

**AGENDA**  
**Upper Hunter Mining Dialogue**

**Joint Working Group - Combined Land Management and Water Meeting**

**UHMD Resource Centre, Upstairs of the Town Square Shopping Centre  
Suite 1, 159 John Street, Singleton NSW 2330**

**Tuesday 27 June 2017: 10:00 am - 1:00 pm**

<b>Water</b>		
1.	Welcome and Apologies	<b>10.00 am</b>
2.	Minutes and actions of the previous meeting	<b>10.05 am</b>
3.	Hunter River Water Quality Study ( <b>Attachment 1</b> )	<b>10.10 am</b>
4.	Water Accounting Framework 2016 data ( <b>Attachment 2</b> )	<b>10.30 am</b>
5.	Update on Water projects	<b>10.35 am</b>
6.	Other business	<b>10.40 am</b>

<b>Combined Session</b>		
7.	Synoptic Plan Workshop and Review Update ( <b>Attachment 3</b> )	<b>10.45 am</b>
8.	School Mine Tours Program Update	<b>11.05 am</b>
9.	UHMD Voids Research Proposal: Presentation from Dayjil Fincham, HEC & University of Queensland ( <b>Attachment 4</b> )	<b>11.30 am</b>
10.	Update on UHMD communication activities	<b>11.55 am</b>

**Quick Break 12.00 pm**

<b>Land Management</b>		
11.	Rehabilitation reporting principles and commitments for 2016	<b>12.10 pm</b>
12.	UHMD Grazing Trials Project and 2017 ACARP Proposal ( <b>Attachment 5</b> )	<b>12:25 pm</b>
13.	Update on Land Management projects	<b>12.40 pm</b>
14.	Other business	<b>12.50 pm</b>
15.	Next Meeting / Meeting Close	<b>12.55 pm</b>

**UHMD Joint Working Group - Water and Land Management  
27 June 2017**

Agenda Item 2

**MINUTES AND ACTIONS ARISING FROM PREVIOUS MEETING**

**DRAFT MINUTES**

**NSW Minerals Council  
UHMD – Joint Working Group – Water and Land Management  
UMHD Resource Centre, Singleton Town Square Shopping Centre, Singleton**

**Wednesday 15 March 2017: 2.00pm - 4.00pm**

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**Present**

Bill Baxter (Chair)	Rio Tinto
Matt Parkinson	Bayswater Power Station
Andrew Darnell	BHP Billiton
Greg Woodward	Community Individual
Paul Amidy	Glencore
Ken Bray	Hunter Valley Water Users Association
Simon Turpin	Local Land Services - Hunter
Julie Thomas	Muswellbrook Coal Company
Neil Griffiths	NSW Department of Primary Industries
John Trotter	NSW Department of Trade and Investment
Karen Marler	NSW Environment Protection Authority
Wendy Bowman	NSW Mine Watch
Chris New	Rio Tinto
John Hindmarsh	The Bloomfield Group
Professor Tim Roberts	Tom Farrell Institute
Cameron Archer	Tom Farrell Institute
Sean Constable	Upper Hunter Shire Council -
Ron Fenwick	Scone Wambo CCC - Singleton
Jim Morgan	Wybong Action Group
Julie McNaughton	Yancoal Australia
Bob Mackie	the resource
Greg Sullivan	NSW Minerals Council
Craig Milton	NSW Minerals Council
Kari Dahlgren	PhD Candidate (observer)

**Apologies**

Donna McLaughlin	BHP Billiton
David O'Brien	Glencore
Helen Squires	NSW Department of Primary Industries
Rebekah Gomez-Fort	NSW Department of Primary Industries - Water
Simon Francis	NSW Department of Primary Industries - Water
Matthew Newton	NSW Department of Trade and Investment, DRE
Melinda Hale	Singleton Council
John Drinan	Singleton Shire Healthy Environment Group
Chris Quinn	The Bloomfield Group

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**1. Welcome and Apologies**

The Chair welcomed attendees and noted apologies. The Chair acknowledged Dr John Drinan who was due to attend these JWG meetings as his final contribution to the Dialogue. The Chair read a prepared statement from Dr Drinan.

## **2. Minutes and actions of the previous meeting - Land Management**

The minutes for the 11 May 2016 meeting were confirmed and an update on the action items was provided.

## **3. Grazing Trials**

Mr Griffiths provided an overview of the grazing trials and an update on recent results that showed cattle on rehabilitated mined land had from 500g to 750g average advantage on those from analogue sites. The existing monitoring under the ACARP project ends mid 2017, with some trials extending beyond this time, which will require further monitoring.

Mr Griffiths advised that DPI has been discussing a number of potential ongoing projects in three broader areas, including:

\*Better cattle production and what can we do with existing rehabilitated sites to increase production and results (e.g. fertilizers, better grazing management).

\*A desktop review looking at knowledge sharing of grazing rehab methods to determine best utilisation of agricultural land use - what has worked and what hasn't.

\*What practices are used in rehab in terms of pasture varieties and biosolids - more detailed and specific examination.

Mr Griffiths was questioned whether it was worth expanding the study to other mine sites. Mr Griffith advised that while it would be a good thing to carry on, there are issues to overcome in terms of scale and replicating the study.

Some members were concerned about the release of toxic minerals from the substrata and how this might impact on the land long-term. The Chair advised that blood sampling was incorporated into the grazing manuals which would highlight any contaminants, although blood sampling has been criticised due to animal welfare issues. There has also been reasonable pasture sampling across pastures including a heavy metals sweep. The Chair also advised that mine sites undertake some testing of mine spoil before applying compost so have some idea of heavy metal levels from these tests.

There was some member concern over the current ACARP trial not providing a full assessment of the suitability of the land for grazing given its relatively short duration. However, within the constraints of the trial, and with the guidance of the project advisory committee the project has delivered on its key outcomes to date and the results are positive.

Members are encouraged to provide feedback to Mr Griffith or the UHMD Secretariat.

## **4. Rehabilitation Reporting project**

Mr Milton provided an overview of the project and advised that the 2015 results have been finalised after a query had been addressed.

The Chair noted that even though some sites are no longer Dialogue members or have ceased production, they are still required to undertake reporting on their rehabilitation progress, and as such will have most of the key information publicly available (excluding offsets and agricultural use data). Some sites also have different reporting periods (calendar/financial year), but this should not matter as long as it is a regular 12 month snapshot.

The Working Group discussed the 'G' figure of overall rehabilitation to disturbance, noting that it will be difficult to shift as it measures cumulative impacts., rather than 'F' which measure the annual impact only. It was suggested that the table needs qualification and that mines should be listed which were taken into account.

Mr Sullivan advised that DRE is developing a digital tool to display rehabilitation progression over time. In the program, users will be able to select a site and see photos and simulation of rehab that has been completed and expected in the future. DRE will likely be very supportive of the Dialogue project and it was suggested that the Dialogue could benefit from a presentation from DRE.

**ACTIONS:**

- **UHMD secretariat to invite David Blackmore at DRE to present on the rehabilitation digital tool and rehabilitation reform program.**

**5. Mine rehabilitation booklet**

Mr Milton provided an update on the DRE and NSWMC collaborative booklet. Mr Sullivan advised that the booklet has gone to the Minister's office and will hopefully be distributed soon.

**6. Update on current Land Management projects**

The current projects were noted.

**7. Other business - Land Management**

No other business was noted.

**8. UHMD 2017 Structure**

Mr Sullivan provided an overview of the structural changes that were approved by the Executive Oversight Committee before its disbandment at the end of 2016. Working Group members were requested to provide feedback on whether the new structure is working.

**9. Synoptic Plan progress**

Mr Sullivan provided an update on the development of the Synoptic Plan workshop and long-term review. Mr Sullivan advised that the UHMD secretariat will be circulating a letter amongst JASC members to write to the Minister for Planning, the Hon Anthony Roberts to ensure this remains a priority, and encouraging members to copy in the local member Mr Michael Johnsen MP.

**10. Community Perceptions Survey**

Mr Milton provided an overview of the survey and key considerations delivered by Ruth McLeod at the recent JASC meeting.

The Working Group discussed whether the Dialogue is continuing to do what was originally intended or not. Mr Sullivan advised that while the survey has provided a reasonable data set of participants from the initial and later surveys, there is a wider group in the broader community that we don't know anything about. Mr Sullivan advised that as part of the Communications Activities, the Dialogue is undertaking surveys at a variety of shows and measuring interactions with the community.

**11. School Bus Tours**

Mr Mackie provided an update on the school bus tours noting that most schools are keen to take part. The tours will be for Years 5 & 9, rather than years 6 & 10 as per the papers.

Professor Roberts advised the Working Group of the difficulties encountered in assessing the effectiveness of engagement with students through a workshop at the Tom Farrell Institute. Professor Roberts recommended the School bus tours working group to survey students on their experience wherever possible so that its contributions can be measured to ensure the viability of the tours, and would be happy to assist the Dialogue in this respect.

Mr Mackie advised that teachers have been contacted following the trials for feedback and that school students will be required to complete a worksheet. There are logistical challenges in surveying children which may render this unable to be done.

**ACTION:**

- **UHMD secretariat to liaise with Professor Roberts regarding any insights into assessing interaction with students and the community through Dialogue activities.**

## **12. Communications Update**

Mr Mackie provided an update on the Dialogue's communication activities, noting that the Landline story will likely run within the next few weeks. Mr Mackie also advised that the Weather Forecasting Video project is due to film shortly at a Glencore site.

