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The Tame, Goyt and Etherow Catchment Abstraction Management Strategy

March 2004



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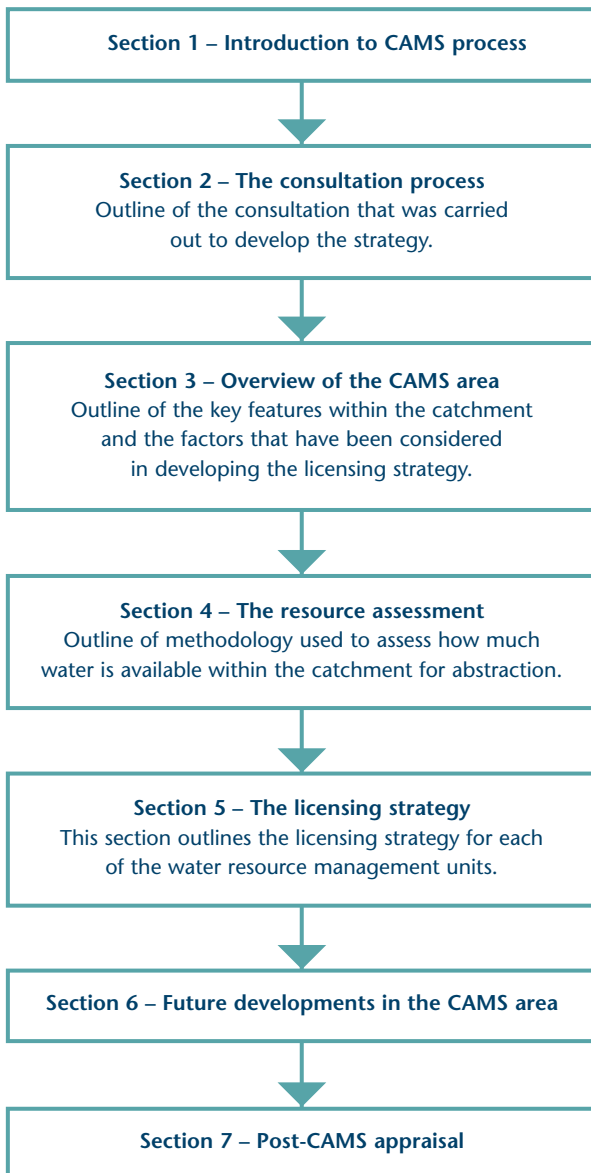
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Contents

	Document Overview	3
Chapter 1	Introduction	4
Chapter 2	Consultation on the Tame, Goyt and Etherow CAMS	5
Chapter 3	The Tame, Goyt and Etherow CAMS area	6
	3.1 Surface water features	6
	3.2 Geology and hydrogeology	8
	3.3 Hydrological monitoring	9
	3.4 Major abstractions, transfers and discharges	10
	3.5 Landscape and land use	11
	3.6 Ecology and fisheries	12
	3.7 Recreation and amenity	14
	3.8 Water quality information	15
Chapter 4	Resource assessment and resource availability status	16
	4.1 Introduction	16
	4.2 Resource assessment for the groundwater management units (GWMU)	18
	4.3 Resource assessment of river assessment points	18
	4.4 Integration of the surface water and groundwater resource assessments	20
	4.5 Summary of resource assessment for the water resource management units	22
Chapter 5	Licensing strategy	25
	5.1 Sustainability appraisal	25
	5.2 Catchment overview of licensing strategy	25
	5.3 Water resource management unit 1 (Lower River Tame, River Etherow and River Goyt)	28
	5.4 Water resource management unit 2 (Upper River Tame and Glossop Brook)	29
	5.5 Water resource management unit 3 (The East Manchester Sandstone Collyhurst Unit)	30
	5.6 Remaining areas not in a WRMU	30
	5.7 Opportunities for Water Rights trading in the Tame, Goyt and Etherow CAMS area	31
	5.8 The impact of the Water Act 2003	32
Chapter 6	Future developments in the CAMS area	33
Chapter 7	Post-CAMS appraisal	34
Appendix 1	Glossary	35
Appendix 2	List of abbreviations	40

Document Overview



This document sets out the licensing strategy for the Tame, Goyt and Etherow CAMS area. This document should be read in conjunction with *Managing Water Abstraction*¹, which provides additional information on the CAMS and licensing processes.

This strategy provides an indication of whether new abstraction licences are likely to be available and the conditions that should be expected on licences. It has been developed with the help of local stakeholders who have been given the opportunity to discuss and influence this licensing strategy for managing our water resources. A consultation document was published in September 2003 containing the proposed strategy for dealing with water resources in the Tame, Goyt and Etherow CAMS area. Responses to this document were taken into account in finalising the strategy and producing this document.

Water is used for industrial and agricultural abstraction, public supply and supporting recreation, such as angling and canoeing. Agriculture and private domestic abstraction is on a small scale throughout the catchment.

The document is split into seven sections relating to the CAMS process. Sections 1 to 4 outline the CAMS process, and Section 5 outlines the licensing strategy for the Tame, Goyt and Etherow CAMS area. Section 6 highlights the future developments in the CAMS area and Section 7 outlines the post-CAMS appraisal.

¹ *Managing Water Abstraction: The Catchment Abstraction Management Strategy Process*, Environment Agency (2002).

Introduction

The vision for the Tame, Goyt and Etherow CAMS is to manage the important water resources within the catchment in a sustainable manner that preserves and enhances the area's natural and cultural heritage alongside its recreation value. This will balance the needs of water users with those of the environment to benefit the whole community.

Catchment Abstraction Management Strategies (CAMS) are strategies for management of water resources at a local level. They will make more information on water resources and licensing practice publicly available and allow the balance between the needs of abstractors, other water users and the aquatic environment to be considered in consultation with the local community and interested parties.

CAMS are also the mechanism for managing time-limited licences by determining whether they should be renewed and, if so, on what terms.

*Managing Water Abstraction: The Catchment Abstraction Management Strategy Process*² is the national document that supports the development of CAMS at a local level. It sets out the national policy and the regulatory framework within which CAMS operate, describes the process of developing CAMS and provides information on the structure and content of CAMS documents. This CAMS document should be read in conjunction with *Managing Water Abstraction*³.

² See footnote 1.

³ See footnote 1

⁴ *The Tame, Goyt & Etherow CAMS Technical Document: Supporting The Tame, Goyt & Etherow CAMS Document*, Environment Agency (March 2004)

The Tame, Goyt and Etherow CAMS document provides an indication of the water resources available in the catchment and sets out the Environment Agency's (referred to as the Agency from this point on) strategy for managing the use of these resources for the next six years.

