

**Frequently asked questions on
how to manage sports facilities
to minimise the impact of
drought conditions**



How do we know if our sport pitch may be in area that is susceptible to drought conditions?

To find out which areas of the country are more likely to experience drought conditions you should visit the website of the Environment Agency at: <http://www.environment-agency.gov.uk/homeandleisure/drought/default.aspx>

How do we find out if our sports facilities are covered by a drought order/hosepipe ban?

Hosepipe bans are controlled by your water company – contact them or look at their website to find out what restrictions are in place. If you are unsure which water company supplies your water – have a look at your water bill. You can also visit the website of the Environment Agency at: <http://www.environment-agency.gov.uk/homeandleisure/drought/default.aspx>

What are ‘hosepipe bans’ and is sport exempt from their restrictions?

To ensure that there is sufficient water for essential uses some water companies are imposing ‘hosepipe bans’. These prevent the watering of sports pitches if the hosepipes are connected to a mains (drinking) water supply. The only exemption to this restriction is for ‘fixtures of national and international significance’. It is unlikely that an exemption will be made for recreational sport.

Why is water needed for sports pitches?

Water is needed for maintaining outdoor sports facilities for two main reasons:

1. To support plant growth, allowing the grass to recover from use and wear.
2. To ensure surfaces are safe with the correct hardness – particularly important in contact sports such as rugby union and rugby league as well as sports where ball bounce is critical such as cricket and tennis.

In cricket and tennis, water is also needed for the following reasons:

3. To help roll the pitches/courts to produce a hard smooth surfaces with an even ball bounce. Research has shown that rolling can become ineffective when water is not available and the surface becomes too dry and not malleable.
4. On clay tennis courts the water is also required to bind the surface together. Without regular watering the court surface will break up and will require significant and costly renovation work.

We are a bowls club and our green is watered by a permanently installed ‘pop-up’ sprinkler irrigation system. Is this covered by the ‘hosepipe ban’?

You will need to check this with your water company however; it is possible that the current hosepipe ban does not prevent the use of permanent ‘pop-up’ irrigation systems. This may

change in the future if the drought conditions deteriorate and further restrictions are put in place. You should note that static hand-moved sprinklers (e.g. rain guns) supplied by a hosepipe are affected by the ban and should not be used.

We are not in a drought area and therefore not currently subject to a hosepipe ban, what steps can we take to conserve water and prepare for any potential hosepipe ban?

The most effective approach is to provide the best possible environment for the grass to grow and survive when water resources are low and restricted. This can be achieved by:

- Increase your mowing height – this helps to reduce water consumption and encourages deeper rooting by the grass.
- Reduce your mowing frequency – this helps to reduce stress on the grass and helps to reduce compaction.
- Return grass clippings (i.e. do not collect clippings) where possible – this returns both nutrients and water to the turf and also provides a bit of mulch to reduce soil evaporation.

I understand that encouraging deeper root growth helps the grass be more resilient in times of drought and that one of the best ways of encouraging deep root growth is by aeration and removing compaction. Is this correct and is it appropriate in all situations?

It is definitely true that increasing the depth of the root system will give the grass access to deeper more moist soils, which have been less affected by evaporation. This will increase the volume of water (and nutrients) available to the grass making it more resilient in drought conditions.

In the right circumstances aerating and de-compacting the surface of the pitch and the soil profile will encourage deeper rooting however, aeration can increase the rate at which soils dry out and therefore aeration must not be carried out unless irrigation is available.

I understand that there are products available that can be injected or incorporated into the ground that will help reduce the stress on the grass in drought conditions. Are these special products worth considering?

There are products available from the turf management industry that can be used however, you should check how long these products will be effective for and weigh this up against the application rates and costs. If in doubt you should speak with an experienced groundsman / independent experienced pitch consultants who has used these products.

When is the best time to water?

Water should be applied in the late evening or overnight when the sun is down, this significantly reduces the water loss and allows more of the water to get deeper into the soil. Never apply water during the heat of the day as most of it will be lost.

How do we ensure that we use the water in the most efficient and effective way?