## **13. Review of 2016 Forum**

Mr Milton provided an overview of the Forum, including the survey of forum participants. Mr Woodward noted his experiences as a first time Forum attendee and that there was not much of a chance for interaction with other guests.

## **14. Minutes from the previous meeting - Water**

The minutes from the previous meeting were accepted and an update on the action items provided.

## **15. Hunter River Water Quality Study**

Mr Sullivan provided an overview of the Study proposal and advised that the outcomes of recent discussions will be provided in a revised proposal expected to be received shortly. Mr New emphasised that this study has a degree of independence through the governance of the University of Newcastle and the Advisory Group that is currently being developed. The Working Group supported Ken Bray's involvement on the Advisory Group as a Dialogue representative

Ms Bowman alerted the Working Group to a Singleton Argus article regarding irrigation. There was additional discussion from members of the Working Group on whether the scope was right, and whether the discharge points were appropriate. It was explained that basing the project on the Hunter River Salinity Trading Scheme was preferred in the first instance.

Mr Sullivan advised that this came about as a Dialogue project from community concern. The project needs to start somewhere and this is an initial study to determine if there is an issue. If further action is required to address issues, that will be considered at a later stage.

The EPA provided some clarity on their involvement and history of interest in water quality studies of the Upper Hunter when questioned about whether this is more of a job for Government to undertake rather than as a Dialogue project. EPA staff indicated that they were happy to participate in settling the scope of the project.

Mr Sullivan encouraged members to provide feedback regarding the scope if they have any additional suggestions.

## **16. Water Accounting Framework**

Mr Milton provided an overview of the progress made with this project, noting the successful delivery of data for 2014 and 2015 and that 2016 would be collected from sites soon. The Working Group noted the similar issues with sites dropping out of the Dialogue as the rehabilitation reporting project which is undertaken annually.

## **17. Update on current Water projects**

The current projects were noted. Ms Thomas alerted the Working Group that the Bioregional Assessment date for the Hunter workshop had changed to 4 May 2017.

## **18. Other Business**

Mr Bray alerted the Working Group to the IPART NSW determination for prices for bulk water noting that the NSW Irrigators Council has been particularly active in this area and encouraged Working Group participants to seek further information to remain informed of developments considering the impact that several proposals will have on the grouping of water across the state.

## 19. Next Meeting / Meeting Close

Meeting Closed at 1.10 pm.

### Actions arising from meeting on 15 March 2017 UHMD Joint Working Group - Land Management and Water Meeting

Action	Responsibility	Status
<b>Rehabilitation Reporting</b>		
UHMD secretariat to invite David Blackmore at DRE to present on rehabilitation digital tool and rehabilitation reform program.	UHMD secretariat	<b>Completed</b> <b>DRG have advised they will be able to present at the next round of UHMD meetings in Sept / Oct 2017.</b>
<b>School Bus Tours Project</b>		
UHMD secretariat to liaise with Professor Roberts regarding any insights into assessing interaction with students and the community through Dialogue activities.	UHMD secretariat	<b>Completed</b>

**FOR INFORMATION / DISCUSSION**

**UHMD Joint Working Group - Water and Land Management  
27 June 2017**

Agenda Item 3

**HUNTER RIVER WATER QUALITY STUDY**

**Issue**

There is ongoing community concern about the quality of water in the Hunter River and whether there is any significant impact from mining industry operations.

**Background**

UHMD community members have been calling for a water quality study of the Hunter River for some time. Recognising the continued desire from community stakeholders to better understand the potential impact of mining on the Hunter River, the UHMD Joint Working Group on Water and Land Management committed to explore a proposal to undertake a water quality study examining the background levels of metals concentration at a number mine and energy discharge sites that form the the Hunter River Salinity Trading Scheme.

At the final 2016 meeting of the JWG - Water, Professor Richard Bush (International Centre for Balanced Land Use, University of Newcastle) met with working group members and discussed a potential study proposal into the water quality of the upper Hunter River. Industry representatives highlighted some technical issues and as a result, technical Professor Bush made some revisions to his original proposal.

Industry subsequently met with the EPA and University of Newcastle representatives in March 2017 to discuss a revised proposal from Professor Richard Bush to determine whether this approach would satisfy the EPA's objectives, who had also expressed an interest in water quality research and considering mandating such research via PRPs on mining operations.

Professor Bush has recently advised that both the EPA and AGL support the revised proposal. An updated proposal has been received from Professor Bush and is attached (**Attachment 1**).

The NSWMC CEO has approved funding for the project and the UHMD Secretariat has recently signed a contract with UoN, with an anticipated commencement date of 30 June 2017.

**Recommendation:**

That Working Group members note the progress made and provide any additional feedback that can help inform the study prior to its commencement.

**FOR INFORMATION / DISCUSSION**

## **ATTACHMENT: HUNTER RIVER WATER QUALITY STUDY PROPOSAL**

### **.ASSESSMENT OF HEAVY METALS IN SURFACE WATER DISCHARGING FROM UPPER HUNTER COAL MINES AND POWER STATIONS**

#### **AIM**

To assess the potential for heavy metal contamination of the Hunter River from coal mines and power utility operating in the Upper Hunter.

#### **SPECIFIC OBJECTIVES**

Proposed is a preliminary study to quantify pollution potential of heavy metals in waters discharging from Upper Hunter coal mines. The outcomes of this study will provide a basis for evaluating environmental risks from heavy metal contamination from coal operations of the Upper Hunter. The key objects are to:

- 1) Quantify heavy metals in surface waters and benthic sediments in water storages that are used with the Hunter River Salinity Trading Scheme.
- 2) Evaluate the potential contribution of coal mining and power generation to heavy metal contamination of the Hunter River.

#### **BACKGROUND**

Coal is a large export commodity for Australia and serves as a major contributor to the national economy. As a primary fuel, power generation by coal produces more than 80% of Australia's electricity supply [1]. Water is a critical resource for the coal industry with an estimated 200 L of water consumed for every tonne of coal produced. In many cases for the Upper Hunter coalfields, it is management of excess water of varying quality that can prove most challenging.

Power generation from thermal coal plants in the Upper Hunter relies on water for cooling. Some cooling water can be ultimately released into the Hunter River and therefore it is important that such discharges are included within study.

The Hunter River Salinity Trading Scheme was developed in the 1990's to minimize cumulative impact of coal mining on water quality of the Hunter River, in particular, to reduce maximum salinity levels. The scheme essentially coordinates the discharge or excess water from mine sites and power stations to coincide with flow conditions that keep salt concentrations within an environmentally acceptable range. The capacity to store water and manage discharge against

real-time flow conditions are the defining features of this scheme. This scheme has proven effective in managing salinity in the Hunter River.

Nutrients, suspended sediments, algae, organic and inorganic compounds, heavy metals, bacteria are other potential factors can affect water quality. Heavy metals, hydrocarbons, salinity and acidity are the common potential contaminants with mining. Technologies and approaches to protect water resources from contamination by either reducing, containing or treating contamination is core business for the industry and closely regulated by licensing authorities.

Sources of contamination are sediment, salinity, alkaline waters and in some cases Acid Mine Drainage (AMD) [2]. 31 coal mines operate in the Hunter Valley and although there is a large dataset on salinity contents in surface water entering the Hunter River from mining [7], there is limited information on the presence of heavy metals. At this stage, heavy metals have not been identified as a major quality parameter of concern associated with coal mining [8] in the Upper Hunter.

## **APPROACH**

The study will use industry and publicly available archive data and primary water quality data to determine the risk of heavy metal contamination to the Hunter River from coal mining and power generation. The cumulative impact of mining will be examined by assessing the heavy metal contents and relative potential load to the Hunter River in the major mine and power generation water storages used in the Hunter River Salinity Trading Scheme. The project will involve two tasks:

**Task 1** - assessment of heavy metal concentrations against water quality guidelines in the surface water and benthic sediments in coal discharge water storages. 18 locations will be examined as part of this survey. (Addressing Objective 1)

**Task 2** - Information from Task 1 will be combined to provide a preliminary assessment of risk for contamination to the Hunter River by heavy metals from the coal operations and electricity generators in the Upper Hunter. If elevated metal contents are identified, the potential for contaminant dispersal will be assessed as part of this task using 2-D hydrological mixing model. (Addressing Objective 2)

### **Study site:**

Sampling will be conducted at 13 locations in the Upper Hunter coal fields, aligning water sampling locations to all major water storages that are used as part of the Hunter River Salinity Trading Scheme. The research team will work closely with mining companies and AGL Macquarie to negotiate access to water storages, ensuring UON staff meet the industry WHS compliance for field sampling.

In addition, 6 locations will be sampled in the Hunter River as a pseudo reference for water and sediment for this study. Site selection will be identified in consultation with the Upper Hunter Mining Dialogue Joint Working Group for Water and Land Management and taking into consideration site accessibility and availability of archive data.

A total of 18 locations will be sampled over a period of 10 days. Water samples will be collected from 2/3 water depth to normalize for potential stratification. Benthic sediments will be collected at the HRSTS water storages including Lake Liddell using a Van-Veen Grab Sampler. This will allow for a homogenized sample of the upper 10cm sediment layer to be collected.

### **Task 1:**

#### **Primary Samples collection:**

Sampling will be undertaken by qualified staff who are experienced in commercial environmental monitoring. Site access, staff induction and sampling logistics will be undertaken in close consultation with mine operators, assuring full compliance with the WHS requirements at each water storage. Water and sediment samples will be collected from a light, flat-bottomed punt.

