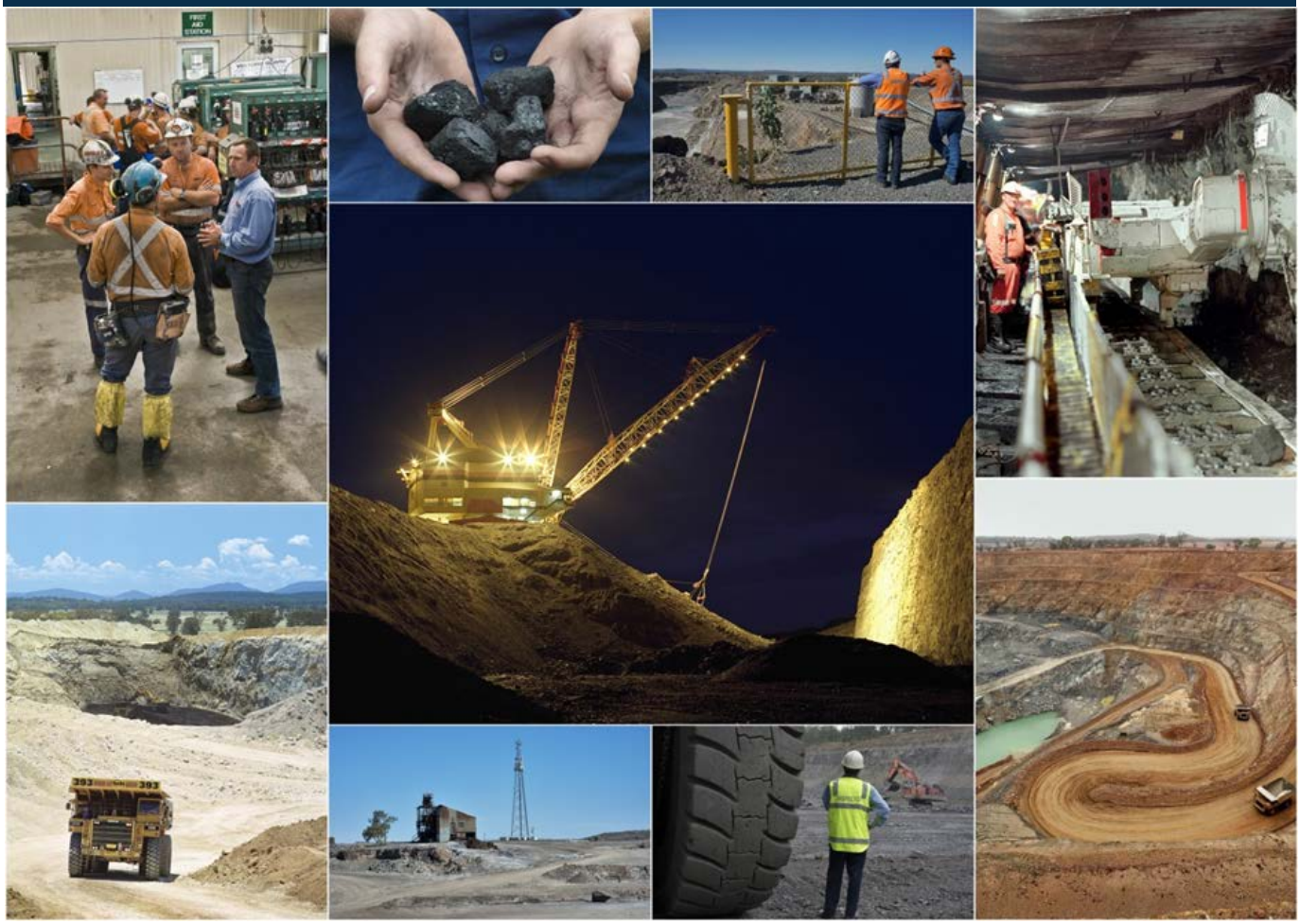
NSW
MAKING IT HAPPEN

NSW GOVERNMENT Department of Industry
Resources & Energy
Mine Safety



MINE SAFETY REGULATORY REFORM

Incident prevention strategy

Published by NSW Department of Industry, Skills and Regional Development, Division of Resources and Energy

Title: Incident prevention strategy

First published: 16 February 2016

Document control

Authorised by: Georgina Mason, a/Director Strategic Compliance Unit

RM8 Reference: PUB16/59

Amendment schedule		
Date	Version #	Amendment

Project steering committee

Name	Role	Phone
Lee Shearer	Executive Director Compliance and Enforcement	02 4931 6401
Gary Parker	a/Chief Inspector	02 4931 6458
Jenny Nash	Director Mine Safety Operations	02 4931 6622
Tony Linnane	a/Director Mine Safety Performance	02 4931 6623
Georgina Mason	a/Director Strategic Compliance Unit	02 4931 6775

Executive summary

The process of regulating mine safety has evolved significantly over the past 20 years, prompted by the 1996 Gretley Colliery mine disaster and resultant 1997 Mine Safety Review. The implementation of the findings and recommendations of this review was the subject of the 2004 Wran Review, which strengthened the role of the Mine Safety Advisory Council (MSAC).

It is well recognised that a number of parties play a key role in keeping employees of the mining and extractive industries safe in NSW. They include the industry itself, industry peak bodies, insurers like Coal Services in NSW, employers, employees, the community and the regulator.

This strategy is focussed internally on the regulator and its role in assisting to keep NSW employees of the mining and extractive industries safe. It is anticipated out of this reform the limited resources of the regulator will be focussed, in the main, on the issues that present significant risk to the workers within the sector and accordingly will directly impact on safety outcomes for NSW.

The number of significant reviews and boards of inquiry looking at the work of the regulator clearly indicates that long term structural reform is required, which embeds a cultural of continual improvement.

The MSAC fatality review built upon the findings of both the 1997 and 2004 reviews, prompted by an apparent increase in significant incidents. This review made three recommendations that form the foundations of the *Mine safety regulatory reform incident prevention strategy*. These are:

1. the development of a framework for risk-based intervention incorporating risk control measures
2. consideration of the impacts of human and organisational factors, and
3. the collection, analysis and use of quality data.

In addition to these recommendations, the incident prevention strategy provides the framework and outlines the various pieces of work required to move to a truly outcomes-focussed, risk-based regulator which is consistent, transparent and able to proactively respond to the challenges of regulating health and safety in the NSW resources industry. This is associated with the implementation of the Quality Regulatory Services (QRS) initiative across the NSW Government regulators.

The incident prevention strategy is underpinned by three key foundations, corresponding to the MSAC fatality review recommendations, being:

Risk-based intervention - develop a framework for the ongoing identification and verification of risk profiling, incorporating risk control measure verification, and consideration of deployment practices to target areas of risk priority.

Human and organisational factors - research and consider the impact of human and organisational factors on risk management and reporting.

Quality data - collect, analyse and use robust data sources to support the risk-based intervention strategy, incorporating consideration of human and organisational factors.

Within these broad project areas, several interdependent and interrelated projects have been identified, which together inform the development of new processes and procedures. These outcomes will be integrated into the business-as-usual operations of the Mine Safety unit. This change management process will include consideration of the integration of new forms, procedural guidelines, data collection methods, and also training to support these new processes.

It became apparent that the timeline for at least one project (RBI1) was going to be unachievable given the extent of consultation that will be involved. As a result, the timeline has been extended to implementation being Q1 2017 with the recommendation that a sub-committee of MSAC be formed to enable extensive key stakeholder consultation to occur.

The purpose of this document is to outline the foundation of the *Mine safety regulatory reform incident prevention strategy*, and identify the primary project areas. The project management of the overall strategy will be supplemented by individual project plans for the identified key projects, with the implementation of the outcomes of the strategy to begin by July 2016.

Contents

1. Background

Improving the safety and health performance of the NSW mining and extractive industries is a priority for the NSW Government. Since its establishment in July 2014, the Division of Resources and Energy's Compliance and Enforcement Branch has been pivotal in achieving the reforms required by the NSW Government in building a trusted regulator for the mining and extractive industries sector in NSW.

The building platform for the overall Compliance and Enforcement operating framework is centred on the Department of Premier and Cabinet's Quality Regulatory Services initiative (QRS) which aims to:

- promote a risk based approach to compliance and enforcement
- require a greater focus on regulatory outcomes.

Compliance and Enforcement's functions include:

- monitoring overall industry compliance
- identifying trends and emerging issues
- developing compliance initiatives and programs
- determining the appropriate level of enforcement to be applied in cases of non-compliance.

Part of this function involves the compliance with work health and safety legislation, which is managed by the Mine Safety Operations branch of Compliance and Enforcement.

Three separate but highly integrated business units under Compliance & Enforcement are primarily responsible for the functions associated with Mine Safety. These are Mine Safety Operations, Mine Safety Performance, and the Office of the Chief Inspector. Other business units within Resources and Energy also contribute to the Mine Safety function, including the Regulatory Audit and Investigation Unit, the Strategic Compliance Unit and the Strategic Communications Unit. Collectively, for the purposes of this document, the staff and resources that work in health and safety are referred to as Mine Safety.

Improving the safety and health performance of the NSW mining industry is a priority for the NSW Government. In fulfilling the role of work health and safety regulator for mines, Mine Safety has responsibility to:

- monitor and enforce compliance with the legislation
- provide advice and information on work health and safety matters
- support effective risk management
- publish information and statistics on health and safety performance
- promote and support education and training on matters relating to work health and safety to duty holders and to the community
- engage in, promote and co-ordinate the sharing of information to enhance health and safety outcomes
- foster cooperative relationships and facilitate effective consultation.

The specific strategies adopted and techniques used by Mine Safety in the role of the health and safety regulator are targeted towards the specific characteristics and risk profiles of the mining and extractive industries and specific sectors within those industries.

Mine Safety tries to work closely with industry peak bodies, Coal Services (insurer in NSW), employers, employees, other government agencies and the community to promote effective risk management and promote good health and safety outcomes.

Mine Safety Performance is responsible for assisting the operational arm (Mine Safety Operations and the Office of the Chief Inspector) to improve the safety performance of the NSW mining and extractive industries.

The Mine Safety Performance team develops and manages policies and regulatory models, supports emergency management capability, develops and implements systems and information, develops and delivers education and training programs, embeds consulting arrangements and systems, and provides the communication strategies to improve safety performance for the mining and extractive industries of NSW.

Combined, the Mine Safety Operations team and the Office of the Chief Inspector is the largest business unit within the Compliance and Enforcement structure, with approximately 106 full-time equivalent staff. The team is organised into five field operations units (East Metex, West Metex, Coal (North), Coal (South) and Petroleum Safety), four technical streams (mining, electrical, mechanical and subsidence engineering) developing and promoting technical standards and supporting field operations, the regulatory coordination team and the Mine Safety technology centre.

