

**MODULE THREE**  
**MONITOR IMPLEMENTATION**  
**OF FATIGUE MANAGEMENT**  
**STRATEGIES**



## 3.1 IDENTIFY CAUSES, SIGNS AND EFFECTS OF FATIGUE

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In order to monitor the implementation of fatigue management strategies in your workplace, you need to be aware of the causes, signs and effects of fatigue on all the employees/workers under your supervision and in your organisation as a whole.

# 3.1.1 CAUSES OF FATIGUE

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Some of the many causes that can contribute to fatigue include:

- Sleep loss.
- Inadequate amount of sleep, i.e. less than 7 to 8 hours, or poor quality sleep.
- Long periods awake, i.e. greater than 17 hours.
- Sustained mental or physical effort.
- Inadequate rest breaks or stops.



# 3.1.1 CAUSES OF FATIGUE

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- Time of day when work is performed, e.g. shift workers.
- Disruption to circadian rhythms/internal biological clock.
- Health and emotional issues, e.g. mind not on the job.
- Boredom, e.g. from travelling the same route.
- Effects of alcohol, other drugs, medicines and stimulants.
- Poor diet.

### 3.1.1.1 WORK AND WORKER-RELATED FACTORS

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Work-related and worker-related factors can contribute to fatigue and have consequences on both employees/workers and an organisation.



### 3.1.1.1 WORK AND WORKER-RELATED FACTORS

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Work-related factors, i.e. as a result of employer activity or workplace or business undertakings, may contribute to fatigue. These may include:

- ▶ Work demands such as:
- ▶ Workload.
- ▶ Work duration.
- ▶ Shift pattern.
- ▶ Time of day.
- ▶ Frequency and duration of breaks.
- ▶ Type of work, e.g. working in isolation, repetitive tasks and boring, monotonous or under-challenging tasks.





# 3.1.1.1 WORK AND WORKER-RELATED FACTORS

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- ▶ Organisational factors including:
- ▶ Work environment, e.g. temperature, ventilation, continual rhythmic vibration from equipment.
- ▶ Payment system.
- ▶ Trip and work scheduling.
- ▶ Predictability of work.

### 3.1.1.1 WORK AND WORKER-RELATED FACTORS

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- ▶ Scheduling factors such as:
- ▶ Rosters.
- ▶ Vehicle schedules.
- ▶ Timetabling.
- ▶ Work plans.





## 3.1.1.2 NON-WORKER RELATED FACTORS

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There are three common categories of non-work related factors that may contribute to fatigue in the workplace.

These include:

- ▶ Lifestyle factors.
- ▶ Multiple job factors.
- ▶ Personal or biological factors.



## 3.1.1.2 NON-WORKER RELATED FACTORS

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### Lifestyle Factors

- ▶ Sleep patterns.
- ▶ Alcohol and drug use.
- ▶ Quantity and timing of food and drink.
- ▶ Opportunities for relaxation with family and friends.
- ▶ Unusual physical activity, e.g. participating in a challenging sport on the weekend.



## 3.1.1.2 NON-WORKER RELATED FACTORS

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### Multiple Job Factors



Factors when working multiple jobs could include:

- ▶ Long hours.
- ▶ Inadequate time between shifts for sleep.
- ▶ Additional commuting times between jobs.
- ▶ Reduced relaxation, family and social obligations.
- ▶ Reduced time for sleep.
- ▶ Additional anxiety and worry; preoccupation with life's concerns and worries.

## 3.1.1.2 NON-WORKER RELATED FACTORS

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### Personal or Biological Factors

- ▶ State of mental and/or physical health.
- ▶ Inadequate sleep.
- ▶ Sleep disorders.
- ▶ Emotional stress.
- ▶ Family responsibilities.
- ▶ Relationship difficulties.
- ▶ Inadequate competence to complete work tasks.
- ▶ Circadian rhythms/internal body clock.



## 3.1.2 SIGNS AND SYMPTOMS OF FATIGUE

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Most people who have a sleep debt don't realise they are tired, so drowsiness can creep up on them.



The general signs and symptoms of fatigue that you need to recognise include:

- Blurred vision.
- Difficulty keeping your eyes open.
- Head nodding.
- Drowsy relaxed feeling.
- Irritability.