Duplicate samples of water will be collected at 2/3 depth of the water column from study sites using decontaminated sample containers. Samples will be immediately filtered, chilled and delivered to the laboratory. Non-conservative parameters like pH, temperature, dissolved oxygen and redox will be determined in the field. Five replicated measurements of each of the above water quality attributes will be recorded. Conservative parameters will be analysed in the Environmental Analysis Laboratory (EAL). EAL is a NATA (National Association of Testing Authorities) accredited laboratory (Lab. Acc. No. 14960).

Primary data will be complemented with archive data gathered from industry and government sources.

#### **Water quality Analysis**

To be tested are the following key parameters;

pH, EC, Total Dissolved Salts (TDS) (calculation); Total Suspended Solids (TSS); Total Nitrogen and Total Phosphorus; Nitrate, Nitrite, Phosphate, Ammonium; Copper, Lead, Cadmium, Zinc, Arsenic (As III and As V), Selenium, Iron, Manganese, Silver, Chromium (Cr III and Cr VI), Nickel, Aluminium, Mercury; Sodium, Potassium, Calcium, Magnesium, Sulfate, Chloride; Bicarbonate Alkalinity and Total Dissolved Organic Carbon will be measured according to standard methods. This information will be sufficient for basic interpretation of the water geochemistry using speciation modelling.

## **Benthic Sediment Quality Analysis**

To be tested are the following key parameters:

pH, Eh, EC (1:5 water); Available (Calcium, Magnesium, Potassium, Ammonium, Nitrate, Phosphate, Sulfur); Exchangeable (Sodium, Potassium, Calcium, Magnesium, Hydrogen, Aluminium, Cation Exchange Capacity); Available Micronutrients (Zinc, Manganese, Iron, Copper, Boron, Silicon); Total Carbon (TC), Total Nitrogen(TN), Organic Matter, TC/TN Ratio; Basic Colour, Basic Texture; Totals (Sodium, Potassium, Calcium, Magnesium, Sulfur, Phosphorus, Silicon, Cobalt, Molybdenum, Selenium, Zinc, Manganese, Iron, Copper, Boron and Aluminium); Heavy Metals (Silver, Arsenic, Lead, Chromium, Nickel, Cadmium, Mercury). This selection of analysis will be useful for understanding the nature of metal accumulation and potential for mobilisation.

### **Tasks 2:**

#### **Assessment of contamination magnitude and intensity:**

A combination of 5 independent statistical methods will be used in a risk-based approach to assess the magnitude of heavy metal contamination [9-11]:

- Cluster analysis (CA): The CA is performed where similar variables are divided into similar group having similar characteristics to other group without prior assumptions.
- Principal component analysis (PCA): PCA constructs latent variables which are the linear combinations of the original data variables of heavy metal concentration. In PC analyses for heavy metals, latent variables with eigenvalue >10 are considered significant.
- Flux-Flow Analysis (F2A): Metal contamination budget will be estimated according to the analysis data of water and sediment quality, combined with estimated flow and mixing volumes under conditions representative of a discharge event to the Hunter River. Publicly available hydrological data for the Hunter and discharge volumes from across the Hunter River Salinity Trading Scheme will be used to constrain hydrological parameters.
- Geo-accumulation index ( $I_{geo}$ ): It is a quantitative measure of metal pollution calculated by the measured content of element and background or pristine value of the element.
- EF (enrichment factor): EF is introduced to assess the soil heavy metal pollution status. Metals and reference metals in the environment and in the reference environment are used.

### **EXPECTED OUTCOME**

1. Spatial scan of heavy metal contents in surface water and sediments for the key coal

mine discharge water storages.

2. Spatial scan for heavy metal contents in the Upper Hunter River.
3. Preliminary assessment of the relative pollution risk from heavy metals associated with Upper Hunter coal mine discharge water.
4. Recommendation on water quality monitoring and management practices to minimize risk of heavy metal contamination from coal operations.

## PROJECT TIMEFRAME

An indicative timeframe for the project is outlined below:

TIMEFRAME	Time (weeks)															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Review of literature and reports	■	■	■	■												
Laboratory/field work preparation				■	■											
Field sampling						■	■									
Laboratory analysis								■	■	■	■	■				
Environmental risk assessment										■	■	■				
Draft report preparation											■	■				
Review and final report delivery													■	■	■	■

16 weeks from commencement, subject to the timely access to sites and/or provision of water and sediment samples.

## PROJECT TEAM

The study will be conducted by Professor Richard Bush, Dr Zhaohui Wang and Dr Thava

Palanisami.

### **Prof Richard Bush**

Richard Bush is Chair to the International Centre for Balanced Land Use. Based at the University of Newcastle's (UON) Newcastle Institute for Energy and Resources (NIER), the Centre is a collaboration with New South Wales Department of Primary Industries and the Department of Industry's Division of Resources and Energy. The Centre draws together research expertise within NSW DPI, NSW DRE, and the University to collaborate with industry and communities on projects of critical importance to the growth and sustainability of regional NSW.

### **Dr Zhaohui Wang**

Zhaohui Wang completed his PhD in physical chemistry at the Institute of Chemistry, Chinese Academy of Sciences (ICCAS), and is currently working as a Senior Research Fellow at International Centre for Balanced Land Use (ICBLU), University of Newcastle. His research interests include environmental chemistry of redox-active metals, advanced oxidation technology, environmental catalysis, soil remediation and greenhouse gas emission. Zhaohui is a member of American Chemistry Society and Chinese Chemistry Society and an Adjunct Senior Lecturer at Southern Cross University. He has supervised more than 20 postgraduate students. He so far has won 7 competitive national research grants in Australia and China. Zhaohui was an Early-Career-Researcher Award Winner in Shanghai ('Chen Guang' scholar, 2010) and Discovery Early-Career-Researcher Fellow 2015 (Australian Research Council). He has published more than 70 journal papers and book chapters. Zhaohui is currently serving as the Associate Editor of RSC Advances in Royal Society of Chemistry.

### **Dr Thava Palanisami**

Thava Palanisami's research career over last 10 years has been strongly based on cutting-edge research on contamination risk assessment and remediation. He has conducted his PhD research at the Centre for Environmental Risk Assessment and Remediation (CERAR), University of South Australia, on the bioavailability and bioremediation of mixed contaminants. His pioneering research on mixed contaminants demonstrated that chemicals in contaminated sites occur as mixtures rather than single contaminants which had been the previous assumption for several decades. Through his special focus on long-term contaminated soils, he demonstrated that mixtures such as PAHs and metals are more toxic and bioavailable than when they occur as single contaminants.

## **REFERENCES**

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**Joint Working Group - Water and Land Management  
27 June 2017**

Agenda Item 4

**WATER ACCOUNTING FRAMEWORK: COLLECTION OF 2016 DATA**

**Issue**

The UHMD secretariat is due to collect data from industry regarding water usage over the 2016 calendar year.

**Background**

The Water Accounting Framework project will commence shortly to determine the 2016 water usage by UHMD members.

NSWMC will once again engage with Dayjil Fincham from Hydro Consulting to determine the project scope and address any other technical issues raised by industry.

The process of gathering and analysing data is more streamlined given the project has been operational for several years now.

The Working Group is encouraged to provide any feedback that might improve the reports delivered as part the project to increase community knowledge and usability of the resources.

The 2015 infographics have been included for reference (**Attachment 2**) to assist members in providing feedback.

**Recommendation**

The Working Group provide feedback on the Water Accounting Framework project and process for gathering data in 2016 to ensure the prompt collection, analysis and delivery of information through this community resource.

**FOR INFORMATION / DISCUSSION**

# UPPER HUNTER WATER BALANCE 2015



Upper Hunter Mining Dialogue

## Mining's water use

The Upper Hunter Mining Dialogue assessed water use by the mining industry in the Upper Hunter in 2015. Using a common accounting framework, mining companies have reported their water inflows and outflows from operations. This has helped them to manage their water use and embark on water saving and reuse opportunities.



**ALMOST 10x**

as much water evaporated from the Hunter River System storage dams as was extracted from the Hunter River System by mining companies

The mining industry used

**JUST 1%**

of water in the Upper Hunter River System

ONLY

**6%**

of mine water came from rivers and alluvial aquifers

**63%**

of mine water was sourced from onsite rainfall and runoff

**27%**

of water was sourced from deep aquifers that are of limited use to other water users due to their high salinity

