



MANAGING OCCUPATIONAL ROAD RISK ASSOCIATED WITH DRIVER FATIGUE

A GOOD PRACTICE GUIDE



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FOREWORD

Driver fatigue is a serious issue among those who drive on the road for work. Long working and driving hours, irregular shifts, work schedules, tight timeframes, night time driving and lack of sleep put work-related drivers at an increased risk of being fatally or seriously injured in a fatigue-related road traffic collision (RTC).

Occupational road risk and driver fatigue is a key area of concern for the Department for Transport. Due to the nature of the rail industry thousands of drivers are potentially exposed to fatigue crash risk factors whilst on the road for work. This includes those whose main job is driving and those who travel long distances to and from work sites, all over the Great Britain, early in the day or late at night to carry out their primary job activities. However, the true scale of the problem has not yet been fully recognised.

Employers have a duty under the law to manage fatigue risks associated with employees' use of the road for work purposes. This requires a range of complementary management policies and procedures to control the multiple causes of driver fatigue.

Company managers can be prosecuted under health and safety or general criminal law for failing to exercise their 'duty of care'.

This practical guide will assist employers and others in the supply chain to effectively manage work-related driver fatigue. It explains the common causes of driver fatigue, provides key evidence, highlights legal responsibilities and sets out a Fatigue Risk Management approach. It supplements existing Fatigue Management guidance produced by RSSB.

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1. WHAT THE GUIDANCE COVERS

This guide provides advice to employers on measures to reduce fatigue risks associated with work-related driving. It is presented in the context of health and safety law and associated regulations under which all vehicles used for work purposes are considered part of the workplace. The scope of this guide therefore applies to the following drivers, journeys and vehicles, but may well have broader application:

DRIVERS	<p>Those whose main job is driving (eg professional drivers of goods and passenger vehicles).</p> <p>Those who drive in the course of their work for whom driving is not the main work activity (eg safety-critical staff, managers, shift workers, contractors, agency workers).</p> <p>Those who only drive occasionally, or as a result of disruption.</p>
JOURNEYS	<p>All journeys made for work purposes when an employee is 'at work', regardless of distance. This includes travel from home to a location which is not the usual place of work and also travelling for training purposes.</p> <p>Under current legal definitions, a driver travelling from home to their normal place of work is not considered to be 'at work'. However, there are known fatigue risks associated with 'normal' home to work commuting and these need to be managed.</p>
VEHICLES	<p>Specific purpose-built (fleet) vehicles provided by employer.</p> <p>Company cars and vans.</p> <p>Lease and hire vehicles.</p> <p>'Grey fleet' (driver's own private vehicle).</p>

Table 1 Scope of guidance

The guidance includes important information on the causes and effects of fatigue on driver performance, legal duties and the benefits that can be achieved by effective fatigue management. Consistent with existing RSSB guidance [7], the advice on how to manage occupational road risk and driver fatigue is presented within a Fatigue Risk Management System (FRMS) framework which can be adapted by an organisation according to its road driver fatigue risk exposure. This begins with the essential Safety Management System (SMS) components – Policy, Roles and Responsibilities, Competence and Consultation. A dedicated fatigue risk assessment process is then introduced, followed by guidance on monitoring and reviewing safety management performance. Finally, consideration is given to important organisational factors critical to success. The advice is based on the latest research, good practice recommendations and information from road safety organisations.

1.1 Target audience

This guide is relevant to:

- Heads of fleet
- Those who procure contracts that require staff to travel to work
- Safety managers
- Those responsible for design of work schedules, FRMS/SMS implementation
- Occupational health
- Training departments

2. WHY EMPLOYERS SHOULD ACT

It is estimated that between 25-33% of all fatal and serious crashes involve somebody who is at work at the time [1]¹

Driving for work is the biggest cause of work-related accidental death [2]. Every week around 200 road deaths and serious injuries involve someone using the road for work purposes, the majority of which are preventable [37]

Fatigue is a major safety risk. However, it is on the roads that driver fatigue causes the most injuries and fatalities worldwide [1]. Fatigue can seriously affect a driver's ability to control a vehicle safely and this can have a devastating impact on an individual, passengers and other road users. A fatigue-related RTC whilst an employee is on the road for work can also cause significant damage to a company's reputation, both amongst its workforce and the wider community.

Research suggests that driver fatigue may be a contributory factor in up to 20% of all RTCs and up to one quarter of fatal and serious accidents [3,4]. Commercial vehicle drivers, shift workers and individuals suffering from Obstructive Sleep Apnoea (the most common sleep disorder) are key groups at an increased risk of a fatigue-related RTC [1,40]. This is because they are more likely to drive in fatiguing situations - long journeys, under time pressure, after long working hours, at times of the day when sleepiness levels naturally peak, following sleep loss. Individual differences, other health conditions, social and domestic circumstances and poor driver awareness of both fatigue and effective countermeasures to manage the risks can also put drivers at an increased risk of a sleep-related RTC at work.

Due to the complexities of work and non-work factors it is clear that any driver on the road for work is at risk of a sleep-related RTC if the multiple causes of fatigue are not effectively managed. Fatigue is also known to affect a driver's judgement of his or her own ability. Although individuals share a responsibility for managing the risks, effective management of fatigue cannot be solely the responsibility of the driver. Under the law, employers' Duty of Care to reduce fatigue risks therefore extends to all road journeys and vehicles used by employees (see Table 1 on p5) whilst on the road for work [5].

1 Normal home to work commuting is currently excluded from the government's national occupational road driver accident statistics. This is one reason why experts suggest the truer estimate of work-related driver fatigue is far higher.

'For the majority of people, the most dangerous thing they do while at work is drive on the public highway' [6]

Fatigue-related crashes tend to be at high speed and are about 50% more likely to result in death or serious injury than collisions caused by other factors. The size and weight of vehicles can also exacerbate the severity of damage to the driver, vehicle and other road users [1]

In the rail industry, work-related RTCs, CIRAS staff reports and RSSB fatigue research show that many workers are exposed to crash risk factors [7,42]. Railway operations often require a rapid response, a need to travel long distances by road to and from different work locations, often when the risk of fatigue is at its highest. It relies on the mobilisation of a vast workforce, including those whose main job is driving, those who drive in the course of their work for whom driving is not the main work activity, those who drive lease, hire, fleet and specific purpose-built vehicles provided by an employer, and owner-drivers (eg 'grey fleet').

However, the true scale of the occupational road risk associated with driver fatigue across the rail industry is unknown. This is due, historically, to poor understanding of fatigue and associated underreporting of workforce road risk. The intended purpose of this guidance is therefore to help employers assess and manage fatigue risk involved in their staff's use of the road for work purposes to meet their duties under health and safety law.

About 300 people are killed each year as a result of drivers falling asleep at the wheel. About 4 in 10 tiredness-related crashes involve someone driving a commercial vehicle [8]

Research in the USA, Canada, Australia and France indicate that road traffic collisions during work, or when travelling to or from work, account for between 25-36% of work-related deaths [3]

2.1 Effects of fatigue on driver performance

If not adequately controlled, fatigue can have a negative impact on the critical cognitive skills required for safe driving – reaction time, vigilance, memory, alertness, concentration and decision making. It can also produce changes in heart rate, brain wave activity, eye and head movement, muscle tone, mood and motivation [9].

From a road safety perspective, it is important to understand the distinction between fatigue and sleepiness. Both can be equally debilitating, but differ in terms of cause and recovery [1].

Fatigue is a slow, progressive state which increases in a corresponding fashion to time-on-task (eg period of driving, work activity). An early sign of fatigue is loss of alertness which can affect a driver's ability to control a vehicle safely. It can also affect a driver's decision making and judgement of their own fatigue levels [1].

Mental and physical fatigue can be overcome by the effective scheduling of rest breaks and recovery between work periods. However, the extent to which an individual recovers will depend on how much sleep they have had, the quality of that sleep, the extent to which sleep coincides with the normal circadian cycle and the conscious effort on the part of the individual to obtain sufficient sleep - see below [9].

The early warning signs that a driver is fatigued include:

SYMPTOMS	DRIVING PERFORMANCE
<ul style="list-style-type: none">• difficulty concentrating• yawning• heavy eyelids/tired eyes• eyes begin to roll• neck muscles relax (head drooping)• restlessness• boredom	<ul style="list-style-type: none">• poor speed control• increased drifting within a lane; crossing the road centre line or side line; late corrections• slower reaction time to stop lights and poor avoidance of hazards• poor steering control

Table 2 Early warning signs of fatigue

If a driver has not been able to obtain the sleep they need and as waking time increases, they will become drowsy and eventually reach the stage of fighting to stay awake – sleepiness. In extreme cases a driver can drift in and out of sleep at the wheel without any awareness of having done so. These brief, involuntary episodes of sleep are known as microsleeps, last several seconds and typically have very severe consequences. A microsleep of six seconds when travelling on a motorway at 70mph is sufficient time for a vehicle to travel nearly 200 metres [10]. This distance is great enough to cross three lanes of traffic and veer off on to an embankment, road or railway track.

A rest break alone will not overcome the need for sleep. Safe performance can only be restored by obtaining sufficient sleep. This means that if a driver has reached the stage of fighting sleep this is indicative of excessive sleepiness and they should seek a safe place to stop the vehicle as soon as possible [1].

Did you know?

'Tiredness at the wheel kills. Driving a vehicle is a huge responsibility that must be taken seriously. That means stopping when we feel drowsy and certainly never starting a journey tired. It's a matter of life and death. We still have widespread misunderstanding of how to prevent driver tiredness, and ignorance about factors like sleep apnoea, a condition that can be treated...' [11].

Drivers are normally aware of when they feel sleepy and so make a conscious decision whether to continue driving or stop for a rest. Those who persist possibly underestimate the risk of actually falling asleep due to:

- Failure to recognise the danger signals
- Underestimating own level of impairment
- Reduced capacity to respond
- Choosing to ignore the risk

This emphasises the role of the employer in planning and scheduling work to minimise fatigue at the earliest stage possible is paramount.

2.2 Causes of fatigue

Fatigue can be caused by work or non-work factors and/or a combination of both:

Lack of sleep:

On average, people require 7-8 hours of nightly sleep. There are also those who require more or less than this. The duration and quality of sleep have a direct effect on the level of alertness and ability to drive a vehicle safely [12]. If the amount of sleep a person needs is reduced by 1-2 hours over several days, or the quality of sleep is poor, the effects are cumulative and can lead to severe sleep debt and an irresistible urge to sleep [2]. This increases the probability of a driver falling asleep at the wheel.

Body clock

As well as sleepiness due to poor quality sleep and sleep debt, our body clock (located in an area of the brain) controls how alert or sleepy we are

throughout the 24-hour day. Natural circadian rhythms fluctuate to control our sleep/wake cycle. This means that as humans we are designed to be awake during the day and asleep at night. Between 2am and 6am our body temperature drops and sleepiness levels peak. Our sleepiness levels peak again mid-afternoon ('siesta time') between the hours of 2pm and 4pm [13]. Driving during these periods when we are at our most sleepy increases the risk of being involved in a crash. The risk can be even greater if the driver has had inadequate sleep [46].

