

Work Health and Safety (Mines and Petroleum Sites) Regulation 2014

Regulatory Impact Statement



Document control

Published by Mining, Exploration and Geoscience

Title: Work Health and Safety (Mines and Petroleum Sites) Regulation 2014 – Regulatory Impact Statement

Amendment schedule

Date	Version	Amendment
8 April 2022	1.0	Consultant's report

© State of New South Wales through Regional NSW 2022. You may copy, distribute, display, download and otherwise freely deal with this publication for any purpose, provided that you attribute Regional NSW as the owner. However, you must obtain permission if you wish to charge others for access to the publication (other than at cost); include the publication in advertising or a product for sale; modify the publication; or republish the publication on a website. You may freely link to the publication on a departmental website.

Disclaimer: The information contained in this publication is based on knowledge and understanding at the time of writing (April 2022) and may not be accurate, current or complete. The State of New South Wales (including Regional NSW), the author and the publisher take no responsibility, and will accept no liability, for the accuracy, currency, reliability or correctness of any information included in the document (including material provided by third parties). Readers should make their own inquiries and rely on their own advice when making decisions related to material contained in this publication.

Executive summary

Mining is a high-hazard industry. Fatalities and injuries occurring at mines and petroleum sites represent a significant cost to industry and the community. In 2020-21, 2 workers suffered fatal injuries and 117 suffered serious injuries on mine sites in NSW. A large proportion of these injuries occur in coal mines. The loss of any life at work is not acceptable.

The NSW Government maintains high safety standards through the *Work Health and Safety (Mines and Petroleum Sites) Act 2011* (the Act), and the *Work Health and Safety (Mines and Petroleum Sites) Regulation 2014* (the Regulation). The Act and the Regulation aim to secure and promote the health and safety of people working at mines and petroleum sites.

The Regulation is scheduled for automatic repeal on 1 September 2022 under the *Subordinate Legislation Act 1989*. Evidence from an independent statutory review shows that stakeholders are broadly supportive of the existing work health and safety framework. However, there are a small number of areas where the laws have unintended consequences, cause stakeholder confusion, or where interstate cooperation has not worked effectively as intended. Minor amendments have been proposed to:

- establish a safer and more modern work health and safety system that aligns with developments in industry best practice and the features of the mining industry in NSW
- improve clarity and transparency for industry and the Regulator
- improve the flexibility of how the regulation is applied and decreasing regulatory burden.

This Regulatory Impact Statement (RIS) sets out the rationale and objectives of the Regulation. It includes three alternative options to achieve these objectives:

- Option 1: Do nothing and allow the existing Regulation to lapse.
- Option 2: Re-make the existing Regulation without amendments (the base case)
- Option 3: Re-make the Regulation with amendments.

It provides an assessment of the costs and benefits of each of these options, noting that the costs and benefits associated with work health and safety can be difficult to quantify. Re-making the Regulation with the proposed amendments is identified as the preferred option as it provides the greatest net benefit to the community.

Contents

1. Background	6
1.1. Requirements under the Subordinate Legislation Act 1989	6
1.2. Better Regulation principles	6
1.3. Consultation program	7
1.3.1. Public consultation on the proposed Regulation and RIS	7
1.3.2. How to make a submission	7
1.3.3. Evaluation of submissions	8
1.3.4. Matters outside the scope of the consultation	8
1.3.5. Commencement of proposed Regulation	8
2. Outline of the regulatory proposal	9
2.1. Legislative background	9
2.2. The need for government action	9
2.3. Objectives of government action	10
2.4. The proposed Regulation	10
3. Options for achieving objectives	12
3.1. Option 1: Do nothing and allow the existing Regulation to lapse	12
3.2. Option 2: Re-make the existing Regulation without amendments (the base case)	12
3.3. Option 3: Re-make the Regulation with amendments	12
4. Identification of costs and benefits of each option	13
4.1. Costs and benefits of Option 1	13
4.2. Costs and benefits of Option 2 (the base case)	14
4.3. Costs and benefits of Option 3	14
5. Cost benefit analysis	15
5.1. Methodology	15
5.1.1. Cost Benefit Analysis	15
5.1.2. Cost Effectiveness Analysis	16
5.2. Results	16

6. The preferred option	17
7. Consultation	18
8. Evaluation and review	19
Appendices	20
A: The proposed Regulation	20
B: Amendment proposals	21
C: Benefits and costs of the preferred option	34
Costs for preferred option (compared with Option 2)	34
Benefits for preferred option (compared with Option 2)	37
D: Technical appendix	38
Generic assumptions	38
Cost Benefit Analysis	39
Cost effectiveness analysis (CEA)	48
Sensitivity analysis	55

1. Background

Mining, Exploration & Geoscience (MEG) in the Department of Regional NSW prepared this Regulatory Impact Statement (RIS) to assess the potential regulatory impacts of proposed amendments to the *Work Health and Safety (Mining and Petroleum Sites) Regulation 2014* (the Regulation). The RIS evaluates the potential costs and benefits of alternative options, and determines which option has the greatest net benefit or the least net cost to the community.

1.1. Requirements under the Subordinate Legislation Act 1989

The *Subordinate Legislation Act 1989* (Subordinate Legislation Act) provides for most regulations to be subject to repeal every five years if not reviewed and re-made. When a regulation is due for repeal, the responsible agency must review the regulation and the need for regulation. The agency must decide whether the regulation should be re-made. The results of this review are required to be published in a RIS and submissions invited from the public.

This RIS addresses the following requirements, as outlined in the Subordinate Legislation Act:

- A statement of the objectives sought to be achieved and the reasons for them.
- An identification of the alternative options by which those objectives can be achieved (whether wholly or substantially).
- An assessment of the costs and benefits of the proposed statutory rule, including the costs and benefits relating to resource allocation, administration, and compliance.
- An assessment of the costs and benefits of each alternative option to the making of the statutory rule, including the costs and benefits relating to the resource allocation, administration, and compliance.
- An assessment as to which of the alternative options involves the greatest net benefit or the least net cost to the community.
- A statement of the consultation program to be undertaken.

1.2. Better Regulation principles

MEG prepared the proposed regulatory amendments in accordance with Treasury's *NSW Government Guide to Better Regulation* (TPP19-01). The Guide sets out what characterises good regulation and the minimisation of red tape through the seven Better Regulation principles:

- The need for government action should be established.
- The objective of government action should be clear.

- The impact of government action should be properly understood, by considering the costs and benefits (using all available data) of a range of options, including non-regulatory options.
- Government action should be effective and proportional.
- Consultation with business, and the community, should inform regulatory development.
- The simplification, repeal, reform, modernisation or consolidation of existing regulation should be considered.
- Regulation should be periodically reviewed, and if necessary reformed, to ensure its continued efficiency and effectiveness.¹

Agencies must demonstrate that all new and amending regulatory proposals submitted for consideration by Cabinet or the Executive Council meet the Better Regulation requirements.

1.3. Consultation program

1.3.1. Public consultation on the proposed Regulation and RIS

The proposed Regulation and this RIS are publicly available for 28 days.

Copies of the proposed Regulation and the RIS are available:

- on the Department of Regional NSW website
- by emailing meg.policy@regional.nsw.gov.au

Copies of the current Work Health and Safety (Mines and Petroleum Sites) Regulation 2014 are available at www.legislation.nsw.gov.au

1.3.2. How to make a submission

Interested parties are invited to submit written comments via email to
meg.policy@regional.nsw.gov.au

The closing date for submissions is 8 July 2022 at 5pm.

Please note that submissions may be made public, subject to the provisions of the Government Information (Public Access) Act 2009.

¹ NSW Treasury 2019. NSW Government Guide to Better Regulation, Policy and Guidelines Paper, p. 5.

1.3.3. Evaluation of submissions

MEG will review the submissions received by the closing date and carefully consider any issues raised. If necessary, the proposed Regulation will be amended to address issues raised in the consultation process.

1.3.4. Matters outside the scope of the consultation

Matters covered by the Act are not subject to consultation. This RIS only deals with matters within the scope of the Regulation, not provisions contained within the Act.

1.3.5. Commencement of proposed Regulation

After the Minister for Regional NSW has finalised the proposed Regulation, it will be submitted to the Governor for approval. Once approved by the Governor, the finalised Regulation will be published on the official NSW Government website for online publication of legislation at www.legislation.nsw.gov.au

2. Outline of the regulatory proposal

2.1. Legislative background

The *Work Health and Safety (Mines and Petroleum Sites) Act 2013* (the Act) legislates requirements for work health and safety at mines and petroleum sites in NSW. The objects of the Act are:

- to assist in securing the objects of the *Work Health and Safety Act 2011* at mines and petroleum sites, including the object of securing and promoting the health and safety of persons at work at mines, petroleum sites or related places,
- to protect workers at mines and petroleum sites and other persons against harm to their health and safety through the elimination or minimisation of risks arising from work or from specific types of substances or plant,
- to ensure that effective provisions for emergencies are developed and maintained at mines and petroleum sites,
- to establish a scheme for ensuring that persons exercising certain functions at mines and petroleum sites are competent to do so,
- to establish the Mine Safety Advisory Council,
- to provide for worker safety and health representatives in coal mines,
- to facilitate interstate regulatory co-operation,
- to establish Boards of Inquiry,
- to provide for enforcement powers that are in addition to those in the *Work Health and Safety Act 2011*.

The Act is to be construed with and as if it forms part of the *Work Health and Safety Act 2011*. The Act assists in securing the objects of the *Work Health and Safety Act 2011* at mines and petroleum sites, given the increased hazards associated with these work sites.

The Regulation commenced on 1 February 2015 and is the subordinate legislation to the Act. It provides administrative and compliance support to meet the objects of the Act.

2.2. The need for government action

Good regulation is characterised by the demonstrated need for government action in the public interest. Mining is a high-hazard industry with a long history of accidents, disasters, and fatalities. This suggests that voluntary approaches are insufficient to achieve an acceptable level of work health and safety. Fatalities and injuries occurring on these sites represent a significant cost to industry and the community. It is therefore generally accepted that there is a need for specialist regulation of work health and safety (WHS) in these sites.

In 2020, independent reviewer Kym Bills undertook a statutory review of the Act and Regulation (the Statutory Review).² The Statutory Review found that mining WHS laws in NSW remain among the best in the world.³ Stakeholders were broadly supportive of the current legislation. Nevertheless, there are a small number of areas where the laws have unintended consequences, cause stakeholder confusion, or where interstate cooperation has not worked as intended.⁴

Initial consultation suggests that the Act and Regulation are largely supported by the community and are meeting objectives to improve health and safety for workers at mines and petroleum sites. A key driver for the re-make of the Regulation is to streamline and modernise the existing regulatory framework to reduce red tape on mine operators while maintaining and/or improving safety outcomes for workers. There is also a need to improve compliance and enforcement arrangements in relation to the administration of safety standards to minimise the risks of non-compliance.

2.3. Objectives of government action

WHS regulation is vital to encouraging a sustainable, safe, and prosperous mining and petroleum sector in NSW. The goal of these regulations is to minimise work-related fatalities, injuries, and illnesses, while maintaining an environment that encourages investment and economic growth in NSW.