The mining industry

**REUSED 50%**

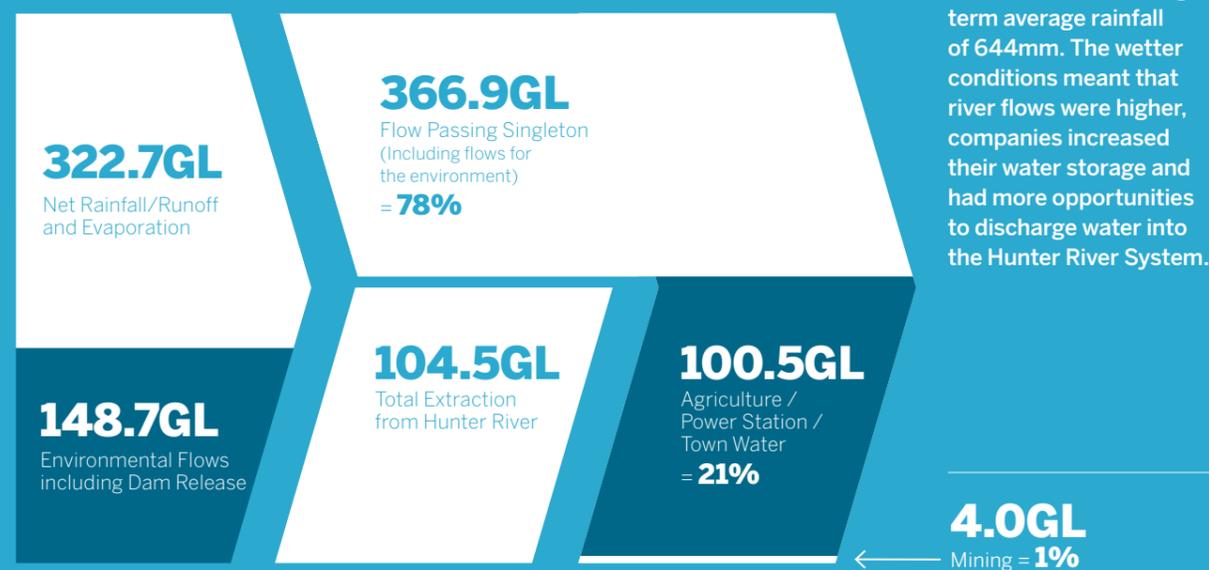
of its water onsite

ONLY

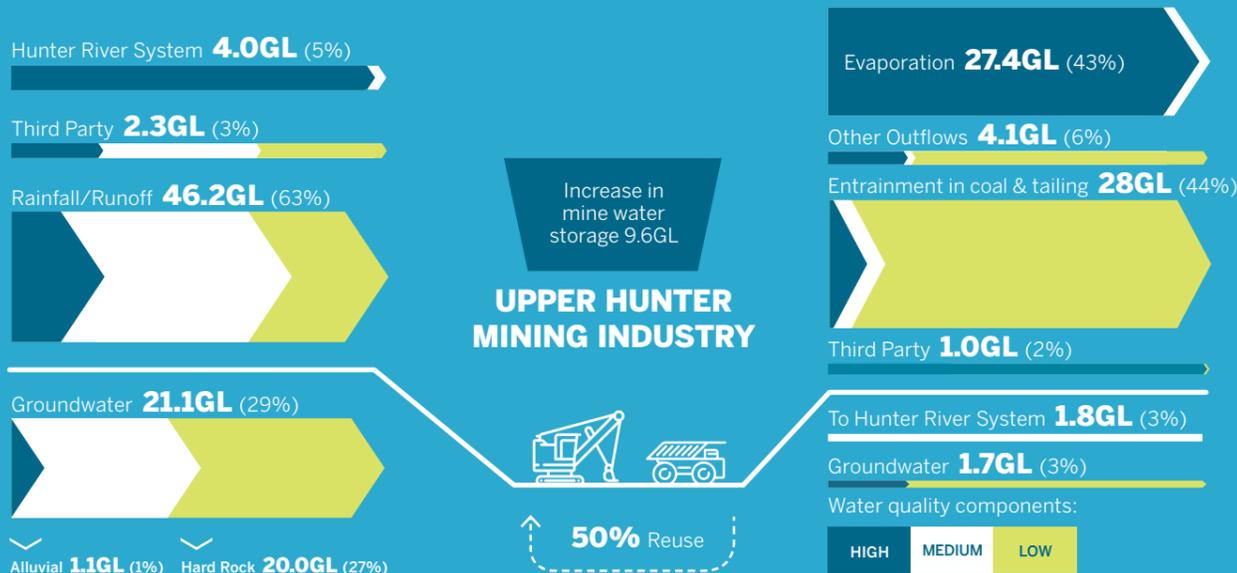
**3%**

of mine water was discharged into the Hunter River

## Hunter River System Extraction



## Mining Industry Water Use Balance



To find out more about the UHMD, visit [miningdialogue.com.au](http://miningdialogue.com.au)

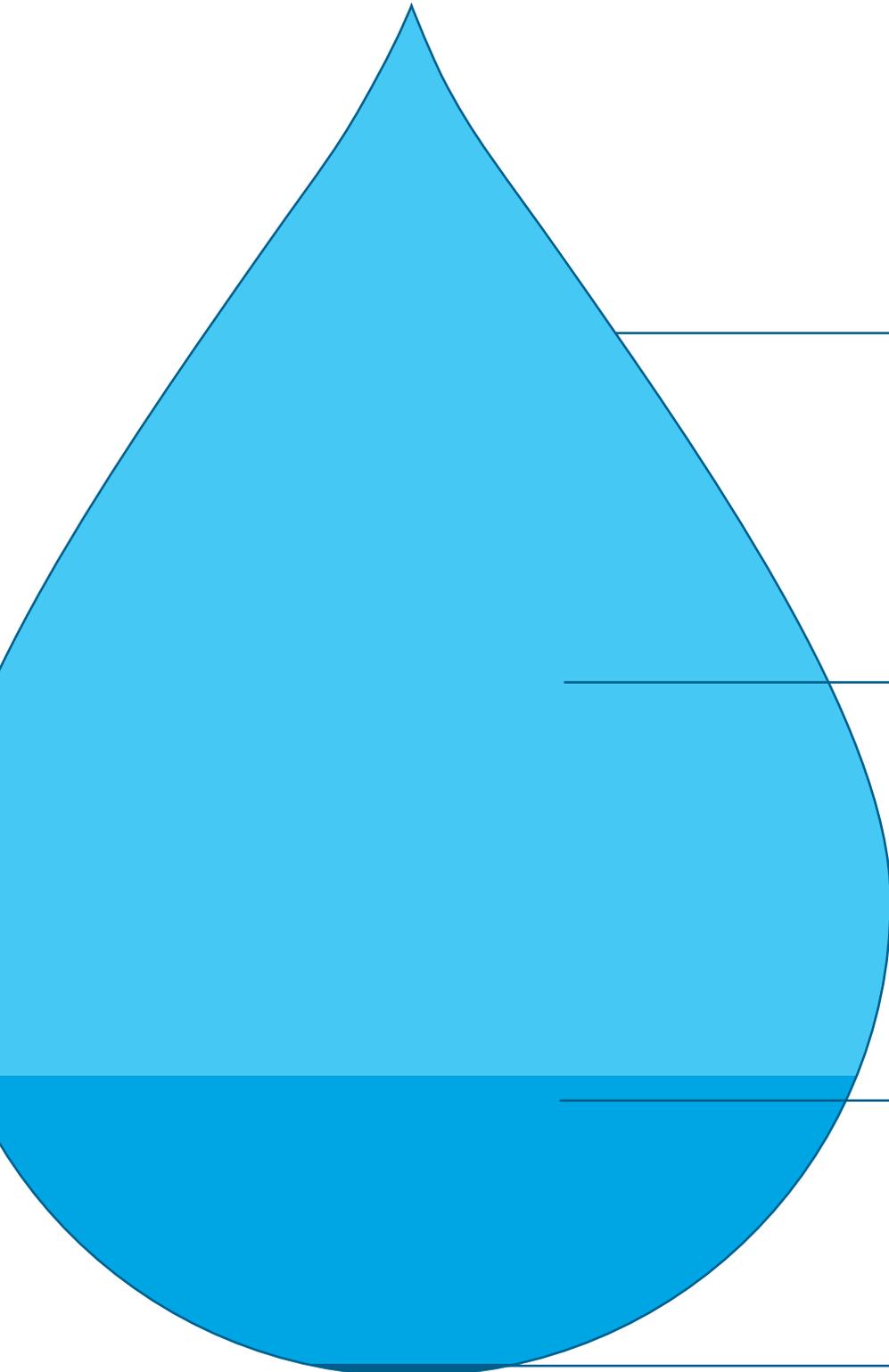
The NSW Minerals Council has compiled the data in this infographic using the best available information. Since water accounting is a complex task that relies on estimates and computer models, there are corresponding limits to the accuracy of the information. Sources: Bureau of Meteorology; DPI Water; NSW Minerals Council data.

# THE HUNTER RIVER 2015

A precious water resource for the Upper Hunter community.



Upper Hunter Mining Dialogue



2015 was a wetter than average year. That year

**471 BILLION LITRES**

entered the river system in the Upper Hunter.

**78%**

of that water stayed in the river.

The amount of water extracted and used by farmers, residents and businesses was

**21%**

**MINING**

used less than

**1%**

of the water in the system.

To find out more, visit [miningdialogue.com.au](http://miningdialogue.com.au)

The NSW Minerals Council has compiled the data in this infographic using the best available information. Since water accounting is a complex task that relies on estimates and computer models, there are corresponding limits to the accuracy of the information. Sources: Bureau of Meteorology; DPI Water; NSW Minerals Council data.

**UHMD Joint Working Group - Water and Land Management  
27 June 2017**

Agenda Item 5

**UPDATE ON WATER PROJECTS**

*Hunter River Water Quality Study*

More information on this project can be found in Agenda item 3.

*MCA Water Accounting Framework*

More information on this project can be found in Agenda item 4.

*Water Resources Map Project*

No update to provide since the previous JWG meeting. Members are encouraged to visit Common Ground and advise of any user issues or accuracy concerns with the recently updated layers, so that we are able to provide feedback to DRG. Please access [www.commonground.nsw.gov.au](http://www.commonground.nsw.gov.au)

*Bioregional Assessment Programme*

Coal mining and CSG proponents attended an Impact and Risk Workshop for the bioregional assessments of the Gloucester and Hunter subregions on Wednesday 24 May 2017, hosted by the Office of Water Science (OWS). A workshop will also be held for the Namoi basin on 2 August 2017.