A *technical document*⁴ (final version) for the Tame, Goyt and Etherow CAMS will be produced. This provides the detailed technical information we used for the development of the strategy. If you wish to receive this document on CD-ROM, please contact us at the address below. A hard-copy version of the document is also available for viewing at the same office.

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Consultation on the Tame, Goyt and Etherow CAMS

Consultation is an integral part of the CAMS process. It is important because it ensures that the CAMS process is as transparent as possible and gives everyone the opportunity to get involved. For the Agency to manage water resources in a catchment effectively and sustainably, it is important that we collate as much information as possible on water needs and uses. Comments and suggestions have been gathered during the early stages of development of this strategy through various pre-consultation activities. These were:

- awareness-raising leaflet;
- CAMS stakeholder group;
- targeted information requests.

The leaflet was distributed in September 2002. Its aim was to raise awareness of the development of the CAMS in the local area and it also invited anyone with an interest to send in written comments, providing information, views and suggestions.

A Stakeholder Group was set up for the Tame, Goyt and Etherow CAMS. The role of the stakeholder group was to represent the key interests in the catchment and to help identify issues of local significance, provide views on proposals and to consider the likely implications of different strategy options.

The members of the Tame, Goyt and Etherow CAMS stakeholder group and the interests they represented are as follows:

- Mark Turner Chairman
- Tom Veitch Water supply
- Tony Bielderman Angling interests
- Peter Birch Navigation interests
- Barry Cook Industrial abstractors
- Tony Smith Ecological/Wildlife interests
- Peter King Recreation
- Simon Papprell Environmental and economic development

⁵ See footnote 4

A targeted information request was also carried out to obtain additional technical information about the CAMS area, to ensure that as much information as possible was available for the resource assessment. The following parties were included in the targeted information request process:

- Greater Manchester Records Office
- Cheshire Records Office
- Derbyshire Records Office
- British Waterways.

We asked them to supply additional information about the water bodies within the catchment, as well as current and future water needs and water uses within the area. There was also a formal consultation on the Tame, Goyt and Etherow CAMS through a consultation document distributed in September 2003. The responses received were analysed and taken into account as the strategy was finalised.

Nineteen responses were received to the consultation document. There was general support from the respondents for the proposed licensing strategy. A number of issues were raised and have been considered in finalising the strategy and in the production of this document.

Amongst the issues raised were habitat improvement with regard to self-sustainable coarse fisheries, unmeasured minewater discharge into the Goyt from rising water levels in disused mine workings, and increased awareness of recreational interests in certain reaches of rivers in the CAMS area.

These responses were also discussed at the final stakeholder group meeting and all respondents received a 'Statement of Response' summarising the comments received. The 'Statement of Response' to the Tame, Goyt and Etherow CAMS consultation document and the minutes of all of the stakeholder group meetings can be found in the *technical documents*⁵ (final version), or a hard copy can be obtained from your CAMS contact (details in Section 1).

This CAMS document now sets out the final strategy that has been developed for the Tame, Goyt and Etherow CAMS area.

The Tame, Goyt and Etherow CAMS area

3.1 Surface water features

The Tame, Goyt and Etherow CAMS covers an area of 511km² and comprises two main sub-catchments – The River Tame catchment and the River Goyt/River Etherow catchment. These catchments drain the area east, north east and south east of Manchester, taking in the areas of Denshaw, Glossop, Stockport, Whaley Bridge and ultimately forming the River Mersey.

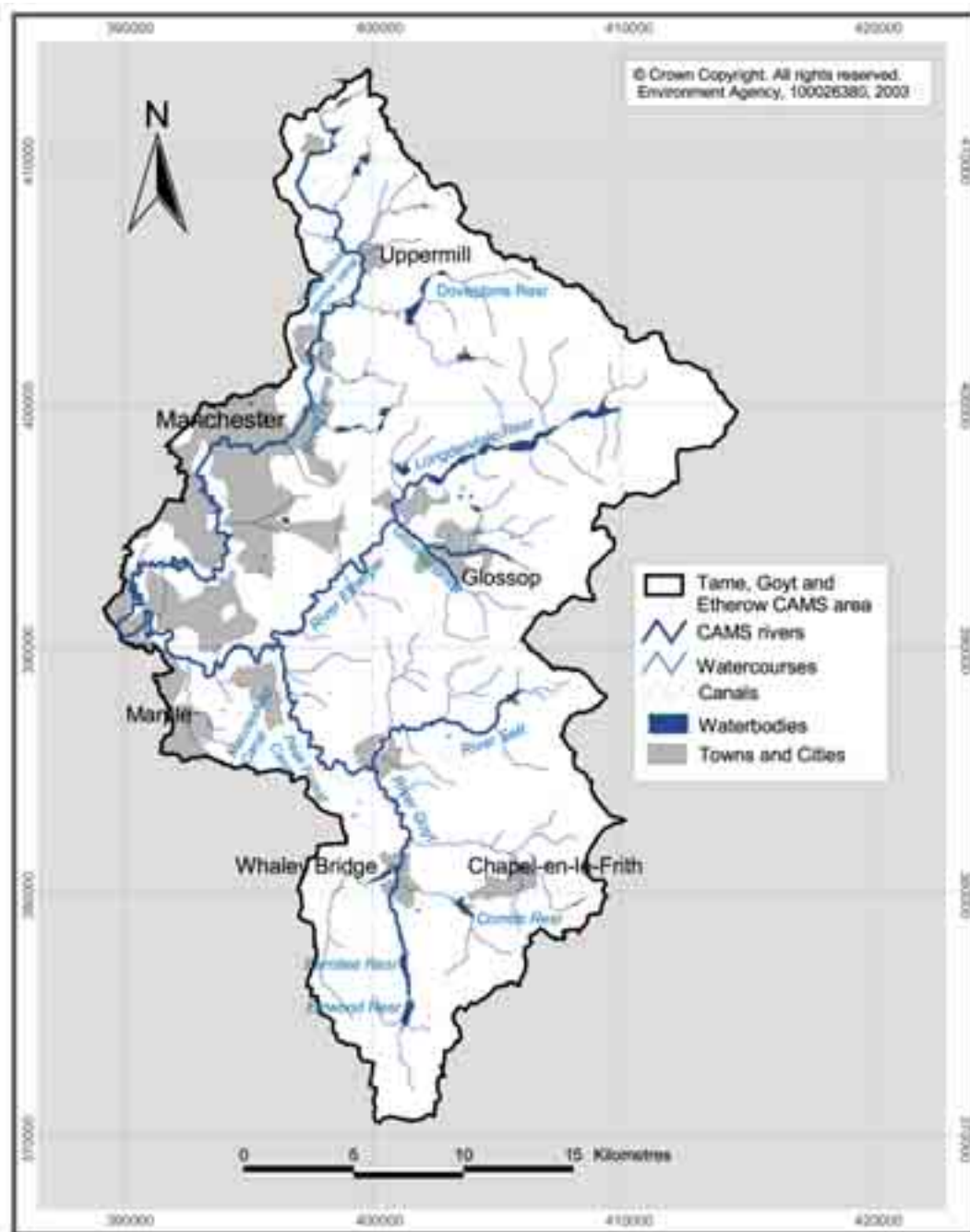
The River Tame drains the eastern edge of the Manchester conurbation and the westerly edge of the Pennines. It rises upstream of New Year's Bridge reservoir at Denshaw and has a catchment area of 146km². From Denshaw the river flows in a southerly direction through the towns and villages of Delph, Uppermill, Mossley, Stalybridge, Ashton-under-Lyne, Denton and Hyde, and ultimately joins the River Goyt at Stockport to form the River Mersey. There are a large number of reservoirs in the upper catchment, which provide public water supply for the area. The Huddersfield Narrow Canal runs adjacent to the River Tame for much of its length before following Diggle Brook above Uppermill and eventually leaving the catchment via the Standedge Tunnel.

