

water abstraction getting the balance right

The Idle and Torne Catchment Abstraction Management Strategy

Consultation Document December 2006



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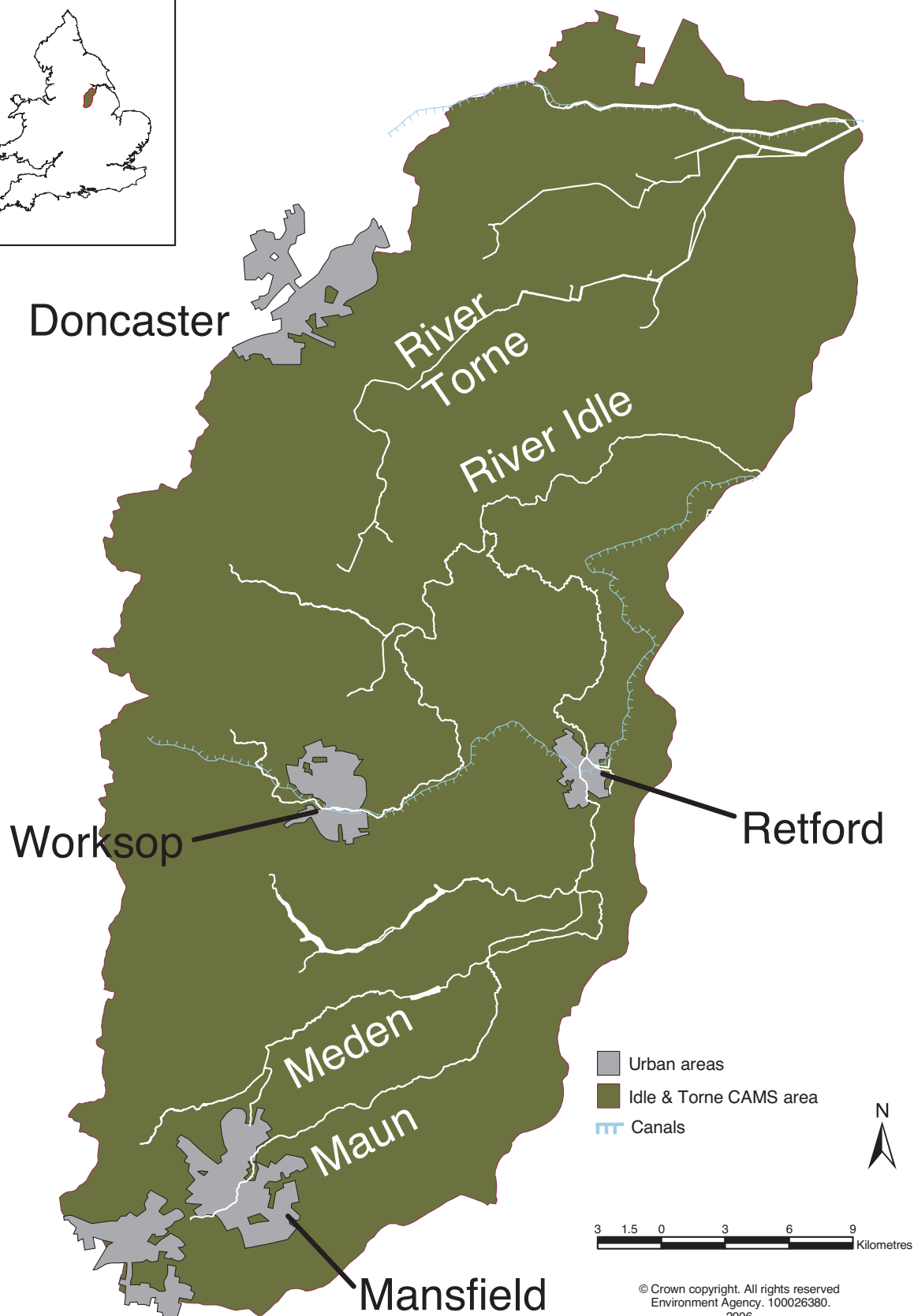
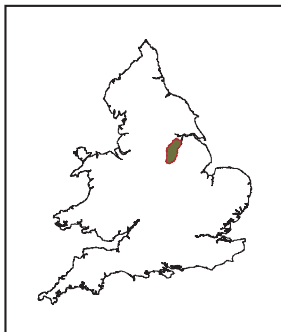
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The Idle & Torne CAMS area overview



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Document structure and accompanying documents

What are CAMS?

Sections 1 and 2 outline what CAMS are and why we have produced this consultation document.

The main chapters

Section 3 of this document outlines the main principles of abstraction licensing that we follow in the catchment.

Section 4 the pale green pages, is the most important section. This is the proposed licensing strategy that we would like you to comment upon. If you are an existing licence holder it is this section that outlines what this strategy will mean for you.

A summary of the questions that we are asking you to comment upon is included on page 24.

Section 5 outlines how we are going to implement the strategy.

Background information

The following sections, **Sections 6 to 8**, provide interesting information about how we developed this strategy and the character of the catchment. You may find this background information useful to understand the issues we are consulting upon.

Technical information

The detailed technical information used to develop this proposed strategy and information about how we made our decisions is included in Appendix 2. This is on a CD at the back of this document.

1.0

This is the consultation document for the Idle and Torne Catchment Abstraction Management Strategy (CAMS). This proposed strategy gives you information on water resources and on how the abstraction licensing system works.

Your local CAMS

We are now using CAMS to manage water resources at a local level. They allow us to consult with the local community and other interested parties in our work to balance the needs of abstractors and other water users with those of the water environment.

Our consultation process will result in a local licensing strategy and a decision on whether time limited licences should be renewed and on what terms.

All catchments in England and Wales will have a CAMS.

The Idle and Torne CAMS area stretches from central Nottinghamshire to southern Yorkshire. It covers an area of approximately 1300km² with a landscape varying from Sherwood Forest and the wooded Dukeries in the south to the Hatfield and Thorne Moors and the valuable agricultural environment of the Isle of Axholme in the north.

The rivers Idle and Torne flow in a general north-easterly direction, joining the River Trent at West Stockwith and Keadby, respectively. The Idle catchment comprises the rivers Meden, Maun and Poulter which meet near Gamston, and is joined by the River Ryton downstream near Bawtry.

The rivers rise and flow through heavily urbanised areas including Mansfield, Sutton in Ashfield, Worksop, East Retford and the south-eastern outskirts of Doncaster. Heavy industry is present in the catchment but many collieries have closed in recent years due to the decline in coal mining. Peat has historically been extracted in the north, at Hatfield Moors.

The dominant land use is arable agriculture. Large areas in the north of the catchment are supported by a comprehensive system of land drainage to maintain their agricultural quality. Due to their low-lying situation these areas are also protected from flooding from the River Trent by extensive flood defences

The above influences have seriously impacted wetland biodiversity in some areas of the catchment.

A technical document for the Idle and Torne CAMS, which contains the detailed technical information on which we have based this strategy, is available on the attached CD. You can also view a printed copy of this document at the address below.

The document *Managing Water Abstraction: The Catchment Abstraction Management Strategy Process* sets out both the national policy and the regulatory framework within which CAMS operates. A copy of this document is on the attached CD. If you would like to be sent a paper copy of *Managing Water Abstraction* please contact us at the following address.

Idle and Torne CAMS Project Manager
Water Resources Management
Environment Agency
Trentside Offices
Scarrington Road
West Bridgford
Nottingham
NG2 5FA

Office hours: Monday to Friday 8.30am-5.00pm
National Customer Contact Centre: 08708 506506
Email: cams.lowertrent@environment-agency.gov.uk

2.0

We consult on CAMS because we need the information you provide to help draw up effective, sustainable plans.

Consultation on the Idle and Torne CAMS

We want to manage water resources in a catchment effectively and sustainably. To do this, it is important that we work with people that have an interest in the water resources and environment of the Idle and Torne catchments.

Once you have read this document we hope that you will send us your comments so that we can benefit from your views when we develop our strategy. To help us we would like you to comment on:

- the questions we have asked on the proposed licensing strategy;
- any additional information that you think would help us to develop our strategy.

We need to receive your comments by 26 January 2007

Please send your comments to:
Idle and Torne CAMS Project Manager
Water Resources Management
Environment Agency
Trentside Offices
Scarrington Road
West Bridgford
Nottingham
NG2 5FA

Office hours: Monday to Friday 8.30am-5.00pm
National Customer Contact Centre: 08708 506506
Fax: 0115 981 7743
Email: cams.lowertrent@environment-agency.gov.uk

Once we have assessed your responses we will produce a written summary of them – we call this a statement of response. This highlights the main issues that you have raised and we will send a copy to everyone who responded. It will also be available to others on request. We may quote from your response in the summary but if you would like your response to be treated as confidential, please state this clearly.

We have also set up a Stakeholder Group. Its role is to represent the main interests in the catchment. The group helps us to identify important local issues, provides feedback on our proposals and considers the likely implications of different strategy options. The members of the Idle and Torne CAMS Stakeholder Group and the interests they represent are:

| | |
|----------------|--------------------------|
| James Dodds | Group Chair |
| Rob Arrowsmith | Navigation |
| Matilda Beatty | Public water supply |
| Carl Cornish | Conservation |
| Mike Fenton | Regeneration |
| Helen Mayfield | Industry |
| Symon Murch | Agriculture |
| David Sisson | Internal Drainage Boards |

Thank you to those people that have already taken part in this consultation by:

- responding to our awareness raising leaflet
- attending the CAMS Stakeholder Group
- responding to our targeted information request.

3.0

The CAMS process provides the framework for any decision on an abstraction licence application.

Main principles of abstraction licensing in the Idle and Torne catchment

3.1 National principles

3.1.1 Licence determination

Anyone wanting to take more than 20m³/day from a 'source of supply' (river, stream lake, well, etc.) must have an abstraction licence. The application process for abstraction is similar to the planning process in that we require the application to be advertised and may require supporting environmental information.

When considering the application we check that the quantities applied for and the purpose of the abstraction are reasonable, that there is sufficient water available to support it and that the potential impacts on the environment and other water users are acceptable. Depending on the outcome of our investigations we will issue a licence either as applied for, or with conditions that restrict the abstraction to protect the environment or other users. In certain cases we may have to refuse the application. Any applicant who is not happy with our determination (decision) has the right to appeal against it.

Each application is determined on its own merits

Whilst the strategy that we develop may conclude that water is available to be licensed in the catchment, this does not guarantee that all applications will be successful. Each application will be determined upon its own merits/impacts.

We have split the catchment into areas of water that can be managed as individual units. The Idle and Torne CAMS has five Water Resource Management Units (WRMU). These are shown on Map 2 on page 7.

Where a proposal for an abstraction licence may have a potentially significant environmental effect, we may ask applicants to provide additional information about the likely environmental impact of the proposed abstraction with their applications. To help identify these situations this document contains maps of all the WRMU and Groundwater Management Units (GWMU) with the location of the main environmental features that are potentially vulnerable to the impacts of abstractions.

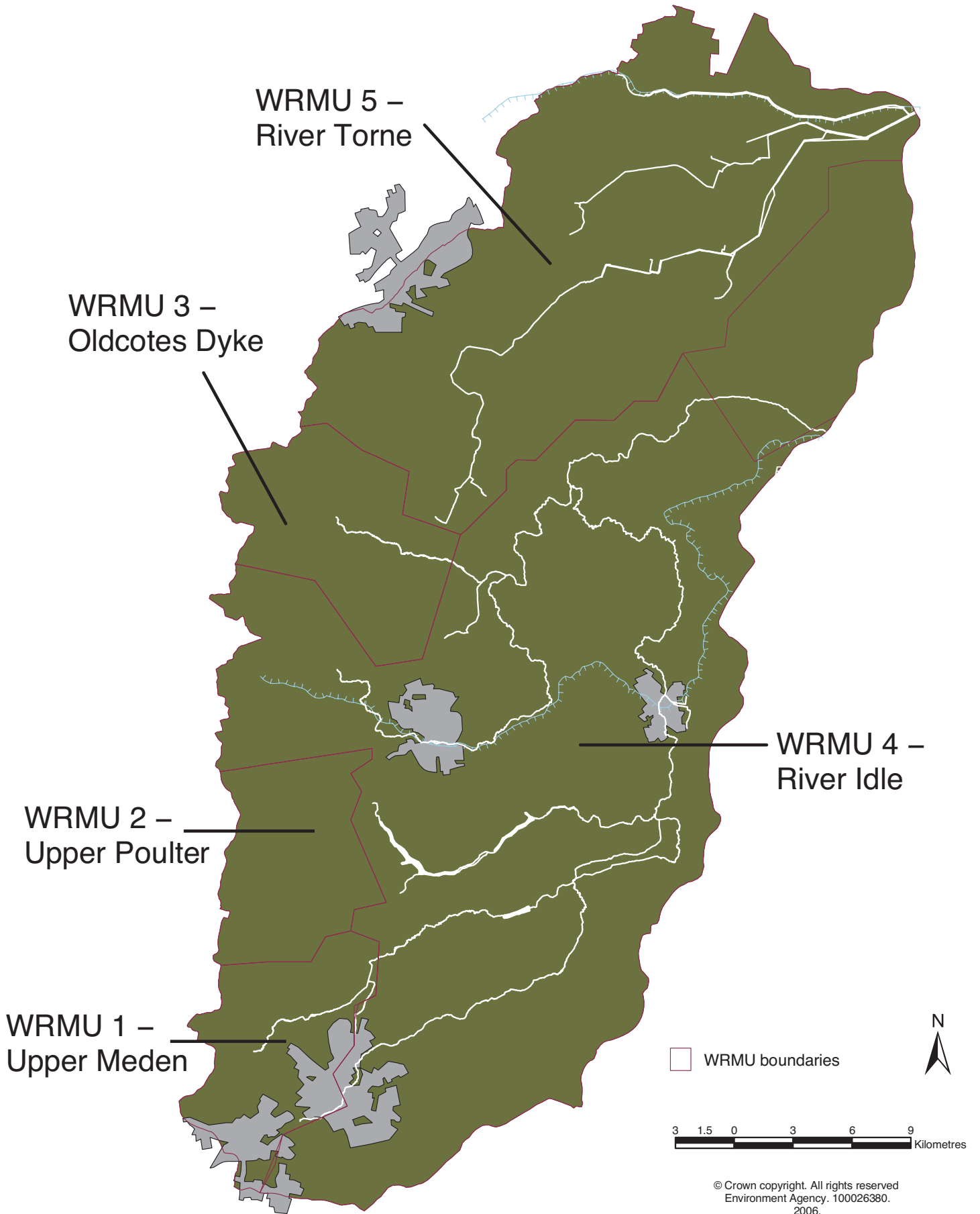
This document sets out our licensing strategy for the catchment. If you want to apply for a licence you should contact us on 08708 506506 for further advice.

Abstractions are managed to protect the environment

To protect the environment we may issue a licence with conditions. One type of condition is referred to as a 'Hands-Off Flow'. This specifies that if the flow or level in the river drops below that which is required to protect the environment the abstraction must stop, hence 'Hands-Off Flow' (HOF).

A licence does not guarantee that water is available

It is important to understand that when we issue a licence we do not guarantee the supply of water. We have to protect the environment and rights of other abstractors. To do this we may add constraints to licences, as described above. The licence holder needs to understand the implications of this as it affects the reliability of supply. For example, in drier years it is more likely that conditions will come into effect and abstraction is more likely to be stopped. Details of 'hands-off flow' conditions are described in more detail in Section 4.



Map 2 Water Resource Management Units

Water efficiency

We need to make the best use of our existing water resources. Adopting water efficiency measures can help us achieve this goal. Water efficiency is one of the tests that will need to be satisfied before we grant a new licence or renew a time limited licence. We are currently consulting with interested parties on how best to implement water efficiency within the abstraction licensing system.

Approach to time limiting of licences

All new licences and variations (other than downward variations or minor variations having no environmental impact) will have a time limit imposed. CAMS are the mechanism for managing time limits on licences by indicating whether they should be renewed and, if so, on what terms. Where possible, the intention is to have all time limits on licences within a CAMS area expiring on the same date (known as the “common end date”). However, there may be situations where shorter or longer time limits may be justified. The next common end date for the Idle and Torne CAMS is 31 March 2014. The normal duration for a renewed licence will be 12 years.

We will notify licence holders 18, 12 and 6 months before the expiry of their licence. If you hold a time limited licence you will then need to apply for a renewal of that licence. There is a presumption that time limited licences will be renewed if:

- environmental sustainability is not in question;
- there is a continued justification of need for the water;
- the water is used efficiently.

We will also take into account any objections received to renewal of the licence. We will endeavour to give six years notice if a licence will not be renewed or is to be renewed but on more restrictive terms which impact significantly on the use of that licence. In very exceptional circumstances we may also grant licences for longer than 12 years.

3.1.2 Water rights trading

We want to make it easier to trade water rights. Such trading refers to the transfer of licensable water rights from one party to another. Abstractors may be able to pass on this right to others. More detailed information is available in Section 4 of Managing Water Abstraction and Chapter 7 of the attached CD.

We sent licence holders a guidance leaflet – Water Rights Trading – in 2002. This explained the current opportunities for trading abstraction licences.

In 2003 we consulted on more detailed proposals. We have now taken your responses into account and we will publish further information and guidance to coincide with the implementation of the relevant parts of the Water Act 2003. Further information is available on our website at www.environment-agency.gov.uk.

The trading of ‘sleeper’ or ‘part utilised’ licences could exacerbate over abstraction in the River Idle and increase the risk of the River Torne becoming over abstracted through the re-activation of currently dormant licensed resources. Trading within the Idle and Torne catchments will therefore require appropriate management, for example we may need to place conditions on new or varied licences to prevent damage to the environment occurring as a result of trading. However, where water rights trading will decrease the consumptiveness of the abstraction purpose authorised by the licence (ie less water will be lost from the catchment) or will cause no adverse environmental impacts, proposals will be welcomed, or promoted where the proposed trading of water rights will bring environmental benefits.

3.1.3 Environmental considerations

European 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. Table 1 lists the related environmentally designated sites in this CAMS.