## 3.1.2 SIGNS AND SYMPTOMS OF FATIGUE

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- Not feeling refreshed after sleep, i.e. waking tired.
- Falling asleep at work.
- Micro sleeps.
- Wandering, disconnected thoughts or day dreaming.
- Eyes close for a moment or go out of focus.
- Eyelids droop.
- Inability to stop yawning.





## 3.1.2 SIGNS AND SYMPTOMS OF FATIGUE

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A fatigued driver may also experience particular signs such as:

- Inability to remember driving the last few kilometres/operations for the last few minutes.
- Drifting over the centre line or onto the gravel at the side of the road when driving.
- Not noticing signs and hazards early enough.

## 3.1.2 SIGNS AND SYMPTOMS OF FATIGUE

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- Missing your exit or turns.
- Missing gear changes.
- Starting to see things that are not there.
- Approaching corners or changes too fast.
- Poor steering or braking too late.
- Changing speed or operations without noticing.



## 3.1.3 EFFECTS AND CONSEQUENCES OF FATIGUE

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Driving/operating is a complex mental and physical task requiring sustained levels of concentration and skill to maintain maximum performance.

No driver/operator can afford to be fatigued, nor can anyone else afford a driver/operator to be fatigued.

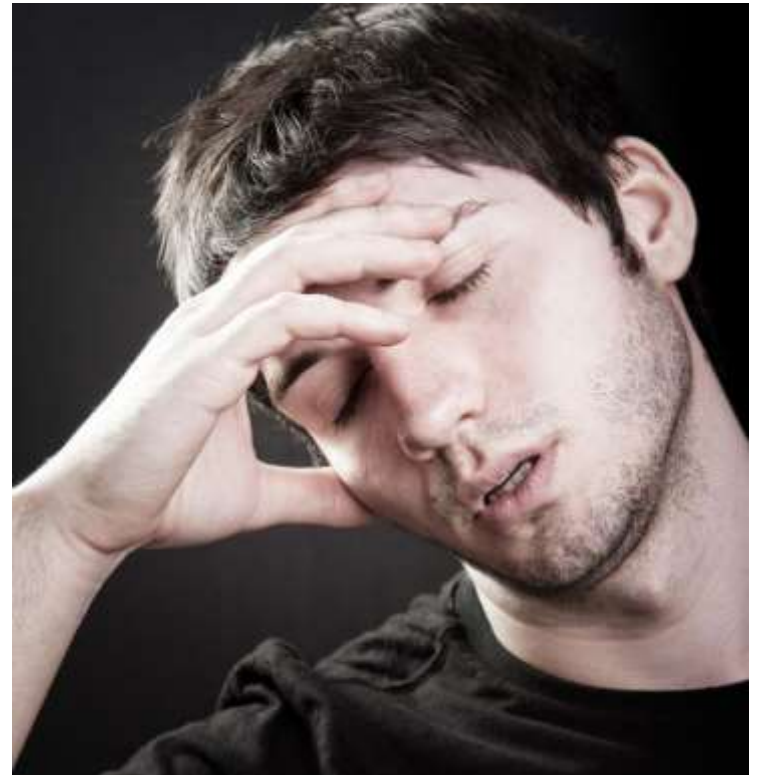


# 3.1.3.1 EFFECTS OF FATIGUE

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The effects of fatigue include:

- Loss of alertness.
- Poor judgment.
- Drowsy driving/operating.
- Falling asleep at the wheel.
- Poor memory.
- Mood change.



# 3.1.3.1 EFFECTS OF FATIGUE

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## Loss of Alertness



Loss of alertness means you respond more slowly to things as they arise. It is an early sign of fatigue and may result in less efficient control of a vehicle, such as:

- ▶ Changing gears roughly, not smoothly.
- ▶ Finding it hard to drive inside the lanes.
- ▶ Finding it hard to maintain a constant speed.



# 3.1.3.1 EFFECTS OF FATIGUE

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## Poor Judgment

Before drowsiness sets in, fatigue affects the ability to think clearly, which is vital when making decisions and judgments related to safety.