The River Etherow drains the Pennines to the east of Stalybridge flowing west through Hollingworth, and joins the River Goyt north of Marple. The upper reaches of the Etherow are dominated by the Longdendale reservoirs, five consecutive reservoirs stretching for approximately 7 km, providing public water supplies. The major tributary to the Etherow is Glossop Brook, which drains the Pennines to the east of Glossop, meeting the Etherow south of Hadfield. Other significant tributaries include Hollingworth Brook and Arnfield Brook, which drain the area north of Hollingworth, and Chisworth Brook, which originates south west of Glossop.

The River Goyt rises on Whetstone Ridge, to the south west of Buxton at an altitude of 520m. The river flows to the north through Errwood and Fernilee reservoirs, before flowing through the towns of Whaley Bridge, Furness Vale, New Mills and Marple, and heading west towards its confluence with the

River Tame. The Goyt has three main tributaries; Black Brook, which drains the Chapel-en-le Frith area, the River Sett, which drains the Hayfield area, and the River Etherow. The total area of the Etherow/Goyt catchment is 365 km². The Peak Forest Canal begins in Whaley Bridge and follows the River Goyt for much of its length before joining the Macclesfield Canal in the lower catchment.

Where the rivers in this area run through urban areas they have often been modified with walls and riverside buildings dating from the 19th and early 20th centuries. Old mills, millraces and mill reservoirs are common. The western part of the area is undergoing substantial redevelopment due to the demise of the more traditional heavy industries, however, there are still pockets of traditional industry in some areas, such as the textile industry in the Tame and Goyt catchments. In the east of the CAMS area there are significant areas of open countryside, which provide valuable wildlife habitats and recreation opportunities. This area is also a vital source of drinking water and has a large number of water supply reservoirs and private abstractions. **Map 1** provides an overview of the Tame, Goyt and Etherow CAMS area.



3.2 Geology and hydrogeology

As illustrated by **Figure 1**, the geology of the area consists of Carboniferous Coal Measures in the west and the Millstone Grit Series rocks in the east. There is also a very small area of Permo-Triassic age Collyhurst Sandstone and Manchester Marl in the extreme west, and a limited outcrop of limestone forming the core of the 'Derbyshire Dome' to the East of Chapel-en-le-Frith.

Drift deposits, principally glacial till (boulder clay) cover much of the land underlain by the Permo-Triassic and Coal Measures strata. These tend to be absent on the higher ground to the east. However, extensive peat deposits have developed on the gritstone uplands.

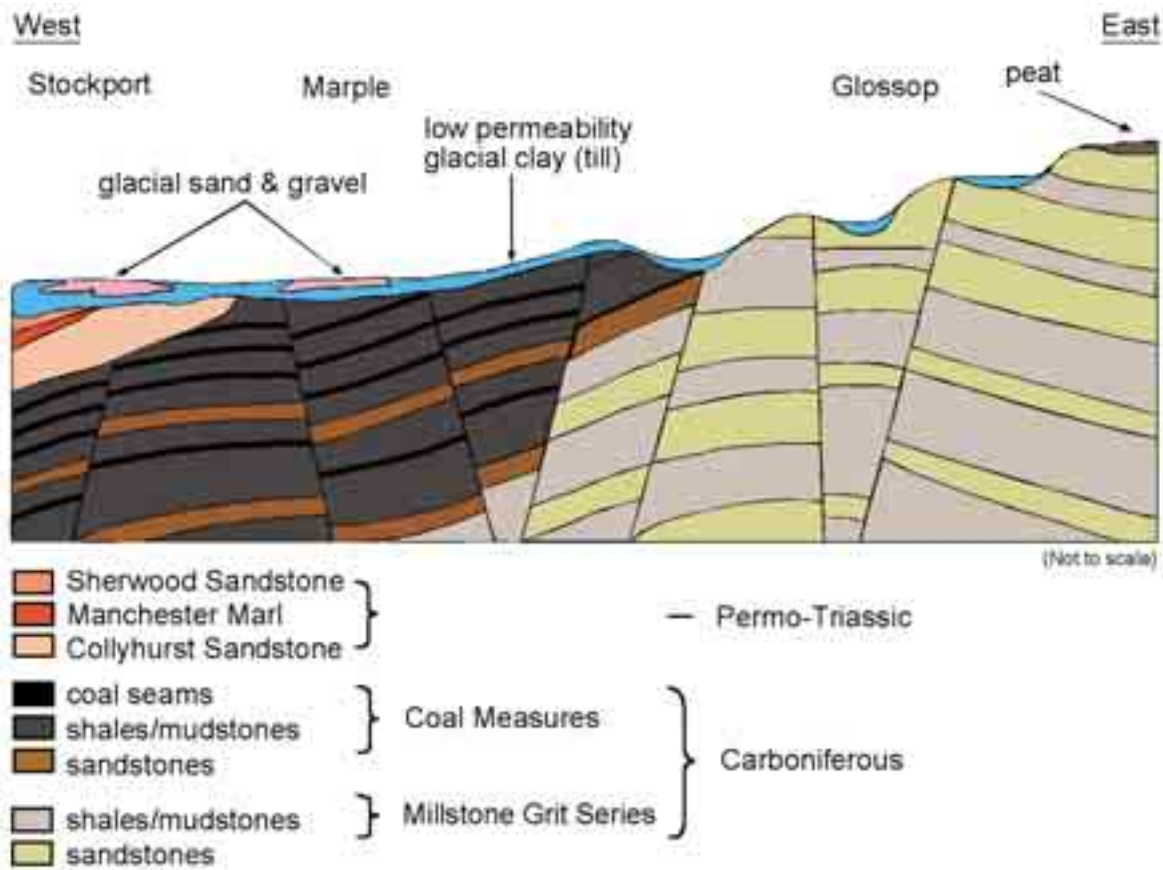
The sandstone layers within the Millstone Grit in the east and Coal Measures in the west tend to act as individual minor aquifer units capable of supporting small to medium sized water supplies. The sandstone in the Millstone Grit Series also produces springs

which contribute to the watercourses that cross them. Groundwater movement generally occurs by movement through cracks and faults in the geology rather than permeating through the rock. The movement of groundwater can be complicated by the presence of old coal workings in the Coal Measures, giving rise to complex and rapid groundwater flow. These mine workings can also adversely affect groundwater and surface water quality.

