



Roding, Beam, Ingrebourne and Mardyke Abstraction Licensing Strategy

A strategy to manage water resources sustainably

February 2019

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Contents

1. About the licensing strategy	4
2. Water resource availability of the RBIM ALS	4
2.1. Surface Water Resource availability	4
2.2. Groundwater resource availability	9
2.3. Resource reliability	11
2.4. Other considerations for availability and reliability	13
2.5. Impoundments	13
3. How we manage abstraction in the RBIM ALS	13
3.1. Assessment points	13
3.2. Groundwater	16
3.7. Protected areas	16
4. Managing existing licences	16
4.1. Water rights trading	16
4.2. Taking action on unsustainable abstraction	17
4.3. Regulating currently exempt abstraction	18
5. List of abbreviations	19
6. Glossary	21

1. About the licensing strategy

This strategy sets out our approach to managing new and existing [abstraction](#) and [impoundment](#) within the Roding, Beam, Ingrebourne, and Mardyke (RBIM) [catchment](#) in the Thames river basin district. The catchment is situated to the east of the River Thames basin and includes parts of Essex and east London. The southern boundary is the River Thames. The area extends from Barking to Canvey Island in the south, and to Takeley in the north.

All the rivers in the RBIM Abstraction Licensing Strategy (ALS) area are relatively small. The headwater catchments comprise of field drainage channels and small streams rather than main rivers. The hydrology is primarily influenced by the impermeable geology of the area, which prevents any hydraulic interaction between surface water and groundwater in the Chalk aquifer below. Consequently, rainfall, run-off and discharges (largely from sewage treatment works) dictate flows and levels in these rivers. There are extensive gravel deposits closer to the River Thames but very few in the upper parts of the catchment, leaving little scope for surface water interaction with these minor gravel aquifers. The Chalk aquifer becomes exposed in the southern part of the Mardyke catchment allowing more interaction between surface and groundwater.

Our approach ensures that River Basin Management Plan objectives for water resources activities are met and we 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, or adjacent [groundwater](#) bodies affected by any reduction in groundwater level.

Please see [Managing Water Abstraction](#) for the technical explanation, legal and policy requirements behind the Abstraction Licensing Strategy ([ALS](#)).

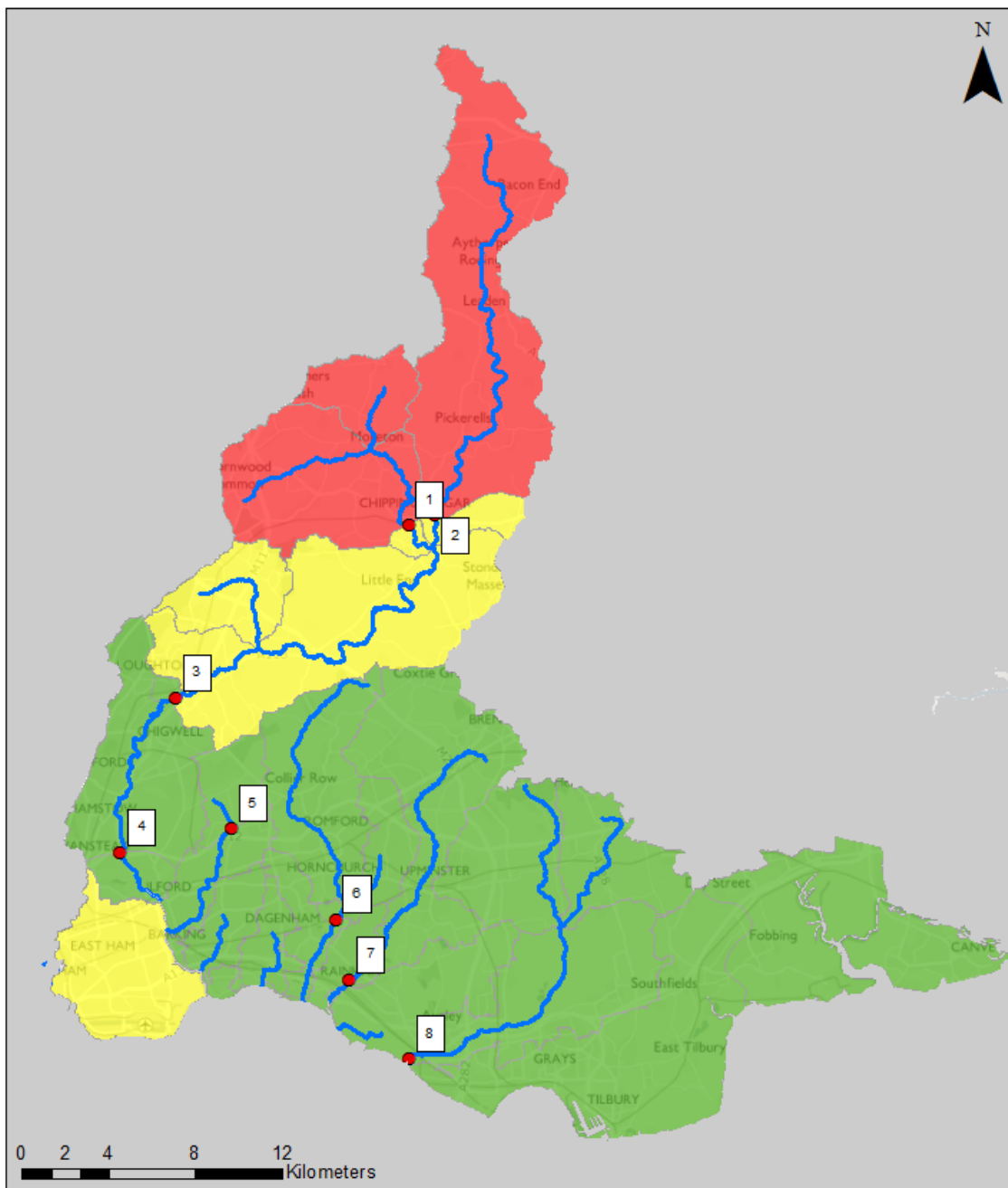
Please see [abstraction pages on gov.uk](#) for advice on who needs an abstraction or impoundment licence, and how to apply.