Despite the importance of circadian factors in determining driver sleepiness, they are not built into legislation protecting drivers of goods or passenger vehicles (eg the EU Drivers Rules and Regulations allow drivers to drive up to 4.5 hours without a break, meaning they may rest when wide awake and drive when sleepy).

Did you know?

A sleep debt needs to be dissipated over successive nights of good sleep that include the time window of the circadian low point [12].

Did you know?

Night shifts and rotating shifts can cause severe sleep disruption. RSSB research found that workers on 12 hour shifts (compared to 8 hours) were significantly sleepier at the end of a shift, especially at 7am [7].

The Royal Society for the Prevention of Accidents estimate the risk of a driver falling asleep at the wheel at 2am to be 50 times greater than at 10am [2].

Time on task

The effects of sleep loss and time of day on driver performance can be exacerbated by the duration of time spent on work-related activities (driving or otherwise). Long working hours, insufficient rest between shifts, inadequate breaks, night work, poor quality sleep and irregular hours can lead to inadequate sleep and on-going fatigue. These factors have been found to increase commercial vehicle drivers' exposure to fatigue risks on the road [12].

Research suggests that the combined effects of previous lack of sleep, time of day and length of time awake explains why so many fatigue-related road accidents occur very soon after the start of a journey (eg 2 hours in) [12].

Did you know?

17 hours of sustained wakefulness leads to a decrease in driving performance equivalent to a blood alcohol level of 0.05% (two glasses of wine).

Long commuter journeys to and from work extend the working day and can mean an employee may become unfit to work safely towards the end of a shift and/or unable to drive home safely. Although individuals who travel from home to their normal place of work are not driving in a work-related capacity, their work patterns (particularly shift work) may be affecting their chances of having a fatigue-related accident [7,15,16]. Many fatigue-related accidents occur after long working hours or on journeys home after long shifts, particularly night shifts [13].

Did you know?

Driver self-reports of average weekly driving hours has been found to be a good discriminator of probable crash involvement. A study of commercial vehicle drivers found accident risk peaked in working weeks over 55 hours when exposure to risk was taken into account [12].

Nature of task and working environment

The effects of fatigue are more evident on tasks that are repetitive, monotonous, or those that demand continuous concentration [36]. Human performance at low levels of workload is not particularly good. Work under-load can impair attention and concentration, induce boredom and create a lack of motivation and loss of skills. This can reduce alertness, increase distraction and the potential for driver errors (eg missed stop signals) [18]. Conversely, as the demands of a task, or workload is increased, performance improves up until an optimum level of workload and performance is achieved. Any increase in workload after this point will impair performance (eg a driver rushing between jobs due to real or perceived time pressure and a tight work schedule) [18]. This applies particularly

Did you know?

The quality of sleep can be less restorative when taken away from home [12, 43].

Self-awareness of driving while sleepy has been found to be a significant predictor of traffic accidents [19].

to 'in demand' rail industry staff who are under pressure to travel around the country to ensure the continued running of the network. At extremely high levels of workload (overload), important information may be missed (eg speed limit) due to the narrowing or focusing of attention on to only one aspect of the task (eg getting to a job on time).

Journeys involving long periods of driving on monotonous roads, such as motorways, where there is a high level of repetition and reduced visual stimuli, are more likely to result in a driver falling asleep at the wheel [2]. Research has estimated that fatigue accounts for 20% of all accidents on motorways [20]. The situation can be compounded by environmental factors such as poor road conditions due to heavy rain or falling snow and by the engineering of modern vehicles with their comfort-enhancing features (eg cruise control, seating position) which can have a lulling effect on the driver making them more relaxed [1].

Did you know?

Setting off on a journey in the early hours of the morning not only shortens the sleep period but also coincides with the natural dip in alertness [1].

Individual factors and health conditions

Sleep and health problems can put drivers at an increased risk of a fatigue-related RTC [21,44]. Most adults will experience a period of temporary insomnia which can result in fatigue, but it is obstructive sleep apnoea (OSA) that is a key road safety concern [3,41]. OSA causes fragmented sleep due to the upper airway repeatedly collapsing and re-opening [1]. The condition can cause daytime sleepiness and, in some cases, lead the sufferer to fall asleep without warning [1]. It is estimated that 1-2% of middle aged men in the UK suffer from the condition [1].

OSA is linked to body mass index and a sedentary lifestyle. An overweight driver needs to be particularly alert to the possibility of suffering from the condition as OSA sufferers have been shown to be 7-12 times more likely to be involved in an RTC than those without the disorder.

OSA is often undiagnosed. A high prevalence of undiagnosed OSA is suspected amongst railway workers [22] and is therefore an issue with serious implications for the industry. Drivers may be unwilling to seek help for fear of losing their driving license. However, established treatments for OSA are available which allow drivers to retain their license and livelihood.

Did you know?

RSSB research into Obstructive Sleep Apnoea (OSA) estimated that OSA is 60% more common amongst train drivers than the general population putting the condition in the top five health issues for the railway industry [22].

Other factors that can increase an individuals' risk of involvement in a fatigue-related RTC include:

- Shift preference - whether people feel naturally most alert in the morning ('larks') or most awake later in the day ('owls')
- Age - accident analyses demonstrate the higher involvement of younger, male drivers in fatigue-

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related accidents in the early hours of the morning (eg due to lifestyle choices; effects of sleep loss); older drivers are more likely to fall asleep at the wheel during the afternoon sleepiness period [17]

- Attitudes and behaviour – work motives, journey goals and the outcomes of habitual or previous behaviour can all influence future sleepy driving [3]
- Stress – tiredness is a typical symptom of stress due to work or home life pressures. It can lead to distraction, anger and aggression while driving and has been shown to increase risky driving behaviour and involvement in minor accidents [1,39]
- Medication - prescription drugs, including some anti-depressants and over-the-counter drugs can cause drowsiness and impaired alertness while driving
- Poor driver awareness of both fatigue and effective countermeasures
- Substance abuse (caffeine, nicotine, alcohol, sleeping pills, drugs)
- Domestic and family circumstances - can cause sleep disruption (eg new baby, bereavement)

Did you know?

Compared to older drivers, younger drivers have been found to be more susceptible to the effects of sleep loss when awake for an equivalent length of time [2].

WORK FACTORS	NON-WORK FACTORS
<ul style="list-style-type: none"> • Long working hours (driving or otherwise) • Poor work scheduling • Working/driving during the times when alertness levels are naturally low (eg early starts, night shifts, driving home after the night shift) • Lack of/poor quality/timing of rest breaks • Workload (eg under-demand/over-demand) • Mentally or physically demanding work • Insufficient recovery time between shifts • Long periods of time awake • Environmental conditions (eg poor visibility due to falling snow) 	<ul style="list-style-type: none"> • Sleep disorders (eg Obstructive Sleep Apnoea) • Travel time/commuting • Poor quality sleep • Sleep loss • Social life • Second jobs • Family needs • Individual differences (eg 'morning types' or 'evening types'), age • Poor fatigue management

Table 3 Summary of work and non-work fatigue risk factors

2.3 Key evidence

Driver fatigue is a particularly prevalent cause of work-related RTCs resulting in death or serious injury [23]. Around 40% of sleep-related accidents involve drivers of commercial vehicles [1]. There is a lack of UK research on the effects of fatigue on commercial drivers but overseas studies suggest three factors increase crash risk – long working days, irregular hours and peak fatigue levels whilst driving at night (which can be ten times greater than during the day) [14].

Did you know?

A study by the US National Transportation Safety Board found that drivers of goods vehicle involved in sleep-related crashes had an average of 5.5 hours sleep in the previous 24 hours, compared with an average of 8.8 hours of sleep for drivers involved in other types of crashes [1].

Within the road haulage industry there is an expectation that drivers will work long hours to meet operational and customer demands any time night or day, often within tight timescales [12]. UK drivers can work at least 10-12 hours in a 24 hour period although studies have found many drivers violate the UK & EU regulations that limit driver hours and work longer than the law allows [1]. Other fatigue risk factors identified include: limited rest opportunities, poor roster planning and management, symptoms of a sleep disorder, insufficient driver numbers, payment systems linked to mileage, driving on monotonous roads (which provide fewer stimuli to the driver), the use of informal driver 'pooling' systems for large operators to call upon drivers as required, loading/delivery queues and the financial lifestyle expectations of employees [1].

Did you know?

In a UK survey comparison of shift workers and similar non-shift workers, shift workers self-reported greater driving impairment and sleepiness when driving to early shifts, and to and from night shifts, and a higher incidence of falling asleep at the wheel while driving after the night shift [24]. Another study showed that the risk of being in a single vehicle accident at 0300hrs was 50% above the baseline after four successive night shifts [25].

It is not only lorry drivers who suffer from fatigue-inducing work schedules. The RAC reports that business drivers in the UK, whose driving hours are totally unregulated, are at an increased risk from falling asleep at the wheel than other drivers [12]. Business drivers with high work-related mileage have been shown to have 50% more injury accidents than matched non-business drivers and collision rates that are estimated to be 30-40% higher [12]. It has also been shown that they are more likely to drive in fatiguing situations – after long working hours, under time pressure and long journeys greater than 50 miles [12].

There has been little UK research into fatigue and accident risk among bus drivers, although one study found one in five drivers to be excessively sleepy during the day, with 12% reporting they experienced microsleeps at least once a month while driving [3]. Overseas studies suggest that long working hours, extended shifts, limited opportunity for rest and sleep during and between shifts, shift

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irregularity and turn around, commute times and tight route schedules are fatigue risk factors [3].

Shift workers are a key risk group in road safety terms [26,45]. They are at an increased risk of a fatigue-related RTC due to the potential for sleep disruption and conflict with an individual's 24-hour sleep/wake cycle [26]. Shift work can be difficult to adapt to and individuals differ in their ability to cope with different types of shifts [7]. They can be exposed to many of the same risk factors as commercial vehicle drivers which curtail the opportunity for sleep. This was evident in RSSB research investigating the shift work patterns of contract track workers and train drivers in the rail industry [7]. Unless effectively planned and managed shift work can exacerbate the tiredness experienced on the drive to work, at work, and the drive home following a period of work activity (particularly a night shift).

Did you know?

RSSB research found that factors that contribute to the risk of falling asleep in shift workers include previous sleep periods of less than six hours and travel time over 35 minutes, although the influence of travel time will vary with shift length [7].

The scale of fatigue risk among other groups of occupational drivers is not well understood. Drivers of smaller vehicles (eg vans, cars, taxis, courier motorcycles) are not covered by UK or EU hours of work regulations [2]. This includes an estimated figure of 73,000 drivers of lease hire fleet vehicles and owner-drivers ('grey fleet') in the rail industry who are accumulating a large but unknown mileage.

Highly skilled, specialised staff employed by a diverse range of rail companies and their suppliers are required to drive all over the Great Britain, potentially early in the day or late at night, to different work sites. Many have to fulfil functions beyond driving which can already account for over 12 hours a day, and then drive home again. Some fall into the key risk groups – shift workers and commercial vehicle drivers. Others will be managers attending meetings, who may only drive occasionally for work.