The overarching objective of government action is to secure and promote improved safety outcomes for workers in mines and petroleum sites in NSW. The proposed Regulation seeks to secure the intended objects of the Act while:

- establishing a safer and more modern work health and safety system that aligns with developments in industry best practice and the features of the mining industry in NSW
- improving clarity and transparency for industry and the Regulator
- improving the flexibility of how the regulation is applied and decreasing regulatory burden.

These objectives are consistent with the NSW Government's framework for cutting red tape and reinforce the government's commitment to protecting worker health and safety in mines and petroleum sites.

2.4. The proposed Regulation

The existing Regulation was developed based on the national model WHS regulations for mining – which was subject to a national RIS process – and additional provisions that were developed by NSW, Queensland and Western Australia following further review and consultation. The

² The Review was required by section 77 of the Act.

³ Bills, Kym 2020. Statutory Review of the Work Health and Safety (Mines and Petroleum Sites) Act 2013 and Regulation, p. 5.

⁴ Bills, Kym 2020. Statutory Review of the Work Health and Safety (Mines and Petroleum Sites) Act 2013 and Regulation, pp. 5-6.

Mining, Exploration & Geoscience

proposed Regulation amends this existing Regulation, with proposals identified through the Statutory Review and public consultation undertaken to date (Appendix B).

The objective of the proposed Regulation is to protect the health and safety of workers at mines and petroleum sites. This is to be achieved by maintaining the existing provisions that have provided a fit-for-purpose regulatory framework for work health and safety to date, while improving how the Regulation is applied. Each amendment seeks to achieve one of the three objectives of government action specified previously (Table 1).

Table 1: Mapping of proposed amendments to objective of government action

Establishing a safer and more modern work health and safety system		Improving clarity and transparency for industry and the Regulator		Improving the flexibility of how the regulation is applied and decreasing regulatory burden	
1	Exhaust emissions and fuel standards (Cl.53)	3	References to superseded standards	4	Use of cables in hazardous zones (Cl.80)
2	Use of plant in hazardous zones (explosion-protection required) (Cl.78(9))	5	Testing of emergency plans (Cl.93)	8	Registration of plant design and items of plant (hoists) (Cl.177)
11	High risk activities – commissioning winding system or booster fan (Cl.177 and Sch. 3)	6	Emergency exits (Cl.96(2)(a))	9	Exemptions for certain mines (Cl.84)
12	High risk activities – constructing a well (Sch.3)	7	Duty to notify the regulator of certain incidents (Cl.128(5))	19	Qualified mechanical tradesperson (coal mines) (Sch.10)
13	High risk activities – raise bore activity (Sch.3)	10	PHMPs – additional matters to be considered (ground or strata failure) (Sch.1)	22	Professional engineering demonstration provision
16	Sampling and analysis – general requirements (Cl.2(2) of Sch.6)	14	Use of safety devices in refuge chamber (Cl.3(1)(d) of Sch.4)	23	Suspend/cancel practising certificate/certificate of competence (Cl.144,150)
17	Sampling and analysis – general requirements (Cl.2(8) of Sch.6)	15	Prohibited items and substances – explosives (Cl.5(2) and 5(3) of Sch.4)	24	Class exemption – Quarry manager instrument of exemption 2015
21	Sampling and analysis of airborne dust	18	Matters to be included in emergency plan (Cl.4 of Sch.7)	25	Class exemption – Recognised Service Facility Instrument of Exemption 2015
		20	Electrical engineer statutory functions (Sch.10)	26	Class exemption – Tier-3 Quarry Managers
				27	Class exemption – Notification of other matters for exploration 2019
				28	Maintenance of competence requirement

3. Options for achieving objectives

Consistent with the Subordinate Legislation Act and the Better Regulation principles, this RIS examines three options to achieve the objectives of the regulatory proposal. Option 2, to re-make the existing mine safety Regulation without amendments (maintaining the status quo) is the 'base case' against which the other options are examined and compared. The three options are:

- Option 1: Do nothing and allow the existing Regulation to lapse.
- Option 2: Re-make the existing Regulation without amendments (the base case)
- Option 3: Re-make the Regulation with amendments.

3.1. Option 1: Do nothing and allow the existing Regulation to lapse

This option involves the government taking no action with regard to the repeal of the Regulation. The existing Regulation would lapse and no longer have any operational effect.

Without its regulations, the Act would not adequately manage risks to worker health and safety at mines and petroleum sites. Instead, work health and safety would be regulated only under the existing *Work Health and Safety Regulation 2011*, which does not provide sufficient requirements for the increased hazards and risks associated with mines and petroleum sites. There would be no specific risk controls for the management of catastrophic hazards associated with mining, in particular for coal mining and underground mining.

3.2. Option 2: Re-make the existing Regulation without amendments (the base case)

Option 2 involves re-making the Regulation without amendment. This would continue all the current provisions in the Regulation and maintain the existing regulatory framework for mines and petroleum sites in NSW. This option would allow all the provisions in the existing Regulation to continue for another five years.

3.3. Option 3: Re-make the Regulation with amendments

Option 3, the proposed Regulation, is to re-make the Regulation with amendments as outlined in the proposed Regulation above.

Making the proposed Regulation will ensure that existing safety standards are improved or maintained while simplifying and modernising the Regulation to decrease regulatory burden on industry and government.

4. Identification of costs and benefits of each option

This RIS assesses the impacts of the proposed Regulation by considering its estimated costs and benefits compared to the base case, Option 2. An initial assessment of the costs and benefits of each option is provided below (Table 2).

Table 2: Summary of options

	Option 1: Allow the existing Regulation to lapse	Option 2: Re-make the existing Regulation without amendments	Option 3: Re-make the Regulation with amendments
Costs to industry, the community and government	Significant risk to worker and community safety Uncertainty for industry	Cost to government to re-make the Regulation	Adjustment costs for industry and government
Benefits to industry, the community and government	No re-make costs Lower regulatory burden on industry	No change for industry	Improved safety outcomes where standards have been updated Increased transparency for industry and the Regulator Decreased regulatory burden

4.1. Costs and benefits of Option 1

Mines and petroleum sites are high risk workplaces, and as such are subject to additional requirements as set out in the Act. This Act cannot operate as intended without a regulation to support it. Should the regulation lapse, hazards that are specific to these sites would not be appropriately managed. Removing the ability of the Government to regulate activities on these sites would likely increase injuries and fatalities. This would undermine the object to protect workers at mines and petroleum sites and other persons against harm to their health and safety.

This option may also impose costs on industry due to greater uncertainty regarding how to manage risk. Industry would be required to make their own assessments regarding what is reasonable to manage risk, and to determine and ensure appropriate safety standards are met. Costs would also increase significantly for government, who would be required to undertake more inspections to assess compliance and more enforcement activities to ensure the objects of the Act are achieved.

The benefit of allowing the Regulation to lapse may be greater flexibility and lower costs for those sites that are able to manage risk in innovative ways that are more efficient for their site. However, the efficient level of work health and safety for a certain site is unlikely to be aligned with the level of work health and safety and appetite for risk expected by the community. Whilst increased regulatory flexibility may in some cases lead to cost savings for industry, it would likely

be to the detriment of work health and safety and an increase in the risk of a major mining disaster. The occurrence of a major disaster would represent a significant, and unacceptable, cost to industry, government, and the broader community.

The Statutory Review found that the current Regulation has broad support from the community. Option 1 is therefore found to be infeasible as the expected costs far outweigh the benefits. It is not analysed further in this RIS.

4.2. Costs and benefits of Option 2 (the base case)

The costs and benefits attributable to Option 2 (the base case) have not been analysed in detail in this RIS as this option is taken to represent 'no change'. Instead, this option has been defined for the purposes of providing a benchmark against which to assess the incremental impacts of options 1 and 3.

The benefit of re-making the existing Regulation under Option 2 is that it maintains the existing operational regulatory framework and is administratively the most convenient option to implement. However, this option would allow the existing regulations to continue without addressing the outstanding health and safety issues identified in the Statutory Review and wider consultation undertaken to date.

4.3. Costs and benefits of Option 3

The major benefit associated with Option 3 is improved safety outcomes for workers at mines and petroleum sites. This is achieved by improving how the regulatory framework is applied to ensure it is in line with best practice developments to manage work health and safety. In particular, a number of amendments seek to reduce the development of silicosis through improved management of the risk of dust disease. Other amendments seek to decrease the risk of major mining accidents; for example, by updating safety standards related to equipment that can be used in underground coal mines.

Other benefits achieved by the proposed amendments include to increase transparency for both industry and government. Several amendments aim to improve clarity about how the Regulation is applied. For example, a perverse outcome from the existing Regulation is that safety devices like oxygen candles are prohibited in refuge chambers (Cl. 3(1)(d) of Schedule 4). This should not be a prohibited item as it does not have a naked flame, and the Resources Regulator provided guidance information as such to industry in 2019. The proposed amendment (14) seeks to make it clear that the prohibition on ignition sources in a refuge chamber should not include oxygen candles. Other amendments seek to clarify clauses that have found to be confusing or unclear how they should be applied by industry during consultation.

The major cost associated with this option is adjustment costs for industry related to matters such as replacing plant used in hazardous zones that is not certified under the AUSEx, ANZEx and IECEx certification schemes, and increased testing requirements for air quality. Transitional arrangements will allow industry and government to implement some of these changes over time. Further, some of these costs will be offset by cost decreases that result from other proposed

amendments that seek to decrease the regulatory burden on both industry and government. For example, some proposed exemptions seek to minimise regulatory burden on smaller mines such as Tier-3 quarries and small opal mines, thus decreasing their costs.

The Guide advises that agencies should also consider the impact of any option on innovation. Several proposed amendments seek to formalise the Regulator's Innovation Policy and provide more flexible ways for industry to achieve the same safety outcomes. For example, it is proposed to allow a professional engineering demonstration of an alternative means of compliance that entails a level of risk equivalent to, or better than, complying with a prescribed standard (amendment 22). This outcomes-focused approach enables alternative designs or systems to manage risk and is likely to incentivise further innovation.

A detailed comparison of the costs and benefits of Option 3 against the base case (Option 2) is provided in the following section. This includes quantification of these costs, wherever possible, as required by the Subordinate Legislation Act.

5. Cost benefit analysis

There are several methods and tools that can be used to quantify costs and benefits. The methodology used for analysing the impact of the proposed Regulation is based on the procedure set out in Schedule 1 of the Subordinate Legislation Act as well as the Guide.

5.1. Methodology

The amendments proposed in Option 3 have been categorised as achieving three main objectives. In line with the Guide, different methods for quantification have been applied to each category of proposals based on how substantive their impacts are expected to be (Table 3). Accordingly, the more substantive amendments have been analysed using Cost Benefit Analysis (CBA). Minor amendments have been analysed using Cost Effectiveness Analysis (CEA).

Table 3: Methodology used for each proposal

Category of proposals	Methodology
Establishing a safer and more modern work health and safety system	Cost Benefit Analysis
Improving clarity and transparency for industry and the Regulator	Cost Effectiveness Analysis
Improving the flexibility of how the regulation is applied and decreasing regulatory burden	Cost Effectiveness Analysis

5.1.1. Cost Benefit Analysis

CBA assesses the incremental change to the costs and benefits to industry, government and the community for the preferred option compared with the base case. This method is best used for proposals where the major benefits can be readily quantified. As such, this method has been used for those proposals expected to have significant work health and safety benefits.

