AshtonCoal

ASHTON COAL OPERATIONS PTY LIMITED

ANNUAL ENVIRONMENTAL MANAGEMENT REPORT

2007 / 2008

Name of mine	Ashton Coal Mine
Titles/Mining Leases	ML1526 and ML1533
MOP Commencement Date 1/11/2007	**MOP Completion Date** 31/12/2012
AEMR Commencement Date 2/09/2007	**AEMR Completion Date** 1/09/2008
Name of Leaseholder	White Mining NSW Limited & ICRA (Ashton) Pty Ltd & International Marine Corporation
Name of Operator (if different)	Ashton Coal Operations Pty Ltd
Reporting Officer	Peter Barton
Title	General Manager

Signature _____ **Date**_____

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1.0 INTRODUCTION

The Ashton Coal Project (ACP) is located approximately 14km north-west of Singleton near the village of Camberwell. During the period of this Annual Environmental Management Report (AEMR), both the Open Cut and Underground mines have continued at full production.

The project currently consists of an open cut truck and shovel mine, underground longwall mine, associated coal preparation plant, stockpiling, administration buildings, workshops, stores, bathhouse facilities and car parking.

This report has been developed in accordance with the conditions of Environmental Protection Licence No. 11879 and all relevant development consent conditions. The structure of this report is based on the document "*Guidelines and Format for Preparation of Annual Environmental Management Report*", Department of Mineral Resources, Document No. EDG03 MREMP Guide V3 dated January 2006.

Ashton Coal is owned by Felix Resources Limited (60%), Itochu Corporation (10%) and International Marine Corporation Group (30%) and operated by ACOL.

This report covers the period 2 September 2007 to 1 September 2008. In accordance with Condition 9.3 of the Development Consent, Ashton has consulted with the Director-General of the Department of Planning in relation the preparation of this report.

1.1 CONSENTS, LEASE AND LICENCES

An interim Mining Operations Plan (MOP) was submitted to the Department of Mineral Resources (DMR) in August 2003, prior to the commencement of construction activities on site. The Open Cut MOP is now approved and was modified in January 2005 for the inclusion of the increased height of the Eastern Emplacement Area and the removal of the Western Emplacement Area from the MOP. The Underground MOP was approved in March 2006 and includes the period from February 2006 through to December 2010. A variation to the Underground MOP allowing the installation of a dewatering bore and ventilation bore was approved in March 2007. During the reporting period a combined Site MOP which combines the Open Cut and Underground operations was approved on the 1 September 2008. This document has superseded the Open Cut and Underground MOPs. The Site MOP covers the period 1 November 2007 to 31 December 2012.

During the reporting period an extension to the Mining Lease area was applied for to the DPI. The extension covers a section of the North West Mains of the Underground Mine that is not currently covered by Mining Leases ML1529 and ML1533. Ashton expect to receive approval for the extension during the 2008-09 reporting period.

The following table (**Table 1**) provides a summary of the status of all leases, licences and approvals obtained by Ashton.

Copies of all licences and approvals have been provided to government agencies and Singleton Council and are available for inspection at the ACOL site office.

Table 1. LEASES, LICENCES AND APPROVALS

Ref	Detail	Granted	Authority	Area	Status	Expiry
	PLANNING APPROVALS					
1.	309-11-2001-i Development Consent	11/10/02	DoP ^	Schedule 1 of the Consent	Current	11/10/23
2.	309-11-2001-i (M1) Modification to Development Consent (allows EPA to specify noise criteria in Table 5)	15/10/03	DoP	Schedule 1 of the Consent	Current	11/10/23
3.	309-11-2001-i (M2) Modification to Development Consent (permits 10 m increase in height of EEA)	27/01/05	DoP	Schedule 1 of the Consent	Current	11/10/23
4.	309-11-2001-i (M3) Modification to Development Consent (for the construction and operations of tailings pipelines between the mine and the former Ravensworth Mine)	19/02/07	DoP	Schedule 1 of the Consent	Current	11/10/23
5.	DA 144/1993 Amendment for use of Ravensworth Void 4 – Tailings Disposal. (held by Macquarie Generation)	25/05/07	SSC	NA	Current	NA
6.	DA486/2006 Train fuelling facility (held By QR)	28/11/06	SSC	Rail Siding	Current	28/11/11
	MINING TENEMENTS					
7.	ML 1533	26/02/03	DPI	883.4 ha	Current	26/02/24
8.	ML 1529	17/09/03	DPI	128.7 ha (sub surface)	Current	11/11/12
9.	Exploration Licence (EL) 5860	14/03/04	DPI	272 ha	Current	21/05/09
10.	Exploration Licence (EL) 4918	17/09/99	DPI	370 ha	Current	17/12/10
11.	EPL 11879 (Open Cut Area and processing facilities)	02/09/03	DECC *	As shown on EPL 11879 Fig 1	S/S	06/11/11
12.	Variation to EPL 11879 (established Construction Noise Criteria)	10/11/03	DECC	As above	S/S	As above
13.	Variation to EPL 11879 (modified dust sampling requirements)	28/02/05	DECC	As above	S/S	As above

Table 1. LEASES, LICENCES AND APPROVALS						
Ref	**Detail**	**Granted**	**Authority**	**Area**	**Status**	**Expiry**
14.	Variation to EPL 11879 (incorporation of UG mine)	17/11/05	DECC	ML1533	Current	As above
	MINING OPERATIONS PLAN					
15.	Interim MOP (for construction and initial 12 months operation of Open Cut & CHPP)	11/08/04	DPI	N/A	S/S	11/08/09
16.	MOP for Open Cut (for all associated life of mine activities)	22/07/04	DPI	N/A	S/S	22/07/09
17.	MOP Modification (for increase in EEA height & removal of WEA)	Jan 2005	DPI	N/A	S/S	Jan 2010
18.	MOP Modification (for Glennies Creek Road Environmental Bund)	31/05/05	DPI	N/A	SS	25/05/10
19.	Interim Underground MOP (for first workings development)	20/12/05	DPI	N/A	S/S	09/12/09
20.	MOP for the Ashton Underground Mine (Development of underground operations for LW1-4 and associated facilities)	23/01/06	DPI	N/A	S/S	31/12/11
21.	Variation to the MOP for the Ashton Underground Mine	28/02/07	DPI	N/A	S/S	31/12/12
22.	MOP combining Open Cut and Underground operations	1/09/08	DPI	N/A	Current	31/12/12
	SUBSIDENCE MANAGEMENT PLAN					
23.	Subsidence Management Plan (for the extraction of LW1–4)	08/03/07	DPI	N/A	Current	Based on area not on year
	OTHER LICENCES					

Table 1. LEASES, LICENCES AND APPROVALS

Ref	Detail	Granted	Authority	Area	Status	Expiry
24.	Water Licences: • 20AL201311 Glennies Creek High Security 11ML • 20AL200491 Glennies Creek High Security 80ML • 20AL204249 Glennies Creek General Security 354ML • 20AL203056 Glennies Creek Supplementary 4ML • 20AL200568 Glennies Creek Stock and Domestic 3ML • 20AL201712 Glennies Creek Stock and Domestic 3ML • 20AL201083 Glennies Creek Stock and Domestic 3ML • 20AL200508 Glennies Creek Stock and Domestic 3ML • 20AL200690 Glennies Creek Stock and Domestic 3ML • 20AL201031Glennies Creek Stock and Domestic 8ML • 20AL200739 Glennies Creek Stock and Domestic 12ML • 20AL200480 Glennies Creek Stock and Domestic 8ML • 20AL200568 Glennies Creek Stock and Domestic 3ML • 20AL201624 Hunter River High Security 3ML • 20AL201625 Hunter River General Security 335ML • 20AL203106 Hunter River Supplementary 15.5ML • 20SL044434 Bowmans Creek Irrigation 366ML • 20SL042214 Bowmans Creek Irrigation 14ML	N/A	DWE **	N/A	Current	30/06/17 TBA 11/03/19 11/03/09 13/03/09 30/06/17 27/05/18 30/06/17 30/06/17 30/06/17 23/05/18 23/05/18 13/03/09 7/04/09 7/04/09 7/04/09 16/10/09 23/02/12

Table 1. LEASES, LICENCES AND APPROVALS

Ref	Detail	Granted	Authority	Area	Status	Expiry
25.	Groundwater Licences: • 20BL136766 Stock Domestic • 20BL168848 Test Bore • 20BL168849 Test Bore • 20BL169508 Mining 10ML • 20BL169937 Mining 100ML • 20BL170596 Monitoring • 20BL171364 Mining 100ML	 12/01/88 27/08/03 27/08/03 15/03/05 06/04/06 16/10/06 17/05/07	DWE	N/A	 Current Current Current Current S/S Current Current	 Perpetuity Perpetuity Perpetuity 14/03/10 S/S Perpetuity 16/05/12
26.	Radiation Licences Licence to Sell/Possess 28485	18/6/03	EPA	NA	Current	18/6/09
27.	Radiation Licences • Registration Certificate • Registration Number 12903 • Registration Number 12905 • Registration Number 12906 • Registration Number 12997 • Registration Number 12998 • Registration Number 12999 • Registration Number 13000 • Registration Number 13001	 16/01/08 16/01/08 16/01/08 3/03/08 3/03/08 3/03/08 3/03/08 3/03/08 3/03/08	DECC	N/A	Current	 16/01/10 16/01/10 16/01/10 3/03/10 3/03/10 3/03/10 3/03/10 3/03/10 3/03/10
28.	AHIMS Permit No 1591 to collect Aboriginal artefacts north of the New England Highway under S90 of NPW Act	21/07/03	DECC (NPWS)	239.8	Complete	21/07/08
29.	AHIMS Permit No 2783 to collect Aboriginal artefacts EWA86 under S90 of NPW Act	28/09/07	DECC (NPWS)	NA	Current	NA
30.	Part 3A permit No P1819 to install two power poles near Bowmans Creek	05/12/03	DWE	N/A	Current	05/12/04
31.	Permit No CW802609 to construct levee bank on Bowmans Creek	08/09/03	DWE	N/A	Current	07/09/13
32.	Clause 88(1) approval for safe operations and stability of workings and resource recovery longwall mining	28/02/07	DPI	N/A	Current	1/06/2011
33.	S126 Approvals for emplacement of carbonaceous materials Ashton Open Cut	08/04/04	DPI	N/A	Current	NA
34.	S126 Approvals for emplacement of carbonaceous materials Ravensworth Void 4	17/01/07	DPI	N/A	Current	NA

^ Department of Planning (DoP) *S/S – superseded*
^^ Department of Water & Energy (DWE) *N/A – Not available*
** Department of Environment & Climate Change (DECC)* *TBA – To be advised*

1.2 MINE CONTACTS

Positions of responsibility for operations and environment are detailed hereunder:

Table 2. KEY MINE CONTACTS

Area of Responsibility	Name	Title	Contact Number(s)
General Manager	P. Barton	General Manager	(02) 6576 1111
Open Cut Mine	B. Chilcott	Mining Manager	(02) 6570 9128
Underground Mine	B. Wesley	Mine Manager	(02) 6570 9104
CHPP	P. Davis	Declared Plant Manager	(02) 6570 9148
Environment	Lisa Richards	Environment and Community Relations Manager	(02) 6570 9219
Environmental Contact Line			1800 657 639

ACOL's General Manager, Peter Barton, has overall responsibility for the operational and development phases of the project and is the statutory manager for the open cut coal mine. Brian Chilcott is Mining Manager for the open cut operation. Brian Wesley is the statutory Mine Manager for the Underground Mine. Paul Davis is CHPP Manager and Declared Plant Manager. Lisa Richards is responsible for day-to-day environmental management and community relations and is the nominated Environmental Officer for the project. ACOL's Board of Directors has ultimate responsibility for Ashton's environmental performance.

1.3 ACTIONS REQUIRED AT AEMR REVIEW

The previous year's AEMR review included a Department of Primary Industry site inspection on 10 September 2008. During the site inspection and review seven issues were identified that required actions, these are detailed in the following table.

Table 3. AEMR 2007-2008 ANNUAL INSPECTION ACTION LIST

No	Issue	Action Required	Action Details	Status
1	MLA status	Mining lease applications over peripheral mining areas (road diversion, underground heading development in NE) are current. It is noted that a DA variation is current for the LW9 area.	A Mining Lease variation for the Underground north west mains has been approved. Ashton plan on submitting a further variation for LW9 and other peripheral areas not yet covered by the mining lease.	Ongoing
2	Tailings Storage Facility (TSF) and pipeline.	The pipeline and TSF was inspected and surveillance procedures discussed. The tailings beach is to be surveyed to confirm performance and storage capacity.	The tailings storage facility has been surveyed and the findings are presented in Section 2.6.	Complete
3	Spontaneous combustion at TSF	Control to be ongoing according to spon com management plan. A heating incidence requires immediate attention. Ashton is to liaise with Xstrata Ravensworth U/G Mine to confirm mining schedule, the TSF wall lift and spon com surveillance / control.	Management options for the heating incidence are being reviewed and remediation of the site will be conducted in the next reporting period. Ashton is currently speaking with Xstrata regarding the Ravensworth UG mine schedule and the impact on the TSF wall lift.	Ongoing
4	Conservation Area	It was noted that a Plan Of Management has been drafted for DECC. Subsequent to a finalised agreement, a summary report in next AEMR on conservation (monitoring, procedures, and revegetation establishment).	Whilst the agreement has not yet been finalised the status of the conservation agreement, monitoring and regeneration works within the southern woodland are presented below in Section 3.6.	Ongoing

Table 3. AEMR 2007-2008 ANNUAL INSPECTION ACTION LIST				
No	**Issue**	**Action Required**	**Action Details**	**Status**
5	AEMR Rehabilitation Plan	Rather than attaching MOP plans, a designated AEMR rehab status plan is required annotating previous, current year and next year areas under rehab – refer to Guidelines.	A designated AEMR plan has been completed and is attached in Appendix 6.	Complete
6	Weed Program	The weed monitoring report and program budget / outcomes are to be identified and discussed in next AEMR.	Weed monitoring report and program is described below in Section 3.8	Complete
7	Rehabilitation trial	Improved native vegetation and grass cover is observed in the Organic Growth Medium (OGM) trial areas. DPI requests an interim report on the trial, including certification of OGM. Report to be supplied in early 2009.	Monitoring has been undertaken and an interim report will be finalised and supplied to DPI in 2009.	In progress

1.4 INDEPENDENT ENVIRONMENTAL AUDITING

Under condition 9.2 of DA 309-11-2001-i Ashton Coal are required to undertake an internal audit of the performance of the project against conditions of the consent and other statutory approvals. To satisfy this condition Hansen Bailey were contracted to conduct the internal audit on behalf of Ashton Coal and the report continues the regular auditing process for the site, assessing the environmental compliance of the operation during the 2007 – 2008 reporting period.

The audit was conducted by Dianne Munro and Dorian Walsh and consisted of a detailed desktop review of documentation, discussions with Ashton Coal environmental staff and a site visit (including a pit top field inspection) of Ashton Coal on 29 August 2008. The audit was conducted in accordance with ISO 19011– *Guidelines for Quality and/or Environmental Systems Auditing*.

The key recommendations from the audit against Ashton Coal's licences and approvals conditions include:

- Ashton should progress discussions with relevant regulatory authorities and resolve all of the non-compliance matters as far as practical, as described in **Table 4**;

- When Development Consent DA 309-11-2001-i is next required to be modified, the application should be sought to ensure a more contemporary planning approval's platform which does not duplicate (and potentially contradict) conditions required to be complied with under other legislation relevant to coal mining in NSW and to omit those which are no longer relevant;

- The two remaining Ashton management plans which have not been reviewed at 5 yearly intervals in accordance with condition 3.6 should be undertaken to ensure they remain relevant to the operation;

- Where properties continue to experience levels above the criteria as a result of Ashton's activities, continued efforts to acquire such properties should continue;

- The 2008 AEMR should clearly stipulate which receivers have or are likely to receive noise, dust and blast limits above the criteria as required by the conditions of development consent;

- Although evidence of significant weed management activities were evident during the audit, as with most disturbed areas in the Hunter Valley, ongoing focus on management of key weed species, particularly galenia would be advantageous;

- A variation to the EPL should be sought to update monitoring locations to be a 'representative location' rather than the prescriptive description currently in place;

- The Conservation Agreement between Ashton Coal and the DECC should continue to be pursued with a view to finalisation; and

- There needs to be a continuation of regular environmental awareness training of all operators and contractors to assist in the reduction of noise, dust and lighting impacts on the local community.

Table 4. ENVIRONMENTAL AUDIT – NON COMPLIANT CONDITIONS OF DEVELOPMENT CONSENT (DA 309-11-2001-1)		
Condition	**Description**	**Comments**
1.2	The Applicant shall carry out the development generally in accordance with the following documents	Full documentation required under these consent conditions was not available to review at the time of the audit.
(f)	additional information relating to flora and fauna surveys, the diversion of Bowmans Creek, water quality, groundwater, air quality and Aboriginal cultural heritage provided by HLA Enviro-sciences to Planning NSW and other government agencies, dated 28 February 2002;	
(i)	additional water management information provided to DEC and other NSW Government agencies prepared by HLA Envirosciences Pty Ltd, dated 5 April;	
(x)	Submission Pursuant to Section 96(2) of the Environmental Planning and Assessment Act 1979, dated August 2004, prepared by Ashton Coal Operations Pty Limited;	
(y)	Supplementary Air Quality Information, dated 9 November 2004, prepared by Holmes Air Sciences;	
1.6	The Applicant shall make the following documents available to the public upon request at the mine site and SSC, and shall post all documents on the internet:	The dates at which the documents under conditions 1.6(a-d) were made available to the public could not be confirmed at the time of the audit.
(a)	this consent;	
(b)	any licenses or approvals for the mine obtained from Government agencies;	
(c)	the Mining Operations Plan; and,	

Table 4. ENVIRONMENTAL AUDIT – NON COMPLIANT CONDITIONS OF DEVELOPMENT CONSENT (DA 309-11-2001-1)		
Condition	**Description**	**Comments**
(d)	all documents required under this consent, including the environmental management strategy, environmental management plans, AEMRs, SMIARs, and Independent Audits.	
3.6	Environmental management plans are to be reviewed, and updated as necessary, at least every 5 years or as otherwise directed by the Director-General, in consultation with the relevant government agencies. Plans shall reflect changing environmental circumstances and changes in technology or best-practice management procedures.	The Ashton Soil Stripping Management Plan and Waste Management Plan have not been updated within 5 years.
3.46(b)	The Applicant shall prepare and implement a Flora and Fauna Management Plan (FFMP) for the DA area. The Plan shall include but not be limited to: details of strategic vegetation management, outlining timeframes for clearing and re-vegetation activities and a map illustrating the Plan. The Plan should aim to maximise scope for new vegetation to establish and restore ecological integrity;	Strategic vegetation management details and plans for Ashton are not included in the Flora & Fauna Management Plan (FFMP) (Pacrim, 2007). The FFMP should be updated with the required information that is currently included in the Ashton MOP and LRMP.
4.16	The Applicant shall prepare a statistical assessment to the satisfaction of DIPNR to initially benchmark the pre-mining natural variation in groundwater quality and quantity and to set trigger levels for accepting accountability. The assessment is to be documented in the SWMP (condition 4.24).	A statistical assessment has not been prepared to benchmark the pre-mining variation in groundwater quality and quantity and to set trigger levels. This assessment should be included in the GMP.
6.1	The Applicant shall comply with the following ambient air quality standards/goals: Table 1 Long Term Particulate Matter Criteria **Pollutant** — **Standard/Goal** — **Agency** Total Suspended Particulate Matter (TSP) — 90ug/m^3 (annual mean) — NH & MRC	Exceedence of 50 ug/m3 goal at site 8 on 1 July 2008 also identified in Ashton Incidents register for 2007/2008 period. Depositional dust goal of 4g/m2/month was exceeded at gauge D7 for the

Table 4. ENVIRONMENTAL AUDIT – NON COMPLIANT CONDITIONS OF DEVELOPMENT CONSENT (DA 309-11-2001-1)

Condition	Description	Comments
	Particulate matter < 10um (PM_{10}) 30ug/m^3 NSW DEC Table 2 Short Term Particulate Matter Goal **Pollutant** **Standard/Goal** **Agency** Particulate matter < 10um (PM_{10}) 50ug/m3 NSW DEC Table 3 NSW DEC Amenity Based Criteria for Dust Fallout **Pollutant Deposited Level** **Averaging Period** **Maximum Increase in Deposited Dust Level** **Maximum Total Deposited Dust Level** Deposited dust Annual 2 g/m^2/month 4 g/m^2/month	period September 2007- February 2008.
6.34	Except as may be expressly provided by a DEC license, noise generated by the development must not exceed the limits specified in Table 5 below. **Table 5 Noise Limits (dB(A))** **Location** **Day** **Evening** **Night** L_{Aeq} (15 min) L_{Aeq} (15 min) $L_{A1(1\ minute)}$ Any residence not owned by the Applicant or not subject to an agreement between the Applicant and the residence owner as to an alternate noise limit. 38 38 36 46	Daytime exceedences of noise were recorded at locations 2 and 3 respectively during monitoring conducted in November 2007.
6.36	The acquisition zone for noise is defined by predicted or demonstrated exceedence of the noise levels shown in Table 6 below: **Table 6 Acquisition Noise Limits (dB(A))**	Exceedances of noise criteria at locations 2 and 3 have been recorded during the audit period.

Table 4. ENVIRONMENTAL AUDIT – NON COMPLIANT CONDITIONS OF DEVELOPMENT CONSENT (DA 309-11-2001-1)					
Condition	**Description**				**Comments**
	Location	**Day** L_{Aeq} (15 min)	**Evening** L_{Aeq} (15 min)	**Night** L_{Aeq} (15 min)	
	Any residence not owned by the Applicant or not subject to an agreement between the Applicant and the residence owner as to an alternate noise limit.	43	43	41	
6.55	The Applicant shall design and construct all roads and areas where mobile equipment and vehicles move on the site to minimise off-site lighting impacts from equipment lighting and headlights. Lighting from equipment and vehicles shall not shine directly on residences or vehicles moving along public roads at any time.				Four lighting related complaints were received during the audit period.
12.1	The Applicant shall ensure that all statutory requirements including but not restricted to those set down by the Environmental Planning and Assessment Act 1979, Local Government Act 1993, Protection of the Environment Administration Act 1991, Protection of the Environment Operations Act 1997, Rivers and Foreshores Improvement Act 1948, Water Act 1912, National Parks and Wildlife Act 1974, and all other relevant legislation, Regulations, Australian Standards, Codes, Guidelines and Notices, Conditions, Directions, Notices and Requirements issued pursuant to statutory powers by the SSC, DEC, DPI Minerals, NPWS, DIPNR, RTA, DPI - Agriculture, DPI - Fisheries and other Government agencies, are fully met.				Various non compliances with other licences and approvals were identified and are included in Table B2.

Table 5. ENVIRONMENTAL AUDIT – NON COMPLIANT CONDITIONS OF EPL NO. 11879

Condition	Description	Comments
L6.1	Noise from the premises must not exceed the limits specified in the table below: **Location** / **Day** L_{Aeq} (15 min) / **Evening** L_{Aeq} (15 min) / **Night** L_{Aeq} (15 min) / **Night** $L_{A1(1\ minute)}$ Any residence not owned by the Applicant or not subject to an agreement between the Applicant and the residence owner as to an alternate noise limit. — 38 — 38 — 36 — 46	Daytime exceedences of noise were recorded at locations 2 and 3 respectively during monitoring conducted in November 2007.

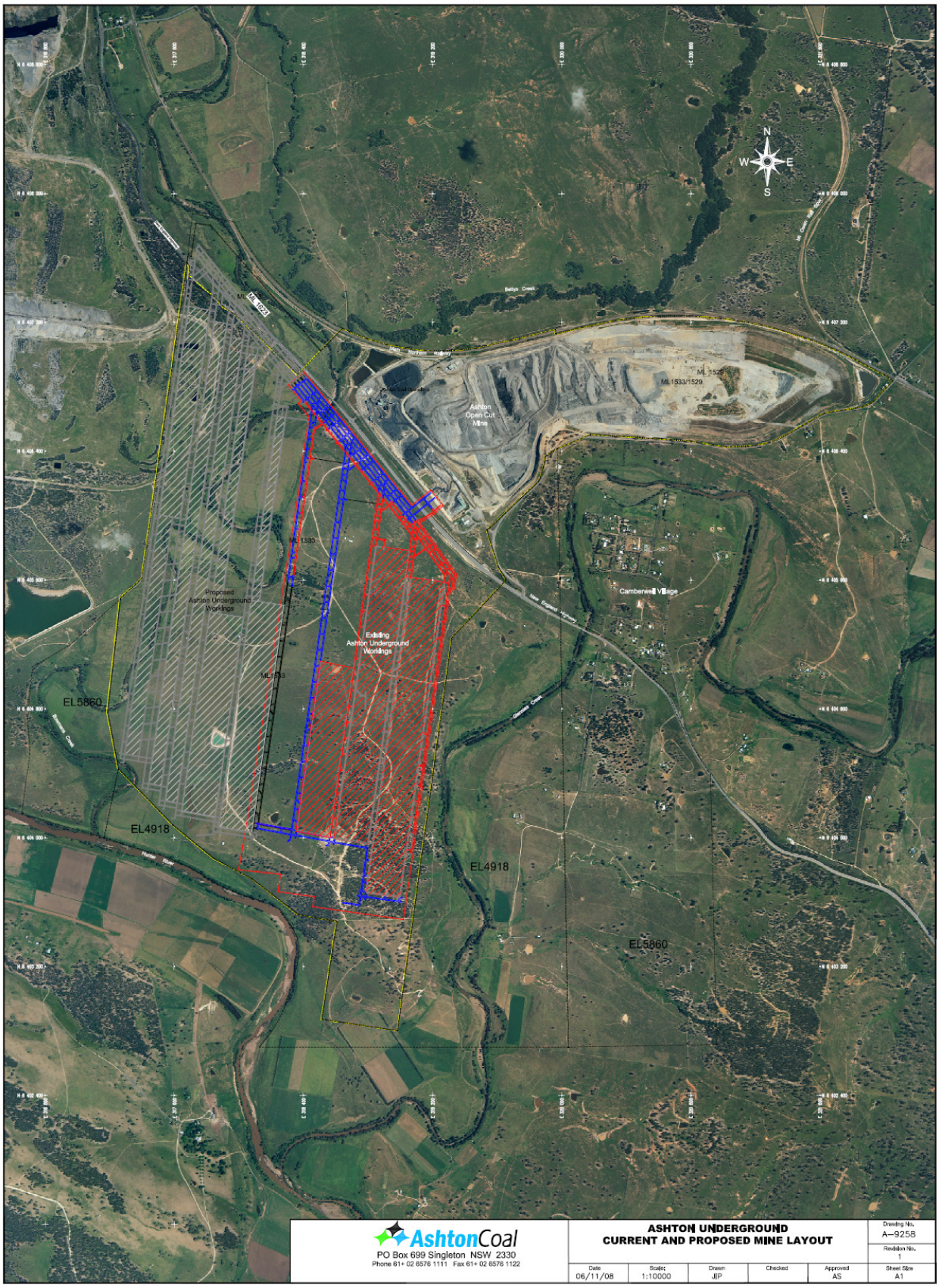


Figure 1. Ashton Coal Location Plan

1.5 ENVIRONMENTAL MANAGEMENT PLAN UPDATE

There were no Environmental Management Plans updated during the AEMR reporting period however there were two management plans revised and submitted to Government Agencies during the reporting period as shown in **Table 6**.

Table 6. ENVIRONMENTAL MANAGEMENT PLANS SUBMITTED DURING THE REPORTING PERIOD

Management Plans
Groundwater Management Plan – revision following SMP
Archaeological and Cultural Heritage Management Plan – submitted to DECC for s90 application

2.0 OPERATIONS DURING THE REPORTING PERIOD

2.1 EXPLORATION

Mining Lease 1533

- Open Cut - 59 holes (9 cored and 50 open holes)
- Underground - 33 holes (3 cored and 30 open holes)
  - 15 in-seam long holes

Exploration Licences 5860 & 4918

- Area being assessed - 31 holes (6 cored 25 open holes)

2.2 LAND PREPARATION

No clearing was undertaken during the reporting period.

2.3 CONSTRUCTION

2.3.1 Underground

The surface facilities for the Underground were completed prior to this reporting period. A temporary bathhouse facility for contractors was installed during this reporting period.

2.3.2 Coal Handling and Preparation Plant

No further construction was completed for the CHPP.

2.3.3 Open Cut

No construction was undertaken in the Open Cut operations during the reporting period.

2.4 MINING

2.4.1 Estimated Mine Life

The life-of-mine MOP for the Open Cut Mine anticipates that open cut mining will be completed by late2010.

The underground mine has now been operating since December 2005. The expected mine life is for a further 15 years (2023).

2.4.2 Mine Production and Mining Constraints

2.4.2.1 Geology

The major coal seams identified at Ashton are (in descending stratigraphical order); the Lemington, Pikes Gully, Arties, Upper Liddell, Middle Liddell, Upper Lower Liddell, Lower Lower Liddell, Upper Barrett and Lower Barrett seams.

The strata within the Foybrook Formation comprises in order of predominance, fine to coarse grained sandstone, siltstone, conglomerate, mudstone, shale and coal. The top of the formation corresponds with the base of the overlying Bulga Formation which in turn is overlain by the Archerfield Sandstone and Jerrys Plains Sub group respectively. The later includes the Bayswater Seam that has been mined in the adjacent Ravensworth development. Only a remnant portion of the Bayswater seam exists in the far western part of the project area.

The principal structural feature of the project area is the Camberwell Anticline. The axis of this structure trends along the eastern boundary of EL4918. The coal seams of principal interest subcrop along the eastern part of the mining area. These subcrops define the westerly dipping limb of the Camberwell Anticline. In the north eastern part of the project area the formation is folded around the axis of the Camberwell Anticline. At this location the formation is more steeply inclined, up to 22 degrees on the eastern limb, with a flatter dip of less than 10 degrees on the western limb. As mining has progressed minor faulting has been detected sub parallel with, and adjacent to, the crest of the anticline in the open cut operation. This faulting is predominantly reverse faults formed in conjunction with the Camberwell Anticline.

During the reporting period the Underground mine intersected an igneous dyke in the northern section of Longwall 2. Longhole drilling from main gate 1 identified the dyke however the main core of the dyke was not assessed. Due to the hardness of the dyke, shot firing was required to allow the longwall to mine through the zone. A grunching panel was also utilised to remove the dyke.

Total in-situ Coal within Ashton is 191 Million tonnes (Mt). Of this quantum, 173 Mt is measured and 18 Mt indicated. Coal resources have been assessed from the in-situ coal inventory and have been further segregated on the basis of Underground or Open Cut development potential.

2.4.2.2 Open Cut

Seams

The seams targeted during Open Cut operations (in descending order) are as follows:

- Pikes Gully;
- Arties;
- Upper Arties;
- Upper Liddell;

- Middle Liddell;
- Upper Lower Liddell;
- Lower Lower Liddell;
- Upper Barrett;
- Upper Barrett Split;
- Lower Barrett Split; and
- Lower Barrett.

Coal Analysis

An assessment of the ROM coal that is recovered from the Open Cut mine found that it generally has an ash content of 18% to 32%. Following processing in the CHPP, steaming and semi soft coking coal is produced for the export market and sized raw coal for domestic consumption. Analysis of the recoverable coal revealed significant proportions of Vitrinite and low amounts of elements such as sulphur, chlorine and phosphorous.

Coal Reserves

The Open Cut is encompassed by ML 1533 which covers an area of 883 hectares (ha) and has known extractable reserves of approximately 6.95 Mt of coal in some 14 seams and splits.

Mining Constraints

Significant mining constraints in the Open Cut operation include:

- The proximity of the village of Camberwell to the site;
- The location of the Main Northern Railway;
- The Glennies Creek road;
- Geological conditions that limit the area available for Open Cut mining; and
- The location of the Hunter River, Glennies Creek and Bowmans Creek and their associated alluvials in relation to the mine.

Mining Operations

Ashton Open Cut has approximately two years operation remaining at the current rate of 2.3 Mt ROM and 11.2Mbcm of overburden removed per year. Ashton Open Cut operates a fleet of hydraulic excavators and associated haul trucks along with support equipment consisting of watercarts, dozers and graders. Overburden is drilled and blasted prior to removal by the excavators. Overburden between seams is typically 15 – 20 m thick and although in the northern half of the pit, where it can be blasted in one pass, in the southern half it will be blasted in two or three passes in order to minimise the impact of blasting vibration on Camberwell village. Coal is usually free-dug by excavator or windrowed by dozers prior to loading in the case of thinner seams.

The Ashton Open Cut mine design has been developed to minimise environmental impacts on Camberwell village, particularly in relation to impacts from blasting vibration, dust and noise. The original mine plan with north-south strips and pit progressing from east to west has been progressively changed to east-west strips and mining from north to south. This concentrates the mining activity initially in the north-west corner of the pit, furthest from the village, and has

the effect of creating a buffer as the mining operations deepen. Mining with this modified orientation minimises hauling of overburden along the southern boundary of the pit and concentrates most of the mining and hauling at levels below the environmental bund for longer periods. Toward the end of the mine life, mining will be at sufficient depth in the southern corner with dumping occurring in the northern half of the pit. The remaining void at the southern end of the operation will be progressively filled with CHPP reject from the continuing Underground operation.

The southern side of the Eastern Emplacement Area was completed to RL 130 during the reporting period. This has created a visual and acoustical barrier between the remaining dumping areas and Camberwell Village. A small section remains to be filled however this is prevented by the location of the southern haul road. As the dump progresses west this area is expected to be filled by early January. The dump's drainage structure design incorporates water recovery maximisation for ongoing utilisation in the CHPP. The final void drainage will ensure decant water from CHPP reject co-disposal will also be recycled once the Open Cut operations cease.

Sufficient overburden will be stockpiled to enable the rehabilitation of Ashton, including Underground and CHPP areas following cessation of mining.

Hours of Operation

Under the conditions of the Development Consent and EPL11879, Open Cut mining operations are limited to the hours of 7:00 am to 10:00 pm, Monday to Saturday and 8:00 am to 10:00 pm on Sundays and public holidays. Hauling of reject material within the Open Cut pit area, operation of water carts and maintenance of equipment may be undertaken 24 hours a day 7 days a week.

Equipment Fleet

Mining of overburden and coal is conducted using hydraulic excavators supported by a range of trucks and other ancillary equipment.

The Open Cut mining fleet at Ashton consists of the equipment as outlined in **Table 7**.

Table 7. OPEN CUT AND CHPP MINING EQUIPMENT			
Number	**Description**	**Number**	**Description**
2	Liebherr 994B excavators	3	Cat 777 or 773 water trucks
1	Liebherr 994 excavator	1	Cat 16H grader
1	Cat 5130 excavator	1	Cat 14H grader
7	Komatsu 630E trucks	1	Komatsu WA 600 wheel Dozer
3	Komatsu 730E trucks	1	CAT 950E
4	Cat 789 trucks	1	Komatsu WA 900-3
2	CAT 785 trucks	1	Cat 938 wheel loader
1	Drilltech D40K drill rig	1	Cat D8R dozer
1	Drilltech D25K drill rig	2	Cat 992 Wheel loader
1	Sandvik	1	Cat 994 Wheel Loader
6	D10 bulldozer		

Permanent workshop, office and refuelling facilities are located at the northern limit of the developing open cut and in the vicinity of the Clean Coal Stockpile and Train Loading Infrastructure.

2.4.2.3 Underground

Ashton's Underground Coal Mine produced 2,119,909 ROM tonnes during the reporting period from Sep 2007 to Aug 2008.

The Underground is listed as having total mining reserves of 38.4Mt. The mining plan includes sequential mining of the Pikes Gully, Upper Liddell, Upper Lower Liddell and the Lower Barrett coal seams. Underground development commenced on the 21st of December 2005.

The requirements of the development consent and the subsidence guidelines of DPI (Minerals) have been merged, and a Subsidence Management Plan was approved in February 2007 for the first four longwall panels in the Pikes Gully Seam.

Operations in this reporting period included development drivage for Longwalls 2, 3 and 4, completion of Longwall 1 extraction in October 2007, extraction of Longwall 2 from November 2007 to July 2008 and the beginning of extraction from Longwall 3 in August 2008.

The underground mine has approval to operate 24hrs a day 7 days a week. At this stage mining production activities are undertaken on a five day week basis. Additional crews are

available on the weekend for maintenance and services support. Underground equipment is listed in **Table 8** below.

Table 8. ASHTON INDICATIVE UNDERGROUND MINING EQUIPMENT

Number	Description	Number	Description
2	12CM12 Continuous Miners	7	PJB Mk4.5
4	15SC Shuttle Cars	4	Jugganaut V2
2	21m3/s auxiliary ventilation fans	2	Eimco EJC 130
3	Integral Rand 160 – 1000 cfm air compressors	2	Flakt Woods 315kW centrifugal fans
2	1050mm temporary conveyors (Jiffy drives)	2	1400mm conveyors (two VVVF drives each)
2	1600mm Conveyors (two VVVF drives each)	1	1600mm stacker conveyor (single VVVF Drive)
1	205m DBT Longwall	1	Stamler breaker feeder
1	Eichoff Shearer		

The presence of a sandstone parting within the seam has resulted in the shortening of Longwall panels 1, 2 and 3 with the likely shortening of Longwall panel 4. The shortening of the panels creates an even greater distance from the saturated alluvial of the Hunter River.

2.4.3 Production and Waste Summary

Operations in the reporting period and predictions for the next reporting period are detailed in **Table 9**.

Table 9. PRODUCTION WASTE SUMMARY

	CUMULATIVE PRODUCTION		
	Start of this Reporting Period	At end of this Reporting Period	Est', end of next Reporting Period
Topsoil Stripped (m^3)	158,200	158,200	158,530
Topsoil used/spread (m^3)	30,890	55,798	70,800
Waste Rock (BCM)	38,685,967	49,710,503	50,400,256
Open Cut Coal (RomT)	6,587,192	8,550,080	10,748,242
Underground Coal (RomT)	1,828,611	3,948,520	7,520,861
Total Coal (RomT)	8,415,803	12,498,600	18,269,103
Processing Waste (T)	2,945,500	4,677,287	7,378,912
Open Cut Product Coal (T)	3,968,538	5,202,152	6,545,152
Underground Product Coal (T)	931,410	2,306,039	4,345,039
Total Product Coal (T)	4,899,948	7,508,191	10,980,191

2.4.4 Changes in Mining Equipment or Method

As part of Ashton Coals commitment to select sound suppressed equipment when replacing old gear Ashton have purchased two new CAT D10T dozers and a Komatsu WA 900-3 Loader. The CAT D10T dozers have been designed with specific sound suppression including rubber idlers to reduce track clatter noise and a sealed engine bay to reduce engine noise. Sound power levels recorded on the machines have indicated that they are approximately 7dBL quieter than the old D10 dozers that were replaced. These dozers are being used in higher noise impact areas including exposed dumps and the product coal stockpile.

The Komatsu WA 900-3 Loader was purchased second hand with 2000 hours. The primary aim of purchasing the loader was to replace the CAT 994 Loader on the Open Cut ROM stockpile. The Komatsu loader is approximately 4dBL quieter than the CAT 994 Loader. These changes to the equipment register along with the replacement of four CAT 777 trucks with CAT 789 trucks and the purchase of a CAT 992G loader in the previous reporting period continue to improve the noise impact from Ashton Coals operations.

2.5 MINERAL PROCESSING

The CHPP incorporates two modules (400tph and 600tph) which are operated independently to produce the total designed throughput of 1000tph. The associated materials handling is designed for 1000tph and includes two rotary breakers on the ROM coal side, one feeding Open Cut coal and the other Underground, and a skyline conveyor on the product coal side. Product coal is recovered through a series of coal valves and conveyed to a Train Loading Station mounted over a dedicated rail siding.

The CHPP is operated by ACOL and manned on a 24 hours a day five days per week basis. However the CHPP has the ability where required to operate 24 hours a day seven days a week. Train loading may operate 7 days a week dependant on the rail schedule.

The CHPP processed 4.44Mt ROM coal during the reporting period to produce 2.61Mt of semi-soft and thermal product coal. All coal was transported by rail to the Port of Newcastle for sale on the export market.

2.6 WASTE MANAGEMENT

Coarse rejects are transferred to a rejects bin, loaded on to ACOL trucks and transported to the overburden dump for disposal. A total of 1.37Mt of coarse reject material were disposed of in this manner during the reporting period.

Fine rejects are pumped to the Mac Gen Void 4 tailings dam. A total of 641Kt of fine reject material was pumped to the Mac Gen tailings dam during the period.

2.6.1 Chemical/Physical Characteristics of Residues

Coarse rejects are generally mudstones and claystones, with some sandstones, and generally contain minimal amounts of carbonaceous material.

The fine rejects contain finely disseminated clays and mudstone, which have been flocculated using a relatively inert chemical. It contains a higher concentration of carbonaceous material than the coarse reject.

2.6.2 Handling and Disposal Procedures

Procedures for the disposal of both coarse and fine reject material are contained in the MOP and the Tipping Rules developed by the Open Cut Mine Manager.

2.6.3 Monitoring and Maintenance of Containment Facilities

All coarse reject material is disposed of within the Eastern Emplacement Area and covered with inert overburden material.

Emplacement of all tailings occurs in the Ravensworth Void 4 tailings dam. The Tailings Emplacement Operations Plan defines the management of the Void 4 tailings facility.

Monitoring includes;

- Continuous Flow Monitoring,
- Twice a week inspections,
- Monthly inspections,
- Subsidence Monitoring, and
- Emplacement Surveillance Report

2.6.4 Sewage Treatment/Disposal

Ashton Coal Operations Limited operates three (3) on-site sewerage management systems, being:-

1. Underground mine bathhouse and administration building combined, which treats the waste from 32 showers, 12 WC's, 9 hand basins and two sinks. The sewage treatment system is a two stage Biolytix type with tertiary bromide dosing. Treated effluent is disposed of by spray irrigation.

