Initial prospects for irrigation - forecast for 2019

Summary

Overview

This document provides the initial prospects for irrigation across areas of England where irrigation is most significant. We will be updating these prospects into the spring. Figure 1 shows a map of irrigation prospects for 2019. The insert shows the position this time last year. January ended with typically just less than 50% of long term average (LTA) rainfall across most parts of England. Most areas of the country were drier than normal for the six month period prior to January. Drier conditions with higher than average temperatures have predominated in February and are forecast to continue until the end of the month due to high pressure. The latest three month Met Office forecast from March to May indicates there is no clear signal on rainfall being above or below average, while above average temperatures are expected to dominate. The extended outlook into March is uncertain with weather systems bringing spells of cloud, rain and strong winds followed by showers and some drier, sunny interludes. The wettest, windiest weather remains most likely in the northwest, with the best of any drier, brighter weather in the south, extending to central areas at times. By late March confidence is low, but there remains a possibility of a return to slowly-evolving weather patterns across the UK giving some drier, brighter spells. The Irrigation prospects reflect the current hydrological conditions and latest available weather forecasts. Many areas are classed as moderate, with groundwater levels in some Areas still below normal for the time of the year. Some Areas have provided detailed prospects which are contained later in this document. The document also contain the prospects should the remaining winter rainfall scenarios turn out to be more pessimistic (i.e. drier) than expected continuing into the summer. Therefore a range of prospect forecasts are presented for some Areas.

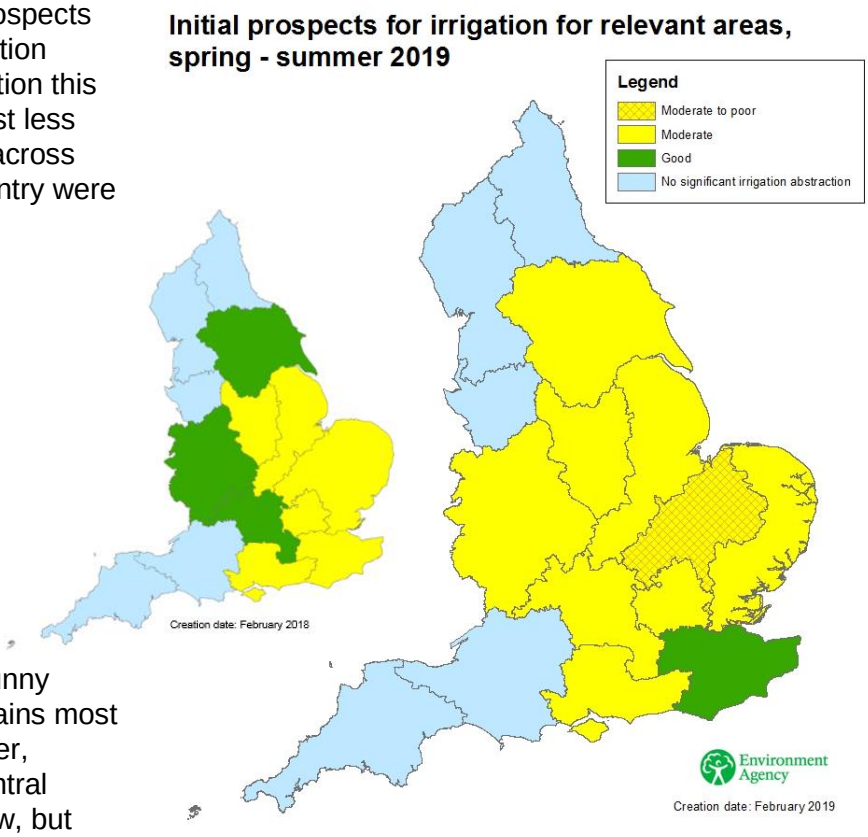

Figure 1

Definitions

Prospects for spray irrigation are defined as ‘Good’, ‘Moderate’ or ‘Poor’.

