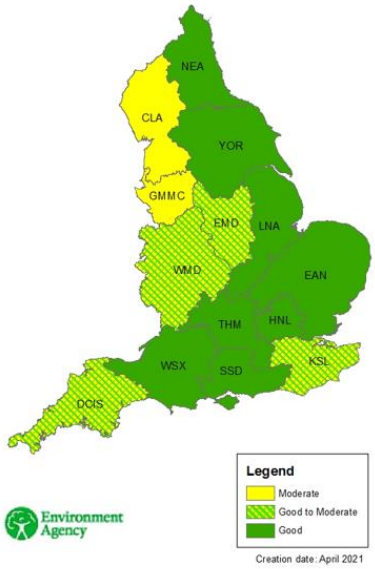
28th April 2021

Updated prospects for irrigation - forecast for 2021

Summary

Overview

Figure 1: Updated Irrigation Prospects
Spring – Summer 2021



This document provides an update to the irrigation prospects we produced in February– with all Areas classed as good. Figure 1 shows an updated map of irrigation prospects for 2021. The insert shows the position back in February for comparison. . Most Areas are still classified as good following a wet winter that has boosted groundwater levels and river flows, although parts of England, primarily in the West, are now good to moderate or moderate. The decline in some Areas reflects the generally dry conditions that have been prevalent from mid-March to late April, especially affecting more impermeable catchments.

April is looking to be a very dry month in most Areas.

The irrigation prospects reflect the current hydrological conditions and latest available weather forecasts. We are aware that with several weeks of dry weather combined with windy conditions there has been an early onset of irrigation in order to wet up soils and establish crops.

The latest three month Met Office forecast up to July indicates wet conditions are slightly more likely than dry conditions for May, combined with warm temperatures. Over the three months as a whole to the end of July there is a slightly greater chance of wet weather compared to normal. Hot conditions are almost twice as likely as normal with the impacts most likely to be seen later in the period.

Some Areas have provided detailed prospects which are contained later in this document, including should the remaining winter rainfall scenarios turn out to be more pessimistic (drier) than expected continuing into the summer. Therefore a range of prospect forecasts are presented for some areas. Given the generally good irrigation prospects we don't typically expect the need for prolonged dry weather abstraction requests. We will continue to monitor the situation and we will review our position if required.

Definitions

Prospects for 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 said “Many farmers have felt the effects of a dry April and the irrigation season has started early for some. Fortunately, as a result of widespread heavy winter rainfall which was a problem for many farms, reservoirs are full and there is generally good water availability from both groundwater and surface water sources. Farmers are closely following predictions of possible hot, dry spells in the weeks ahead and what they could mean for water availability as the irrigation season builds”.

Prospects for individual areas

Yorkshire

Prospects for water resources availability for irrigation in Yorkshire for 2021 remain GOOD.

Kent, South London and East Sussex (KSL)

The water resource availability in Kent and South London (KSL) Area for the 2021 irrigation season is GOOD to MODERATE.

East Anglia (East)

The overall summer prospects for water resources availability for irrigation in East Anglia (East) are currently GOOD.

East Anglia (West)

The overall summer prospects for water resources availability for irrigation in East Anglia (West) area are currently GOOD.

Hertfordshire and North London

The Hertfordshire and North London Area consider irrigation prospects potentially GOOD for summer 2021.

Lincolnshire and Northamptonshire

The overall summer prospects for water resources availability for irrigation in Lincolnshire and Northamptonshire area are currently GOOD.

East Midlands

The overall summer prospects for water resources availability for irrigation in East Midlands Area are currently GOOD to MODERATE.

West Midlands

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

Solent and South Downs

The overall summer prospects for water resources availability for irrigation in Solent and South Downs (SSD) are currently GOOD.

Thames

The overall summer prospects for water resources availability for irrigation in Thames Area are currently GOOD.

Devon, Cornwall and the Isles of Scilly

The overall summer prospects for water resources availability for irrigation in Devon, Cornwall & Isles of Scilly are currently GOOD to MODERATE.

North East

The overall summer prospects for water resources availability for irrigation in North East Area are currently GOOD.

Cumbria and Lancashire

Prospects across Cumbria and Lancashire are MODERATE for 2021.

Greater Manchester, Merseyside and Cheshire

Given the forecast of minimal precipitation and rivers reacting to current conditions, prospects across Greater Manchester, Merseyside and Cheshire are MODERATE for 2021.

Wessex

The overall summer prospects for water resources availability for irrigation in Wessex Area are currently GOOD.

Area detail

Yorkshire

Background

In February 2021 the Environment Agency issued the "Initial Prospects for Irrigation" report. Following a wet winter many areas listed their prospects as GOOD, Yorkshire was no exception with some exceptionally high river flows and rainfall.

Hydrology Information

March and April so far have seen mixed weather patterns with some extreme changes in the space of 48 hours, e.g. the switch from above 20 degrees in many parts of the county at the end of March to widespread snowfall over Easter and the following weekend.

The Lower Ouse, Derwent and Rye catchments received below normal rainfall for March and for February. This may be apparent on the ground when observing small watercourses, although the main rivers in these catchments remain at “Normal”. The rest of the Yorkshire Area remains in normal or above for river flows.

Groundwater has received an additional top up from the recent late snowfall. All of the EA monitoring boreholes are currently reading Above Normal or higher with one exception being again the Rye Catchment. The Corallian Limestone here is at Normal, reflecting the river flows much more than elsewhere in Yorkshire, which is not uncommon.

Forward look

Irrigation prospects are currently GOOD for spring/summer 2021 there will be no change to the Yorkshire Area status.

Our previous prospects in February of 2021 was issued after an extremely wet period when water stocks were incredibly high. Following this current review there will be no change in the status of Yorkshire Area. However, we would remind abstractors that it is still early in the season and dry weather impacts in 2020 and most importantly 2018 were not felt until well into the summer.

Abstraction in the region is primarily controlled by conditions on licences and licence holders must ensure that they adhere to these at all times. It is possible that we may need to implement ‘Hands Off Flow’ (HOF) or 'Hands Off Level' (HOL) conditions on licences in the coming weeks should dry weather continue.

It is important to note that in early summer wet ground still allows flows to respond to rainfall. Should dry weather persist into May and June increased sunlight hours means that flow responses to rainfall becomes muted. It is important to note that rivers in Yorkshire fed by upland moorlands respond very quickly to hot and dry weather as opposed to those fed by groundwater (mostly in the East of the Area). We urge all abstractors to check the monthly water situation reports and take note of any warnings of a “Hands Off Flow/Level” being implemented in their catchment.