Habitats Regulations

Under the Habitats Regulations we have to assess the affects of existing abstraction licences and any new applications to make sure they are not impacting on internationally important nature conservation sites. These sites are known as Special Areas of Conservation (SAC) and Special Protection Areas (SPA). If your current licence is being reviewed under this legislation to assess its impact you will already have been sent a letter with information about the review. If you have not received a letter from us your licence is either not near a SAC/SPA or cannot have an impact on these sites.

Table 1 Features present within the Idle and Torne catchment that may affect water availability at a catchment or Water Resource Management Unit (WRMU) scale

| Feature | Present | WRMU |
|--|---|-----------------------|
| Water related Special Site of Scientific Interest (SSSI) sites | Hills and Holes and the Sookholme Brook, Pleasley Vale Railway | WRMU1 – Upper Meden |
| Water related Special Site of Scientific Interest (SSSI) sites | Not applicable | WRMU2 – Upper Poulter |
| Water related Special Site of Scientific Interest (SSSI) sites | Dyscarr Wood, Maltby Low Common, Roche Abbey Woodlands, | WRMU3 – Oldcotes Dyke |
| Water related Special Site of Scientific Interest (SSSI) sites | Barrow Hills Sandpit, Bevercotes Park, Birklands and Bilhaugh, Birklands West and Ollerton Corner, Castle Hill Wood, Chesterfield Canal, Clipstone Heath, Clumber Park, Crabtree Wood, Cresswell Crag, Ginny Spring and Whitwell Wood, Hollinhill and Markland Grips, Lindrick Golf Course, Misson Drain, Misson Line Bank, Misson Training Area, Rainworth Heath, Rainworth Lakes, River Idle Washlands, Sherwood Forest Golf Course, Strawberry Hill Heaths, Sutton and Lound Gravel Pits, Thoresby Lake, Wellow Park, Welbeck Lake | WRMU4 – River Idle |
| Water related Special Site of Scientific Interest (SSSI) sites | Belshaw, Crowle Borrow Pits, Edlington Wood, Epworth Turbary, Hatfield Chase Ditches, Hatfield Moors, Haxey Grange Fen, Haxey Turbary, Potteric Carr, Rush Furlong, Sandall Beat, Thorne, Crowle and Goole Moors | WRMU5 – River Torne |
| Water related Special Area of Conservation (SAC) sites | Hatfield Moors SAC Thorne Moors SAC | WRMU5 – River Torne |
| Water related Special Protection Area (SPA) sites | No* | |

*NB: Thorne and Hatfield Moors SPA is designated for the presence of nightjar which is dependent on a dry heathland habitat. Consequently the interest feature is not water dependent and therefore does not directly relate to the CAMS process.

If our assessment shows that a new application could have an impact on a SAC/SPA we will have to follow some strict rules in setting a time limit for that licence. These are:

- We may be able to grant the licence but only with a short time limit. This is so we can monitor the effect of the abstraction on a SAC/SPA and change the licence if necessary;
- If it cannot be determined that your application will not affect the site we have to either put conditions on the licence so that it cannot affect the site or refuse the application. If we grant the licence we may ask you to monitor its impact;
- If our assessment shows that there isn't an impact on the site we will manage it in line with this CAMS.
- new controls on previously exempt abstractions for mine and quarry de-watering, trickle and other forms of irrigation, transfers into canals and internal drainage districts;
- stronger powers for water resources planning and management;
- more flexibility to the licensing regulations to improve their efficiency and to encourage water rights trading;
- stronger powers on water conservation.

For more details on the Water Act 2003 and its implementation, see our website, www.environment-agency.gov.uk or contact your local Environment Agency office on 08708 506506. The website will be updated to provide information as the Water Act 2003 is implemented.

3.1.4 The Water Act 2003

The Water Act 2003 introduces a new statutory framework for managing water resources that will be implemented into the water resources authorisation system over the next few years. The main changes that are still to be implemented include:

3.1.5 Exempt purposes and areas

Some abstractions do not need to be licensed, for example those that do not exceed 20 cubic metres per day. Other abstractions are exempt because they take place in a part of the country where a general exemption has been given from the need for abstractions to be licensed. The existence of these 'exempt areas' could prevent the proper management of water resources. We will put forward proposals to remove the 'exempt areas'. There are no such location-based exemptions within the Idle and Torne CAMS area.

3.1.6 Impoundments

Applications for impoundments will be dealt with on a case-by-case basis to ensure that any proposed development does not compromise the licensing strategy for the Idle and Torne catchments.

3.1.7 Management of existing licences

We enforce licences through a programme of routine inspections to ensure that the abstraction conditions are understood and adhered to. We will continue to operate a rigorous enforcement policy and undertake regular licence inspections and site visits.

3.2 Catchment water resource availability

If you want to abstract water you need to know what water resources are available within a catchment and where abstraction for consumptive purposes is allowed. To provide this information we have developed a classification system. This gives a "resource availability status" and indicates:

- the relative balance between the environmental requirements for water and how much is licensed for abstraction;
- whether water is available for further abstraction;
- areas where abstraction needs to be reduced.

Licence applications still have to go through the normal licensing process. More information on this process is in Annexe 2 of Managing Water Abstraction on the attached CD.

There are four categories of resource availability status, as shown in Table 2. If you need more information about what a resource availability status is and how they were calculated please refer to Section 6.2, page # of this document.

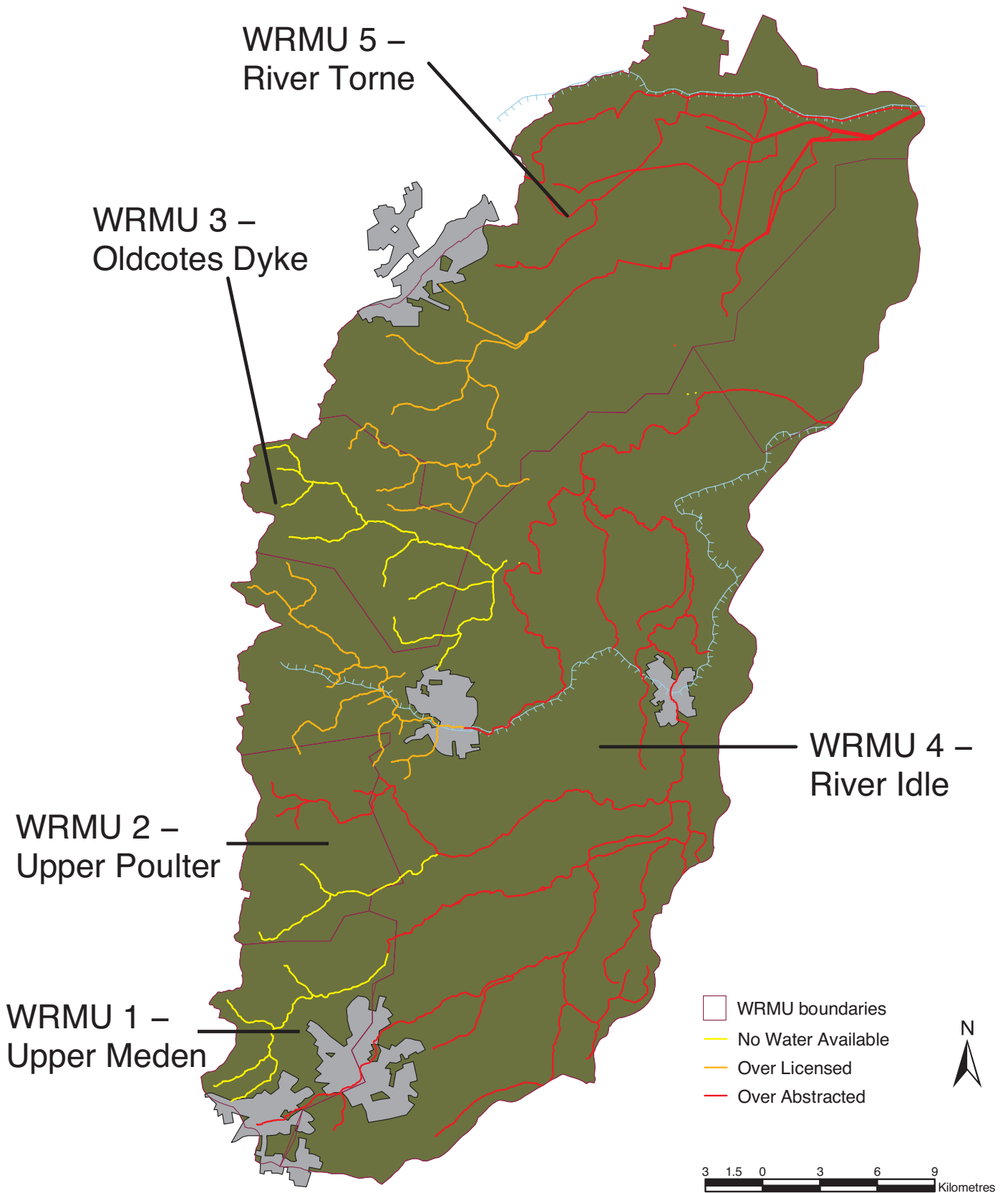
The resource availability status and target status for each WRMU and GWMU are shown in Table 3 and Map 3.

Table 2 Resource availability status categories

| Indicative resource availability status | Licence Availability |
|---|---|
| Water available | Water is likely to be available at all flows including low flows. Restrictions may apply. |
| No water available | No water is available for further licensing at low flows. Water may be available at higher flows with appropriate restrictions. |
| Over-licensed | Current actual abstraction is such that no water is available at low flows. If existing licences were used to their full allocation they could cause unacceptable environmental damage at low flows. Water may be available at high flows, with appropriate restrictions. |
| Over-abstracted | Existing abstraction is causing unacceptable damage to the environment at low flows. Water may still be available at high flows, with appropriate restrictions. |

Table 3 Overview of the existing water resource availability and the target water resource availability at low flows for this CAMS when it is reviewed again in 2010 and 2016. (See also section 6 of this document for further information).

| WRMU/GWMU Name | Associated main river | Resource Availability Status | | | | Details of the unit is on page |
|-------------------------|-----------------------|------------------------------|------------------------|-----------------------|-----------------------|--------------------------------|
| | | Individual WRMU status | Integrated WRMU status | Target status in 2010 | Target status in 2016 | |
| WRMU 1 Upper Meden | River Meden | Water available | No water available | No water available | No water available | 00 |
| WRMU 2 Upper Poulter | River Poulter | Water available | No water available | No water available | No water available | 00 |
| WRMU 3 Oldcotes Dyke | Oldcotes Dyke | Water available | No water available | No water available | No water available | 00 |
| WRMU 4 River Idle | River Idle | Over abstracted | Over abstracted | Over abstracted | Over abstracted | 00 |
| WRMU 5 River Torne | River Torne | Over abstracted | Over abstracted | Over abstracted | Over abstracted | 00 |



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Map 3 Integrated Resource Availability Status

4.0

This section describes the licensing strategy and available water resource for each WRMU and GWMU in the catchment.

Proposed abstraction licensing strategy

It is important to note that this strategy may not apply to licences that return abstracted water back close to the point of abstraction or result in a net benefit to the water environment.

4.1 Water Resource Management Unit 1- Upper Meden

Our proposals

The water resource availability status of this WRMU is no water available. As shown in Table 4 the target status for this WRMU in 2010 is to remain at no water available. The Upper Meden WRMU lies upstream of the River Idle WRMU. We need to maintain flows in the Upper Meden to prevent the deterioration of flows into the River Idle WRMU. We have therefore fixed the target status for water resources availability as no water available.

The target status is the outcome of the sustainability appraisal process. If you would like more information about the sustainability appraisal process and how we came to this decision please refer to Chapter 3 of the technical document on the attached CD.

Strategy for new and existing licences

The strategy for this WRMU is to remain at the status of no water available. This means that for new licences:

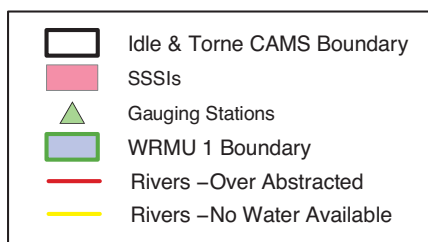
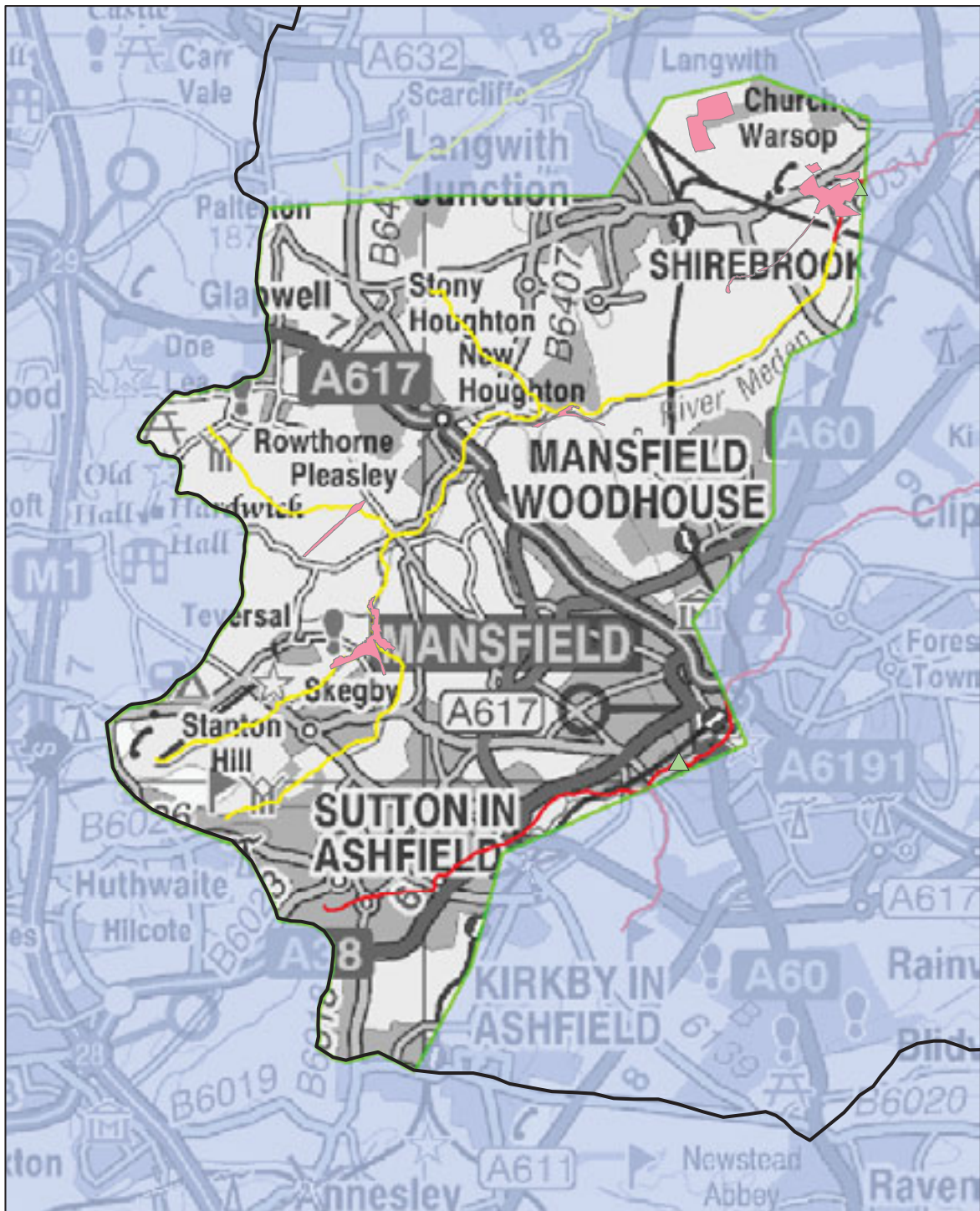
- there will be a presumption against the issue of new licences within the Upper Meden WRMU unless they can be demonstrated to be of environmental benefit;
- any licence that is issued will be subject to the common end date for the Idle and Torne CAMS area, typically 31 March 2014.

and for **existing licences**:

- there will be a presumption of renewal subject to local considerations and the main principles of abstraction licensing, as described in section 3, above;
- licences will be issued to the common end date for the Idle and Torne CAMS area, typically 31 March 2014.

Table 4 Existing low flow resource availability status and target low flow resource availability status for the Upper Meden Water Resource Management Unit.

| Associated main river | Resource Availability Status | | | | Comment |
|-----------------------|------------------------------|------------------------|-----------------------|-----------------------|---|
| | Individual WRMU status | Integrated WRMU status | Target status in 2010 | Target status in 2016 | |
| River Meden | Water available | No water available | No water available | No water available | The target status is to ensure that the management of water resources within the WRMU will not adversely impact on WRMU4 – River Idle, downstream |



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Map 4 Shows the location of sites and features that may affect abstraction licence/water availability.

Table 5 Presence of features that may affect water availability in WRMU1-Upper Meden

| Feature | Comment |
|--|--|
| Water related Site of Special Scientific Interest (SSSI) sites | Hills and Holes and the Sookholme Brook Pleasley Vale Railway |

How much water is available and what restrictions might apply

There will be a presumption against the issue of new licences and variations to existing licences that would increase either the amount of abstraction or the amount of water lost from the catchment (ie increase the consumptiveness of licences). All abstraction licence applications will be subject to an assessment to take account of any local issues and granted on a first-come-first-served basis.

Additional local information specific to this WRMU

Map 4 illustrates the boundaries of the WRMU, which includes the River Meden and its tributaries upstream of Church Warsop together with the Mansfield Groundwater Management Unit of the Lower Magnesian Limestone. Hills and Holes and the Sookholme Brook SSSI is located in the lower reaches of the WRMU. Natural England has identified the vulnerability of this designated site to damage as a result of abstraction and have produced a ‘Views About Management’ plan. The SSSI has also been included within our Restoring Sustainable Abstraction (RSA) Programme catalogue of work, under which monitoring of the impact of abstraction on the site is underway.

Issues for consultation

- The Hills and Holes and the Sookholme Brook SSSI has been identified as vulnerable to the impact of abstraction and has therefore been listed in the RSA Programme catalogue of work as a site to be investigated. We are proposing not to pursue resource recovery for the Upper Meden WRMU until the RSA investigations have been completed. Do you agree with our approach? If not, please explain why.
- Is the licensing strategy proposed for the Upper Meden WRMU clear?