Good	Water levels are average or above average and supplies are expected to be safe. There is a possibility of minor local controls on abstraction from surface water in late summer if the weather is exceptionally hot and dry.
Moderate	Water levels are low. Some controls on surface water abstraction are possible by midsummer if the weather is hot and dry. Controls on abstraction from groundwater are possible in small, sensitive groundwater areas.
Poor	Water levels are well below average. Soil moisture deficit is developing early and significant restrictions on abstraction from surface and groundwater are probable.

Paul Hammett, NFU's water specialist has urged growers to monitor irrigation prospect announcements from the Environment Agency as they are updated in the months ahead. He said “A return to wet weather conditions could still turn the situation around, but summer drought measures are increasingly likely if dry weather persists, and time is running out to fill farm reservoirs”.

Prospects for individual areas

Yorkshire

The prospects for water resources availability for irrigation in Yorkshire for spring - summer 2019 are MODERATE.

Kent, South London and East Sussex

In Kent and South London Area the water resource availability for the 2019 irrigation season is: GOOD in the ‘Most likely’ scenario and MODERATE in the ‘Reasonable worst case’ scenario

The scenarios are defined as:

- Most likely - 100% of long term average (LTA) rainfall.
- Reasonable worst case - 80% of LTA rainfall.

East Anglia

The overall summer prospects for water resources availability for spray irrigation in East Anglia are currently MODERATE to MODERATE to POOR.

Hertfordshire and North London

The prospects for water resources availability for irrigation in Hertfordshire and North London are currently MODERATE, and likely to remain MODERATE based on the latest weather forecasts.

Lincolnshire and Northamptonshire

A slow start to the recharge period and a dry January means that the overall summer prospects for water resources availability for irrigation in Lincolnshire and Northamptonshire are currently MODERATE.

East Midlands

East Midlands will not be producing an irrigation prospects but their spray irrigation outlook for spring - summer 2019 is MODERATE.

West Midlands

The summer prospects for water resources availability for irrigation in the Environment Agency's West Midlands are currently MODERATE.

Solent and South Downs

The indicative spray irrigation prospects for spring/summer is currently MODERATE. It is rather early to produce a spray irrigation prospects as we are still in the groundwater recharge season. Groundwater and river flows are improving due to recent rainfall but the Area will have a better idea of formal prospects later in March/April.

Thames

Thames haven't yet produced a formal irrigation prospects for this year but currently the assessment is MODERATE.

Area detail

Yorkshire

Background

2018 was notable for the extremes of weather that took place. Water stocks did not recover in the early winter period, but there was a significant increase in stocks following the cold and wet weather that persisted throughout March and early April. The summer of 2018 started with river flows and groundwater levels at normal or above in all of the waterbodies in Yorkshire. This was reflected in storage reservoirs which were at or around 100% full for all purposes (Navigation, Public Water Supply, Agriculture). Despite this promising start to 2018, the hot dry summer took its toll on water resources for all water users, including agriculture.

Despite the dry start to 2019, water resources have been replenished to some extent since the extreme summer conditions - river flows have recovered and storage reservoirs have refilled.

Soil Moisture Deficit calculations currently show that soils throughout Yorkshire are classified as wet. This means that low volumes of rainfall still keep many reservoirs in Yorkshire relatively full as there is lots of runoff from the hills. Reservoirs regulate flows in many of our Yorkshire rivers such as the Don, Aire, Calder and Holme.

However, so far groundwater refill has been limited and has not made up for the water lost over the summer of 2018. The current groundwater conditions are reflected in the groundwater-fed river flows in East Yorkshire, where the flows stabilise for a short period following rainfall but continue their steady decline once the rainfall impact has worn off.

As of February 2019, groundwater levels in both the Chalk and Corallian Limestone aquifers are at average or just above average for the time of year. The Magnesian Limestone aquifer within Yorkshire is just below average for the time of year.

