

The groundwater impact assessment completed for the Drayton EA (AGE, 2006) was reviewed for the Modification to determine the potential for additional groundwater impacts and whether any additional management measures would be required.

The extension of mining operations and the revision to the conceptual final landform proposed for the Modification will not result in any significant impacts to the groundwater systems surrounding Drayton in addition to those currently approved under PA 06_0202.

The existing groundwater monitoring network in place at Drayton as displayed in **Figure 3** would not be impacted by the extension to mining operations proposed for the Modification. Groundwater monitoring will continue to be undertaken at Drayton in a manner consistent with the management commitments of the SHECMS and as required by the Drayton Water Management Plan.

In response to the Statement of Commitments within the Drayton EA, all necessary water access licences and incidental groundwater make approvals were granted by the Department of Water & Energy in 2008. As no further groundwater make is anticipated as a result of the Modification, the current water access approvals will not be required to be modified.

7.5 REHABILITATION AND FINAL LANDFORM

In accordance with current practice at Drayton and the SHECMS, the rehabilitation of land disturbance associated with the Modification will be undertaken progressively as an integral component mining operations. Progressive rehabilitation is scheduled to take place as soon as practical after mining disturbance is completed. The Modification extension area will be integrated into the conceptual final landform developed for the site and presented in the Drayton EA. This will involve the integration of the Modification extension area into the approved final void for the Drayton North Pit, resulting in a sustainable landscape consistent with the Department of Mineral Resources Synoptic Plan (1999) that aims to link existing woodland with rehabilitation areas to provide corridors for the movement of flora and fauna.

7.6 SURFACE WATER

The existing water management system in place at Drayton is based on the following key water management strategies:

- The diversion of clean surface water run-off away from areas disturbed by mining activities;
- Collection of surface water run-off from areas disturbed by mining activities in catch drains and sediment traps for control of suspended sediment prior to run-off from site or reuse on-site;
- Collection of run-off from industrial areas (such as the Workshop) in catch drains, directing this run-off to the Oil Pollution Control Dam for treatment, and return to storage dams for reuse as mine water supply; and
- Transfer of open cut pit water to storage dams for reuse as a mine water supply.

The sources of water supply and the mine water demand will remain substantially unchanged as a result of the mining of the Modification extension area.

Additional water management controls and infrastructure such as sediment traps and catch drains will be established for the Modification extension area as required for the additional mining disturbance. These additional mitigation measures will be developed in accordance with the SHECMS and the existing Site Water Management Plan in place at Drayton to ensure that runoff is directed into the existing water management system.

7.7 SPONTANEOUS COMBUSTION

The mining of the Modification extension area will be carried out in a manner consistent with current approvals and methods, targeting five seams within the Greta coal measures, which are known to be susceptible to spontaneous combustion.

Drayton has implemented a range of measures for the management of spontaneous combustion on site in accordance with the SHECMS and a Spontaneous Combustion Management Plan (Anglo Coal, 2009) developed in consultation with Muswellbrook Shire Council, Department of Primary Industries and Department of Environment & Climate Change. These techniques for the management of spontaneous combustion will continue to be used for the Modification.

In accordance with Drayton EPL 1323 and regulatory reporting requirements under PA 06_0202, Drayton will continue to provide regular reports to DECC on the extent of spontaneous combustion and on the methods being implemented to reduce occurrences of spontaneous combustion and their respective effectiveness.

7.8 SOILS & LAND CAPABILITY

The soil, land capability and agricultural suitability characteristics of the Modification extension area were determined through the review of previous assessments undertaken at the site, most recently for the Drayton EA (GSSE, 2006).

This assessment determined that the Modification extension area consists predominantly of yellow duplex soils, with small areas of established rehabilitation located along the southern boundary. The Drayton EA described the yellow duplex soil unit as follows:

> *"The yellow duplex soil unit consists mainly of yellow solodics and is commonly associated with the Brays Hill and Liddell soil landscape units (Kovac & Lawrie, 1991). Yellow duplex soils occur throughout the North Pit, where the topsoil is structurally stable and typically 14 cm to 25 cm deep and generally dark brown in colour. This topsoil is suitable for stripping and for use in rehabilitation. The subsoil ranges in depth up to 90 cm and contains fine texture (high clay content) and massive structure. This subsoil layer is not suitable for stripping or use in rehabilitation* (GSSE, 2006)*."*

The land capability of the Modification extension area has previously been assessed in accordance with the Department of Water and Energy rural land capability assessment system, which classifies land based on soil erosion hazard and versatility of use. This land has been classified as Class VI, which is deemed as suitable only for grazing activities, with land to be managed in order to ensure adequate land cover is maintained.

Due to the yellow duplex soils characteristics common to the Modification extension area, the agricultural land suitability has previously been assessed as Class 4. These lands are therefore classified as being appropriate for usage in low intensity grazing activities, but not for cultivation.

Drayton will develop the land resources of the Modification extension area in a manner consistent with their existing management commitments and the relevant documents under the SHECMS.

7.9 VISUAL

The Drayton EA included the identification of the visual impacts associated with the mine plans approved under PA 06_0202 and the assessment of the cumulative impacts of the operation and surrounding visual setting (Integral, 2006). This assessment was reviewed against the mining operations proposed for the Modification to determine the potential for impacts to surrounding visual receivers in addition to those currently approved at Drayton.

As shown in **Figure 5A**, the Modification represents an extension to the approved mining disturbance area of approximately 120 m toward the closest residential receivers to the north of Drayton. This extension will be undertaken in a manner consistent with the approved mining sequence and will not result in an increase in the height of the landform approved under PA 06_0202. Of the four representative viewing locations assessed for the Drayton EA, two were reassessed to determine if any additional visual impacts would result for the Modification due to the mine plan proposed, being:

- Thomas Mitchell Drive; and
- Hassall Road.

The Drayton EA determined that the Thomas Mitchell Drive viewing location (representative of the north-west and south-west sectors surrounding the site) would be unlikely to experience visual impacts until Year 5 of the approved mine plan (i.e. 2012), with visibility being generally limited to foreground views to users of the road. During the period from Year 5 to Year 10, it was predicted that the level of visual impacts created by views to the emplacement areas will increase until the development of the final landform and initial rehabilitation is completed, whereupon the impacts will be reduced to low. The minor extension in the disturbance footprint proposed for the Modification is not anticipated to result in any significant increases to visual impact levels for receivers in this viewing location.

The Hassall Road viewing location was selected as being representative of the rural residential areas to the north and north-east of Drayton including those along Hassall Road, Balmoral Road and Pamger Drive. Consistent with the Drayton EA, dense vegetation and undulating topography will continue to screen the majority of the receivers in these areas from the Modification extension area and the site as a whole.

All visual and lighting impacts created by Drayton will continue to be managed in accordance with the SHECMS.

7.10 ABORIGINAL ARCHAEOLOGY & CULTURAL HERITAGE

The Aboriginal archaeological impact assessment for the Drayton EA (Hamm, 2006) identified a number of sites within and surrounding the EA Boundary. This report was reviewed as part of this EA for the Modification to determine the extent of any Aboriginal sites located within the proposed Modification extension area.

As shown on **Figure 8**, the Modification extension area does not contain any sites of Aboriginal archaeology. Five known Aboriginal sites are located within the proposed Modification offset area. The current status of each of the sites located within the Modification offset area and their management status included in the approved Drayton *Aboriginal Cultural Heritage Management Plan* (2008) is presented in **Table 3**.

In accordance with their current management status, each of the Aboriginal archaeological sites located within the Modification offset area will continue to be conserved. Ongoing conservation works consistent with the Drayton *Aboriginal Cultural Heritage Management Plan* (2008) will be continued, with appropriate fencing and signage to be maintained for these sites to reduce any potential for inadvertent impacts.

Table 3
Aboriginal Archaeological Sites in Modification Offset Area

Drayton Site ID	DECC Site ID	Site Type	Artefact Density	Management Status
R5	37-2-2342	Isolated Find	1	Conservation
R6	37-2-2343	Artefact Scatter	3	Conservation
R8	37-2-2345	Isolated Find	1	Conservation
R9	37-2-2346	Isolated Find	1	Conservation
R10	37-2-2347	Isolated Find	1	Conservation

Source: Anglo Coal (Drayton Management) Pty Ltd (2008)

7.11 NON-ABORIGINAL HERITAGE

An assessment was undertaken for the Drayton EA to identify any Non-Aboriginal heritage items remaining within the EA Boundary and to determine the potential for impacts to these sites due to that Project (Veritas Archaeology & History Service, 2005).

A review of this assessment found that of the Non-Aboriginal heritage sites previously identified at Drayton, none are located within, or in the vicinity of areas to be disturbed for the Modification (see **Figure 8**). As such, no additional management or mitigation measures will be required.

7.12 TRAFFIC & TRANSPORT

As stated in **Section 3.0**, site operations for the Modification shall be undertaken generally in accordance with those described in the Drayton EA and approved under PA 06_0202, with no increase in road or rail traffic movements sought. Therefore, no impacts to the transport networks surrounding the EA Boundary will result from the Modification.

7.13 SOCIO-ECONOMIC ASSESSMENT

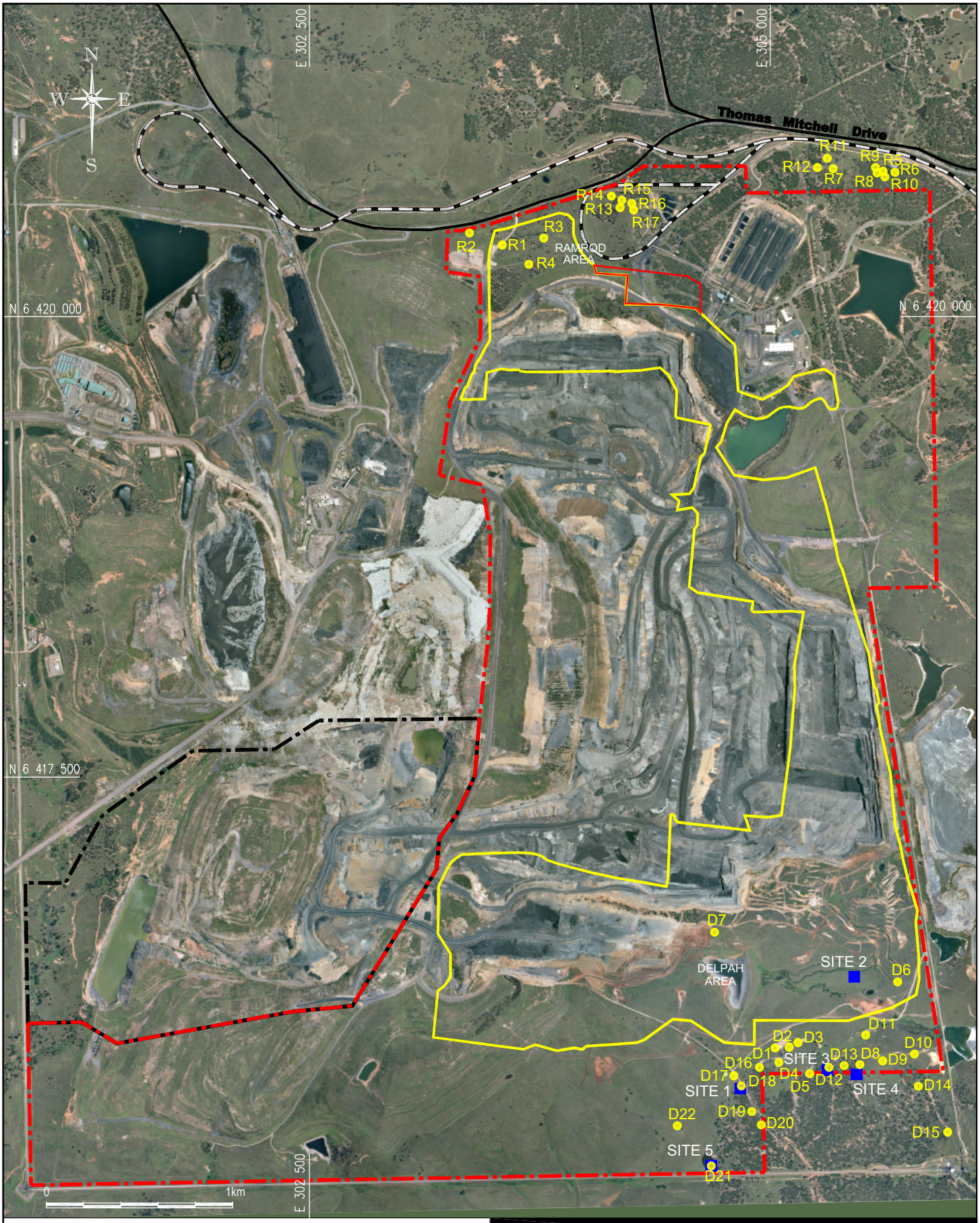
While the primary requirement of this Modification relates to the provision of additional flexibilities for the development of haul road infrastructure, the minor extension to mining operations within the Modification extension area will result in Drayton accessing an additional resource of approximately 1 Mt of product coal which would otherwise be sterilised. The extraction of this resource will result in the generation of approximately $80 million in additional royalties for the NSW State Government.

The Modification will not result any increase in total coal extraction rates, life of mine, or the level of employees in addition to those approved under PA 06_0202.

7.14 WASTE

Drayton has a comprehensive Waste Management System (WMS) in place which addresses all issues relevant to the management of waste from its operations.

The current waste management measures in place at Drayton will continue to be utilised as no additional demands on the WMS will be created by the Modification.



Legend

- EA Boundary
- MAC Sub-lease
- Proposed Modification Area
- Approved Mining Disturbance Footprint
- European Heritage Site
- Aboriginal Archaeology Site

Hansen Bailey

ANGLO COAL

DRAYTON

Co-ordinate System: MGA Zone 56 Aerial: May 2009

Source: ARAS (2006) and Veritas Archaeology and History Service (2006)

DRAYTON MINE MODIFICATION

Heritage Sites

Cad File: 03967E.dwg	Date: 15.07.2009	Drawn: CP	Figure 8

8.0 STATEMENT OF COMMITMENTS

Specific management commitments to be implemented for the Modification in addition to those already in place for the Drayton EA are listed in **Table 4**.