2. CHPP facilities and open cut bathhouse combined, which treats waste from 25 showers, 11 WC's, 8 hand basins and one sink. The sewage treatment system is an Envirocycle type with disposal of the treated effluent by spray irrigation.

3. Open cut mine workshop which treats 4 showers, 4 WC's, three hand basins and a sink. The sewage treatment system is an Envirocycle type with disposal of the treated effluent by spray irrigation.

2.6.5 Total Site Waste Management Program

Ashton Coal contracted Transpacific Industries to establish a total waste management program in the previous reporting period. The program has now been running for 18 months. The key objective of the program is to reduce waste to landfill by 20% over the first 5 years. To date the following changes have been implemented as part of the program:

- Increase in paper and cardboard recycling bins including under desk baskets, wheely bins and skip bins across site.
- Timber skip bins have been placed at each of the surface areas (UG surface, CHPP and OC workshop).
- Batteries are now recycled where possible.

- Used printer cartridges are now fully recycled through the 'Cartridges 4 Planet Ark' program.

A Transpacific Waste Management Officer (WMO) inspects ACOL's waste streams on a weekly basis. During these inspections the WMO identifies contamination of waste streams, and where efficiencies and improvements can be made to the system. All of this information is provided in a monthly report which is presented in Occupational Health, Safety and Environment meetings. Where heavy contamination is identified, the WMO will provide a toolbox talk to the relevant employees to increase the awareness of the problem.

During the reporting period a waste awareness and minimisation toolbox talk was presented to the Underground, CHPP and Open Cut Workshop crews. The toolbox talk was initiated to provide awareness to the workforce of the changes to the waste management system and following continued contamination of the timber bins. Following the completion of the toolbox talk there was an immediate decrease in contaminated bins across the entire site. This trend has continued with contamination rarely recorded.

Waste tracking is also completed by Transpacific with data provided in the monthly reports.

2.6.6 Waste Stream Volumes

The waste stream volumes are shown in **Table 10** below.

Table 10. WASTE STREAM WEIGHTS IN KG SEPTEMBER 07 – AUGUST 08

Waste Stream	Sep-07	Oct-07	Nov-07	Dec-07	Jan-08	Feb-08	Mar-08	Apr-08	May-08	Jun-08	Jul-08	Aug-08
Absorbents (kg)	490		630			530		790				
Air Filters (kg)		40	65	30								
Air Filters (refurbished) (kg)	20	1,995	735	255								
Batteries - Lead Acid (kg)			1,080		930	780		1,410	1,730		1,020	800
Contaminated Rags – Hydrocarbons (kg)	720	1,920	1,200	720	960	960	960	720	720	960	720	960
Effluent (kg)		10,000	20,000				9,000					
Empty Drums (Contaminated) (kg)			5,942									
General Waste (kg)	24,900	24,400	23,100	25,660	23,050	37,000	14,400	25,960	27,550	24,520	31,350	24,960
Grease (kg)	205		240	205		205		205	205	205		
Oil Emulsions (kg)	25,000	2,700	33,200	9,100	1,200	6,900	12,900	13,200	29,500	16,900	3,350	3,000
Oil Filters (kg)	7,500	6,000	1,740	4,740	1,500	1,740	4,740	3,240	4,740	3,480	1,740	3,240
Paper & Cardboard (kg)	940	875	1,120	785	1,160	1,268	895	960	1,120	670	965	1,030
Scrap Metal (kg)	12,360	17,590	3,240	1,420	9,180	9,200	12,600	10,980	17,500	11,620	57,760	13,300
Timber (kg)	5,580	21,260	8,671	4,780	23,200	8,730	9,000	7,440	10,320	3,820	4,900	5,820

Through the total Site Waste Management Program, ACOL and TPI have established five end uses for waste produced on site. These being:

- Disposal – general waste, air filters and timber.
- Energy Recovery – grease.
- Recycling – oil emulsion, oil filters, paper and cardboard and scrap metal.
- Reuse – refurbished air filters.
- Treatment – hydrocarbon contaminated rags and drums.

Figure 2 presents the monthly breakdown of each waste end use. The waste end use percentages are shown in **Table 11**.

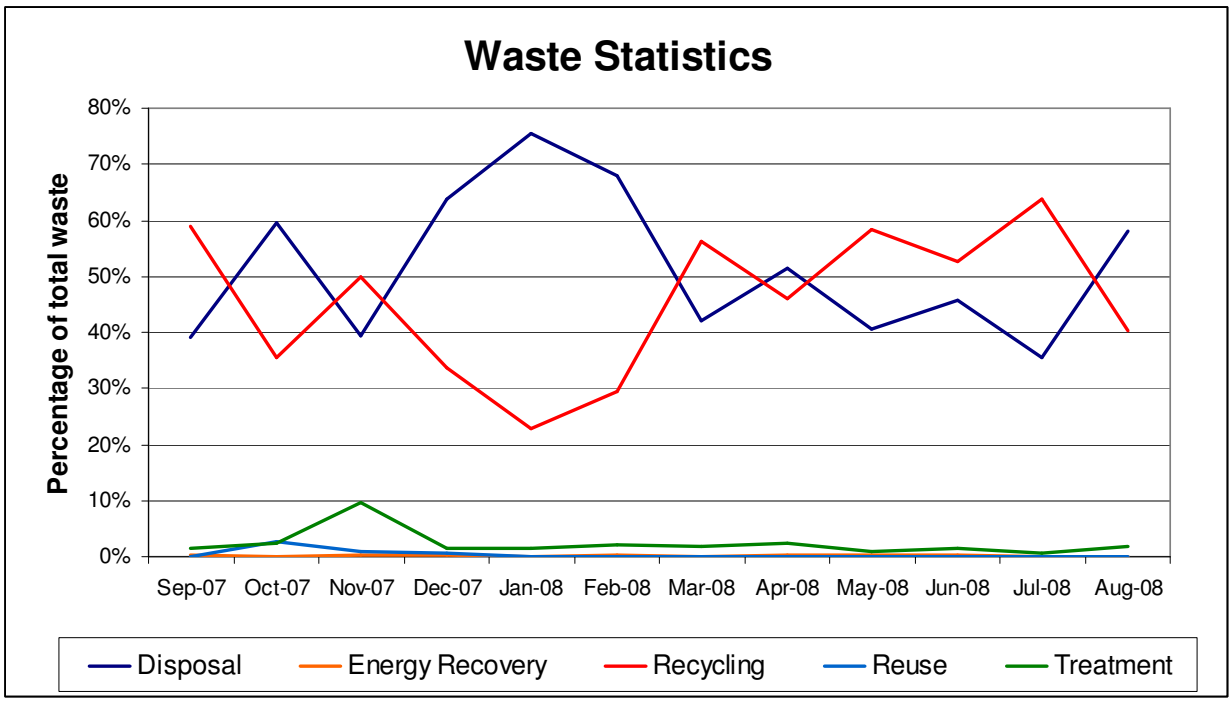


Figure 2. Waste Statistics

Table 11. WASTE END USE AVERAGE PERCENTAGES SEPTEMBER 07 – AUGUST 08					
Month	**Disposal**	**Energy Recovery**	**Recycling**	**Reuse**	**Treatment**
Sep – 07	39.2%	0.3%	58.9%	0.0%	1.6%
Oct – 07	59.5%	0.0%	35.4%	2.6%	2.5%
Nov – 07	39.3%	0.3%	49.9%	0.9%	9.6%
Dec – 07	63.9%	0.4%	33.6%	0.5%	1.5%
Jan – 08	75.6%	0.0%	22.8%	0.0%	1.6%
Feb – 08	67.9%	0.3%	29.5%	0.0%	2.2%
Mar – 08	42.2%	0.0%	56.1%	0.0%	1.7%
Apr – 08	51.5%	0.3%	45.9%	0.0%	2.3%
May – 08	40.6%	0.2%	58.5%	0.0%	0.8%
Jun – 08	45.6%	0.3%	52.5%	0.0%	1.5%
Jul – 08	35.6%	0.0%	63.7%	0.0%	0.7%
Aug – 08	58.0%	0.0%	40.2%	0.0%	1.8%
Average	51.6%	0.2%	45.6%	0.3%	2.3%

2.7 ROM COAL AND COAL PRODUCT STOCKPILES

Both ROM coal and product coal are stockpiled adjacent to the CHPP. ROM coal from the Open Cut is stockpiled in a 100,000T stockpile. The capacity of the product coal stockpile is approximately 300Kt. All product coal was transported off site by rail during the reporting period. No changes are envisaged to this mode of transport.

2.8 WATER MANAGEMENT

Ashton is a nil discharge site and split water into three distinct water categories, Clean Water, Runoff Water and Mine Water.

2.8.1 Clean Water Management

Clean water is used only where there exists a need for water of that quality or there is a shortfall of Mine water for reuse. Clean water is currently sourced from:

- Glennies Creek; and
- The Hunter River.

This water is used untreated as raw water in the Underground, treated in an on-site water treatment plant for use in the office and bath house facilities, or used as raw top up water to the process water dam for use in the CHPP, wash down and dust suppression.

2.8.2 Runoff Water Management

Runoff water from some of the rehabilitation areas is directed to sediment control structures prior to runoff from site. These areas are minimised and the water is harvested back onto site for reuse as a priority.

2.8.3 Mine Water Management

All water contaminated by contact with carbonaceous material or collected from the general mining area catchment is classed as Mine water and is collected on site in storage dams. This mine water is utilised in the mining process for dust suppression and the CHPP. Where the quality is suitable this water may also be used to irrigate rehabilitated areas.

There is an agreement in place to use excess underground water from Glennies Creek Underground Coal Mine (Integra Coal). This water supply is used intermittently to top up process water levels and for dust suppression.

2.8.4 Drainage

Drainage from undisturbed areas is managed in one of two ways:

- The drainage from small undisturbed areas that do not form part of the general mine catchment area are permitted to follow their natural drainage path; or
- The drainage from areas that do form part of the general mine catchment area is channelled into the runoff water dam where it is pumped to the process water dam and used in the CHPP, for wash down or dust suppression.

Drainage from disturbed areas is captured in sedimentation control dams and transferred to the process water dam and used in the CHPP, for wash down or dust suppression.

2.8.5 Water Supply and Demand

Licences are held by ACOL to pump water from Glennies, and the Hunter River for use on the mine site (refer to **Table 1**). On the 1st July 2007 State Water announced zero allocation for general security water access licences in the Hunter River Water Sharing Plan area. Following this announcement Ashton Coal purchased 88ML of high security water access licence shares including the associated water allocation, 70ML of general security water access licences including the associated water allocation and 138ML of general security water allocation.

Tables 13 and **14** show the balance of water draw from Glennies Creek and the Hunter River respectively over the reporting period. The Glennies Creek water draw includes pumped volume as well as a calculated draw to balance approved draw down in the Glennies Creek alluvium due to the underground operations. **Section 3.4** discusses in more detail the Underground alluvium impacts.

Table 15 details the total site water balance calculated on a 6 monthly basis for the AEMR reporting period. It should be noted that there are potentially some errors inherent in the water balance as they are based on a combination of metering and calculations.

Table 12. BALANCE OF LICENSED WATER DRAW FROM GLENNIES CREEK

Month	Total Volume Pumped	Underground Alluvial Impacts	Cumulative Volume Extracted	Available Water Determination	Pumping conducted under Uncontrolled Flow*	Pumping conducted under Controlled Flow	Days with uncontrolled flows	Water Purchases	Total Licensed ML	Available Water[1]	Drawdown of Available Water under controlled flows	Drawdown from Total Licensed ML
Column ID	B	C	D	E	F	G	H	I	J	K	M	L
Cell Formula			= Cum (D + C)								= $M_{previous}$ + I - G	= J - D
2007-08 Water Year												
Jul-07	21.9	5.27	27.2	0% GS, 75% HS, 10% CO	27.2	0.0	31		379.2	36.8	36.8	352.0
Aug-07	35.0	5.27	67.5	0% GS, 75% HS, 10% CO	39.1	1.2	20		379.2	36.8	35.6	311.7
Sep-07	43.8	5.1	116.4	18% GS, 84% HS, 10% CO	0.0	48.9	0		379.2	98.6	48.5	262.8
Oct-07	19.7	5.27	141.3	18% GS, 84% HS, 10% CO	0.0	24.9	0	65	444.2	163.2	88.0	302.9
Nov-07	16.9	5.1	163.3	26% GS, 88% HS, 10% CO	0.0	22.0	16	74	517.7	264.6	167.6	354.4
Dec-07	42.0	5.27	210.6	48% GS, 99% HS, 10% CO	30.9	16.4	29		517.7	340.2	226.8	307.1
Jan-08	19.0	5.1	234.7	84% GS, 100% HS, 10% CO	0.7	23.5	4		517.7	463.3	326.4	283.0
Feb-08	16.2	4.93	255.9	100% GS & HS, 10% CO	3.1	18.1	18	70	588.0	588.0	433.0	332.1
Mar-08	8.3	5.27	269.4	100% GS & HS, 10% CO	0.0	13.6	0		588.0	588.0	419.4	318.6
Apr-08	14.6	5.1	289.1	100% GS & HS, 10% CO	0.0	19.7	0		588.0	588.0	399.7	298.9
May-08	23.9	5.27	318.3	100% GS & HS, 10% CO	0.0	29.2	0		588.0	588.0	370.5	269.7
Jun-08	33.4	5.1	356.8	100% GS & HS, 10% CO	0.0	38.5	0		588.0	588.0	332.0	231.2
Total end of Water Year	**294.7**	**62.05**	**356.8**		**100.9**	**256.0**	**118**					
2008-09 Water Year												
Jul-08	8.9	5.27	14.2	100% GS & HS, 10% CO	0.0	14.2	NA		394.9	394.9	380.7	380.7
Aug-08	20.0	5.27	39.4	100% GS & HS, 10% CO	0.0	25.3	NA		394.9	394.9	355.4	355.4

[1] *Available water* is available water determination plus any additional water purchased

Table 13. BALANCE OF LICENSED WATER DRAW FROM HUNTER RIVER

Month	Total Volume Pumped	Cumulative Total	Available Water Determination	Pumping conducted under Uncontrolled Flow*	Pumping conducted under Controlled Flow	Total Licensed ML	Available Water[1]	Drawdown of Available Water under controlled flows	Drawdown from Total Licensed ML
A	B	C	D	E	F	G	H	I	J
		= Cum B						= I - F	= G - C
2006-07 Water Year									
Jul-07	20.2	20.2	0% GS, 75% HS, 10% CO	20.2	0.0	371.5	36.1	36.1	351.3
Aug-07	53.7	73.9	0% GS, 75% HS, 10% CO	51.1	2.6	371.5	36.1	33.5	297.6
Sep-07	58.1	132.1	18% GS, 84% HS, 10% CO	58.1	0.0	371.5	96.6	94.0	239.5
Oct-07	25.0	157.0	18% GS, 84% HS, 10% CO	22.2	2.8	371.5	96.6	91.2	214.5
Nov-07	24.6	181.6	26% GS, 88% HS, 10% CO	10.8	13.8	371.5	123.5	104.3	189.9
Dec-07	17.6	199.2	48% GS, 99% HS, 10% CO	15.6	2.0	371.5	197.6	176.4	172.3
Jan-08	4.6	203.8	84% GS, 100% HS, 10% CO	4.6	0.0	371.5	318.2	297.0	167.7
Feb-08	0.1	203.9	100% GS & HS, 10% CO	0.0	0.1	371.5	371.5	350.2	167.6
Mar-08	0.8	204.6	100% GS & HS, 10% CO	0.0	0.8	371.5	371.5	349.4	166.8
Apr-08	0.0	204.6	100% GS & HS, 10% CO	0.0	0.0	371.5	371.5	349.4	166.8
May-08	10.1	214.7	100% GS & HS, 10% CO	0.0	10.1	371.5	371.5	339.3	156.7
Jun-08	31.4	246.1	100% GS & HS, 10% CO	0.0	31.4	371.5	371.5	307.9	125.3
Total at end of Water Year	**246.1**	**246.1**		**182.6**	**31.4**				
2007-08 Water Year									
Jul-08	15.4	15.4	100% GS & HS, 10% CO	0	15.4	371.5	371.5	356.2	356.2
Aug-08	49.5	64.8	100% GS & HS, 10% CO	0	49.5	371.5	371.5	306.7	306.7

GS – General Security
HS – High Security
CO – Carry Over

The project water balance for the reporting period is detailed in the following table:

Table 14. ASHTON COAL WATER BALANCE

Period	ML 2 Sept 07 - 28 Feb 08	ML 1 March 08 - 1 Sep 08
Water Sources		
Hunter River	129.94	107.09
Glennies Creek	156.77	98.60
Open Cut Dewatering	107.84	107.28
Off-site mine water supply	200.75	200.75
Tailings Decant	277.60	404.20
Underground	141.10	143.30
TOTAL WATER SOURCES	**1,014.00**	**1061.21**
Water Use		
CHPP Usage	933.10	880.38
Underground	44.13	53.95
Open Cut	42.90	11.10
Off-site Tailings Floc Station	17.79	17.16
Potable Water	2.21	2.24
TOTAL WATER USE	**1,040.13**	**964.82**
Change in Storage Volumes		
Process Water Dam	-12.37	+22.70
Dirty Water Dam	+35.60	-33.60
Dam 56	+15.93	-21.40
Arties Dam	-2.20	+0.80
Total water in Dams Onsite	**99.60**	**68.10**
TOTAL CHANGE IN WATER STORED	**+36.96**	**-31.50**
SUMMARY		
A) Total Water sources	1,014.00	1061.21
B) Water used/stored on site	1,040.13	964.82
C) Change in water volume held in dams end of period	+36.96	-31.50
Balance (A – B + C)	**10.83**	**64.89**

Note: Evaporation losses have not been included in the above calculations.

2.9 HAZARDOUS MATERIAL MANAGEMENT

2.9.1 Fuel Containment

The open cut workshop and fuel storage facilities have a dedicated bunded area for both fuel and oil storage. No changes have been made to these facilities in the reporting period.

Only small volumes of specialised lubricants are stored at the CHPP. These are stored in a dedicated bunded area.

2.10 OTHER INFRASTRUCTURE MANAGEMENT

Other infrastructure established on site includes a railway siding, various roads, electricity reticulation, site communications and water reticulation system.

Tailings Disposal

Ashton disposes of tailings in Macquarie Generations Void 4 (East) at Ravensworth. Inspections are undertaken to assess the storage capacity of the detention ponds and check for any damage or leaking in the pipeline.

3.0 ENVIRONMENTAL MANAGEMENT AND PERFORMANCE

3.1 AIR POLLUTION

3.1.1 Air Pollution Management

Ashton Coal has an approved Air Quality Management Plan. Controls have been put in place in accordance with this plan to control potential causes of air pollution. These controls are considered to have been adequate for the reporting period, these are described below.

Planning Controls

ACOL has implemented the following planning controls:

- A network of real time environmental monitoring stations has been established on site;
- ACOL has developed protocols involving specific operational controls when the wind is emanating from the northwest sector to minimise the effect of emissions on the village of Camberwell. The trigger to stop operations is generated by real-time monitoring.
- Large earth berms and tree plantations between the operations and the village have been constructed and planted;
- External overburden emplacement areas have been completed and rehabilitation will be complete within three years;
- The active mining area continues to be minimised.

Engineering Controls

Engineering controls are implemented on the ACOL site during mining operations. These include but are not necessarily limited to:

- Water carts utilised around the site to keep trafficked areas in a damp condition;
- All stockpiles are kept damp by the use of fixed or mobile water sprays under dry and windy conditions;
- Roads are regularly graded to ensure that loose dust-generating surface material is kept to the lowest level practicable;
- Speed limits on mine roads are restricted to 60 km/hr. Speed limits will be reduced if required to maintain dust emission at minimum levels;
- Roads are clearly delineated to minimise trafficked areas and to ensure that traffic is kept to watered areas;
- Drills are fitted with dust control equipment and graded rock will be used to stem blast holes. Drill rigs use water injection for drilling and drill areas are wet down prior to drilling during dry and windy conditions;
- Haul trucks and other earthmoving equipment with upwardly directed exhausts are used on site to minimise the generation of dust by exhaust emissions;
- All diesel equipment used on site is maintained properly and fitted with appropriate pollution control devices; and
- Underground ventilation fans are monitored to manage particulate emissions.

Operational Controls

Active controls involve the continuous management of dust generating activities to ensure that dust emissions do not affect nearby sensitive receptors. Operations are managed in response to real time air quality and weather data measured within the village and surrounds in accordance with set protocols. Other controls include day-to-day planning of mining activities and taking account of forecast weather and actual weather conditions.

Specific Operational controls include:

- There will be no dumping on high levels of emplacement areas when ten minute average wind speeds exceed 10 m/s and the wind is emanating from the northwest sector;
- Dumping, dozing, loading and haulage operations will be managed to minimise the amount of visible dust exiting the “lease” area; and
- Blasting is to be undertaken using procedures that will involve an assessment of meteorological conditions and will be designed to prevent dust and other emissions causing exceedences, or air quality goals or nuisance effects. Such controls are detailed in the Blasting and Vibration Management Plan.
- Four water carts are used onsite at Ashton Coal. Two of these operate permanently during open cut operations with the remainder being utilised when the conditions necessitate.

Improvements during the Reporting Period

Improvements made during the reporting period to reduce the potential for the generation of dust from site activities include;

- A further 30ha of the Eastern Emplacement Area was rehabilitated,

There are daily operational changes which are undertaken as standard practice by the Open Cut Examiner, and CHPP supervisors. These are based on standard scenarios of pit and weather conditions and/or response to complaints. These standard controls are listed above and are inclusive of moving operations within the pit, operation of additional water carts and stockpile water sprays. In addition to these standard scenario controls other higher level operational changes may be undertaken on site at the discretion of the Mine Manager in consultation with the Environmental Officer. These additional higher level operational changes are listed in **Table 16.** Things that may be considered higher level controls include cancellation or change of blast times and shutting down of pit operations.

Table 15. OPERATIONAL CHANGES RELATING TO DUST IMPACTS

Date	Issue	Changes Undertaken
03/10/2007	Dust level increased due to strong winds.	All high level dumping ceased and three water carts operating at 10:50am. At 2:30pm dust levels increased further, fourth water cart started up. 3:45pm no decrease in PM10, all operations ceased to reduce dust levels. At 6:30pm dust levels and winds subsided, three of four excavators restarted.
28/01/2008	Dust complaint received.	Whilst dust levels were well within criteria, dumping operations removed from the southern boundary.
31/03/2008	Observations from the OCE and increased dust levels on real-time PM10 monitors prompted a change to operations.	All rehabilitation works ceased and dumping at the 135RL dump relocated to in pit.
03/04/2008	Inspection of Camberwell Village identified elevated dust levels.	Dumping operations at 135RL dump relocated to in pit.
28/04/2008	Winds speeds increased suddenly to above 10m/s.	Whilst dust levels remained low, dumping on the 135RL dump ceased and bulk shaping on the exposed faces cancelled for the day. Rehabilitation contractors moved to the northern face away from Camberwell Village.
21/06/2008	Dust complaint received.	Although real-time PM10 levels were within criteria, dust was visible leaving site. Dumping relocated from the southern to the northern boundary.
26/06/2008	10 min PM10 levels spiking with wind speeds between 8 and 10 m/s. Later in the day the 24hr contribution approached 50.	Dumping operations at Strip 1 Ramp were identified to be causing dust to funnel out through the Glennies Creek rd cutting impacting on dust monitoring sites 1 and 8. This dumping was relocated to the east. When 24hr contribution increased all dumping was relocated to the bottom of the pit and Excavator 20 was shut down at shift change.
1/06/2008	10 min PM10 levels not decreasing. Ashton 24 hour contribution increasing.	All water carts were operating prior to midday and all exposed dumping had been ceased. 10 minute PM10 levels were not decreasing. Following this the OCE shutdown Excavator 20 at 2pm. 10 min PM10 levels did not drop immediately so Excavator 19 was shutdown at 3:30pm. Both Excavators were left down for the remainder of the day.
14/08/2008	Ashton contribution increasing.	Open cut pit was not generating large amounts of visible dust. Site 7 (background site) was only recording very small amounts of dust. Excavator 30 shutdown from 9am onwards. Excavator 21 shutdown at 4:20pm in an attempt to reduce dust levels.
20/08/2008	Dust complaint received and PM10 levels increasing.	All water carts operating. No visible dust emitting from the Excavation operations. Water carts were instructed to focus on drill patterns and dig areas. At 2pm dust levels began to decrease.

3.1.2 Meteorological Monitoring

Ashton established two meteorological monitoring stations prior to the commencement of construction and operation activities on site. These are located at Monitoring Location 1 in the village of Camberwell and at the Repeater Station on the ridge above the village (see **Figure 2** in **Appendix 2**). The repeater station is the primary meteorological station from which wind direction and speed is assessed for mine operation purposes, whilst Location 1 is primarily used to measure temperature inversions. These weather stations are calibrated annually.

Rainfall

Rainfall data for the reporting period is displayed in the following table.

Table 16. RAINFALL DATA 2007-2008

Month	Rainfall (mm)	Long Term Median Rainfall *(mm)
Sep 07	9.0	50.4
Oct 07	15.4	34.5
Nov 07	124.2	64.6
Dec 07	58.2	83.4
Jan 08	52.6	69.6
Feb 08	134.6	94.7
Mar 08	44.4	68.5
Apr 08	103.2	41.3
May 08	1.6	43.6
Jun 08	72.6	34.8
Jul 08	19.4	40.8
Aug 08	63.2	31.5
Total	**698.4**	**657.7**

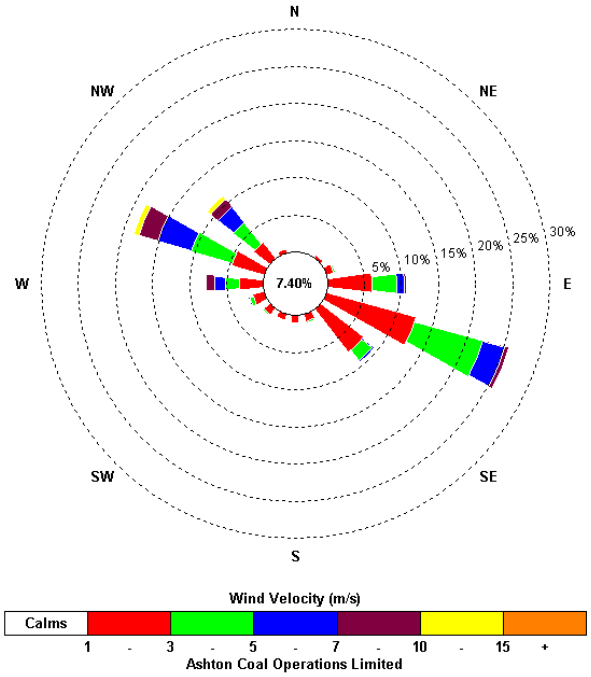
*Long Term Median Data from Bureau of Meteorology, for Singleton STP.

Annual rainfall for the period was slightly above the long term median for Singleton NSW. The area has seen a return to average rainfalls following the prolonged drought period that occurred over the previous 5 years. Where necessary due to equipment failure, data from neighbouring Camberwell Mine has been used to supplement the information obtained on site

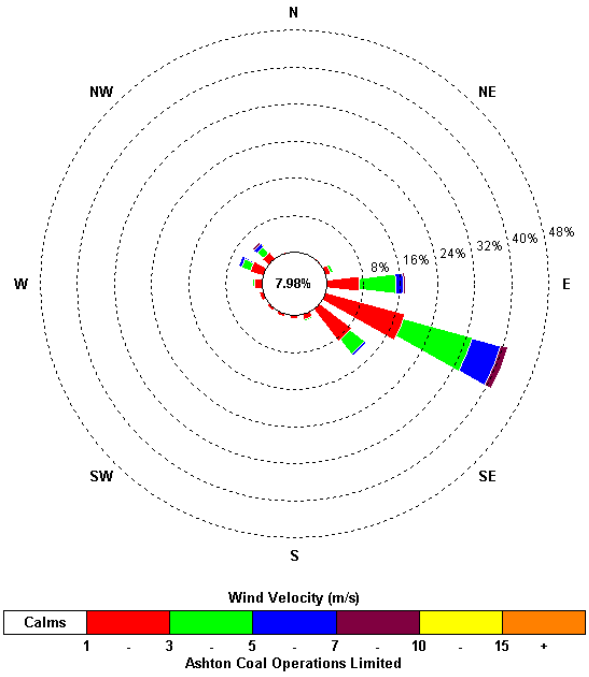
Wind Speed and Direction

Observed wind patterns for the period are outlined in the following table:

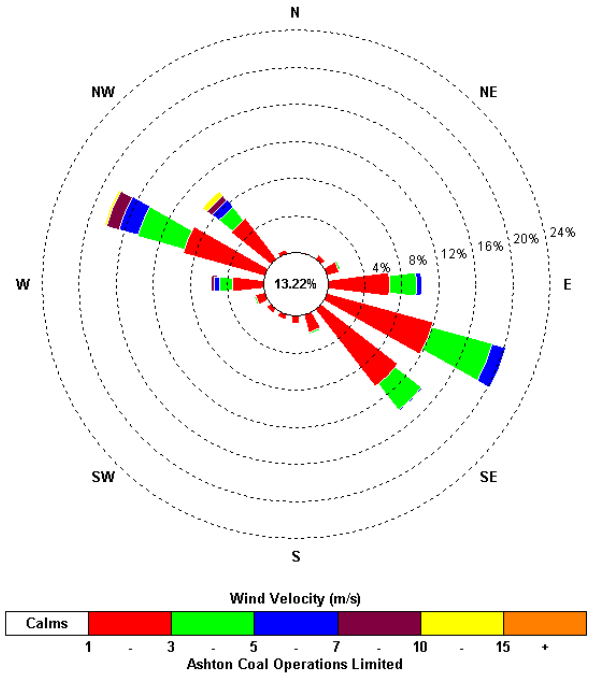
Table 17. WIND PATTERNS BY MONTH 2007 - 2008		
Month	**Primary Wind Direction (Quadrant)**	**Secondary Wind Direction (Quadrant)**
September	NW	SE
October	NW	SE
November	SE	NW
December	SE	NW
January	SE	NW
February	SE	-
March	SE	-
April	SE	NW
May	NW	-
June	NW	-
July	NW	-
August	NW	-



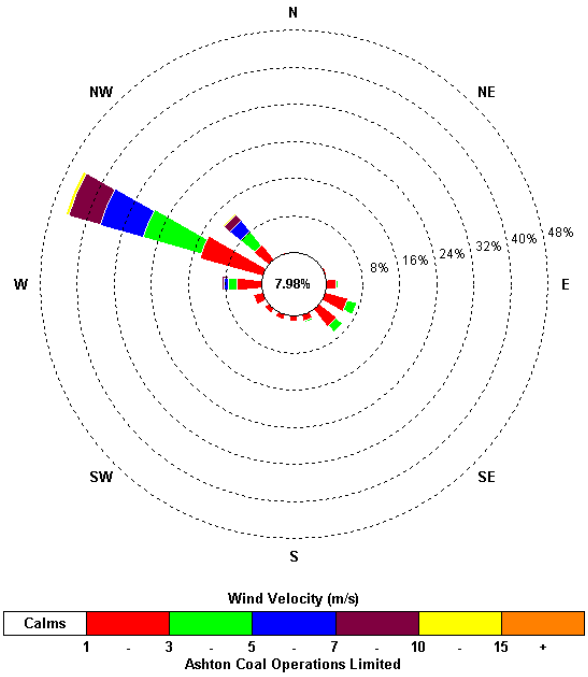
1st Quarter Windrose Sep 06– Nov 06



2nd Quarter Windrose Dec 06 – Feb 07



3rd Quarter Windrose Mar 07 – May 07



4th Quarter Windrose Jun 07 – Aug 07

Figure 3. Windroses

Dominant winds for the first quarter of the period were from the North West during September followed by an emergence of Southerlies in October and November. The second quarter (December 06 – Feb 07) saw a continuation of the dominant Southerlies which sustained into the third quarter until May when the North Westerlies returned and remained throughout the fourth quarter.

3.1.3 Dust Criteria and Monitoring

A network of real-time environmental monitoring stations was installed prior to the commencement of operations and is utilised to ensure continued compliance with the criteria established in the Development Consent and the EPL. **Figure 4** details the monitoring locations.

3.1.3.1 Particulate Matter < 10µg (PM_{10})

The criteria for particulate matter less than 10µm (PM_{10}) is as follows:

- Annual mean less than 30µg/m^3 on a cumulative basis,
- 24 hour average contribution from Ashton Mine not to exceed 50µg/m^3, and
- Maximum cumulative 24 hour average not to exceed 150µg/m^3.

Locations of PM_{10} monitoring stations are detailed on **Figure 4**. They are as follows:

Table 18. LOCATION OF PM_{10} MONITORING STATIONS

Monitoring Station No	Location
1	Camberwell village (north)
2	Camberwell village (south)
3	Property east of Camberwell village
4	**On site** north of Eastern Emplacement Area
7	**On site** at country end of rail siding
8	Camberwell village (east)

Monitoring Locations 4 and 7 are situated to the north of mining operations, immediately south of the Main Northern Railway and are intended to monitor the incoming concentrations of PM_{10} dust when the prevailing winds are from the northwest, which is the wind direction that presents the greatest risk of impact to the village of Camberwell.

The Ashton contribution to the concentration of PM_{10} at community sites is calculated by subtracting the incoming dust concentration (the lowest level recorded at sites 4 or 7 is used for this calculation) from the ambient level of dust concentration at the four community sites. This is a very conservative calculation.

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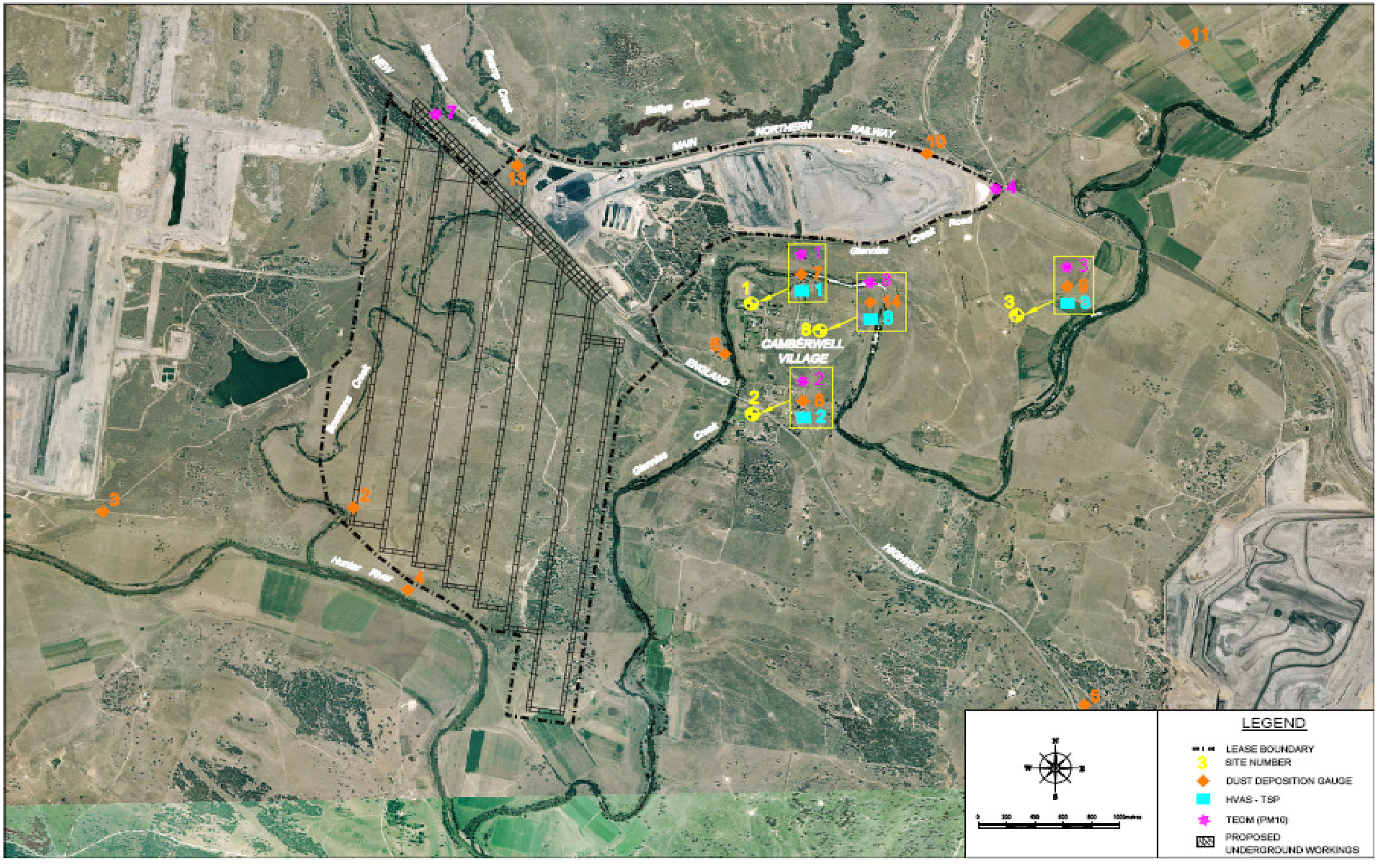

Figure 4. Air Quality Monitoring Locations

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Historic Trends

Long term PM 10 results from 1996 to 2001 are available for a monitoring location in close proximity to ACOL's Site 1. These results are shown below. It is difficult to undertake a direct comparrison of these results with the the ACOL monitoring results as the historic results are based on the operations of a HVAS PM10 operated every 6 days and the ACOL monitoring system is a realtime monitoring system operating 24 hours a day 7 days a week . The results however do give an indication of the historic PM10 levels within the Village of Camberwell prior to the commencment of the ACOL operations. As seen in the graph below there are several periods in time where the historic annual average is above the cummulative annual average criteria of 30µg/m^3.