The Met Office is currently forecasting Atlantic weather fronts affecting the west and northwest of the UK, with these perhaps making some progress across to the east of the country. These will occasionally bring rain to some places, however with higher pressure remaining close to the east of the UK means we are more likely to see a continuation of drier than average conditions in the near future.

Forward look

Spray Irrigation prospects for the Yorkshire Area for Spring - Summer 2019 are currently MODERATE. This is due to the continued lack of recovery in groundwater stocks. Although many aquifers have similar levels to this time last year, there was rainfall in excess of the Long Term Average throughout March and April 2018 coupled with extremely cold temperatures.
Should a hot, dry summer occur without any significant rainfall in early spring, then abstractors from both groundwater and surface water may encounter restrictions, and the environment would not have same resilience it had in 2018.

During 2018 the Environment Agency launched its "Flexible Abstraction" initiative. This allowed abstractors in the agricultural sector to trade water quickly with other licence holders or increase abstraction. In Yorkshire this mainly utilised groundwater resources, which were plentiful at the time.

All of the abstractors who utilised this position are encouraged to vary their licence if they require an increase in volumes for future years. Abstractors must also be aware that the specific conditions of Summer 2018 meant hot and dry conditions were accompanied by healthy groundwater stocks, allowing trades and increased volumes from these aquifers without increasing the risk to the environment. Conditions in 2019 may be very different, therefore we will make decisions on any flexible abstraction requests based on their current risk to the environment and water resources locally.
An up to date version of the Environment Agency's Flexibility Position can be found on the NFU web site following this link: https://www.nfuonline.com/cross-sector/environment/water/irrigation-and-water-resources/environment-agency-licence-flexibility-provisions-extended-to-reservoir-filling/.

For those farmers who wish to extend their licensed abstraction period, we strongly recommend that you apply now to formally vary your licence. In most cases these variations will be relatively straightforward and will provide you with long term drought resilience without the need to talk to us in the future for a temporary dispensation.

We do have powers to further restrict the abstraction of water for irrigation from rivers, streams and underground sources, and will use those powers should the situation become critical. If such a situation arises, however, we will always seek to achieve as much as possible through voluntary savings before imposing formal restrictions. Total bans will only be used as a last resort

For the most up to date water situation reports please visit our website.
https://www.gov.uk/government/statistics/water-situation-report-yorkshire-and-north-east

If you have any questions or would like to feedback comments about the prospects report please contact Yorkshire Area Drought Team on drought.yorkshire@environment-agency.gov.uk

An electronic version of this document is available on the NFU here: http://www.nfuonline.com/about-us/our-offices/north-east/environment-and-land-use-latest-news/water-use-in-the-north-east/

Kent, South London and East Sussex

Background

After an exceptionally dry winter 2016/17, spring and autumn 2017 were also very dry. In early 2018, there was a significant improvement in the water resources situation with recovery in groundwater levels, rivers and reservoirs. However the summer saw particularly high temperatures and exceptionally low rainfall across the Area and the country, which continued into October.

So far this winter, the area has received 97% of the long term average rainfall. However, there is still a need for average rainfall for the remainder of the winter to support further recovery and improve irrigation prospects. More detailed information can be found in the Environment Agency's Area Monthly Water Situation Report at: https://www.gov.uk/government/publications/water-situation-local-area-reports

Forward look

Indicative spray irrigation prospects for the summer are to MODERATE to GOOD across the Area.

Under the reasonable worst case scenario of 80% long term average rainfall, flow/level constraints for abstraction licences would likely come into force for:
• rainfall dependent catchments from the middle of spring and remain throughout the summer;
• groundwater fed catchments from late summer onwards.
This scenario would lead to moderate irrigation prospects.