4.2 Water Resource Management Unit 2- Upper Poulter

Our proposals

The water resource availability status of this WRMU is no water available. As shown in Table 6 the target status for this WRMU in 2010 is to remain at no water available. The Upper Poulter WRMU lies upstream of the River Idle WRMU. We need to maintain flows in the Upper Poulter to prevent the deterioration of flows into the River Idle WRMU. We have therefore fixed the target status for water resources availability as no water available.

The target status is the outcome of the sustainability appraisal process. If you would like more information about the sustainability appraisal process and how we came to this decision please refer to Chapter 3 of the technical document on the attached CD.

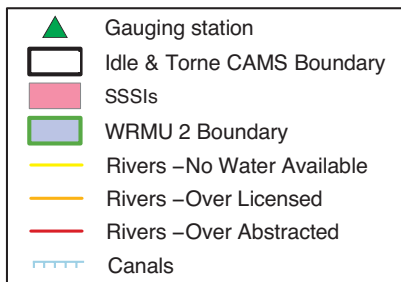
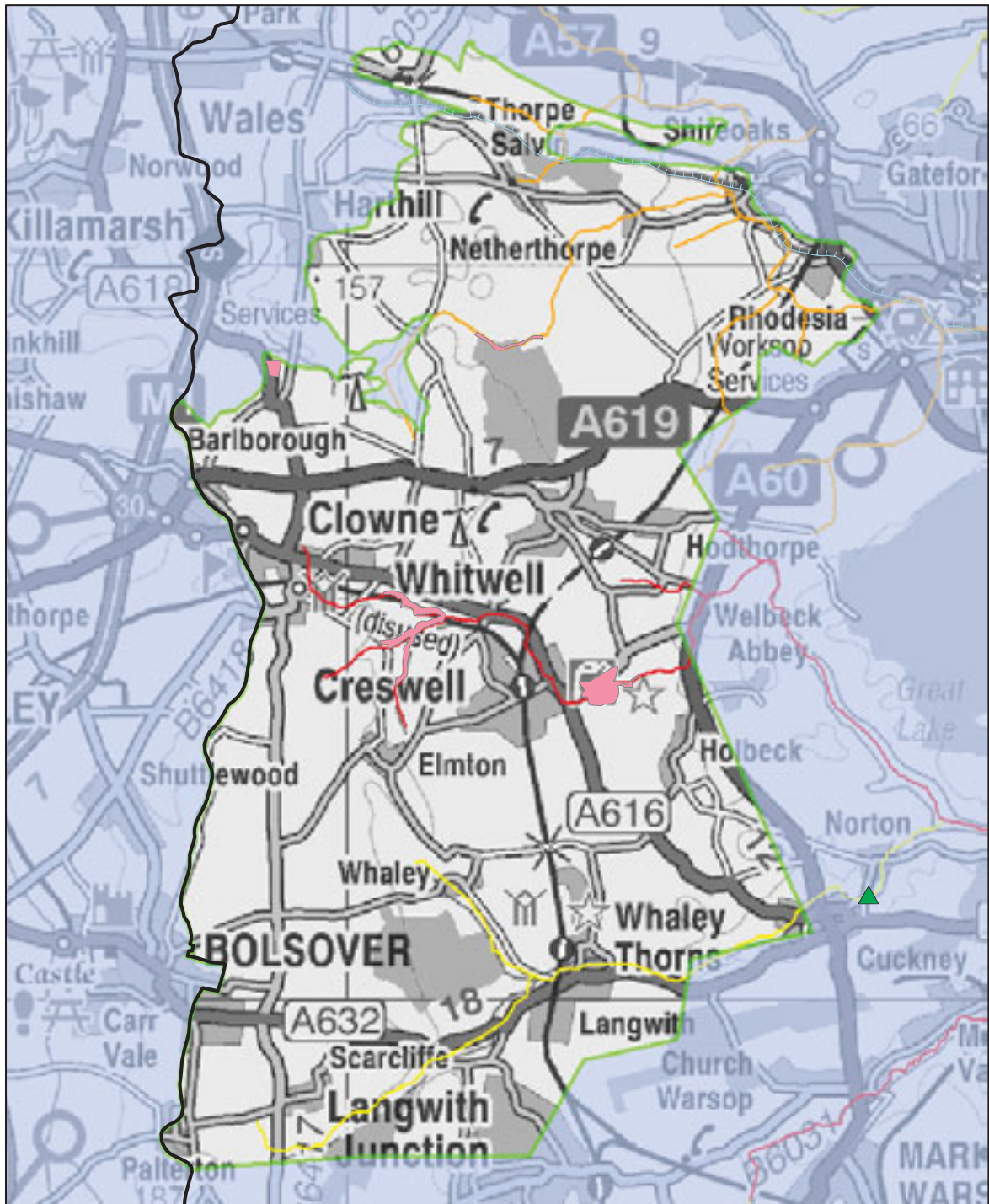
Strategy for new and existing licences

The strategy for this WRMU is to remain at the status no water available. This means that for new licences:

- there will be a presumption against the issue of new licences within the Upper Poulter WRMU unless they can be demonstrated to be of environmental benefit;
- any licence that is issued will be subject to the common end date for the Idle and Torne CAMS area, typically 31 March 2014.

and for **existing licences**:

- there will be a presumption of renewal subject to local considerations and the main principles of abstraction licensing, as described in section 3, above;
- licences will be issued to the common end date for the Idle and Torne CAMS area, typically 31 March 2014.



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Map 5 Shows the location of sites and features that may affect abstraction licence/water availability.

Table 6 Existing low flow resource availability status and target low flow resource availability status for the Upper Poulter Water Resource Management Unit.

| Associated main river | Resource Availability Status | | | | Comment |
|-----------------------|------------------------------|------------------------|-----------------------|-----------------------|---|
| | Individual WRMU status | Integrated WRMU status | Target status in 2010 | Target status in 2016 | |
| Upper Poulter | Water available | No water available | No water available | No water available | The target status is to ensure that the management of water resources within the WRMU will not adversely impact on WRMU4 – River Idle, downstream |

Table 7 Presence of features that may affect water availability in WRMU2-Upper Poulter

| Feature | Comment |
|--|--|
| Water related Site of Special Scientific Interest (SSSI) sites | There are no SSSIs designated for aquatic interest within the Upper River Poulter WRMU |

How much water is available and what restrictions might apply

There will be a presumption against the issue of new licences and variations to existing licences that would increase either the amount of abstraction or the amount of water lost from the catchment (ie increase the consumptiveness of licences). All abstraction licence applications will be subject to an assessment to take account of any local issues and granted on a first-come-first-served basis.

Additional local information specific to this WRMU

Map 5 illustrates the boundaries of the WRMU, which includes the River Poulter and its tributaries upstream of Cuckney together with the Bolsover Groundwater Management Unit of the Lower Magnesian Limestone. No water dependent SSSIs have been designated within this WRMU, however, overall the upper reaches of the River Poulter are physically and ecologically diverse, including an area of wet woodland, a priority Biodiversity Action Plan habitat.

Issues for consultation

- we believe that abstraction does not currently adversely impact the Upper Poulter WRMU. Do you agree? If not, please explain why.

- is the licensing strategy proposed for the Upper Poulter WRMU clear

4.3 Water Resource Management Unit 3- Oldcotes Dyke

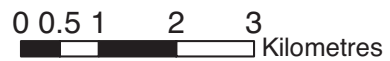
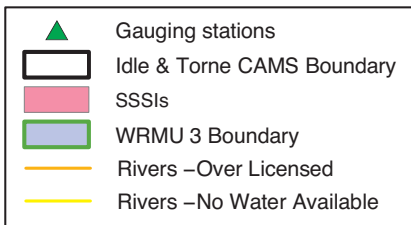
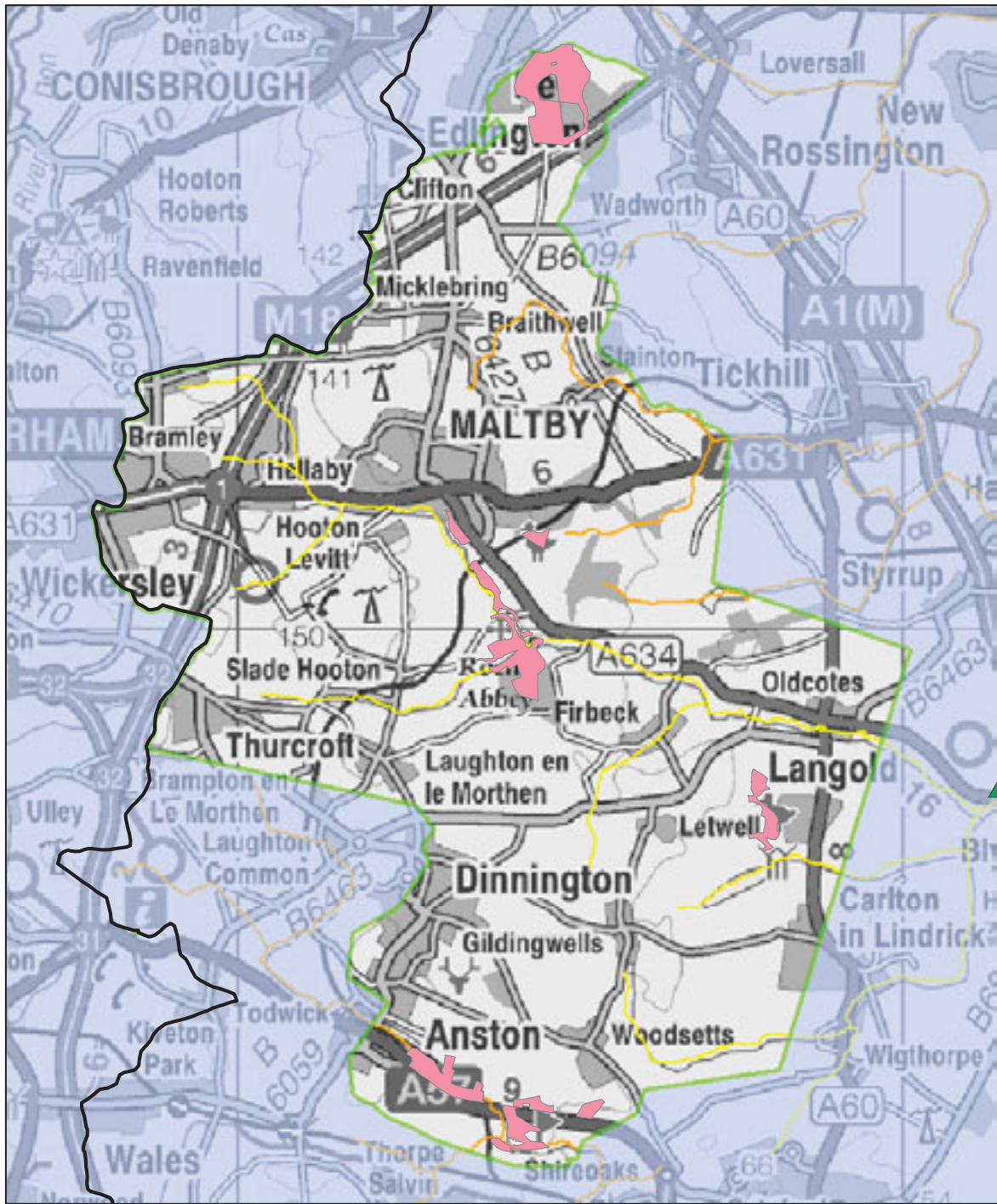
Our proposals

The water resource availability status of this WRMU is no water available. As shown in Table 8 the target status for this WRMU in 2010 is to remain at no water available. The Oldcotes Dyke WRMU lies upstream of the River Idle WRMU. We need to maintain flows in the Oldcotes to prevent the deterioration of flows into the River Idle WRMU. We have therefore fixed the target status for water resources availability as no water available.

The target status is the outcome of the sustainability appraisal process. If you would like more information about the sustainability appraisal process and how we came to this decision please refer to Chapter 3 of the technical document on the attached CD.

Table 8 Existing low flow resource availability status and target low flow resource availability status for the Oldcotes Dyke Water Resource Management Unit.

| Associated main river | Resource Availability Status | | | | Comment |
|-----------------------|------------------------------|------------------------|-----------------------|-----------------------|---|
| | Individual WRMU status | Integrated WRMU status | Target status in 2010 | Target status in 2016 | |
| Oldcotes Dyke | Water available | No water available | No water available | No water available | The target status is to ensure that the management of water resources within the WRMU will not adversely impact on WRMU4 – River Idle, downstream |



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Map 6 Shows the location of sites and features that may affect abstraction licence/water availability.

Table 9 Presence of features that may affect water availability in WRMU4-Oldcotes Dyke

| Feature | Comment |
|--|--|
| Water related Site of Special Scientific Interest (SSSI) sites | Dyscarr Wood, Maltby Low Common, Roche Abbey Woodlands |

Strategy for new and existing licences

The strategy for this WRMU is to remain at the status of no water available. This means that for new licences:

- there will be a presumption against the issue of new licences within the Oldcotes Dyke WRMU unless they can be demonstrated to be of environmental benefit;
- any licence that is issued will be subject to the common end date for the Idle and Torne CAMS area, typically 31 March 2014.

and for **existing licences**:

- there will be a presumption of renewal subject to local considerations and the main principles of abstraction licensing, as described in section 3, above;
- licences will be issued to the common end date for the Idle and Torne CAMS area, typically 31 March 2014.

How much water is available and what restrictions might apply

There will be a presumption against the issue of new licences and variations to existing licences that would increase either the amount of abstraction or the amount of water lost from the catchment (ie increase the consumptiveness of licences). All abstraction licence applications will be subject to an assessment to take account of any local issues and granted on a first-come-first-served basis.

Issues for consultation

- we believe that abstraction does not currently adversely impact the Oldcotes Dyke WRMU. Do you agree? If not, please explain why.
- is the licensing strategy proposed for the Oldcotes Dyke WRMU clear?

4.4 Water Resource Management Unit 4- River Idle

Water Resource Management Unit 4 (WRMU4) includes the River Idle and its tributaries the rivers Maun, Meden, Poulter and Ryton, together with the Ravenshead (North), Thoresby, Retford and Blyth groundwater management units of the Sherwood Sandstone aquifer that underlies this area. Map 7 shows the location of sites and features that may affect abstraction licence/water availability.

Our proposals

The water resource availability status of this WRMU is over abstracted, through most of the flow range not solely at low flows. As shown in Table 9 the target status for this WRMU in 2010 is over licensed. This would required a reduction in actual abstraction from both surface and groundwater sources.

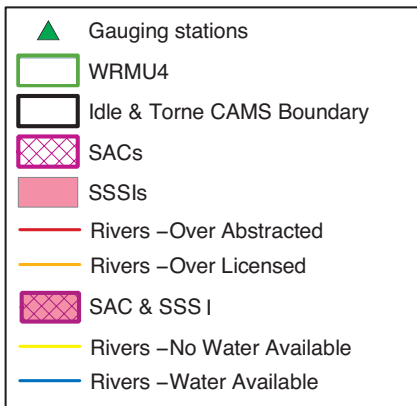
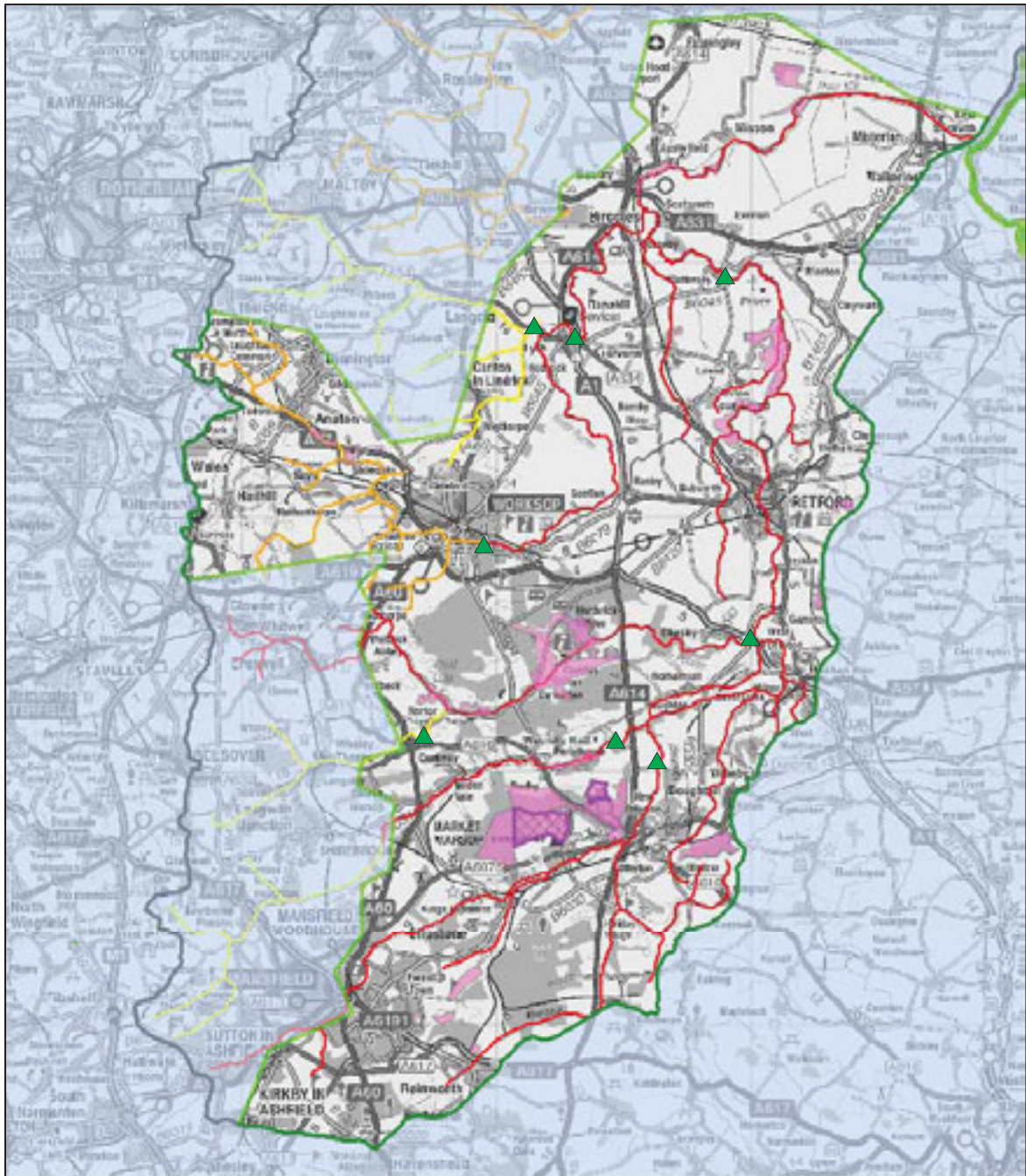
The target status is the outcome of the sustainability appraisal process, through which we considered a number of different options. If you would like more information about the sustainability appraisal process and how we came to this decision please refer to Chapter 3 of the technical document on the attached CD.