The Permo-Triassic Collyhurst Sandstone present in the extreme west of the CAMS area represents the eastern margin and basal layer of an extensive major aquifer that extends northwards to Manchester, south to Macclesfield and west through to Liverpool. It falls within the Manchester and East Cheshire Aquifer Unit.

Much of the area is covered in low permeability boulder clay. This has the effect of reducing hydraulic connection between groundwater and surface water. Where the boulder clay thins, for example in the eastern uplands, there is higher continuity between bedrock aquifers and surface water.

Figure 1 | Schematic geological cross-section through the Tame, Goyt and Etherow CAMS area



3.3 Hydrological monitoring

Water resources in the catchment are monitored by a hydrometric network. Data from this network is used on a routine basis for drought and flood monitoring, and water resources investigations, and has also been used to assess resource availability in this CAMS. For water resources planning and investigations, it is vital to maintain accurate long-term river flow and level records.

The Tame, Goyt and Etherow CAMS area is served by a network of five permanent gauging stations, which measure water levels as well as river flows within these rivers. (Figure 2 shows a gauging station at Marple Bridge). There are also a number of temporary hydrometric river sites measuring flows and levels at additional sites throughout the catchment.

Rainfall is measured via a network of raingauges, which are read on a daily basis by voluntary observers. Supporting this network are a number of automatic raingauges, which record rainfall on a minute by minute basis in order to determine rainfall intensity. Most of these automatic raingauges are monitored using telemetry to a central computer, and provide vital information for the Agency's flood warning role. The raingauges form part of the Agency's national rainfall network. Average annual rainfall varies from 1584mm in the western upland areas to 894mm around Denton.

The Agency also monitors groundwater levels within the sandstone aquifer to the west of the CAMS area.

Figure 2 | Gauging station at Marple Bridge



3.4 Major abstractions, transfers and discharges

There is a long history of water resource development in the Tame, Goyt and Etherow CAMS area. In the 18th and 19th centuries, textile mills began to utilise the area's swift-flowing rivers to power their weaving equipment. The textile industry once supported 112 cotton mills on the banks of the River Etherow and Glossop Brook. Paper mills and bleach and dye works have also abstracted significant amounts of water historically and still rely on significant abstractions in some parts of the CAMS area.

The rise of industry during the 19th century led to the creation of a network of canals to transport goods between Manchester and the surrounding towns, as well as cities further afield. These canals rely on abstractions from the area's rivers and reservoirs to maintain their levels. The Huddersfield Narrow Canal has recently been restored following many years of closure; this has helped to regenerate large areas along the canal⁶.

As the population of Manchester and the outlying towns increased, there was a greater need for a reliable supply of clean, disease-free water. This led to the construction of many reservoirs in the Tame, Goyt and Etherow CAMS area. One of the larger projects was the Longdendale Reservoir Complex, which was completed in 1877 and was at that time the longest reservoir chain in the world. These five reservoirs at the head of the River Etherow are still a vital water source and are the fifth largest drinking water source for United Utilities (Water) Plc. As demand continued to rise in the 19th century, many more reservoirs were built and supplies augmented by building long-distance aqueducts to bring water from as far as Ullswater and Haweswater in the Lake District. This network of reservoirs and aqueducts now provides a highly integrated regional water supply system, capable of meeting changing demand and conditions.

Currently, water is abstracted throughout the catchment from both surface waters and groundwater for a number of uses, including agricultural, industrial and public water supply. Within the CAMS area there are 39 licensed groundwater abstractions, used principally for agriculture and private water supply, and 173 licensed surface water abstractions used predominately for agriculture and the public water supply industry.

There are also numerous abstractions for which a licence is not required. For example, some parts of the catchment are not served by mains water

supply and water users rely upon small, local sources. Exemptions from the general requirement for a licence are outlined in *Managing Water Abstraction*, Annexe 2⁷.

A number of abstraction licences within the Tame, Goyt and Etherow CAMS area are subject to hands-off level or flow conditions. This means that abstraction must cease in order to protect existing abstractors, river ecology or other local issues.

Figure 3 illustrates the division of licences (by volume) between the major uses for abstractions in the area. Public water supply is the main use of licensed water abstractions in the CAMS area.

