FATIGUE AND DISTRACTION DETECTION TECHNOLOGY (FDDT)

Good practice guidance material

2024

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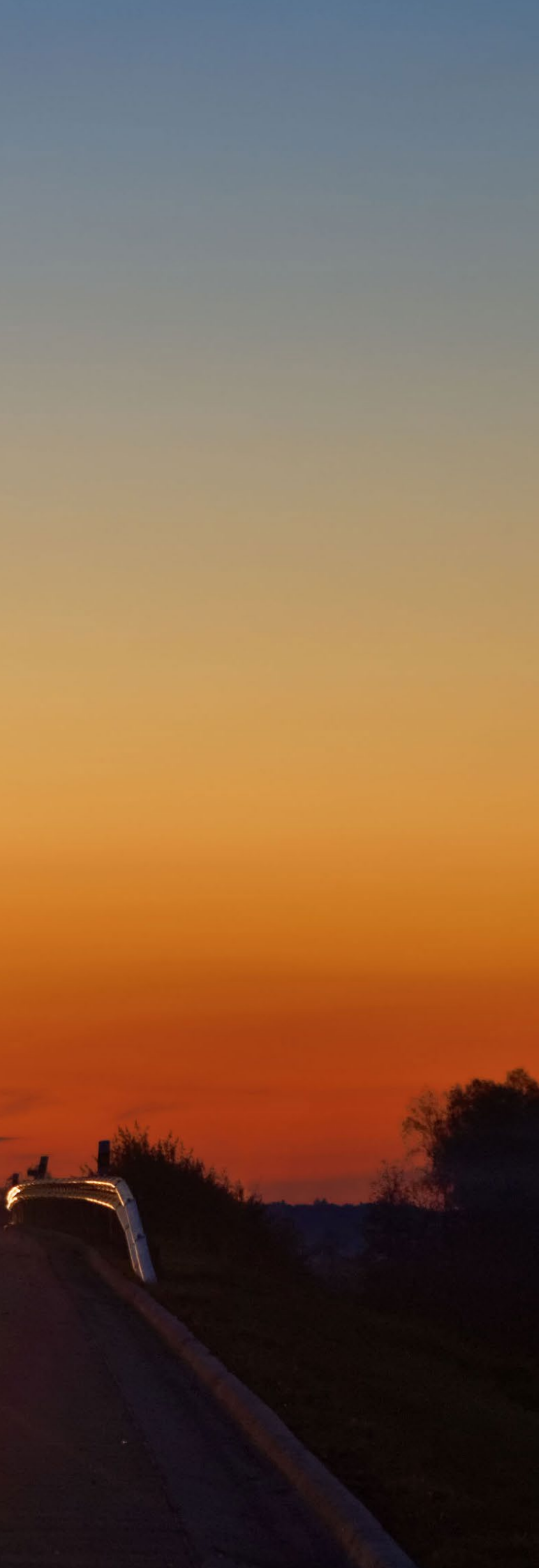
The National Heavy Vehicle Regulator (NHVR) has prepared this Guidance Material in partnership with Professor Drew Dawson, Andrew Higginson and Dr Maddy Sprajcer (Project Consultants Edu Au Pty Ltd) as part of the NHVR commissioned 2023 "Fatigue and Distraction Detection Technology (FDDT) – What Good Practice Looks Like" Project.



INTRODUCTION

About the Guidance Material

The Fatigue and Distraction Detection Technology (FDDT) Good Practice Guidance Material is designed to provide practical information to assist transport companies to effectively implement and use FDDTs in their business. The Guidance Material has been developed based on feedback from interviews with transport operators of varying sizes throughout August and September 2023 (see Project Background for more information).

Generally, the heavy vehicle industry pointed to the emerging nature of FDDT and the resultant lack of industry experience or knowledge of what good practice looks like. This limited industry knowledge underpinned support for the development of Guidance Material to help others undertake the journey of implementing this safety technology.

In particular, the industry feedback highlighted that they are seeking greater clarification on several key aspects, including:

- how to support an effective rollout of the technology amongst drivers and companies, and
- the regulatory responsibilities of companies responding in an effective way to FDDT alerts and data.

The Guidance is not meant to be a prescriptive, "must do", but rather is designed to provide a starting point on the good practice options to help manage challenges that might be encountered with FDDT introduction and use. By choosing and implementing options that fit driver and company needs, it is expected that companies and individuals will have built a prima facie case that they have taken all reasonable steps in their use of FDDTs.

The Guidance Material includes a selection of processes and usable templates that are designed to be easily implemented in business operations. The examples provided have been adapted from transport companies who are currently using the technology.

As part of this initiative, the NHVR also proposes to partner with industry by initiating a community of transport operators who currently use FDDTs to share their practices and identify opportunities for ongoing safety improvements (see the Community of Practice section of this document for more information).

Project background

The NHVR is seeking to work with industry and governments to improve road safety outcomes by supporting the heavy vehicle industry to adopt rapidly emerging FDDT.

This 2023 Fatigue and Distraction Detection Technology (FDDT) – What Good Practice Looks Like project builds on the initial stakeholder engagement exercise undertaken in 2019. This sees the NHVR partnering with transport operators, drivers, technology providers, and regulatory partners to review the different methods and processes currently used by industry when using FDDTs. The 2019 report can be found on the NHVR website at nhvr.gov.au.

Interviews were conducted in August and September 2023 with both small and large transport companies. This included representatives of seven transport companies who participated in 2019 interviews, plus an additional nine new transport companies that nominated to participate in 2023. Technology providers, police, regulatory authorities, and industry association representatives were also involved making a total of 28 interviews in 2023.

Based on the interviews undertaken, it was apparent that industry representatives see FDDTs as a highly positive technology that when used effectively, can improve safety outcomes by reducing driver fatigue and distraction events. Operators and drivers alike indicate that FDDTs 'save lives.' In line with the existing regulatory framework, they strongly believe that there is a shared responsibility between operators and drivers to work together to ensure the best safety outcomes are achieved.

What is Fatigue and Distraction Detection Technology (FDDT)?

FDDTs detect possible fatigue and distraction events. They are one part of the solution to assist companies and drivers to deliver better "fitness for duty", and thus safety outcomes, throughout a transport shift.

The overwhelming majority of FDDTs seen in both the 2019 and 2023 studies are in-vehicle cameras that analyse video footage of the driver to detect the signs of fatigue (e.g., eye closures) or distraction (e.g., looking away from the road).

Although not seen during the 2023 study, there are other classes of FDDT including wearables (e.g., glasses, hats) and performance monitoring options (e.g., technology that detects vehicle movements such as lane deviation). The technology includes devices that are solely dedicated to capturing fatigue and/or distraction but can also include technology designed for other purposes that has been adapted to also include fatigue and/or distraction detection.

The 2023 study identified that the number and complexity of FDDTs are rapidly expanding and that an increasing number of providers are developing and selling FDDTs. This provides a greater range of options for transport companies which can of course also add greater complexity to the selection process.

In the main, transport companies see the primary outcome of FDDT use is to produce real time in cab 'alerts' to the driver when they are showing signs of an increased likelihood of being fatigued or distracted. They see this "real time" alert outcome as a real lifesaver and/or a possible incident avoidance tool. The alerts are usually auditory (loud noise), with fatigue alerts generally accompanied by seat vibrations designed to wake the driver if they have fallen asleep.

Stakeholders exhibited a high degree of variation in awareness of the responsibilities of companies in responding in an effective way to FDDT alerts and data. Industry awareness of the regulatory and legal challenges involved in FDDT use was more evident in the 2023 study.

An ideal outcome would see the following two steps occur when alerts are received:

- **Step One**: Driver uses information in real time to make an informed decision about whether they can continue driving safely or whether other action is required. This decision is based on company policies and where practicable, with the support of their company.
- **Step Two**: Company has processes in place (based on policy and procedures) to support the driver with this decision making and have realistic and transparent policies for remedial actions as required.

The NHVR is establishing a Community of Practice. The Community of Practice will provide a forum for heavy vehicle transport professionals to share best practice and knowledge related to the effective management of fatigue and distraction using FDDT.

What is the Community of Practice?

To ensure the FDDT Guidance Material remains fit for purpose and new learnings and research are considered, participation in the Community of Practice will be available through an Expression of Interest process on the NHVR website. The Community of Practice will meet on a quarterly basis.

Together the Community of Practice will focus on and provide solutions to some of the key challenges in managing fatigue and distraction using FDDTs. Some of the areas we will focus on are:

- Practical strategies in how to select, set up, and rollout FDDTs.
- Strategies for identifying and managing alerts and how best to respond, including dealing with false alerts.
- Tools and Guidance Material to support industry uptake of FDDTs.
- Knowledge sharing between industry professionals, regulatory partners, and other stakeholders.

In addition, members may nominate their own topics and invite other experts to share with the community.

The NHVR will be looking to establish a Community of Practice with a view to the foundation membership being drawn from the transport companies involved in the 2023 interviews.

KEY AREAS FOR GUIDANCE MATERIAL

Industry feedback provided by transport operators and drivers in both the 2019 and 2023 studies identified four key phases for the successful implementation and use of FDDTs.

Key considerations include:

1. Deciding to invest

2. Rollout

3. Setup and maintenance

4. Usage and monitoring

Each of these areas is covered in a separate chapter with an explanation and where possible, templates for use in your business.

1 DECIDING TO INVEST

- Reasons to invest
- Effectiveness and reliability
- Type of driving/task
- Type of FDDT
- Cost and workload

1. DECIDING TO INVEST

The key driver identified by transport companies in their decision to adopt FDDTs is the strong interest in improving safety outcomes. This is largely due to an increasing awareness by industry and government of the importance of managing a driver's fitness for duty throughout a shift and not just at the beginning. Along with other measures, FDDT is seen as part of a solution to achieving this.

Importantly, FDDTs also enable companies and drivers to better manage and address actual fatigue safety risks based on individual driver's needs, rather than just an hours-based approach.

What are some of the reasons companies invest?

The transport companies interviewed identified the following key areas as the reasons they decided to invest in FDDT.

1. Improved safety outcomes - To better manage fatigue and/or distraction safety risks or to address an increase in safety related incidents or a possible fatigue problem. Several companies who undertook a pilot of FDDT with a small number of devices quickly decided it was an important investment based on the in-cab transparency.

2. Industry recommendation - A recommendation of the benefits from an industry leader who uses the technology, or from a driver who has worked for a company that has the technology installed.

3. Customer or company requirement - A direction from head office or a contract requirement stipulated by a customer. The technology already being installed in vehicles obtained when taking over other companies.

It's important that you understand your business needs and the outcome you are trying to achieve before investing in FDDT. Stakeholders identified the following key areas that should be considered in choosing which FDDT to invest in.

How effective and reliable is the technology?

The effectiveness and reliability of the technology is one of the main questions transport companies considered when making their purchasing decisions.

It was acknowledged that it is still early days in the FDDT evolution. Stakeholders suggest that the reliability of the technology may increase through trial and error during actual operation, including reducing false positive and negative alerts (i.e., when the device allegedly does not provide an accurate alert; see Usage and Monitoring for further information).