The CBA approach results in the calculation of the net present value (NPV) of the option. The NPV is a single dollar figure value for the estimated value (in 2022 dollars) of the flow of benefits over time less costs. A positive NPV means that the option has a net benefit to the community compared to the base case, and the higher the value of the NPV the greater this benefit is.

Further detail on the quantifiable costs and benefits, methodology and assumptions used for the CBA are presented in Appendix D: Technical appendix.

5.1.2. Cost Effectiveness Analysis

CEA is an alternative methodology that can be applied for proposals where the benefits of the option cannot be quantified readily in dollar terms, but where the desired outcome can be clearly specified. It is therefore a practical way to assess which option achieves the objectives of regulatory change at least cost. This approach is therefore used to assess the remaining proposals. Effectively, it tests the hypothesis that the proposed Regulation is more cost effective than the base case.

Further detail on the quantifiable costs, methodology and assumptions used for the CEA are presented in Appendix D: Technical appendix.

5.2. Results

On balance, the group of amendments assessed using CEA are likely to have an overall negligible impact or net cost saving for industry and government. Those assessed using CBA are likely to have an overall net benefit for society.

The quantifiable analysis suggests that the present value costs associated with Option 3 over 10 years would be \$2.9 million, while the present value benefits would be \$3.5 million, leading to an overall net benefit to the community of \$0.5 million (Table 4).

Table 4: Summary of results for Option 3 compared to the base case (Option 2)

Objective	Units	Benefits (NPV)	Costs (NPV)	Overall benefit (NPV)
Establishing a safer and more modern work health and safety system	AUD \$m	\$3.5	\$2.9	\$0.5
Improving clarity and transparency for industry and the Regulator	AUD \$m	Negligible	\$0.2	Negligible change
Improving the flexibility of how the regulation is applied and decreasing regulatory burden	AUD \$m	Negligible	-\$0.3	Negligible change

A full comparison of the costs and benefits of Option 3 against the base case (Option 2) is in Appendix C: Benefits and costs of the preferred option.

There is considerable uncertainty about many of the parameters underlying this analysis, as it is difficult to measure the value of safety benefits. It is also recognised that the impacts on each mine or petroleum site may vary significantly depending on its characteristics. Many mines have already implemented these changes to foster a safe work environment. For these mines, the amendments will come at a negligible cost. For those that may be using out-dated equipment or previous (lower) standards, the amendments may come at a higher cost.

MEG has undertaken this analysis in a transparent manner, with all assumptions detailed in Appendix D: Technical appendix. The results are reasonably robust to sensitivity analysis. Costs for industry to adjust would have to rise significantly higher than expected for the overall impact of the amendments to be a net cost to the community. Engagement with industry in the following stages of consultation will be important to validate the size and nature of the expected impacts.

6. The preferred option

MEG has selected the preferred option based on an assessment of the results of quantitative and qualitative analysis, distributional impacts, any cumulative regulatory burden, and risk and uncertainty, as described in the Guide. The three options were considered against the base case (Option 2), which is to re-make the Regulation with no amendments (Table 5).

Table 5: Summary of costs and benefits of each option

Option	Costs	Benefits	Overall benefit
1. Allow the existing Regulation to lapse	High	Low	High negative
2. Re-make the existing Regulation without amendments	Low	Low	Neutral
3. Re-make the Regulation with amendments	Low	Medium	Positive

While Option 1 would reduce regulatory burden on industry, it would increase risks to worker safety. The removal of a well-established and successful approach to managing risks in mines and petroleum sites is not supported by stakeholders and would require a significant increase in oversight from government to maintain the risk environment without the legislative framework in place. Further in-depth analysis of this option was not undertaken as it is not supported by stakeholders and is misaligned with the NSW Government's approach to health and safety, as well as the model WHS regulations applied nationally.

Option 2 would retain the existing Regulation without amendment. This would continue the existing legislated safety standards that have driven improved safety performance in NSW over a long period of time and would require no change costs to industry or government. It would, however, maintain provisions that were found to be sometimes outdated or confusing in both the Statutory Review and wider consultation undertaken to date.

Option 3 would re-make the Regulation with a set of proposed amendments (the proposed Regulation). Option 3 will require adjustment and ongoing costs to industry and government of \$3.1 million over 10 years in net present value terms. However, these costs are more than offset by estimated benefits achieved for increased safety of \$3.5 million, as well as decreases in costs

of \$0.3 million due to a set of amendments that seek to decrease regulatory burden where appropriate.

For these reasons, Option 3 is the preferred option.

Option 3 is the preferred option, as re-making the Regulation with amendments will help achieve the Act's objectives while establishing a safer and more modern work health and safety system that aligns with developments in industry best practice and the features of the mining industry in NSW; improving clarity and transparency for industry and the Regulator; and improving the flexibility of how the regulation is applied and decreasing regulatory burden.

7. Consultation

Extensive consultation has been undertaken regarding these proposed regulatory amendments. The Resources Regulator facilitated a Statutory Review of the Act and Regulation during 2020, led by independent reviewer Kym Bills. The public consultation period ran from 1 March 2020 to 1 May 2020. A discussion paper was published in March 2020, inviting submissions to be made to the Review. Twenty-four submissions were received, reflecting all areas and types of the State's mining industry. An online survey was also undertaken to provide feedback into the Review. Eighteen respondents provided feedback to the survey.

The lead reviewer and the Regulator conducted nine public forums with six face-to-face sessions across NSW and three online forums due to COVID-19 restrictions. A recording of the online public consultation held on 7 April 2020 is available on the Regulator's website, as well as PowerPoint slides presented at these forums.

The lead reviewer examined all submissions and considered the issues raised in them, the outcomes of the online survey and input from the public forums. The lead reviewer then prepared a report for the Deputy Premier that was tabled in Parliament on 10 November 2020.

Following the review, MEG identified several recommendations that required further consultation as they were complex and possibly required legislative reform. A number of other matters were also identified to be consulted on in this process.

MEG developed a discussion paper in March 2021 to help interested parties consider and respond to the proposed amendments. Public consultation took place from 19 April 2021 to 17 May 2021. Fifteen public submissions were made by:

- Australian Workers Union
- Centennial Clarence
- Centennial Coal

- Centennial Myuna
- Centennial Newstan
- CFMMEU
- Coal Services Mine Rescue
- Green Consulting Group
- Lightning Ridge Miners Association
- Mining Electrical Mining Mechanical Engineers
- Mine Managers Association of Australia
- NSW Minerals Council
- Association of Mining and Exploration Companies
- Cement Concrete and Aggregates Australia
- Association of Professional Engineers, Scientists and Managers Australia

This public consultation process allowed internal and industry stakeholders to provide input and has informed MEG's approach to these proposals. The submissions received can be viewed on the website of the Resources Regulator.⁵ These proposals are being addressed via the staged repeal and re-make of the Regulation proposed in this RIS.

A small number of additional amendments have been proposed based on internal MEG feedback and are being consulted upon as part of this RIS.

8. Evaluation and review

The proposed Regulation, once made, will be the subject of periodic review under the requirements of the Subordinate Legislation Act, which provides for most regulations to be subject to repeal every five years if not reviewed and re-made.

⁵ <https://www.resourcesregulator.nsw.gov.au/our-role/legislation/public-consultation/work-health-and-safety-mines-and-petroleum-sites-laws>

Appendices

A: The proposed Regulation

See proposed Work Health and Safety (Mines and Petroleum Sites) Regulation 2022.

B: Amendment proposals

Each amendment proposal is described below.

1. Exhaust emissions and fuel standards (Cl. 53)

Problem	<p>Diesel engine exhaust emissions can cause adverse health outcomes, including acute and chronic pulmonary and cardiovascular diseases.</p> <p>For underground coal mines, sampling and analysis must be undertaken every six months by a licensed person (clause 75). Whereas, for underground mines other than coal mines, it must be undertaken regularly but there is no prescribed frequency, and it does not need to be undertaken by a licensed person (cl. 53).</p> <p>The sampling and analysis requirements should be the same for all underground mines to ensure all workers in underground mines receive the same levels of protection.</p>
Desired outcome	<p>Amend the Regulation to extend the requirements for underground coal mines to underground mines other than coal mines.</p> <p>For underground mines other than coal mines, amend the Regulation to require the sampling and analysis to be undertaken by a person who holds a license under clause 152(2)(a) or who meets the eligibility requirements under clause 154.</p>

2. Use of plant in hazardous zones (explosion-protection required) (Cl.78(9))

Problem	<p>Under clause 78, electrical plant used in a hazardous zone must have a valid certificate of conformity or be Departmental approved plant. ‘Departmental approved’ means plant manufactured before 1 October 2015 and specified in the Explosion Protected Electrical Apparatus Approvals List.</p> <p>These plant were designed in accordance with various standards which have been superseded multiple times.</p> <p>Industry has been transitioning to equipment certified under the AUSEx, ANZEx and IECEx certification schemes since the 1 October 2015 manufacturing limit was introduced. Most Departmental approved plant would not meet the design requirements of these certification schemes and therefore they provide a lower factor of safety.</p> <p>A large portion of Departmental approved plant has a suitably certified alternative available.</p>
Desired outcome	<p>Amend clause 78 to remove references to ‘Departmental approved’ plant. Enable industry to transition by providing that ‘Departmental approved’ plant has an end-of-life date which is six years from the commencement of the new Regulation. The six-year end of life date is based on the maximum in-service period for explosion protected equipment based on AS/NZS 2290.1.</p>

3. References to superseded standards

Problem	<p>The following Standards referred to in the Regulation are superseded.</p> <p>Clause 78:</p> <p>Superseded: AS/NZS 60079.18:2011 Explosive atmospheres—Part 18: Equipment protection by encapsulation ‘m’</p> <p>Current: AS/NZS 60079.18:2016 Explosive atmospheres—Part 18: Equipment protection by encapsulation ‘m’</p> <p>Superseded: AS/NZS 60079.0:2012 Explosive atmospheres—Part 0: Equipment—General requirements</p> <p>Current: AS/NZS 60079.0:2019 Explosive atmospheres—Part 0: Equipment—General requirements</p> <p>The note in clause 78(3)(b)(i)</p> <p>Superseded: See table 2.1 of Australian and New Zealand Standard AS/NZS 0079.14:2009 Explosive atmospheres—Part 14: Electrical installations design, election and erection for the explosion protection techniques that achieve equipment protection level “Mb”.</p> <p>Current: See Appendix ZZ table 2 of Australian and New Zealand Standard AS/NZS 60079.14:2017 Explosive atmospheres—Part 14: Design selection, erection and initial inspection for the explosion protection techniques that achieve equipment protection level “Mb”.</p> <p>Clause 80</p> <p>Superseded: AS/NZS 1802:2003 Electric cables—Reeling and trailing—For underground coal mining purposes</p> <p>Current: AS/NZS 1802:2018 Electrical cables—Reeling and trailing—For underground coal mining</p> <p>Clause 3A (f) of Schedule 1 and clause 18(1)(a) of Schedule 3</p> <p>Superseded: AS 3980–1999, Guide to the determination of gas content of coal—Direct desorption method</p> <p>Current: AS 3980:2016 Determination of gas content of coal and carbonaceous material—Direct desorption method</p>
Desired outcome	Amend the Regulation to replace the references to the superseded standard with the current standard.