To ensure that you are using the water in the most effective way you should follow the following steps:

- Service your irrigation equipment to ensure that it is leak-free, blockage and scale free and all moving parts are free to move through complete arcs etc. Check distribution uniformity by putting buckets out to ensure water is distributed evenly
- Never leave a static, hose-fed sprinkler system (one where the sprinkler head does not move across the pitch) unattended. Always be prepared to monitor and move it regularly.
- The best way to apply water is the right amount on fewer occasions rather than applying water little and often. This will allow the water to get deeper into the soil, encouraging deeper root growth and reduced water loss due to evaporation and transpiration by the grass.
- Only apply the amount needed. You can check this by using a spade or corer to see how far the water is penetrating. If you have sandy soils or well drained soils then do not over apply water. If you have heavily cracked clay soils, apply water slowly otherwise water will simply flow down the cracks and away from the turf plants.
- Do not allow the water to pond or run-off as this wastes water and cause pollution. If irrigation is not going into the profile then consider spiking and look for areas of compaction. Reduce the rate of watering and increase the length of time for watering to reduce wastage.
- When watering, look for signs of water repellency (hydrophobicity) which is very common on dried out sandy or thatch soils. Water repellency isn't just when water ponds on the surface - it can cause water to flow limited parts of the soil and other parts of the soil will remain dry. Take cores or use a spade to look where water is going in the soil profile. Be aware that although thatchy soils can stay wetter for longer once they dry out they are very difficult to wet up.
- You should consider watering the minimum number of pitches possible. Review your fixture list and consider the potential wear and recovery required - you may be able to take certain pitches out of use.

Our club is in a drought area with a hosepipe ban, what can we do to minimise the impact of the hose pipe ban?

When a hose pipe ban is in place and the available water is limited to the occasional rain it is very important to:

1. Limit the stress on the grass by:
 - Limiting any unnecessary wear on the pitch. This may mean closing some pitches.
 - Avoid applications of fertiliser and pesticide which could scorch or stress the grass
 - Limit the use of machinery to essential turf maintenance
 - Increase your mowing height – this helps to reduce water consumption and encourages deeper rooting by the grass.
 - Reduce your mowing frequency – this helps to reduce stress on the grass and helps to reduce compaction.
 - Return grass clippings (i.e. do not collect clippings) where possible – this returns both nutrients and water to the turf and also provides a bit of mulch to reduce soil evaporation.
2. Be prepared to make sacrifices:
 - Cricket outfields will brown; however they will recover when rain falls, so focus on the square. Advise and educate players on diving and stopping on hard ground where the risk of impact injuries and abrasions will increase due to the hard ground conditions.
 - Delay renovation work to the autumn / winter when rain is more likely (but not guaranteed)

- With contact sports, if the ground gets too hard it may be necessary to postpone or cancel games. You should set up a procedure for regularly reviewing pitches to ensure that they are safe to play. The procedure should be similar to how you review playing conditions in the winter to ensure that pitches are safe to play on and that no significant damage will occur to the playing surface.
3. Make the most of any rainfall that does occur:
- Try to encourage as much of the rain that falls to infiltrate the playing surface –but avoid aeration which can speed up the drying of the soil which make the conditions worse for the grass to survive and revive.
 - After it has rained take the opportunity to carry out water sensitive operations such as rolling in cricket. Think carefully about which pitches can be rolled
 - If rain falls on areas that have been seeded you should consider using germination sheets to help the germination get the new grass established.
 - Capture rainfall off roof surfaces by installing water butts on down pipes (make sure that they are installed with diverters for when the water butt is full). This captured water is very valuable for watering small renovation areas.

What alternative sources of water should we consider to help us maintain our pitches?

There are three potential sources of water which are worth considering. These are:

1. Using existing watercourses
2. Using a borehole
3. Using grey water

Existing water courses/ponds

It is currently possible to abstract up to 20m³ a day from a watercourse or borehole without a licence. However, permission is required from the Environment Agency if you need to disturb or alter the bank of a watercourse. In addition, you will need to obtain approval from the owner of the land. You should also have the water tested for its suitability for use.

You should note that you are not allowed to abstract water from a river/pond where flows are low and harm could be caused to the environment by abstracting water. Further information can be found on the [Environment Agency's website](#).

Using a Borehole

Where groundwater tables are high it may be possible to sink a shallow borehole however, if this is not the case due to prevailing drought conditions you may be able to drill a deeper borehole to access an aquifer. To establish if there is an available aquifer you will need to seek the advice from a properly qualified consultant. Further information is available from the British Geological Survey (BGS). Consider commissioning a Borehole Prognosis Report. Further information on this can be found on the [BGS website](#).