Under the most likely scenario, if there is sustained, average rainfall until the close of the recharge season, irrigation prospects will continue to improve with a forecast of good irrigation prospects. In this scenario, flow/level constraints for abstraction licences would likely come into force for:

- rainfall dependent catchments from early to mid-summer

When constraints are in force, we encourage abstractors with Hands off Flow conditions (HoFs) to keep track of daily river levels on our website: https://flood-warning-information.service.gov.uk/river-and-sea-levels , so they can take advantage of brief increases in flows following rainfall events. Further advice and details will be sent to affected abstractors prior to when constraints come into force.

What else can Irrigators do?
We are encouraging irrigators to take the following actions:

- Abstraction Licences – Check the licence details and special conditions and at all times adhere to them – these are in place to protect the natural environment and neighbouring abstractors downstream.
- To help other abstractors, please tell us if you're not planning to use your licence in 2019.

We encourage all abstractors to provide email contact details, so we can improve our river flow messaging services to abstractors.

This is an interim forecast and a further update will be provided by mid-April.

For further updates or advice please contact your local environment officer or the Groundwater Hydrology team on: ksl.gwh@environment-agency.gov.uk

East Anglia

Background

Rainfall

From May 2018 to January 2019 East Anglia has seen the fourth driest period since records began in 1910. We have seen a reduced amount of rainfall in the area in most months, with only August, October and November 2018 rainfall being close to the long term average. June was the driest month of last year, and the second driest on record (since 1910), with only 7mm of rainfall.

Following a dry start to the autumn in 2018, rainfall between November 2018 and February 2019 has been around 80% of the long term average in the east and only 75% in the west. Most of this rainfall was soaked up by the unseasonably dry soils or by intermittent percolation directly into aquifers. This winter has seen very low total river flows, significantly affecting the availability of water to fill storage reservoirs. Notably, there have been very few significant heavy rain events during this period.

Summer 2018 saw temperatures regularly exceeding 30 degrees, causing a very high demand for water both for public water supply and for irrigation. Soil moisture deficits went from notably low at the beginning of May to notably high at the end of July. In the level-based Fenland areas water levels dropped to a point where both voluntary and statutory restrictions on irrigation were required, despite early collaboration between water companies and irrigators.

In 2019, January rainfall was only 26mm, 51% of the long-term average, causing most of our river monitoring sites to drop to notably or exceptionally low levels. So far during February we have received 75% of long-term average rainfall, with South Essex receiving close to average amounts. Soil moisture deficits have fallen sufficiently on the east part of the area, so that further moderate rainfall should see steady recovery of all major aquifers. This is around 4-6 weeks later than usual, meaning prospects for next year continue to depend on rainfall in the next 8 to 10 weeks. However, the latest weather forecast suggests the remainder of the month will remain dry.

River Flows

River flows are still low for the time of year and are only slighter higher than those expected in the summer. This has led to winter cessation abstraction licence conditions being triggered in many catchments and farmers unable to store water in their reservoirs ahead of the summer.

Groundwater

The groundwater recharge season began two months later than usual, starting in November and December. Whilst most observation sites in the east of the area have recorded some recharge with some recovering to normal seasonal levels, most of the sites in the west of the area remain well below average. The recharge that was taking place has slowed or stopped during January.

Water Rights Trading Map

Last summer, we received numerous requests for flexibility around abstraction licence conditions or temporary abstraction licence trades and in many cases, licensed water or water stored in reservoirs has been able to be traded.

In response to this demand, we developed an online tool which we hope can help farmers to identify potential for trades. We hope that this may be useful should farmers still require flexibility this year and will be complementary to the NFU's Water Bank. The '**Help for water rights trading'** tool can be found using this link.

https://environment.maps.arcgis.com/apps/webappviewer/index.html?id=c9176c299b734cff9a6deffcf7f40a4e

Forward look

Groundwater levels are likely to remain below normal or lower this summer. Rivers are likely to be flowing below normal levels, in groundwater fed catchments throughout the irrigation season.