Poor judgment can be observed when:

- ▶ Someone who is very fatigued may not realise how tired they really are.
- ▶ Fatigued people are unaware that they are not functioning as well or as safely as they would if they were not tired.





# 3.1.3.1 EFFECTS OF FATIGUE

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## Drowsy Driving/Operating



Drowsiness means feeling sleepy, but not actually being asleep. For example:

- When drowsy, a driver may actually drift in and out of sleep occasionally without knowing it, experiencing a “micro sleep”.
- Drivers studied when drowsy have been found to be asleep for 3 to 5 seconds, or as long as 15 seconds. Travelling at 100 kilometres per hour can mean 100–300 metres of travel and plenty of time to run off the road.

# 3.1.3.1 EFFECTS OF FATIGUE

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## Falling Asleep At The Wheel

Falling asleep at the wheel happens in a number of crashes:

- ▶ Typically in very severe single vehicle crashes where there has been no attempt by the driver to control the vehicle.
- ▶ Often where the driver was completely unaware of events before the crash.



### 3.1.3.1 EFFECTS OF FATIGUE

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#### Poor Memory



Being fatigued will affect your memory.

Drivers/operators may have travelled a significant distance without knowing it.

This is directly related to loss of alertness.

# 3.1.3.1 EFFECTS OF FATIGUE

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## Mood Change

Being fatigued means you start to overreact to things including those that wouldn't normally upset you, i.e. your mood changes. It can also make you:

- ▶ Irritable.
- ▶ Agitated.
- ▶ Aggressive.
- ▶ Poor company.





# 3.1.3.1 EFFECTS OF FATIGUE

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In summary, the causes of fatigue can have devastating effects, including accidents and poor workplace performance.



## 3.1.3.2 CONSEQUENCES OF FATIGUE

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### Workplace Performance

Fatigue affects workplace performance as it leads to:

- ▶ Poor judgment.
- ▶ Poor problem solving.
- ▶ Poor decision making.
- ▶ Poor performance on skilled tasks.
- ▶ Slower reaction times.
- ▶ Stopping you from appreciating how serious a situation has become.
- ▶ Difficulties in undertaking complex tasks.





## 3.1.3.2 CONSEQUENCES OF FATIGUE

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### Workplace Accidents



Factors which increase fatigue-related accidents include:

- ▶ Working long hours.
- ▶ Working long hours for consecutive shifts.
- ▶ Building up your sleep debt.

## 3.1.3.2 CONSEQUENCES OF FATIGUE

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Poor decision making as a result of fatigue is one of the key causes of workplace accidents. Research has shown:

- ▶ The risk of work-related injuries and illnesses is increased in people working more than 60 hours a week, or working 12 hours or more in a day.
- ▶ Compared with an eight hour shift, accident rates are doubled after 12 hours at work.
- ▶ A 17 per cent increase in accident rates occur after the fourth day shift.
- ▶ There are also 30 per cent more incidents on the fourth night shift compared with the first, unless other measures such as frequent rest breaks, are put in place.

## 3.2 MONITOR WORK ACTIVITIES FOR FATIGUE RISK

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Your overall monitoring process will also involve the monitoring of work activities of employees/workers, subcontractors and suppliers in the supply chain of products and services.

This will be carried out in accordance with the organisation's fatigue risk management implementation plan.

## 3.2.1 MONITOR WORK ACTIVITIES

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There are many ways to identify and monitor workplace factors that contribute to fatigue, including:

- Inspecting workplace rosters and work time records.
- Consulting with drivers/operators, i.e. ask them about schedules and rosters, any problems they have encountered, any near misses, unreported injuries.

## 3.2.1 MONITOR WORK ACTIVITIES

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- Consulting with workplace OHS/WHS representatives and committees.
- Reviewing loading and unloading times and delays at pick up and delivery points.
- Conducting safety audits.
- Analysing injury and incident reports.
- Undertaking driver surveys.





## 3.2.1 MONITOR WORK ACTIVITIES

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- Reviewing loading and unloading times and delays at pick up and delivery points.
- Conducting safety audits.
- Keeping records and details of all workplace incidences and near misses.
- Recording frequency, i.e. how often the situation occurs.
- Recording the number of people exposed and duration.