Any consideration of the future regulatory models for Mine Safety Operations as a regulator in 2016, needs to be viewed through the lens of the past 20 years. This is paramount because Mine Safety Operations, under its various organisational titles over the past 20 years, have been subject to a number of significant inquiries including how the agency performs its regulatory role.

The main catastrophic event that underpins all the inquiries held during this time was the Gretley mine disaster in which four workers were killed on the 14 November 1996 at the Gretley Colliery in the Newcastle area.

As a result of the Gretley disaster numerous recommendations were made regarding the functions and how they are performed by the regulator for safety in mining in NSW.

In 1997, a Mine Safety Review was commissioned by the NSW Government against a backdrop of continuing death and serious injuries in the state's mining industry. This review was asked to identify key safety issues that need to be addressed in order to achieve a significant improvement in industry safety performance.

All the recommendations from this review have been reproduced below for a number of reasons including:

- recognition of the importance of the Gretley disaster and the foundation stones that were set in its wake
- the applicability of these recommendations to the work performed today.

1.1. Recommendations from the 1997 Mine Safety Review

The recommendations arising from the 1997 Mine Safety Review were:

Measuring safety

- NSW mining industry safety performance be measured on a mix of indicators. This mix might include lost time injury frequency rate (LTIFR), fatal injury frequency rate (FIFR), disabling injury and progress in managing core risks.
- The exact mix of measures be determined on a tripartite basis as a matter of urgency
- The Department of Mineral Resources adopt this mix of measures and use it in the targeting of the inspectorates' safety-related activities.
- The NSW Minerals Council develops guidelines for use by mine operators in determining how individual site safety performance is to be measured.

Safety aims

- Companies give greater attention to involving those on site in the formation of safety targets.

Safety incentives

- The industry commission a more detailed study of the safety impact of production bonuses and of possible measures available to address any negative effects.
- Companies re-evaluate their existing safety incentive schemes with a view to establishing their actual safety impact as distinct from their effect on LTIFR.

Roles played by key individuals

- Company boards take a more active role in requiring reporting on a mix of safety indicators that more accurately reflect site safety performance.
- The NSW Minerals Council convenes a CEO level safety forum to allow greater exchange of information on safety approaches.
- Mine operators give high priority to promoting middle management commitment to, and ownership of, safety initiatives through the effective involvement of middle managers in the development and implementation of all such activities.
- Mine operators provide training and support to enable middle managers to effectively carry out their role in communicating safety requirements to work groups under their control and ensuring compliance with safe operating procedures.

Workforce involvement

- Companies re-evaluate their approaches to involving workers in safety management with a view to achieving greater worker participation particularly in terms of the assessment and management of core risks.

Contractor safety involvement

- The NSW Minerals Council takes an active role in promoting the use of the guidelines for contractor occupational health and safety management by its members.
- Companies devote greater effort to the safety aspects of contractor selection and management, given that contractor safety performance in the broad remains a problem area.

Engineering and equipment

- There be a tripartite examination of safety issues associated with the introduction of remote controlled equipment underground.

Risk management

- The NSW Minerals Council and inspectorate continue to promote risk assessment and management approaches as a valuable safety management tool.
- Companies review their approaches to core risk assessment and management in the light of the identified concerns.

Collation, analysis and use of accident information

- A tripartite group be asked to develop proposals for stakeholder consideration on how information sharing on accident cause can be improved. The group should in particular focus on the following areas:
  - provision of information on serious incidents, and accidents across the industry (that is between operators)

  - more effective means of communicating this information to mine middle managers and the mine workforce.

Training

- Companies introduce structured safety and communications-related training for mine mangers and mining professionals.
- The levels of hazard awareness training provided to mine workers in both the coal and metalliferous sectors be increased.
- Each operation reviews its emergency procedures training.
- Test evacuations of all or parts of sites should be an integral aspect of operations' approaches to emergency preparedness.

The inspectorates

- The Department of Mineral Resources devolve environmental responsibilities to other officers with specific environmental expertise, and require the inspectorate to focus wholly on matters related to mine site safety and health.
- The department move to create support positions of Mines Safety Officer with the detailed job description for such officers to be determined within the department.
- The department give consideration to the introduction of cross-inspection as a mechanism for maximising the best use of the inspectorate resources.
- inspectorate policies and procedures on investigation and enforcement be developed and published.
- The creation of a discrete Accident Investigation and Analysis Unit within the inspectorate.
- The department determine the number of additional inspectors required in the light of approaches taken to the redistribution of 85 environmental responsibilities and the creation of Mine Safety Officer positions.
- The department introduce a more systematic approach to the prioritisation of inspectorate activities.
- Physical examinations of site operations continue to be a major aspect of the role played by inspectors in both the coal and metalliferous sectors.
- All inspectors conduct both pre-announced and unannounced mine site visits, and that there be a requirement for sufficient unannounced visits to create a perception of a significant likelihood of an unannounced visit at any time.
- The department act without delay to resolve outstanding salary issues by bringing inspectorate salaries into closer parity with those paid by other inspectorates and by industry.
- In the event that a significant increase in inspectors' remuneration levels is proposed, all affected positions be declared vacant and advertised.

Legislation and regulation

- The inspectorate adopts a more active approach to enforcement of the metalliferous General Rule.
- A database on the status of implementation of requirements under the General Rule be developed and maintained by the inspectorate.
- The department act immediately to establish the status of the implementation of the General Rule among smaller operators with a view to determining what particular assistance may be required.
- Timeframes for the implementation of provisions under the General Rule be established and promulgated.
- Companies, unions, and government devote further effort to informing mine workers about the General Rule and its implications.
- There be an immediate tripartite re-examination of legislative options for the coal sector, particularly as regards the practicality, and likely impact of, a two-tiered regulatory approach.

- Further consideration be given to the priority presently being given to the development of a single piece of mining legislation in NSW.

Moura Inquiry implementation

- NSW coal operators be required to prepare mine safety management plans to identify and manage all core risks.
- As a first step, the metalliferous inspectorate be required to report to the minister in detail on the possible application of mine safety management plans, and of other Moura Inquiry recommendations, to the metalliferous sector.
- The Moura Inquiry training and communications recommendations be implemented by NSW coal industry stakeholders including the inspectorate.
- The department chair a NSW stakeholder group charged with determining the applicability of the Moura task group recommendations in NSW.

1.2. The Wran Review - 2004

The importance of ensuring implementation of these recommendations was emphasised when the NSW Government commissioned the Wran Review in 2004. This review was established with the aim of understanding how the 1997 reforms were progressed.

The terms of reference of the Wran Review were to:

1) review the progress with the implementation of the recommendations of the Mine Safety Review and the Gretley Report
2) consider whether any change in the implementation of these recommendations is required
3) review the operation of the Mine Safety Advisory Council and the supporting consultative process
4) review and make recommendations in relation to:
   a) the safety performance of contractors
   b) the broad practice of hours of work and fatigue management in the NSW mining industry.
5) review the enforcement policy and the processes used by the department to implement the policy
6) consider ways and make recommendations as to how the NSW mining industry safety culture could be improved.

The Wran Review recognised, at that time, that there had been significant progress following the 1997 Mine Safety Review and the Gretley Inquiry however it also made clear that a long-term strategic focus remained to be achieved[1].

One of the key outcomes from the 1997 recommendations was the establishment of a tri-partite advisory council. In 1998 the NSW Government established the Mine Safety Advisory Council (MSAC) to advise the minister on work health and safety (WHS) issues of critical importance to the NSW Government.

Following the Wran Review, the council was strengthened in 2006 and has aimed to increase the emphasis on safety and health within the NSW mining and extractives industry by reviewing and analysing safety performance, setting strategic directions, providing advice and developing policy recommendations.

The minister refers matters to the council for its consideration and advice on ways to foster improved health and safety performance in the industry. To date, this has included:

- incident prevention
- emergency response

[1] pg.46 Wran Review

- world-leading WHS culture
- associated non-technical skills
- fatigue management
- health management

1.3. The Macken Board of Enquiry - 2007

In 2007, the then NSW Minister for Primary Industries announced a Board of Enquiry into the *Mine Safety Enforcement Policy*.

The Board of Enquiry had eight broad terms of reference these being:

(1) the adequacy of the legislative framework for mine health and safety enforcement policies

(2) the role of NSW Department of Primary Industries (NSW DPI) inspectorate, including the qualifications and experience of staff, resourcing and training

(3) the implementation of policies, including developing a strategic approach to enforcement with a view to long-term improvement in compliance

(4) the range and application of sanctions available to inspectors, and if inadequate, sanctions that might apply

(5) the role of employers, unions and NSW DPI in enforcement of breaches under the relevant legislation

(6) the adequacy of monitoring and reporting systems

(7) prosecutions

(8) benchmarking the policies and practices of comparable mine health and safety agencies.

It is apparent that a number of these recommendations were successfully progressed however significantly at the heart of some findings was the requirement for the regulator to move to a risk-based and transparent model that has clarity and direction.

In 2014, following an apparent increase of significant incidents at the same time as significant adjustment and change in the industry, the Minister for Resources and Energy, Anthony Roberts MP, instructed the council to conduct a review to identify and respond to any systematic and underlying issues contributing to serious incidents.

The scope for the review was to:

- consider the existing industry circumstances
- identify contributing factors to the incidents using information available to the department
- explore systemic and underlying issues that may influence serious incidents.

The MSAC fatality review made three recommendations that form the foundations of the incident prevention strategy:

(1) Development of a framework for risk-based intervention incorporating risk control measures.

(2) Consideration of the impacts of human and organisational factors.

(3) The collection, analysis and use of quality data.

2. The current regulatory framework

While significant work has been undertaken since the foundational 1997 review, it is apparent that some aspects of reform remain to be implemented and others need to evolve further to be integrated into a modern regulatory framework. Furthermore, the 2014 Wilkinson Review and the implementation of the NSW Government's Quality Regulatory Strategy (QRS) initiative clearly sets the future course for the type of regulatory framework required to guide the work of the regulator for NSW mining safety in 2015 and the years ahead.

In assessing the current regulatory framework an assessment has been conducted to identify the strengths and weaknesses of the current strategy broadly using the principles articulated in the 1997 review, post the Gretley disaster, as the roadmap. It has identified that, while developments in technical standards and good practice, have evolved to adopt continuous improvement models, the regulatory framework and supporting infrastructure have remained more static and failed to build on experiences of other jurisdictions or industries.