As the technology evolves, technology vendors should provide more information on their devices, including how their FDDT has been proven to be effective. The difficulties associated with this are acknowledged in an emerging market but, operators could for example seek:

- Validation by the technology vendor and/or examples of use from other companies.
- More information (e.g., is the vendor able to share information about how effective their FDDT is).
- Independent scientific validation (e.g., journal articles, academic reports).

What type of driving suits the use of FDDTs?

The companies interviewed represented different sectors and included short- and long-distance tasks, or a combination.

Several companies are investigating which FDDT is most appropriate for their different driving tasks. Some are undertaking trials looking to enhance their short distance FDDT monitoring capability. The challenges they have identified focus on local work distraction incidents i.e., constant mirror and other checks around the vehicle and how relevant fatigue detection is in short distance driving. Others are looking at FDDT primarily being available as a driver aide to provide coaching and training feedback to enhance safety outcomes.

The majority of transport companies interviewed use FDDT for long linehaul tasks, with the aim of being able to better manage individual driver fatigue safety risks.

FDDT is generally designed to detect both fatigue and distraction. However, most companies using the technology report that FDDT distraction alerts are approximately four times more frequent than fatigue alerts.

What types of FDDT are available?

There are many different classes of FDDT in the market. Knowing the outcome you are trying to achieve can help you decide on what is best for your business.

In-Cab Alert Only and/or Company Response?

Technology provider feedback suggests a small proportion of FDDTs only provide in-cabin alerts. Stakeholders indicated that the overwhelming majority of FDDT options use company response systems (i.e., information is provided back to the company; see Usage and Monitoring section for further information).

The main technology used by the participating transport companies was in-vehicle camera technology that monitors eye movements and provides an alert when the eyes are detected to have moved away from the road for too long.

Stakeholder feedback also indicated that some transport companies are, with the providers assistance, looking to extend the capabilities of existing in-truck technology to include fatigue and/or distraction detection as well as (according to some providers) a wide range of other vehicle and driver performance functions to assist with improving incident transparency.

Some FDDTs allow for continual recording, whereas others only trigger a report and alert if a fatigue or distraction event happens. Privacy concerns were raised by some participants regarding the continuous recording option (see Roll-Out section for further information).

Other FDDTs said to be on the market (but not seen during this Study) include driver activated recording devices, Electroencephalography (EEG) monitoring (brain activity monitoring), and biometric measuring wearables including caps, glasses, watches, rings, and galvanic resistance.

What type of cost and additional workload is involved?

The transport companies interviewed didn't necessarily identify cost as a major influencing factor and were of the view "that if it saves a life, or avoids an incident, it has paid for itself already."

The key costs associated with the FDDT include:

- Capital outlay (purchase of the equipment/devices)
- Ongoing running costs
  - Maintenance capability provided in house or by a third party.
  - Off road time costs when FDDT is being installed and undergoing maintenance.
  - The extent of the communication and engagement program followed by ongoing training and coaching for both drivers and leaders.
  - The workload for administrative and/or supervisory staff, including on-call time (to respond if alerts happen outside of normal work hours).
  - Monthly fees.

Some FDDT vendors offer support services such as monitoring, communicating with drivers and trend analysis. Companies stated that as with all technology, the ongoing support available from the provider is important as well as the support network available in the areas the company operates.

2 ROLLOUT

- Shared responsibility
- Rollout
- Monitoring
- Data, privacy and confidentiality
- Absolute authority to stop

2. ROLLOUT

All the transport companies interviewed stressed the importance of putting effort in upfront to undertake meaningful driver consultation that includes building an understanding of the technology and its shared use, in addition to securing support.

Getting this phase right greatly affects drivers' acceptance for FDDT use. Companies acknowledged that with hindsight they would have been successful earlier if they put greater effort into consultation.

Company representatives stressed that being patient and inclusive and ensuring the implementation is well thought out in partnership with drivers usually delivers a smoother implementation path and delivers significant safety benefits. Phasing FDDT in with a 'champion driver' helps bring other drivers on board.

Example Templates:

1. Driver FDDT Monitoring Policy (pg 12)

2. Driver FDDT Data, Privacy and Confidentiality Policy (pg 13)

3. FDDT Shared Responsibility Framework Policy (pg 14)

What is a shared responsibility framework?

The shared responsibility concept was recognised by all study participants as the most critical feature in successful implementation of FDDT in a company.

In addition, both the *Heavy Vehicle National Law* (HVNL) and Work Health and Safety legislation state that fatigue management is a shared responsibility of all parties in the supply chain.

A successful shared responsibility framework would see companies actively partnering with drivers in the whole FDDT journey and would ensure drivers are aware of the need to be fit for duty (i.e. not fatigued) throughout the shift including learning to identify any unsafe behaviours and take corrective actions.

Improving driver awareness of the possible signs of fatigue is seen as being critically important so they avoid receiving alerts and are therefore operating more safely. The same applies to distraction events, where education and coaching is seen as key to saving lives.

This partnership concept helps define the respective responsibilities in responding to FDDT alerts, both in real time (drivers) and post alerts (companies and drivers) in looking to identify any underlying themes as to why alerts are being triggered either with the driver or the task itself. Given companies generally do not receive real-time alert information, drivers are primarily responsible for managing FDDT alerts when received in real time and in-cab. (see Figure 1) (pg 14).

Company feedback shows that most FDDT incidents can be addressed in partnership with drivers who are not usually aware of the possible unsafe habit with very few requiring disciplinary action.

Suggested Staged Roll-Out Approach

Industry feedback suggests that companies do better when they adopt the following steps in implementing FDDTs.

Step	Action	Description
01	Consultation prior to implementation	Commence consultation prior to FDDT implementation process to allow enough time for workers to provide input into the decision-making process including the implementation, and usage of FDDT. According to participants, the value of good, effective, and early meaningful consultation with drivers cannot be overstated in a successful FDDT implementation journey. Meaningful consultation before FDDT implementation increases the likelihood that drivers will better understand and support FDDT use. In this sense, communication and consultation are different. The former is when workers are told about changes (like implementing FDDT). On the other hand, consultation is an active process where workers are involved and encouraged to give meaningful feedback before and during the process. Extended consultation periods have been associated with improved uptake and acceptance, particularly among drivers. ***Refer to shared responsibility framework policy (pg 14).***
02	Data, Privacy and Confidentiality	Data privacy has been identified by companies as being very important to drivers. Every company interviewed indicated that drivers had raised this issue, and that there were beliefs that the technology would be used as 'Big Brother.' Data privacy is particularly important when the data produced is identifiable (e.g., video footage of the driver's face). Companies outlined that their procedures clearly state that this data is limited to key staff and is not shared without permission from the driver unless required to do so legally (e.g., at police request). Industry feedback strongly suggests that specifically targeting data privacy and surveillance issues during the consultation process results in improved driver uptake and acceptance. Good practice could include clearly describing what data will be collected, who will have access to the data, whether data will be continually collected, and what level of 'surveillance' there will be in the cab (i.e., can a supervisor log in and 'see' the driver at any time, or does the technology only record when an alert is triggered). ***Refer to data, privacy and confidentiality policy template. Companies will need to amend the template as required to ensure it meets confidentiality, privacy and workplace surveillance obligations (pg 13).***
03	Training and Education	Training, education, and ongoing coaching is important to ensure drivers and others understand the technology and are on board with its use. The amount required depends on how complex it is, how much drivers need to directly interact with it, and what processes and procedures are needed. For example, if drivers must set up and connect the device when they drive, the training might be more extensive. Training should be provided to drivers and other stakeholders a) when FDDT is implemented, and b) during induction for new drivers and other users. Training will also be required for leaders (e.g., safety managers, data-users) who interact with FDDT as part of their role. Some technology providers supply training material or undertake training activities. Training and education could include: • Training and education on the benefits and use etc. for drivers and others (e.g. supervisors, managers, executives, directors, drivers' family members[1]). • Technological capabilities (i.e., what the system can and cannot do). • Reason/s for company investment in FDDT as outlined above. • Potential safety outcomes.
04	Introduce FDDT in stages as a pilot	Interview participants strongly recommend the introduction of FDDT in stages. This might mean trying it out with a small group of drivers as a pilot before broader introduction. Drivers who have tried FDDT during this phase are reported to be overwhelmingly positive about it and encourage others to use it. It is also helpful to identify 'champions' – supporters who can help address any concerns from other drivers while supporting the wider implementation.
05	Consultation during implementation	Giving drivers and other stakeholders the opportunity to provide feedback during the roll out process can establish trust in FDDT and encourage drivers to use it properly. This process may include informal and formal feedback, such as 1-1 conversations, anonymous written feedback, forums, having an open-door policy, team check-ins, and information provided to health and safety representatives.
06	Ongoing consultation post implementation	Ideally, drivers would be able to provide feedback on how FDDT is being used in an ongoing way – beyond the formal consultation and implementation period. This could be done formally or informally. ***Refer to monitoring policy (pg 12).***
07	Advise clients of FDDT	Under the current Chain of Responsibility (CoR) framework, responsibility for safety extends beyond the driver and includes parties across the supply chain. This means drivers, companies, and clients share responsibility for managing fatigue. Because of the CoR framework, some clients now require contractors to install and use FDDT to undertake contracts. These guidelines offer a chance for companies and clients to agree on FDDT use. Clients can be given these guidelines to assist building understanding of the systems in place and the possible results of using FDDT. For example, clients may need to be aware and accept potential delays if driver fatigue is identified by FDDT. Companies may choose to specify that certain delays are 'safety delays' – which may occur when responding to information provided by FDDT. If you use sub-contractors, you could do the same thing (i.e., ensure that they align with these guidelines for how they use FDDT).

1 Some companies report that having support and buy-in from family members can be highly effective in promoting support for FDDT use in drivers.

Example Template 1: Driver FDDT – Monitoring Policy

i. Use this template to develop a policy for FDDT monitoring. This template can be used to explain how FDDTs will be used, the type of data being collected, how the data will be used and expectations.

Purpose

The purpose of this policy is to establish guidelines for the use of driver state sensing technology, [[insert FDDT type]], in [[insert company name]] vehicles. [[Insert company name]] is committed to safe heavy vehicle operations, reducing the rate of fatigue related incidents and promoting a culture of responsible driving.

Scope

This policy applies to all [[insert company name]] vehicles equipped with [[insert FDDT type]] devices and all employees authorised to operate [[insert company name]] vehicles.

Policy statement

Driver state sensing technology [[insert FDDT type]] are installed to monitor drivers to detect signs of distraction and fatigue. The primary goal of [[insert company name]] is to enhance road safety and protect all road users from harm.

Drivers will be informed of the presence of [[insert FDDT type]] technology in company vehicles at [[induction/driver training/ commencement of employment]]. All data collected by [[insert FDDT type]] will be treated as confidential and restricted to authorised company personnel. [[insert FDDT type]] collects data on [[eye movement/head position/posture/behaviour]]. Data collected will be used exclusively for monitoring and detecting signs of fatigue and distraction. Data collected from [[insert FDDT type]] will be retained for [[insert duration]] in [[insert location]].