## 3.2.1 MONITOR WORK ACTIVITIES

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Factors to be considered when identifying fatigue-related risks include:

- Length of shifts worked – the length of shifts worked can contribute to fatigue.
- Previous hours and days worked – the effects of fatigue are cumulative, e.g. drivers/operators may have sleep debt due to the previous hours and days worked, which can contribute to fatigue.
- Type of work performed – pay attention to the level of physical and/or mental effort required.

## 3.2.1 MONITOR WORK ACTIVITIES

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- Time of the day when the work is being performed – remember that disrupting the body clock can cause fatigue and also impact on task performance.
- Delays loading or unloading at consignors or consignees.
- Roster design and scheduling – allow for rest and recovery between shifts.
- Work premises, e.g. layout and condition.



## 3.2.1 MONITOR WORK ACTIVITIES

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- Work environment, e.g. vibration, noise, climate/temperature, etc.
- Human factors, e.g. capability, skill, experience, age, physical fitness and health status.
- Driver/operator fitness for duty.

### 3.2.1.1 KEEP RECORDS OF RISK IDENTIFICATION

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Records should be kept of the risk identification process and of decisions made. This information can be useful as a starting point when undertaking regular reviews of risks in the future.



## 3.3 REVIEW WORK HOURS AND REPORT BREACHES

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You will need to review scheduled hours compared to actual work hours carried out by all personnel/workers under your supervision.

Where a breach of compliance is identified, you will need to analyse why and how it occurred, and take action to rectify the situation.

### 3.3.1 REVIEW AND ASSESS WORKPLACE OPERATIONS

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Your review of work hours will involve an examination of how work activities are carried out, i.e. the seriousness of fatigue risks associated with work hours and whether tasks are conducted in line with the overall fatigue management system.

Any unusual behaviours, insufficient completion of tasks or evidence of inappropriate scheduling that are identified can be seen as breaches of fatigue management strategies and appropriate action needs to be taken.



## 3.3.1 REVIEW AND ASSESS WORKPLACE OPERATIONS

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As a guide, fatigue risks and the seriousness they might have in your organisation can be categorised as:

- ▶ Lower fatigue risk, such as:
  - ▶ Regular short shifts with little night work.
  - ▶ Schedules build in time for typical delays.
  - ▶ All trips avoid driving at low alertness periods (i.e. night, early morning).

## 3.3.1 REVIEW AND ASSESS WORKPLACE OPERATIONS

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- Rosters ensure at least a week's notice to prepare for upcoming schedules.
- Short breaks are taken frequently and from early in the shift.
- Drivers are able to sleep at night in own bed.
- Drivers almost always get 7-8 hours continuous sleep per night.



### 3.3.1 REVIEW AND ASSESS WORKPLACE OPERATIONS

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- ▶ Some fatigue risk, for example:
- ▶ Regular shifts.
- ▶ Schedules allow some flexibility for delays.
- ▶ Some trips occur during low alertness periods.
- ▶ Rosters allow a few days' notice for upcoming schedules.
- ▶ Short breaks are taken only at the end of an allowed maximum driving period.
- ▶ Drivers sometimes sleep at night and usually in their own bed, or always at night but in their vehicle or a motel.
- ▶ Drivers sometimes get 7-8 hours sleep.



### 3.3.1 REVIEW AND ASSESS WORKPLACE OPERATIONS

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- ▶ Higher fatigue risk, including:
  - Unpredictable or long shifts with lots of night work.
  - Schedules do not allow any time for delays.
  - Most trips occur during low alertness periods.
  - Notice for schedule changes do not allow an opportunity for good quality rest.
  - Short breaks are not always taken.
  - Drivers rarely sleep at night and if they do it is usually in their vehicle.
  - Drivers rarely get 7-8 hours sleep.

## 3.3.2 REPORT BREACHES

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Having reviewed scheduled hours and actual hours worked by employees/workers, subcontractors and suppliers, some breaches of fatigue management policies, procedures and regulations may be identified.

These breaches will need to be reported in accordance with standard procedures.

