Staffordshire Trent Valley Abstraction Licensing Strategy

A strategy to manage water resources sustainably

June 2021

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

Contents **3**
1. About the licensing strategy **4**
1.1. Overview 4
1.2. How is the licensing strategy set out? 4
1.3. Collaborative and sustainable water management 5
2. Catchment overview **5**
2.1. Landscape and land use 5
2.2. Water Resources 7
2.3. Climate change 7
3. Water resource availability in the Staffordshire Trent Valley catchment **8**
3.1. Surface water availability 8
3.2. Groundwater resource availability 15
3.3. Resource reliability 18
3.4. Other considerations for resource availability and reliability 20
3.5. Impoundments 20
4. How we manage water availability in the Staffordshire Trent Valley ALS **20**
4.1. Surface water 20
4.2. Groundwater 23
4.3. Protected sites 25
5. Managing the catchment together **26**
5.1. Actions being taken on unsustainable abstraction 26
5.2. Action that has been taken on unsustainable abstraction in this catchment 29
5.3. Water rights trading 31
6. Related links **33**
7. List of abbreviations **33**
8. Glossary **35**
9. Copyright - maps **36**
10. Contact details for further information **37**

1. About the licensing strategy

1.1 Overview

This strategy sets out how we manage new and existing abstractions and impoundments within the Staffordshire Trent Valley catchment in the Humber 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 Staffordshire Trent Valley 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.

In several priority catchments across England we have explored:

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

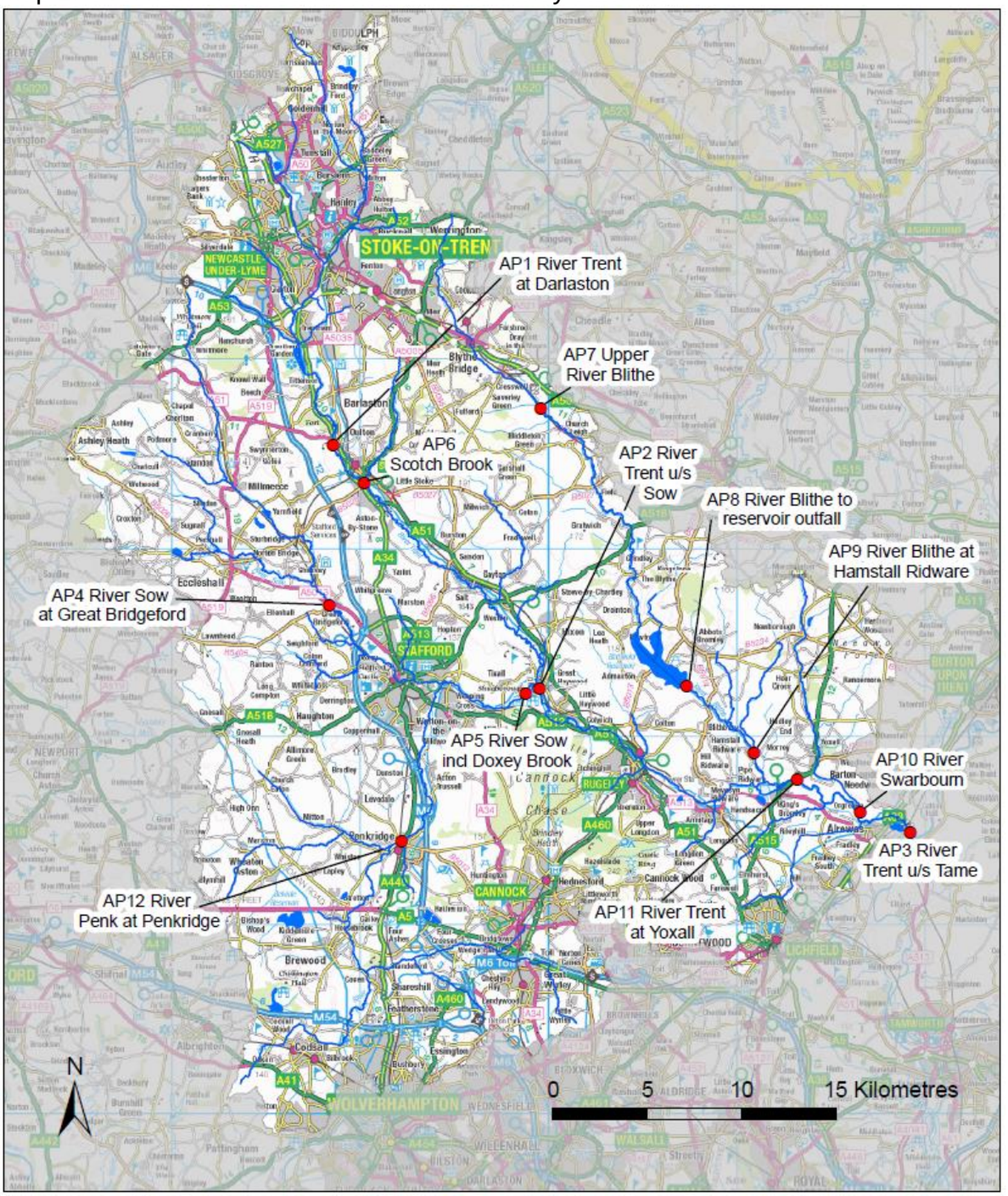
This strategy is a tool to make informed decisions on the choices abstractors make about their use of water. We want this strategy to help abstractors plan their water use and become more resilient in the face of climate change

2. Catchment overview

2.1. Landscape and land use

The catchment area covers an area of approximately 1,330km^2 including much of Staffordshire, Stoke on Trent and a small part of northern Wolverhampton. It is characterised by the undulating urban area of Stoke in the upper reaches, the wide gently rolling grassland of the Trent valley further downstream, and the increasingly arable nature of the landscape towards the bottom of the catchment. There are pockets of woodland throughout and the south is dominated by the upland woodland and heath of Cannock Chase. Other urban areas include Stafford, Cannock, Newcastle-under-Lyme and Rugeley.

Map 1: Overview of the Staffordshire Trent Valley catchment



Legend

- STV ALS area
- Rivers
- Lakes/reservoirs
- Assessment Points (APs)

2.2. Water Resources

The Staffordshire Trent Valley catchment covers the tributaries and catchment of the Staffordshire River Trent from its source on Biddulph Moor, north of Stoke-on-Trent, downstream to its confluence with the Tame near Alrewas.

