

System Procedure

Applying Risk Management to Fatigue



Version control

Version	Change from previous	Date	Comment
1.0	First release	23 Feb 2010	
2.0	4.4.3 (page 9) inclusion of dot point relating to providing access to accommodation when employees need to work away from home Updated hyperlink to SMS-06-SR-1384	3 Aug 2010	Incorporating regulator feedback
2.1	Typographical error amended on page 8	11 Aug 2010	

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4. Risk management process

4.1 What is fatigue?

Fatigue is more than feeling tired or drowsy. It is an acute and/or ongoing tiredness that leads to mental or physical exhaustion and prevents people from functioning within normal boundaries.

A fatigue hazard has the potential to harm the health and safety of people or to cause other damage such as disrupting service delivery or compromising network reliability.

4.2 Identifying fatigue hazards

General managers and managers, in consultation with employees, must identify fatigue hazards consistent with the approach described in [SMS-06-PR-0104 Workplace Risk Management](#).

Fatigue hazards can be identified by:

- examining rostering and shift work arrangements
- monitoring work hours and overtime reports
- monitoring the log books or work diaries of heavy vehicle drivers
- reviewing incident data to identify if fatigue was a contributing factor, for example:
 - what time of day did the incident occur?
 - how long had employees been awake before the incident occurred?
 - what were the work patterns in the 14 days before the incident?
 - how many breaks were taken during the shift and how long were those breaks?
 - what were the non-work activities undertaken in the 48 hours before the incident, such as secondary employment
- reviewing work schedules and contractual arrangements that may impose tight deadlines
- identifying work practices such as operating complex equipment or coordinating complex processes
- listening to feedback from employees to find out what factors are causing fatigue and the context in which this occurs
- reviewing sick leave records to determine if fatigue is a factor
- observing signs of fatigue (see Figure 2 for information on what to look for)

Figure 2 illustrates the factors known to cause fatigue. Recognising the importance of these factors helps identify both current and future work arrangements that contribute to fatigue and supports work planning to reduce fatigue risks. Each factor has the capacity to affect a person's ability and opportunity to obtain restorative sleep, the only cure for fatigue.

Managers must document fatigue hazards using [SMS-20-FM-1446 Fatigue Risk Profile](#).