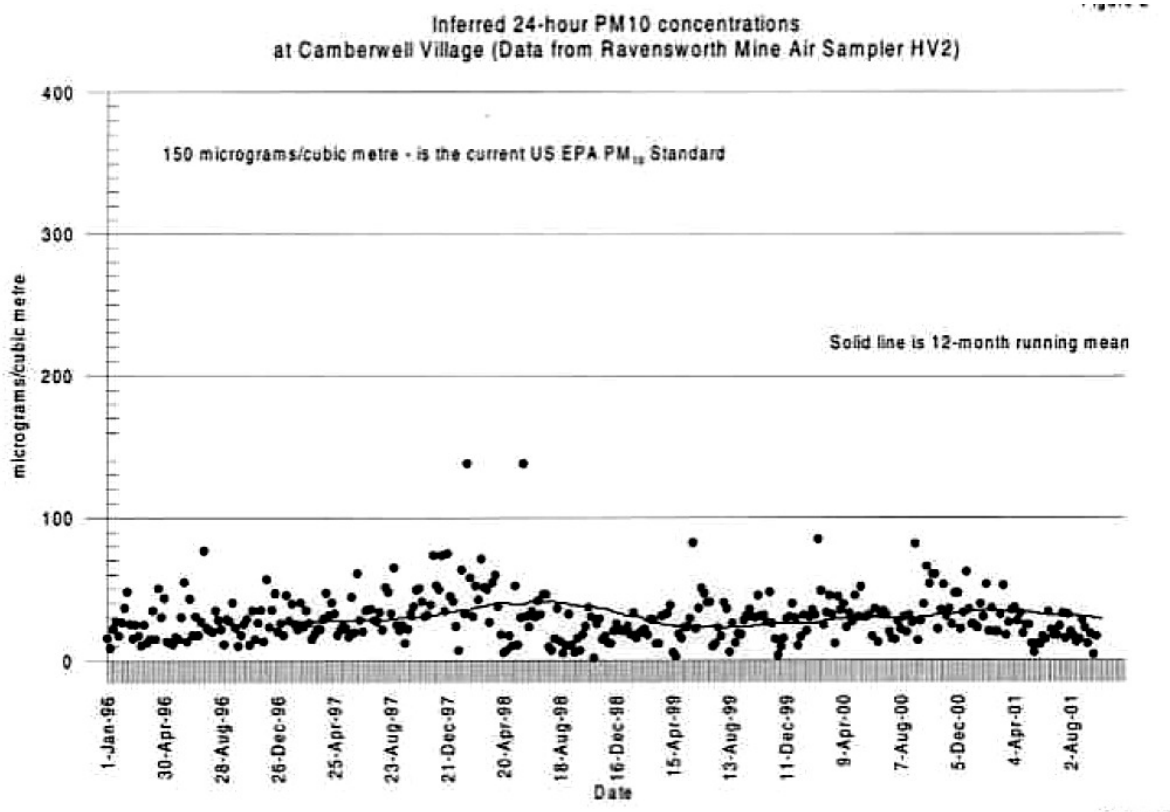
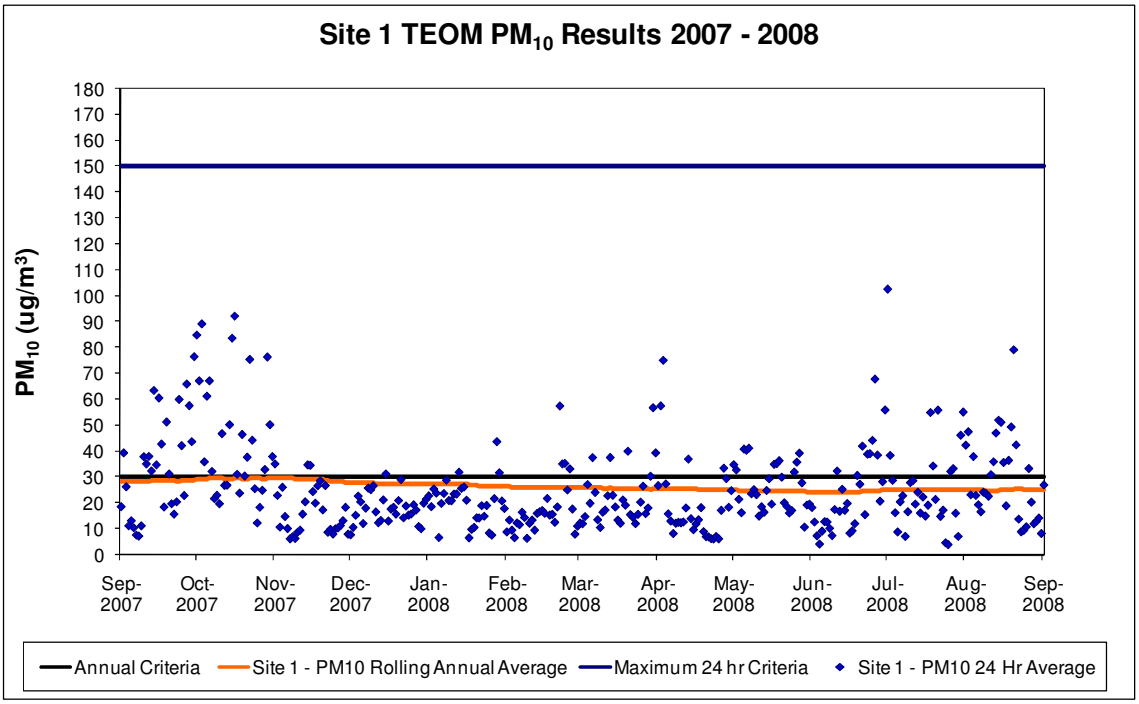


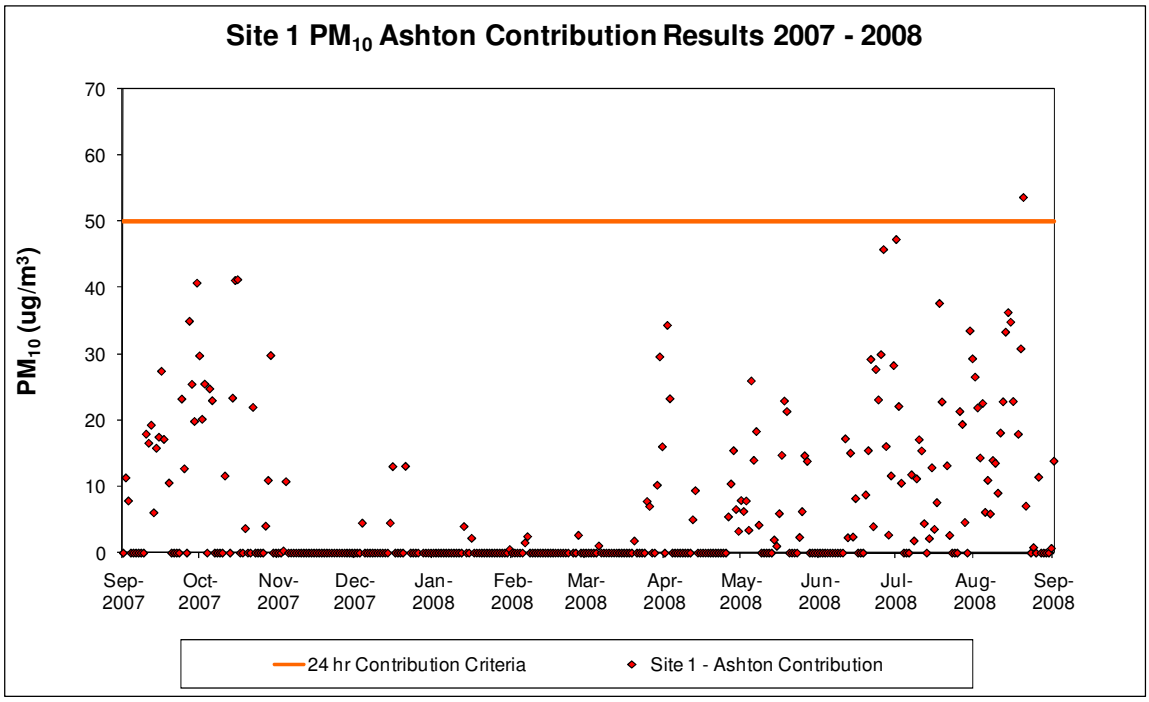
Figure 3

Site 1 TEOM

Site 1 is located in the northern portion of the village of Camberwell. 100% of data was captured for Site 1 for the reporting period. Results of PM_{10} monitoring at this location were as follows.



The rolling average PM_{10} results for Site 1 demonstrates compliance with the annual goal of 30µg/m^3. Site 1 also demonstrated compliance with the maximum 24hr Criteria of 150µg/m^3.

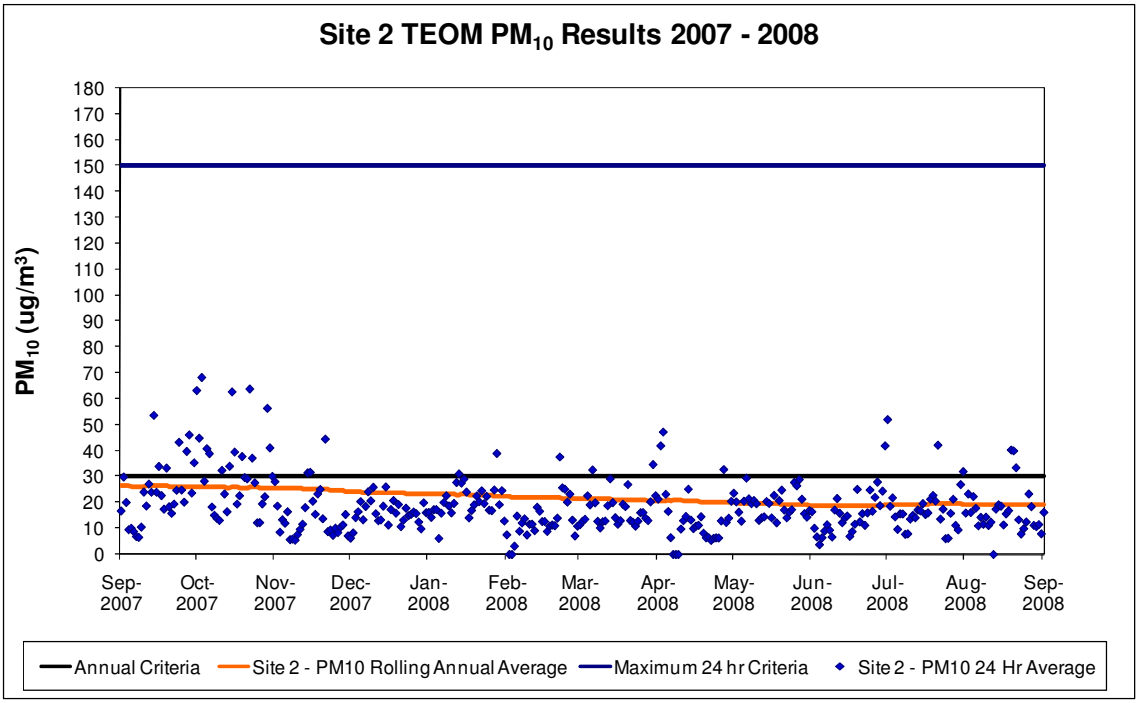


Note: Ashton Contributions are calculated where there is a NW wind direction otherwise the contribution is plotted as 0.

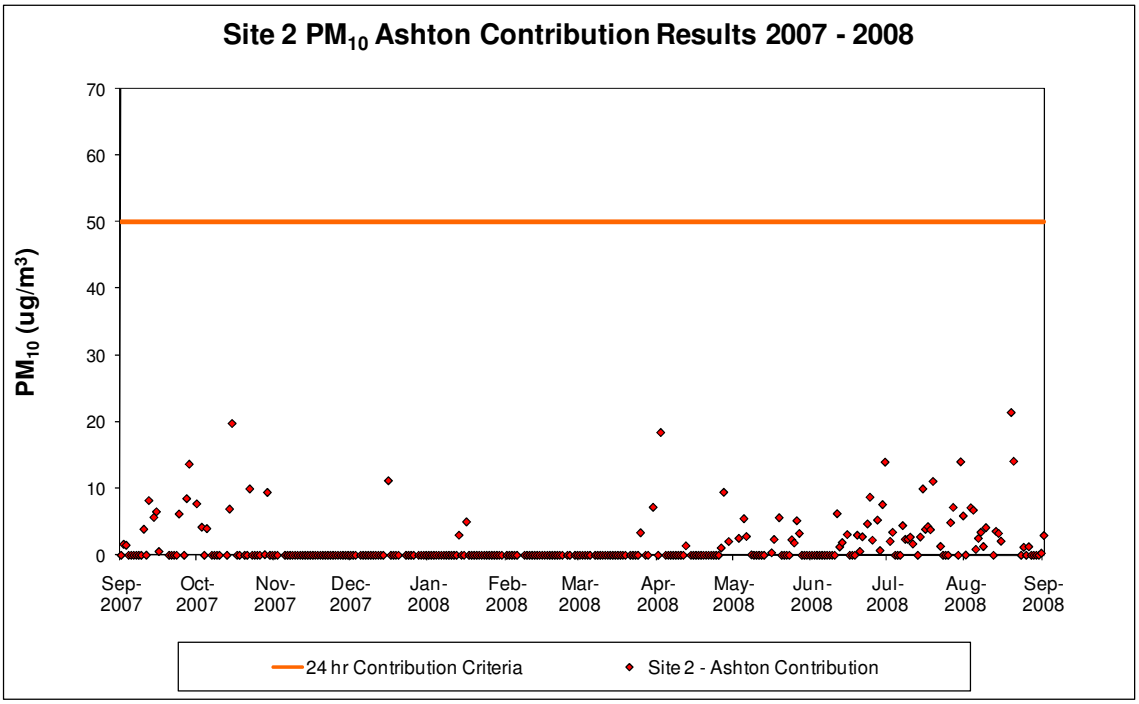
There was 1 instance where Ashton's community contribution was recorded above the criteria of 50µg/m^3. This level was recorded as 54µg/m^3 on the 20 August 2008. Ashton ensured all water carts were operating and all dumping was restricted to low levels throughout the day. No visible dust emitting from the roads and excavation operations. Water carts were instructed to focus on drill patterns and dig areas. At 2pm dust levels began to decrease. At 5pm Excavator 30 was shutdown to reduce haul traffic. Dust levels spiked late in the evening at 7:30pm which contributed to the exceedence.

Site 2 TEOM

Site 2 is located in Camberwell village on the south side of the New England Highway. 98% of data was captured from Site 2 for the reporting period. Results of PM_{10} monitoring at this location were as follows:



The rolling average PM_{10} results for Site 2 demonstrates compliance with the annual criteria of 30µg/m^3 and with the maximum 24 hour criteria of 150µg/m^3.

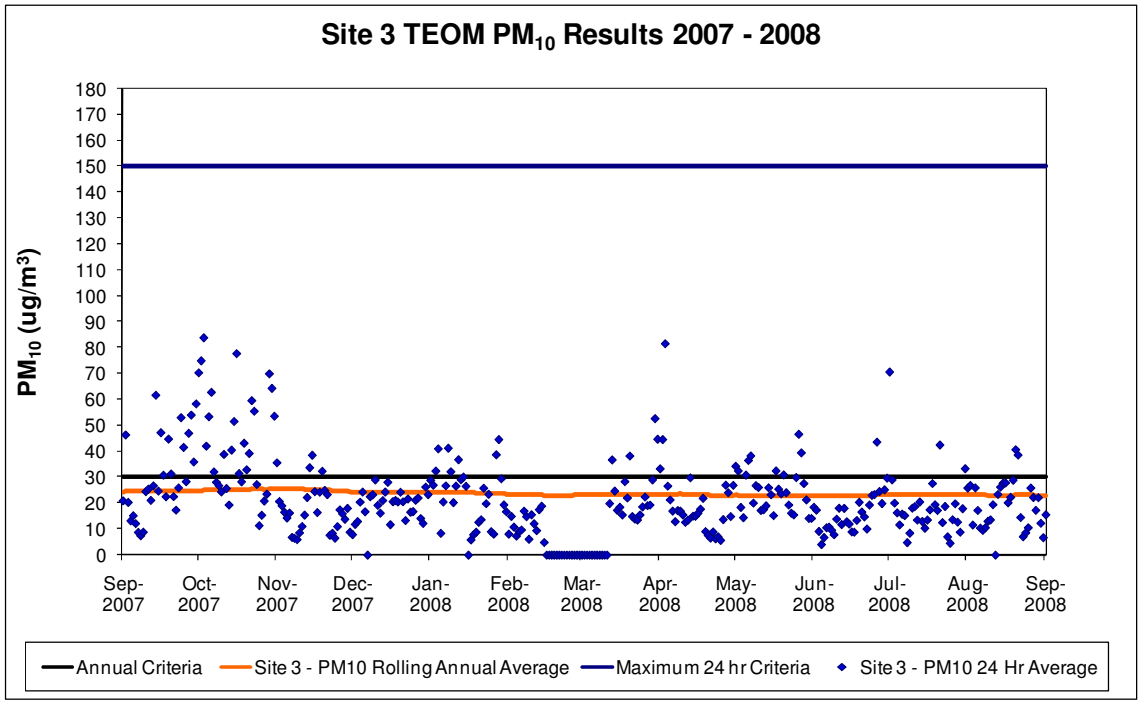


Note: Ashton Contributions are calculated where there is a NW wind direction otherwise the contribution is plotted as 0.

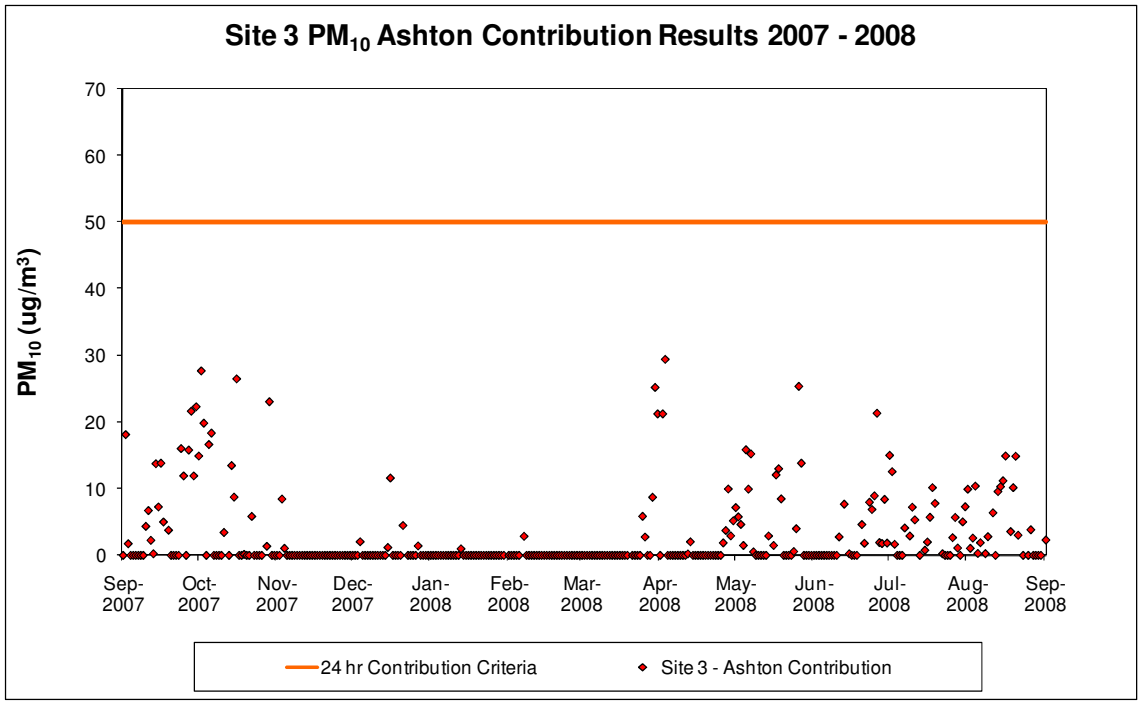
Site No 2 is located close to the New England Highway, and may be influenced by passing traffic when the winds emanate from the north, however Ashton remained in compliance with the criteria of 50µg/m^3 at all times.

Site 3 TEOM

Site 3 is located on a farming property to the east of the Eastern Emplacement Area. 92% of data was recovered at Site 3 for the reporting period. The data loss was due to a damaged sensor unit that required rebuilding. Results of PM_{10} monitoring at this location were as follows:



The rolling average PM_{10} results for Site 3 demonstrates compliance with the annual criteria of 30µg/m^3. Site 3 also complied with the maximum 24 hour criteria of 150µg/m^3.

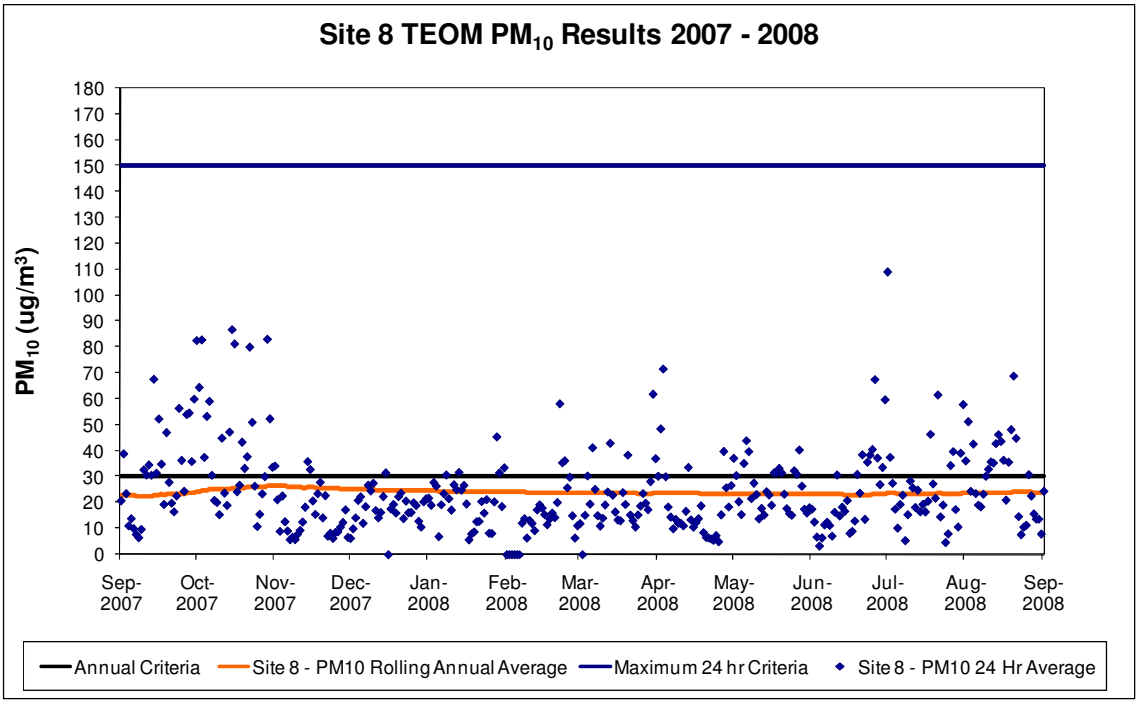


Note: Ashton Contributions are calculated where there is a NW wind direction otherwise the contribution is plotted as 0.

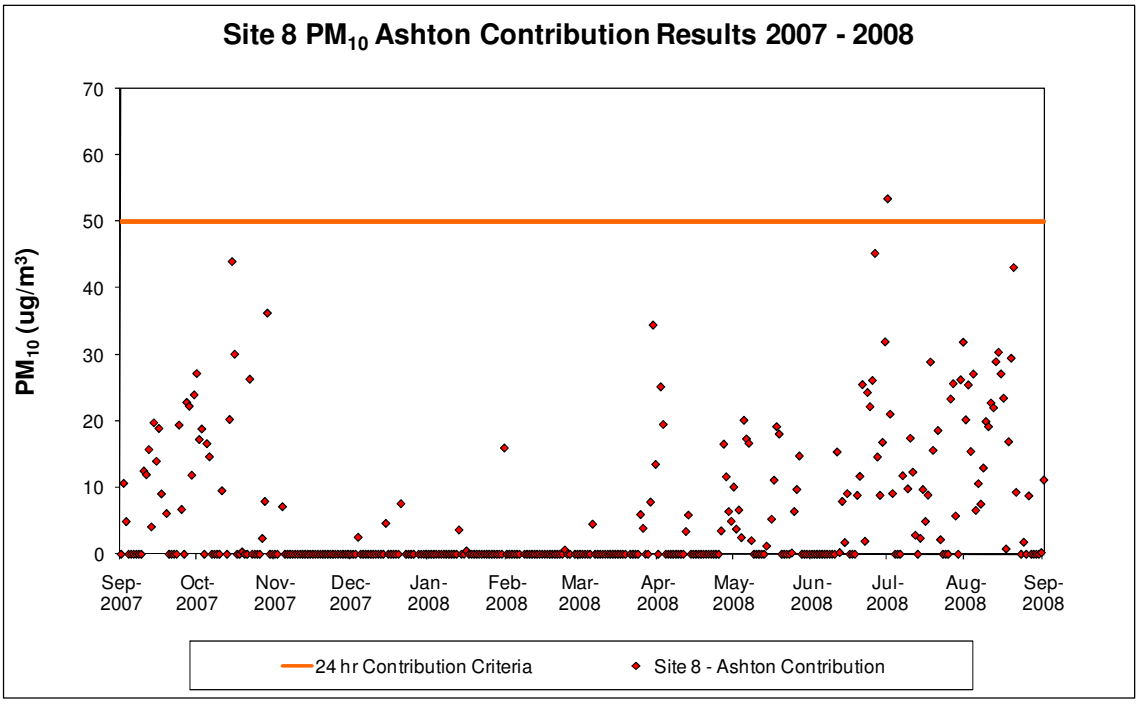
Site 3 remained in compliance with the Ashton contribution criteria of 50µg/m^3 at all times.

Site 8 TEOM

Site 8 is located on the eastern side of Camberwell Village. From this date the site had recorded a 98% data recovery rate.



Site 8 showed compliance with the annual criteria of 30µg/m^3. Site 8 also complied with the maximum 24 hour criteria of 150µg/m^3.



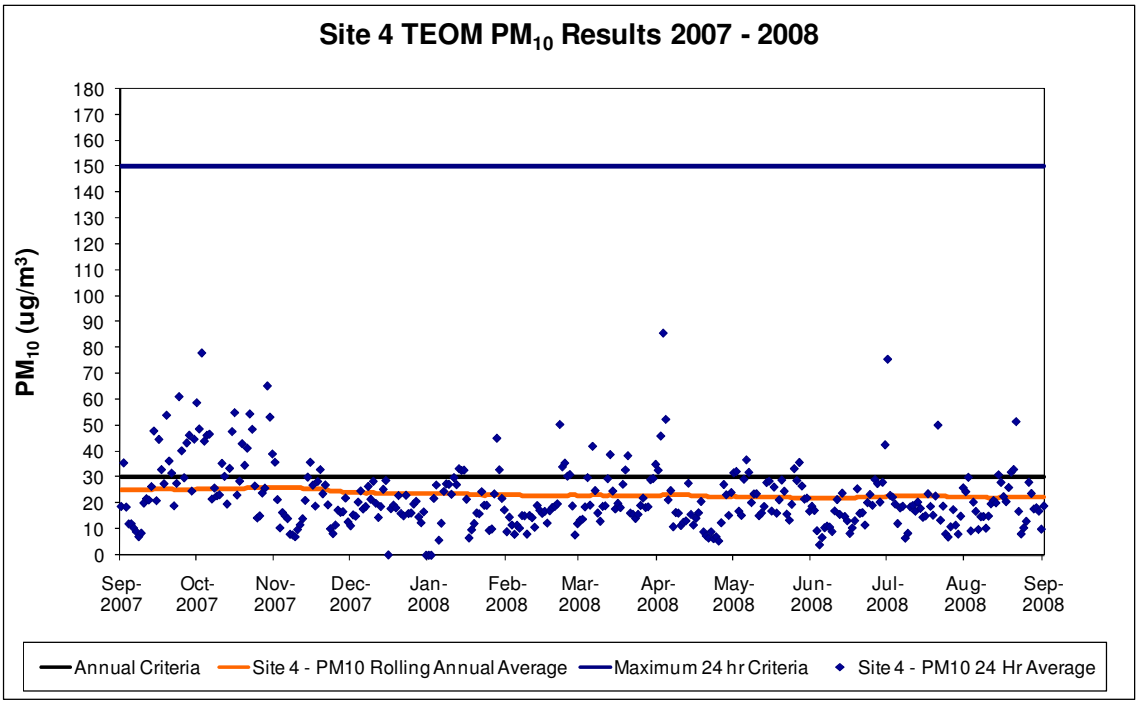
Note: Ashton Contributions are calculated where there is a NW wind direction otherwise the contribution is plotted as 0.

One exceedence of Ashton's community contribution (50µg/m^3) was recorded at site 8 during the reporting period. The result of 53µg/m^3 was recorded on the 1 July 2008. PM10 levels were

elevated at all sites including up wind sites early in the morning. Ashton's OCE relocated all exposed dumping in pit and had all water carts operating throughout the day. Once upwind PM10 levels began to decrease the OCE was required to shut down operations to reduce dust levels. Excavator 20 was shut down at 2pm. No significant drop in PM10 levels occurred following this so Excavator 19 was then shutdown at 3:30pm. Both Excavators remained down for the remainder of the day however the Ashton Coal 24hr contribution was still exceeded at Site 8.

Site 4 TEOM (On-Site)

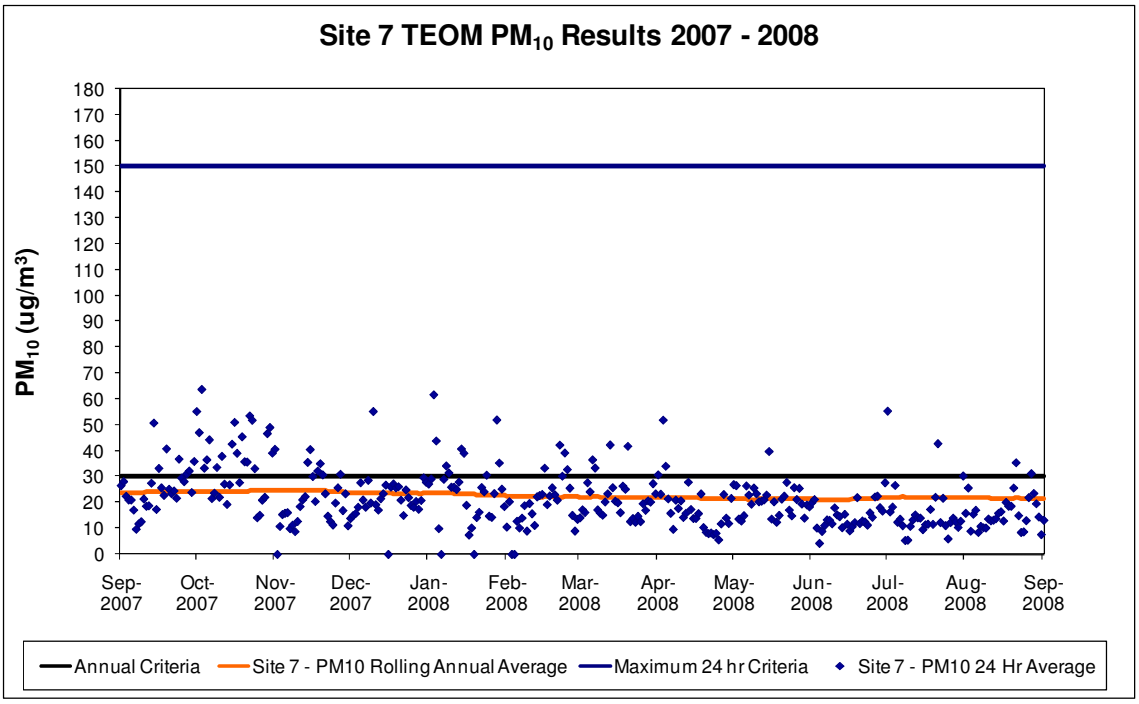
Site 4 is located on the eastern tip of the eastern emplacement area, next to Dam 5/6. 99 % of data was recovered at site 4 for the reporting period.



This site is used as a background monitoring for calculating the Ashton Contribution under NW wind conditions. Although the annual criteria of 30µg/m^3 is not expected to apply to onsite TEOMS the annual criteria was still achieved at site 4.

Site 7 TEOM (On-Site)

Site 7 is located adjacent to the Main Northern Railway at the country end turnout. The site is remote from mining operations. 98% of data was recovered from this site during the monitoring period.



The annual criteria of 30µg/m^3 is not expected to apply to onsite TEOMS. The results from this monitor show why it is selected for most calculations of Ashton's Contribution. It is generally the lowest of the background TEOMs.

3.1.3.2 Total Suspended Particulate Matter (TSP)

The High Volume Air Samplers (HVAS) operate for a 24 hour period on every sixth day (specified DECC schedule). The criteria applicable to these gauges is an annual average criteria of 90 µg/m^3.

The locations of High Volume Air Samplers to monitor TSP are detailed in **Figure 4** above. They are as follows:

Table 19. LOCATION OF TSP MONITORING STATIONS

Monitoring Station No	Location
1	Camberwell village (north)
2	Camberwell village (south)
3	Property east of Camberwell village
8	Camberwell village (east)

Historic Trends

Historic TSP results are available for a location close to Site 1 in Camberwell Village. The results for this site are shown below. They show historically prior to the commencement of the ACOL operations the annual average has exceeded the 90µg/m^3 (annual mean) criteria at various times.

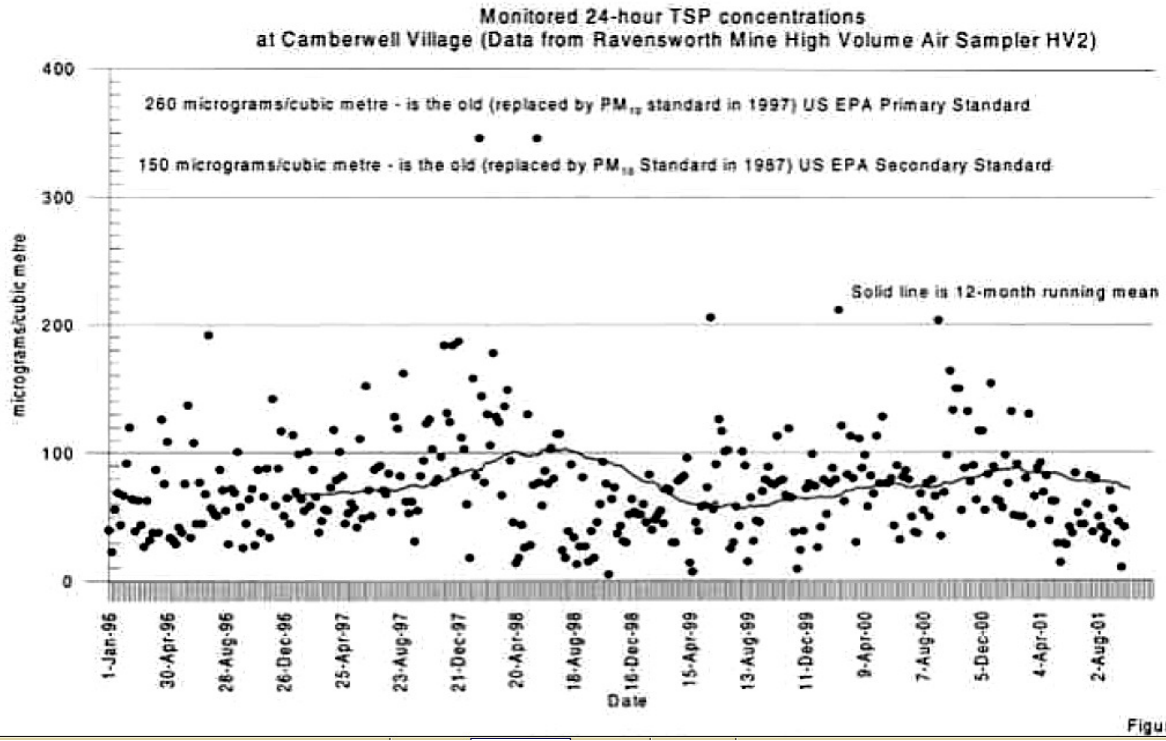
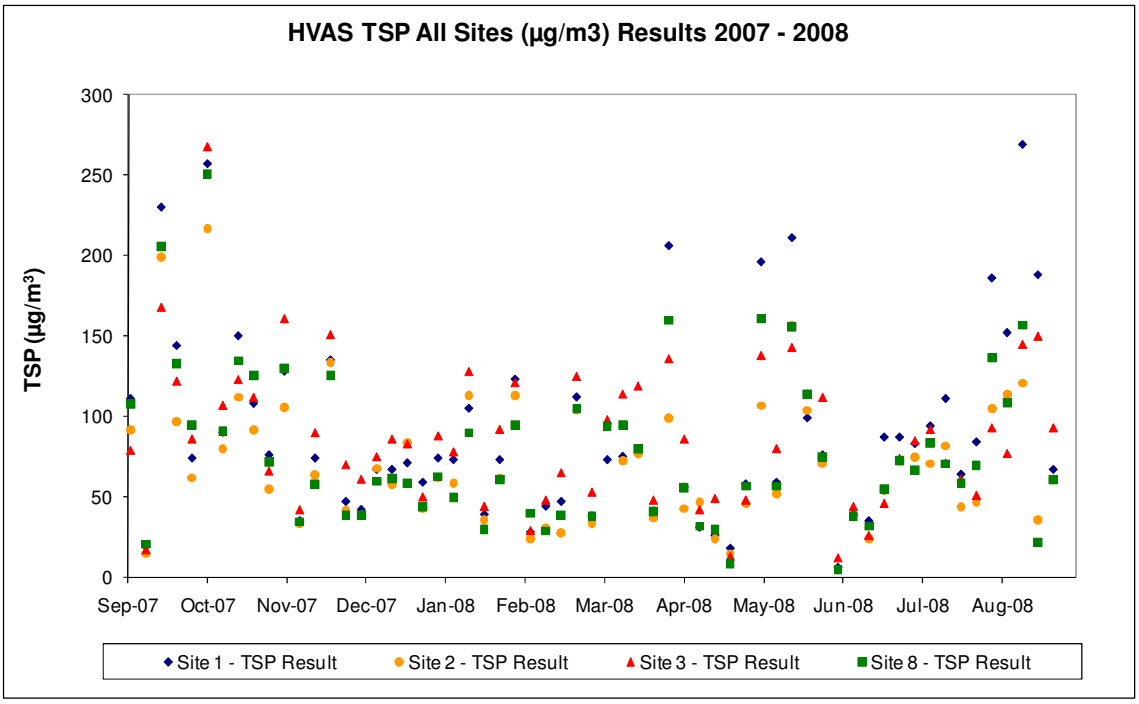
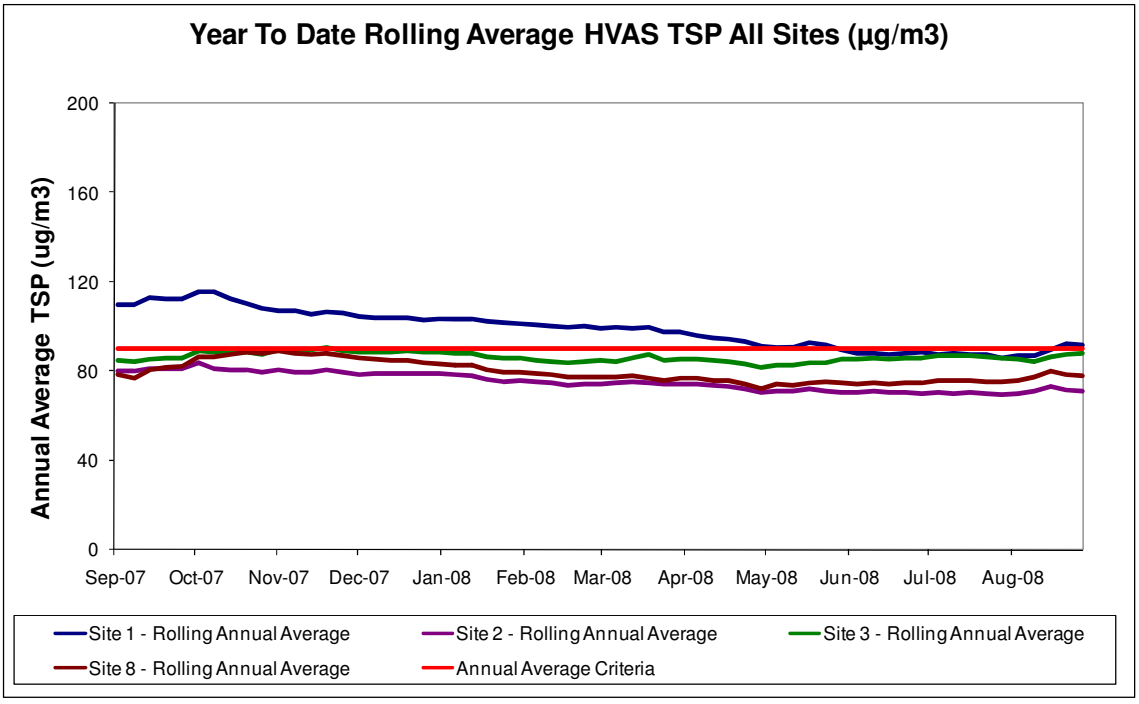


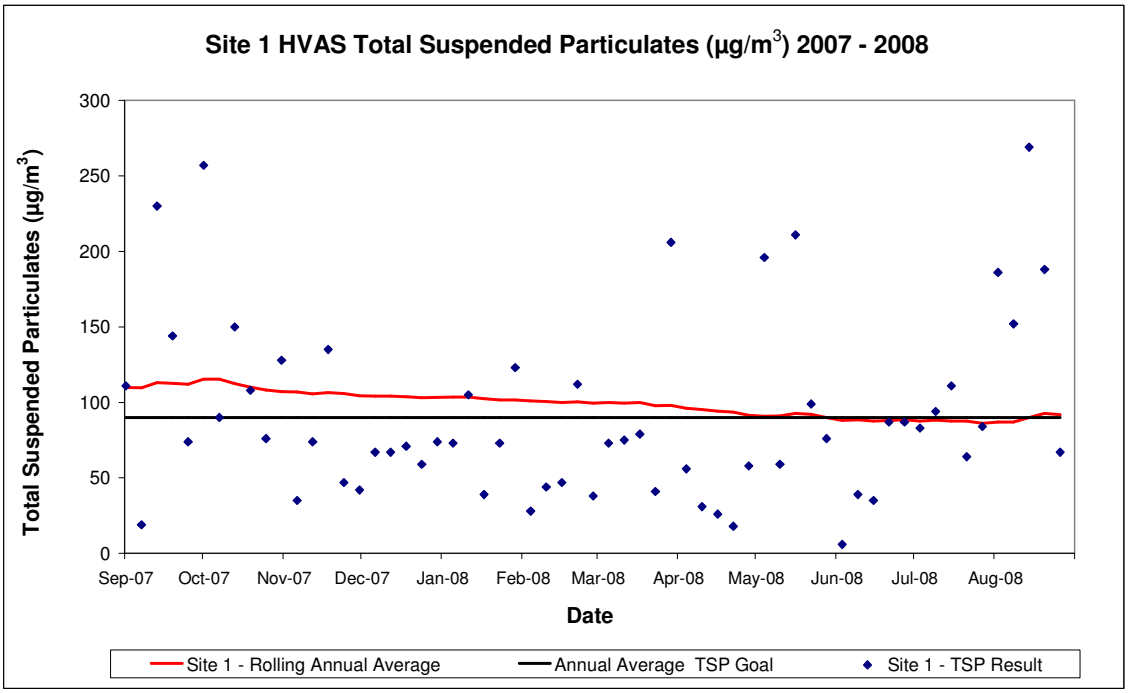
Figure 2

100% of data was recovered at sites 1, 2, 3 and 8. 24 hour results are presented below. There is no 24hr criteria for Total Suspended Particulates.