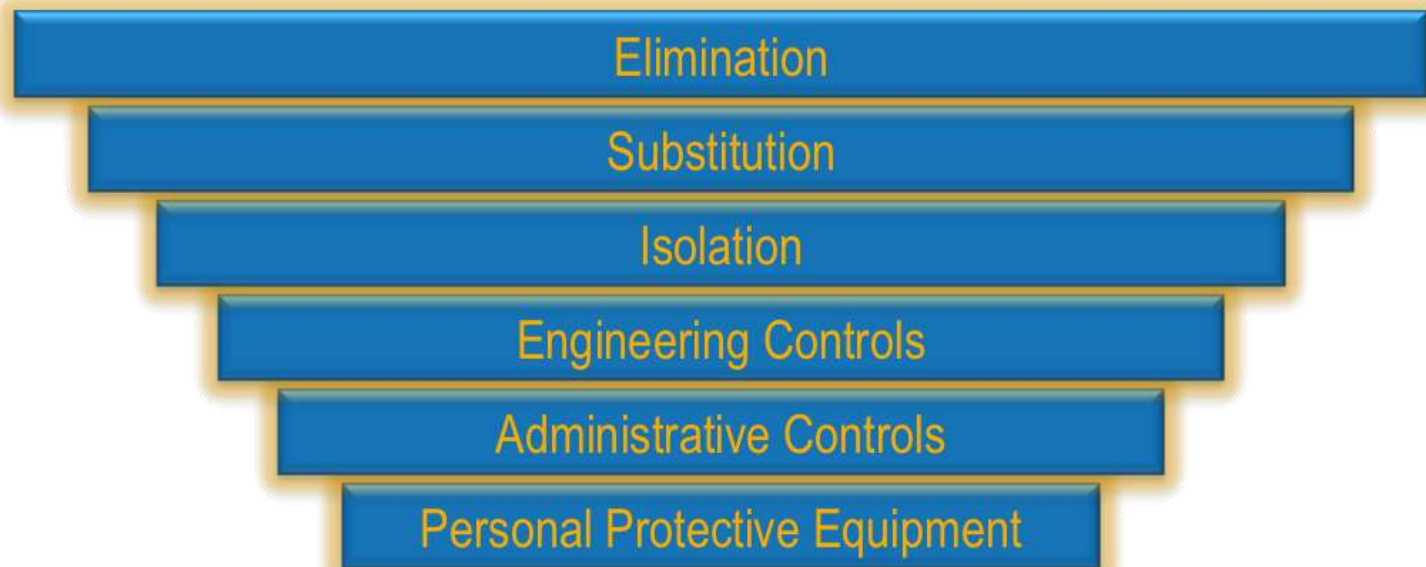
Senior management will then be aware that more effective measures for adequately controlling fatigue in your organisation need to be implemented.

This will encourage and enable staff to adhere to fatigue management policies, procedures and regulations more readily, and therefore minimise or prevent further breaches.

### 3.3.3 IMPLEMENT FATIGUE RISK CONTROL MEASURES

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Implementing measures to control the risks of fatigue in a timely manner could involve a risk management technique known as the hierarchy of control.



### 3.3.3.1 APPLICATION OF THE HIERARCHY OF CONTROL

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Under the hierarchy, the ideal solution when managing fatigue is to completely eliminate factors contributing to fatigue.

If this is not reasonably possible there are a number of control options that may be used alone, or in combination, to reduce the risk so far as is reasonably practicable.

Measures should be supported by policies, procedures, information and training.



### 3.3.3.1 APPLICATION OF THE HIERARCHY OF CONTROL

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Fatigue is caused by a combination of factors, therefore the most effective way to manage it is by using a combination of risk control measures.

The hierarchy of control provides a method of assessing control measures, whereby number 1 is the most effective control measure and number 6 is the least effective control measure.



## 3.3.3.1 APPLICATION OF THE HIERARCHY OF CONTROL

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### Level 1 – Elimination

You could remove the hazard or hazardous work practice from the workplace:

- Eliminating schedules that result in undue pressure on drivers/operators.
- Using effective policies and fatigue-monitoring equipment that ensure a driver stops driving before becoming impaired by fatigue.