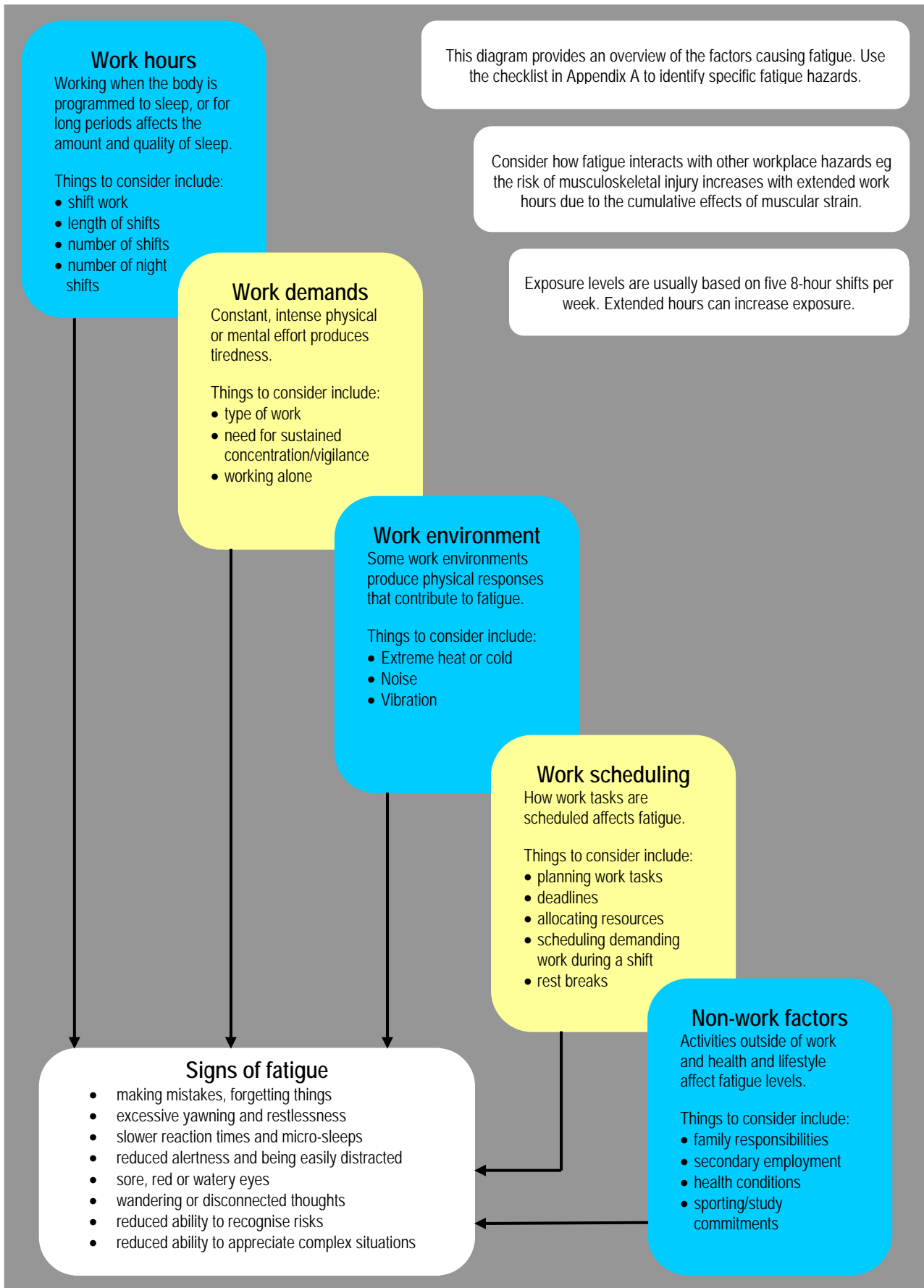


Figure 2 Factors known to cause fatigue

4.3 Assessing fatigue risks

Managers, in consultation with employees, must assess the risks of fatigue. Understanding the situations contributing to fatigue helps assess the risks. The factors in Figure 2 are known to contribute to fatigue in most people because the amount and quality of sleep is affected.

4.3.1 Issues to consider when assessing fatigue risks

When assessing fatigue risks, it is important to recognise that:

- factors can be inter-related and should not be considered in isolation
- fatigue management is not an exact science – people will have varying responses to situations that may cause fatigue with some being more affected than others
- not all causes of fatigue contribute equally to the overall level of fatigue
- chronic health conditions and temporary illnesses may affect a person's fatigue levels
- mathematical models used to calculate fatigue must only be used for guidance as they do not factor in the type of work being done, the conditions under which the work is being done and an employee's non-work activities.

4.3.2 Risk assessment tools

Managers, in consultation with employees, must complete [SMS-20-FM-1446 Fatigue Risk Profile](#) for their work area.

General managers may determine how workgroups are defined for the purpose of completing a Fatigue Risk Profile, taking into account:

- occupational groups
- number of employees
- nature of the work
- working arrangements
- management structure

Multiple profiles may be needed to cover different occupational groups with different fatigue risks. A single profile may cover multiple workgroups when the duties, rostering arrangements and fatigue risks are identical across the workgroups.

4.4 Controlling fatigue risks

General managers and managers, in consultation with employees, must eliminate the risk of fatigue where reasonably practicable. Where risks cannot be eliminated, controls must be used to reduce the risk to an acceptable level (ALARP). As fatigue is caused by many factors, multiple controls will be more effective than a single control.

The following control measures are aligned to the factors shown in Figure 2.

4.4.1 Work hours

Line managers must manage the risks of fatigue arising from the working hours of employees who undertake shift work and extended hours arrangements.

RailCorp uses a software program, Fatigue Audit InterDyne (FAID[®]) to predict the level of fatigue associated with hours of work. FAID[®] only provides an indication of the level of fatigue based solely on the roster. It does not take into account other causes of fatigue.

Line managers must only use FAID[®] within a risk management context where control measures are implemented such as:

- reducing the use of shift work, especially night shift where possible
- limiting the number of consecutive night shifts
- limiting the duration of night shifts
- limiting the duration of shifts to no more than 12 hours including overtime
- designing working hours to allow sufficient time for restorative sleep
- allocating shift workers consecutive days off
- scheduling consistent start times or where rotating rosters are used, using forward rotation for shifts (morning-afternoon-night) rather than a backward rotation (night-afternoon-morning)
- identifying ways to ensure shifts do not extend beyond usual finish times
- monitoring actual hours worked against rostered hours to identify and review situations where excessive hours are being worked
- allowing new employees and employees returning from leave with time to acclimatise to shift work
- developing procedures for managing shift-swapping and reducing recalls to duty.

