NSW Mine Rehabilitation Forum

8 September 2021 | Webinar

2021

Contents

Welcome

Welcome to the 2021 NSW Mine Rehabilitation Forum.

We are delighted that you can join us as we embark on our transition to new and improved compliance and reporting requirements through an amendment to the Regulation under the *Mining Act 1992*.

This webinar is an opportunity for both the NSW Resources Regulator and industry to share experiences, lessons learned and promote leading practice in mine rehabilitation.

Thank you for your support in attending our NSW Mine Rehabilitation Forum. I hope you can join us again in 2022 as we look forward to making this an annual fixture on the calendar for many years to come.

Garvin Burns
A/ Executive Director
NSW Resources Regulator

Information

Using Zoom

Once the webinar has commenced all attendees will be on mute and your camera feed will not be visible to the audience or panelists.

For more detailed instructions about how to join and participate in a Zoom webinar, please visit the [Zoom website](#).

When you join the webinar, it would be appreciated if delegates could name themselves appropriately, using the first name last name convention, so that the chair of each session can direct questions to panelists appropriately.

Questions

Throughout the day, please use the Q&A window to ask questions of the presenters.

Click on the Q&A icon from the Zoom menu. The Q&A window will open, allowing you to type questions to the host and panelists. They will either reply back to you via text in the Q&A window or answer your question live.

Please note that we will do our best to keep each session to time and therefore, may not get to all audience questions. Where possible, questions we don't get to answer will carry over to the panel discussion at the end of the forum.

Panel discussion

During the final session of the forum, the panel discussion, we invite webinar attendees to ask verbal questions of the panelists.

During this session, please raise your hand using the 'raise hand' icon and the facilitator will ask you to unmute. You will also receive a notification on your screen asking you to unmute.

Webinar recording

This webinar is being recorded and will be made available on our website following the event. By attending this online event, you are giving consent to any responses, feedback or questions you ask being recorded and published on our website as part of the webinar recording.

Breaks

Throughout the day we will have three set breaks.

- 10:15am - morning tea (15 mins)
- 12:00pm - lunch (45 mins)
- 2:45pm - afternoon tea (15 mins)

We will do our best to keep each session to time but where a session does go over, we will ensure the next session starts on time so break lengths may vary to the program.

Please note the times provided in this program are Australian Eastern Standard Time (AEST).

Program

This program has been designed so you can type directly into any 'notes' field, then print or save as required.

Program

Wednesday 8 September

TIME	DETAILS
9:00am - 9:15am	Welcome and overview of Regulator's Priorities - Steve Orr, NSW Resources Regulator
9:15am - 10:15am	Transitioning to the rehabilitation reforms - David Humphris, NSW Resources Regulator

Regulator Industry Portal and Mine Rehabilitation Portal - Jeremy Arnott and Will Mitry, NSW Resources Regulator |
| 10:15am - 10:30am | Morning tea |
| 10:30am - 12:00pm | Implementation of geomorphic design and quality assurance/quality control processes in establishing final landforms - Chloe Annandale, Mach Energy, Mount Pleasant Coal Operation and Michelle Eckersley, Thiess Mount Pleasant Operation

Rehabilitation risk assessments: key learnings from TAPs - Chris Rudens, NSW Resources Regulator

Mine closure planning: It's a risky business - Andrew Hutton, Integrated Environmental Management Australia |
| 12:00pm - 12:45pm | Lunch |
| 12:45pm - 2:45pm | Use of landscape evolution models in constructing long-term stable landforms - Keynote speaker, Professor Greg Hancock, University of Newcastle

Tailings and waste rock management considerations for mine closure - Brett Stephens, Klohn Crippen Berger Australia

Corporate governance of rehabilitation and mine closure, focusing on risk management and minimisation - Paul Amidy and Jason Desmond, Glencore Coal Australia |
| 2:45pm - 3:00pm | Afternoon tea |
| 3:00pm - 4:00pm | Guidance on Reasonably Practicable - Matthew Newton, NSW Resources Regulator

Panel session: Challenges and solutions to achieving sustainable rehabilitation outcomes - Regulator personnel, industry speakers and keynote speaker

Wrap up and close - Steve Orr, NSW Resources Regulator |

Steve Orr

DIRECTOR COMPLIANCE
NSW RESOURCES REGULATOR

Steve is the Director of Compliance with the NSW Resources Regulator and is responsible for managing a diverse team of environmental and compliance inspectors.

Prior to this role, Steve led a team of specialist investigators who undertake major investigations under the NSW work health and safety laws and mining laws.

Steve has over 20 years' experience working in a variety of state and local government agencies and has extensive experience leading regulatory business units.