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

For more information please contact us by emailing AEPYorkshireandNE@environment-agency.gov.uk

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

Kent, South London and East Sussex

Background

The onset of wetter conditions witnessed from October 2020 throughout the winter months resulted in exceptionally high rainfall across catchments, causing ground conditions to be heavily saturated across the Area. By the end of March there was a degree of regional variation, such that in the west of the KSL Area groundwater was best described as above normal. Conditions in the eastern catchments at the end of the March were notably high, leaving the Area’s resources in a relatively healthy position as we head into summer.

Rainfall / Soil Moisture Deficit

Over the winter period (Oct 2020 to Mar 2021) we received 146% of the Long Term Average (LTA) rainfall with cool drier conditions predominating that latter end of March and the start of April. Rainfall in March was in the lower part of normal across most of the Area, with 72% of Long Term Average (LTA) overall. This contrasts to rainfall over the winter period from October to March which was broadly notably high

across the Area. However, dry weather from the latter half of March has allowed significant Soil Moisture Deficits (SMD) to develop. The healthy winter's groundwater recharge has now likely ceased as drier conditions dominate. The prevailing drier conditions have continued through April enabling the SMD to increase further.

River Flows

After a wet winter, March flows declined but remain varied across the Area with groundwater dominated catchments remaining above normal and impermeable clay catchments generally within the normal ranges for the time of year. Impermeable catchments will typically be more susceptible to the impacts of drier conditions with subsequent abstraction constraints invariably following. However, it is expected that the onset of these constraints will be typically delayed as a result of the benefits from the wet winter. Catchments where the summer flow component is predominately composed of groundwater base flow will, for the short to medium term remain resilient should drier warmer conditions continue into the summer months.

Groundwater

Up until early February groundwater continued to rise with recharge elevating levels to exceptionally & notably high. There has been little effective recharge since then causing groundwater levels to plateau out. There is now an expectation that the current rates of decline will only start to accelerate over the coming months. As a result of the healthy groundwater conditions there are no expected risks for those irrigators that are dependent upon abstraction boreholes this summer.

More detailed hydrological 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

The latest Met Office three month weather outlook for May-June-July indicates that hot conditions are almost twice as likely as normal, combined with a slightly greater chance of a wet period compared to normal.

Generally, there is a water resource risk in the water level marsh supported areas through to those catchments where the flow is more rainfall dominated, as the wet winter's impacts wane. Within rainfall sensitive catchments such as; the Medway, Mole, Rother and Upper Stour, it is expected Hands off Flow (HoF) conditions for agriculture abstractors will be reached in late spring and remain in place throughout the summer. Additional HoF conditions are likely to be progressively triggered through the summer with continuing dry weather. Supported marsh water level dependant areas will benefit from the wet winter with greater groundwater seepage feeds but they can likely expect HoF constraints to apply in late summer in the Stour and Rother Marshes, with increasing pressure on water resources expected during peak irrigation periods. Groundwater abstractions including those that have antecedent rainfall constraints are not expected to see HoFs applied this summer. As a result irrigation prospects for the summer are 'GOOD' to 'MODERATE' across the Area.

For further information, updates or advice please contact your local environment officer or the Groundwater Hydrology team on: ksl.gwh@environment-agency.gov.uk telephone: 03708 506 506

East Anglia (West)

Background

Exceptionally high rainfall in October 2020 (215% of the long term average) triggered the following: a sharp drop in Soil Moisture Deficit, the start of groundwater recharge at many sites and a rise in river flows to

normal or above. Rainfall was also significantly above average in December 2020 and January 2021. The six months between August 2020 to January 2021 was the second wettest such period ending in January since records began in 1892. By the end of January the majority of groundwater levels were classified above normal, notably high or exceptionally high. River flows were exceptionally high across the whole Area in the first week of February. Rainfall was below the long term average in March and during the start of April. There has been a corresponding rise in Soil Moisture Deficit to slightly above normal for the time of year and a drop in river flows across the Area. Groundwater levels remain generally above normal.

Rainfall

Rainfall in February and March 2021 as a whole has been classified normal (117% and 79% respectively of the long term average). However, as a result of the very high rainfall totals experienced in October and December 2020 and January 2021, the rainfall for the past six months to March is classified as exceptionally high (144% of the long term average). This is the third wettest October to March period since records began in 1892. April has started dry, with only 7% of the long term average rainfall as of the 20th of the month.

River Flows

River flows were exceptionally high across the whole area by the start of February 2021, reflecting the very high winter rainfall. By the end of March, following two months of normal rainfall totals, river flows had dropped across the Area and were classified normal in the Bedford Ouse, Cam and Rhee, and above normal, notably high or exceptionally high across the rest of the Ely Ouse and North Norfolk. By mid-April flows in the Bedford Ouse clay catchments had dropped in some places to below normal, but in the Ely Ouse catchments continued to be sustained by strong base flow contributions from the Chalk.

Groundwater

Soil Moisture Deficits dropped sharply in October 2020, in response to exceptionally high rainfall. They remained low throughout the winter months, rising to normal levels throughout March 2021 and to above normal by mid-April. There has been significant groundwater recharge across the area over the winter months, with levels classified notably or exceptionally high in all indicator boreholes at some point over the winter. By the first week in April, groundwater levels remained high but had begun to recede at most locations across the area. The North Herts Chalk is the exception where levels are exceptionally high and continue to rise - recharge also started later at this location. Groundwater levels in the Wissey and NW Norfolk Chalk have reached their highest recorded levels.

More detailed information can be found in the Environment Agency Monthly Water Situation Report at **http://www.environment-agency.gov.uk/research/library/publications/104036.aspx**. This is updated shortly after the 10th of each month.

Forward look

Prospects across the East Anglia (West) Area are GOOD for 2021. Groundwater levels are above normal across most of the area, and river flows are likely to be in the normal range in groundwater fed catchments throughout the irrigation season, even with below average rainfall.

If weather conditions turn dry for the remainder of the spring, river flows could return to below normal levels in parts of the Bedford Ouse (i.e. the Kym and the Bedford Ouse at Roxton). If below average rainfall is accompanied by hot weather, flows could drop to below normal over the summer in the Ely Ouse. Groundwater levels are expected to remain in the normal range or higher throughout the irrigation season even with below average rainfall.