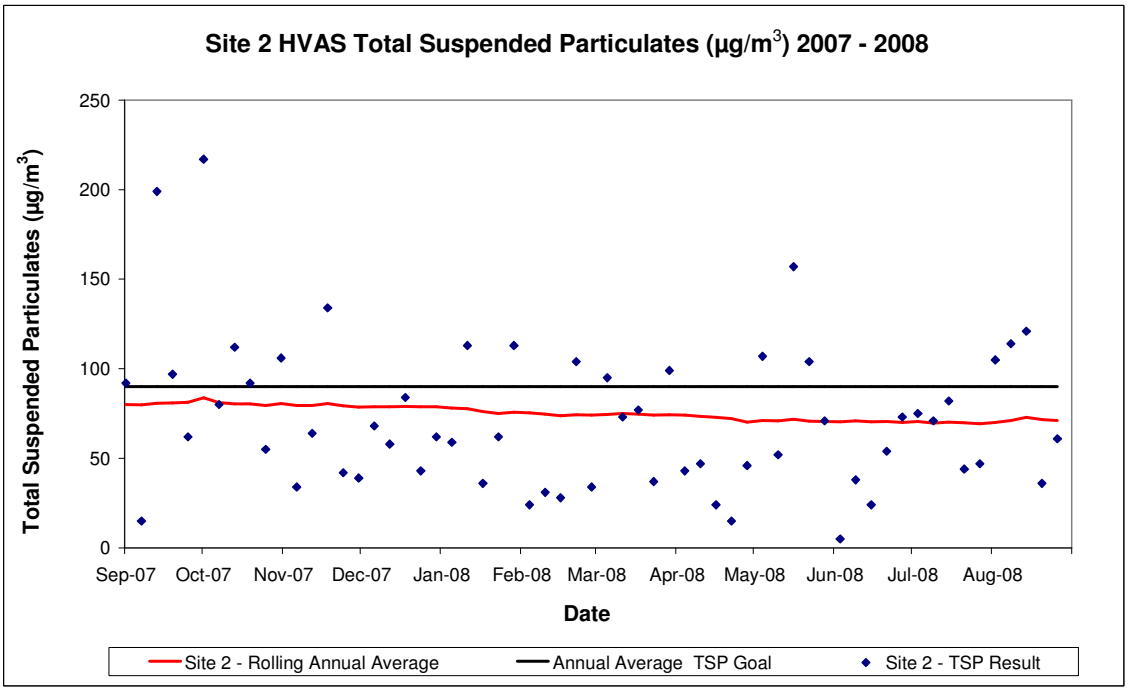


Site 1 HVAS



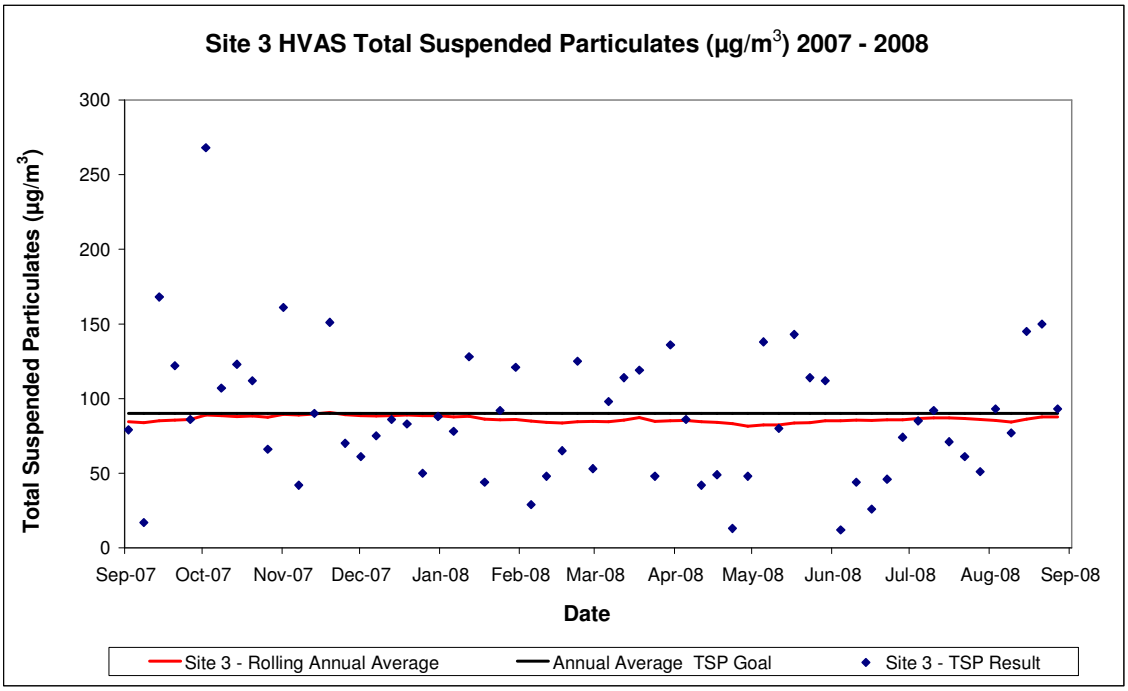
The cumulative rolling annual average for TSP at site 1 demonstrated non-compliance with the annual average criteria of 90µg/m^3. The final annual average was 92µg/m^3. The figure above shows the marked decrease in TSP levels at Site 1 over the past 12 months. The alleviation of drought conditions over the past 12 months is likely to have played a great part in reducing these levels.

Site 2 HVAS



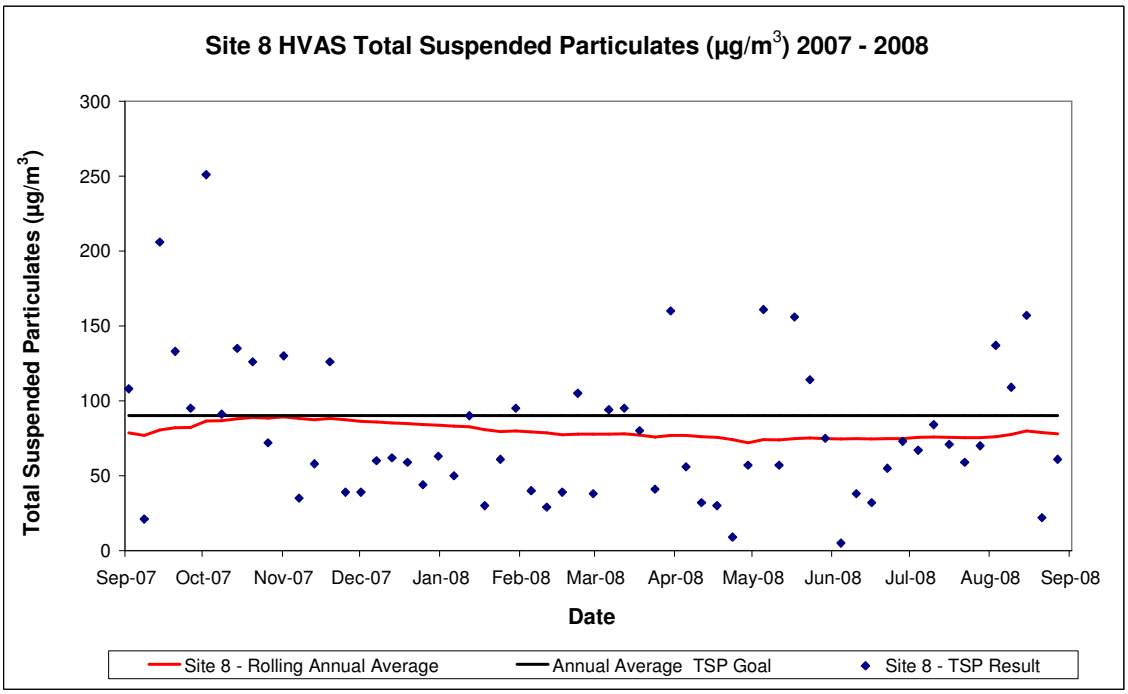
The cumulative rolling average TSP results for Site 2 was below the annual average TSP goal of 90µg/m^3 for the reporting period. The final annual average at Site 2 was 71µg/m^3.

Site 3 HVAS



The cumulative rolling average TSP results for Site 3 are below the annual average TSP goal of 90µg/m^3. The final annual average at Site 3 for the reporting period was 88µg/m^3.

Site 8 HVAS



The cumulative rolling annual average was below Ashton Coals criteria for the reporting period. The final annual average recorded at site 8 for the reporting period was 78µg/m^3.

3.1.3.3 Dust Deposition Gauges

The location of Dust Deposition gauges is detailed on **Figure 4**. They are as follows:

Table 20. LOCATION OF DUST DEPOSITION GAUGES

Monitoring Station No	Location
2	Ravensworth property west of open cut
4	Ashton property near Hunter River
5	New England Highway SE of Camberwell village
6	St Clements Church
7	TEOM site 1 - Camberwell Village
8	TEOM site 2 - Camberwell Village
9	TEOM site 3 – Property east of Camberwell
10	**On site** - TEOM site 4 (near East OB dump)
11	NE of Emplacement Area on Glennies Creek Rd
13	**On site** – TEOM site 7 (country end turnout)
14	TEOM site 8 – Camberwell Village

Data recovery for all depositional dust gauges is as follows:

Table 21. DUST DEPOSITION GAUGES – EXTENT OF CONTAMINATION

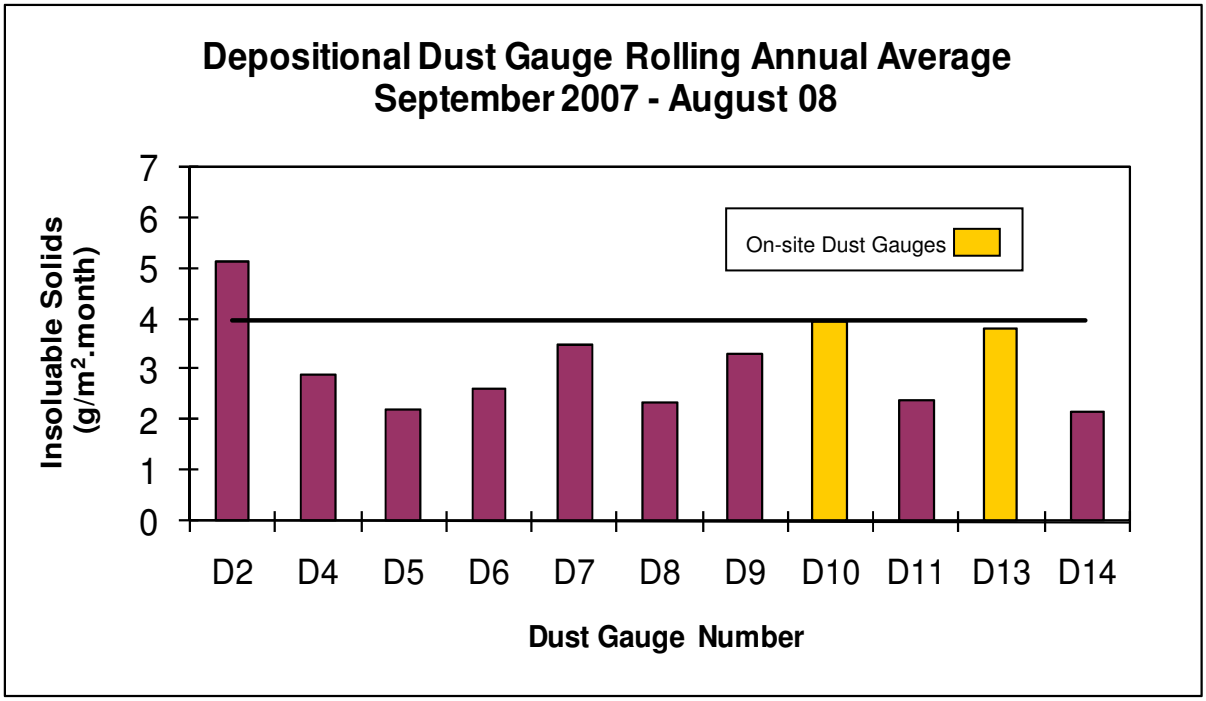
Gauge Number	Data Availability (%)	Data Loss
D2	100	
D4	100	
D5	100	
D6	100	
D7	100	
D8	100	
D9	100	
D10	100	
D11	100	
D13	100	
D14	100	

The following table shows the annual average insoluble solids for each gauge over the 2007 – 2008 reporting period. Dust gauge D2 is located in close proximity to a neighbouring operation and due to the progression of their pit, now lies within the 4g/m^2/month impact zone identified in their environmental impact assessment. All remaining off-site gauges were within criteria at the end of the reporting period. This includes Gauge 7, located in Camberwell Village. Previously this site was exceeding the criteria for deposited dust. The reduction in dust levels at Site 1 is strongly correlated with the alleviation of drought conditions observed over the past 12 months.

Table 22. INSOLUBLE SOLIDS ANNUAL AVERAGE RESULTS (EXCLUDING CONTAMINATED GAUGES)

Dust Gauge	Annual Average EIS Background Values (g/m^2.month)	Annual Average 2007– 2008 (g/m^2/month)
D2	3.5	**5.1**
D4	1.6	2.9
D5	2.0	2.2
D6	1.5	2.6
D7	NA	3.5
D8	NA	2.3
D9	NA	3.3
D10 (on site)	NA	3.9
D11	NA	2.4
D13 (on site)	NA	3.8
D14	NA	2.2

The annual average dust deposition for all depositional dust gauges is as follows:



3.2 EROSION AND SEDIMENT

3.2.1 Erosion and Sediment Management

All runoff from disturbed areas is collected in a series of sedimentation and settling dams established in accordance with the Erosion and Sediment Control Management Plan (ESCP). Monitoring indicates that these dams have been working effectively in controlling sediment flow. Gypsum has been used in drains where there is a high potential for sediment movement during heavy rainfall events. The Gypsum works by dropping the sediment out of entrainment in the overland water flow.

Major runoff storage dams are located in the following areas:

- On the north-west side of the CHPP (Process Water Dam and Settling Dam);
- On the eastern side of the Eastern Emplacement Area (Dam 5/6); and

In addition, there are a number of minor runoff capture dams that intercept runoff water before it departs site. These dams also contain sedimentation control devices in the form of hay bales, silt fences, etc where required.

Work was undertaken during the period to complete the two main drop structures for the Eastern Emplacement Area (EEA). The structures receive water from the rehabilitated and disturbed slopes of the EEA and transport the water to sediment containment dams. The structures have been designed to handle a 1 in 100 ARI storm event. The drop structures are constructed by shaping the spoil on a 10% slope. Biddim is placed along the entire length of the structure and covered with rock ranging from 0.4 to 0.6m diameter. A velocity dissipation basin was constructed at the base of each drop structure because of the change in direction required. These basins were also lined with biddim and armoured with rock.

Figure 5. Northern drop structure under construction

3.2.2 Erosion and Sediment Monitoring

Visual inspections are undertaken on a regular basis and stream water quality results are presented in the following section.

3.3 SURFACE WATER POLLUTION

3.3.1 Surface Water Management

Ashton Coal has an approved Site Water Management Pan. Controls have been put in place in accordance with this plan to control potential causes of water pollution. These controls are considered to have been adequate for the reporting period.

3.3.2 Surface Water Monitoring

The water monitoring locations are detailed in Figure 6 as well as the following table:

Table 23. SURFACE WATER MONITORING LOCATIONS

Monitoring Station	Stream	Location
SM 1	Bettys Creek	Glendell land upstream of Ashton
SM 2	Bettys Creek	Just upstream of confluence with Bowmans Creek
SM 3	Bowmans Creek	Water pool at north west corner of mine lease
SM 4	Bowmans Creek	Water pool just downstream of New England Highway
SM 5	Bowmans Creek	Halfway down Ashton property
SM 6	Bowmans Creek	Just upstream of confluence with Hunter River
SM 7	Glennies Creek	Upstream of Ashton Mine
SM 8	Glennies Creek	Halfway down Ashton property
SM 9	Hunter River	Upstream of confluence with Bowmans Creek
SM 10	Hunter River	Downstream of confluence with Bowmans Creek
SM 11	Glennies Creek	Upstream of confluence with Hunter River
SM 12	Hunter River	Downstream of confluence with Glennies Creek
SM 13	Hunter River	Upstream of confluence with Glennies Creek midway between Bowmans Creek and Glennies Creek.
SM 14	Hunter River	Directly Upstream of confluence with Glennies Creek

Abbreviations used within Section 3.3 are as follows:

µS/cm	*microsiemens per centimetre*
mg/l	*milligrams per litre*
TDS	*Total Dissolved Solids*
TSS	*Total Suspended Solids*
EC	Electrical Conductivity

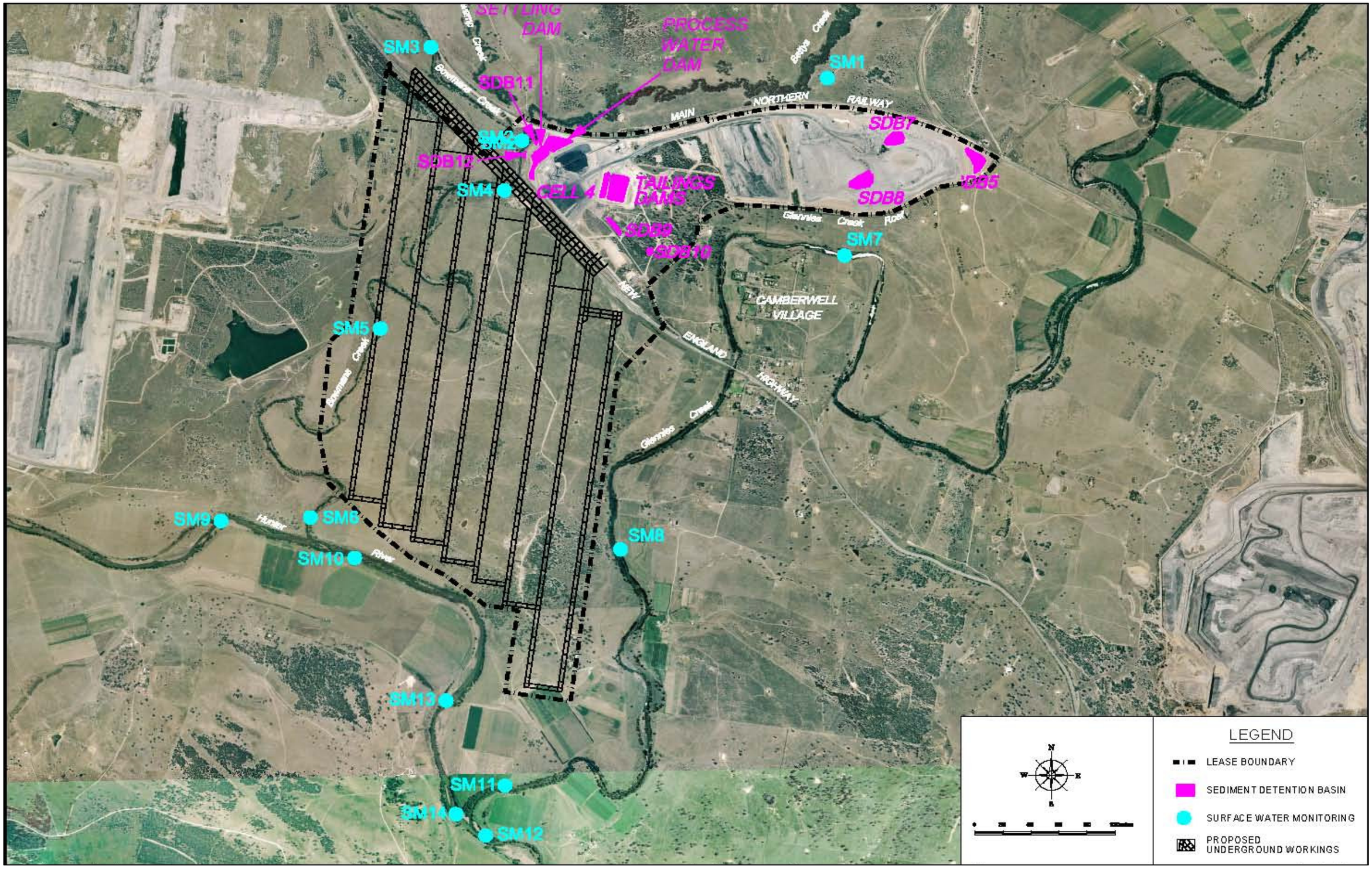


Figure 6. Water Quality Monitoring Locations

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3.3.2.1 Monthly Water Quality Monitoring Results

All monthly water samples were collected and analysed during the reporting period for pH, Electrical Conductivity (EC), Total Dissolved Solids (TDS), Total Suspended Solids (TSS) Total Hardness ($CaCO_3$), and Oil and Grease (O & G).

pH

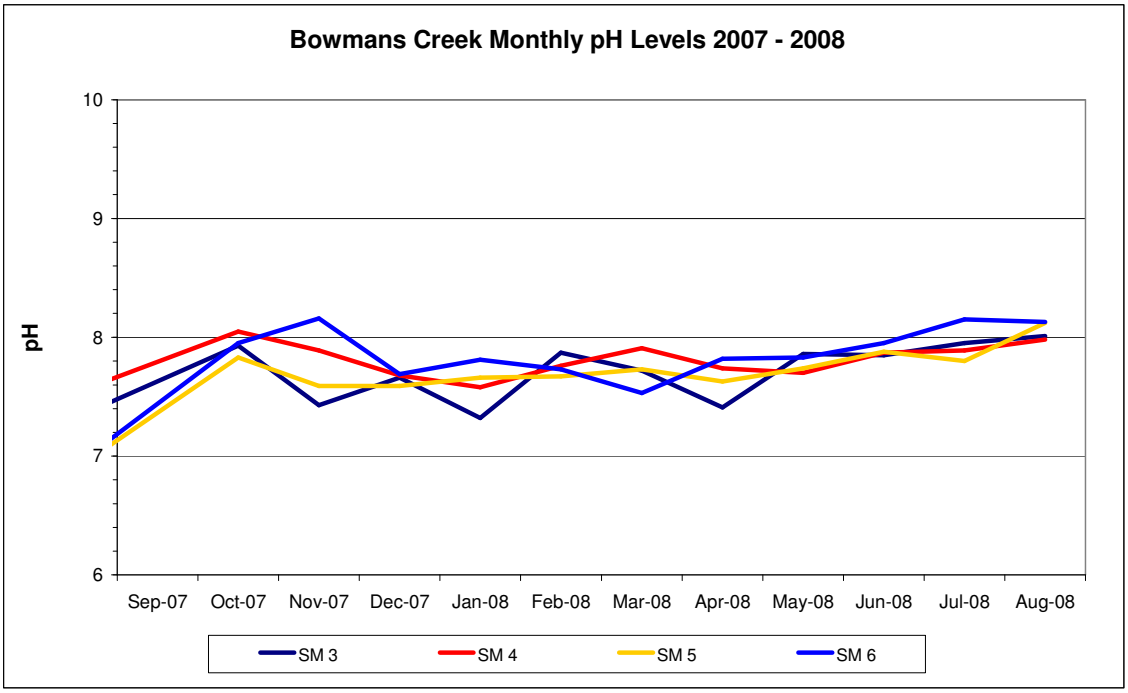
The results of monthly pH monitoring were as follows:

Table 24. pH RESULTS 2007 - 2008

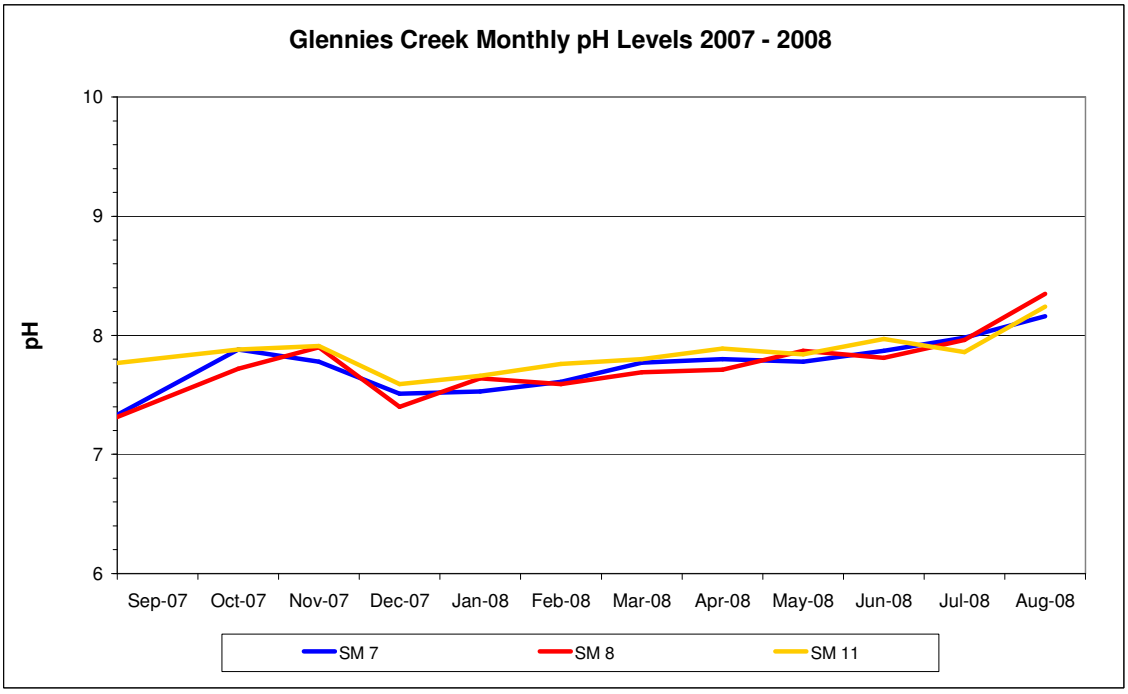
pH	SM 1	SM 2	SM 3	SM 4	SM 5	SM 6	SM 7	SM 8	SM 9	SM 10	SM 11	SM 12	SM 13	SM 14
Sep-07	7.65	6.63	7.3	7.5	6.9	6.9	7.2	7.2	7.8	7.9	7.7	7.8	8.0	7.9
Oct-07	Dry	Dry	7.9	8.1	7.8	8.0	7.9	7.7	8.4	8.3	7.9	8.0	8.3	8.3
Nov-07	Dry	Dry	7.4	7.9	7.6	8.2	7.8	7.9	8.3	8.4	7.9	7.9	8.3	8.4
Dec-07	Dry	Dry	7.7	7.7	7.6	7.7	7.5	7.4	8.0	8.0	7.6	8.0	8.0	8.0
Jan-08	Dry	Dry	7.3	7.6	7.7	7.8	7.5	7.6	8.1	8.1	7.7	8.0	8.0	8.1
Feb-08	7.9	7.6	7.9	7.8	7.7	7.7	7.6	7.6	7.9	7.9	7.8	7.9	8.0	8.0
Mar-08	Dry	Dry	7.7	7.9	7.7	7.5	7.8	7.7	8.2	8.1	7.8	8.0	8.2	8.1
Apr-08	Dry	Dry	7.4	7.7	7.6	7.8	7.8	7.7	8.2	8.2	7.9	8.1	8.2	8.3
May-08	Dry	Dry	7.9	7.7	7.7	7.8	7.8	7.9	8.1	7.9	7.8	8.0	8.1	8.1
Jun-08	7.98	7.67	7.85	7.9	7.9	8.0	7.9	7.8	7.9	8.0	8.0	7.9	8.0	8.1
Jul-08	Dry	Dry	8.0	7.9	7.8	8.2	8.0	8.0	7.9	7.9	7.9	8.2	8.3	8.2
Aug-08	Dry	Dry	8.0	8.0	8.0	8.1	8.1	8.2	8.4	8.4	8.2	8.2	8.4	8.4
Min	7.2	6.9	7.3	7.5	6.9	6.9	7.2	7.2	7.8	7.9	7.6	7.8	8.0	7.9
Av	7.2	6.9	7.7	7.8	7.7	7.8	7.7	7.7	8.1	8.1	7.8	8.0	8.1	8.2
Max	7.2	6.9	8.0	8.1	8.0	8.2	8.1	8.2	8.4	8.4	8.2	8.2	8.4	8.4

Monthly water quality monitoring in Bowmans Creek, Glennies Creek and the Hunter River indicated that pH levels throughout the reporting period were consistently within the neutral (min pH = 6.9) to slightly alkaline (max pH = 8.4) range. Previously during more severe drought conditions, SM4 showed higher pH ranges. This was the result of drying of the pool and recharge from saline groundwater. The site has moved to a similar pH range as the other sites along Bowmans Creek since the drought conditions have alleviated and the creek has regularly flowed. The variation apparent at each site can be attributed to natural fluctuations in water pH as a result of rainfall runoff, evaporation, vegetation decay and fluvial sediment movements.

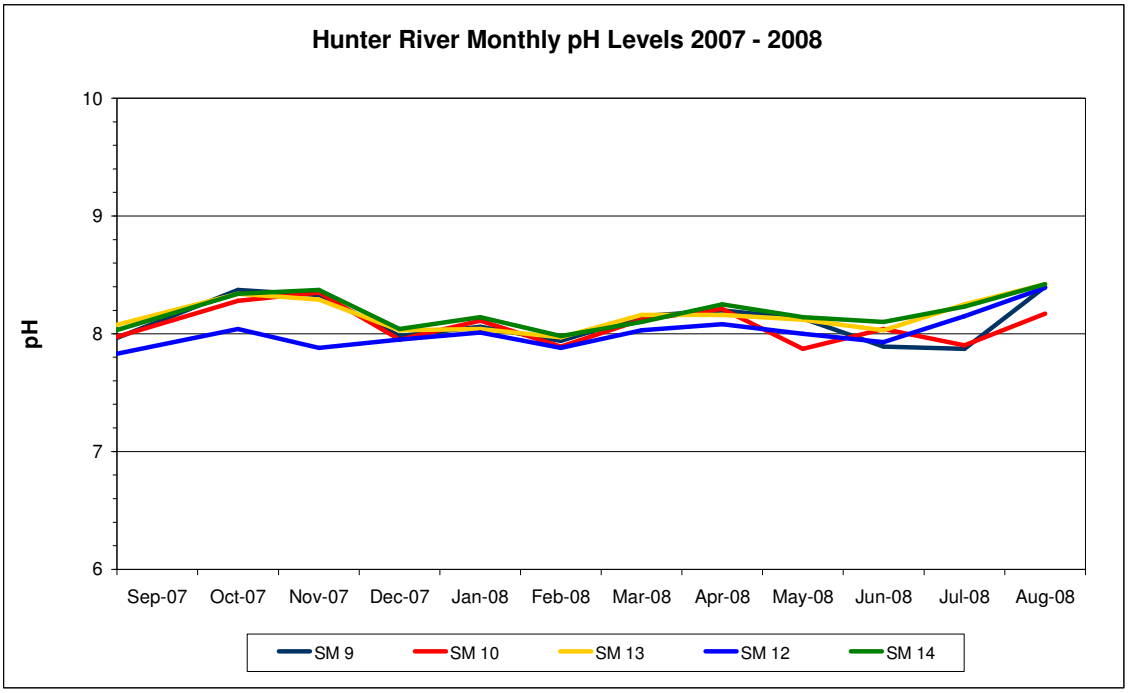
Monitoring locations SM1 and SM2 in Betty's Creek were intermittently wet following heavy rainfall.



pH levels in Bowmans Creek (SM3, SM4, SM5 and SM6) were neutral to slightly alkaline (ranging from 6.9 to 8.2 and remained within the acceptable recommended pH range.



Glennies Creek (SM7, SM8 and SM11) pH levels were neutral to slightly alkaline (ranging from 7.2 to 8.2) with little variation between sites, and remained within the acceptable recommended pH range. Slight pH fluctuations throughout the reporting period followed a very similar pattern across all sites.



pH levels in the Hunter River (SM9, SM10, SM12, SM13 and SM14) were neutral to slightly alkaline (ranging from 7.8 to 8.4) with minimal variation between sites, and remained within the acceptable recommended pH range. Similar to Glennies Creek slight pH fluctuations throughout the reporting period followed a very similar pattern across all sites. pH is often slightly lower at SM12 as it is located at the confluence of Glennies Creek.

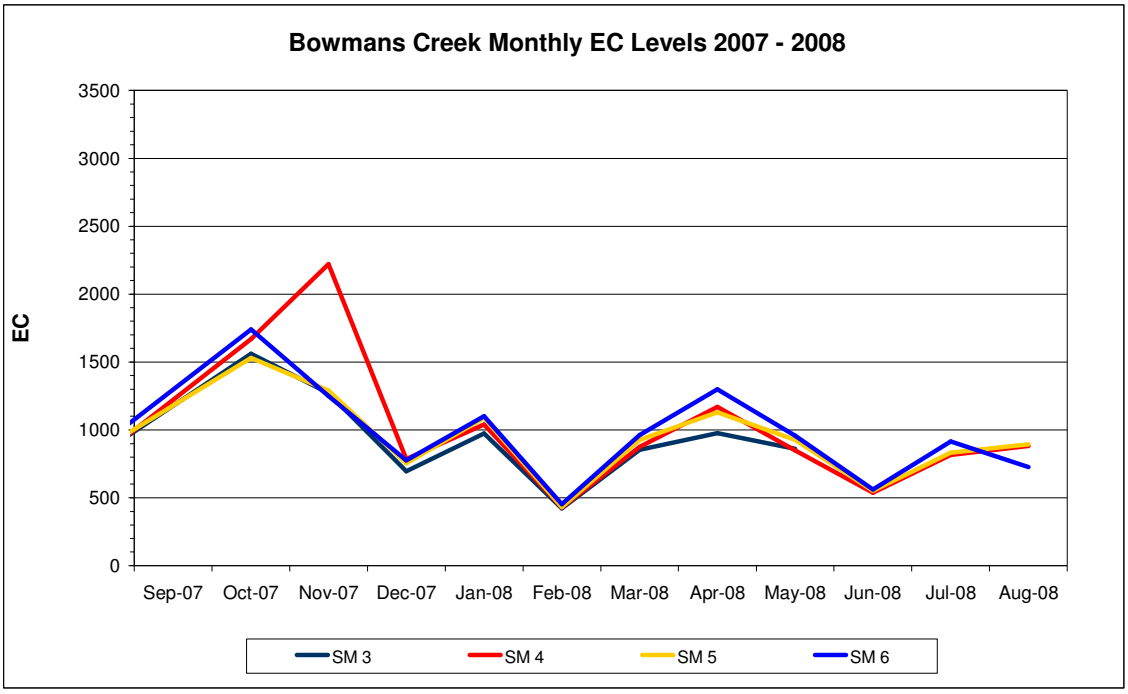
Electrical Conductivity (EC)

The results of EC monitoring are as follows:

Table 25. ELECTRICAL CONDUCTIVITY RESULTS 2006 – 2007

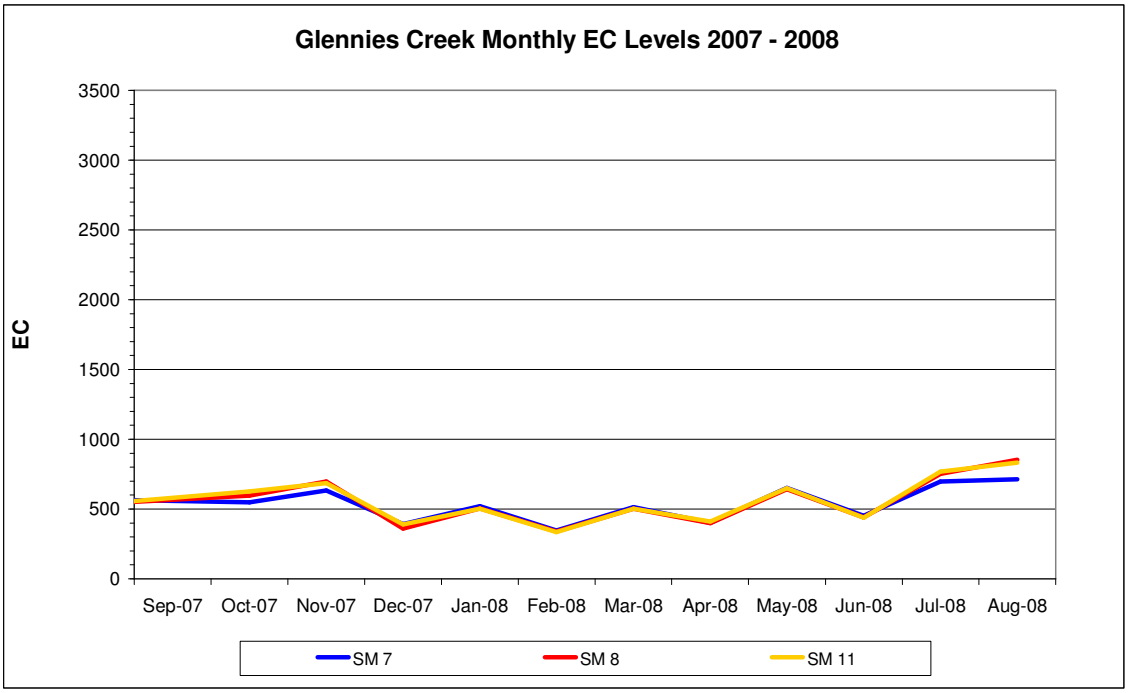
EC	SM 1	SM 2	SM 3	SM 4	SM 5	SM 6	SM 7	SM 8	SM 9	SM 10	SM 11	SM 12	SM 13	SM 14
Sep-07	777	714	796	775	831	856	570	538	644	629	534	605	615	615
Oct-07	Dry	Dry	1560	1670	1530	1740	548	596	1270	1290	628	980	1260	1260
Nov-07	Dry	Dry	1270	2220	1290	1250	633	699	1030	1040	686	715	1070	1060
Dec-07	Dry	Dry	696	785	754	775	392	360	667	661	390	635	656	661
Jan-08	Dry	Dry	974	1040	1090	1100	521	504	733	750	502	720	741	739
Feb-08	277	574	421	428	432	453	347	339	544	465	335	461	525	545
Mar-08	Dry	Dry	853	875	927	962	513	501	874	876	501	792	880	876
Apr-08	Dry	Dry	976	1170	1130	1300	402	400	1060	1070	410	812	1060	1060
May-08	Dry	Dry	859	848	925	957	652	644	881	891	650	815	885	892
Jun-08	360	405	531	539	552	561	452	440	552	615	439	551	628	629
Jul-08	Dry	Dry	800	817	833	915	697	754	845	872	768	884	922	913
Aug-08	Dry	Dry	860	883	870	893	727	715	854	853	726	832	870	861
Min	1800	1950	421	428	432	453	347	339	544	465	335	461	525	545
Av	1800	1950	883	1004	930	980	538	541	830	834	547	734	843	843
Max	1800	1950	1560	2220	1530	1740	727	754	1270	1290	768	980	1260	1260

Monitoring locations SM1 and SM2 in Betty's Creek were intermittently wet following heavy rainfall.

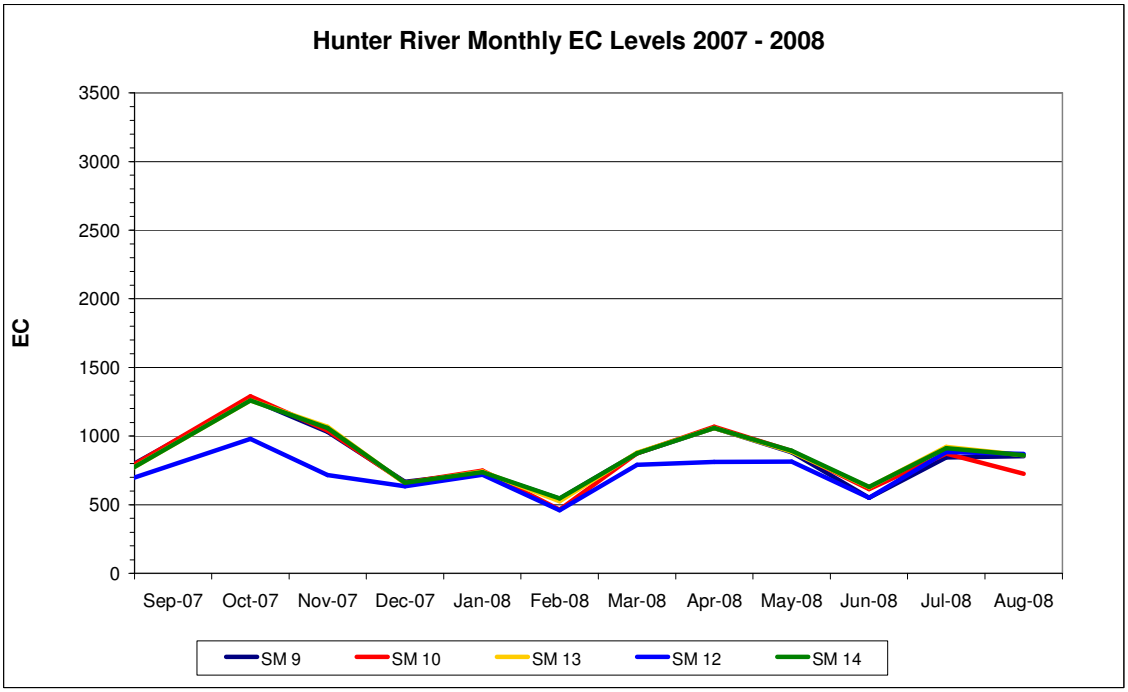


Electrical Conductivity (EC) levels in Bowmans Creek fluctuated between 421µS/cm and 2200µS/cm. High EC levels were generally consistent with periods of low to no rainfall in

particular SM4 which appears to have a direct link to saline ground waters. All four sites showed similar trends throughout the period.



The EC of water in Glennies Creek (SM7, SM8 and SM11) remained consistently low. All three sites trended together throughout the period indicating no impacts from Ashton Coal Operations.



The EC of the Hunter River (SM9, SM10, SM12, SM13 and SM14) generally trended together throughout the period. SM12 is located downstream of the confluence with Glennies Creek and is affected by the lower EC levels of Glennies Creek under low flow conditions.