East Anglia area (west)

Prospects across East Anglia West area are MODERATE to POOR for 2019. Soil Moisture Deficits are above normal this winter. Average rainfall during the rest of winter and spring would mean river flows likely to be flowing below normal levels to notably low levels in groundwater fed catchments throughout the irrigation season. Groundwater levels are expected to remain below normal levels at most sites. It requires significantly higher than average rainfall to get levels back to normal levels before summer.

If the dry weather conditions continue, river flows are likely to fall to notably low and exceptionally low levels in the Ely Ouse catchment and to below normal and notably low in the Norfolk area. Groundwater levels are likely to show little or no recovery and levels could be either below normal or notably low during the irrigation season.

It is likely that local water management actions will be required in Fenland catchments. These actions will most likely be required in the Middle Level, South Level, Counter Drain and/or the Hundred Foot catchments.

East Anglia area (east)

Aquifers currently below their normal levels are not expected to completely recover as we head into this summer, with the confined chalk of Essex and Suffolk potentially remaining below normal. There remains a small possibility that informal limited local water management actions may be required should summer 2019 be hot and particularly dry. Prospects for East Anglia east area following average winter rainfall is therefore considered to be generally MODERATE.

Prospects following February to April rainfall totals 2019 which are much below 75% of the long term average are less favourable. There is around a 20 % probability of rainfall being below this level, and if associated with continuing prolonged dry conditions in the summer, more active local water management actions may be required. A continuation of very dry conditions into the summer could result in flows falling below our exceptionally low indicator for drought in some catchments. Should this occur, the level of peak demand for resources direct from the river is likely to determine the need for demand reduction measures in individual catchments. This elevated risk remains low but significant enough for us to issue advice that we cannot exclude the need for formal restrictions. The prospects for this dry scenario are therefore MODERATE to POOR.

We are aware of the current difficulties in filling winter storage reservoirs, caused by a prolonged lack of winter runoff. Despite the encouragingly low soil moisture deficit we have not experienced any heavy or prolonged rainfall since Christmas. In some catchments centred on the Essex and Suffolk border, the lack of response in clay headwaters has been particularly acute. Wetter conditions in early February will have helped the situation to a degree. However, fully depleted reservoirs may require additional time to fill, possibly through an extension of the winter season into April.

Please talk to us now about actions you can take:

East Anglia area (west)
Andy Chapman
02030 251786

East Anglia area (west)
Mark Corcoran
02030 251895

East Anglia area (east)
Dawn Goodhall
02030 258371

Hertfordshire and North London (HNL)

Background

Winter rains dictate the overall hydrological situation including how much groundwater levels recover to support chalk streams over the summer. Winter rainfall has been uneven across HNL with the Upper Lee catchment presently 18% below long term average (LTA), while other catchments are closer to normal range.

Rainfall received so far this winter has contributed to removing the soil moisture deficit caused by the previous hot summer. Monitoring boreholes in the Colne and Upper Lee catchments have readings currently in the below normal range. The decline in seasonal groundwater levels appears to have ceased and the potential remains for some recovery depending on rainfall totals. River flows across the Area, which are supported by groundwater, are also in the below normal range. Flows in the winterbourne section of rivers have been intermittent this winter.

Winter storage refill

Winter abstractions have been affected by the limited rainfall with licence flow constraints activated. Reservoirs were emptied last summer due to hot temperatures and high abstraction volumes. Requests for extending the winter storage reservoir refill abstraction period into April will be considered in line with the Environment Agency's updated flexible abstraction position. https://www.nfuonline.com/cross-sector/environment/water/irrigation-and-water-resources/environment-agency-licence-flexibility-provisions-extended-to-reservoir-filling/.

Summer irrigation abstractors mainly rely on groundwater. There is limited direct river abstraction due to historical licence policy restrictions. HNL has a total 15 spray irrigation licences linked to flow constraints. Any restrictions are likely to be on longer due to low river levels. Mains water supply is an option for some but they would need to contact their local water companies to confirm arrangements. HNL will contact these licence holders before the summer abstraction period begins to inform them of the water situation.