There is potential that local water management actions, using existing licence conditions, will be required in Fenland catchments during the irrigation season. Even in average conditions any dry periods during the summer can result in some form of local water management actions. These actions will most likely be required in the Middle Level, South Level, Counter Drain and/or the Hundred Foot catchments. Soils are

slightly drier than average for the time of year and there is a possibility of slightly earlier demand in the Middle Level in particular.

Please talk to us now about actions you can take by contacting:

East Anglia (West)
Andy Chapman
02030 251786

East Anglia (East)

Background
The period from September 2016 to August 2020 was notably drier than average, particularly over the Suffolk and Essex river valleys. This prolonged dry weather resulted in a gradual decline in ground water levels and some exceptionally low river flows in the summers of both 2019 and 2020. A shift in weather patterns in September 2020 resulted in exceptionally high rainfall totals being recorded in September, October and December. Rainfall totals for the Autumn and Winter period were typically between 35 and 45 % above the long term average – a level of excess we may observe once every 10 to 25 years. Drier conditions have re-established since early February with totals around 80% or less over the last 10 weeks.

Rainfall / Soil Moisture Deficit
The Soil Moisture Deficit (SMD) decreased during the first half of March then began to increase towards the end of the month as the weather gets warmer. The SMD was fairly consistent across East Anglia in March with an average SMD of 15mm, which is classified as normal for the time of year.

River Flows
The Soil Moisture Deficit (SMD) decreased during the first half of March then began to increase towards the end of the month as the weather gets warmer. The SMD is fairly consistent across East Anglia in March with an average SMD of 15mm, which is classified as normal for the time of year.

Groundwater
Recharge of groundwater commenced early in September and has at times been exceptionally rapid. Nearly all monitoring sites are now recording levels which have recovered to above normal or notably high. Localised areas within the Essex and Suffolk chalk aquifer which had been more severely impacted by dry weather are now experiencing a return to notably high levels. A few local areas in North West Norfolk remain in recovery from the sustained effects of exceptionally high groundwater levels and associated flooding in late winter.

With ground conditions now drying, aquifers have probably attained their maximum recovery for 2021, although significant rainfall may continue to sustain current high levels for a few weeks further. Most parts of the aquifer have now recovered to their highest April level for seven years, with an area from Mid to North Norfolk at their highest for over 20 years.

Forward look
Our prognosis for a Real Worst Case (RWC) rainfall scenario at 80 % of average through to May is for normal groundwater levels and flows to prevail this summer with significant areas of Essex and Norfolk remaining above normal. A few local sites in the confined chalk of the East Suffolk river valleys may not sustain normal levels falling below normal by early summer.

An Actual Worst Case (AWC) rainfall scenario of 60 % should still result in normal conditions over much of the Area, but an increasing likelihood of below normal by late summer in the East Suffolk confined chalk.

With the exception of catchments south of the Crouch in Essex there is now very little prospect of flow rates declining to notably low or exceptionally low (i.e. prolonged dry weather or drought incident levels), even if the weather becomes exceptionally dry for the rest of the spring and early summer. The South Essex rivers have very low groundwater inputs and can fall rapidly following any short intense dry period.

We therefore currently assess the prospects for irrigation next year as GOOD over the whole of the Eastern catchment area.

Section 57 restrictions are an emergency response to reduce abstraction pressures. Catchments with a low natural groundwater contribution and a high demand for water direct from the river can and do fall rapidly in response to intense hot and dry summer conditions. These are typically the rivers south of the Waveney to the Mardyke in Essex (not including the coastal crag and gravel streams). Concentrated demand from these rivers during hot weather can lead to major environmental incidents. Abstraction pressures can be a significant contributory factor to these events. We cannot therefore preclude S57 as a necessary response to managing a rapidly deteriorating situation. There is however now a very low likelihood of such measures being required in 2021.

Please contact for more information:

Clare Watkins, East Anglia (East) Drought Co-ordinator
Clare.Watkins@environment-agency.gov.uk

Hertfordshire and North London (HNL)

The Hertfordshire and North London Area consider irrigation prospects potentially GOOD for summer 2021.

Background

Entering spring 2021 weather conditions have turned drier. Rainfall amounts for March were below the monthly average. Soil Moisture Deficits have started to increase in response. Drier weather conditions with lower rainfall amounts are now being forecasted.

Groundwater conditions benefitted significantly from the higher winter rainfall amounts. Chalk water levels recovered and river flows returned to headwater stretches. The rate of groundwater decline will be slowed by the high aquifer storage amounts.

River flows reliant on these groundwater systems are likely to be sustained for the foreseeable future. The clay based watercourses are already showing signs of decline due to the lower rainfall amounts.

Abstraction situation

- Water availability for irrigation based on winter storage reservoirs should not be affected by the present drier conditions. Higher winter river flows did allow plenty of opportunity to fill storage reservoirs with no reported issues.

- Groundwater based irrigators are unlikely to see significant declines in water levels outside normal seasonal fluctuations.
- Groundwater supported rivers should see flows maintained in perennial stretches.
- Rivers which flow over impermeable clay surfaces will see declines where we enter any period of low rainfall.

- Summer hands off flow constraints are mainly linked to groundwater based abstractions and located in areas where the river system is supported by groundwater. These areas presently have good flows but some restrictions are likely over a dry summer.

Forward Look

Irrigation prospects are looking promising with only normal seasonal restrictions expected based on the current water resource situation. The Hertfordshire and North London Area will continue to monitor river flows and groundwater levels. This data is available to irrigators via https://www.gov.uk/government/publications/water-situation-local-area-reports

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

Lincolnshire and Northamptonshire

Background

After a dry spring in 2020, a wet summer meant that conditions at the end of September were generally normal for the time of year. The wet weather continued into the autumn and the start of winter. From October to January 2021 the area received 155% of the long term average rainfall for the period. This led to exceptionally high river flows at most sites in January with all sites having above average flows. Groundwater was also classified as exceptionally high at most sites and is above the normal range at all sites monitored.

The very wet weather continued into the first week of February before a change to predominantly dry weather which has caused river flows and groundwater levels to fall from their January and February highs.

More detailed information can be found in the Environment Agency Monthly Water Situation Report available here. This is updated shortly after the 10th of each month.

Rainfall / Soil Moisture Deficit

October 2020 saw nearly twice the long term average rainfall. This was followed by a drier than average November before a return to wet weather in December and January, with approximately twice the long term average rainfall. The wet weather led to soil moisture deficits being overcome in December.