Strategy for new and existing licences

The strategy for this WRMU is to move towards the status of over licensed. We will seek reductions in both licensed quantities and actual abstraction within the River Idle WRMU.

Table 10 Existing low flow resource availability status and target low flow resource availability status for the River Idle Water Resource Management Unit.

| Associated main river | Resource Availability Status | | | | Comment |
|-----------------------|------------------------------|------------------------|-----------------------|-----------------------|---|
| | Individual WRMU status | Integrated WRMU status | Target status in 2010 | Target status in 2016 | |
| River Idle | Over abstracted | Over abstracted | Over licenced | Over licenced | Due to the large resource deficit we wish to move towards the target status over the duration of the CAMS cycle |



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Map 7 Shows the location of sites and features that may affect abstraction licence/water availability.

This means that for new licences:

- there will be a presumption against the issue of new licences within the River Idle WRMU unless they can be demonstrated to be of environmental benefit;
- any licence that is issued will be subject to the common end date for the Idle and Torne CAMS area, typically 31 March 2014.

and for **existing licences:**

- there will be a presumption of renewal subject to local considerations and the main principles of abstraction licensing, as described in section 3, above. Specifically, applicants will be required to demonstrate that quantities applied for are fully justified and how water will be used in an efficient manner;
- we will encourage licence holders to undertake water audits and implement water efficient technologies and techniques. We will provide timely and useful information to licence holders. Please see Appendix 1 Water efficiency contacts;
- we will continue to encourage and work with public water suppliers in investigating and implementing demand management techniques within the WRMU. This work will need to be implemented through both the Environment Agency and water companies' water resource plans. We will encourage the water companies in this CAMS area to undertake water efficiency initiatives and will ensure information is readily available to their customers. Please see Appendix 1 Water efficiency contacts;
- we will encourage licence holders to reduce licensed quantities in line with their actual abstraction needs;
- licences will be issued to the common end date for the Idle and Torne CAMS area, typically 31 March 2014.

How much water is available and what restrictions might apply

There will be a presumption against the issue of new licences and variations to existing licences that would increase either the amount of abstraction or the amount of water lost from the catchment (ie increase the consumptiveness of licences). All abstraction licence applications will be subject to an assessment to take account of any local issues and granted on a first-come-first-served basis.

Although there is a presumption of renewal for existing time-limited licences, as described in section 3 above, applicants will be required to demonstrate a continued justification of need for the licence and that the water will be used in an efficient manner.

Additional local information specific to this WRMU

Were licence holders to abstract the full quantities they are legally allowed to, in the lower reaches the River Idle WRMU would be over abstracted for 87 per cent of the time during an average year. This means that abstraction would take flow that has been assessed to be required for the environment.

Through the CAMS process issues associated with abstraction during periods of high flow have also been highlighted rather than solely at low flows. For example the siltation of river gravels used by spawning fish in some of the tributaries of the River Idle can impact reproductive rates within the catchment leading to population decline.

Due to the over abstracted nature of this WRMU, we will seek to regain as much licensed water as possible for the environment in this area. The efficient use of water by both direct abstractors and public water supply customers will therefore be extremely important in achieving improvements. We will encourage licence holders to reduce the quantities they are licensed to abstract to reflect their actual abstraction needs to reduce the risk of increases in actual abstraction.

Table 11 Presence of features that may affect water availability in WRMU4-River Idle

| Feature | Comment |
|--|--|
| Water related Site of Special Scientific Interest (SSSI) sites | Barrow Hills Sandpit, Bevercotes Park, Birklands and Bilhaugh, Birklands West and Ollerton Corner, Castle Hill Wood, Chesterfield Canal, Clipstone Heath, Clumber Park, Crabtree Wood, Cresswell Craggs, Ginny Spring and Whitwell Wood, Hollinhill and Markland Grips, Lindrick Golf Course, Misson Drain, Misson Line Bank, Misson Training Area, Rainworth Heath, Rainworth Lakes, River Idle Washlands, Sherwood Forest Golf Course, Strawberry Hill Heaths, Sutton and Lound Gravel Pits, Thoresby Lake, Wellow Park, Welbeck Lake. |

Issues for consultation

- Is the licensing strategy proposed for the River Idle WRMU clear?
- Do you think the approach to abstraction management is appropriate for the River Idle WRMU? Would you like to make any additional or alternative suggestions?
- What are your views about seeking resource recovery in this area and the methods proposed?
- Should resource recovery be applied across the whole of the Idle and Torne CAMS area, rather than solely to those units classed as either ‘over licensed’ or ‘over abstracted’ as proposed?
- We encourage all water users to make the most efficient use of water resources. Do you think we are achieving this? If not how do you think we can better achieve this

4.5 Water Resource Management Unit 5- River Torne

Water Resource Management Unit 5 (WRMU5) includes the River Torne and the drain network which combine to form Three Rivers, together with the Hatfield groundwater management unit of the Sherwood Sandstone aquifer that underlies this area. Map 8 shows the location of sites and features that may affect abstraction licence/water availability.

Our proposals

The water resource availability status of this WRMU is over abstracted, through much of the flow range not solely at low flows. As shown in Table 9 the target status for this WRMU in 2010 is over licensed. This would required a reduction in actual abstraction from both surface and groundwater sources.

The target status is the outcome of the sustainability appraisal process, through which we considered a number of different options. If you would like more

information about the sustainability appraisal process and how we came to this decision please refer to Chapter 3 of the technical document on the attached CD.

Strategy for new and existing licences

The strategy for this WRMU is to move towards the status of over licensed. We will seek reductions in both licensed quantities and actual abstraction within the River Torne WRMU.

- there will be a presumption against the issue of new licences within the River Torne WRMU unless they can be demonstrated to be of environmental benefit;
- any licence that is issued will be subject to the common end date for the Idle and Torne CAMS area, typically 31 March 2014.

and for **existing licences**:

- there will be a presumption of renewal subject to local considerations and the main principles of abstraction licensing, as described in section 3, above. Specifically, applicants will be required to demonstrate that quantities applied for are fully justified and how water will be used in an efficient manner;
- we will encourage licence holders to undertake water audits and implement water efficient technologies and techniques. We will provide timely and useful information to licence holders. Please see Appendix 1 Water efficiency contacts;
- we will continue to encourage and work with public water suppliers in investigating and implementing demand management techniques within the WRMU. This work will need to be implemented through the Environment Agency and water companies’ water resource plans. We will encourage the water companies in this CAMS area to undertake water efficiency initiatives and will ensure information is readily available to their customers. Please see Appendix 1 Water efficiency contacts;
- we will encourage licence holders to reduce licensed quantities in line with their actual abstraction needs;
- licences will be issued to the common end date for the Idle and Torne CAMS area, typically 31 March 2014.

Table 12 Existing low flow resource availability status and target low flow resource availability status for the River Torne Water Resource Management Unit.

| Associated main river | Resource Availability Status | | | | Comment |
|-----------------------|------------------------------|------------------------|-----------------------|-----------------------|---|
| | Individual WRMU status | Integrated WRMU status | Target status in 2010 | Target status in 2016 | |
| River Torne | Over abstracted | Over abstracted | Over licenced | Over licenced | Due to the large resource deficit we wish to move towards the target status over the duration of the CAMS cycle |

How much water is available and what restrictions might apply

There will be a presumption against the issue of new licences and variations to existing licences that would increase either the amount of abstraction or the amount of water lost from the catchment (ie increase the consumptiveness of licences). All abstraction licence applications will be subject to an assessment to take account of any local issues and granted on a first-come-first-served basis.

An exception to the above presumption exists with a small area around Doncaster town centre which has been subject to rising groundwater levels, following reductions in industrial abstraction from the Sherwood Sandstone aquifer. This area covers part of the Hatfield groundwater unit in the Idle and Torne CAMS and extends into the Don and Rother CAMS area. The area is collectively referred to as the Doncaster Sub-Unit. The rising groundwater contrasts with the remainder of the Hatfield unit, where historical abstraction has led to a fall in groundwater levels and depletion of baseflow. Within this small area, we will consider applications for new licences up to a maximum licensable resource of 1 Ml/d. This figure will be reviewed when we update the Nottinghamshire-Doncaster groundwater model. Any licences issued in the Doncaster Sub-Unit will be time limited to a CAMS Common End Date of 2014.

Although there is a presumption of renewal for existing time-limited licences, as described in section 3 above, applicants will be required to demonstrate a continued justification of need for the licence and that the water will be used in an efficient manner.

Additional local information specific to this WRMU

Were licence holders to abstract the full quantities they are legally allowed to, in the lower reaches the River Torne WRMU would be over abstracted for 63 per cent of the time during an average year. This means that abstraction would take flow that has been assessed to be required for the environment.

Due to the over abstracted nature of this WRMU, we will seek to regain as much licensed water as possible for the environment in this area. The efficient use of water by both direct abstractors and public water supply customers will therefore be extremely important in achieving improvements. We will encourage licence holders to reduce the quantities they are licensed to abstract to reflect their actual abstraction needs to reduce the risk of increases in actual abstraction.

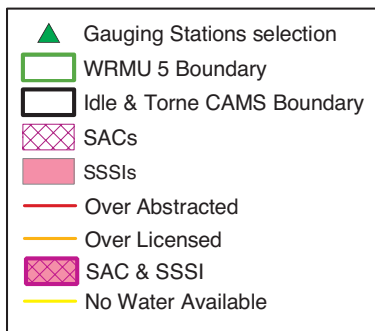
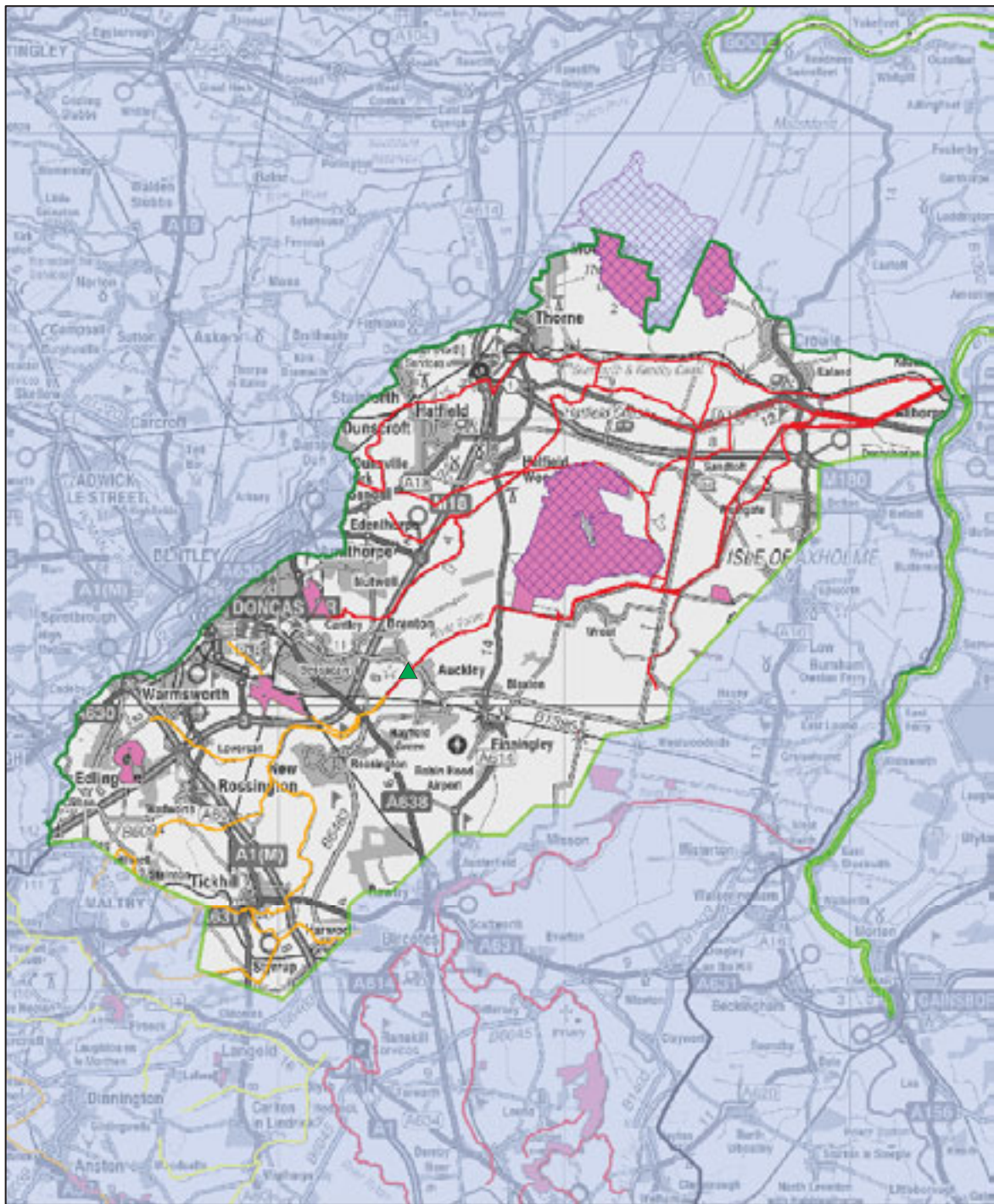
Issues for consultation

- Is the licensing strategy proposed for the River Torne WRMU clear?
- do you think the resource recovery options are appropriate? Would you like to make any additional or alternative abstraction management suggestions?
- should resource recovery options be applied across the whole of the Idle and Torne catchment, rather than solely to those units classed as either 'over licensed' or 'over abstracted' as proposed?
- what are your views about seeking resource recovery in this area and the methods proposed?
- we encourage all water users to make the most efficient use of water resources. Do you think we are achieving this? If not how do you think we can better achieve this?

Table 13 Presence of features that may affect water availability in WRMU5-River Torne

| Feature | Comment |
|--|---|
| Water related Site of Special Scientific Interest (SSSI) sites | Belshaw, Crowle Borrow Pits, Edlington Wood, Epworth Turbary, Hatfield Chase Ditches, Hatfield Moors, Haxey Grange Fen, Haxey Turbary, Potteric Carr, Rush Furlong, Sandall Beat, Thorne, Crowle and Goole Moors. |
| Water related Special Area of Conservation (SAC) | Thorne Moors SAC, Hatfield Moors SAC. |
| Water related Special Protection Area (SPA) | No* |

*NB: Thorne and Hatfield Moors SPA is designated for the presence of nightjar which is dependent on a dry heathland habitat. Consequently the interest feature is not water dependent and therefore does not directly relate to the CAMS process.



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Map 8 Shows the location of sites and features that may affect abstraction licence/water availability.

Summary of issues for consultation

We want you to be able to understand and contribute to the development of the Idle and Torne CAMS. That way, through an open and transparent process we will develop a shared strategy for managing water resources. We welcome your comments on any part of the proposed licensing strategy set out in Section 3. A summary of the issues on which we are looking for a response on are listed here.

- is the licensing strategy proposed for each WRMU clear?
- the Hills and Holes and the Sookholme Brook SSSI has been identified as vulnerable to the impact of abstraction and has therefore been listed in the RSA Programme catalogue of work as a site to be investigated. We are proposing not to pursue resource recovery for the Upper Meden WRMU until the RSA investigations have been completed. Do you agree with our approach? If not, please explain why.
- we believe that abstraction does not have any adverse impacts within the Upper Poulter WRMU. Do you agree? If not, please explain why.
- we believe that abstraction does not have any adverse impacts within the Oldcotes Dyke WRMU. Do you agree? If not, please explain why.
- do you think the approaches to resource recovery proposed are appropriate? Would you like to make any additional or alternative abstraction management suggestions?
- should resource recovery options be applied across the whole of the Idle and Torne catchment, rather than solely to those units classed as either 'over licensed' or 'over abstracted' as proposed?
- we encourage all water users to make the most efficient use of water resources. Do you think we are achieving this? If not how do you think we can improve this?

5.0

These are the actions that we will undertake in the next 6 years to implement this strategy

Strategy Actions

Table 14 outlines what we will do to assist in water resource management during the lifetime of the strategy.

| Description, aim and comments | WRMU/GWMU | Start | Finish | External partners |
|---|--|---------|---------|---|
| The long-term and significant abstraction pressures within the catchment have led to a complex system of hands off flow conditions. This has been highlighted by the CAMS as an area that needs to be investigated with a view to rationalising the existing abstraction controls within the catchment by simplifying and streamlining the number of conditions. Due to the complexity and extent of the work that would be required it would be inappropriate for us to propose and implement a revised system were we to have insufficient confidence. We therefore propose that a parcel of work should be undertaken with the aim of enabling a revision of the existing system when this CAMS is reviewed. | All | 2006 | 2010 | Licence holders |
| We will continue to review the pressures associated with individual abstraction licences through the Restoring Sustainable Abstraction Programme. | All | Ongoing | Ongoing | Natural England Licence holders |
| We will continue the Review of Consents under the Habitats Directive for Hatfield and Thorne Moors SACs. Stage 3 of the Review of Consents has been signed off with progression to Stage 4. | WRMU5 – River Torne | Ongoing | 2008 | Natural England |
| We will continue to work with our partners on the River Idle Washlands SSSI Water Level Management Plan (WLMP). A WLMP is scheduled to be completed and implemented to achieve favourable condition for the site by 2010. | WRMU4 – River Idle | Ongoing | 2010 | Natural England Nottinghamshire Wildlife Trust Internal DrainageBoards |
| We will continue to work with our partners on the Hatfield Moors SSSI Water Level Management Plan (WLMP). A WLMP is scheduled to be completed and implemented to achieve favourable condition for the site by 2010. | WRMU5 – River Torne | Ongoing | 2010 | Natural England Internal Drainage Boards Yorkshire Water Services |
| We will continue to promote water efficiency to licence holders with the aim of reducing abstraction within the CAMS area. We will also seek reductions in licensed and actual abstractions. | WRMU4 – River Idle and WRMU5 – River Torne | Ongoing | Ongoing | Licence holders |
| Routine sampling programmes to monitor fisheries, macrophytes and macroinvertebrates will continue and will be subject to evaluation and review in order to provide the best information for CAMS | All | Ongoing | Ongoing | |
| The Nottinghamshire-South Yorkshire groundwater model will be completed for use during the next review of the Idle and Torne CAMS. | All | Ongoing | 2007 | |
| We will review the Memorandum of Understanding between the Environment Agency and British Waterways about the operation of the Chesterfield Canal and its interaction with the Rivers Ryton and Idle. | WRMU4 – River Idle | Ongoing | 2009 | British Waterways |

6.0

The aim of CAMS is a shared strategy for the sustainable management of water resources within a catchment. We are also promoting a more consistent and structured approach to local water resource management. This applies to all CAMS that we are developing across England and Wales.