2. Water resource availability of the RBIM ALS

2.1. Surface Water Resource Availability

River flows change naturally throughout the year, so we want to protect flow variability in our rivers from low to high flow conditions. We use flow statistics to help to do this. Flow statistics are expressed as the percentage of time that flow is exceeded. The water resource availability is calculated at four different flows, Q95 (lowest), Q70, Q50, and Q30 (highest). Where a Q95 is the flow of a river which is exceeded, on average, for 95% of the time. A Q95 is normally taken as a low flow, a Q70 is considered a summer flow, a Q30 is a winter flow, and Q50 is the mean flow. The water resource availabilities for this ALS are presented and explained in Maps 1 - 4 and section 2.1.1.

Map 1 Water resource availability colours at Q30 for RBIM ALS.



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Legend:

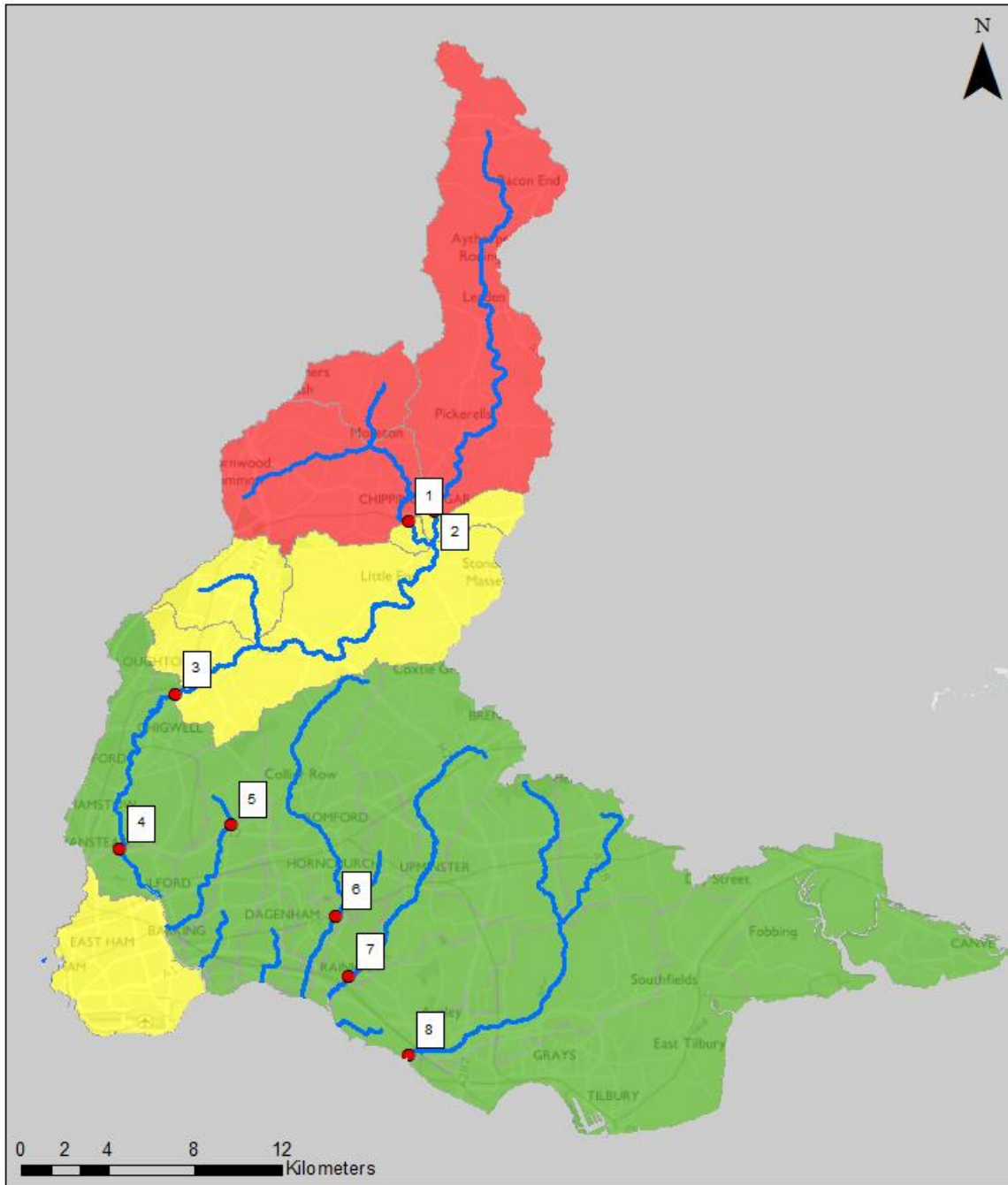
● Assessment Points (names can be found in Table 1)