Table 4
Statement of Commitments

Ref	Description	EA Section
1.	The existing SHECMS will continue to be used for the management, mitigation and monitoring of environmental issues at Drayton.	**3.1**
2.	The extension to the mining disturbance area for the Modification will be 7.5 ha, consisting of haul road infrastructure and active mining areas.	**3.1**
3.	An ecological offset area of 12 ha will be added to the existing Drayton Wildlife Refuge for the Modification as shown in **Figure 6**. This offset area will be delineated and managed in accordance with the existing Drayton Wildlife Refuge to ensure security and maintain the conservation values of this area.	**7.3**
4.	An assessment of the Modification offset area will be incorporated in the Drayton Offset Strategy document prior to the extension of the mining disturbance footprint.	**7.3**
5.	Drayton will continue to manage its operations (including the Modification) to meet the currently approved Project-specific noise criteria listed in PA 06_0202.	**7.2**
6.	Drayton will continue to manage the Aboriginal archaeological heritage sites located within the Modification offset area in accordance with the approved *Aboriginal Cultural Heritage Management Plan* (2008).	**7.10**

9.0 MODIFICATION JUSTIFICATION

The Modification as sought relates to a minor northern extension of the approved Drayton mining disturbance footprint commencing from late 2009. This extension of the mining disturbance footprint will be undertaken generally in accordance with the approved open cut mining activities at Drayton. An additional ecological offset area will also be established by for the Modification and integrated into the existing Drayton Wildlife Refuge.

The environmental assessment and review process conducted for this Modification have confirmed that the impacts from the activities described in this EA are minor in nature and are consistent with those already approved by the Project Approval 06_0202 and as described in the Drayton EA. The Modification will be undertaken in an area suitable for mining activities located in an area of disturbed and fragmented vegetation adjacent to existing Drayton mine infrastructure and mining operations.

The Modification as sought will therefore result in the creation of added flexibilities for haul road infrastructure, providing for greater safety and efficiencies in their development. Further, the Modification will allow for the effective and efficient extraction of an identified coal resource in a small area adjacent to Drayton's approved mining disturbance footprint that would otherwise be sterilised. The location of the minor extension area will allow Drayton to effectively integrate the Modification with the conceptual rehabilitation and final landform design for the site, while the ecological offset area to be added to the Drayton Wildlife Refuge will ensure the ongoing biodiversity and sustainability of the local natural environment.

10.0 ABBREVIATIONS

Abbreviation	Description
ACA	Anglo Coal Australia
CL	Coal Lease
DECC	NSW Department of Environment and Climate Change
DoP	NSW Department of Planning
Drayton EA	Drayton Mine Extension Environmental Assessment (Hansen Bailey, 2007)
EA	Environmental Assessment
EEC	Endangered Ecological Community
EPBC Act	*Environmental Protection and Biodiversity Conservation Act 1999* (Commonwealth)
EPI	Environmental Planning Instrument
EPL	Environmental Protection Licence
EP&A Act	*Environmental Planning and Assessment Act 1979*
ha	hectare
HLRF	Hunter Lowland Redgum Forest
LA_{eq}	The summation of noise over a selected period of time. It is the energy average noise from a source, and is the equivalent continuous sound pressure level over a given period
LEP	Local Environment Plan
ML	Mining Lease
MSC	Muswellbrook Shire Council
Mtpa	Million tonnes per annum
PA	Project Approval
Receiver	Property adjacent the EA Boundary containing a residence
SEPP	State Environmental Planning Policy
SHECMS	Safety, Health, Environment and Community Management System
TSC Act	*Threatened Species Conservation Act 1995*
Tph	Tonnes per hour

11.0 REFERENCES

- Anglo Coal (Drayton Management) Pty Ltd (2008) *Aboriginal Cultural Heritage Management Plan*.
- Anglo Coal (Drayton Management) Pty Ltd (2008) *Blast Management Plan*.
- Anglo Coal (Drayton Management) Pty Ltd (2009) *Spontaneous Combustion Management Plan*.
- Australasian Groundwater & Environmental Consultants Pty Ltd (2006) *Report on Drayton Mine Extension; Groundwater Impact Assessment*, prepared for Hansen Bailey Pty Ltd.
- Bridges Acoustics (2009) *Drayton Mine Section 75W Modification to Development Consent Environmental Noise Review*.
- Cumberland Ecology (2009) *Ecological Assessment of 75W Modification for Drayton Mine*.
- Department of Mineral Resources (1999) *Synoptic Plan: Integrated Landscapes for Coal Mine Rehabilitation in the Hunter Valley of New South Wales*.
- GSSE (2006) *Drayton Mine Extension EA Soil Survey and Land Resource Assessment Report*.
- Hamm, G. (2006) *Aboriginal Archaeology & Cultural Heritage Assessment Report of Drayton Mine Extension; A report to Anglo Coal (Drayton Management) Pty Ltd*.
- Hansen Bailey (2008) *Drayton Mine Extension Environmental Assessment*, Volumes 1-2.
- Integral Landscape Architecture & Visual Planning (2006) *Drayton Mine Extension EA for Anglo Coal (Drayton Management) Pty Ltd, Visual Impact Assessment Study*.
- Kovac, M. and Lawrie, J.M. (1991) *Soils Landscapes of the Singleton 1:250,000 Sheet*, Soil Conservation Service, NSW.
- Veritas Archaeology & History Service (2005) *Drayton Extension Non-Aboriginal Heritage Assessment*.





APPENDIX A

REGULATORY CORRESPONDENCE

Hansen Bailey

ENVIRONMENTAL CONSULTANTS

NSW GOVERNMENT
Department of Planning

Major Project Assessment
Industry & Mining
Phone: (02) 9228 6306
Fax: (02) 9228 6466
Email: belinda.parker@planning.nsw.gov.au
Room 305
23-33 Bridge Street
GPO Box 39
SYDNEY NSW 2001

Ms Pam Simpson
Environment Coordinator
Anglo Coal (Drayton Management) Pty Ltd
Private Mail Bag No. 9
MUSWELLBOOK NSW 2333

Dear Pam

Drayton Coal Mine
Offset Strategy & Proposed Modification

I refer to our meeting with you and Peter Forbes on 23 April 2009.

At the meeting, the Department:

1. Agreed in principle with the proposed offset strategy, which will:
   - enhance and protect the vegetation on a number of sites in the vicinity of the existing Wildlife Refuge;
   - extend the proposed north-south vegetation corridor across the rehabilitated land to the south of the mine and connect to the riparian corridor adjoining Saddlers Creek; and
   - enhance land in the vicinity of the Saddlers Creek riparian corridor.

2. Agreed to give the company until 1 July 2009 to submit the Offset Strategy and draft Landscape Management Plan for the mine.

3. Agreed to accept an application from the company for some minor modifications to the surface infrastructure at the mine without issuing DGRs, as long as the application was accompanied by an Environmental Assessment that included an adequate assessment of the potential impacts of the proposed modifications.

If you have any queries, please contact Belinda Parker on 9228 6306.

Yours sincerely

DKitto 24/4/09

David Kitto
Director
Major Development Assessment





APPENDIX B

AIR QUALITY IMPACT ASSESSMENT

Hansen Bailey
ENVIRONMENTAL CONSULTANTS

1 July 2009

Hansen Bailey Pty Ltd
6/127-129 John Street
SINGLETON NSW 2330

Attention: James Bailey

Re: Review of air quality effects due to modification of mining at Drayton – Section 75W Modification to Mining Operations

Dear James,

1 INTRODUCTION

Anglo Coal (Drayton Management) Pty Limited (Drayton) was granted Project Approval (PA) 06_0202 by the Minister for Planning on 1 February 2008 for the Drayton Mine Extension (Drayton Extension). Drayton is currently preparing a Modification to their PA 06_002 under Section 75W of the *Environmental Planning & Assessment Act 1979*, to extend their operations into an area to the north of the currently approved mining footprint (the Modification).

This letter has been prepared by PAEHolmes to address the air quality issues arising from plans to modify PA 06 002.

2 BACKGROUND

The air quality effects of the Drayton Extension were considered in a report prepared in 2007 (Holmes Air Sciences, 2007). As discussed above, Drayton is now seeking approval to further extend their operations into an area to the north of the approved open cut mine, see **Figure 1**. This will create an additional eight hectares of disturbed land in addition to the area already approved for the Drayton Extension Environmental Assessment (Drayton EA) prepared in 2007. The additional eight hectares of disturbed land will become part of the approved void for the north pit.

The air quality assessment completed for the Drayton EA in 2007 covered the following:

- An extension of mining from 2010 to 2017;
- An extension of the mine footprint to uncover additional coal reserves within the current mining leases;
- An increase in the maximum ROM coal production up to 8 Mtpa;
- An upgrade of the existing stockpile reclamation system and existing coal handling plant (CHP), and;
- Modifications to Drayton's power reticulation and water management systems.

The Drayton EA air quality assessment analysed Drayton's operations for three years - Years 1, 5 and 10. Model predictions of the maximum 24-hour PM_{10}, annual average PM_{10}, annual average TSP and annual average dust (insoluble solids) deposition levels were provided for each of these years for both Drayton considered in isolation and Drayton considered with other sources of dust, i.e. a cumulative assessment.

The Drayton EA assessment identified the area of land that would experience particulate matter concentration and deposition levels above the Department of Environment and Climate Change's (DECC) assessment criteria for PM_{10}, TSP and dust (insoluble solids) deposition.

3 ASSESSMENT

This assessment makes use of information provided in the Drayton EA air quality assessment to show that the area of land affected by the Modification (with respect to air quality) does not expand beyond the area already identified in the Drayton EA. This requires a number of steps including: (1) reviewing the meteorological conditions in the area, (2) comparing the locations of dust generating activities required to mine the new eight hectare Modification Area compared with the locations of equivalent dust sources in Years 1, 5 and 10 considered in the Drayton EA and (3) reviewing the areas identified to be impacted during Years 1, 5 and 10 in the Drayton EA.

It is useful to review the location of the dust generating activities in relation to the dust sensitive areas, which are residences (located generally to the north of the mine), and to consider this with the directions of the prevailing winds. This is done below.

3.1 Meteorology

Figure 2 shows annual and seasonal wind roses for the area prepared from the hourly meteorological data used in the Drayton EA. Over the year, winds are predominantly aligned along a northwest-southeast direction, with winds in summer and autumn being mostly from the southeast. In winter and spring winds are more frequently from the northwest although southeast winds are still a significant feature in the wind roses.

If **Figure 1** is inspected, it can be seen, that for dust to be transported from the proposed Modification Area (marked orange on **Figure 1**), towards any of the residences to the north it would require the wind to be in the 85°-wide sector from 160° clockwise to 245°. Thus winds in the sectors SSE, S, SSW and SW are required to transport dust from the Modification Area to the residences to the north. **Table 1** shows an analysis of the 1996 meteorological data set as used in the Drayton EA assessment. The relevant directions are shown in bold print. The table shows that approximately 9.3% of winds lie in these four sectors over the year. A more detailed analysis of the data confined to the precise sector defined by "160° clockwise to 245°" shows only 456 hours of the 7080 hours of valid data in the 1996 data set were in the direction that would carry dust from the new mining area to the residences. This is 6.4% of hours in the year. If the winds were distributed evenly around the compass it would be expected that 23.6% of winds would be in this sector.

This analysis indicates that, given the prevailing winds, the Modification Area is very favourably located in relation to the nearby residences and very little of the dust liberated while working in this area would be transported towards the residential area of Antiene.

Table 1: Analysis of winds for Drayton area showing fractional occurrence of winds in indicated wind direction and wind speed classes

ALL PASQUILL STABILITY CLASSES

Wind Speed Class (m/s)

WIND SECTOR	0.50 TO 1.50	1.50 TO 3.00	3.00 TO 4.50	4.50 TO 6.00	6.00 TO 7.50	7.50 TO 9.00	9.00 TO 10.50	GREATER THAN 10.50	TOTAL
NNE	0.036864	0.026554	0.001977	0.000424	0.000282	0.000141	0.000000	0.000000	0.066243
NE	0.024294	0.009040	0.000565	0.000141	0.000000	0.000000	0.000000	0.000000	0.034040
ENE	0.012712	0.002966	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.015678
E	0.008757	0.007203	0.001554	0.000424	0.000282	0.000000	0.000000	0.000000	0.018220
ESE	0.010734	0.026695	0.019915	0.015819	0.008192	0.002825	0.000565	0.000141	0.084887
SE	0.010734	0.025424	0.064831	0.073305	0.051977	0.021186	0.004520	0.000847	0.252825
SSE	**0.008475**	**0.007486**	**0.011158**	**0.011582**	**0.006921**	**0.003107**	**0.000424**	**0.000000**	**0.049153**
S	**0.007910**	**0.004661**	**0.000847**	**0.000000**	**0.000424**	**0.000000**	**0.000000**	**0.000000**	**0.013842**
SSW	**0.009887**	**0.002825**	**0.000424**	**0.000282**	**0.000141**	**0.000000**	**0.000141**	**0.000000**	**0.013701**
SW	**0.011158**	**0.003955**	**0.000424**	**0.000282**	**0.000424**	**0.000141**	**0.000000**	**0.000000**	**0.016384**
WSW	0.014407	0.010452	0.002260	0.000989	0.000847	0.000141	0.000141	0.000000	0.029237
W	0.012429	0.015254	0.008051	0.005367	0.004237	0.002684	0.003107	0.001412	0.052542
WNW	0.013701	0.015960	0.016243	0.021751	0.015395	0.011299	0.005367	0.002401	0.102119
NW	0.019915	0.018927	0.021610	0.013701	0.007345	0.002542	0.001130	0.000706	0.085876
NNW	0.022175	0.024153	0.013701	0.006356	0.005367	0.001554	0.000706	0.000424	0.074435
N	0.032627	0.036582	0.013842	0.004944	0.001836	0.000847	0.000141	0.000000	0.090819
CALM									0.000000
TOTAL	0.256780	0.238136	0.177401	0.155367	0.103672	0.046469	0.016243	0.005932	1.000000

MEAN WIND SPEED (m/s) = 3.59
NUMBER OF OBSERVATIONS = 7080

3.2 Comparison of proposed mining in the Modification area with areas covered in previous modelling work

When the original Drayton EA air quality impact report is reviewed, it is easy to see that of the three years modelled, it is Year 10 that is the most relevant year for assessing the effects of mining in the Modification area. **Figure 3** shows the locations of mining equipment as envisaged in Year 10 (see Holmes Air Sciences (2007)) and the predicted annual average PM_{10} concentrations for the same year and equipment deployment. The black numbered dots on the figure denote the locations of dust generating equipment over Year 10. In particular dots numbered 17 to 21 show working positions for the shovel/excavator in the northern pit. In the assessment in the Drayton EA, this scenario (Year 10) showed no exceedances of any of the DECC's assessment criteria at the privately owned residences to the north. This approved scenario envisages mining equipment located further to the north than will be required when the Modification is undertaken.