Concerns have been raised about the fatigue risk management practices of some organisations within the rail industry and, in particular, among lower tier contractors. Between 2010 and 2012, the industry's Confidential Information and Reporting System (CIRAS) received 23 reports from staff on issues relating to: excessive travel times, long working hours, poor roster planning, inadequate rest between shifts, long and irregular shifts, overnight accommodation or paid allowance not provided by company, designated drivers not provided, no opportunity to share driving, false recording of subcontractor travel times and inadequate transport.

Did you know?

Simulator research has demonstrated an increase in driver errors (eg lane drifting) among night shift workers 25 minutes into the drive [1].

The requirement to record incident and accident data on RTCs and input into the rail industry's

Safety Management Information System (SMIS) is stated in Railway Group Standard GE/RT8047 and includes any personal accident to 'an IM/RU's employee or contractor's employee while travelling by road vehicle between sites of work'. All accidents and incidents that occur when an employee has been driving on the road for work must be reported regardless of the vehicle being driven. Information should be collected and recorded in such a way as to be able to easily identify the purpose of the journey, so that commuting incidents between a person's home and usual workplace can be distinguished from 'at work' incidents.²

Culturally, however, the rail industry as a whole has not recognised the size of the occupational road risk. Between March 2007 and March 2012 just over 950 RTCs were recorded in SMIS. However, a significant number of road accidents reported to local management have not been input into SMIS. This indicates that road accident data has been underreported across industry. Of the road vehicle RTCs recorded in SMIS it is also unknown in how many driver fatigue was a contributory factor due to a lack of information.

Did you know?

Accident investigators can examine driver schedules, working hours, tachographs (for larger vehicles), type of impact, eye witness statements and marks on the road for evidence of braking to determine tiredness as a possible cause [3].

Underreporting and poor quality information is not just a problem for the rail industry. Historically, the quality of accident investigations generally has suffered due to poor understanding of fatigue, lack of standardised investigation methodology and difficulties determining fatigue as a cause of a collision (eg driver fatally injured, lack of witnesses, driver unwilling to admit having fallen asleep at the wheel due to fear of prosecution) [3].

Evidence from previous RSSB research [7], coupled with concerns raised by staff, indicate that many railway employees have a far greater road risk exposure due to fatigue than the official figures would suggest. It is also not unreasonable to suggest that the exclusion of many categories of drivers and normal commuter journeys from the national occupational road traffic database underestimates the prevalence of driver fatigue as a significant cause of accidents among those who drive for work across the UK.

² Health and safety law does not apply to commuting, unless the employee is travelling from their home to a location which is not their usual place of work.

3. THE LEGAL POSITION

Employer responsibilities:

Health and Safety Executive (HSE) guidelines 'Driving for work' state that 'health and safety law applies to on-the-road work activities as to all work activities and that the risks should be effectively managed within a health and safety system' [5].

In addition to duties under road traffic law (eg Road Traffic Act; Road Vehicle (Construction and Use) Regulations) administered by the police and the Vehicle and Operator Services Agency, employers must comply with the legislation shown in Table 4 on p19.

Employers are legally required to consult with employees, and where applicable, their health and safety representatives on the health and safety issues covered in this guidance.

Employers have a responsibility to ensure that labour suppliers have robust fatigue risk management procedures in place to protect those who provide road transport.

Company managers can be prosecuted under health and safety or general criminal law for failing to exercise their 'duty of care' if they: set unrealistic schedules (eg work schedules so tight that the driver would be breaking speed limits if attempting to meet them; require drivers to drive excessive hours; or put pressure on a driver to continue driving when they have notified employers they are too tired) [27]. This duty also applies to those responsible for procuring contracted resources, whether as labour only or as a service.

'If you employ contractors, you have a legal duty to make sure they are competent to do the work you want them to do'.

'Both you and the contractor have duties under health and safety law. This also applies when a contractor employs subcontractors'.

(Health and Safety Executive)

THE HEALTH AND SAFETY AT WORK ACT (1974)	<p>Employers have a duty of care to ensure, so far as is reasonable practicable, the health and safety of all employees who drive for them. This duty of care also extends to all those who may be affected by company business, including other road users, pedestrians and the general public.</p> <p>Health and safety law does not apply to commuting unless the employee is travelling from their home to a location not considered their usual place of work.</p>
THE MANAGEMENT OF HEALTH AND SAFETY AT WORK REGULATIONS (1999)	<p>Employers must assess the risks involved in their staff's use of the road for work and put in place all reasonably practical measures to manage fatigue risks. This should include an assessment of the driver, taking into account drivers' work schedules, vehicles and the journeys they make.</p>
THE RAILWAYS AND OTHER GUIDED TRANSPORT SYSTEMS (SAFETY) REGULATIONS (2006) (ROGS)	<p>Under 'Regulation 25 – Fatigue', duty holders are required to manage fatigue in safety-critical workers.</p>
UK DRIVERS' HOURS RULES	<p>The rules specify maximum driving times, frequency of breaks, minimum rest periods and requirements for record keeping (eg tachographs) for goods vehicles <3.5 tonnes and passenger vehicles carrying less than nine people (see Appendix 1) [38].</p>
EUROPEAN UNION DRIVERS' HOURS RULES AND REGULATIONS	<p>The rules and regulations specify maximum driving times, frequency of breaks, minimum rest periods and requirements for record keeping (eg tachographs) for goods vehicles >3.5 tonnes and passenger vehicles carrying more than nine people (see Appendix 1) [38].</p>
THE WORKING TIME (AMENDMENT) REGULATIONS (WTRS) (1998)	<p>The WTRs include limits on the number of hours employees can be required to work per week by employers, limit night work hours, and include provision for rest breaks, paid annual leave and health assessments for night workers. Duty holders need to consider and comply with the requirements of WTRs, but complying with the WTRs is not in itself sufficient to adequately control risks from staff fatigue.</p> <p>The WTRs are not risk based, nor are they are “relevant statutory provisions” made under the Health and Safety at Work Act (1974). They contain many exemptions and opt outs. For safety-critical workers (as defined under ROGS), the WTRs provisions are therefore in addition to, not instead of, protection under the ROGS.</p>

Table 4 Legislation

In the case of an RTC which results in a fatality, the corporate body, rather than individuals, face prosecution under the Corporate Manslaughter and Corporate Homicide Act (2007) if found guilty of gross failings in the management of its duty of care [27]. This carries a maximum penalty of an unlimited fine. Since 2008, this charge can now be brought in a wider range of cases where an organisation's risk management activities are deemed to have been insufficient, having led to a gross breach of duty of care [27].

Employee responsibilities:

Although the duty is narrower, employees are also required to take reasonable care for their own health and safety and that of others who may be affected by their work activities [27].

Drivers must comply with relevant road safety laws and manage their own sleep and alertness to make sure they are fit to drive [27]. They have a responsibility to inform the Driver Vehicle and Licensing Agency (DVLA) if they develop any health condition likely to affect their driving. This includes the most common sleeping disorder, Obstructive Sleep Apnoea.

Driving while fatigued is an offence which can result in prosecution leading to imprisonment and other penalties. Tired drivers can be charged with:

- Careless driving
- Dangerous driving
- Death by careless driving
- Death by dangerous driving

If a tired driver has caused a death (and there is sufficient evidence) they can be charged with death by dangerous driving which carries a maximum sentence of 14 years imprisonment.

Employees have a duty to cooperate with their employer on measures introduced to eliminate or reduce risks. In the context of fatigue and work-related driving this includes:

- Reporting any fatigue-related work or non-work issue that may affect fitness to drive (eg working/driving hours; health condition, including Obstructive Sleep Apnoea)
- Refraining from driving if impaired by medication or fatigue
- Reporting any fatigue-related incidents

4. COSTS AND BENEFITS

Despite the high risk of fatigue-related injury or death on the road, many organisations continue with unsafe practices as they are perceived to produce short-term benefits.

There are obvious costs to an organisation, such as repairs and insurance claims, when an employee is involved in an RTC. But the true costs of fatigue and work-related RTCs are nearly always much higher than many employers realise.

Additional costs to an organisation not covered by insurance include:

- The grief and suffering of affected family members, work colleagues and the general community
- The costs of emergency and medical services
- Fines and prosecutions
- The loss of company reputation and contracts
- Staff absenteeism
- Staff downtime due to medical appointments, court attendance
- Replacement staff costs and sick pay
- Reduced staff morale
- Increased management and administrative time (eg accident investigation and paperwork)
- The costs of alternative transport for repair duration
- Inconvenience and re-delivery

Did you know?

Companies who demonstrate a proactive and effective attitude to risk management have more control over motor insurance and hidden costs (eg damaged vehicle off the road; hiring of a temporary driver) [27].

The benefits to individuals and companies (of all sizes) from managing driver fatigue and occupational road risk can be considerable [17]. They include:

- Improved safety culture and business performance
- Defence against criminal prosecutions and civil litigation
- Improved public image
- Fewer days lost due to injury and work-related ill-health
- Less chance of employees being banned from driving
- Fewer vehicles off the road for repair
- Higher staff morale
- Less need for investigation and paperwork
- Reduced lost time due to work rescheduling
- Lower insurance premiums and legal fees

5. MANAGING FATIGUE

This section provides a brief overview of the background and various approaches to managing fatigue before moving on to the recommended fatigue risk management process.

5.1 Background

Traditionally, regulators and operators across different transport sectors have relied on compliance with prescriptive hours of work rule sets to manage fatigue [9]. With regard to drivers of goods and passenger vehicles, prescriptive rules such as the EU Drivers' Hours Rules and Regulations and the GB domestic driver's rules, together with a driver's legal responsibility to be fit for work, remain the key countermeasures used today [1].

Although limitations on hours of work provide a simple set of unambiguous rules with which to comply and assist in the scheduling of staff, there is increasing recognition that 'prescriptive' approaches do not, in isolation, offer adequate protection from fatigue [9]. This is clear from the high incidence of fatigue-related crashes among commercial vehicle drivers.

The problems associated with prescriptive approaches are summarised in Table 5 on p23.

Some companies sporadically introduce controls to manage driver fatigue that may or may not be in addition to hours of work regulations and/or as a reactive response to an incident. However, there is limited evidence to suggest that in isolation they are effective in managing driver fatigue risk. Examples of such approaches include those shown in Table 6 on p24.

ISSUE	
DO NOT CONSIDER THE ROLE OF THIRD PARTIES	They do not encourage those in the supply chain to manage fatigue risk [9]. The risk imported by non-railway group members, non-regulated sub-contractors and agencies would remain uncontrolled.
THERE IS NO GENERIC, 'ONE SIZE FITS ALL' APPROACH	They fail to take account of individual factors [1].
OFFER POOR OPERATIONAL FLEXIBILITY	They apply equally to all operators, regardless of risk exposure and operational conditions [9].
PROVIDE LITTLE MOTIVATION TO IMPLEMENT NEW CONTROLS	They encourage a reactive approach to fleet safety (eg as a reaction to a collision or death) [4].
NOT BASED ON A SCIENTIFIC UNDERSTANDING OF FATIGUE	<p>They do not recognise the effect of circadian rhythms.</p> <p>The EU Drivers' Hours Rules allow drivers to drive up to 4.5 hours without a break, and can require a driver to rest when wide awake and drive when sleepy. This is more than double the recommendation in the Highway Code of taking a break after two hours of driving. The period without a break can be significantly extended when a driver's non-driving duty hours are taken into account. There is no convincing data to support the premise that 4.5 hours is a 'safe' length of time for a driver to drive, especially on monotonous roads [2].</p> <p>UK and EU rules state that within any six day period a driver can drive up to 56 hours a week (with prescribed breaks and rest periods). If hours on duty are included (eg waiting in cab, loading and delivering goods) a driver can work up to 84 hours in a six day period (eg 14 hour days and a single day of rest per week). Most UK truck drivers work up to these legal limits and many go beyond them [2].</p>
DERIVED FROM REGULATORY APPROACHES FOR MANAGING PHYSICAL FATIGUE	Mental fatigue is more associated with the timing and duration of sleep and wake within a break and not just as a function of time as is the case with physical fatigue [9].
RELY ON COMPLIANCE (DRIVERS AND COMPANIES)	Drivers can exceed their legal work time limitations [2].
EXCLUDE MANY CLASSES OF DRIVER	Vans, taxis, company cars and 'grey fleet' have no legal limit on their driving time.

