Driving for Work: Managing Fatigue Risks
A Guide for Road Vehicle Drivers and their Managers
A GUIDE FOR ROAD VEHICLE DRIVERS

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WHY YOU NEED TO READ THIS GUIDE

Driver fatigue is a serious problem that results in thousands of serious injuries and deaths on Britain’s roads every year. It is estimated that fatigue may be a factor in up to 20% of all road accidents and up to a quarter of fatal and serious accidents (Department for Transport, 2011).

Every week around 200 road deaths and serious injuries involve someone using the road for work purposes (The Royal Society for the Prevention of Accidents). Around 40% of sleep-related accidents involve drivers of commercial vehicles (Department for Transport, 2010). Long working hours, irregular shifts, work schedules and night time driving are factors that increase crash risk. Business drivers with high work-related mileage have over 50% more injury accidents than non-business road drivers (RAC) as they are more likely to drive in fatiguing situations – long journeys, under time pressure and after long working hours.

In the rail industry, work-related road traffic accidents and incidents and CIRAS staff reports show that many workers are exposed to similar crash risk factors. Thousands of rail staff drive road vehicles as part of their daily work activities. This includes those whose main job is driving (to transport goods, colleagues or passengers) and those who travel long distances to and from work sites, potentially all over the UK, early in the day or late at night to carry out their primary job activities.

DO NOT CONTINUE TO DRIVE IF YOU FEEL SLEEPY

Employers have a duty under health and safety law to assess and manage fatigue risk involved in their staff’s use of the road for work purposes, whether in company provided vehicles, lease and hire vehicles or private vehicles.

Drivers share a responsibility to tackle the demands of fatigue at work and to plan non-work time to ensure fitness to drive. This guide will help you achieve this.

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

This guide uses images from edition 35 of the RED DVD series: (produced by Opsweb - http://opsweb.co.uk/login/) which is dedicated to managing fatigue risk.
PURPOSE AND SCOPE

Driver fatigue can have a devastating impact on you, your livelihood, your passengers and other road users. You need to understand what causes driver fatigue, how to recognise the warning signs and what you need to do to reduce the risks.

This guide will enable you to work together with your employer to improve your safety while on the road for work.

It includes sections on:

- The effects of fatigue on driver performance and how to recognise the early warning signs
- Work and non-work factors that can put you at a significantly higher risk of a fatigue-related road traffic accident
- Legal responsibilities of employer and employee
- Practical advice for reducing fatigue risk

This information supplements existing fatigue guidance produced by and available from RSSB and is based on the latest scientific research and information from road safety organisations.

It is relevant to all drivers on the road for work. This includes:

- Those who drive in the course of their work for whom driving is not the main work activity (eg contractor engineering and track workers, rail industry safety critical staff, managers and shift workers)
- Those whose main job is driving (eg drivers of goods and passenger vehicles)
- Those who may only drive occasionally or as a result of disruption
- Drivers of privately-owned vehicles
- Drivers of lease, hire, fleet and specific purpose-built vehicles provided by an employer
EFFECTS OF FATIGUE ON DRIVER PERFORMANCE

**Driving is a complex task that relies on sustained concentration and skill for safe performance**

Fatigue is a major safety hazard but it is on the roads that it causes the most injuries and fatalities worldwide. This is due to the serious impact it has on the critical skills required for safe driving.

It is often thought that driver fatigue means falling asleep at the wheel. But fatigue can affect your ability to control a vehicle safely long before you ‘nod off’.

Fatigue is a slow, progressive state which increases in a corresponding fashion to time-on-task (eg period of driving, length of work activity).

**Loss of alertness** is an early sign of fatigue. This can affect your decision making, reaction times, vigilance, memory, concentration and judgement of your own fatigue levels. It can also affect your mood causing you to overreact to the road situation around you. **As a result you will be slower to interpret and respond to the traffic situation.** You may miss danger signals or road exits and become far less efficient in controlling your vehicle.

Mental and physical fatigue can be overcome by effective scheduling of rest breaks and recovery sleep between work periods. But the extent to which a driver recovers depends on:

- The amount of sleep obtained
- The quality of that sleep
- The extent to which the sleep obtained coincides with the normal sleep/wake expectations of the internal body clock (eg during the hours of darkness)
- The conscious effort on the part of a driver to obtain sufficient sleep

If you have not been able to obtain the sleep you need and as waking time increases, you will experience **drowsy driving**. This means feeling sleepy, but not actually being asleep. It can cause you to drift in and out of sleep, without any awareness of having done so. These brief, involuntary episodes of sleep are known as microsleeps. They can 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. This distance is great enough to cross three lanes of traffic and veer off on to an embankment, road or railway track.

Image courtesy of RED 35
In extreme cases when the loss of sleep has been allowed to build up, a driver will fall asleep at the wheel. The risk of death or serious injury to a driver and passenger in a fatigue-related crash is about 50% higher than in collisions caused by other factors. This is due to the speed of collision and absence of any braking or avoidance action on the part of the driver.