Broadly speaking the main issues that have been identified with the current regulatory framework are:

- There is no single, overarching mine safety regulatory strategy that communicates what strategies are being applied by the regulator, and to what industry sectors or safety problems to achieve the intended outcome.
- The current framework needs to more visibly and clearly apply the principles of a risk-based regulator, to meet the requirements of the QRS initiative and provide appropriate evidence that the requirements are met.
- There is the need to respond to the recommendations of the MSAC fatality review 2013-14.
- A lack of clarity and rationale around decisions on resource allocation and deployment.
- A lack of clarity around decisions on sampling and targeting strategies for proactive interventions (inspections and audits) to ensure they are risk-based and achieve the greatest safety improvement for the resources applied.
- The need for robust analysis of data collected to ensure emerging issues are identified, sampling and targeting strategies are informed, and interventions are evidence-based.
- The need for systems and processes related to the collection of data, to ensure that there is consistency in the type, form and detail to support robust analysis.
- The need for integration between data collection and recording methods (incident data, investigation, inspection and audits, external data) to enable robust, multifactorial data analysis to support sampling and targeting strategies and program development.
- The need to implement and demonstrate a risk-based process for inspections and audits.
- The need to demonstrate 'value for money' to industry in relation to the mine safety levy and to government in relation to budgeting.

It is clear there are a number of strengths that have been identified in the current structure. These include but are not limited to the:

- level of expertise, experience, and competence of staff
- level of commitment of staff to achieving the best safety outcomes
- level of engagement with industry
- consultative relationship with other regulators.

Notwithstanding the strengths identified within the structure, a number of challenges do exist and need to be reformed if Mine Safety Operations is going to move to a truly risk-based and outcomes-focussed regulatory model.

These challenges include, but are not limited to:

- No single data system that enables clear trend identification, work flow, automated interactivity exists, making it difficult to retrieve meaningful information or evidence to demonstrate and inform continuous improvement.
- The current manner of deployment with limited resources is restrictive for a model focussed on risk and outcomes.
- Limited resources for regulating certain sectors i.e. low-risk mines.
- An aging workforce and limited ability for succession planning.
- Structural issues reflecting a lack of resources to provide analysis.

The development of the incident prevention strategy and its integration into the Mine Safety regulatory reform program, is a fundamental component of the move towards a risk- and evidence-based approach to compliance and enforcement, as required through the QRS initiative for regulating work health and safety in the NSW mining and extractive industries.

In addition to meeting the requirements of the QRS, the strategy is also driven by the need for demonstrated continuous improvement, implementation of legislative reform, consideration of changes made since the 2004 Wran review, departmental and industry structural changes, and a direct response to the recommendations of the MSAC fatality review.

The MSAC fatality review made three recommendations that form the foundations of the incident prevention strategy:

(1) Development of a framework for risk-based intervention incorporating risk control measures

(2) Consideration of the impacts of human and organisational factors

(3) The collection, analysis and use of quality data.

Several interrelated and interdependent projects have been identified to inform and support the development of these three key areas and to achieve the necessary outputs which form the overall incident prevention strategy. These outputs have been identified broadly to be:

- Data collection and analysis processes
- Targeted intervention strategies
- Audit and investigation procedures
- Risk assessment framework
- Regulatory approach
- Implementation strategy.

This document provides the framework for the incident prevention strategy and supporting activities, identifying the individual projects, their interrelationships, and broad timeframes for completion. It will be supported by project plans for the key projects identified within the strategy.

3. The way forward

As a result of the 1997 review following Gretley, the Wran Review, the fatalities review, the implementation of QRS across the NSW Government regulators, and the expectation that continuous improvement can be demonstrated, reform is required to implement a new regulatory operating model that is based around an integrated incident prevention strategy.

It is recognised that the timeline for the finalisation of the projects is ambitious however a number of the projects, particularly in the human and organisational factors area, are already part of the business of the current regulatory model but they require a renewed focus to contemporise them into the new way of doing business.

It is recognised this is a large reform process in many ways, however the planning around the project leads and support has been well considered and to ensure business as usual continues with the least amount of interruption the Director of Mine Safety Operations will retain the clear day-to-day focus.

The *Mine safety regulatory reform incident prevention strategy* provides the framework and outlines the various pieces of work required to move to a truly outcomes-focussed, risk-based regulator that is consistent, transparent and able to proactively respond to the challenges of regulating health and safety in the NSW resources industry.

The overall objectives of the incident prevention strategy are to:

- develop procedures to ensure that proactive assessments and audits are planned and targeted risk-based interventions, looking at the right things at the right sites
- ensure that proactive assessments and audits are undertaken in a thorough and consistent, manner and that a clear record of what has been assessed and what the findings are is captured in an inspection report
- ensure the most appropriate use of resources to undertake inspections, audits and investigations
- ensure that the data from audits and investigations are collated, analysed and utilised to identify high risk operations, emerging issues or trends, or to develop targeted information or regulatory strategies
- ensure that plans and processes reflect a robust, risk-based approach to resource allocation and strategy development
- ensure operators are identifying and implementing the appropriate risk control measures to manage identified risks, and
- ensure that processes and procedures consider and address the impact of organisational and human factors on the identification, implementation and monitoring of risk priorities and risk control measures.

The incident prevention strategy is underpinned by three key foundations:

Risk-based intervention - develop a framework for the ongoing identification and verification of risk profiling, incorporating risk control measures verification, and consideration of deployment practices to target areas of risk priority.

Human and organisational factors - research and consider the impact of human and organisational factors on risk management and reporting;

Quality data - collect, analyse and use robust data sources to support the risk-based intervention strategy, incorporating consideration of human and organisational factors.

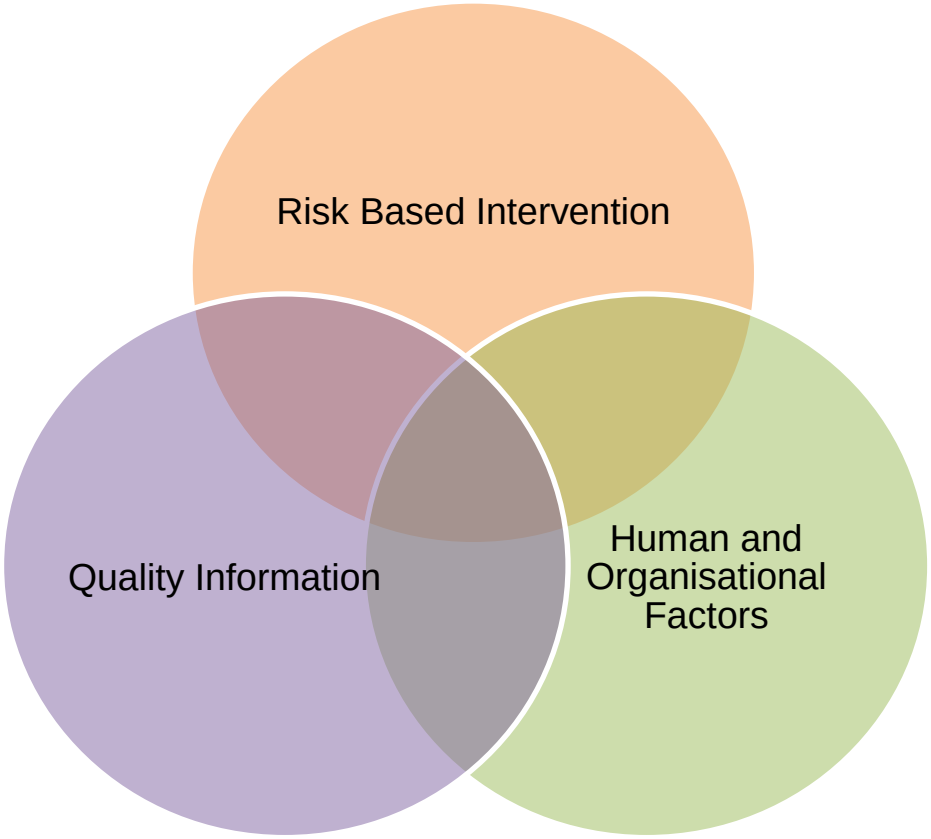
The integration of the incident prevention strategy with the business-as-usual operation of the Mine Safety unit is an important process to ensure that the business of mine safety is not interrupted.

To oversee this integration, an implementation strategy will be produced to guide the incorporation of the new processes and procedures arising from the incident prevention strategy into the day-to-day business

of the unit. This change management process will include consideration of the integration of new forms, procedural guidelines, data collection methods, and also the training to support these new processes.

The communication of these changes to the unit operation will also form an important aspect of the undertaking and implementation of the incident prevention strategy. In this regard, an overarching communications strategy will be developed to indicate the internal and external communications requirements.

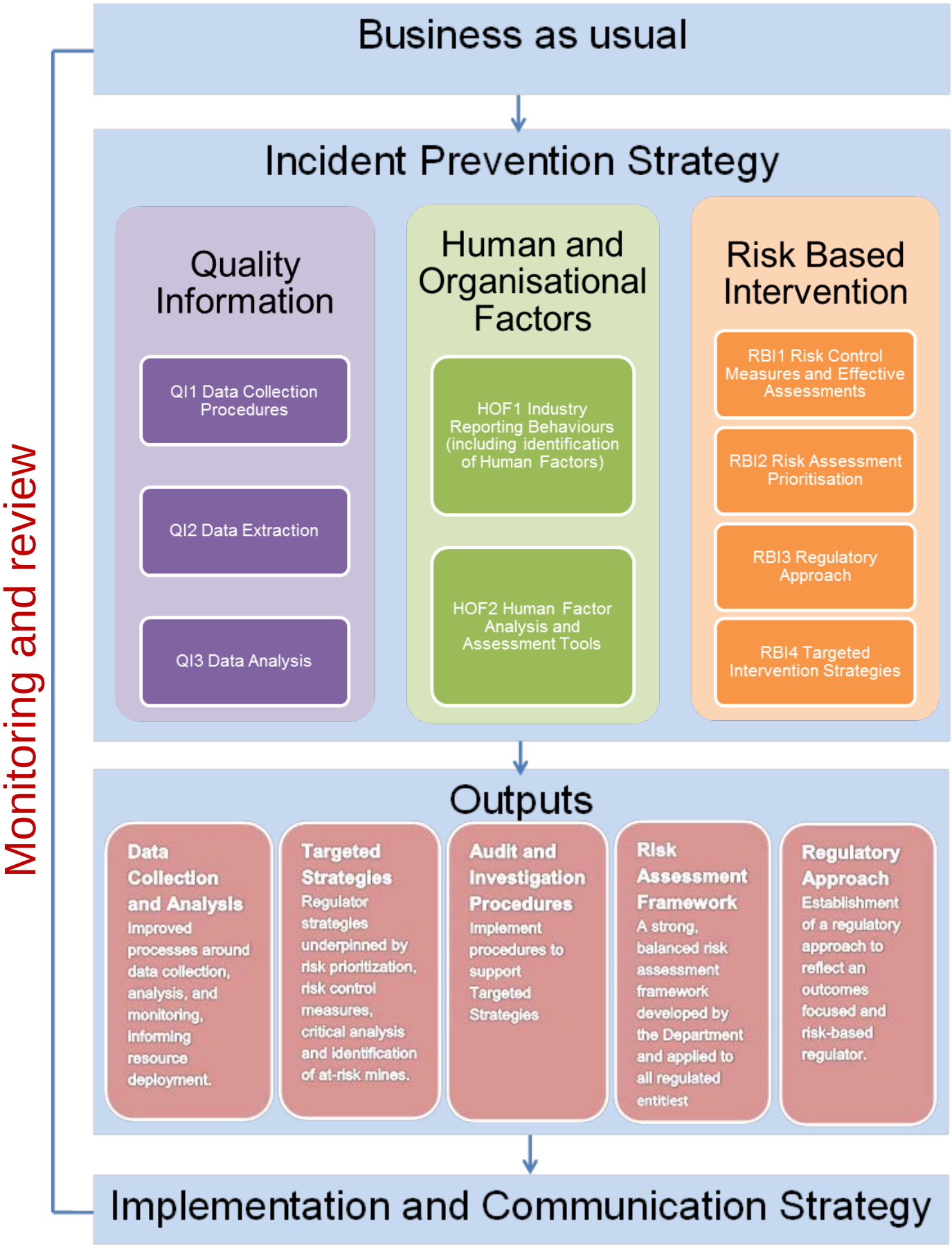
Figure 1: Incident prevention strategy focus areas



