

Review

In this chapter we have looked at:

- why you need to develop your higher mental skills as well as your technical and operational skills
- ways to help your brain process information from your observations to maximum capacity
- how to recognise operational driving stress and steps to prevent it affecting your driving performance
- how attitudes and emotions can affect your driving performance and ways of countering negative states of mind
- being aware of your body and how physiological factors can affect your driving
- how to recognise and resist internal and external pressures that might compromise safety
- how this impacts on your speed
- how accurate self assessment can help you develop your driving skills and awareness of safety
- why knowing your vehicle is vital for safe decision making.

Check your understanding



Why are higher mental skills especially important for drivers in the emergency services?

What are three factors that can impair the mental skills you need for driving?

What is situational awareness?

What is reaction time and how can you reduce it?

Give some examples of driving stressors that can affect your driving ability.

Describe some steps you might take to counter the effects of operational driving stress.

Give some examples of negative attitudes that can arise from driving stress.

Describe practical steps to avoid the effect of negative attitudes and emotions in police driving.

List four physiological factors that might reduce your driving performance.

What is the guiding rule to decide a safe speed?

Give two examples of pressures that might encourage you to drive too fast and how you can counter these.

Why is it important to know your vehicle?

Use this chapter to find out about:

- why good anticipation is vital to better driving
- how careful observation contributes to anticipation
- how to use your observations to make a driving plan
- how to improve your observation and anticipation
- how to adapt your driving to speed, night conditions, weather and road surface
- how to make the best use of road signs and markings

If you have difficulty in answering any of these questions, look back over the relevant part of this chapter to refresh your memory.

Why observation and anticipation are essential for better driving

This chapter looks at the skills of observation and anticipation, and how you can apply them to your driving. The first part of the chapter looks at the link between observation, anticipation and planning, and at how you can learn to observe more effectively. The second part looks at physiological factors that affect observation and anticipation. The final part looks at weather conditions and other important sources of information in the traffic environment.

An important goal of police driver training is to develop sophisticated anticipation skills. Anticipation is the ability to identify hazards at the earliest possible opportunity.

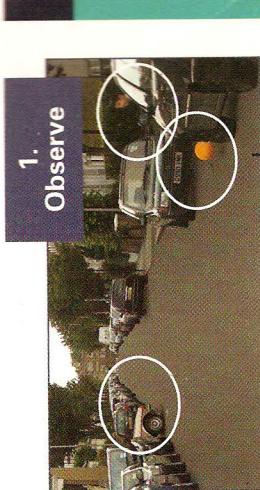
A hazard can be immediate and obvious, such as a car approaching you on the wrong side of the road. Or it might be something less obvious but just as dangerous – for example, a blind bend could conceal an obstacle in your path. Failing to recognise hazardous situations is a major cause of collisions.

Observation is a key component of anticipation. Careful observation allows you to spot hazards and give yourself extra time to think, anticipate and react. You can then deal with unfolding hazards before they develop into dangerous situations.

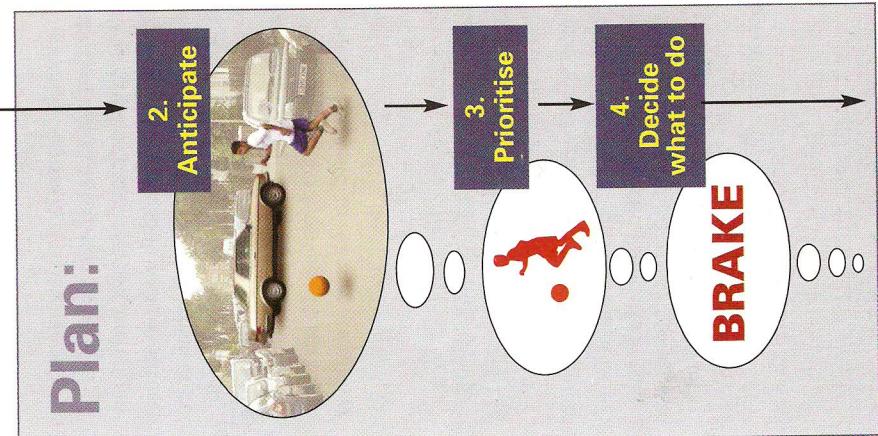
Most of your observations while driving will be visual (around 95%) but you should also make use of your other senses such as hearing (horn sounds, children), smell (e.g. new-mown grass, possibly indicating the presence of slow-moving grass-cutting machinery) and physical sensations such as vibration (e.g. juddering from road surface irregularities).

But good anticipation involves more than just good observation. It means 'reading the road' and extracting the fullest meaning from your observations. This involves:

- using your higher mental skills to interpret clues in the environment
 - developing your ability to scan your surroundings.
- Using your higher mental skills**
- You may occasionally have caught yourself driving on 'autopilot' – perhaps thinking about the incident you are



1. Observe



driving to – and only noticing what is happening immediately in front of you. The ability to take, use and give information and to apply the system of fan control (Chapter 3) requires fan control and your active attention to your driving all the time. Negotiating traffic situations safely means observing, reading the road, anticipating hazards and planning ahead.

Chapter 1 explained how you can expand your capacity to process information and develop your situational awareness. Use those mental skills to accurately interpret visual clues about the traffic situation and the likely behaviour of other road users.

Planning

Safer driving depends on systematically bringing the information you gather from observation to plan your driving actions:

- anticipate hazards
- prioritise
- decide what to do.

Generally things do not just happen, they take a while to develop – good planning depends on early observation and early anticipation of risk.

The purpose of the plan is to put you in the correct position, at the correct speed, with the correct gear engaged at the correct time to negotiate hazards safely and efficiently. As soon as conditions change, a new driving plan is required; so effective planning is a continual process of forming and reforming plans.

The diagram on the right shows how the key stages of planning encourage you to interpret and act on your observations.