How this strategy was developed

6.1 Overview of the CAMS process

The same process is being used to develop all CAMS. There are five main stages in the production of a CAMS. These are:

1. an assessment of the water resource availability calculated using the Resource Assessment and Management Framework (RAM Framework);
2. an assessment of the pros and cons of the proposed water management strategy known as the sustainability appraisal;
3. consultation;
4. the publication of the CAMS;
5. implementation of the strategy over the following six years.

An assessment of water resource availability – RAM Framework

This is a detailed investigation into water resource availability in each CAMS area. An assessment is made for a number of smaller units in each CAMS. The method we use to determine if water is available for abstraction is not open to consultation. Abstraction licence holders and interested parties are invited to provide information about the CAMS area that may inform our decision.

An assessment of the pros and cons of the proposed water management strategy – Sustainability Appraisal

This is a detailed investigation into the pros and cons that a number of management options will have on the CAMS area. The impact on the economy, selected social criteria, natural resources and the environment are all considered during this process. The option that best meets the requirements of all four considerations is adopted as the management strategy for the CAMS.

Consultation

Consultation is an integral part of the CAMS process. It ensures that all interested parties can see clearly how this strategy is developed and have an opportunity to get involved. There are a number of occasions during the process that the public is invited to comment. Initially an awareness-raising leaflet is produced to let people know that the CAMS for their area has been started. In the leaflet there is a general request for information to help us carry out the RAM Framework. A Stakeholder Group is set up with representatives from groups and individuals with an interest in the management of water in the catchment. The role of this group is to advise us during the process. This document offers you the chance to comment on our proposed strategy.

Publication and implementation of the CAMS

Following consultation the CAMS is finalised and published. The strategy is valid for six years and during this time changes to existing licences and new licences will be determined using the licensing policies set out in the CAMS strategy document, subject to the normal licensing considerations. After six years the strategy will be reviewed and updated. It will then be re-published and will again be valid for another six years.

During the six-year period of the CAMS, we will review progress against the strategy. This will include a review of the process so those lessons that we learn can be incorporated into the production of new CAMS.

More detail on the resource assessment and sustainability appraisal for the Idle and Torne CAMS is provided in Section 6.2 and Section 6.3. The next section provides details about the Idle and Torne CAMS area.

6.2 Resource assessment and resource availability status

To manage water resources effectively, we need to understand how much water is available and where it is located. We do this by assessing resources, including surface water and groundwater.

We use water in many different ways. The most significant uses are general agriculture, spray irrigation, industrial use, power generation and water supply. For each different use, there may be great variation in the amount of water returned to the area from which the water was abstracted. Where water loss is high, we describe the abstraction as consumptive. This may restrict the availability of water for these purposes, unless a significant proportion of the abstracted water is returned to the water source close to the point of abstraction.

If you want to abstract water you need to know what water resources are available within a catchment and where abstraction for consumptive purposes is allowed. To provide this information we have developed a classification system. This gives a “resource availability status” and indicates:

- the relative balance between committed and available resources;
- whether licences are likely to be available;
- areas where abstraction needs to be reduced.

Licence applications still have to go through the normal licensing process. More information on this process is in Annexe 2 of Managing Water Abstraction on the attached CD.

There are four categories of resource availability status, as shown in Table 14.

We must ensure that we assess and manage water resources consistently. To do this we have adopted a standard approach for use in all CAMS areas.

To make the process as effective as possible we start by breaking down the CAMS catchment into smaller areas with similar characteristics – known as units. We then develop an understanding of the water resources in the area and assess the surface water and groundwater resources. We use all these results to determine the final status of each unit in terms of resource availability.

Depending on the nature of the CAMS, we give these units different names. Where groundwater resources are significant, they are called GWMU. For surface water, they are known as Assessment Points. These units are the focus of our resource assessment and our licensing of abstractions.

Table 15 Resource availability status categories

| Indicative resource availability status | Licence Availability |
|---|---|
| Water available | Water is likely to be available at all flows including low flows. Restrictions may apply. |
| No water available | No water is available for further licensing at low flows. Water may be available at higher flows with appropriate restrictions. |
| Over-licensed | Current actual abstraction is such that no water is available at low flows. If existing licences were used to their full allocation they could cause unacceptable environmental damage at low flows. Water may be available at high flows, with appropriate restrictions. |
| Over-abstracted | Existing abstraction is causing unacceptable damage to the environment at low flows. Water may still be available at high flows, with appropriate restrictions. |

Resource assessment

Surface water assessment

Before we can assess the surface water resource, we have to decide how much of the river flow we want to protect – our ecological river flow objectives.

These objectives are based on the sensitivity of the local ecology to variations in river flow. Or, to put it another way, how vulnerable the river is to the effects of removing water. We also take account of other flow needs. Once we know the minimum flow that we should aim to protect, we can calculate the amount of water that is available for abstraction. These are undertaken at assessment points on the main rivers.

The first step is to give the reaches scores that represent their sensitivity to abstraction. The bands are Very High (VH), High (H), Moderate (M), Low (L) and Very Low (VL).

Table 15 shows the environmental weighting for each surface water assessment point in the Idle and Torne CAMS area.

Next we look at what would happen to river flows if all licences were fully utilised (i.e. the full licensed quantity was being abstracted). We compare the results with our river flow objectives. There will be a surplus, a balance or a deficit.

This availability of water gives some indication as to whether new licences will be granted for the WRMU

or whether we need to reduce water abstraction. However, there are significant variations in flow throughout the year. If we classify an area as over-licensed or over-abstracted, this generally indicates that no new licences will be granted. However, this applies only at times of low flow. When flows are higher, there may be some water available for abstraction. Our classification really relates to resource availability at low flow.

Variability of flow is necessary for many aquatic species. In order to maintain this flow variability, we sometimes include HOF conditions in our abstraction licences. These conditions require you to stop or reduce abstraction when the flow in the river falls below a specified quantity. When river flows are above this quantity, abstraction can take place. Low flows will occur more frequently during the summer months.

In order to maximise abstraction while maintaining the variability of flow, we stagger the quantities at which HOF conditions come into force. Licences are issued on a first-come, first-served basis. The first licences granted have the least restrictive HOF condition. As more licences are granted, more restrictive HOF conditions are used. This maintains variable flows in the river.

If you are thinking of applying for a new abstraction licence, you will want to know how likely the licence is to be granted, and to what extent any HOF condition

Table 16 Environmental weighting scores for each assessment point

| Assessment point | Assessment point name | Environment weighting score |
|------------------|---|-----------------------------|
| AP1 | Upper Meden | Moderate |
| AP2 | River Maun & Meden at Conjure Alders | Moderate |
| AP3 | Upper Poulter | Moderate |
| AP4 | Upper Ryton | Moderate |
| AP5 | Oldcoates Dyke | Low |
| AP6 | River Idle at Bawtry Bridge | Low |
| AP7 | River Idle Level Dependent Management Unit | High ecological value* |
| AP8 | River Idle at West Stockwith | Low |
| AP9 | River Idle at Auckley | Low |
| AP10 | Isle of Axholme Level Dependent Management Unit | High ecological value* |
| AP11 | Three Rivers at Keadby | Low |

* The River Idle and Isle of Axholme Level Dependent Management Units were assessed separately under different criteria, referred to as local 'ecological value' under the methodology used. Environmental weighting scores were not therefore applied to these units.

would affect your right to abstract water. We show the likely impact of a HOF condition as a percentage. This indicates how much of the time you may be able to abstract water. It is based on the minimum amount of time over the long term that the scenario flow (the flow if all licences were fully utilised) exceeds our river flow objective (the level of river flow we wish to protect).

Our assessments assume that all licences are fully used. However, many licences are not used fully, so the real resource availability can be different. If we decide that an area is over-licensed, we use data from actual abstraction to establish whether the status should be over-abstracted – where actual flows are lower than our river flow objectives. In over-abstracted areas abstraction is already unsustainable. In over-licensed ones the classification represents the potential for damage should the full licensed amount be abstracted.

In the north east of the CAMS area, the Idle and Torne catchments are level dependent environments. These are made up of a network of raised river channels flowing (although often ponded) above the level of surrounding land. The surrounding land has a network of drainage ditches, which remove water from the low-lying land into the main river during the winter and provide an irrigation resource during the summer.

Our assessment determines the balance of water within these channels by taking account of the requirements of the drain management regime whilst protecting the needs of local ecology. The impact of the level dependent environment is expressed as a demand on or supply to the main river, depending on whether the management levels within the channels need to gain or lose water. The impact of the level dependent environment is included in the resource assessment to define the resource availability status at the downstream assessment point on the main river.

Groundwater assessment

To assess groundwater five tests are proposed to determine groundwater resource availability. These are:

- Test 1:** Comparison of inputs (recharge by rain and lateral groundwater flow) to outputs (abstraction and baseflow);
- Test 2:** Comparison of environmentally acceptable summer baseflow to actual summer baseflow;
- Test 3:** Observed trends in groundwater levels or quality;

Test 4: Research, using historical maps or other evidence;

Test 5: Optional local tests as a further check on the groundwater resource availability.

Integrating our assessments of surface water and groundwater

We integrate our results on resource availability for both the river reach and the GWMUs. This classification uses both the groundwater and surface water assessment results as well as subsequent checks. The results of the separate surface water and groundwater assessments are available in the Idle and Torne CAMS technical document.

Detail of each Water Resource Management Unit

Water Resource Management Unit 1 – Upper Meden

WRMU1 covers an area of 60km² of the surface water catchment of the River Idle, stretching from the headwaters of the River Meden north of Sutton in Ashfield to the Environment Agency gauging station at Church Warsop north of Mansfield. The unit includes the Mansfield Groundwater Management Unit (GWMU) of the Lower Magnesian Limestone aquifer. The preliminary resource assessment result for WRMU1 was ‘water available’, overridden to ‘no water available’. The override recognises that although there are no abstraction-related problems within the WRMU, its resource surplus is required to meet more critical river flow objectives and abstraction demands further downstream in the River Idle catchment.

Water Resource Management Unit 2 – Upper Poulter

WRMU2 covers an area of 32km² of the surface water catchment of the River Idle, stretching from the headwaters of the River Poulter west of Shirebrook to the Environment Agency gauging station at Cuckney. The unit includes the Bolsover Groundwater Management Unit (GWMU) of the Lower Magnesian Limestone aquifer. The preliminary resource assessment result for WRMU2 was ‘water available’, overridden to ‘no water available’. The override recognises that although there are no abstraction-related problems within the WRMU, its resource surplus is required to meet more critical river flow objectives and abstraction demands further downstream in the River Idle catchment.

Water Resource Management Unit 3 – Oldcotes Dyke

WRMU3 covers an area of 85km² of the surface water catchment of the River Idle, stretching from the headwaters of the Oldcotes Dyke west of Maltby to its confluence with the River Ryton near Blyth. The unit includes the Maltby Groundwater Management Unit of the Lower Magnesian Limestone aquifer.

The preliminary resource assessment result for WRMU3 was 'water available', overridden to 'no water available'. The override recognises that although there are no abstraction-related problems within the WRMU, its resource surplus is required to meet more critical river flow objectives and abstraction demands further downstream in the River Idle catchment.

Water Resource Management Unit 4 – River Idle

WRMU4 covers an area of 547km² of the surface water catchment of the River Idle. The unit contains the River Maun and its tributaries including Rainworth Water, the River Meden downstream of WRMU1, the River Poulter downstream of WRMU2 and the River Ryton catchment, excluding the Oldcotes Dyke. The WRMU includes the Ravenshead North, Thoresby, Retford and Blyth Groundwater Management Units (GWMU) of the Sherwood Sandstone aquifer. The preliminary and integrated resource assessment for WRMU4 was 'over abstracted', with the exception of the River Ryton upstream of Worksop which was classed as 'over licensed'.

Water Resource Management Unit 5 – River Torne

WRMU5 covers an area of 356km² of the CAMS area. The unit comprises the flowing watercourses of the upper reaches of the River Torne and the Isle of Axholme Level Dependent Management Unit (LDMU),

together with the Hatfield Groundwater Management Unit (GWMU) of the Sherwood Sandstone aquifer, which includes the Doncaster sub-unit. The preliminary and integrated resource assessment for WRMU5 was 'over abstracted'.

6.3 The sustainability appraisal

We have to make sure that the impact of our work is proportional to the benefits that the CAMS process brings. To do this we make an assessment against the government's four objectives for sustainable development, which relate to the environment, economy, society and resource use. We follow a largely qualitative approach to decide what the resource availability status for each water resource management unit should or could be at the end of each six-year cycle (Tier 1). We do this for all units in all CAMS areas. We also look at how we could improve water resources, by seeing how different options affect sustainability (Tier 2). We do this to determine the most sustainable options for managing the catchment in the future. Where necessary, these include options to recover resources. More information on the sustainability appraisal process is provided in Managing Water Abstraction, which is on the attached CD.

7.0

To help you understand some of the issues that we are asking you to comment upon - you may wish to know more about the character of the Idle and Torne catchments. This section contains background information on the Idle and Torne CAMS area. More detail can be found in the Idle and Torne CAMS technical document.

The Idle and Torne CAMS area

7.1 Introduction to the CAMS area

Draining adjacent catchments, the rivers Idle and Torne are two major tributaries of the tidal reach of the River Trent. The River Maun and the River Meden rise west of Mansfield, in the south west of the CAMS area, flowing in a north-easterly direction. At their confluence with the River Poulter near Elkersley, south of Retford, the watercourse becomes the River Idle. After its confluence with the River Ryton south of Bawtry, the River Idle takes an easterly course to its confluence with the Trent at West Stockwith. The River Torne rises to the east of Maltby, flowing around the south-eastern outskirts of Doncaster before turning east to its confluence with the Trent at Keadby.

7.2 Hydrology and hydrogeology

Surface watercourses

The Idle drains a catchment area of approximately 724km² and the Torne an area of approximately 356km². The average annual rainfall for the area is 620mm (based on rainfall data from the period 1961-1990). This is less than the average annual rainfall for England of 897mm. Annually an average 200mm of precipitation finds its way into the catchments' rivers through runoff. Rainfall is evenly spread over the catchments.

Rising in the Huthwaite area the River Meden flows in an easterly direction, draining the hilly west and south of the area. It feeds a number of ponds along the course. The middle reach of the River Meden feeds Thoresby Lake. The River Maun rises at Sutton in Ashfield, taking a north-easterly course through Mansfield. The main tributaries of the River Maun are Rainworth Water, Vicar Water and Caldwell Brook. The confluence of the Rivers

Meden and Maun is located at Conjure Alders to the north of Ollerton. Approximately 100 metres downstream of the confluence the rivers divide again and flow as separate watercourses, meeting again just upstream of the confluence with the River Poulter.

At Rainworth Lakes Severn Trent Water has a project under the third phase of the water company' Asset Management Plan (AMP3) as part of the joint Environment Agency and water company National Environment Programme. This scheme seeks to maintain flows in Rainworth Lakes SSSI by augmentation of low flows through the addition of groundwater.

The River Poulter rises at Scarcliffe and flows in a north-easterly direction to Cuckney. After the confluence with Owl Sick, the River Poulter feeds a number of small lakes and ponds including The Lake, at Nether Langwith, and Cuckney Dam.

The confluence of the Rivers Poulter, Maun and Meden forms the River Idle at Gamston. The River Idle flows in a northerly direction through Retford. The Rivers Ryton and Idle meet at Bawtry.

Rising in the Kiveton area between South Anston and Shireoakes the River Ryton flows east to Worksop. The main tributaries of the upper reaches are the Anston Brook, Bondhay Dyke, Pudding Dike and Broadbridge Dyke.

The Chesterfield Canal flows from Kiveton Park in the west, eastwards through Worksop. Harthill and Pebley Reservoirs feed the canal. These reservoirs impound the catchment of the Broadbridge Dyke, effectively diverting

water from this area of the catchment to the River Trent via the canal. The excess overflow from the canal is discharged into Pudding Dike, returning water to the Ryton catchment. The canal flow is augmented by abstraction from the River Ryton at the Brancliffe Feeder west of Worksop. The Chesterfield Canal flows eastwards towards Retford and then north and east to its discharge into the River Trent at West Stockwith. At Kilton and Retford water is transferred from the River Ryton and the River Idle, respectively, into the canal.

There is a discharge into the River Ryton at Manton, on the eastern outskirts of Worksop. This discharge is intended to alleviate low flows in the River Ryton caused by over licensing of groundwater abstraction in the Blyth Sandstone GWMU. The lowering of the groundwater levels has resulted in a loss of baseflow to surface water, due to the particularly high degree of connectivity between the Sherwood Sandstone and the River Ryton. Originally the compensation water was taken from the colliery, but in 2004 a borehole was specifically drilled and licensed to provide compensation discharges following the re-development of the colliery. Severn Trent Water Ltd operates the compensation, which takes water from the Sherwood Sandstone and directly discharges in to the River Ryton.

The Oldcotes Dyke rises as the Newhall Dyke at Maltby and the Brookhouse Dyke at Thurcross. The two watercourses converge at Roche Abbey to form the Firbeck Dyke, which becomes the Oldcotes Dyke. The Oldcotes Dyke joins the River Ryton at Blyth.