Table 5 Issues with prescriptive approaches to fatigue management

APPROACH	ISSUE
In-vehicle fatigue detection and warning systems designed to monitor driver or vehicle behaviour to detect signs of performance impairment due to fatigue	<p>Such devices have been criticised for failing to detect the early signs of fatigue. A driver's performance may have already deteriorated to unsafe levels [1].</p> <p>RoSPA is also concerned that drivers would rely on such devices and be tempted to drive when tired [2].</p> <p>The Department for Transport warns that these devices should only ever be used as a fall-back safety aid as they do not provide a substitute for adequate rest [1].</p>
In-vehicle mechanical tachographs used within the road haulage industry to record working, driving and rest hours.	Drivers can tamper with these devices. This has partly undermined their role in controlling and enforcing driver regulations. The advice is therefore that it is far better to plan safe journeys and for drivers to follow recommended advice provided by employers and the Highway Code [1].
Computer-based fatigue risk models (eg HSE's Fatigue and Risk Index)	Although very useful for predicting average levels of fatigue associated with a given shift system and changes to working patterns, models are not good at determining if a given individual is fit for duty on a given occasion. They are based on a set of theoretical assumptions (eg that individuals will get sufficient sleep between shifts) and do not take into account individual factors, job role, environment and workload [7,15].
Driver training and awareness	<p>Research has shown that, used on their own, such initiatives do not prevent crashes or stop drivers driving when fatigued. For some drivers, the goals and rewards of completing a journey far outweigh the calculated known risks. There have also been few attempts to evaluate the effectiveness of such approaches [3].</p> <p>When used in isolation, driver training and awareness can also assume that fatigue management is the sole responsibility of the driver, rather than the shared responsibility between employer and employee to manage the multiple causes of fatigue.</p>
Incentive schemes to promote specific group or individual activities or behaviours over a set period of time and manage work-related road safety	Such schemes can promote culture change, reward positive behaviour, increase employee self-esteem and reduce costs. But the disadvantages include pressure to meet targets, administration difficulties and a negative impact on staff morale.

Table 6 Technological, fatigue modelling and training approaches

5.2 Risk management approach

Effective management of occupational road risk requires consideration of the multiple causes of driver fatigue. Research therefore points to the need for a more systematic, risk-based approach. This offers significant potential for improved fleet safety and greater operational flexibility as it encourages organisations to measure fatigue risk unique to its operations [7].

A Fatigue Risk Management System (FRMS) is described by the Department for Transport as an 'explicit and comprehensive process for measuring, mitigating and managing' the actual fatigue risks to which a company and its employees are exposed [13]. It is an evidence-based, data driven and documented process which enables a company to develop layers of tailored controls to offset any potential increase in fatigue levels as an integral part of its safety management system [7].

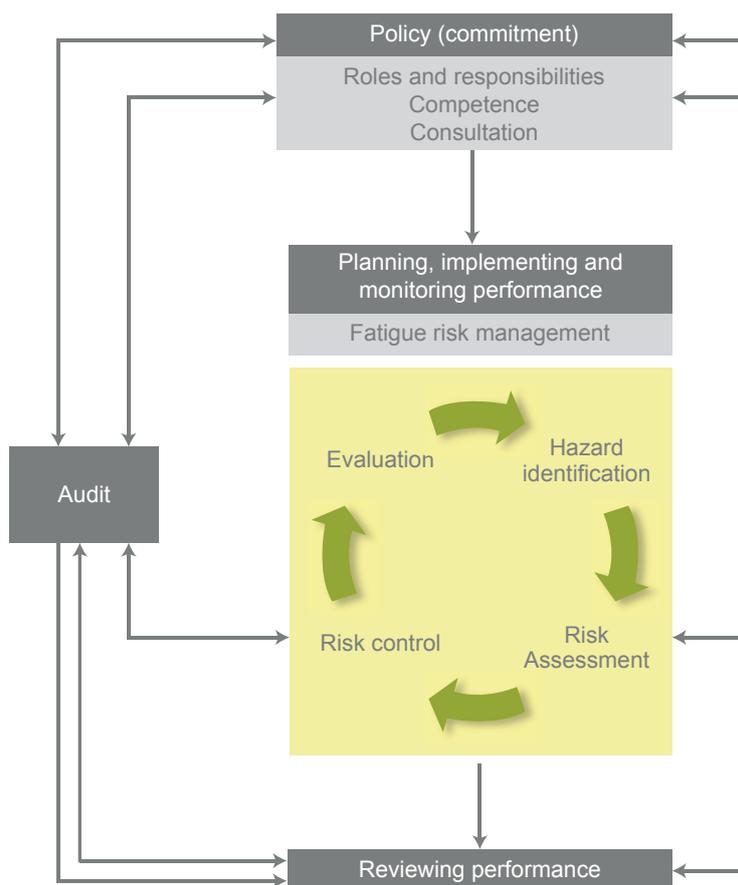


Figure 1: Fatigue Risk Management within the context of an overarching Safety Management System (adapted from the HSE's POPMAR model (HSG(65)) for successful health and safety management)

The key components of an FRMS (as shown in figure 1) are discussed in the sections that follow.

5.2.1 Organising for safety

5.2.1.1 Policy:

A fatigue policy should be in place setting out the company approach to preventing work-related driver fatigue. It should be proportionate to the size and fatigue risk exposure of the organisation and make clear it covers all at-work drivers, the journeys they make and the vehicles they use for work purposes.

The specific details relating to what, who and when something must be done should be covered in supporting procedures.

A fatigue policy would typically cover:

- Legal duties and relevant health and safety and road traffic legislation
- Alignment with related policies (eg alcohol and drugs)
- Senior management responsibility
- Practical steps that will be taken to prevent fatigue-related RTCs (eg how journeys will be planned, policy on breaks and rest, overnight accommodation, alternative transport)
- Procedures in place to control third party risk in the supply chain
- Definition of roles and responsibilities (including for implementation of the policy and everyone involved in fatigue risk management process)
- Accident investigation and reporting and what action will be taken in the event of a RTC
- Commitment to safety in selecting vehicles
- Commitment to keeping employees trained and informed

The policy should advise drivers to:

- Ensure they are physically fit to drive
- Comply with relevant legislation (eg Highway Code)
- Inform their line manager of any health problems or personal circumstances that could make driving hazardous
- Follow advice on journey planning and fatigue countermeasures supplied by management
- Ensure that suitable breaks are included to prevent fatigue
- Allow extra journey time and breaks where required, to allow for bad weather, traffic congestion, etc
- Stay calm and relaxed while driving and try to avoid situations which could lead to stress or road rage
- Be aware that fatigue is more of a problem at certain times of day and when nearing the end of a long journey
- Report any fatigue-related issues

The policy should be communicated to all employees and others, such as contractors and clients, who might be impacted by its implementation.

5.2.1.2 Roles and responsibilities

Effective management of fleet and driver safety requires individual roles and responsibilities at all levels within an organisation to be allocated and actions required clearly defined. This includes, but is not limited to:

- Company directors
- Staff who procure contractors
- Senior and line managers
- Individuals responsible for the management of contractors
- Supervisors
- Drivers
- Occupational health
- Trainers

It is essential that all those with responsibilities to manage fatigue understand what they must do, how they will be held accountable, and have the authority to make the right decisions. This information should be documented and distributed throughout the company and to contractors to promote a common understanding of everyone's role in the FRMS. This is to ensure policy commitment becomes a reality [4].

There needs to be effective communication channels and cooperation between all those who share responsibility for work-related driving (eg rosters, fleet, procurement, those responsible for managing contractors, contractors, occupational health, human resources, training department). This is to ensure the links between work and driving activities and other factors that can increase fatigue risk are coordinated and effectively controlled.

Depending on the size and nature of the organisation, there may be benefit in establishing a Fatigue Management Steering Committee to provide overall coordination of FRMS activities [7].

5.2.1.2.1 Senior management and individual responsibilities

It is suggested that overall responsibility for fleet safety and work-related driving be with the executive line/CEO of an organisation [4]. This needs to be visibly demonstrated to send a strong message throughout the organisation that there is top-level commitment to work-related road safety.

The health and safety function needs to provide advice and set out the policy, standards and requirements for work-related driving [4]. Implementation can then be delegated to specific individuals, such as dedicated health and safety managers, fleet manager(s), accountable operational/line managers and supervisors, who actively steer the process and provide clear direction, lead by example and take responsibility for process [7].

5.2.1.2.2 Procurement

Responsibility for driver safety must be extended through the supply chain [4]. Clients and principal contractors have a legal duty to ensure that suppliers of transport services (eg taxis) and labour have fatigue management arrangements in place and are competent in controlling the risks.

Prior to awarding contracts, the responsible person(s) within the organisation need to satisfy themselves that suppliers they deal with acknowledge the driver fatigue issue, including influencing factors, and have effective controls in place (see below). This should be done as part of the procurement and supplier accreditation process.

Responsible clients and principal contractors should also have supply chain management arrangements which source competent labour locally in the first instance to minimise costs and associated risks from staff having to travel long distances to and from work [4].

WHEN EMPLOYING CONTRACTORS, YOU SHOULD:

- Select a suitable subcontractor (eg proximity to the job; skills, knowledge and control of fatigue risks)
- Assess the risks of the work
- Do a risk assessment (this should include the risks from all parties)
- Provide information to contractors on the risks and controls in place
- Put liaison arrangements in place to ensure coordination and cooperation
- Decide how contractors will be managed and agree the nature of the controls before the work commences

FOR MORE INFORMATION GO TO:

<http://www.hse.gov.uk/toolbox/workers/contractors.htm>

<http://www.hse.gov.uk/workplacetransport/factsheets/contractors.htm> -

5.2.1.2.3 Contractors

All suppliers of transport and labour services should comply with the fatigue management arrangements put in place by the client or principal contractor (eg as communicated via the Fatigue Policy). Before contracts are signed they should be required to demonstrate:

- (1) Their acknowledgement and control of driver fatigue risks, including the actions of sub-contractors, and
- (2) How they ensure that fatigue management information is sent out, received and understood by all, including the many transient, notionally self-employed staff who are required to drive to distant sites, and those who only work intermittently (eg weekends only) on the railway.