Decide what to do

Anticipate hazards

Observation and anticipation reinforce each other. On a familiar route, for example, you may know from experience where there are likely to be hazards, even if your view of the road is blocked by vehicles. Anticipating hazards sharpens your observation as you search the road for visual clues.

From careful observation you gather new visual clues that increase your ability to anticipate.

You can develop your skill at anticipating the actions of other drivers by carefully observing their progress and behaviour, and their head, hand and eye movements. Even careful drivers can make mistakes, so learning to anticipate other road users' intentions can give you and them an extra safety margin.

Lack experience of the kinds of hazardous events that can lead to a collision. In other words, they are not aware of the risks and fail to anticipate them. Trained drivers spot the early signs of possible trouble and anticipate what might happen, so they react quickly and appropriately. They are constantly alert to potential danger and monitor risk at a subconscious level so that they are ready to respond quickly if the situation develops.



Research has shown that a driver's ability to anticipate hazards can be developed through specific training in hazard perception. But you can also learn to anticipate through experience, if you assess your own performance and that of other road users each time you drive. Young, inexperienced drivers typically react very quickly to simple hazards but tend to react more slowly to complex traffic hazards because they

have less time to react to a hazard, the more likely that you can deal with it safely.

Anticipating hazards gives you extra time. The more time that you have to react to a hazard, the more likely that you can deal with it safely.

Prioritise hazards



Where there are multiple hazards, prioritise them in order of importance. The level of danger associated with particular hazards varies with:

- the hazard itself
- how close it is to you
- road layout
- whether the hazard is stationary or moving
- how fast you are approaching it.

The greater the danger, the higher the priority, but be ready to re-adjust your priorities as the situation develops.

The purpose of your plan is to decide on and adopt a course of action that ensures the safety of yourself and other road users at all times, taking account of:

- what can be seen
- what cannot be seen
- what might reasonably be expected to happen
- which hazards represent the greatest threat
- what to do if things turn out differently from expected (contingency plans).

Planning is a vital skill when you are driving.

Practise applying the three stages of planning during every journey until you do it automatically, even when you are driving under pressure.

On your next journey, give yourself a running commentary as you drive:

describe what hazards you can observe and how you plan to deal with them. Remember to observe other drivers as well as their vehicles.

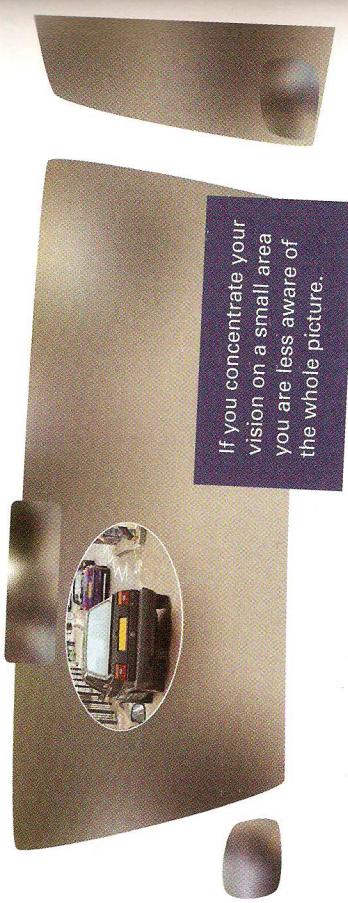
With practice you should find that you observe more hazards, earlier and in more detail, and gain more time to react.

Improving your observation

Scanning the environment

Our ability to handle information about the environment is limited so we tend to cope with this by concentrating on one part of it at a time. But drivers who rapidly scan the whole environment looking for different kinds of hazards have a much lower risk of accident than drivers who concentrate on one area.

Imagine your field of view as a picture – you can see the whole picture but you can only concentrate on one part of it at a time. This is why you need to develop the habit of scanning repeatedly and regularly.



If you concentrate your vision on a small area you are less aware of the whole picture.



Continually scan different areas of the environment in turn so that you build up a whole picture.
Routine scanning enables you to process information, spot hazards and monitor the situation as it changes.

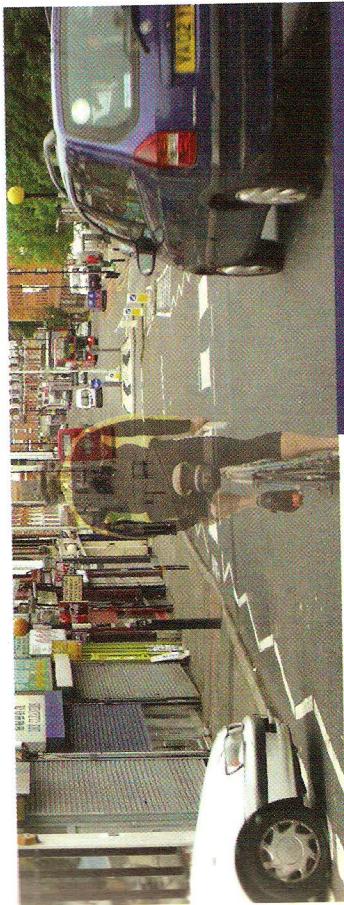
Learn to use your eyes in a scanning motion which sweeps the whole environment – the far distance, the middle distance, the foreground, the sides and rear – to build up a picture of what is happening all around you, as far as you can see, in every direction.

Scanning is a continuous process. When a new view opens out in front of you, quickly scan the new scene. By scanning the whole of the environment you will know where the areas of risk are. Check and re-check these risk areas in your visual sweeps. Avoid fixing on particular risk areas because this stops you placing them in the bigger context. Use all your mirrors, and consider a shoulder check on the occasions when it is not safe to rely on your mirrors alone – for example, when reversing, moving off from the kerb, joining a motorway or leaving a roundabout.