Mining, Exploration & Geoscience

4. Use of cables in hazardous zones (Cl.80)

Problem	<p>Prescribing the class exemption permits the ongoing use of cables that do not conform to the requirements of clause 80(3)(b) and (c) subject to some conditions for an underground mine where the concentration of methane in air is less than 1.25% by volume. The class exemption is currently permitted by gazette order only and was issued after considering alternative designs with the equivalent level of health and safety.</p> <p>This update is consistent with the Regulator's Innovation policy which allows for continuous improvement of health and safety outcomes through design, technology, product and system innovation and development.</p>
Desired outcome	<p>Amend clause 80 to adopt the class exemption granted by the NSW Government in August 2020 via government gazette. (NSW Government Gazette No 171 of 7 August 2020).</p>

5. Testing of emergency plans (Cl.93)

Problem	<p>Clause 93 provides that the testing of emergency plans is to have regard to the recommendations made by emergency services organisations consulted under clause 89 in preparing the plan. Clause 89(2) states a test of an emergency plan is to have regard to the recommendations.</p>
Desired outcome	<p>Amend clause 93 to be consistent with clause 89 by ensuring emergency plans address recommendations made by emergency services.</p>

6. Emergency exits (Cl.96(2)(a))

Problem	<p>Cl.96(2)(a) requires each exit at an underground mine to be accessible from each level in which 'coal extraction or stoping operations' are carried out.</p> <p>In metal mines 'stoping' is only one of numerous techniques that constitute 'extraction'.</p> <p>Cl.96 should regulate all underground mine production techniques.</p>
Desired outcome	<p>Use the term 'extraction operations' instead of 'coal extraction or stoping operations'.</p>

7. Duty to notify the regulator of certain incidents (Cl.128(5))

Problem	<p>New exposure standards for diesel particulates were implemented in clause 39.</p> <p>Proposal will assist the Resources Regulator to support industry reducing worker exposure levels to dust and diesel particulate matter and airborne concentrations of a substance or mixture in the workplace.</p>
Desired outcome	<p>Insert exceedances of exposure standards for dust, diesel particulate matter and make it a notifiable high potential incident</p> <p>Detection of above legislative levels of carbon dioxide (clause 39) to make it a notifiable high potential incident.</p> <p>Insert exceedances of airborne concentrations of a substance or mixtures at a workplace (clause 50 WHS Regulation) to make it a notifiable high potential incident.</p>

8. Registration of plant design and items of plant (hoists) (Cl.177)

Problem	<p>There are currently three categories of hoists with different legislative requirements:</p> <ul style="list-style-type: none">person-riding hoists which require design and item registrationexempt hoists which only require item registrationmaterial hoists which do not require design or item registration. <p>The registration process can be difficult for small gemstone mines due to their remote location, lack of available independent competent persons in these remote locations and lack of digital connectivity. It can be difficult for mine safety inspectors to determine the legitimacy of operator claims, for example that the hoist is an exempt hoist or that the hoist is only used for materials.</p>
Desired outcome	<p>Prescribing the fundamental safety requirements in the Regulation for winding systems at opal mines is a simpler, more direct and more appropriate regulatory option than requiring design and item registration (clauses 177(2) and (3)).</p> <p>Refer to Appendix A for proposed amendments to the Regulation.</p>

Mining, Exploration & Geoscience

9. Exemptions for certain mines (Cl.84)

Problem	<p>Tier-3 quarries operate similarly to already exempted, lower risk mining. They should be regulated similarly.</p> <p>Certain gemstone mines and tourist mines are exempt from the WHS(MPS) regulation provisions relating to control of risk. Instead, exempted mines need to set out systems and procedures to control any risks to health and safety associated with the mine's major hazards. Existing quarry exemptions utilise the below definition via government gazette.</p> <p>'Tier-3 quarry means a mine, other than an underground mine or a coal mine, where the mining operations meet all the following criteria:</p> <ul style="list-style-type: none">(a) 5 or less workers (FTE), including the quarry manager and contractors(b) does not carry out dredging or blasting (explosives) activities(c) does not extract more than 30,000 cubic meters of extractive material for sale or reuse per year.'<p>Clause 184(3) identifies risks that must be addressed via systems, procedures, plans and other controls. Not all these risks are applicable for tier-3 quarries (i.e., 184(3)(a) ground or strata failure and (c) mine shafts and winding system, (h) ventilation as these relate to underground operations. Other exempted mines, opal mines, underground small gemstone mines or tourist mines, may be underground.</p>
Desired outcome	<p>Insert definition of tier 3 quarry so that the small gemstone mines exemption applies to the defined mine.</p> <p>Insert exemption for tier-3 quarries for risks identified in clause 184(3) that are not applicable.</p>

10. PHMPs – additional matters to be considered (ground or strata failure) (Sch.1)

Problem	<p>Clause 1(1) of Schedule 1 does not make it clear that mine operators should consider risks of rock, coal or related pressure bursts when developing a principal mining hazard management plan. This may be confusing.</p> <p>Rock, coal or related pressure bursts may be caused by a mining process or activity and may lead to ground or strata failure. While these bursts are not defined as a principal mining hazard under the WHS(MPS) regulation, a ground or strata failure is.</p> <p>Clarify that if a mine operator must assess their risk of rock, coal or related pressure bursts. A principal hazard management plan must address all aspects of risks associated with the principal mining hazard.</p>
Desired outcome	Insert requirement for mine operators to consider their risk of rock, coal or related pressure bursts when developing a principal hazard management plan to control measures to manage the risks of ground or strata failure.

11. High risk activities – commissioning winding system or booster fan (Cl.177 and Sch. 3)

Problem	<p>Under cl.177 and Schedule 3, the Regulator is introducing a new process for the design and item registration of booster fans and winding systems which takes into consideration their unique requirements. These plant are unique as they are not mass produced, fixed, bespoke, predominately site specific, and required to be installed at the site before testing can be undertaken to demonstrate the design has achieved the specified performance.</p> <p>The commissioning step currently occurs prior to design registration. Under the new process, design registration will be granted before construction and commissioning, giving mines greater certainty of project timelines, which simplifies the process. To ensure an equivalent level of safety, mines will have to submit a HRA notification for commissioning of a winder or booster fan.</p> <p>References to commission and commissioning in clause 177(9) and (10) have often created confusion for stakeholders. Clause 179(9) requires that a PCBU must not commission an item of plant that has not been item registered. Clause 177(10) enables any necessary adjustments, tests or inspections to be carried out as part of the commissioning process before the plant is commissioned at a workplace. These clauses are consistent with clause 234 of the WHS Regulation 2017</p>
Desired outcome	<p>The Regulation is amended to include a new HRA notification for the commissioning of a winding system or booster fan required to be item registered under clause 177(3). This includes re-commissioning a booster fan or winding system which has had its design altered in accordance with clause 244 of the WHS Regulation.</p> <p>The information and documentation to be provided is:</p> <ul style="list-style-type: none"> the name of the commissioning verifier a statement from the commissioning verifier stating that they have reviewed the commissioning information and are satisfied that it is appropriate for the commissioning work to be undertaken Commissioning verifier must be an independent, competent person. Waiting period is to be 1 month <p>The Regulation is amended to include a note to clarify the intent of the following terms used in clauses 177(9) and (10):</p> <ul style="list-style-type: none"> commission: to place in service commissioning: performing the necessary adjustments, tests and inspections to ensure plant is in full working order to specified requirements before the plant is used.

12. High risk activities – constructing a well (Sch.3)

Problem	<p>The risks associated with constructing a well are comparable to those associated with existing HRAs.</p> <p>The risks of associated with constructing a well include:</p> <ul style="list-style-type: none">a blowout in the drilling phase - uncontrolled release of crude oil and/or natural gas from a well after pressure control systems have failed which can cause serious injury or death.high pressures during stimulation activities with potential to cause equipment failure.ignition risks during testing activities caused by flaring gas at the surfacethe unknown geology and pressure profiles of exploration wells.
Desired outcome	<p>Amend Part 6 of Schedule 3 to include a new HRA for constructing a well applicable to exploration and production wells.</p> <p>The waiting period is 14 days and the following information and documents must be provided:</p> <ul style="list-style-type: none">- type of well to be drilled (exploration or production well)- proposed well name- expected depth- proposed survey of the well- an assessment that indicates that any equipment that is used for well construction is fit for purpose- details of how well control will be managed during the activity. <p>The following definitions are included in the new clause:</p> <ul style="list-style-type: none">- exploration well means a well-constructed to explore for petroleum. In this clause, exploration well also applies to appraisal wells and gas monitoring wells.- production well means a well that produces petroleum- well completion means a generic term used to describe the assembly of downhole tubulars and equipment required to enable safe and efficient production from an oil or gas well. The point at which the completion process begins may depend on the type and design of well.- well construction means the drilling and completion steps prior to production. This includes well testing activities and well stimulation activities- well control means methods used to minimise the potential for the well to flow or kick and to maintain control of the well in the event of flow or a kick

Mining, Exploration & Geoscience

13. High risk activities – raise bore activity (Sch.3)

Problem	<p>Recent safety incidents have occurred involving raise bore activity in underground mines.</p> <p>Include raise bore activity as a high-risk activity provides the regulatory power for the Regulator to review the proposed safety system (including equipment and plans to be used) and, if required, provide feedback to the mine operator. The Regulator currently relies on a Guideline for this function.</p>
Desired outcome	<p>Insert raise bore activity to include it as a high-risk activity for underground mines for specific instances:</p> <ul style="list-style-type: none">- Raise boring activity is greater than 3.0 metres in diameter and more than 100 metres long, or- The waiting period is proposed for 3 months. <p>The information and document to be provided is:</p> <ul style="list-style-type: none">- Details of the safety systems and method of working- Details of the plant and equipment to be used.

14. Use of safety devices in refuge chamber (Cl.3(1)(d) of Sch.4)

Problem	<p>A perverse outcome from this clause is the prohibition of safety devices like oxygen candles in refuge chambers.</p> <p>This should not be a prohibited item for use in a refuge chamber in underground metalliferous mines as it does not have a naked flame. It is standard practice to use an oxygen candle in a refuge chamber.</p> <p>Resources Regulator provided guidance information to Industry in 2019.</p>
Desired outcome	Amend clause to make it clear that the prohibition on ignition sources in a refuge chamber should not include oxygen candles.

15. Prohibited items and substances – explosives (Cl.5(2) and 5(3) of Sch.4)

Problem	Amend provisions to clarify the intention of the clauses and the limited circumstances in which the clauses apply.
Desired outcome	Insert note to refer to clause 3 definitions of ‘underground coal mine’ and ‘underground mine’.

16. Sampling and analysis – general requirements (Cl.2(2) of Sch.6)

Problem	<p>Sch. 6 sets the minimum worker exposure sampling required in coal mines for all coal mines and in relation to the sampling and analysis of the airborne dust.</p> <p>The minimum standard required for sampling airborne dust should be updated to reflect changes in shift duration in NSW coal operations.</p>
Desired outcome	Amend ‘over a period of at least 5 hours’ to ‘a minimum of 80% of a shift’ in duration.

17. Sampling and analysis – general requirements (Cl. 2(8) of Sch.6)

Problem	<p>Sch.6 sets the minimum worker exposure sampling required in coal mines for all coal mines and in relation to the sampling and analysis of the airborne dust.</p> <p>The current requirement to only analyse one respirable dust sample taken in an area at a particular time (one sample out five) for respirable quartz means that the testing results do not provide the full picture. Changing the requirement to ensure all samples are analysed addresses this issue.</p>
Desired outcome	Amend to include analysis of the level of respirable quartz to be required for each respirable dust sample.