Forward look

Above average rainfall totals are required before the irrigation period starts for the current situation to improve. However, due to negligible soil moisture deficits, this situation can quickly change if we receive sufficient rainfall. Without above average rainfall we will see lower river flows and some earlier than normal drying out of upper reaches. HNL consider irrigation prospects to be MODERATE and likely to remain moderate based on the present weather forecasts.

If you would like further information please contact: alastair.wilson@environment-agency.gov.uk or call 0203 025 8953.

Lincolnshire and Northamptonshire

Background

A very wet March and April saw the 2017-18 recharge period ending with groundwater levels classified as above normal or higher in both the chalk and limestone aquifers. River flows were classified as notably or exceptionally high across the area. There then followed a near average May before conditions turned dry and hot. June was one of the driest months on record particular towards the south of the area with the Upper Welland and Nene receiving less than 2mm of rain over the whole month. This hot dry weather continued well into July with the area receiving virtually no rainfall in the first 26 days. The hot dry weather caused a very high demand for water both for public water supply and for irrigation and soil moisture deficits went from notably low at the beginning of May to exceptionally high at the end of July. Despite the dry

weather base flows in groundwater fed rivers stayed within the normal range. Flows in the River Welland and River Nene were generally below normal and could not keep up with demand in the lower catchments leading to restrictions on abstractors. August was not as dry and the cooler weather provided some relief for irrigators. A dry September meant we started the recharge period with high SMDs which were not overcome by the near average rainfall in October and November. December was wetter than average and rivers started to respond and recharge began. This was brought to an abrupt stop on 24th December which was the start of a sustained period of virtually no rainfall that continued until the 16th January during which time soil moisture deficits actually increased. January finished with just 20mm of rainfall, 39% of the long term average and most of the river flow sites classified as either notably or exceptionally low with the chalk fed sites towards the north and east of Lincolnshire classified as below normal.

February started wet receiving an average of 27mm, 70% of the long term average in the first 10 days. This has resulted in some limited recharge and a temporary boost to flows but since then the weather has turned dry and it is forecast to be another drier than average month.

Groundwater levels give a clearer indication of the overall state of water resources as they largely determine the level of base flows in rivers during the summer months. Most groundwater levels are currently classified as below normal.

Forward look

A slow start to the recharge period and a dry January means that the overall summer prospects for water resources availability for irrigation in Lincolnshire and Northamptonshire are currently MODERATE.

With average rainfall we are likely to see below normal groundwater levels meaning that river base flows will be lower than normal in both the chalk and limestone fed rivers. The River Welland and River Nene are likely to see below average flows but are likely to see a greater recovery from an average spring.

With 80% of long term average rainfall groundwater levels are likely to be notably low this summer leading to significant lower base flows in groundwater fed rivers. The River Welland and River Nene will have notably low base flows under this rainfall scenario.

It is possible that local water management actions may be required across the area during the irrigation season. Even in average conditions any dry periods during the summer can result in some form of local water management actions.

If you would like further information or have a specific query about your abstraction licence please contact us at:

Drought.LNA@environment-agency.gov.uk

West Midlands

Background

Following a sustained period of hot dry weather between June to August 2018; September saw all hydrological areas receive some much needed rain. However overall totals were still below or very close to the Long Term Average (LTA) for the time of year. The most rain fell in the Dove and Welsh Uplands hydrological catchments, the least in the Avon to Evesham and Severn Estuary hydrological catchments.

During October and November all hydrological catchments received some rainfall but totals were below the LTA for the time of year. Western parts received the most rain. Upper Trent, Dove and the Shropshire Plains received the least. As expected soils became wetter in the west but overall, soil moisture remained below the LTA for the time of year. River flows also varied with the majority of sites recording flows in the normal range or lower.

December was a wet month and rainfall totals were above the LTA for the time of year. Even so river flows were lower than expected because of the high soil moisture deficits and reservoir refill.