Looking but not seeing

What we see depends to a large extent on what we expect to see. At some time, you might have pulled out having missed seeing a bicycle coming from the direction in which you have just looked. Mistakes of this type are common because drivers are generally looking for cars or lorries but not other road users such as bicycles or motorcycles. When we concentrate we don't just look at a particular part of a scene, we look for particular types of objects in that scene. We find it easier to detect objects that we expect to see, and react more quickly to them. So we often fail to see objects that we don't expect to see.

Many people relax their concentration when driving along familiar routes, so it is important to give as much attention to observation and anticipation on routes you use every day as on journeys you are making for the first time.



When you scan, look out for solo road users.

If you are not expecting them they can become 'invisible' to you.

How speed affects observation

Adjust your speed to how well you can see, the complexity of the situation and the distance it will take you to stop. At 70 mph you would typically need to allow a safe stopping distance of about 100 metres. This is the distance between motorway marker posts. The eye's receptors in this area are different from the central receptors, and are particularly good at sensing movement. This warns you of areas that you need to examine more closely.

See Chapter 4, Acceleration, using gears, braking and steering, page 73. The safe stopping distance rule.

is not the same thing as a safe speed. The safe speed for a particular stretch of road depends on the conditions at the time. It is your responsibility to select a speed appropriate for the conditions so that you maximise your ability to observe and anticipate hazards.

Minimising the safe stopping distance rule

Always drive so you can stop safely within the distance you think you to be clear.

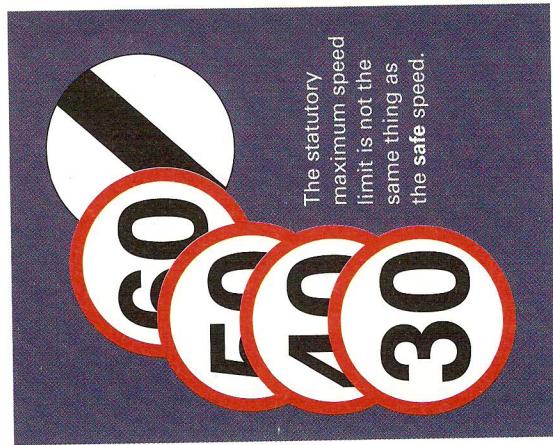
The faster you go, the further ahead you need to look. This is because as you drive faster, the nearest point at which you can accurately focus moves away from you. Foreground detail becomes blurred and observation becomes more difficult because you have to process more information in less time. The only way to cope with this is to scan further ahead, beyond the point where your eyes naturally come to rest, to give yourself more time to absorb, plan and react.

- Driving at high speed requires a high level of attention and judgement which you can't sustain if you are tired. Plan regular rest periods to help you to stay alert and get some fresh air. Rest for longer when tired.

- At higher speeds, you will travel further before you can react to what you have seen and you need to build this into your safe stopping distance.

- Your ability to take in foreground detail decreases with speed and increases as you slow down. In areas of high traffic density such as town centres, you must slow down so that you are able to take in as much foreground information as possible.

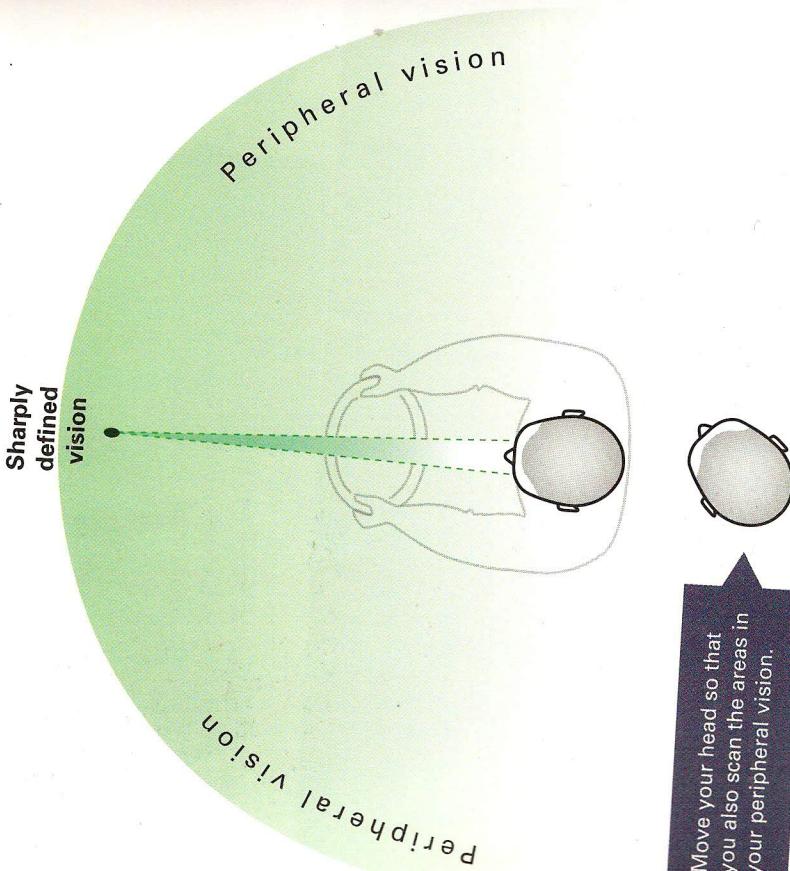
- Statutory speed limits set the maximum permissible speed, but this



Use speed safely

Know your limits and keep within the speed at which you feel safe and comfortable – resist the pressures that might encourage you to drive faster.

Remember that at 30 mph a minor misjudgement can be corrected but at 70 mph the same mistake could be disastrous.



Move your head so that you also scan the areas in your peripheral vision.