4.4.2 Work demands

Measures to manage the risk of fatigue from work demands include:

- redesigning work to remove or reduce excessive physical and mental demands
- introducing a variety of tasks to minimise physical and mental demands and assist in maintaining alertness during a shift
- using vigilance systems to help maintain alertness
- using plant, machinery and equipment (such as lifting equipment) to eliminate or reduce excessive physical demands
- introducing job rotation to limit a build-up of mental and physical fatigue
- using regular rest periods in addition to scheduled meal breaks
- developing procedures to manage queuing of heavy vehicles.

4.4.3 Work environment

Measures to manage the fatigue risks associated with the work environment include:

- avoiding physically demanding work during periods of extreme temperature
- using heating/cooling devices in extreme temperature work environments (where appropriate) and/or providing appropriate work clothing and shelter
- installing ventilation/cooling devices in hot, confined work environments such as vehicle cabins

- providing access to facilities for rest, meal breaks and other essential requirements such as bathroom facilities
- providing access to accommodation when employees need to work away from home, where the sleep environment is conducive to restorative sleep (ie quiet, dark, cool)
- monitoring exposure to noise, temperature and chemicals and enforcing strict controls to ensure that exposure is limited
- providing personal protective equipment and ensuring correct use
- rotating employees through different tasks to reduce the effects of environmental factors on fatigue.

4.4.4 Work scheduling

Measures to manage the fatigue risks arising from work scheduling practices include:

- scheduling safety critical work outside periods when natural sleep cycles encourage people to sleep ie avoid scheduling work between 12am and 6am
- managing deadlines so workload can be safely undertaken especially during night shift
- including adequate breaks during a work schedule, especially during a night shift
- providing adequate breaks between shifts to allow enough time for rest and recovery before the next shift including time for sleeping and eating
- ensuring there are adequate resources to do the job so breaks during and between shifts are not adversely affected and excessive demands are not placed on employees
- arranging for vacant positions to be filled in a timely manner to ensure there are sufficient numbers of employees to complete work schedules
- planning work tasks so that work demands decrease towards the end of the shift
- allowing for traffic delays in relation to work involving heavy road vehicles
- developing procedures to manage shift-swapping and reducing recalls to duty
- providing sufficient notice to employees of changes in work schedules.

4.4.5 Non-work factors

RailCorp employees must report to work fit-for-duty. This means employees must manage their non-work commitments so that they reduce the risk of fatigue including:

- not entering into outside work commitments that increase the risk of fatigue
- completing an annual [Secondary Employment and Voluntary Work Application Form](#) and submitting this to their manager to be assessed and approved
- taking regular annual leave and minimising the accrual of excess annual leave
- advising their manager if they are unfit for work owing to fatigue (self-identifying)
- using breaks between shifts to obtain sufficient rest and recovery.

Line managers must take appropriate action to manage the risk of fatigue by:

- checking that employees are fit-for-work and encouraging them to self-identify where appropriate

- following up when an employee self-identifies by identifying difficulties s/he may have with rostering arrangements, health conditions, family/carer responsibilities
- assessing applications for secondary employment and approving applications only if they are satisfied that there is no increased risk of fatigue
- encouraging employees to seek medical advice to manage both temporary illnesses and chronic health conditions which may lead to higher levels of fatigue
- providing new employees and those returning from leave with time to acclimatise to shift arrangements
- monitoring leave to ensure employees do not accrue excess annual leave, in accordance with the [RailCorp Union Collective Agreement](#)
- monitoring sick leave to ensure that employees affected by fatigue are identified and managed appropriately in accordance with RailCorp's [Union Collective Agreement](#)
- referring employees who may be experiencing fatigue as a result of personal issues to [RailCorp's Employee Assistance Program](#).

Line managers, in consultation with employees, must document control measures using [SMS-20-FM-1446 Fatigue Risk Profile](#). The above information provides guidance on fatigue-related control measures. However, there may be other control measures relating to management practices that should be considered.

4.5 Reviewing and monitoring

General managers and line managers, in consultation with employees, must monitor risk assessments and control measures relating to fatigue. This is to ensure that risk assessments are valid and that control measures are still effective and have not created additional risks.