18. Matters to be included in emergency plan (Cl.4 of Sch.7)

Problem	<p>Cl.101 identifies the type of personal protective equipment (PPE) and the type of incidents in which this PPE must be provided to workers entering an underground mine in an emergency.</p> <p>However, appropriate PPE should be provided regardless of the incident type, based on the potential risks (e.g., appropriate PPE for a fire or hazchem response).</p>
Desired outcome	Amend clause 4(1)(b) of Schedule 7 to refer to PPE so that PPE must be provided regardless of the incident type, based on the potential risks.

Mining, Exploration & Geoscience

19. Qualified mechanical tradesperson (coal mines) (Sch.10)

Problem	<p>The competency requirements to be nominated for the statutory function of qualified mechanical tradesperson (underground coal mines) lack flexibility and should allow for alternative trades with qualifications more suited to the mining industry.</p> <p>A wide range of mechanical skills enter a mine site to perform tasks specific to their scope of engagement. For example, a pump specialist who is engaged to fix a water pump in the coal handling and preparation plant who is performing mechanical work but would not have the skills to work on a Caterpillar Haul Truck. Similarly, a person engaged to perform a hydraulic tune on an excavator is doing mechanical work but is not skilled in working on transmissions, steering or braking systems.</p>
Desired outcome	<p>Amend the Regulation to provide mine operators with the flexibility to identify appropriate qualifications, skills and experience in the mine's mechanical engineering control plan (MECP) which would be required in order to be nominated for the qualified mechanical tradesperson statutory functions at underground and open-cut coal mines.</p> <p>The MECP could specify nationally recognised training package qualifications (certificate IV), type and amount of experience required, and skills.</p> <p>The qualification must align with a mechanical trade qualification in the Australian Qualifications Framework.</p> <p>The mine operator determines what is appropriate depending on the mine's circumstances.</p> <p>The MECP could specify nationally recognised training package qualifications (certificate IV), type and amount of experience required, and skills.</p>

20. Electrical engineer statutory functions (Sch.10)

Problem	<p>The electrical engineering statutory functions are inconsistent. For the electrical engineering manager at an underground coal mine, the functions include 'supervising' and 'monitoring'. However, there is no 'supervise' or 'monitor' function for the following statutory functions:</p> <p>electrical engineer (coal mines other than underground coal mines) electrical engineer (underground mines other than coal mines) electrical engineer (mines other than underground mines)</p> <p>Compliance actions have been required to address issues related to appropriate supervision and monitoring of electrical work at these mines.</p>
Desired outcome	<p>Update the three electrical engineer statutory functions (clauses 20, 28 and 22 of Schedule 10) to include a 'supervise' and 'monitor' function to be consistent with the statutory function of electrical engineering manager at an underground coal mine.</p>

Mining, Exploration & Geoscience

21. Sampling and analysis of airborne dust

Problem	<p>Similar sampling and analysis of respirable quartz for coal mines and non-coal mines helps create a consistent minimum standard. Non-coal workers are provided the same protection as coal workers.</p> <p>Similar to existing requirements in Clause 86 and Schedule 6.</p>
Desired outcome	Amend the regulation to require the sampling and analysis of respirable quartz for non-coal mines where the hazard exists.

22. Professional engineering demonstration provision

Problem	<p>An outcomes-focused approach enables alternative designs or systems to manage risks and provides regulatory support to the Resource Regulator's Innovation Policy, currently operational.</p> <p>This provision enables mine operators to manage risk in a different way to the prescribed standards if they can show the method used is like or better than the required standard.</p>
Desired outcome	<p>Amend the regulation to create a class exemption to enable a professional engineering demonstration of an alternative means of compliance that entails a level of risk equivalent to, or better than, complying with a prescribed standard.</p> <p>The alternative means would still require Regulator approval. This is formalising the Regulator's Innovation Policy into the Regulation.</p>

23. Suspend/cancel practising certificate/certificate of competence (Cl.144,150)

Problem	<p>In 2018, Queensland amended their mine safety laws to enable the Chief Executive Officer of Resources Safety and Health Queensland to suspend or cancel a certificate of competency or site senior executive notice where the holder has contravened a safety and health obligation under the legislation, or has committed an offence against a mining safety legislation in Queensland or another state or territory, or where the holder has had a certificate of competency suspended or cancelled in another state or territory.</p> <p>There are comparable provisions already in NSW, with the exception of when a certificate holder has contravened a safety and health obligation under the legislation.</p>
Desired outcome	Include a contravention, rather than only a conviction, of a safety and health obligation under the legislation as grounds for suspending or cancelling a practicing certificate or certificate of competence. The contravention of a safety and health obligation is to be limited to circumstances where the contravention could have led to the risk to the health or safety of a person, that is to exclude any contraventions of an administrative nature.

Mining, Exploration & Geoscience

24. Class exemption - Quarry manager instrument of exemption 2015

Problem	<p>The class exemption issued by the Regulator under cl 185 of the Regulation titled <u>Quarry Manager Instrument of Exemption 2015</u> dated 30 June 2015 allows a competent but unqualified person to be a quarry manager (relates to cl 136(3), 136(4) and 137(1))</p> <p>This exemption has been in effect for 6 years. A class exemption is not an appropriate long-term regulatory option.</p>
Desired outcome	<p>This class exemption is written into the Regulation to avoid unnecessary administrative burden for the Regulator.</p>

25. Class exemption - Recognised Service Facility Instrument of Exemption 2015

Problem	<p>The class exemption issued by the Regulator under cl 185 of the Regulation titled <u>Recognised Service Facility Instrument of Exemption 2015</u> dated 20 July 2015 allows a recognised service facility to carry out a licensed activity on an explosion protected diesel engine system at an underground coal mine (relates to cl 152(2)(b) of the Reg)</p> <p>This exemption has been in effect for 6 years. A class exemption is not an appropriate long-term regulatory option.</p>
Desired outcome	<p>This class exemption is written into the Regulation to avoid unnecessary administrative burden for the Regulator.</p>

26. Class exemption – Tier-3 Quarry Managers

Problem	<p>The class exemption titled <u>Work Health and Safety (Mines and Petroleum Sites) Exemption (Tier-3 Quarry Managers) March 2020</u> published in the NSW Government Gazette No 58 of 27 March 2020 provides an exemption for a tier-3 quarry to nominate an unqualified individual to be a quarry manager.</p> <p>This exemption has been recently established and the reason for the exemption being created is unlikely to have changed. A class exemption is not an appropriate long-term regulatory option.</p>
Desired outcome	<p>This class exemption is written into the Regulation to avoid unnecessary administrative burden for the Regulator</p>

27. Class exemption – Notification of other matters for exploration 2019

Problem	<p>The class exemption Work Health and Safety (Mines and Petroleum Sites) Exemption (Notification of Other Matters for Exploration) 2019 published in the NSW Government gazette No 165 of 6 December 2019 exempts the operator of a mine or petroleum site from some of the requirements to notify under cl 129 where the only activity being undertaken is exploring for minerals or petroleum.</p> <p>This exemption was issued as it was not necessary for these notifications to be given where only exploration for minerals was being undertaken. This was to reduce unnecessary regulatory burden.</p>
Desired outcome	This class exemption is incorporated into the Regulation as a more appropriate regulatory approach than a class exemption.

28. Maintenance of competence requirement

Problem	<p>Recent amendments to the Mutual Recognition (New South Wales) Act 1992 will allow people from other jurisdictions to undertake activities in equivalent occupations in NSW without needing to notify for mutual recognition (i.e., automatic mutual recognition)</p> <p>These changes will eventually apply (noting a temporary exemption is currently in place) to statutory functions listed in schedule 10 of the regulation that require a practising certificate</p> <p>Mutual recognition in mining is currently given effect by the grant of a practising certificate. This will not be required for automatic mutual recognition</p> <p>The regulator currently includes a condition requiring maintenance of competence on practising certificates (see attached). A regulatory gap has been created by automatic mutual recognition in that the regulator will not be able to require people from interstate to maintain their competence when performing the activities of a statutory function through automatic mutual recognition (i.e., they don't hold a practising certificate granted in NSW)</p> <p>An exemption is not an appropriate long-term regulatory option</p>
Desired outcome	<p>Amend the regulation to place a duty on any person performing a statutory function in schedule 10 that requires a practising certificate to comply with the maintenance of competence requirements published by the regulator (see clause 138C and attached).</p> <p>Failure to comply with the obligation should be a penalty offence, but also grounds for suspension or cancellation of a practising certificate.</p> <p>The regulator should also be able to direct a person who does not hold an NSW practicing certificate but is otherwise able to perform the activities of a statutory function through automatic mutual recognition, to not perform the activities if they have failed to comply with the maintenance of competence obligations until they have complied.</p>

C: Benefits and costs of the preferred option

Costs for preferred option (compared with Option 2)

Table 6: Summary of CBA cost results

Proposed amendment	Costs to industry	Costs to community	Costs to government
1 Exhaust emissions and fuel standards (Cl.53)	\$224,921	No or negligible additional cost	No or negligible additional cost
2 Use of plant in hazardous zones (explosion-protection required) (Cl.78(9))	\$1,695,139	No or negligible additional cost	No or negligible additional cost
11 High risk activities – commissioning winding system or booster fan (Cl.177 and Sch. 3)	\$46,084	No or negligible additional cost	Administrative costs in providing guidance (assumed to form part of existing education and compliance activities)
12 High risk activities – constructing a well (Sch.3)	\$102,256	No or negligible additional cost	Administrative costs in providing guidance (assumed to form part of existing education and compliance activities)
13 High risk activities – raise bore activity (Sch.3)	\$88,058	No or negligible additional cost	Administrative costs in providing guidance (assumed to form part of existing education and compliance activities)
16 Sampling and analysis – general requirements (Cl.2(2) of Sch.6)	\$29,342	No or negligible additional cost	No or negligible additional cost
17 Sampling and analysis – general requirements (Cl.2(8) of Sch.6)	\$268,269	No or negligible additional cost	No or negligible additional cost
21 Sampling and analysis of airborne dust	\$476,210	No or negligible additional cost	No or negligible additional cost

Mining, Exploration & Geoscience

Table 7: Summary of CEA cost results

Proposed amendment	Costs to industry	Costs to community	Costs to government
3 References to superseded standards	\$1,402	No or negligible additional cost	No or negligible additional cost
4 Use of cables in hazardous zones (Cl.80)	\$1,402	No or negligible additional cost	No or negligible additional cost
5 Testing of emergency plans (Cl.93)	\$1,402	No or negligible additional cost	\$140,766
6 Emergency exits (Cl.96(2)(a))	\$1,402	No or negligible additional cost	No or negligible additional cost
7 Duty to notify the regulator of certain incidents (Cl.128(5))	\$2,867	No or negligible additional cost	\$14,714
8 Registration of plant design and items of plant (hoists) (Cl.177)	-\$44,370	No or negligible additional cost	-\$859,729
9 Exemptions for certain mines (Cl.84)	\$701	No or negligible additional cost	No or negligible additional cost
10 PHMPs – additional matters to be considered (ground or strata failure) (Sch.1)	\$1,402	No or negligible additional cost	\$14,714
14 Use of safety devices in refuge chamber (Cl.3(1)(d) of Sch.4)	\$1,402	No or negligible additional cost	No or negligible additional cost
15 Prohibited items and substances – explosives (Cl.5(2) and 5(3) of Sch.4)	\$1,402	No or negligible additional cost	No or negligible additional cost
18 Matters to be included in emergency plan (Cl.4 of Sch.7)	\$1,402	No or negligible additional cost	No or negligible additional cost
19 Qualified mechanical tradesperson (coal mines) (Sch.10)	\$1,402	No or negligible additional cost	No or negligible additional cost
20 Electrical engineer statutory functions (Sch.10)	\$1,402	No or negligible additional cost	No or negligible additional cost
22 Professional engineering demonstration provision	\$145,678	No or negligible additional cost	-\$291,355