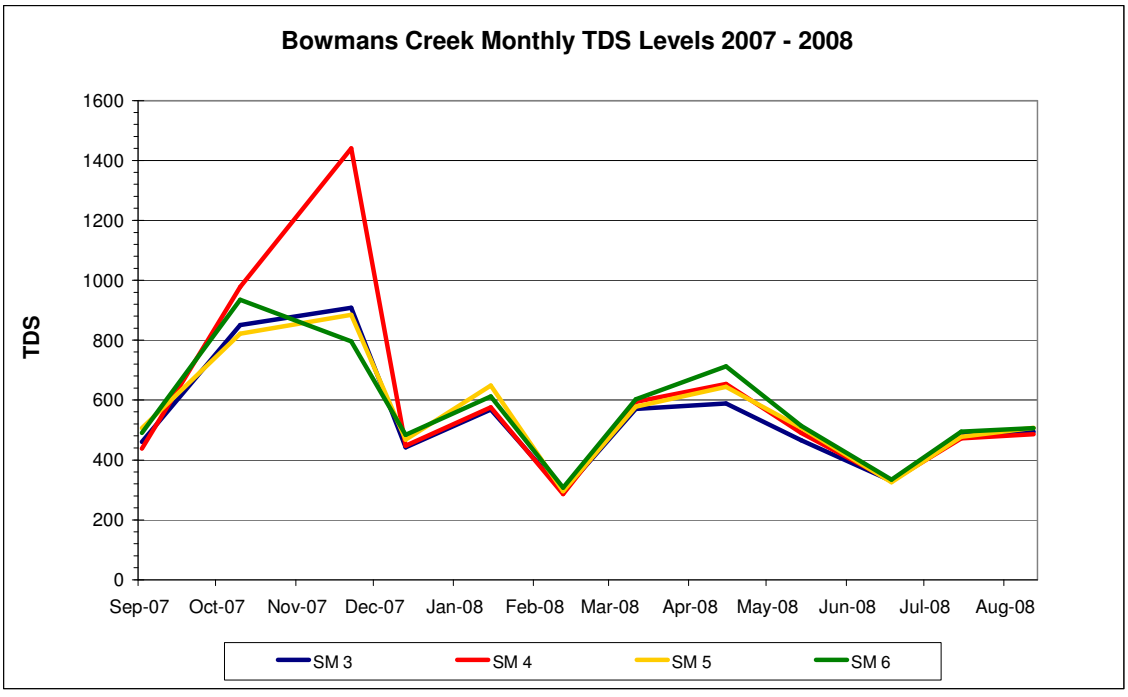
Total Dissolved Solids (TDS)

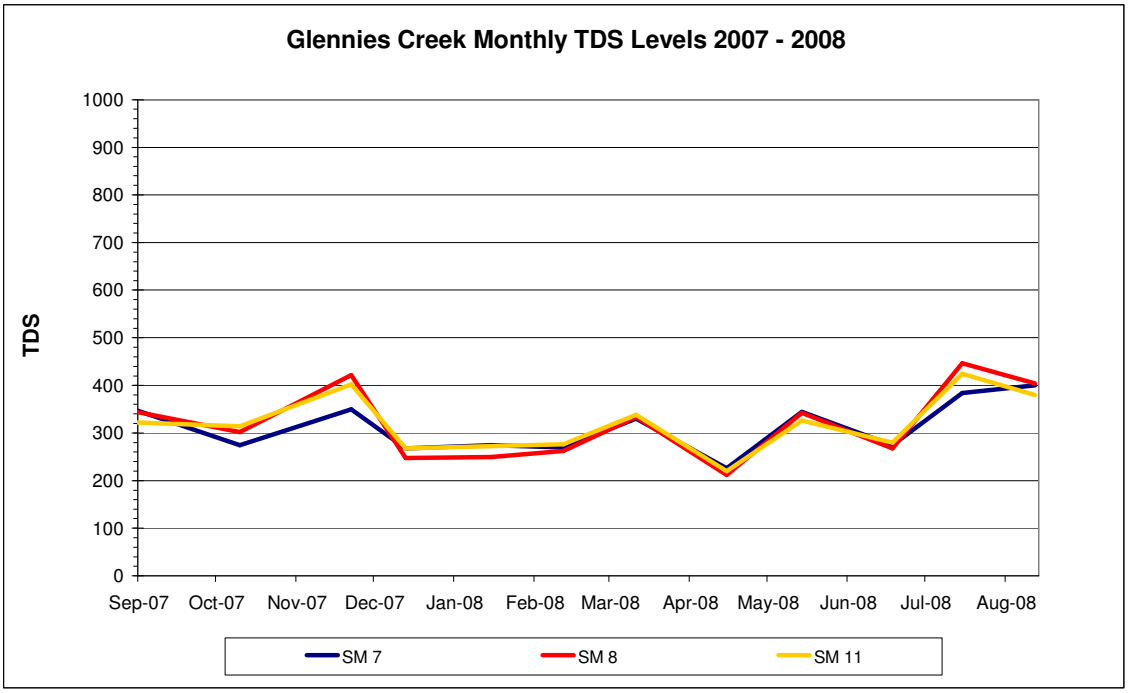
Monthly TDS results are as follows:

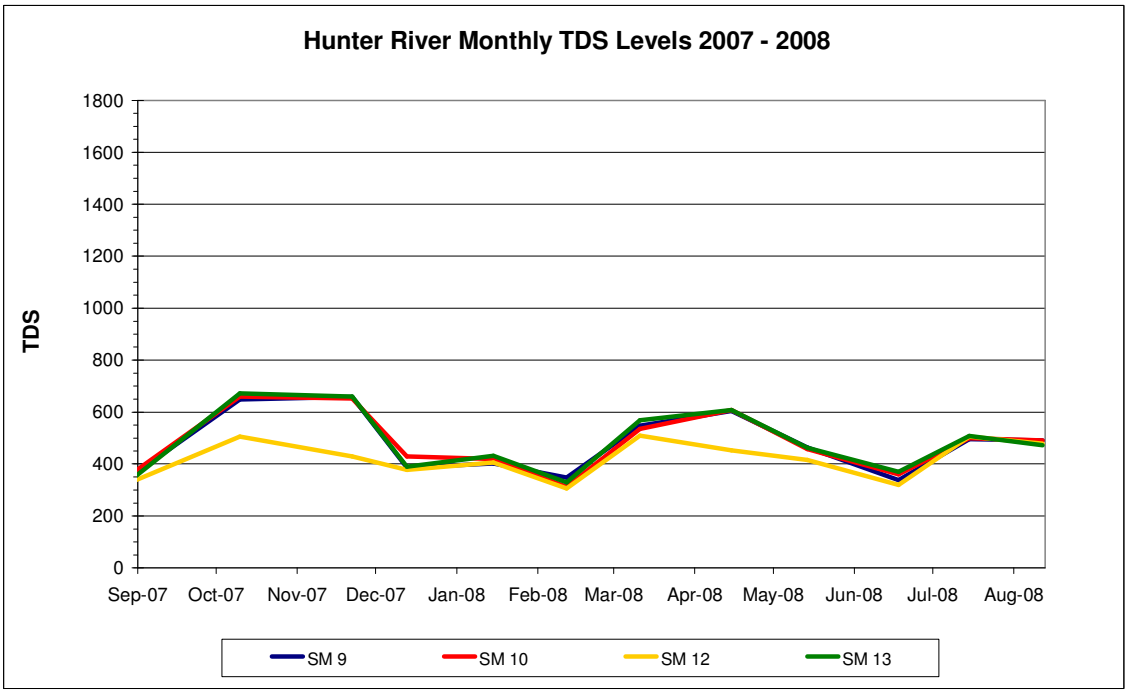
Table 26. TOTAL DISSOLVED SOLIDS RESULTS 2007 - 2008

TDS	SM 1	SM 2	SM 3	SM 4	SM 5	SM 6	SM 7	SM 8	SM 9	SM 10	SM 11	SM 12	SM 13	SM 14
Sep-07	578	586	460	438	480	506	490	348	344	364	372	322	336	352
Oct-07	Dry	Dry	850	978	684	822	934	274	302	648	660	314	506	672
Nov-07	Dry	Dry	908	1440	792	884	796	350	422	658	652	402	430	660
Dec-07	Dry	Dry	442	448	450	468	484	268	248	386	430	268	378	390
Jan-08	Dry	Dry	568	576	592	648	612	274	250	402	420	272	406	432
Feb-08	1190	668	294	286	300	296	308	270	262	348	312	276	306	330
Mar-08	Dry	Dry	570	594	580	578	602	330	334	548	536	338	510	568
Apr-08	Dry	Dry	588	654	580	644	712	226	212	604	608	220	452	608
May-08	Dry	Dry	466	490	472	508	514	344	342	464	458	326	416	462
Jun-08	716	726	330	330	334	326	334	274	268	338	360	280	320	370
Jul-08	Dry	Dry	488	472	480	478	494	384	446	496	500	424	506	508
Aug-08	Dry	Dry	494	486	500	508	506	400	404	490	490	380	478	472
Min	988	1120	294	286	300	296	308	226	212	338	312	220	306	330
Av	988	1120	538	599	520	556	566	312	320	479	483	319	420	485
Max	988	1120	908	1440	792	884	934	400	446	658	660	424	510	672

TDS results closely reflect EC results.




Glennies Creek Monthly TDS Levels 2007 - 2008
TDS
1000
900
800
700
600
500
400
300
200
100
0
Sep-07
Oct-07
Nov-07
Dec-07
Jan-08
Feb-08
Mar-08
Apr-08
May-08
Jun-08
Jul-08
Aug-08
SM 7
SM 8
SM 11

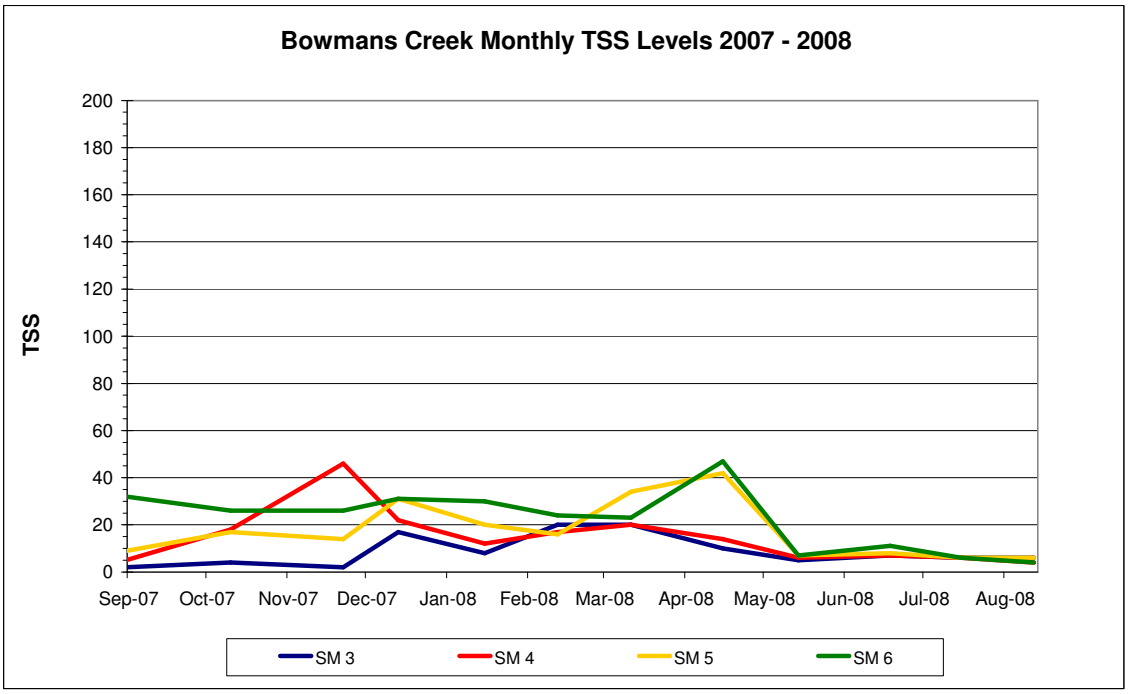

Hunter River Monthly TDS Levels 2007 - 2008
TDS
1800
1600
1400
1200
1000
800
600
400
200
0
Sep-07
Oct-07
Nov-07
Dec-07
Jan-08
Feb-08
Mar-08
Apr-08
May-08
Jun-08
Jul-08
Aug-08
SM 9
SM 10
SM 12
SM 13

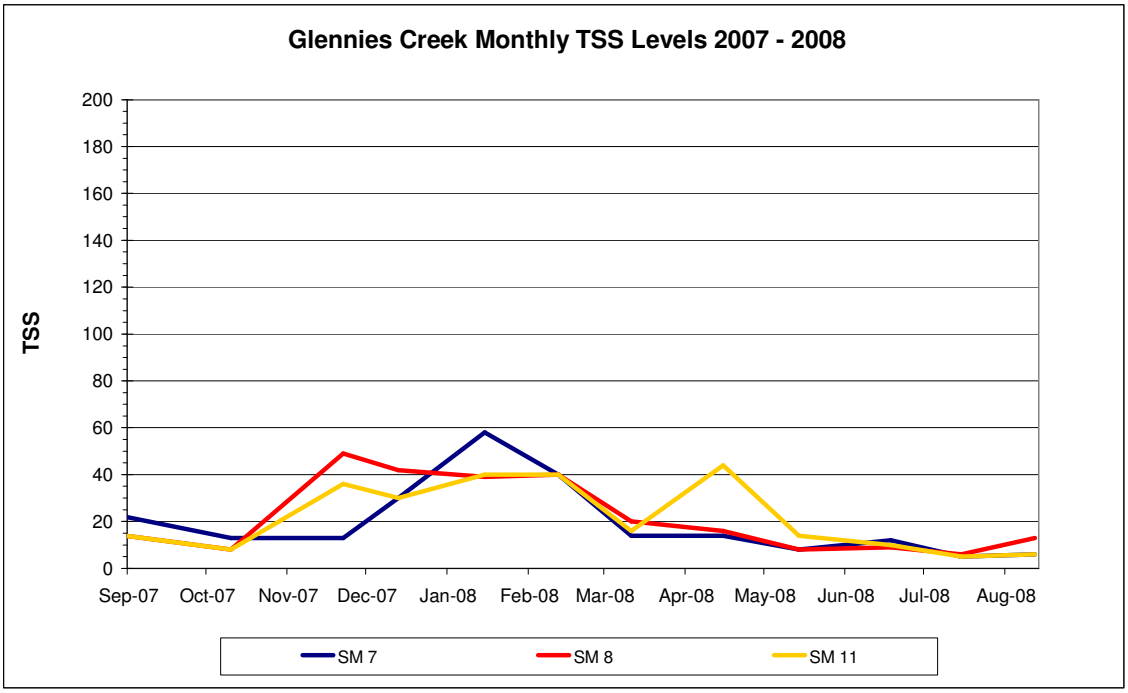
Total Suspended Solids (TSS)

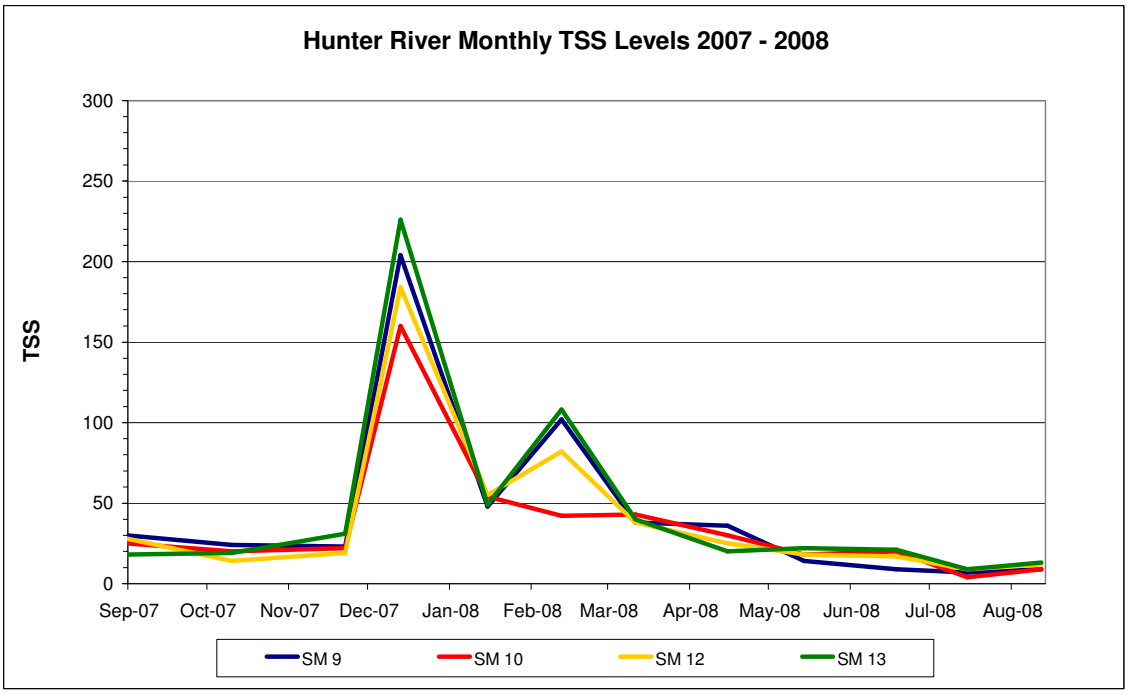
Monthly TSS results are as follows:

Table 27. TOTAL SUSPENDED SOLIDS RESULTS 2007 - 2008

TSS	SM 1	SM 2	SM 3	SM 4	SM 5	SM 6	SM 7	SM 8	SM 9	SM 10	SM 11	SM 12	SM 13	SM 14
Sep-07	8	27	2	5	4	9	32	22	14	30	25	14	28	18
Oct-07	Dry	Dry	4	18	4	17	26	13	8	24	20	8	14	19
Nov-07	Dry	Dry	2	46	11	14	26	13	49	23	22	36	19	31
Dec-07	Dry	Dry	17	22	22	31	31	30	42	204	160	30	184	226
Jan-08	Dry	Dry	8	12	4	20	30	58	39	48	54	40	55	49
Feb-08	504	98	20	17	19	16	24	40	40	102	42	40	82	108
Mar-08	Dry	Dry	20	20	18	34	23	14	20	38	43	16	38	40
Apr-08	Dry	Dry	10	14	10	42	47	14	16	36	30	44	25	20
May-08	Dry	Dry	5	6	5	7	7	8	8	14	18	14	18	22
Jun-08	40	18	7	7	8	8	11	12	9	9	20	10	17	21
Jul-08	Dry	Dry	6	6	7	6	6	5	6	7	4	5	9	9
Aug-08	Dry	Dry	6	4	3	6	4	6	13	9	9	6	12	13
Min	13	18	2	4	3	6	4	5	6	7	4	5	9	9
Av	13	18	9	15	10	18	22	20	22	45	37	22	42	48
Max	13	18	20	46	22	42	47	58	49	204	160	44	184	226




Glennies Creek Monthly TSS Levels 2007 - 2008
TSS
200
180
160
140
120
100
80
60
40
20
0
Sep-07
Oct-07
Nov-07
Dec-07
Jan-08
Feb-08
Mar-08
Apr-08
May-08
Jun-08
Jul-08
Aug-08
SM 7
SM 8
SM 11


Hunter River Monthly TSS Levels 2007 - 2008
TSS
300
250
200
150
100
50
0
Sep-07
Oct-07
Nov-07
Dec-07
Jan-08
Feb-08
Mar-08
Apr-08
May-08
Jun-08
Jul-08
Aug-08
SM 9
SM 10
SM 12
SM 13

Total Hardness ($CaCO_3$)

Table 28. TOTAL HARDNESS RESULTS 2007 - 2008														
$CaCO_3$	SM 1	SM 2	SM 3	SM 4	SM 5	SM 6	SM 7	SM 8	SM 9	SM 10	SM 11	SM 12	SM 13	SM 14
Sep-07	119	104	169	180	191	176	193	136	130	200	185	134	200	183
Oct-07	Dry	Dry	291	288	240	266	354	120	134	342	350	140	249	346
Nov-07	Dry	Dry	314	349	256	284	370	163	181	358	356	184	193	355
Dec-07	Dry	Dry	171	172	174	178	179	103	92	209	204	100	197	208
Jan-08	Dry	Dry	187	187	191	194	204	114	112	212	209	110	204	220
Feb-08	39	71	102	97	106	105	107	90	87	154	112	87	125	155
Mar-08	Dry	Dry	177	174	176	199	204	131	124	280	269	125	238	268
Apr-08	Dry	Dry	221	233	204	208	243	97	96	326	319	97	235	312
May-08	Dry	Dry	190	179	186	187	199	162	153	275	250	150	219	250
Jun-08	54	60	124	125	124	125	126	111	106	126	168	107	152	183
Jul-08	Dry	Dry	488	472	480	478	494	384	446	496	500	424	506	508
Aug-08	Dry	Dry	201	192	194	193	200	189	189	282	278	192	263	274
Min	283	303	102	97	106	105	107	90	87	126	112	87	125	155
Av	283	303	220	221	210	216	239	150	154	272	267	154	232	272
Max	283	303	488	472	480	478	494	384	446	496	500	424	506	508

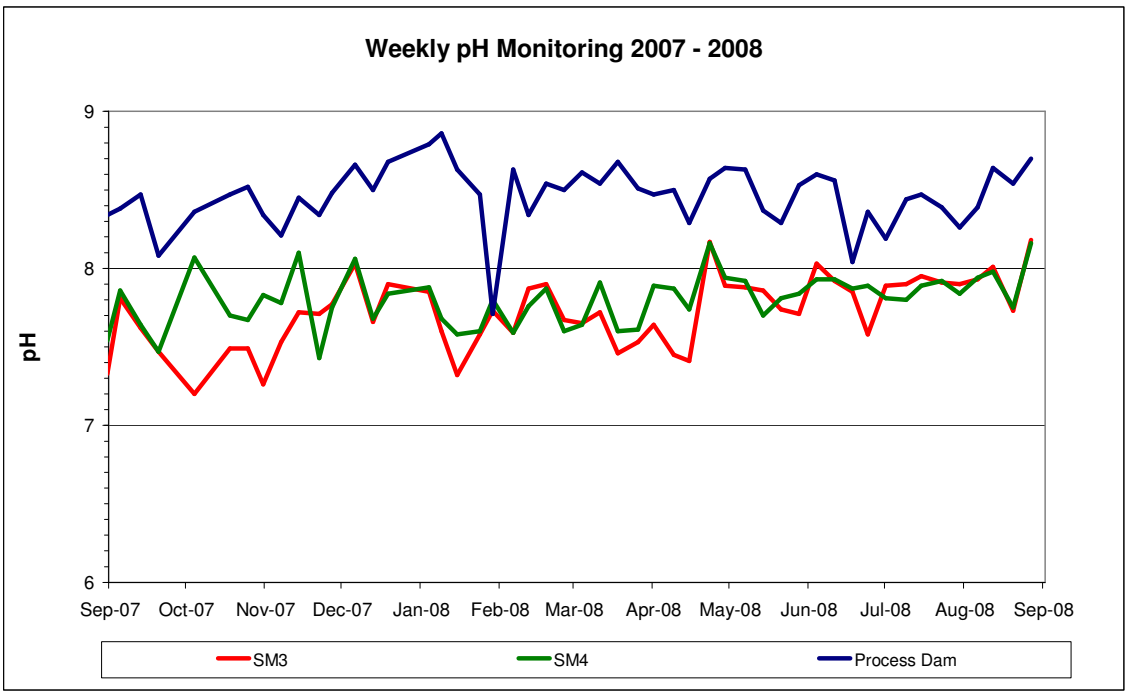
Oil and Grease

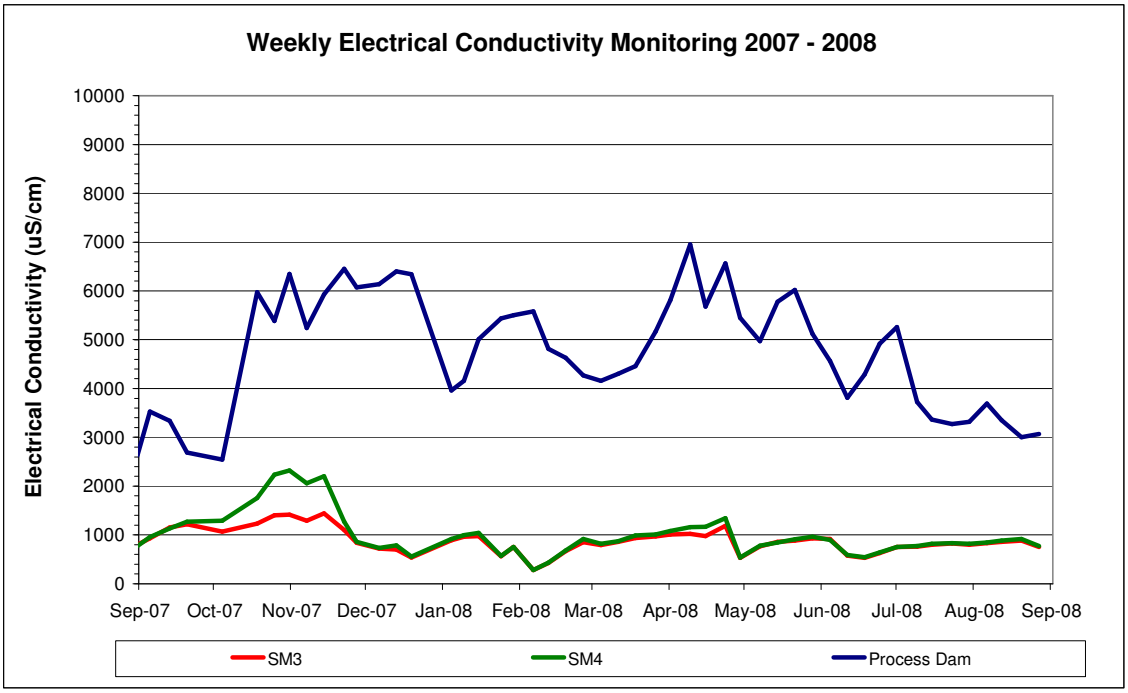
Table 29. TOTAL OIL & GREASE RESULTS 2007 – 2008														
Oil & Grease	SM 1	SM 2	SM 3	SM 4	SM 5	SM 6	SM 7	SM 8	SM 9	SM 10	SM 11	SM 12	SM 13	SM 14
Sep-07	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Oct-07	Dry	Dry	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Nov-07	Dry	Dry	<5	<5	<5	<5	<5	<5	8	<5	<5	<5	<5	<5
Dec-07	Dry	Dry	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Jan-08	Dry	Dry	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Feb-08	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Mar-08	Dry	Dry	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Apr-08	Dry	Dry	<5	<5	<5	12	<5	<5	<5	<5	<5	<5	<5	<5
May-08	Dry	Dry	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Jun-08	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Jul-08	Dry	Dry	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Aug-08	Dry	Dry	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Min	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Av	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Max	<5	<5	<5	<5	<5	12	<5	<5	8	<5	<5	<5	<5	<5

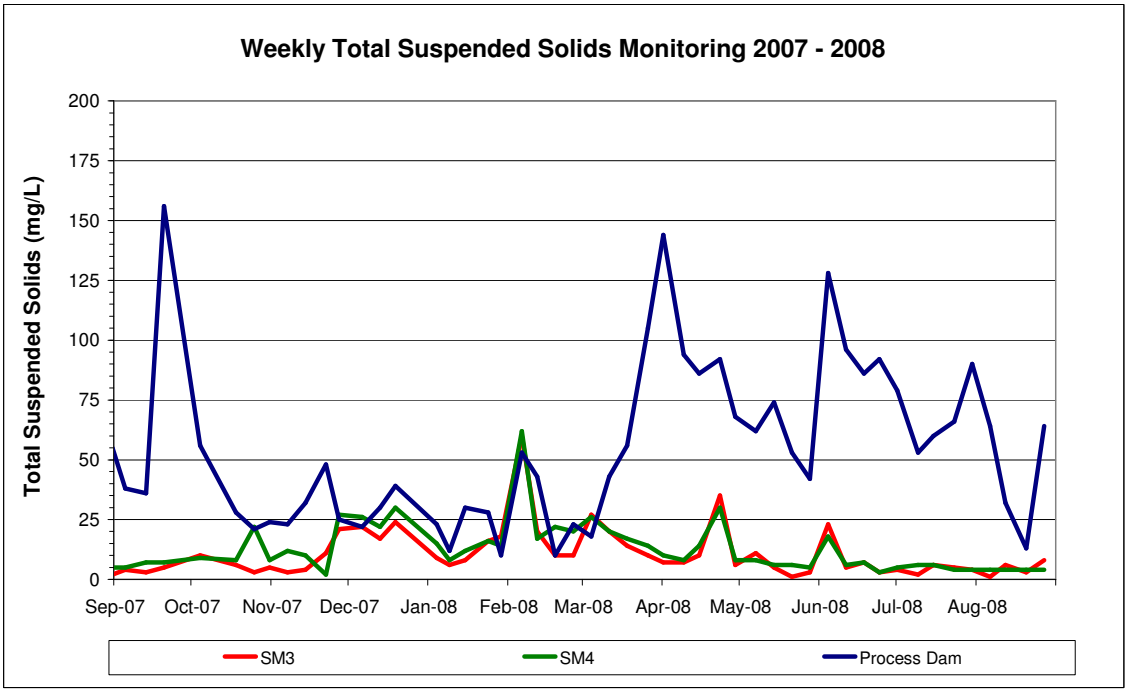
There were only two instances of hydrocarbons recorded at all of the sites in the past year. These were observed at sites SM6 (15 April 2008) in Bowmans Creek and SM9 (22 November 2007) in the Hunter River. The lack of any results above laboratory quantification limits suggests that there were no hydrocarbon impacts to the surface waters surrounding the Ashton Operation at the times of sampling. The two samples at sites SM6 and SM9 are likely to be an anomaly caused by natural organic substances analytically interfering with the oil and grease analysis.

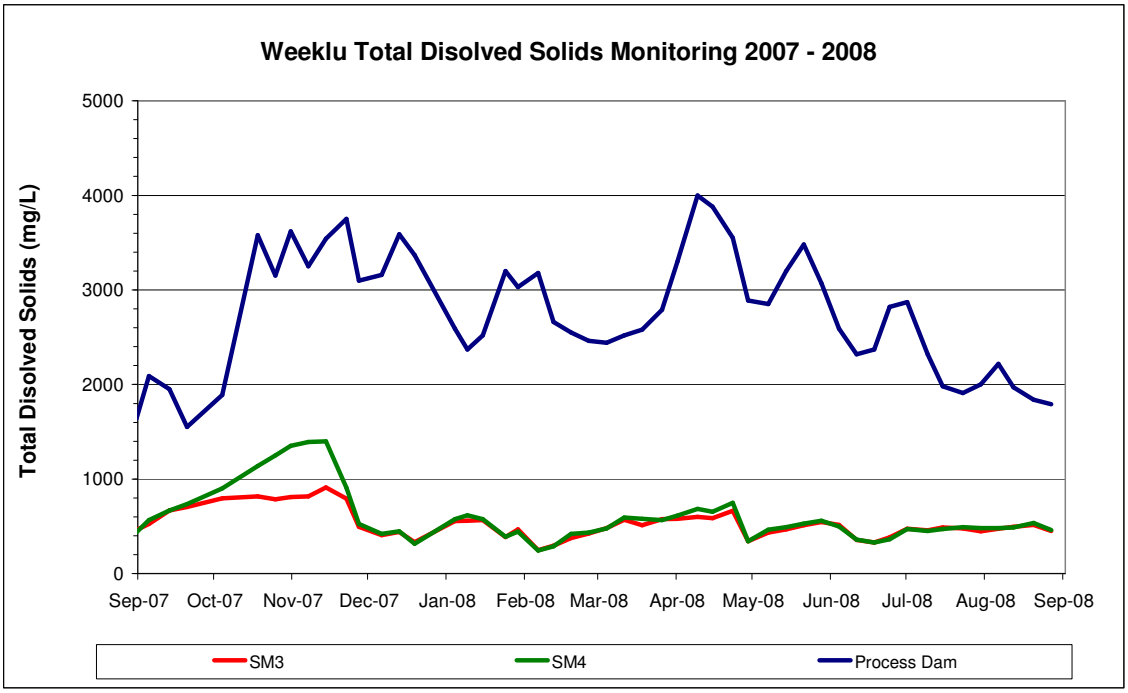
3.3.2.2 Weekly Water Quality Monitoring Results

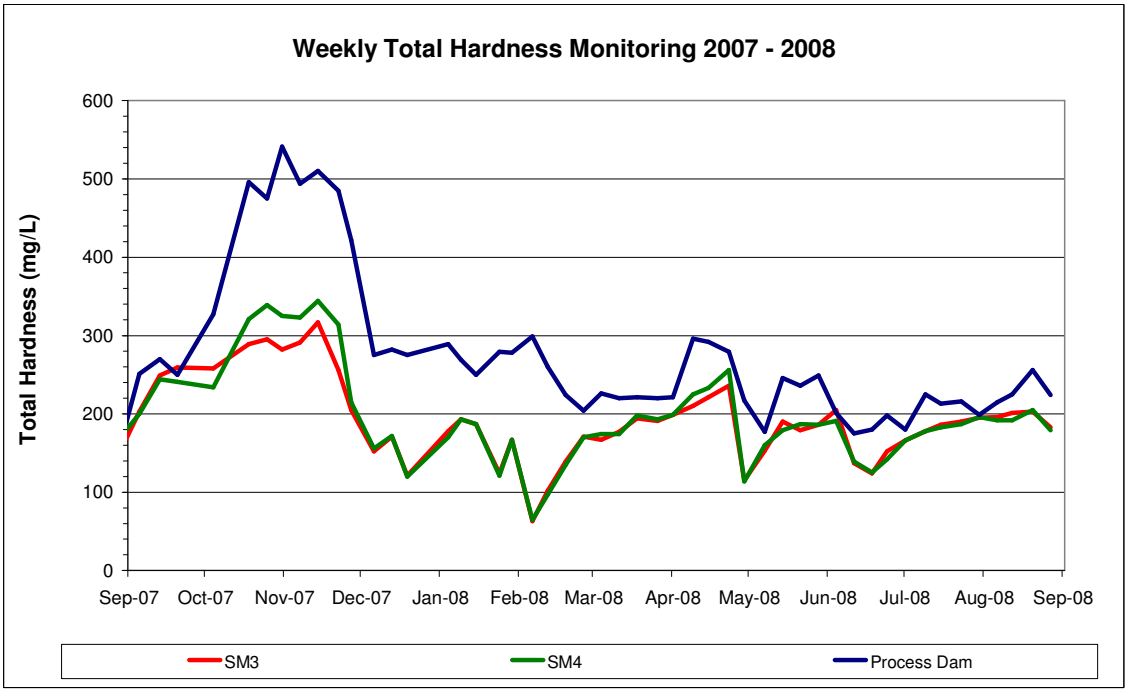
Weekly water samples were collected and analysed during the reporting period for pH, Electrical Conductivity (EC), Total Dissolved Solids (TDS), Total Suspended Solids (TSS) Total Hardness ($CaCO_3$) and Oil and Grease (O & G). The purpose of sites SM3 and SM4 are to determine if the process water dam located adjacent to Betty's and Bowmans Creek is discharging dirty water into the creek system. The results of this monitoring indicate that there were no discharges during the monitoring period.




Weekly Electrical Conductivity Monitoring 2007 - 2008
Electrical Conductivity (uS/cm)
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
Sep-07
Oct-07
Nov-07
Dec-07
Jan-08
Feb-08
Mar-08
Apr-08
May-08
Jun-08
Jul-08
Aug-08
Sep-08
SM3
SM4
Process Dam


Weekly Total Suspended Solids Monitoring 2007 - 2008
Total Suspended Solids (mg/L)
200
175
150
125
100
75
50
25
0
Sep-07
Oct-07
Nov-07
Dec-07
Jan-08
Feb-08
Mar-08
Apr-08
May-08
Jun-08
Jul-08
Aug-08
SM3
SM4
Process Dam


Weeklu Total Disolved Solids Monitoring 2007 - 2008
Total Disolved Solids (mg/L)
5000
4000
3000
2000
1000
0
Sep-07
Oct-07
Nov-07
Dec-07
Jan-08
Feb-08
Mar-08
Apr-08
May-08
Jun-08
Jul-08
Aug-08
Sep-08
SM3
SM4
Process Dam


Weekly Total Hardness Monitoring 2007 - 2008
Total Hardness (mg/L)
600
500
400
300
200
100
0
Sep-07
Oct-07
Nov-07
Dec-07
Jan-08
Feb-08
Mar-08
Apr-08
May-08
Jun-08
Jul-08
Aug-08
Sep-08
SM3
SM4
Process Dam

3.4 GROUND WATER POLLUTION

As required by Consent Condition 9.2 (d), a groundwater reports has been prepared by an independent expert covering the reporting period 2 September 2007 to 1 September 2008. This report has been included in Appendix 2.

3.4.1 Summary

The report included in Appendix 2 details the monitoring and other work carried out as part of the groundwater management activities for the project. The report has been prepared in accordance with Consent Condition 9.2 (d) of the Ashton Coal Project Approval, and covers the reporting period 1 September 2007 to 1 September 2008. The report details the monitoring and other work carried out as part of the groundwater
management activities for the project. The results of monitoring are presented, together with analysis of trends displayed by the data. The groundwater response to the mining operations has been compared with impacts predicted for this stage of mining in the EIS and the SMP for LWs 1 to 4.

Additional multi-level vibrating wire piezometers have been installed to establish baseline monitoring conditions of the main coal seams above and beneath the Pikes Gully seam during the reporting period. Other monitoring bores were installed between the mine and the Glennies Creek alluvium to the east during the prior period (2006-2007). Finally, a comprehensive drilling program to better define the extent and nature of the Bowmans Creek alluvium aquifer system was completed during the review period.

The monitoring frequency was intensified in the early stages of underground mining, above that specified in the GWMP, until the groundwater system responses became clear. It is proposed that the monitoring frequency will now in most cases revert to that outlined in the GWMP.

Groundwater inflows to the underground mine have been monitored closely for both volume and water quality (EC). Net groundwater inflows have been calculated by a water balance approach, from measured flow rates at various points in the water management system, and allowing for water imported for operation of the longwall. Average total groundwater inflows to the underground mine during the reporting period were 0.5 ML/d (6 L/s) compared with 0.9 ML/d (10.4 L/s) predicted in the EIS for this stage of mining.

Seepage into the underground mine from the eastern rib of the heading closest to Glennies Creek (TG1A) have been isolated from other inflows and continues to be monitored separately, with a high level of accuracy. The seepage has an average EC of about 1800 µS/cm, compared with typical ECs of 5000-8000 µS/cm for groundwater in the Permian coal seams. The reduced EC of the TG1A seepage is believed due to a component of seepage from Glennies Creek alluvium in the total seepage inflows. The average rate of seepage from the Glennies Creek alluvium calculated during the reporting period was under 2 L/s, less than the

rate of 2.8 L/s predicted in the EIS for this stage of mining. Large drawdown responses have been observed in a restricted area local to LWs 1 and 2, in the Pikes Gully seam and to a lesser extent in the overlying coal measures. Drawdowns in the alluvium have been limited to the small area between the mine and Glennies Creek. The magnitude of drawdown to date (1 m at WML120B) is less than the 1.3m drawdown predicted for this location in the EIS at this stage of mining. No mining related drawdown has been observed in either Hunter River or Bowmans Creek alluvium, or in Glennies Creek alluvium east of Glennies Creek.

Extensive water quality monitoring has shown variable salinity in both the alluvium and the Permian coal measures, indicating some exchange of groundwater between the two units. The groundwater in the alluvium is generally more saline than surface water in Hunter River, Bowmans Creek and Glennies Creek. Generally, groundwater in the coal measures is much more saline, but at some sites in the Bowmans Creek valley, the groundwater in the upper levels of the Permian is at similar or lower salinity than the alluvium. pH of all groundwaters is generally close to neutral. The groundwater model used for the EIS studies has been modified to allow better definition of subsidence related impacts of underground mining. The model was run to calibrate against observed impacts from open cut mining and underground mining from the Pikes Gully seam in Our Reference S03/R10a LW1 and LW2 up to April 2008. Predicted groundwater level impacts showed good calibration with observed drawdowns in the large network of monitoring bores, which are distributed across the project area and in all the main hydrogeological units and model layers.

In conclusion, the monitoring program has been carried out in accordance with the GWMP and the requirements detailed in the Consent conditions. Impacts have in all respects been at or below those predicted for this stage of mining in the EIS and the LW1-4 SMP.

3.5 CONTAMINATED AND POLLUTED LAND

There are no known areas of contaminated or polluted land at the Ashton Coal Project.

3.6 THREATENED FLORA AND FAUNA

3.6.1 Flora and Fauna Management

Condition 3.46 of the Development Consent requires the preparation of a Flora and Fauna Management Plan (FFMP), which was approved by the Director General of DIPNR. The phase 2 FFMP was approved by DEC, DoP, DNR and DPI in August 2006. Autumn and Spring Fauna monitoring was conducted during the period as part of the Flora and Fauna Management Plan. Pre-clearance surveys have been conducted for the small area of native vegetation remaining within the open cut disturbance area. No fauna species (threatened or otherwise) were identified during the pre-clearance survey.

3.6.1.1 Conservation Area

A draft Plan of Management for the conservation area has been submitted to DECC NPWS which they have accepted. ACOL is now finalising the plan for final submission. Monitoring of the flora and fauna of the conservation area has been ongoing including monitoring of a number of nest boxes. While the agreement has not yet been finalised the area is being managed as intended in the agreement, the area has been fully fenced to exclude grazing and sign posted as a conservation area. Weed works have been conducted during the reporting period including the removal African Boxthorn, Prickly Pear and Tiger Pear. Works to be conducted in the next reporting period include further weed works focusing on St John's Wort and African Boxthorn and reshaping and seeding of heavily eroded areas on the western boundary of the conservation area.

3.6.2 Fauna Monitoring

Fauna habitat surveys were carried out in both the spring and autumn seasons during the reporting period. These surveys are continually assessing the habitat value and species and abundance and diversity within ACOL lands. The main focus of the monitoring is the southern woodland (voluntary conservation area) which consists of open grassy woodland dominated by *Allocasuarina luehmannii*. Sub-dominant species include *Eucalyptus crebra* (narrow-leaved ironbark), *Eucalyptus melliodora* (yellow box) and *eucalyptus fibrosa* (grey box).

A number of monitoring techniques are undertaken as part of the Fauna surveys. These include:

- Pitfall trapping. Ten permanent pitfall traps have been installed at four locations. Between surveys the traps are sealed.
- Elliot A Traps. 50 traps were placed along two transects to monitor small and medium terrestrial mammals.