The list below suggests questions that can be used to assess the suitability of a contractor. It is not exhaustive, but rather intended as a good practice checklist which can be adapted to suit the needs of an individual organisation. For example:

- How are hours worked and travel times implemented and monitored for all jobs that staff do?
- What controls are in place to ensure drivers receive their daily and weekly rest entitlement?
- How are the actions of sub-contractors controlled?
- What allowance is made and built into work schedules for staff travel time to and from work?
- What provision is made for overnight accommodation and alternative transport where staff travel long distances, work shifts (particularly night shifts) and in the event of job overruns and emergencies?
- Do you monitor health conditions, such as sleep apnoea, that could affect a driver's ability to drive safely? If so, how?
- How do you ensure work schedules comply with legal requirements on work and drivers' hours?
- What fatigue risk management information and training have drivers received?
- What is your RTC rate?
- Are RTCs recorded and fully investigated?
- What is the ill-health record for drivers?
- Are vehicles used suitable and properly maintained?
- Are you aware of the penalties of unsafe working and driving (eg fines, prosecution, termination of contract, loss of reputation, matters being referred for criminal investigation)?

Table 9 of this document provides further information that can be used to develop this checklist. The Health and Safety Executive has also produced a useful document 'Use of Contractors: A joint responsibility' (Leaflet INDG368) [48].

5.2.1.3 Competence

Employers must ensure that those who drive for work are fit to do so and safe for themselves and other road users. They must ensure employees are aware of the dangers of driving while fatigued and receive sufficient information (eg fatigue policy, how to report issues) and training for this to be the case [4].

The earliest point at which safe driving can be raised as an issue is at the recruitment and selection stage. This is relevant at both driver and manager levels. Safe driving can be included in job descriptions and discussed in job interviews where the job involves significant amounts of driving [3]. This may also include assessments of an applicant's previous experience, including their driver record, insurance credentials and medical examinations related to fitness to drive [3].

Fatigue management information and training is not only relevant to new employees, but also existing employees who drive for work, those who move into positions that involve significant driving and employees with responsibility for the design of work schedules and driver safety. There are a variety of direct and indirect means by which this can be achieved:

- Direct: workshops, staff briefings, toolbox talks, driver training, refresher training, appraisals
- Indirect: placing fleet safety information in safety manual, driver handbooks, company newsletters, notice boards, posters, websites and emails

Research suggests an advantage in combining different approaches to achieve maximum impact [3].

It is suggested employers, and those who procure sub-contracted labour, remind drivers of the following:

- Legal responsibilities
- The prevalence of fatigue-related crashes among at-work drivers
- The distinction between fatigue and sleepiness
- The early warning signs of fatigue
- The causes of fatigue
- The impact of fatigue on driver performance
- Driver countermeasures - before and during a journey
- Company fatigue policy and reporting channels

Did you know?

RSSB has produced a summary leaflet of key fatigue risk mitigations for all staff that drive on the road for work purposes (see Appendix 2). This should be distributed to drivers and provided in new starter induction packs, and during safety briefings.

RSSB has also produced 'Driving for Work: Managing Fatigue Risks - A Guide for Road Vehicle Drivers'. This is relevant to all drivers on the road for work and includes sections on the effects of fatigue on driver performance, the early warning signs, work and non-work risk factors, legal responsibilities and practical advice for reducing fatigue risk.

RSSB has also produced RED35, a DVD to examine the issue of fatigue as it affects railway staff driving to or from work. [For more information go to Opsweb, www.opsweb.co.uk].

5.2.1.4 Consultation

Employers have a legal responsibility to consult with the workforce. This should include discussions with drivers, safety representatives, managers and, where appropriate, independent contractors and their employees. The range of matters includes identifying and assessing hazards, making decisions on how to control driver fatigue risks and the development of a fatigue policy [7].

This may be achieved via a dedicated Fatigue Management Steering Group, health and safety committee or regular scheduled safety meetings. Whatever method chosen, consultation is based on the recognition that employee input and participation improve decision-making and driver safety culture [7].

5.2.2 Fatigue risk assessments

Fatigue risk assessments for work-related driving should follow the same principles as those for any other work activity [4,35]. This should help employers identify factors that may contribute to driver fatigue and decide in a systematic manner how to manage the risks.

Principally, employers need to assess which drivers and journeys are at risk and set schedules that do not require drivers to exceed recommended driver hours and working limits [2,34]. This should cover all those who drive at work, those who drive lease, hire and fleet vehicles, company cars and vans, specific purpose-built (fleet) vehicles and owner-drivers (see table 1 above), normal working and extraordinary events. Working practices, journey schedules, appointments and routes should enable drivers to stay within the law [2]. The process is cyclical and includes the following steps:

Step 1 - Hazard identification

The first step is to undertake a comprehensive identification of fatigue hazards associated with current work-related road journeys [18]. Employers and others in the supply chain should record a list of all factors that have the potential to contribute to driver fatigue.

The process should include consideration of the following:

- Time of day and impact of the body clock on driver performance
- Shift work and roster design (eg is sufficient time allowed for rest and recovery between shifts? type of shift worked? shift regularity)
- Duration of working day (eg total work/driving time, including commuting)
- Working limits and driving hours
- Previous hours and days worked (which may have accumulated a sleep debt)
- High number of weekly driving hours

- Distance from employees' home to the point s/he books on
- Nature of task and working conditions (eg workload; inclement weather)
- Individual factors (eg health and fitness for duty, age, experience, skill)
- Organisational culture (eg job demands; time pressure)
- Vehicle engineering, safety features and ergonomics

There are many options for identifying fatigue hazards. They include:

- Reviewing actual rosters and work schedules
- Commuting information collected at booking on points (see Step 4 below)
- Occupational health records
- Driver fatigue reports and surveys
- Consulting with drivers and their safety representatives
- Accident and incident data on RTCs
- Insurance claims
- Safety audits

This information can be used to systematically categorise fatigue hazards by different groups of workers (eg long distance/regular commuters; night shift workers; occasional non safety-critical drivers).

Step 2 - Risk assessment

For each hazard identified, the next step is to consider (1) the likelihood of an event occurring, and (2) the potential consequences of the event occurring. The level of risk can then be estimated using a combination of (1) and (2) so that any actions required can be prioritised.

LIKELIHOOD	CONSEQUENCES		
	Minor (eg slight tiredness)	Moderate (eg slow reactions, reduced alertness)	Major (eg falling asleep at the wheel)
Likely			
Possible			
Unlikely			

Key:

Intolerable risk level – immediate action required

Tolerable risk level – risks must be reduced so far as is reasonably practicable

Broadly acceptable risk level – Monitor and further reduce where practicable

Table 7 Simple risk matrix

The risk assessment should be informed by knowledge of the effectiveness of existing controls. Table 8 below provides tips on factors that can increase the risk of a driver being involved in a fatigue-related accident or incident.

	LOW RISK	MEDIUM RISK	HIGH RISK
SLEEP	Driver normally gets 7-8 hours continuous sleep per night	Driver occasionally gets 7-8 hours continuous sleep per night	Driver rarely gets 7-8 hours sleep
	Driver sleeps at night in own bed	Driver occasionally sleeps at night in own bed, or always at night in overnight accommodation	Driver rarely sleeps at night and usually in overnight accommodation
BODY CLOCK	No driving during low alertness times	Some driving during low alertness times	Most driving when alertness low
TIME ON TASK	No shift working – regular hours	Predictable shift start times	Unpredictable or long shifts/consecutive duties (particularly nights and early starts)
	No long drives to, from or for work	Occasionally drives long distances to, from or for work	Regularly drives long distances to, from or for work
	All journeys planned to allow sufficient time for breaks and typical delays	Some flexibility for delays in schedule	Competing job demands and no time for delays
	Good quality breaks taken at regular intervals	Breaks only taken at beginning/end of work period	Short breaks rarely taken
NATURE OF TASK	No work-related driving	Occasionally drives for work, and particularly after long work periods on motorways	Regularly drives for work, and particularly after long work periods on motorways
INDIVIDUAL FACTORS	No evidence of sleep or health problems	Driver under treatment for sleep and/or health problems	Symptoms of an undiagnosed sleep disorder and/or other health problems
	Fatigue policy communicated and drivers aware of fatigue risks and countermeasure	Some information provided to drivers to raise awareness of fatigue	Drivers have no access to information on fatigue management

Table 8 Example driver fatigue risk assessment

Step 3 - Risk control

The next stage in the process is to eliminate or, if not possible, reduce risk so far as is reasonably practicable. As driver fatigue has multiple causes the most effective way to manage risk is to implement a combination of risk control measures. Priority should be given to the highest areas of risk (eg shift workers, long distance and high annual mileage drivers, drivers with OSA).

Typical risk controls relate to:

- The driver – competence; fitness and health
- The journey – route planning; work scheduling; journey times and distance
- The vehicle – engineering, safety, ergonomics, insurance
- The organisation – commitment to and competence in safety management

A set of principles are provided in Table 9 below which can be used to direct the approach for taking appropriate measures. They are not exhaustive, are intended as a guide and are based on the latest research and RSSB good practice guidance. The table includes consideration of risks at the organisational level.

HAZARD	RISK CONTROL
The organisation:	
Safety management system:	
Health and safety policy does not cover fatigue risk associated with work-related road driving	Extend to apply equally to all those who drive for work (see table 1).
Driver fatigue and occupational road risk is not considered as an integral part of the Safety Management System	Adopt an FRMS that is endorsed at all levels as part of the general safety culture. Ensure continuous improvement of work/driving planning arrangements and roster system (refer to RSSB Fatigue Management Good Practice Guide) [7].
Work-related driver safety does not have the visible support and commitment of senior management	Senior/accountable line managers to actively steer the process and take responsibility for progress. Managers should constantly remind workers of the rules and lead by example.
There is no consultation with the workforce and/or contractors when assessing fatigue risks and/or during the development and implementation of new control measures	Provide a mechanism for consultation with drivers, managers, safety representatives and contractors.

HAZARD	RISK CONTROL
There is no communication or cooperation between departments with links to driver safety (eg fleet, rosters, occupational health, training)	Ensure a coordinated approach to regulating driving and working time to (1) ensure permissible driving times do not inevitably lead to unacceptably high working hours, and (2) there is a joined up approach to identifying and managing driver fatigue risk.
No contingencies are in place for unplanned events (eg job overruns, emergencies)	<p>Ensure stringent procedures are in place to minimise risk for occasions where preceding levels of controls are ineffective/ exceeded (eg extra time and facilities for rest and recuperation, nominated fully rested driver, car sharing, overnight accommodation, alternative transport, checks on fitness for duty).</p> <p>Ensure that staff know what to do to minimise fatigue risk in the event of unplanned work.</p>
Driver fatigue risks are not regularly monitored	<p>Monitor the effectiveness of control measures in place and take further action where necessary to create a loop of continuous improvement.</p> <p>Record sufficient information to enable informed decisions to be made.</p> <p>Introduce activity and outcome safety performance indicators.</p>
RTCs are not fully investigated, recorded or communicated to staff to enable lessons to be learned	<p>Investigate crashes while driving for work to determine if fatigue was a contributory factor.</p> <p>Internal crash report/incident form should be completed for any vehicle driven for work and forwarded to the person responsible for investigating and taking follow up action.</p> <p>All work-related road traffic accidents and incidents must be reported in the rail industry's Safety Management Information System (SMIS).</p> <p>Representatives and employees should be involved, particularly when making recommendations to rectify the problem.</p> <p>Communicate lessons learned throughout the organisation.</p>
Roles and responsibilities for fatigue management have not been adequately defined	<p>Ensure everyone understands what is expected of them and that they have the required level of competence.</p> <p>Ensure managers take responsibility for making hotel bookings and arranging alternative transport for employees who work long hours.</p> <p>Ensure that staff at booking-on points have the necessary competence to challenge staff who are or who could become fatigued due to travel time or other issues.</p>
Responsibility for driver safety has not been extended through the supply chain	Request information from contractors/labour agencies on their fatigue risk management arrangements (eg how they monitor and control the travel and working time of all jobs that agency staff do. This should include what provision is made for overnight accommodation, etc) and should be considered prior to awarding contracts.