In order the meet the objectives of the overall incident prevention strategy, several project areas have been identified under the broad focus areas of quality information, human and organisational factors and risk-based intervention.

The incident prevention strategy project areas within the overall Mine Safety regulatory strategy, are detailed further in **Figure 2**. This overall strategy incorporates the 'business as usual' aspects of the Mine Safety unit, the implementation of the outcomes of the incident prevention strategy and the need for continual monitoring of these outcomes to ensure that the processes replace, complement or support the business as usual operations.

Figure 2: Mine safety regulatory strategy incorporating the incident prevention strategy.



4. Projects

4.1. Quality information

Objectives

The objectives of the projects associated with the provision and use of quality information are to:

- develop policies, procedures and work practices to ensure that the level of data collected is consistent, appropriate and necessary
- improve the relevance and quality of information provided to the regulator
- educate, inform and enforce the provision of relevant and quality information by all stakeholders when reporting a notifiable incident
- implement a means of monitoring, evaluating and improving the reporting behaviour of operators, including the provision of timely reporting, and consistency in data provision and collection
- implement procedures for data collection and analysis, and the identification of trends to inform the development of mine safety policy and procedures
- integrate procedures for data collection and analysis to inform and support the process of risk-based intervention, and consideration of human and organisation factors
- develop IT systems to support the assessment compliance and enforcement system (ACES) to enable the qualitative and quantitative recording of data.

Quality information projects

QI1 Data collection procedures

The department records incident information in the computerised information system COMET (Common Mines Environment) database with non-compliance matters being recorded in ACES.

While much data is recorded, further analysis into trends and clusters of occurrences needs to be undertaken to gain a greater understanding of the influences on incidents and to identify the gaps in the existing data collection process.

There are also inconsistencies in the way data is recorded and the level of detail provided, both across the different recording systems and for different operators. This can lead to inaccuracies in data collection and analysis and impact on the validity of results and trend analysis.

A systematic and consistent approach to data collection needs to be investigated and implemented to ensure that all data is relevant, robust, and rigorous.

QI2 Data extraction

Sources of data are inherent in the processes of the unit, through event reporting, inspections, audits and investigations.

The safety performance measures program ensures the collection, validation, trend analysis, interpretation and reporting of industry safety data, through COMET and through establishing links with external agencies and key industry stakeholders. The COMET information system collects data on Mine Safety core business processes including assessments, accidents, incidents, approvals and authorisations.

The functions of COMET are being superseded by the ACES system, which is used to record events and will eventually replace COMET as the primary data recording tool.

The method of retrieving the data from these and alternative sources needs to be established to ensure that all data sources are fully integrated into the data analysis process.

QI3 Data analysis

The data, collected since 1999, has enabled a range of comprehensive reports, on incidents and trend analysis, to be produced, together with the capacity to undertake in-depth analysis and research. This integrated industry information is used to satisfy legislative requirements, underpin corporate strategies, business plans and processes, and provide information to the mining and extractive industries.

The information informs the annual *Mine Safety Performance Report*, which records hours worked, lost time industry frequency, fatality rates, injuries and incidents. Analysis is provided by sector, providing for coal underground, coal surface, metalliferous and extractives. Weekly reports are also made of incident occurrences, with major incident investigations being published.

Further research is needed into analytical methods to use the vast supply of data sources, to ensure that the data is appropriately and fully analysed to support the targeted intervention strategies, the risk prioritisation, and resource deployment. Data analysis will also enable the demonstration of continuous improvement that is fundamental to the overall strategy.

4.2. Human and organisational factors

Consideration needs to be given to the impact of organisation and human factors when assessing risk and determining corrective actions. Human factors refer to environmental, organisational and job factors, and to human and individual characteristics which influence behaviour at work. As outlined in the United Kingdom Health and Safety Executive (HSE) guidance, there are 10 human and organisational factors that need be in considered with respect to work health and safety. These are:

- managing human failures
- procedures
- training and competence
- staffing and workload
- organisational change
- safety critical communication
- human factors in design
- fatigue and shift work
- organisational culture
- maintenance inspection and testing.

Objectives

The objectives of the projects associated with the consideration and incorporation of human and organisational factors are to:

- develop an understanding of the nature of organisational and human factors that shape intentional behaviours and their contributions to incidents in the mining, extractive and petroleum industries
- develop the skills of the regulator and industry in distinguishing between intentional and unintentional behaviour and conducting appropriate assessment of human factors
- improve reporting, investigating and corrective actions involving organisational and human factors
- develop and implement a human factors framework to improve incident investigations and outcomes
- through the collection and analysis of relevant and accurate information, improve feedback to industry to support targeted intervention strategies and drive improvement
- implement procedures and fully integrate the consideration of human and organisation factors in the process of investigations, audits and inspections through the use of human factors assessment tools.

Human and organisation factors projects

HOF1 Industry reporting behaviours (including identification of human factors)

The purpose of this project is to increase the understanding of reporting behaviour, identifying barriers to reporting and exploring underlying reasons for variable reporting outcomes. This will improve safety performance through the collection of relevant and accurate information from industry and can, in turn, lead to the provision of meaningful performance data to industry which can drive improvement.

HOF2 Human factor analysis and assessment tools

The promotion of human factors analysis and deployment of human factors assessment tools will enable both industry and the regulator to have a better understanding of the impact of human factors on the occurrence and reporting of incidents. This will lead to better processes for managing these impacts, on the occurrence of incidents and in informing targeted intervention strategies to improve practices.

The consideration of human and organisational factors on the process of risk assessment, and on the development and implementation of risk control measures will form a future stage of this process, once the identification and implementation of the risk control measures has been undertaken under project RBI1 Risk control measures and effective assessments.

4.3. Risk-based intervention

Objectives

The objectives of the projects associated with the implementation of risk based, targeted intervention strategies are to:

- develop a framework for the ongoing identification and verification of risk profiling of the regulated entities. The risk assessment process will include a consideration of operational, organisational, community and engineering profiles
- identify priorities around inherent hazards and risk profiles
- implement procedures to target high risk areas
- introduce procedures to proactively target inspections and audits to areas of risk priority
- include communication to industry on the areas of high risk areas and risk priority to encourage improvements and the adoption of best practice
- consider the role of the inspectorate and the functions of the department in the regulation of safety in the mining and extractive industries
- review the current policies and operational procedures to ensure that they reflect and support the determined role and function of the inspectors
- consider amendments to the process of inspections and audits to ensure that resources are utilised in the most efficient and effective way, including through targeted intervention strategies and cross-area team based audits
- ensure that a mechanism for monitoring and review of the risk control measures is imbedded into the procedures
- identify the necessary skills to implement the reforms and ensure that resources are deployed in such a way as to maximise the utilisation of those skills to perform the functions of the unit
- develop a regulatory approach that will support the Mine Safety regulatory reform process being undertaken and integrated into the business-as-usual practices of the regulator.

4.4. Risk-based intervention projects

RBI1 Risk control measures and effective assessment

Risk control measures have been the focus of high hazard industries such as nuclear and offshore oil and gas for several years. The International Council on Mining and Metals (ICMM) has developed a guide for critical control management that is being adopted by Queensland and Western Australian regulators, and major industry operatives.

The ICMM guideline (*Health and Safety Critical Control Management Good Practice Guide, 2015*) provides specific guidance on:

- identifying the critical controls
- assessing their adequacy
- assigning accountability for their implementation
- verifying their effectiveness in practice.

This guideline will form the basis for consideration of the development of risk control measures and associated policies and procedures, and processes for the ongoing monitoring of these controls.

The focus of risk control measures for the industry necessitates a new process for assessment and inspections, which will need to consider the implementation and effectiveness of risk control measures at a particular workplace.

This project necessitates work on the identification of common risk control measures for industry operations, and the integration of the assessment of these in the inspection, audit and investigation process.

The collation and analysis of meaningful data associated with the broader incident prevention strategy will inform the development of risk control measures and also enable the monitoring of their effectiveness. Processes to ensure the effectiveness of assessments will therefore incorporate data collection processes.

RBI2 Risk assessment prioritisation

This project involves the identification of an appropriate framework for risk profiling of regulated entities, likely based on the HSE's risk profiling framework. The establishment of a risk assessment process will enable the identification of risk priorities and inherent hazards, which can be communicated to industry, and used to inform targeted intervention strategies and the deployment of resources.

RBI3 Regulatory approach

Mine Safety has more than 60 inspectors with responsibility for various sites, or specialisms. What the actual role of the inspectorate should be needs to be considered, resolved and articulated to ensure that all inspectorate resources and regulated entities are clear as to the role and functions of the inspectorate.

It is anticipated a new deployment philosophy of inspectorate resources will be required to support the defined role of the inspectorate. As a result, new policies and operational procedures will be developed, and implemented, to support this new direction.

The regulatory approach will be informed by the other projects associated with the incident prevention strategy. This will include, but is not limited to, the identification of targeted intervention strategies to identify specific issues, and the process of risk assessment prioritisation to identify the target sites.

RBI4 Targeted intervention strategies

The identification of targeted intervention strategies will be based on the need to prevent catastrophic, multiple fatality events, reduce occurrences of personal injury; and embed occupational health

considerations. It will involve the use of quality information to assist in development of targeted intervention strategies for highest risk areas, and require the communication to industry on the focus areas of highest risk.