There is a degree of warning before extreme sleepiness occurs. The early warning signs are:

**Table 1 Early warning signs of fatigue**

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>Driving performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Difficulty concentrating</td>
<td>• Poor speed control</td>
</tr>
<tr>
<td>• Repeated yawning</td>
<td>• Increased drifting within a lane,</td>
</tr>
<tr>
<td>• Heavy eyelids/tired eyes</td>
<td>crossing the road centre line or side line, late</td>
</tr>
<tr>
<td>• Eyes begin to roll</td>
<td>corrections</td>
</tr>
<tr>
<td>• Neck muscles relax (head drooping)</td>
<td>• Slower reaction time to braking lights and traffic</td>
</tr>
<tr>
<td>• Restlessness</td>
<td>signals</td>
</tr>
<tr>
<td>• Boredom</td>
<td>• Poor avoidance of hazards</td>
</tr>
<tr>
<td></td>
<td>• Poor steering control</td>
</tr>
<tr>
<td></td>
<td>• Underestimation of own level of impairment</td>
</tr>
<tr>
<td></td>
<td>• Reduced capacity to respond</td>
</tr>
<tr>
<td></td>
<td>• Choosing to ignore the risk (eg due to work factors,</td>
</tr>
<tr>
<td></td>
<td>management pressure, journey goals, such as rushing</td>
</tr>
<tr>
<td></td>
<td>to get home, and the outcomes of previous journeys</td>
</tr>
<tr>
<td></td>
<td>made when fatigued that can influence sleepy driving</td>
</tr>
<tr>
<td></td>
<td>behaviour)</td>
</tr>
</tbody>
</table>

Fatigue can have a similar effect to alcohol on driving performance. Research has found that after two hours of driving drivers make similar mistakes to someone with 0.05% blood alcohol content. This is more than half the UK legal drink drive limit.
ROAD DRIVER FATIGUE RISK FACTORS

Fatigue can be caused by work or non-work factors and/or a combination of both. These can put you at an increased risk of a fatigue-related crash while on the road for work. Understanding the factors that increase the risk of fatigue will help you assess whether you are in a fit state to drive safely.

TIME OF DAY

There are two times of day when we are at our most drowsy – in the early hours of the morning – between 2am and 6am, and mid-afternoon – between 2pm and 4pm. This is due to fluctuations in the natural circadian rhythms of our internal body clock (located in the brain) that regulate how alert or sleepy we feel throughout the 24-hour day.

Driving during these periods when we are at our most sleepy increases the risk of being involved in a crash. The Royal Society for the Prevention of Accidents estimates the risk of a driver falling asleep at the wheel at 2am to be 50 times greater than at 10am. The risk is even greater if a driver has had inadequate sleep.

Our body clock is also sensitive to night and day which means people are genetically designed to sleep at night and be awake during the day. This is why sleepiness is particularly evident during night shift work, and why night shift workers are at an increased risk of a road traffic accident on the return journey home.

The effect of time of day on driver performance can be biologically influenced by whether a person experiences peak alertness and activity in the morning (‘morning types’ or ‘larks’) or later in the day (‘evening types’ or ‘owls’). RSSB research into fatigue and shift work issues among train drivers and contract track workers found considerable individual differences in preferences for working, and ability to cope with, different shifts (particularly nights and early starts). This can impair driving performance when travelling to early shifts and to and from night shifts.

There is also an association between peak fatigue times and age – younger drivers are more likely to fall asleep at the wheel in the early hours of the morning, older drivers during the afternoon sleepiness period.

Despite the importance of time of day effects, it is important to be aware that they are not built into legislation protecting drivers of goods and passenger vehicles (eg the EU Drivers’ Hours Rules allow drivers to drive up to 4.5 hours without a break, and can require a driver to drive when sleepy and rest when wide awake).
SLEEP LOSS

On average, individuals require between seven and eight hours of nightly sleep to feel fully rested. There are also people who require more or less than this average amount. If you get less than six hours, you are very likely to feel drowsy at work.

When you get less sleep than you need you begin to build up a sleep debt. For example, if you need eight hours sleep per day to feel sharp and well-rested, but only get six hours sleep, you will be two hours in debt. If you get less sleep than you need for a period of up to two days, this is known as acute sleep loss. As a result you will feel sleepier sooner and your performance will deteriorate faster than if you had obtained the sleep you need. Losing as little as one or two hours sleep on one occasion can affect your reaction time, decision making, eye-hand coordination, memory, mood and alertness.

If you routinely lose sleep night after night your sleep debt builds up. Each night of missed sleep magnifies the negative impact on your mental and physical performance. This is known as chronic sleep loss. Losing just two hours sleep for four nights in a row makes you almost as tired as losing a whole night’s sleep. If you do not consistently sleep for longer to make up for lost sleep and boost your average sleep time, eventually you will fall asleep involuntarily (microsleep) even if this puts you at risk (eg while driving). In the end you need a really good, long sleep to catch up.

How much sleep do you need to feel fully alert?

It is important to understand how much sleep your body needs. Track your personal sleep need over a two week period. An ideal opportunity to do this is if you take a vacation from work where you sleep in the same place and at the same time every night.

You may need to make up for lost sleep for the first few days. After this, go to bed at the same time every night. Do not use an alarm-sleep until you wake up. The amount of sleep you average over a week is likely to represent your personal sleep need.

If you do not average your personal sleep need when working you may need more or better quality sleep. Aim to get your average sleep length as close as possible to your personal sleep need.

A person who drives after 17 hours of sustained wakefulness has impaired driving skills comparable to a driver with a blood alcohol level of 0.05% (eg two glasses of wine).