Its main tributaries are the River Blithe and the River Sow. The River Sow rises in the north-west of the catchment, flows south-east through Stafford, is joined by the River Penk, and joins the River Trent near Great Haywood. The River Blithe rises to the east of Stoke on Trent and flows south-east parallel to the main Trent valley, joining the Trent near Kings Bromley. The River Blithe is impounded at Blithfield Reservoir where water is abstracted for public water supply.

The area contains significant quantities of groundwater within the Permo-Triassic sandstone aquifers. These are high yielding, strategically important principal 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 flows are particularly important during the drier seasons. The area also contains strata with more variable permeability where water is encountered in sufficient but lower quantities capable of supporting smaller locally important abstractions for agriculture or domestic purposes, known as Secondary Aquifers. Over 60% of water licensed in the catchment is from the Sandstone aquifers and other groundwater sources.

Overall, more licences are for agricultural purposes than for any other purpose but the largest volume is licensed to be abstracted for public water supply.

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.

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.

3. Water resource availability in the Staffordshire Trent Valley 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 12 APs in the Staffordshire Trent Valley ALS:

- AP1 covers the upper River Trent including Fowlea Brook, Lyme Brook and Park Brook
- AP2 covers the River Trent catchment to its confluence with the River Sow near Great Haywood, including the Gayton Brook
- AP3 covers the whole River Trent catchment upstream of the River Tame confluence near Alrewas and incorporates flows from all the upstream tributaries in this ALS
- AP4 covers the River Sow catchment upstream of Great Bridgeford gauging station, including the Meece Brook – much of the upper catchment is underlain by Sherwood Sandstone
- AP5 covers the River Sow catchment to its confluence with the River Trent west of Great Haywood. The River Sow flows over outcrops of Sherwood Sandstone downstream of Stafford to the Trent confluence.
- AP6 covers the Scotch Brook to its confluence with the River Trent – a significant proportion of the catchment is underlain by Sherwood Sandstone
- AP7 covers the upper River Blithe which overlies large areas of Sherwood Sandstone
- AP8 covers the River Blithe to a point just downstream of Blithfield Reservoir. The river is classed as heavily modified as it flows through the reservoir
- AP9 covers the River Blithe to Hamstall Ridware gauging station. The Blithe downstream of Blithfield Reservoir is classed as heavily modified due to the upstream impact of the reservoir
- AP10 covers the River Swarbourne catchment
- AP11 covers the River Trent catchment upstream of Yoxall gauging station and incorporates the upstream tributaries including the Rivers Sow and Blithe – large areas between the Trent and Sow/Penk catchments are underlain by Sherwood Sandstone
- AP12 covers the River Penk upstream of Penkridge, including the Whiston Brook and Saredon Brook; large areas are underlain by Sherwood Sandstone

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.

The water resource availability is calculated and the colour assigned at four 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

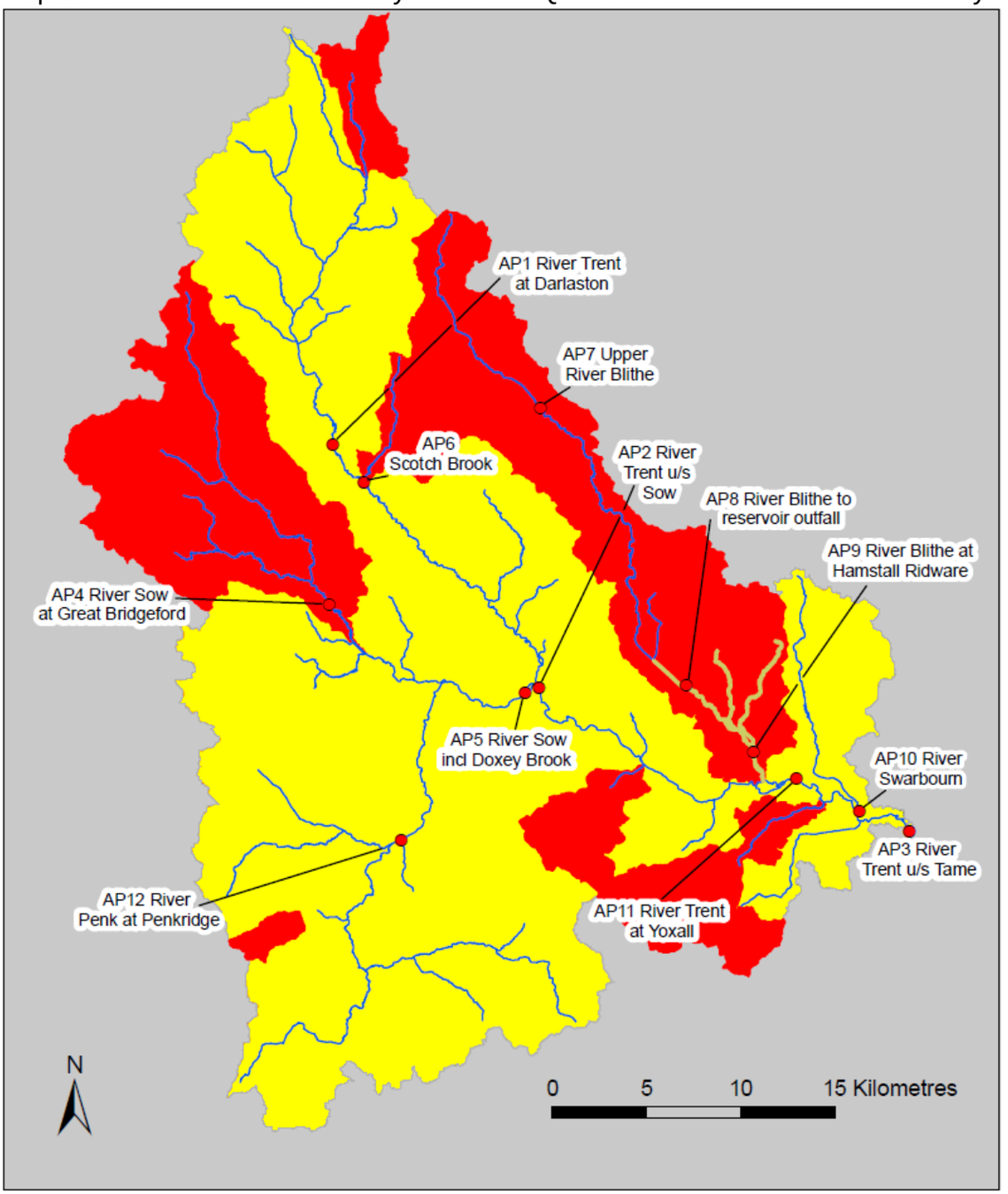
Water availability maps

The water availability colours for the Staffordshire Trent Valley catchment are presented in maps 2-5. Table 1 provides a summary of this information.