— Rivers

Water Availability at Q30:


- Water available
- Restricted water available
- Water not available

Map 2 Water resource availability colours at Q50 for RBIM ALS.



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Legend:


 Assessment Points (names can be found in Table 1)

 Rivers

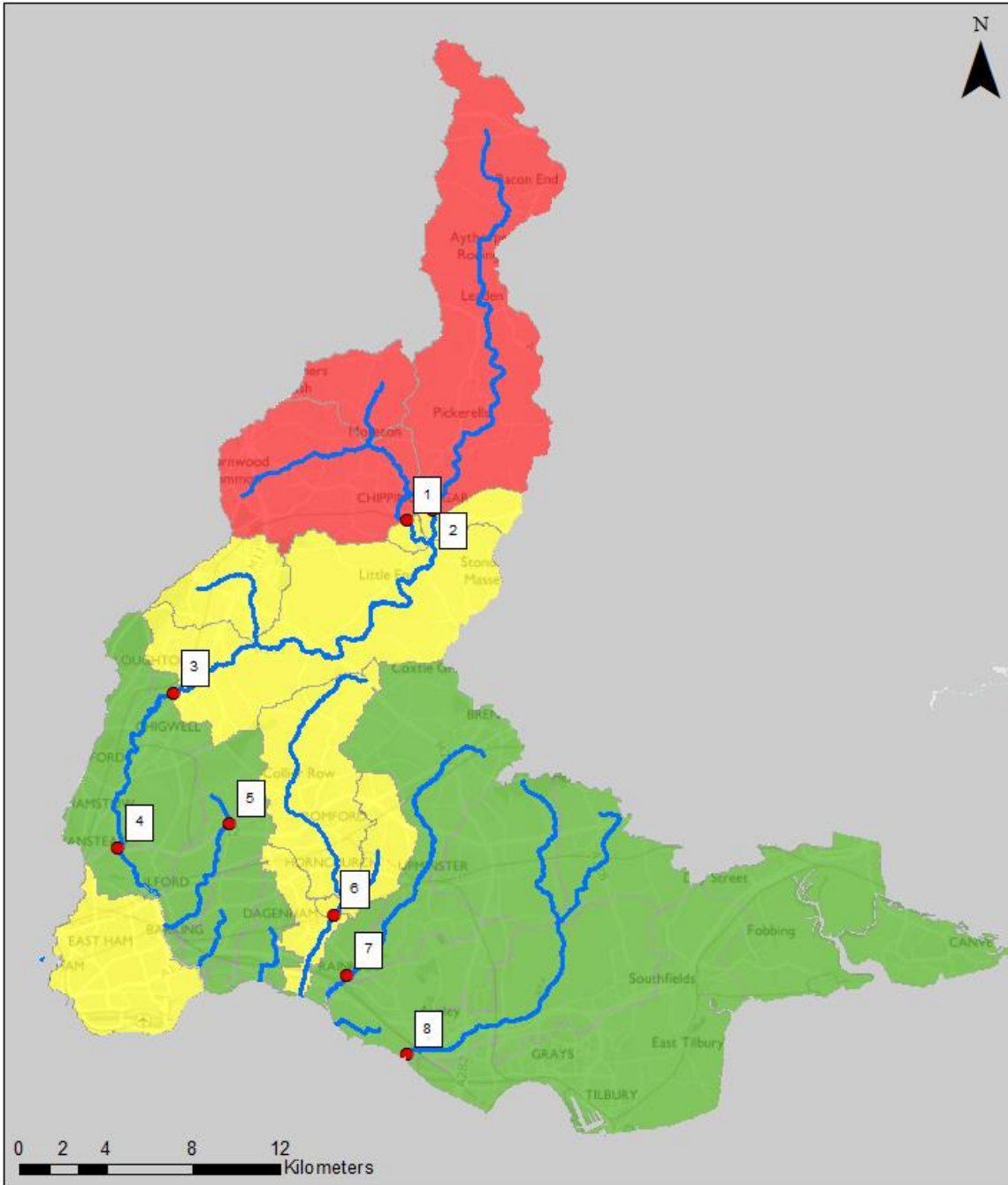
Water Availability at Q50:

 Water available

 Restricted water available


 Water not available

Map 3 Water resource availability colours at Q70 for RBIM ALS.