Information gathered from [[insert FDDT type]] will only be disclosed to [[insert position titles]] involved in monitoring, analysing and addressing driver fatigue and distraction. Data will not be used for driver performance evaluations, unless in the case of repeated instances of fatigue and distraction events.

[[insert company name]] takes driver privacy seriously and has implemented controls to ensure personal information is secure in accordance with [[insert policy name/data and privacy policy.

Drivers may receive immediate alerts or notifications when signs of fatigue and distraction are detected via [[insert how drivers receive notifications]]. On detection of a fatigue or distraction event [[Insert position titles of monitoring positions]] will be alerted via [[insert how monitoring staff will receive notifications]] to take appropriate action. Events will be addressed promptly to ensure driver and road user safety. In the event an alert is received in an area of low or no coverage drivers are to follow [[insert procedures]].

Misuse and tampering with [[insert FDDT type]] devices is strictly prohibited and puts the driver's safety at risk. Failure to comply with this policy may result in disciplinary action, suspension or termination of employment.

Changes to this policy

[[Insert company name]] reserves the right to modify this policy at any time. Changes will be communicated via [[insert how changes to this policy will be communicated]].

Policy tip: Consider whether the 'Changes to this policy' complies with company obligations under relevant workplace surveillance laws.

Example Template 2: Driver FDDT – Data, Privacy and Confidentiality Policy

i. Use this template to develop a policy for protecting personal information. This can be used to explain the type of data being collected and what it will be used for. Ensure collection and use of data complies with applicable privacy and workplace surveillance laws.

Introduction

[[Insert company name]] is committed to protecting the privacy and security of personal information. This FDDT Data, Privacy and Confidentiality Policy describes how we collect, hold and use your personal information for the purposes of detecting and managing driver fatigue and distraction alerts using [[type of/name of]] FDDT and how we maintain the security of your personal information.

What is personal information?

Personal information means any information about an individual who is reasonably identifiable from this information. This includes information that personally identifies you directly (e.g. your name) or indirectly (e.g. driver ID or rego).

Data collection

[[Insert company name]] collects data for the sole purposes of identifying and preventing driver fatigue and distraction using [[type of/name of]] FDDTs. The primary purpose of collecting this data is to enhance road safety by detecting the signs of fatigue and distraction and alerting the driver to take appropriate actions. The data collected includes:

[[Select from/add types]]

Vehicle data

- Acceleration and deceleration
- Registration/VIN
- Steering behaviour/driving patterns

Biometric data

- Head/body posture
- Facial expression
- Eye movement
- Blink rate/frequency

Policy tip: Collect only personal information that is necessary to fulfil the purpose directly related to the function or activity. Obtain that information lawfully and fairly and in a way that is not unreasonable or intrusive. Inform the individual of what you will do with this information and who has access to it and when. Consider whether the 'personal information' definition meets the requirements of your company. If your company is not subject to privacy legislation, consider the companies confidentiality obligations.

Data storage

[[Insert company name]] takes all reasonable steps to ensure that the personal information we hold about you is kept confidential and secure. All data collected will be securely stored [[insert where information will be stored]]. Access to this data is restricted to [[insert the position titles or functions that will have access to the data]].

Data retention

[[Insert company name]] will not keep your personal information for longer than we need to. We retain FDDT alert data for [[insert how long alert data is kept for]] for the purposes outlined in this policy and to comply with record keeping obligations. After that retention period expires all alert data is securely removed from our systems by [[explain how this is done e.g. deleting files]].

Policy tip: Make sure personal information is protected by safeguards to prevent it from being accessed improperly, modified or inappropriately disclosed. Ensure that access is limited to only those that need to know.

Data sharing

[[Insert company name]] does not share personally identifiable information to third parties. FDDT alert data will only be shared with law enforcement authorities when required and under the applicable law or regulation.

Policy tip: If your FDDT alerts are managed by the vendor or other third party monitoring service be sure to detail who the third party is, where they are located and what role they perform.

Individual rights

Individuals have the right to request access to their personal data. [[Insert company name]] will endeavour to keep all personal information accurate, complete and up-to-date. Requests regarding personal information under this policy can be submitted to [[insert position title/email/phone number of who to contact]].

Policy tip: Consider whether the individual rights section meets workplace and privacy requirements for your company.

Changes to this policy

[[Insert company name]] reserves the right to modify this policy at any time. Changes will be communicated via [[insert how changes to this policy will be communicated]].

Policy tip: Consider whether this section complies with company obligations under relevant workplace surveillance laws.

Example Template 3: FDDT Shared Responsibility Framework Policy

i. Use this template to define responsibilities. This template can be used to detail who is responsible for what using FDDTs.

[[Insert company name]] operates under the following shared responsibility framework with regards to the use of Fatigue Detection and Distraction Devices (FDDTs).

The *Heavy Vehicle National Law (HVNL)* and Work Health and Safety legislation state:

- It is an offence to drive while fatigued.
- That fatigue management is a shared responsibility of all parties in the supply chain.

Under the Chain of Responsibility (CoR) framework, the responsibility for safety extends beyond the company and drivers to include all parties in the supply chain. This means that all parties in the CoR share a responsibility for managing fatigue.

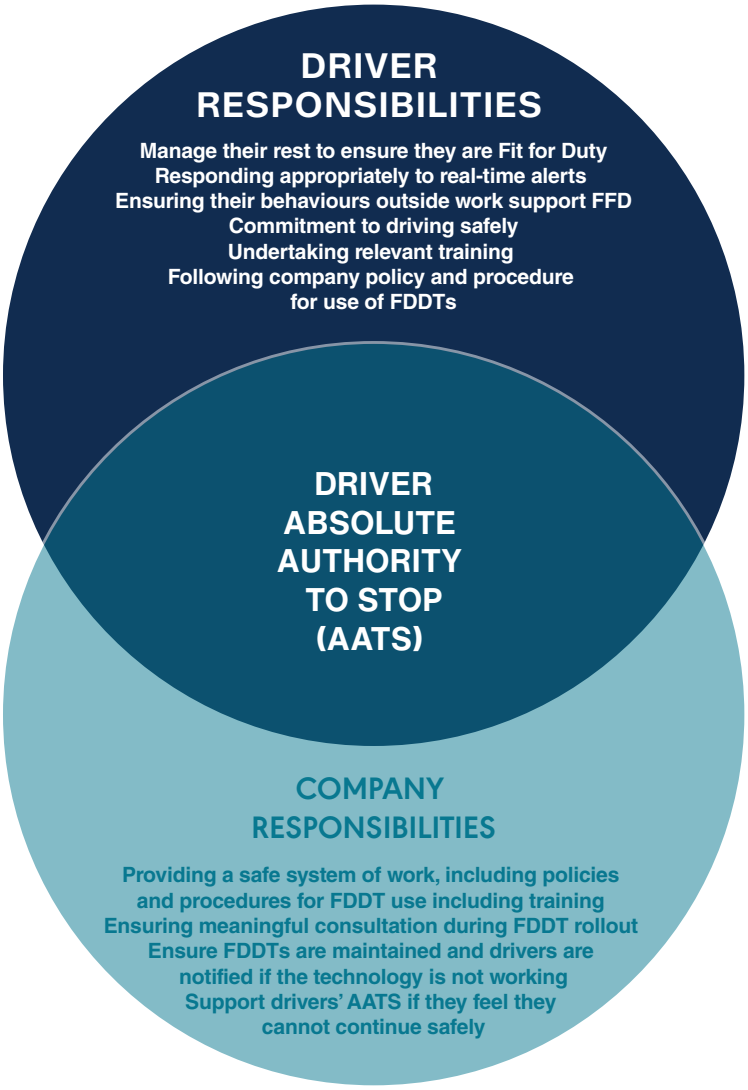


Figure 1. Responsibilities under a shared responsibility framework

Absolute authority to stop statement

With FDDTs, there is sometimes a delay between when the driver receives an in-cabin alert and when [[Insert company name]] is notified. Under these circumstances, and during normal operations drivers must feel and understand that they are empowered to act and rest if necessary, without the need to check with their supervisor or [[insert position title]] first.

[[Insert company name]] empowers its drivers to exercise their absolute authority to stop driving if unsafe to continue for any reason including fatigue. In some circumstances, drivers must also follow a [[Insert company name]] direction to stop and rest when directed and safe to do so.

3 SETUP AND MAINTENANCE

- Installation
- Set-up
- Calibration
- Maintenance
- What if it stops working?

3. SETUP AND MAINTENANCE

Industry stakeholders generally indicated that they understood transport companies are responsible for managing and maintaining their FDDT. For FDDTs to work effectively they need to be set-up and maintained to collect, transmit, and store data.

Example Templates:

4. FDDT Installation checklist (pg 18-20)

What is involved in installing an FDDT?

Generally, the vendor will install FDDT devices however, if you have staff that are certified in the installation this can be managed internally.

How should I set-up my FDDT?

Some FDDTs need to be set up for individual drivers whilst others are said to have a good adaptability range (i.e., they can be used for multiple drivers without needing to be set up again). This includes in-vehicle cameras that are positioned to focus on the driver based on their height or ensuring that wearables fit the driver appropriately.

Where possible, FDDTs would ideally either be set up to fit all (or the majority of) drivers or should be easy to adapt to new drivers if vehicles are shared.

To avoid technical problems while driving, pre-start procedures should be put in place to check a) that the FDDT is working and b) that the FDDT is properly set up for the driver.

How should I calibrate my FDDT alert settings?

Many FDDTs identify fatigue based on the number of seconds a driver is not looking at the road. Depending on the technology, companies may have the capacity to select the number of seconds after which an alert occurs.

Additionally, it may be possible to select certain distraction settings, in addition to fatigue settings (i.e., alerts only occurring under specific circumstances). Companies may be able to choose how fast the vehicle is going before alerts are 'turned on'. Choosing a particular speed limit is useful in situations where the driver is undertaking low speed driving tasks such as reversing where they would by nature be looking away from the road for longer periods of time.

Deciding what settings to choose for detection (i.e., how many seconds the driver must have their eyes away from the road before an alert occurs, or how fast the vehicle must be going for the technology to be activated) can be challenging and may differ depending on operational requirements.

Based on feedback, it would be unusual for FDDT detection settings to be:

>2.5 seconds for eyes closed alerts

>4 seconds for eyes off road alerts

>25kmh for the technology to be activated.

If customising, companies should be aware that amending certain metrics may lead to an increased safety risk and should only be undertaken in conjunction with the provider. Heavy vehicle operators may increase their legal liability if excessive adjustments are made. In addition, the settings that can be customised will be different based on the type of FDDT your company uses (e.g., in-vehicle cameras, wearables).

How will I maintain my FDDT system?

