Warwickshire Avon Abstraction Licensing Strategy

A strategy to manage water resources sustainably

March 2023

We are the Environment Agency. We protect and improve the environment.

We help people and wildlife adapt to climate change and reduce its impacts, including flooding, drought, sea level rise and coastal erosion.

We improve the quality of our water, land and air by tackling pollution. We work with businesses to help them comply with environmental regulations. A healthy and diverse environment enhances people's lives and contributes to economic growth.

We can't do this alone. We work as part of the Defra group (Department for Environment, Food & Rural Affairs), with the rest of government, local councils, businesses, civil society groups and local communities to create a better place for people and wildlife.

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Contents

1. About the licensing strategy

1.1. Overview

This strategy sets out how we manage new and existing abstractions and impoundments within the Warwickshire Avon catchment in the Severn river basin district.

It ensures that we:

- meet river basin management plan (RBMP) objectives for water resources activities
- avoid deterioration within this catchment

We apply this approach to the water body in which the abstraction is located.

It also applies to:

- all downstream surface water bodies that may be affected by any reduction in abstraction related flow
- adjacent groundwater bodies affected by any reduction in groundwater level

Managing water abstraction describes the technical explanation, legal and policy requirements behind the abstraction licensing strategies (ALS).

Our online abstraction pages advise on:

- who needs an abstraction or impoundment licence
- how to apply for a licence

1.2. How is the licensing strategy set out?

This ALS provides an overview of how water is sustainably managed in the Warwickshire Avon catchment to:

- provide water for abstraction
- protect the environment

The following is a summary of what each section covers:

- Catchment background - sets out additional information about the catchment and the influences and pressures on water availability
- Water resource availability - explains how much water is available for abstraction in the catchment
- How we manage water resource availability - explains the local licensing approach for the catchment which is summarised in Tables 2 and 3. This includes the potential water available for licensing and the restrictions that would be required
- Managing the catchment together - details the actions we are taking where abstraction is currently unsustainable in the catchment. Approaches to ensure sustainable water management in the future are outlined, including information on licence trading
- Related links - are listed for further information on water resource management.
- Abbreviations – lists the full text of abbreviations used in this document
- Glossary – explains technical terms included throughout this document
- Contact details – on how to get in touch

Note: whilst our assessment tools are continuously updated, we aim to update this document on a 3 year basis. Therefore some details within this document, for example

hands off flow (HoF) values may be outdated. Use this document as a guide to water availability but for the most up to date information please contact us.

1.3. Collaborative and sustainable water management

Our long term goal is to develop a stronger catchment focus for water resources. We are working with abstractors and catchment groups to:

- develop local solutions to existing pressures
- to prepare for the future

Catchment groups may include a variety of different partnership groups such as:

- abstractor groups
- local catchment partnerships
- priority catchment groups
- environmental groups

Since the autumn of 2018, we have been collaborating with local partners. In several priority catchments across England we have explored:

- modern and innovative ways of improving access to water
- alternative ways to achieving sustainable abstraction

This strategy is a tool to make informed decisions on the choices abstractors make about their use of water. We want this strategy to help abstractors plan their water use and become more resilient in the face of climate change.

2. Catchment overview

2.1. Landscape and land use

The Warwickshire Avon catchment area is located in the south of the English Midlands. It covers around 2900km^2 including much of the county of Warwickshire together with areas of:

- Worcestershire
- Northamptonshire
- Leicestershire
- Gloucestershire
- West Midlands

The River Avon rises in the north-east of the catchment near Naseby, to the east of Rugby. It flows south-west for approximately 179 kilometres through Warwick, Stratford upon Avon and Evesham, to its confluence with the River Severn in Tewkesbury. Its significant tributaries include the Rivers Swift, Sowe, Leam, Dene, Stour, Arrow and Isbourne, and the Bow and Badsey Brooks.

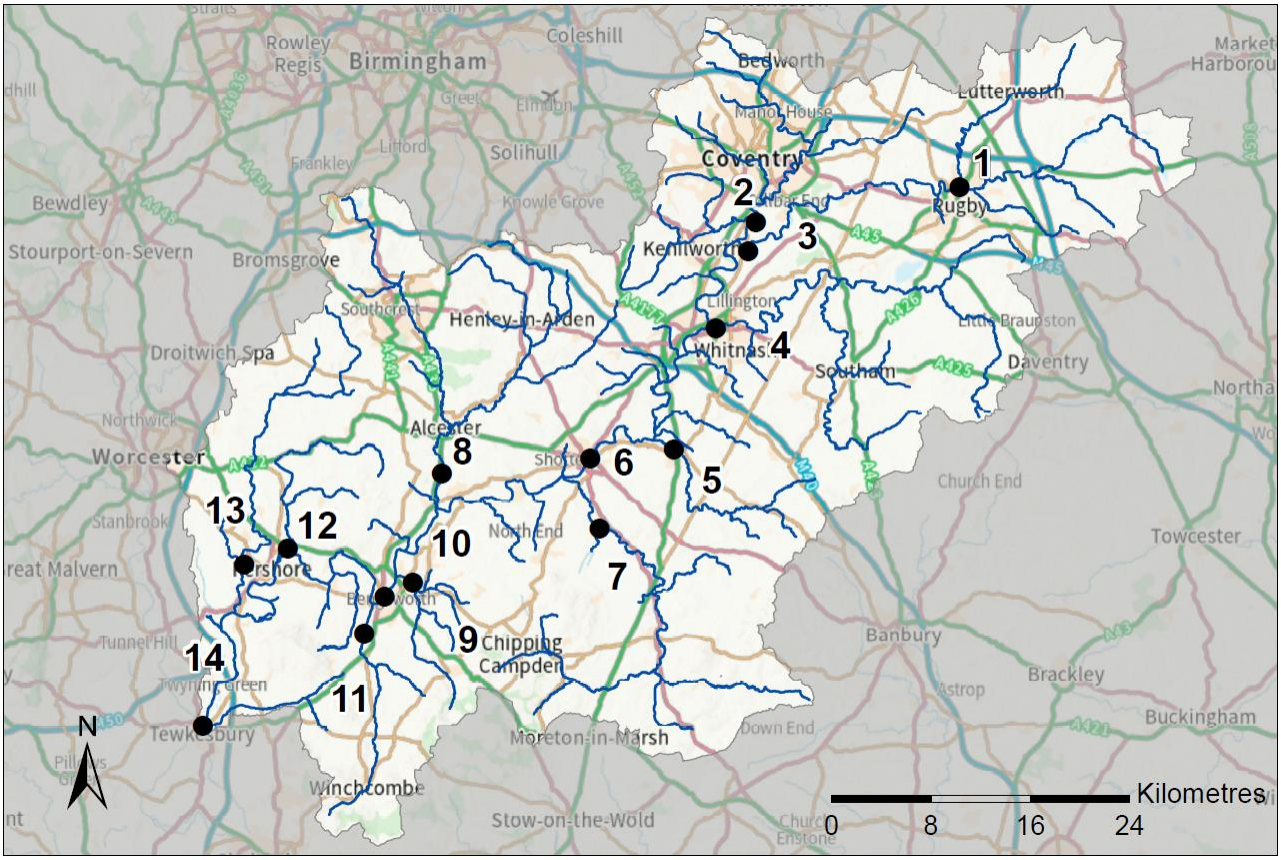
The catchment is generally low-lying and gently undulating. It is a mainly rural catchment with some large urban areas, Coventry being the largest. Agriculture is a major land use in the catchment and an important part of the economy. Traditionally the main farming activities include arable, livestock, horticulture and market gardening, particularly around Evesham.

In the upper catchment, reservoirs support flows in the network of canals that cross the catchment. The River Avon itself is navigable from upstream of Stratford downstream to

Tewkesbury. Weirs and locks are used to control flows and levels for leisure-orientated boat traffic. The river is a major amenity for recreation and tourism, recognised as being of great natural beauty.

The catchment's vast array of lakes, rivers, canals and commercial coarse and trout fisheries provide anglers with a wealth of choice.

Map 1: overview of the Warwickshire Avon catchment



Legend

Rivers

Assessment Points (APs)

AP1 Rugby (River Avon)

AP2 Stoneleigh (River Sowe)

AP3 Stareton (River Avon)

AP4 Leamington (River Leam)

AP5 Wellesbourne (River Dene)

AP6 Stratford (River Avon)

AP7 Wimpstone (River Stour)

AP8 Broom (River Arrow)

AP9 Offenham (Badsey Brook)

AP10 Evesham (River Avon)

AP11 Hinton (River Isbourne)

AP12 Wyre Piddle (Piddle Brook)

AP13 Besford Bridge (Bow Brook)

AP14 Upper Pound (River Avon)

2.2. Water resources

The Warwickshire Avon catchment covers the whole of the River Avon catchment to its confluence with the River Severn.

Water within the catchment is mainly abstracted from surface and groundwater for

- public water supply
- agriculture
- industry

Overall, more sources are licensed for abstraction for agricultural purposes than for any other purpose but the largest volume is licensed for public water supply.

Draycote Water is the largest water supply reservoir in the catchment; it is supplied with water from the Rivers Leam and Avon.

Apart from the River Leam catchment and some individual waterbodies, surface water is available for abstraction throughout the catchment. All consumptive abstraction will be restricted by a HoF, which can significantly reduce the time abstraction can take place in areas under greater water stress.

The rivers of the catchment also play a vital role in the disposal of sewage from the catchment's population and waste water from industry. The largest input into the catchment is from Finham sewage treatment works on the River Sowe south of Coventry. The assessment of water availability for abstraction includes the contribution of these inputs to river flows.

24% of water licensed for consumptive abstraction in the catchment is from the principal aquifers and other groundwater sources.

The majority of the catchment is underlain by Mercia Mudstones, a secondary aquifer. The Mercia Mudstone contains strata with variable permeability where water is encountered in lower quantities. It is capable of supporting smaller, locally important abstractions for agriculture or domestic purposes.

The principal aquifers in the catchment are:

- the Carboniferous age rocks around Coventry and Kenilworth
- the Permo-Triassic (PT) sandstone aquifers to the west and south of Coventry and in the Warwick and Bromsgrove areas
- the Confined Permo-Triassic aquifer near Stratford upon Avon
- the Great and Oolitic Limestone aquifers around the south west edge of the area

These principal aquifers are high yielding, strategically important aquifers that support significant abstraction for public supply, industrial and agricultural use. They also provide important flows to connected rivers and wetlands (known as baseflow). Such flow support is particularly important during the drier seasons.