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Legend:


 Assessment Points (names can be found in Table 1)

 Rivers

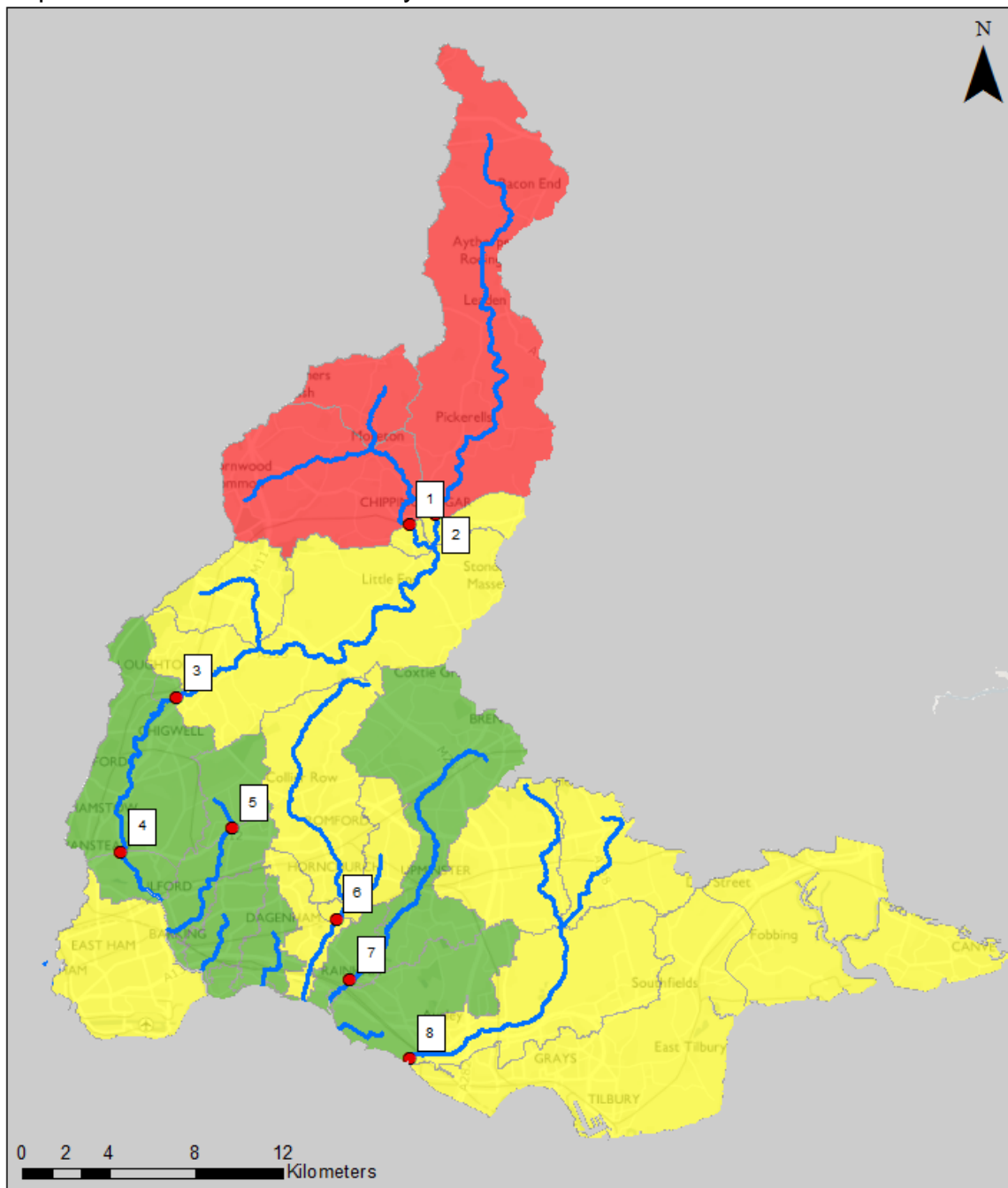
Water Availability at Q70:

 Water available

 Restricted water available

 Water not available

Map 4 Water resource availability colours at Q95 for RBIM ALS



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Legend:


 Assessment Points (names can be found in Table 1)

 Rivers

Water Availability at Q95:

 Water available

 Restricted water available

 Water not available

2.1.1. Water resource availability colours and implications for licensing

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.

Restricted water available for licensing

Yellow 

Full Licensed flows fall below the [Environmental Flow Indicators EFIs](#).

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.

Note: 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 recently abstracted from an existing licence holder.