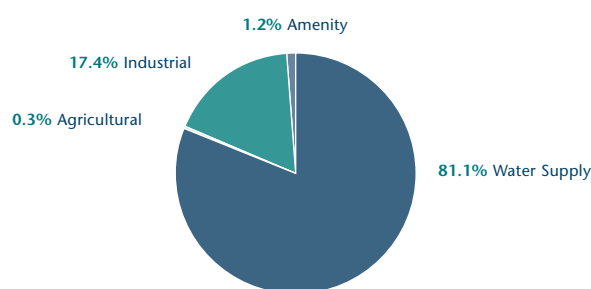


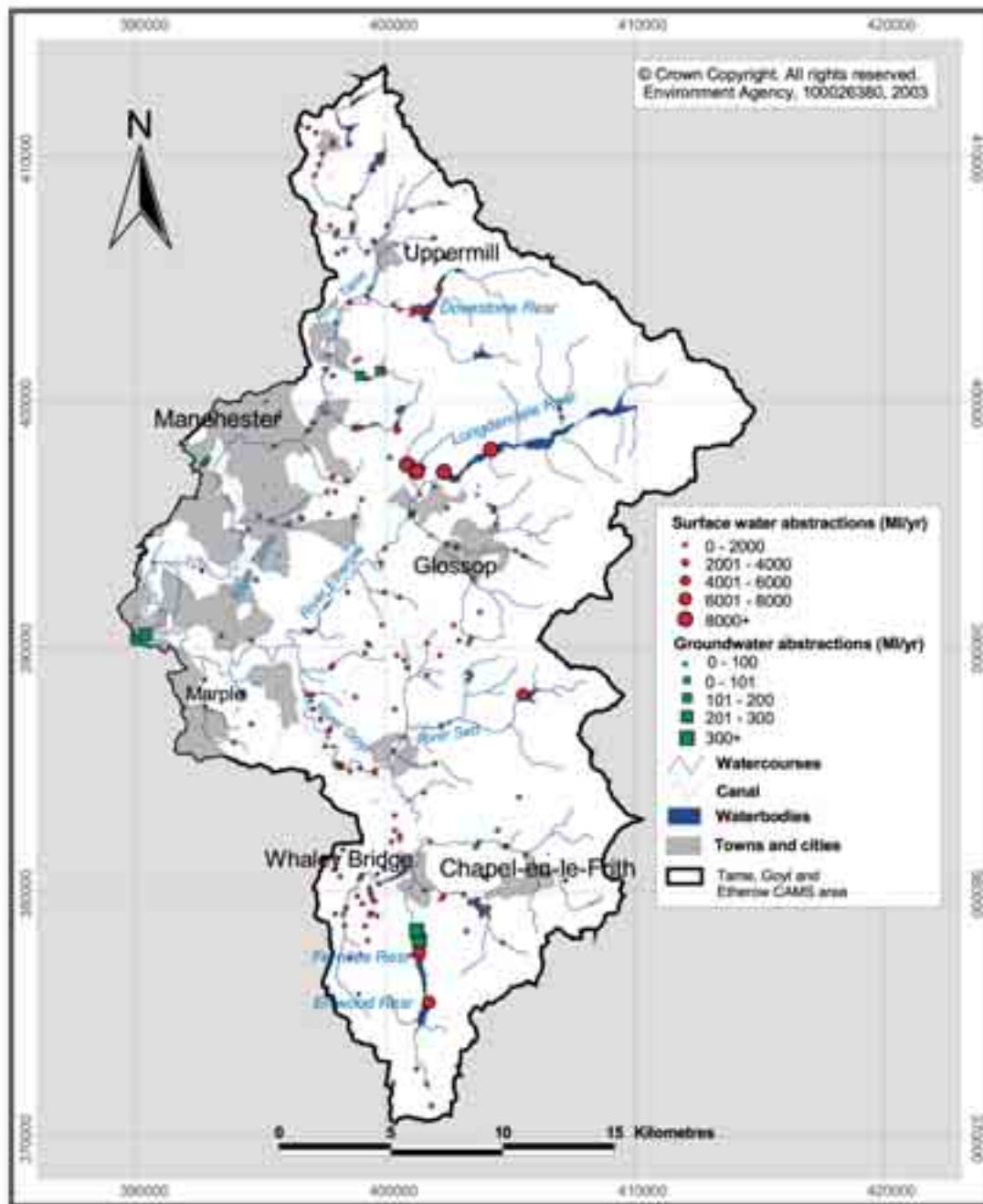
Figure 3 | Licensed water abstraction by use (%)

There is limited groundwater abstraction in the area as yields are difficult to predict and the quality is often poor with a high iron content. However, minor aquifers are capable of supporting small-scale agricultural and domestic supplies and are used for such in areas remote from the public mains system.

Map 2 illustrates the location and relative size of both surface water and groundwater abstractions within the CAMS area.

⁶ Canal abstractions are exempt from licensing under the Water Resources Act 1991

⁷ See footnote 1



3.5 Landscape and land use

The Tame, Goyt, Etherow CAMS area is an area of significant contrasts, ranging from open moorland in the east to the dense urban conurbation of the west (see **Figure 4** for example of open moorland). Its topography changes from steep sided hills in the east to flat river valleys in the west. The eastern area includes a part of the Peak District National Park and extensive moorland areas, which are designated

as a candidate Special Area of Conservation (cSAC) under the Habitats Directive (Natura 2000). Much of the land in the CAMS area is used for mixed agriculture, both arable and pastoral, with large areas of uplands used for sheep grazing. These uplands also serve as water gathering grounds for the many reservoirs in the area. The western part of this area is undergoing substantial redevelopment as service industry, light industry and warehousing replace the old heavy industries.

3.6 Ecology and fisheries

There are a large number of designated conservation areas in the catchment. The key site within the CAMS area is the South Pennines Moors cSAC and Special Protection Area (SPA), which covers much of the headwaters of these catchments, as illustrated in **Map 3**. This site consists of extensive areas of upland moorland supporting plants such as heather, cotton grass and bilberry, and provides internationally significant breeding areas for many important bird species such as golden plover, curlew, ringed ouzel, merlin and grouse. There are also numerous Sites of Special Scientific Interest (SSSI) in the area as illustrated in **Map 3**. The Compstall Nature Reserve SSSI on the banks of the River Etherow contains a variety of habitats, including open water, tall fen and reed swamp, and is also of considerable ornithological interest.

There are many Sites of Biological Interest (SBI) found across the catchment, for example, the Peak Forest Canal which has healthy populations of rare invertebrates such as the freshwater mussel. There is a concentration of valuable SBIs associated with the river corridor and wetland habitats. These protect areas of remnant woodland, acid grassland areas, landslips and cliff sites, as well as valuable sites associated with industrial history, old millponds, disused railways, quarries and canals. The presence of earth cliffs, gravel shoals and boulders enhances the ecological value of the river corridor, providing habitat for a number of species, such as kingfishers and sandmartins. A number of sites also provide habitat for the threatened native crayfish.

The large number of ponds and reservoirs create many standing water habitats, supporting a wide range of plants and animals. In addition, there are several compensation reservoirs which provide regular flows to streams and rivers to supply water for impoundments and abstractions.