The detailed projects associated with these project areas are summarised in Table 1 on the following page.

Table 1: Incident prevention strategy project areas

Project areas		Description	Projects	Project output	Project manager
QUALITY INFORMATION					
QI 1	Data collection procedures	• Develop new procedures, forms etc. to ensure that all data captured is consistent and relevant	Data collection procedures and forms	Data collection and analysis procedures	Director, Strategic Compliance Unit
QI 2	Data extraction	• Develop systems that enable data extraction • Recording data – consistent and relevant recording of data • Use of COMET, ACES	Data extraction procedures for existing and future sources	Data collection and analysis procedures	Director, Strategic Compliance Unit
			Gap analysis of existing data sources	Data collection and analysis procedures	Director, Strategic Compliance Unit
QI 3	Data analysis	• Research into suitable data analysis methods	Data analysis and monitoring procedures	Data collection and analysis procedures	Director, Strategic Compliance Unit
HUMAN AND ORGANISATIONAL FACTORS					
HOF 1	Industry reporting behaviours (including identification of human factors)	• Improve relevance and quality of information provided • Educate stakeholders regarding provision of quality information • Implement means of monitoring and evaluating reporting behaviours • Better understanding of factors influencing quality of risk assessments	• Reporting behaviours of organisations • Research to identify leading indicators that influence risk rating	Risk assessment framework	Director, Mine Safety Performance
HOF 2	Human factors analysis and assessment tools	• Promotion of human factors analysis and greater utilisation of tool both internally and externally	Process for human factors analysis and deployment of assessment tools	Human factors analysis and assessment tools	Director, Mine Safety Performance
RISK BASED INTERVENTION					
RBI 1	Risk control measures and effective assessment	• Identify and implement assessment priorities - systematic risk-based assessment prioritisation model • Cross-area, team based audits • Effective, proactive assessment procedures	Ongoing cross-area team based audit program	Audit and investigation procedures	Director, Mine Safety Operations
			Amended assessment procedures for audits and inspections	Audit and investigation procedures	Chief Inspector

Project areas		Description	Projects	Project output	Project manager
	Overall project lead: Gary Parker CI	• Ensure collect relevant data, in consistent way to inform quality data aspects • Appropriately verify plan implementation and risk control measures actually in place • Education of industry on implementation of risk control measures • Embed in assessment and audit procedures to consider risk control measures	Data collection procedures and forms (to ensure data relevant and consistent)	Data collection and analysis procedures	Director, Strategic Compliance Unit
			Risk control measure identification and implementation guidelines for industry	Guidance	Director, Mine Safety Performance
			Inspection and audit procedures to assess risk control measures	Audit and Investigation Procedures	Chief Inspector
RBI 2	Risk Assessment Prioritisation	• Identify risk priorities and inherent hazards • Develop framework for risk profiling (based on UK HSE model)	Risk profiling framework	Risk assessment framework	Executive Director, Compliance and Enforcement
			Risk priority identification	Targeted intervention strategies	Executive Director, Compliance and Enforcement
RBI 3	Regulatory Approach Overall project lead: Lee Shearer ED Compliance and Enforcement	• Consider the role and function of the inspectorate • Identify the most effective use of resources • Implement appropriate deployment models to address risk priorities and targeted intervention strategies.	Regulatory approach (incorporating cross-area team based audits)	Regulatory approach	Executive Director, Compliance and Enforcement
RBI 4	Targeted Intervention Strategies Overall project lead: Georgina Mason, Strategic Compliance Unit	• Identification of target areas to prevent catastrophic, multiple fatality events, reduce personal injury; and address occupational health • Use quality information to assist in development of targeted intervention strategies for highest risk areas • Communicate to industry the focus areas of highest risk.	Processes for identification of target areas	Risk assessment framework	Executive Director, Compliance and Enforcement
			Data collection procedures and forms (to verify/assess target areas)	Data collection and analysis procedures	Director, Strategic Compliance Unit
			Communications processes to inform industry about target areas	Guidance	Director, Strategic Compliance Unit

5. Implementing the incident prevention strategy

The process of developing the incident prevention strategy and embedding the outcomes of the strategy into the overall Mine Safety regulatory strategy will involve the undertaking of the many projects identified in table 1.

As the individual projects are developed, it is imperative that a quality control mechanism be in place to ensure the projects are aligned and fully integrated into the framework ready for implementation in July 2016. The Director of Mine Safety Operations will have a key role in ensuring the alignment and integration along with managing the day-to-day operations of Mine Safety Operations.

The individual projects will have their own detailed project plans, however it is important to provide an overall context to these project areas and enable the identification of any interrelationships and interdependencies between them.

It is therefore necessary to:

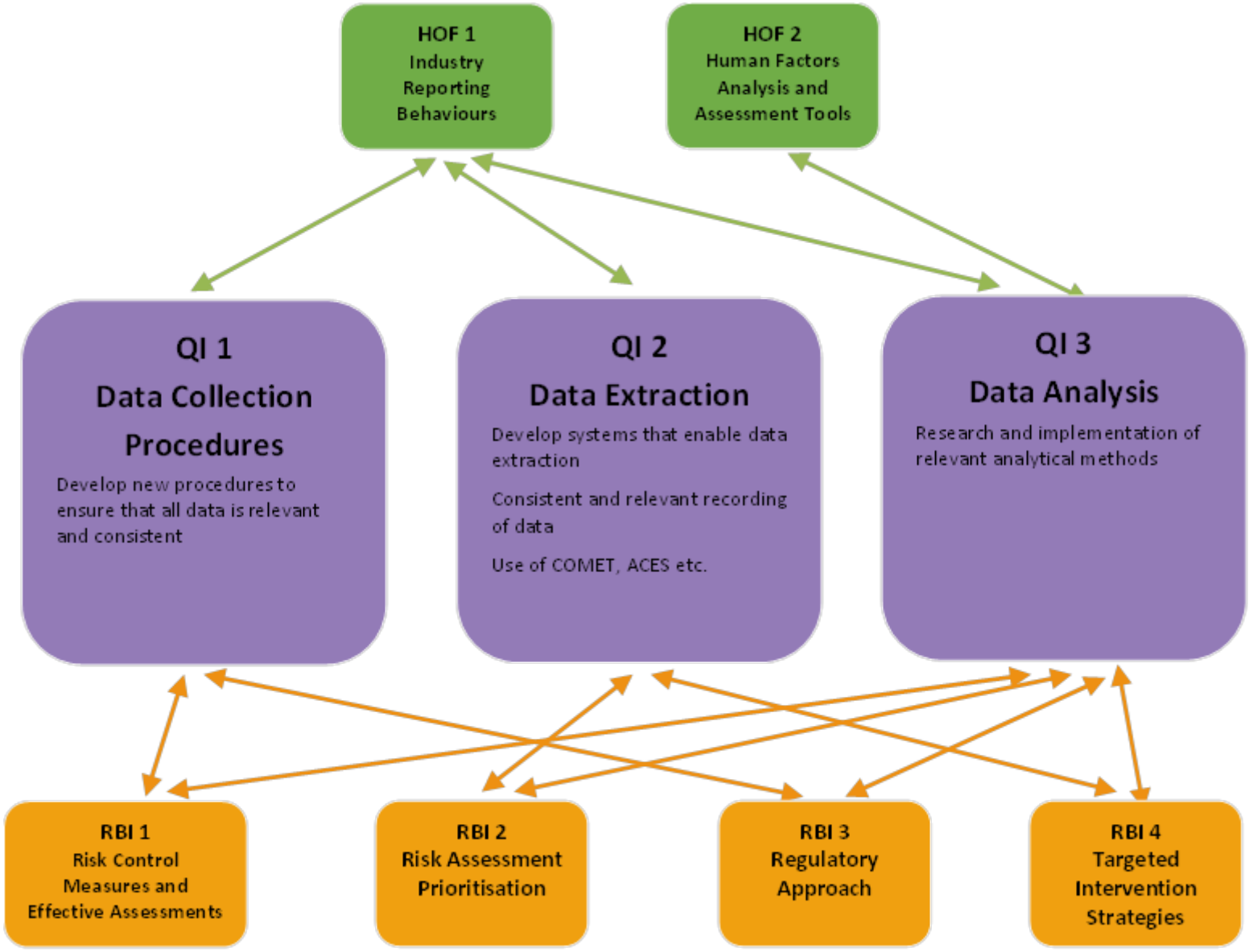
- identify the interrelationships between sub-projects
- enable consistency in the project management processes for sub-projects through the inclusion of standard project management tools, including project plan templates, and reporting and recording mechanisms
- ensure comprehensive reporting and accountability for the overall strategy.