Assess-ment Point	Name	Q30	Q50	Q70	Q95
1	River Trent at Darlaston	Water available	Water available	Restricted water available	Restricted water available
2	River Trent u/s Sow	Water available	Water available	Restricted water available	Restricted water available
3	River Trent u/s Tame	Water available	Water available	Water available	Restricted water available
4	River Sow at Great Bridgeford	Water available	Water not available	Water not available	Water not available
5	River Sow inc Doxey Brook	Water available	Water available	Restricted water available	Restricted water available
6	Scotch Brook	Restricted water available	Water not available	Water not available	Water not available
7	Upper River Blithe	Restricted water available	Water not available	Water not available	Water not available
8	River Blithe to reservoir outfall	Water not available	Water not available	Water not available	Water not available
9	River Blithe at Hamstall Ridware	Water not available	Water not available	Water not available	Water not available
10	River Swarbourn	Water available	Water available	Water available	Restricted water available
11	River Trent at Yoxall	Water available	Water available	Water available	Restricted water available
12	River Penk at Penkridge	Water available	Water available	Water available	Restricted water available

Table 1: Summary of maps 2 to 5 – water availability at each assessment point by flow category

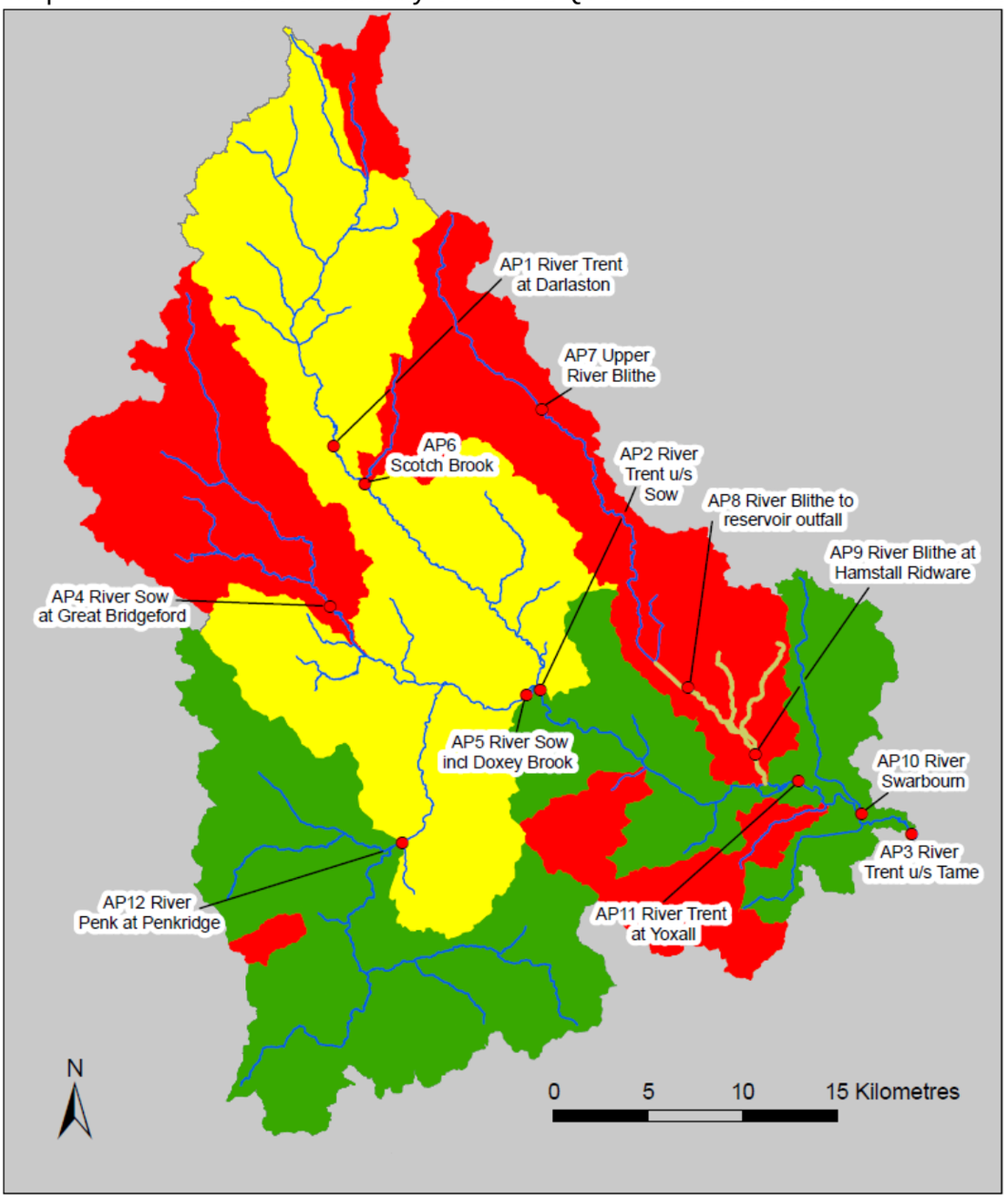
Map 2: Water resource availability colours at Q95 for the Staffordshire Trent Valley ALS.



Legend

- Assessment Points (APs)
- Rivers
- Heavily modified rivers
- Lakes/reservoirs
- Restricted water available
- Water not available