Assuming that the same mining equipment is used and mining takes place at the same rate (i.e. coal and overburden are generated at the same rate) then a good indication as to the likely effects of dust emissions from the Modification Area can be obtained by sliding the contours and black numbered source location markers to the southeast. To represent the effects when mining is taking place in the Modification Area, the dot marked 18 should be located in the central north of the Modification Area (shown in orange on **Figure 3**). The other dots in that group should retain their same relative position as should the contours. If this is done it can be seen that no residences would experience higher predicted annual average PM_{10} levels than would arise in Year 10. If this is the case for annual average PM_{10} concentrations then it can be concluded that this will also apply to the contours for the other assessment criteria.

4 CONCLUSIONS

This report has assessed the effects on air quality of an extension to the mining area at Drayton Mine. Previous air quality impact assessment work undertaken as part of the Drayton EA examined the effects of mining for three scenarios in Years 1, 5 and 10. A review of meteorological conditions indicates that, given the prevailing winds, the Modification Area is favourably located relative to the nearby Antiene residential area. A review of the modelling results for Year 10 shows that there would be no predicted exceedances of the DECC's assessment criteria at the nearby privately owned residences as a result of the Modification. This conclusion ofcourse assumes that mining methods, mining equipment and the rate of coal and overburden production in the Modification Area are similar to the levels assumed for Year 10.

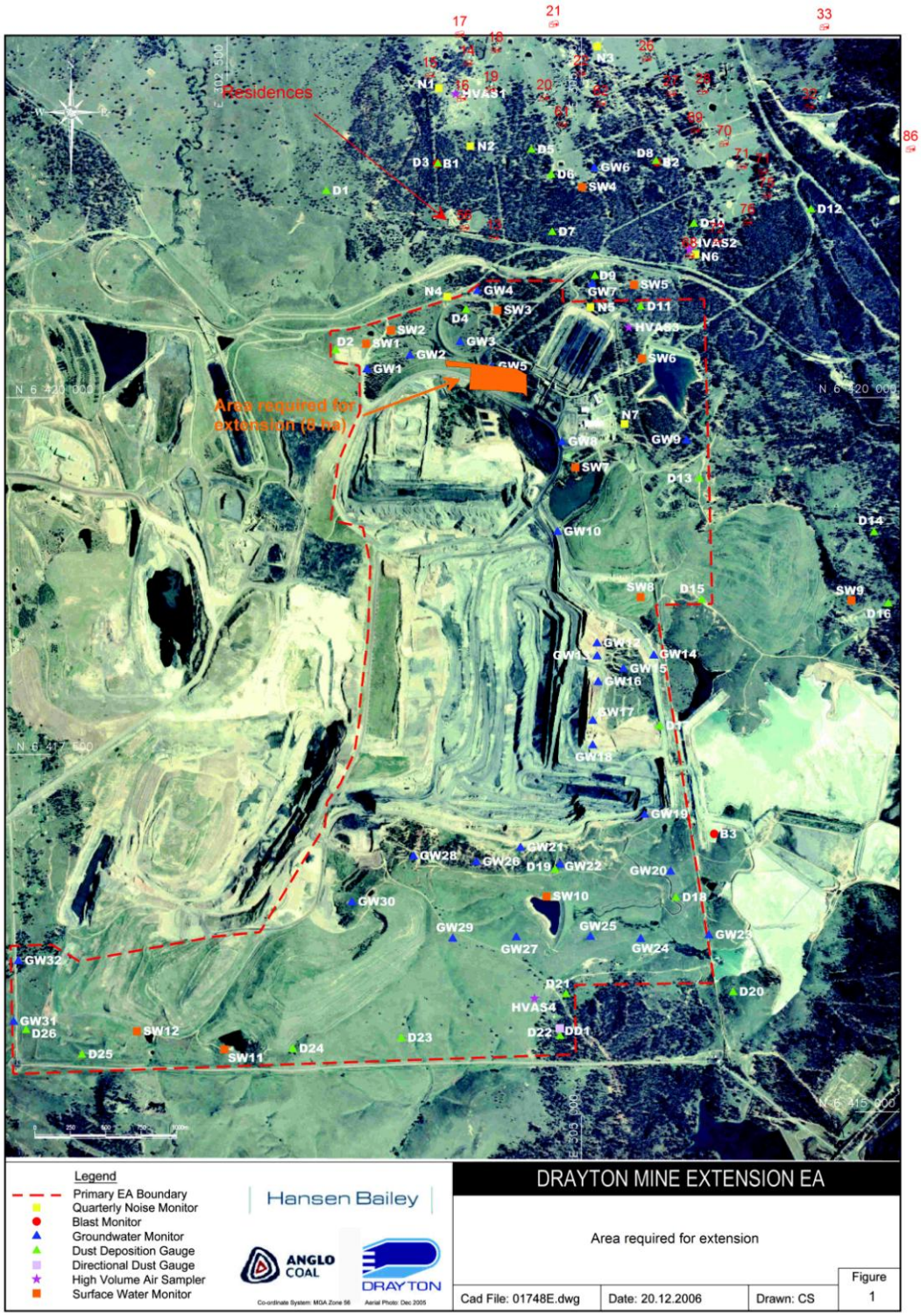
Yours faithfully,
PAEHolmes

Nigel Holmes PhD
Atmospheric Physicist

5 REFERENCES

Holmes Air Sciences (2007)
"Air Quality Impact Assessment: Extension of Drayton Open Cut Mine" Prepared for Hansen Bailey by Holmes Air Sciences, Suite 2B, 14 Glen Street, Eastwood, NSW 2122 (also published as Appendix E to the EA).

Figures


Residences
Area required for extension (8 ha)
N1
N2
N3
N4
N5
N6
N7
N8
N9
B1
B3
D1
D2
D3
D4
D5
D6
D7
D8
D9
D10
D11
D12
D13
D14
D15
D16
D18
D19
D20
D21
D22
D23
D24
D25
D26
GW1
GW2
GW3
GW4
GW5
GW6
GW7
GW8
GW9
GW10
GW11
GW12
GW13
GW14
GW15
GW16
GW17
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GW19
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GW28
GW29
GW30
GW31
GW32
SW1
SW2
SW3
SW4
SW5
SW6
SW7
SW8
SW9
SW10
SW11
SW12
HVAS1
HVAS2
HVAS3
HVAS4
Legend
Primary EA Boundary
Quarterly Noise Monitor
Blast Monitor
Groundwater Monitor
Dust Deposition Gauge
Directional Dust Gauge
High Volume Air Sampler
Surface Water Monitor
Hansen Bailey
ANGLO COAL
DRAYTON
DRAYTON MINE EXTENSION EA
Area required for extension
Cad File: 01748E.dwg
Date: 20.12.2006
Drawn: CS
Figure 1

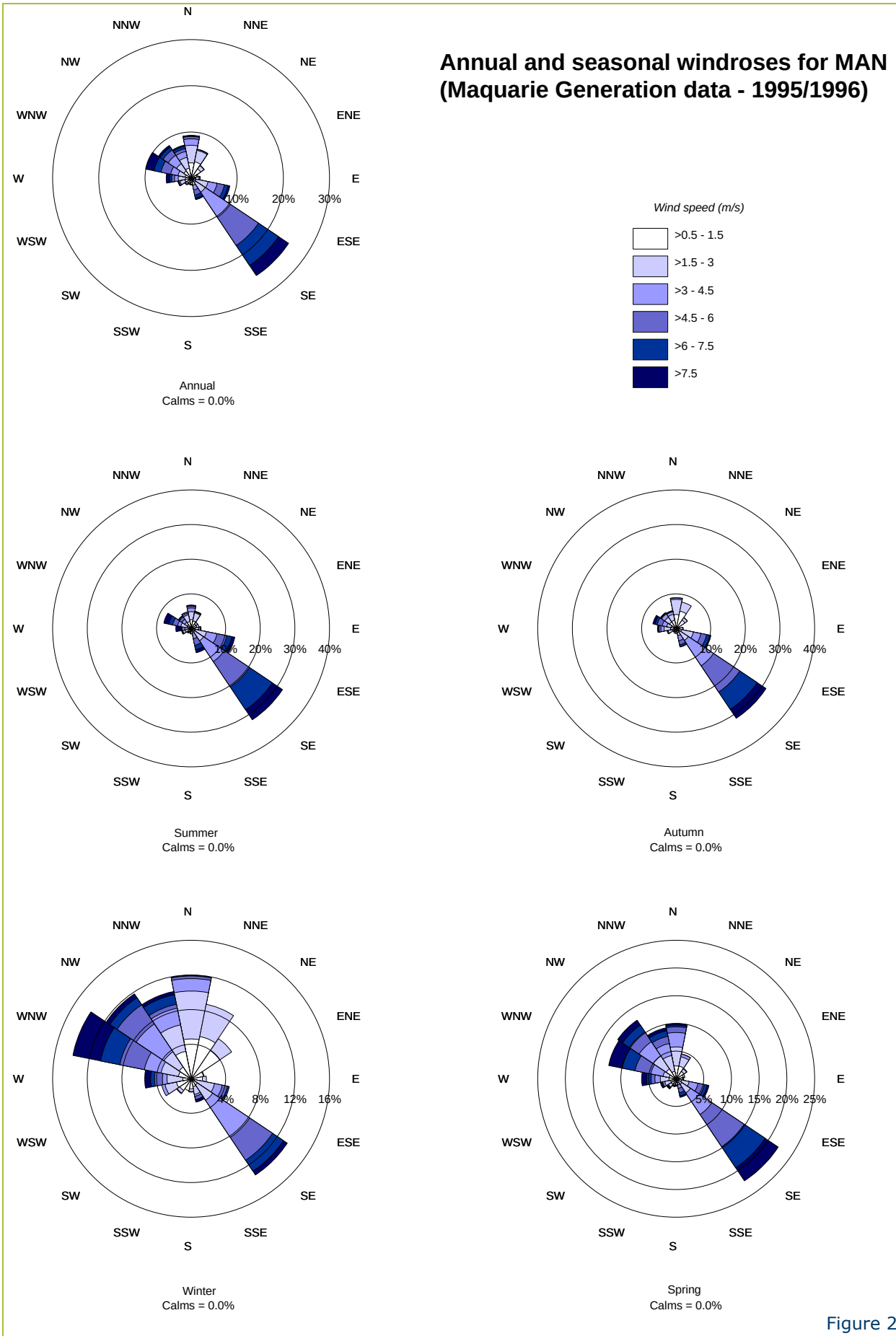
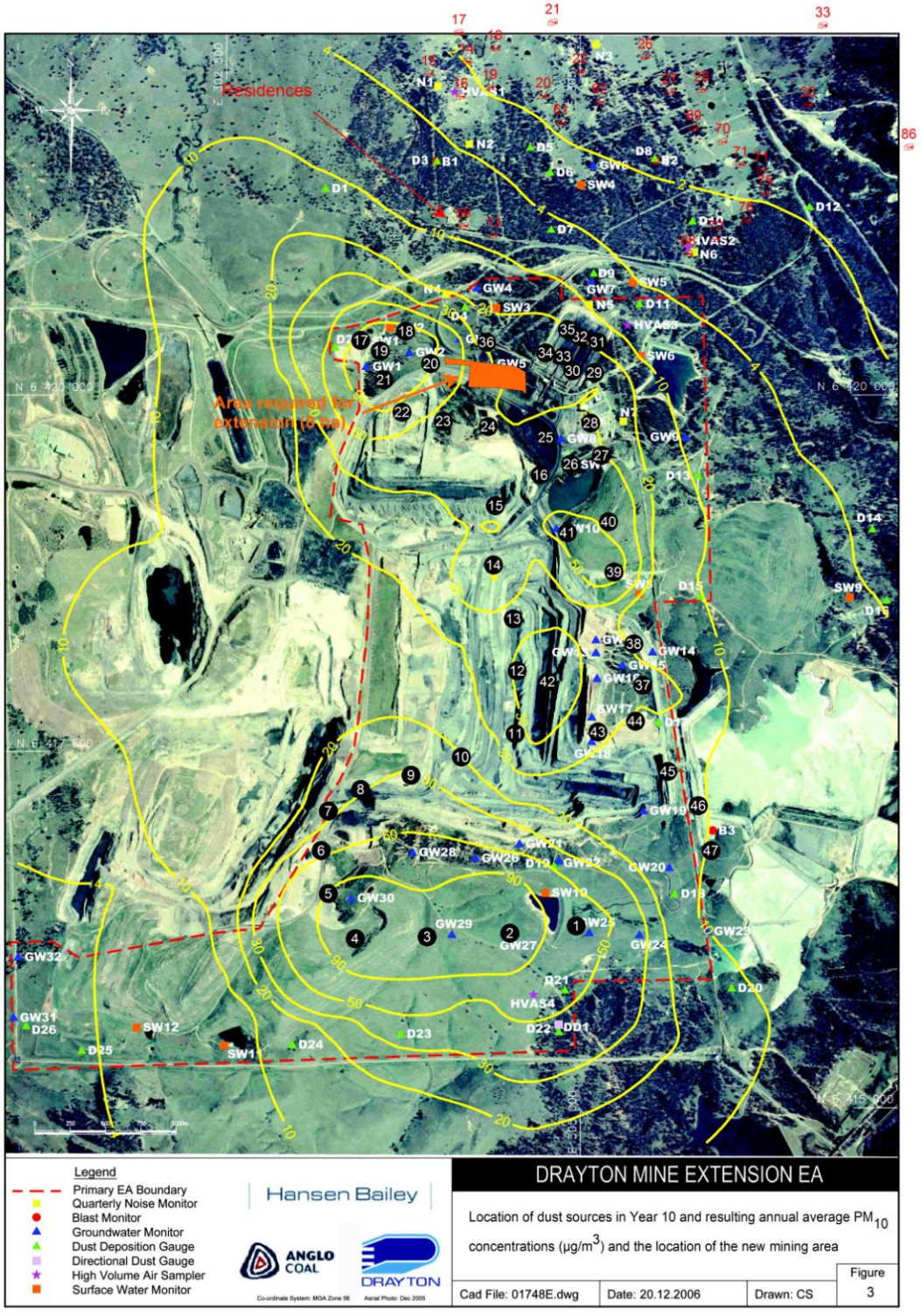