The effects of sleep loss should be reduced over successive nights of good sleep.
Shift workers are at an increased risk of a fatigue-related road traffic collision due to the potential for sleep disruption and conflict with an individual’s body clock. Inadequate sleep is also a key cause of fatigue-related crashes in commercial drivers.

When working during the night alertness levels will be low because the body’s biological systems are programmed for sleep at this time. Early morning shifts may require driving through the middle of the night and beginning work at a time when alertness may be at its lowest. Attempts made to attain sleep earlier than usual to compensate for this early waking may be unsuccessful because the body is not used to sleeping at this time. It is likely that sleep will be disturbed if taken during the day if the circadian rhythm has not adapted to this sleep pattern.

Working the same shift is beneficial as long as the same sleep pattern is established during days off. However, there is normally variety in shifts worked. This may be due to unpredictable shift start times, short notice changes to shifts and ‘backward rotating’ shifts (eg where the next shift starts earlier than the previous one). This makes it difficult for shift workers to adapt to shift work, establish a regular sleep routine and can build up a ‘sleep debt’ if a worker is unable to get the sleep they need.

Sleep disorders, various health complications and certain medications are common causes of sleep loss (see page 12). Domestic and family circumstances can also cause sleep disruption, eg new baby, bereavement. Social activities and second jobs can also reduce the amount of time available for sleep.

**TIME-ON-TASK**

The length of time spent in work-related activities (driving or otherwise) increases a driver’s exposure to fatigue risks on the road. Many fatigue-related accidents occur after long working hours or on journeys home after long shifts, particularly night shifts.

Without sufficient opportunity for regular, good quality rest breaks during work and sufficient recovery between work periods, fatigue levels will accumulate and impair driving performance. The effects will be even more noticeable if driving during the natural dip in alertness levels. This is one explanation for why so many crashes occur within two hours of driving time.

The driving hours, frequency of breaks and minimum rest periods of goods and passenger vehicle drivers are strictly controlled by the UK and European Drivers’ Hours Rules. But driving time is only part of the total working time for commercial vehicle drivers. Many drivers have to spend time waiting, loading or unloading vehicles or carrying out other work duties. If the total hours on duty (eg driving and non-driving time) are included this can mean drivers work beyond the legal limits. Long working hours (during the day or night) and fast turnarounds reduce the opportunity for sleep between periods of work. These are contributory causes that explain why commercial vehicle drivers are over-represented in the road traffic accident statistics.

Drivers in the rail industry (the majority of whom are not covered by the UK and European Drivers’ Hours Rules) have to fulfil work functions beyond driving, which can already account for over 12 hours per day. This includes site workers who are often required to travel long distances before arriving at work, work a long shift, and then repeat the same journey home.
Shift duration (excluding travel time) is a key factor influencing fatigue and can mean an employee can become unfit to work safely towards the end of a shift and unable to drive home safely. Longer travel times to work can also increase fatigue levels at the start of a shift. This has obvious implications for the safety of the rail transport system and staff personal safety.

Traffic delays, overtime, disruptions and emergencies can further extend the working day and reduce the time available to get sufficient sleep and recover from long periods of work.

**DO NOT CONTINUE TO DRIVE IF YOU FEEL SLEEPY**

**TYPE OF TASK**

The effects of fatigue can be more evident on tasks that are monotonous, repetitive or demand continuous concentration. Human performance at low levels of workload is not particularly good. Work underload can impair attention and concentration, induce boredom and create a lack of motivation. This can reduce alertness, increase distraction and the potential for driver errors (eg missed stop signals).

As task demands or workload are increased the standard of our performance improves until an optimum level of workload and performance is reached. Any increase in workload after this point will impair performance. This can be due to having too many tasks to complete in the available time and a driver rushing between jobs to get the work done. At extremely high levels of workload (overload), important information may be missed (eg speed limit, motorway exits). This is due to a narrowing of attention and focus on only one aspect of the task (eg getting to a job on time).

Commercial vehicle drivers are often required to work within tight timeframes to meet operational demands. This is also true of many 'in demand' railway staff that are under pressure to travel around the country to ensure the continued running of the network.

Driving for long periods on monotonous roads, such as motorways, where there is a high level of repetition is more likely to result in a driver falling asleep at the wheel. It is estimated that fatigue accounts for 20% of all accidents on motorways.

The risks can be exacerbated by environmental factors such as road conditions (eg heavy traffic) and poor weather (eg heavy rain, fog or falling snow). The engineering and ergonomic features of vehicles (eg cruise control, seating position, temperature) can also have an impact on driver fatigue levels (eg reduce workload or have a lulling effect on a driver making them more sleepy).

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1 fatsigue and shiftwork for freight locomotive drivers and contract trackworkers: Implications for fatigue and safety. Published by RSSB at www.rssb.co.uk
HEALTH CONDITIONS

Sleep and health problems that prevent individuals getting sufficient good quality sleep can put a driver at an increased risk of a fatigue-related road traffic accident. Medication, including prescribed drugs (including some anti-depressants) and over-the-counter cold and flu remedies, pain killers and travel sickness tablets can cause drowsiness and impair driver alertness. The packaging of any medication taken should always be checked before driving to make sure alertness is not affected. If unsure, ask your pharmacist.