Mining, Exploration & Geoscience

23	Suspend/cancel practising certificate/certificate of competence (Cl.144,150)	\$1,402	No or negligible additional cost	\$764,204
24	Class exemption – Quarry manager instrument of exemption 2015	\$1,402	No or negligible additional cost	No or negligible additional cost
25	Class exemption – Recognised Service Facility Instrument of Exemption 2015	\$1,402	No or negligible additional cost	No or negligible additional cost
26	Class exemption – Tier-3 Quarry Managers	\$1,402	No or negligible additional cost	No or negligible additional cost
27	Class exemption – Notification of other matters for exploration 2019	\$1,402	No or negligible additional cost	No or negligible additional cost
28	Maintenance of competence requirement	\$1,402	No or negligible additional cost	No or negligible additional cost

Benefits for preferred option (compared with Option 2)

Table 8: Summary of CBA benefit results

Proposed amendment	Benefits to Industry	Benefits to Community	Benefits to Government
1 Exhaust emissions and fuel standards (Cl.53)	\$675,438	Unquantifiable, however significant benefits to those families and communities that might otherwise be affected by diesel exhaust emissions	Unquantifiable, however reduction in costs associated with potential emergency situations
2 Use of plant in hazardous zones (explosion-protection required) (Cl.78(9))	\$965,300	Unquantifiable, however potential avoidance of major mining disasters	Unquantifiable, however potential avoidance of major mining disasters
11 High risk activities – commissioning winding system or booster fan (Cl.177 and Sch. 3)	\$298,719	Unquantifiable, however confidence in appropriate management of worker safety	Unquantifiable, however administrative savings associated with removal of the existing regime
12 High risk activities – constructing a well (Sch.3)	\$99,573	Unquantifiable, however confidence in appropriate management of worker safety	Unquantifiable, however administrative savings associated with removal of the existing regime
13 High risk activities – raise bore activity (Sch.3)	\$199,146	Unquantifiable, however confidence in appropriate management of worker safety	Unquantifiable, however administrative savings associated with removal of the existing regime
16 Sampling and analysis – general requirements (Cl.2(2) of Sch.6)	\$197,003	Unquantifiable, however confidence in appropriate management of worker safety	Negligible change
17 Sampling and analysis – general requirements (Cl. 2(8) of Sch.6)	\$360,234	Unquantifiable, however confidence in appropriate management of worker safety	Negligible change
21 Sampling and analysis of airborne dust	\$675,438	Unquantifiable, however confidence in appropriate management of worker safety	Negligible change

D: Technical appendix

We use a collection of the best available evidence to inform the quantification of costs and benefits in the CBA and CEA. The following assumptions in relation to costs and benefits have been developed based on:

- NSW Department of Trade and Investment, Regional Infrastructure and Services, *Regulatory Impact Statement for Work Health and Safety (Mines) Regulation 2014*, published September 2014.
- NSW Regions Mining and Petroleum statistics
- FTE costings based on internal MEG data.

The inputs used to inform the analysis are outlined in the following sections. Due to uncertainty in some of these parameters, sensitivity analysis is also undertaken to test the robustness of the results.

Generic assumptions

The following assumptions are used in both the CBA and CEA analyses.

Estimating the costs to government

We estimated costs to government by quantifying changes in hours worked for individuals employed by Regions NSW that result from each amendment, and monetising it based on the hourly costs for the relevant employee. To calculate the approximate hourly wage per FTE grade, it is assumed 45 weeks are worked in a year, and each week contains 38 hours. Full time employee (FTE) salaries are recorded in the regulator's Administrative Costs 2022 data set. The FTE salary cost is divided by worked weeks (45) and hours in a worked week (38) to arrive at the following hourly rates (Table 9).

Table 9: Summary of FTE approximate hourly wage per grade

Grade	FTE salary/cost	Worked weeks	Hours in a worked week	Approximate hourly wage
Clerk grade 3/4	\$81,158	45	38	\$47
Clerk grade 9/10	\$124,901	45	38	\$73
Inspectors grade 3	\$212,037	45	38	\$124
Inspectors grade 4	\$222,871	45	38	\$130

Source: MEG.

Estimating the proportion of mines affected by an amendment

The regulator records the number of mines and hours worked in NSW in their data set for Mining and Petroleum statistics in 2022 (Table 10). We used this data to calculate the proportion of the industry being impacted for each amendment.

Table 10: Summary of mine types and hours worked in NSW

Mine type	Number of mines in NSW	Hours worked (000')
All coal	121	45,937
Coal underground	41	13,668
All large metalliferous	59	16,413
Large metalliferous underground	24	8,981
All small metalliferous, quarries and other gemstones	2,611	2,271
Petroleum and geothermal sites (including exploration)	127	N/A
Exploration	835	N/A
Opal	3,274	N/A
All mines (excl. small opal)	3,848	N/A

Source: MEG.

Cost Benefit Analysis

The following sections outline the assumptions and methodology for the Cost Benefit Analysis. This approach was used to quantify the costs and benefits for the more substantive proposals that are expected to have work health and safety benefits.

Option 2 is the base case against which the costs and benefits of the proposed amendments have been assessed. We estimate costs and benefits in net present value terms over a 10-year period. Future costs and benefits are discounted to present value terms using a real discount rate of 7 per cent. This discount rate is consistent with NSW Treasury's CBA guidelines, but other discount rates are tested in the sensitivity analysis. All amounts are stated in 2022 Australian dollars.

Quantification of benefits

The goal of this set of amendments is to ensure that the benefits expected to be achieved by the Act are extended to all areas of industry where required. That is, they aim to fill gaps where the existing Regulation may not have been applied as intended, or where industry standards or behaviour has changed over time. If these gaps are not filled, the benefits of the Act are at risk of

not being realised. As such, we quantify the benefits as a proportion of the safety benefits estimated when the existing Regulation was made.

Calculating the size of the safety benefit in 2022 terms

The RIS undertaken in 2014 found that the benefits associated with that proposed Regulation (in our analysis, the base case) were \$7.69 million over 10 years at a 7 per cent discount rate (in 2014 dollars) compared to the 'do nothing' option in that analysis. This estimate is the starting point for calculating the benefits associated with the proposed amendments.

The key expected safety benefits were a reduction in injuries (labelled 'Control of Risk (Hazardous Zones)') and a reduction in loss of life in emergency situations (labelled 'Self-Rescuers (Health and lung risks)'). These safety benefits were estimated in 2014 prices. For this assessment, the estimates have been inflated to 2022 dollars. They have also been adjusted to allow for the increase in employment in the mining sector, and hence the increase in the value of the safety benefits that have been experienced since the regulatory changes were implemented (Table 11).

Table 11: Summary of benefits estimated in the 2014 RIS and the respective inflated 2022 benefits forecast over a 10-year period

Benefit	Estimated benefit (2014 NPV @ 7%)	Estimated benefit (2022 NPV @ 7%)
Reduction in injuries	\$3,550,000	\$4,596,666
Reduction in loss of life	\$4,140,000	\$5,360,618
All 2014 quantifiable benefits	\$7,690,000	\$9,957,284

Mapping the amendments to the relevant safety benefit

We first map each regulatory amendment to the relevant estimated safety benefit:

- Proposed amendment 2 aims to minimise the potential danger in hazardous zones, thus aligns with the reduction in injuries benefit.
- Proposed amendments 1, 16, 17 and 21 relate to employee health and safety, in particular air quality and breathing of airborne dust, thus align with the reduction in loss of life benefit.
- Proposed amendments 12, 13 and 14 relate to high-risk activity (HRA) notifications. These impact all aspects of the mining operation, thus aligns with both benefits.

Estimating the size of the industry affected

We estimate the size of the industry affected to determine what proportion of the above safety benefits can be attributable to each amendment. The following assumptions are used:

- **Proposed amendment 1:** This proposal aims to extend the testing requirements for underground coal mines to underground mines other than coal mines. This affects 36 per cent of mine sites in NSW. 35 per cent of employees work in underground coal mines and large underground mines (metalliferous and quarries). Of the proportion of labour

working underground, the additional testing measures will impact 24 underground large metalliferous mines. The estimated industry gap total is calculated as the product of underground mine employees in NSW (35 per cent) and the additional underground mines that will require testing (36 per cent), which equals 13 per cent.

- **Proposed amendment 2:** The industry impact is calculated as the proportion of employees engaged in underground coal mines (21 per cent) that might be subject to a catastrophic event occurring.
- **Proposed amendment 11:** The industry impact is calculated as the proportion of coal mines (121) in NSW that could employ a winding system or booster fan against the total number of mines in NSW (3,858), which equals 3 per cent.
- **Proposed amendment 12:** The proportion of petroleum sites (127) to total NSW mines (3,858) is 3 per cent. However, this proposal only affects a single site, the Narrabri Gas Project. To simplify the analysis, the industry impact is estimated to be 1 per cent to provide a quantifiable benefit. This also provides a conservative estimate should further sites open.
- **Proposed amendment 13:** The industry impact is calculated as the proportion of underground coal mines and underground large metalliferous mines in NSW (41 and 24) in NSW that employ high-risk bore activity against the total number of mines in NSW (3,858), which equals 2 per cent.
- **Proposed amendment 16:** The industry impact is calculated as the percentage of employees engaged in underground coal mines (21 per cent) and the marginal increase in the testing time frame. Prior mining work policies placed a standard shift for 8 hours, in which testing was over a period of 5 hours. This is 62.5 per cent ($5/8$) of the shift. By enforcing a minimum testing rate of 80 per cent, this increases the standard testing time frame by an additional 17.5 per cent. The estimated industry gap is calculated as the product of underground mine employees in NSW (21 per cent) and the additional testing time frame (17.5 per cent), which equals 4 per cent.
- **Proposed amendment 17:** The industry impact is calculated based on the proportion of employees engaged in underground mines (35 per cent), the proportion of underground coal mines to the number of underground mines (24 per cent), and the marginal increase of testing the remaining 4 out of 5 tests (80 per cent).
- **Proposed amendment 21:** The industry impact is calculated based on the additional testing required for large underground mines and the proportion of NSW mining employees that work in large underground mines (35 per cent). Of the proportion of labour working underground, the additional testing measures will impact non-coal mines where respirable crystalline silica is a hazard, which is most likely to occur in large underground metalliferous mines. There are 41 underground coal mines in NSW. As such the additional proportion of underground large mines to implement the testing is 36 per cent.

Quantifying the expected benefit to industry for each amendment

We calculated the estimated benefit for each amendment as the relevant proportion of the industry affected (D) multiplied by the relevant safety benefit estimated in 2014 (E) (Table 12).