5.1. Project interrelationships

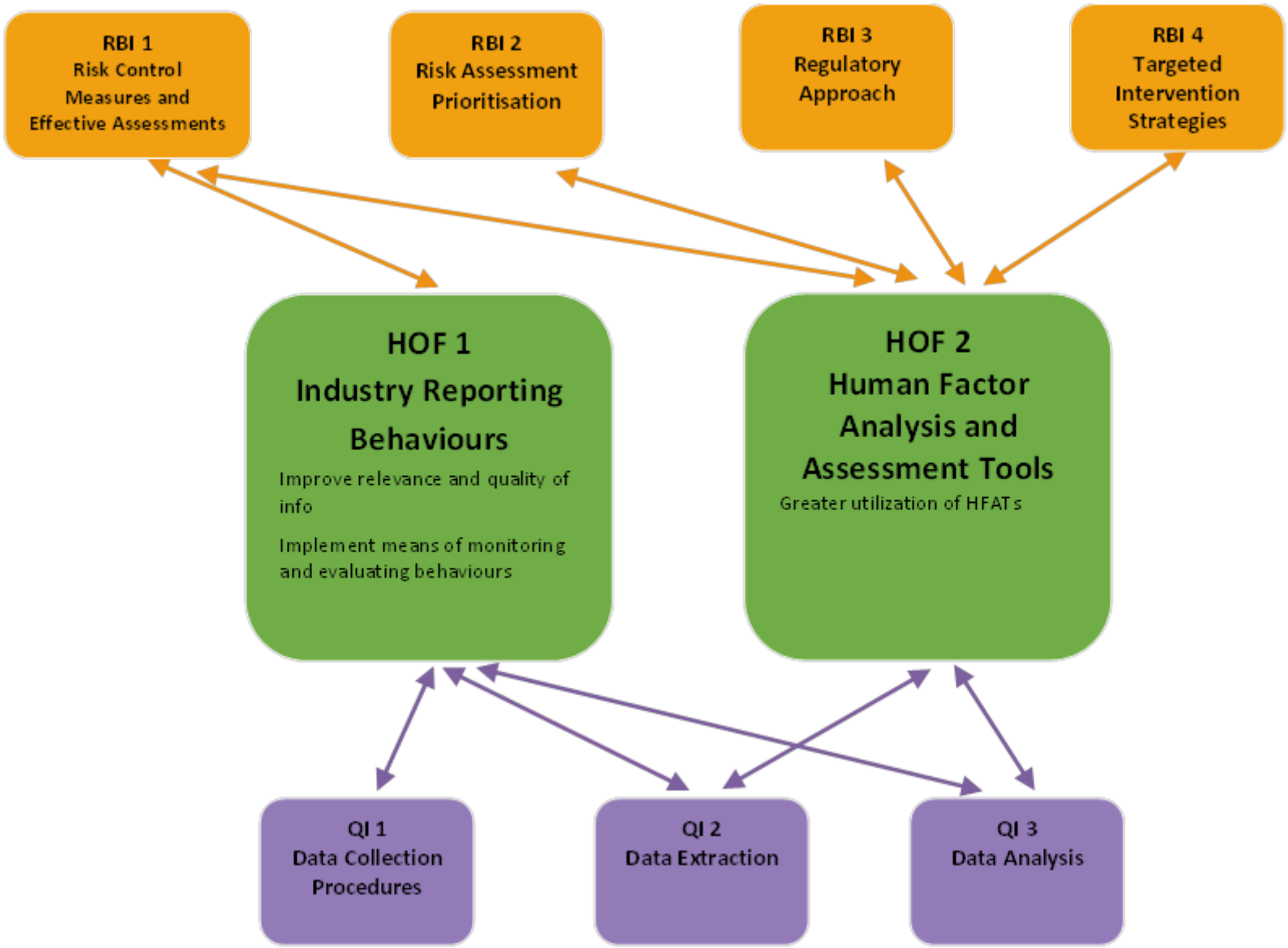
The diagrams on the following pages attempt to indicate the inter-relationships between the identified project areas with numerous connections between and within the project areas, revealing its complexity. For example, data collection and analysis is critical to assessing the implementation and effect of new processes and procedures. The new processes and procedures governing data quality and analysis directly affect analysis and ultimately industry and department policy development.

It should also be noted that during the development and implementation of new processes and procedures, the business of the unit will continue, generating more data and information that will verify assumptions and validate systems, further developing and refining individual projects.

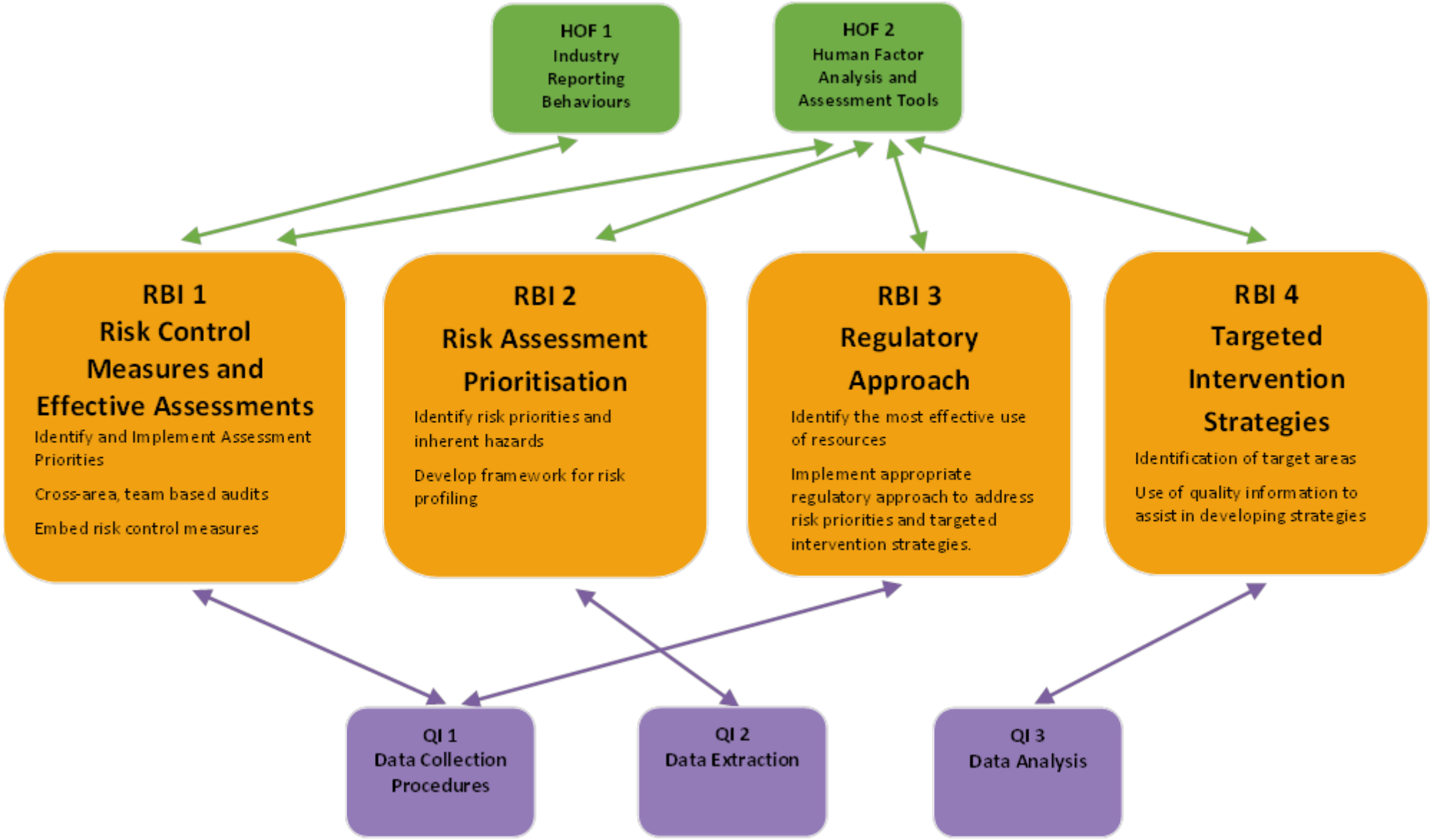
Quality information



Human and organisational factors



Risk-based intervention



5.2. Strategy scope

Table 2: Strategy scope

In scope	Out of scope
Coordinated development and implementation of the overall incident prevention strategy	Undertaking individual projects
Consideration of the overall Mine Safety regulatory strategy – impacts and interrelationships with the IPS	Manage teams for individual projects
Reporting procedures for individual projects within strategy (i.e. identifying and achieving key task timeframes)	
Co-ordination of reporting to Executive Director	
Consideration of interdependencies and impacts on meeting individual project timeframes and milestones.	
Support individual project managers to undertake project management i.e. assistance to complete project plans and reporting	
Identification of key tasks and outputs from the various projects	
Identification of key areas of risk associated with the project delivery	
Ensuring that all project managers are aware of the interrelationships and interdependencies across the project areas	
Provide a conduit for information sharing and monitoring across the project areas	
Identify any key projects that are required to supplement those outlined in this document	

5.3. Deliverables

The overall project outputs will involve:

1. **Data collection and analysis** - the production of processes and procedures to ensure that information gathered is adequate, relevant, consistent, thoroughly analysed, and utilised to inform other aspects of the project and business as usual scenarios. The robust data collection and analysis will then guide the deployment of resources, the identification of targeted intervention strategies and, through the ongoing monitoring and feedback on the projects, demonstrate the impact of the implementation of the incident prevention strategy on the management of risks.
2. **Targeted intervention strategies** - the development of regulatory strategies to identify strategic areas of risk to target, underpinned by risk prioritisation, risk control measures, critical analysis and the identification of risks at sites. These targeted strategies will be communicated to industry with the provision of supporting information to industry to manage the risk. The process of inspection, auditing and assessment of these target strategy areas will enforce the development and implementation of risk control measures and specific risk management practices. Continuous monitoring of the impact of this targeted approach will enable other strategies to be developed as required.
3. **Audit and investigation procedures** - the development and implementation of audit and investigation procedures to support the targeted strategy approach. These procedures will include team-based assessments, the integration of risk control measure considerations, and consistent approaches to data collection.

4. **Risk assessment procedures** - the development of a strong, balanced, risk assessment framework developed by the division and applied to all regulated entities. This will inform the regulatory approach and targeted intervention strategies.
5. **Regulatory approach** - the introduction of a robust regulatory approach, to determine the targeted use of resources and reflecting a regulator which is outcomes focused and risk based.
6. **Implementation strategy** - the production of an overarching strategy to detail the integration of the incident prevention strategy with the overall workings of the unit. This will include details of any new procedures, forms or operational guidance, as well as the identification of any training required. It will be supported by a communication strategy to detail how the changes will be communication both internally and externally.

Many of these outcomes are inter-related, drawing upon the findings of various aspects of the overall incident prevention strategy. The ongoing monitoring of the outcomes will be possible through the implementation of rigorous data collection and analysis processes, which will enable the consideration of the effectiveness of the various sub-projects in meeting the overall objectives of the strategy.

This process of ongoing implementation and monitoring should also enable the continuous improvement of processes and procedures to ensure that the division is achieve the required outcomes.

5.4. Process

Individual project plans will be produced and implemented for the various project areas however the process for project managing the overall process will involve the following:

Table 3: Primary processes

Process	Detail
Audit of existing projects	Including the identification of project managers/leads, team members, timeframes, status of project, consultation requirements and budget requirements.
Preparation and distribution of template project plans for individual projects	The project plan template will closely match those templates that have already been produced, to reduce the need for further work. Existing project plans may need amending to reflect the structure of the overall strategy. The overall project structure information should be included in the template with the project specific information easily transposed into the new format.
Preparation of recording and reporting procedures for individual projects	A reporting schedule will be established with the Executive Director, which will require the assessment against key milestones for the individual projects and the overall project.
Determination of timeframes for overall project	This will be based on the timeframes associated with the individual projects, and the identification of interdependencies between these.
Identification of key milestones	This will be based on key milestones associated with the individual projects, including when projects may be completed.
Preparation of an implementation strategy	This will detail how the various projects will be integrated into the business as usual operations of the unit and include details of training, and new procedures.
Preparation of a communications strategy	This will support the implementation strategy and provide detailed information about how the changes to the operation of the unit will be communicated to internal and external stakeholders.
Ongoing monitoring and reporting of projects against the key milestones and project timeframes	A process of review of the individual projects against the project milestones.
Continual review and update of overall project plan.	The overall project plan will be a responsive document, reflecting changes in the scope and timeframes of the individual projects.

5.5. Consultation

Detailed consultation requirements will be identified through the project plans for the individual projects. However, a broad consultation strategy will be implemented to ensure that consultation is undertaken in the most inclusive and efficient way.