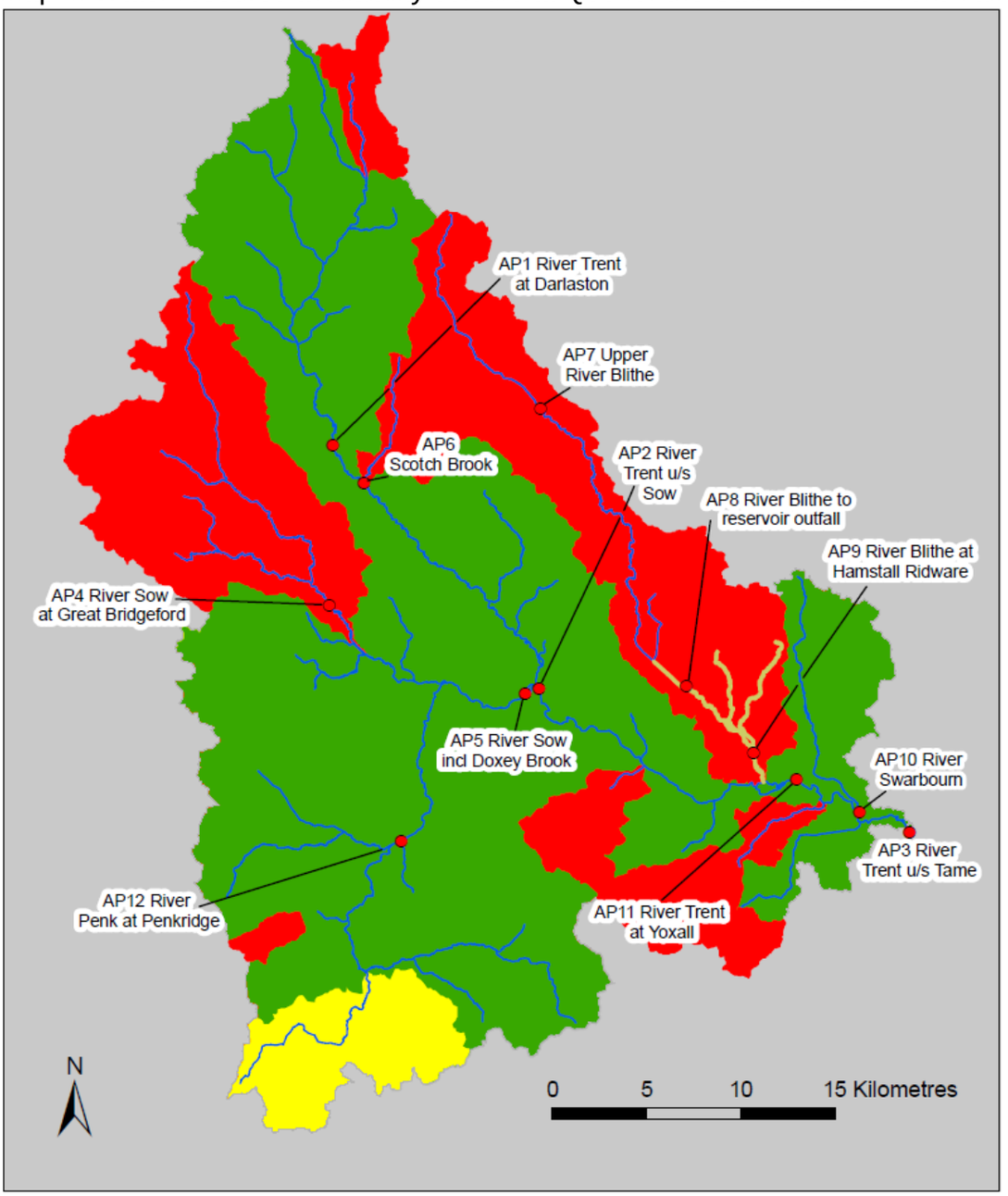
Map 3: Water resource availability colours at Q70 for the Staffordshire Trent Valley ALS



Legend

- Assessment Points (APs)
- Rivers
- Heavily modified rivers
- Lakes/reservoirs
- Water available
- Restricted water available
- Water not available

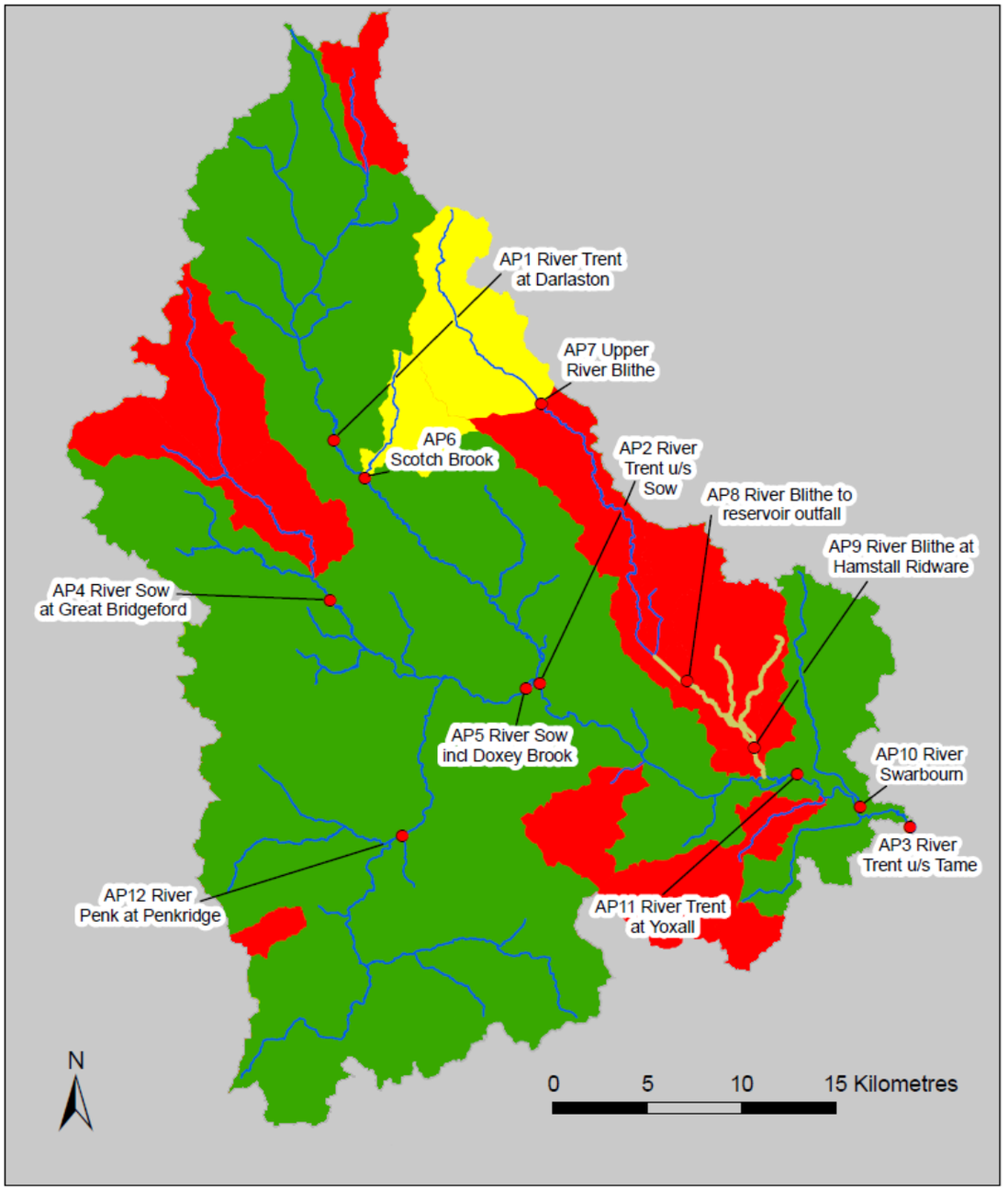
Map 4: Water resource availability colours at Q50 for the Staffordshire Trent Valley ALS