Annual and seasonal windroses for MAN
(Maquarie Generation data - 1995/1996)
Wind speed (m/s)
>0.5 - 1.5
>1.5 - 3
>3 - 4.5
>4.5 - 6
>6 - 7.5
>7.5
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
10%
20%
30%
40%
4%
8%
12%
16%
5%
10%
15%
20%
25%
Annual
Calms = 0.0%
Summer
Calms = 0.0%
Autumn
Calms = 0.0%
Winter
Calms = 0.0%
Spring
Calms = 0.0%

Figure 2


Residences
Area required for extension (6 ha)
Legend
Primary EA Boundary
Quarterly Noise Monitor
Blast Monitor
Groundwater Monitor
Dust Deposition Gauge
Directional Dust Gauge
High Volume Air Sampler
Surface Water Monitor
Hansen Bailey
ANGLO COAL
DRAYTON
DRAYTON MINE EXTENSION EA
Location of dust sources in Year 10 and resulting annual average PM10 concentrations (µg/m3) and the location of the new mining area
Cad File: 01748E.dwg
Date: 20.12.2006
Drawn: CS
Figure 3





APPENDIX C

NOISE & VIBRATION IMPACT ASSESSMENT

Hansen Bailey

ENVIRONMENTAL CONSULTANTS

BRIDGES ACOUSTICS

ABN: 73 254 053 305

78 Woodglen Close
P.O. Box 61
PATERSON NSW 2421

Phone : (02) 4938 5866
Fax: (02) 4938 5831
Mobile: (0407) 38 5866
E-mail: bridgesacoustics@bigpond.com

15th July 2009
Ref: J0130-35-L2

Hansen Bailey Pty Ltd
P.O. Box 473
SINGLETON NSW 2330

Attn: Ms. Melissa Walker

Dear Melissa,

RE: DRAYTON MINE –

SECTION 75W MODIFICATION TO DEVELOPMENT CONSENT

UPDATED ENVIRONMENTAL NOISE REVIEW

Thank you for your instructions to review environmental noise issues associated with the proposed Section 75W Modification to the Drayton Coal Mine Development Consent. The proposed Modification would include coal mining, and construction and operation of associated infrastructure such as haul roads, within an area of approximately eight hectares adjoining the north eastern boundary of the currently approved mine disturbance area.

This review is based on the following data:

- Environmental Assessment Drayton Mine Expansion (Hansen Bailey, August 2007);
- A plan of the existing approved disturbance area and the proposed disturbance area (Hansen Bailey, May 2009) attached as Appendix A;
- A terrain file in Autocad format showing the anticipated final landform within the proposed disturbance area; and
- A description of the proposed Modification included in your email dated 1st June 2009.

CURRENTLY APPROVED MINE

Anglo Coal (Drayton Management) Pty Limited (Drayton) currently operates Drayton Mine under a Project Approval 06_0202 issued in February 2008, which allows up to 8 million tonnes of Run of Mine (ROM) coal to be produced each year until 2017. Drayton uses a combination of dragline and truck/shovel operations to uncover and extract coal from mining areas in the northern, southern and eastern portions of the lease. The existing Project Approval includes a number of conditions to control the operation and protect the environment, including intrusive noise criteria at a number of residential receivers in Antiene generally north of the mine site.

The Drayton Mine Extension Environmental Assessment (Drayton EA) prepared in 2007 described a number of noise control measures that were adopted by Drayton to minimise environmental noise levels at nearest residential properties. Adopted noise control measures were primarily designed to control noise from the North Pit and the Coal Handling and Preparation Plant (CHPP), including:

- Only one loading unit (excavator or front end loader) would work in the North Pit during the evening or night, primarily to minimise exposed truck movements associated with overburden or coal haulage from the North Pit;

- North and East Pit overburden trucks would dump in shielded locations during the evening and night;
- North Pit prestrip haul roads would be shielded by the pit walls or a berm in the direction of residences, at least during the evening and night;
- Loading units within the North Pit prestrip area would be located in a shielded area below the natural surface during the evening and night;
- The coal haul road from the South Pit would be realigned to the lowest possible elevation, with minimal long straight sections of road directly in line with a residence and effective shielding with earth berms along the sides of the road where possible;
- The proposed ROM stockpile south of the workshop would have a 5 m wall or equivalent berm on the northern side and returned along part of the eastern and western sides to minimise noise from the loader and trucks working on the stockpile;
- A 4 m berm and/or wall would be constructed along the eastern side of the coal haul road from the ROM stockpile to meet the existing ROM hopper wall, including returns along side roads to minimise the effect of gaps in the barrier;
- A sound power limit of 103 dBA each for the three new reclaimers and one ROM coal stacker;
- Steel sheeting would be installed on the northern face of the secondary crusher building after removal of the rotary breaker and installation of the new screen and crusher; and
- Upgraded exhaust mufflers on some trucks with the exception of the South Pit overburden fleet.

PROPOSED MODIFICATION

The proposed Modification would include coal mining in an expanded area generally north east of the current mining area, using approved mining methods and equipment fleet. No additional equipment is proposed to be acquired for use within the Modification extension area.

With no change to mining methods or equipment, noise levels from the Modification extension area would be similar to noise levels expected from the approved mining disturbance area. Any differences in noise level would primarily be due to variations in distance from the approved mining disturbance area and the Modification extension area to each receiver.

The noise assessment included in the Drayton EA included tables of predicted noise levels to nearby receivers under acoustically neutral and prevailing weather conditions. Table 11 from the Drayton EA noise assessment, which provided predicted noise levels under prevailing weather condition at all receivers, is reproduced below in **Table 1**, along with the predicted difference in noise level due to mining and use of haul roads within the proposed Modification extension area. Predicted noise level differences due to the Modification extension area have been determined based on the following strategy:

- Assuming a reasonable worst-case assessment with one half of the Drayton's noise emissions originating from within the Modification extension area and the other half from elsewhere within the mine, typically within the eastern or southern pits;
- Assuming all equipment working within the Modification extension area would otherwise have been working at the closest point within the approved mining disturbance area;
- Applying a correction for differences in distance from the existing mine or the Modification extension area to each receiver and applying that correction to half of the total site sound power level while leaving noise levels from the remaining equipment fleet unmodified; and
- Reporting the overall difference in mining noise levels by combining corrected noise levels from the northern half of the mine (i.e. including the Modification extension area) with uncorrected noise levels from the remainder of the mine.

Table 1: Predicted Received Noise Levels, Prevailing Weather Conditions, LAeq,15min

Private Receivers	**Drayton EA** Predicted Received Noise Levels, LAeq,15min									Adopted Intrusive Noise Criteria	**Difference due to Modification**
	Year 1			Year 5			Year 10				
	Day	Even	Night	Day	Even	Night	Day	Even	Night		
11 Yarramolong	34	34	33	34	33	32	32	32	32	35	0.0
12 Newton	35	36	36	36	35	35	34	35	35	37	0.0
13 Jacobson	35	**36**	34	**36**	**36**	34	35	34	33	35	0.0
16 Doherty	**40**	**41**	**39**	**41**	**41**	**39**	**40**	**41**	**39**	37	0.0
17 Page	37	**38**	36	37	37	36	36	37	36	37	0.0
18 Page	**38**	**39**	**38**	**38**	**39**	37	37	**38**	37	37	0.0
19 Duck	**40**	**40**	**39**	**40**	**40**	**39**	**39**	**40**	**39**	37	0.0
20 Osborn	**39**	**40**	**39**	**39**	**39**	**39**	**38**	**39**	**39**	35	0.0
21 Reynolds	**37**	**38**	**38**	**38**	**38**	**37**	**36**	**37**	**37**	35	0.0
22 Halloran	**37**	**38**	**38**	**38**	**38**	**38**	**36**	**37**	**37**	35	0.0
23 Jackson	34	34	34	34	34	33	32	33	33	37	0.0
25 Collins	35	37	37	36	36	36	34	35	35	37	0.0
26 Baxter	35	37	**38**	36	36	**38**	34	36	37	37	0.0
27 de Boer	35	37	**39**	36	36	**39**	34	36	**38**	37	0.2
28 Bird	34	37	**40**	35	36	**39**	33	36	**39**	37	0.3
29 Wallman	34	35	36	34	34	35	32	33	34	37	0.0
31 Summerville	33	35	37	34	34	36	32	34	35	37	0.0
32 Cross	31	34	**40**	32	33	**39**	30	33	**39**	37	0.3
33 Fisher	30	33	**38**	31	32	**37**	<30	32	**36**	35	0.3
34 Davis	<30	31	**36**	<30	30	35	<30	<30	34	35	0.2
35 Wilson	<30	31	35	30	30	35	<30	30	34	35	0.1
37 King	<30	30	35	<30	<30	34	<30	<30	33	35	0.2
42 Ray	<30	<30	31	<30	<30	32	<30	<30	31	35	0.3
61 Skinner	**38**	**40**	**39**	**39**	**39**	**39**	**37**	**39**	**39**	35	0.0
69 Clifton	35	37	**41**	35	37	**41**	34	36	**40**	37	0.4
70 Jones	34	36	**41**	35	36	**41**	33	36	**40**	37	0.4
71 Hunter	33	35	**41**	34	35	**40**	32	35	**40**	37	0.5
72 Robertson*	35	37	**42**	36	37	**42**	34	36	**42**	37	0.6
75 Sharman	33	35	**41**	34	35	**40**	32	34	**40**	37	0.5
76 Horder*	34	36	**42**	35	36	**41**	33	35	**42**	37	0.5
86 Wild Group	30	31	**38**	31	31	**38**	30	31	**38**	35	0.3

**Note, both receivers 72 and 76 are subject to acquisition rights under Project Approval 06_0202.*

Table 1 shows a maximum increase of 0.6 dBA at Receiver 72 compared to currently approved noise levels if the Modification was to proceed, with minor expected noise level increases at other receivers. No noise level increase is expected for many receivers because the Modification extension area is further from the receiver than the closest part of the currently approved mining disturbance area.

Inspection of the terrain between the Modification extension area and closest privately owned properties indicates part of the Modification extension area would be shielded behind the elevated rail loop, at least from the point of view of residents north of the mine site. The Modification extension area and the adjacent approved mining disturbance area are at a similar elevation and would therefore be similarly exposed or shielded to nearest residences, apart from the influence of the rail loop.

CONCLUSION

These observations lead to the conclusion that proposed mining or associated activity within the Modification extension area would produce similar noise levels to currently approved operations in the adjacent approved mining area, provided the adopted noise mitigation and management measures described

in the Drayton EA are also applied to mining and associated operations in the Modification extension area where appropriate.

Blasting is expected to be required within the Modification extension area to loosen overburden and coal for removal or extraction. Drayton currently has a network of blast monitors within the Antiene residential area which are used to provide feedback on ground vibration and blast noise (overpressure) levels for each blast. Data collected from the monitors is correlated with blast parameters such as charge weight and location and used to ensure future blasts are adequately designed to avoid exceedances of appropriate noise and vibration criteria. This feedback and design process would continue and remains appropriate for future blasts within the Modification extension area.

We trust this review satisfies your requirements. Please contact the undersigned for any further information or discussion.

Yours faithfully,

BRIDGES ACOUSTICS

MARK BRIDGES BE (Mech) (Hons) MAAS
Principal Consultant

APPENDIX A: SITE PLAN

DRAYTON EA MODIFICATION AREA (May 2009)

Site plan prepared by Hansen Bailey





APPENDIX D

FLORA & FAUNA IMPACT ASSESSMENT

Hansen Bailey

ENVIRONMENTAL CONSULTANTS

15 July 2009

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ECOLOGICAL ASSESSMENT OF SECTION 75W MODIFICATION FOR DRAYTON MINE

Dear Mel,

Anglo Coal (Drayton Management) Pty Limited (Drayton) was granted Project Approval (PA) 06_0202 by the Minister for Planning on 1 February 2008 for the Drayton Mine Extension. Drayton is currently preparing a Modification to their Project Approval (06_002) under Section 75W of the *Environmental Planning & Assessment Act 1979*, to extend their operations into an area to the north of the currently approved mining footprint (the Modification).

The purpose of this letter is to present an assessment of the ecological impacts of the proposed Modification. The full report is contained within Appendix A.