The very wet weather continued into the first week of February before turning drier for the rest of the month but still ending with slightly above average rainfall. March was a much drier month with just 60% of long term average rainfall with very little rain in the second half of the month. March was drier in the north of the area than in the south. The dry weather has continued into April with just 4mm up to the 20th of the month.

With the dry weather and the onset of spring soil moisture deficits started to build again and are above average for the time of year.

River Flows

During December 2020 to February 2021 river flows were above the normal range in both the base flow and runoff dominated catchments, with most monitoring sites recording notably or exceptionally high flows. During March with the reduced rainfall most sites fell back to the normal range. Even with the dry start to April flows are still generally within the normal range.

Groundwater

Groundwater levels were around normal for the time of year at the start of the recharge season in October 2020. Significant recharge occurred during December to February causing levels to be above the normal

range at all reported sites, with most exceptionally high in both the limestone and chalk aquifers. With the Soil Moisture Deficit at an average of 50mm further significant recharge is now unlikely.

Forward Look

Prospects across Lincolnshire and Northamptonshire are generally GOOD for 2021.

With average rainfall we are likely to see normal aquifer water levels leading to strong base flows in groundwater fed rivers. The River Welland and River Nene are also likely to see normal flows.

With 80% of long term average rainfall, aquifer water levels are again likely to be normal or near normal this summer providing a reasonably strong base flow in groundwater fed rivers. The River Welland and River Nene are also likely to have normal or slightly below normal flows.

It is likely that local water management actions, using existing abstraction licence conditions, will be required in Fenland catchments during the irrigation season. These actions will most likely be required in the lower reaches of the River Glen, River Welland & River Nene catchments. Even in average conditions any dry periods during the summer can result in some form of local water management actions. Soils are slightly drier than average for the time of year and there is a possibility of slightly earlier demand.

Please contact for more information:

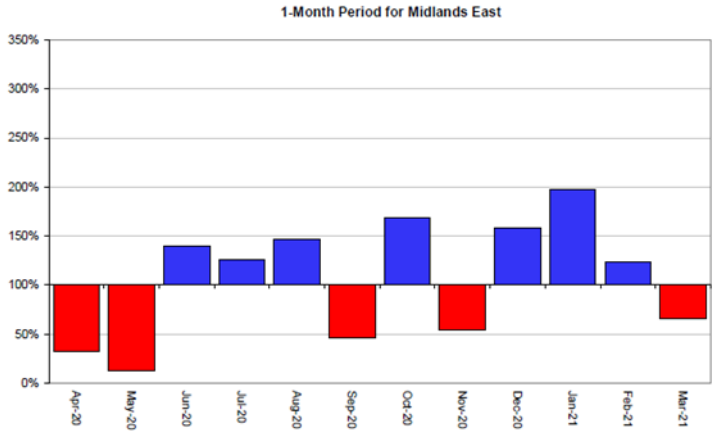
Drought.LNA@environment-agency.gov.uk

East Midlands

Background

The East Midlands experienced an exceptionally wet December 2020 and January 2021.

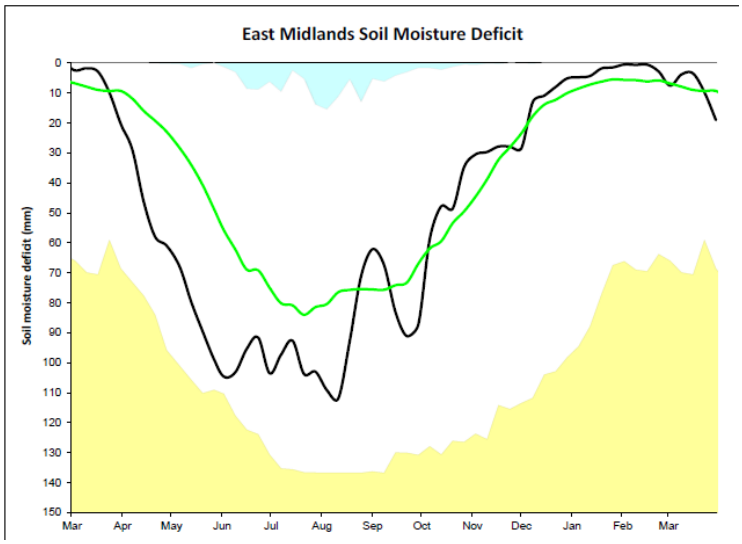
Rainfall



The chart above shows the monthly rainfall in East Midlands Area compared to the Long Term Average (LTA). The blue bars represent above average rainfall and the red bars show below average rainfall. The chart shows that we've had a wetter than average winter 2020/21 period. December received over 150% of LTA, with January almost at 200% of LTA. February was another wet month at 125% of LTA. March 2021 is the first time this year rainfall was below average for the respective month, with 60% of the expected rainfall reaching the East Midlands Area. April has been exceptionally dry so far with just 6% of the expected LTA rainfall.

Soil Moisture Deficit

Soil Moisture Deficits in the East Midlands were drier than average for the month of March, following a bout of higher than average temperatures in the middle of the month. The graph below represents the Soil Moisture Deficit for the East Midlands Area. The green line represents the average Soil Moisture Deficit for the month, whilst the black line represents the current year. The yellow and blue shaded areas represent the absolute monthly maximum and minimum Soil Moisture Deficits. As can be seen, soils have been wetter than average through the winter, and have only dried following more recent drier weather. Following warmer conditions and little rainfall Soil Moisture Deficits remain below the LTA.



River Flows

Following the dry April, river levels across the East Midlands are “Normal” or “Below Normal” in respect to the LTA.

Groundwater

All groundwater sites are reporting as “Normal” or above in comparison to the March LTA in the East Midlands Area, with no change through April.

Forward look

Prospects across East Midlands Area are currently GOOD to MODERATE for 2021.

Whilst there has been good recharge to the aquifers over the winter period, following a drier than average March and April rivers are beginning to recede to lower flows.

Please contact for more information:
For the most up to date situation reports please visit our website here:
https://www.gov.uk/government/publications/water-situation-local-area-reports

If you would like further information or have a specific query about your abstraction licence please contact us at: **WaterResources.DBNTLS@environment-agency.gov.uk**

West Midlands

Rainfall / Soil Moisture Deficit

In February 2021 all hydrological areas in the West Midlands received rainfall that was 'Normal' for the time of year. In March 2021 all hydrological areas received rainfall below their long term average (LTA). The average rainfall for the last three months to March as a whole has been within the 'Normal' range.