Using Grey water

By using the grey water from kitchen sinks and showers it is possible to create a small source of water however, in most cases it is not possible/easy to install the necessary equipment at short notice. If you wish to consider the use of grey water further you can get more detailed information on the [Environment Agency's website](#).

How safe is a hard pitch? How can we manage and monitor the safety aspects?

For contact sports such as Rugby Union and Rugby League playing on dry pitches which are likely to be hard, needs careful monitoring due to the higher risk of injury. Clubs and officials need to take a similar approach to how they review winter pitch conditions when they are frozen or waterlogged pitches, i.e. is the pitch dangerous to play on and/or will playing on the pitch do serious long term damage to the playing surface? A common sense approach needs to prevail and where necessary matches should be postponed and cancelled in advance to avoid unnecessary travel etc.

Our pitch is in an area where a hosepipe ban is in place/is being proposed- Can we appeal and/or make a special case?

It is possible to appeal to your water company for an exemption to the hosepipe ban but this should be a last resort and needs to be a reasonable case as any exemption will be considered in the light of other demand for water.

- The strongest case to make is on health and safety grounds and you will need to explain why watering is necessary to maintain safe participation. Your case may be helped by setting out the wider community and sporting benefits that your club brings and how this is threatened by the water restriction. Keeping the grass green is not a justifiable reason.

Any exemption will have to consider the following:

- The number and ages of people affected
- The value of assets affected – how much will it cost to renovate lost grass cover for example.
- The quantity of water normally used and the minimum necessary application required
- How the water will be applied
- When will the water be applied (ideally dusk to dawn)
- What the club/board are doing to limit consumption and save water
- Is there a long term strategy in place for reducing mains water consumption

Applications for exemptions need to be realistic – total, irrecoverable destruction of a square or court is a claim too far. You should consider that neighbours and the wider community might not support your proposal to use water for irrigating sports pitches if they do not understand your case. You should explain and demonstrate the need for the exemption and the benefits that maintaining sports participation and ensuring the long term viability/sustainability of the club will bring to the community.

Our contractor is planning to start the construction of our new pitch in three weeks' time at the beginning of May and is encouraging us to sign the contract however, our committee is concerned that with the current dry conditions and the current hosepipe ban that this may not be a wise move. What factors do we need to consider?

You need to discuss your concerns with your Pitch Consultant and consider their advice carefully before making any decisions. The consultant will have a detailed knowledge of the site, the proposed works, the contract documents, as well as knowledge of the experience and capability of the pitch contractor in managing these conditions. They will take all of this into account when considering their advice to you on the impact of the prevailing and expected weather conditions.

It is difficult to predict the weather in the medium / long term and therefore it will not be an easy decision to delay a project with the uncertainty over the weather through autumn and winter periods. Dry conditions can be beneficial for handling soils during construction

(provided that dust does not cause a problem) but lack of access to irrigation during drought conditions will make grass establishment difficult and this may well lead to a significant delay in the completion of the works and a delay to when the pitch will be available for playing on.

Your discussions with the consultant could consider:

- Whether turfing is more viable than reseeding. New turf still needs to be watered in to establish root growth and resistance to wear which is likely to add to the project cost
- Whether a contingency should be included for overseeding / reseeding later in the project when rains return if established summer seeding / turfing plans go ahead.
- Who is responsible for irrigation during the grow-in period? Is it the contractor or the facility management?

I would like to get someone who can give our club specific advice on what we need to do to manage our pitches in the most effective way. Where can I get more information and advice?

You need to seek the advice of a qualified and experienced pitch consultant and groundsman who can visit your site, assess the facilities and conditions, as well as to talk to you about how you use the site and what your capabilities are to get a better understanding of what the solutions might be. The advice you receive could be critical to the performance and availability of your facilities for many years to come and therefore you should be sure of their experience and effectiveness before commissioning/taking their advice. The following organisations provide lists and advice on consultants who may be suitable:

- [Institute of Groundsmanship \(IOG\)](#)
- [The Sport and Play Construction Association \(SAPCA\)](#)

We are tennis club and have some clay courts which we have been told we will soon be unable to use because of a hose pipe ban. Is this correct and what will be the consequence of us playing on the clay courts if we do not water them?