Welcome address

Overview of NSW Resources Regulator's priorities 2021 - 2024

Notes:

David Humphris

**PRINCIPAL COMPLIANCE OFFICER
NSW RESOURCES REGULATOR**

David started his career working as a town planner in 1991 taking on a variety of roles in South Africa, the United Kingdom and Australia. This included working in both the government and private sectors undertaking environmental impact assessments for a range of building, infrastructure and mining projects.

Since 2014 David has held various operational and management roles within the NSW Government focusing on the regulation of exploration and mining operations. This work included the recent amendments to the Mining Regulation to introduce standard rehabilitation conditions across all mining leases in NSW.

David is currently in the role of Principal Compliance Officer within the NSW Resources Regulator.

Transitioning to the rehabilitation reforms

This presentation will provide an overview of the recent amendments to the Mining Regulation 2016 which introduce new standard rehabilitation and reporting conditions across all mining leases in NSW.

The presentation will explain the transitional arrangements that are in place to allow lease holders to prepare for the new requirements.

Details will be provided about how the NSW Resources Regulator will be assisting industry to transition to the new requirements as well as what mine operators can do now to get ready.

Notes:

Jeremy Arnott ───────

INSPECTOR ENVIRONMENT
NSW RESOURCES REGULATOR

Jeremy has been employed by the NSW Resources Regulator and formerly the Environmental Sustainability Unit for eight years. He has assessed hundreds of mining and exploration applications and is currently the design lead for the Regulator's move to online forms and functionality.

Overall, Jeremy has more than 14 years of environmental compliance, auditing and management system development in the mining industry both internationally and across Australia.

Will Mitry ───────

SENIOR INSPECTOR ENVIRONMENT
NSW RESOURCES REGULATOR

Will worked in environmental management roles in heavy industry (BlueScope Steelworks) and coal mining (underground coal) before joining the Resources Regulator as an Inspector Environment in 2013.

Will's work in the Regulator has been focused on improving systems for the regulation of mine rehabilitation with a keen focus on improving the situational awareness of the Resources Regulator through bespoke GIS based systems.

Will is passionate about improving the rehabilitation outcomes of the mining industry and is inspired by the great outcomes being achieved in mine rehabilitation across the state.

Regulator Industry Portal and Mine Rehabilitation Portal

Since early 2020, the NSW Resources Regulator has been undertaking a process of migrating all of its application and submission functionality to its Industry Portal. The portal based system allows for all data to be managed online and significantly improves efficiency (for both industry and the Regulator).

This presentation will provide an introduction to the Industry and Mine Rehabilitation Portals and demonstrate how they will facilitate the new reporting and application requirements for all mining leases and key spatial data submission requirements due to the recent amendments to the Mining Regulation 2016.

Note: For further information on the GIS submission requirements you are encouraged to attend a Mine Rehabilitation Portal User training session being run by the Resources Regulator. A video recording of a past session can be found here. You can register for upcoming webinars here.

Notes:

Chloe Annandale ———————

SENIOR ENVIRONMENTAL ADVISOR
MACH ENERGY MOUNT PLEASANT
COAL OPERATION

Chloe has ten years' experience in environmental management, compliance and rehabilitation across Queensland, New South Wales and the Northern Territory.

As the MACH Energy Mount Pleasant Operation Senior Environmental Advisor, Chloe has spent the last three years with a focus on best practice rehabilitation and land management, including working closely with mining services provider Thiess in both meeting regulatory requirements and exceeding company rehabilitation goals.

Chloe has also been project manager of research projects with the University of Newcastle in topsoil stockpile viability; and site trials to increase vegetation connectivity and fauna presence within the area.

Chloe holds a Bachelor of Science from James Cook University and a Master of Environment – Environmental Protection from Griffith University.

Michelle Eckersley ———————

ENVIRONMENT AND COMMUNITY
OFFICER
THIESS MOUNT PLEASANT OPERATION

Michelle has eight years' experience across conservation, land management and mine site rehabilitation. She joined Thiess in 2017 as an Environment and Community Officer at the Mount Pleasant Operation.

Michelle is responsible for helping deliver the mine's rehabilitation program, ensuring it meets statutory obligations, client commitments and end land use objectives. This includes driving compliance of more than 100 hectares of rehabilitation to enable long-term landform stability and the restoration of self-sustaining ecosystems post mining.

Michelle's commitment to build authentic, collaborative relationships with the MACH Energy team and local stakeholders extends her ability to deliver enduring environmental value for the Upper Hunter region.

Michelle holds a Bachelor of Applied Science – Integrated Resource Management from the University of Queensland.