A number of conservation sites where there are concerns about the impact of abstractions on water levels or flows and hence the ecological features have been identified in the River Idle catchment. These sites Welbeck Lake, Clumber Park and Sutton and Lound Gravel Pits are SSSIs designated under the Wildlife and Countryside Act 1981. The sites have been reviewed under the National Environment Programme (NEP) and included in the AMP 4 work programme, to investigate the effect of abstraction and lowered groundwater levels on the SSSIs from local groundwater abstractions for public water supply.

Downstream of Bawtry Bridge to the confluence with the River Trent at West Stockwith the low-lying land bordering the River Idle is artificially managed via a network of drains and a series of pumping stations and sluices. The area includes land to the north and south of the River Idle. To the south the area includes the drained land between the Chesterfield Canal and the River Idle. To the north the area includes the land between the Idle and the Warping Drain, including the Austerfield Drain. The low-lying drained area is connected to the River Idle at a number of points. Pumping from the low-lying area

in to the river occurs during periods of high water level, to avoid flooding. At Gringley Pumping Station water can be moved both ways from the drained areas in times of high water and to the drained area when water is required for irrigation (let back).

The Idle Washlands are a SSSI located adjacent to the River Idle, designated under the Wildlife and Countryside Act 1981. Four separate units of periodically flooded grassland are designated for populations of wintering and breeding birds. The washlands are closely related to the river, as the habitat requires high water levels and periodic inundation from flooding by the river. Recent and historic change in the management of the river for flood defence, drainage of the land and lowering of groundwater has contributed to a decline in the condition of the SSSI. The site has been included in the NEP and is an AMP4 project, investigating the effect of abstraction and lowered groundwater levels on the SSSI from local groundwater abstractions for public water supply. A water level management plan is being prepared by the Environment Agency, with the objective of improving the condition of the SSSI by 2010.

The River Idle discharges into the River Trent, controlled at West Stockwith Pumping Station. Two vertical lift sluice gates and four electric pumps control water levels. This allows the prevention of flooding upstream by isolation of the Idle from the Trent. When water would not normally discharge into the Trent at high tide it can be pumped into the space between the two sluice gates. It also allows water movement to prevent eutrophication. When water levels are high enough in the River Idle water flows by gravity. Management at West Stockwith controls river flow and levels upstream in the River Idle.

The River Torne rises to the south of Tickhill from Sandbeck Lake and flows north-eastwards to Auckley. The main tributaries are the Paper Mill Dyke, Dadley Well Stream and Mother Drain. Flows in the River Torne are measured at the Environment Agency owned and operated gauging station at Auckley at which the flow restriction for the existing licensing strategy is based and which was used in the resource assessment.

From Auckley downstream to the confluence with the River Trent at Keadby is the Isle of Axholme, an area of low-lying land that has been extensively drained to improve the quality of the agricultural land. Water levels in the low-lying drained areas are managed to minimise flooding and provide water for irrigation during the summer. There are a number of main watercourses in addition to the River Torne. The North Engine Drain, Hatfield Waste Drain, River Torne, South Engine Drain and Folly Drain combine to form the Three Rivers at Pilsfry Junction, which then continue to Keadby. The

Hatfield Waste Drain becomes the northern-most channel of the Three Rivers. The River Torne and the North Engine Drain combine to form the central channel and the Folly Drain and the South Engine Drain form the southern channel. Downstream of Pilfrey Junction the North and South Soak combine with the Three Rivers.

The Stainforth and Keadby canal flows to the east through the north of the Isle of Axholme Level Dependent Management Unit (LDMU). It does not have any interaction with this CAMS area.

The main watercourses (high level carriers) flow in an easterly or north-easterly direction. These watercourses are connected to the lower lying drained areas at a number of pumping stations. The pumping stations control water movement and water levels. Pumping from the low lying area in to the high level carriers occurs during periods of high water level, to avoid flooding. At a number of pumping stations water can be moved both ways from the drained areas in times of high water and to the drained area when water is required for irrigation (let back).

Hatfield Moor is located entirely within the Torne catchment whilst Thorne Moor borders to the north. These areas are designated under the European Union Habitats and Birds Directive as a Special Protection Area for populations of Nightjar and a Special Area for Conservation as lowland raised bog. A combination of influences affect the condition of the sites, this includes drainage, peat removal and lowered groundwater levels. The habitats require a high water level to maintain and improve the habitat and are under the ownership of Natural England. The sites have been reviewed under the National Environment Programme (NEP) and included in AMP 4 investigations. These investigations are re-assessing if local public water supply groundwater abstractions are adversely affecting the site. A water level management plan is being prepared by the Environment Agency, with the objective of improving the condition of the SSSI by 2010.

The River Torne and the other main carriers converge and discharge to the River Trent at Keadby Pumping Station. Water can be discharged at Keadby Pumping Station by gravity through six concrete culverts. When the level of the Trent is higher than Three Rivers six pumps can discharge water into the Trent.

Geology and groundwater

The Environment Agency classifies aquifers as major, minor or non-aquifers. Two major aquifers are present in the Idle and Torne CAMS area. Running north to south through the western area of the catchments the Lower Magnesian Limestone aquifer outcrops, underlying the

headwaters of the River Torne and the tributaries of the River Idle, providing baseflow to the surface watercourses. Although classed as a major aquifer, yields from the limestone can be variable due to the fissured nature of the geology. To the east the younger Triassic Sherwood Sandstone outcrops, overlying the limestone as it dips to the east. The Sherwood Sandstone is the dominant geology in the catchment. The aquifer provides a strategically important groundwater resource, with significant public water supply, industrial and agricultural abstractions. There are extensive fracture systems, which are particularly enhanced in parts of Nottinghamshire where mining subsidence has affected the overlying aquifer. Substantial areas of the sandstone aquifer lie to the east of the outcrop area, confined beneath the overlying Mercia Mudstones.

7.3 Conservation

The Idle and Torne catchments have been subject to significant river and floodplain modification over many years. The evolution and maintenance of a comprehensive land drainage system, primarily for arable agriculture, has been to the detriment of the biodiversity interest of the catchment. Much of the land within the catchments has long since lost its original function as floodplain and is now heavily drained and many of its rivers heavily modified.

However, despite the extensive modification the catchment still boasts some areas of valuable riverine and wetland habitat that support rare species. Those areas of valuable riverine and wetland habitat have been designated Sites of Special Scientific Interest (SSSIs). There are forty-five SSSIs with features that are water dependent to some degree, although many of these are degraded and require more sympathetic management to restore their former biodiversity value. There are also areas of internationally important wetlands with Thorne and Hatfield Moors Special Areas of Conservation (SACs) designated primarily for their lowland raised bog habitat that is currently being restored following the cessation of peat milling. Other areas that are notable at a local level have been designated Sites of Importance to Nature Conservation (SINCs).

The designated habitats are prime examples within the catchment, but it is vital that the wider countryside, including smaller wetlands and less diverse stream reaches, is also protected – thereby linking the larger more diverse areas and enabling wildlife to flourish throughout the catchment.

The River Idle catchment predominantly comprises arable land. Sherwood Forest, much of which is today owned and managed by the National Trust, lies within

the area, supporting five of the largest SSSIs in the CAMS area. The Idle catchment has a history of coal mining and sand and gravel extraction, activities which have led to the development of areas of wetland interest such as the flooded gravel pits and associated habitat of Sutton and Lound SSSI.

The watercourses of the River Torne catchment are more significantly modified. The Torne itself has undergone significant re-sectioning along much of its length, similar to that in the lower reaches of the River Idle. Thorne and Hatfield Moors are located within the Torne catchment. Hatfield Chase Ditches SSSI is designated for their aquatic and emergent plant interest. Potteric Carr SSSI on the outskirts of Doncaster is also an important wetland habitat within the area.

Although naturally functioning floodplain wetlands would once have dominated the landscape in this lowland catchment there are now only remnants of this habitat left. The most significant modification in the Idle and Torne catchment is the established pumping regime of the lower reaches that has resulted in huge changes to the water regime and reduced the inundation of the floodplains, isolated from the watercourses in places by the construction of flood defences. The River Idle Washlands SSSI downstream of Bawtry is the principal area of floodplain wet grassland in the catchment. The SSSI once covered 250 hectares of grazing pasture with a high spring and summer water table and regular, shallow winter flooding. Following land drainage and flood defence works in the early 1980s the SSSI area was reduced to 88 hectares. The area continues to be impacted by these issues and abstraction, and action is required to retain its wet grassland communities and associated wildfowl and wader interest with work underway under the NEP and AMP schemes together with the production of a water level management plan (WLMP).

Despite the modifications and changes in water regime, the catchment does support populations of water vole, whilst surveys show that otter is returning to the catchment, particularly in the lower reaches of the River Torne. Isolated populations of great crested newts have been recorded in ponds with adjacent foraging areas and populations of native crayfish are sparsely distributed within the catchment. A variety of over-wintering and breeding wildfowl and wading birds such as wigeon, redshank and lapwing use the wet grasslands of the Idle Valley and their numbers should increase following implementation of the WLMP. Such birds require the retention of water on floodplain meadows to ensure an adequate invertebrate food supply is available to them. Many of the drains support aquatic and emergent plants of local importance and there are isolated records of rare wetland invertebrates including

the hairy hawk dragonfly and Biodiversity Action Plan (BAP) beetle species such as the mire pill beetle within the catchment.

All of these listed species are reliant on the maintenance of their wetland habitats for survival and suffer if subjected to over abstraction or drainage due to impacts on their habitat or food supply.

7.4 Ecology & fisheries

Within the Idle and Torne CAMS area we carry out ecological quality monitoring at a range of sites. The assessment method with the longest data set focuses on the diversity of macroinvertebrates, which determines the severity and possible causes of environmental stress. Different species of invertebrates have different levels of tolerance to pollution. Analysis of the types of species present in a river can therefore give a good indication of the water quality. Surveying of macrophytes (macroscopic plants) and diatoms (unicellular algae) are also undertaken in the catchment to assess the extent of any eutrophication (nutrient enrichment).

The general ecological status in this catchment, as represented by the macroinvertebrate fauna varies from good in the main rivers such as the Torne and Idle to moderate and poor in some of the level dependant areas towards the north of the catchment. There are localised stretches of the river network that report moderate quality located downstream of the major sewage effluent discharges and large urban areas.

The upper reaches of the River Maun are heavily culverted until Mansfield, supporting a fish community of cyprinids typical of slow-flowing watercourses as well as several species that would not naturally occur in the river but are escapees from online ponds and lakes. In the past, major fish kills have originated from Mansfield, usually associated with heavy rain and the operation of storm overflows. High ammonia problems have been evident in the past, associated with the sewage works at Mansfield where capital investments are anticipated to bring improvements. The poor riverine habitat and an over-engineered channel are perceived to be the major constraining factors for the fishery.

Upstream of Thoresby Lake in the River Meden, brown trout are the dominant species. Roach in the upper reaches are escapees from online ponds, joined downstream by cyprinids including chub, dace and gudgeon, whilst trout become scarce. As with the River Maun, poor riverine habitat and an over-engineered channel cause recruitment problems, exacerbated at low flows by abstraction with exposure of spawning gravels and fry habitat. Sedimentation of spawning gravels is an additional problem in the River Meden, with winter flows

reduced by abstraction, unable to flush out sand and other fines that wash off the agricultural lands.

Upstream of Welbeck Lake, the River Poulter has a good head of wild brown trout. Running through the large estate lakes of Welbeck and Clumber the principal species are cyprinids typical of slow flowing or still water, together with pike and eels. Low summer flows result in a sluggish regime and siltation, seen particularly in the Norton area and downstream.

The upper reaches of the River Ryton and its tributary the Anston Brook contain only marginal fish communities. Joined by a series of small, cleaner tributaries, the Ryton is able to support a population of wild brown trout downstream to Worksop. Downstream of the town the river supports a diverse community of cyprinids typical of flowing waters, together with occasional trout. Spawning areas and fry habitat are reported to suffer in the Ryton as a result of abstraction, reduced flows allowing these important habitats to dry out routinely during all but the wettest summers. Exacerbated by siltation, a significant decline in fish populations is reported in the reach from Scofton to Serlby. However, the lower reaches of the Ryton are the only area where there is organised angling on the tributaries of the River Idle, where angling is typically light on the watercourses instead being concentrated on the many ponds and lakes.

The River Idle itself supports a varying community of cyprinids typical of both flowing and still waters. The Idle is a valuable fishery with organised angling from Gamston downstream to West Stockwith with both clubs and the Environment Agency having undertaken stocking. The lower reaches of the Meden and Poulter provide valuable spawning areas for a number of species living in the main river. However, as with the tributaries water depth and siltation of gravel beds can both be summer problems which compromise fish welfare, with higher water temperatures causing low dissolved oxygen the cause of a fish kill in the Mattersey area during summer 2006. Poor habitat and an over-engineered channel exacerbate low flow problems. There have been some records and reports of salmon in the River Idle, coinciding with a sustained period of low flow in the estuary. The Idle may, therefore, be a useful resource during these conditions, particularly with recent efforts to re-introduce salmon to the River Trent system.

The upper reaches of the River Torne primarily supports roach, dace and chub with a few gudgeon. Downstream of Torne Bridge, the river becomes a pumped system – the slower, deeper water supports roach, perch, pike bream, tench and eels. Whilst low flows effect recruitment in the upper reaches, downstream of Torne

Bridge the river supports a valuable fishery with a variety of angling clubs.

7.5 Industry & agriculture

Arable agriculture is the main land use within the Idle and Torne CAMS area, with uses including cropped land, set aside, grassland rough grazing and farm woodland. The main cropping activity within the area is the growing of cereals, which account for approximately two-thirds of the cropped area. Other general cropping includes the growing of oilseed rape and sugar beet. Potato and horticultural crops account for a relatively small proportion of the land area in arable production although the high water requirements of these crops mean they dominate in terms of demand for abstraction.

Although predominantly associated with arable agriculture, parts of the CAMS area support lowland livestock farming. Pig numbers account for the majority of livestock in the area with trends towards increasing specialisation, amalgamation and expansion of the main pig producers.

The East Midlands Development Agency report that Nottinghamshire, within which much of the CAMS area lies, has a diverse economy with a growing service industry. Important employers include the engineering, clothing and textiles and the food and drink sectors. The Idle and Torne CAMS area has historically supported numerous coal mines, an industry that has declined in line with national trends. Mineral resources within the CAMS area do continue to be heavily exploited with the extensive limestone, clay and sand and gravel deposits.

7.6 Water quality

The discharges to the rivers Idle and Torne and their tributaries consented under the Water Resources Act 1991, as amended by the Environment Act 1995, are from sewage treatment works (STW) and industrial sources. The biggest discharges are made from those STWs serving the large urban areas and these have the biggest impact on water quality. Treatment at these works has been improved over many years of AMP schemes but chemically, in terms of biochemical oxygen demand (BOD), ammonia and nutrients (primarily phosphate) they are still significant. This is especially found where they make up a large proportion of the dry weather flow in the downstream watercourse. Mansfield STW, for example, is the largest sewage works in CAMS area, consented for a dry weather flow of nearly 23 megalitres a day (Ml/d), discharging to the River Maun at a point where the dry weather flow is only 13Ml/d. Altogether there are 55 sewage works in the Idle and Torne catchment, although 28 of these serve small settlements and discharge less than 1Ml/d. Of the 36 consented discharges of trade effluent in the

CAMS area the vast majority are associated with mineral extraction, with 16 quarries and 12 collieries. The rest are a mixture of trades from carrot washing to fish farming. The quarries contribute very large volumes of water to river flow and, although they may deplete the aquifer, their effect on watercourses is mainly beneficial since most consist of clean groundwater abstracted to allow the minerals to be extracted dry. The colliery discharges are also largely beneficial on water quality at the moment where they are deep minewaters pumped to the surface. Minewater discharges present a risk due to the chloride they contain, although currently under control this can be a threat to fish and other aquatic species. Whilst mines are active the risk is minimal, when mines close and pumping is reduced there is potential for problems in the future. The remaining trade effluents can have localised significance but can not effect the wider catchment.

The water quality of the CAMS area has improved over recent time. This has mainly been due to the continuing effort to improve treatment works and reducing the number of combined sewer overflows. In addition, tighter regulation of discharging activities has also contributed to the improvement in water quality. Water quality improvements at specific sites are scheduled through the water industry Asset Management Plans (AMP), part of a periodic review process.

Water quality is assessed in terms of both chemical and biological parameters in accordance with the General Quality Assessment (GQA) scheme. GQA scores are a description of existing water quality based on BOD, Ammonia and Dissolved Oxygen levels, and range from 'A' to 'F'. Grade 'A' indicates the highest quality and 'F' the lowest. Rivers are sampled at key locations with respect to major discharges and tributary confluences.

The river quality of the Upper Meden at Church Warsop is GQA 'A', the highest quality. Upstream, below Shirebrook STW, the quality is lower at GQA 'B' and the Sookholme Brook is GQA 'C'. The marked improvement in water quality by Church Warsop is probably due to self-purification, together with dilution provided by the Leas Brook. By Conjure Alders at the first confluence of the rivers Maun and Meden the river quality is GQA 'C', having deteriorated from Church Warsop, upstream, by two grades. This is probably due to the influence of Warsop STW input of an average 2.8ML/d to the Meden and Mansfield, Rainworth, Bilsthorpe and Edwinstowe STWs, via Rainworth Water and the River Maun. These latter four works have a combined average daily flow of over 40ML/d.

The river quality of the Upper Poulter is GQA 'B' the second highest quality. Significant discharges upstream include 1.2ML/d average daily flow from Langwith STW

and a maximum 0.9ML/d from Langwith Fish Farm. The latter discharge is seasonal and so probably not as important as the sewage works. The river quality of the Upper Ryton is GQA 'B' also. Dinnington and Anston STWs upstream have a combined average daily flow greater than 7ML/d. The river quality of the Oldcotes Dyke is GQA 'C'. This probably reflects the input of Hooton, Hodsock and Maltby STWs upstream with a combined daily flow of over 15ML/d.

By Bawtry Bridge the river quality of the River Idle is GQA 'C'. This point includes the cumulative impacts of discharges to the upper Idle and its tributaries with many major sewage works discharging to it including Worksop (12.8ML/d), Retford (8.2ML/d) Clowne (3ML/d) and Cresswell (2.5ML/d). Downstream to West Stockwith the river quality of the Idle remains GQA 'C'. There are no significant inputs downstream of Bawtry indicating insufficient dilution between the two points and time for self-purification, to improve the quality before it is pumped into the Trent.