Obstructive sleep apnoea (OSA) is the most common sleep disorder (it is estimated that 4 in every 100 men have the condition) and is a key concern for driver safety.

OSA causes fragmented sleep due to the upper airway repeatedly collapsing and re-opening. Episodes of wakefulness are usually so short that they will not be remembered the following morning leaving the sufferer wondering why they feel so tired. The condition can cause daytime sleepiness and, in some cases, lead the sufferer to fall asleep without warning.

OSA is linked to high body mass index and a sedentary lifestyle, so an overweight driver needs to be particularly alert to the possibility of suffering from the disorder. OSA is often undiagnosed. A high prevalence of undiagnosed OSA is suspected amongst railway workers 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.

Symptoms of OSA include:

- Loud snoring
- Breathing pauses during sleep
- Short awakenings during the night - individuals with OSA can awaken 100 times in a night with no memory of these awakenings in the morning
- Excessive daytime sleepiness

Lifestyle changes, such as losing weight and cutting back on alcohol improve this condition.

RSSB research estimated that Obstructive Sleep Apnoea (OSA) is 60% more common among train drivers than the general population, putting the condition in the top 5 health issues for the railway industry.

OSA sufferers have been shown to be 7 - 12 times more likely to be involved in a road traffic accident than those without the disorder.
## SUMMARY OF DRIVER FATIGUE RISK FACTORS

The table below summarises the work and non-work factors that can put drivers at an increased risk of a sleep-related road traffic accident at work.

<table>
<thead>
<tr>
<th>Work factors</th>
<th>Non-work factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Time of day and impact of body clock</td>
<td>• Individual differences (eg ‘morning types’, ‘evening types’, age)</td>
</tr>
<tr>
<td>• Shift work and roster design</td>
<td>• Sleep loss/poor quality sleep (eg domestic and family circumstances, social life and second jobs)</td>
</tr>
<tr>
<td>• Length of working day (including travel time) (eg long journeys home after long working hours)</td>
<td>• Sleep disorders (eg Obstructive Sleep Apnoea) and health conditions</td>
</tr>
<tr>
<td>• Inadequate rest breaks</td>
<td>• Medication than can cause drowsiness</td>
</tr>
<tr>
<td>• Previous hours and days worked (eg reduced opportunity for sleep and recovery)</td>
<td>• Poor driver fatigue awareness and management</td>
</tr>
<tr>
<td>• Nature of task and working conditions (eg long journeys on monotonous roads, poor weather and traffic conditions)</td>
<td></td>
</tr>
<tr>
<td>• Company culture (eg job demands, time pressure)</td>
<td></td>
</tr>
<tr>
<td>• Vehicle engineering and ergonomic design</td>
<td></td>
</tr>
</tbody>
</table>

Table 2  Summary of driver fatigue risk factors
LEGAL RESPONSIBILITIES OF EMPLOYER AND EMPLOYEE

Employers have a Duty of Care to ‘ensure, so far as is reasonably practicable, the health and safety of all employees while at work’ and are responsible for what might happen if this is not done. This ‘applies to all on-the-road work activities as to all work activities’ (Health and Safety at Work Act, 1974).

Under the Management of Health and Safety at Work Regulations (1999) 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 driver fatigue. Employers need to assess which drivers and journeys are at risk and set schedules that do not require drivers to exceed recommended working limits and driver hours. This should cover all those who drive for work purposes (whether driving is the main work activity or not), those who drive fleet vehicles, owner-drivers, normal working and extraordinary events.

The M40 minibus crash was one of the first fatigue-related road accidents to attract national attention. It occurred just after midnight on 18 November 1993. 14 children and the driver (the children’s music teacher) died when the vehicle veered off the motorway and crashed into a maintenance truck parked on the hard shoulder. The jury was told that the incident was a ‘classic case’ of the driver falling asleep at the wheel.

Working practices, journey schedules, appointments and routes should enable drivers to stay within the law. Employers are legally required to consult with employees on health and safety issues.

The Selby rail crash in 2001 was described by the judge as ‘perhaps the worst driving-related incident in the UK in recent years’ (BBC news, 2002). A passenger train collided with a car, causing it to be derailed, and then deflected by points, into the path of a freight train. 10 people died and over 70 more were injured. The driver of the car, who had fallen asleep behind the wheel, was found guilty of causing death by dangerous driving and jailed for 5 years.

Drivers also have a duty to ensure that they are in a fit state to drive and that their driving activities do not put others at risk. Drivers of goods and passenger road vehicles must comply with the UK and EU Drivers’ Hours Rules on operating limits, maintain log books, record hours of work and rest and ensure medical assessments are up-to-date as required. All work-related drivers (including owner-drivers and drivers of fleet and specific purpose-built vehicles provided by an employer) share a responsibility to
work within fatigue risk management systems (eg working limits and driving hours) put in place by their employer.

Driving while fatigued is an offence under road traffic law and may result in prosecution leading to imprisonment and other penalties. Fatigued drivers can be charged with:

- Careless driving
- Dangerous driving
- Death by dangerous driving (which carries a maximum sentence of 14 years imprisonment)

A full list of the main offences and associated penalties is provided in the Appendix. In addition, it should be noted that there is a wide range of other, more specific offences.