Legend

- Assessment Points (APs)
- Rivers
- Heavily modified rivers
- Lakes/reservoirs
- Water available
- Restricted water available
- Water not available

Map 5: Water resource availability colours at Q30 for the Staffordshire Trent Valley ALS



Legend

- Assessment Points (APs)
- Rivers
- Heavily modified rivers
- Lakes/reservoirs
- 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 Staffordshire Trent Valley ALS area, water availability has been assessed using a number of tests. This is combined with monitoring data and surface water availability. 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 Staffordshire Trent Valley 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 is a principal aquifer of strategic importance. It provides a large part of Staffordshire and surrounding areas with drinking water supply. It has a large outcrop area within the Staffordshire Trent Valley catchment. The Sherwood Sandstone has been split into 2 GWBs and 10 different GWMUs within this catchment (see Map 6 and Table 3):

- Staffordshire Trent Valley - PT Sandstone Staffordshire GWB, covering the following GWMUs:
    - Forsbrook
    - Spot
    - Hatton
    - Tittensor
    - Oulton & Hardiwick
    - Hopton
    - Rugeley
    - Teddesley
    - Coven
- Staffordshire Trent Valley - PT Sandstone Bishops Wood GWB which contains the Bishops Wood GWMU

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 and they do not cause saline intrusions.

Restricted water available for licensing

Yellow 

Groundwater management unit balance shows more water is licensed than the amount available, but that recent actual abstractions are lower than the amount available OR that there are known local impacts likely to occur on surface water flows, dependent wetlands, groundwater levels or cause saline intrusions but with management options in place.

In restricted groundwater management units no new consumptive licences will be granted where the groundwater balance and/or surface water flows/groundwater dependent wetlands are at risk of becoming unsustainable as a result of existing licensed abstraction. 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.

Water not available for licensing

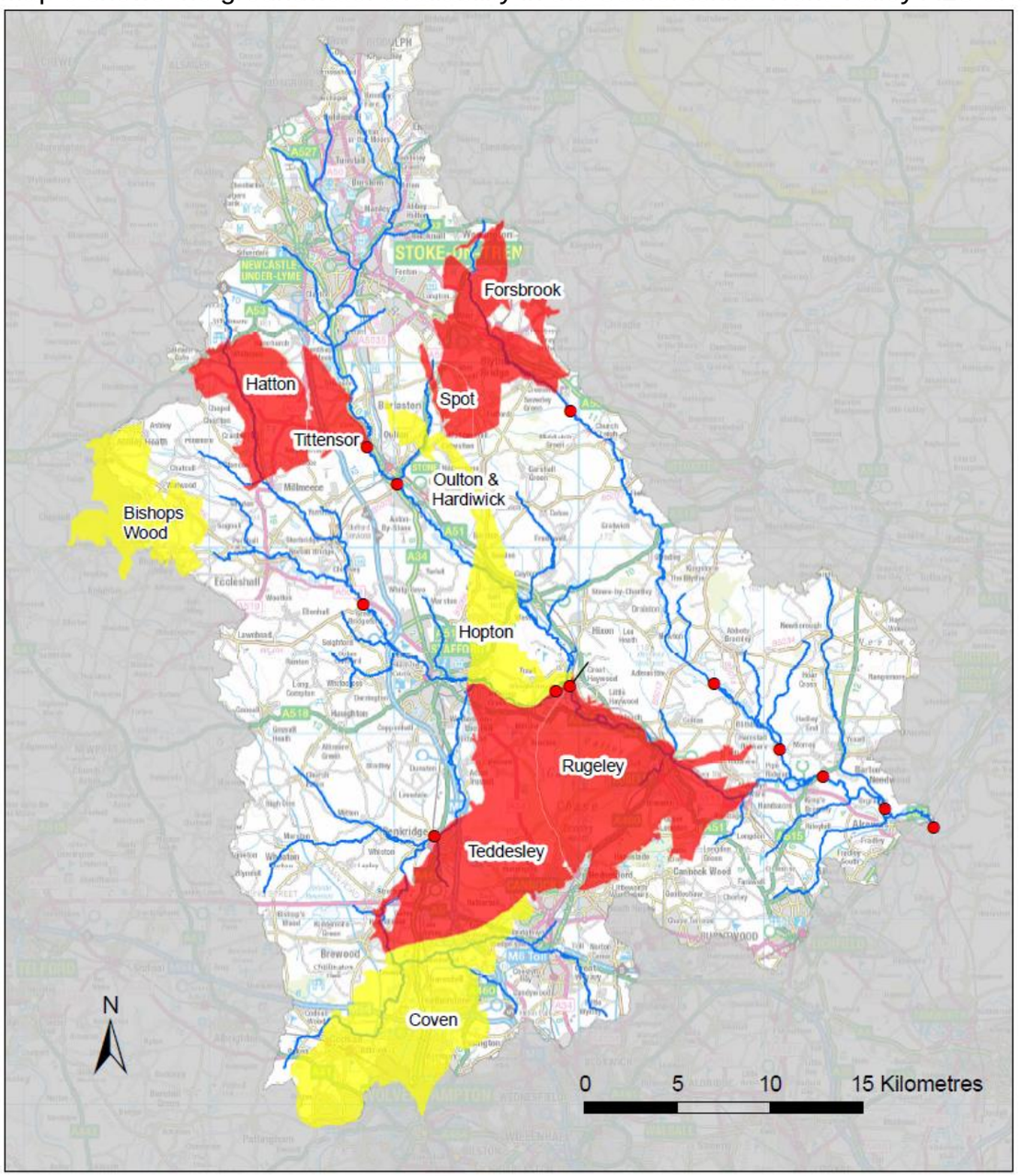
Red 

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.

Groundwater availability map

Map 6 shows the groundwater availability in the Staffordshire Trent Valley ALS area.