The Modification will require an additional 7.5 ha disturbance (Modification Extension Area) to operations approved as part of the Drayton Extension Environmental Assessment (Drayton Extension EA) completed in 2007. The Modification extension area will be utilised for additional mining area and associated disturbance activities including infrastructure such as haul roads etc.

As part of the 7.5 ha Modification extension area contains native woodland vegetation (4.0 ha), Drayton is proposing to offset the impacts of the Modification by the dedication of 12 ha of land to the north-east of their EA Boundary. This area will complement the existing offset area of 88 ha in the south-west near Saddlers Creek, established for the Drayton Extension EA.

The flora and fauna of the study area were studied during the investigations for the Drayton EA and so baseline information exists for the Modification extension area. Additionally, to verify the current condition, Cumberland Ecology conducted a site inspection in May 2009 and completed a quadrat flora survey in the Modification extension area and the proposed Modification offset area. A fauna habitat assessment was also conducted at this time and locations where fauna could

reside or forage were recorded.

The Modification extension area contains 1.9 ha of degraded Hunter Lowland Redgum Forest, which is an Endangered Ecological Community (EEC) listed under the NSW *Threatened Species Conservation Act 1995* (TSC Act). It also contains potential habitat for TSC Act threatened species that have been recorded previously from Drayton such as Diamond Firetail (*Stagonopleura guttata*), Squirrel Glider (*Petaurus norfolcensis*) and several threatened microchiropteran bat species. No species listed by the Commonwealth *Environment Protection and Biodiversity Conservation Act* (EPBC Act) are likely to make significant use of the area and the vegetation of the Modification extension area does not conform to any threatened listing under the EPBC Act.

However, the Modification extension area is fragmented by existing roads and is significantly weed invaded in parts. It is also within close proximity of the conveyor belt and noisy associated infrastructure. For these reasons, it has a reduced habitat value for flora and fauna. 1.9 ha of the Modification extension area contains Hunter Lowland Redgum Forest and a further 2.1 ha of Grey Box Forest; however the remainder of the site is characterised by derived native grassland, which provides habitat only for common grazing species such as the Eastern Grey Kangaroo (*Macropus giganteus*).

A 12 ha area of vegetation adjacent to the Drayton Wildlife Refuge will be reserved as a specific offset for the Modification, which exceeds a 2:1 offset ratio for the 4.0 ha of woodland that is proposed to be removed. The Modification offset area also contains Hunter Lowland Redgum Forest that is of significantly higher quality than that which will be removed for the Modification. This area will be subject to ongoing maintenance and weed control which will continue to improve the condition of this vegetation community. The Modification offset area is located adjacent to the Drayton Wildlife Refuge, a 114 ha area that is protected for conservation and contains areas of high quality Hunter Lowland Redgum Forest and other related forest and woodland types. In addition, 88 ha of native vegetation will be recreated as part of the Offset Strategy for the approved Drayton Extension, including examples of EECs. Both of these offset areas (the Modification Offset Area and Drayton EA offset area) will be incorporated into and managed in the long-term in accordance with the existing Drayton Wildlife Refuge area.

The threatened fauna that have potential to utilise the Modification extension area will benefit from the establishment of the Modification offset area and the ongoing conservation management of this area. They are highly mobile species and the Modification extension area likely forms a small proportion of its home range. There are large areas of habitat remaining in the locality for the fauna species likely to utilise the site, including the proposed Modification offset areas and existing native vegetation. The removal of a small area of degraded vegetation is not likely to negatively affect these species.

Taking into consideration the highly degraded condition of the vegetation within the Modification extension area, and the large areas of high quality vegetation being protected in the locality, it is considered that the proposed Modification is unlikely to result in a significant impact to EECs or threatened species. Moreover, as no Commonwealth-listed flora and fauna will be significantly impacted, no Referral is required to the Commonwealth Department of Environment Water Heritage and the Arts.

If you have any questions relating to this assessment, please do not hesitate to contact me on 02) 9868 1933.

Yours sincerely

David Robertson
Director
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Appendix A

75W Modification for Drayton Mine: Ecological Assessment

A.1 Introduction

Anglo Coal (Drayton Management) Pty Limited (Drayton) was granted Project Approval (PA) 06_0202 by the Minister for Planning on 1 February 2008 for the Drayton Mine Extension (Drayton EA). Specifically, PA 06_0202 provides for the following:

- An increase in maximum Run-of-Mine (ROM) coal production to 8 Million tonnes per annum (Mtpa);
- An extension of mining duration from 2010 to 2017;
- An extension of the mining footprint to uncover additional coal reserves within the current Mining Leases;
- Upgrade of the existing stockpile reclamation system and existing Coal Handling Plant (CHP); and
- Minor modifications to Drayton's infrastructure and water management system.

Drayton now intends to utilise a 7.5 ha of land that is not covered by this approval, and are applying for a Section 75W Modification approval from the Minister.

Drayton is now seeking approval to extend their operations into an area to the north of the currently approved mining footprint via a Modification to PA 06_0202 under Section 75W of the *Environmental Planning & Assessment Act 1979* (EP&A Act) (the Modification). This will require an additional 7.5 ha of disturbance (referred to in the following report as the "Modification extension area" - see **Figure 1**), of which 4.0 ha is vegetated by woodland. This report will form part of an Environmental Assessment for the Modification prepared by Hansen Bailey.

As an offset for the clearing of 4.0 ha of woodland in the Modification extension area, a 12 ha area adjacent to the Drayton Wildlife Refuge is proposed to be reserved for conservation. This offset area contains 12.0 ha of woodland and complements the 88 ha of revegetation that will be taking place as an offset for the approved Drayton Mine Extension.

The purpose of this report is to assess the ecological impacts of the proposed Modification, including threatened flora, fauna and endangered ecological communities (EEC). The report focuses on the impacts of the Modification on threatened flora and fauna listed by the NSW *Threatened Species Conservation Act 1995* (TSC Act) and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

A.2 Methods

A.2.1 Literature Review

The flora and fauna of the Modification extension area is known via previous studies that took place for the Drayton EA. The studies, which incorporated the Modification extension area and surrounding woodland areas, have been reviewed to gain an understanding of the potential flora, fauna and vegetation communities present within the Modification extension area and for data relevant to the current assessment.

These include two unpublished studies that Cumberland Ecology supplied to Hansen Bailey to support the Drayton EA:

- Saunders, T (2006) Bird Surveys of the Proposed Drayton Mine Extension; and
- Cumberland Ecology (2007) Drayton Mine Fauna Surveys;

and the ecological assessment component of the Drayton EA:

- Hansen Bailey (2007) Drayton Mine Extension Flora and Fauna Impact Assessment[10].

A.2.2 Database Analysis

Database searches of both Commonwealth (EPBC Act) and State listed (TSC Act) threatened flora and fauna species were conducted for the locality (5km radius of the Modification extension area). These databases, such as the NPWS Atlas of NSW Wildlife[8], the RBG PlantNet[1] and the EPBC Protected Matters Search Tool[9] provide detailed information about threatened species, populations, distribution and community ecology.

A.2.3 Flora

Quadrat surveys were undertaken in the Modification offset area in May 2009 to identify and characterise the vegetation present and to survey for the presence of threatened flora species.

Woodland vegetation across the Modification extension area was traversed and notes made about the species present and the condition. Vegetation was also surveyed within two 20 x 20 metre quadrats in the Modification extension area and five quadrats in the Modification offset area (see **Figure 1**). Notes were taken of the plant communities and species present, significant flora variations and the age structure of the vegetation. An estimate was made of the cover abundance of each species present within quadrats (based on a modified Braun-Blanquet system) and bushland condition was assessed based on the percentage of exotic species in each vegetation stratum.

Plant communities were described based on the dominant canopy species and community structure, according to Specht (1970)[12]. Plant species nomenclature conforms to Harden (1990-93)[11]. The potential conservation significance of communities and species was based on the TSC Act and the EPBC Act.

Photographs were taken of each quadrat in order to provide an indication of the current condition of the habitat.

A.2.4 Fauna

Habitat Assessment

A fauna habitat assessment was conducted during the field survey in May 2009. The nature and extent of fauna habitats in the Modification extension area and offset area were assessed and areas where threatened fauna species could reside or forage were identified. Site assessments included consideration of important indicators of habitat condition and complexity including the occurrence of microhabitats such as tree hollows, fallen logs, bush rock and wetland areas such as creeks and soaks. An assessment of the structural complexity of

vegetation, the age structure of the forest and the nature and extent of human disturbance throughout the Modification extension area was also undertaken and considered. Tree hollows were used as a general indication of habitat quality for arboreal fauna, and hollow-dwelling birds and bats. Hollows observed during surveys were recorded and the general vegetation condition and tree maturity was used to predict whether trees on site were likely to contain hollows.

Fauna Surveys

During the May 2009 field surveys, bird searches were undertaken including playback of calls of threatened woodland birds. In addition, any fauna observed or heard calling were recorded.

Limitations

Targeted threatened fauna surveys of the Modification offset area were not undertaken during the current field surveys as the environment on and around Drayton Mine has been extensively surveyed in recent years and the threatened fauna with potential to occur are well known, and can be predicted with confidence based on the results of previous surveys and fauna habitat assessments. Where potential habitat for threatened species was deemed to occur on the Modification extension area, the relevant threatened species have been assumed to occur, and have been assessed accordingly.

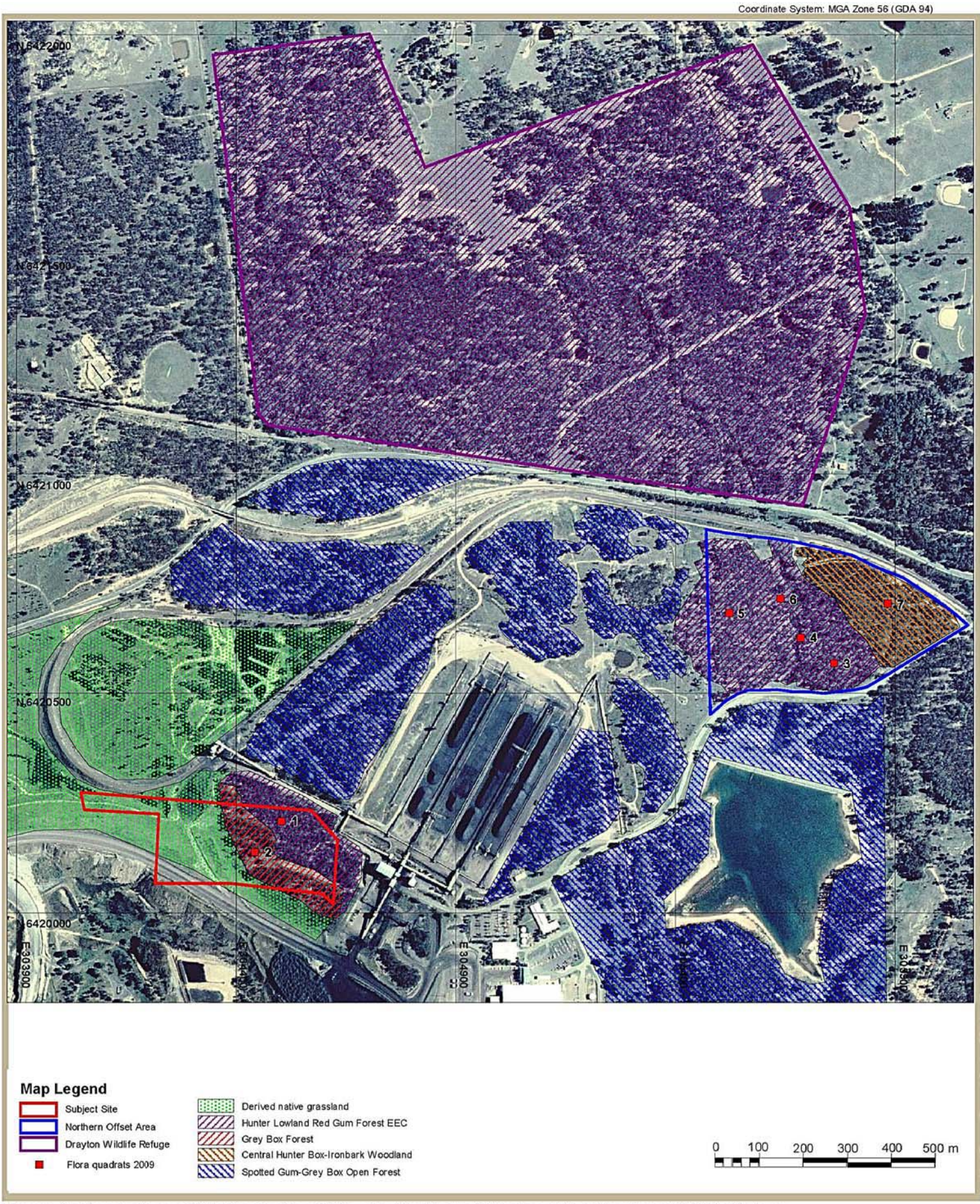

Figure 1: Vegetation within the Subject Site, the Northern Offset and the Drayton Wildlife Refuge

CUMBERLAND ECOLOGY

A.3 Results

A.3.1 Flora

Hunter Lowland Redgum Forest

The Modification extension area contains 1.9 ha of Hunter Lowland Redgum Forest, which is an EEC listed under the TSC Act (**Photograph 1**). This community is not listed under the EPBC Act. This is a degraded remnant of this community and is characterised by relatively low species diversity. It is immature vegetation and is comprised mostly of regrowth. This vegetation is dominated by *Eucalyptus teretecornis* and *E. teretecornis* x *E. blakelyi* intergrades in low numbers.