This workshop summarised the key findings of the bioregional assessments, including:

- Presentation of the potential hydrological changes associated with coal and coal seam gas development; and
- Their assessment of the risks and potential impacts of modelled hydrological change on landscape classes and water-dependent assets.

It should be noted that in the proposed presentation of results there is a focus on significant *but* unlikely impacts (the highest 5% of impacts) instead of the predicted impacts that are much more likely to eventuate.

Further, the main conclusions for the Hunter assessment appear to draw on a small number of localised impacts in the assessment, rather than the impacts on the overall catchment, which is the intended use of the bioregional assessments.

Further details on the bioregional assessments can be found here:

<http://www.bioregionalassessments.gov.au/>

**FOR INFORMATION / DISCUSSION**

**UHMD Joint Working Group - Water and Land Management  
27 June 2017**

Agenda Item 6

**OTHER BUSINESS (WATER)**

**UHMD Joint Working Group - Water and Land Management**  
**27 June 2017**

Agenda Item 7

**SYNOPTIC PLAN WORKSHOP AND REVIEW UPDATE**

**Issue**

The Upper Hunter Mining Dialogue has been calling for a refresh of the Synoptic Plan since 2011. The Synoptic Plan Workshop in Singleton on 2 June began what is anticipated to be a two-year review project.

**Background**

At the 2016 Upper Hunter Mining Dialogue (UHMD) Annual Forum, a panel discussion session at the 2016 UHMD Annual Forum addressed the issue of beneficial use of voids in a post mining landscape. Panellists identified the need for a refresh to the synoptic plan and further research to identify future voids and what benefits could be derived from them. There was strong support among forum participants for a refresh of the 1999 Synoptic Plan.

As a result of the Forum, DPE agreed to host a community workshop in early 2017 in the Upper Hunter to determine how best to progress a final land use strategy (Synoptic Plan) update. The UHMD Secretariat assisted in the establishment of a committee consisting of DRG, DPE, DPC, University of Newcastle, and industry to discuss preparations for the event.

The UHMD Secretariat prepared a brief Synoptic Plan timeline prior to the Workshop that tracks the development of the Plan review from the initial release of the *Synoptic Plan: Integrated Landscapes for Coal Mine Rehabilitation in the Hunter Valley of NSW in 1999* to the decision to host the workshops at 2016 UHMD Annual Forum, detailing various meetings and discussions between stakeholders that have occurred since the release of the plan. This Synoptic Plan timeline document has been attached (**Attachment 3**) for reference, and was circulated to all workshop attendees, in addition to two early UHMD workshop documents, to ensure there is a level of common understanding of the background to the workshop.

The workshop was held on Friday 2 June 2017 at the Singleton Diggers Club. There was a mix of representatives from community and interest groups, industry, local government, academia and departmental representatives spread across each table to ensure the discussion was balanced and respectful, which provided a number of valuable considerations for the DPC to work with.

DPC have advised they will prepare a report summarising the proceedings at the workshop and in due course will advise how Government intends to move forward with the review.

**Recommendation**

That the JWG note that the Synoptic Plan Workshop has been held and discuss the review process moving forward to ensure that the review of the Synoptic Plan appropriately engages all key stakeholders and delivers outcomes that provide certainty for the Upper Hunter communities.

**FOR INFORMATION / DISCUSSION**

## HISTORY OF THE SYNOPTIC PLAN



### August 1999 - Synoptic plan released

The *Synoptic Plan: integrated landscapes for coal mine rehabilitation in the Hunter Valley of NSW* was released and prepared for the then NSW Department of Mineral Resources by Architects Planners Landscape Consultants.

### July 2011 - Upper Hunter Mining Dialogue Workshop (Singleton, NSW)

Updating the Synoptic Plan for the Upper Hunter was the top priority idea for actions identified by the community at the first Upper Hunter Mining Dialogue (UHMD) workshop.

Workshop participants were invited to vote on their preferred priorities in response to the question "What could we start together today that could make the most difference to the future of this issue?". Several Synoptic Plan-related actions tallied a combined 49 votes. These actions included:

- Urgent development of a new synoptic plan incorporating the following elements (28 votes):
  - Strong community and industry input;
  - Include land classes; and
  - Ensure plan is a living document.
- Synoptic Plan should link to site closure plans and rehabilitation completion criteria reviewed regularly. (15 votes)
- Stakeholders and industry to advocate to government to revise the synoptic plan for the Hunter Valley.

The Workshop highlighted that those who would go on to become long-term UHMD participants seemed to recognise the separate issues of land use planning and the Synoptic Plan are not the same.

### September 2011 - NSWMC response to the UHMD Workshop

NSWMC subsequently responded to the workshop's top ten ideas for action and identified the next steps required in the development of the action. As a result of the Workshop, four actions were identified:

1. The Synoptic Plan should be a tool under the strategic regional land use plans.
2. The Synoptic Plan should be revised and that should be pursued by:
  - a. Stakeholder and industry meetings to discuss who should lead/fund its place in the strategic regional land use plan
  - b. Advocacy to government.
3. Revise the 1999 Synoptic Plan:
  - a. This should be expedited
  - b. Use the existing 1999 document, 'don't reinvent'
  - c. Consider strategic planning outcomes
  - d. Identify issues not already identified in the 1999 Plan
  - e. Should be led by the Department of Planning and Infrastructure and should be developed alongside the Strategic Regional Land Use Plan.
  - f. The deadline for the completion of the synoptic plan is 31 December 2012 or when the land use plan is completed, whichever comes first
  - g. Industry should adhere to recommendations of the synoptic plan.
4. Develop a consolidated map of all mines in the Hunter Valley and what industry is doing (rehabilitation, disturbance, offsets etc.) and future approved plans. The Rehabilitation and Land Management Working Group will consider.

NSWMC proposed to organise a Land Use Planning Workshop with interested stakeholders, industry, the Department of Planning and Environment (DPE) and the Department of Trade and Investment, Regional Services and Infrastructure to begin the development of a new Synoptic Plan.

## November 2011 - Land Use Planning Workshop

The Land Use Planning Workshop was intended to consider the role of the synoptic plan and how it should be developed, including how the synoptic plan fits with the strategic regional land use plan (SRLUP) that the Government was preparing for the Hunter Valley region in 2011. The Workshop highlighted that members were primarily focused on the synoptic plan and did not provide any feedback on land use planning (this was happening concurrently with the SRLUP). Participants were asked to provide feedback on a number of questions including:

- **What is the synoptic plan?** - Participants discussed the purpose of a synoptic plan and advised that it should provide a master framework for landscape level decision-making and set the standards from which individual mine plans can be established. Participants also discussed the scope of the plan, advising that it should include planning constraints and requirements and the interconnectivity, consider the cumulative impact of mining.
- **What can the plan deliver?** - Participants advised that the Plan can deliver a reference document that talks to the strategic regional land use plan. Further, the Plan could be a live document that is regularly updated and whose performance can be measured and reported.
- **What can the plan not deliver?** - Participants advised that Synoptic Plan cannot be specific to mining and extractive industries and there are restrictions on the capability of rehabilitated land and what it may be used for post-mining.
- **What are the benefits?** - Participants saw the benefits of a synoptic plan as having an integrated approach and a clear vision of end outcomes with the capacity to inform regulatory instruments, boundaries and objectives. Participants felt the synoptic plan needs to be part of the wider strategic land use plan.
- **What are the outcomes?** - Participants advised the outcomes of a synoptic plan would facilitate better coordination and public communication, as well as greater alignment of mine rehabilitation and lease management with broader regional land use objectives through strategic land use plans.
- **How should the plan be developed?** - Participants discussed how who should take leadership and decision making responsibilities of the plan, with the Department of Premier and Cabinet identified as the appropriate leader for a whole of government approach. Industry and community were also recognised as key stakeholders. Participants felt an independent Chair should oversee the Plan, alongside a Steering Committee. Funds to develop the plan could be shared by industry and government, or raised by a special levy and will require ongoing funding to ensure regular updates can be undertaken.
- **What additional inputs might be needed to inform the study?** - With regards to biophysical and triple bottom line economic analysis, participants advised that the study should incorporate vegetation and biodiversity data; population trends and changes; economic and feasibility analysis of post mining land uses; and attempt to understand restoration objectives and limitations. With respect to review of research, participants advised the study should include risk assessments for types of land uses proposed; understand carbon credit policy, water, transport, infrastructure and electricity transmission planning; assessment of cumulative impacts; and analysis of existing consent conditions and final voids.
- **What are the best avenues for involving the broader community in the plan development?** - Participants believed it is best to engage with community from the very beginning, that they should set the values up front, and they be asked at what steps they want to be involved in. All forms of community input should be utilized (i.e. websites, social media, newspapers, shows, radio) to generate as much community interest in plan development as possible. Participants advised that the best way to educate the community was through case studies, fact sheets and showcasing mines and rehabilitation work. Participants felt it was important to empower the community to own the plan, as this would encourage active involvement in setting outcomes and governance of plan development.
- **What are some of the practical issues in delivering and maintaining the Plan?** - Participants felt both a hardcopy and online would be best and that a fact sheet should be produced for the community outlining the key principles and components of the plan. Participants queried who would own the data and overarching plan and process, and encouraged one department only to take the lead. In terms of updating the plan, participants agreed that a regular update was needed, but that it should be a living document that is capable of periodic updating when required and that it could incorporate a principle of reporting frequently, but reviewing infrequently. Participants noted the success of the Upper Hunter Air Quality Monitoring Network as an example of what the Plan's presentation of data could be based on.