- Hair tubes. 30 tubes were placed throughout the southern woodland for 10 nights to monitor small and medium terrestrial mammals.
- Elliot B Traps. Twenty traps were mounted on trees along the survey transects at approximately 2 metres above the ground. They were used to target small to medium sized arboreal mammals.
- Hair funnels. Ten funnels were mounted on tree trunks along the transects for ten nights targeting arboreal mammals.
- Targeted amphibian surveys were undertaken.
- Two Anabat echolocation call detectors were used over two consecutive nights to record and identify bat calls.
- 10 minute diurnal bird point surveys were conducted over four days.
- Targeted Grey-Crowned Babbler, Speckled Warbler and Hooded Robin surveys were conducted (see 3.7.3 below).
- Spotlighting was undertaken.
- Nest boxes. A total of 28 nest boxes and 14 bat boxes have been installed on ACOL property and these boxes were monitored for species use.

There were no significant changes in species abundance or diversity identified during the reporting period. Flora surveys indicate that the Southern Woodland is regenerating slowly, however this is generally dominated by Bull oak. Terrestrial and arboreal mammal trapping recorded the presence of the Yellow-footed Antechinus (*Antechinus flavipes*), Common Brushtail Possum (*Trichosurus vulpecula*) and the introduced House Mouse (*Mus musculus*). Amphibian species identified during the surveys included Peron's Tree Frog (*Litoria peronii*), Broad-palmed Frog (*Litoria latopalmata*), Common Eastern Froglet (*Crinia signifera*), Red Groined Froglet (*Paracrinia haswellii*) and Leseur's Frog (*Litoria leseuri*). A number of common bird species similar to those observed in previous reporting periods were identified during the bird surveys. Four microchiropteran bat species were observed during the spring survey. This is again similar to previous periods.

Figure 7. Ringtail Possum Nest Box and Pit fall Trap Southern Woodland

3.6.2.1 Significant Fauna Species

A total of 3 threatened bird species have been identified within the Southern Woodland. The Speckled Warbler and Grey-crowned Babbler have been identified in the Southern Woodland in previous reporting periods and have continued to reside in the Southern Woodland throughout 2007-08. The hooded Robin was observed during the 2006 Spring survey however has not been observed since.

During both the Spring '07 and Autumn '08 surveys the Grey-crowned Babbler population situated within the Southern Woodland remained steady with a total of six individuals and 13 nests observed. The Speckled Warbler population increased during the Spring '07 period however no individuals were observed during the Autumn '08 survey. **Figure 8** below shows the change in population size of the both the Grey-crowned Babbler and Speckled Warbler over time.

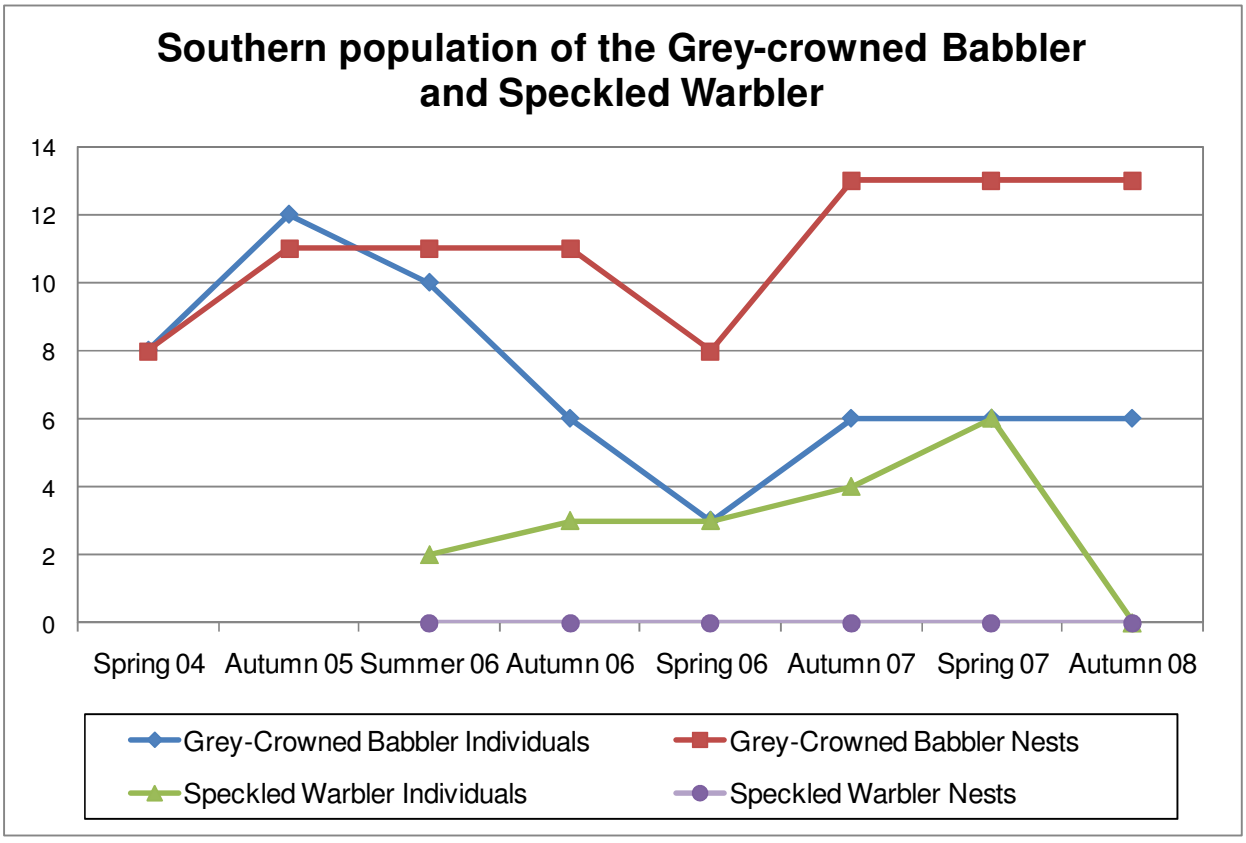


Figure 8. Southern population of the Grey-crowned Babbler and Speckled Warbler

Prior to clearing for Open Cut mining in the North East Open Cut Pit at Ashton Coal, a population of Grey-crowned Babblers was present within the grassy woodland habitat. Ongoing monitoring of the progressively cleared area and the adjacent remnant south east of Glennies Creek Road suggests that the resident population previously located within the Open Cut disturbance area has relocated to the adjacent remnant. **Figure 9** shows the change in population size and presence of nests over time.

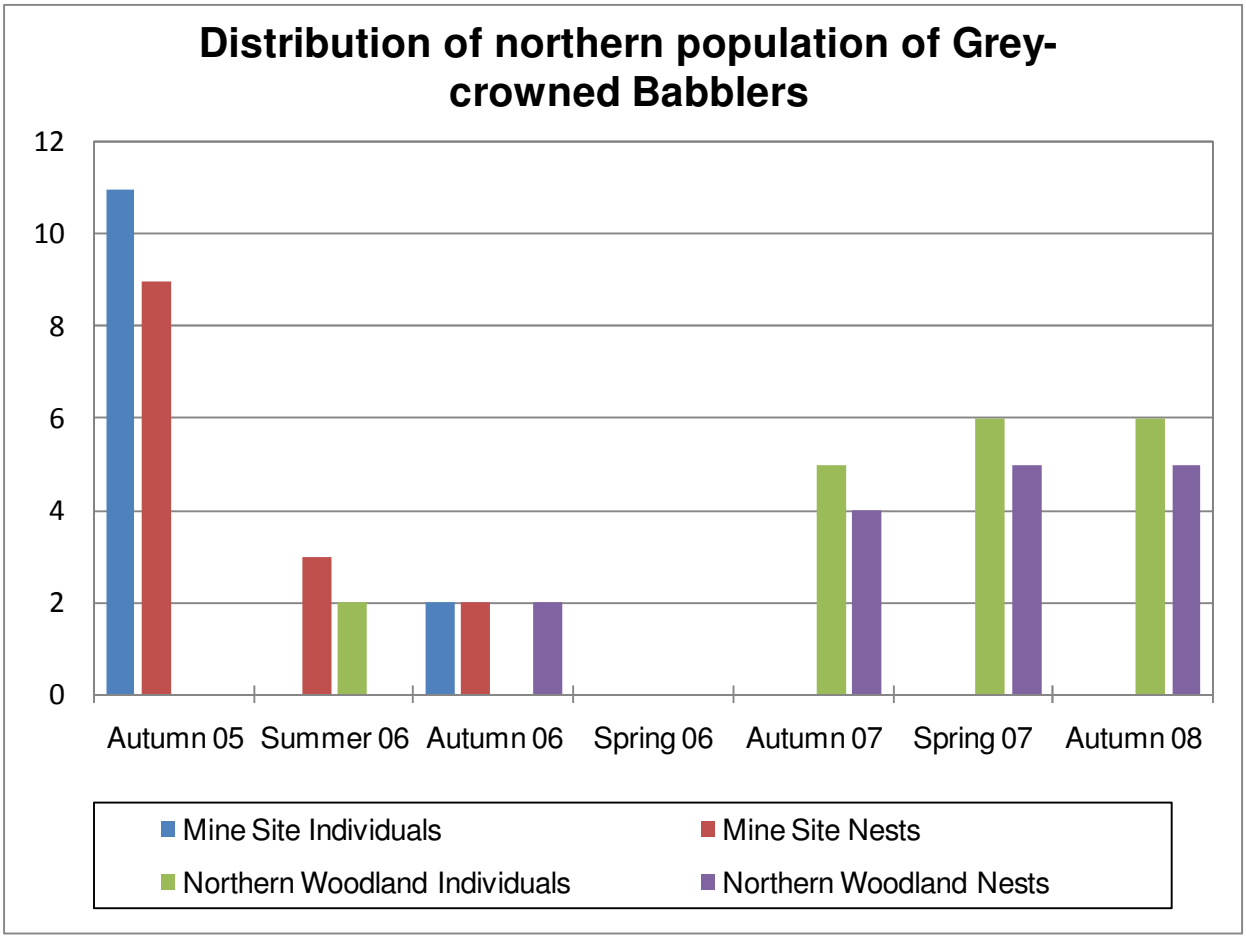


Figure 9. Distribution of northern population of Grey-crowned Babbler

3.6.2.2 Nest Boxes

A total of 28 nest boxes and 14 Bat boxes have been installed within ACOL property. The nest boxes target a number of different species. They are monitored biannually for resident fauna, evidence of use and presence of pest species.

The existing Brushtail Possum population is utilising the nest boxes with evidence of use (scat and hair analysis) in eight boxes and a further two nest boxes supporting brushtail possums. Whilst four microchiropteran bat species have been identified within the Southern Woodland there has still been no evidence of use in the bat boxes to date. In the previous reporting period chicken mesh was attached to the entrance of the bat boxes to improve the landing surface. It is expected that the presence of rough barked eucalypts within the Southern Woodland is providing preferable roosting sites for the bat species.

A population analysis of the nest box usage data will be undertaken in the next reporting period once sufficient data has been collected.

3.7 AQUATIC ECOLOGY MONITORING BOWMANS AND GLENNIES CREEK

As required by Consent Conditions 3.19 and 3.20 under Development Application DA No 309-11-2001-i issued by the Minister for Planning, aquatic ecological monitoring was undertaken during the reporting period. Monitoring conducted during the period builds on sampling studies conducted in 2006 and 2007 and the initial benchmarking conducted during the EIS phase in 2001. Monitoring was conducted in Spring 2007 and Autumn 2008.

As there are no specific expected impacts on creek morphology or function arising from the present approved long wall extraction (Panels 1 to 4), the studies completed during the period incorporate monitoring sites more or less evenly spaced along the two creeks with upstream, mid stream and downstream sites. In terms of overall study aims, the Aquatic Ecology Monitoring study endeavours to answer the following questions:

- Are there measurable differences in aquatic ecological attributes between creek pools upstream, alongside and downstream of mining operations?
- Are observed differences directly attributable to mining impacts or can differences be attributed to spatial (between-site) and/or temporal (between-survey) differences?
- Do the creeks provide (and continue to provide) suitable aquatic habitat?
- Do the creeks continue to provide suitable fish passage?

3.7.1 Sampling Methods

The adopted sampling methods are based on existing methods being utilised for monitoring long-term aquatic ecological change in several of the Illawarra coal mining catchments (e.g., BHP Billiton 2001). The study follows the National River Process and Management Program River Bio-assessment Manual methods (NRPMP 1994) as adapted for the National River Health Program (now referred to as the AusRivAS method (Turak et al 1999).

The AusRivAS protocol provides a number of definitions of sites and habitats within sites for selection of sampling locations and recommends that, wherever possible, two habitats (riffles and edges) be sampled at each site. The following AusRivAS definitions are relevant and sampling has conformed to these definitions:

- A site is "a stream reach with a length of 100 m or 10 times the stream width, whichever is the greater"
- A riffle habitat is "an area of broken water with rapid current that has some cobble or boulder substratum". However, "sampling riffles where the substratum consists predominantly of large boulders may be difficult and may not produce reliable results".
- Edge habitat is "an area along the creek with little or no current".

Given the location of a number of the study sites in reaches of creeks where there are predicted to be periods of little or no connecting flow between pools or where there are predicted to be no riffle sections available for sampling, it was decided that only pool 'edge' samples would be sampled, as riffle samples could not be guaranteed for all (or possibly even for most) sites at all sample times.

The final adopted design includes the following features:

- Sampling the aquatic macro invertebrate fauna of a minimum of three creek pools in each creek twice a year (in Spring and Autumn) using the AusRivAS sampling, sorting and identification protocols.
- Estimation of fish occurrence by a combination of bait-trapping, dip netting and observation, with all captured fish identified in-situ and immediately released.
- Depth profiles of basic water quality parameters: Temperature, Electrical Conductivity (salinity), water acidity (pH), Dissolved Oxygen and Turbidity, at each site during each sampling run.
- Recording of changes in creek riparian condition and of aquatic plant distribution within the study areas at each sampling time.

The particular reach selected for sampling within each of the sample locations was selected on the basis of it being;

(i) a reach with high drought resistance (generally based on pool size, depth and riparian cover) and

(ii) a reach with high aquatic habitat diversity; ideally deep pools connected by gentle riffles, abundance of stream bed litter, presence of snags, presence of aquatic vegetation and good extent of cover of overhanging riparian vegetation.

Seven sites were selected and sampled with a view to assessing within- and between-creek variability:

BCUp Bowmans Creek Upstream. Located upstream of mine lease area, approximately 1.3 km upstream from New England Highway. This is also an Ashton Coal water quality monitoring site (SM3).

BCLW5 Bowmans Creek Upstream Intermediate site located at creek bend overlying Longwall 5.

BCLW7 Bowmans Creek Downstream Intermediate site about 1.2 km downstream from BCLW5, overlying Longwall 7. Also Ashton Coal water quality monitoring site (SM5).

BCDown Bowmans Creek Downstream located about 200m upstream from Hunter River confluence. Ashton Coal water quality monitoring site (SM6).

GCUp Glennies Creek Upstream about 50m downstream from church, and 300m upstream from New England Highway.

GCMid Glennies Creek intermediate located on bend at closest point to longwall 1 approximately 1.4 km downstream from New England Highway, and 500m upstream from Ashton Coal water monitoring site SM8.

GCDown Glennies Creek Downstream located approximately 1.5km downstream from GCmid, and 2km upstream from Hunter River confluence.

3.7.2 Monitoring Results

Sampling for the Spring 2007 survey was delayed due to prolonged rainfall in the Hunter River catchment area and as a result sampling was conducted over three days in late December. Autumn 2008 survey was conducted in May 2008.

Creek flows in December 2007 were moderate to high during the survey (840 ML/day on the 18th, 318 ML/day on the 19th and 158 ML/day on the 20th), and water levels plus habitat availability were similar to that encountered during the post flood sample conditions in June 2007. Established trees and terrestrial plants along the pool edge areas were inundated at most sites indicating that water levels were higher than usual, and there was evidence in tree branches of recent high flows at 2-3m above the current water level. Due to the combined low water clarity and raised water levels, the extent of macrophyte beds was not able to be determined for any of the sites. Pool depths during December 2007 were estimated at between 1.5 and 2.5 m depth, as creek levels and flows were too high for in-situ pool depth measurements. Pool bottom substrates were similar across all sites in both creeks during Spring 2007, and consisted of a mixture of sandy gravel and cobble beds. There was minimal mud deposition observed instream, however the flooded riparian banks at all sites in both creeks had deposits of muddy alluvial material.

Water levels recorded during the Autumn 2008 survey had receded from the previous spring survey with maximum pool depths estimated at between 1 and 2m depth. Water flows were still moderate during the period however. Again in Autumn pool substrates were consistent across all sites, mainly sandy gravel beds with cobbles and sparse boulders. In contrast to former surveys however there was minimal mud deposition on creek banks and riparian areas.

With the improvements in water clarity during the Autumn 2008 survey, it could be confirmed that pool substrates consisted mainly of sandy gravel beds with cobbles and sparse boulders, and there was accumulation of fine materials at sheltered locations in-stream. Aquatic macrophyte beds were able to be observed and sampled. Clasped Pondweed (*Potamogeton perfoliatus*) was the most abundant submerged macrophyte throughout the study area and was found at six sample sites and *Myriophyllum* was sampled at four sites.

The Autumn 2008 water conductivity was similar (mean 768 µS/cm) to that recorded in Autumn 2007 (810 µS/cm), but was elevated when compared with the Spring 2007 survey result (441 µS/cm). Nevertheless, over all three surveys, water conductivity values have been within the range set by ANZECC (2000) Guidelines for Lowland Rivers of 125 to 2200 µS/cm.

Bowmans Creek mean dissolved oxygen value (91 ± 4.2 % saturation) met the ANZECC (2000) range for the protection of aquatic life of 85 to 110% saturation set for lowland rivers whilst the Glennies Creek mean was just under the range (at 83 ± 4.9 % sat). These figures are similar to the Spring 2007 dissolved oxygen results in Bowmans and Glennies Creeks (91.4 ± 3.1% and 79.3 ± 3.7% respectively).

A total of 49 macroinvertebrate taxa were recorded during the December 07 survey period and 44 observed in Autumn 2008. This is an increase on previous surveys. 42 taxa were found in Glennies Creek during both survey periods and 30 and 32 taxa were found in Bowmans Creek during the Spring 2007 and Autumn 2008 periods respectively. Site SIGNAL index scores were slightly higher in the Autumn 2008 period than Spring 2007, ranging between 4.6 and 5.5 (Spring 07) and 4.8 and 5.2 (Autumn 2008) for Glennies Creek (moderately impaired to mildly impaired range) and 4.3 to 5.3 (Spring 07) and 4.6 to 5.0 (Autumn 2008) for Bowmans Creek (moderately impaired to mildly impaired range). Macroinvertebrates fauna predominantly consisted of insects with small numbers of crustaceans and molluscs and others found.

At least three fish species were identified during the December 07 survey along with the widespread presence of the introduced species Minnow (*Gambusia holbrooki*). Native species included Australian Smelt (*Retropinna semoni*) and the Flathead Gudgeon (*Philypnodon grandiceps*). *R semoni* was not identified in the Autumn 07 survey. Two further native fish species were identified in the Autumn 2008, these being: Sea Mullet and Long Finned Eels. Large Carp were also observed for the first time during the surveys. This is however due to the low visibility during previous surveys. No threatened species as currently listed under the NSW Fisheries Management Act 1994 (FMA) were found or observed in the study, and no protected fish, as listed under the FMA, were found or observed.

3.7.3 Longterm analysis

Both creeks recorded the highest mean number of macroinvertebrate taxa per site to date during the Autumn 2008 survey, with an overall mean site diversity of 21.8 ± 1.1 taxa. The total study SIGNAL score was also higher than previous occasions at 4.91 (compared to 4.76 in Spring 2007 and 4.16 in Autumn 2007). Species diversity has increased fairly rapidly since the June 2007 floods in both creeks. SIGNAL scores have also increased in both creeks over the survey period. Monitoring will continue on a 6 monthly basis to further understand the aquatic ecosystems of the Creeks.

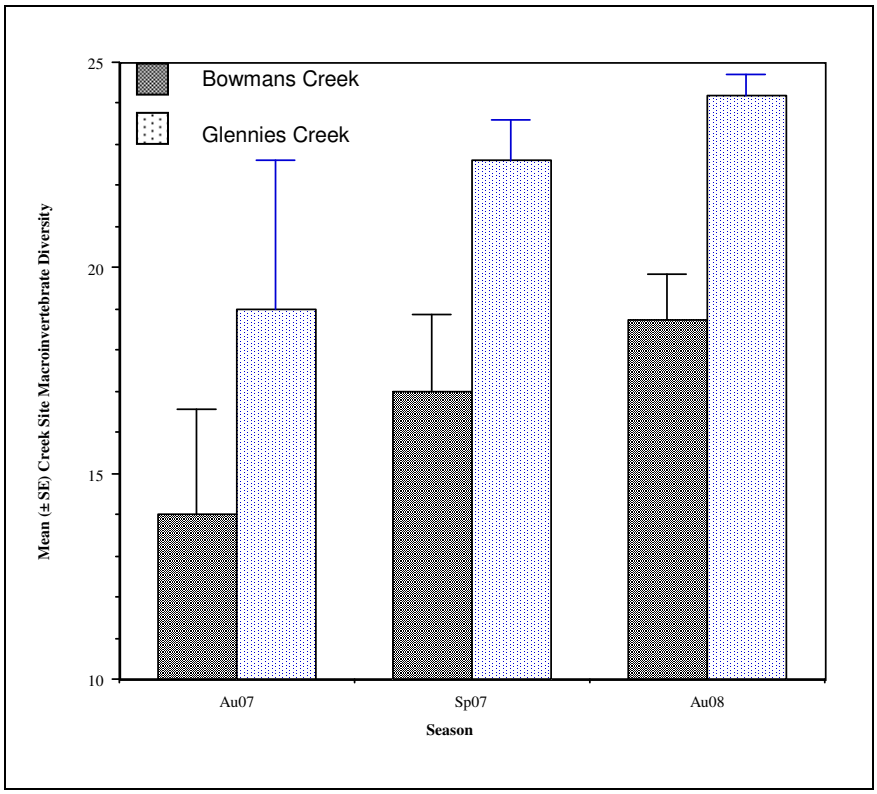


Figure 10. Changes in Mean Creek Site Diversity since the 2007 Flood event

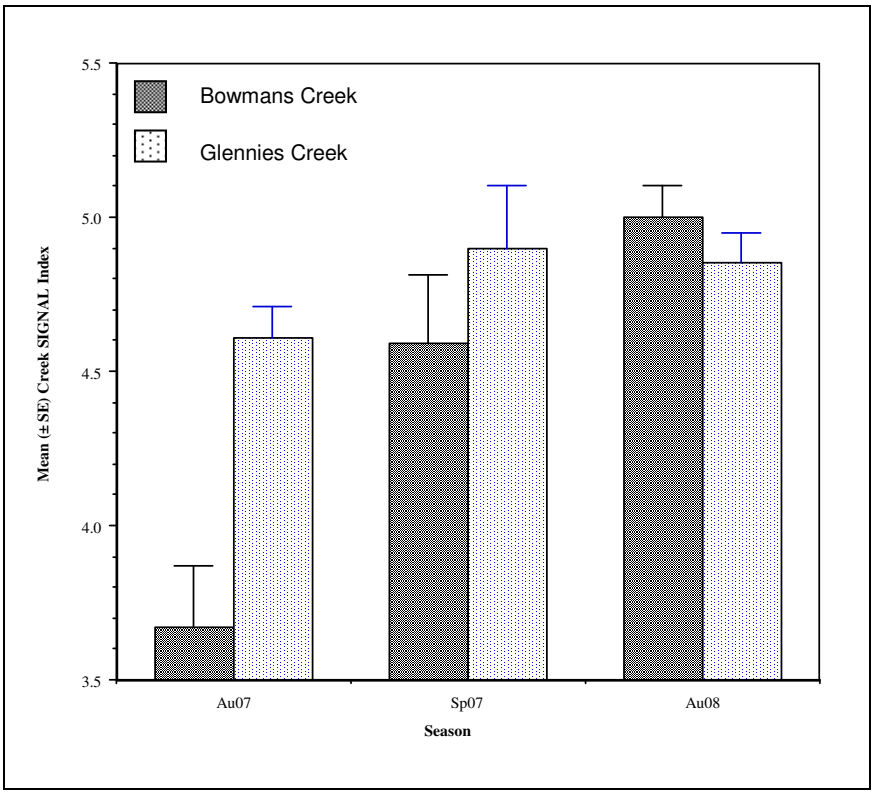


Figure 11. Changes in Mean Creek Site SIGNAL Index since the 2007 Flood

Figure 12. Bowmans Creek (BCLW5) looking upstream, Spring 2007

Figure 13. Bowmans Creek (BCLW5) looking upstream, Autumn 2008. Note the reduced water levels since Spring 2007.

3.8 WEEDS

3.8.1 Weed Management

The Weed Management Plan has been revised under consent condition 3.7 and approved by the Department of Planning. A Weed Survey and Action Plan was developed during the period. This is discussed further below in section 3.8.2. Weed works conducted during the period focused on the following species:

- Green Cestrum, a Class 3 noxious weed. Controlled using cut and paint techniques with Roundup Biactive®. A total of 7ha predominantly along the banks of Glennies Creek were treated.
- African Boxthorn, a Class 4 noxious weed. Controlled using cut and paint techniques with Roundup Biactive®. A total of 64ha were treated.
- Prickly, Tiger and Creeping Pear, a Class 4 noxious weed. Manually removed and located in a designated stockpile site. From there the material was removed and disposed of. A total of 37ha were treated.
- Galinea, an environmental weed. Sprayed with Grazon Extra®. A total of 6ha were treated all within Ashton Coals rehabilitation area.
- Sweet Briar, a Class 4 noxious weed. Treated using cut and paint techniques with Roundup Biactive®. Individual plants were treated as shown in **Figure 14**.
- Prickly Acacia, a Class 1 noxious weed. Treated using cut and paint techniques with Roundup Biactive®. Individual plants were treated as shown in **Figure 14**.

The Cacto-blastis moth larvae were found in areas of the prickly pear infestation. It appeared that the larvae were preventing the spread of the pear species. The impact of the larvae is shown in **Figure 17**.

Figure 14 shows the location of weed works conducted during the period.

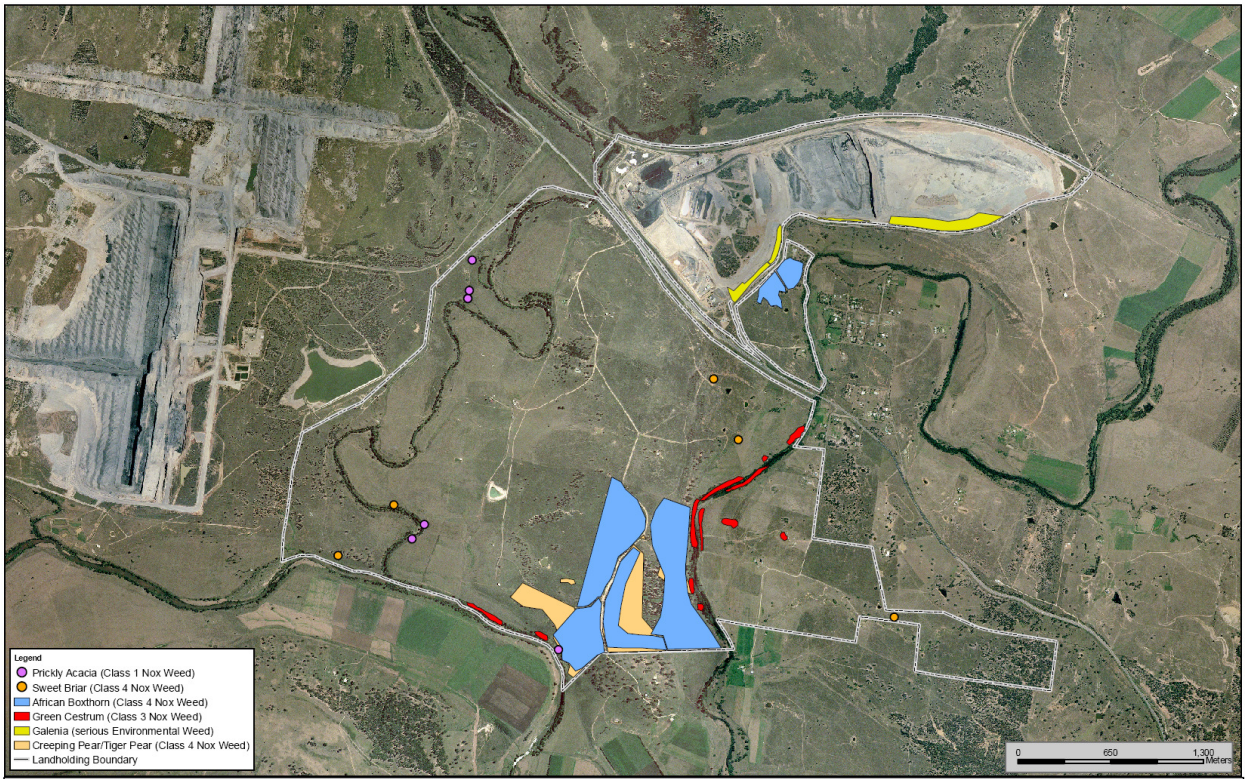


Figure 14. Overview of weed control works September 2007 to August 2008

3.8.2 Weed Monitoring

An extensive weed survey and Annual Weed Monitoring Report was undertaken in the previous reporting period. Priority weed species were identified and a large number treated during the reporting period. Following completion of weed works a second survey will be conducted and the spread and/or the reduction in weed species noted. This will assist the determination of future weed works for the next reporting period.

Figure 15. Green Cestrum along Glennies Creek pre and post treatment

Figure 16. Prickly Pear stockpile site and Creeping Pear infestation in the VCA

Figure 17. Damage to Creeping Pear from Cacto-blastis larvae and larvae in action

BLASTING

3.8.3 Blast Management

Due to the proximity of the Main Northern Railway, Glennies Creek Road and the village of Camberwell to the mining operations area, the Blasting and Vibration Management Plan (BVMP) along with a complex series of controls have been established to ensure that blasts conform to the criteria defined in the Development Consent and the EPL.

Blasting times are limited to the hours of 9am to 5pm Monday to Saturday inclusive by the Development Consent, but the EPL also states that blasting cannot occur on Sundays or public holidays without the prior approval of the DECC. During the reporting period no blasts were conducted on Sundays or Public Holidays.

To ensure that ground vibration does not exceed criteria at receptor locations, the Maximum Instantaneous Charge (MIC) is calculated for each blast at the design stage. Procedures are also in place to ensure that sufficient depth of crushed stemming material is also placed in the collar of each blast hole to minimise the effects of air blast (air overpressure).

The BVMP also requires the completion of a Blasting Environmental Checklist prior to each blast. This checklist ensures that meteorological conditions are appropriate for the blast to occur. There are also checklists for Community Notification and Notification of the Common Management Committee when the common requires closing.

The Road and Rail Closure Management Plan (RRCMP) also requires the closure of Glennies Creek Road or the New England Highway if any part of the road comes within the 500 metre zone of exclusion that is required to be established around each blast. If any blast is within 200 metres of the Main Northern Railway, ACOL seek possession of the railway for the duration of the blast. This ensures that no rail traffic enters the zone of exclusion within a blast period.

The residents of Camberwell village and all occupiers of buildings within two kilometres of blasting locations are provided advance notice of planned blasting events on the Ashton website (www.ashtoncoal.com.au) and, excepting where they have requested to be removed from the contact list, at least one hour prior to each blasting event, by telephone.

Due to fire damage to St Clements Church caused by an arsonist, no structural assessments were undertaken by Ashton Coal on St Clements Church during the reporting period. The historic church has now been listed as a heritage building under the NSW Heritage Act. Repair works have been planned for 2009. Ashton Coal has assisted the clean up project with labour and support and has offered to provide any assistance to the congregation where required.

3.8.3.1 SODAR Meteorological Monitoring Project

Certain meteorological conditions can lead to enhanced blast overpressure levels and potentially result in blast exceedences. The extent of this enhancement is determined by temperature and wind gradients up to 1000m in altitude that require specialised meteorological and modelling equipment to record and predict the effects. The SODAR project involves installing and operating this equipment to determine the enhancement.

The SODAR project is an approved Australian Coal Association Research Project (ACARP), in which the coal industry is contributing funds to purchase the monitoring equipment. Ashton Coal is a Joint Venture partner in this project.

Instrumentation has been installed and commissioned on a property off Lemington Rd in the Hunter Valley. The sounding equipment located at Lemington consists of two items:

- A SODAR, which measures wind velocity
- A RASS, which measures temperature

The SODAR and RASS are now fully operational. Furthermore the Hunter Valley MM5 Meteorological Forecasting site is now up and running, providing daily forecasts of wind speed and direction and temperature up to 1000m. The data is being used at a number of sites within the Hunter Valley for predicting the meteorological effects on blast overpressure. Ashton is also utilising the forecast for scheduling blasting and forecasting potential dust impacts. It is hoped that the information provided by the MM5 will be used in the future for predictive modelling of dust and noise impacts.

Real-time wind velocity, direction and temperature data at 10 minute intervals is also available from the SentineX repository operated by Advitech.

3.8.4 Blast Criteria and Monitoring

The Development Consent defines the following criteria:

"The Airblast overpressure level from blasting operations carried out in or on the premises must not exceed:

(a) 115dB (Lin Peak) for more than 5% of the total number of blasts during each reporting period; and

(b) 120dB (Lin Peak) at any time

At any residence or other noise sensitive receiver such as the St Clements Anglican Church and Camberwell Community Hall

The ground vibration peak particle velocity from blasting operations carried out in or on the premises must not exceed:

(a) 2mm/s for more than 5% of the total number of blasts carried out in or on the premises during each reporting period; and

(b) Exceed 10mm/s at any time

At any residence or other noise sensitive receiver such as the St Clements Anglican Church and Camberwell Community Hall."

During the reporting period the DECC varied Ashton Coal's EPL blasting criteria to make them consistent with the Development Consent. Previously the EPL stipulated blast vibration levels at Camberwell Village of no greater than 5% of blasts may exceed 5mm/s and no blasts may exceed 10mm/s. The variation changed the 5% limit from 5mm/s to 2mm/s consistent with the Development Consent. It is important to note however that the 2mm/s limit is inconsistent with all other mining operations in the Hunter Valley. All other operations in the vicinity of Camberwell Village and other privately owned residents have a 5mm/s 5% criteria determined by the Department of Planning. Criteria for blast vibration at St Clements Church was already consistent with the Development Consent and other operations with a limit of 2mm/s.

A total of 159 blasts took place during the reporting period. A summary of the results is given below while a comprehensive list of blast monitoring results is presented in **Appendix 4**.

The locations are detailed hereunder:

Table 30. LOCATION OF BLAST MONITORING STATIONS

Monitoring Station No	Location
1	Camberwell village (north)
2	St Clements Church

Table 31. SUMMARY BLAST MONITORING RESULTS

	St Clements Church		Camberwell Village	
	Vibration	Overpressure	Vibration	Overpressure
Results Captured	157	131	159	140
Data Recovery (%)	99%	82%*	100%	88%*
Results >2mm/s	0		5	
Results >2mm/s (%)	0.0%		3.1%	
Results >10mm/s	0		0	
Results > 115dB		5		2
Results > 115dB (%)		3.1%		1.3%
Results > 120bB		0		0

*It should be noted that the lower Data recovery for Overpressure is due predominantly to the Blast monitors being triggered by Vibration. Due to the strict controls in place for Ashton Coal many blast are so small that they do not trigger the monitors for vibration hence it is a technical non-measurement for Overpressure, while it is expected that due to the small shot overpressure would also be well below criteria.

At the end of the 2007-08 reporting period both the Church and Village blast monitoring locations were within all criteria.

Table 32. OPERATIONAL CHANGES RELATING TO BLAST IMPACTS

Date	Issue	Changes Undertaken
4/09/2007	Winds speeds increasing throughout the day.	Blast cancelled.
4/10/2007	Strong North Westerly winds.	Blast postponed.
16/10/2007	Strong North Westerly winds.	Blast cancelled.
26/06/2008	Strong gusty winds forecast for the day.	Blast brought forward to 9:30am.
3/07/2008	Strong North Westerly winds.	Blast cancelled.
8/07/2008	Strong North Westerly winds.	Blast cancelled.
9/07/2008	Strong North Westerly winds.	Blast cancelled.
10/07/2008	Strong North Westerly winds.	Blast cancelled.
15/08/2008	Strong North Westerly winds.	Blast cancelled.
21/08/2008	Weather forecast suggested wind speeds should drop off after 3pm.	Blast postponed. Rail possession renegotiated with ARTC to allow blasting at 3:30pm.

3.8.5 Long-term Blasting Trends

In previous reporting periods Ashton Coal has exceeded blast criteria at certain monitoring locations. As discussed above, Ashton maintained compliance with all blast criteria for the 2007-08 reporting period. **Figure 18** below shows the trend in blast criteria over the 4 years of operation. Please note 5% vibration criteria relates to 2mm/s and the standard 5mm/s criteria applied to residential dwelling has never been exceeded in the village.

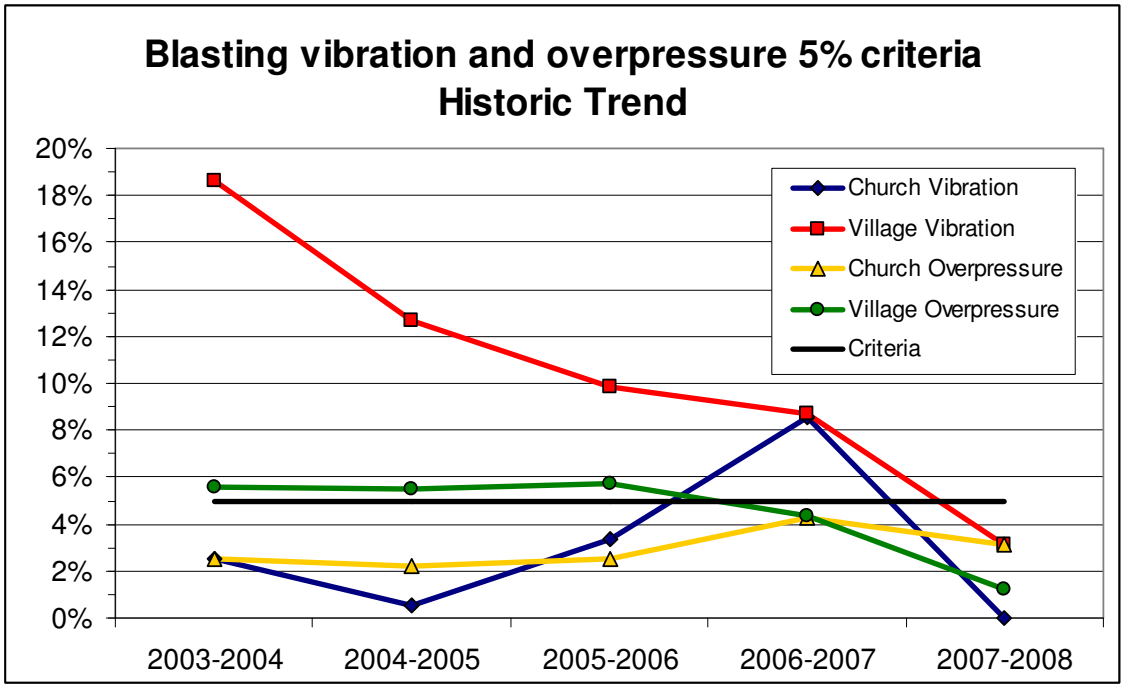


Figure 18. Blasting vibration and overpressure 5% criteria historic trend

3.9 OPERATIONAL NOISE

3.9.1 Noise Management

The Noise Management Plan for phase 2 of Ashton Coal's mining operations has been approved by the Department of Planning. As part of this plan a set of proactive and reactive mitigation measures have been identified to assist in reducing the noise impact from ACOL on the neighbouring residence. The inversion study conducted by Spectrum Acoustics during the previous reporting period indicated that even when a strong inversion (+7.5^{O}C/100m) is in place, trucks that are dumping on the northern side of the 135RL dump, Camberwell village falls in the acoustic shadow zone of the eastern emplacement. As a result ACOL has committed to restricting dumping at night to both the northern side and lower areas of the Open Cut, particularly when winds are emanating from the North West.

Major noise mitigation measures implemented during the reporting period include:

- A review of the noise model was conducted to redefine the acquisition and management zones for the operations. This was also undertaken in considering alternate mine plans being reviewed for the development of the new Mining Operations Plan.

- Two new Caterpillar D10T sound suppressed dozers were purchased. These dozers include a range of sound suppressant modifications such as rubber idlers and sealed engine bay. Sound power testing places these D10T dozers up to 8dBL quieter than non sound suppressed dozers in both first and second gear. The new dozers are being utilised in exposed areas such as bulk shaping of the final landform and train loading on the product stockpile.

- A Komatsu WA 900 loader was purchased to load ROM coal to the CHPP. This loader has a sound power level of 116dBL, approximately 4dBL quieter than the original CAT 994 loader used to load ROM coal to the Open Cut and Underground ROM hoppers.

- Advanced construction of the eastern emplacement along Glennies Creek Rd as the priority dump location was undertaken during the period. The aim of this is to decrease the propagation of noise down onto Camberwell village by building up the outer dump first and providing a sound barrier to work behind.

There are also a number of standard operational controls under taken to reduce the noise impact on the Village of Camberwell, these are;

- During inversion and NW wind conditions (noise enhancing conditions) machinery is removed from the southern exposed faces and relocated to the northern boundary or lower levels within the pit.
- After 6pm in the evening machinery is removed from the southern exposed faces and relocated to the northern boundary or lower levels within the pit.

In addition to these standard practices a number of specific operational changes were made during the reporting period in response to either complaints or identified noise issues, these are presented in the table below.