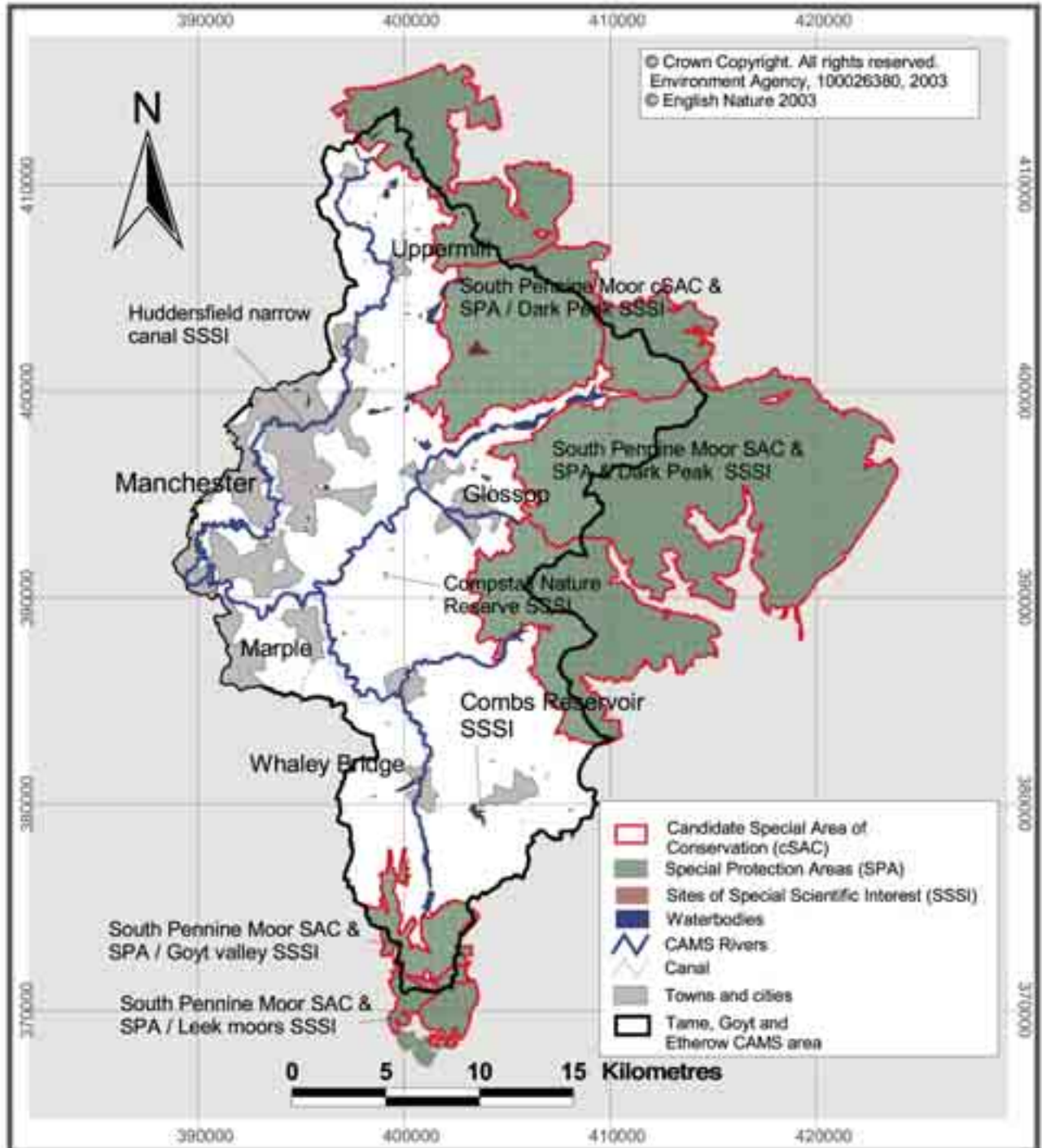
Populations of fish are healthy in the Tame, Goyt and Etherow CAMS area. Brown trout have been recorded within most of the Etherow and Goyt catchments, particularly in the upper catchments. Good coarse fisheries (i.e. fish species other than trout and salmon) are present at Compstall Park on the River Etherow, Brabyns Park on the River Goyt and in the lower reaches of the CAMS rivers.

Both organised and informal coarse angling on the rivers is widespread. In many places, local angling clubs control fishing but informal angling also takes place on the lower reaches of the River Tame. Trout fishing takes place on the upper reaches of most of the main rivers and tributaries.

Some of the major clubs in the area include the Stockport Federation of Anglers, Bredbury Anglers and Disley & New Mills Anglers, and the Northumberland Angling Club which owns some fishing rights on the River Etherow. British Waterways and local angling clubs control angling on the canals. Many still waters and reservoirs within the Tame, Goyt and Etherow CAMS area are fished by angling groups, e.g. the Saddleworth & District Angling Society.



Figure 4 | Walkers in the South Pennine Moors cSAC.



3.7 Recreation and amenity

The rural nature of the Tame, Goyt and Etherow catchments and their proximity to major population centres has created many valuable opportunities for recreation and amenity. The area has many countryside parks, for example, Werneth Low Country Park, Etherow Country Park and the Sett Valley Country Park. These parks provide activities such as woodland walks, nature trails, fishing lakes and bike riding trails.

Many of the waterbodies within the area are also used for both recreational and educational purposes, including guided walks, pond dipping, activity days, river clean-up campaigns and river studies.

Longdendale Valley provides a variety of recreation activities, including a sailing club on Torside reservoir. Sailing takes place on many other reservoirs in the area, including Todd Brook, Dovestones Reservoir and Bottoms Reservoir, near Hadfield. Canoeing is also popular on the CAMS rivers and the Manchester Canoe Club is very active in the area. The River Tame has a canoe trail on the Ashton-under-Lyne to Hyde reach and the Roaches to Mossley side reach. In addition to these trails, numerous other reaches are canoed at higher flows.

The area is well served by both local and long, distance footpaths, many of which run by rivers, canals, ponds or reservoirs. These footpaths are well used by visitors from the neighbouring urban areas. The Pennine Way passes through the area en route between Edale and the Scottish Border. This popular trail is walked by over 10, 000 people a year. Bridleways are used daily by horse riders in the Tame Valley, the Longdendale Valley and the Middlewood Way.

One of the most popular walks in the area is the Longdendale Trail, which runs alongside the Longdendale reservoirs and continues west to Liverpool and Southport. This trail follows the disused Woodhead railway line and is also suitable for cycling and horse riding and provides access for wheelchair users. The trail forms part of the Trans-Pennine Trail and continues over the moorland tracks via Salters Brook to Yorkshire. (See **Figure 4.**)



Figure 5 | Wade Lock, Huddersfield Narrow Canal, Uppermill (Martin Clark)
Photograph courtesy of www.penninewaterways.co.uk

There is an extensive canal network in the Tame, Goyt and Etherow CAMS area with the Peak Forest, Ashton, Macclesfield and Huddersfield Narrow Canals. These canals form part of two popular cruising routes, the South Pennine ring and the Cheshire ring. Short boat trips are also available on the Huddersfield Narrow Canal at Uppermill (see **Figure 5**). The Huddersfield Narrow Canal has recently been restored to full navigation. This is likely to increase the activity of small craft in the area.

3.8 Water quality information

The Agency monitors the chemical quality of significant watercourses and the aquatic life supported by those watercourses on a regular basis. The results of this monitoring are used to classify the quality of the watercourses and to report compliance against various EU Directives. A General Quality Assessment (GQA) scheme is used to classify rivers and canals into one of six water quality classes. This is made possible by using water quality data collected on a rolling three-year basis.

Figure 6 illustrates the percentage of surface waters in each water quality class using data from 1998 to 2000.

The Agency has proposed “Ecological River Quality Objectives” for water quality within the Tame, Goyt and Etherow CAMS area. These targets set water quality standards in relation to the requirements for aquatic ecosystems in the area. At present, compliance with the short-term objectives (10 years) is currently being achieved in 97% of the classified rivers, the remaining 3% only marginally failed

to comply. Compliance with the long-term objectives is currently being achieved in 79% of reaches. Where water quality is poor in the area, it is caused by inputs of pollutants and not by over-abstraction.