Unsustainable levels of groundwater abstraction mean there is little water available for further abstraction from principal aquifers in the catchment. It has also resulted in low surface water flows in certain areas of the catchment, including the Batchley Brook. Here, compensation water supports lake levels in Hewell Grange Lake Site of Special Scientific Interest near Bromsgrove. To the north-west of Coventry flow, support is also provided to the River Sherbourne under lower flow conditions. Flows in the upper Bow Brook are also augmented at low flows.

The catchment data explorer and Defra's Magic Map can help you explore and download information about the catchment and water environment.

2.3. Climate change

Climate change will likely impact on the quantity and seasonal availability of water resources within the catchment.

The projected climate change impacts on rainfall and river flow for the Midlands Region by the 2050s are for:

- rainfall to decrease by 34% in the summer but increase by 29% in the winter
- low flows to be 65% lower but peak river flows to be 30% higher

Climate change projections are estimated using data from UKCP09, consistent with a 4ºC rise by 2100. Further details on the assumptions used can be found in the Environment Agency climate impacts tool.

2.4. Environment and sustainability

Our licensing approach ensures that we avoid deterioration within this catchment in line with the Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 (WFD). The WFD Regulations (2017) seek environmental objectives to protect and enhance the water environment. It ensures the sustainable use of water resources for economic and social development.

We assess the impacts of new water abstraction applications to make sure that they comply with the WFD Regulations (2017). This includes ensuring water bodies will maintain a healthy ecology. If the ecology is not good, we ensure abstraction will not deteriorate the ecology further. WFD Regulations (2017) status is assessed at a water body scale. Water body WFD Regulations (2017) status can be:

- bad
- poor
- moderate
- good
- high

Groundwater body status is assessed with a separate set of tests, with the status reported as either good or poor.

2.5. Partnership working

The Warwickshire Avon catchment partnership in this catchment:

- focuses on developing collaborative approaches to water resources management and planning
- engages with stakeholders from a range of backgrounds to address issues in the catchment and find solutions to water scarcity

More information can be found by visiting the Warwickshire Avon catchment partnership webpage.

3. Water resource availability in the Warwickshire Avon catchment

3.1. Surface water availability

The method for calculating the water resource availability is explained in Managing water abstraction. Water availability is calculated at selected assessment points (APs). The maps show the water availability calculated at the AP, local water availability may differ. There are 14 APs in the Warwickshire Avon ALS:

AP1

The upper River Avon upstream of Rugby, including the River Swift and Sulby/Welford, Stanford and Naseby Reservoirs.

AP2

The River Sowe catchment through Coventry to upstream of the Finham Brook confluence. The western side of the catchment is underlain by the Coal Measures Coventry groundwater body. In the eastern part of the catchment the Sowe flows over the PT Sandstone Warwick/Avon Confined groundwater body.

AP3

The River Avon catchment to Stareton gauging station, upstream of the River Sowe confluence.

AP4

The River Leam catchment, including the River Itchen and Draycote Reservoir.

AP5

The River Dene catchment.

AP6

The Avon catchment between Stareton gauging station and Stratford upon Avon. The northern section, between the Rivers Sowe and Leam, is underlain by outcrops of the Sherwood Sandstone and Coal Measures aquifers. These are part of the PT Sandstone Warwick/Avon Confined groundwater body and Coal Measures Coventry groundwater body respectively.

AP7

The River Stour catchment. Part of its headwaters, in the south of the Avon catchment, is underlain by the Jurassic Limestone aquifer. This is part of the Jurassic Limestones Cotswold Edge North groundwater body.

AP8

The River Arrow catchment including the River Alne. A small area of the upper catchment is underlain by Sherwood Sandstone, part of the PT Sandstone Bromsgrove South groundwater body.

AP9

The Badsey Brook catchment, which flows into the River Avon upstream of Evesham. The Jurassic Limestone aquifer, part of the Jurassic Limestones Cotswold Edge North groundwater body, underlies areas at the southern edge of the Badsey Brook catchment.

AP10

The River Avon catchment downstream of Stratford upon Avon to Evesham gauging station.

AP11

The River Isbourne catchment. There are outcrops of the Jurassic Limestone aquifer which is part of the Jurassic Limestones Cotswold Edge North groundwater body, along the catchment's southern boundary.

AP12

The Piddle Brook catchment.

AP13

The Bow Brook catchment, the headwaters of which are underlain by the Sherwood Sandstone aquifer, part of the Bromsgrove South groundwater body.

AP14

The most downstream assessment point in the Warwickshire Avon catchmen. It covers the River Avon to Tewkesbury, near to its confluence with the River Severn.

3.1.1. Water resource availability colours and implications for licensing

We use colours to represent different surface water availability at a range of flows:

Water available for licensing

Green 

There is more water than required to meet the needs of the environment. New licences can be considered depending on local and downstream impacts. Licences will be issued with a hands off flow (HoF) restriction to protect environmental requirements at lower flows.

Restricted water available for licensing

Yellow 

Full Licensed flows fall below the Environmental Flow Indicator (EFI).

If all licensed water is abstracted there will not be enough water left for the needs of the environment. No new consumptive licences would be granted. It is likely we'll be taking action to reduce full licensed risks. Water may be available if you can 'buy' (known as licence trading) the entitlement to abstract water from an existing licence holder.

Water not available for licensing

Red 

Recent actual flows are below the EFI.

This scenario highlights water bodies where flows are below the indicative flow requirement to help support a healthy ecology in our rivers. We call this 'Good Ecological Status' (GES) or 'Good Ecological Potential' (GEP) where a water body is heavily modified for reasons other than water resources.

We are currently taking action in water bodies that are not supporting GES or GEP. We will not grant further licences. Water may be available if you can 'buy' (known as licence trading) the amount equivalent to that recently abstracted by an existing licence holder.

Heavily Modified Water Bodies (HMWBs) (and/or discharge rich water bodies

Grey 

These water bodies have a modified flow that is influenced by reservoir compensation releases or they have flows that are augmented. These are often known as 'regulated rivers'. They may be managed through an operating agreement, often held by a water company. The availability of water is dependent on these operating agreements. More detail if applicable can be found in section 4.1 Surface Water.

There may be water available for abstraction in discharge rich catchments, you need to contact us to find out more.

The water resource availability is calculated and the colour assigned at 4 different flows:

- Q95 – the flow of a river which is exceeded on average for 95% of the time i.e. a low flow - you would expect the river flow to be lower than Q95 on 18 days in an average year
- Q70 – the flow of a river which is exceeded on average for 70% of the time - you would expect the river flow to be lower than Q70 on 110 days in an average year
- Q50 – the flow of a river which is exceeded on average 50% of the time - you would expect the river flow to be lower than Q50 on 183 days in an average year
- Q30 – the flow of a river which is exceeded on average for 30% of the time - you would expect the river flow to be lower than Q30 on 256 days in an average year

3.1.2. Water availability maps

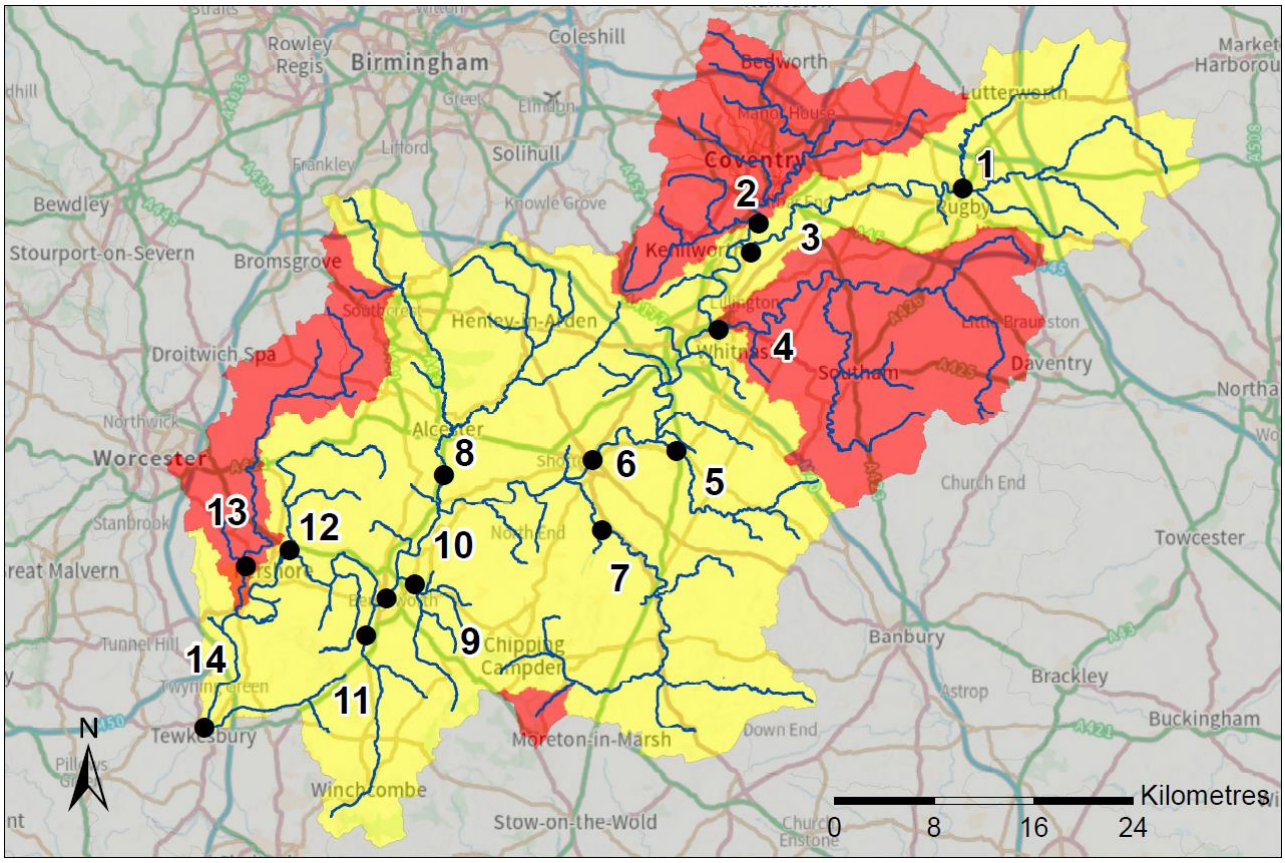
The water availability colours for the Warwickshire Avon catchment are presented in maps 2 to 5. Table 1 provides a summary of this information.