Legend

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

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:

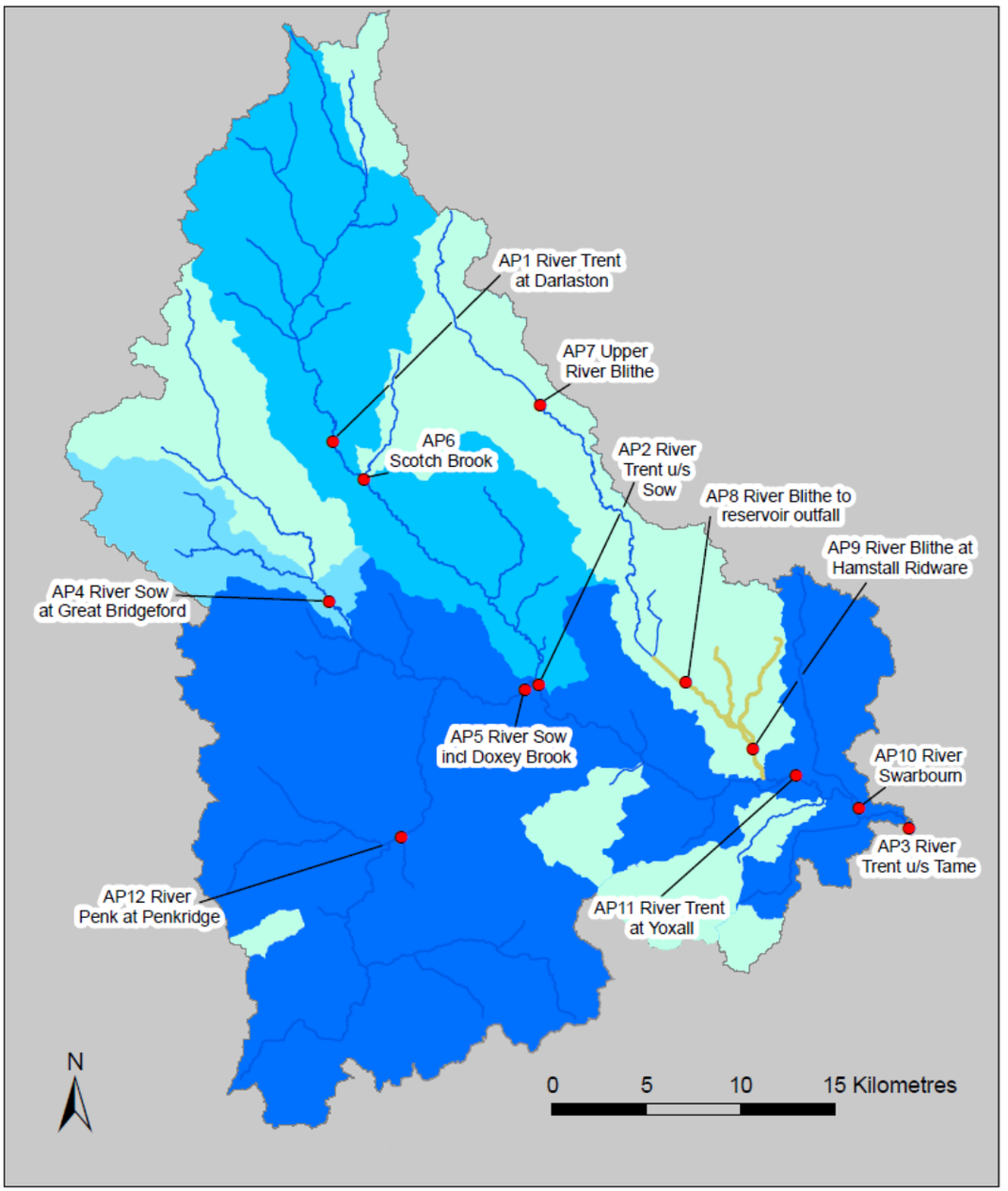
- when there is a surplus or deficit of water
- the associated reliability of an abstraction

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 Staffordshire Trent Valley area expressed as a percentage of time. In this catchment:

- AP1: Consumptive abstraction is available at least 50% of the time except for the very upper River Trent where consumptive abstraction is available for less than 30% of the time
- AP2: Consumptive abstraction is available at least 50% of the time
- AP3: Consumptive abstraction is available at least 70% of the time except from the Bourne-Bilson Brook and Leomansley Brook upstream of Stowe Pool where consumptive abstraction is available less than 30% of the time
- AP4: Consumptive abstraction is available at least 30% of the time except from the Meece Brook catchment where 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 less than 30% of the time
- AP7: Consumptive abstraction is available less than 30% of the time
- AP8: Consumptive abstraction is available less than 30% of the time
- AP9: Consumptive abstraction is available less than 30% of the time
- AP10: Consumptive abstraction is available at least 70% of the time
- AP11: Consumptive abstraction is available at least 70% of the time except from the Rising Brook where consumptive abstraction is available less than 30% of the time
- AP12: Consumptive abstraction is available at least 70% of the time except the Horse Brook around Belvide Reservoir where consumptive abstraction is available less than 30% of the time

Map 7: Water resource reliability of the Staffordshire Trent Valley ALS expressed as percentage of time available



Legend

- Assessment Points (APs)
- Rivers
- Heavily modified rivers

Resource Reliability (% 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 doesn't mean that we guarantee a supply of water. These conditions specify that if the flow in the river drops below what's 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 have to determine each application on its own merits. Local factors may mean we're either 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 2039 and the subsequent one is 31 March 2051.

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 Staffordshire Trent Valley ALS

4.1 Surface water

We assess surface water flows at assessment points (APs), which 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 the flow 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 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 Sherwood Sandstone principal aquifers comprise the Staffordshire and Bishops Wood Groundwater Bodies. Groundwater abstraction from these either impact or has the potential to impact the water courses that rise on them or flow across them. The key APs where surface water flows over Sherwood Sandstone 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 Staffordshire Trent Valley 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 Trent catchment the water resource strategies are driven by the need to protect river levels at the bottom of the fluvial River Trent at North Muskham. Flows of 2650Ml/d are needed at that point to safeguard river levels for navigation, as well as protecting flows further downstream into the Humber Estuary Special Area of Conservation (SAC).

Therefore all HoFs in the catchment have been set at local gauging stations at flows which are equivalent to, or higher than, 2650Ml/d at North Muskham gauging station. Where watercourses need further protection of flows due to unfavourable local water resource situations, we have set their HoFs at a suitable higher flow. This is the case at all APs in the Staffordshire Trent Valley catchment.

The conditions in Table 2 apply to new or varied consumptive abstractions and may not apply if the abstraction is non-consumptive (i.e. it doesn't result in a loss of water to any part of the catchment) or if the licence results in an overall environmental benefit. Any existing licence which the holder applies to have formally varied to increase the volume abstracted will be subject to the same conditions as new licences on the increased part of the licence only.