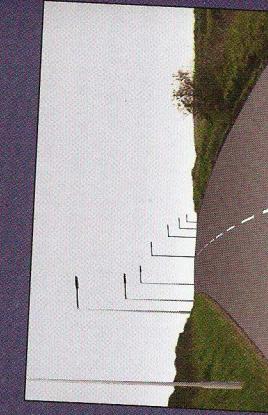
Zones of visibility

The road around you is made up of different zones of visibility. In some areas your view will be good and in others you will only be able to see what is immediately in front of you.

On the approach to a hazard where the view is restricted, use every opportunity to get more information about the road ahead:



open spaces and breaks in hedges, fences and walls on the approach to a blind junction



a curving row of trees or lamp posts



reflections in shop windows



the angle of approaching headlights



the shadow of an approaching vehicle

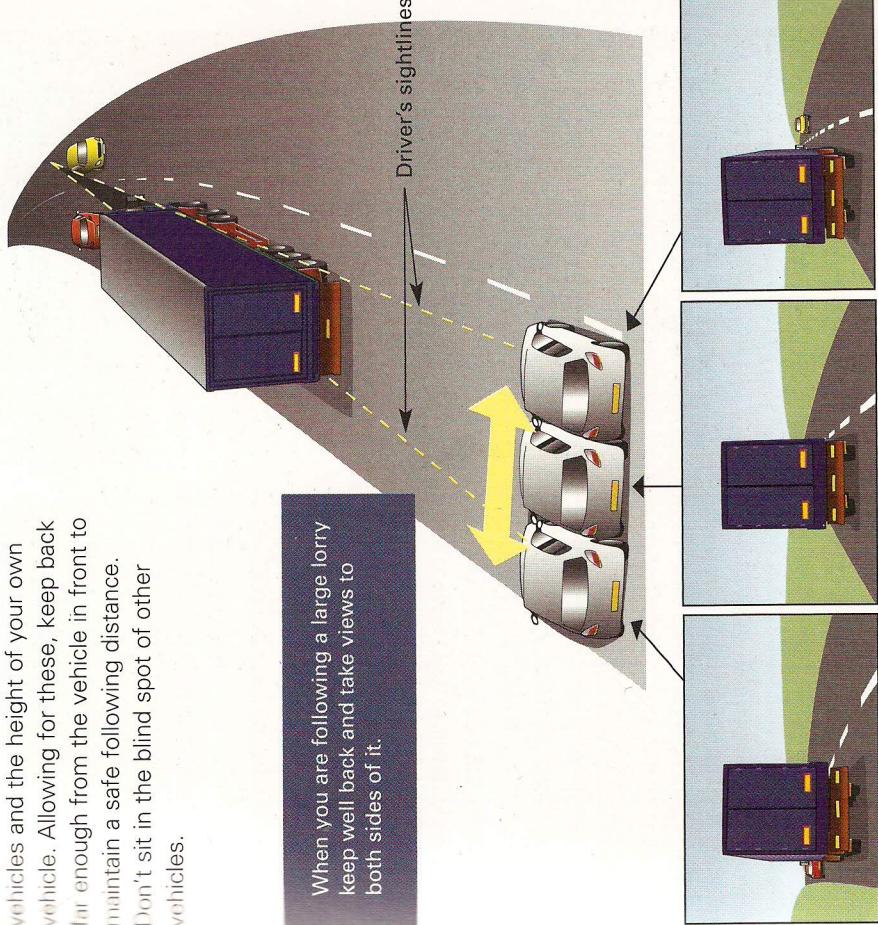
Keep your distance

The closer you are to the vehicle in front the less you will be able to see beyond it, especially if it is a van or lorry. In slow-moving traffic it is better to drop back slightly so that you can see what is happening two to three vehicles in front.

You particularly need a good view of the road ahead on motorways and other fast-moving roads. Your view will depend on the curvature and gradient of the carriageway, the lane that you are in, the size and position of other vehicles and the height of your own vehicle. Allowing for these, keep back far enough from the vehicle in front to maintain a safe following distance. Don't sit in the blind spot of other vehicles.

Always check that no one is sitting in your own blind spot before you change lanes. Make sure you know where the offside and nearside blind spots are on any vehicle that you drive. If you're not sure, get a colleague to help you to work this out before you make a journey.

See Chapter 10, Driving on motorways and multi-lane carriageways.



When you are following a large lorry keep well back and take views to both sides of it.

Alertness and tiredness

- Think about the last time you misjudged a situation. Did this happen because you failed to observe a hazard? Or did you see the developing hazard but fail to interpret it correctly?
- Did any other factors affect your ability to observe and anticipate? (For example, tiredness, pressure, night driving, bad weather, thinking about the reason for your journey?)
- Can you use your mistake to improve your anticipation in future?

The ultimate loss in alertness is falling asleep at the wheel; this is a significant cause of motorway accidents. Professional drivers need to be aware that tiredness is related to the total time spent at work and not just to the time spent at the wheel. If you are tired from other duties before you start a journey, you are much more at risk from tiredness during the journey. Tiredness is a particular problem for professional drivers because the demands of the job may mean that they have to drive beyond their safety limit.

Monotonous conditions

- Driving for long periods of time in monotonous conditions such as low-density traffic, fog, at night or on a motorway reduces stimulation and promotes tiredness (see 'Night driving' below). Most people experience some tiredness, whatever the conditions, if they drive for longer than about four hours.
- Alertness is reduced if you drive at times when you would normally be asleep or if you have not had a normal amount of sleep. It also varies with the time of day:
- our reactions tend to be slightly faster in the early evening than in the morning
- there seems to be a dip in alertness after the midday meal

Physiological factors that affect observation and anticipation

Safe driving is about more than handling your vehicle and the immediate traffic situation. In Chapter 1 you saw why expanding your higher mental skills can improve your driving ability. We also explained some of the psychological, physiological and emotional factors that can affect your driving. Here we look in more detail at the factors that affect observation and anticipation.

drivers become physically tense. If you can, try to relax your posture during emergency driving.