### 3.3.3.1 APPLICATION OF THE HIERARCHY OF CONTROL

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#### Level 2 – Substitution

You could substitute or replace a hazard or hazardous work practice with a less hazardous one by:

- Substituting an onerous schedule.
- Providing a changeover driver rather than requiring the one driver to complete a long shift.

## 3.3.3.1 APPLICATION OF THE HIERARCHY OF CONTROL

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### Level 3 – Isolation

You can isolate or separate the hazard or hazardous work practice from people involved in the work or people in the general work area by:

- Providing drivers with accommodation for quiet sleep away from the heavy vehicle and from noisy traffic.



### 3.3.3.1 APPLICATION OF THE HIERARCHY OF CONTROL

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## Level 4 – Engineering Controls



If the hazard cannot be eliminated, substituted or isolated, an engineering control is the next preferred measure, such as:

- Re-engineering a queuing system in order to minimise queuing of heavy vehicles for loading/unloading.

## 3.3.3.1 APPLICATION OF THE HIERARCHY OF CONTROL

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### **Level 5 – Administrative Controls**

This includes introducing work practices that reduce the risk by:

- Providing procedures, instruction and training.
- Providing training to employees/workers on combating fatigue.
- Supervising and assessing driver/operator fitness for duty through a shift.





### 3.3.3.1 APPLICATION OF THE HIERARCHY OF CONTROL

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## Level 6 – Personal Protective Clothing And Equipment

You should consider this only when other control measures are not practicable or to increase protection. While essential for some work procedures, these should be last in the list of priorities, for example:

- Fitting heavy vehicles with safety equipment such as airbags.
- Implementing policies and supervision to ensure drivers wear their seat belt.

### 3.4 INVESTIGATE AND REPORT NON-COMPLIANCE INCIDENTS

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If you have identified any breaches of procedures and regulations you need to investigate the errors and incidents that may be traceable to non-compliance with aspects of the fatigue management system.

You will also have to take action to ensure ongoing and future compliance by all staff.

## 3.4.1 INVESTIGATE ERRORS AND INCIDENTS

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In order to investigate any errors or incidents traceable to non-compliance you will need to follow workplace procedures to:

- Monitor and review the effectiveness of fatigue control measures.
- Investigate errors and incidents.
- Make reports.
- Revise control measures, if necessary.



## 3.4.1.1 QUESTIONS FOR INVESTIGATION

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You should consider the following questions during your investigation:

- Have the chosen fatigue risk control measures been implemented as planned?
- Are the chosen control measures working?
- Are there any new problems that may, for example, have been caused by the control measures?



## 3.4.1.1 QUESTIONS FOR INVESTIGATION

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To find answers these questions, you or senior management could:

▶Consult with:

▶Drivers/operators.

▶Other schedulers/supervisors.

▶OHS/WHS representatives and officers.

▶Safety committees.

▶Other parties in the supply chain.

▶Measure exposure to fatigue – are drivers still becoming fatigued?

▶Monitor incident reports and assess the likelihood for fatigue contributing to incidents.



## 3.4.2 REPORT INCIDENTS AND ERRORS

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As a scheduler/supervisor you will be required to record and report details of the non-compliance incidents and errors you have identified, in accordance with operational procedures.

Your report should also include outlines of any action that was undertaken and any decisions that were reached.

## 3.4.2 REPORT INCIDENTS AND ERRORS

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This information will allow your manager and other senior personnel to be fully aware of any new or existing hazards that were identified.

They will also be able to assess the effectiveness, or otherwise, of the current risk management process as part of the organisation's overall fatigue management system.



## 3.5 ENSURE ONGOING COMPLIANCE

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To ensure ongoing and future compliance with the organisation's fatigue management policy and procedures, appropriate action needs to be taken in conjunction with employees/workers, subcontractors or suppliers concerned.

# 3.5 ENSURE ONGOING COMPLIANCE

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Appropriate action involves reasonable steps to prove that:

- A person had followed all requirements and made all reasonable efforts to prevent the breach concerned.
- Or a person could not reasonably be expected to have taken any steps to prevent the breach concerned.



## 3.5 ENSURE ONGOING COMPLIANCE

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Appropriate action may include:

- Staff training.
- Reviewing business practices.
- Regulating work practices.
- Developing an industry code of practice.