To protect fish and eels we may also require the installation of a correctly-sized screen and/or fish pass.

Licences will be issued to the Staffordshire Trent Valley Common End Date (CED) of 31st March 2039. 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 two 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. Any changes to major abstractions from or discharges to the catchment may result in a change in this licensing strategy or to the volumes of water available.

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	River Trent at Darlaston	SJ885573 5499	Restricted water available for licensing	208Ml/d at Darlaston	212	13.3Ml/d	The River Trent from Source to Ford Green Brook will be closed to further abstraction
2	River Trent u/s Sow	SJ995042 2583	Restricted water available for licensing	208Ml/d at Darlaston	212	13.3Ml/d	
3	River Trent u/s Tame	SK191901 4910	Restricted water available for licensing	498Ml/d at Yoxall	295	43.1Ml/d	Bourne/Bilson Brook and Leomansley Brook upstream of Stowe Pool will be closed to further abstraction
4	River Sow at Great Bridgeford	SJ883482 6980	Restricted water available for licensing	98Ml/d at Great Bridgeford	113	3.6Ml/d	Meece Brook will remain closed to further abstraction
5	River Sow inc Doxey Brook	SJ987522 2312	Restricted water available for licensing	498Ml/d at Yoxall	295	43.1Ml/d	All new abstractions which may have an impact on Cannock Chase SAC will require a Habitats Directive risk assessment to be carried out
6	Scotch Brook	SJ901823 3436	Restricted water available for licensing	N/A	N/A	Closed	

AP	Name	AP National Grid Reference	Water Resource Availability	HoF Restriction (Ml/d)	Number of days per annum abstrac-tion may be available	Approxi-mate volume available at restriction (Ml/d)	Additional restrictions
7	Upper River Blithe	SJ995633 7382	Water not available for licensing	N/A	N/A	Closed	
8	River Blithe to reservoir outfall	SK073212 2672	Water not available for licensing	N/A	N/A	Closed	
9	River Blithe at Hamstall Ridware	SK108761 9145	Water not available for licensing	N/A	N/A	Closed	
10	River Swarbourn	SK165301 5963	Restricted water available for licensing	13.2Ml/d at Meadow Lane, Yoxall	295	See AP3	
11	River Trent at Yoxall	SK132051 7711	Restricted water available for licensing	498Ml/d at Yoxall	295	43.1Ml/d	Rising Brook will remain closed to further abstraction. All new abstractions which may have an impact on Cannock Chase SAC will require a Habitats Regulations Assessment to be carried out
12	River Penk at Penkridge	SJ921931 4432	Restricted water available for licensing	82Ml/d at Penkridge	274	14.4Ml/d	Horse Brook catchment will remain closed to further abstraction

Table 2 Summary of licensing approach for the assessment points of the Staffordshire Trent Valley ALS.

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 the 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.

Licence restrictions on groundwater abstractions in the Staffordshire Trent Valley ALS area

As set out in Section 3.2 there are 10 GWMUs as well as superficial deposits within the boundary of the Staffordshire Trent Valley catchment.

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, no new water is available for licensing from the groundwater resources. This is to protect groundwater resources, river baseflow and dependent environments.

Groundwater body and status	Groundwater management unit	Resource availability colour and licence restrictions on groundwater abstractions
Staffordshire Trent Valley - PT Sandstone Staffordshire This groundwater body is considered to be poor quantitative status and is at risk of deterioration.	Forsbrook Spot Hatton Tittensor Rugeley Teddesley	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.
Staffordshire Trent Valley - PT Sandstone Staffordshire This groundwater body is considered to be poor quantitative status and is at risk of deterioration.	Oulton & Hardiwick Hopton Coven	Restricted water available for licensing. These GWMUs are 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. 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.
Staffordshire Trent Valley - PT Sandstone Bishops Wood	Bishops Wood	Restricted water available for licensing. This GWMU is within a GWB that is at good status but is at risk of deterioration. No new consumptive licences will be granted as this

Groundwater body and status	Groundwater management unit	Resource availability colour and licence restrictions on groundwater abstractions
This groundwater body is considered to be good quantitative status but is at risk of deterioration.		would increase the risk of deterioration in the groundwater body. The GWMU status also reflects the need to protect baseflow of the River Sow which rises on this outcrop. 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.

Table 3 Summary of licensing approach for the GWMUs of the Staffordshire Trent Valley ALS.

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 2 types of designated sites due to their special environment. These are:

• 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

The Staffordshire Trent Valley catchment has 5 water-related SACs – these are shown in Table 4.

Designation Name	Site Name
Special Area of Conservation	Cannock Chase Cannock Extension Canal Chartley Moss Mottey Meadows Pasturefields Salt Marsh

Table 4 SACs in the Staffordshire Trent Valley catchment

The impact of all new abstraction applications on these sites will be considered and a Habitats Regulations Assessment may be required.

Government policy treats Ramsar sites (internationally important wetland sites) in the same way as SACs and SPAs. Ramsars, SACs and SPAs are referred to collectively as European sites. Sites of Special Scientific Interest (SSSI) also carry a high level of environmental

importance and there are many of these sites linked to the water resources of the Staffordshire Trent Valley catchment.

Conservation objectives are the main objectives for European and SSSI protected sites to maintain at, or to reach, favourable condition. These are set by Natural England. The process for setting targets is described through the Joint Nature Conservation Committee approved 'Common Standards Monitoring Guidance' (CSMG). Natural England use these targets to assess the condition of European and SSSI protected sites. These quantitative targets are considered by Natural England as a pre-requisite for achieving the conservation objectives for European or SSSI designated sites. We have a duty to have regard to Natural England's advice when determining licence applications that may impact on a designated site.

We may need more detailed supporting information when a licence application could impact on a designated conservation site. This will allow us to complete the required statutory assessment.

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 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 and in some cases, presents a significant environmental risk if abstraction were to be restarted. We will continue to target these unused and underused licences in the catchment with the aim of reducing licensed abstraction which is not being used. This helps to remove the risk of future deterioration and may release unused water for future licensing.

During the three phases of the unused licence programme so far we have contacted 92 abstractors in the Staffordshire Trent Valley area. The sum of water reduced or revoked so far is 2,228,106 cubic metres per year.

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 which are needed to meet Water Framework Directive and national targets. Water companies will be carrying out investigations in AMP7 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.

Restoring Sustainable Abstraction (RSA)

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

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.

