

Fatigue management for managers

NSW mining and extractives industry

Introduction

The purpose of this fact sheet is to provide managers with a summary of the key elements contained within the publication 'Fatigue Management Plan: A practical guide to developing and implementing a fatigue management plan'. The guide is endorsed by the Mine Safety Advisory Council and provides a detailed framework on how to develop and implement a systematic approach to the management of fatigue. This fact sheet summarises some of the key points contained in the 'Fatigue Management Plan' guide.

How does your organisation manage fatigue?

The objective of a fatigue management plan is to ensure in consultation that:

- the systems of work and the work environment eliminate or adequately control the risks associated with fatigue;
- roles and responsibilities are clearly understood;
- informed decisions are made in regards to hours of work, working arrangements and shift rosters;
- ongoing assessment and monitoring of conditions, rosters, unplanned work and tasks to ensure they do not result in fatigue;
- supervisors and managers are provided with the necessary training and information to enable them to carry out their responsibilities towards managing fatigue;
- individuals receive education and training on fatigue management and are fit for work;

- incidents are investigated and analysed to identify possible fatigue related causal factors to prevent reoccurrence;
- a "no blame" approach to fatigue identification and self reporting is promoted;
- contractor fatigue is managed consistently within the mine's fatigue management plan.

Obligations and responsibilities

Operators and those with responsibilities that include management or control of workplaces are required to:

- ensure the health and safety and welfare of employees and visitors with regard to fatigue;
- have a health and safety management system or plan that includes fatigue management;
- consult with employees, and those doing particular types of work, about the fatigue risks;
- provide information and instruction on managing fatigue risks;
- identify fatigue hazards;
- assess fatigue risks;
- eliminate or control fatigue risks; and
- provide supervision of work practices.

All people working at or visiting the mine are required to co-operate with the fatigue management plan and report issues or problems.

Who needs a fatigue management plan?

All sites should conduct a fatigue risk assessment. A written and auditable management plan is required for all operations that have working time arrangements that:

- do not only have a day shift (that operates between 6.00am and 7.00pm);
- involve more than 48 hours in any consecutive five-day period (working on each day); or
- do not have a minimum of two consecutive days off in any seven-day period.

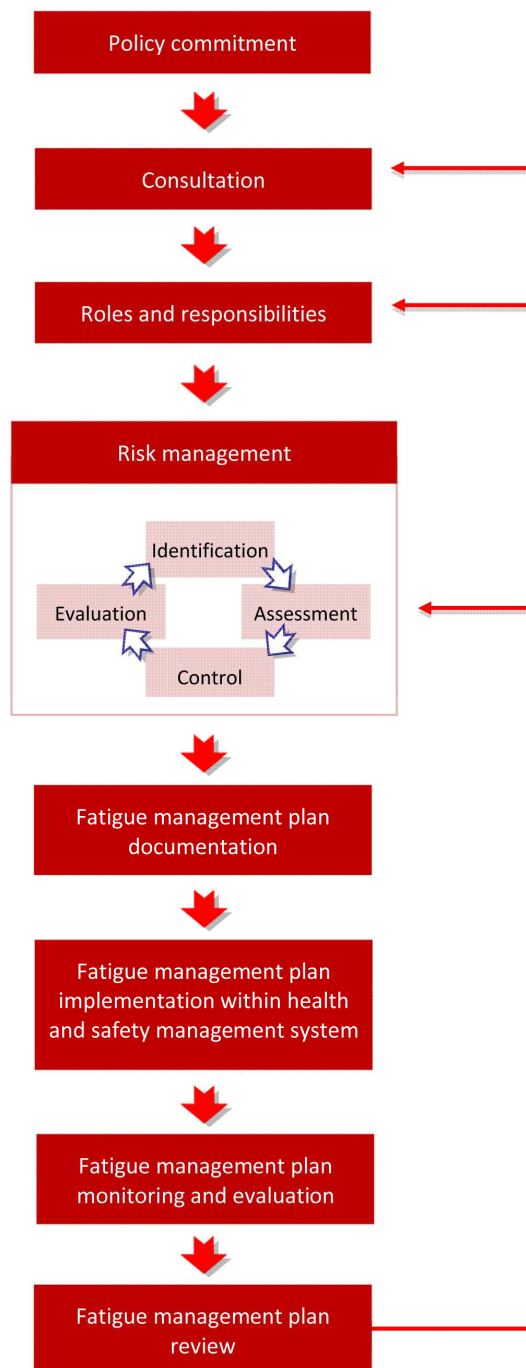
A fatigue management plan is also required if a fatigue hazard is identified during the risk assessment.