You should first contact your water company to establish if there is definitely a hose pipe ban as it is critical to the performance of the clay surface. If the surface of the court is not regularly watered and kept moist it will start to dry out and erode. Playing on an un-watered surface will accelerate the erosion leaving undulations in the surface which could expose the sub-base. This could create a dangerous surface and will be expensive to repair in the future. In other words, if you are not able to properly irrigate your clay courts you will need to close them until the hose pipe ban is lifted. You should seriously consider taking the nets down to avoid the temptation for people to play on them.

The water company will need to know the type of irrigation system that you use as this will determine whether it is covered by the drought order. Currently systems that incorporate permanent pipe work (i.e. not hose pipes) are not included by many drought orders. This means that if you use a pop-up irrigation system or an underground cell irrigation system it is likely that your water company will accept their use however, you need to specifically check this and also be aware that if the drought conditions worsen then they may not be acceptable in the future.

If your current irrigation system incorporates a hosepipe then this will be covered by the hosepipe ban and you will not be able to maintain the court effectively unless you can make a special case to the water company for an exemption to the ban. Possible grounds for an exemption could be on the basis of maintaining safe participation in sport, which has health benefits, and also sustaining the club which is dependent on the income from the courts as well as burdened by the cost of the additional remedial works if the courts are not watered. It is unlikely to be justifiable that keeping the courts in top condition will be considered a special case for an exemption to the ban.

We operate and run a water based hockey pitch and we have been told that we will soon be unable to use the pitch because of a hosepipe ban. Is this correct and what will be the consequence of us playing on the pitch if we do not water it?

You should first contact your water company to establish if there is definitely a hosepipe ban as it is critical to the performance playing surface as such surfaces are designed to be played on wet and not dry. The water company will need to know the type of irrigation system that you use as this will determine whether it is covered by the drought order. Currently systems that incorporate permanent pipe work (i.e. not hosepipes) are not included by many drought orders. As most pitch watering systems comprise permanent piped rain guns or pop up sprinklers, it is possible that your company will accept their use however; you must specifically check this and also be aware that if the drought conditions worsen then they may not be acceptable in the future. With most surfaces, if they are not watered before playing hockey it will be hazardous to players and will accelerate the wear of the surface. The implications are therefore potential injuries to players and a potential invalidation of the manufacturer's warranty.

You must also establish which particular artificial grass surface has been installed i.e. the manufacturer and surface specification. This is very important because there are many different surfaces used for water based pitches and they all perform differently if not watered. You should then contact the surface manufacturer or the installer, explain the situation and ask them:

- Is the surface safe to play hockey and other sports on if not watered?
- If the surface is safe when dry what is the implication on the surface performance and is the surface more likely to be damaged?
- Is there any effect on the warranty if the pitch is played on dry?

If your current irrigation system incorporates a hosepipe or a form of irrigation that is not 'approved' by your water company then you will need to make a special case to the water company for an exemption to the ban. Possible grounds for an exemption could be on the basis of maintaining safe participation in sport, which has health benefits, sustains the sports club, which is dependent on the income from the pitch and the potential for damage and invalidation of the carpet warranty if the pitch is not watered. The need to keep the pitch in top condition is unlikely to be a justifiable reason.

In situations where the water supply is drawn from a private borehole, the operator must keep within their agreed annual allowance although you should contact your water company to see if the drought order has affected your agreement.

Why is water essential for cricket?

- The ECB funded rolling trials at Cranfield University (www.cranfield.ac.uk/sas/sst/rolling) have shown that water is critical to pitch preparation – this is not just a grass growth issue but a soil

mechanics issue. Water is required to increase soil water content so that the clay can be remoulded using a roller. This remoulding is necessary to produce a uniform hardness across the pitch and a smooth flat surface. This ensures ball bounce is predictable and consistent.

- As pitches are used and dry out they tend to become worn, deform and crack – particularly during dry conditions. This causes the surface to become more variable and ball bounce less predictable. Rolling dry soils has less effect than rolling wetted pitches – compaction is limited and it is difficult to re-smooth the surface after use.
- Uneven bounce can make a pitch unsafe to play on – especially for juniors – this is because ball bounce behaviour becomes harder to predict and more likely to hit the body – resulting in potentially serious injury (an example being the Warwickshire vs Worcestershire LV Championship match last season). It also alters the balance between bowler and batsmen, making the game shorter and less enjoyable for participants.
- As the clay loam soils used in cricket dry, they shrink – this can structure the soil – which is desirable in that it allows plant roots to explore deeper parts of the soil profile to exploit water but it can also reduce the quality of pitches through cracking and the formation of layers in the profile. Long term this could damage a cricket surface but it is unlikely to cause long term problems if squares can be re-wetted on an annual basis – and could be beneficial due to improved root growth.