It is anticipated that a steering group be established as a sub-committee of MSAC. This group will have regular meetings to advise on, and review aspects of the strategy and individual projects as required. The membership and remit of the group, and the meeting schedule will be determined and implemented in mid-January 2016.

5.6. Risks and constraints

The following risks and constraints to the undertaking and completion of the project have been identified.

Table 4: Main project risks

Risk	Likelihood	Action
Complex interaction with Mine Safety management	High	Clarify support role at outset and gain buy-in over project management process
Gaining support of individual project managers	High	Clarify support role at outset and gain buy-in over project management process
Inability to identify and target individual project leads	Medium	May need to assist in establishing leads for some projects where no clear accountability has been given
Lack of information about current status of projects in order to establish milestones, timeframes etc.	High	Discussions with managers and project leads to establish relevant information
Ineffective or delayed implementation of processes and procedures to inform other project areas	High	Clarify necessity of timely implementation of processes
Delays to individual projects impacting upon overall strategy development and implementation	High	Clear scoping and establishment of individual project timeframes at outset
Major changes to individual projects impacting overall strategy	High	Clear scoping of individual projects
Major changes to overall incident prevention strategy scope	Medium	Embed continuous monitoring processes within project planning
Difficulties implementing sub-projects that impact upon broader strategy i.e. data collection or analysis processes, audit and inspection amendments	High	Clearly establishing and communicating processes and interdependencies

5.7. Financial impact

The overall budget for the development and implementation of the incident prevention strategy has been allocated within the budget for Mine Safety Operations. This includes the proposed engagement of external appropriately qualified experts which will need to occur for some of the projects.

Detailed financial impacts and budgeting will be associated with the individual project areas and should be identified in the individual project plans.

The financial impact of the implementation of the strategy will be seen through the efficient use of resources determined by the regulatory approach.

5.8. Key tasks and timing

The following timeline for the overall incident prevention strategy project is proposed:

Table 5: Incident prevention strategy project management timeframes

Key Tasks		Date
1.	Preparation of overall project plan.	Completed November 2015
2.	Preparation of template project plans for individual projects.	Completed November 2015
3.	Audit of existing projects	Completed November 2015
4.	Preparation of recording and reporting procedures for individual projects.	Completed December 2015
5.	Initiating reporting procedures for individual projects	Initiated January 2016
6.	Co-ordinated reporting for overall strategy.	Initiated January 2016
7.	Co-ordination and assistance in finalising individual project plans	Completed 8 January 2016
8.	Commencement of all projects associated with the reform strategy	Early January 2016
9.	Ongoing reporting and monitoring of individual projects on a fortnightly basis to Strategic Compliance Unit	Mid-January 2016 onwards
10.	Updating project plans as required on a needs basis with steering committee approval	Mid-January 2016 onwards
11.	Identification of additional projects and development of associated plans and reporting	Mid-January 2016 ongoing

Individual project plans will identify the timeframes for the individual projects. While several of the projects can be developed and implemented within the short term, many of them will have a longer term focus, with the collection and analysis of data over a period of time required to develop new processes and procedures.

Table six on the following page identifies the completion timeframes for the main aspects of the individual projects. It is acknowledged that ongoing monitoring and implementation will mean that many of these projects will be ongoing beyond the timeframes outlined below. However, these timeframes seek to recognise the need for initial stages to be completed in order to provide input into other key projects.

Once further detailed project plans have been provided for the individual projects, this table can be updated to reflect key milestones for the individual projects. This will assist in ensuring that stages that are required to feed into other projects are completed in time.

Table 6: Project completion timeframes

Project Areas		Projects	Project manager	Completion
QUALITY INFORMATION				
QI 1	Data collection procedures	Data collection procedures and forms	Director, Strategic Compliance Unit	Q2 2016
QI 2	Data extraction	Data extraction procedures for existing and future sources	Director, Strategic Compliance Unit	Q2 2016
		Gap analysis of existing data sources	Director, Strategic Compliance Unit	Q4 2015
QI 3	Data analysis framework established	Data analysis and monitoring procedures	Director, Strategic Compliance Unit	Q2 2016
HUMAN AND ORGANISATIONAL FACTORS				
HOF 1	Industry reporting behaviours (including identification of human factors)	Reporting behaviours of organisations	Director, Mine Safety Performance	Q2 2016
		Research to identify leading indicators that influence risk rating	Director, Strategic Compliance Unit	Q2 2016
HOF 2	Human factors analysis and assessment tools	Human factors analysis and deployment of assessment tools	Director, Mine Safety Performance	Q2 2016
RISK BASED INTERVENTION				
RBI 1	Risk control measures and effective assessment NOTE: As a result of stakeholder consultation the timeline for this project was to ambitious. Accordingly, the timelines have been adjusted to ensure strong and co-ordination with industry reps.	Cross-area team based audit trial	Director, Mine Safety Operations	Q4 2015
		Amended assessment procedures for audits and inspections	Chief Inspector	Q2 2017
		Data collection procedures and forms (to ensure data relevant and consistent)	Director, Strategic Compliance Unit	Q4 2016
		Risk control measure identification and implementation guidelines for industry	Chief Inspector	Q2 2017
		Inspection and audit procedures to assess risk control measures	Chief Inspector	Q2 2017
RBI 2	Risk assessment prioritisation	Regulated entity risk assessment and prioritisation	Executive Director, Compliance & Enforcement	Q2 2016
		Risk priority identification	Executive Director, Compliance & Enforcement	Q2 2016
RBI 3	Regulatory approach	Regulatory approach (incorporating cross-area team based audits)	Executive Director, Compliance & Enforcement	Q2 2016
RBI 4	Targeted intervention strategies	Processes for identification of target areas	Executive Director, Compliance & Enforcement	Q2 2016
		Data collection procedures and forms (to verify/assess target areas)	Director, Strategic Compliance Unit	Q2 2016
		Communications processes to inform industry about target areas	Director, Strategic Compliance Unit	Q2 2016

Attachments

Attachment	Title
A	Project timeline
B	Project team
C	Project details

Attachment A – Project timeline

Main Tasks	4 Dec	11 Dec	18 Dec	25 Dec	1 Jan	Q1 2016	Q2 2016	Q3 2016	Q4 2016
Initiating reporting procedures									
Co-ordinated reporting for overall strategy.									
Assistance in finalising individual project plans									
Preparation of implementation strategy									
Ongoing reporting and monitoring									
QI2 Data extraction									
QI3 Data analysis									
QI1 Data collection procedures									
HOF1 Industry reporting behaviours (including identification of human factors)									
HOF2 Human factors analysis and assessment tools (HFAT)									
RBI1 Risk control measures and effective assessment*									
RBI2 Risk assessment prioritisation									
RBI3 Regulatory approach									
RBI4 Targeted intervention strategies									
Full implementation of strategy ongoing monitoring#									

*As a result of consultation it has been agreed that this project requires more extensive consultation and it is proposed a sub-committee of MSAC be established to assist this work.

Implementation of RB1 will not commence until Q1 2017

Attachment B – Project team

Name	Project role	Position
Lee Shearer	Chair	Executive Director Compliance and Enforcement
Gary Parker	Project Lead	a/Chief Inspector
Jenny Nash	Project Lead	Director Mine Safety Operations
Tony Linnane	Project Lead	a/Director Mine Safety Performance
Georgina Mason	Project Lead	a/Director, Strategic Compliance Unit

Attachment C – Project details

C.1 QI1,2,3 Quality information

The purpose of this project is to produce a quality information system that incorporates the consolidation of data into a single database and the analysis of this data to support the broader incident prevention strategy project.

Project scope

This project involves the development and implementation of a data system that will effectively capture and inform the department's information requirements and risk assessment model.

The project will draw upon existing information and data sources, and concurrent projects associated with data management, to develop a single data set for integration by systems to expedite effective tailored reporting based on statistical and nodal analysis.

This will initially require a complete data audit and development of a clear path for the migration of the current system into a single data set for intelligence purposes. The database will capture all department reporting on incidents, inspections, audits, investigations, approvals, exemptions, authorisations, notifications and management plans. Consideration will also be given to alternative sources of data that can support the aims and objectives of the broader project and can be captured and analysed by the database.

The complete database will broadly cover a multi-faceted appreciation of operations, including safety performance, inherent hazards, operational and organisational factors, and safety culture. The analysed data will feed into the other strategy projects, and provide timely information for the regulator to ensure the efficient and effective deployment of resources in order to minimise risks.

The acquisition of software systems to inform both strategic and operational intelligence requirements will require further scoping and be heavily reliant on the data format currently held by the department.

Once the data set and interrogative software systems are in place, the final phase of the project will be the development of the analytical capability and the associated reporting requirements; initially, for prioritising inspection resources based on assessed risk.

Key tasks

The main task areas for the project include:

- audit of the existing data sources with a view to collating and standardised formatting
- identification of any gaps in current data collection, and development of processes to identify, obtain and store external data effectively
- linking data types/sources to key mine safety considerations
- consideration of controls that are identified in regard to storage and collection of information
- development of processes to enable the consideration of the critical controls, risk prioritisation and ranking information to identify targeted intervention strategies
- identification of initial targeted intervention strategies and possible reporting structures
- consideration of identified targeted intervention strategies with deployment model, in terms of skills and resource allocation requirements
- development of processes to enable the ongoing data collection and analysis to determine the success or otherwise of targeted intervention strategies
- input into the development of audit, inspection and investigation procedures to target specific areas of risk.

Consultation summary

Internal department consultation will be required to understand the current information sources, collection and analysis. Mine Safety inspectors will be required to help shape the data collection processes relevant to the information to be collected through the inspectorate's work. This project will also provide information and processes that will impact on all the other aspects of the strategy and close internal consultation with those project managers will be required. The project will also be discussed with MSAC sub-committee as required.

External consultation, including new Memorandums of Understanding, will be required with other government and private organisations that hold information deemed relevant to mine safety.

Proposed implementation date

July 2016

C.2 HOF1 Industry reporting behaviours (including identification of human factors)

The aim of the project is to understand reporting behaviour, identify reporting barriers and provide quality performance data to industry. Fundamentally the project provides an opportunity for the provision of robust data that is a mainstay for a targeted intervention program.

Project scope

This project will analyse reportable incidents and injuries by sector, type of operation, event subtype /incident subtype and:

- establish an industry average reporting rate for each category of event
- establish individual average reporting rate for each category of event
- establish high and low reporting sites compared to industry averages for incident rates with injury, incident rates without injury as well as total incident rates
- identify outliers
- explore underlying reasons.