Capital investment by United Utilities (Water) Plc has led to improvements in water quality in a number of rivers. United Utilities (Water) Plc also aims to upgrade wastewater treatment works and sewerage networks. This will improve compliance of some of these failing rivers and help to maintain and improve the quality of other reaches.

Agriculture is widespread throughout the Tame, Goyt and Etherow area and can give rise to diffuse pollution problems. Diffuse run-off from agricultural land associated with cultivation, fertiliser usage and slurry spreading can result in nitrate and phosphate pollution of rivers and streams.

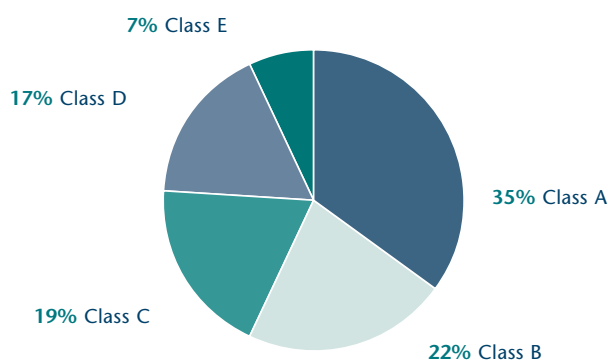


Figure 6 | Water quality classes of surface waters in Tame, Goyt and Etherow catchments in 2001.

Resource assessment and resource availability status

4.1 Introduction

To manage water resources effectively, we need to understand how much water is available and where it is located. This is achieved by undertaking a resource assessment, covering both surface water and groundwater.

Water is used for a number of different purposes, the principal categories being general agriculture, spray irrigation, industrial use, power generation and public water supply. For each different use, the amount of water that is returned to the water environment close to where the water was abstracted may vary considerably. Where the loss is high, the Agency considers the abstraction to be consumptive. This may restrict the availability of water for these purposes, unless a significant proportion of the water abstracted is returned to the water source close to the point of abstraction.

To easily provide information on the availability of water resources within a catchment that may be used for consumptive purposes, a classification system

has been developed. This “resource availability status” indicates the relative balance between committed and available resources, showing whether licences are likely to be available and highlighting areas where abstraction needs to be reduced. This does not replace the need for the licence determination process, which is applied to licence applications. More information on the determination process is given in Annex 2 of *Managing Water Abstraction*⁸.

There are four categories of resource availability status, as shown in **Table 1**.

So that water resources are assessed consistently in similar situations, a framework for the resource assessment and management to be applied in all CAMS areas has been developed.

This framework involves the development of an understanding of the water resources of the CAMS area and assessment of the surface water and groundwater resource. These results are integrated to define the final resource availability status of different units within the CAMS area.

Table 1 | Resource availability status categories

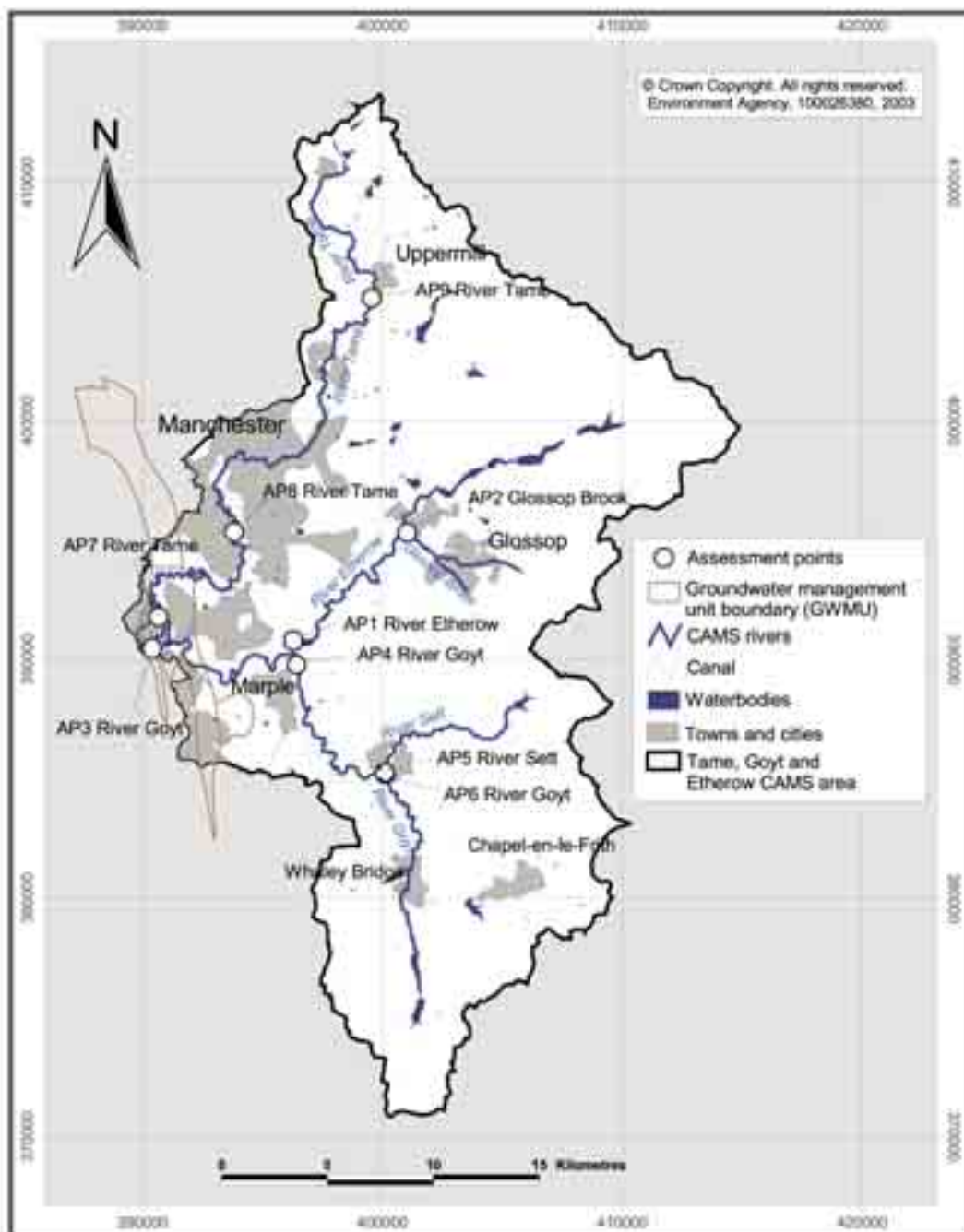
Indicative resource availability status	Definition	Colour coding for illustration on maps
Water available	Water likely to be available at all flows including low flows. Restrictions may apply.	Blue
No water available	No water available for further licensing at low flows although water may be available at higher flows with appropriate restrictions.	Yellow
Over-licensed	Current actual abstraction is resulting in no water available at low flows. If existing licences were used to their full allocation they would have the potential to cause unacceptable environmental impact at low flows. Water may be available at high flows with appropriate restrictions.	Orange
Over-abstracted	Existing abstraction is causing unacceptable environmental impact at low flows. Water may still be available at high flows with appropriate restrictions.	Red

⁸ See footnote 1

Within and between catchments there are variations in characteristics. In order to measure, manage and regulate effectively, we need to break catchments down into smaller areas, recognising similarities in characteristics. In the resource assessment for CAMS, in areas where groundwater resources are significant, groundwater management units (GWMUs) are defined. For surface water, "assessment points" (APs) are located on the river network. These river APs and GWMUs are the focus of resource assessment and abstraction licensing.