A mine's fatigue management plan should cover managers, professional staff, contractors and those who work on the planned rosters and unplanned work, such as overtime and call outs. Commuting times should also be considered.

Further information is available in the 'Fatigue Management Plan: A practical guide to developing and implementing a fatigue management plan'

The flow chart and summary information on the following pages outlines the steps that mine's need to take to develop and implement a fatigue management plan.

Fatigue management plan: Development and implementation overview



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Fatigue management plan elements

Major elements of a fatigue management plan are:

- **Policy commitment**

The operator should make a firm policy commitment to effective fatigue management. This policy should make it clear to management, employees/workers (including contractors) and visitors that the operator/employer is committed to ensuring proper control of fatigue risks that might affect the health and safety of those involved in the work or those affected by the work.

The roles and responsibility of all persons at the site who will have responsibility for developing and implementing the plan should be identified.

- **Consultation**

Development of the fatigue management plan requires early and on-going consultation with all relevant groups. It is important to involve employees/workers, as they are the persons most likely to be at risk of developing ill health as a result of work-related exposures.

- **Risk management**

The key aspect of developing a fatigue management plan for a specific site is to undertake thorough risk management. This involves hazard identification and risk assessment, control of the risks and evaluation of the effectiveness of the risk control process. Risk assessment is a dynamic process, and the work environment and systems should be evaluated regularly.

- **Documentation**

A fatigue management plan must be fully documented and integrated as part of an overall health and safety management system or plan. The plan must be able to be audited and assessed.

- **Implementation**

The fatigue management plan must be properly implemented. Without adequate risk controls put into place, the work that has gone into preparing the fatigue management plan will not be useful. Key issues to consider in implementing the plan include timeframes, training, roles and responsibilities, communication and participation.

- **Evaluation**

All aspects of the fatigue management plan should be reviewed at regular intervals to ensure continuing suitability, adequacy and effectiveness of the controls for eliminating risk. The plan must be reviewed when circumstances change at the mine, rostering patterns change, or when there is any indication that fatigue risks are not being controlled.

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Fatigue risk management

Fatigue risk management applies the same basic approach to managing risk as with any health or safety hazard at the workplace. It should:

- identify the hazards arising from work schedules, work demands and work environment, commuting and individual factors;
- assess the risks posed by each identified fatigue hazard;
- control the risks applying the hierarchy of controls;
- evaluate the effectiveness;

Identify hazard factors influencing fatigue

The following diagram is a visual representation of the seven main factor types identified as being those that contribute to fatigue. This is taken directly from the publication, 'Fatigue Management Plan; A practical guide to the developing and implementing a fatigue management plan'. Refer to the guide for more information on the potential fatigue hazards.

Factors influencing fatigue

Mental and physical demands of work

Work scheduling and planning – Night work

Work scheduling and planning – Shift work

Work scheduling and planning – Hours

Excessive commuting times necessary

Individual and non – individual work factors

Work environment and work conditions

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Identifying risk factors that influence fatigue

Identifying common risk factors

Risk factors for fatigue can be identified in a variety of ways. Typically this would start with consulting the workforce and contractors. In addition, examining records to look at incidents and health concerns that have occurred previously sometimes provides useful information. Common factors that can contribute to the development of fatigue are:

- mental and physical demands of work;
- work scheduling and planning;
- work environment conditions;
- excessive commuting times, and
- individual and non-work factors.

Mental and physical demands of work

The mental and physical demands of work can contribute to an employee/worker becoming impaired by fatigue in a number of ways.

Concentrating for extended periods of time, performing repetitious or monotonous work or performing work that requires continued physical effort can increase the risk of fatigue by producing mental and/or physical tiredness.

Work scheduling and planning

The way work is planned and scheduled, the time work is performed and the amount of time worked can increase the risk of fatigue.

Scheduling work in a way that fails to allow employees/workers enough time for travel to and from work and/or physically recover can produce fatigue. Working at times when employees/workers are biologically programmed to sleep (which can disrupt an employee/worker's body clock) and working for long periods of time can also produce fatigue.

Work environment conditions

Working in harsh and/or uncomfortable environmental conditions can contribute to the risk of fatigue in a number of ways. Heat, cold, noise and vibration are some of the environmental conditions that can make employees/workers tire quicker and impair their performance.

Excessive commuting

Having to travel long distances before or after work is a significant potential cause of fatigue.