Transport companies indicated that maintaining an FDDT system requires ongoing support and resourcing either from within your company or via external sources. Ongoing vendor support is necessary for some FDDT systems, either for operational use or for maintenance. The availability of vendor support should be a consideration when determining which FDDT to purchase.

Like all technology, companies should consider technical support and maintenance availability in regional and remote areas, particularly if vendor technicians are needed.

If you can, an option is to train your company's technicians to handle the installation and maintenance of FDDT. Some vendors might be open to providing training for your in-house technicians. Given the difficulty in obtaining technical support from vendors reported by a small number of stakeholders, particularly in geographically remote areas, the provision of specialised support from a third party may be a business opportunity for the sector in future.

While most stakeholders did not indicate that technology updates and upgrades were problematic at this stage, it is likely that as technology improves, transport companies will need to upgrade their FDDT systems, as with any technology.

What if my FDDT stops working?

Overall, companies reported few maintenance issues with their FDDT. However, it was clear that calibration and checking processes need to be realistic and followed consistently within companies. Feedback suggests some FDDTs allegedly do not indicate whether the technology is working when the vehicle is turned on (though this information can generally be found at a management / back-end level). Some FDDTs do not indicate to a driver whether the FDDT is working. For example, some indicate that they are functioning by displaying flashing lights that can be hard to identify.

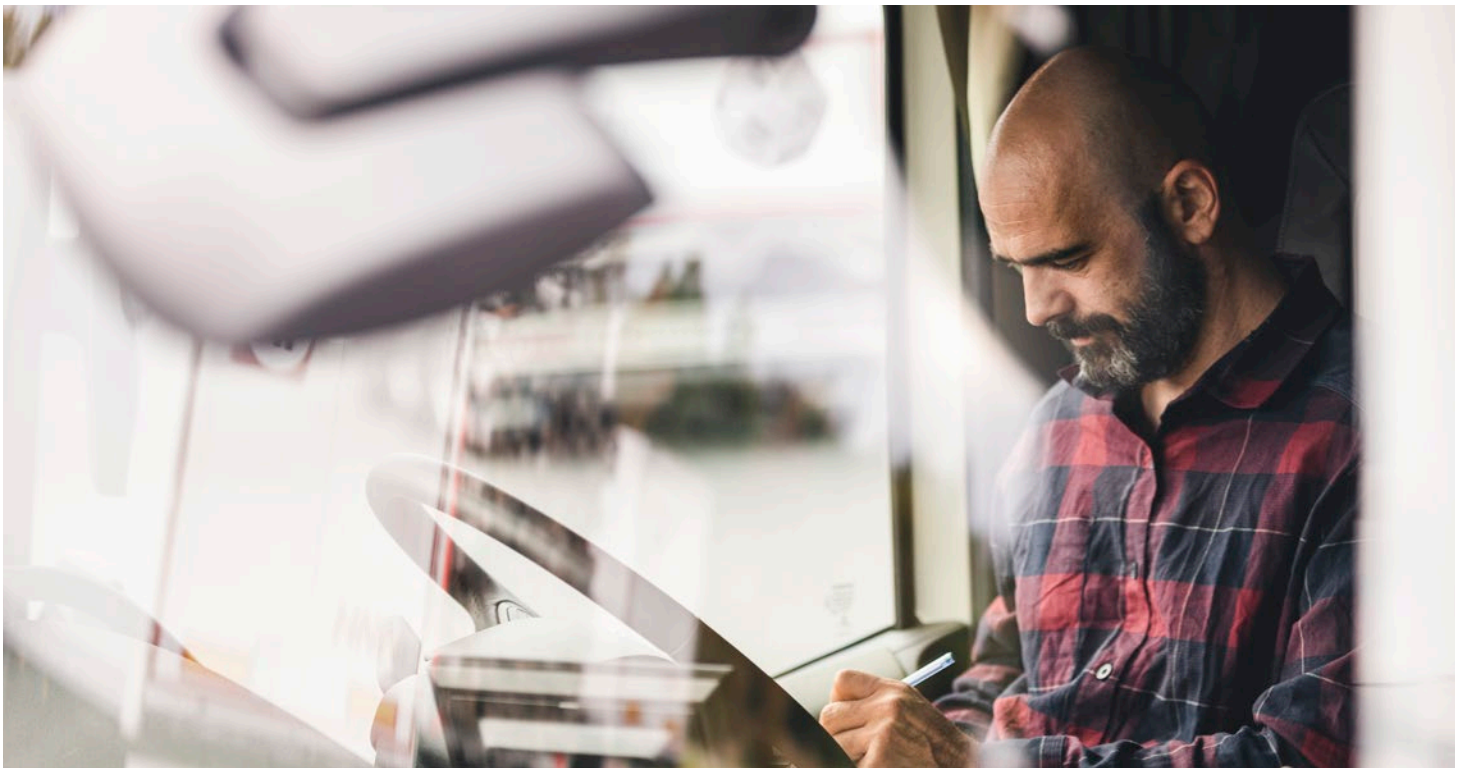
Calibration and checking would ideally be undertaken as part of standard pre-start procedures (by a driver), in addition to at an organisation level. For example, a relevant company employee would ideally have oversight over all FDDT devices, with real time data provided as to whether each device is currently functional (e.g., a dashboard). This type of dashboard will generally provide notifications such as error messages or maintenance warnings.

Example: What should I do if a FDDT device isn't working?

1. Understand how your FDDT reports problems or how drivers or management can identify them in a timely way.
2. Tell the driver as soon as possible that their FDDT is not working.
3. Implement additional risk controls if necessary for that trip.
4. Ensure that you book the device in for maintenance as soon as is reasonably practicable.
5. Ensure that the FDDT is repaired within a reasonable timeframe. What is reasonable will depend on your geographic location (e.g., remoteness) and the availability of your technician (or a technician provided by the FDDT vendor).

Driving with a non-functional FDDT can introduce additional uncontrolled safety risk, particularly if the driver does not know that the technology is not working. Companies should have procedures to check and advise the driver if the FDDT is not operational. A driver FDDT check could be part of a pre-trip check if this function is available.

Drivers should use what they have learnt from use of the FDDT eg., when they typically start to get tired to modify their driving and rest pattern accordingly.



Example Template 4 – FDDT Installation checklist

i. Use this template to create a FDDT installation checklist. The items listed are key things to consider when installing FDDTs. This checklist template can be customised to suit the type of FDDT you choose and manufacturers specifications.

Form to be completed upon FDDT installation.

Site	
Vehicle ID	
Vehicle Make	
Vehicle Model	
Date/Time	
Unit Serial number	

Safety checklist

Please check the relevant box	Yes	No	N/A
Has all site safety documentation been completed? (JHA, Take 5, etc.)	☐	☐	☐
Has the vehicle power been isolated appropriately?	☐	☐	
Are all members of the installation team fit for work?	☐	☐	
Are all tools and equipment fit for purpose?	☐	☐	
Are all members of the installation team in possession of the correct PPE?	☐	☐	
Have other people on the vehicle been communicated with?	☐	☐	☐
Have all environmental factors been considered? (heat, cold, sun, etc.)	☐	☐	
Is the vehicle parked in a safe location, away from interference?	☐	☐	

Communication details checklist

Please complete the relevant details	Details
Ethernet settings	
Wi-Fi settings	
3G settings	
SIM card number	
SIM card phone number	

Physical installation

Check item	Yes	N/A	Initials	Date
Correct mounting/location of processor unit	☐	☐		
Correct mounting/location of driver facing camera	☐	☐		
Correct mounting/location of left IR illuminator	☐	☐		
Correct mounting/location of right IR illuminator	☐	☐		
Correct mounting/location of 3G.GPS antenna	☐	☐		
Correct mounting/location of Wi-Fi antenna	☐	☐		
Correct mounting/location of vibration motor	☐	☐		
Battery fuse installed correctly	☐	☐		
Ignition fuse installed correctly	☐	☐		
All cables routed correctly	☐	☐		
Vehicle powers up / down correctly with ignition	☐	☐		

System configuration

Check item	Yes	N/A	Initials	Date
Vehicle ID inserted	☐	☐		
Product and serial number inserted	☐	☐		
Configuration file selected	☐	☐		
Ethernet settings correct	☐	☐		
Cellular settings correct	☐	☐		
Wi-Fi settings correct	☐	☐		
Pitch set (Pitch setting: _____)	☐	☐		
Yaw set (Yaw setting: _____)	☐	☐		
System re-booted correctly	☐	☐		
System test completed without fault	☐	☐		
Peripherals checked – including IR illuminators	☐	☐		
System is communicating with the database	☐	☐		
Field of view confirmed as correct	☐	☐		

Administration

Check item	Yes	N/A	Initials	Date
Photo of processor unit taken	☐	☐		
Photo of driver facing camera taken	☐	☐		
Photo of left IR illuminator taken	☐	☐		
Photo of right IR illuminator taken	☐	☐		
Photo of 3G/GPS antenna taken	☐	☐		
Photo of Wi-Fi antenna taken	☐	☐		
Photo of vibration motor taken	☐	☐		
Photo of camera image taken (via laptop screen)	☐	☐		
System confirmed as working (verification: _____)	☐	☐		

Quality assurance checks

Check item	Yes	No
Were all received/unpacked components without visual damage or hardware problems?	☐	☐
If NO, what component/s were damaged or faulty?		
Packaging	☐	
Processor unit	☐	
Connector protector	☐	
Power cable	☐	
Driver facing camera and cables	☐	
Driver facing camera bracket	☐	
IR illuminator	☐	
3G/GPS antenna	☐	
Wi-Fi antenna	☐	
Vibration motor	☐	
Mounting kit	☐	

What was the damage or fault?	

Comments	

Acceptance

The **installer** warrants that:

- Installation conforms to the relevant manual.
- The equipment is operator fatigue ready.

Name	
Signature	
ID number	
Date	

The **site representative** agrees that to the best of their knowledge:

- All quality standards are met.
- The device was installed and operational as demonstrated by the technician.

Name	
Signature	
ID number	
Date	

4 USAGE AND MONITORING

- Alerts
- Responding to alerts
- Managing false alerts
- Fitness for duty
- Legal implications
- Audit and review

4. USAGE AND MONITORING

Transport companies report a variety of informal and formalised approaches to monitoring and responding to FDDT alerts. The most effective approach will vary for each company, but it should be documented, no matter how simple it is.

Ideally, FDDTs should be used to help drivers make better decisions about when they are able to drive safely, and to be empowered to make these decisions with the full support of their company.

In addition to preventing fatigue and distraction related crashes in the short term, FDDTs can help drivers and companies better control fatigue and distraction related risks through identifying trends and addressing individual needs.

Use the templates that best work in your business.

Example Templates:

5. Responding to alerts

a) Supervisor response model (pg 27)

b) Supervisor response model (pg 28)

c) Responding to alerts (no supervisor monitoring) (pg 29)

6. Fatigue risk assessments

a) Fatigue risk assessment (with post event review) (pg 30-31)

b) Fatigue risk assessment (pg 32)

c) Fatigue risk assessment (pg 33-34)

7. Pre-Start Fitness for Duty (pg 35)

8. Standard Operating Procedures

a) Fatigue alerts (pg 36)

b) Distraction alerts (pg 37)

9. Driver Discussion Summary

a) Fatigue alerts (pg 38)

b) Distraction alerts (pg 38)

10. Fatigue incident report (pg 39)

Is there a difference between fatigue and distraction alerts?