How much water is used in irrigation in cricket?

Survey of 45 clubs in the Sustainable Cricket Project showed that:

1. Clubs do not know how much water they use (because it is historically cheap and convenient).
2. 84% of clubs use mains water for irrigation
3. Where data were available typical annual consumption for irrigation was:
 - o Small club (1-2 adult XIs, limited junior section): 5-10 m³/y
 - o Medium club (2-3 adult XIs, junior section): 50-150 m³/y
 - o Premier league club (4-5 adult XIs, 2 grounds, large junior section): 200-300 m³/y
4. Only 10 facilities in the country irrigate outfielders – for the majority of clubs this is an issue of watering squares.
 - o A typical 12 pitch cricket square is 12 x 3 m x 25 m = 900 m² in area (0.09 ha)
 - o A typical pitch is only 3 m x 25 m = 75 m² in area. Therefore irrigation requirements are small relative to other sports including golf, football and bowls.
5. For a typical 20 minute watering during pitch preparation – clubs will use 500-800 L (0.5-0.8 m³)

What can cricket do in the short term?

The application of 750 L is equivalent to 10 mm depth of irrigation – a sufficient maintenance depth per pitch preparation.

1. Water should be applied in the evening / overnight at low application rates – to maximise infiltration and minimise evapotranspiration – daytime water applications should be avoided.
2. Clubs should avoid static hand-moved sprinklers and use hand controlled roses etc. to avoid over application and runoff. Micro-spray hoses are another technique to limit application rate to below infiltration rate.
3. Clubs should seek to capture as much water as possible when it rains – simple investment in water butts to collect water from the clubhouse roof – could prove invaluable.
4. Clubs should roll when it rains – maximising natural irrigation opportunities.
5. Clubs should keep an eye on the weather forecast – allowing them to react appropriately.

6. Clubs should use covers to help reduce evapotranspiration losses.

What do water companies want to know?

- The number and ages of people affected
- The value of assets affected – how much will it cost to renovate lost grass cover for example.
- The quantity of water normally used and the minimum necessary application required
- How the water will be applied
- When will the water be applied (ideally dusk to dawn)
- What the club/board are doing to limit consumption and save water
- Is there a long term strategy in place for reducing mains water consumption
- Applications for exemptions need to be realistic – total, irrecoverable destruction of a square is a claim too far

What does sport need to be doing in the long term?

1. Diversification away from mains water supply (use of abstracted surface and groundwater, rainwater harvesting, grey water recycling).
2. Reduction of consumption (both club house and grounds) – e.g. monitoring consumption, reducing run off, selecting drought tolerant grasses, use of covers to reduce evapotranspiration.

Sport England and the ECB are working with Cranfield University and other key partners to develop advice tools and media to help clubs achieve these objectives and to achieve short term immediate reduction in water consumption by reducing water in the clubhouse and use on the grounds and pitches.

Other guidance

The following guidance is also available about the drought from Sport England:

- [Drought Advice Note](#)
- [Drought Report](#)
- Further information can also be found on the [ECB website](#) and the [Institute of Groundsmanship website](#).

Partners

This guidance has been developed by Sport England in partnership with the following governing bodies of sport (NGBs):

[The Football Association](#)

[The England and Wales Cricket Board](#)

[The Lawn Tennis Association](#)

[The Rugby Football Union](#)

[The Rugby Football League](#)

[The England Hockey Board](#)

Research

The guidance has been developed from research work carried out by Cranfield University for Sport England on the impact of Climate Change and this work will be published in Spring 2012.

Advice and consultation

Sport England and the NGBs have also been supported and advised by the following:

[The Institute of Groundsmanship \(IOG\)](#)

[TGMS Ltd](#)

[STRI](#)

[Professional Sportsturf Design \(NW\) Ltd](#)

[Total Turf Solutions Ltd](#)

[Materials Science Consultants Limited](#)

[Labosport](#)