Implementation of geomorphic design and quality assurance/ quality control process in establishing final landforms

MACH Energy implements geomorphic landform establishment to create best practice rehabilitation at the Mount Pleasant Operation, in close consultation with Chris Waygood and Associate Professor Greg Hancock (University of Newcastle).

MACH Energy and mining services provider, Thiess, work closely together to execute the rehabilitation design and implement detail quality assurance and control including inspection and test plans for each step of the process, while taking opportunities for optimisation, and research and development, wherever possible.

This presentation goes through the detail of the rehabilitation culture, mine planning optimisation and inspection and test planning process undertaken at the Mount Pleasant Operation.

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Chris Rudens

**PRINCIPAL OFFICER REHABILITATION
NSW RESOURCES REGULATOR**

Chris is an environmental engineer who started his career in consultancy before joining NSW Government in 2006. Since this time, Chris has held various positions primarily focused on the regulation of the mining and petroleum operations.

In his current role as the Principal Officer Rehabilitation, Chris provides technical and strategic input to support the functions of the NSW Resources Regulator, including risk-based compliance activities to support successful mine rehabilitation.

Rehabilitation risk assessments – key learnings from targeted assessment programs

This presentation will present the key learnings from recent targeted assessment programs undertaken by the Resources Regulator including tailings management, soils and material management, and landform establishment. These findings will help explain the importance of rehabilitation risk assessments and the Regulator's expectations for these assessments with the recent rollout of the amendments to the Mining Regulation 2016.

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Andrew Hutton

PRINCIPAL CONSULTANT
INTEGRATED ENVIRONMENTAL MANAGEMENT AUSTRALIA

Andrew is the Managing Director and founder of Integrated Environmental Management Australia (IEMA).

Andrew has 25 years of experience in the mining, agriculture, and extractive industry sectors, in both operational and consulting roles.

Andrew specialises in facility closure planning. He has extensive experience in decommissioning and mine closure planning, including development and delivery of mine closure plans and assessment of rehabilitation liabilities from the preliminary phase through to detailed closure planning.

Andrew has performed the role of Technical Study Manager, responsible for engaging and managing specialist study teams to deliver detailed closure plans for several key clients.

Mine closure planning: It's a risky business

Mine closure planning is a difficult, complicated, and often lengthy process. There are many interconnected variables that need to be considered in an iterative process to develop an executable mine closure plan. In the absence of suitable early planning mine closure practitioners may be left with a very short timeline in which to deliver a suitable plan.

Regardless, the site mine closure planning team will likely find themselves needing to work through vast amounts of information to understand key aspects to underpin detailed mine closure planning.

A successful closure planning strategy depends upon a comprehensive review and understanding of the whole closure risk profile and importantly, the identification of all the critical controls that will proactively and effectively mitigate the barriers to achieving the desired closure outcomes.

This presentation will discuss how we approach understanding the mine closure risk profile, identify the critical controls, and develop the tools to manage critical control failure modes and critical control implementation and evaluation. We will discuss relevant and practical examples from our recent projects to describe what we consider "good" looks like and demonstrate the importance of embedding critical controls supported by strong control implementation and evaluation programs in closure or rehabilitation planning.

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Professor Greg Hancock

**SCHOOL OF ENVIRONMENTAL AND LIFE SCIENCES
COLLEGE OF ENGINEERING, SCIENCE AND ENVIRONMENT,
UNIVERSITY OF NEWCASTLE**

Greg has worked in the area of post-mining landscape assessment and mining rehabilitation for the past 25 years.

He has particular expertise in the use of computer based landscape evolution models for both current and proposed landscape assessment in particular SIBERIA and CAESAR.

He has worked across a wide range of projects, sites and climates both here in Australia and internationally for government agencies, mining companies and consultancy firms.

He has published over 100 research and conference papers as well as numerous industry research reports.

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Use of Landscape Evolution Models in constructing long-term stable landforms

The goal of any mine is to operate with minimal environmental impact both during and post operation. During mine operations environmental impacts are planned and controlled. Post-mining the reconstructed landscape needs to be a functional entity which geomorphologically links with its surrounds. A key issue is that once a landscape is constructed it is relatively costly to make significant changes. It is more difficult post-closure if any unforeseen issues emerge.

This presentation will outline the use of computer-based Landscape Evolution Models (LEMs) in designing and assessing post-mining landscapes. LEMs can predict erosion and deposition patterns as well as overall landscape behaviour. They provide a very useful design and assessment tool. The latest models can predict water quality as well as weathering, armouring and pedogenesis. Model application will be outlined as well as the latest models and capabilities together with data needs.