2.2. Groundwater resource availability

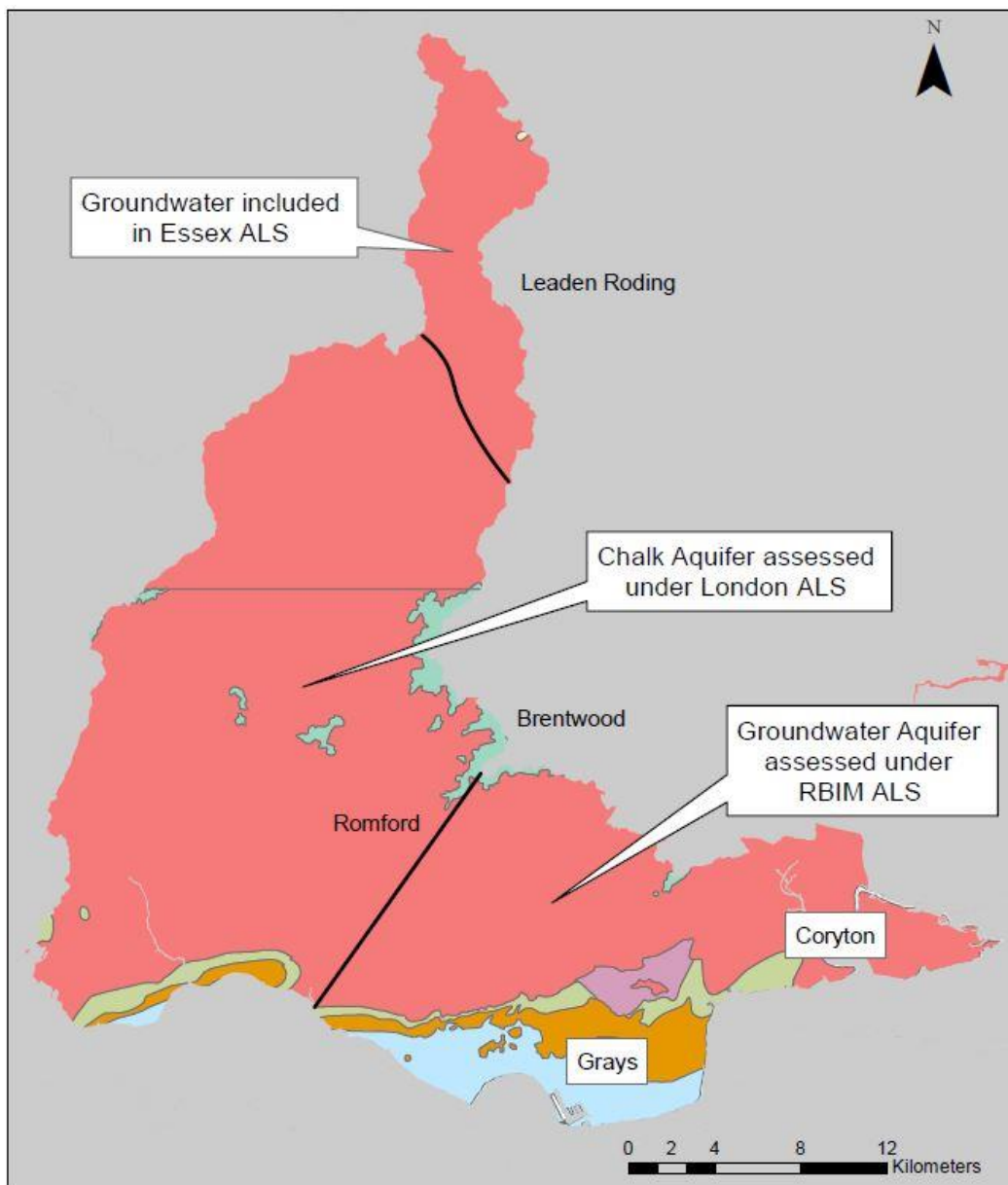
Most of the RBIM catchment chalk aquifer is overlain by London Clay. This aquifer is recharged in the unconfined areas north of the RBIM catchment. There is no interaction between surface water and groundwater.

The groundwater aquifer cannot be considered as a distinct hydrogeological unit as it only represents a small section of Chalk that is part of the larger regional London aquifer. Groundwater flow is generally in a southerly direction towards Dagenham. Hence most of the groundwater aquifer within the catchment is managed under the Management of the [London Basin Chalk Aquifer](#).

The exception is the northern part of the catchment, where groundwater flows in an easterly direction and therefore any abstractions located in this area are more likely to impact Essex resources. Hence it is covered under [Essex ALS](#).

The Mardyke sub-catchment is not covered by the groundwater model that was developed to improve our understanding of the water resource within the London Basin and therefore it is assessed on its own merits. Division between the three groundwater units is shown on Map 5.

Map 5 Geology of the RBIM catchment with the division of management of the groundwater aquifers.