Individual and non-work factors

In addition to the work-related factors that contribute to fatigue, it is important to identify factors that cause fatigue due to sleep deprivation. These include:

- lifestyle factors such as child-care responsibilities, voluntary work, having more than one job, level of fitness, social life or diet;
- home environment characteristics such as noisy neighbours or a bedroom that is too hot or not dark enough for day-time sleep, and
- health conditions including insomnia, sleep apnoea, or alcohol or drug dependence.

Effect of exposure for longer periods

When taking a risk management approach to fatigue, it is very important to look at how fatigue, and long working hours in general, can interact with other workplace hazards. Exposure to hazards such as manual tasks, hazardous chemicals, dust and noise can be increased when working extended hours.

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Assess the risks arising from each identified factor

The Table below provides some general guidance on how to assess the risks arising from each of the hazard factors above. When assessing risk consider interaction between hazard factors that could influence the level of risk.

A risk assessment must be carried out by every mine to determine if a fatigue management plan is required. In addition, the following circumstances could also reasonably be considered as 'triggers' for carrying out a fatigue assessment.

- Implementing a new shift roster working arrangements.

- Varying existing planned shift working arrangements.
- Approving any extension to work hours beyond 13hrs.
- Approving the commencement of work by an individual without appropriate breaks or approving a person to commence a short notice or call-out overtime shift

For further guidance on risk assessment refer the 'Fatigue Management Plan; A practical guide to developing and implementing a fatigue management plan'. In particular Appendix 2 'Risk Assessment Chart' provides information to assist with the assessment and rating of risks.

Fatigue risk factors

Risk factor	Aspects to consider
MENTAL AND PHYSICAL DEMANDS OF WORK	
Repetitive or monotonous work	<ul style="list-style-type: none"> • Do jobs involve repetitive or monotonous work, eg haul-truck driving?
Sustained physical or mental effort	<ul style="list-style-type: none"> • Is the work physically demanding? • Is there time pressure due to a heavy workload? • Is work fast paced? • Is work intensive? • Can employees/workers vary work pace or work tasks as desired? • Have employees/workers been consulted regarding work tasks or how to carry them out?
Complex physical or mental tasks	<ul style="list-style-type: none"> • Is high vigilance and/or concentration required? • Are there different demands that can be difficult to combine? • Are complex, difficult or strenuous tasks required at the end of shifts or shift cycles?
WORK SCHEDULING AND PLANNING	
Night shifts, including the number of consecutive night shifts	<ul style="list-style-type: none"> • Are too many consecutive night shifts worked? • Is more than eight hours work required over night shift? • Are more than four consecutive 12-hour night shifts worked? • Are more than five consecutive 10-hour night shifts worked? • Are more than six consecutive 8 - hour night shifts worked? • Are tasks requiring sustained physical or mental effort undertaken on night shift?
Long hours of work in a single shift. This includes travel time, especially for remote mine's	<ul style="list-style-type: none"> • Does one shift involve more than 12 hours in a day (including call outs)?
Long hours of work across a roster cycle	<ul style="list-style-type: none"> • Do hours of active work (total time spent at work including overtime) exceed 48 hours in any seven days, or 624 hours over a three-month (13 week) period?
Long hours because of on-call duties	<ul style="list-style-type: none"> • Are there irregular and unplanned schedules as a result of call outs? • Is the working day or working week extended beyond 12 hours in a single day, 48 hours in any seven days, or 624 hours over a three-month (13 week) period as a result of call outs?

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Fatigue risk factors (continued)

Risk factor	Aspects to consider
WORK SCHEDULING AND PLANNING	
Short breaks between work shifts	<ul style="list-style-type: none"> Is there enough time between work shifts to allow for adequate sleep? Enough time in a break for five hours uninterrupted sleep in 24 hours (only for one night); AND Enough time in breaks for 12 hours of sleep in 48 hours and at least six hours in 24 hours; AND Enough time in breaks for 50 hours sleep in seven days? Is the break between shifts less than 10 hours? Are there at least two consecutive night time sleep opportunities (48 hours) every seven days?
Short breaks within work shifts	<ul style="list-style-type: none"> Are breaks within shifts long enough and frequent enough to allow employees/workers to rest, refresh and nourish themselves?
Shift start/finish times	<ul style="list-style-type: none"> Do any shifts start or finish between 10pm and 6am? Are split shifts required or offered? Are complex, difficult or strenuous tasks required at the start or end of such shifts?
Changes to rosters	<ul style="list-style-type: none"> Do employees/workers get sufficient notice of roster changes? Is fatigue management taken into account in roster changes?
WORK ENVIRONMENT CONDITIONS	
Stress	<ul style="list-style-type: none"> Do jobs involve high demand, but low control? Are there poor social relations at work, eg bullying? Is there low social support from peers and supervisors at work? Is there low recognition for the effort involved in the work?
Adverse working conditions	<ul style="list-style-type: none"> Do adverse working conditions exist, eg exposure to: <ul style="list-style-type: none"> Noise? Heat? Cold? Dust? Hazardous substances?
EXCESSIVE COMMUTING TIMES NECESSARY	
Long travel times	<ul style="list-style-type: none"> Is significant travel to and from work necessary each day so that time for adequate sleep is reduced? Are long-distance commutes necessary at the beginning of a work cycle?
INDIVIDUAL AND NON-WORK FACTORS	
Social impacts	<ul style="list-style-type: none"> To what extent is there evidence of problems as a result of: <ul style="list-style-type: none"> Family commitments? Insufficient quality sleep? Sleeping disorders? Psychological issues? Alcohol and drug use? Second job/non-paid work?
EFFECT OF EXPOSURE DURING EXTENDED SHIFTS	
Extended exposure	<ul style="list-style-type: none"> Is there significant exposure to hazardous chemicals, dust and noise? (Note that exposure standards may need to be adjusted.)