January saw a return to below average rainfall with only 46% of the LTA received across the Midlands area as a whole. Soil moisture deficits increased and river flows became lower, compared to December. River flow measurements were exceptionally low for the time of year.

A relatively dry autumn and winter up to the end of January caused a delayed start to recharge of soil moisture and groundwater. Recent river and groundwater levels have increased from the end of January across the Midlands, following rainfall associated with Storm Erik. February's rainfall has been generally average but another 2 months of average rainfall and in some places above average rainfall is required to get conditions back to normal and enable adequate recovery of groundwater before the summer period.

Groundwater levels give a clearer indication of the overall state of water resources as they largely determine the level of base flows in rivers during the summer months. Groundwater levels range from 'below normal to normal' in the West Midland Area's key groundwater level indicator sites. The winter/ spring time is the usual top up (recharge) period for groundwater from rainfall. January and parts of February have been dry which has reduced the amount of water getting into our aquifers, which has influenced natural groundwater level recovery which we would have expected for this this time of the year.

Forward look

Spray irrigation prospects are moderate across the West Midlands. Normal abstraction licence restrictions are possible during most summers and given the current groundwater & river levels they are more likely to be imposed early this year. This will be even more likely if the weather is hot and dry. Controls on abstraction from groundwater are possible in small, sensitive groundwaters.

The key cause for concern is groundwater top up (recharge) that is needed to support watercourse flows during the summer, particularly if the coming months are dry. However, medium term predictions for groundwater level recovery from Centre for Ecology and Hydrology have indicated that by March 2019 the levels at the West Midlands key indicator sites should have recovered more towards the normal range, but this is subject to receiving normal rainfall for this time of year.

The principal aquifers of the Permo-Triassic sandstones in the West Midlands are a large store of groundwater and relatively resistant to drought conditions. Key indicator Permo-Triassic sandstone sites across the West Midlands show some variability but still remain within acceptable ranges, although we would have expected a little more recovery in groundwater levels as part of the natural rainfall recharge regime within our aquifers by now which raises some concerns for the summer.

Anthony's Cross observation borehole in Gloucestershire is low for the time of year, but is starting to improve slightly and the levels are rising currently, even with the little rainfall we have had.

Heathlanes borehole in Shropshire is well within the 'normal' range and indicating a more stable trend.

Four Crosses borehole in Staffordshire is currently 'below normal' with a slight receding trend.

Ram Hall borehole is near Coventry and within the Permo-Carboniferous sandstone and mudstone. Levels are currently within the 'below normal' range on a receding trend.

If you would like further information please contact: IEP_WMD_waterresources@environment-agency.gov.uk

Ensuring your business is resilient to drought

Climate change predictions suggest the extremes of weather we have seen in the last few years are likely to become more frequent in the future. It will become increasingly important to ensure we are as resilient as possible to periods of reduced water resource and drought. The section below gives you some ideas on what you could consider before and during a drought to help make your business more resilient.

We will work with abstractors to minimise the impact of drought and related restrictions on businesses in the future. If you have ideas on things such as voluntary initiatives to conserve water whilst reducing the impacts of imposed restrictions in your area, or would like to set up an abstractor group in your area to work together to improve resilience, please get in contact, our details are at the end of this document.

We continue to recognise the importance of irrigation to the agricultural industry and will aim to work with farmers and others to try to minimise, where possible, the impact of any dry weather on their businesses.

Abstraction is primarily controlled by conditions on licences and licence holders must ensure that they adhere to these at all times. We would encourage all abstractors to review their licences to ensure that they continue to meet their needs. In areas across England in 2009 and 2010, some farmers experienced difficulties lifting crops from dry ground and found that their abstraction licences didn't cover abstraction beyond the end of September. You may also need to extend the winter season on your licence from February to March.