Table 1: summary of maps 2 to 5 showing the water availability at each assessment point by flow category

Assess-ment Point	Name	Q30	Q50	Q70	Q95
1	Rugby (River Avon)	Water available	Restricted water available	Restricted water available	Restricted water available
2	Stoneleigh (River Sowe)	Water available	Restricted water available	Restricted water available	Water not available

Assess-ment Point	Name	Q30	Q50	Q70	Q95
3	Stareton (River Avon)	Water available	Water available	Restricted water available	Restricted water available
4	Leamington (River Leam)	Water not available	Water not available	Water not available	Water not available
5	Wellesbourne (River Dene)	Water available	Water available	Restricted water available	Restricted water available
6	Stratford (River Avon)	Water available	Water available	Water available	Restricted water available
7	Wimpstone (River Stour)	Water available	Water available	Water available	Restricted water available
8	Broom (River Arrow)	Water available	Water available	Water available	Restricted water available
9	Offenham (Badsey Brook)	Water available	Water available	Water available	Restricted water available
10	Evesham (River Avon)	Water available	Water available	Water available	Restricted water available
11	Hinton (River Isbourne)	Water available	Restricted water available	Restricted water available	Restricted water available
12	Wyre Piddle (Piddle Brook)	Water available	Water available	Water available	Restricted water available
13	Besford Bridge (Bow Brook)	Water available	Water available	Water available	Water not available
14	Upper Pound (River Avon)	Water available	Water available	Water available	Restricted water available

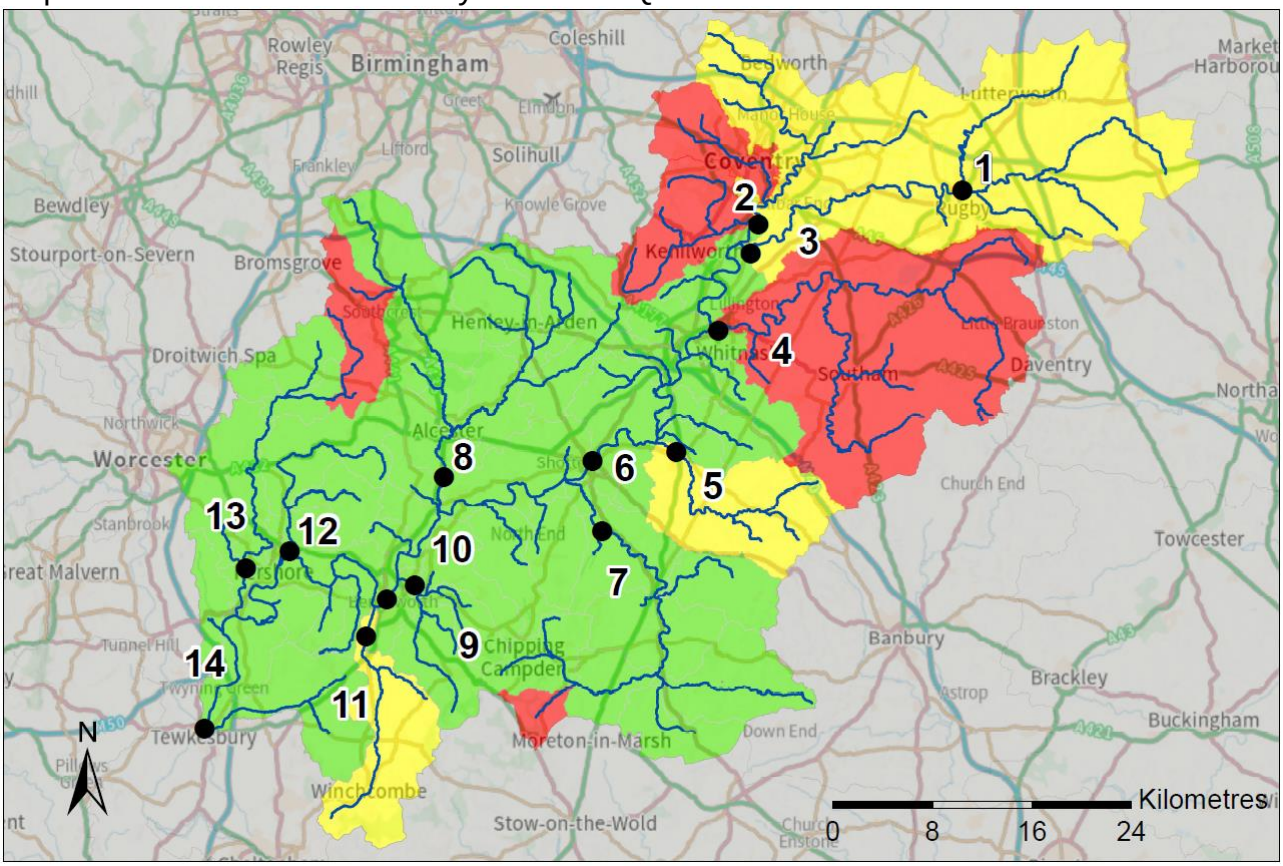
Map 2: water resource availability colours at Q95 for the Warwickshire Avon catchment



Legend

- Assessment Points (APs)
- Rivers
- Water available
- Restricted water available
- Water not available

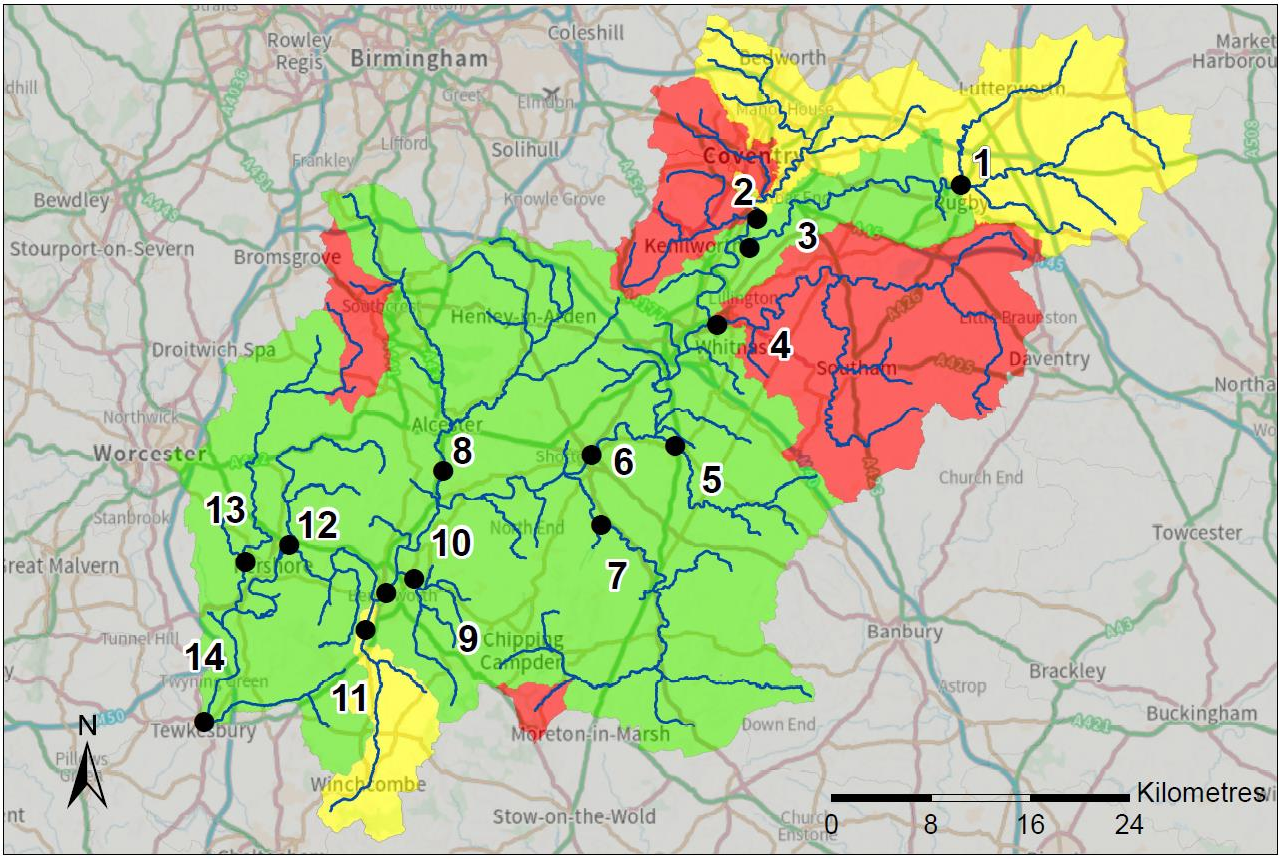
Map 3: water resource availability colours at Q70 for the Warwickshire Avon catchment



Legend

- Assessment Points (APs)
- Rivers
- Water available
- Restricted water available
- Water not available