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Legend:

- Bagshot Formation
- Harwich Formation
- Lambeth Group London
- Norwich Crag Formation and Red Crag Formation (Undifferentiated)
- Clay Formation
- Thanet Sand Formation
- Upper Chalk Formation

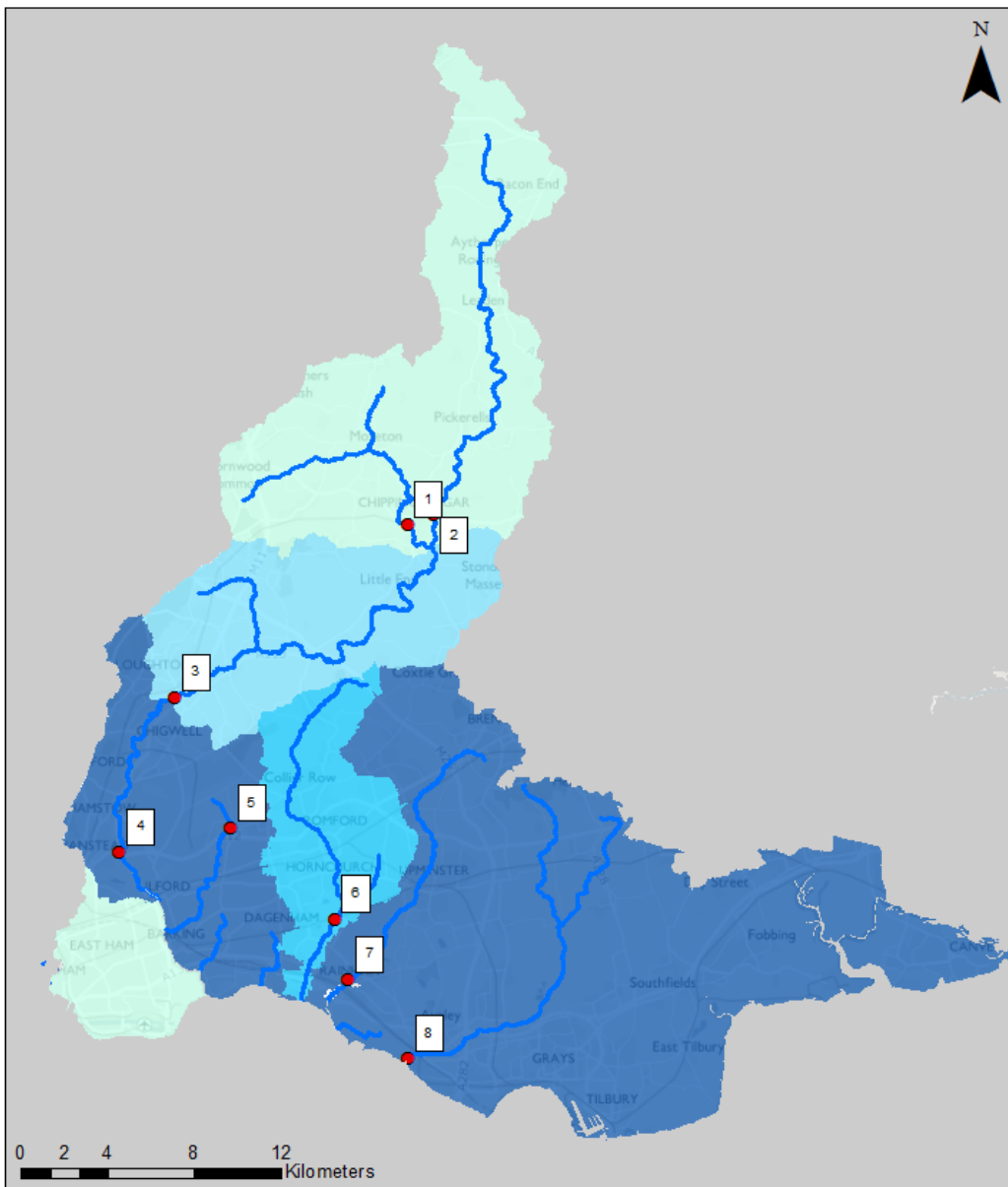
2.3. Surface water resource reliability

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 and the associated reliability of an abstraction. This is an indication only; actual reliability of a licence will be discussed when you apply.

Map 6 gives an indication of the resource availability for [consumptive abstraction](#) in RBIM area expressed as a percentage of time.

Map 6 Surface water resource reliability of the RBIM ALS expressed as percentage of time available



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Legend:

- Assessment Points
- Rivers

Percentage of the time additional consumptive resource may be available:

- Consumptive abstraction available less than 30% of the time
- Consumptive abstraction available at least 30% of the time
- Consumptive abstraction available at least 50% of the time
- Consumptive abstraction available at least 70% of the time
- Consumptive abstraction available at least 95% of the time

2.4. Other considerations for availability and reliability

We may have to add constraints to licences such as ‘[hands off flow](#)’ (HoF) conditions to protect the environment and 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. So, in dry years, restrictions are likely to apply more often, which will affect the reliability of supply.

Whilst this document may say that water is available for abstraction, this doesn't guarantee that all applications will be successful. This is because we have to determine each application on its own merits, and local factors may mean we're either unable to grant a licence as applied for, or even at all.