A Brake and Direct Line survey (2010) found that nearly three-quarters of drivers (74%) admitted driving tired in the past 12 months, with almost 1 in 10 (10%) saying they did so at least once a week. This was a huge increase on six years ago when 46% of drivers owned up to getting behind the wheel tired. Brake believes therefore that sadly the lessons of Selby have been forgotten.

The Campaign Director for the independent road safety charity Brake states: ‘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. These messages still need to get through to the public, which is why we are calling for renewed efforts from the Government to tackle this issue urgently’.

Drivers are required by law to inform the Driver and Vehicle Licensing Agency (DVLA) if they develop any health condition likely to affect their driving. This includes the most common sleep disorder, Obstructive Sleep Apnoea.
COUNTERMEASURES TO COMBAT FATIGUE

This section describes the key countermeasures for reducing driver fatigue while on the road for work.

COMPANY FATIGUE MANAGEMENT ARRANGEMENTS AND POLICIES

Employers have a duty under health and safety law to assess and manage fatigue risk involved in their staff’s use of the road for work purposes. They should identify, assess and manage fatigue risks associated with all drivers (eg shift workers, long distance and high annual mileage drivers, drivers with OSA), the journeys they make, work schedules and vehicles (whether in company provided vehicles, lease and hire vehicles or private vehicles).

Work patterns should allow for a minimum of between seven and eight consecutive hours of sleep in each 24-hour period. Where work schedules or journeys do not allow this to happen you should notify your employer so that remedial action can be taken. You also need to advise your employer of any fatigue-related non-work issue (eg health or sleep problem) that may affect your ability to drive safely.

The table below highlights company systems and information for managing driver fatigue that you should be aware of.

<table>
<thead>
<tr>
<th>Fatigue policy</th>
<th>This should set out the company approach to minimising fatigue risk among those who drive on the road for work.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Awareness of the dangers of driving while fatigued and what to do if you start to feel sleepy</td>
<td>You should be provided with relevant driver fatigue management information.</td>
</tr>
<tr>
<td>In-house company limits on permitted working/driving hours per day/week/year</td>
<td>You should work within operational limits and follow agreed procedures in the event working/driving limits are exceeded (eg job overruns, emergencies). This should include checks on fitness to continue working and compensatory rest in the next recovery period.</td>
</tr>
<tr>
<td>Company shift working arrangements</td>
<td>• Shift durations and consecutive shifts (eg early, days, lates and night shifts)</td>
</tr>
</tbody>
</table>
| **Fatigue reporting channels** | • How to report fatigue-related issues associated with road journeys, work schedules and vehicles  
• What to do in the event you are too fatigued to drive  
• How to report a sleep or health issue that may affect your fitness to drive  
• How to report an accident or incident while on the road for work |

| **Overnight hotels and alternative transport** | Company policy on provision of overnight accommodation, alternative transport or fully rested driver when required to travel long distances to or from work (particularly early and night shifts). |

| **Occupational health and medical services** | Access, advice and treatment available. |

| **Incident and accident investigation and reporting** | The findings and action taken following a fatigue-related accident or incident involving an employer on the road for work. |

**Table 3** Basic company arrangements for managing driver fatigue risk
# HIGHWAY CODE RULES

<table>
<thead>
<tr>
<th>Rule 90</th>
<th>Make sure that you are fit to drive. You MUST report to the Driver and Vehicle Licensing Agency (DVLA) any health condition likely to affect your driving.</th>
</tr>
</thead>
</table>
| Rule 91 | Driving when you are tired greatly increases your risk of collision. To minimise this risk:  
- Make sure you are fit to drive. Do not begin a journey if you are tired. Get a good night’s sleep before embarking on a long journey  
- Avoid undertaking long journeys between midnight and 6am, when natural alertness is at a minimum  
- Plan your journey to take sufficient breaks. A minimum break of at least 15 minutes after every two hours of driving is recommended  
- If you feel at all sleepy, stop in a safe place. Do not stop on the hard shoulder of a motorway  
- The most effective ways to counter sleepiness are to drink, for example, two cups of caffeinated coffee and to take a short nap (at least 15 minutes) |

### Table 4  Highway Code Rules

**USE FATIGUE MANAGEMENT INFORMATION AND TRAINING PROVIDED BY YOUR EMPLOYER**

You should:

- Manage your sleep and alertness to ensure fitness to drive
- Make sure you do not have a sleep disorder or other medical condition that could affect your ability to drive safely
- Make sure you are not taking medication that makes you drowsy
- Understand the warning signs of fatigue
- Understand your body clock and how it can be disturbed by shift work
- Ensure family, social and other commitments outside work (such as second jobs or hobbies) do not limit your opportunity for sleep
• Look after your health:
  - Have regular health checks
  - Take regular exercise to help you sleep and stay fit and healthy
  - Eat the right foods. Avoid high calorie, fatty foods that can make you sleepy even if you have had enough sleep. Do not rely on snack bars or other sugary foods - they give you a big rush of energy, the ‘sugar high’, which is followed by a low that makes you feel tired again. A sandwich is better, preferably with brown bread
  - Try not to skip meals
  - Drink plenty of water to stop you getting dehydrated which can affect your concentration. Canned soft drinks are not as good as water – like snack bars, they can lead to sugar highs and lows