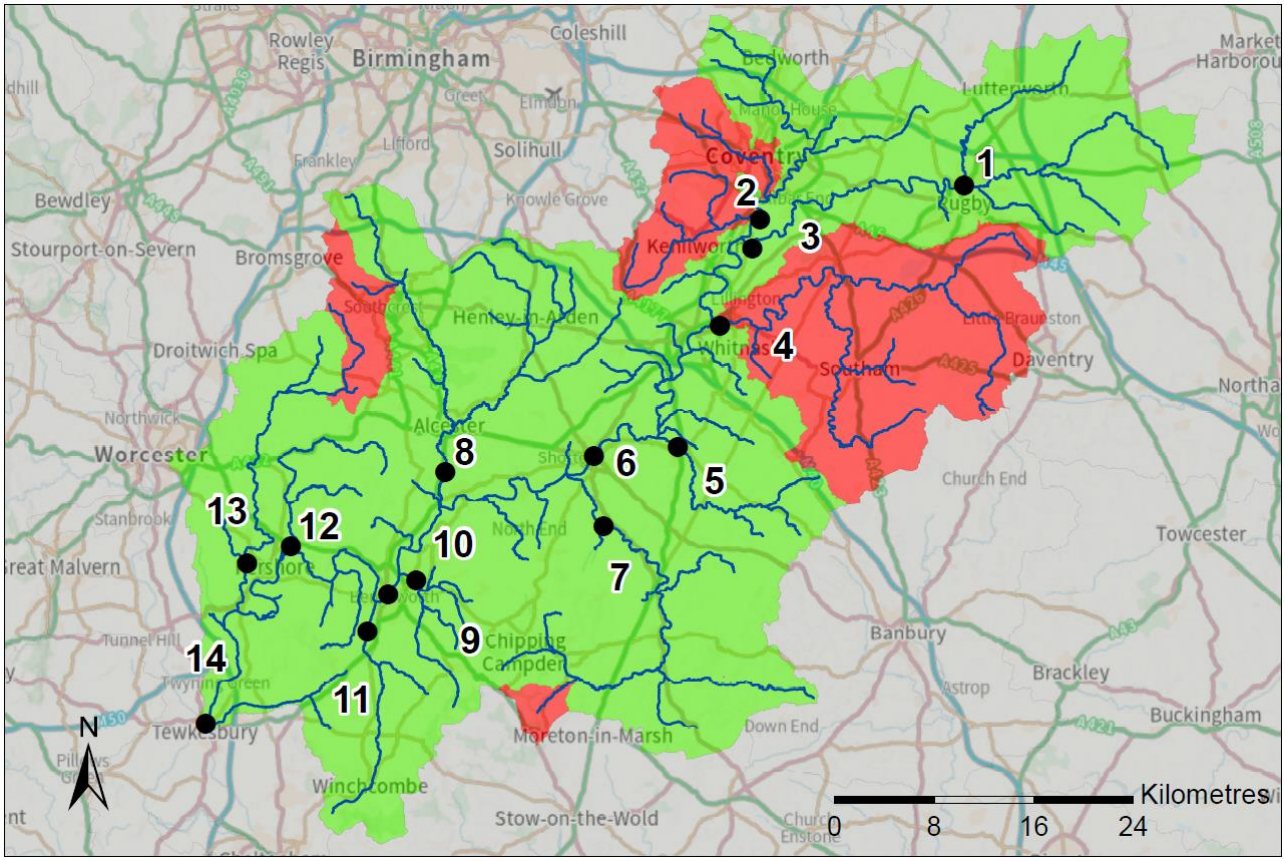
Map 4: water resource availability colours at Q50 for the Warwickshire Avon catchment



Legend

- Assessment Points (APs)
- Rivers
- Water available
- Restricted water available
- Water not available

Map 5: water resource availability colours at Q30 for the Warwickshire Avon catchment



Legend

- Assessment Points (APs)
- Rivers
- Water available
- Restricted water available
- Water not available

3.2. Groundwater resource availability

Groundwater availability is guided by the surface water resource availability unless we:

- have better information on principal aquifers
- are aware of local issues we need to protect

For the principal aquifers in the Warwickshire Avon ALS area, water availability has been assessed using a number of tests. This assessment may also include:

- consideration of available monitoring data
- surface water availability
- the need to protect groundwater dependent features including designated conservation sites

For secondary aquifers, where we typically have less information, groundwater availability is guided by the surface water availability.

In certain areas, resource concerns over groundwater mean that the standard water resource availability colours have been overridden.

Under the WFD Regulations (2017), aquifers are designated as named groundwater bodies (GWBs). We may divide GWBs into groundwater management units (GWMUs). In the case of principal aquifers, we use the information and assessments on these units to determine water availability and licence restrictions. Within the Warwickshire Avon catchment, groundwater has been assessed using both GWBs and GWMUs to represent the water resource status for groundwater. GWMU water availability status may be overridden to support GWB objectives.

The Permo-Triassic Sandstone and Carboniferous Coal Measures are strategically important aquifers within the Warwickshire Avon ALS Area. Both are designated as Principal Aquifers within this catchment and supply significant resources into drinking water supply.

The GWBs and GWMUs in the Warwickshire Avon catchment are:

- The Warwickshire Avon - PT Sandstone Warwick/Avon Confined GWB which contains 3 GWMUs:
  - Whitley GWMU
  - Warwick GWMU
  - Avon Confined GWMU

- The Warwickshire Avon - PT Sandstone Bromsgrove South GWB which contains one GWMU:
  - Bromsgrove South GWMU

- The Coal Measures Coventry GWB which contains 2 GWMUs:
  - Coventry GWMU
  - Kenilworth GWMU

- The Warwickshire Avon - Jurassic Limestones Cotswold Edge North GWB, also a Principal Aquifer, which contains one GWMU:
  - Cotswold Edge North GWMU

The GWMUs are shown on Map 6 and in Table 3.

3.2.1. Groundwater resource availability colours and implications for licensing

We use colours to represent different groundwater availability:

Water available for licensing

Green 

Groundwater management unit balance shows groundwater is available for licensing. New licences can be considered depending on their impacts on other abstractors and providing there will be no significant impact on:

- surface water flows
- dependent wetlands
- groundwater levels
- saline intrusions

Restricted water available for licensing

Yellow 

In these water bodies, the groundwater management unit balance shows that either:

- more water is licensed than the amount available, but that recent actual abstractions are lower than the amount available
- there are known local impacts likely to occur but with management options in place. These impacts could be on:
    - surface water flows
    - dependent wetlands
    - groundwater levels
    - saline intrusions

In restricted groundwater management units no new consumptive licences will be granted where there are risk of unsustainability as a result of existing licensed abstraction. The risks of becoming unsustainable apply to the groundwater balance and/or:

- surface water flows
- groundwater dependent wetlands

It will be appropriate to take action to reduce fully licensed risks.

Water may be available if you can 'buy' (known as licence trading) the entitlement to abstract water from an existing licence holder. Please refer to Section 5.3.

There may be restrictions in some areas, for example in relation to saline intrusion or surface water flows. Where flow impacts are a concern a hands off flow may be applied.

Water not available for licensing

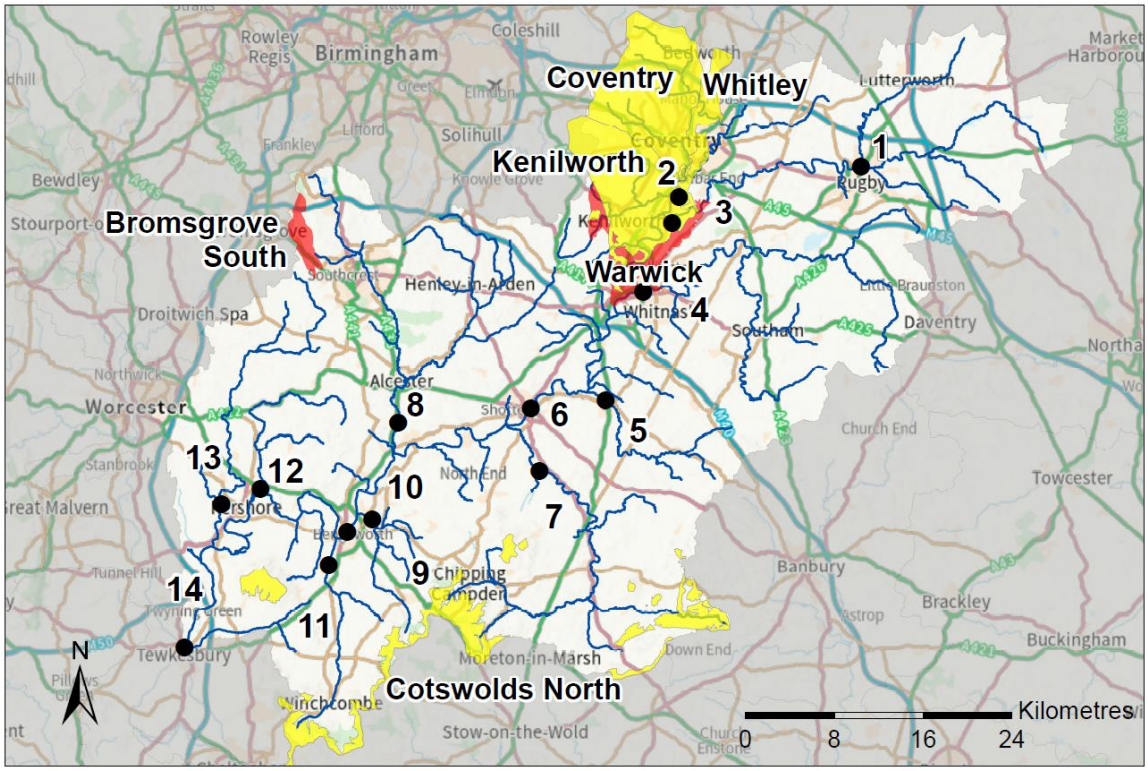
Red 

Groundwater management unit balance shows more water has been abstracted based on recent amounts than the amount available.

We will not grant further consumptive licences. It will be appropriate to take action to reduce fully licensed risks. Water may be available if you can 'buy' (known as licence trading) the entitlement to abstract water from an existing licence holder. Please refer to Section 5.3.

3.2.2. Groundwater availability map

Map 6: groundwater availability colours in the Warwickshire Avon catchment



Legend

- Assessment Points (APs)
- Rivers
- No Water Available GWMU
- Restricted Water Available GWMU

3.3. Resource reliability

If you want to apply for a licence, it's worth considering the reliability of your abstraction.

By assessing the quantity of water available at different flows it's possible to see:

- when there is a surplus or deficit of water
- the associated reliability of an abstraction

This is an indication only. Actual reliability of a licence will be discussed when you apply.