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HAZARD	RISK CONTROL
Company safety culture is not regularly assessed	Safety culture should be assessed on a two-yearly basis to gauge staff attitudes and perceptions towards the effectiveness of control measures in place.
The driver:	
Competence	
Drivers are unaware of the company fatigue policy and do not know what to do should they start to feel sleepy	Communicate policy to all staff, including contractors.
Drivers do not have access to fatigue management information	<p>Raise awareness / provide training on the risks of driving while fatigued. Give priority to those at highest risk (eg shift workers, high annual mileage drivers, young drivers, those with poor accident records).</p> <p>Ensure drivers understand the dangers of working/driving while fatigued.</p> <p>Ensure sufficient time and resources are allocated for driver training and awareness campaigns, including refresher training.</p>
Drivers are unaware of how to report fatigue-related issues	<p>Ensure drivers know how and feel able to report fatigue issues, without fear of negative comeback.</p> <p>Actively encourage and thank drivers for reporting fatigue-related issues.</p> <p>Respond to driver feedback.</p>
No checks are made to ensure drivers meet the required standards of skill and expertise	<p>Ensure drivers hold a valid licence for the vehicle driven and understand what is expected of them under relevant road traffic legislation.</p> <p>Ensure owner drivers' ('grey fleet') vehicles are insured for work purposes.</p> <p>Ensure professional drivers are compliant with drivers' hours rules.</p>

HAZARD	RISK CONTROL
<i>Fitness and health</i>	
<p>Fitness and health issues are putting drivers and others at risk</p>	<p>Proactively monitor driver fitness and health via questionnaires, discussions with drivers, subjective symptom checklists, as part of the annual review/performance management process, and via supportive management.</p> <p>Routinely consider excessive daytime sleepiness and OSA when assessing medical fitness.</p> <p>Arrange for the medical status of individuals involved in accidents and incidents to be assessed to exclude a sleep disorder as an underlying cause.</p> <p>Ensure drivers know not to drive while taking a course of medication that might impair their judgement.</p> <p>Encourage employees to be open about their symptoms so appropriate support can be given.</p> <p>Pay attention to the influence of personal living circumstances of drivers.</p>
<p>Drivers are at risk from Obstructive Sleep Apnoea and other health conditions</p>	<p>Consider developing a screening programme for sleep disorders, particularly Obstructive Sleep Apnoea. This could include regular, confidential driver-manager meetings on the issue, particularly for new recruits.</p> <p>An RSSB screening questionnaire tailored to rail workers has been developed and validated and is considered an effective means for the initial identification of individuals who may be suffering from undiagnosed sleep apnoea.</p> <p>Raise awareness of sleep disorders, the symptoms and treatment available.</p> <p>Ensure drivers of heavy vehicles (for which there are legal requirements) have the appropriate medical certification.</p>
<p>Drivers do not know how to access professional support and advice in the event of concerns that may increase their fatigue risk</p>	<p>Provide access to confidential occupational health services and supportive management.</p>

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HAZARD	RISK CONTROL
Support mechanisms are not in place in the event of an incident	Make provision for staff to receive support via occupational health, professional counselling and/or buddy system.
The vehicle:	
No account is taken of which vehicles are fit for purpose	<p>Take account of which vehicles are best for driving before purchasing new or replacement vehicles. This should include ergonomic considerations (eg appropriate seating), safety features (eg cruise control, seat belts) and the impact they can they have on driver health and safety.</p> <p>Check requirements for tachographs on vehicles and that drivers are not putting themselves and others at risk by violating the rules.</p> <p>Review decisions for whether or not to have tachographs on SRS vehicles.</p> <p>Gather the views of drivers on the safety and suitability of vehicles.</p> <p>Provide drivers with information on vehicle and driving safety that will help them reduce risks.</p>
The journey:	
Routes:	
Drivers travel long distances on monotonous roads (eg motorways) following long shifts	Avoid long journeys on monotonous roads after long working hours, particularly following a night shift.
The 'safest' routes are not specified	Plan routes to avoid hazards such as road works and accident 'hot spots'.
Scheduling:	
Drivers are required to drive long distances during the natural dip in alertness when fatigue-related accidents are at their highest	<p>Take time of day/circadian effects into account. Driving between 2am-6am should be avoided unless absolutely essential. Be aware that people are also generally more sleepy between 2pm-4pm – if drivers must drive at these times they should be adequately rested.</p> <p>Reduce permissible driving hours at night to avoid circadian troughs.</p> <p>Actively discourage driving at night where reasonably practicable.</p>
The human need for rest and sufficient night time rest is not taken into account when scheduling work	<p>Daily rest:</p> <ul style="list-style-type: none"> • Provide the opportunity for a minimum of 7-8 hours of sleep plus time for food and hygiene. 11 hours minimum is suggested although evidence that sleep starts to be negatively affected if daily rest is less than 12-14 hours should be noted.
<i>Continued on next page</i>	

HAZARD	RISK CONTROL
<p><i>Continued</i></p>	<ul style="list-style-type: none"> • For shift workers, hours worked per turn of duty should vary according to type of shift worked (day shift - 12hrs; nights and early shifts - 10 hours; shifts starting before 5am - 8 hours) [7] • For shift workers, a 12 hour minimum rest period between booking off from a turn of duty to booking on for the next turn is recommended. This should be extended to 14 hours between consecutive night shifts [7] • Control door-to-door travel time to cover work on site and return travel to home/lodgings. Some companies use a 14-hour door-to-door maximum. However even following a single shift, particularly a night shift, this is likely to lead to excessive fatigue and an employee being unfit to drive home and should only be used in exceptional circumstances • Ensure all staff are able to take regular, good quality breaks away from work-related activity • Take account of the demands and nature of non-driving activities in those who drive to and from work (eg mental workload; loading and unloading vehicles) • Monitor and control total working and driving hours within recommended safe limits and legal requirements <p>Weekly rest:</p> <ul style="list-style-type: none"> • For shift workers and for those whose main job is driving, reduce the permissible driving time to bring total working time within recommended limits (eg one reference point is to limit the total weekly maximum working time to 55 hours) [7, 12] • Make provision for two nights sleep at home to ensure next work period does not start with substantial sleep debt. For reasonably regular daytime work this indicates a 36 hour minimum period [5] • Where work is irregular or includes night working or an early start, 48 hours over two consecutive days is recommended. When changing from nights to early shifts, a minimum 43 hours rest should be provided [7] • Build regular work-free weekends into the roster • Minimise rest day working <p>Review shift work arrangements against RSSB and good practice recommendations for the number of consecutive shifts to be worked before a rest day: days (including mixed patterns) - 6; nights (where nights exceed 8 hours) - 3; early (starts before 5am) – 5 [7].</p>

5. MANAGING FATIGUE

HAZARD	RISK CONTROL
Commuting schedules/road journeys to (remote) work locations are not optimised to minimise the need to drive and unnecessary on-road exposure	<p>Car/vehicle pooling³ can be used for road users who commute along the same routes. Software packages exist to help companies establish a car pooling scheme.</p> <p>Provide shuttle services to work sites.</p> <p>Establish an information network to help employees get involved in car pooling (eg via company intranet).</p> <p>Consolidate road journeys with the use of public transport where practical.</p>
Drivers work irregular/unpredictable hours	<p>Provide notice and predictability in work schedules/roster patterns to preserve regularity in the 24-hour cycle.</p> <p>For shift workers, use the principle of forward rotation (eg next shift starts later than the last).</p>
Remote communications are not considered for use as a substitute for road journeys	Consider where telephone/video conferencing, or email can be used as an alternative to road journeys to reduce the number of journeys, where reasonably practicable.
Time:	
Journey times do not allow for adequate rest breaks.	<p>The Highway Code recommends drivers take a 15 minute break every two hours.</p> <p>Plan rest breaks and rest locations in advance of long road journeys.</p> <p>Ensure drivers are aware of the benefits of the most effective temporary countermeasures to fatigue when driving (eg stopping the car in a safe location; caffeine combined with a 15-20 minute nap) [28,29,30,31].</p>
Journey times do not take account of road types and traffic conditions	<p>Allocate sufficient time for common delays. Take account of road type (eg urban road/motorway) and traffic densities (eg time journeys to avoid peak traffic hours).</p> <p>Use journey planners to direct drivers along the most efficient routes. These can be linked to technologies used for scheduling of shifts and linked to managing fatigue [13]. Some satellite navigation applications (SatNavs) and journey planners already take into account school times during peak hours.</p> <p>Display real time information about congestion and accidents on company intranet or screens in the workplace.</p>

³ The Department of Transport has established a National Business Travel Network of over 4000 organisations to share good practice and promote the idea of travel planning - tailored, practical measures to reduce fleet risks and operational costs associated with work-related travel through the use of better alternative travel choices, such as car share schemes, shuttle services between train station and place of work, travel plan networks with other employers, etc [16].

HAZARD	RISK CONTROL
<p>Company policy puts drivers under pressure and encourages unnecessary risk taking to meet agreed arrival times</p>	<p>Avoid unrealistic work/delivery schedules.</p> <p>Introduce buffer times in the supply chain to relieve drivers from time pressure.</p> <p>Do not put pressure on a driver to continue driving when they have notified employer they are too tired.</p> <p>Establish schedules that allow drivers enough time to obey speed limits.</p>
<p>Distance:</p>	
<p>Journeys are not planned to ensure they are not so long as to contribute to fatigue</p>	<p>When requiring employees to drive to/from a location for a work task, set acceptable in-house maximum driving distances which drivers should not be expected to exceed in a day/week/month/year. This should be done in consultation with employees/representatives.</p> <p>For shift workers, where travel to and from site is likely to take more than 1.5 hours each way make arrangements to provide transport or overnight accommodation.</p> <p>For staff working 12-hour rostered shifts, where travel to and from site is likely to take more than one hour each way, make arrangements to provide transport or overnight accommodation.</p> <p>At the end of a work period at a remote location, following the night shift and for those working irregular hours, provide alternative transport or make provision for employees to stay overnight so they do not have to drive fatigued.</p> <p>Ask staff working on remote sites to travel the night before and stay overnight.</p> <p>Support with clear policies that allow staff to take overnight stops, use alternative transport or share driving.</p> <p>When setting driving limits, use time limits not mileage as the latter makes no allowance for congestion, road works, etc.</p> <p>Managers should be responsible for making hotel booking arrangements for employees who work long hours.</p> <p>Use good practice in selection of facilities for drivers when away from home base.</p> <p>Use free internet journey planning sites to ensure journeys and sleeping arrangements are realistic.</p> <p>Eliminate long road journeys or reduce them by combining with other modes of transport.</p> <p>Use multi-modal door-to-door journey planners.</p>

HAZARD	RISK CONTROL
The geographical distance from a work sites is not taken into consideration by contractors	Look at contractor responsibilities/what client organisations demand. Work should be specified and planned so that contract staff do not work excessive shift lengths, including the time spent driving to and from work. This should be written into the contract.
Weather conditions:	
Weather conditions are not taken into consideration when planning journeys	Allocate sufficient time to allow for poor weather and seasonality (eg travel during hours of darkness).
There are no contingencies in place in the event of adverse weather.	Put arrangements in place to ensure drivers are not required to drive long distances in adverse weather. Select a safer mode of travel (eg taxi, rail).
Staff feel pressurised to complete journeys in exceptionally difficult weather conditions	Ensure staff feel able to postpone journeys/change routes if police advise against road travel due to weather conditions. Actively discourage driving in adverse weather conditions, particularly fog, very high winds, ice, snow, flooding.
Drivers are unaware of company procedures when adverse weather causes a journey to be cancelled	Communicate reporting procedures to all staff in the event that a journey needs to be cancelled.