Table 33. OPERATIONAL CHANGES REGARDING NOISE IMPACTS

Date	Issue	Changes Undertaken
6/01/2008	Noise complaint received.	Dumping operations relocated following complaint.
16/01/2008	Noise complaint received.	Dozer operating on rehabilitation relocated. Noise attenuated dozer left on rehabilitation.
2/04/2008	Inspection from EO of Camberwell Village indicated Ashton contribution to noise was noticable.	Dumping to RL135 ceased.
24/06/2008	Noise complaint received.	Inspection from EO indicated Ashton contribution to noise levels was noticable. Truck movements along southern boundary were ceased.
4/08/2008	Noise complaint received.	Dumping operations were relocated to the northern boundary.
12/08/2008	Noise complaint received.	Relocated dumping operations to the northern boundary.
17/08/2008	Noise complaint received.	Relocated electric drive trucks away from the southern buttress road and reduced speed of trucks.
20/08/2008	Noise complaint received at 8:30pm.	Divert trucks running to 115RL dump from the southern buttress to the centre ramp.
20/08/2008	Noise complaint received at 9:30pm.	Cease dumping to 115RL dump.

3.9.2 Noise Criteria and Monitoring

Noise generated by the Ashton Coal Project must not exceed the limits specified in Condition 6.34 (Table 5), which is detailed hereunder, except as may be expressly provided by an EPA Licence,

Table 34. (DC TABLE 5) NOISE LIMITS (DB(A))

Location	Day	Evening	Night	
	$L_{Aeq(15\ minute)}$	$L_{Aeq(15\ minute)}$	$L_{Aeq(15\ minute)}$	$L_{Aeq(1\ minute)}$
Any residence not owned by the Applicant or not subject to an agreement between the Applicant and the residence owner as to an alternate noise limit	38	38	36	46

The above criteria do not apply when wind speeds are greater than 3m/s and/or there is an inversion in place of greater then 3^{O}/100m.

3.9.3 Noise Compliance Assessment Report

Condition 6.45 of the Development Consent requires a Noise Compliance Assessment Report to be submitted to DECC and DoP within 3 months of commencement of normal operations and on an annual basis thereafter in the AEMR. The Noise Compliance Assessment Report has been included in **Appendix 4**. The report summaries the findings of the quarterly attended noise monitoring conducted by Spectrum Acoustics as described below. As required by Development condition 6.43e the ACOL noise model has been reviewed redefining both the acquisition and management zones. Results of this review are presented in **Appendix 5**

Quarterly Noise Monitoring

Condition 6.44 of the Development Consent requires detailed noise monitoring surveys at potentially affected residences on a 3-monthly basis. All monitoring was performed by Spectrum Acoustics, utilising manned monitoring methods as specified in the EIS.

Quarterly noise monitoring results are as follows. Where exceedences of the EPL and DC criteria have occurred these are shown in red:

Table 35. 1ST QUARTER NOISE RESULTS NOVEMBER 2007 (19 NOVEMBER 2007):

ACP Noise Monitoring Results – 19 November 2007 – Day

Location	Time	dB(A) Leq	ACOL dB(A)	Comments	WS and Direction	Inversion °C/ 100m	ACP Noise Sources
Richards	2.35 pm	42	Inaudible	Wind on mic (42), **ACP inaudible**	0.9 SSE	n/a	n/a
Stapleton	3.18 pm	46	40	Traffic (42), **ACP (40)**	1.5 ENE	n/a	Haul trucks, dozer, hum
Clark	3.01 pm	41	40	**ACP (40)**, traffic (32)	1.7 ENE	n/a	Haul trucks, dozer, hum
Horadam	3.35 pm	48	Inaudible	Traffic (48), **ACP inaudible**	2.3 ESE	n/a	n/a
Moss	3.55 pm	50	Inaudible	Traffic (50), **ACP inaudible**	3.1 ESE	n/a	n/a

ACP Noise Monitoring Results – 19 November 2007 - Evening

Location	Time	dB(A) Leq	ACOL dB(A)	Comments	WS and Direction	Inversion °C/ 100m	ACP Noise Sources
Richards	9.18 pm	41	Inaudible	Other mines (40), insects (33), **ACP inaudible**	2.5 ESE	n/a	n/a
Stapleton	8.17 pm	45	35	Traffic (45), **ACP (35)**, insects (34)	2.8 ESE	n/a	Mine hum
Clark	8.00 pm	44	30	Birds (44), **ACP (30)**, traffic (27),	2.8 ESE	n/a	Mine hum
Horadam	8.51 pm	49	Inaudible	Traffic (49), insects (39), **ACP inaudible**	3.2 ESE	n/a	n/a
Moss	8.35 pm	50	Inaudible	Traffic (49), insects (44), other mines (38), **ACP inaudible**	3.1 ESE	n/a	n/a

ACP Noise Monitoring Results – 19 November 2007 - Evening

Location	Time	dB(A) Leq	ACOL dB(A)	Comments	WS and Direction	Inversion °C/ 100m	ACP Noise Sources
Richards	12.01 am	39	Inaudible	Other mines (37), insects (33), **ACP inaudible**	1.8 SSW	+1.25	n/a
Stapleton	12.42 am	42	Inaudible	Traffic (40), insects (37), other mines (32), **ACP inaudible**	1.5 SSE	+3.75	n/a
Clark	12.25 am	39	Inaudible	Traffic (37), other mines (33), insects (26), **ACP inaudible**	2.2 SSE	0	n/a
Horadam	12.59 am	44	Inaudible	Traffic (44), **ACP inaudible**	2.2 ESE	+2.5	n/a
Moss	1.20 am	46	Inaudible	Traffic (46), other mines (35) **ACP inaudible**	2.2 ESE	+2.5	n/a

During the monitoring on the 19 November winds were light and swung from the North East to the South East during the period. Two noise exceedences were recorded during the day time monitoring. These were recorded during the 15 minute intervals beginning at 3:01pm (40dBL) and 3:18pm (39dBL).

Table 36. 2ND QUARTER NOISE RESULTS FEBRUARY 2008 (18 FEBRUARY 2008):

ACP Noise Monitoring Results – 18 February 2008 – Day

Location	Time	dB(A) Leq	ACOL dB(A)	Comments	WS and Direction	Inversion °C/ 100m	ACP Noise Sources
Richards	3.40 pm	39	Inaudible	Birds & insects (36), wind (33), traffic (33) **ACP inaudible**	3.3 ENE	n/a	n/a
Stapleton	4.25 pm	43	Inaudible	Traffic (42), birds (36), **ACP inaudible**	4.4 ESE	n/a	n/a
Clark	4.07 pm	43	40	**ACP (40)** traffic (38), wind (37), insects (30)	3.6 ESE	n/a	Dozer
Horadam	5.03 pm	47	Inaudible	Traffic (47), **ACP inaudible**	5.9 ESE	n/a	n/a
Moss	4.45 pm	50	Inaudible	Traffic (50), **ACP inaudible**	4.5 ESE	n/a	n/a

ACP Noise Monitoring Results – 18 February 2008 – Evening

Location	Time	dB(A) Leq	ACOL dB(A)	Comments	WS and Direction	Inversion °C/ 100m	ACP Noise Sources
Richards	7.35 pm	45	Inaudible	Dog (43), other mines (36), birds and insects (34), **ACP inaudible**	2.8 ESE	n/a	n/a
Stapleton	8.20 pm	44	Inaudible	Birds & insects (42), traffic (41), other mines (32), **ACP inaudible**	3.4 ESE	n/a	Mine hum
Clark	8.02 pm	41	Inaudible	Traffic (38), birds & insects (37), other mines (32), **ACP inaudible**	3.0 ESE	n/a	
Horadam	8.58 pm	44	Inaudible	Traffic (43), insects (35), **ACP inaudible**	2.8 ESE	n/a	n/a
Moss	8.40 pm	56	Inaudible	Traffic (56), **ACP inaudible**	3.0 ENE	n/a	n/a

ACP Noise Monitoring Results – 18 February 2008 – Night

Location	Time	dB(A) Leq	ACOL dB(A)	Comments	WS and Direction	Inversion °C/ 100m	ACP Noise Sources
Richards	10.07 pm	48	Inaudible	Train (46), insects (41), dog (38), other mines (35), **ACP inaudible**	2.3 ENE	n/a	n/a
Stapleton	10.47 pm	42	Inaudible	Traffic (39), insects (36), other mines (31), **ACP inaudible**	2.1 ENE	n/a	n/a
Clark	10.30 pm	42	Inaudible	Traffic (40), insects (35), other mines (31), **ACP inaudible**	2.4 ENE	n/a	n/a
Horadam	11.23 pm	47	Inaudible	Traffic (47), **ACP inaudible**	2.2 ENE	n/a	n/a
Moss	11.05 pm	55	Inaudible	Traffic (55), **ACP inaudible**	2.3 ENE	n/a	n/a

During the reporting period Ashton was predominantly inaudible apart from one 15 min period where Ashton was recorded at 40dBL at the Clarke residence. At the time wind speeds were above 3m/s (3.6m/s) where by the noise criteria do not apply.

Table 37. 3RD QUARTER NOISE RESULTS MAY 2008 (26 MAY 2008):

ACP Noise Monitoring Results – 26 May 2008 – Day

Location	Time	dB(A) Leq	ACOL dB(A)	Comments	WS and Direction	Inversion °C/ 100m	ACP Noise Sources
Richards	5.16 pm	40	30	Birds (35), cows (34), traffic (30), **ACP (30)**	4.8 WNW	n/a	Mine hum
Stapleton	4.18 pm	50	36	Traffic (50), birds (37), **ACP (36)**	4.8 WNW	n/a	Mine hum, conveyor ?
Clark	4.01 pm	46	33	Traffic (45), birds(34) **ACP (33)**	4.4 WNW	n/a	Mine hum, conveyor ?
Horadam	4.55 pm	54	Inaudible	Traffic (54), dog (45), **ACP inaudible**	5.6 WNW	n/a	n/a
Moss	4.36 pm	65	Inaudible	Traffic (65), **ACP inaudible**	5.0 WNW	n/a	n/a

ACP Noise Monitoring Results – 26 May 2008 – Evening

Location	Time	dB(A) Leq	ACOL dB(A)	Comments	WS and Direction	Inversion °C/ 100m	ACP Noise Sources
Richards	7.35 pm	43	30	Farm machinery (43), **ACP (30)**	1.8 WNW	+5.2	Mine hum,
Stapleton	8.13 pm	46	42	Traffic (44), **ACP (42)**	1.9 WNW	+10.0	Mine hum, trucks, conveyor?
Clark	7.57 pm	47	42	Traffic (45), **ACP (42)**, dog (30)	1.7 WNW	+8.2	Mine hum, trucks
Horadam	8.47 pm	51	38	Traffic (51), **ACP (38 est.)**	1.4 WNW	+10.6	Mine hum,
Moss	8.30 pm	55	30	Traffic (55), **ACP (30 est.)**	1.1 WNW	+10.2	Mine hum,

ACP Noise Monitoring Results – 26 May 2008 – Night

Location	Time	dB(A) Leq	ACOL dB(A)	Comments	WS and Direction	Inversion °C/ 100m	ACP Noise Sources
Richards	10.20 pm	39	Inaudible	Traffic (38) other mines (32), **ACP inaudible**	2.2 WNW	+4.7	n/a
Stapleton	11.00 pm	47	43	Traffic (44), **ACP (43)**	2.3 WNW	+8.6	CHPP, dozer?, engine revs
Clark	10.43 pm	47	44	**ACP (44)**, traffic (43)	1.9 WNW	+7.9	CHPP, dozer?, engine revs
Horadam	11.35 pm	48	37	Traffic (48) **ACP (37 est.)**	2.7 WNW	+0.7	n/a
Moss	11.17 pm	66	Inaudible	Traffic (66), **ACP inaudible**	2.6 WNW	+2.5	n/a

During the survey period the winds were light north westerlies and a strong inversion was present for the evening and night time periods. After the inversion came in Ashton noise levels increased at the Stapleton and Clarke residences. Ashton noise levels were recorded between 42dBL and 44dBL during the evening and night periods at the two residents however the inversion strength was greater than 3°/100m during the survey. Ashton Coals noise criteria do not apply under these conditions. It should be noted that during the evening times open cut equipment was operating at lower levels in the pit. During the night period the open cut was not operational. However due to the extreme nature of the inversion equipment was still audible.

Table 38. 4TH QUARTER NOISE RESULTS AUGUST 2008 (25 AUGUST 2008):

ACP Noise Monitoring Results – 25 August 2008 – Day

Location	Time	dB(A) Leq	ACOL dB(A)	Comments	WS and Direction	Inversion °C/ 100m	ACP Noise Sources
Richards	3.32 pm	36	32	Tractor (33), **ACP (32)**, birds (31)	0.3, ESE	n/a	Dozer
Stapleton	4.46 pm	40	35	Traffic (39), **ACP (35)**, birds (28)	1.2, ENE	n/a	Dozer
Clark	4.02 pm	41	40	**ACP (40)**, birds (33), dog (30)	0.8, ENE	n/a	Dozer
Horadam	4.22 pm	54	inaudible	Traffic (54), **ACP inaudible**	0.5, ENE	n/a	n/a
Moss	5.03 pm	56	inaudible	Traffic (56), **ACP inaudible**	1.7, ENE	n/a	n/a

ACP Noise Monitoring Results – 25 August 2008 – Evening

Location	Time	dB(A) Leq	ACOL dB(A)	Comments	WS and Direction	Inversion °C/ 100m	ACP Noise Sources
Richards	7.39 pm	40	inaudible	Other mines (40), birds (25), **ACP inaudible**	2.1, ESE	6.98	n/a
Stapleton	9.17 pm	48	32	Traffic (48), other mines (36), **ACP est. (32)**	0.9, SSE	4.65	Haul trucks, mine hum
Clark	8.02 pm	44	34	Traffic (41), other mines (38), **ACP est. (34)**, train (33)	2.2, SSE	5.55	Haul trucks, mine hum
Horadam	8.22 pm	47	35	Traffic (46), other mines (40), **ACP (35)**	2.0, SSE	5.01	Haul trucks, mine hum
Moss	9.00 pm	54	inaudible	Traffic (54), other mines (40), **ACP inaudible**	2.0, SSE	4.65	n/a

ACP Noise Monitoring Results – 25 August 2008 – Night

Location	Time	dB(A) Leq	ACOL dB(A)	Comments	WS and Direction	Inversion °C/ 100m	ACP Noise Sources
Richards	10.03 pm	41	inaudible	Other mines (41), cows (30), **ACP inaudible**	0.8, SSE	6.26	n/a
Stapleton	10.46 pm	42	faintly audible	Other mines (39), traffic (38), trains (32) **ACP faintly audible**	0.3, SSE	7.16	Mine hum
Clark	10.28 pm	41	faintly audible	Other mines (37), traffic (36), trains (36) **ACP faintly audible**	0.7, SSE	7.16	Mine hum
Horadam	11.02 pm	51	inaudible	Traffic (50), dogs (43), other mines (38), **ACP inaudible**	0.3, SSE	7.16	n/a
Moss	11.20 pm	53	inaudible	Traffic (53), other mines (40),**ACP inaudible**	0.2, SSE	7.51	n/a

During the survey period winds were light and from the north west during the day period and later swung to the south east during the evening and night periods. During the day time period one exceedence of Ashton Coals criteria was recorded at the Clarke residence (40dBL). Throughout the remainder of the survey period Ashton was inaudible.

3.10 VISUAL, STRAY LIGHT

Lighting issues on site are managed through the Lighting Management Plan (LMP).

Three types of lighting are utilised on site. They are:

- Fixed lighting utilised to illuminate the areas arrange the CHPP and open cut workshop;
- Mobile lighting plants utilised to illuminate the open cut, the overburden dump, the tailings disposal area and some maintenance operations; and
- Lighting equipped on mobile plant.

Fixed lighting is generally high pressure sodium vapour lights, which minimise the glare usually associated with “white” lights.

Historically Mobile lighting plants have been the source of lighting complaints, particularly those stationed on the Eastern Emplacement Area. During the reporting period four complaints regarding lights on the Eastern Emplacement Area were received. There was no trend to these complaints and were the result of incorrect placement of lighting plants. Positioning of lighting plants to reduce off-site impacts is included in ACOL’s induction process to ensure employees and contractors are aware of potential impacts to Ashton’s neighbours.

3.11 ABORIGINAL HERITAGE

In December 2007 Ashton Coal received a Heritage Impact Permit under *Section 90* of the *NPW Act 1974* for the area above Longwall 1-4. The application was made in June 2007 the permit application was submitted with a detailed management plan that aimed to where possible preserve and manage artefacts and only collect where necessary. While preservation is the ongoing aim of ACOL, due to the nature of subsidence impacts and the potential for emergency remediation works being required due to safety related issues the submission was for a blanket S90 over the entire UG area.

The management plan was developed in conjunction with relevant community groups, Ashton Coal and Angela Besant of Insite Heritage. The plan will be revised at the end of mining of each seam, by all parties and any subsequent adjustments made to the management plan will be lodged with the DECC. The plan aims to minimise impact on Aboriginal relics and the integrity of sites while retaining the maximum possible site/s in situ.

The management plan may result in the surface collection of some artefacts which may be impacted by ripping of cracks due to subsidence. There may also be some limited excavation of sub surface deposits where necessary. The artefacts collected as part of this process will be redeposited within the relevant site and an updated site card lodged with DECC.

This management plan is applicable to the subsidence zone for longwall panels 1-4 only. Sites and areas of potential archaeological deposits located outside of the subsidence zone are not covered by this management plan.

Salvage Works

Salvage works were undertaken on the 4th October 2007 for a single artefact EWA86. EWA 86 was located within the predicted subsidence cracking zone of the finish line for Longwall 1 see **Figure 19**. Due to the shallow depth of the longwall at that point and nature of longwall mining, subsidence cracking had the potential to be significant i.e. multiple cracks potentially up to 300mm in width. This type of cracking has the potential to impact on an artefact at the time of cracking, and during rehabilitation works. The site was predicted to be impacted by the underground operations on the 9th October 2007.

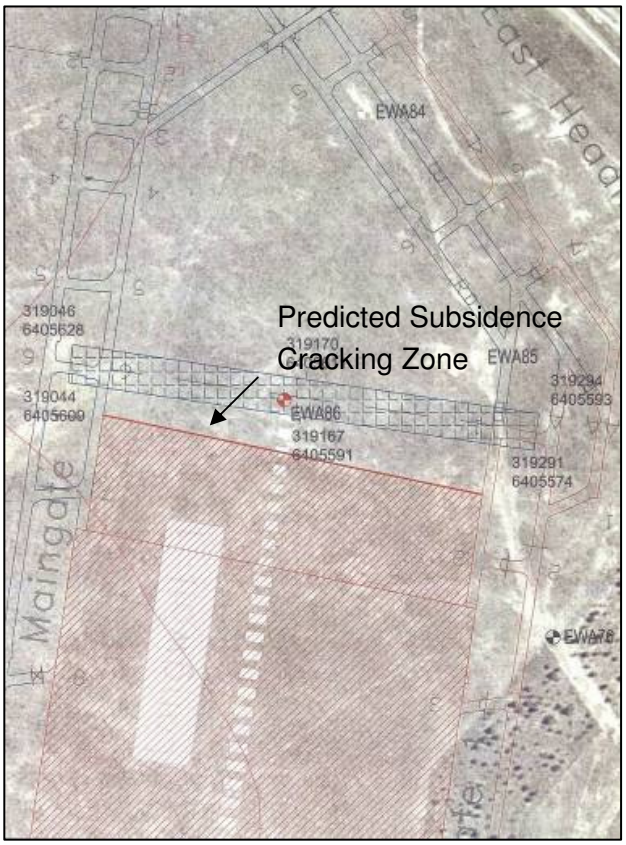


Figure 19. EWA 86 Location and Subsidence Predictions.

EWA 86 is a single artefact find within the High Ridge Workshop Site. *"The High Ridge Workshop site is on a shoulder of Ashton Ridge, and Features a microblade workshop of grey tuff.*

In accordance with the requirements of the AHIP all groups relevant to the AHIP were contacted in relation to the collection. Roger Mehr of the DECC was advised, by phone of the field work and potential collection dependant on issuing of the AHIP, and in writing on the 4th October 2007.

The collection was attended by;

- Victor Perry - Upper Hunter Wanaruah Council,
- Donna Mathews - WLALC,
- Allen Paget - Ungooroo Aboriginal Corporation,
- Angela Besant - Insite Heritage,
- Lisa Richards - Ashton Coal Operations Pty Limited,

The artefact was located at EWA 86 as shown in **Figure 19**. The artefact was found on the surface of an erosion exposure. There was no excavation required during the inspection and collection. Following collection the exact point the artefact was collected from was recorded using a Trimble 5800 High definition GPS which is accurate to 3mm the point was also pegged as shown in **Figure 20.**

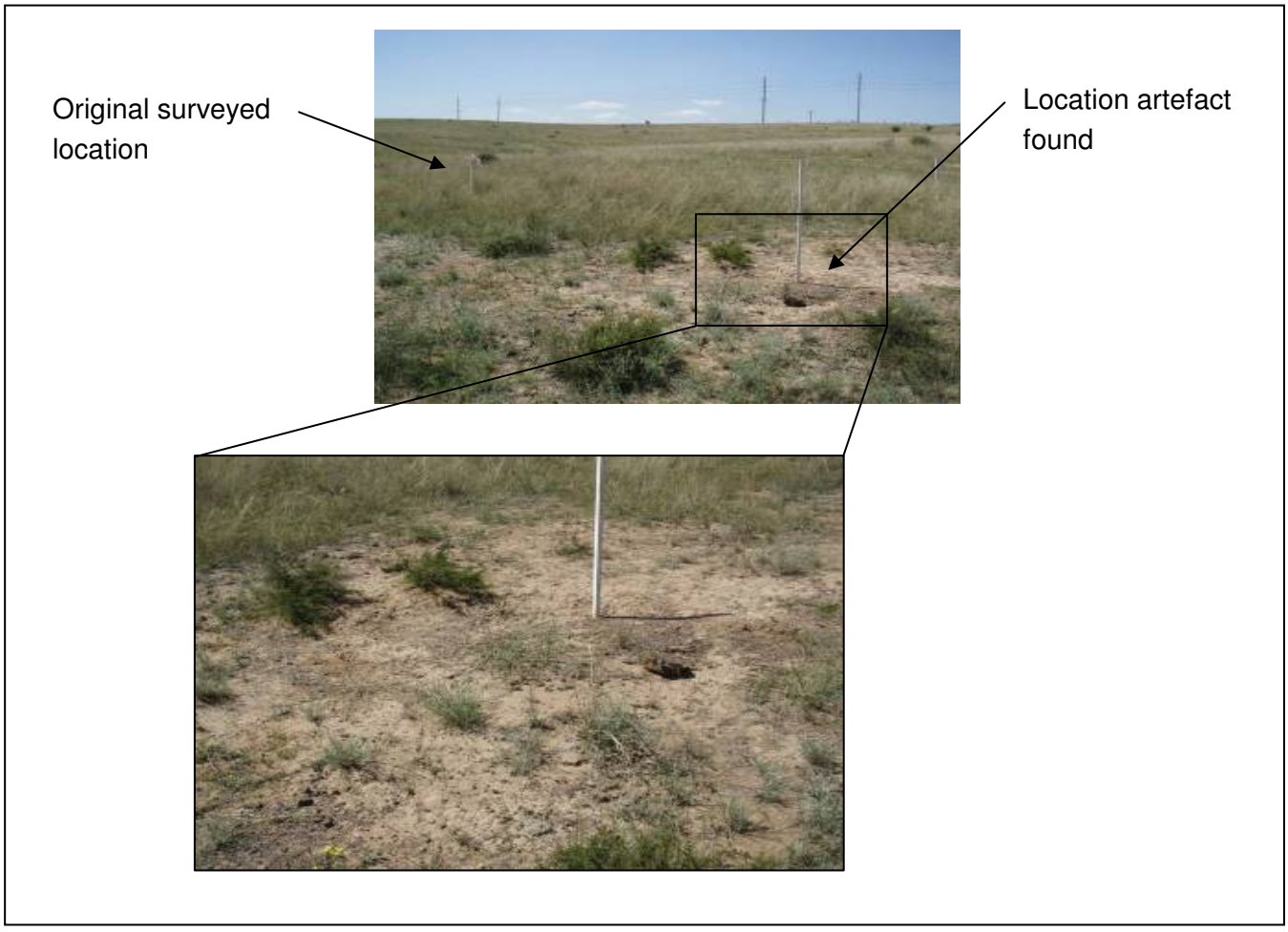


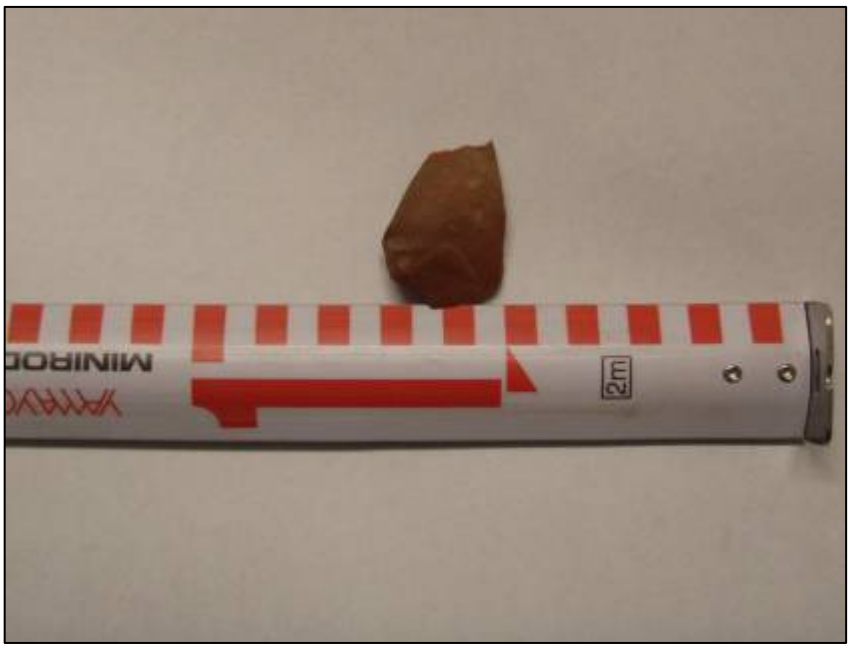
Figure 20. Artefact site

Following longwall mining impacts a series of subsidence cracks developed directly around the location were the artefact was collected from. The average width of the crack would have been great enough to have impacted on the artefact should it have run directly thought the point were the artefact was positioned.

Subsidence Cracks

Figure 21. Artefact site post subsidence

Artefact Description
NPWS Site Number - High Ridge Site 37 – 3 – 0537
Single artefact - EWA 86
Site Collection Co-ordinates - 319148.4743, 6405526.2384



Material – tuff
Type – flake fragment
Mx L - 35,
Mx W - 19,
Mx T - 11,
Attributes – unident

Figure 22. Single Artefact EWA86

The artefact was relocated within about ten metres of the recorded AMG co-ordinates which is as effective as any contemporary hand held equipment.

The community representatives who have attended to date have expressed satisfaction with the process. Unfortunately several groups were unable to attend this particular collection due to demands for field work however it is anticipated that by the time of the next inspection more groups and / or different groups will be able to attend.

The implementation of the management plan is considered to have been effective to date. The process of assessing the potential impacts on artefact sites based on predictions of crack locations, and only disturbing sites where necessary, has lead to only a single artefact being disturbed during the mining of longwall 1 and 2. Ongoing monitoring of crack positions has shown little impact from cracking at other sites and the need for destructive remediation measures has not been required.

Consultation with the Indigenous Community

Table 39.	EXTRACT FROM INDIGENIOUS COMMUNITY CONSULTATION LOG
26/09/2007	Yarrawalk correspondence regarding concerns raised to DECC over s90 application
28/09/2007	Ashton response to DECC re: Yarrawalk concerns in s90 application outstanding
29/10/2007	Ashton response to DECC re: Yarrawalk concerns in s90 application outstanding
27/09/2007	Invited groups to a meeting at Ashton Coal on 04.10.07. Des Hickey – Wattaka Wonnarua Cultural Consultancy Service. John and Margaret Mathews Wanaruah LALC – Spoke to Donna the acting manager Ungooroo Aboriginal Corporation Wonnarua Custodians (Barbra Foot) Upper Wonnarua Tribal Council, Barry Anderson Tom Miller
3/10/2007	Calling to confirm attendance at the meeting on the 4.10.07 Ungooroo Aboriginal Corporation, spoke to Allan Paget Upper Wonnarua Tribal Council, Wanaruah LALC. David Foot - Wonnarua Custodians Lower Hunter Wonnarua Council -Tom Miller. Tracey
4/10/2007	Collection of EWA 86 all groups invited, attended by • Victor Perry - Upper Hunter Wanaruah Council, • Donna Mathews - WLALC, • Allen Paget - Ungooroo Aboriginal Corporation, • Angela Besant - Insite Heritage, • Lisa Richards - Ashton Coal Operations Pty Limited
10/10/2007	Emailed management plan to Lee-Ann Miller to forward on to Tom Miller for review.
19/12/2007	Correspondence received from DECC re: Aboriginal Community Consultation process complaints received
19/12/2007	Correspondence received from DECC re: notice of amendment of conditions to S90 AHIP #2783
1/12/2007	Notification correspondence to the following indigenous groups regarding receipt of AHIP #2783 issued under s90 Junburra Consulting Lower Wonnarua Tribal Council Aboriginal Native Title Heritage Consultants Wonnaruah Local Aboriginal Land Council Wattaka Wonnarua Cultural Consultants Ungooroo Aboriginal Corporation Wanaruah Aboriginal Custodians Corporation
20/12/2007	Salvage report for EWA 86 sent to DECC and the following groups. Junburra Consulting Lower Wonnarua Tribal Council Lower Hunter Wonnarua Council

Table 39.	EXTRACT FROM INDIGENIOUS COMMUNITY CONSULTATION LOG
	Aboriginal Native Title Heritage Consultants Wonnaruah Local Aboriginal Land Council Wattaka Wonnarua Cultural Consultants Yarrawalk Enterprises Ungooroo Aboriginal Corporation Wanaruah Aboriginal Custodians Corporation (also Babra Foot)
23/06/2008	Notification letter was sent to the following indigenous groups informing them of the opportunity for their input of the preparation of the subsidence management plan for mining of longwalls 5-9 through the public open day to be hold on 7 July or by contacting Aston Coal directly Ungooroo Aboriginal Corporation Wattaka Wonnarua C.C. Service Wonnarua Local Aboriginal Land Council Wonnarua Aboriginal Custodians Corporation Junburra Consulting Biami Pty Ltd Aboriginal native Title Heritage Consultants Lower Wonnarua Tribal Council
25/06/2008	Aboriginal Native Title Heritage Consultants and Yarrawalk correspondence returned , recipient had left address listed on file
26/06/2008	Rang Roger to confirm the addresses of the returned letters
	Aboriginal Native Title Heritage Consultants
	DECC have them registered as
	Aboriginal Native Title Elders Consultants.
	Yarrawalk
	This is now Biami
	Roger Confirmed that he thought Yarrawalk was still operating but is happy if we contact Biami in lieu of Yarrawalk.
19/08/2008	Received correspondence from WNAC re: appointment of 2 directors, Barry Anderson and Laurie Perry to sit on the liaison committee and the development of a year Strategic Plan for WNAC

3.12 NATURAL HERITAGE

No items of natural or European heritage were identified during the EIS process as being likely to be disturbed by mining operations.

During the reporting period donations were made to the St Clements Church to repaint the churches windows. Unfortunately shortly after completion the Church was vandalised with a large fire being lit within the church. Labour was then supplied to assist in the clean up of the church following the fire that occurred in January 2008.

3.13 SPONTANEOUS COMBUSTION

A Spontaneous Combustion Management Plan has been prepared and implemented on site.

ACOL have taken on the responsibility of an area of Macquarie Generations Ravensworth Void 4 area for the disposal of Tailings. This area has significant spontaneous combustion instances and is managed under the Tailings Emplacement Operations Plan. Part of this management includes regular monitoring by CHPP personnel and detailed survey of the area to record the location and severity of spontaneous combustion points. Photographic records of each area are also included in the report. The first survey was undertaken in July 2007 and identified 36 separate instances of spontaneous combustion within ACOL's area of responsibility. During the reporting period an area adjacent to the tailings void area was rehabilitated by deep ripping and compaction. To date this has proven to be successful in reducing the spontaneous combustion in that area. Ongoing surveys have also been undertaken which show a reduction in the level of Spontaneous combustion as the tailings level in the void increases. The reason for this is that the tailings are successfully sealing the sides of the void which removes the oxygen form the Spontaneous combustion within the spoil.

3.14 BUSHFIRE

A Bushfire Management Plan (BMP) has been developed and implemented on site. This BMP requires that a risk assessment be undertaken in consultation with the Singleton Rural Fire Service to assess the risks of fire breaking out, or entering on to the site, as well as the development of risk reduction measures. This risk assessment was completed prior to the commencement of the 2003 / 2004 fire season and all agreed actions have been implemented. As identified in Ashton Coal's annual internal compliance audit discussed in Section 1.4 the BMP requires review. This is currently in progress and will be conducted in consultation with the Singleton Rural Fire Service.

There were no outbreaks of bushfire on the project lands during this reporting period.

3.15 MINE SUBSIDENCE

The Pikes Gully Seam section mined along the length of Longwalls 1 to 3 at Ashton Underground Mine is approximately 2.4m high. The seam dips to the southwest at a grade of up to 1 in 10. The overburden ranges in thickness from 35m at end of Longwall 1 to 130m at the start of Longwall 3. The final extraction void is nominally 216m with chain pillars 25m rib-to-rib at 100m cut-through centres.

Longwall operation commenced in February 2007 and Longwall 3 was completed in March 2009. The progress of longwall extraction is shown in **Figure 23**.

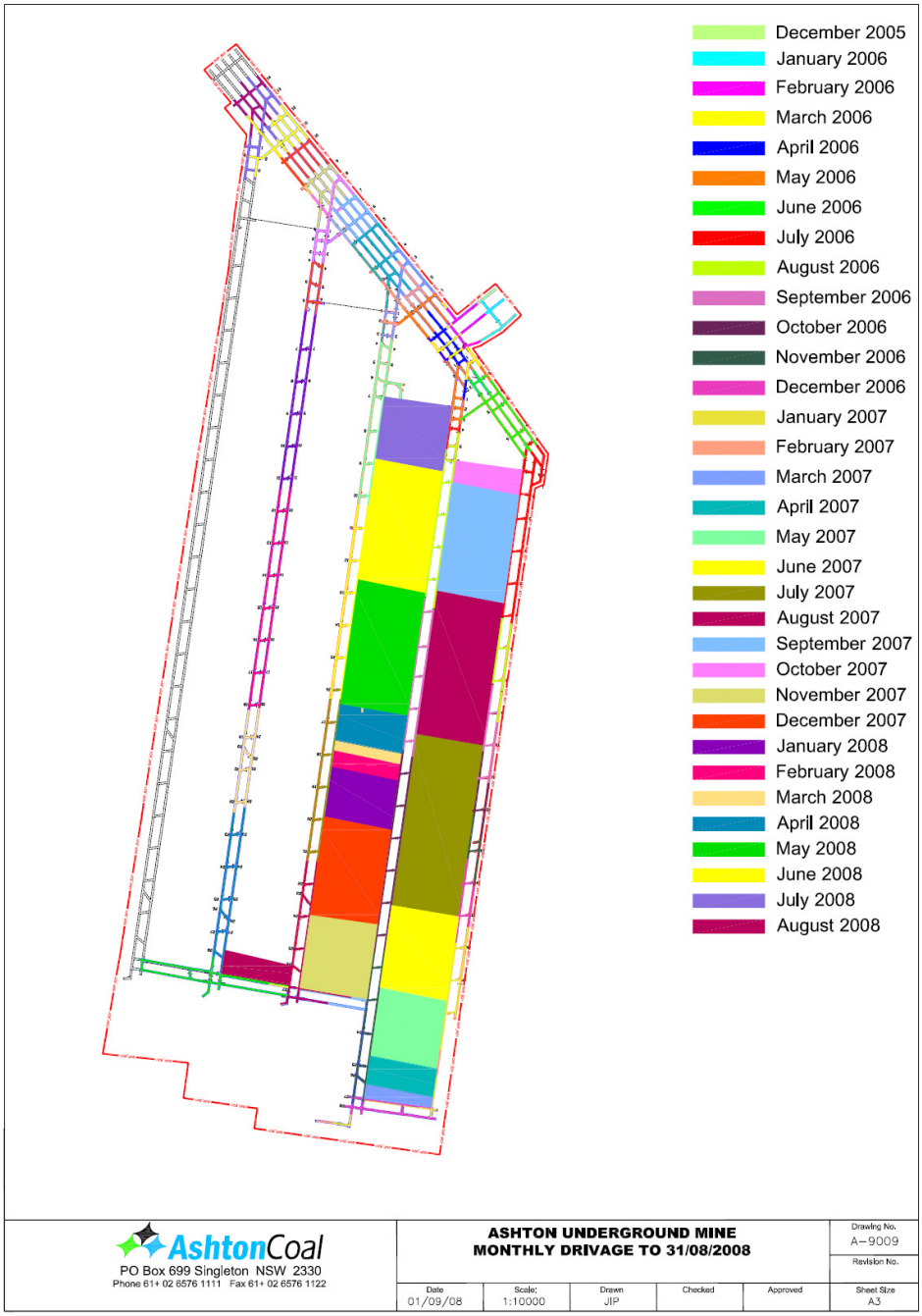


Figure 23. Progression of Longwall Extraction

3.15.1 Monitoring

Ashton Coal has monitored the subsidence movement on the surface during the extraction of Longwalls 1-3 using longitudinal subsidence lines over the start and finish of each panel and a main cross line extending over all three panels. Several other subsidence lines have been used to monitor the slope leading down to Glennies Creek, closure across the New England Highway, and subsidence across a dyke.

A plan showing the location of the subsidence lines is included as **Figure 24**.

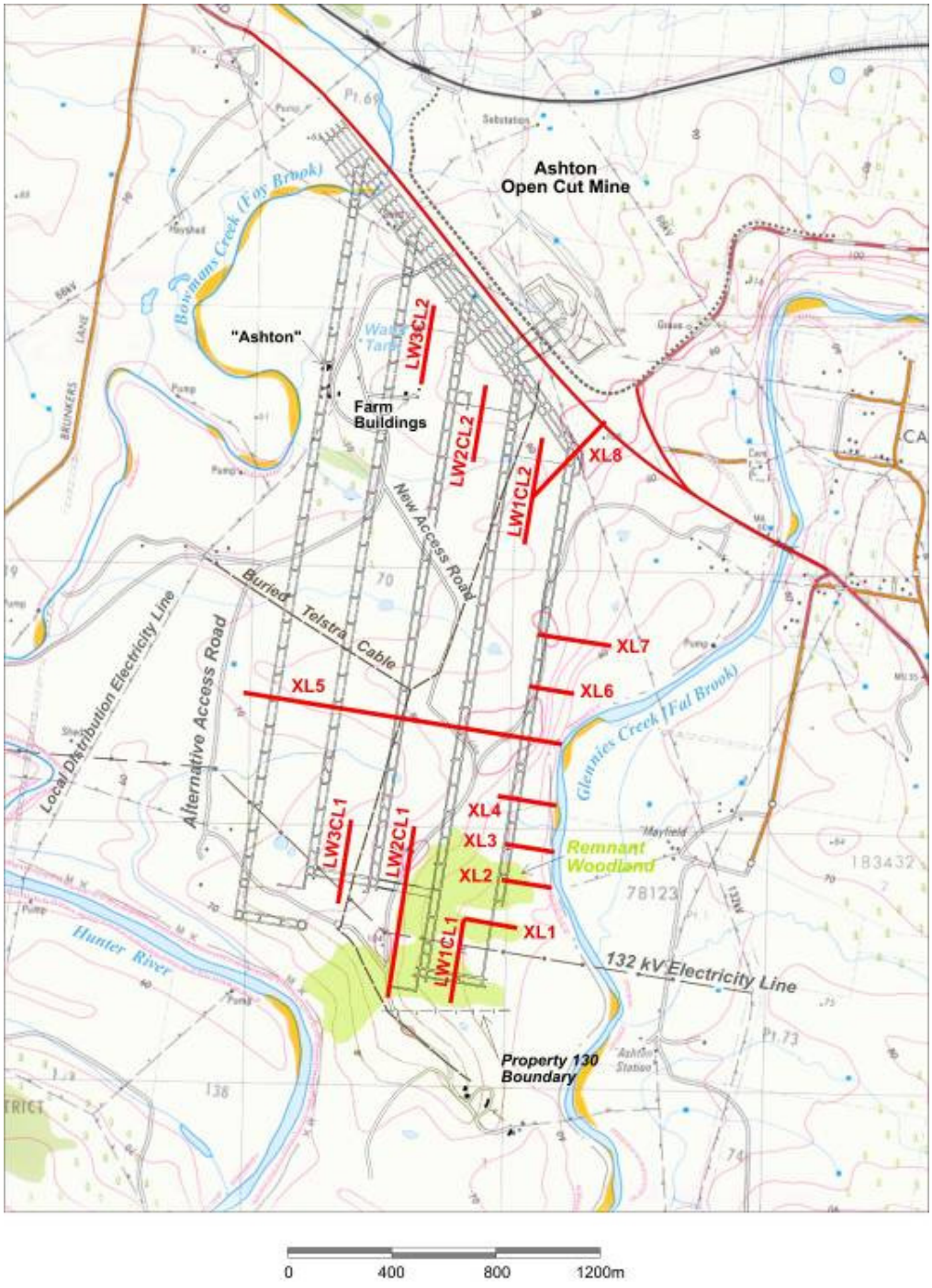


Figure 24. Subsidence Monitoring Cross Lines

The following table outlines the maximum subsidence parameters recorded during regular survey of subsidence lines as the longwall passed each location.