New licences within an ALS 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 2028 and the subsequent one is 31 March 2040. As these licences will have a licencing period of over 12 years, they will require a Minimum Value Condition (MVC), to be applied to the licence as per the legislation. A Minimum Value Condition will state a value to which abstraction may be reduced when we notify a licence holder. We will not be liable to pay compensation to the licence holder for implementing the reduction. Where we are uncertain about the long term impacts of an abstraction we will grant a short term licence during which time potential impacts are monitored and reviewed.

2.5. 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 on gov.uk](#).

3. How we manage abstraction in the RBIM ALS

3.1. Assessment points

We assess surface water flows at [Assessment points](#) (APs), which are significant points on a river, often where two major rivers join or at a gauging station. APs cover multiple surface water bodies.

Where groundwater abstractions directly impact on surface water flows, the impact is measured at the surface water AP.

Licence variations that could result in an increase in actual abstraction, but remain within existing licensed volumes will be considered in line with our stated licencing strategy for surface or groundwater abstractions, and subject to a local impact assessment.

Table 1 gives an indication of how much water is available for further abstraction and the associated restrictions we may have to apply to new and varied [abstraction licences](#) from the main river. Tributaries to the main river may be subject to different restrictions and quantities and will be assessed locally on a case by case basis.

Each HoF is linked to an AP and is dependent on the 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 abstraction rights and/or the ecological requirements of the river. The depth of water across the channel width will need to be taken into account when setting individual HoF values. Many channels in the RBIM do cater for a wide range of flows as a consequence flow across the width of a channel need

to be safeguarded. This is likely to mean HoF values could be higher than the figures shown in Table 1 to protect environmental interests in these channels.

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

Reading from top to bottom in Table 1 are the APs in the RBIM ALS area. Reading across the columns you can see the potential HoF that may be applied to a licence, the number of days water may be available under this restriction and the approximate volume of water in [Ml/d](#) that may be available. In cases where there is water available at all flows we may apply a Minimum Residual Flow (MRF) to protect very low flows. We'll decide this on a case by case basis.

The HoF for RBIM catchment APs have been over-ridden from that supplied by the initial CAMS assessment method. The over-ride has been based on local knowledge and assessment in order to protect the wildlife and / or rights of the existing abstractors. There are further constraints which are covered in the bullet points below:

- New consumptive surface water abstractions in the Cripsey Brook and Upper Roding sub-catchments will be considered only at times of very high flows. These watercourses are already subject to abstractions with high flow constraints. Any new abstraction proposal will need to be set at a value which protects these existing abstraction rights.
- Abstraction at very high flows may not provide a reliable source of water as they may not occur every year. An applicant will need to invest in a water storage reservoir to store water when it's available.
- New consumptive surface water licences in the remaining part of the catchment will be considered and issued with a HoF to protect the ecology and to ensure no derogation to other abstraction rights.
- Upstream of the discharge point from the Brentwood sewage treatment works, abstraction licence applications, will be subject to a local determination. The inclusion of any HoF value will need to assess the dilution needs of the sewage treatment works and to protect the aquatic environment.
- Where there is no suitable flow gauging station by which to assess a surface water proposal then the applicant will be expected to monitor and submit flow data to support their proposal. The applicant will need to demonstrate their proposal will not impact the ecology and/or other abstraction rights. We would advise any such applicant to contact us first to discuss their proposal and individual monitoring requirements.
- Where a local flow or level constraint is required it will be the responsibility of the applicant to install and maintain the agreed constraint mechanism. The right to abstract water will be conditioned on the satisfactory working order of the constraint mechanism.
- [Non-consumptive](#) surface water licences or small consumptive licences that result in an overall net benefit to the water environment may be considered at all times subject to a local assessment.
- Licence variations that could result in increases in actual abstraction, but remain within existing licensed volumes will be decided in line with our licensing strategy for surface or groundwater abstractions, and subject to a local impact assessment.

AP	Name	Water Resource Availability	HOF Restriction (MI/d)	Number of days per annum abstraction may be available	Approximate volume available at restriction (MI/d)	Is there a gauging station at this AP?
1	Cripsey Brook	Water not available for licensing	44.0	54	19.7	Yes
2	Upper Roding	Water not available for licensing	85.0	32	43.1	Yes
3	Middle Roding	Restricted water available for licensing	44.0	138	26.2	Yes
4	Lower Roding	Water Available for Licensing	29.1	255	17.3	Yes
5	Seven Kings	Water Available for Licensing	5.1	255	3.9	No
6	Beam	Restricted water available for licensing	8.8	255	7.2	Yes
7	Ingrebourne	Water Available for Licensing	11.5	255	4.2	Gauging station is at the bottom of the catchment
8	Mardyke	Restricted water available for licensing	4.41	347	3.7	No

Table 1 Summary of licensing approach for the assessment points of RBIM ALS.

3.2. Groundwater

New consumptive licences from the confined chalk aquifer underneath Roding, Beam and Ingrebourne sub-catchments will be considered, subject to the direction of groundwater flow and/or consideration of the policies in the [Essex ALS](#) and/or the [London ALS](#).

In the Mardyke sub-catchment, the confined chalk waterbody has no water available for abstraction. Hence, no new consumptive abstractions will be granted in this area.