West Midlands soils overall have been wetter than the SMD LTA for the whole period of October 2020 to February 2021. Following a drier March the soil is now drier than the LTA.

River Flows

As a result of mostly above average rainfall since October, all river sites have recorded 'Normal' or above flows since October. Following a drier March flows are now starting to decrease but still remain at 'Normal' levels.

Groundwater

Consistent rainfall and wetter soils over the winter improved the groundwater status, with all sites being at 'Normal' status or higher in March 2021. Groundwater supplies can support watercourse flows during the summer, which may be needed if the coming months are dry.

Reservoir storage

All ten major public water supply reservoirs that provide water to the Midlands are currently (March 2021) at or above their LTA storage. At the end of March 2021 one reservoir was recorded as being full, with the other nine being above 90% full.

With reservoir stocks being healthy for the time of year and groundwater having had reasonable recharge over the winter, the prospects are GOOD to MODERATE for water availability for 2021. However, this may change depending on the weather and amount of rainfall received in future months.

Ongoing Impacts from Covid-19

We continue to review how we respond and adapt our regulation of Water Resources under the current COVID 19 restrictions and the following information provides some guidance as to how we will continue to support access to water over the coming months.

- The **Spray line service** for abstractors in the River Wye catchment is currently closed as flows are sufficient, but will resume again once river levels drop to trigger thresholds for abstraction restrictions. We will contact licence holders when these thresholds are crossed and the service becomes operational again. *For more information please call 07789397595 Monday to Friday 9am-5pm*

- **Hands off Flow restrictions -** Abstraction in the Area is primarily controlled by conditions on licences and licence holders must ensure that they adhere to these at all times. We intend to operate water resource regulation and hands off flow restrictions as normal. We may still look to do as much regulation as possible remotely but will also undertake face to face inspections where needed.

Forward look

Although irrigation prospects are currently good to moderate across the West Midlands area, abstraction licence Hands off Flow restrictions may still be imposed on surface water abstractions, especially in late summer, if the weather becomes hot and dry.

The principal aquifers of the Permo-Triassic sandstones in the West Midlands provide a large store of groundwater and are relatively resistant to drought conditions. The key indicator Permo-Triassic sandstone sites across the West Midlands are all within normal or higher ranges for the time of year having received good recharge following the wet winter. The good recovery that has been observed will serve to provide good resilience to support surface water flows into the summer months.

Anthony's Cross observation borehole in Gloucestershire is currently at 'Notably High' status and is showing a decreasing trend.

Weir Farm observation borehole in Shropshire is currently within the 'Exceptionally High' range and showing a steady trend.

St. Mary's Church observation borehole in Worcestershire is showing within the 'Notably High' range and is showing an upward trend.

Four Crosses borehole in Staffordshire is currently within the 'Normal' range and is displaying a decreasing trend.

Ram Hall borehole is near Coventry and within the Permo-Carboniferous sandstone and mudstone. The levels are currently within the 'Normal' range and showing an upward trend.

Please contact for more information:

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

Solent and South Downs

The overall summer prospects for water resources availability for irrigation in Solent and South Downs (SSD) are currently GOOD. Despite the dry start to spring, above average rainfall over the winter period has seen groundwater levels rise substantially. As a groundwater dominated Area this should provide a buffer should rainfall over the summer period be below the Long Term Average (LTA). Further to this, the Ardingly reservoir has returned to 100% storage capacity following historic low levels in September 2020. At the start of April river levels ranged from below normal to notably high.

Background

By the end of March 2021 SSD had experienced above average rainfall for the six month winter period from October 2020 - 127% of the Long Term Average (LTA). As a result, Soil Moisture Deficits (SMDs) were 0mm for the majority of the winter period. Effective rainfall was particularly high in comparison to the LTA. Groundwater resources have recharged sufficiently to ensure the Area will be resilient to long dry spells in the summer. Surface water flows also range from below normal to notably high at the start of April, with reservoir stocks at or near full capacity.

Rainfall / Soil Moisture Deficit

The 2020/2021 autumn and winter period to date has been wetter than the LTA, resulting in significant increases in river flow and groundwater recharge across SSD. SMD remained near 0mm for most of the winter, resulting in higher than average effective rainfall.

Due to a dry March SMD totals are currently higher in relation to the LTA for the start of April. The average SMD across SSD at the end of March was 17mm (the LTA is 9mm).

River Flows

At the end of March 2021 the River Lymington at Brockenhurst GS recorded monthly mean flows in the normal range. Flows on the River Test at Chilbolton GS, River Wallington at North Fareham, Western Rother at Iping Mill GS Alfoldean and Cuckmere at Cowbeech were also in the normal range. The River Itchen at Allbrook & Highbridge GS was above normal. Flows on the River Medina at Blackwater were normal. All other reported sites were normal, with the exception of the River Arun at Alfoldean which was below normal.

At the start of April 2021 reservoir stocks were above average at Ardingly Reservoir (Ouse Catchment) with 100% of total capacity (LTA is 97%) and at Arlington Reservoir (Cuckmere catchment) with 98.4% of total capacity (LTA is 99%).

Groundwater

At the start of April 2021 groundwater levels ranged from normal to notably high across SSD. Levels at Carisbrooke Castle (Isle of Wight) were normal. Clanville Gate (Test Chalk) was above normal and Preston Candover was notably high. West Meon (East Hants Chalk) was above normal. Beeding Hill (west Sussex Chalk) levels were normal. All remaining sites were normal or above normal.