Table 40. SUBSIDENCE LEVELS

	Maximum Predicted	Maximum Measured		
North End of LW1		**CL2**		**XL8**
Subsidence (mm)	1800	1528		1500
Tilt (mm/m)	244	100		103
Horizontal Movement (mm)	>500	476		500
Tensile Strain (mm/m)	73	40		15
Compressive Strain (mm/m)	98	28		27
Remainder of LW1		**CL1**		**XL5**
Subsidence (mm)	1700	1318		1436
Tilt (mm/m)	141	60		75
Horizontal Movement (mm)	300-500	480		503
Tensile Strain (mm/m)	42	49		17
Compressive Strain (mm/m)	56	23		24
Longwall 2		**CL1**	**CL2**	**XL5**
Subsidence (mm)	1600	1296	1513	1266
Tilt (mm/m)	102	40	82	78
Horizontal Movement (mm)	300-500	440	298	390
Tensile Strain (mm/m)	30	17	16	11
Compressive Strain (mm/m)	41	16	32	28
Longwall 3		**CL1**	**CL2**	**XL5**
Subsidence (mm)	1600	1420	1354	1429
Tilt (mm/m)	78	41	48	97
Horizontal Movement (mm)	300-500	463	345	394
Tensile Strain (mm/m)	23	10	17	22
Compressive Strain (mm/m)	31	7	18	24

Additional monitoring was undertaken of fixed stations on a 132kV power line crossing the longwall panel near the start of Longwall 1, but the next two panels have not mined under this power line. Survey monitoring was supplemented with visual monitoring of subsidence areas, powerlines and the adjacent steep slope. Subsidence information was reported and distributed to DPI Minerals, Energy Australia, and an adjacent land owner.

Impacts

Surface subsidence cracks have developed along each edge of the longwall panels. These cracks are particularly evident on the up hill side of each panel. In most places, these cracks have been rehabilitated by ripping the surface to reduce surface water ingress and reduce the risk of injury to stock. Cracks through the Voluntary Conservation Area above Longwall 1 were rehabilitated using a small excavator and skid steer loader. Cracked areas in open fields were remediated using a D6 dozer with ripping tines. The extent of subsidence remediation at the goaf edge is outlined in **Figure 25**.

There does not appear to be any strong evidence of direct connective subsidence cracking between the surface and underground, but an increase in the hydraulic conductivity of the overburden strata is nevertheless expected as a result of mining subsidence. Seepage through the Pikes Gully Seam also appeared to be entering the mine from Glennies Creek, but this was related to mining development headings rather than mining subsidence.

Initial caving above Longwall 1 was delayed for reasons that are not clear, but caving over the start of Longwalls 2 and 3 was typical of the caving behaviour observed elsewhere and consistent with predicted subsidence behaviour.

The Access Road to Property 130 was cracked and a diversion was put in place during the impact period until the road was repaired. Small farm dams in areas of shallow cover were dewatered before the longwall passed beneath and following subsequent rain events were observed to refill and hold water.

In general, the maximum subsidence movements detected were less than those predicted. There is no indication of any significant lateral movement of the steep slope adjacent Glennies Creek or of the New England Highway cutting.

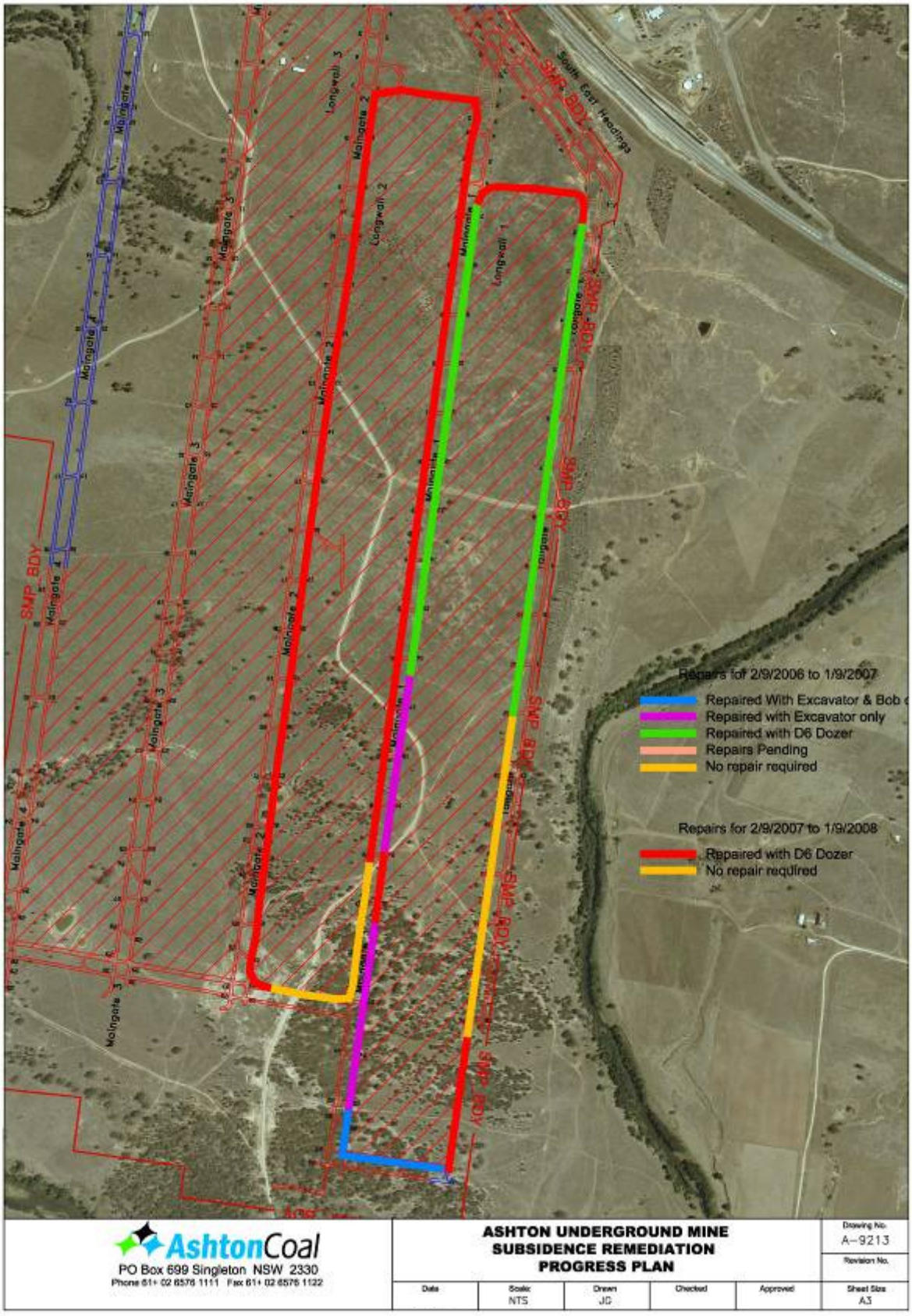


Figure 25. Subsidence Remediation Progress

Figure 26. Subsidence cracks, Longwall 2

Figure 27. Subsidence crack remediation

3.16 HYDROCARBON CONTAMINATION

There have been some minor hydrocarbon spillages during the reporting period. All spillages were contained and promptly collected with appropriate absorbent products prior to any hydrocarbons moving offsite or out of immediate work areas.

3.17 METHANE DRAINAGE/VENTILATION

Mine ventilation has occurred throughout the period. Mine ventilation has been occurring since May 2006 and the ventilation quantity is currently approximately 145 cubic metres per second with methane concentrations of 0.06% to 0.34% exhausting from the main fans, and 0.05% Carbon Dioxide emissions.

Nil methane drainage activities are in place or planned in the next 12 months.

3.18 PUBLIC SAFETY

There is a boundary fence around the open cut operations with signs warning that the area is subject to mining. Only one access road to the site is in general use and all visitors are directed to the ACOL office for further directions on the roads that they are permitted to access. All other vehicular access points are locked. A gate system that remains closed outside normal office hours has been installed to prevent ad hoc public access.

The safety of public travelling on trains or along the access roads alongside the railway has also been an area of focus. Procedures are in place to ensure the Main Northern Railway is clear of trains before blasting within 500 metres of the rail line, and to take possession of the rail line if blasting within 200 metres. This has occurred for every relevant blast in the reporting period.

Procedures are also in place to close the Camberwell common to the public when blasting within 500m. Livestock and persons are moved to areas outside the blasting area. During the reporting period there were no instances where a common closure was required.

The safety of public travelling along the New England Highway has been of major consideration when blasting within 500m. Due to the progression of Open Cut mining to the western portion of the pit a number of highway closures were undertaken during the reporting period. Highway closures are designed to impact on motorists for a maximum of 2 – 3 minutes.

The safety of public travelling along Glennies Creek Road has been a major consideration during the reporting period, with numerous closures of the road when blasting occurs within 500 metres. The Glennies Creek Road Environmental Bund has further isolated mining activities from the publics view increasing safety levels along the road.

Since the commencement of subsidence over the longwall area signage has been erected on the Right of Way (ROW) leading to property 130 on Ashton Property. An alternate access road has also been established and road closure signs are placed when possible subsidence impact may be experienced on the ROW. As detailed in the approved SMP Road Management Plan and Property 130 Management Plan, the tenants and owner of Property 130 are notified when any such impacts are expected to be experienced.

3.19 OTHER ISSUES AND RISKS

No other risks or issues have been identified during the reporting period.

4.0 COMMUNITY RELATIONS

4.1 ENVIRONMENTAL COMPLAINTS

A total of 64 complaints were received directly to Ashton Coal during the reporting period and 80 complaints received through the Department of Environment and Climate Change (DECC). Of the 64 complaints received directly to Ashton Coal, 44 were received from resident 18. ACOL have approached the resident and offered purchase or the opportunity to establish an agreement however this offer has not been accepted. The majority of complaints received through the DECC corresponded to a complaint or enquiry received directly to Ashton Coal. Community members who have agreements with Ashton Coal are able to lodge enquiries in the same way as a complaint. Their Enquiries are responded to in exactly the same way as a complaint and are logged and filed as an Enquiry. A total of 49 enquiries were received during the reporting period. A full list of complaints is provided in **Appendix 6**

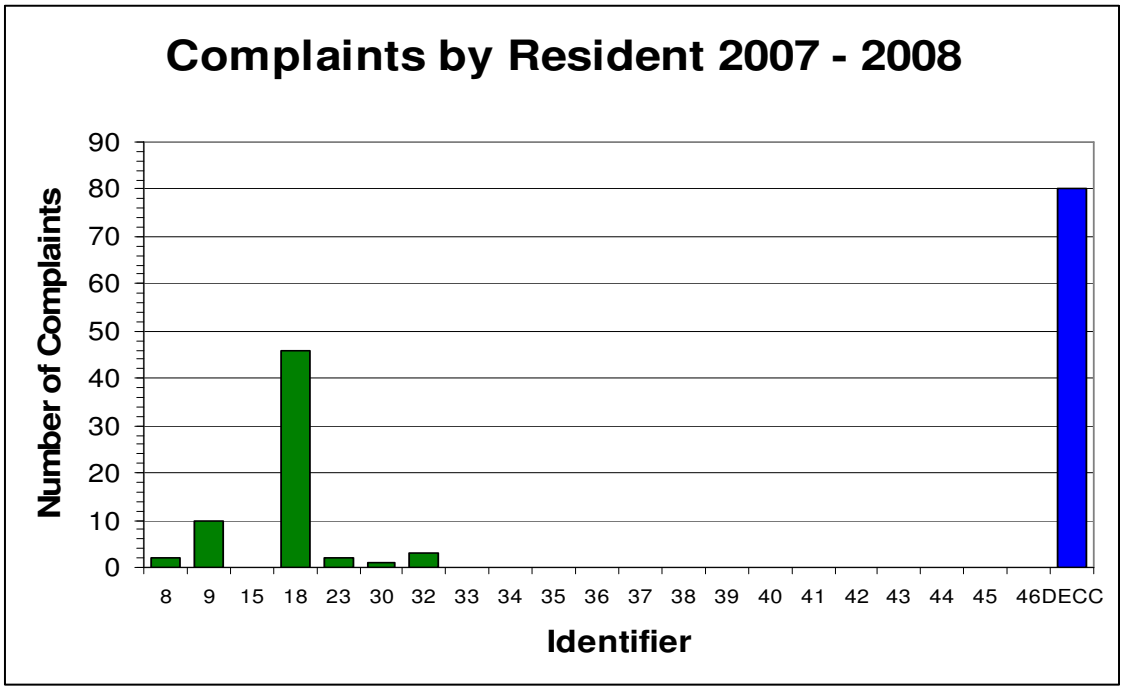
Noise complaints increased during winter months corresponding with the onset of strong north westerly winds and consistent temperature inversions. Ashton Coal commit to reducing the impact of noise from the Open Cut operations by restricting dumping after 6:00pm to lower or northern dumps. During favourable wind directions, ACOL completed the construction of the southern bund during the reporting period with the aim of reducing noise propagation from dumping operations occurring behind the bund. Furthermore during the reporting period new attenuated equipment was purchased as discussed above in Section 3.10.2. This included two new D10T dozers used in exposed areas and a Komatsu WA 900 Loader used for loading the open cut and underground ROM hoppers.

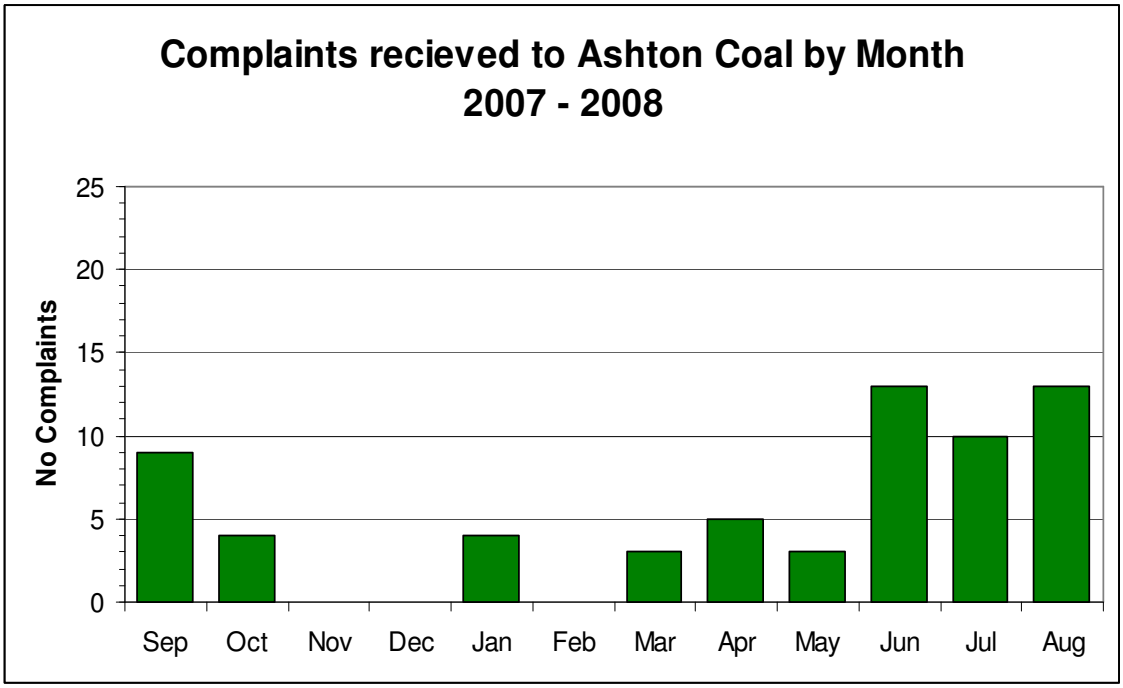
The historic trend of complaints shows an increase in complaints during the autumn and winter period over the past 2 years. It also depicts a marked increase in the number of complaints received through the DECC over the past two years, however there has been an overall decrease in complaints since the beginning of the project.

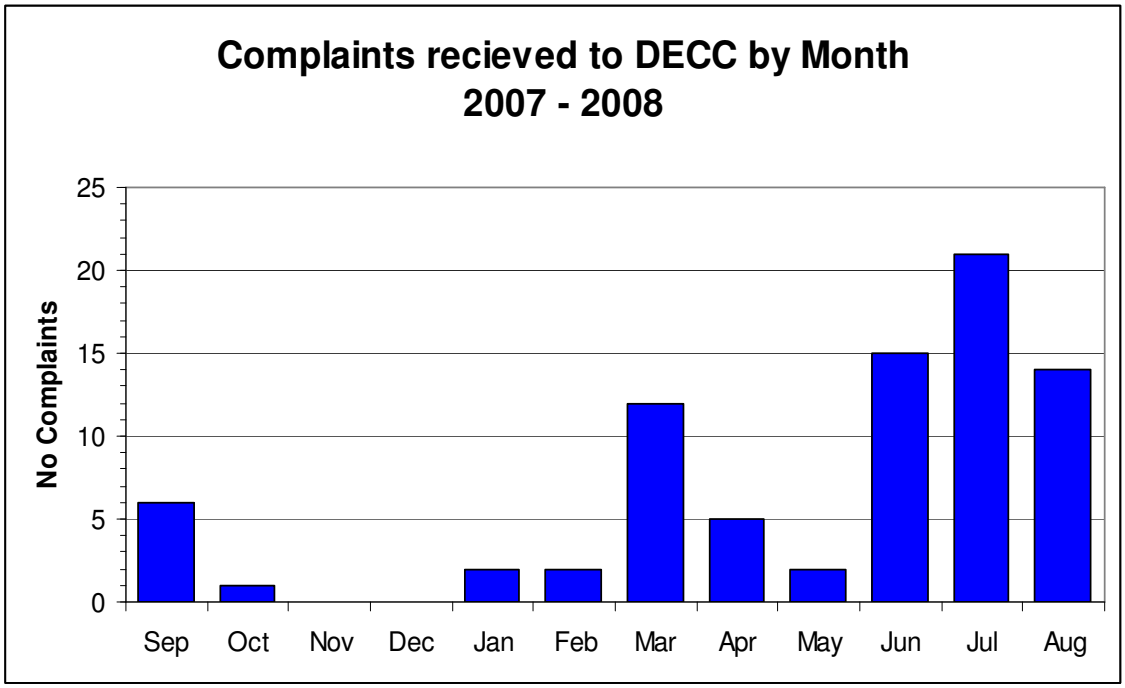
Complaints received during the reporting period were as follows:

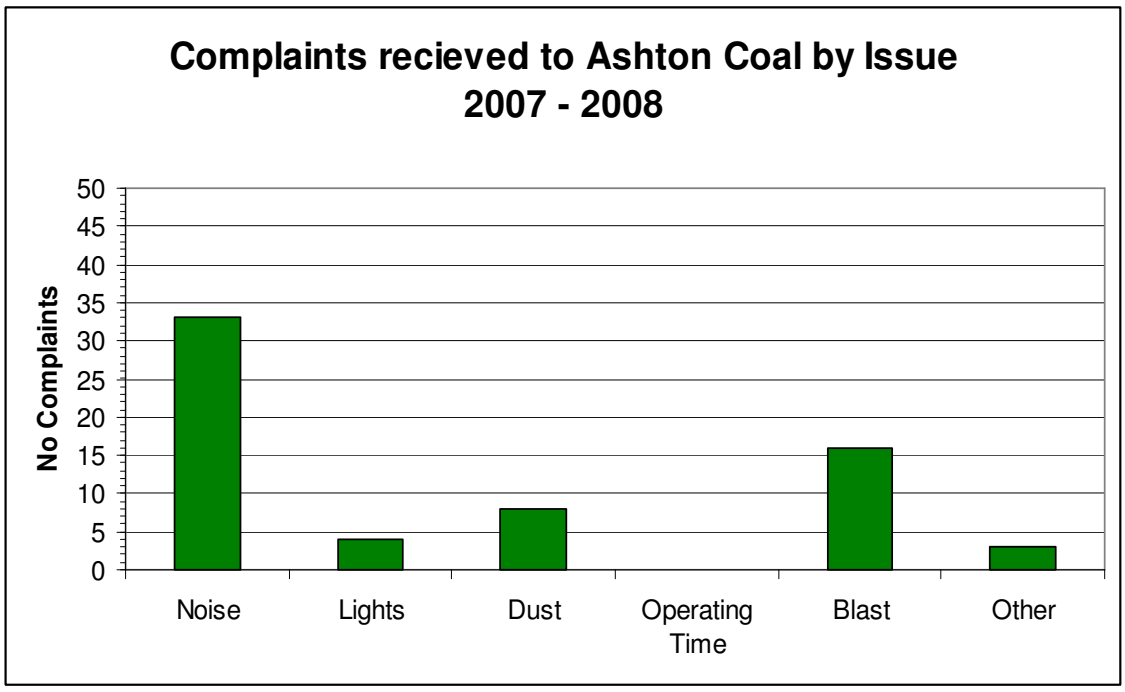
Table 41. SUMMARY OF COMPLAINTS RECEIVED DIRECT TO ASHTON COAL 2007 - 2008							
Month	Noise	Lights	Dust	Operating Time	Blast	Other	**TOTAL**
Sep	2	1	0	0	6	0	9
Oct	1	1	0	0	2	0	4
Nov	0	0	0	0	0	0	0
Dec	0	0	0	0	0	0	0
Jan	3	0	1	0	0	0	4
Feb	0	0	0	0	0	0	0
Mar	0	0	2	0	1	0	3
Apr	4	0	1	0	0	0	5
May	3	0	0	0	0	0	3
Jun	9	0	2	0	2	0	13
Jul	5	2	2	0	0	1	10
Aug	6	0	0	0	5	2	13
TOTAL	33	4	8	0	16	3	64

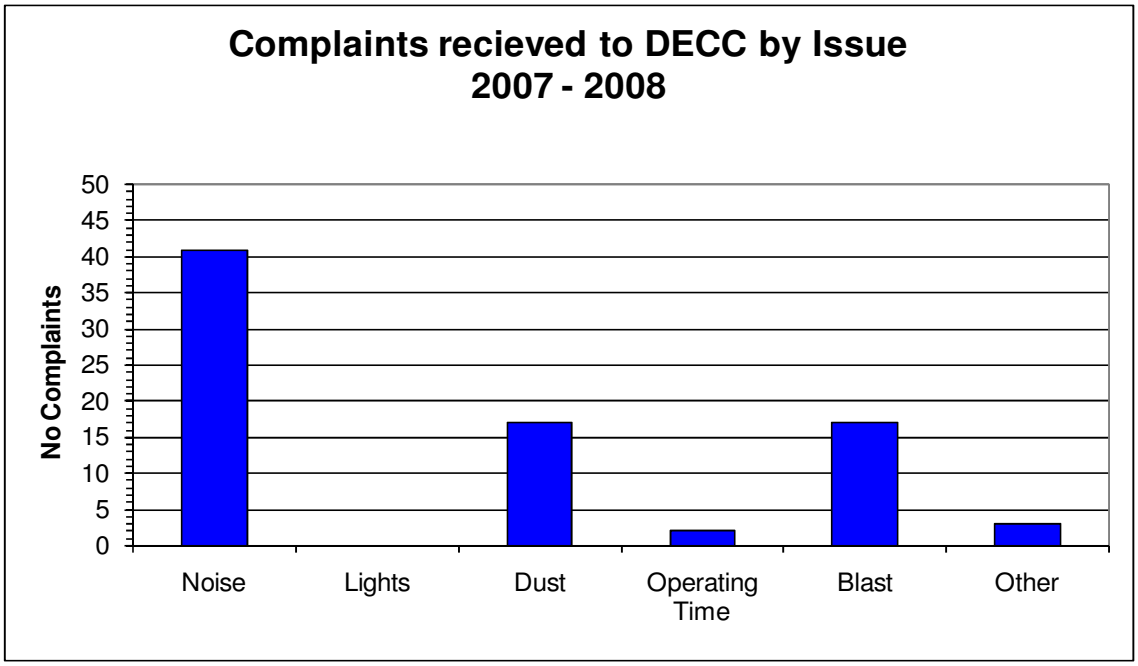
Table 42. SUMMARY OF COMPLAINTS RECEIVED FROM DECC 2007 - 2008							
Month	Noise	Lights	Dust	Operating Time	Blast	Other	**TOTAL**
Sep	2	0	0	0	4	0	**6**
Oct	0	0	0	0	1	0	1
Nov	0	0	0	0	0	0	0
Dec	0	0	0	0	0	0	0
Jan	1	0	1	0	0	0	2
Feb	1	0	0	0	1	0	**2**
Mar	4	0	2	2	4	0	12
Apr	3	0	2	0	0	0	5
May	2	0	0	0	0	0	**2**
Jun	6	0	5	0	4	0	15
Jul	15	0	5	0	0	1	21
Aug	7	0	2	0	3	2	14
TOTAL	41	0	17	2	17	3	80


Complaints by Resident 2007 - 2008
Number of Complaints
90
80
70
60
50
40
30
20
10
0
8 9 15 18 23 30 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46DECC
Identifier

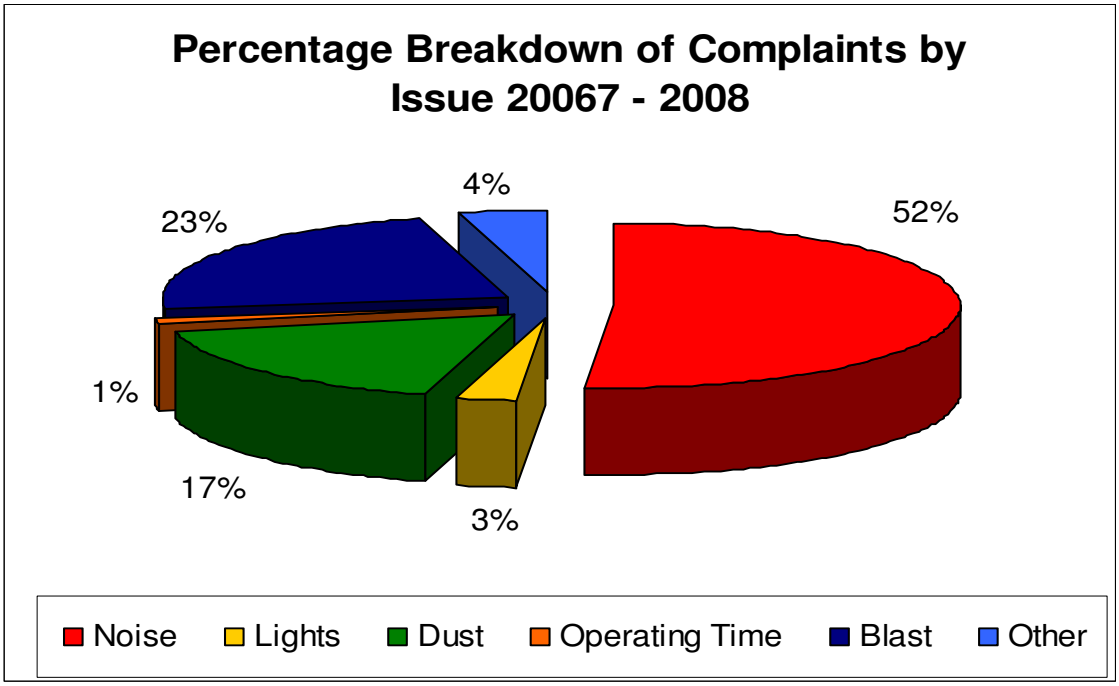

Complaints recieved to Ashton Coal by Month
2007 - 2008
No Complaints
25
20
15
10
5
0
Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug

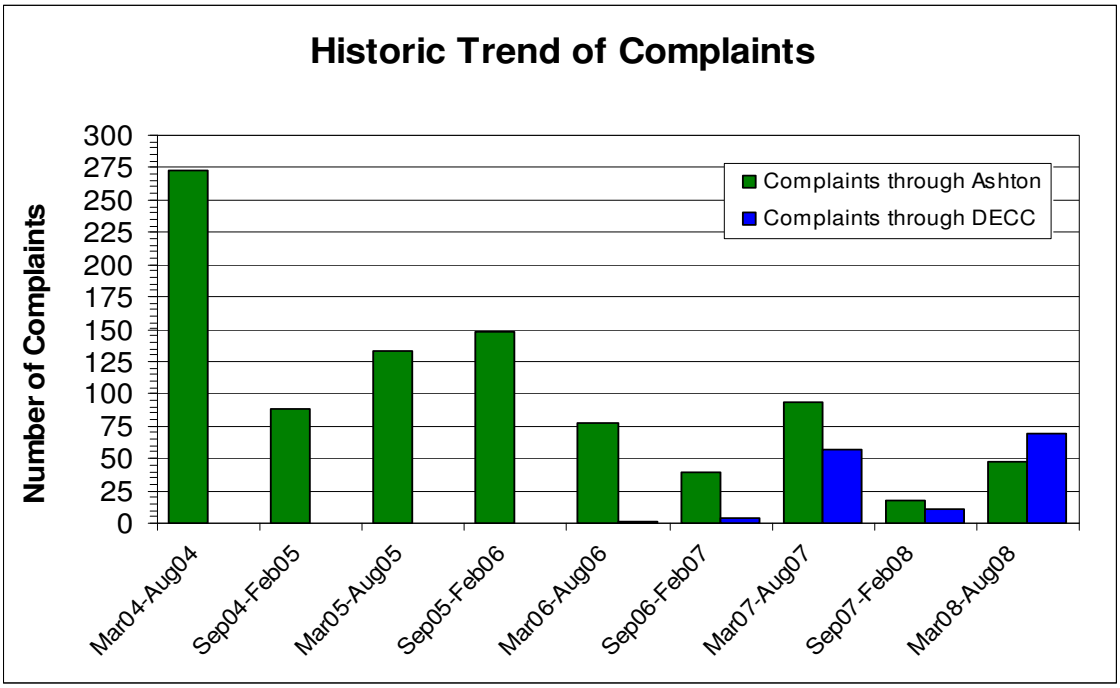

Complaints recieved to DECC by Month
2007 - 2008
No Complaints
25
20
15
10
5
0
Sep
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug


Complaints recieved to Ashton Coal by Issue
2007 - 2008
No Complaints
50
45
40
35
30
25
20
15
10
5
0
Noise
Lights
Dust
Operating Time
Blast
Other



The percentage breakdown by issue of the total complaints for the period is detailed below:




Historic Trend of Complaints
Number of Complaints
300
275
250
225
200
175
150
125
100
75
50
25
0
Complaints through Ashton
Complaints through DECC
Mar04-Aug04
Sep04-Feb05
Mar05-Aug05
Sep05-Feb06
Mar06-Aug06
Sep06-Feb07
Mar07-Aug07
Sep07-Feb08
Mar08-Aug08

4.2 COMMUNITY LIAISON

On top of the community newsletters and Community Consultative Committee meetings Ashton Coal has committed to a community program that provides a budget for undertaking activities that aim to reduce the impact of mining on the residents of Camberwell. Feedback from previous surveys has indicated that dust impacts are the major concern of residents in Camberwell Village. Continuing from the work completed in the previous year Ashton conducted water tank cleaning on household water tanks for all residents in Camberwell who wished to receive the offer. This involved cleaning the sludge layer that build up on the bottom of all tanks from plant matter and dust. Rainwater tank guidelines suggest that all tanks regardless of the area should be cleaned on a regular basis, generally every two years. Ashton also installed a number of whole house filters on water tanks to provide cleaner and clearer drinking water.

CCC meetings were conducted quarterly during the reporting period. CCC members were provided with information on the project as well as updates on environmental monitoring and any future projects.

The CCC met on the following dates:

Table 43. COMMUNITY CONSULTATIVE COMMITTEE

Meeting Date	Items Addressed
18th September 2007	Environmental monitoring, Glennies Creek Road diversion, Mac Gen Tailings Dam, CHPP upgrade completion, open cut and underground update, section 94 contribution.
11th December 2007	Environmental monitoring, project update, section 94 contribution.
11th March 2008	Environmental monitoring, project update, section 94 contribution.
17th June 2008	Rehabilitation site inspection, environmental monitoring, project update, section 94 contribution.

The CCC has been actively involved in questioning our commitment to the village as well as asking questions on blast fume, stone dusting, water restrictions, rehabilitation, dust generation during blasts and the projects for the S94 contribution funds. Progress forward has been made during the reporting period for the use of the S94 funds. It has been agreed that the money will be put towards erecting entrance signs to Camberwell Village in line with the signage proposed by Singleton Council. The location of the signage has been chosen and the next step is to submit the appropriate approvals to council to have the work undertaken. It is hoped that the signage will be fully completed in the coming reporting period.

Two newsletters were also distributed amongst the local community detailing progress on the Ashton site. The dates of these newsletters were as follows:

Table 44. COMMUNITY NEWSLETTERS

Newsletter No	Issued	Contents
27	December 07	St Clements Church donations, Open Cut, Underground and CHPP update, Noise reduction initiatives, Rehabilitation and the annual kangaroo cull.
28	June 2008	Ashton Subsidence Management Plan Longwalls 5 – 9, Open Cut and Underground update, Rehabilitation progress, OGM trial, Weed Management.

During the reporting period donations were made to the St Clements Church to repaint the churches windows. Unfortunately shortly after completion the Church was vandalised with a large fire being lit with in the church. Labour was then supplied to assist in the clean up of the church following the fire that occurred in January 2008.

Figure 28. The windows of St Clements Church, Camberwell before and after the windows were painted and glass replaced.

5.0 REHABILITATION

5.1 OPEN CUT

Rainfall results indicate that there has been an alleviation of drought conditions that have been present for the past 5 years in the area. This has greatly assisted the establishment of rehabilitation across the site. A total of 27 ha were rehabilitated during the reporting period. This included 14.3ha of native tree seed for native vegetation establishment and 11.3ha of exotic pastures. A 1.5ha dam was also shaped and compacted to provide water retention of water on the top of the Eastern Emplacement Area. The 27ha also included a 3ha biosolids trial aiming to assess the different effects biosolids and Organic Growth Media (OGM) have on the two vegetation types (woodland and pastures). Maintenance works totalling 6.7ha were also conducted on areas of the rehabilitation that have not shown high enough groundcover or suffered heavy weed infestation. The different processes used during the reporting period are as follow:

- Woodland Rehabilitation – a total of 14.3 hectares of the Eastern Emplacement area was rehabilitated as woodland. This was achieved through direct seeding. 8.8ha of the 14.3ha total was conducted on the side slopes of the EEA and the remaining 5.5ha was on the gently undulating top of the EEA. The side slopes had 100mm of topsoil applied to provide greater stability and faster establishment of groundcover. The top of dump was seeded directly into the overburden. OGM was applied to all areas at approximately 100t/ha. A cover crop of rye corn was also included in the seed mix to provide an initial stabilisation of the soil and assist in out competing weeds. 1.5ha of the native woodland rehabilitation forms half of the biosolids trial described in section 5.2.

- Pasture Rehabilitation – a total of 11.3ha of pasture was seeded. 1.5 ha formed part of the biosolids trial. Pasture seed was applied with fertiliser at a rate of 70 and 200 kg/ha respectively. OGM was applied to all areas excluding the biosolids trial area at 100t/ha.

- Maintenance Works – a total of 6.7ha of existing rehabilitation was re worked due to the infestation of weeds and poor establishment of pasture species. Maintenance works included reseeding and OGM application following poor ground cover establishment, and weed spraying where high infestation of galinea was present.

- Tubestock Planting – approximately 1800 mixed eucalypt species were planted across Ashton Coal property during the reporting period.

5.2 REHABILITATION TRIALS AND RESEARCH

Two rehabilitation trials are now in progress at Ashton Coal. The OGM trial began in May 2007. A recent Biosolids trial was initiated in May 2008. As requested by Greg Summerhayes at the Department of Primary Industries, Ashton will provide a progress report on the findings of the OGM trial to date. Monitoring of the OGM trial area has included vegetation surveys and soil testing.

The biosolids trial is a simple comparison investigation to determine the different effects biosolids and OGM have on vegetation growth. The trial is also assessing the feasibility of spreading the two materials together to gain the benefits of both. The trial are comprises six 0.5ha plots. Plots 1, 2 and 3 had 100mm of topsoil applied in to which the three soil supplements were applied, these being 100t/ha OGM, 50t/ha OGM and 100t/ha biosolids and 150t/ha biosolids. Native tree seed was then seeded into these plots.

Plots 4, 5 and six received the same land preparation and the same soil supplement applications however the plots were seeded with exotic pastures. To date there has been no monitoring conducted on the trial areas but preliminary visual assessment suggests that there has been no significant difference in plant establishment so far across the trial.

5.3 FURTHER DEVELOPMENT OF THE FINAL REHABILITATION PLAN

ACOL received approval from the Department of Primary Industries of a new Mine Operations Plan. As part of the submission a new final rehabilitation plan was submitted which incorporated slight changes to the eastern emplacement area topography allowing undulation and relief across the landscape.

5.4 REHABILITATION SUMMARY

Table 45. REHABILITATION SUMMARY 2007– 2008

	Area Affected / Rehabilitated (hectares)		
	To Date	Last Report	Next Report (estimated)
A: MINE LEASE AREA			
Mine Lease 1529	128.7	128.7	128.7
Mine Lease 1533 (part overlies ML 1529)	883.4	883.4	883.4
B: DISTURBED AREAS			
B1 Infrastructure area	47.8	47.8	47.8
B2 Active Mining Area (Excluding B3 – B5)	32.1	25.4	34
B3 Waste Emplacement (Active / unshaped)	75.1	59.1	67.7
B4 Tailings emplacements (active / uncapped)	2	0	4
B5 Shaped waste emplacement (awaits final vegetation)	3.6	22.1	10
B6 Ravensworth Void 4 area of responsibility (Active / unshaped / partially rehabilitated)	41	0	39
ALL DISTURBED AREAS	201.6	154.4	202.5
C. REHABILITATION PROGRESS			
C1 Total Rehabilitated Area (except for maintenance)	66.9	39.9	92
D. REHABILITATION ON SLOPES			
D1 10 to 18 degrees	62.3	39.87	70
D2 Greater than 18 degrees	0	0	0

Table 46. REHABILITATION SUMMARY 2007- 2008

	Area Affected / Rehabilitated (hectares)		
	To Date	Last Report	Next Report (estimated)
E. SURFACE OF REHABILITATED LAND			
E1 Pasture and grasses	40.3	28.7	50
E2 Native woodland / ecosystems	20.8	6.2	35
E3 Plantations and crops	0	0	0
E4 Other (includes non-vegetative outcomes)	1.5 (EEA top of dump dam)	0	3

Table 47. MAINTENANCE ACTIVITIES ON REHABILITATED LAND

NATURE OF TREATMENT	Area Treated (ha)		Comment / control strategies / treatment detail
	Report Period	Next Period	
Additional erosion control works (drains re-contouring, rock protection)	2	1	Contour drains of the eastern emplacement area were reworked to provide more stable structures and an increased water capacity. Construction of two major drop structures were started to provide transport of water from the rehabilitated slopes of the EEA to the site dams
Re-covering (detail – further topsoil, subsoil sealing, etc)	0	0	No areas were re-covered during the period.
Soil treatment (detail – fertiliser, lime, gypsum, etc)	27	30	Following results of trials OGM applied across site at 100t/ha. 3 ha of Biosolids trial as well.
Treatment / Management (detail – grazing, cropping, slashing, etc)	0	0	
Re-seeding / Replanting (detail – species density, season, etc)	3.7	5	Reseeding of native tree and pasture areas with a pasture mix to provide greater groundcover.
Adversely Affected by Weeds (detail – type and treatment)	3	10	*Galenia pubescens.* Sprayed with Grazon Extra as shown in **Figure 12**.
Feral animal control (detail – additional fencing, trapping, baiting, etc)			Kangaroo Cull conducted during December 2007. Stock proof fencing of the proposed tree corridor above the underground longwalls was completed.

6.0 ACTIVITIES PROPOSED IN THE NEXT AEMR PERIOD

6.1 EXPLORATION

Anticipated Exploration for period to Aug 2009

Mining Lease 1533

- Open cut - No activity planned.
- Underground - It is expected that between 10 and 15 holes are likely to be drilled denpending on changes in the Pike Gully seam (2 - 5 cored and 8 -10 open holes).

Exploration Licences 5860 & 4918

- Exploration commencing with 16 holes planned (7 cored and 9 open holes).

6.2 REHABILITATION

Approximately a 30ha of rehabilitation will be undertaken during 2009. This area will complete the batters of the Eastern Emplacement Area and continue the works on the top of the EEA. A second dam will be completed along with the two main drop structures. Approximately 60% of the planned rehabilitation will be native woodland with the remaining exotic pastures.

Replanting of failed tubestock will be conducted particularily along tree screens. Further rehabilitation works will be conducted around the top of dump dam as suggested by Greg Summerhayes during the annual DPI inspection. This work will be conducted once existing rehabilitation becomes further established and allows a better understanding of what else is required to provide better habitat for fauna species.

Rehabilitation works within the conservation area will be commenced with the reshaping and revegetation of the old quarry located on the western border of the conservation area. Seeding of native species will be conducted in the area.

6.3 WATER MANAGEMENT

Investigations will be undertaken in to the installation of a fine coal recovery system within the CHPP. This system will allow more effective recovery of fine coal, and reduce water and power usage in the tailings circuit.

6.4 OTHER ACTIVITIES

Other activities planned for the next AEMR (2008 – 2009) period include:

- Gain approval of the SMP for Longwall Panels 5 to 9 including the proposal to use mini-walls to reduce the potential for connective cracking to occur between the operations and Bowmans Creek.
- Begin the development of Closure Criteria for the Open Cut rehabilitation utilising analogue sites within Ashton Coals buffer lands. The methodology for developing the closure criteria will be presented in next years AEMR.
- Receive final signoff of the Conservation Agreement with NPWS for the Southern Woodland.

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