Common understorey species include *Notelaea microcarpa* var. *microcarpa* (Native Olive), *Myoporum montanum* (Water bush), *Acacia decora* (Western Golden Wattle) and *Maireana microphylla* (Eastern Cottonbush). The groundcover is diverse and is generally dominated by grasses and forbs, such as *Aristida ramosa* (Threeawn Wiregrass), *Cymbopogon refractus* (Barbed Wire Grass), *Austrostipa verticillata* (Slender Bamboo Grass), *Chloris ventricosa* (Windmill Grass), *Austrodanthonia fulva* (Wallaby Grass), *Cynodon dactylon* (Couch Grass), *Calotis lappulaccea* (Yellow Burr-daisy), *Dichondra repens* (Kidney Weed), *Desmodium varians* (Variable Tick-trefoil) and *Einadia nutans* (Climbing Saltbush).

The Modification offset area contains 6.3 ha of Hunter Lowland Redgum Forest, which comprises more mature and intact vegetation than that which occurs in the Modification extension area.

Grey Box Forest

An area of 2.1 ha in the southern portion of the Modification extension area is dominated by *E. moluccana* (Grey Box) with low numbers of *Eucalyptus teretecornis* and *E. teretecornis* x *E. blakelyi* intergrades (**Photograph 2**). This woodland is not an EEC, but belongs to a vegetation type that has been extensively cleared in the Hunter Valley.

Common understorey species include *Notelaea microcarpa* var. *microcarpa*, and *Maireana microphylla*. It can also include *Breynia oblongifolia* (Coffee Bush), *Cassinia quinquefaria* (Cough-bush) and *Dodonaea viscosa*. Subshrubs are common and can include *Solanum cinereum* (Narrawa Burr) and *Phyllanthus virgatus* (Spurge).

The groundcover is characterised by a variety of forbs, grasses, ferns and twiners. Abundant species include *Aristida ramosa*, *Cymbopogon refractus*, *Austrostipa scabra* (Corkscrew Grass), *Bothriochloa decipiens* (Red Leg Grass), *Chloris ventricosa*, *Cheilanthes sieberi* ssp. *sieberi* (Poison Rock Fern), *Calotis lappulaccea* (Yellow Burr-daisy), *Vittadinia cuneata* (Fuzzweed), *Chrysocephalum apiculatum* (Common Everlasting), *Eremophila debilis* (Winter Apple), *Brunoniella australis* (Blue Trumpet), *Ajuga australis* (Austral Bugle), *Lomandra multiflora* ssp. *multiflora* (Many-flowered Mat-rush), *Dichondra repens*, *Desmodium varians*, *Sida corrugata* (Corrugated Sida), *Einadia nutans* and *Einadia trigonos* (Fishweed).

Derived Grassland

Derived Grassland is the name given to grassland vegetation derived from the clearing of trees and shrubs. As such, the floristic composition of this community can vary according to the community from which it originated and to slope, aspect, soil and underlying geology.

The remainder of the Modification extension area consists of 3.5 ha of derived native grassland dominated by Three-awned Grass Open Grassland, which is not listed under either State or Federal threatened species legislation (**Photograph 3**).

This grassland is dominated by grasses and forbs, such as *Aristida ramosa* (Threeawn Wiregrass), *Cymbopogon refractus* (Barbed Wire Grass), *Austrostipa verticillata* (Slender Bamboo Grass), *Chloris ventricosa* (Windmill Grass), *Austrodanthonia fulva* (Wallaby Grass), *Cynodon dactylon* (Couch Grass), *Calotis lappulaccea* (Yellow Burr-daisy), *Dichondra repens* (Kidney Weed), *Desmodium varians* (Variable Tick-trefoil) and *Einadia nutans* (Climbing Saltbush).

Threatened Plants

No threatened plants were found on the Modification extension area during either the 2006 or 2009 surveys. Database analysis[8] indicates that one plant species listed as Vulnerable under the TSC Act occurs in the locality, the Tricolour Orchid (*Diuris tricolor*). This species was searched for but not located during either the current field survey or in earlier surveys by Cumberland Ecology in summer 2006.

Photograph 1: Immature Hunter Lowland Redgum Forest in the Modification extension area

Photograph 2: Grey Box Forest (foreground) in the Modification extension area

Photograph 3: Derived native grassland in the Modification extension area

A.3.2 Fauna

Database Analysis

Database analysis[8] indicates that four bird species listed as vulnerable under the TSC Act have been recorded from the locality. These include the Speckled Warbler (*Pyrrholaemus sagittatus*), Brown Treecreeper (*Climacteris picumnus*), Diamond Firetail (*Stagonopleura guttata*), and Grey-crowned Babbler (eastern subspecies) (*Pomatostomus temporalis temporalis*).

Four bat species listed as vulnerable under the TSC Act have been recorded from the locality including the Yellow-bellied Sheathtail-bat (*Saccolaimus flaviventris*), Eastern Freetail-bat (*Mormopterus norfolkensis*), Eastern Bentwing-bat (*Miniopterus schreibersii oceanensis*) and Large-footed Myotis (*Myotis adversus*).

One terrestrial mammal species listed as vulnerable under the TSC Act has been recorded from the wider Drayton mine lease and generally within the locality, the Squirrel Glider (*Petaurus norfolcensis*).

Previous Fauna Surveys

Previous fauna surveys on Drayton have recorded a very low diversity of species[10]. The fauna species recorded were mostly common and widespread and included *Macropus giganteus* (Eastern Grey Kangaroo), which was found across all grassland sites; and *Macropus rufogriseus* (Red-necked Wallaby), which was recorded in woodland. The introduced pest species *Oryctolagus cuniculus* (Rabbit) was recorded as being very widespread, especially in open grassy areas.

Three bird species of conservation significance have been recorded from Drayton (Saunders 2006), including:

- Diamond Firetail (*Stagonopleura guttata*) – listed as Vulnerable under the TSC Act;
- White-throated Needletail (*Hirundapus caudacutus*) – listed as a Migratory/Marine species under the EPBC Act; and
- Rainbow Bee-eater (*Merops ornatus*) - listed as a Migratory/Marine species under the EPBC Act

Five Squirrel Gliders were captured in Elliott B traps during field surveys conducted on Drayton, in February 2007. The areas in which they were captured were characterised by woodland dominated by Spotted Gum.

Several threatened microchiropteran bat species were recorded from Drayton in February 2007 including: Yellow-bellied sheath-tailed bat (*Saccolaimus flaviventris*), Eastern bent-winged bat (*Miniopterus schreibersii*) Greater broad-nosed bat (*Scoteanax rueppellii*) Eastern cave bat (*Vespadelus troughtoni*).

Exotic (feral) fauna species are relatively common throughout Drayton. Rabbit warrens are common and rabbits are often seen. Hares have also been observed and one European Red Fox has been previously recorded.

Fauna Habitat Assessment

The Modification extension area is modified due to previous land clearing and past grazing and provides limited habitat for native species. The patches of vegetation that occur are characterised by immature regrowth vegetation, with few older trees (see **Photographs 1** and **2**). Some small hollows were recorded that are likely to be suitable as roosting habitat for bats, however most of the canopy trees are small and do not provide substantial hollows. The understorey is limited, and contains few areas of dense shrubby vegetation. This significantly limits the habitat amenity of this area for species such as woodland birds that depend on dense understorey for foraging resources and shelter. Some woodland birds, including the threatened species Diamond Firetail and Speckled Warbler may periodically utilise the Modification extension area although suitable habitat is very limited.

A small amount of ground debris is present, but fallen hollow logs that could be used by ground dwelling fauna are absent.

The areas of woodland on the Modification extension area are likely to provide foraging habitat for a wide range of microchiropteran bat species. These bats forage over and among the canopy, and are likely to be able to find suitable roosting sites in the hollows recorded. No roosting habitat is likely to exist on the site for the Eastern Bent-wing bat however, as this species requires caves or tunnels in which to roost.

A small drainage line is present in the north-east corner of the Modification extension area (**Photograph 4**). It is narrow and contains aquatic vegetation that is likely to provide habitat for some amphibian species. However, the quality of the water is generally very poor however as it is located within an active mine.

Beyond the forested portion, the Modification extension area consists of heavily disturbed grassland interspersed with areas cleared of grasses. These areas constitute very poor habitat for all fauna with the exception of common widespread species such as the Eastern Grey Kangaroo (*Macropus giganteus*) and exotic fauna such as the European Rabbit (*Oryctolagus cuniculus*).

Current Fauna Surveys

The current survey recorded one mammal species, the Eastern Gray Kangaroo, and several bird species including: White-plumed Honey Eater, Superb Fairy-wren, Zebra Finch, Australian Raven, Yellow-faced Honeyeater, Red Wattlebird, Noisy Friarbird, Eastern Rosella, Australian Magpie, Buff-rumped Thornbill, and Brown Falcon. These are all relatively common native species that are commonly recorded in disturbed environments. They co-exist easily with humans and adapt well to disturbance.

One threatened bird species, the Speckled Warbler (*Pyrrholaemus sagittatus*) was recorded at Drayton during the current field survey, however not on the Modification extension area. This species was recorded in the proposed 12 ha Modification offset area, to the north-east of Drayton.

Photograph 4: Drainage line in proposed Modification extension area.

A.4 Impact Assessment

A.4.1 Vegetation Communities

The Modification will disturb a 7.5 ha area and result in the removal of 4.0 ha of woodland vegetation, of which 1.9 ha consists of Hunter Lowland Redgum Forest, an EEC listed under the TSC Act. This community is fragmented, immature and weeds are prevalent throughout. An area of 6.3 ha of Hunter Lowland Redgum Forest occurs in the Modification offset area and will be protected for conservation in the long term.

The Modification Offset Area proposed is a 12 ha area, comprising of 12 ha of woodland vegetation. This represents over a 2:1 ratio of woodland vegetation being retained to that being removed. The Modification Offset Area, in conjunction with the additional 88 ha offset developed for the Drayton EA, will be managed in the long-term in accordance with the existing Drayton Wildlife Refuge conservation area.

The Hunter Lowland Redgum Forest EEC in the Modification offset area will benefit from an ongoing management regime including weed control and supplementary planting. Approximately 114 ha of this community also exist in the Drayton Wildlife Refuge, which is located adjacent to the Modification offset area. This area will benefit from the addition of the Modification offset area and will reduce edge effects in the refuge.

Taking into consideration the small, fragmented size of the Modification extension area, the degraded condition of the vegetation on the Modification extension area, and the very large,

high quality areas of this community being protected in the Modification offset area and in the nearby Drayton Wildlife Refuge, it is considered that the Modification is unlikely to result in a significant impact to the Hunter Lowland Redgum Forest.

A.4.2 Flora

No threatened flora were recorded on the Modification extension area or will be impacted by the Modification extension area. No significant impact is expected to occur to any flora species as a result of the Modification.

A.4.3 Fauna

The recent fauna surveys did not record any threatened species within the Modification extension area, however several threatened fauna species have been previously recorded from Drayton. These species are considered to have potential to utilise native vegetation on the Modification extension area, and have been assessed accordingly.

Microchiropteran Bats

Database records and fauna survey results indicate that several threatened microchiropteran bat species utilise Drayton and the locality, including the Yellow-bellied Sheathtail-bat (*Saccolaimus flaviventris*), Eastern Freetail-bat (*Mormopterus norfolkensis*), Eastern Bentwing-bat (*Miniopterus schreibersii oceanensis*), Greater broad-nosed bat (*Scoteanax rueppellii*), and Eastern cave bat (*Vespadelus troughtoni*) and Large-footed Myotis (*Myotis adversus*).

Most microchiropteran bats forage above the tree canopy for insects, and foraging habitat exists for most of these bat species in the Modification extension area. The proposed extension will result in the removal of 4.0 ha of woodland vegetation, and therefore this represents a reduction in the amount of habitat available for these species. This habitat is not of high quality however, and is located close to the conveyor belt and noisy associated infrastructure and surrounded by roads. There are large areas of native vegetation remaining within Drayton and 114 ha of native vegetation are protected in the long-term within the Drayton Wildlife Refuge.

In addition, 88 ha of woodland are being created as part of the Offset Strategy for the Drayton EA, which will provide a large area of potential habitat for microchiropteran bat species. An additional 12 ha area is being retained adjacent to the Drayton Wildlife Refuge as a specific offset for the Modification extension area. This area represents significantly higher quality habitat than that to be removed. Microchiropteran bats are highly mobile species and the species that currently utilise the site will be able to utilise these other habitat areas. These bats are not likely to be dependant on the areas of vegetation to be removed for their ongoing survival.

The Eastern Freetail-bat and the Yellow-bellied sheath-tailed bat are likely to utilise the Modification extension area to forage over, and also may roost in tree hollows and bark slits that may be present in the native vegetation. However, due to the large areas of suitable habitat that will remain, no significant impact is predicted to occur to these species.

The Eastern Bent-wing Bat and the Eastern Cave Bat are unlikely to breed in the Modification extension area as they have highly specific requirements for caves or tunnels for breeding. These species are likely to forage over the Modification extension area, however, due to the

large areas of suitable habitat that will remain; no significant impact is predicted to occur to these species.

The Large-footed Myotis has been recorded from the locality; however it is a fishing bat and requires large dams or creeks to forage in. No large dam will be removed as part of the Modification and therefore no foraging habitat for this bat will be removed.

Considering the offsets proposed and the amount of retained native vegetation in the vicinity of the Modification extension area, it is considered unlikely that the Modification will result in an important impact to these species. Assessments of significance have been prepared for the microchiropteran bats recorded from Drayton and are presented in **Appendix B**. These assessments of significance indicate that no significant impact is likely to occur to the threatened bat species recorded from the site as a result of the Modification.

Squirrel Glider

Squirrel Gliders are known to utilise a range of habitat types and are found in many kinds of trees including Box Ironbark Woodlands and Red Gum Forests[5]. Their diet varies seasonally and consists of range of resources including Acacia gum, eucalypt sap, nectar, honeydew and manna, and also invertebrates and pollen[5].

Squirrel Gliders have been recorded previously on Drayton, within an area of Spotted Gum Forest. It is highly likely that this species would utilise other areas of habitat on Drayton at different times of the year, when different resources become available, including the Modification extension area.