<table>
<thead>
<tr>
<th>Cons</th>
<th>Pros</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Weight gain:</strong> Energy drinks often have high sugar content. Excessive sugar intake if left unchecked can lead to obesity and other chronic medical problems.</td>
<td><strong>Occasional use can enhance alertness and provide an energy boost.</strong></td>
</tr>
<tr>
<td><strong>Cardiovascular problems:</strong> Overdosing on high energy drinks can put you at a higher risk of developing cardiovascular problems (eg increased blood pressure, irregular, rapid heartbeat).</td>
<td><strong>Convenient:</strong> Highly accessible. Can quickly increase energy levels.</td>
</tr>
<tr>
<td><strong>Psychological impact:</strong> Overuse can decrease your ability to function - overtime nervousness, irritability and anxiety can increase. Insomnia or disruptive sleep cycles may also develop.</td>
<td></td>
</tr>
<tr>
<td><strong>Metabolic issues:</strong> Over time the stress hormones produced by the body to metabolize and process the high levels of sugar, additives and vitamins in high energy drinks can lead to medical complications.</td>
<td></td>
</tr>
<tr>
<td><strong>Dependence:</strong> If used excessively on a daily basis energy drinks can be highly addictive and lead to withdrawal symptoms when trying to stop. Energy drinks should be used rarely, as a last resort, rather than as part of a regular daily diet.</td>
<td></td>
</tr>
</tbody>
</table>

Table 5  Pros and cons of high energy drinks
PLAN JOURNEYS

All road journeys should be planned, particularly those involving long drives on monotonous roads, such as motorways, and at times when alertness levels are naturally low. Do not drive if sleepy, when you would normally be sleeping, when you are ill or taking medication that makes you drowsy.

- Make sure you are well rested and feeling fit to drive - you should preferably have a good night’s sleep before setting off on a long road journey. Do not drive if you believe your fatigue level is a risk to yourself or others.

- A short nap (15-20 minutes) before can improve your alertness. But you should allow time to recover from the ‘groggy’ sensation experienced on waking up from a nap (see page 21).

- Take into account the time of day that sleep was most recently taken and the prospect of a night’s sleep in the immediate period ahead. Balance any reduction in quality of sleep with a longer sleep in the next rest period.

- Remember the risks if you have to get up unusually early to start your journey, or have a long journey home after long working hours or a night shift. Long journeys (eg more than two hours in each direction) should be avoided, particularly when you have had less sleep than normal, when travelling alone. The safest option is to stay in overnight accommodation or use alternative transport provided by your employer. Avoid driving between the hours of 2am-6am unless absolutely essential. Be aware that people are also generally more sleepy between the hours of 2pm-4pm – if you must drive at these times, make sure you are adequately rested.

- Consider how long the journey will take, including time for rest breaks and unexpected delays. Journeys should be planned to allow for a minimum 15 minute break every two hours of driving. If you are running late it is not advised to work through rest breaks.

- Write out a route plan that you can easily read. If you use Satellite Navigation, programme the destination before you set off and plan where to stop for regular rest breaks every two hours or sooner if feeling tired. The Transport Direct website: www.transportdirect.info uses live travel information for both road and rail to make journey planning easier.


- If possible plan an alternative route to use if you need to avoid any major delays.
DURING A JOURNEY

Even when we have had sufficient sleep, the monotony and length of a road journey can make us lose concentration. Driving performance can also be affected by road conditions, such as traffic delays, poor weather, actual or perceived time pressure (eg work schedules, rushing between jobs or to get home quickly). You should respond to on-the-road conditions and adjust the schedule as necessary. It may be necessary to communicate with your employer to take advice on changes to the schedule.

- Take planned breaks every two hours of driving.
- Be aware of the warning signs of fatigue. If any of these are experienced you need to stop the vehicle in a safe place as soon as possible (not on the hard shoulder) and find somewhere to get sufficient sleep.
- A vehicle that is too hot can lull a driver into sleepiness. Keep the vehicle well ventilated and at a comfortable temperature. You should also set the driver seat to a comfortable upright posture to maintain alertness.

- The ideal activity to undertake when fatigue is experienced is a proper sleep. But an effective emergency countermeasure to help get you to a safe place where you can get proper sleep is the consumption of two cups of strong coffee, or high caffeine drink, followed by a short nap (lasting between 15 and 20 minutes).
- It is important to consume the caffeine before a nap is taken because caffeine takes roughly 20 minutes to take effect.
- When you take a nap it is recommended that its duration is kept below 20 minutes to avoid ‘sleep inertia’. This refers to the ‘groggy’ sensation and associated impairment experienced on waking up. This is a potential hazard if you drive too soon. ‘Grogginess’ can last just a few minutes or up to an hour if a driver is seriously sleep deprived. A nap of no more than 20 minutes will minimise this.
- You should be aware that the effects of caffeine will wear off and sleepiness will return if you do not stop driving within a fairly short period of time.

The amount of caffeine needed to overcome fatigue is dependent on how much caffeine is usually ingested. For example, 200mg may be sufficient but may have less effect on an individual that is used to regularly consuming high quantities of caffeine.

The table below shows the typical amount of caffeine contained within beverages and food items.