### **December 2011 - NSWMC follow-up work from the 2011 Workshop**

There was general agreement that a group consisting of government, industry and community groups needed to steer the development of an updated synoptic plan for the Upper Hunter. The 2011 end of year report noted that a framework for the development of the plan would be prepared and made available for consultation.

NSWMC intended to draft the initial plan for the development and seek Government commitment to take responsibility for this. The development of the Plan was discussed with staff for the then Minister of Resources, but received a lukewarm reception. NSWMC considered driving this internally through industry by engaging and paying consultants to undertake the development of the Plan with stakeholders, which was ultimately undertaken later in the process.

### **September 2012 - Strategic Land Use Plan for the Upper Hunter**

In September 2012, the Government committed DPE to update the Synoptic Plan for the Upper Hunter, however there was no clear plan to undertake the work and no one within the Department owned the action.

### **December 2012 - UHMD workshops held to determine projects**

In 2012, workshops were held in each of the key UHMD subject areas and projects chosen. The projects chosen for the Land Management area were Grazing Trials, Establishment of Biodiversity Reference Sites and Rehabilitation Principles and Reporting. The synoptic plan was considered to be in the hands of the government.

### **May 2013 - Division of Resources and Energy commit to development of the Synoptic Plan**

Although it was not initially supported as an UHMD Land Management Joint Working Group (JWG) project in the industry workshop, the UHMD Land Management Industry Working Group (IWG) agreed that driving the development of the Synoptic Plan should be a proposed new project for the JWG Land Management.

Members of the IWG along with NSWMC, met with DPE to discuss the development of the Plan on 9 May 2013. The DPE was sent a draft NSWMC plan to update the Synoptic Plan. The Division of Resources and Energy (DRE) subsequently agreed to engage consultants to develop a scope for the development of the plan. NSWMC advised the IWG that no progress had been made to date as of mid-July 2013.

At the JWG meeting on 21 May 2013, NSWMC advised members that DRE were undertaking the updating of the Synoptic Plan and were considering how to broadly consult with the all stakeholders in developing the plan. NSWMC confirmed that we would continue to advocate for broad community involvement in the development of the plan as per the feedback from workshop participants at the 2011 workshop.

### **November 2013 - DRE distributes a scope to NSWMC**

DRE delivered a document to NSWMC outlining a scope that sought quotes for suitable consultants to carry out the first phase of the Synoptic Plan Project. The brief outlines that there will be several phases to the Synoptic Plan Project:

- Phase 1 – Reference Group Consultation
- Phase 2 – Broader Community Consultation / Establish Steering Committee
- Phase 3 – Develop Synoptic Plan

The key objectives of Phase 1 of this project were to:

Write a discussion paper outlining the purpose of a Synoptic Plan

Facilitate a workshop of stakeholders encouraging participation and information sharing, and managing diverse views to achieve a clear view of project requirements

Prepare a project brief for Phase 2. (continued next page)

The Scope for Phase 1 involved two parts, with phase 1 (a) to be completed by 19 December 2013, and phase 1 (b) to be completed by 19 February 2014. NSWMC provided feedback to the DRE scope.

### **December 2016 - DPE commits to hosting a community workshop at the UHMD Forum**

A panel discussion session at the 2016 UHMD Annual Forum addressed the issue of beneficial use of voids in a post mining landscape. Panellists identified the need for a refresh to the synoptic plan and further research to identify future voids and what benefits could be derived from them. There was strong support among forum participants for a refresh of the Synoptic Plan. As a result of the Forum, DPE agreed to host a community workshop in the Upper Hunter to determine how best to progress a final land use strategy (Synoptic Plan) update in early 2017.

**UHMD Joint Working Group - Water and Land Management  
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Agenda Item 8

**SCHOOL MINE TOURS PROGRAM UPDATE**

**Issue**

The UHMD is making significant progress in developing the School Mine Tours Program.

**Background**

Planning is well underway for the School Mine Tours Program which aims to systematically expose Year 5 and Year 9 students from across the Upper Hunter to an educational experience related to mining as part of their school studies. Under this program, every student in the Singleton/Muswellbrook catchment would tour a mine and its rehabilitation works twice during their 12 years of schooling.

A 10-person working group, led by Rae O'Brien (Glencore), is developing consistent messaging and educational material which will be integrated with the school syllabus. The working group is made up of industry representatives, educators and community members. Key features of the materials the project group is working on include:

- Messaging will be unbiased and explain both the impacts of mining and how its products are used in day to day life. Development of messaging is viewed as vital by the working group as the material will be delivered through a combination of "pre-tour material" and via site personnel "tour-guides" across multiple mine sites.
- Tour design and material will be integrated with the NSW syllabus and designed for use by teachers in the classroom.
- Production of virtual reality tours using 3D headsets and videos are also planned to enhance the "live" experience offered by the mine tours. Once developed the virtual reality headsets and videos could be used as a means to deliver the Dialogue's overall message to not only schools but also the general community.

All Dialogue industry partners earlier agreed to take part in the tours. In order to further planning, the individual mine sites to be used for the tours need to be identified by industry partners and guides from each site nominated so they can be trained. It is crucial that the working group receives details on sites' capabilities to further progress planning – matching schools with sites, training guides, timing, etc. Sites will be surveyed shortly. A survey for industry participants has been prepared and distributed to operators.

All 20 schools in the area have been contacted and all but two have expressed an interest in principle in participating. More than half the schools have now confirmed their involvement and provided student and class numbers. At this stage about 660 students have been confirmed. This number will likely rise as more schools confirm their involvement, as Muswellbrook High School has recently done, reversing an earlier decision to decline participating. It is estimated that each industry partner would likely be required to host 2 or 3 tours per year.

A second pilot tour of 20 Singleton High School students has recently been undertaken, and a verbal update will be provided at the meeting. The overall program is scheduled to commence in September. The bulk of the tours are likely to occur in Spring and Autumn to ensure conditions are optimal for students.

A media plan to promote the tours program is being developed and will include:

- **News Media** - Media releases will be provided to local media outlets – print and radio. A major article will be prepared for publishing covering the June trial tour. There has been some interest from local radio to interview students who participate in a tour distributed as each school tours a site during the program.
- **Social media** - It is proposed to develop a Facebook page for the program. To minimise risk of

inappropriate comments, the page would have to be non-interactive and not allow comments. Schools to be encouraged to promote their tours on their own Facebook pages.

- **Websites** - Promote program on industry partners, Dialogue/NSWMC, local media websites

NSWMC is considering a proposal from the University of New South Wales' Virtual Reality Development team. The proposal relates to the acquisition of 3D imagery at an operating mine site and is estimated to take 3 weeks of filming. There are some logistical issues which will need to be addressed including organising site access and determining the best filming schedule as Spring may provide better footage of the rehabilitation vegetation rather than Winter.

### **Recommendations**

The Joint Working Group note the progress made by this project, and provide any suggestions to enhance the project to the UHMD secretariat for consideration.

### **FOR INFORMATION / DISCUSSION**

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Agenda Item 9

**PRESENTATION: DAYJIL FINCHAM - VOIDS RESEARCH PROJECT 'LEARNING FROM LUSATIA'**

**About the Presenter:**

Dayjil Fincham is the Senior Water Resources Engineer at Hydro & Engineering Consulting Pty Ltd. Ms Fincham has had some 8 years' experience in a range of civil and environmental engineering projects in water resources and mining. Her experience includes water resource management and assessment, water supply, water quality, development of water balance models for mine sites, and hydrologic and hydraulic modelling of natural and engineered systems. She has expertise in hydrology, modelling, and design and assessment of water management systems. She has participated in the production of several Environmental Impact Statements (EISs) and Environmental Assessments (EAs). She also has experience with the recently revised Climate Futures tool produced by CSIRO for the assessment of the effects of climate change on projects for development approval.

**VOIDS RESEARCH PROPOSAL**

Ms Fincham has proposed to undertake a research project examining voids in the Upper Hunter. At the March 2017 Joint Advisory Steering Committee meeting, a brief overview of the research proposal was provided. JASC members noted that Ms Fincham was keen to engage with the Dialogue and the work proposed to be undertaken could greatly help inform the direction of the Synoptic Plan review which is soon to commence. Ms Fincham returned to the JASC meeting earlier in June to present on her research in further detail.

Ms Fincham is well known to many industry members of the Dialogue given her involvement with the UHMD Water Accounting Framework project and other water modelling and analysis projects for operations.

Ms Fincham recently attended the Synoptic Plan Workshop to be held in Singleton on 2 June 2017 as a researcher, and discussed her research proposal with numerous Dialogue members and other community representatives, which has further helped her research project.

Attached is Ms Fincham's voids research proposal outlining the key objectives of the research. (**Attachment 4**).

Ms Fincham will distribute surveys to Working Group members at the meeting. Members are encouraged to provide feedback to Ms Fincham either on the day or to be returned to the UHMD secretariat or to Ms Fincham directly.

**Recommendation:**

That Joint Working Group members engage with Ms Fincham and advise on the projects and opportunities explored throughout their involvement in the Dialogue.