The river quality of the River Torne at Auckley is GQA 'C'. Upstream of this point there are seven STWs the largest being Balby, discharging to the Mother Drain tributary with an average daily flow of 7.7ML/d. Other significant works in the catchment are located at Branton with 4ML/d, Warmsworth with 3.3ML/d and Tickhill with 1.7ML/d. Urban runoff from the southern areas of Doncaster, including combined sewer overflows in wet weather is also likely to be a significant factor influencing water quality in the River Torne. By Keadby the river quality of the Torne is the poorest in the CAMS area with a GQA of 'D'. There are some significant STWs inputs upstream including Armthorpe STW with 5ML/d on average and Epworth STW with 1.3ML/d but the flat landscape and slow sluggish movement of the watercourses exacerbate the problems. The BOD and ammonia at this point are good enough for two grades higher but it is the dissolved oxygen levels that make it a 'D'. This is probably due to the slow flow or 'no' flow conditions preventing self-purification taking place in the watercourse.

7.7 Water abstraction

The Idle and Torne CAMS area provides a valuable source of water for many abstraction licence holders. The major consumptive use of water within the catchments is for public water supply, accounting for over 50 per cent of water licensed for abstraction. The Idle and Torne CAMS lies within the supply zones of three water companies – Anglian Water Services, Severn Trent Water and Yorkshire Water Services. Water is drawn from the Sherwood Sandstone aquifer, with abstractions dating from the mid-nineteenth century. Water is returned to the catchment via effluent discharges to the rivers. Water companies are required by Government to

produce long-term water resources plans for submission to Ofwat which show how they intend to continue to supply sufficient water to meet their customers' needs. We analyse these plans to make sure that water companies are not taking unnecessary risks with essential water supplies or the environment. The last round of water resources plans was submitted to us in 2004. Our report to Ministers on water company water resources plans, 'Maintaining Water Supply', can be found on our website www.environment-agency.gov.uk. Future rounds of water resources plans will be informed by CAMS and other publications such as the report on the House of Lords Select Committee Inquiry into Water Management.

Spray irrigation for agriculture and horticulture is the second largest abstraction purpose accounting for 15 per cent of water licensed for abstraction within the CAMS area. Nearly three-quarters of the licences within the CAMS area are for spray irrigation. Spray irrigation is a highly consumptive use, none of the water abstracted being returned to watercourse. The period of highest demand typically corresponds to the time of year with the lowest river flows with over 60 per cent of the volume licensed authorised to be abstracted from surface watercourses.

Industrial abstractors account for a similar proportion of licensed abstraction as spray irrigators, with approximately 50 per cent of the volume licensed to be used in the quarrying and mining sector. Volumetrically, the greatest use of water within this sector is for gravel washing, from which most of the water is returned to the catchment. However, where groundwater is abstracted and discharged to surface watercourses the process accelerates its loss from the catchment. Further water is used in the process of manufacture within sectors including food and drink, textiles and housekeeping at facilities including warehousing.

Other water use within the catchment includes amenity and environmental projects, many requiring throughflow or top-up of lakes, ponds and reedbeds. These abstractions help to maintain a network of different habitats throughout the CAMS area including Potteric Carr SSSI, an important urban nature reserve located on the outskirts of Doncaster.

7.8 Links with other plans

CAMS have links with a number of other initiatives that are taken into account during the development of a strategy, some are managed by us and others external to the Environment Agency. Plans and initiatives considered include the Restoring Sustainable Abstraction (RSA) Programme, Water Level Management Plans, Catchment Flood Management Plans, Water

Quality Improvement Plans, the National Environment Programme (NEP), Fisheries Action Plans and Biodiversity Action Plans (BAP). CAMS will complement the existing Environment Agency Water Resources Strategies and take account of the public water suppliers Water Resources Plans.

We also encourage links with plans produced by external groups such as Community Strategies produce by Local Strategic Partnerships (LSP) in each local authority area.

A list of the different plans and strategies related to the Idle and Torne CAMS is provided in the technical document.

7.9 Recreation & tourism

The Idle and Torne CAMS area is a popular area for a range of recreational activities, pursuits including walking, cycling, boating and angling.

Clumber Park is one of the most popular tourist attractions in the East Midlands with in the region of 900 000 visits per annum. There are a number of other parks and country parks, which provide excellent recreational facilities, for example Sherwood Forest Country Park and Rufford Country Park, both situated near Ollerton and Cresswell Crag near Worksop.

A number of wetland sites are attractions, with visitor and education facilities provided at Potteric Carr SSSI, near Doncaster, and similar plans for Sutton and Lound SSSI near Retford. Whilst walking and watching wildlife are popular pass times with networks of footpaths extending throughout the area.

The Chesterfield Canal stretches from west to east across the catchment passing through Worksop and Retford to the River Trent, which it joins at West Stockwith. The canal has been the subject of considerable investment, restoration and regeneration over recent years with a view to further enhancing the visitor resource. A new marina at Shireoaks has brought increasing number of boat users whilst the environmental enhancement has attracted greater numbers of walkers, cyclists and anglers.

Angling is a popular activity throughout the CAMS area, with numerous fishing ponds and lakes. Organised angling is present within the catchments, particularly in the lower reaches of the Rivers Idle and Torne.

8.0

To help you understand some of the proposed changes we are making to abstraction management you may wish to know more about our existing licensing strategy in the catchment. This section outlines our existing licensing strategy.

Existing licensing strategy in the Idle and Torne CAMS area

Existing licensing strategy

Licensing within the Idle and Torne catchments follows the principles and procedures of the abstraction licensing system, as described in Annexe 2 of Managing Water Abstraction – available on the CD at the back of this document. Due to the nature of the catchment, the level of use and the consequent importance of its water resources, there is an existing licensing strategy for both ground and surface water abstractions. The time limit applied to licences within the Idle and Torne CAMS area is 31 March 2014, the common end date for the catchments.

Surface water licensing strategy

Upper Idle catchment – the River Maun upstream of its confluence with the River Meden at Conjure Alders

- Closed to further abstraction involving a net loss to the catchment during the summer period (April to October). Abstraction during the winter period (November to March) is authorised subject to a flow threshold of 38ML/d in the River Maun at the Environment Agency gauging station Whitewater Bridge.
- Minor tributaries are closed to further abstraction in the summer period with licences authorised subject to a local prescribed flow condition during the winter period.

Upper Idle catchment – the River Meden upstream of its confluence with the River Maun at Conjure Alders

- Closed to further abstraction involving a net loss to the catchment during the summer period (April to October). Abstraction during the winter period (November to March) is authorised subject to a flow threshold of 34ML/d in the River Meden at the Environment Agency gauging station at Perlethorpe.

- Minor tributaries are closed to further abstraction during the summer period with licences authorised subject to a local prescribed flow condition during the winter period.

Upper Idle catchment – the Rivers Maun and Meden downstream of their confluence at Conjure Alders to the confluence with the River Poulter

- Closed to further abstraction involving a net loss to the catchment during the summer period (April to October). Abstraction during the winter period (November to March) is authorised subject to a flow threshold of 72ML/d in the Rivers Maun and Meden at the Environment Agency gauging stations at Perlethorpe and Whitewater Bridge combined.

Upper Idle catchment – the River Poulter

- Closed to further abstraction involving a net loss to the catchment during the summer period (April to October). Abstraction during the winter period (November to March) is authorised subject to a flow threshold of 14.9ML/d in the River Poulter at the Environment Agency gauging station at Cuckney.
- Minor tributaries are closed to further abstraction during the summer period with licences authorised subject to a local prescribed flow condition during the winter period.

Middle Idle catchment from the River Poulter confluence to East Retford

- Closed to further abstraction involving a net loss to the catchment during the summer period (April to October). Abstraction during the winter period is authorised subject to a flow threshold of 138ML/d in the River Idle at the Environment Agency gauging station at Mattersey.

- Minor tributaries are closed to further abstraction during the summer period with licences authorised subject to a local prescribed flow condition during the winter period.

Middle Idle catchment downstream of East Retford to the confluence with the River Ryton near Bawtry

- Closed to further abstraction involving a net loss to the catchment during the summer period (April to October). Abstraction during the winter period (November to March) is authorised subject to a level restriction of 1.8m above Ordnance Datum (AOD) in the River Idle at the Environment Agency pumping station at West Stockwith.
- Minor tributaries are closed to further abstraction during the summer period with licences authorised subject to a level restriction of 1.8m AOD in the River Idle at the Environment Agency pumping station at West Stockwith. Local prescribed levels or flows may be substituted as required.

Middle Idle catchment – the River Ryton including the Oldcotes Dyke

- Closed to further abstraction involving a net loss to the catchment during the summer period (April to October). Abstraction during the winter period (November to March) is authorised subject to a flow threshold of 60ML/d in the River Ryton at the Environment Agency gauging station at Blyth.
- Minor tributaries are closed to further abstraction during the summer period with licences authorised subject to a local prescribed flow condition during the winter period.

Lower Idle catchment downstream of the River Ryton confluence to the River Trent at West Stockwith

- Closed to further abstraction involving a net loss to the catchment during the summer period (April to October). Abstraction during the winter period (November to March) is authorised subject to a level restriction of 1.8m above Ordnance Datum (AOD) in the River Idle at the Environment Agency pumping station at West Stockwith. Local prescribed levels or flows may be substituted as required.
- The licensing strategy for minor tributaries of the lower River Idle is to be determined.

Upper Torne catchment – the River Torne and tributaries upstream of the Environment Agency pumping stations at Candy Farm (SE 698 030)

- Closed to further abstraction involving a net loss to the catchment during the summer period (April to October). Abstraction during the winter period (November to March) is authorised subject to a flow threshold of 37ML/d in the River Torne at the Environment Agency gauging station at Auckley.

Lower Torne catchment – the High Level Carriers downstream of Candy Farm to the Environment Agency pumping station at Keadby, including the North Soak,

South Soak, North Level Engine, Hatfield Waste, South Level Engine and Folly drains and the River Torne

- Closed to further abstraction involving a net loss to the catchment during the summer period (April to October). Abstraction during the winter period (November to March) is authorised subject to a local level restriction set at the Environment Agency pumping station at Keadby. Additionally, abstractions from the Folly Drain are authorised subject to a restriction of 0.5m above the drain bed at the abstraction point.

Lower Torne catchment – low level drains fed by letback releases from the High Level Carriers, including the catchments of Belton Grange, Bull Hassocks, Candy Farm North, Candy Farm South, Dirtness, Tunnel Pitts North and Tunnel Pitts South pumping stations

- Closed to further abstraction involving a net loss to the catchment during the summer period (April to October). Abstraction during the winter period (November to March) is authorised subject to a level restriction in the low level drain at the associated pumping station with reference to the Flood Defence winter maintained levels.

Lower Torne catchment – low level drains not fed by letback releases from the High Level Carriers, including the catchments of New Zealand, Medge Hall, Wikewell, Althorpe, Goodcop, Lowbank, Woodcarr, Torne Bridge, Kilham Farm, Greenholme, Waterton Farm, Crowle and Ealand pumping stations

- Closed to further abstraction involving a net loss to the catchment during the summer period (April to October). Abstraction during the winter period (November to March) is authorised subject to a local level restriction in the low level drain at the associated pumping station. Abstraction from the Ealand pumping station catchment is subject to a level restriction set at Keadby.

Groundwater licensing strategy

Sherwood Sandstone

The Sherwood Sandstone aquifer within the Idle and Torne CAMS area has been closed to further abstraction currently classed as ‘no resources available’. Licensed abstractions exceed the long-term recharge for the whole of the Nottinghamshire-South Yorkshire Sherwood Sandstone aquifer. Consequently, there is no scope for further licences to be granted beyond existing commitments except for schemes that result in environmental benefit. The status of time limited licences are to be reviewed through the CAMS process. Modifications to existing permanent licences may be acceptable provided proposals include reduced quantities, or time limited components are introduced.

A small area around Doncaster town centre has been subject to rising groundwater levels, following reductions in industrial abstraction from the Sherwood Sandstone aquifer. The rising groundwater contrasts

with the remainder of the Hatfield Unit, where historical abstraction has led to a fall in groundwater levels and depletion of baseflow. Within this localised area termed the Doncaster Sub-Unit, the Environment Agency will consider applications for new licences up to a cumulative maximum licensable resource of 1Ml/d. Any licences issued will be time limited to the CAMS common end date of 31 March 2014.

Lower Magnesian Limestone

There is some potential for further development but borehole yields and groundwater quality are variable with yields especially tending to be poor.

There is a presumption against large abstraction licences and a requirement for special study to be undertaken in the preparation of any licence application. The strategy for the limestone aquifer seeks to protect baseflow to ameliorate low flows and quality problems downstream as the watercourses draining the aquifer flow east and cross the Sherwood Sandstone.

Glossary

Abstraction

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

Abstraction - actual

The volume of water actually abstracted as opposed to the volume of water that may be abstracted under the terms of an abstraction licence. Most individual abstraction records are reported to the Environment Agency each year.

Abstraction charges

The charges payable on an annual basis to the Environment Agency under the terms of an abstraction licence.

Abstraction impact

The effect of abstractions taken directly from a body of water.

Abstraction licence

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

Alluvial deposit

Layers of sand or gravel, which are transported by a river and then deposited in flatter areas such as flood plains or lake beds.

Aquifer

A geological formation that can store and transmit groundwater in significant quantities.

Aquifer transmissivity

A measure of the ease at which water moves through a porous medium.

Artificial impacts

Combined impacts of abstraction and discharge on flows at the assessment point.

Artificial influences

Catchment activities such as surface water abstractions, effluent returns and groundwater abstractions which, individually or collectively, have an influence on natural flows or levels.

Artificial recharge

Water which is deliberately discharged to groundwater for the purposes of groundwater management.

Assessment Point (AP)

Critical point in a catchment at which an assessment of available resources is made. Assessment Points are located at the extremities of identified reaches and Water Resource Management Units.

Asset Management Plans (AMP)

Asset Management Plans are produced by water companies for Ofwat and set out the investment programme for the water industry. These plans are drawn up through consultation with the Environment Agency and other bodies to cover a five year period and have to be agreed by Defra and Ofwat.

Augmentation (river)

To increase flow.

Baseflow

The component of river flow that is derived from groundwater sources rather than surface run-off.

Benchmark flow

The river flow regime selected as a context for setting river flow objectives (may be natural, partly natural or gauged).

Biodiversity

The living component of the natural world. It embraces all plant and animal species and communities associated with terrestrial, aquatic and marine habitats. It also includes genetic variation within species.

Biodiversity Action Plans

At the Earth Summit in Rio in 1992, governments from across the world pledged to take urgent action to secure the future of the earth's resources. In the UK, a national strategy has been developed for the conservation of biological diversity through the UK Biodiversity Action Plan.

Borehole

Well sunk into a water bearing rock from which water will be pumped.

Canal

An artificial watercourse used for navigation.

Candidate Special Area of Conservation (cSAC)

A candidate Special Area of Conservation classified under the EC Habitats Directive and agreed with the EU to contribute to biodiversity by maintaining and restoring habitats and species. It is expected to become a SAC.

Catchment

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

Cessation condition

A condition on a licence that requires the licence-holder to immediately stop abstracting when a pre-determined flow or water level is reached, in order to prevent environmental damage.

Compensation flow

Water released from reservoirs in order to maintain a certain flow or level further downstream of the river.

Confluence

The point where two or more streams or rivers meet.

Conservation Regulations 1994

Regulations that implement the Habitats Directive in UK law (also known as the Habitats Regulations).

Consumptive use / Consumptiveness

Use of water where a significant proportion is not returned, either directly or indirectly, to the source of supply after use, e.g. spray irrigation.

Cubic metre (m³)

Equivalent to 219,969 gallons or 1,000 litres.

Demand

The amount of water required for use.

Demand management

The implementation of policies or measures which are used to control or influence the consumption or waste of water.

Derogate

To depreciate or diminish - used in abstraction licensing where a proposed new licence would reduce resources to an existing authorised abstraction.

Designated water dependent sites

Nationally or internationally important (habitat) sites that have been legally recognised, which could be affected by water management or water quality issues.

Discharge

The release of substances (i.e. water, sewage, etc.) into surface waters.

Discharge consent

A statutory document issued by the Environment Agency, which defines the legal limits and conditions on the discharge of effluent into controlled waters.

Drift deposit

A loose deposit of sand, gravel, clay, etc on top of solid rock.

Drought

A general term covering prolonged periods of below average rainfall resulting in low river flows and/or low recharge to groundwater, imposing significant strain on water resources and potentially the environment.

Drought order

A means where Water Companies and/or the Environment Agency apply to the Secretary of State for the imposition of restrictions in the uses of water.

Drought permit

Used by the Environment Agency in order to allow a Water Company to abstract water outside of the normal terms of an Abstraction Licence during a drought period.

Dry Weather Flow (DWF)

This can be thought of as the average flow in the driest week in the average summer.

EC Directive

Issued by the European Commission to member states with the objective of producing common standards in the European Union – member states are then obliged to introduce appropriate legislation to comply with the Directive.

Ecological River Flow Objectives / Level Requirements

The minimum river flows (or water levels) required to protect ecological objectives.

Ecosystem

A community of plants and animals viewed within its physical environment or habitat.

Effective rainfall

Rainfall which recharges an aquifer or supports river flow after 'losses' due to evaporation and transpiration.

Effluent

Liquid waste from industrial, agricultural or sewage plants.

Environmental allocation

The amount of water that is required to support the ecology of a river.

Environmental impact

The total effect of any operation on the environment.

Environmental Weighting (EW)

An assessment of a river's sensitivity to abstraction based on physical characteristics, fisheries, plant life and invertebrates. It is specifically used in the CAMS RAM.

EU Water Framework Directive

First major review of European water policy. Seeks to improve water quality in rivers and groundwater in an integrated way (see Integrated River Basin Management).

EU Wild Birds Directive (1979)

Implemented through the Habitats Directive. A network of sites has been established to protect important and threatened species.

Evapotranspiration

The total loss of water as a result of transpiration from plants and the evaporation of water from soil, rock and surface water.

Exceedence value

The percentage of time that a particular flow is exceeded within the flow record (also see flow duration curve).