Key tasks

The main task areas for the project include:

- Establish a historical overview of reporting behaviour within industry.
- Analyse incident rates and compare individual sites against industry averages to identify industry outliers and allow further consideration of the factors influencing this.
- Enable the department to receive data that can be scientifically evaluated.
- Develop a targeted program of works that provides information, advice and education to industry, including communication with industry about performance.
- Develop a means to monitor and evaluate the effects of the targeted program on safety performance.
- Develop and implement a system to identify and manage non-compliance.

Consultation summary

The project will be discussed with a number of key stakeholder including intel and data experts within the department. Externally, updates on the project will be provided to MSAC, health and safety representatives, and other stakeholders. This provides the means for consultation and constructive feedback and enables industry involvement to identify areas of need or improvement within their sector.

Proposed implementation date

July 2016

C.3 HOF2 Human factors analysis and assessment tools

The aim of the project is for the department to support industry in successful implementing reliable controls taking into consideration human and organisational factors. The project will focus on the provision of consistency via the development of a tool kit, and upskilling of the regulator in human and organisational factors to enable a proactive approach to prevention strategies.

Project scope

This project will involve the development of a tool kit that will provide a consistent approach within the department and industry for the management of incidents. The project will also foster additional training and information in the provision of a tool to assist the department to investigate incidents where human error or violation has been identified by the operator or the inspector as a contributing factor.

Key tasks

The main task areas for the project include:

- Develop a human and organisational factors toolkit for the department and industry.
- Develop case studies illustrating different intentional behaviours, including appropriate control measures.
- Map skill set with the department to facilitate development of a tool kit.
- Industry workshops that provide proactive guidance and mentoring to industry from the department with regards to human and organisational factors.
- Monitor and evaluate incident investigations from intervention sites pre-intervention and twelve months post-intervention.

Consultation summary

The project will be discussed with a number of key stakeholders including internal human and organisational factors experts within the department as well as external specialist in human factors field. Externally, updates on the project will be provided to MSAC, health and safety representatives, and operators. This provides the means for consultation and constructive feedback and enables industry education with regards to human and organisational factors.

Proposed implementation date

July 2016

C.4 RBI1 Risk control measures and effective assessments

The purpose of this project is to develop an effective, proactive assessment of control measures associated with the management of risk at operations and so drive operational safety in the mining and extractive industries sector as required under the *Work Health and Safety Regulation 2011* Chapter 3 Part 3.1 and the *Work Health and Safety (Mines and Petroleum Sites) Regulation 2014* Part 2.

Project scope

This project will focus on two (2) primary areas.

1. For industry:
   - guidance will be provided on how to achieve compliance with the legislation through an improved focus on risk control measures, and;
2. For the regulator:
   - a structured process to verify how effectively operators have complied with the requirement to identify, assess, control and hence manage risk
   - a systematic risk based prioritisation model to ensure resources are being allocated for greatest benefit to industry based on quality data to determine highest priority focus.

Key tasks

The key tasks for the project are:

- Development of a communication strategy for the risk based intervention project (internal and external).
- Review of existing assessment tools within the department to determine their relevance and any amendments required to support the project.
- Development of a guidance document for the department to proactively assess the effectiveness of risk control measures at sites based on legislative requirements and modelled on current best practice, for example *ICMM Health and Safety Critical Control Management Good Practice Guide*.
- Benchmarking of risk control measures for hazards to assist in the development of proactive assessment tools for the following sectors:
  - underground coal
  - open-cut coal
  - underground metalliferous
  - surface extractives
  - engineering
  - opal/gemstones
- Rollout of proactive assessment tools will include:
  - communication of the assessment tools to all internal stakeholders
  - specific training to relevant internal stakeholders in the principals for the proactive assessment tools.
- Rollout of industry guidance on the management of risk through effective identification of hazards and the implementation of effective risk control measures.

Consultation summary

External consultation will occur with mine safety experts who can advise on the development of the project, and inform particular aspects of the project. Expert technical advice will also be procured for the project as required. Industry representatives and stakeholders will also be consulted as required. The project will also be discussed with the MSAC sub-committee as required.

Proposed implementation date

January 2017

C.5 RBI2 Risk assessment prioritisation

The purpose of this project is to establish the framework for risk assessment prioritisation that will support the identification of areas (including particular risks and specific titles) of increased risk where the deployment of resources should be prioritised in order to minimise those risks.

Project scope

This project involves the development of a risk assessment framework that can be used to inform and support the deployment of resources to manage risk across the resources sector. This will include the development of a risk prioritisation tool which should examine:

- the nature and level of the threats faced by an organisation
- the likelihood of adverse effects occurring
- the level of disruption and costs associated with each type of risk
- the effectiveness of controls in place to manage those risks.

Once established, the risk prioritisation tool will be used to determine areas of enhanced risk, where resources should be considered for deployment. This may include increased auditing and inspections regimes for particular sites, or targeted intervention strategies for areas of highest risk.

The tool must be able to be updated and reviewed as new sources of information and data are captured (including through future inspections) and assessed, and as areas of risk change.

This tool will form the basis of the risk assessment prioritisation framework which should also include consideration of human and organisational factors, risk control measures, current and future resources, and the process for the ongoing monitoring and verification of risks through the analysis of robust data.

Key tasks

The main task areas for the project include:

- Research into potential models of risk prioritisation
- Consideration of the existing data sources and the way these can be used to identify risk priorities
- Identification of any gaps in the current data collection that should be filled
- Identification of any gaps in the current data extraction and analysis that could be used to inform target intervention strategies
- Consideration of risk control measures as they are identified and ranking information
- Development of risk prioritisation tool
- Development of processes to enable the consideration of the risk control measures and ranking information within the risk prioritisation tool
- Input into the development of audit, inspection and investigation procedures to target specific areas of risk priority
- Input into the development of targeted intervention strategies
- Input into the deployment of resources to ensure that identified areas of risk prioritisation are appropriately managed
- Development of processes to enable the ongoing data collection and analysis to determine the success or otherwise of risk priorities

Consultation summary

External consultation will occur with mine safety experts who can advise on the development of the project, and inform particular aspects of the project, for example risk identification. Industry representatives and stakeholders will also be consulted as required. The project will also be discussed with the MSAC sub-committee as required.

Proposed implementation date

July 2016

C.6 RBI3 Regulatory approach

The purpose of this project is to ensure that the deployment of resources, both personnel and financial, are used in the most efficient and effective way to support an outcomes focussed approach to regulating based on international best practice. The project will involve the consideration of international best practice regulatory approaches and will provide a significant vehicle for the implementation of the outcomes of the other incident prevention strategy which will inform the deployment of resources.

Project scope

Fundamentally, this project should consider what the role of a mine safety inspector is, and develop resource allocation and auditing procedures and tools to support this identified role.

This project involves a review of the current deployment of resources, to identify where resources are prioritised under the current approach and where improvement may be made. It will identify gaps in the existing resources, skills and ad hoc deployment strategies, and consider how those issues can be addressed. This will include the current process of triage, ranking of incidents and response. The project will also consider international best practice in the deployment of resources in similar environments, and in industries or jurisdictions within similar risks or approaches to regulation.

This review of the current situation and the identification of best practice will inform the development and implementation of a robust and inclusive regulatory approach that will lead to the best use of personnel and financial resources. The regulatory approach will provide areas of focus for personnel (both geographical and risk), matching specific skills and expertise with those target areas. It will consider the findings of the cross-area team based audit program and build upon this process if appropriate.

The regulatory approach will be required to integrate the findings of the risk prioritisation, risk control measures and assessment procedures, and targeted intervention strategies to ensure that resources address these issues, where required, and can accommodate the needs of the outputs of these projects. For example, matching the skills with the particular risk control measure assessment for a site.

The ongoing monitoring of the implementation of the regulatory approach and deployment model, and impacts this may have on risk reduction, will be necessary to determine the effectiveness of the approach and identify any necessary refinements or amendments. This will also enable value-for-money of the mine safety levy to be demonstrated to industry.

Key tasks

The main task areas for the project include:

- Consideration of the existing methods of deployment and the identification of any issues with this.
- Research into regulatory approaches and deployment models for other jurisdictions and sectors.
- Consideration of risk control measures and assessment procedures as they are identified.
- Consideration of areas of risk prioritisation.
- Consideration of the targeted intervention strategies.
- Production of auditing and investigation tools.
- Development of a regulatory approach including detailed deployment model.
- Implementation of the regulatory approach.
- Ongoing monitoring and review of the regulatory approach.

Consultation summary

External consultation will occur with industry representatives and stakeholders. The project will also be discussed with the MSAC sub-committee as required.

Extensive internal consultation will occur with the mine safety inspectors and this may also involve union representatives.

Proposed implementation date

July 2016

C.7 RBI4 Targeted intervention strategies

The purpose of this project is to develop and implement a process for targeted risk identification that can lead to the most efficient use of resources and the development of education and information tools for industry. The project aims to maximise voluntary compliance to prevent catastrophic, multiple-fatality events, reduce personal injury, and address occupational health.

Project scope

This project involves the development and implementation of a robust and inclusive process to identify target areas of risk, associated with the various types of operations and sites. This will draw upon existing information and data sources, and the concurrent projects associated with the development of ranking (part of the QI projects), risk control measures, and risk prioritisation.

These targeted intervention strategies will then inform the deployment of resources, in terms of what target areas inspections and audits may focus on, and the resources in relation to focused education campaigns to maximise voluntary compliance.

Key tasks

The main task areas for the project include:

- Consideration of the existing data sources and the way these can be used to identify targeted intervention strategies.
- Identification of any gaps in the current data collection that should be filled.
- Identification of any gaps in the current data extraction and analysis that could be used to inform targeted intervention strategies.
- Consideration of risk control measures as they are identified.
- Consideration of areas of risk prioritisation and ranking information.
- Development of processes to enable the consideration of the risk control measures, risk prioritisation and ranking information to identify targeted intervention strategies.
- Identification of initial target strategies.
- Consideration of identified target strategies with deployment model, in terms of skills and resource allocation potential.
- Ranking of target strategies and development of timeframes for the implementation of individual targeted intervention strategies.
- Development of processes to enable the ongoing data collection and analysis to determine the success or otherwise of targeted intervention strategies.
- Input into the development of audit, inspection and investigation procedures to target specific areas of risk.
- Development of education and communication procedures for targeted intervention strategies.
- Implementation of the target strategy through the deployment of resources, undertaking of assessment procedures and through education/awareness campaigns.
- Ongoing monitoring of the implementation of targeted intervention strategies.
- Ongoing process of verification of target strategies and the identification of new strategies based on risk prioritisation and analysis.

Consultation summary

External consultation will occur with mine safety experts who can advise on the development of the project, and inform particular aspects of the project, for example risk identification. Industry representatives and stakeholders will also be consulted as required. The project will also be discussed with the MSAC sub-committee as required.

Proposed implementation date

July 2016