For those farmers who wish to extend their licensed abstraction period, we strongly recommend that you apply now to formally vary your licence. In most cases these variations will be relatively straight forward and will provide you with long term drought resilience without the need to talk to us in the future for a temporary dispensation. This is particularly important as the allowances in the last few years are unlikely to be made in the future as more farmers formally vary their abstraction periods.

We do have powers to further restrict the abstraction of water for irrigation from rivers, streams and underground sources, and will use those powers should the situation become critical. If such a situation arises, however, we will always seek to achieve as much as possible through voluntary savings before imposing formal restrictions. Total bans will only be used as a last resort.

The latest version of the Environment Agency's Flexible Abstraction Position can be found on the NFU web site following this link: https://www.nfuonline.com/cross-sector/environment/water/irrigation-and-water-resources/environment-agency-licence-flexibility-provisions-extended-to-reservoir-filling/.

We are planning to extend the Water Rights Trading Map in East Anglia to Midlands and Northamptonshire and Lincolnshire.

More detailed hydrological information for all the areas can be found in the Environment Agency's Weekly and Monthly Water Situation Reports at:

https://www.gov.uk/government/collections/water-situation-reports-for-england

What can irrigators do?

For their part, irrigators are encouraged to take such actions as they can to minimise the impacts on the environment and their businesses: Please talk to us now about actions you can take. If you don't know your local EA contact, please call our customer service line on 03708506506 and ask to speak to your local water resources member of staff dealing with spray irrigation prospects.

Abstraction Licences

- Check your licence details and, at all times, adhere to licence conditions. The Environment Agency is developing its secure online water resources licensing service, which can be found by searching GOV.UK for 'Manage your water abstraction or impoundment licence'.

As part of the digital service you can now:

- Submit your abstraction returns
- View your licence and previous returns
- Receive letter notifications (expiry reminders, HoF warnings and irrigation bans)
- Give permission to a named contact to manage your licence

Voluntary Restrictions

- Comply with voluntary restrictions where they are requested. This will delay, and may avoid the need for more formal restrictions.

Storage Reservoirs

- Take every possible opportunity to ensure that high flow storage reservoirs are as full as possible by the start of the irrigation season;
- Continue to plan for the future. Is there an opportunity to convert from direct summer abstraction to high flow storage? The Rural Development Programme for England (RDPE) may be able to help with funding.
- Ensure your reservoir is regularly maintained, checking for cracks and leaks.
- The Environment Agency has a range of literature available to help support your business including Rain Water Harvesting; Think about installing an irrigation Reservoir and adopting Best Metering Practice. Guidance on the planning and design of irrigation reservoirs in Kent, jointly produced by Environment Agency, Kent County Council and EMR.
- If you are currently having trouble filling your irrigation reservoirs, please contact us as early as possible to enable maximising any potential that may exist to fill your reservoir.

Irrigation Management

- Make sure that meters are in good working order and properly fitted;
- Check irrigation systems and replace worn or broken items before the start of the season;
- Make sure that irrigation systems are properly set up and operated in accordance with an accurate and reliable irrigation scheduling system;
- Ensure you are prepared to change your irrigation plans if necessary;
- Prioritise crops and fields in terms of water need;
- Choose irrigation times carefully, e.g. avoid the heat of the day; irrigate at night, if possible;
- Undertake a water audit. Know the cost of your water, calculate crop per drop.

- Keep updated on the latest water situation reports at https://www.gov.uk/government/collections/water-situation-reports-for-england

Abstractor Groups and Guidance

- Where appropriate, discuss issues, share ideas etc. with neighbouring farmers. A number of local liaison groups already exist for this purpose. Consider joining or setting up a group.
- Maintain an awareness of developing guidance from academic institutions and farming organisations (e.g. NFU, UKIA, Cranfield University etc.);
- The Environment Agency has a range of literature available to help support your business including Rain Water Harvesting; Think about Installing an Irrigation Reservoir and adopting Best Metering Practice.