<table>
<thead>
<tr>
<th>Product</th>
<th>Caffeine (mg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cup of Coffee</td>
<td>65-110</td>
</tr>
<tr>
<td>Cup of Tea</td>
<td>40-60</td>
</tr>
<tr>
<td>Glass of Cola</td>
<td>40</td>
</tr>
<tr>
<td>Bar of Chocolate</td>
<td>5-20</td>
</tr>
<tr>
<td>Bottle of Energy Drink</td>
<td>50-80</td>
</tr>
<tr>
<td>Caffeine Tablets</td>
<td>50-100</td>
</tr>
</tbody>
</table>

Table 6 Caffeine content of beverages and food items
• Caffeine should not be used as a long term coping strategy for fatigue and is not appropriate if a doctor or health care professional has advised against it for medical reasons. This includes the use of caffeine tablets. Too much caffeine can cause shaking, anxiety, increased heart rate and blood pressure, nausea, diarrhoea and an increase in urine production. Some people may be more prone to these side effects than others. If caffeine is consumed less than four hours before sleep you may find it difficult to get to sleep. However, it should be considered that after a shift a driver will need to remain alert for the journey home. Sudden withdrawal from caffeine can cause headaches, irritability and sleepiness. The frequency and strength of the symptoms will vary between people.

• Stay hydrated and eat sensibly throughout the journey. You should avoid large meals which can make you drowsy, particularly at lunchtime before driving.

APPLY RECOGNISED METHODS OF IMPROVING SLEEP QUALITY

It is recommended that if sleeping during the day you should:

• Avoid eating a large meal before attempting to sleep but ensure that a sufficient amount is consumed to avoid feeling hungry.

• Help your body get ready for sleep. Wind down, put the problems away until tomorrow.

• Block out the light as much as possible (blackout curtains, blinds or sleeping masks are useful).

• Ensure there is as little noise as possible (ear plugs may be helpful).

• Ensure sleeping conditions are comfortable (not too warm – 18°C or less; comfortable bedding and pillows).

• Do not smoke before sleep or if awoken early with the intention of obtaining more sleep.

• Avoid consumption of alcoholic beverages close to bed time as this disrupts the normal sleep pattern.

• Try a warm bath or relaxation techniques.

• Set things up so your sleep will not be disturbed (eg use an answering machine for the telephone; turn off your mobile).

Before any period of sleep (regardless if sleeping in the day or night) the following actions should be taken:

• Avoid caffeinated beverages four hours prior to going to bed.

• A good exercise programme can improve sleep but exercise close to bed time can disturb your sleep.

• Try to establish a regular sleep routine and stick to it so that your body knows what to expect. If you are on rotating shift work – move your bedtime by an hour or two each day.
# DRIVER SELF-CHECK

1. Do you ever drive long distances in the early hours of the morning after having had less sleep than normal?  
2. Do you ever feel frustrated or aggressive towards other road users?  
3. Do you ever lose attention or concentration when driving?  
4. Have you ever experienced tired eyes and heavy eyelids while driving?  
5. Have you ever skipped a rest break due to time pressure?  
6. Have you ever missed a rest break so that you can finish work early?  
7. Have you ever missed a rest break so that you can get home early?  
8. Caffeine replaces the need for sleep when driving.  
9. I can tell when I am going to fall asleep.  
10. I can drive safely when I am a bit sleepy as I am a careful driver.  
11. Have you ever started a journey with a sleep debt?  
12. Have you ever started driving immediately after taking a short nap?  
13. I sometimes have trouble sleeping.  
14. Have your eyes ever closed for a moment or gone out of focus whilst driving?  
15. Have you ever drifted over the centre line or onto the side of the road while driving?  
16. Have you ever missed your exit, or something that represents a danger, while driving?  
17. Have you ever slowed your vehicle unintentionally?  
18. Have you ever had wandering disconnected thoughts?  
19. Have you ever had to brake suddenly when driving?  
20. Have you ever felt sleepy during the day even after a good night’s sleep?  

If you answered ‘yes’ to any of these questions this may be a sign that you are not managing your fatigue levels effectively.
A FINAL WORD OF CAUTION

In-vehicle fatigue detection and warning devices are designed to alert drivers to when they are feeling sleepy. However, they have been criticised for failing to detect the early warning signs of fatigue. The Royal Society for the Prevention of Accidents is concerned that drivers would rely on such devices and be tempted to drive when driving performance has already deteriorated to unsafe levels.

The advice from the Department for Transport is that these devices do not provide a substitute for adequate rest. They should only ever be used as a fall-back safety aid.