FDDT is generally designed to detect both fatigue and distraction. Some companies using the technology report that FDDT is much more likely to detect distraction than fatigue.

It is important to differentiate between fatigue and distraction alerts. This is because the way a driver and company will respond to each type of alert will likely be different.

Distraction alerts generally relate to behaviours that the driver can control (e.g., using a mobile phone, eating, interacting with the vehicle radio), while fatigue alerts generally relate to behaviours that the driver cannot control (e.g., microsleeps).

Most FDDTs can change the type of alert based on whether the device has detected fatigue or distraction in the driver.

- **Fatigue alerts** would ideally be loud enough to wake the driver up if they have fallen asleep while driving and may include a vibration component.
- **Distraction alerts** would ideally be different to fatigue alerts, so the driver knows that the alert means they need to keep their eyes on the road.

While companies should think carefully about how they respond to both types of alerts, there is usually less of a need to respond immediately to distraction alerts.

Responding to alerts

Ideally, FDDT would be used to help drivers to make better decisions about when they are able to drive safely, and to be empowered to make this decision with the support of their company.

Companies will use systems where a driver and/or company can use the information provided to them by the FDDT system to make an informed decision about:

- any additional controls needed to drive safely and addressing habits that increase distraction events, and
- whether they need to stop driving because they are too fatigued, and if so, how long this break should be.

Fatigue and Distraction response flowcharts based on examples from companies using FDDT are provided in the templates in this chapter. (Examples 5 (a-c)).

It is also good practice for drivers to take responsibility for calling the company if a fatigue alert is received. In this situation, two-way feedback is quickly established with the driver, and with some devices, the company can view the footage or other FDDT data.

Assessing risk with driver when alert is triggered

When responding to an FDDT alert, it is important to assess the driver's fatigue and distraction safety risk.

This decision, made by the driver and/or company as appropriate, would ideally be based on the FDDT alert as well as other information such as the driver's prior work history, how much sleep they have had, and how fatigued they are feeling.

Fatigue risk assessment example templates from companies using FDDT are provided in this chapter (examples 6 (a-c)).

Assessing risk associated with distraction alerts is generally a simple process, whereas assessing risk associated with fatigue alerts may be a little more complex.

Assessing risk using distraction alerts

Companies report that most distraction alerts indicate that the driver has looked away from the road. Generally, looking away from the road while driving is caused by a probable unsafe activity (e.g., mobile phone use, eating, adjusting the radio, etc.). These alerts typically provide immediate feedback to the driver, and this information will be reported to a supervisor in daily or weekly summary reports.

Distraction alerts, while less immediate a risk than fatigue, also contribute to risk because the driver is not focusing on the road. However, transport companies believe that distraction events need careful management as they produce a higher level of false positive alerts than fatigue.

Drivers with a high number of distraction alerts should be made aware and corrective actions undertaken to improve safety by reducing the frequency that the driver is distracted.

Assessing risk using fatigue alerts

Fatigue alerts generally indicate that the driver is at an increased likelihood of being fatigued and as a result, generally warrant an immediate response.

When assessing fatigue, the terms 'pre-microsleep event' and 'microsleep event' have been used. These terms are defined as such:

- **Pre-microsleep event (non-startle):** A fatigue alert that occurs without a microsleep (i.e., without the driver falling asleep at the wheel). This type of alert could be triggered by slow blinks, poor driving performance, or other similar behaviours.
- Some types of distraction (e.g., staring out of the window for an extended period) could potentially be considered a pre-microsleep event. If a driver has a pre-microsleep event, they usually will not react to the alert with a strong startle response (because they have not been woken up).
- **Microsleep event (startle):** A microsleep event refers to an alert that occurs because the driver has fallen asleep. Anecdotally, microsleep events are often associated with a characteristic 'startle' response from the driver (who has been woken from sleep).

Assessing risk when driver is not contactable

Most companies reported that they have a feedback loop either when talking to the driver immediately after an alert, or if this is not possible, at a later time (e.g., when network connectivity returns, post shift, etc.). Feedback should generally be provided to the driver about how appropriately they responded to the alert at the time and any other action required.

The majority of FDDT devices have the option to provide an in-cabin alert to the driver regardless of if alerts are monitored by another party. To get the most out of FDDT alerts you should have procedures in place for each type of alert and how drivers can best respond and schedule regular reviews where drivers are given feedback on their response to alerts.

Refer to Example 5 (c): Responding to alerts (no supervisor monitoring) for actions for driver to take when they are not contactable.

Helping drivers respond to alerts

Constructive feedback can help drivers improve their risk assessment and management skills. It also empowers them to be more confident in accurately evaluating their own fatigue-related risk. Given FDDT can sometimes provide what is termed false alerts, it is important to figure out whether drivers can correctly distinguish between real alerts and false positives (see section on managing false positive and false negative alerts for more information).

Experience reported by companies suggests when an alert goes off, it is common for drivers not to immediately acknowledge feeling fatigued, especially when the technology is first introduced. Companies state there are a variety of reasons including:

- Industry-specific cultural factors, such as drivers wanting to show that they can handle their fatigue without relying on technology.
- Drivers not believing the fatigue alert is accurate because they underestimated how fatigued they are.

Companies stressed that it is important to introduce FDDT to drivers as a tool that supports their own fatigue management, not to 'catch' them doing something wrong.

If a driver has misunderstood a fatigue alert, it would be helpful to share this information with them during ongoing coaching and education sessions.

How should I manage false positive alerts?

Companies reported that FDDT will alert in line with its settings, and this is sometimes referred to as false positive alerts. However, what a driver or company sees as a 'false positive' might not be the same as what the FDDT vendor considers a false positive. For example, some FDDTs give alerts when a driver closes their eyes or moves their head in a certain way for a set number of seconds.

Think about a regular driving task, like reversing or parking, where the driver needs to look away from the windshield. In this situation, the FDDT might still trigger an alert. Even though the driver might think it is a 'false positive' because they do not feel tired or distracted, the technology is working as it should. The alert was not caused by a technical problem or mistake.

Sometimes, drivers might set off alerts that they think are 'false positives' because they do not realise they are tired or they are distracted. Research shows that it is possible not to notice how fatigued you are. Emerging evidence also suggests that being distracted can be an early sign of fatigue.

As a result, all alerts would ideally be managed via the same systematic approach, whereby risk could be accurately assessed. Put simply, if you receive an alert, it needs to be assessed to determine if a problem exists.

How should I manage false negatives?

False negatives occur when the driver is experiencing fatigue, but the FDDT does not detect it. False negatives are arguably a far greater problem than false positives, as the consequences of undetected driver fatigue can be far more significant (i.e., a fatigue-related vehicle crash). Poorly made technology may be more likely to produce false negatives.

False negatives generally have one of two potential causes:

1. The technology has not detected the fatigue despite being functional. This may occur if, for example, a driver is fatigued but is not displaying characteristic long blinks or microsleeps.
2. The technology is not working. False negatives can occur if the FDDT has broken down, but the driver is not aware of the problem.

To manage false negatives, companies should encourage drivers to report on any instances where they were experiencing fatigue, but no alert occurred. This information can be used to either detect devices that are not working, or to improve calibration (i.e., how the device works).

Additionally, this feedback would ideally be provided back to the FDDT vendor to support technology improvement. This feedback should be part of the ongoing consultation process.

How could my company respond to fatigue alerts across shifts?

The flowcharts provided at Examples 5 (a) and (b) outline how some companies manage a fatigue alert during a shift. Companies should also keep an eye on how often fatigue alerts happen over more than one shift.

The flowchart below (Figure 2) gives an example of a strategy for dealing with fatigue alerts across shifts. The example provides a response if a driver produces 3 fatigue alerts across 2 or more shifts in 7 days.

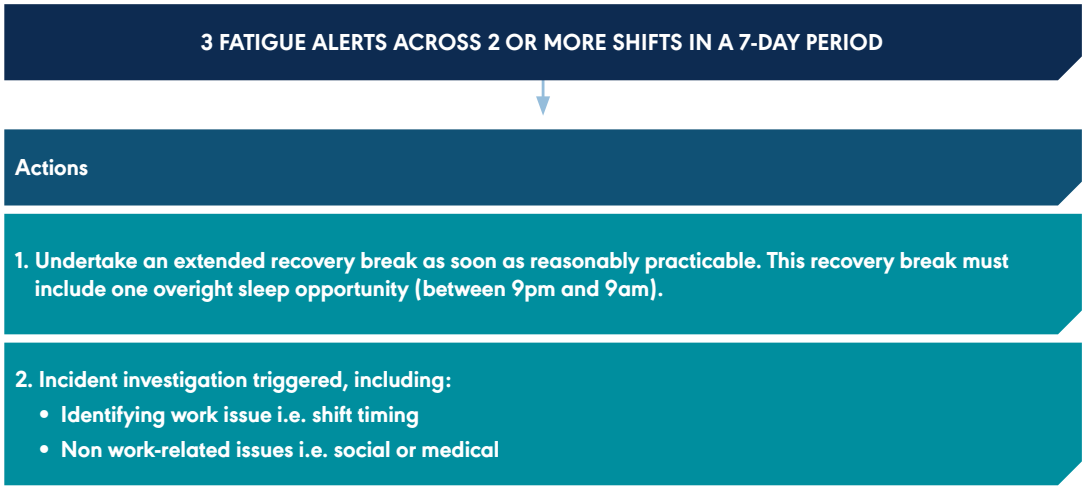
This process may start with a conversation with the driver to identify why they are experiencing fatigue so frequently. This may include identifying work (e.g., shift timing) or non-work (e.g., family responsibilities) causes of fatigue. If the cause is unknown (i.e., not social factors or work factors) then the driver could be referred to a medical professional for health screening.

Transport company representatives indicated that it was important to develop a standard approach to managing drivers who produce a lot of fatigue alerts to ensure trends can be identified and managed (see section on Using Data to Improve Fatigue Management for more information) (pg 26).

How can I use FDDT to meet my fitness for duty obligations?

FDDT could be included in a company's fitness for duty assessment plan. Evidence-based assessments for fitness for duty usually try to figure out the likelihood of an individual experiencing high fatigue using different criteria. Multiple levels are used together to better identify fatigue compared to relying on a single factor alone, which might miss some instances of fatigue.

Figure 2. Potential response to fatigue alerts that occur across multiple shifts



Note: Night rest breaks under the HVNL are 7 continuous hours, with stationary rest time taken between the hours of 10pm on a day and 8am on the next day.

Fitness for duty assessments generally include information about the hours that driver has been working, how much sleep they have had in the last few days, how fatigued they are feeling, and ideally – information provided by the FDDT.