Table 9 Tips for identifying fatigue hazards and implementing controls

Step 4 - Evaluation

The fourth step is to monitor the control measures put in place to ensure that the driving element of work takes account of the jobs employees do and does not increase fatigue risk. It provides the opportunity to evaluate how effectively the FRMS is reducing risk, the impact of new journeys/jobs, and identify any new problems and changes over time [18]. Where new risks are identified it will be necessary to go back to step one and channel resources so that new or modified control measures can be introduced accordingly (eg in-house work/driving limits, FRMS policy objectives) [18].

On-going performance monitoring allows significant achievements to be identified. Positive outcomes can also contribute to motivating staff. If the organisation is large enough to have meaningful data, there is also the opportunity for benchmarking with similar organisations. In the case of smaller organisations, the data can be compared with industry averages provided by government/safety bodies.

Safety performance indicators across a number of different areas that influence driver fatigue risk can be introduced. Examples include the following 'activity' (eg before things go wrong) and 'outcome' (eg after things go wrong) performance measures:

- Employee - driving violations, insurance claims, sickness levels, shift pattern, total driving/working hours, health/well being checks, staff turnover, job satisfaction, driver feedback on fatigue issues

- Journey – types of journeys made, mode of travel to work, miles travelled, high risk locations on regular routes
- Vehicles - insurance claims per vehicle type, number/type/severity of collisions, vehicle costs (repair, increased insurance excess and premiums)
- Business environment - budget for driver fatigue training, staff resources, number of road safety meetings, safety culture survey results
- Incidents – fatigue as a contributor to RTCs, number of near misses/incidents by week/month/miles travelled, incident location, cost of incidents, involvement of third parties, number of incident free days

Information should also be collected to monitor fatigue risks associated with commuting. For those driving to fixed sites who sleep at home this should be straightforward. For staff who travel to different work sites and/or stay in lodgings due to the distance from home (eg infrastructure maintenance staff), information can be gathered at site access points as part of the booking on process [15]. For example:

- Location of sleep before shift (eg postcode, town of lodgings)
- Time of departure from above location
- Mode of travel to site and name of driver
- Shift start and end time
- Location (eg postcode, town of lodgings) where they will sleep following shift
- Mode of travel back from site and name of driver
- Time of arrival at sleeping location

Records should be kept of the process for review and audit purposes, including decisions reached and actions taken.

Did you know?

Many tools are available to assist in the assessment of risk factors associated with the driver and work schedules. Examples include:

- HSE's Fatigue Risk Index - used to assess the risks arising from fatigue associated with different shift work patterns [7];
- The Driver Risk Index (developed by Cranfield University) - a validated tool to identify crash involvement risk from a behavioural perspective [32];
- Online interactive Risk Assessment tool (OiRA) - a free web application to assist small organisations identify and evaluate workplace risks and implement preventative actions [33]

5.2.3 Reviewing performance

The FRMS should be reviewed at least annually and more regularly for large fleets or organisations that have high levels of work-related driving. Where a fatigue committee or fleet safety group exists, a review of the programme should be on the agenda. This is to ensure control measures in place comply with current legislation, operational requirements, shift/work/driving arrangements and good practice guidelines.

Issues such as fatigue-related incidents require immediate response. Other review 'triggers' include: feedback from staff on fatigue and driver safety, and where work or driving limits are consistently exceeded.

The review should use information collected as part of the risk evaluation process. It should include analysis of fatigue-related RTCs and near misses to assess whether performance is improving.

Learning outcomes should be reported and communicated to staff.

6. CRITICAL SUCCESS FACTORS

Research has demonstrated that a strong safety culture in an organisation can have a significant influence on behaviour whilst driving for work and the success of approaches to managing fatigue risk [8]. For example, it can motivate drivers to drive safely and to comply with safety systems put in place.

Safety culture refers to the product of individual and group attitudes, values, perceptions and beliefs towards safety and patterns of behaviour that determine an organisation's style of and proficiency in health and safety management [13]. Features of a strong safety culture that can benefit fleet safety and have a positive impact on driver attitudes and behaviours, include:

- The integration of driver safety culture throughout the organisation – eg driver safety is considered as part of the recruitment process to emphasise an organisation's approach to fleet safety
- The creation of a continuous cycle of improvement – eg via the monitoring of safety targets
- Work-related driver safety is considered part of the overall safety effort
- Resources for work-related driver safety are allocated to reflect the level of risk exposure
- Management emphasises the importance of control measures put in place
- Unsafe driving behaviour is challenged and unsafe situations are reported without fear of recrimination. Sanctions are in place to address unsafe driver behaviour, commensurate with the nature/impact of the act, and there is recognition of safe driving behaviour
- Fatigue reporting channels are in place for drivers to raise safety concerns
- Accidents and incidents are thoroughly investigated and reported
- Clear company procedures and guidelines regarding safe driving behaviour are in place
- Recognition that incidents have multiple causes and a focus on learning from unsafe, underlying conditions responsible for an event
- Employers and employees share a positive view of the importance and usefulness of work structures, safety policies and procedures around work-related driving and recognise their shared responsibilities
- Employees buy-in to, support and are aware of the rationale behind new work initiatives designed to manage driver fatigue
- Senior management shows visible commitment and leadership – eg to the development and implementation of the driver fatigue policy; decision-making that benefits fleet safety
- Senior and line managers lead by example
- Somebody actively steers the process and takes responsibility for progress
- Feedback on crashes is used to increase awareness of the problem of driver fatigue
- Peer-to-peer debriefs following incidents
- Fatigue management education and training is provided as part of a progressive learning cycle

Department for Transport research has demonstrated that companies who have addressed the

6. CRITICAL SUCCESS FACTORS

attitudes to risk of all employees (not just those who drive for company business) have been the most successful in reducing incidents and changing road safety behaviour [8]. This can be achieved by increasing awareness and involvement in the risk assessment process and through effective consultation.

Research has also shown that companies with 'clear driving standards and rules, excellent driver training and a policy to report and try and learn from all driving incidents' show the lowest accident rates and the highest positive scores on a driver attitude scale [8]. In contrast, the same research showed that the company with 'no formal driver training, unclear rules/reporting requirements and relatively ineffective lines of communication' had the most negative driver attitudes and the worst accident rate [8].

Time pressure, attitudes to road safety risk and driver behaviour, lack of appropriate guidance and inaccurate data are all barriers to the development of an effective driver safety culture [8]. But increasing the time spent on driver risk reduction and promoting a sound work-related driver health and safety culture can reduce the chance of staff being involved in a RTC, the associated costs and may well spill over into private driving [8].

7. FATIGUE MANAGEMENT CHECKLIST

The checklist below is designed to assist employers and others in the supply chain identify areas to be addressed to manage road vehicle driver fatigue risks. **It is to be used as a guide only.** It summarises basic fatigue management arrangements that should be in place. It does not include a comprehensive list of all potential issues a company might face under the law.

CHECKLIST	YES	NO	REASONS
Is there a Fatigue Policy in place that covers work-related road driving?			
Is there top-level, visible commitment to work-related road safety?			
Are roles and responsibilities for managing fatigue risks understood by all?			
Do drivers, schedulers and managers have the knowledge and skills to practice effective control of fatigue risks?			
Is continuous fatigue management information and training provided to staff with responsibilities for managing fatigue?			
Are driver fitness and health issues proactively managed?			
Do suppliers demonstrate their control of road driver fatigue risks prior to contracts being awarded?			
Is the workforce consulted on the management of fatigue risks?			
Are road driver fatigue risk assessments an integral part of the safety management system?			
Is sufficient daily and weekly rest taken into consideration when designing work schedules?			
Are drivers regularly required to drive during peak fatigue times (2am-6am and 2pm-4pm)?			
Are drivers required to travel long distances before or after long shifts?			

7. SUMMARY ROAD DRIVER FATIGUE MANAGEMENT CHECKLIST

CHECKLIST	YES	NO	REASONS
Are clear procedures in place for the provision of overnight accommodation, alternative transport, or a well-rested relief driver where necessary?			
Do work schedules allow sufficient time for road vehicle drivers to take adequate breaks?			
Do journey times take into account common delays?			
Have the demands and nature of non-driving activities in those who drive to and from work been taken into account?			
Have acceptable in-house maximum road driving distances been set in consultation with the workforce?			
Are the regulations on daily and weekly driving hours complied with?			
Are road journeys safely routed?			
Are unnecessary road journeys eliminated?			
Do road journeys take sufficient account of adverse weather conditions?			
Are vehicles fit for purpose?			
Are shuttle services and/or car/vehicle pooling used by road users to travel the same routes?			
Are fatigue controls regularly monitored and reviewed?			
Are stringent procedures in place to minimise risk when preceding fatigue risk controls are exceeded/ineffective?			
Are drivers easily and without judgement able to report fatigue issues?			

CHECKLIST	YES	NO	REASONS
Are all RTCs investigated to determine if fatigue was a contributory factor?			
Is sufficient RTC information recorded to distinguish between travel to/from work and regular commuting?			
Are all RTCs involving staff travelling on the road for work reported into SMIS?			
Are lessons learned following an RTC communicated to all staff as part of the continuous improvement process?			