The proposed extension would remove 4.0 ha of potential woodland habitat for this species; however this area of vegetation is largely lacking in hollows and is fragmented by surrounding roads and the existing mine. An area of 12 ha of higher quality vegetation are proposed to be provided as an offset specific to the Modification (see **Figure 1**). The Modification offset area contains significantly higher quality habitat that that which will be removed. It is located adjacent to the Drayton Wildlife Refuge and will further enhance the quality of the native vegetation contained within the reserve by reducing edge effects and increasing the area of land to be conserved. The Modification Offset Area will be incorporated into and managed in the long-term in accordance with the existing Drayton Wildlife Refuge area.

Large areas of potential habitat for Squirrel Gliders will also remain in areas of native vegetation that occur nearby, particularly in the Drayton Wildlife Refuge. A large area of potential habitat for Squirrel Gliders exists in this area (114 ha), and although gliders have not been trapped within the refuge, they are likely to be present in this area. This is a large area of habitat that will be protected in the long-term and is likely to offer large amount of high quality habitat for this species. Additionally, as an offset for the approved Drayton Extension, 88 ha of woodland are being created as part of the Offset Strategy which will provide a large area of potential habitat for the Squirrel Glider.

Considering the offsets proposed and the amount of retained native vegetation in the vicinity of the Modification extension area, it is considered unlikely that the Modification will result in an important impact to this species. An Assessment of Significance has been prepared for the Squirrel Glider and is presented in **Appendix B**. This assessment indicates that a significant impact is unlikely to occur to this species as a result of the Modification.

Birds

Several threatened species of birds have been recorded from the locality or recorded from the Modification extension area including: Speckled Warbler (*Pyrrholaemus sagittatus*), Brown Treecreeper (*Climacteris picumnus*), Diamond Firetail (*Stagonopleura guttata*), and Grey-crowned Babbler (eastern subspecies) (*Pomatostomus temporalis temporalis*). These species of birds typically occur in woodlands to the west of the Great Dividing Range.

The Modification extension area offers limited habitat for these species as it is small and highly degraded. Large areas of higher quality potential habitat for these species remain in the locality, particularly in the 114 ha Drayton Wildlife Refuge, the 88 ha of proposed revegetation offset for the Drayton EA and the proposed 12 ha Modification offset near the Wildlife Refuge. The removal of a small area of native vegetation is not expected to have a significant effect on these species. Although not recorded from the Modification extension area, the Speckled Warbler (*Pyrrholaemus sagittatus*) has been recorded within the Modification offset area. This area will not be disturbed and will continue to provide habitat for this species.

Two species listed as Migratory/Marine under the EPBC Act have been recorded from Drayton; the White-throated Needletail (*Hirundapus caudacutus*) and Rainbow Bee-eater (*Merops ornatus*). These species would only periodically utilise foraging resources that are present on the Modification extension area, and would not nest on the site. This habitat is unlikely to be important for these species, and the minor reduction in potential foraging habitat would not have a deleterious effect on them. Large areas of vegetation remain in the locality as outlined above, and these would continue to provide habitat for these species.

Considering the offsets proposed and the amount of retained native vegetation on and near Drayton, it is considered unlikely that the modification will result in an important impact to the threatened bird species recorded from Drayton or the locality. An Assessment of Significance has been prepared and presented in **Appendix B** for the Diamond Firetail, as it is the only threatened bird species recorded on Drayton. This assessment indicates that a significant impact is unlikely to occur to this species as a result of the Modification.

A.5 Conclusion

7.5 ha of vegetation will be removed by the Modification, of which 1.9 ha comprises Hunter Lowland Redgum Forest, which is listed as an EEC under the TSC Act. 6.3 ha of the Hunter Lowland Redgum Forest will be provided as an offset in an area of land adjacent to the Drayton Wildlife Refuge. This area is of higher quality than that to be removed and will be actively managed to maintain and increase its conservation value. In addition to what is being protected by the offset, the Drayton Wildlife Refuge contains approximately 114 ha of Hunter Lowland Redgum Forest which is protected and subject to ongoing management. It is considered that this community is well represented in the locality and no significant impact is predicted to occur as a result of the Modification.

No threatened flora species have been recorded from the Modification extension area or will be impacted by the Modification.

The Modification extension area is highly degraded, and the majority of fauna species that occur in this area are common widespread species that are able to exist in highly disturbed

environments. However, several threatened species have been recorded from Drayton that has the potential to utilise native vegetation on the Modification extension area as habitat. These include the Squirrel Glider, microchiropteran bats, and the Diamond Firetail. However, the vegetation of the Modification extension area is immature and highly degraded, and it is unlikely to provide important habitat to these threatened species.

As an offset to the clearance of 4.0 ha of native woodland vegetation, 12 ha of native vegetation within a 12 ha area is proposed to be retained, located directly adjacent to the 114 ha Drayton Wildlife Refuge. This area of vegetation is of significantly higher quality than that which will be removed. In addition to this area, 88 ha of land will be revegetated as an offset for the Drayton Extension. Both of these offset areas (the Modification Offset Area and Drayton EA offset area) will be incorporated into and managed in the long-term in accordance with the existing Drayton Wildlife Refuge area.

Considering the large areas of native vegetation being retained in the locality, including the Drayton Wildlife Refuge and the areas of offset land, it is not considered that the removal of a small area of poor quality habitat will detrimentally affect the threatened species recorded.

No significant impact is considered likely to occur to threatened species as a result of the proposed Modification and no referral to the Department of Environment Water Heritage and the Arts is required to fulfil the requirements of the EPBC Act.

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Appendix B

Assessments of Significance

B.1 Squirrel Glider (*Petaurus norfolcensis*)

The Squirrel Glider has previously been recorded from an area of Spotted Gum Woodland on Drayton's Mine. The species is widely though sparsely distributed in eastern Australia, from northern Queensland to western Victoria. It inhabits mature or old growth Box, Box-Ironbark woodlands and River Red Gum forest west of the Great Dividing Range and Blackbutt/Bloodwood forest with heath understorey in coastal areas[5]. The Squirrel Glider prefers mixed species stands with a shrub or Acacia mid-storey. It lives in family groups of a single adult male one or more adult females and offspring. It requires abundant tree hollows for refuge and nest sites. Their diet varies seasonally and consists of Acacia gum, eucalypt sap, nectar, honeydew and manna, with invertebrates and pollen providing protein[5].

a) In the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,

Some potential habitat for this species will be removed as part of the Modification; however larger, additional areas of habitat are being protected as an offset. Large areas of potential habitat will remain the locality, most notably the Drayton Wildlife Refuge, a 114 ha area of bushland. Due to the continued availability of suitable habitat, a viable local population is unlikely to be placed at risk of extinction as a result of the proposed development.

b) In the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction,

Not applicable.

c) In the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:

(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or

(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction.

Not applicable.

d) In relation to the habitat of a threatened species, population or ecological community:

(i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and

(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and

(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality.

4.0 ha of foraging habitat for this species will be removed on the Modification extension area, but a specific offset of 12 ha of higher quality vegetation will be protected. The Modification offset area will provide corridors and habitat for foraging and directly adjoins the Drayton Wildlife Refuge, a 114 ha area of vegetation that is protected for conservation in perpetuity. In addition, 88 ha of land will be revegetated to native vegetation as an offset for the already approved Drayton Extension. It is therefore considered that a significant area of known habitat for this species will not be affected by the proposed extension.

The impacts of the project are not expected to have a deleterious impact upon habitat corridors or habitat connectivity for dispersal of the species. The extent of clearing will not cause any isolation of potential foraging habitat for this species. The project will not cause habitat to become effectively isolated from currently interconnecting or proximate areas of habitat.

The habitat to be removed is not important to the long term survival of this species as its known habitat will not be removed and only a relatively small area of potential habitat will be removed. Large areas of potential habitat still exist on Drayton, and the Drayton Wildlife Refuge also offers a large amount of habitat that will be protected in perpetuity. The project will not affect the long-term viability of this species

e) *Whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly),*

No critical habitat for the subject species has currently been listed in the critical habitat registry by the Director-General of the DEC.

f) Whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan,

No recovery plan has been prepared for this species.

No threat abatement plan is relevant to this species.

A list of actions for the recovery of this species has been prepared. These actions include:

- Retain den trees and recruitment trees (future hollow-bearing trees);
- Retain food resources, particularly sap-feeding trees and understorey feed species such as *Acacia* and *Banksia*;
- Replace top one or two strands of barbed wire on fences with regular wire in and adjacent to habitat (i.e. along the rail loop);
- Retain and protect areas of habitat, particularly mature or old-growth forest containing hollow-bearing trees and sap-feeding trees; and

- In urban and rural areas retain and rehabilitate habitat to maintain or increase the total area of habitat available, reduce edge effects, minimise foraging distances and increase the types of resources available

g) *Whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.*

The proposed development will involve the clearing of native vegetation, which is a listed Key Threatening Processes under the TSC Act. However, the area to be cleared or modified does not constitute important habitat for this species and the proposed development is not considered to increase the impact of this process upon the Squirrel Glider.

Conclusion

The population of Squirrel Gliders that occur on Drayton are unlikely to be impacted on by the proposed extension. The vegetation to be removed is of poor quality and is mostly immature. The highest quality vegetation will be retained on the mine and the known habitat for this species on the mine site will be retained. The species has been shown to be tolerant of relatively close proximity with humans and it is likely that much of the remaining vegetation on Drayton Mine would offer habitat for Squirrel Gliders. In addition, the nearby Drayton Wildlife Refuge offers a large area of habitat that is protected and will not be disturbed. An additional 12 ha of land adjacent to the Drayton Wildlife Refuge has been provided as an ecological offset to the extension in addition to the 88 ha of revegetation being undertaken as an offset for the approved Drayton Extension. No significant impact is likely to occur to this species as a result of the Modification and no Species Impact Statement is required for this species.

B.2 Greater broad-nosed bat (*Scoteanax rueppellii*)

The Greater Broad-nosed Bat is found mainly in the gullies and river systems that drain the Great Dividing Range, from north-eastern Victoria to the Atherton Tablelands, and extends to the coast over much of its range[4]. It utilises a variety of habitats from woodland through to moist and dry eucalypt forest and rainforest, though it is most commonly found in tall wet forest.

This species usually forages for beetles and other large, slow-flying insects after sunset, along creek and river corridors and in open woodland habitat and dry open forest. It usually roosts in tree hollows.

a) *In the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,*

Small areas of potential roosting and foraging habitat may occur for this species on the Modification extension area and will be cleared, however larger, additional areas of habitat are being protected as an offset. Large areas of potential habitat will remain the locality, most notably the Drayton Wildlife Refuge, a 114 ha area of bushland, and the 12 ha offset, specific for this extension. Any bats likely to utilise the Modification extension area would also utilise these offset areas and therefore, a viable local population is unlikely to be placed at risk of extinction as a result of the proposed development.

b) In the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction,

No endangered populations of the Greater Broad-nosed Bat are listed under the TSC Act.

(c) *In the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:*

(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or

(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction

Not applicable.

(d) *In relation to the habitat of a threatened species, population or ecological community:*

(i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and

(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and

(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality.

4.0 ha of foraging habitat for this species will be removed on the Modification extension area, however 12 ha of higher quality habitat is being protected as an offset specific to this extension. The Modification offset area directly adjoins the Drayton Wildlife Refuge, and will provide corridors and habitat for foraging. 88 ha of land is also being revegetated as an offset for the approved Drayton Extension which will provide habitat for this species when complete. It is therefore considered that a significant area of known habitat will not be affected by the proposed modification.

This is a highly mobile species and the impacts of the project are not expected to have a deleterious impact upon habitat corridors or habitat connectivity for dispersal of the species. The extent of clearing will not cause any isolation of potential foraging habitat for this species. The project will not cause habitat to become effectively isolated from currently interconnecting or proximate areas of habitat.

Removal of trees will reduce some poor quality foraging habitat for this species, however large areas of higher quality habitat remain in the locality, particularly in the Drayton Wildlife Refuge and the 12 ha Modification offset area. The habitat to be removed is not considered to be important to the long term survival of the species in the locality and the project will not affect the long-term viability of this species.

e) Whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly)

No critical habitat for this species has currently been identified by the Director-General of the DECC.

f) whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan

No recovery plan for this species has been prepared by the NSW National Parks and Wildlife Service to date.

No threat abatement plans relevant to the threatening processes mentioned in part (g) below have been prepared by the NSW National Parks and Wildlife Service to date.

g) whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process

The proposed project will involve two Key Threatening Processes under the TSC Act:

- Clearing of native vegetation; and
- The removal of dead trees, dead wood and logs.

No threat abatement plans relevant to the threatening processes mentioned above have been prepared by DECC to date.

Conclusion

The Greater Broad-nosed Bat has previously been recorded from Drayton and it is likely that it utilises habitat on the Modification extension area. 4.0 ha of foraging habitat will be cleared from the Modification extension area as a result of the modification; however no maternity caves or roosts are located on the Modification extension area and will be impacted. Large areas of potential habitat for this species occur in the locality, in particular the 12 ha of habitat that are being provided as an offset specific to the extension, and the adjoining 114 ha Drayton Wildlife Refuge. This is in addition to the 88 ha of land being revegetated as an offset for the approved Drayton Extension. Due to the extensive areas of habitat that occur in the locality, it is considered that the habitat to be removed on the Modification extension area is not important to the survival of this species and the proposal is not expected to result in a significant impact to the Greater Broad-nosed Bat. No Species Impact Statement is required for this species.