Where chalk is unconfined (see Map 5), water resource availability is the same as the surface water availability. New consumptive abstractions will be considered above the HoF value, subject to local assessment. As a general principle, it is up to the applicant to prove that their proposed abstraction will not have a negative impact upon the ecology of the surface water features which rely on base flow from the groundwater aquifer.

3.3. Protected areas

UK law provides a very high level of protection to two 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

Ramsar sites and Sites of Special Scientific Interest ([SSSI](#)) also carry a high level of environmental importance.

There are numerous designated sites in the RBIM catchment that rely on water. Some of these sites include:

- Roding Valley Meadows SSSI - traditional hay meadows, flood meadows and marsh.
- Ingrebourne Marshes SSSI - the largest and one of the most diverse freshwater marshland in Greater London.
- Inner Thames Marshes SSSI is a stronghold for water voles and ditch wildlife.
- Mucking Flats and Marshes SSSI - part of Thames Estuary and Marshes RAMSAR and SPA, feeding ground for internationally important numbers of wintering waterfowl.
- Grays Thurrock Chalk Pit SSSI - a range of woodland, scrub and calcareous grassland habitats that are important for the assemblage of invertebrate fauna they support (including Red Data book species of invertebrates).
- West Thurrock Lagoon and Marshes SSSI - one of the most important sites for wintering waders and wildfowl on the Inner Thames Estuary.
- Thorndon Park SSSI - semi-natural broad-leaved woodland and ancient parkland developed over Claygate and Bagshot Beds.

4. Managing existing licences

4.1. Water rights trading

We want to make it easier to trade water rights. 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 which 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 both within the water body / bodies where the trade will take place and to downstream water bodies. The section below provides a guide to the potential for trading in water bodies of a particular ALS water resource availability colour, as shown on maps 1 - 4.

To find out more about licence trading please go to our [water management web pages on gov.uk](https://www.gov.uk/water-management)


Guide to the potential trading in water bodies of a particular ALS water resource availability colour

Water available for licensing

Green 

Allow trades of recent actual abstraction and licensed abstraction, but little demand for trading expected within water body as water 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 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 recent actual abstraction but no increase in recent actual abstraction is permitted in water body. Licensed abstraction will be recovered for the environment.

4.2. Taking action on unsustainable abstraction

4.2.1. Action being taken on unsustainable abstraction in the RBIM

Actions are necessary to improve rivers where flows are not sufficient enough to support a healthy ecology. Under the Water Framework Directive (WFD), the aim is to ensure rivers and coastal waters achieve 'good ecological status or potential' status, and that there is no deterioration from their current status.

We're taking the following actions on improving flows in the rivers in the RBIM ALS.

- Actions under the Water Industry National Environment Programme (WINEP)
- Revocations of licences for non-use
- Reductions of under-used and unused licence quantities.
- Changes to time limited licences where: abstraction quantities are no longer justified, renewal of licence poses a risk of deterioration in ecological status, and the sustainability issues in the catchment have not been resolved.

4.3. Regulating currently exempt abstraction

As the abstraction licensing system in England and Wales developed over the past 50 years, certain abstractions have remained lawfully exempt from licensing control. This meant that unlimited supplies of water could be abstracted, even in areas that are water stressed.

This means that those exempt abstractions could potentially take unlimited amounts of water, irrespective of availability and without regard to impacts on the environment or other abstractors.

Following two public consultations Government have introduced new Regulations to take effect from 1st January 2018. The Water Resources (Transitional Provisions) Regulations 2017 have removed the majority of previous exemptions from licensing control, and current exempt abstractors will now require a licence to lawfully abstract water.

The main activities affected are:

- transferring water from one inland water system to another in the course of, or as the result of, operations carried out by a navigation, harbour or conservancy authority;
- abstracting water into internal drainage districts;
- dewatering mines, quarries and engineering works, except in an emergency;
- warping (abstraction of water containing silt for deposit onto agricultural land so that the silt acts as a fertiliser);
- all forms of irrigation (other than spray irrigation, which is already licensable), and the use of land drainage systems in reverse (including transfers into managed wetland systems) to maintain field water levels;
- abstracting within currently geographically exempt areas, including some rivers close to the borders of Scotland; and
- abstractions covered by Crown and visiting forces (other than Her Majesty the Queen and the Duchies of Cornwall and Lancaster in their private capacity).

Where we have details of these abstractions, we've included them in our assessments to consider how they impact on the catchment.

5. List of abbreviations

ALS

Abstraction Licensing Strategy.

AP

Assessment Point.

CED

Common End Date.

Defra

Department of Environment Fisheries 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.

MI/d

Megalitres per day.

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.

6. 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.

Catchment

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

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.

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.

Non-consumptive abstraction

Abstraction where all the water is returned to the same source of supply after use. There can only be a relatively short environmentally acceptable distance between the abstraction and discharge points.

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.

Would you like to find out more about us or your environment?

Then call us on

03708 506 506 (Monday to Friday, 8am to 6pm)

email

enquiries@environment-agency.gov.uk

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