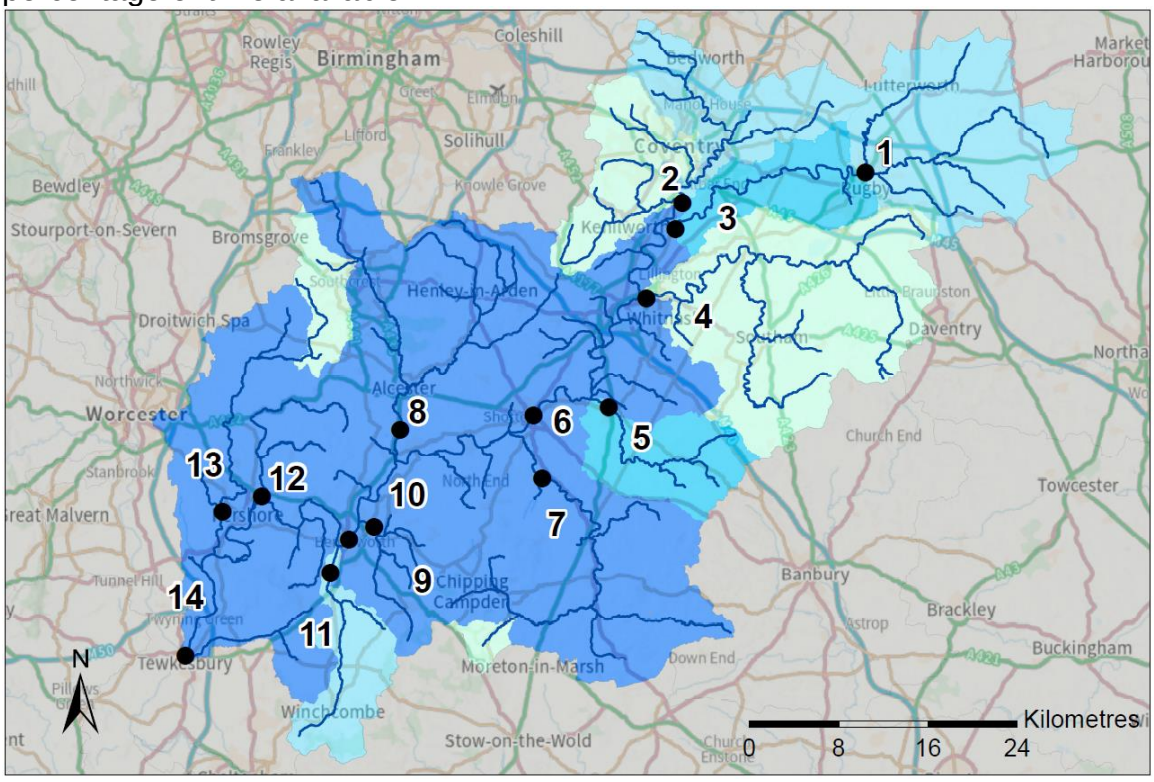
Map 7 gives an indication of the resource availability for consumptive abstraction in the Warwickshire Avon area expressed as a percentage of time.

In this catchment:

- AP1: Consumptive abstraction is available at least 30% of the time
- AP2: Consumptive abstraction is available at least 30% of the time except the River Sherbourne where water is available less than 30% of the time
- AP3: Consumptive abstraction is available at least 50% of the time
- AP4: Consumptive abstraction is available less than 30% of the time

- AP5: Consumptive abstraction is available at least 70% of the time
- AP6: Consumptive abstraction is available at least 70% of the time except the Finham Brook where water is available less than 30% of the time
- AP7: Consumptive abstraction is available at least 70% of the time except from the Blockley Brook where abstraction is available less than 30% of the time
- AP8: Consumptive abstraction is available at least 70% of the time except the Batchley Brook where water is available less than 30% of the time
- AP9: Consumptive abstraction is available at least 70% of the time
- AP10: Consumptive abstraction is available at least 70% of the time
- AP11: Consumptive abstraction is available at least 30% of the time
- AP12: Consumptive abstraction is available at least 70% of the time
- AP13: Consumptive abstraction is available at least 70% of the time except the upper Bow Brook where water is available less than 30% of the time
- AP14: Consumptive abstraction is available at least 70% of the time

Map 7: surface water resource reliability in the Warwickshire Avon ALS expressed as percentage of time available



Legend

- Assessment Points (APs)
- Rivers

Resource availability (% of the time)

- less than 30%
- at least 30%
- at least 50%
- at least 70%
- at least 95%

3.4. Other considerations for resource availability and reliability

We will add constraints to licences such as hands off flow (HoF) conditions to protect:

- the environment
- the rights of other abstractors

As a result, when we grant a licence, it does not mean that we guarantee a supply of water. These conditions specify that if the flow in the river drops below what is needed to protect the environment, abstraction must reduce or stop. In dry years, restrictions are likely to apply more often. This will affect the reliability of supply.

There is no guarantee that we will grant licences even where water is available for abstraction. This is because we determine each application on its own merits. Local factors may mean we are unable to grant a licence as applied for, or even at all.

New licences within a catchment are usually given a Common End Date (CED), which allows them to be reviewed at the same time. The next CED for this ALS is 31 March 2037 and the subsequent one is 31 March 2049.

3.5. Impoundments

Applications for impoundments will be dealt with on a case-by-case basis. More information may be found on our water management web pages.

4. How we manage water availability in the Warwickshire Avon ALS

4.1. Surface water

We assess surface water flows at assessment points (APs). These are significant points on a river, often where 2 major rivers join or at a gauging station. APs cover multiple surface water bodies.

To protect the environment we will issue licences with a condition referred to as a hands off flow (HoF). It means that if flows in the river drops below that which is required to protect the environment, abstraction must stop, hence ‘hands off flow’.

Each HoF is linked to an AP and is dependent on the assessment of the river at that AP and downstream. This determines the water resource availability at that AP. In some cases additional restrictions may apply to licences where there is a more critical resource availability downstream. This is to protect the ecological requirements of the river.

All abstraction licence applications are subject to an assessment to take account of any local and downstream issues.

Where groundwater abstractions directly impact on surface water flows, the impact is measured at the surface water AP. Surface waters are supported by groundwater where they interact with aquifers:

- springs feed headwaters or contribute further downstream
- baseflow supports flow through riverbeds along the watercourse route

Groundwater abstractions can lower the water table. This could reduce groundwater inputs via springs and baseflow so reducing surface water flows and impacting ecology. The potential for groundwater abstraction to affect groundwater and surface water connectivity is included in the assessment of the groundwater resource status and risk.

In this catchment the principal aquifers consist of the:

- Permo-Triassic Sandstone Bromsgrove South groundwater body
- Permo-Triassic Sandstone Warwick/Avon Confined groundwater body
- Carboniferous Coal Measures Coventry groundwater body
- Jurassic Limestone Cotswold Edge North groundwater body

Groundwater abstractions from these either impact or have the potential to impact the water courses that rise on them or flow across them. Key APs where surface water flows over aquifers and which are likely to be impacted by this groundwater abstraction are identified in Section 3.1.

Table 2 gives an indication of:

- how much water is available for further abstraction from surface water
- the associated restrictions we may have to apply to new and varied abstraction licences from the main river

Depending on the nature of the catchment, tributaries to the main river may be subject to different restrictions and quantities. This may be assessed locally on a case-by-case basis.

Reading from top to bottom in Table 2 are the APs in the Warwickshire Avon ALS area. Reading across the columns you can see:

- the location of the AP
- the water resource availability status of that AP
- the potential HoF that may be applied to a licence
- the number of days water may be available under this restriction
- the approximate volume of water in Ml/d that may be available
- any other information or local restrictions

Across the River Avon catchment the water resource strategies are driven by the need to protect downstream river flows. At the lower end of the River Severn, at Deerhurst gauging station, a HoF of 2,568 Ml/d has been set to safeguard lower flows.

Therefore all HoFs in the catchment have been set at local gauging stations at flows which are equivalent to, or higher than, 2,568 Ml/d at Deerhurst. Where watercourses need further protection of flows due to locally unsustainable water resource situations, we have set their HoFs at a suitable higher flow.

These conditions in Table 2 apply to new or varied consumptive abstractions. They may not apply if the abstraction is non-consumptive or if the licence results in an overall environmental benefit. Formal variations to increase the volume licensed will be subject to the same conditions as new licences on the increased part of the licence only.

We may also require the installation of a correctly-sized intake screen and/or a fish or eel pass. These help mitigate the impact where an abstraction creates a delay or barrier to the movement of fish or eel.

Licences will be issued to the Warwickshire Avon Common End Date (CED) of 31st March 2037. A shorter time limit or changes to the licence conditions may be required where there are risks to the sustainability of catchments.

Where environmental sustainability is not in question, renewal of time limited licences will be considered subject to local considerations and the following criteria:

- there is a continued justification of need for the water
- the water is used efficiently

Where these 2 criteria are met but the abstraction of water is unsustainable we will require licence changes to reflect historic usage. There is more information on the renewal of time-limited licences in Section 5.1.

The strategy outlined in Table 2 depends on the resource situation remaining as it is currently. Parts of the catchment are discharge-rich so this water has been made available for abstraction. Changes to major abstractions or discharges in the catchment may result in a change in this licensing strategy or to the volumes of water available.

The volumes stated are the maximum acceptable volumes available for abstraction from that location. Where the AP is on a tributary of the Avon, the volume applies to the whole tributary to its confluence with the River Avon. The exception is the River Sowe where the volume available applies to the Sowe upstream of Finham sewage treatment works (STW). Less water will be available for abstraction further upstream and from tributaries due to reduced flows. All volumes applied for will be assessed individually to ensure the impacts are sustainable both locally and further downstream.

Table 2 summary of licensing approach for the surface water assessment points of the Warwickshire Avon catchment

AP	Name	AP National Grid Reference	Water Resource Availability	HoF Restriction (Ml/d)	Number of days per annum abstraction may be available	Approximate volume available at restriction (Ml/d)	Additional restrictions
1	Rugby (River Avon)	SP 50315 76657	Water available for licensing at Q43	140 Ml/d at Stareton	157	5.8 Ml/d	
2	Stoneleigh (River Sowe)	SP 33924 73879	Water available for licensing at Q43	140 Ml/d at Stareton	157	6 Ml/d	The River Sherbourne will be closed to further abstraction.