**FOR INFORMATION / DISCUSSION**

15 February 2017

Mr David O'Brien  
Chair  
Joint Advisory Steering Committee  
Upper Hunter Mining Dialogue

**RE: Request for Involvement in Masters Final Project**

Hi Dave,

As per previous correspondence, I am currently undertaking my Masters of Integrated Water Management through the International Water Centre (IWC) at the University of Queensland and have chosen a Final Project the title of which is "Learning from Lusatia: an integrated approach to planning for post-mining land and water use in the Upper Hunter Valley, NSW". The Final Project will be completed part-time and is due in October this year. As you know, I work full-time as a Senior Water Resources Engineer for a consultancy in Brisbane and I have been involved in the management of water at a number of mine sites in the Hunter Valley over the last 9 years. I am extremely interested in post-mining landscape planning of the Upper Hunter region and the allowance for a solution that is cognisant of environmental, social and economic aspects. Input from and communication with the Upper Hunter Mining Dialogue (UHMD) is a key aspect of the project and after contacting the NSW Minerals Council, I understand approval for this is required from the Joint Advisory Steering Committee (JASC).

I understand the aim of the UHMD is to work together to minimise the cumulative impacts of mining in the region which align with the aim of my project as well as looking toward the future to ensure the long-term sustainability of the area. Reading the UHMD website, I note that work is "being undertaken to establish a multi-stakeholder working group to progress development of an integrated landscape plan for the Upper Hunter, reflecting growing interest from the community on potential use of rehabilitated land post-mining". I would be very interested in this working group and would greatly appreciate being involved in any way possible. I realise the UHMD involves approximately 70 stakeholder groups hence I understand if my interaction would be best suited with this working group.

My preliminary research has identified that the planning associated with cessation of coal mining in the Lusatia area of Eastern Germany may provide insights and lessons that could be used to inform post-mining planning decisions for the Upper Hunter region. In the last 15 years, Lusatia in Eastern Germany has been transformed from an intensely mined area of lignite (brown coal) open cut voids to a lake district attracting tourists via art installations and recreation, all while embracing the rich mining history of the region. Both Lusatia and the Upper Hunter are in close proximity to a major city with Berlin approximately 100 km from Lusatia and Sydney a similar distance from the Upper Hunter. Economics and energy generation drive coal mining in both regions while trying to find a balance with local farmers

and indigenous groups and avoiding environmental impacts. Risk minimisation of mining and in particular post-mining landscapes is an increasingly important sphere and I believe there are a number of parallels to be drawn between the regions in this respect. Given the success of the new Lusatian lake district, there is an opportunity for the Upper Hunter region to learn from the lessons in Germany.

My overarching research question is "What potential learnings can be found regarding post-mining planning in the Lusatian mining region and how can they be applied to the Upper Hunter mining region?". I request to meet with the UHMD to present the project topic and provide an overview of the Lusatian Rehabilitation Project then gain any feedback on the *Strategic Regional Land Use Plan for the Upper Hunter*. I then aim to visit the Lusatia region to access the literature available at the international study house (set up as a storehouse knowledge database of the project) as well as speak with planners and other stakeholders to inform a critical review of the Lusatian Rehabilitation Project. Following my visit to Germany, I would like to present key findings of this review to the UHMD and canvas participants to understand how lessons from Lusatia could best be translated to the Upper Hunter.

Given my technical background in water management at mines in the Upper Hunter paired with the knowledge I have gained from the coursework component of the Masters course as well as my general desire to bring about sustainable solutions for the mining industry, I believe I am well placed to deliver this project.

There may be scope to apply any learnings from this project to other areas in Australia which would place the Upper Hunter region as a landmark area for rehabilitation and land use planning and the UHMD as a leader in rehabilitation planning.

Please feel free to get in contact to discuss any aspect of the project – I would be more than willing to talk the JASC through my goals for the project and how I think this would benefit the UHMD and the greater Upper Hunter community.

I look forward to hearing from you.

Kind Regards,



Dayjil Fincham

0407 133 937

**UHMD Joint Working Group - Water and Land Management  
27 June 2017**

Agenda Item 10

**UPDATE ON COMMUNICATIONS INITIATIVES**

**Issue**

The Upper Hunter Mining Dialogue has been actively focussing on its key communications strategies so far in 2017 with a number of community engagement events attended and media engagement opportunities either completed or in the final stages of planning. Key activities for 2017 include:

**Media plans:**

- As earlier reported, the Dialogue arranged for ABC TV Landline and Lateline journalist Ginny Stein to record a segment on the UHMD Grazing Trial. Two stories have now been broadcast – one on Lateline and focusing on collaboration between agriculture and mining through the use of Mt Arthur rehabilitated land for grazing and one for Landline with a more indepth look at the results of the grazing trials.
- The Dialogue also arranged for the Singleton Argus to report an article for the final weigh in of cattle in the Grazing Trial which occurred in early June.
- Radio 2NM's Stephen Cenatiempo has agreed in principle to air regular updates on UHMD activities.
- A separate media plan for the School Mine Tours Program is being developed. Refer to **Agenda item 4** for further information.

**Recent Media:**

- Published media has primarily appeared in industry magazine @thecoalface in recent months. The Dialogue has featured with stories on the UHMD Annual Forum results (February) Community Engagement Program (March) and the retirement of Dr John Drinan and resulting vacancy for a community representative on the Joint Advisory Steering Committee (April-May) and Di Sneddon's appointment to the JASC (May-June). An update on the Synoptic Plan Workshop appeared in the June-July edition.
- The vacant position on the JASC was advertised, asking the community for nominations, in the Singleton Argus and Muswellbrook Chronicle.
- An article announcing Di Sneddon was submitted to Fairfax and appeared in the Hunter Valley News.

**Recent Events:**

The Dialogue was on display at the Cessnock Show (February 24-25), Tom Farrell Institute Rehab Conference (March 30) and Upper Hunter Show (March 31 – April 1). The Dialogue interacted with 78 people at the three events and collected a further 35 community surveys.

The Dialogue also attended the Tocal Field Days on May 5 – 7 and collected 70 surveys through interaction with 152 people which brings the total number of surveys gathered at events in the past year to 288. As evident in the numbers, despite being outside our immediate catchment in the Upper Hunter, Tocal is a valuable event for the Dialogue to spread its message; from the surveys collected 25% of the respondents identified as living or working in the Upper Hunter which would also apply to the people we interacted with but did not fill out a survey. The nature of the event – with its many information and educational displays – also leads to greater depth of interaction with people who are very interested and, generally, positive about the Dialogue's work and messaging. The interaction/conversations generally take 10/20 minutes per person – occasionally lasting almost an hour.

**The Dialogue is also scheduled to attend:**

<b>Upcoming Community Event</b>	<b>Date</b>
NSWMC HSEC Conference	August 14-16
Broke Village Fair	September 10
Singleton Show	September 22-23

**Media Links:**

- ABC Landline video:  
<http://www.abc.net.au/tv/programs/landline/old-site/content/2017/s4683881.htm>
- ABC Lateline video: <http://www.abc.net.au/lateline/content/2016/s4679918.htm>
- ABC Landline article:  
<http://www.abc.net.au/news/2017-06-11/cattle-thrive-on-retired-mining-sites-in-new-trial/8604456>

**FOR INFORMATION / DISCUSSION**

**UHMD Joint Working Group - Water and Land Management  
27 June 2017**

Agenda Item 11

**REHABILITATION REPORTING PRINCIPLES AND COMMITMENTS FOR 2016**

**Issue**

The rehabilitation and reporting principles and commitments are currently being collated from the region's coal producers for the 2016 calendar year.

**Background**

All mines in the region undertake regular rehabilitation to provide temporary or final cover of land disturbed by mining. However, in the past information about the industry as a whole hasn't been easy to access or understand. The joint working group has developed a set of common principles, agreed by the coal producers involved in the Dialogue, to drive improvements in the speed of rehabilitation and to provide aggregate data to the community about total land disturbed and rehabilitated.

The Upper Hunter Mining Dialogue Joint Working Group – Land Management has developed a set of principles and commitments that aim to decrease the periods of time that disturbed areas are left without temporary or final cover to minimise any impacts on the landscape or air quality.

Each Upper Hunter coal producer publicly reports their progress against the principles each year through Annual Environment Management Reports (AEMRs), with the data provided to the UMD secretariat and compiled to show the total area of land disturbed and rehabilitated each year across all Upper Hunter operations. Since 2012, this has been published on the Dialogue website.

Given the project is currently still underway for the 2016 data collection, the following results are yet to be confirmed with all parties, however, some preliminary results have been calculated using this publicly available information for those operations yet to lodge their figures with the UHMD secretariat. Any unknowns are assumed to have remained unchanged from the previous reporting period and are subject to change once results are confirmed and provided by the companies. Further, the figures for some former member companies are also included using information in their AEMRs and are important include as they are still undertaking rehabilitation in the region and therefore should be included in the reporting.

The preliminary data is included in the table below, as well as the 2014 and 2015 data for comparison.