A good practice example pre-start fitness for duty declaration is provided at Example 7.

It is important that you consider your own needs and build an appropriate fitness for duty assessment process that includes the use of FDDT data.

In many companies, there is an increasing understanding of fit for duty and an associated good practice shift towards more detailed and meaningful fitness for duty assessments, to improve safety and comply with legislative responsibilities.

What are the legal implications of installing FDDT?

Based on the interviews, it was clear that an improved understanding of legal obligations regarding FDDT use is needed. While there have not yet been many legal cases in Australia that have set up a clear legal framework around FDDT,[2] companies may consider:

The possibility that FDDT data might be used by enforcement and/or regulatory agencies.

- The need to show you have taken reasonable steps in considering the effectiveness of the technology and how well it fits into your company setting and how you use it including any policy and procedures.
- Companies may need to be able to show that the equipment they have purchased has been implemented correctly, appropriately maintained, and that alerts and faults are being responded to in a reasonable manner.

Under current *Heavy Vehicle National Law*, it is illegal for heavy vehicle drivers to drive while fatigued. Industry representatives are clearly investing in FDDT because they believe it assists in identifying when a driver may be at an increased likelihood of fatigue and distraction events, and therefore when their ability to drive safely may be compromised.

Put simply, if you have information then you have a responsibility to do something with it.

How should I review or audit my FDDT?

Representatives from transport companies provided feedback that they would ideally be able to use FDDT to identify trends within their operations. To that end, alerts could be reviewed or audited frequently (e.g. weekly) to identify coaching opportunities for certain drivers or situations. Additionally, aggregated data, trends, and corrective actions could be collated and reported on a regular basis (e.g., quarterly).

2 The legal basis for much of this area is not yet clear because of the lack of case law.

Review or audit frequency may depend on the size of the company:

- Large companies may be able to review/audit their FDDT data more regularly because larger fleets will by nature produce larger datasets – which can be used to identify trends more quickly.
- Smaller companies may need to undertake review/audit activities less regularly, as it will likely take longer to produce enough data to produce meaningful results.

Review/audit reports could be made to upper management levels within the company or sometimes to other partners.

Using FDDT data to improve fatigue management

In addition to preventing fatigue and distraction related crashes in the short term, stakeholders (including drivers) reported that a significant additional benefit of FDDT is how it can teach drivers and companies on how to better control fatigue and distraction related risk.

Companies should carefully consider the types of data that they use to identify trends and may consider seeking legal advice to ensure that an informed decision is made.

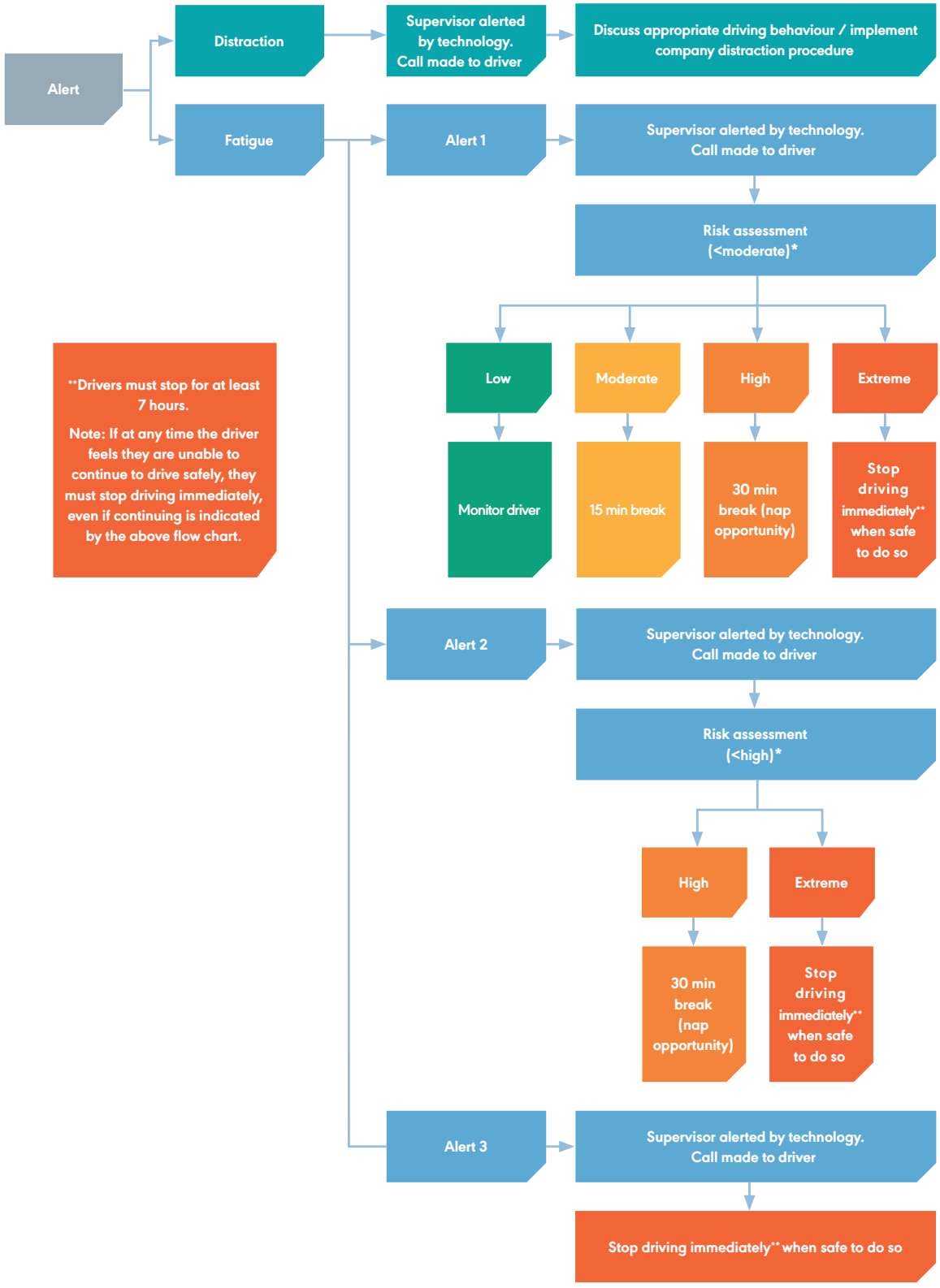
Examples of trend analysis may include:

- Driver analysis:
  - identifying drivers who have a lot of fatigue or distraction alerts. If a driver gets a lot of fatigue alerts, further investigation or referral to a medical professional could be triggered.
- Route analysis:
  - identifying specific routes or locations where alerts occur most frequently. Trends could trigger additional control measures in these locations.
- Schedule analysis:
  - identifying certain roster features that are associated with an increased rate of alerts. Examples may include shifts that start or end at certain times, the number of consecutive shifts, or times of day or night.

Sample operating procedures and driver discussion summaries are provided in examples 8-9.

Example Template 5 (a): Responding to alerts (with monitoring from supervisor)

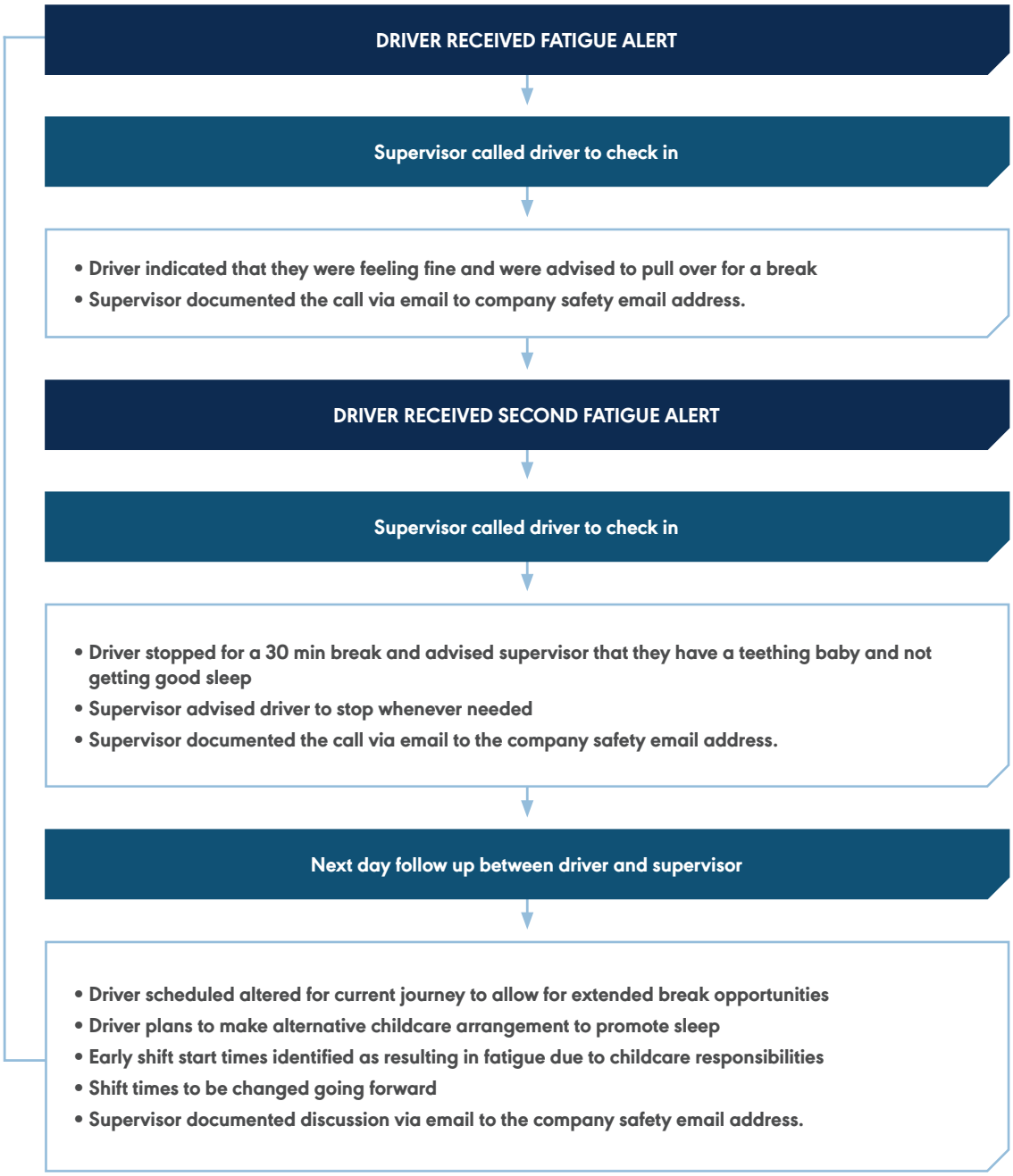
i. Use this template to create a flowchart for responding to FDDT alerts. This template is best suited to operators that have a dedicated resource monitoring and managing FDDT alerts as they are received.



* undertake fatigue assessment using one of the provided example templates 6 (a-c).