AP	Name	AP National Grid Reference	Water Resource Availability	HoF Restriction (Ml/d)	Number of days per annum abstraction may be available	Approximate volume available at restriction (Ml/d)	Additional restrictions
3	Stareton (River Avon)	SP 33307 71565	Water available for licensing at Q68	80 Ml/d at Stareton	248	3.5 Ml/d	
4	Leamington (River Leam)	SP 30681 65361	Water not available for licensing	N/A	N/A	N/A	Remains closed to abstraction at all flows
5	Wellesbourne (River Dene)	SP 27292 55591	Water available for licensing at Q70	11.4 Ml/d at Wellesbourne	256	3.5 Ml/d	
6	Stratford (River Avon)	SP 20584 54871	Water available for licensing at Q78	525 Ml/d at Evesham	285	See AP10	Finham and Canley Brooks will be closed to further abstraction.
7	Wimpstone (River Stour)	SP 21343 49236	Water available for licensing at Q78	35.6 Ml/d at Wimpstone	285	6 Ml/d	No further abstraction from the Blockley Brook
8	Broom (River Arrow)	SP 08642 53615	Water available for licensing at Q78	95.7Ml/d at Broom	285	30 Ml/d	The Batchley Brook will be closed to further abstraction

AP	Name	AP National Grid Reference	Water Resource Availability	HoF Restriction (Ml/d)	Number of days per annum abstraction may be available	Approximate volume available at restriction (Ml/d)	Additional restrictions
9	Offenham (Badsey Brook)	SP 06293 44909	Water available for licensing at Q75	13.5 Ml/d at Offenham	274	3.4 Ml/d	
10	Evesham (River Avon)	SP 04034 43760	Water available for licensing at Q78	525 Ml/d at Evesham	285	57.4 Ml/d	
11	Hinton (River Isbourne)	SP 02394 40792	Water available for licensing at Q45	38 Ml/d at Hinton	164	5 Ml/d	
12	Wyre Piddle (Piddle Brook)	SO 96236 47603	Water available for licensing at Q78	9.2 Ml/d at Wyre Piddle	285	1.6 Ml/d	
13	Besford Bridge (Bow Brook)	SO 92719 46289	Water available for licensing at Q78	18.2 Ml/d at Besford Bridge	285	2 Ml/d	The upper Bow Brook will be closed to further abstraction (upstream of Priest Bridge SO 98938 59910)
14	Upper Pound (River Avon)	SO 89402 33338	Water available for licensing at Q78	2,568 Ml/d at Deerhurst (River Severn)	285	57.4 Ml/d	

In line with the Severn Corridor abstraction licensing strategy, we will be offering an alternative HoF on some watercourses. These will apply when abstraction is not required under Severn Trent Water's Birmingham Resilience licence. The HoFs will be:

- AP7 Wimpstone 33.8 Ml/d
- AP8 Broom 92.9 Ml/d
- AP10 Evesham 507 Ml/d
- AP12 Wyre Piddle 8.65 Ml/d
- AP13 Besford Bridge 17.3 Ml/d

4.2. Groundwater

Principal aquifers are designated as named groundwater bodies (GWB). We may divide principal aquifers into groundwater management units (GWMU), which are sub-divisions of the groundwater bodies. In these cases we use the status and objectives of GWBs together with information and assessments on GWMUs to determine water availability and licence restrictions. GWMU water availability status may be overridden to support GWB objectives.

Where groundwater abstractions directly impact on surface water flows the impact is measured at the surface water AP. This includes where the impact reduces baseflow. In these cases, restrictions may be applied to licences, such as hands off level (HoL) conditions or hands off flow (HoF) conditions. The HoL is a groundwater level below which an abstractor is required to reduce or stop abstraction. The HoF is a flow in a connected watercourse, below which an abstractor is required to reduce or stop abstraction.

Other restrictions may apply where availability is limited or to protect the environment, for example to prevent saline intrusion.

4.2.1. Licence restrictions on groundwater abstractions in the Warwickshire Avon ALS area

As set out in Section 3.2 there are 7 GWMUs as well as superficial deposits within the boundary of the Warwickshire Avon catchment. Section 3.2.1 describes the groundwater resource availability colours and the implications for licensing.

Table 3 details water availability status for these GWMUs and the superficial deposits. It sets out the restrictions that might be applied to abstractions likely to impact on groundwater-dependent environments. Overall, there is very limited water available for licensing from groundwater sources. This is to protect groundwater resources, river baseflow and dependent environments and manage the status and risk of the groundwater body where necessary.

Table 3 summary of licensing approach for the GWMUs of the Warwickshire Avon

Groundwater body and status	Groundwater management unit	Resource availability colour and licence restrictions on groundwater abstractions
Warwickshire Avon - PT Sandstone Bromsgrove South This groundwater body is considered to be Poor quantitative	Bromsgrove South	Red - Water not available for licensing. No new consumptive abstractions will be granted. Opportunities to reduce fully licensed risks will be taken. Time limited licence renewals will require changes to reflect historic usage

Groundwater body and status	Groundwater management unit	Resource availability colour and licence restrictions on groundwater abstractions
status and is at risk of deterioration.		in order to manage the risk of future deterioration to the environment.
Warwickshire Avon - Coal Measures Coventry This groundwater body is considered to be Poor quantitative status and is at risk of deterioration.	Coventry Kenilworth	Yellow - Restricted water available for licensing. These GWMUs are in a GWB that is at Poor Quantitative Status and is at Risk of Deterioration. No new consumptive licences will be granted as this would increase the risk of deterioration in the groundwater body. Licence trades will be considered. Trades will only be considered if the applicant can clearly demonstrate that the new abstraction will not compromise GWB objectives or result in deterioration. Opportunities to reduce fully licensed risks will be taken. Time limited licence renewals will require changes to reflect historic usage. This is in order to manage the risk of future deterioration to the environment.
Warwickshire Avon - PT Sandstone Warwick/Avon Confined This groundwater body is considered to be Poor quantitative status and is at risk of deterioration.	Warwick Avon (Confined)	Red - Water not available for licensing. No new consumptive abstractions will be granted. Opportunities to reduce fully licensed risks will be taken. Time limited licence renewals will require changes to reflect historic usage in order to manage the risk of future deterioration to the environment.
Warwickshire Avon - PT Sandstone Warwick/Avon Confined This groundwater body is considered to be Poor quantitative status and is at risk of deterioration.	Whitley	Yellow - Restricted water available for licensing. This GWMU is in a larger GWB that is at Poor Quantitative Status and is at Risk of Deterioration. No new consumptive licences will be granted as this would increase the risk of deterioration in the groundwater body. Licence trades will be considered only with abstraction licences located within 'Water not available for licensing' GWMUs. This will help to improve overall sustainability. Trades will only be considered if the applicant can clearly demonstrate that the

Groundwater body and status	Groundwater management unit	Resource availability colour and licence restrictions on groundwater abstractions
		new abstraction will not compromise GWB objectives or result in deterioration. Opportunities to reduce fully licensed risks will be taken. Time limited licence renewals will require changes to reflect historic usage. This is in order to manage the risk of future deterioration to the environment.
Warwickshire Avon - Jurassic Limestones Cotswold Edge North This groundwater body is considered to be Good quantitative status and not at risk of deterioration.	Cotswolds (North)	Yellow - Restricted water available for licensing. Overridden to Restricted water available to protect Public Water Supply abstractions reliant on spring discharges and to protect the downstream status of the Severn Estuary.

Secondary Aquifers

New groundwater licence applications for abstraction outside of the principal aquifers will continue to be assessed on a case-by-case basis. Consideration will include potential impacts on:

- existing water users
- groundwater dependent terrestrial ecosystems
- groundwater resources
- surface water level and flow

We must ensure that no deterioration of the water environment is allowed to occur.

4.3. Protected sites

The Conservation of Habitats and Species Regulations 2017 (Habitats Regulations) provides a very high level of protection to:

- Special Areas of Conservation (SAC), which contribute to biodiversity by maintaining and restoring habitats and species
- Special Protection Area (SPA), which provides protection to birds and their nests, eggs and habitats

Ramsar sites (internationally important wetland sites), SACs and SPAs are referred to collectively as European sites. This recognises that they protect species and habitats shared across Europe and were originally designated under European legislation.

Sites of Special Scientific Interest (SSSI) also carry a high level of environmental importance. There are many such sites linked to the water resources of the Warwickshire Avon catchment including, but not limited to, those listed in Table 4.

Table 4 SSSIs in the Warwickshire Avon catchment

Designation Name	Site Name
Site of Special Scientific Interest	Ashmoor Common Bittell Reservoirs Bosworth Mill Meadow Brandon Marsh Calcutt Locks Meadow Combe Pool Dagnell End Meadow Dean Brook Valley Pastures Herald Way Marsh Hewell Park Lake Hopwood Dingle Ipsley Alders Marsh Lobbington Hall Marsh Long Meadow Merriman's Hill Farm Meadows Misterton Marshes River Itchen Sherbourne Meadows Shrewley Canal Cutting Stanford Park Trickses Hole Ullenhall Meadows Upham Meadow & Summer Leasow Upton Ham

Conservation objectives are defined for European and SSSI protected sites to maintain them at, or to reach, favourable condition status. These objectives are set by Natural England. They conduct condition assessments and use targets defined in the 'Common Standards Monitoring Guidance' (CSMG), produced by the Joint Nature Conservation Committee (JNCC). These quantitative targets are considered by Natural England as pre-requisite for achieving favourable status and are more stringent than WFD Regulations (2017) targets. We have a duty to have regard to Natural England's advice when determining licence applications that may impact on a designated site.

The Natural Environment and Rural Communities (NERC) Act 2006 also requires us to have regard to the conservation of biodiversity when carrying out our normal functions. Section 41 of the Act lists species and habitats that are considered to be of principal importance for the purpose of conserving biodiversity in England.

We will consider the impact of all new abstraction applications on designated sites and species. We may request more detailed supporting information when a licence could cause impacts. For European sites, a Habitat Regulations Assessment (HRA) may be required.

5. Managing the catchment together

5.1. Actions being taken on unsustainable abstraction

Managing water abstraction gives details on:

- what an unsustainable abstraction is
- the measures available to resolve environmental issues caused by abstraction

There are a series of actions that we are taking to address unsustainable abstraction. These are listed here and are followed by work that has been done in individual catchments and subsequent action to be taken.

Revocation for non-use / reduction of underused licences

There is a large volume of water licensed within abstraction licences that has not been abstracted for a number of years. This limits water availability for those that need it. In some cases it also presents a significant environmental risk if abstraction were to be restarted.

The Environment Agency has an unused licences programme which aims to reduce licensed abstraction which is not being used. This helps to reduce the risk of future deterioration and may release unused water for future licensing. The majority of changes to licensed quantities are made voluntarily. However, where there is risk of environmental damage, the Environment Agency can propose the revocation of unused licences. This is done using legal powers under section 52 of the Water Resources Act 1991.