APPENDIX - TABLE OF DRIVING PENALTIES

<table>
<thead>
<tr>
<th>Offence</th>
<th>Maximum imprisonment</th>
<th>Maximum fine</th>
<th>Disqualification</th>
<th>Penalty points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Causing death by dangerous driving (DD80)</td>
<td>14 years</td>
<td>Unlimited</td>
<td>Obligatory - 2 years minimum</td>
<td>3-11 (if exceptionally not disqualified)</td>
</tr>
<tr>
<td>Dangerous driving (DD40)</td>
<td>2 years</td>
<td>Unlimited</td>
<td>Obligatory</td>
<td>3-11 (if exceptionally not disqualified)</td>
</tr>
<tr>
<td>Causing death by careless driving under the influence of drink (CD40) or drugs (CD50)</td>
<td>14 years</td>
<td>Unlimited</td>
<td>Obligatory - 2 years minimum</td>
<td>3-11 (if exceptionally not disqualified)</td>
</tr>
<tr>
<td>Careless (CD10) and inconsiderate (CD20) driving</td>
<td>-</td>
<td>£5,000</td>
<td>Discretionary</td>
<td>3-9</td>
</tr>
<tr>
<td>Offence</td>
<td>Maximum imprisonment</td>
<td>Maximum fine</td>
<td>Disqualification</td>
<td>Penalty points</td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
<td>----------------------</td>
<td>--------------</td>
<td>-----------------</td>
<td>-------------------------------------</td>
</tr>
<tr>
<td>Driving while unfit through drink (DR20) or drugs (DR80) or with excess alcohol (DR10), or failing to provide a specimen for analysis (DR30)</td>
<td>6 months</td>
<td>£5,000</td>
<td>Obligatory</td>
<td>3-11 (if exceptionally not disqualified)</td>
</tr>
<tr>
<td>Failing to stop after an accident (AC10) or failing to report an accident (AC20)</td>
<td>6 months</td>
<td>£5,000</td>
<td>Discretionary</td>
<td>5-10</td>
</tr>
<tr>
<td>Driving when disqualified (BA10, BA30)</td>
<td>6 months</td>
<td>£5,000</td>
<td>Discretionary</td>
<td>6</td>
</tr>
<tr>
<td>Driving after refusal or revocation of licence on medical grounds (LC50)</td>
<td>6 months</td>
<td>£5,000</td>
<td>Discretionary</td>
<td>3-6</td>
</tr>
<tr>
<td>Driving without insurance (IN10)</td>
<td>-</td>
<td>£5,000</td>
<td>Discretionary</td>
<td>6-8</td>
</tr>
<tr>
<td>Offence</td>
<td>Maximum imprisonment</td>
<td>Maximum fine</td>
<td>Disqualification</td>
<td>Penalty points</td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
<td>----------------------</td>
<td>--------------------------</td>
<td>----------------------------------------------------------------------------------</td>
<td>----------------</td>
</tr>
<tr>
<td>Using a vehicle in a dangerous condition (CU20)</td>
<td>-</td>
<td>LGV/PCV £5,000</td>
<td>Obligatory if offence committed within 3 years of a previous conviction for the same offence - 6 months minimum. Otherwise discretionary</td>
<td>3 in each case</td>
</tr>
<tr>
<td>(LGV = Large Goods Vehicle; PCV = Passenger Carrying Vehicle)</td>
<td></td>
<td>Other £2,500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Failure to have proper control of vehicle or full view of the road and traffic ahead, or using a hand-held mobile phone while driving (CU80)</td>
<td>-</td>
<td>£1,000 (£2,500 for PCV or goods vehicle)</td>
<td>Discretionary</td>
<td>3</td>
</tr>
<tr>
<td>Driving otherwise than in accordance with a licence (LC20)</td>
<td>-</td>
<td>£1,000</td>
<td>Discretionary</td>
<td>3-6</td>
</tr>
<tr>
<td>Speeding (SP10, SP20, SP30, SP40, SP50, SP60: depending on type of vehicle)</td>
<td>-</td>
<td>£1,000 (£2,500 for motorway offences)</td>
<td>Discretionary</td>
<td>3-6 or 3 (fixed penalty)</td>
</tr>
<tr>
<td>Traffic light offences (TS10)</td>
<td>-</td>
<td>£1,000</td>
<td>Discretionary</td>
<td>3</td>
</tr>
<tr>
<td>No MOT certificate</td>
<td>-</td>
<td>£1,000</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Seat belt offences</td>
<td>-</td>
<td>£500</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Failing to identify driver of a vehicle</td>
<td>-</td>
<td>£1,000</td>
<td>Discretionary</td>
<td>6</td>
</tr>
</tbody>
</table>

Table 7  Driving penalties
FURTHER INFORMATION

BBC Science and Nature
http://www.bbc.c.uk/science/humanbody/sleep/

British Snoring and Sleep Apnoea Association
http://www.britishsnoring.co.uk

Caffeine Calculator

Driver and Vehicle Licensing Agency
http://www.dft.gov.uk/dvla/drivers.aspx

Direct.gov
http://www.direct.gov.uk/en/Motoring/DriverLicensing/MedicalRulesForDrivers/MedicalA-Z/DG_185783

Feeling tired? RSSB Human Factors Fact Sheets
www.rssb.co.uk

National Sleep Foundation
http://www.sleepfoundation.org/

RED 35 – Fatigue at the wheel
www.opsweb.co.uk

Owl/lark Questionnaire
http://web.ukonline.co.uk/bjlogie/test.htm

Railroaders’ Guide to Healthy Sleep
http://www.railroaderson.org

The Royal Society for the Prevention of Accidents
http://www.rospa.com/roadsafety/

Sleep Apnoea Trust
http://www.sleep-apnoea-trust.org/

Sleep Council
http://www.sleepcouncil.com/

Sleep Disorders
http://www.sleepdisorders.com/

Sleep Foundation
http://www.sleepfoundation.org

Talk about Sleep
http://www.talkaboutsleep.com

Think! Road Safety Campaign
http://think.direct.gov.uk/

Working Time Society
http://www.workingtime.org