Brett Stephens

**SENIOR GEOTECHNICAL ENGINEER, PRINCIPAL
KLOHN CRIPPEN BERGER AUSTRALIA**

Brett Stephens has 30 years of experience in mine environment and water resource projects, spanning throughout Australia, Canada and internationally. He is a registered Professional Engineer in Australia, Canada and the United States.

His experience includes tailings dams, water supply dams and associated infrastructure.

Brett has been working on the planning, design and construction of tailings and water dams for over 20 years. He is currently, or has previously held the role of design Engineer of Record for several extreme and high consequence tailings dams.

He has also participated in the engineering, audit and assessment of over 100 tailings and water dams worldwide.

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Tailings and waste rock management considerations for mine closure

Tailings and mine waste management remains a key closure cost and legacy issue. Physical and chemical stability considerations are priority objectives in achieving a low post-closure residual risk, and meeting end land use objectives.

In 2018, the NSW Resources Regulator identified tailings management as a focus of compliance. A key recommendation from the 2020 compliance priority outcomes was that a comprehensive risk management program is required to inform tailings design, construction, operation, and decommissioning. In addition, there have been numerous global reviews and industry standard updates in response to recent tailings dam failures.

This presentation will

- Discuss recent global trends in tailings management.
- Identify challenges around reclamation to relinquishment.
- Present a range of global case studies at various lifecycle stages that demonstrate risk-informed closure design.
- Identify areas for improvement.

Paul Amidy

MINING ENGINEERING MANAGER GLENCORE COAL AUSTRALIA

Paul has worked as an environmental practitioner for approximately 20 years in government, consulting and, more so, mining roles. Paul is currently responsible for overseeing mine closure and rehabilitation across the NSW assets of Glencore Coal Assets Australia.

Successful Rehabilitation and Mine Closure at Glencore – Effective Risk Management

This presentation provides an overview and practical insight into the overall management of rehabilitation and closure for GCAA and into the implementation of the Rehabilitation Report Card (RRC) at Glencore's Mount Owen Glendell Operations.

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Jason Desmond

ENVIRONMENT AND COMMUNITY MANAGER, MT OWEN/GLENDELL OPERATION
GLENCORE COAL AUSTRALIA

Jason has a Bachelor of Environmental Science and Management from the University of Newcastle and has worked in a variety of roles throughout his career.

In 2015 he gained his Open Cut Examiners practising certificate to gain a thorough understanding of mine legislation and practical experience of a mining operation. Jason has 13 years experience working in the coal industry in NSW and metalliferous mines in the Northern Territory.

Jason has been the Environment and Community Manager at Mt Owen Glendell for the past two years, supervising a team of passionate environmental professionals who work for Glencore and Thiess. He has a passion for mine rehabilitation and the legacy left after mining and is not afraid to complete tasks 'outside the norm' in order to strive for continual improvement in this space.

Matthew Newton

**PRINCIPAL INSPECTOR ENVIRONMENT AND REHABILITATION OPERATIONS
NSW RESOURCES REGULATOR**

Matthew Newton is the Principal Inspector for Environment & Rehabilitation Operations with the NSW Resources Regulator. The Mining Act Inspectorate branch undertakes risk-based compliance and enforcement activities in relation to obligations under the Mining Act. This includes conducting assessment and compliance activities in relation to the mine rehabilitation and security deposits.

Since joining the Department in 2013, Matthew has been involved in the development of a number of government reform projects that are aimed at improving the environmental and rehabilitation performance across the resources sector. This includes the Operational Rehabilitation Reforms project, which is scheduled to commence across the mining industry in mid 2021.

Prior to joining the Department, Matthew has worked as a consultant as well as in site-based mining roles with a particular focus on rehabilitation and mine closure projects. Matthew has approximately 25 years of experience in environmental assessment and management and has been involved in a range of environmental projects relating to mining operations situated throughout NSW, Queensland, Victoria, Western Australia and the USA.

Guidance on Reasonably Practicable

The term 'reasonably practicable' is used in relation to certain rehabilitation obligations on lease holders in various clauses in Schedule 8A of the Mining Regulation 2016. Specifically in the context of preventing or minimising harm to the environment, progressive rehabilitation and identifying foreseeable hazards that present a risk to the lease holder's ability to ensure that rehabilitation achieves the final land use.

This presentation will outline the key elements that the NSW Resources Regulator will consider when determining what is 'reasonably practicable' for the purposes of mine rehabilitation and environmental management. In addition, examples will be provided of what may be considered 'reasonably practicable' to assist industry to comply with their obligations.

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1300 814 609