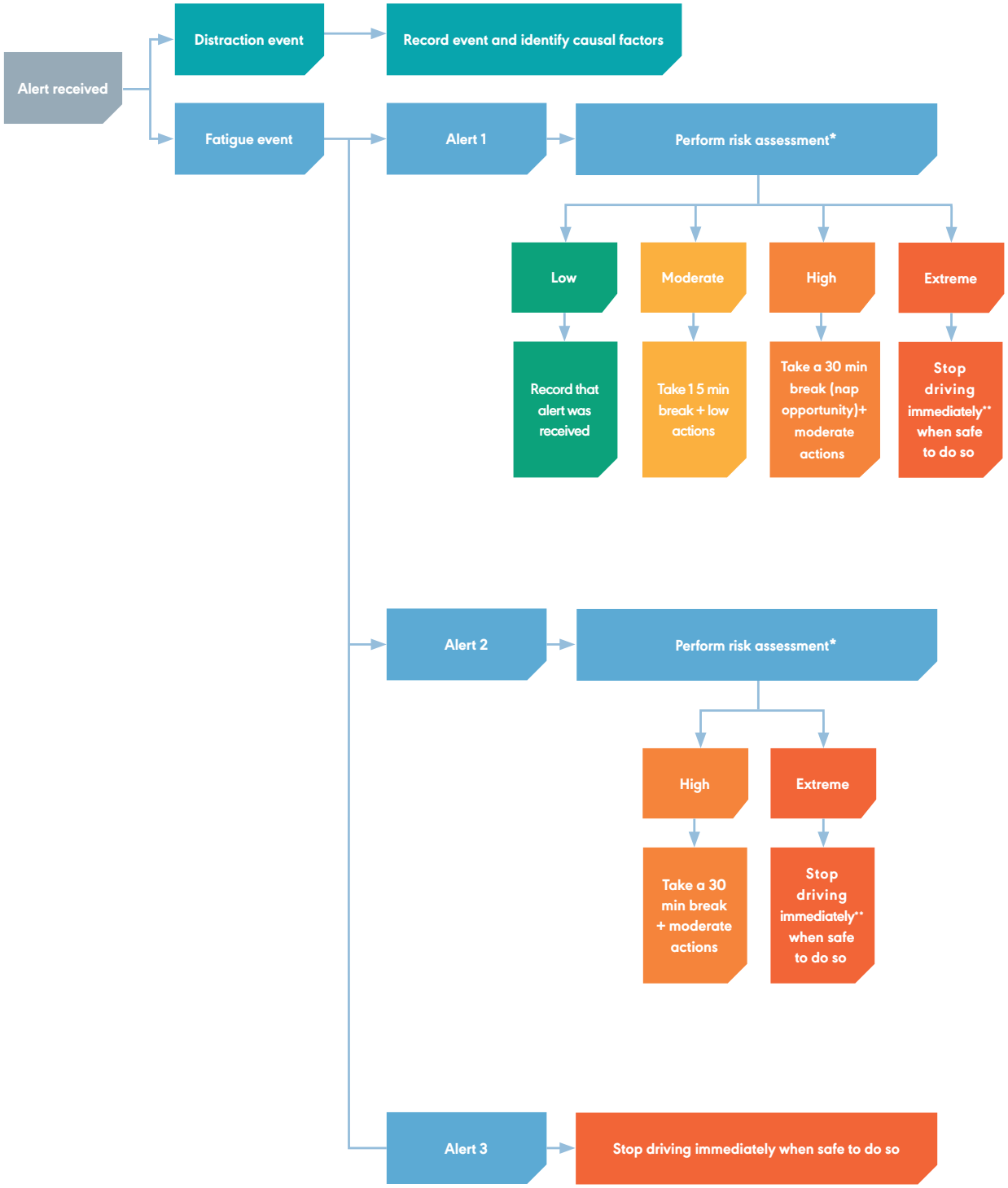
Example Template 5 (b): Responding to alerts (with monitoring from supervisor)

i. Use this template to create a flowchart for responding to FDDT alerts. This template is best suited to operators that have a dedicated resource monitoring and managing FDDT alerts as they are received.



Example Template 5 (c): Responding to alerts (no supervisor monitoring)

i. Use this template to create a flowchart for responding to FDDT alerts. This template is best suited to operators that do not have dedicated resource for monitoring FDDT alerts.



* undertake fatigue assessment using one of the provided example templates 6 (a-c).

Example 6 Template (a): Fatigue risk assessment (with post event review)

i. Use this template to create a fatigue risk assessment form. This form is best used in conjunction with a response flowchart or model and can be used as a record of having completed a fatigue risk assessment. This template is best suited to operators that have a dedicated resource monitoring and managing FDDT alerts.

Section 1 – Fatigue event details

To be completed with the driver at fatigue intervention point. Make contact with the driver as soon as possible following fatigue event. If there is no answer, follow up with phone calls/text message/best method of communication until contact is made. Check vehicle telematics (if available) to ascertain if the vehicle is moving.

Date of event			
Time of event			
Location of event			
Time of call from driver or technology alert			
Driver's name			
Driver's phone number			
Start time		**End time**	
Last break time + duration		**Last break time + duration**	
Are you taking any medications that may affect alertness?			
Have you had any other fatigue alerts since your last major rest break?			

Section 2 – Driver assessment

How alert/sleepy are you feeling right now?												**Score**
Very tired	1	2	3	4	5	6	7	8	9	10	Very alert	
How alert/sleepy were you feeling at the time of alert?												**Score**
Very tired	1	2	3	4	5	6	7	8	9	10	Very alert	
How long were you asleep before you commenced this shift?												**Score**
Hours	1	2	3	4	5	6	7	8	9	10		
What was the quality of your sleep before you commenced this shift?												**Score**
Very poor	1	2	3	4	5	6	7	8	9	10	Excellent	
											Total score	

Section 3 – Risk classification

Score	Risk	Actions
40-50	Low	If there are no concerns from both the driver and supervisor, the driver should be considered fit to continue.
30-39	Moderate	Fitness to continue should be reassessed following a 15 minute rest break.
15-29	High	Fitness to continue should be reassessed following a minimum 30 minute rest break.
0-14	Extreme	Stop driving immediately, when safe to do so.

*Measured from start to end of shift after any break/rest period.
Note: Night rest breaks under the HVNL are 7 continuous hours, with stationary rest time taken between the hours of 10pm on a day and 8am on the next day.

Section 4 – Risk controls

Supervisor's name			
Date		**Time**	

Risk classification	☐ Low	☐ Moderate	☐ High
Actions taken (including further actions)			

Section 5 – Post event review with the driver

Complete this section when the driver returns to the depot as soon as possible following the event. Show them the footage and discuss what they see and how they were feeling at the time of the fatigue event. Record notes below.

											Score
Very tired	1	2	3	4	5	6	7	8	9	10	Very alert	
How alert/sleepy were you at the time of the fatigue event?											**Score**
Very tired	1	2	3	4	5	6	7	8	9	10	Very alert	
What was the quality of your sleep before you commenced this shift?											**Score**
Very poor	1	2	3	4	5	6	7	8	9	10	Excellent	
											Total score	

Feedback from the driver (what did the driver say, how were they feeling, are there any non-work factors that may be contributing to fatigue?

Example Template 6 (b): Fatigue risk assessment

i. Use this template to create a fatigue risk assessment form. This form is best used in conjunction with a response flowchart or model and can be used as a record of having completed a fatigue risk assessment. This template is best suited to operators that have a dedicated resource monitoring and managing FDDT alerts.

To be used when notified of a fatigue event. Make contact with the driver as soon as possible following fatigue event. If there is no answer, follow up with phone calls/text message/best method of communication until contact is made. Check vehicle telematics (if available) to ascertain if the vehicle is moving.

Date of event	
Time of event	
Location of event	
Time of call from driver or technology alert	
Driver's name	
Driver's phone number	

Questions	**Response**
Do you need to stop to be fit for duty?** **If the answer is yes, instruct the driver to pull up as soon as it's safe to do so.	No / Yes
Did you [[hear/feel]] the fatigue alert (if available)?** **If the answer to [[hear/feel]] the alert is no, you are to instruct the driver to pull up and have rest break	No / Yes
Do you know why you received the alert?	No / Yes
If yes, select the most appropriate trigger/s:	
☐ Drowsiness ☐ Yawning ☐ Long blink ☐ Other ☐ Micro sleep ☐ Stretching ☐ Scratching Head/Ear	
What time did you start this shift?	am / pm
Are you ok to continue?## ##If they are right to continue, let them know that if you receive another notification of a fatigue event or if the in-cabin [[insert response type]] activates you will [[insert fatigue procedures]] If they are not ok to continue, let them know what instructions to follow and what course of action you will take.	No / Yes
Other comments/observations:	

This call was actioned by:

Supervisor's name			
Date		**Time**	
Action/s taken	☐ No countermeasures ☐ Strategic use of caffeine ☐ Food and drink	☐ Increased communication ☐ Physical movement	☐ Advised a colleague/ supervisor ☐ Other:

Example Template 6 (c): Fatigue risk assessment

i. Use this template to create a fatigue risk assessment form. This form is best used in conjunction with a response flowchart or model and can be used as a record of having completed a fatigue risk assessment. This template is best suited to operators that have a dedicated resource monitoring and managing FDDT alerts.

This form is made up of 3 parts. Complete each part to produce a score. All 3 scores are then combined to determine the likelihood of fatigue. This likelihood score can then be used within a standard risk matrix.

This form is to be completed by a driver with their supervisor / line manager if the driver:

a) Has not had at least 5 hours of sleep in the previous 24 hours,

b) Has not had at least 12 hours of sleep in the previous 48 hours, or

c) Does not believe they are sufficiently rested to undertake their shift, or there is any other reason to believe they may be experiencing fatigue.

Date of event	
Time of event	
Location of event	
Time of call from driver or technology alert	
Driver's name	
Driver's phone number	

Part 1 – roster score

	Scores				
Roster dimension	**0**	**1**	**2**	**4**	**8**
Maximum hours/week	≤36h	36-43h	44-47h	48-54h	55h+
Shift duration (hrs)*	≤8h	8-10h	10-12h	12-14h	≥14h
Break duration (hrs)	≥16h	16-13h	12-10h	10-8h	≤8h
Max overnight hrs/week**	0h	1-8h	8-16h	16-24h	≥24h
Days between reset breaks	<6	6	7-10	11-12	12+
My scores					
				Total	

Part 2 – prior wake sleep score

Sleep in the prior 24 hrs	**Sleep**	**2 hours**	**3 hours**	**4 hours**	**5 hours**		**X Score**
	Points	12	8	4	0		
Sleep in the prior 48 hrs	**Sleep**	**8 hours**	**9 hours**	**10 hours**	**11 hours**	**12 hours**	**Y Score**
	Points	8	6	4	2	0	
Prior wake	Count the total hours you have been awake at the end of your shift, excluding any sleep you anticipate during the shift. For every hour more than your sleep in the prior 48 hours add 1 point.						**Z Score**
						Total (add your X, Y and Z scores)	

Part 3 – self-report score

No.	Description
1	Extremely alert
2	Very alert
3	Alert
4	Rather alert
5	Neither alert nor sleepy
6	Some signs of sleepiness
7	Sleepy, but no effort to keep awake
8	Sleepy, but some effort to keep awake
9	Very sleepy, great effort to keep awake, fighting sleep
10	Extremely sleepy, can't keep awake
Self-report score	

Fatigue risk assessment example continued

1. In Table A write your scores from parts 1, 2 and 3.

2. In Table B circle your scores from each part. Use the highest score to determine your ISO31000 likelihood score.

Table A	
Roster score (Part 1)	
Prior wake sleep score (Part 2)	
Self-report score (Part 3)	

Table B			
Fatigue likelihood score	**Part 1**	**Part 2**	**Part 3**
Rare	0-5	0	1-2
Unlikely	6-11	1-4	3-4
Possible	12-20	4-8	5-6
Likely	21-25	9-12	7-8
Almost certain	25+	12+	9

Use your fatigue likelihood score and your consequence rating in the risk matrix.