B.3 Eastern cave bat (*Vespadelus troughtoni*)

The Eastern Cave Bat is found on both sides of the Great Dividing Range from Cape York to Kempsey, with records from the New England Tablelands and the upper north coast of NSW [7]. It is a cave-roosting species that is usually found in dry open forest and woodland, near cliffs or rocky overhangs, although it has been recorded roosting in disused mine workings, occasionally in colonies of up to 500 individuals. It has occasionally been found along cliff-lines in wet eucalypt forest and rainforest.

a) In the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,

No known caves are present in the Modification extension area or will be removed by the modification. 4.0 ha of foraging habitat occurs on the Modification extension area and will be cleared, however 12 ha of higher quality habitat are being provided as an offset. Large areas of potential habitat will remain the locality, most notably in the Drayton Wildlife Refuge, a 114 ha area of bushland. A viable local population is unlikely to be placed at risk of extinction as a result of the proposed development.

b) *In the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction,*

No endangered populations of the Eastern Cave Bat are listed under the TSC Act.

(c) *In the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:*

(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or

(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction

Not applicable.

(d) *In relation to the habitat of a threatened species, population or ecological community:*

(i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and

(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and

(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality.

4.0 ha of foraging habitat for this species will be removed on the Modification extension area, but 12 ha of higher quality foraging habitat will be protected in the Modification offset area. The Modification offset area will provide corridors and habitat for foraging and directly adjoins the Drayton Wildlife Refuge, a 114 ha area of vegetation that is protected for conservation in perpetuity. In addition, 88 ha of land are being revegetated as an offset for the Drayton Extension. Therefore it is not considered that a significant area of known habitat will be affected by the proposed modification.

This is a highly mobile species and the impacts of the project are not expected to have a deleterious impact upon habitat corridors or habitat connectivity for dispersal of the species. The extent of clearing will not cause any isolation of potential foraging habitat for this species. The project will not cause habitat to become effectively isolated from currently interconnecting or proximate areas of habitat.

Removal of trees will reduce some foraging areas for this species, however large areas of habitat remain in the locality. The habitat to be removed is not considered to be important to the long term survival of the species in the locality and the project will not affect the long-term viability of this species.

e) Whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly)

No critical habitat for this species has currently been identified by the Director-General of the DECC.

f) whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan

No recovery plan for this species has been prepared by the NSW National Parks and Wildlife Service to date.

No threat abatement plans relevant to the threatening processes mentioned in part (g) below have been prepared by the NSW National Parks and Wildlife Service to date.

g) whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process

The proposed project will involve two Key Threatening Processes under the TSC Act:

- Clearing of native vegetation; and
- The removal of dead trees, dead wood and logs.

No threat abatement plans relevant to the threatening processes mentioned above have been prepared by DECC to date.

Conclusion

The Eastern Cave Bat has previously been recorded from Drayton and it is likely that it utilises habitat on the Modification extension area. A small area of poor quality foraging habitat will be cleared from the Modification extension area as a result of the modification, however no maternity caves or roosts are located on the Modification extension area and will be impacted. An area of 12 ha of higher quality habitat are being protected as an offset for the vegetation clearance, and large areas of potential habitat for this species will remain in the locality, in particular the 114 ha Drayton Wildlife Refuge. Additional areas of habitat are also being created in the 88 ha offset area for the approved Drayton Extension. The habitat to be removed on the Modification extension area is not considered to be important to the survival of this species and the proposal is not expected to result in a significant impact to the Eastern Cave Bat. No Species Impact Statement is required for this species.

1.2 Eastern Bent-wing Bat (Miniopterus schreibersii oceanensis)

The Eastern Bent-wing Bat occurs along the east and north-west coasts of Australia[3]. Caves are the primary roosting habitat, but they also use derelict mines, storm-water tunnels, buildings and other man-made structures. This species forms discrete populations centred on a maternity cave that is used annually in spring and summer for the birth and rearing of young[3]. Populations disperse within about 300 km range of maternity caves and breeding or roosting colonies can number from 100 to 150,000 individuals. They hunt in forested areas, catching moths and other flying insects above the tree tops.

a) *In the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,*

No known roosts or maternity caves are present in the Modification extension area or will be removed by the modification. 4.0 ha of foraging habitat occurs on the Modification extension area and will be cleared, however 12 ha of higher quality habitat are being protected as an offset. Large areas of potential habitat will remain the locality, most notably in the Drayton Wildlife Refuge, a 114 ha area of bushland. In addition, 88 ha of land are being revegetated as an offset for the Drayton Extension. A viable local population is unlikely to be placed at risk of extinction as a result of the proposed development.

b) *In the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction,*

No endangered populations of the Eastern Bentwing Bat are listed under the TSC Act.

(c) *In the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:*

(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or

(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction

Not applicable.

(d) *In relation to the habitat of a threatened species, population or ecological community:*

(i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and

(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and

(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality.

4.0 ha of foraging habitat for this species will be removed on the Modification extension area, but 12 ha of higher quality foraging habitat in the Modification offset area will be protected. The Modification offset area will provide corridors and habitat for foraging and directly adjoins the Drayton Wildlife Refuge, a 114 ha area of vegetation that is protected for conservation in perpetuity. In addition, 88 ha of land is being revegetated as an offset for the Drayton Extension. A significant area of known habitat will not be affected by the proposed modification.

This is a highly mobile species and the impacts of the project are not expected to have a deleterious impact upon habitat corridors or habitat connectivity for dispersal of the species. The extent of clearing will not cause any isolation of potential foraging habitat for this species. The project will not cause habitat to become effectively isolated from currently interconnecting or proximate areas of habitat.

Removal of trees will reduce foraging areas for this species; however large areas of habitat remain in the locality. The habitat to be removed is not considered to be important to the long term survival of the species in the locality and the project will not affect the long-term viability of this species.

e) Whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly)

No critical habitat for this species has currently been identified by the Director-General of the DECC.

f) whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan

No recovery plan for this species has been prepared by the NSW National Parks and Wildlife Service to date.

No threat abatement plans relevant to the threatening processes mentioned in part (g) below have been prepared by the NSW National Parks and Wildlife Service to date.

g) whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process

The proposed project will involve two Key Threatening Processes under the TSC Act:

- Clearing of native vegetation; and
- The removal of dead trees, dead wood and logs.

No threat abatement plans relevant to the threatening processes mentioned above have been prepared by DECC to date.

Conclusion

The Eastern Bentwing Bat has previously been recorded from Drayton and it is likely that it utilises habitat on the Modification extension area. A small area of foraging habitat will be cleared from the Modification extension area as a result of the modification, however no maternity caves or roosts are located on the Modification extension area and will be impacted.

An area of 12 ha of higher quality habitat are being protected as an offset for the modification, and large areas of potential habitat for this species will remain in the locality, in particular the 114 ha Drayton Wildlife Refuge. In addition, 88 ha of land is being revegetated as an offset for the Drayton Extension. The habitat to be removed on the Modification extension area is not considered to be important to the survival of this species and the proposal is not expected to result in a significant impact to the Eastern Bentwing Bat. No Species Impact Statement is required for this species.

1.3 Yellow-bellied Sheathtail Bat

The Yellow-bellied Sheathtail-bat is a wide-ranging species found across northern and eastern Australia[6]. It roosts singly or in groups of up to six, in tree hollows and buildings; in treeless areas they are known to utilise mammal burrows. The Yellow-bellied Sheathtail-bat forages over the forest canopy for insects in most habitats across its very wide range, with and without trees.

(a) *In the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,*

A small area of foraging habitat for this species occurs on the Modification extension area, as well as some potential roosting habitat in small tree hollows. This habitat will be cleared for the Modification; however 12 ha of higher quality habitat are being protected as an offset. Large areas of potential habitat will remain the locality, most notably Drayton Wildlife Refuge, a 114 ha area of bushland. Accordingly, a viable local population is unlikely to be placed at risk of extinction as a result of the proposed development.

(b) *In the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction,*

No endangered populations of the Yellow-bellied Sheathtail Bat are listed under the TSC Act.

(c) *In the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:*

(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or

(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction

Not applicable.

(d) *In relation to the habitat of a threatened species, population or ecological community:*

(i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and

(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and

(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality.

4.0 ha of potential habitat for this species will be removed on the Modification extension area, but 12 ha of higher quality potential habitat in the Modification offset area will be protected. The Modification offset area will provide corridors and habitat for foraging and directly adjoins the Drayton Wildlife Refuge, a 114 ha area of vegetation that is protected for conservation in perpetuity. In addition, 88 ha of land is being revegetated as an offset for the Drayton Extension. A significant area of known habitat will not be affected by the Modification.

This is a highly mobile species and the impacts of the Modification are not expected to have a deleterious impact upon habitat corridors or habitat connectivity for dispersal of the species. The extent of clearing will not cause any isolation of potential foraging habitat for this species. The project will not cause habitat to become effectively isolated from currently interconnecting or proximate areas of habitat.

Removal of trees will reduce foraging areas for this species, however large areas of habitat remain in the locality. The habitat to be removed is not considered to be important to the long term survival of the species in the locality and the project will not affect the long-term viability of this species.

e) Whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly)

No critical habitat for this species has currently been identified by the Director-General of the DECC.

f) whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan

No recovery plan for this species has been prepared by the NSW National Parks and Wildlife Service to date.

No threat abatement plans relevant to the threatening processes mentioned in part (g) below have been prepared by the NSW National Parks and Wildlife Service to date.

g) whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process

The proposed project will involve two Key Threatening Processes under the TSC Act:

- Clearing of native vegetation; and
- The removal of dead trees, dead wood and logs.

No threat abatement plans relevant to the key threatening processes mentioned above have been prepared by DECC to date.

Conclusion

The Yellow-bellied Sheathtail-bat has previously been recorded from Drayton and it is likely that it utilises habitat on the Modification extension area. A small area (7.5ha) of potential habitat will be cleared from the Modification extension area as a result of the modification, however 12 ha of higher quality habitat is being provided as an offset. Larger areas of potential habitat for this species occur in the locality, in particular the 114 ha Drayton Wildlife Refuge. In addition, 88 ha of land is being revegetated as an offset for the approved Drayton Extension. The habitat to be removed on the Modification extension area is not considered to be important to the survival of this species and the proposal is not expected to result in a significant impact to the Yellow-bellied Sheathtail-bat. No Species Impact Statement is required for this species.

1.4 Diamond Firetail (*Stagonopleura guttata*)

The Diamond Firetail is widely distributed in NSW, from the Northern, Central and Southern Tablelands, the Northern, Central and South Western Slopes and the North West Plains and Riverina[2]. It is not commonly found in coastal districts, though there are records from near Sydney, the Hunter Valley and the Bega Valley. This species has a scattered distribution over the rest of NSW. Also found in the Australian Capital Territory, Queensland, Victoria and South Australia.

It is found in grassy eucalypt woodlands, including Box-Gum Woodlands and Snow Gum *Eucalyptus pauciflora* Woodlands. It also occurs in open forest, mallee, Natural Temperate Grassland, and in secondary grassland derived from other communities. It feeds exclusively on the ground, on ripe and partly-ripe grass and herb seeds and green leaves, and on insects. The Diamond Firetail is often found in riparian areas, and sometimes in lightly wooded farmland, and roosts in dense shrubs or in smaller nests built especially for roosting.

(e) *In the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,*

Some degraded foraging habitat for this species occurs on the Modification extension area which will be cleared for the modification. However, 12 ha of higher quality habitat are being protected as an offset. Large areas of potential habitat will remain the locality, most notably Drayton Wildlife Refuge, a 114 ha area of bushland. Considering the large amount of suitable habitat that remains in the locality, a viable local population is unlikely to be placed at risk of extinction as a result of the proposed development.

(f) *In the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction,*

No endangered populations of the Diamond Firetail are listed under the TSC Act.

(g) *In the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:*

(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or

(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction

Not applicable.

(h) *In relation to the habitat of a threatened species, population or ecological community:*

(i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and

(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and

(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality.

4.0 ha of potential habitat for this species will be removed on the Modification extension area, but 12 ha of higher quality potential habitat will be protected in the Modification offset area. The Modification offset area will provide corridors and habitat for foraging and directly adjoins the Drayton Wildlife Refuge, a 114 ha area of vegetation that is protected for conservation in perpetuity. In addition, 88 ha of land is being revegetated as an offset for the Drayton Extension. It is therefore considered that a significant area of known habitat will not be affected by the Modification.

This is a highly mobile species and the impacts of the project are not expected to have a deleterious impact upon habitat corridors or habitat connectivity for dispersal of the species. The extent of clearing will not cause any isolation of potential foraging habitat for this species. The project will not cause habitat to become effectively isolated from currently interconnecting or proximate areas of habitat.

The proposed modification will reduce a small area of foraging habitat for this species, however large areas of higher quality habitat remain in the locality. The habitat to be removed is not considered to be important to the long term survival of the species in the locality and the project will not affect the long-term viability of this species.

e) Whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly)

No critical habitat for this species has currently been identified by the Director-General of the DECC.

f) whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan

No recovery plan for this species has been prepared by the NSW National Parks and Wildlife Service to date.

No threat abatement plans relevant to the threatening processes mentioned in part (g) below have been prepared by the NSW National Parks and Wildlife Service to date.

g) whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process

The proposed project will involve two Key Threatening Processes under the TSC Act:

- Clearing of native vegetation; and
- The removal of dead trees, dead wood and logs.

No threat abatement plans relevant to the key threatening processes mentioned above have been prepared by DECC to date.

Conclusion

The Diamond Firetail has previously been recorded from Drayton and it is likely that it periodically utilises habitat on the Modification extension area. 4.0 ha of degraded potential habitat will be cleared from the Modification extension area as a result of the modification, however 12 ha of higher quality potential habitat for this species are being provided as an offset. Large area of suitable habitat for this species occur in the locality, in particular the 114 ha Drayton Wildlife Refuge, which is being protected for conservation. In addition, 88 ha of land are being revegetated as an offset for the approved Drayton Extension. The habitat to be removed on the Modification extension area is not considered to be important to the survival of this species and the proposal is not expected to result in a significant impact to the Diamond Firetail. No Species Impact Statement is required for this species.