During the 3 phases of the unused licence programme so far, we have contacted the holders of 37 abstraction licences in the Warwickshire Avon area. The sum of water reduced or revoked so far in this catchment is 335,967 cubic metres per year. We will continue to review unused and underused licences in the catchment.

Water Industry National Environment Programme (WINEP) and Asset Management Plans (AMP)

Through these programmes we work with the water companies to investigate and deliver environmental improvements. These are needed to meet Water Framework Directive and national targets. Water companies will be carrying out investigations in AMP7. This is to understand the risk of deterioration due to planned sustained increases in abstraction from their sources. They will have to implement changes to prevent deterioration before deterioration is predicted to occur. If the investigations show a risk of deterioration, they will need to carry out an Options Appraisal. This is to identify measures to mitigate the risks and prevent deterioration of WFD Regulations (2017) status. Mitigation or changes to abstraction to prevent deterioration will need to be implemented before deterioration is predicted to occur.

Water companies will also be delivering changes to the management of other abstractions in the Warwickshire Avon catchment.

This will take the form of:

- licence reductions
- altering the management of the sources
- providing mitigations

These will be carried out under the No Deterioration AMP driver. The measures are known as Sustainability Change and Adaptive Management measures.

Restoring Sustainable Abstraction (RSA)

This is the Environment Agency's programme of work to review unsustainable abstraction. This includes water abstractions which cause or potentially cause actual flows to fall short of the EFIs and result in environmental damage. We have been changing or revoking abstraction licences in order to achieve a sustainable abstraction regime.

Changing Licences to Prevent Deterioration

The Environment Agency must take action to prevent water bodies from deteriorating. This is in accordance with its duties under the Water Environment (WFD) (England and Wales) Regulations 2017 to prevent water bodies deteriorating in status. The Environment Agency's principal intervention to prevent deterioration is to reduce licensed quantities. The scale of any reduction is dependent on the deterioration risk and how current levels of abstraction impact the environment. Licence changes to prevent deterioration will need to commence as part of the renewal of time limited abstraction licences.

Changes to licences held by statutory water undertakers to prevent deterioration will normally be progressed through the Water Industry National Environment Programme (WINEP). Changes to permanent licences not held by statutory water undertakers will be progressed as and when circumstances allow. Further changes may be required to licences to meet other environmental obligations in addition to preventing deterioration.

Serious Damage

In order to be classified as being at serious damage a surface water body must meet the following 3 criteria:

- be identified as being Band 3 non-compliant for flow - this means that they are experiencing severe levels of abstraction pressure causing recent actual flows to fall into deficit against the EFI
- have an overall WFD Regulations (2017) status of less than 'Good'
- have the abstraction of water and subsequent low flows confirmed as the reason for not achieving 'Good' WFD Regulations (2017) status

In the Warwickshire Avon catchment there is currently one surface waterbody confirmed as being at serious damage. This is the Batchley Brook - source to confl R Arrow (GB109054043860). Another waterbody is at risk of serious damage; this is the River Sherbourne - source to confl R Sowe (GB109054044620).

Both of these surface water bodies are closed to further abstraction to ensure that no deterioration of the water environment is allowed to occur.

For a groundwater body, serious damage occurs when:

- there is a deterioration in combined overall WFD Regulations (2017) groundwater body status from good to poor
- there is a deterioration in combined overall WFD Regulations (2017) groundwater status from poor (low confidence) to poor (high confidence)
- the WFD Regulations (2017) Groundwater Dependent Terrestrial Ecosystem (wetlands) test is assessed as poor

A groundwater body is at risk of serious damage where the full licensed conditions could result in:

- the deterioration in combined overall WFD Regulations (2017) groundwater body status from good to poor
- the deterioration in combined overall WFD Regulations (2017) groundwater status from poor (low confidence) to poor (high confidence)

Warwickshire Avon - Coal Measures Coventry and Warwickshire Avon - PT Sandstone Bromsgrove South GWBs are both at risk of deterioration and serious damage.

In the Warwickshire Avon - Coal Measures Coventry GWB, takeup of a proportion of licensed headroom would see deterioration from poor (low confidence) to poor (high confidence). Warwickshire Avon - PT Sandstone Bromsgrove South remains at poor quantitative status (high confidence).

Changes to time limited licences

Where environmental sustainability is not in question renewal of time limited licences will be considered subject to local considerations and the following criteria:

- there is a continued justification of need for the water
- the water is used efficiently

Where these 2 criteria are met but the abstraction of water is unsustainable we will require licence changes to reflect historic usage. In order to manage the risk of future deterioration to the ground or surface water body we would not wish to see growth into licensed headroom. This would result in a sustained increase in abstraction and damage to the environment. We may also issue renewed licences with a short time-limit.

The renewal criteria also apply to renewals of licences for formerly exempt purposes which were brought into the licensing regime under New Authorisations transitional arrangements. The HoFs applied to these licences under the transitional regulations were not always required to address sustainability issues, therefore the abstractions may be unsustainable. We will require further evidence on the abstraction and its impacts on the environment at renewal in order to assess environmental sustainability. There is no guarantee that we will renew licences or renew them on the same terms.

Water availability colours for surface water at Q95, Q70, Q50 and Q30 can be found on maps 2 to 5 and for each groundwater management unit on map 6.

Surface water abstraction licences

Surface water licences will be renewed on the following broad principles around environmental sustainability:

Water available for licensing

Green 

We will consider renewing the licence at the same quantities, subject to the renewal criteria. The waterbody, and downstream waterbodies, need to have environmentally sustainable rates of water abstraction - both now and at times when abstractors take their full licensed quantities of water.

Restricted water available for licensing

Yellow 

On renewal of abstractions in waterbodies where full licensed flows have fallen below the EFI, we may seek to reduce unused portions of licensed quantities. This is to reduce the risk of surface water bodies becoming unsustainable at fully licensed rates of abstraction. It will also help to prevent the ecology deteriorating compared to the River Basin Management Plan (RBMP) 2015 baseline.

Water not available for licensing

Red 

These surface water bodies are already subject to unsustainable rates of abstraction. We will need to renew the licences with measures to help restore that waterbody to a sustainable level of abstraction.

On renewal, time limited licences may be capped at historic maximum abstraction. This will reduce the risk of abstraction from surface water bodies becoming increasingly unsustainable at fully licensed rates of abstraction. It will also help to prevent the ecology deteriorating compared to the River Basin Management Plan (RBMP) 2015 baseline. We will also consider more restrictive terms and conditions such as hands off flow/level conditions.

Where measures are still under investigation, licences are likely to be renewed with a cap at historic maximum uptake. They may also be time-limited to an earlier date than the catchment's Common End Date.

Groundwater abstraction licences

Individual groundwater management unit status and water availability is summarised in Section 4.2.

Groundwater licences will be renewed on the following broad principles around environmental sustainability:

Water available for licensing

Green 

We will consider renewing the licence at the same quantities. The groundwater body/groundwater management unit, overlying rivers and associated wetland habitats have environmentally sustainable rates of water abstraction. This applies both now and under conditions when abstractors take their full licensed quantities of water.

Restricted water available for licensing

Yellow 

Groundwater/surface water bodies and/or the groundwater management unit in which the groundwater abstraction sits are at risk of deterioration. Time limited renewals will require licence changes to reflect historic usage and reduce the fully licensed risk in order to manage the risk of deterioration.

Water not available for licensing

Red 

Groundwater/surface water bodies and/or the groundwater management unit in which the groundwater abstraction sits are already subject to unsustainable rates of abstraction. We will renew the licence with measures to help restore a more sustainable level of abstraction. These measures could be licence quantity reductions or hands off flow/level conditions. Where 'water body' scale measures are still under investigation, then licence changes to reflect historic usage and a short time-limit will be applied. Requirements for any further licence changes (reductions, HoFs etc.) can then be assessed on the subsequent renewal.

5.2. Action that has been taken on unsustainable abstraction in this catchment

Five Regional Groups have been created to develop long-term water resources plans up to 2050 and beyond. The Warwickshire Avon area falls in the Water Resources West group. The area covered by this group includes the North-West, the Midlands and cross-border catchments between Wales and England. It is a multi-sector group that includes representatives from the water companies, National Farmers' Union (NFU), Energy UK and Canal and River Trust.

The Regional Groups have been tasked with considering the challenges and producing multi-sector regional plans. These will set out how water supply and demand will be managed over the long-term for people, businesses and agriculture, whilst protecting the environment. They will need to understand environmental needs and develop the long-term environmental destination for water resources by:

- ensuring no deterioration
- addressing unsustainable abstraction
- improving environmental resilience in the face of climate change

The regional plans will set out the actions that water companies and other abstractors will need to take to reach the long-term environmental destination. Draft plans will be published for consultation on the Water Resources West webpage.

We have provided information to this group to help them identify catchments with existing or potential problems.

This catchment also lies within water company supply zones which have been classified by DEFRA as being under serious water stress. This is where the current or future demand for water is a high proportion of the rainfall available to meet that demand. The classification informs:

- water companies on whether to consider metering
- local authorities on whether to request more stringent consumption standards in new developments

The following actions are also being undertaken in the catchment:

Groundwater Body Actions

We need to prevent further deterioration of 3 groundwater bodies and flows in the associated watercourses that rise on or cross the outcrops. Therefore we will take the following actions in these:

- no new consumptive abstractions will be granted and we will take opportunities to reduce fully licensed risks
- new authorisations will be determined based on historic use
- time limited licences will be capped to reflect historic use
- we will only accept licence trades if the trade is consistent with achieving water body objectives
- we will seek a voluntary approach to change permanent non-water company licences
- water companies will undertake further investigation of a number of sources to identify the measures required to comply with WFD Regulations (2017) no deterioration requirements. They will implement sustainability changes where required

- we will seek to address unused and underused groundwater abstraction licences to reduce licensed headroom to reduce the risk of deterioration defined by the WFD Regulations (2017)

Coal Measures Coventry Groundwater Body

This groundwater body is at overall poor quantitative status and at risk of deterioration. Previous investigations have concluded that surface watercourses in this groundwater body are impacted by groundwater abstraction from multiple sources, primarily for public water supply. We have assessed the impact of abstractions from this groundwater body on the Rivers Sowe and Sherbourne, and the Canley and Finham Brooks.