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Control the risks for each hazard factor

The key aim of a fatigue management plan is to ensure that hazards that pose a risk to the health and safety of employees/workers are properly controlled. Where a hazard factor is assessed as a medium/higher risk, consider implementing control measures such as those outlined in the guide. Some examples of risk control measures are listed below but the list is not exhaustive.

For further guidance on risk control measures refer the publication 'Fatigue Management Plan; A practical guide to developing and implementing a fatigue management plan'. In particular, Table 2, 'Examples of control measures for various fatigue risk factors', provides information to assist with the control of fatigue risks.

MENTAL AND PHYSICAL DEMANDS OF WORK (HAZARD)	
(CONTROL)	<ul style="list-style-type: none"> Re-design jobs/tasks to eliminate or minimise boring, repetitive tasks. Reduce the time workers spend performing physically or mentally demanding work or factor in adequate rest breaks. Ensure work demands increase towards middle of shift and decrease towards the end of shift. Ensure that there are adequate workers and resources to do the job without placing excessive demands on available staff.
WORK SCHEDULING AND PLANNING – NIGHT WORK (HAZARD)	
(CONTROL)	<ul style="list-style-type: none"> Eliminate or limit night shift where possible or schedule complex tasks for daytime. Schedule high risk or safety critical work outside low body clock periods i.e. outside the hours of 2am to 6am. Limit the number of consecutive night shifts – no more than four night shifts in a row for 12 hour shifts. Ensure rosters allow for at least two full nights sleep after the last night shift. Use a forward rotation shift system (i.e. morning to afternoon, afternoon to night) and arrange shifts so that day sleep is adequate.

WORK SCHEDULING AND PLANNING – SHIFT WORK (HAZARD)	
(CONTROL)	<ul style="list-style-type: none"> Control the length of shifts and increase the length of breaks between shifts. Look at how workloads are managed during times of breakdowns or worker absences. Ensure adequate breaks between shifts to allow workers to travel, sleep, eat and socialise. Don't start or finish between 10pm and 6am.
WORK SCHEDULING AND PLANNING – HOURS AND COMMUTING (HAZARD)	
(CONTROL)	<ul style="list-style-type: none"> Avoid working arrangements that provide incentives to work excessive hours. Monitor hours of work, especially for professional staff (salaried). Control the length of shifts. Limit the use of overtime, particularly unscheduled overtime. Reduce active working time to account for long commuting time and for remote access mines start work the day after arrival on site. Assist with transport arrangements
WORK ENVIRONMENT CONDITIONS (HAZARD)	
(CONTROL)	<ul style="list-style-type: none"> Ensure opportunities to clarify stress-related issues Control exposures to hazardous substances and environments. Employees/workers who perform repetitive manual tasks should be given regular rest breaks. Ensure exposures to hazardous substances and noise are carefully monitored and exposure levels adjusted. For example, exposure during a 10 hour shift may not equate to 1.25 times the exposure experienced during an 8 hour shift.
INDIVIDUAL FACTORS (HAZARD)	
(CONTROL)	<ul style="list-style-type: none"> Foster identification of non-work related factors. Provide information and education on management of non-work related factors. Provide opportunities for workers to raise non-work related factors without fear or blame. Offer employee assistance program.

Evaluate the effectiveness of the fatigue management plan

The fatigue management plan should be audited and reviewed at regular intervals to make sure that fatigue risks are adequately controlled.