Likelihood of fatigue	Severity of consequence (i.e. if fatigue event happens)				
	Insignificant	Minor	Moderate	Major	Catastrophic
Rare	Low	Low	Moderate	Moderate	Moderate
Unlikely	Low	Moderate	Moderate	Moderate	High
Possible	Moderate	Moderate	Moderate	High	High
Likely	Moderate	Moderate	High	High	Extreme
Almost certain	Moderate	High	High	Extreme	Extreme

Driver declaration

Driver's name	
Risk assessment	☐ Low ☐ Moderate ☐ High ☐ Extreme
Risk controls	A description of additional controls and countermeasures agreed with the driver when the assessment is not low.
Date	
Driver's signature	
Supervisor signature	

Example Template 7: Pre-start fitness for duty form

i. Use this template to create a pre-start fitness for duty form. This can be used by drivers with and without supervisor monitoring.

All drivers need to be fit to perform their required duties.

This checklist should be completed and signed off by the driver at the start of each shift.

It is important that you complete this form accurately and honestly. If you do not answer honestly, you may be in breach of your safety responsibilities outlined in the *Work Health and Safety Act* (2011).

Driver's name	
Date	
Shift start time	
Expected shift end time	

Please check each box to declare that each statement is true	
I have had 5 or more hours of sleep in the last 24 hours	☐
I have had 12 or more hours of sleep in the last 48 hours	☐
I am sufficiently rested to be able to safely undertake my shift today	☐
I have not consumed alcohol in the last 12 hours	☐
I currently have a zero-blood alcohol level and I am not impaired by drugs	☐
I am not currently taking drugs/medications that are likely to impair my alertness or performance	☐

If you did not check all boxes, do not commence work and where applicable contact your supervisor or line manager immediately.

Driver's signature	

Note: Night rest breaks under the HVNL are 7 continuous hours, with stationary rest time taken between the hours of 10pm on a day and 8am on the next day.

Example Template 8 (a): Standard operating procedures – fatigue alerts

i. Use this template to create a standard operating procedure for responding to FDDT fatigue alerts. This template is best suited to operators that have dedicated resources for monitoring and managing FDDT alerts.

The following procedures must be followed for every [[insert company name]] fatigue event.

Step	Action	Description	Responsible
1	**Alert received**	Alert received via [[insert method]] from [[name of monitor]].	[[Insert position title]]
2	**Contact driver**	Make contact with the driver as soon as possible following fatigue event. If there is no answer, follow up with phone calls/ text message/best method of communication until contact is made. Advise the driver a fatigue alert has been detected and instruct them to pull over as soon as safe to do so.	[[Insert position title]]
3	**Fatigue assessment**	Complete an assessment of fatigue using [[insert document/ process]]. Use this time to assess how the driver sounds, reaction times and responsiveness. Instruct the driver to take a break. Based on the risk classification, decide on and advise of actions and next steps. Record all information and observations.	[[Insert position title]]
4	**Ongoing monitoring**	Where the driver has been authorised to continue welfare checks every [[insert time/frequency]] and record all information using the [[insert document/process]].	[[Insert position title]]
5	**Incident report**	Complete a fatigue incident report using [[insert document/ process]].	[[Insert position title]]
6	**Meet with driver**	Meet with the driver when the driver returns to the depot as soon as possible following the event. Review the fatigue event footage (where available) and the fatigue assessment with the driver and discuss: Questions: • What happened? • Have you done this task/route/roster before? • Do you find this task/route/roster difficult? • Why do you think you were fatigued? • Were you surprised/startled by the alert? • Did you advise anyone of the alert? • What did you do immediately after the alert? • What do you think you could have done to prevent the alert? • What can be done to prevent another event? • Is there support we can offer you?	[[Insert position title]]
7	**Analysis**	Review the footage, fatigue assessment, interview notes and any other relevant records for contributing factors.	[[Insert position title]]
8	**Audit**	Conduct an audit of work and rest hours for the previous [[insert number of days]]. Record results in [[insert document/ system]].	[[Insert position title]]
9	**Further investigation**	All fatigue events are considered a significant incident. Raise corrective actions in [[insert document/system]] if required. Advise senior management as part of reporting process.	[[Insert position title]]
10	**Continuous improvement**	Implement corrective actions. Update/modify documents and procedures as required. Multiple or recurring fatigue events may require the driver to undergo additional health screening.	[[Insert position title]]

Example Template 8 (b): Standard operating procedures – distraction alerts

i. Use this template to create a standard operating procedure for responding to FDDT distraction alerts. This template is best suited to operators that have dedicated resources for monitoring and managing FDDT alerts.

The following procedures must be followed for every [[insert company name]] distraction event.

Step	Action	Description	Responsible
1	**Alert received**	Alert received via [[insert method]] from [[name of monitor]].	[[Insert position title]]
2	**Distraction assessment**	Complete an assessment of the distraction event using [[insert document/process]]. Determine the causal factor/s severity and if immediate action is required.	[[Insert position title]]
3	**Contact driver**	Contact the driver to advise a distraction event has been received. This is best done at the next scheduled stop so as not to introduce further distractions. Instruct the driver to attend a safety discussion on return to the depot.	[[Insert position title]]
4	**Meet with driver**	Meet with the driver when the driver returns to the depot as soon as possible following the event. Review the distraction event footage (where available) and the distraction assessment with the driver and discuss: Questions: • What happened? • Have you done this task/route/roster before? • Do you find this task/route/roster difficult? • Were you surprised/startled by the alert? • What were you doing at the time of the alert? • What did you do immediately after the alert? • What do you think you could have done to prevent the alert? • What can be done to prevent another event? • Is there support we can offer you?	[[Insert position title]]
5	**Analysis**	Review the footage, distraction assessment, interview notes and any other relevant records for contributing factors.	[[Insert position title]]
6	**Further investigation**	All distraction events are considered preventable. Raise corrective actions in [[insert document/system]] if required. Advise senior management as part of reporting process.	[[Insert position title]]
7	**Continuous improvement**	Implement corrective actions. Update/modify documents and procedures as required. Multiple or recurring distraction events may require additional driver coaching.	[[Insert position title]]

Example Template 9 (a): Driver fatigue discussion summary

i. Use this template to create a form for recording discussions with a driver after they have received a fatigue alert. This can then be used as a record of having a post event discussion with a driver following a fatigue alert. This template is best suited to operators that have dedicated resources for monitoring and managing FDDT alerts.

Post-event interview questions

Are you aware that [[FDDT type]] was activated?	
What was your reaction?	
Why do you think it activated?	
View the footage. What are your thoughts now that you have seen the footage?	
Did you feel fatigued at beginning of your shift?	
Did you feel fatigued at the time?	
Have you had any changes in sleep patterns or quality?	
Have you had any changes to medications	
Are there any other factors that may be contributing to the fatigue event?	
Do you have any suggestions to minimise the potential of future events?	
Any other comments/observations?	

Driver		**Signed**	
Supervisor		**Signed**	

Example Template 9 (b): Driver distraction discussion summary

i. Use this template to create a form for recording discussions with a driver after they have received a distraction alert. This can then be used as a record of having a post event discussion with a driver following a fatigue alert. This template is best suited to operators that have dedicated resources for monitoring and managing FDDT alerts.

Post-event interview questions

Are you aware that [[FDDT type]] was activated?	
What was your reaction?	
Why do you think it activated?	
What were you doing at the time of the alert?	
View the footage. What are your thoughts now that you have seen the footage?	
Have you had any changes to medications	
Are there any other factors that may be contributing to the distraction event?	
Do you have any suggestions to minimise the potential of future events?	
Any other comments/observations?	

Driver		**Signed**	
Supervisor		**Signed**	

Example Template 10: Fatigue incident report

i. Use this template to create a form for recording fatigue incidents. This can also be used as a record of having completed an incident report.

This form is being completed in relation to							
☐ A lodged incident		☐ A non-reported safety event		☐ A general fatigue safety concern			
Date of incident		**Time of incident**		**Weather conditions**			
Name of the person involved				**Date of birth**			
Location of incident							
What were you doing at the time of the event?							
☐ Commuting to work	☐ Driving (start of trip/end of trip)	☐ Other work	☐ Commuting home from work				
Description of the incident							

Tick all the factors that contributed to the fatigue incident or your general concern					
Night work (00:00-06:00)	☐	Medication	☐	Insufficient rest time	☐
Early start	☐	Shift transition (early to late)	☐	Don't know	☐
Late finish	☐	Shift transition (late to early)	☐	Other	☐
Long shift	☐	Boredom	☐		
Roster change	☐	Home issues	☐		
Illness/health issue	☐	Unforeseen circumstance	☐		

Tick all the physical and cognitive signs of fatigue that occurred in the 2 hours leading up to the incident, general concerns and any countermeasures used					
Physical signs		**Mental and emotional signs**		**Countermeasures**	
Long blinks	☐	Lapses in attention	☐	Strategic use of caffeine	☐
Yawning	☐	Lapses in memory	☐	Food and drink	☐
Rubbing eyes	☐	Changes in mood	☐	Rest pause	☐
Heavy eyelids	☐	Decreased reaction time	☐	Physical movement	☐
Head drooping/nodding	☐	Decrease in communication	☐	Increased communication	☐
Staring blankly	☐	Difficulty concentrating	☐	Advised a colleague/supervisor	☐
Restlessness/fidgeting	☐	Other	☐	Other	☐
Other	☐	None of the above	☐	None of the above	☐
None of the above	☐				

Tick all the physical and cognitive signs of fatigue that occurred in the 2 hours leading up to the incident, general concerns and any countermeasures used					
1 Extremely alert	☐	4 Rather alert	☐	7 Sleepy, but no effort to keep awake	☐
2 Very alert	☐	5 Neither alert nor asleep	☐	8 Sleepy, some effort to keep awake	☐
3 Alert	☐	6 Some signs of sleepiness	☐	9 Very sleepy, fighting sleep	☐

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