- Noise and vibration cause tiredness, so do everything possible to reduce noise in the vehicle. Keep windows closed and use the ventilation controls instead, but make sure that you have enough ventilation to stay alert.
- Take regular breaks – every two hours if possible – don't wait until you feel drowsy. Most people need a rest break of at least 20 minutes to restore alertness.
- Have a caffeine drink (e.g. coffee or an 'energy' drink) – this needs 15 minutes to take effect.
- On long journeys plan a series of rest breaks, but recognise that each successive break will give less recovery than the one before. Try to include some walking in your breaks. Drivers over 45 are more at risk of, and recover less quickly from, tiredness than younger drivers.

If you know you are tired, allow yourself a greater safety margin – slow down and be aware you need more time to react.

In the following pages we look at possible hazards arising out of particular traffic situations. The aim is to 'presentise' your awareness so that when you encounter a situation you already know what hazards to look for and can react to them more quickly.

This can be a problem during emergency driving when some

How well do you anticipate?

- Think about the last time you misjudged a situation. Did this happen because you failed to observe a hazard? Or did you see the developing hazard but fail to interpret it correctly?
- Did any other factors affect your ability to observe and anticipate? (For example, tiredness, pressure, night driving, bad weather, thinking about the reason for your journey?)
- Can you use your mistake to improve your anticipation in future?

Night driving

When driving at night, you will need to think about:

- your physiological and mental responses to night-time conditions
- how the condition of your vehicle and information in the environment can help you.

Observing in night conditions (anything less than full daylight) is more difficult and yields less information. As the light dwindles, your ability to see the road ahead declines – contrast fails, colours fade and edges become indistinct. Your body naturally wants to slow down as night draws on and you are more likely to grow tired.

Night driving puts extra strain on your eyes. Any slight eyesight irregularity can cause stress and tiredness so if you find you are unexpectedly suffering from tiredness, especially at night, get your eyes tested as soon as possible.

Think about the condition of your vehicle. Windows, mirrors, and the lenses of lights and indicators should all be clean to give the best possible visibility. The slightest film of moisture, grease or dirt on windows or mirrors will break up light and increase glare, making it harder to distinguish what is going on. The lights should be correctly aligned, and adjusted for the vehicle load. The bulbs should all work and the switching equipment should function properly. Windscreen washers, wipers and demisters should also be working properly.

See *Know your vehicle*, page 164.

On unlit roads put your headlights on main beam and only dip them for other road users.

Use dipped headlights:

- in built-up areas
- in situations when dipped headlights are more effective than the main beam, for example when going round a left-hand bend or at a hump back bridge
- in heavy rain, snow and fog when the falling droplets reflect glare from headlights on full beam.

Dip your headlights to avoid dazzling oncoming drivers, the driver in front or other road users. When you overtake another vehicle, return to full beam when you are parallel with it.

Fog lights should only be used when visibility is 100 metres or less.

Always drive so that you can stop safely within the distance you can see to be clear; at night this is the area lit by your headlights unless there is full street lighting. Even in the best conditions your ability to assess the speed and position of oncoming vehicles is reduced at night, so you need to allow an extra safety margin.

Dazzle

Headlights shining directly into your eyes may dazzle you. This can happen on sharp right-hand bends and steep inclines, and when the lights of oncoming vehicles are undipped or badly adjusted. The intensity of the light bleaches the retinas of your eyes so

that you can see nothing for some moments.

To avoid dazzle, look towards the **front-side edge of the road**. This enables you to keep your road position but does not tell you what is happening in the road ahead, so slow down or stop if necessary. If you are dazzled by un dipped headlights, flash your own lights quickly to alert the other driver, but don't retaliate by putting on your full beam. If you did, both you and the other driver would be converging blind. If you suffer temporary blindness, stop and wait until your eyes have adjusted.

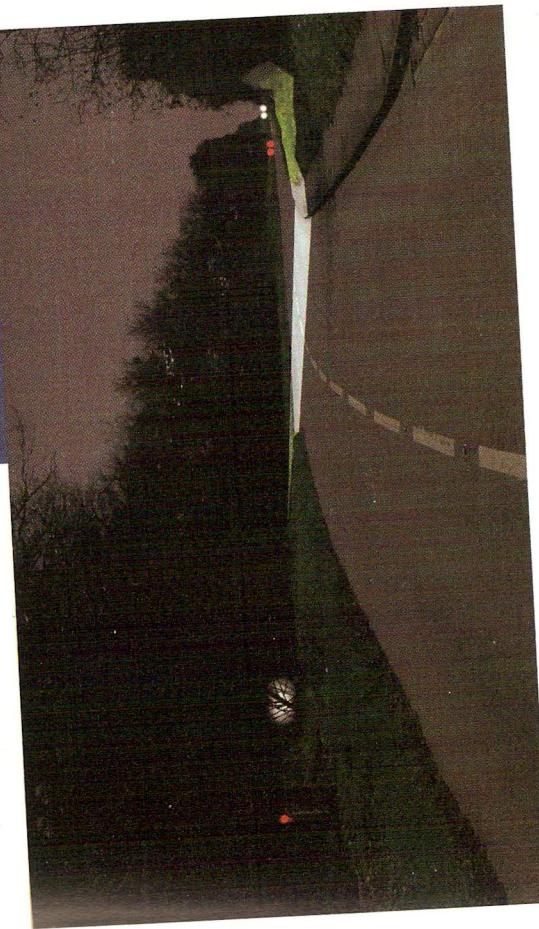
Following other vehicles at night

When you follow another vehicle, dip your headlights and leave a long enough gap so that your lights don't dazzle the driver in front. When you overtake, move out early with your

headlights still dipped. If you need to warn the other driver that you are there, flash your lights instead of using the horn. When you are alongside the other vehicle return to full beam. If you are overtaken, dip your headlights when the overtaking vehicle draws alongside you and keep them dipped until you can raise them without dazzling the other driver.