	<b>Rehabilitation Reporting</b>	<b>2014</b> (hectares)	<b>2015</b> (hectares)	<b>2016</b> <b>(preliminary)*</b> (hectares)
<b>A</b>	Total land area disturbed and not yet rehabilitated at the beginning of the reporting period	18479	20171	<b>21873</b>
<b>B</b>	Total amount of land newly disturbed within the reporting period	1058	1424	<b>1271</b>
<b>C</b>	Total amount of land newly rehabilitated within the reporting period (rehabilitation commenced in this period)	801	856	<b>907</b>
<b>D</b>	Total land area disturbed and not yet rehabilitated at the end of the reporting period (D = A + B - C)	18736	21008	<b>22142</b>
<b>E</b>	Total area of rehabilitation at all operations at the end of the reporting period	10023	10783	<b>11653</b>
<b>G</b>	Overall proportion of disturbed land rehabilitated	34.9%	33.9%	<b>34.5%</b>

	(E/(D+E))			
<b>Other managed land</b>				
	Estimate of total land held as biodiversity offsets	22607	22773	<b>23731</b>
	Estimate of the total area of land managed for agricultural use (e.g. grazing, cropping, viticulture)	44252	44632	<b>41010</b>

The preliminary figures highlight that there appears to have been an increase in the amount of rehabilitation being undertaken at sites in the past year. While there is still currently more land disturbed than rehabilitated, the gap has narrowed and the actual amount of land disturbed in 2016 appears to have decreased from that of the previous year, with the ratio of rehabilitated land compared to disturbed land increasing from 33.9% in 2015 to 34.5% in 2016.

The UHMD secretariat will follow up with those sites yet to provide their data and principles statement to confirm their figures for 2016.

### **Recommendation**

It is recommended that the Joint Working Group note the progress of project.

### **FOR INFORMATION / DISCUSSION**

**UHMD Joint Working Group - Water and Land Management  
27 June 2017**

Agenda Item 12

**UPPER HUNTER GRAZING TRIALS AND 2017/18 ACARP PROPOSAL**

**Issue**

Funding for the current UHMD Grazing Trials project has expired. A proposal for a new ACARP study looking into rehabilitated mined land has recently been submitted, which will require industry support should it progress to the next stage of the application process.

**Background**

Funding for the UHMD grazing trials is expected to expire at the end of June 2017. The study has conclusively established that high quality rehabilitation of mined land can support commercially viable land uses such as the grazing of cattle and provide superior pasture compared to surrounding undisturbed paddocks.

The grazing trials have generated an excellent level of collaboration between government, industry and the community, and continue to generate significant interest in mining rehabilitation and industry best-practice from conferences, forums and various forms of media.

The UHMD secretariat recently provided support for Mr Neil Griffiths (Department of Primary Industries) in preparing a short proposal for ACARP Funding. The new proposal seeks to evaluate the suitability of rehabilitated mining land for grazing in the Hunter Valley, building on research undertaken under a previous ACARP-funded study into the sustainability and profitability of grazing on rehabilitated land in the Upper Hunter (Grazing Trials).

If the proposal is successful in the first round of the application process, the UHMD secretariat will assist Mr Griffiths in developing the long form proposal by seeking letters of support from all interested UHMD members, many of which have already indicated they will assist by providing records and data for the desktop review and participate in any required field assessments.

At the Industry Working Group meeting in early June, an industry representative that sits on the ACARP committee that decides on the proposals advised that an additional document could be prepared by the UHMD secretariat to provide more information about the intent of the project, a widening of the scope to sites other than the Hunter, and more detail on how the previous grazing trials have provided value and can be utilised by industry and community.

Attached is a copy of the ACARP short proposal prepared by Mr Griffiths (**Attachment 5**).

**Recommendation**

That Joint Working Group members review the proposal and provide any suggestions to enhance the long form proposal, should the project proceed to the next round of funding applications.

**FOR INFORMATION / DISCUSSION**

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Agenda Item 13

**UPDATE ON LAND MANAGEMENT PROJECTS**

**Dialogue projects:**

***Rehabilitation Reporting and Principles***

Refer to Agenda item 11.

***Grazing Trials / ACARP study into rehabilitation projects***

Refer to Agenda item 12.

***Beneficial reuse of voids project***

The rehabilitation and Mine Closure Working Group discussed a proposal from Dr Cherie McCullough from Golder Associates to redraft a number of the reports into more easily accessible and useful fact sheets. The Working Group discussed how these would be made available, with Mr Sullivan advising they would likely be made digitally available, and with NSWMC branding. The Working Group supported progressing the project, noting that this is the first product in a larger body of work focusing on rehabilitation and that NSWMC will need to have editorial control of the final products.

Further, the Working Group discussed a Golder Associates proposal to use drones in water quality sampling that Dr Cherie McCullough intended to submit to the recent ACARP funding applications. Golder Associates sought a letter of support from the NSWMC. The Working Group noted that this project has the potential for a broader context and provided a letter supporting the proposal. A contract has been finalised with Golder Associates to progress stage one of the project and work has commenced.

***Awareness and promotion of rehabilitation in the Hunter Valley / mine rehabilitation booklet***

NSWMC and DRG will continue to progress the collaborative mine rehabilitation booklet now that the findings from the Audit Office report into security deposits have now been publicly released.

**Government / other projects:**

There is a significant amount of activity happening in the mine rehabilitation and closure space currently. Key government

***Audit Office Review of mining rehabilitation security deposits***

The NSW Audit Office released a report on Mining Rehabilitation Security Deposits in May 2017. The Audit Office found that the DPE holds security deposits for mining rehabilitation that are consistent with the amounts they have requested from mining companies and the value of securities held by the DPE aligns with the latest approved rehabilitation cost estimates. The report also acknowledged that security deposits are an option of last resort and the DPE has a wide array of legislative and regulatory compliance tools to enforce should the need arise.

The Audit Office found that rehabilitation cost estimates are not adequate to cover rehabilitation cost estimates of imminent closure and there is no financial assurance over long-term environmental risks. The report also stated that rehabilitation and closure outcomes are considered vague and lacking specificity in Mining Operations Plans, and that monitoring is not adequate to effectively gauge

rehabilitation progress.

Key recommendations of the report were that the DPE should by January 2018:

- Improve the quality of rehabilitation and closure plans;
- Improve assurance that security deposits are sufficient;
- Enhance oversight of mine rehabilitation; and
- Collaborate with relevant agencies to establish a financial assurance mechanism, such as a sinking fund, to cover the risk of long-term environmental degradation after mines are closed and security deposits returned.

The Division of Resources and Geoscience responded to the report advising that a number of the key recommendations have already been implemented or are underway, as part of the DRG's Rehabilitation Regulatory Reform Project. It is unclear whether the Government will support the Audit Office's review.

### ***Revised Rehabilitation Cost Estimate (RCE) Tool***

DRG has updated its guidelines and tools for calculation of rehabilitation costs. The revised guidelines and tools anticipated many of the Audit Office's findings. A briefing on the revised tool and guidelines was held in Kurri Kurri on 18 May 2017.

The presentations outlined key changes to the tool, which includes updated third party rates for rehabilitation. The main impact for industry is an expected increase in security bonds required. DRG were reluctant to quantify the likely scale of increase, stating it will vary between sites, however by way of example said that the contingency component of calculations will rise from 15 to 30%, adding a significant cost burden. The revised RCE tool was released 1 June 2017, with staged implementation until January 2018.

### ***Clean Air for NSW Summit Update***

The NSW Environment Protection Authority (EPA) in conjunction with the NSW Office of Environment and Heritage has announced the upcoming NSW Clean Air Summit.

The Summit will be held on Tuesday 27 June in Sydney, the same day as this JWG meeting. JWG - Emissions and Health Chair John Watson, will be presenting on behalf of industry and there is quite a large focus on coal mining and complementary industries.

The Clean Air Summit follows the release of the Clean Air for NSW Consultation Paper for public comment from October 2016 to January 2017. A copy of the NSWMC submission, as well as the consultation paper and other submissions received are available on the EPA website at:

<http://www.epa.nsw.gov.au/air/clean-air-nsw.htm>.

The Summit will discuss key issues raised in the consultation paper and stakeholder submissions, and provide an opportunity for further stakeholder input to the development of the Clean Air for NSW strategy, which includes actions to improve air quality results across the state over the next ten years.

### ***ICMM Workshop***

The International Council of Mining and Metals (ICMM) will be hosting a Mine Closure Workshop in Newcastle CBD on 8-10 August 2017. The UHMD secretariat is working with the ICMM to determine whether any support will need to be provided. This workshop will incorporate tours of mine rehabilitation sites across the Hunter.

### ***Senate Committee Inquiry Into Mine Rehabilitation***

A Senate inquiry into Rehabilitation of mining and resources projects as it relates to Commonwealth responsibilities was established on 9 February 2017. The inquiry was initiated by the Greens Party, with the Australian Labor Party supporting establishment of the inquiry. The initial reporting date for the Committee was 23 August 2017, however this has been extended to 17 October 2017. A total of 55 submissions were received. All public submission can be viewed here:

[http://www.aph.gov.au/Parliamentary\\_Business/Committees/Senate/Environment\\_and\\_Communications/MiningandResources/Submissions](http://www.aph.gov.au/Parliamentary_Business/Committees/Senate/Environment_and_Communications/MiningandResources/Submissions)

A number of Senators have expressed an interest in attending a tour of Upper Hunter mine rehabilitation sites, given the relatively close proximity of mines, to learn more about how mine rehabilitation is undertaken across various locations in the region.

**FOR INFORMATION / DISCUSSION**

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**OTHER BUSINESS (LAND MANAGEMENT)**

**UHMD Joint Working Group - Water and Land Management  
27 June 2017**

Agenda Item 15

**NEXT MEETING**

The next meeting for the JWG - Water and Land Management is currently scheduled for Wednesday 11 October 2017 from 10:00 am to 1:00 pm.

Members are encouraged to RSVP and advise whether this date is suitable.