New applications for abstraction from waterbodies that are classified as being at, or at risk of, serious damage will be assessed on a case by case basis, to ensure that no deterioration of the water environment is allowed to occur.

In the Staffordshire Trent Valley catchment there are currently 3 surface waterbodies confirmed as being at serious damage. These are the Rising Brook, the Blithe from source to Tad Brook, and the Meece Brook from source to Chatcull Brook. Two further waterbodies are at risk of serious damage; these are the Penk from source to Saredon Brook, and the Scotch Brook.

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)

The Staffordshire Trent Valley - PT Sandstone Staffordshire GWB has an overall quantitative status of poor (low confidence) under recent actual abstraction. It is at risk of potential serious damage as under full licensed conditions may deteriorate to poor (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 two 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.

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, when the waterbody, and downstream waterbodies, 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 to reduce the risk of surface water bodies becoming unsustainable at fully licensed rates of abstraction or 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 so 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 or 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, then a licence would be renewed with a cap at historic maximum uptake and may be time-limited to an earlier 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 when the groundwater body/groundwater management unit, overlying rivers and associated wetland habitats 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 

If the groundwater/surface water bodies and/or 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 in order to manage the risk of deterioration i.e. reduce fully licensed risk.

Water not available for licensing

Red 

If the groundwater/surface water bodies and/or 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 Staffordshire Trent Valley 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, NFU, Canal and River Trust and Energy UK.

The Regional Groups have been tasked with considering the challenges and producing multi-sector regional plans that 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 – ensuring no deterioration, addressing unsustainable abstraction and 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.

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

Upper River Blithe

Investigations into the impacts of groundwater abstraction on flows and appraisal of options to improve flows were carried out by Severn Trent Water in previous Asset Management Plan (AMP) cycles. Reductions in groundwater abstraction are needed to improve river flows. There are currently no technically feasible or cost effective solutions available that will allow

reductions in abstraction without putting security of public water supply at risk. However, we will continue to monitor the situation as there is still a sustainability issue to be resolved and what is feasible could change in the future. Information on this issue has been provided to Water Resources West.

Lower River Blithe

Blithfield Reservoir impounds the River Blithe. South Staffs Water investigated the effects of compensation flow releases from Blithfield Reservoir on the local ecology. Although the flow regime downstream of the reservoir is not natural, flow-sensitive species are not significantly affected and it is not cost beneficial to make any changes to the compensation releases. There are plans for catchment measures in AMP7 to improve habitat and/or water quality in the Blithe.

Meece Brook, upper River Sow catchment

Following work on the Meece Brook in previous AMP cycles, Severn Trent Water have made improvements to the operation of the existing brook flow augmentation scheme. Hydrogeomorphological improvements, such as berms and riffles, have also been made to a section of the brook to improve the habitat for the ecology. There is ongoing monitoring and reporting on the effectiveness of the measures by Severn Trent Water.

Cannock Chase

Following the Cannock Chase Habitats Directive investigation, all new abstractions which may have an impact on the site will require a Habitats Regulations Assessment to be carried out.

Rising Brook

Investigations into the impacts of groundwater abstraction on flows in Rising Brook and appraisal of options to improve flows were carried out by South Staffs Water during previous AMP cycles. Changes will be made to their groundwater abstraction regime to help improve flows in the brook.

Staffordshire Trent Valley - PT Sandstone Staffordshire (Forsbrook, Spot, Hatton, Tittensor, Rugeley, Teddesley,Oulton & Hardiwick, Hopton and Coven GWMUs)

This groundwater body is considered to be at overall poor status and at risk of deterioration.

Groundwater abstraction, predominantly by Water Companies operating in these catchments has resulted in flow impacts on surface watercourses within this GWB. Previous investigations into groundwater abstraction impacts on the Meece Brook, River Blithe, Rising Brook, Scotch Brook, Moddershall Brook and River Sow have all been undertaken. A flow compensation scheme supports flows on the Meece Brook. An investigation was undertaken into groundwater abstraction impact on water levels within Swynnerton Pools, this resulted in a reduction in licensed volume at Severn Trent Water Limited's Swynnerton source.

In this groundwater body:

- 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

- the water companies will undertake further investigation of a number of sources to identify the measures required to comply with the WFD Regulations (2017) no deterioration requirements and 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)

Staffordshire Trent Valley - PT Sandstone Bishops Wood

The Staffordshire Trent Valley - PT Sandstone Bishops Wood Groundwater Body currently has good overall quantitative status but is at risk of deterioration as a result of unused headroom on historical permanent licences also known as licences of right. The outcrop of this Groundwater Body underlies the headwaters of the River Sow and groundwater provides appreciable baseflow support during dry weather.

To protect the overall status of the Groundwater Body and flows in the River Sow:

- no new consumptive licences will be granted. We will take appropriate action 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
- we will seek to ensure that the water company will adhere to its responsibilities under the WFD Regulations (2017) no deterioration requirements
- 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)

5.3 Water rights trading

A water rights trade is where a person sells all or part of their water right, as defined by their abstraction licence(s), to another person 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 through the issue or variation of abstraction licences.

In licensing trades, as with new abstraction licences, we need to make sure that we don’t 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, as shown in maps 2 to 5 (surface water) and map 6 (groundwater).

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 unless the trade is consistent with achieving water body objectives.

Water not available for licensing

Red 

We will only trade up to 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.

5.3.2 Groundwater rights trading

The principles detailed in Section 5.3 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 GWMU's that are in deficit i.e. 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 i.e. Water Available (see Section 4.2)
- the trade must not result in deterioration of the status on 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

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

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

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

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

Environment Agency and Cranfield University's guide to planning, designing, constructing and commissioning a water storage reservoir - if you are considering an irrigation reservoir

The UK Irrigation Association and Cranfield University - provide a range of irrigation booklets that tackle key issues

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

Waster and Resource Action Programme website has a guide to water saving devices and practices

7. List of abbreviations

ALS

Abstraction Licensing Strategy

AMP

Asset Management Plan

AP
Assessment Point

CaBA
Catchment Based Approach

CED
Common End Date

Defra
Department of Environment Food and Rural Affairs

EFI
Ecological Flow Indicator

GEP
Good Ecological Potential

GES
Good Ecological Status

GW
Groundwater

HMWB
Heavily Modified Water Body

HoF
Hands off Flow

HoL
Hands off Level

Ml/d
Megalitres per day

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

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 two major rivers join or at a gauging station.

Asset Management Plan
Every five 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.

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.

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.

Surface water

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

Water body

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

9. Copyright - maps

10. Contact details for further information

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