Information from other vehicles' lights

You can get a great deal of useful information from the front and rear lights of other vehicles; for example, the sweep of the headlights of vehicles ahead approaching a bend can indicate the sharpness of the bend, and the sweep of the headlights of vehicles in front can give you an early warning to reduce speed. Intelligent use of information given by lights can help your driving.



Reflective studs and markings

Reflective studs and markings are a good source of information about road layout at night. To get the most out of them you need to be familiar with the *Highway Code*. Roadside marker posts reflect your headlights and show you the direction of a curve before you can see where the actual road goes.

Cat's eyes

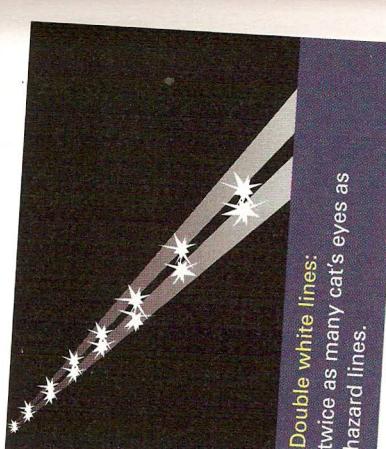
Cat's eyes indicate the type of white line along the centre of the road. Generally the more white paint in the line, the greater the number of cat's eyes. They are particularly helpful when it is raining at night and the glare of headlights makes it difficult to see.



Centre lines:
one cat's eye every other gap.



Hazard lines:
one cat's eye every gap.



Double white lines:
twice as many cat's eyes as hazard lines.

Weather conditions

Bad weather is often blamed for引发 collisions when the real cause is inappropriate driving. Careful observation, good anticipation, the correct speed and adequate braking distances are crucial for safe driving in difficult weather conditions.

The weather affects how far you can see, and how your vehicle performs, so it is central to your observation, anticipation and driving plan. When weather conditions reduce visibility, reduce your speed and regularly check your actual speed on the speedometer. You should always be able to stop within the distance you can see to be clear. If it is foggy, follow the *Highway Code* fog code. In extreme conditions, consider whether your journey is really necessary.

Examples of weather conditions which reduce visibility are:

- fog and mist
- heavy rain
- snow and sleet
- bright sunshine, especially when it is low in the sky.

Using lights in bad weather

Choose your lights according to the circumstances.

- Switch on your dipped headlights when visibility is poor in daylight or fading light. Use dipped headlights in fog or heavy rain in daylight, because sidelights are virtually invisible.
- As a general rule, use your dipped headlights whenever your wipers are in constant use.
- When there is fog or falling snow at night, foglights often give a better view than dipped headlights. Use them as an alternative to or together with dipped headlights if visibility is 100 metres or less.
- Switch off your foglights when you leave the fog in order not to dazzle other drivers.
- Do not use your main headlight beam when you are behind another vehicle in fog – it may dazzle the driver, and will cast a shadow of the vehicle on the fog ahead, disrupting the driver's view.
- The brightness of rear foglights can mask the brake lights – allow more distance between you and the car in front and aim to brake gently yourself.

Using auxiliary controls and instruments in bad weather

Make full use of your washers and wipers to keep your windscreen and rear window as clear as possible. When there is a possibility of freezing fog, put freeze-resistant screen wash in the

Other ways to improve observation at night

- Keep your speed down when you leave brightly lit areas to allow time for your eyes to adjust to the lower level of lighting.
- Any light inside the vehicle which reflects off the windows will distract you and reduce your ability to see. Interior lights, torches, rally lights and cigarette lighters can cause reflections, so limit their use.
- Certain types of spectacles – such as those with tinted or photochromatic lenses – may be unsuitable for night driving, so check with your optician.

screen wash reservoir. In fog, rain, or snow regularly check your speedometer for your actual speed; you cannot rely on your eyes to judge speed accurately in these conditions. Low visibility distorts your perception of speed.

Observing when visibility is low

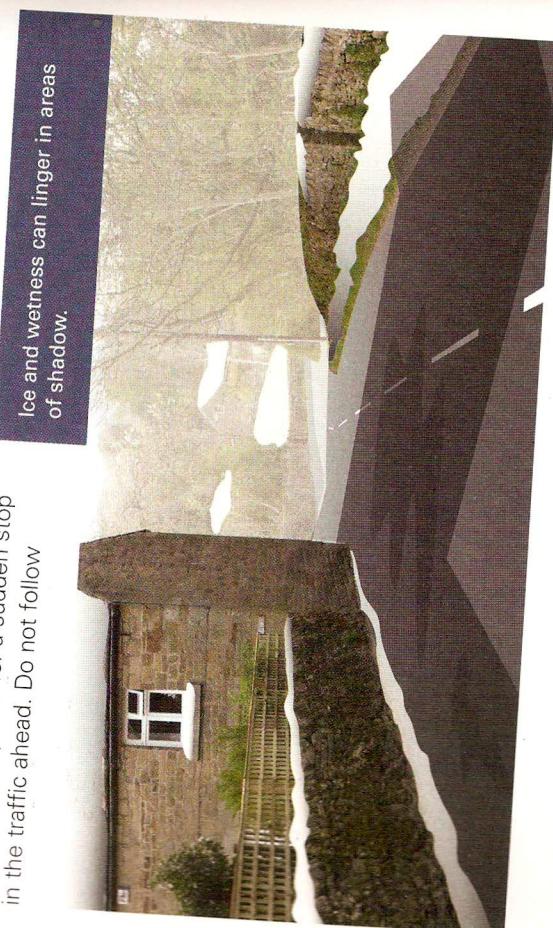
When visibility is low, keep to a slow steady pace and use the edge of the carriageway, hazard lines and car's eyes as a guide, especially when approaching a road junction or corner. Staring into featureless mist tires the eyes very quickly. Focus instead on what you can see: the vehicle in front, the edge of the road or the road ahead. But avoid fixing your focus on the tail lights of the vehicle in front because they will tend to draw you towards it and you could collide if the vehicle stopped suddenly. Be ready to use your horn to tell other road users you are there.