Risk assessments and control measures must be re-evaluated where:

- FAID[®] scores continually exceed recommended limits
- there is evidence that risk assessments or control measures are no longer valid
- an injury or incident occurs where fatigue is found to be a contributing factor
- there are changes to the work environment, equipment or work practices that make the risk assessment or control measures ineffective or out-of-date
- there are new developments that can assist in managing fatigue more effectively
- when an employee indicates that s/he is unfit for work owing to fatigue
- when changes are proposed to work schedules and prior to new work schedules being introduced.

Line managers must document changes to risk assessments and control measures using the [SMS-20-FM-1446 Fatigue Risk Profile](#).

5. Performance requirements

Position or Role	Performance requirements
Group general managers	Group general managers must lead the implementation of this procedure and associated documentation within their area of responsibility
General Manager, Safety Systems	The General Manager, Safety Systems must develop, promote and review RailCorp's Fatigue Management Program.
Chief Health Officer	The Chief Health Officer must provide advice to RailCorp on health conditions contributing to fatigue including new developments and emerging issues.
General Manager, RailCorp Training	The General Manager, RailCorp Training must develop and manage training to support RailCorp's Fatigue Management Program.
General managers	General managers must manage the risk of fatigue within their area of responsibility.
Line managers	Line managers must manage the risk of fatigue, at local level.
Employees	Employees must comply with the requirements of RailCorp's Fatigue Management Program.

6. Records management

Records must be maintained according to [SMS-05-SR-0027 Records Management](#).

Records produced when implementing this procedure include:

- [SMS-20-FM-1446 Fatigue Risk Profile](#)
- SMS audit reports
- SMS investigation reports

7. Training and instruction

General managers of workgroups engaged in shift work and extended hours arrangements must ensure that line managers and employees receive fatigue management training. Fatigue management training includes:

Employee category	What the training/instruction covers:
Line managers/team leaders	<ul style="list-style-type: none"> • what fatigue is, how it affects health and safety and the importance of sufficient restorative sleep • how work and non-work factors contribute to fatigue • applying risk management processes to fatigue • implementing rostering practices to reduce the risk of fatigue • using FAID as a tool to calculate fatigue associated with rosters.
Rosterers and schedulers	<ul style="list-style-type: none"> • what fatigue is, how it affects health and safety and the importance of sufficient restorative sleep • how work and non-work factors contribute to fatigue • implementing rostering principles to reduce the risk of fatigue • using FAID as a tool to calculate fatigue associated with rosters.
Employees (who undertake shift work, or extended hours arrangements)	<ul style="list-style-type: none"> • what fatigue is, how it affects health and safety and the importance of sufficient restorative sleep • how work and non-work factors contribute to fatigue • being aware of their responsibility to report to work fit-for-duty and their role in managing non-work causes of fatigue
Incident investigators	<ul style="list-style-type: none"> • what fatigue is, how it affects health and safety and the importance of sufficient restorative sleep • how work and non-work factors contribute to fatigue • identifying and assessing fatigue-related causes when conducting incident investigations

8. Tools and guidance material

[SMS-20-FM-1446 Fatigue Risk Profile](#)

9. References

- [Rail Safety Act 2008 \(NSW\)](#)
- [Rail Safety \(General\) Regulation, 2008 \(NSW\)](#)
- [Occupational Health and Safety Act, 2000 \(NSW\)](#)
- [Occupational Health and Safety Regulation 2001 \(NSW\)](#)
- [Road Transport \(General\) Regulation 2005 \(NSW\)](#)
- [Guidelines Relating to the Management of Fatigue, ITSSR](#)
- [Fatigue Prevention in the Workplace](#), Workcover NSW & WorkSafe Victoria

10. Definitions

Term	Means
ALARP	As low as reasonably practical.
Extended hours	Work hours that that are an extension of standard shift hours as a result of overtime or on-call arrangements.
FAID [®]	Fatigue Audit InterDyne – a computerised mathematical calculation applied to rosters to predict the fatigue associated with roster patterns. It takes into account hours of work, time of day when work is undertaken and breaks within and between shifts. It does not take into account other work and non-work factors.
Fatigue	Fatigue is acute and/or ongoing tiredness that leads to mental or physical exhaustion and which prevents people from functioning within normal boundaries.
Restorative sleep	Involves cycles of deep sleep that allow a person to recuperate and wake up refreshed. Restorative sleep is the only process by which the human body can overcome the effects of fatigue.
Rotating roster	A roster where the shifts have varying start and finish times and may include morning, afternoon and/or night shifts.
Shift work	For the purposes of managing fatigue, shift work involves working outside normal daylight hours (7am – 6pm).