Table 12: Detailed summary of quantifiable CBA benefit results

Proposed amendment		Estimated employees impacted (%) [A]	Estimated mines impacted (%) [B]	Estimated testing proportion (%) [C]	Industry impact (%) [D] = [A * B * C]	Relevant benefit estimate [E]	Benefit to industry (NPV) @ 7% [F] = [D * E]
1	Exhaust emissions and fuel standards (Cl.53)	35%	36%	N/A	13%	\$5,360,618	\$675,438
2	Use of plant in hazardous zones (explosion-protection required) (Cl.78(9))	21%	N/A	N/A	21%	\$4,596,666	\$965,300
11	High risk activities – commissioning winding system or booster fan (Cl.177 and Sch. 3)	N/A	3%	N/A	3%	\$9,957,284	\$298,719
12	High risk activities – constructing a well (Sch.3)	N/A	1%	N/A	1%	\$9,957,284	\$99,573
13	High risk activities – raise bore activity (Sch.3)	N/A	2%	N/A	2%	\$9,957,284	\$199,146
16	Sampling and analysis – general requirements (Cl.2(2) of Sch.6)	21%	N/A	18%	4%	\$5,360,618	\$197,003
17	Sampling and analysis – general requirements (Cl. 2(8) of Sch.6)	35%	24%	80%	7%	\$5,360,618	\$360,234
21	Sampling and analysis of airborne dust	35%	36%	N/A	13%	\$5,360,618	\$675,438

Quantification of costs

The kinds of costs quantified in the analysis include administrative costs incurred by government and industry, such as time associated with complying with and reporting on regulatory requirements. Other costs incurred by industry include the purchase of new equipment or the implementation of more regular air quality testing. These have all been quantified where possible.

Costs to government: HRA notification costs

HRA notifications impose costs on the Regulator, which must then take administrative and compliance activities relevant to that notification. The regulator records the number of HRA notifications reviewed each year. This data has been used to forecast how many HRA notifications are expected because of the proposed amendments. We assume the number of HRA notifications each year will remain constant over the 10-year period. The FTE salary data and the time taken to complete a review have been used to quantify the costs of these increased HRA notifications to the regulator (Table 13).

Table 13: Summary of results for HRA Notification Costs

Proposed amendment		Estimated time taken to complete 1 review (hrs) [A]	FTE salary grade	Estimated hourly rate [B]	Individual HRA cost [C] = [A * B]	Total cost of all FTE employees per HRA [D]	Estimated yearly HRA notifications [E]	Total Annual Cost [F] = [D * E]
8	Registration of Plant design and item of plant (design registration)	2.5	\$81,158	\$47	\$119	\$1,000	2	\$1,999
		5	\$212,037	\$124	\$620			
		2	\$222,871	\$130	\$261			
8	Registration of Plant design and item of plant (Item registration)	1.5	\$81,158	\$47	\$71	\$952	4	\$3,807
		5	\$212,037	\$124	\$620			
		2	\$222,871	\$130	\$261			
8	Total: Registration of plant design and item of plant							\$5,806
11	High risk activities – commissioning winding system or booster fan	10	\$212,037	\$124	\$1,240	\$1,761	3	\$5,284
		4	\$222,871	\$130	\$521			
12	High risk activities – constructing a well	14	\$212,037	\$124	\$1,736	\$1,736	7	\$12,152
13	High risk activities – raise bore activity	14	\$212,037	\$130	\$1,736	\$1,736	6	\$10,416

Source: MEG.

Costs to government: Regulator one-off cost

Government will also incur a one-off cost related to implementing some of the proposals. Administrative costs in relation to implementation of the proposed amendments includes design, testing, implementing, and deploying. MEG estimates of the time taken to implement each proposal have informed these cost estimates (Table 14). This time has been doubled to provide a conservative estimated implementation time. The FTE data has then been used to quantify this one-off cost to government. This cost is only incurred in the first year.

Table 14: Summary of administrative costs stemming from WHS (MPS) Regulation re-make (one off costs)

Proposed amendment	Estimated time taken to implement proposal (hrs)	FTE salary	Estimated hourly rate	Total cost
7 Duty to notify the regulator of certain incidents (Cl.128(5))	42	\$124,901	\$73	\$3,068
11 High risk activities – commissioning winding system or booster fan (Cl.177 and Sch. 3)	42	\$124,901	\$73	\$3,068
12 High risk activities – constructing a well (Sch.3)	42	\$124,901	\$73	\$3,068
13 High risk activities – raise bore activity (Sch.3)	42	\$124,901	\$73	\$3,068

Source: MEG.

Costs to industry: Replacement of plant and testing costs

The following simplifying assumptions were made to calculate costs to industry for the replacement of plant and testing costs (Table 15 and Table 16):

- **Proposed amendment 1:** The proposed frequency of testing is likely to be every 12 months (once a year for mines other than coal that employ diesel engine systems). There are 55 large and small metalliferous mines that could potentially employ diesel engine systems. Hence the total cost of yearly testing is estimated as the total cost to conduct a single test each year in each metalliferous mine.
- **Proposed amendment 2:** The cost of new equipment is estimated to range from \$5000 to \$100,000 depending on the electrical plant. An average cost of \$50,000 was estimated as applying to all hazardous zones (underground coal mines in NSW). Plant will be required to be replaced after 6 years, in alignment with the maximum in-service period for explosion protected equipment based on AS/NZS 2290.1. The forecasted period therefore employs a 6-year NPV calculation to align with this transition.
- **Proposed amendment 16:** An estimated cost of testing of \$500 is applied to all underground coal mines (40 mines). A standard shift used to be 8 hours, in which testing covered a period of 5 hours. This is a ratio of 5/8 = 62.5 per cent. Enforcing a minimum testing rate of 80 per cent increases this standard testing time frame by 17.5 per cent (a

factor of 0.175). Hence, the \$500 cost of testing has been multiplied by 0.175 to estimate the cost of the incremental increase in testing.

- **Proposed amendment 17:** An estimated cost of testing of \$200 is applied to all underground coal mines (41) for silica testing of the additional 4 out of 5 samples (a factor of 4).
- **Proposed amendment 21:** The cost of testing at non-coal mines where underground hazards exist is estimated as the total of Large Metalliferous underground Mines (24). The testing cost is inclusive of labour, travel, reporting and analysis costs.

Table 15: Summary of results for administrative costs stemming from WHS (MPS) Regulation re-make (ongoing costs)

Proposed amendment		Mines impacted [A]	Additional cost [B]	Factor [C]	Total yearly cost [D] = [A * B * C]
1 Exhaust emissions and fuel standards (Cl.53)		55	\$500	1	\$27,500
16	Sampling and analysis – general requirements (Cl.2(2) of Sch.6)	41	\$500	0.175	\$3,588
17 Sampling and analysis – general requirements (Cl. 2(8) of Sch.6)		41	\$200	4	\$32,800
21	Sampling and analysis of airborne dust	24	\$2,426	1	\$58,224

Source: MEG.

Table 16: Summary of results for administrative costs stemming from WHS (MPS) Regulation re-make (ongoing costs)

Proposed amendment		Mines impacted [A]	Frequency (years) [B]	Additional cost per mine [C]	Additional cost [D] = [A * C]	Yearly cost for 6-year transition period [E] = [D / B]
2	Use of plant in hazardous zones (explosion-protection required) (Cl.78(9))	41	6	\$50,000	\$2,050,000	\$341,667

Source: MEG.

Summary of CBA results

Ongoing annual costs taken from Tables 13, Table 15: Summary of results for administrative costs stemming from WHS (MPS) Regulation re-make (ongoing costs) and Table 16: Summary of results for administrative costs stemming from WHS (MPS) Regulation re-make (ongoing costs) are forecast over a 10 year period using a 7 per cent (real) discount rate. One-off costs were taken from Table 14 and are discounted using a 7 per cent (real) rate for the single period (2022).

The summary of the CBA results is shown below (Table 17), detailing the estimated benefits, costs and net benefit for each proposal. We estimate an overall net positive NPV of \$540,570. The Benefit Cost Ratio (BCR) is estimated to be 1.18. The findings indicate that measures that increase regulatory costs are more than offset by the measures that generate benefits resulting in a relatively small or minor net improvement in welfare and wellbeing.

Table 17: Summary of CBA results

Proposed amendment		Benefits (NPV) @7%	Costs (NPV) @7%	Net benefits
1	Exhaust emissions and fuel standards (Cl.53)	\$675,438	\$224,921	\$450,517
2	Use of plant in hazardous zones (explosion-protection required) (Cl.78(9))	\$965,300	\$1,695,139	-\$729,839
11	High risk activities – commissioning winding system or booster fan (Cl.177 and Sch. 3)	\$298,719	\$46,084	\$252,634
12	High risk activities – constructing a well (Sch.3)	\$99,573	\$102,256	-\$2,683
13	High risk activities – raise bore activity (Sch.3)	\$199,146	\$88,058	\$111,088
16	Sampling and analysis – general requirements (Cl.2(2) of Sch.6)	\$197,003	\$29,342	\$167,661
17	Sampling and analysis – general requirements (Cl. 2(8) of Sch.6)	\$360,234	\$268,269	\$91,964
21	Sampling and analysis of airborne dust	\$675,438	\$476,210	\$199,228
Total NPV		\$3,470,849	\$2,930,279	\$540,570
BCR				1.18

Cost effectiveness analysis (CEA)

Two categories of amendments have been analysed using CEA, as their objectives can be clearly specified but their benefits difficult to measure. These are the amendments that seek to:

- improve clarity and transparency for industry and the Regulator
- improve the flexibility of how the regulation is applied and decreasing regulatory burden.

This RIS takes an activity-based costing approach to quantify many of these costs, as complying with some of these regulations will require an extra time burden placed on both industry and the Regulator. The kinds of costs quantified in the analysis include changes to reporting requirements for some mines and petroleum sites and changes to time spent undertaking compliance and investigation activities for the Regulator.

Quantification of costs to industry

The costs to industry have been estimated in Table 18.

The following assumptions were made for proposals aimed at improving clarity and transparency for industry and the regulator:

- **Proposed amendment 5:** The industry cost is calculated as the product of estimated time required to send a notification to the regulator (4 hours), an estimated hourly rate for employees engaged in a mine (\$30) and the number of mines in which the testing of emergency plans is significant (307). This industry cost is estimated to occur over the 10-year time period.
- **Proposed amendment 7:** The industry cost is calculated as the product of estimated time required to send a notification to the regulator (4 hours), an estimated hourly rate for employees engaged in an underground coal mine (\$96) and the number of underground coal mines in which a duty to notify the regulator exists (41).
- **Proposed amendment 10:** The industry cost is calculated as the product of estimated time required to send a notification to the regulator (4 hours), an estimated hourly rate for employees engaged in an underground coal mine (\$96) and the number of underground coal mines in which a duty to notify the regulator exists (41).
- The remaining proposed amendments in this category (3, 6, 14, 15, 18 and 20) are not quantifiable, hence a value of \$0 has been used.

The following assumptions were made for proposals aimed at improving the flexibility of how the regulation is applied and decreasing regulatory burden:

- **Proposed amendment 8:** The industry cost is calculated as the product of estimated time saved by no longer registering plant design and items of plant (3 hours), an estimated hourly rate for employees engaged opal mines (\$25) and approximately half the number of opal mines that engage in registration (1,500). As the regulator requires on average 9 hours to review a plant design or items of plant, a third of regulator time

was apportioned to industry time (3 hours). This saving in registration time is estimated over the 10-year period.