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USEFUL WEBSITES

Automobile Association - <http://www.theaa.com>

Brake road safety charity - <http://www.brake.org.uk>

Department for Transport - <http://www.dft.gov.uk/>

Driver and Vehicle Licensing Agency - <http://www.dvla.gov.uk/>

Health and Safety Executive - <http://www.hse.gov.uk/workplacetransport>

Institution of Occupational Safety and Health - <http://www.iosh.co.uk/>

Occupational Road Safety Alliance - www.orsa.org.uk/index.htm

Opsweb - <http://opsweb.co.uk/login/>

Royal Society for the Prevention of Accidents - <http://www.rospa.com>

Transport Research Laboratory - <http://www.trl.co.uk>

Trade Union Congress - <http://www.tuc.org.uk>

www.drivingforbetterbusiness.com (UK) - Government-funded campaign to promote best practice in fleet safety

www.fleetsafe.org (international) - run by a consortium of agencies, it promotes responsible fleet operation in the developing world

www.irtec.org.uk - includes details of the IRTEC Licensing Scheme, a qualification of safety and competence in maintenance and repair of commercial vehicles

www.cdc.gov/niosh/ - USA's National Institute for Occupational Safety and Health. Holds conferences on, and promotes, fleet safety

<http://www.vicroads.vic.gov.au/saferdriving> - online 'Safer Driving Kit' for companies by VicRoads, the government agency for transport in Victoria, Australia

www.transportforqualityoflife.com - publisher of useful titles including 'Car Sick: Solutions for our Car-Addicted Culture' by Lynn Sloman which includes case studies of companies that have taken part in initiatives such as car-sharing and transport plans

APPENDIX 1 - UK AND EU DRIVERS' HOURS RULES

Drivers' Hours Rules

In the UK, the work and driving hours of goods and passenger vehicle drivers are regulated using a number of complementary sets of Hours of Work Limitations. Their purpose is to maintain safety standards, specify maximum driving times, the frequency of breaks and minimum rest periods.

European Union Drivers' Hours Rules and Regulations apply to LGV drivers (for goods vehicles that exceed 3.5 tonnes) based in the UK, while they are driving both in the UK and in the European Union. Passenger vehicles carrying more than nine people are also subject to the EU Drivers' Hours Rules, while 'domestic rules' apply to drivers of most other goods and passenger vehicles when they are in the UK.

It is the employer's and driver's responsibility to comply with the driver's hours and Tachograph Regulations. The rules are summarised below:

- *Goods vehicles <3.5 tonnes*

For goods vehicles of less than 3.5 tonnes, which are operated entirely within the GB the following GB rules on domestic driving limits apply:

Daily driving: From the start of duty time, the maximum amount of driving permitted in any working day is 10 hours.

Daily duty: Where an employee is required to drive for more than 4 hours during the working day, the maximum length of duty permitted (whether driving or otherwise) is 11 hours, not including rest or breaks. A driver is exempt from the daily duty limit on days when they do not drive, and/or they drive for less than 4 hours on each day of the week.

Record keeping: Daily records of hours of work using either a log book or tachograph are required by law for that day if:

- The driver is driving a vehicle that is within the scope of operator licensing, and
- The driver drives for more than 4 hours on the day, or, the driver drives outside a 50km radius of the vehicle's operating centre on the day

Where no records are required by law for that day, it is recommended that records are maintained for safety management purposes.

- *Goods vehicles >3.5 tonnes*

For goods vehicles greater than 3.5 tonnes, that are operated entirely within the GB, the EU rules apply for the whole of that day. This requires compliance with EU law on daily and weekly driving limits, breaks and rest periods and the rules are summarised in the table on the following page:

Breaks from driving	A break of no less than 45 minutes must be taken after no more than 4.5 hours of driving. The break can be divided into 2 periods - the first at least 15 minutes long and the second at least 30 minutes - taken over the 4.5 hours.
Daily driving	Maximum of 9 hours, extendable to 10 hours no more than twice a week.
Weekly driving	Maximum of 56 hours.
Two-weekly driving	Maximum of 90 hours in any two-week period.
Daily rest	Minimum of 11 hours, which can be reduced to a minimum of 9 hours no more than 3 times between weekly rests. May be taken in 2 periods, the first at least 3 hours long and the second at least 9 hours long. The rest must be completed within 24 hours of the end of the last daily or weekly rest period.
Multi-manning daily rest	A 9 hour daily rest must be taken within a period of 30 hours that starts from the end of the last daily or weekly rest period. For the first hour of multi-manning, the presence of another driver is optional, but for the remaining time it is compulsory.
Ferry/train daily rest	A regular rest period (of at least 11 hours) may be interrupted no more than twice by other activities of not more than 1 hour's duration in total, provided that the driver is accompanying a vehicle that is travelling by ferry or train and has access to a bunk or couchette.
Weekly rest	A regular weekly rest of at least 45 hours, or a reduced weekly rest of at least 24 hours, must be started no later than the end of 6 consecutive 24-hour periods from the end of the last weekly rest. In any 2 consecutive weeks a driver must have at least 2 weekly rests - 1 of which must be at least 45 hours long. A weekly rest that falls across 2 weeks may be counted in either week but not in both. Any reductions must be compensated in 1 block by an equivalent rest added to another rest period of at least 9 hours before the end of the third week following the week in question.

The EU drivers' hours rules do not place any specific limits on overall working time. Therefore the regulations are supplemented by The Road Transport (Working Time) Regulations (2005) which specific minimum requirements with regard to the organisation of working time for all persons performing mobile road transport activities, including self-employed drivers, who operate on vehicles which are subject to the European drivers' hours rules. A 'mobile worker' is defined as any worker forming part of the travelling staff (typically drivers and vehicle crew, but also trainees and apprentices) who is in the service of an undertaking which operates road transport services for passengers or the movement of goods.

Under the Regulations, "working time" for mobile workers must not exceed:

- An average 48 hour week (normally calculated over a 4 month reference period);
- 60 hours in any single week;
- 10 hours in any 24 hour period, if working at night

Working time includes activities such as driving, loading, unloading, cleaning and technical maintenance, assisting passenger boarding, disembarking the vehicle. The directive also entails break requirements (maximum 6 consecutive working hours without breaks) and extends rest time provisions of the EU drivers' hours rules to crew members on in-scope vehicles.

Drivers subject to the EU drivers' hours rules are required by law to record drivers' activities (including the vehicle's speed, distance and time) using an approved tachograph.

Adapted from: Rules on Drivers' Hours and Tachographs. Goods vehicles in GB and Europe. Vehicle & Operator Services Agency [38]

APPENDIX 2 - 'FATIGUE KILLS' LEAFLET

Appendix 2 can be found on p57-58.

During a journey

- Take regular breaks - the Government advice recommends you take a break at least every two hours for at least 15 minutes **or sooner if you feel tired**. Ensure you use your breaks to relax, not to carry out other work.
- Share the driving if possible.
- Stay hydrated and eat sensibly throughout the journey.
- Keep the vehicle well ventilated and at a comfortable temperature.
- Poor concentration, repeated yawning, heavy eyelids, head drooping, restlessness, boredom, lane drifting, poor speed or steering control, slower reactions – these are symptoms of a microsleep. You need to stop driving long before you reach the point of being at risk of falling asleep at the wheel.
- If you start to feel sleepy get off the road as soon as possible and find somewhere safe to stop (not on the hard shoulder).
- The ideal activity when fatigue is experienced is a proper sleep. But drinking two cups of strong coffee, or a high caffeine drink, followed by a nap no longer than 20 minutes is an effective **emergency** countermeasure to fatigue that will help get you to a safe place where you can get proper sleep. Caffeine takes about 20 minutes to take effect. This is time for a short nap. You should allow time to get over the groggy sensation on waking up from a nap. A nap of no more than 20 minutes will minimise this.
- If you are still tired, do not drive on.
- Fatigue will return if you do not stop driving in a fairly short period of time.
- Do not rely on opening the window, turning up air conditioning, listening to radio or music, or conversation to keep you awake – these are **not** effective countermeasures to fatigue.
- Stay calm and relaxed while driving.

The law

If you kill someone when tired behind the wheel, you may be charged with causing death by dangerous driving, which has a maximum penalty of 14 years in prison.

RESPONSIBILITIES OF YOUR EMPLOYER

- Your employer has a duty of care to ensure that you are fully alert when driving as part of your work. This means ensuring that your schedules are well planned and sensibly routed, with adequate time for rest breaks. They should also check if drivers take medicinal drugs that can affect alertness, and provide information on symptoms of sleep disorders.
- They must comply with regulations on daily and weekly driving hours. However, following these regulations is not enough to prevent driver fatigue.
- Make provision for alternative transport, overnight accommodation for potentially fatigued drivers, or a well-rested relief driver where necessary.
- Ensure that you can easily and without judgement report fatigue issues.
- Provide you with relevant driver fatigue management information.
- Company managers can be prosecuted under health and safety or general criminal law for failing to exercise their 'duty of care'.

In the event of an emergency or need to report a fatigue-related issue, contact:

(Write in company details in the above box)



FATIGUE KILLS

DO NOT PUT YOUR LIFE OR THE LIFE OF OTHERS AT RISK

DO NOT DRIVE IF YOU ARE SLEEPY - YOU MAY NEVER ARRIVE AT YOUR DESTINATION, OR FACE OTHER CONSEQUENCES

Every week around 200 road deaths and serious injuries involve someone using the road for work purposes. It is estimated that driver fatigue may be a factor in up to 20% of all road accidents and up to a quarter of fatal and serious accidents. Please read the tips within this leaflet that will help you avoid the dangers of fatigue to ensure you have a safe journey.

‘FOR THE MAJORITY OF PEOPLE, THE MOST DANGEROUS THING THEY DO WHILE AT WORK IS DRIVE ON THE PUBLIC HIGHWAY’

(ROYAL SOCIETY FOR THE PREVENTION OF ACCIDENTS)

Factors that can contribute to increased fatigue¹:

Work factors

- Time of day and impact of body clock
- Shift work and roster design
- Length of working day (including travel time, eg long journeys home after long working hours)
- Inadequate rest breaks
- Previous hours and days worked (eg reduced opportunity for sleep and recovery)
- Nature of task and working conditions (eg long journeys on monotonous roads, poor weather and traffic conditions)
- Company culture (eg job demands, time pressure)
- Vehicle engineering and ergonomic design

Non-work factors

- Individual differences (eg ‘morning types’, ‘evening types’, age)
- Sleep loss/poor quality sleep (eg domestic and family circumstances, social life and second jobs)
- Sleep disorders (eg Obstructive Sleep Apnoea) and health conditions
- Medication that can cause drowsiness (be aware that some medication, particularly over-the-counter drugs, may not carry clear warnings about causing drowsiness)
- Poor driver fatigue awareness and management



RESPONSIBILITIES OF THE DRIVER

Before you set off

- Manage your sleep and alertness to ensure fitness to drive. Do not start a long trip if you are already tired.
- Avoid driving between 2am-6am, when fatigue is more of a problem, unless absolutely essential. Be aware that people are also generally more sleepy between 2pm-4pm – if you must drive at these times, make sure you are adequately rested.
- Make sure you do not have a sleep disorder or other medical condition that could affect your ability to drive safely.
- If any medication you are taking makes you drowsy, inform your employer and ensure you are not fatigued when you are driving.
- Check company provisions for overnight accommodation and alternative transport.
- Plan time for a 15 minute break every two hours of driving.
- Check for delays (www.transportdirect.info) and plan alternative routes before you set off.
- Allow time for unexpected delays, peak traffic hours and poor weather.
- Plan time for overnight rest stops if necessary.

A REST BREAK ALONE WILL NOT OVERCOME THE NEED FOR SLEEP. PROPER SLEEP IS THE ONLY REAL CURE FOR SLEEPINESS.

¹ Driving for Work: Managing Fatigue Risks – A Guide for Road Vehicle Drivers’ (RSSB, 2013)
‘Episode 35 of the RED DVD series produced by RSSB is dedicated to the issue of fatigue and how it affects railway staff driving on the road for work.’

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