Always be prepared for a sudden stop in the traffic ahead. Do not follow

closely, and only overtake other traffic when you can see that it is absolutely safe to do so. This is seldom possible in fog on a two-way road. At junctions when visibility is low, wind down your window and listen for other vehicles, and consider using your horn.

Micro climates

Look out for micro climates which can cause frost and wet patches which can some areas after they have disappeared elsewhere. Ice can linger in landscape features such as valley bottoms, shaded hillsides and shaded slopes, or large areas of shadow cast by trees or buildings, and result in sudden skidding. Bridge surfaces are often colder than the surrounding roads because they are exposed on all sides, and can be icy when nearby roads are not. Patchy fog is particularly dangerous and is a common cause of multiple collisions.



Ice and wetness can linger in areas of shadow.

Road surface

The type and condition of the road surface affects tyre grip and vehicle handling characteristics. Tyre grip is fundamental to driving control because it determines steering, acceleration and braking. Most drivers do not pay enough attention to this.

Always look well ahead to identify changes in the road surface, and adjust the strength of your braking, acceleration and steering to retain adequate road holding.

Always observe the camber of the road on a curve or bend.

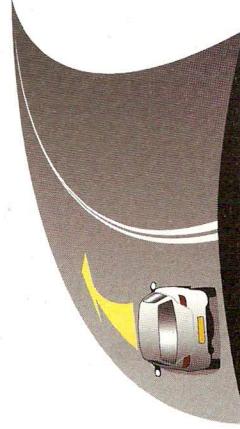
See Chapter 8, Cornering, page 121, Camber and camber elevation.

The surfaces of most roads are good for road holding when they are clean and dry. Snow, frost, ice, rain, oil, moist muddy patches, wet leaves, dry loose

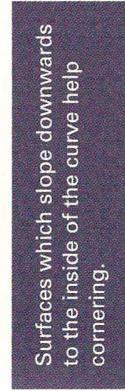
dust or gravel can cause tyres to lose grip, making skids and aquaplaning more likely. Rain may produce a slippery road surface, especially after a long dry spell. At hazards such as roundabouts or junctions, tyre deposit and diesel spillage may make the surface slippery at precisely the point where effective steering, braking and acceleration are needed to negotiate the hazard safely.

Road surface irregularities

Look out for irregularities in the road surface such as potholes, projecting manhole covers, sunken gullies and bits of debris, which can damage the tyres and suspension. If you can alter your road position to avoid them without endangering other traffic, do so. If you cannot, slow down to reduce shock and maintain stability as you pass over them.



Surfaces which slope upwards to the inside of the curve make cornering more difficult.



Surfaces which slope downwards to the inside of the curve help cornering.

The road surface in winter

In winter, the ice or frost covering on road surfaces is not always uniform. Isolated patches remain iced up when other parts have thawed out, and certain slopes are especially susceptible to this. Be on the look out for ice or frost patches, which you can detect by

their appearance, by the behaviour of other vehicles and by the sudden absence of tyre noise: tyres travelling on ice make virtually no noise. Adjust your driving early to avoid skidding.

See Chapter 5, *Maintaining vehicle stability*.

Driving through water

Driving at speed through water can easily deflect the front wheels and cause you to lose control. Take extra care at night, when it is difficult to distinguish between a wet road surface and flood water. Flood water can gather quickly where the road dips and at the edges of the road in poorly drained low lying areas. Dips often occur under bridges.

Surfacing materials	Grip characteristics	Problems
Tarmac or asphalt	Tarmac or asphalt surfaces give a good grip when they are dressed with stones or chips.	In time they become polished and lose some of their skid resistant properties.
Anti-skid surface	A high grip anti-skid surface (known as 'shell grip') designed to give extra grip on the approach to fixed hazards such as roundabouts, traffic lights and zebra crossings.	When newly laid, loose gravel on surface can reduce grip; patches can become polished over time.
Concrete	Concrete road surfaces often have roughened ribs which give a good skid resistant surface.	Some hold water, which freezes in cold weather and creates a slippery surface which is not easily seen.
Cobbles	Low grip when wet.	Rain increases the likelihood of skidding.

If you decide to drive on, follow the steps below:

- Engage first gear and keep the engine running at just above idle speed. (Just enough to prevent stalling.)
(In older vehicles, driving at high revs could prevent water being drawn into the exhaust system. In many newer vehicles, the air intake is positioned below the front bumper so avoid high revs as this would cause water to be sucked into the engine causing expensive damage.)
- Drive through the water at a slow and even speed (a slow walking pace) to avoid making a bow wave.
- Grip the steering wheel more tightly to maintain direction as you drive through the water.

If the road is entirely submerged, stop the vehicle in a safe place and cautiously find out how deep the water is. The depth of water that you can safely drive through depends on how high your vehicle stands off the ground and where the electrical components, engine, air intake and exhaust pipe are positioned. For example, submerging a hot catalytic converter could cause damage.

Refer to the manufacturer's handbook for specific advice for your vehicle.

Observation and anticipation

- Engage first gear and keep the engine running at just above idle speed. (Just enough to prevent stalling.)
(In older vehicles, driving at high revs could prevent water being drawn into the exhaust system. In many newer vehicles, the air intake is positioned below the front bumper so avoid high revs as this would cause water to be sucked into the engine causing expensive damage.)
- Drive through the water at a slow and even speed (a slow walking pace) to avoid making a bow wave.
- Grip the steering wheel more tightly to maintain direction as you drive through the water.