- **Proposed amendment 22:** The industry cost is calculated as the product of the low range estimated regulator cost (\$1,000) for implementation, and a quarter of the number of estimated mines (excluding opal mines) (~311). This is taking the same costs as estimated for regulator costs, as industry is estimated to spend more time than the regulator in understanding the new class exemption.
- **Proposed amendment 23:** The industry cost of replacing an individual that is suspended or has their practicing certificate cancelled is estimated to be one FTE employee earning \$100,000 per annum, forecast over a 10-year period. It is noted that the administrative cost on the regulator will be negligible as the power is rarely exercised, hence the basis for only estimating a single person over the 10-year period.

The remaining proposed amendments in this category (4, 9, 19, 24–28) are not quantifiable. Hence, a value of \$0 has been assumed.

Table 18: Estimated costs to industry

	#	Proposed amendment	Industry costs NPV @7%	Frequency	Actual/estimated	Industry cost	Mine types	Mines impacted
Improving clarity and transparency for industry and the Regulator	3	References to superseded standards			Estimated		All Underground Coal	41
	5	Testing of emergency plans (Cl.93)	\$140,766	Recurring Yearly	Estimated	\$18,420	All Mines	307
	6	Emergency exits (Cl.96(2)(a))			Estimated		Underground Mines	170
	7	Duty to notify the regulator of certain incidents (Cl.128(5))	\$14,714	One-off	Actual	\$15,744	All Underground Coal	41
	10	PHMPs – additional matters to be considered (ground or strata failure) (Sch.1)	\$14,714	One-off	Estimated	\$15,744	Underground Coal	41
	14	Use of safety devices in refuge chamber (Cl.3(1)(d) of Sch.4)			Estimated		Large Underground metalliferous	24
	15	Prohibited items and substances – explosives (Cl.5(2) and 5(3) of Sch.4)			Estimated		Underground Mines	170
	18	Matters to be included in emergency plan (Cl.4 of Sch.7)			Estimated		Underground Mines	170
	20	Electrical engineer statutory functions (Sch.10)			Estimated		All Underground Coal	41

	#	Proposed amendment	Industry costs NPV @7%	Frequency	Actual/estimated	Industry cost	Mine types	Mines impacted
Improving the flexibility of how the regulation is applied and decreasing regulatory burden	4	Use of cables in hazardous zones (Cl.80)			Estimated		All Underground Coal	41
	8	Registration of plant design and items of plant (hoists) (Cl.177)	-\$859,729	Recurring Yearly	Actual	-\$112,500	Opal Mines	3,724
	9	Exemptions for certain mines (Cl.84)			Estimated		Tier 3 Opal	1,000
	19	Qualified mechanical tradesperson (coal mines) (Sch.10)			Estimated		All Underground Coal	41
	22	Professional engineering demonstration provision	-\$291,355	One-off	Estimated	-\$311,750	Estimated - all non-opal	1,247
	23	Suspend/cancel practising certificate/certificate of competence (Cl.144,150)	\$764,204	Recurring Yearly	Estimated	\$100,000	Estimated - all non-opal	1,247
	24	Class exemption – Quarry manager instrument of exemption 2015			Estimated		Quarries	1,132
	25	Class exemption – Recognised Service Facility Instrument of Exemption 2015			Estimated		All Underground Coal	41
	26	Class exemption – Tier-3 Quarry Managers			Estimated		Estimated Tier 3 Quarry	2,000
	27	Class exemption – Notification of other matters for exploration 2019			Estimated		Coal, Metalliferous, Petroleum Sites	307
	28	Maintenance of competence requirement			Estimated		Estimated - non opal	1,247
Total NPV for both categories			-\$216,686			-\$274,342		

Source: MEG.

Quantification of costs to government

It is estimated that there will be one-off costs incurred by government for the administrative implementation of some amendments (Table 19). We made the following assumptions:

- Proposed amendment 7 will result in a one-off administrative burden in design, testing and implementation. The regulator cost of \$3,068 was calculated as in the CBA analysis (Table 13) and is applied only for 2022.
- Proposed amendment 8 will result in some time spent by the regulator to adapt to the new exemption. The regulator is estimated to spend time proportional to the time spent by industry to adapt. The regulator cost is calculated as the product of the low range regulator cost (\$1,000) estimated for implementation, and it assumed that about half of the number of estimated significant mines (excluding opal mines) (~622) may interact with the regulator.
- The remaining proposed amendments will result in a one-off administrative burden in design, testing and implementation. An estimated regulator cost of \$1,500 for implementing the amendment within the regulation is applied only for 2022.

It is expected that some proposed amendments will decrease costs to government particularly proposed amendment 8. This proposal will result in a reduction in administrative burden in relation to the registration of plant design and items of plant (hoists). The regulator cost saving of -\$5,806 was calculated as in the CBA analysis (Table 13) and is applied only for 2022, as these are one-off cost.

Table 19: Estimated costs to government

	#	Proposal description	Regulator costs NPV @7%	Frequency	Actual/ estimated	Regulator cost	Mine types	Mines impacted
Improving clarity and transparency for industry and the Regulator	3	References to superseded standards	\$1,402	One-off	Estimated	\$1,500	All Underground Coal	41
	5	Testing of emergency plans (Cl.93)	\$1,402	One-off	Estimated	\$1,500	All Mines	307
	6	Emergency exits (Cl.96(2)(a))	\$1,402	One-off	Estimated	\$1,500	Underground Mines	170
	7	Duty to notify the regulator of certain incidents (Cl.128(5))	\$2,867	One-off	Actual	\$3,068	All Underground Coal	41
	10	PHMPs – additional matters to be considered (ground or strata failure) (Sch.1)	\$1,402	One-off	Estimated	\$1,500	Underground Coal	41
	14	Use of safety devices in refuge chamber (Cl.3(1)(d) of Sch.4)	\$1,402	One-off	Estimated	\$1,500	Large Underground metalliferous	24
	15	Prohibited items and substances – explosives (Cl.5(2) and 5(3) of Sch.4)	\$1,402	One-off	Estimated	\$1,500	Underground Mines	170
	18	Matters to be included in emergency plan (Cl.4 of Sch.7)	\$1,402	One-off	Estimated	\$1,500	Underground Mines	170
	20	Electrical engineer statutory functions (Sch.10)	\$1,402	One-off	Estimated	\$1,500	All Underground Coal	41

	#	Proposal description	Regulator costs NPV @7%	Frequency	Actual/ estimated	Regulator cost	Mine types	Mines impacted
Improving the flexibility of how the regulation is applied and decreasing regulatory burden	4	Use of cables in hazardous zones (Cl.80)	\$1,402	One-off	Estimated	\$1,500	All Underground Coal	41
	8	Registration of plant design and items of plant (hoists) (Cl.177)	-\$44,370	Recurring Yearly	Actual	-\$5,806	Opal Mines	3,724
	9	Exemptions for certain mines (Cl.84)	\$701	One-off	Estimated	\$750	Tier 3 Opal	1,000
	19	Qualified mechanical tradesperson (coal mines) (Sch.10)	\$1,402	One-off	Estimated	\$1,500	All Underground Coal	41
	22	Professional engineering demonstration provision	\$145,678	One-off	Estimated	\$155,875	Estimated - all mines non-opal	1,247
	23	Suspend/cancel practising certificate/certificate of competence (Cl.144,150)	\$1,402	One-off	Estimated	\$1,500	Estimated - all mines non-opal	1,247
	24	Class exemption – Quarry manager instrument of exemption 2015	\$1,402	One-off	Estimated	\$1,500	Quarries	1,132
	25	Class exemption – Recognised Service Facility Instrument of Exemption 2015	\$1,402	One-off	Estimated	\$1,500	All Underground Coal	41
	26	Class exemption – Tier-3 Quarry Managers	\$1,402	One-off	Estimated	\$1,500	Estimated Tier 3 Quarry	2,000
	27	Class exemption – Notification of other matters for exploration 2019	\$1,402	One-off	Estimated	\$1,500	Coal, Metalliferous, Petroleum Sites	307
	28	Maintenance of competence requirement	\$1,402	One-off	Estimated	\$1,500	Estimated - non opal	1,247
Total NPV for both Categories			\$127,306			\$177,887		

Source: MEG.

Summary of CEA results

The summary of the amendments analysed using CEA indicates that, taken together, and on a net present value basis over the 10-year period, they result in an overall net saving of \$0.1 million (Table 20). The findings indicate that measures that reduce the regulatory burden are partially offset by the measures that increase costs resulting in a relatively small or minor net improvement in cost effectiveness.

Table 20: Summary of CEA results

Category of proposals	Regulator costs NPV @7%	Industry costs NPV @7%	Total CEA NPV @7%
Improving clarity and transparency for industry and the Regulator	\$14,082	\$170,194	\$184,276
Improving the flexibility of how the regulation is applied and decreasing regulatory burden	\$113,224	-\$386,881	-\$273,657
CEA NPV cost totals	\$127,306	-\$216,686	-\$89,381

Sensitivity analysis

We undertook sensitivity analysis to test the robustness of the analysis. This is required to understand the impact of the significant uncertainty associated with many of the inputs and parameters. Two sensitivity analyses were undertaken:

- varying the real discount rate
- increasing and decreasing costs and benefits by 10 per cent (pessimistic and optimistic scenarios).

Varying the real discount rate

Changing the real discount rate does not significantly change the size of the net benefits (Table 21). Net benefits are least \$0.6 million over 10 years at a 4 per cent discount rate. Many of the major benefits occur later in the time period. When the discount rate is reduced the present value of these benefits rise.

Table 21: Summary of results for sensitivity analysis (NPV) – changing the real discount rate

Sensitivity analysis (NPV) – changing the real discount rate	Unit	4%	7%	10%
Total benefits NPV	AUD \$m	\$4.1	\$3.5	\$3.0
Total costs NPV	AUD \$m	\$3.4	\$2.9	\$2.7
Net benefits	AUD \$m	\$0.6	\$0.5	\$0.3
BCR	Ratio	1.18	1.18	1.10

Pessimistic and optimistic scenarios

Pessimistic and optimistic scenarios were also considered to understand how sensitive the result is to the size of the estimated costs and benefits (Table 22).

Table 22: Summary of results for sensitivity analysis – changing costs and benefits by 10%

Sensitivity analysis (NPV) – changing costs and benefits by 10%	Unit	Pessimistic scenario	Expected scenario	Optimistic scenario
Total benefits NPV	AUD \$m	\$3.1	\$3.5	\$3.8
Total costs NPV	AUD \$m	\$3.2	\$2.9	\$2.6
Net benefits	AUD \$m	-\$0.1	\$0.5	\$1.2
BCR	Ratio	0.97	1.18	1.45

In the optimistic scenario, costs were decreased by 10 per cent relative to Option 3, while the benefits were increased by 10 per cent. This results in net benefits of \$1.2 million. In the pessimistic scenario, costs were increased by 10 per cent relative to Option 3, while the benefits were decreased by 10 per cent. This results in a NPV of -\$0.1 million. This is not materially different from a balanced result, where the regulation has a negligible cost impact.

The sensitivity analysis conducted reveals that Option 3 is not very sensitive to a significant change in the input variables, suggesting a relatively high level of confidence in this finding.