The River Sherbourne is known to have low flow issues in its upper reaches. Investigations have resulted in the implementation of a flow support scheme on the North Brook. The whole River Sherbourne catchment will be closed to further abstraction, as will the Finham Brook where an unsustainable volume of water has been licensed.

Permo-Triassic Sandstone Bromsgrove South Groundwater Body

Groundwater abstraction, predominantly for public water supply, within this groundwater body has resulted in reduced groundwater levels and flow impacts on surface water courses. Previous investigations into groundwater abstraction impacts have been undertaken on the Batchley and Bow Brooks. Currently the water company, under previous AMP cycles, has not identified a cost beneficial solution to improve flows affected by groundwater abstraction. Action has been implemented to restrict growth in groundwater abstraction and to protect the status of water courses. A compensation borehole has been installed to maintain levels in the Hewell Grange Lake Site of Special Scientific Interest in the Batchley Brook catchment (upper River Arrow). A compensation scheme also supports flows in the upper Bow Brook.

Permo-Triassic Sandstone Warwick/Avon Confined Groundwater Body

Groundwater abstraction, predominantly by water companies, within this groundwater body has resulted in reduced groundwater levels and an unsustainable groundwater balance. Action has been implemented to restrict growth in groundwater abstraction and to protect the status of water courses that cross the outcropping sandstone.

Blockley Brook

Investigations in AMP4 concluded that sufficient spring flow downstream of Dovedale Pool was occurring. The investigations also showed that the public water supply abstractions are not the most significant factor affecting flows along the brook. It was suggested that pond leakage and local weir and sluice structures were having a more significant effect.

5.3. Water rights trading

A water rights trade is where a licence holder sells all or part of their water right, as defined by their abstraction licence(s), to another person. This could be on a permanent or temporary basis. In the majority of cases a trade will involve a change in abstraction location and/or use. We will need to approve proposed changes through the issue or variation of abstraction licences.

In licensing trades, as with new abstraction licences, we need to make sure that we do not cause any deterioration in water body status. This is both:

- within the water body / bodies where the trade will take place
- to downstream water bodies

This section provides a guide to the potential for trading in water bodies of a particular ALS water resource availability colour. Water resource availability colours are shown in maps 2 to 5 (surface water) and map 6 (groundwater).

As New Authorisations licences have not been granted with HoFs which address sustainability, trading of these will be limited. Only beneficial (which result in a positive move towards achieving sustainability) and temporary changes will be permitted. All traded water will be returned to the New Authorisations licence at the CED (or sooner) so that sustainability can be addressed at that point.

5.3.1. Guide to potential trading based on water resource availability

Water available for licensing

Green 

There may be opportunities to allow trades of recent actual abstraction and licensed abstraction. But little demand for trading is expected as water is available for new abstractions.

Restricted water available for licensing

Yellow 

There may be opportunities for licence holders to trade up to their full licensed quantities. But the quantities of water available to trade may be restricted once levels of actual abstraction reach sustainable limits. We will not permit licence trades in water bodies or groundwater management units where we are taking action to prevent deterioration. The exception to this is if the trade is consistent with achieving water body objectives.

Water not available for licensing

Red 

We will only trade recent actual abstraction but no increase in recent actual abstraction is permitted in the water body/groundwater management unit. Licensed abstraction will be recovered for the environment.

HMWBs

Grey 

Opportunities for trading will depend on local operating agreements and local management.

Groundwater rights trading

The principles detailed in Section 5.3.1 apply to permanent trading of groundwater within the same GWMU. The following additional principles apply for the permanent trading of groundwater between groundwater management units (GWMU) within the same groundwater body (GWB):

- the trade must be compatible with this abstraction licensing strategy for the recipient GWMU and surface water bodies
- there is a presumption against trading between GWMUs that are in deficit - Restricted Water Available or No Water Available (see Section 4.2)
- licence trades will only be considered where the recipient GWMU water balance is in surplus - Water Available (see Section 4.2)
- the trade must not result in deterioration of the status of any groundwater body or surface water body test
- the trade should be compatible with the ambition to maintain good or the pathway to achieving good status - the ambition should be realistic and cost beneficial
- the trade must not cause any environmental damage
- the trade must not derogate any protected right and must have due regard to lawful users - a pump test is likely to be required to assess potential impacts on these and other water features
- there is a presumption against trading to a non-compliant surface water body
- the receiving trade abstraction point(s) must consider the distributed impact across surface water bodies - there is a presumption against trading where the distributed impact results in depleting flows within a non-compliant surface water body

To find out more about licence trading please go to our water management web pages.

Help for trading water rights map: this may help abstractors to identify potential trades - it provides information on nearby licences and an indication of the potential for a trade.

6. Related links

Agriculture and Horticulture Development Board (AHDB) website - provides information on effective use of water on livestock farms

Warwickshire Avon Catchment Based Approach community website - provides further information on the catchment based approach in the Avon catchment

UK Centre for Ecology and Hydrology Drought Portal - is an interactive portal presenting information on the latest hydrological situation across the UK

Energy Saving Trust website has advice on many aspects of water and energy conservation including advice on water saving products at home

Environment Agency, how to apply for a water abstraction or impoundment licence web pages - provide all the information needed to go through the application process to get a licence

Environment Agency manage your water abstraction or impoundment licence online web service - allows abstractors to view and share licence information and submit abstraction returns

Environment Agency priority catchments website - provides further information about the priority catchment work

Environment Agency National Framework for Water Resources - explores England's long-term water needs and the importance of planning at the regional scale and link to the catchment scale

Environment Agency and Cranfield University's guide to planning, designing and building water storage reservoirs – if you are considering an irrigation reservoir

Linking Environment and Farming (LEAF) Simply Sustainable Water guide – explains 6 simple steps for managing water quality and industrial use

National Farmers' Union web pages on Irrigation and water resources – provide useful information

Natural England's website provides further information on protected sites and species

Waste and Resources Action Programme website has guidance on water efficiency in the food and drink industry

Water Resources West website provides further information on the group, its aims and actions

7. List of abbreviations

ALS
Abstraction Licensing Strategy

AMP
Asset Management Plan

AP
Assessment Point

CaBA
Catchment Based Approach

CED
Common End Date

CSMG
Common Standards Monitoring Guidance

Defra
Department of Environment Food and Rural Affairs

EFI
Environmental Flow Indicator

GEP
Good Ecological Potential

GES
Good Ecological Status

GW
Groundwater

GWB
Groundwater Body

GWMU
Groundwater Management Unit

HMWB
Heavily Modified Water Body

HoF
Hands off Flow

HoL
Hands off Level

JNCC
Joint Nature Conservation Committee

Ml/d
Megalitres per day

NERC
National Environment and Rural Communities Act

RBMP
River Basin Management Plan

SAC
Special Areas of Conservation

SPA
Special Protection Areas

SSSI
Sites of Special Scientific Interest

UKTAG
United Kingdom's Technical Advisory Group

WB
Water body

WFD
Water Framework Directive

WINEP
Water Industry National Environment Programme

8. Glossary

Abstraction
Removal of water from a source of supply (surface or groundwater).

Abstraction licence
The authorisation granted by the Environment Agency to allow the removal of water.

Assessment point
A significant point on a river, often where 2 major rivers join or at a gauging station.

Asset Management Plan
Every 5 years Ofwat assesses water company business plans, including spending and investment. The Water Industry National Environment Programme (WINEP) is included in the business plans and is considered by Ofwat in the determination of water company prices. The WINEP consists of investigations, monitoring, options appraisals and schemes to improve, prevent deterioration and protect the water environment. These form part of a water company's Asset Management Plan (AMP). We are currently in AMP7 with measures being delivered between 2020 and 2025.

Catchment
The area from which precipitation and groundwater will collect and contribute to the flow of a specific river.

Catchment based approach
Partnership working at the river catchment scale to deliver a range of environmental, social and economic benefits while protecting our precious water environments for the benefit of all.

Common Standards Monitoring Guidance
Guidance on setting and assessing conservation objectives of UK protected sites (SAC, SPA, Ramsar, SSSI).

Consumptive abstraction
Abstraction where a significant proportion of the water is not returned either directly or indirectly to the source of supply after use. For example for the use of spray irrigation. Non-consumptive abstraction is returned directly or indirectly to the source of supply and therefore doesn't have such a significant impact on water resources.

Deterioration
Deterioration is a change in the class of any one of the quality elements used to determine the WFD Regulations (2017) status in a water body from its existing class to the class below, or any deterioration within the lowest class. It is not change within a class unless already in the lowest class.

Discharge
The release of substances (for example, water, treated sewage effluent) into surface waters.

Environmental flow indicator
Flow indicator to prevent environmental deterioration of rivers, set in line with new UK standards set by UKTAG.

Groundwater
Water that is contained in underground rocks.

Hands off flow
A condition attached to an abstraction licence which states that if flow (in the river) falls below the level specified on the licence, the abstractor will be required to reduce or stop the abstraction.

Impoundment
A structure that obstructs or impedes the flow of inland water, such as a dam, weir or other constructed works.

National Environment and Rural Communities Act 2006
The Act of Parliament that established Natural England and places a duty to conserve biodiversity on public authorities.

New Authorisations
The Water Act 2003 brought all significant water abstraction under licensing control. This resulted in trickle irrigation, dewatering of mines, quarries, engineering works and construction sites, abstractions related to Internal Drainage Districts, navigation abstraction and abstraction for ports and harbour authorities and other local exemptions coming into the licensing regime.

Protected Right
A protected right is simply a right to abstract. The Environment Agency has a statutory duty to not take away from, or weaken a protected right, by granting another licence.

Surface water
This is a general term used to describe all water features such as rivers, streams, springs, ponds and lakes.

Transitional arrangements
The process by which previously exempt abstractions (new authorisations) were brought into the licensing regime between 2018 and 2023. Water Resources (Transitional Provisions) Regulations 2017 (Transitional Regulations).

Water body
Units of either surface water or groundwater which we use to assess water availability.

Water Framework Directive
The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 provides a framework for managing the water environment. The WFD Regulations require:

- the preparation and publication of river basin management plans
- the setting of environmental objectives for groundwater and surface waters (including estuaries and coastal waters)
- the devising and implementing of programmes of measures to meet those objectives

Water Industry National Environment Programme
A schedule of environmental enhancement obligations, drawn up by the Environment Agency and signed off by the Secretary of State at Department of Environment, Food and Rural Affairs.

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