Existing abstraction and discharge impacts

The amount by which all abstractions reduced natural flows in the scenario year, taking into account the consumptiveness of the use, the location of any effluent return and any lags or smoothing effects between abstraction and outflow impact. Based on estimated abstraction returns from the scenario year.

Fauna

Animal population of a particular area or period.

Floodplain

Land adjacent to a watercourse that is subject to flooding.

Flora

Plant population of a particular area or period.

Flow duration curve

A graph showing the plot of flow versus exceedence value. Thus Q95 (the natural river flow that is exceeded 95% of the time) will be a low rate of flow, and Q5 (the natural river flow which is only exceeded 5% of the time) will be a high rate of flow.

Flow regime

The statistical pattern of a river's varying (mean daily) flow rates.

Gauged flow records

Records of flow in a river as conventionally measured. They reflect natural runoff from the catchment and artificial influences (abstraction, discharge, etc) that occur upstream of the measurement point.

Gauging station

A site where the flow of a river is measured.

General Quality Assessment (GQA)

Method for assessing the general quality of inland and coastal waters.

Groundwater

Water that is contained in underground rocks.

Groundwater baseflow

The contribution that groundwater makes to the flow of rivers. It maintains the flow of rivers during extended periods of dry weather.

Groundwater catchment

The area from which groundwater will collect and flow to a specific river or over a specific discharge boundary.

Groundwater Management Units (GWMU)

Administrative sub-divisions of aquifers, defined on geological and hydrogeological criteria, which form the basis for groundwater resource management and licensing policy decisions.

Habitat

Place in which a species or community of species live, with characteristic plants and animals.

Habitats Directive

A European directive on Conservation of Natural Habitats and of Wild Flora and Fauna. The Directive is implemented in the UK by the Conservation (Natural Habitats & c.) Regulations 1994 - commonly known as the 'Habitats Regulations'. The Directive created a network of protected areas across the European Union known as 'Natura 2000' sites.

Hands-Off Flow (HOF)

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.

Hands-Off Level

A river flow level below which an abstractor is required to reduce or stop abstraction.

Hydrogeology

Branch of geology concerned with water within the Earth's crust.

Hydrograph

A graph showing the plot of flow or level versus time.

Hydrometric network

Networks of sites monitoring rainfall, river flow and other water levels. The data collected is used for water resources management and planning, water quality, ecological protection and improvement, flood defence design and flood warning.

Hydrometry

The measurement of water on or below the earth's surface.

Impoundment

An artificial body of water or wastewater such as a pond or dam for collection or storage of water for future use.

Integrated River Basin Management

The method by which the EU Water Framework Directive will be implemented to ensure that all requirements and pressures on the water environment are taken into account.

Internal Drainage Board (IDB)

A local land drainage authority with powers to raise finance and do works.

Irrigation

The artificial distribution and application of water through man made systems in order to stimulate crop growth.

Land drainage

Actions taken to reduce waterlogging of land and to minimise flood risk.

Licence

Formal permit allowing the holder to engage in an activity (in the context of this report, usually abstraction), subject to conditions specified in the licence itself and the legislation under which it was issued.

Low flow

It is usually determined at a given value of 'Q95', which means that flow falls below this level 5% of the time.

Low Flows 2000

A software package which originated from CEH, which can be used to generate low flow statistics for a catchment.

Managing Water Abstraction

Document produced in May 2001 about the CAMS process. It was updated in July 2002.

Mean flow

A long term average of the daily flow.

Net use

Proportion of abstracted water that is not returned to the river system nearby. For example, irrigation abstractions have 100% net use because no water is returned to the river.

Non-consumptive

This is where all abstracted water is returned to the source a relatively short distance downstream of the abstraction point. E.g. hydropower generation, fish farming.

OFWAT

Office of Water Services.

Peak flow

The maximum flow recorded during a high flow event.

Permeability

The capacity of soil or porous rock to transmit water.

Potable water

Water of a suitable quality for drinking.

Precautionary principle

Where data within an area is incomplete but there is potential for significant environmental damage, all decisions err on the side of caution in order to protect the environment.

Precipitation

Deposition of moisture including dew, hail, rain, sleet and snow.

Prescribed flow

A generic term for any flow set down as a rule or guide to be followed under statute or regulation.

Primary gauging station

A permanent river flow gauging installation included in the National Surface Water Archive.

Protected right

Means a right to abstract, which someone has by virtue of the small abstractions exemptions defined in the Water Act 2003 or by virtue of having an abstraction licence. The right protected is the quantity that can be abstracted up to that allowed by the exemption or the terms of the licence. The small abstraction exemptions defined by the Water Act 2003 are for domestic and agricultural purposes (excluding spray irrigation) not exceeding 20 m³/d.

Presumption against

It cannot be taken for granted that a licence will be issued for abstraction from this area. A licence application will be fully assessed and it is highly likely that it will have some constraints.

Public Water Supply (PWS)

Term used to describe the supply of water provided by a water company.

Q50

The flow of a river which is exceeded on average for 50% of the time.

Q95

The flow of a river which is exceeded on average for 95% of the time.

RAM Framework

Resource Assessment and Management Framework – a technical framework for resource assessment (for the definition and reporting of CAMS) and subsequent resource management (including abstraction licensing).

Reach

Unit of a river between two Assessment Points, delineated for the purposes of abstraction licensing and resource management.

Recent actual abstraction and discharge impacts

The impacts of abstractions and discharges calculated for current abstraction licences and discharges based on recent abstraction returns or estimated from uptake and consumptiveness assumptions.

Recharge

Water which percolates downward from the surface into groundwater.

Regime (Flow)

The statistical pattern of a river's constantly varying (daily) flow rates.

Resource zone

The largest possible zone in which all water resources are shared. As a result all customers can experience the same risk of supply failure from a resource shortfall.

Restoring Sustainable Abstraction Programme (RSA)

The programme for resolving environmental problems caused by unsustainable abstraction in certain catchments.

Review of consents

The procedure by which the Environment Agency as a competent authority will apply the Habitats Regulations to review all relevant existing discharge consents, abstraction licences, permissions and activities which are likely to affect a designated European site.

Return period

The average interval of time within which the magnitude of a given event, such as a flood or a drought, will be equalled or exceeded once. So a flood of this scale would happen once in fifty years. This is shown as 1 in 50 or 1:50. It is also known as Recurrence Interval.

Revocation

The cancellation of a licence and all associated rights and benefits.

River Flow Objectives (RFOs)

The minimum river outflows required to protect ecological objectives within the area. It also considers effluent dilution requirements, navigation and other in-river needs.

River Quality Objective (RQOs)

An agreed strategic target, expressed in terms of River Ecosystem standards, which is used as the planning base for all activities affecting the water quality of a stretch of watercourse.

Salmonids

Family of fish (salmonidae) which includes many commercially farmed species such as the Salmon, Trout and Char.

Scenario flows

The flow at a given assessment point based on a defined abstraction and discharge rate.

Site of Special Scientific Interest (SSSI)

An area given a statutory designation by English Nature or the Countryside Council for Wales because of its nature conservation value.

Source of supply

Either an inland water (river, stream, canal, lake, etc.) or underground strata.

Spate flows

A flash flood resulting from a sudden downpour of rain.

Special Area of Conservation (SAC)

An area classified under the EC Habitats Directive and agreed with the EU to contribute to biodiversity by maintaining and restoring habitats and species.

Special Protection Area (SPA)

An area classified under the EC Birds Directive to provide protection to birds, their nests, eggs and habitats.

Spray Irrigation

Abstracted water sprayed onto grassland, fruit, vegetables, etc. During the summer period it has a high impact on water resources.

Springs

These occur where the water table intersects the ground's surface.

Strata

Layers of rock, including unconsolidated materials such as sands and gravels.

Surface Water

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

Surface water catchment

The area from which runoff would naturally discharge to a defined point of a river, or over a defined boundary.

Surplus or Deficit

How much more or how much less abstraction impact is acceptable: = Scenario flows – RFOs.

Sustainable development

Development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

Sustainable management

The interpretation of the principles of sustainable development at a local or regional level within the boundaries of national and international political, economic and environmental decision making.

Threshold

A Hands Off Flow (HOF) value within a sequence of HOFs, each individual MI/d higher than the previous.

Time Limited Licence

Licence with specified end date.

Treatment Works (also Waste Water Treatment Works)

Sewage Treatment Works or Water Treatment Works.

Trickle irrigation

The irrigation of crops by taking water direct to the plant roots, but without spraying or ejecting into the air.

Underground Strata

A term used to signify geology under the surface soil layer.

Unlicensed Abstraction

An abstraction that is carried out unlawfully or that is exempt from licensing.

Washlands

Extensive areas of semi-natural floodplain next to a river where water is stored during floods to protect developed areas downstream.

Water Level Management Plans

These provide a framework by which the water level requirements of a particular site can be discussed in order to incorporate and integrate a range of activities. The Agency has a responsibility to be involved in the production of these plans in consultation with other interested bodies such as English Nature, Internal Drainage Boards, conservation groups and landowners.

Water Resource Management Unit (WRMU)

An area that has similar groundwater and/or surface water characteristics and is managed in a similar way.

Water Resource(s)

The supply of groundwater and surface water in a given area.

Water Resources Strategies (The)

Strategy for Water Resource planning in England and Wales over the next 25 years which will ensure sustainable use and sufficient water for all human uses with an improved water environment. The strategies predict demand using different social and economic scenarios.

Water Rights Trading

The transfer of licensable water rights from one party to another for benefit.

Wetland

An area of low lying land where the water table is at or near the surface for most of the time, leading to characteristic habitats.

Year drought/flood 1:10

A drought or flood event with a statistical probability of occurring once in a ten year period (other periods may be specified in a similar way). See *Return Period*.

List of Abbreviations

| | | | | | |
|-----------------------------------|---|---|---|--------------|--|
| AMP | Asset Management Plan produced by the water companies for OFWAT. It sets out the investment programme by the water industry. | Defra | Department of the Environment, Food and Rural Affairs (succeeds former DETR and MAFF) | Q95 | Flow exceeded 95 per cent of the time period considered. |
| AOD (also mAOD) | Above Ordnance Datum: Land levels are measured relative to the average sea level at Newlyn in Cornwall. This average level is referred to as 'Ordnance Datum'. Contours on Ordnance Survey maps of the UK show heights above AOD. | EU | European Union. | RFO | River Flow Objectives. |
| AP | Assessment Point. | FDC | Flow Duration Curve. | RQO | River Quality Objective. |
| BAP | Biodiversity Action Plan. | GQA | General Quality Assessment. | SAC | Special Area of Conservation. |
| BW | British Waterways | HOF | Hands-off flow. | SINC | Site of Importance for Nature Conservation |
| CAMS | Catchment Abstraction Management Strategy. | m³/s | Cubic metres per second. | SPA | Special Protection Area. |
| cSAC | Candidate Special Area of Conservation | MI, MI/d, MI/day | MI = megalitres = 1,000,000 litres = 1,000 cubic metres = 1,000 m ³ = 220,000 gallons MI/d = MI/day = MI per day, = thousand cubic metres per day (tcmd). | SSSI | Site of Special Scientific Interest. |
| cSPA | Candidate Special Protection Area | MI/a | MI/a = Megalitres per year. | STW | Sewage Treatment Works |
| | | PWS | Public Water Supply. | UWWTD | Urban Waste Water Treatment Directive. |
| | | Q50 | Flow exceeded 50 per cent of the time period considered. | WRMU | Water Resource Management Unit |
| | | | | WWTW | Waste Water Treatment Works |

Appendix 1

Water efficiency contacts

General / all sectors

Environment Agency

We provide a range of free guidance on water efficiency, including best practice case studies for agriculture, business, industry, public sector and the domestic consumer.

www.environment-agency.gov.uk/savewater

Water companies

For local water efficiency advice your water company can provide guidance. The Idle and Torne CAMS lies within the supply zone of Anglian Water Services, Severn Trent Water and Yorkshire Water Services.

www.anglianwater.co.uk

www.stwater.co.uk

www.yorkshirewater.com

Water Regulations Advisory Scheme

WRAS provides advice on the Water Supply (Water Fittings) Regulations 1999, which prevents waste, misuse, undue consumption or contamination of wholesome water.

www.wras.co.uk

Agriculture & horticulture

UK Irrigation Association

The UKIA provides information on irrigation to its members and runs technical workshops.

www.ukia.org

Linking Environment and Farming

LEAF promote and develop integrated farm management including whole farm water savings.

www.leafuk.org

Natural England

Encompassing the former Rural Development Service, Natural England provides advice to farmers and other land managers.

www.naturalengland.org.uk

Business / commercial

Envirowise

Envirowise is a Government programme offering free, independent advice on practical ways for industrial and commercial small and medium sized enterprises (SMEs) to minimise waste and convert turnover into profit. Envirowise has a specific water section on their website called 'Waternet', which

includes links to guidance published around the world and a benchmarking tool.

www.envirowise.gov.uk/waternet

Or telephone the Environment and Energy helpline
0800 585794

Hospitals

Water UK

Water UK is the association that represents the UK water industry nationally and with Europe. The industry association has collaborated with NHS Estates and Watermark to produce Water Efficient Hospitals, an information pack to help hospitals use water wisely. The resource aims to save money through water and energy efficiency.

www.water.org.uk

Mineral extraction

Envirowise

Envirowise is a Government programme offering free, independent advice on practical ways for industrial and commercial small and medium sized enterprises (SMEs) to minimise waste and convert turnover into profit. Envirowise has a specific water section on their website called 'Waternet', which includes links to guidance published around the world and a benchmarking tool.

www.envirowise.gov.uk/waternet

Or telephone the Environment and Energy helpline
0800 585794

Public sector

Watermark

Watermark is an initiative for public sector organisations from OCGbuying.solution, part of the Office of Government Commerce in the Treasury. It has produced benchmarks for a wide range of public sector buildings and offers access to a shared savings scheme for the installation of new, water efficient devices.

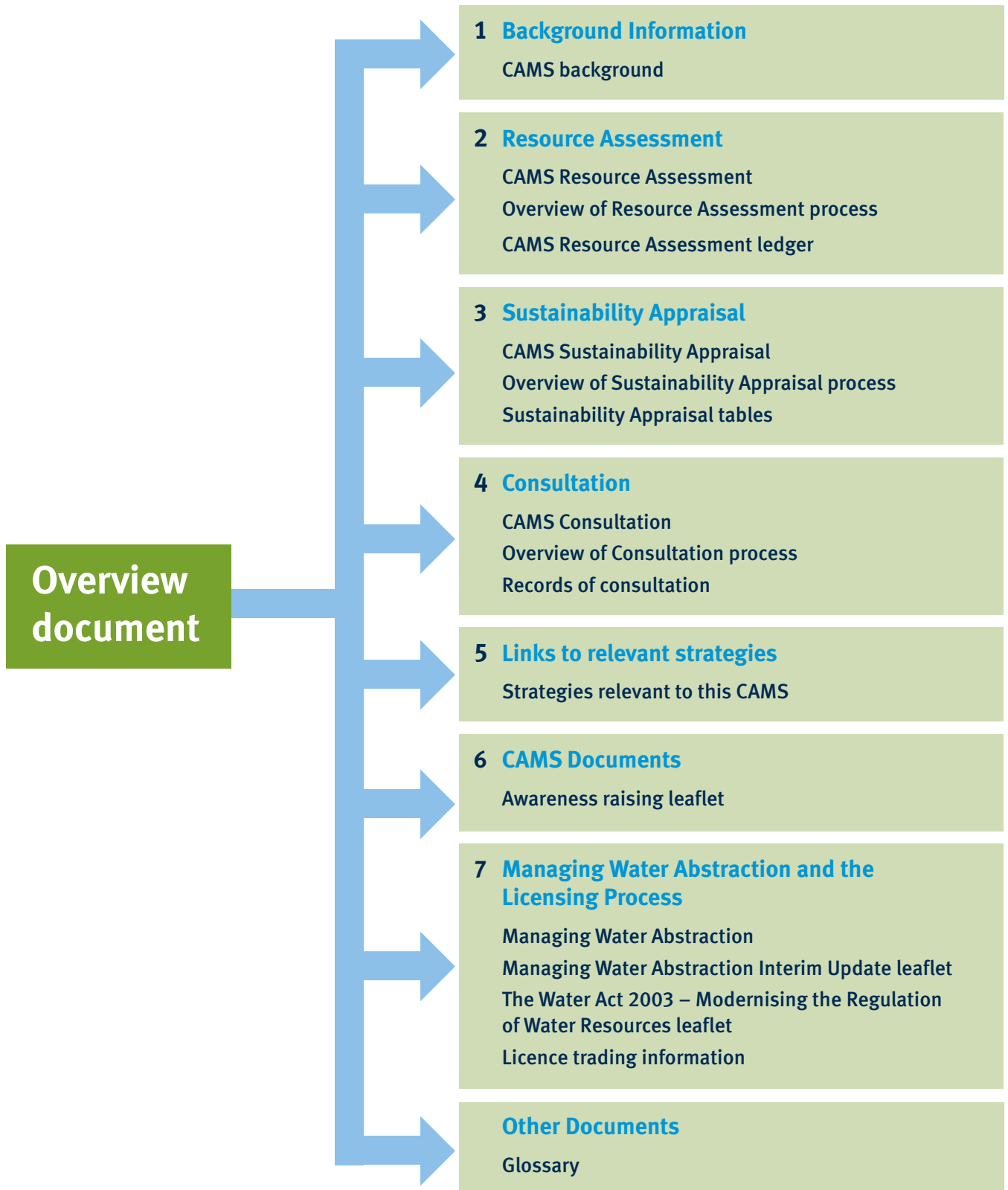
www.watermark.gov.uk

Water in the School

Water in the School is a website supported by a number of water companies aimed at National Curriculum Key Stage 2 and 3 pupils and their teachers. It provides information for pupils on how to make savings.

www.waterintheschool.co.uk

Appendix 2: Outline structure and information in technical document





This CD-ROM contains the Idle and Torne CAMS Technical Document in a printable PDF format and can be viewed in Adobe Acrobat. If you have any problems with the CD, please contact

Idle and Torne CAMS Project Manager
Water Resources Management
Environment Agency
Trentside Offices
Scarrington Road
West Bridgford
Nottingham NG2 5FA



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