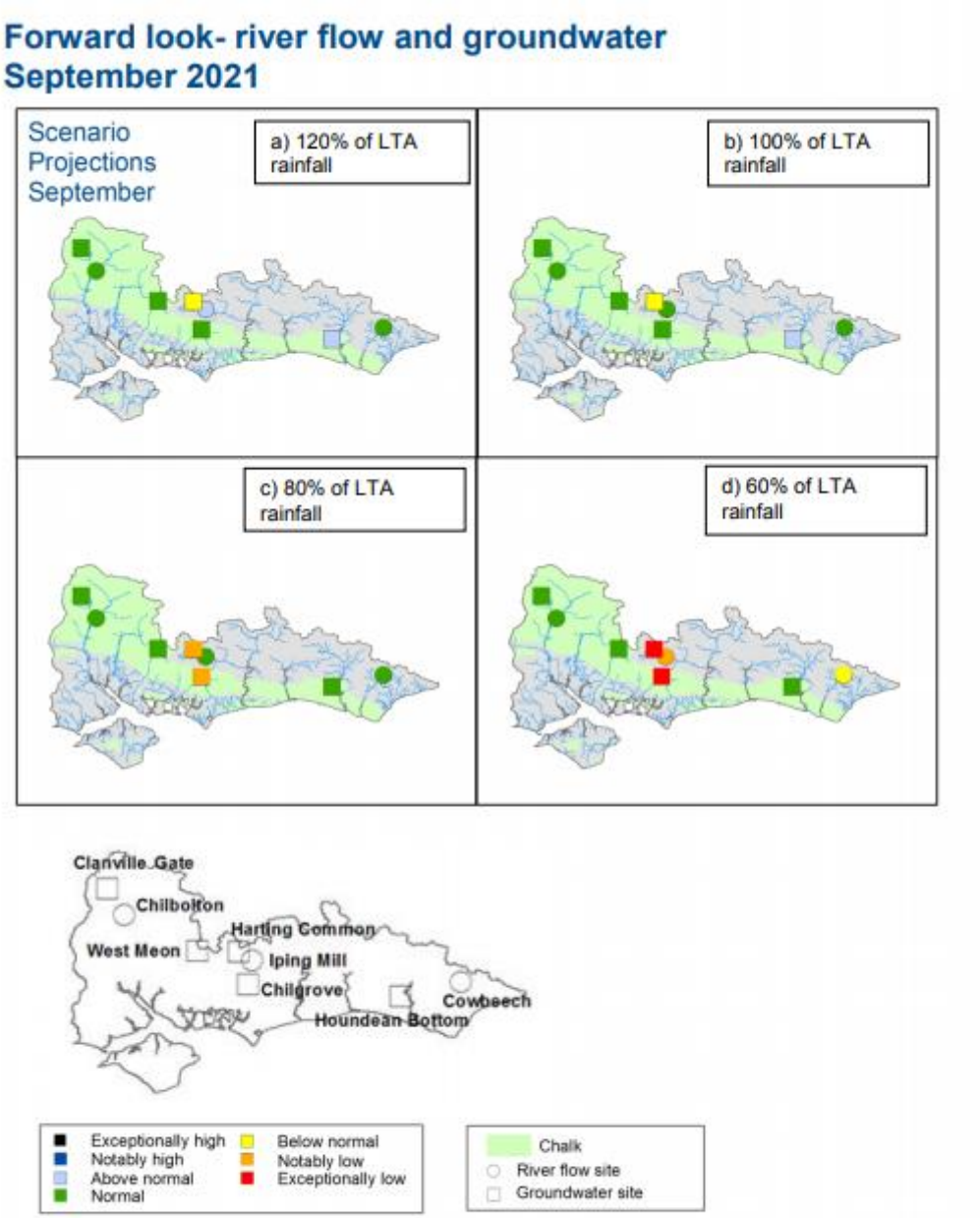
Forward look

Prospects across Solent and South Downs are GOOD for 2021. The reason for this status is the groundwater recharge that has taken place over the winter. Public water supply reservoirs remain near capacity and surface water levels are largely at normal or above normal.

Replenished groundwater resources in the Area will ensure the area remains resilient to prolonged dry periods in the summer. This is illustrated in Figure 1 overleaf which shows the water resources situation up to the end of September 2021.

Please contact for more information:

Tony Byrne or Bethan Davies: ***HydrologySSD@environment-agency.gov.uk***



Projected river flows at key indicator sites up until the end of September 2021. Projected groundwater levels at key indicator sites at the end of September 2021. Projections based on four scenarios: 120% (a), 100% (b), 80% (c) and 60% (d) of long term average rainfall (Source: Environment Agency). Geological map reproduced with kind permission from UK Groundwater Forum BGS © NERC Crown copyright. All rights reserved. Environment Agency 100026380 2021.

Figure 1: SSD hydrological forward outlook to September 2021

Thames

Background

At the end of February, prolonged rainfall events led to surface water flows and groundwater levels being high or exceptionally high at most indicator sites. Following a dry March, many of these sites are now normal

or above normal, with only one site (in the Inferior Oolites) being below normal. We go into the spring/summer period in a good water availability position.

Rainfall / Soil Moisture Deficit

During March the Thames Area received 53% of the Long Term Average (LTA) rainfall (1st March to 29th March). This makes the average rainfall for the winter period (October – end of March) 133% of the LTA. The effective rainfall (the proportion of rain that contributes to groundwater recharge) for this period is estimated as 140% of the LTA. Soil Moisture Deficits are however above average for the time of year as a result of the recent dry weather coinciding with the start of the growing season.

River Flows

River flows have been high this winter period, owing to notable rainfall events between October and February. Following a drier than average March, the majority of rivers now have normal flows for the time of year, with the exception of one groundwater fed site, which is above normal.

Groundwater

Groundwater level indicator sites in the Thames area are currently normal or above normal for this time of year, with the exception of one site in the Inferior Oolites, which is below normal. The groundwater recharge season is at an end, but the Area is still in a good position going into the spring/summer months.

Forward look

Despite the drier conditions of the past month, most surface water flows and groundwater levels are normal or above normal. The groundwater recharge season is now considered to be at an end, and so we can expect to see flows and levels at indicator sites decline over the spring/summer period. It is still likely that hands off flows and levels will come into force during the summer, but these are likely to be seen later in the season than in the previous few years. We are not expecting to need additional constraints on irrigation during the summer period. Prospects across the Thames Area are therefore GOOD for 2021.

Please contact for more information:
Jess Barnes, jess.barnes@environment-agency.gov.uk

Devon, Cornwall and Isles of Scilly (DCIS)

Background

Because of the nature of the geology and landscape in Devon, Cornwall & Isles of Scilly, it is difficult to predict water shortages for irrigation in the coming season. Whether there is sufficient water will depend on rainfall, water abstraction and temperatures during the season. We therefore expect abstractors to be prepared and encourage applications for winter storage reservoirs.

Rainfall/Soil Moisture Deficit

Rainfall totals for March 2021 were ‘below normal’ at 54% of the LTA. All Cornwall catchments in March 2021 received ‘below normal’ rainfall. Most Devon catchments received ‘normal’ rainfall totals while two of the six catchments experienced ‘below normal’ rainfall. Soil Moisture Deficit (SMD) was 12mm at the end of March 2021, drier than average for the time of year.

River Flows

The monthly mean flows were a mix of ‘normal’ and ‘below normal’ for March. Monthly mean flows ranged from 62% to 90% of the LTA during this period. At the end of March, most rivers were experiencing ‘below normal’ flows.