- When you leave the water continue driving slowly and apply the foot brake lightly until the brakes grip. Repeat this again after a short while until you are confident that your brakes are working normally.
If just one wheel enters a deep puddle (usually the nearside wheel), that wheel will slow rapidly causing the vehicle to veer in that direction. If you can't avoid the puddle, prepare by tightening your grip on the steering wheel and holding it straight until clear.

Road signs and markings

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Road signs and markings warn of approaching hazards and give instructions and information about road use.

Make the best possible use of road signs and markings:

- Observe – actively search for road signs and markings in your observation scans, and incorporate the information they give you into your driving plan as soon as possible. Many drivers fail to see and make use of them, and so lose valuable information.
- Understand – be able to recognise them immediately. You should be familiar with the *current* edition of the *Highway Code* and *Know your Traffic Signs*.
- React – react to a sign or marking by looking ahead to what it refers to and building the information into your driving plan. Where the sign or marking refers to an unseen hazard, anticipate the hazard and adapt your plan accordingly.

On road signs the furthest hazard is shown at the bottom and the nearest at the top.
Use your own observations to link the signs to the road layout ahead. Consider the furthest hazard first, so that you observe from the far distance, through the middle ground to the foreground.



When was the last time you looked at road signs in the current *Highway Code*?



On your next few journeys, check whether you know the meaning of each sign or road marking you meet and map them against the road layout ahead.

Unofficial road signs such as 'Mud on Road', 'Car Boot Sale' and 'Concealed Entrance' can also help you anticipate the road conditions ahead.

Town driving puts heavy demands on your observation, reactions and driving skills, and you need to be alert at all times. At complicated junctions, where it is important to get into the correct lane, local knowledge is useful. But even when you know the layout of main road junctions, one-way streets, roundabouts and other local features, always plan on the basis of what you can actually see – not what usually happens.

Local road knowledge

Increasing your local knowledge of the roads can help your driving, but never take familiar roads for granted. Loss of attention is a major cause of collisions and drivers are least attentive on roads

Making observation links

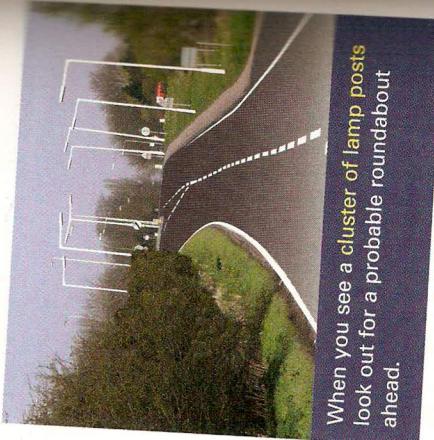
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Roadcraft

Observation links

Observation links are clues to the likely behaviour of other road users. Aim to build up your own stock of observation links, which will help you to anticipate road and traffic conditions as you scan the environment.

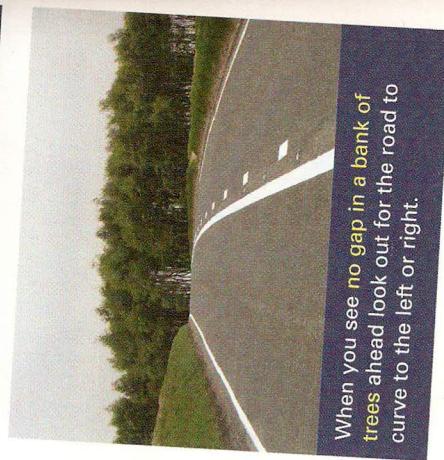
On the right are some examples of observation links.



When you see a cluster of lamp posts look out for a probable roundabout ahead.



When you see a single lamp post on its own, look out for the exit point of a junction.



When you see no gap in a bank of trees ahead look out for the road to curve to the left or right.

Some more observation links

When you see...	Look out for...
Hallway line beside road	Road will invariably go over or under it, often with sharp turns.
A row of parked vehicles	Doors opening, vehicles moving off. Pedestrians stepping out from behind vehicles. Small children hidden from view.
A bus at a stop	Pedestrians crossing the road to and from the bus. Bus moving off, possibly at an angle.
Pedal cyclists	Inexperienced cyclist doing something erratic. Cyclist looking over shoulder with the intention of turning right. Strong winds causing wobble. Young cyclist doing something dangerous.

Practise using observation links. What would you look out for if you observed:

- a pedestrian calling a cab
- fresh mud on the road
- a courier van
- a catering van or ice cream van in a lay-by
- a motorway slip road
- new hedge clippings or grass cuttings on a narrow country road
- a sign for a large leisure complex?

Can you think of a recent occasion where you failed to spot the significance of something you observed?

Could you use this experience to improve your anticipation skills?

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Observation and anticipation

Review

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In this chapter we have looked at:

- how you can develop observation and anticipation skills that will help to improve your driving
- the link between observation, planning and acting, and the need to anticipate and prioritise hazards
- how you can extract the fullest meaning from your observations
- why it is important to keep alert and acknowledge tiredness when driving
- using scanning and your peripheral vision to get the maximum information from observation
- how speed affects your ability to observe and anticipate
- using additional sources of information when your view is restricted
- ways of improving observation when you are driving at night
- weather conditions to watch out for and how to adjust your driving to poor visibility
- why you should make full use of information from road signs and markings
- ways to develop your skill at making observation links.

Roadcraft

Chapter 3 The system of car control



Check your understanding

Why is anticipation vital to better driving?

What is the relationship between observation and anticipation?

Why do you need a plan and what are the three key stages of planning?

Describe two ways in which you can improve your observation.

How can you get more information when your view is restricted?

In what ways does speed affect your ability to observe your environment?

When should you use dipped headlights?

What hazards should you look out for on the road surface?

Describe at least three examples of observation links.

If you have difficulty in answering any of these questions, look back over the relevant part of this chapter to refresh your memory.

Use this chapter to find out about:

- how to use the system of car control
- how to apply the system to common hazards.