Groundwater

As of Mid-April 2021, groundwater levels remain healthy. The level at one indicator borehole is 'above normal', levels at five are 'normal' and the level at the final one is 'below normal'. The borehole with below normal levels is in a shallow, fractured aquifer and responds rapidly to rainfall. Groundwater levels at the majority of the indicator boreholes are now in recession or about to start receding.

Forward look

With the groundwater levels remaining healthy and the limited environmental benefit of placing restrictions in Devon, Cornwall & Isles of Scilly, we do not anticipate any restrictions with regard to irrigation in the coming months, despite the mix of normal and below normal rainfall and river flows. However, due to the nature of the geology and landscape in Devon, Cornwall & Isles of Scilly, it is difficult to predict water shortages for irrigation in the coming season. This position will be reviewed during 2021, dependent on the rainfall patterns and river/groundwater levels.

The indicative irrigation prospects for Devon, Cornwall & Isles of Scilly are GOOD to MODERATE for 2021.

Please contact for more information:

Emma Townsend – Drought Coordinator DCIS
Drought.DCIS@environment-agency.gov.uk

North East Area

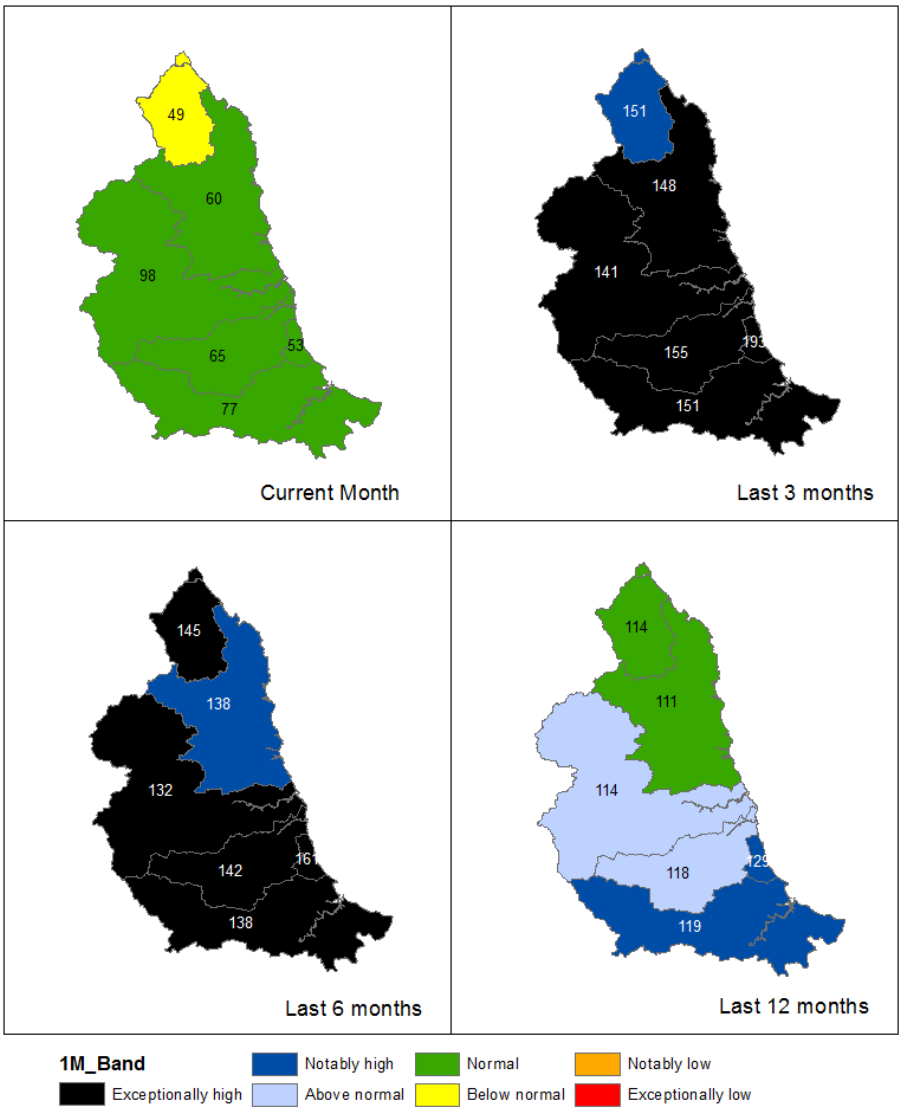
Background

All catchments within the North East area had moved out of 'Prolonged Dry Weather' and into the 'recovery' phase in September 2020, before moving back to 'normal' status in October 2020. November was a dry month with monthly rainfall totals below average in all catchments. The year ended fairly wet with December recording 'above average' monthly rainfall totals.

The wet weather continued into 2021 with rainfall recorded on most days throughout January. Storm Christoph did produce some large daily rainfall totals around the 19th though these were not as significant as seen in other parts of the country. January 2021 was the fourth wettest January recorded in the North East and the second wettest January in the Seaham, Wear and Tees catchments in a dataset beginning in 1891. February was another wet month with above average monthly rainfall totals observed in all North East catchments. Freezing conditions were dominant during the first half of February with subsequent snow showers occurring for several days, later producing snow melt which elevated river levels. Reservoir stocks have remained healthy and above average throughout the winter.

Rainfall / Soil Moisture Deficit

Following the very dry spring in 2020, rainfall totals have increased significantly and over the last 6 months to March 2021 cumulative rainfall totals are now 'notably high' or 'exceptionally high' across the North East. Despite high cumulative totals, March 2021 was the driest month of the year so far with monthly rainfall totals falling within the 'normal' or 'below normal' category for the first time since November 2020 (see map overleaf).



Total rainfall (as a percentage of the long term average) for hydrological areas across the North East area for March 2021, the last three months, the last six months, and the last twelve months, classed relative to an analysis of respective historical totals.

Soil Moisture Deficits took a while to recover from last spring's dry weather with parts of the North East (in particular the Northumberland Coast and Till catchments) continuing to have significant Soil Moisture Deficits in September 2020 which placed them within the 'dry' category. By October deficits had greatly declined and in November all soils were saturated and fell within the 'wet' category where they continue to remain now.

River Flows

After several months of very low flows in the spring and summer 2020, some recovery was seen in September, with larger peaks occurring in the following months. At the start of December river levels increased rapidly and have continued to remain elevated into 2021 after several periods of rainfall, including two large storms (named Bella and Christoph) over the winter. Wintery conditions have also resulted in several periods of snowfall, starting on Christmas Eve and continuing into February. Periodic snowmelt over winter has contributed to an increase in river levels and despite a drier March, monthly river flows remain slightly elevated classified as either 'normal' or 'above normal'.

Groundwater

Groundwater levels rose into 2021 as predicted, to normal for the time of the year, with some catchments above average. Groundwater levels in some more confined (and therefore less responsive to rainfall) parts of our aquifers have started to level-off or drop slightly suggesting that recharge is slowing. However, despite this, all groundwater levels in the Fell Sandstone and Magnesian Limestone remain at normal or above, with some still exceptionally high for the time of year.

Forward look

Prospects across the North East area are GOOD for 2021. The rainfall outlook for April issued by the Met Office shows average and below-average precipitation is more likely than above-average precipitation. However for April-May-June as a whole, above-average precipitation is more likely than below-average precipitation. River flows are also expected to remain normal for April and over the next three months.

Restrictions

There is limited irrigation in the Tyne, Tees, Wear and Northumberland catchments. Irrigators on the Tyne, Tees and Wear are mostly supported by reservoirs. Although HoF's (Hands off Flows) are unlikely, cessation notifications may be issued in accordance with licence conditions linked to river regulation and higher charging arrangements. The EA will contact individual licence holders to inform them if this occurs.

Trickle irrigators on the Till catchment have recently received their abstraction licences following the removal of historic exemptions in that catchment. Notification will be provided by the Environment Agency when HoF conditions are in place.

Please contact for more information:

Water Resources: water.resources.northeast@environment-agency.gov.uk
and Hydrology: hydrology.northeast@environment-agency.gov.uk

Cumbria and Lancashire

Background

Following relatively high monthly rainfall totals since the start of the year and above average rainfall in March, river flows were classed as either 'Above normal' or 'Notably high'. The first half of April has been relatively dry and in response to this river flows are declining.

Rainfall / Soil Moisture Deficit

The cumulative rainfall totals for January, February and March were classed as either 'Notably high' or 'Exceptionally high' across Cumbria and Lancashire. The exception to this was the Esk (Dumfries) hydrological area which was classed as 'Normal'.

Rainfall for the first half of April was below average across Cumbria and Lancashire - between 4% and 13% of the LTA for April 2021 - with many areas observing no rainfall. The Met Office forecast up to the end of April is generally for relatively dry weather across North West England.

The main surface water irrigation area is Crossens, which lies in the Douglas hydrological area. The rain gauge at Crossens had observed around 8% of the LTA for April up to the 18th of the month.

At the end of March, Soil Moisture Deficits were generally as expected for the time of year, but were starting to increase as the dry weather continued into April.

River Flows

Following the relatively dry start to April river flows started to decrease, intermittently reaching Q95 in the Kirkby (Alt) catchment by mid-month, and given continuing low rainfall we may see more fall below Q95 across Lancashire and possibly Cumbria.

With regard to the Alt and Crossens catchments with the current and forecast dry weather, we have now moved to maintaining water in the level dependent area at summer values. In doing this we have to take into account various priorities, including flood risk management, as well as maintaining water levels to support abstraction for irrigation. We will monitor the situation but do not envisage changing to running on the lower winter levels unless there is significant rainfall forecast.

Groundwater

There are no issues with groundwater resource availability in Cumbria and Lancashire at the present time. In the principal aquifers groundwater levels are all classed as normal or above and generally take a long time to decline, although groundwater reacts more quickly in shallow aquifers.

Forward look

Prospects across Cumbria and Lancashire are MODERATE for 2021.

Please contact for more information:

Alison McLean, Water Resources – Integrated Environmental Planning

IEP_CLA@environment-agency.gov.uk

Greater Manchester, Merseyside and Cheshire

Background

Rainfall has been high since the start of the year. March's values were 'above normal' for the Mersey and Irwell catchments, and 'Normal' for the Cheshire Rivers Group. As a result river flows were 'Exceptionally high' in March across Greater Manchester, Merseyside and Cheshire. However, a subsequent clear shift in the weather with minimal rainfall has started to see rivers react.

Rainfall / Soil Moisture Deficit

Rainfall totals for the previous 3 months (i.e. January, February and March) ranged between 'Exceptionally high' and 'Normal' across Greater Manchester, Merseyside and Cheshire, with January seeing 208% of the LTA.

April's rainfall up to and including the 18th, was well below average for the month, ranging between 8% to 19% of the LTA. Since the 18th very little rain has fallen with the Met Office forecasting minimal volumes until the end of April. The main irrigation areas of Cheshire and the Lower Mersey catchment have experienced on average 12% of the LTA rainfall up to the 18th April. At the end of March, Soil Moisture Deficits were generally as expected for the time of year, with the exception of the Lower Mersey and Cheshire catchments which were becoming increasingly dry.

River Flows

We are starting to see river levels drop in some catchments with flows reaching Q95. Given continuing low rainfall we would expect to see more rivers fall below Q95 across Greater Manchester, Merseyside and Cheshire towards the end of April.

Groundwater

There are no issues with groundwater resource availability in Greater Manchester, Merseyside and Cheshire at the present time. In the principal aquifers groundwater levels are all classed as normal or above and generally take a long time to decline, although groundwater reacts more quickly in shallow aquifers.

Forward look

Given the forecast of minimal precipitation and rivers reacting to current conditions, prospects across Greater Manchester, Merseyside and Cheshire are MODERATE for 2021.

Please contact for more information:

IEP_GMMC@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 following the experiences of 2018 and 2019. 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.

A Water Rights Trading Map is available for East Anglia, Midlands and Lincolnshire and Northamptonshire areas.

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 03708 506506 and ask to speak to your local water resources member of staff dealing with irrigation prospects.

Abstraction Licences

- Check your licence details and, at all times, adhere to licence conditions ensuring that abstractions are only taken from authorised locations, volumes are not exceeded and accurate records are kept of meter readings. In particular, where third parties undertake irrigation, licence holders should ensure contractors fully understand the abstraction licence conditions. Those who have licences with compensation discharges and re-abstraction conditions should ensure that water is released at the same time as abstraction is taking place
- 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 Payments Agency 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
- Read our latest abstraction and dry weather advice in the Farming Advice Service newsletters;
- Use a planning tool such as D-Risk to manage your irrigation abstraction and drought risks

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.