Map 4 shows the river APs that have been defined for the Tame, Goyt and Etherow CAMS. Further details on how these were defined are provided in the *technical document*⁹ (final version) for the Tame, Goyt and Etherow CAMS.

Map 4 | Tame, Goyt and Etherow CAMS Groundwater Management Unit and assessment points.



⁹ See footnote 4

4.2 Resource assessment for groundwater management unit (GWMU)

Only one GWMU has been defined for the Tame, Goyt and Etherow CAMS, that is the East Manchester Collyhurst Sandstone GWMU, see **Map 4**.

For the groundwater resource assessment, various tests are applied to each unit to determine the resource availability status. These tests include examining the balance between recharge to the unit and abstraction from it, and the impact of abstraction on summer outflows from the unit.

4.3 Resource assessment of river assessment points

The surface water resource assessment requires the definition of “ecological river flow objectives”. These are based on the sensitivity of the local ecology to flow variations (i.e. their vulnerability to abstraction impacts). The assessment also takes account of other flow needs. These objectives represent the minimum flow that we are aiming to protect. This then affects the amount of water that is available for abstraction.

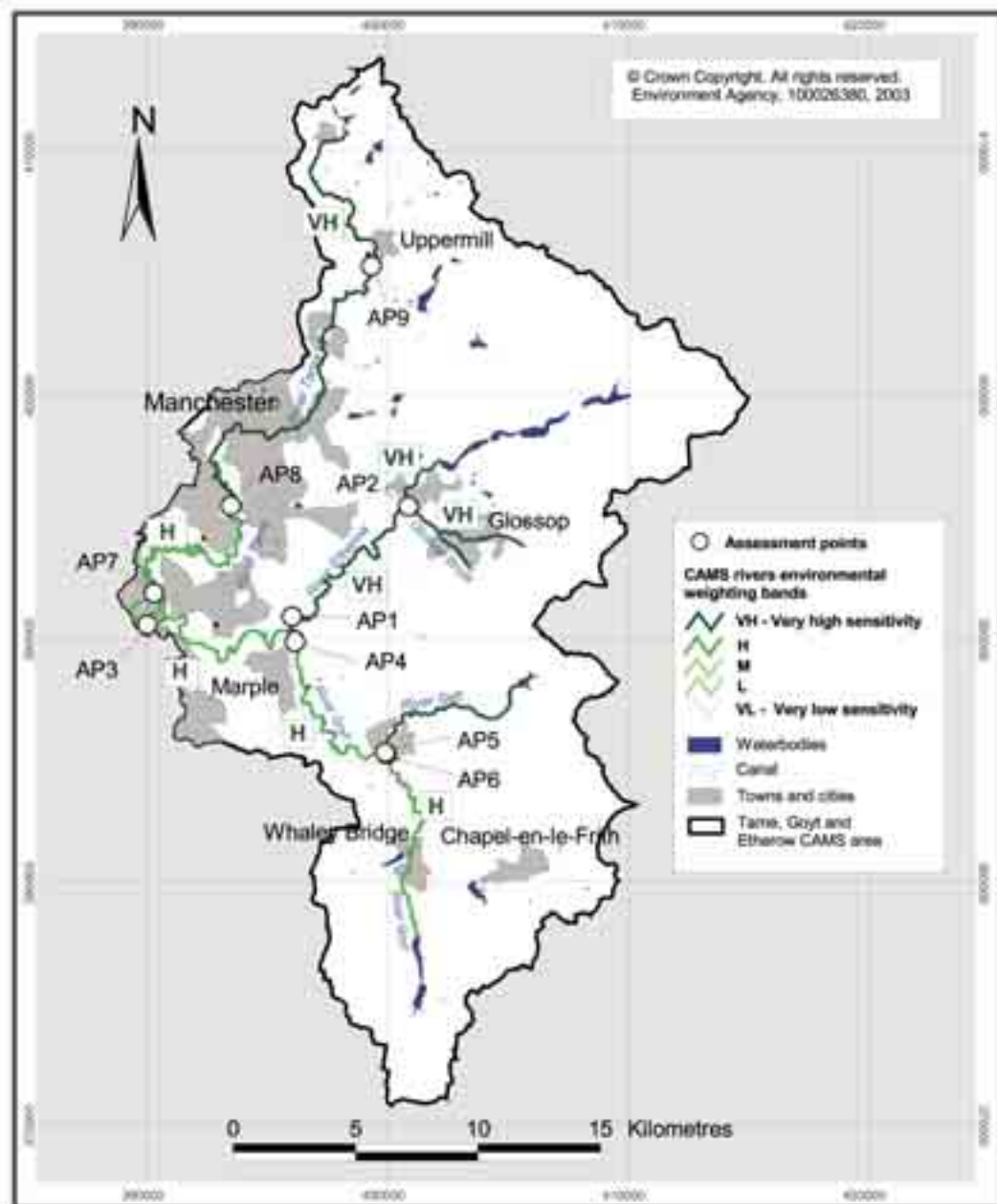
These ecological river flow objectives are developed by first giving “environmental weighting” bands to the reaches. These represent the sensitivity of the river reach to abstraction. Reaches are banded according to their sensitivity to abstraction, either Very High (VH), High (H), Medium (M), Low (L) or Very Low (VL).

Table 2 and **Map 5** show the environmental weighting bands for each assessment point in the Tame, Goyt and Etherow CAMS area.

Table 2 | Tame, Goyt and Etherow CAMS environmental weighting bands and component scores

AP no.	Assessment point name (AP)	Environmental weighting band
1	River Etherow at Compstall Gauging station	VH
2	Glossop Brook prior to confluence with River Etherow	VH
3	River Goyt prior to confluence with River Mersey	H
4	River Goyt at Marple Bridge Gauging station	H
5	River Goyt prior to confluence with River Sett	H
6	River Sett prior to confluence with River Goyt	VH
7	River Tame at Portwood Gauging station	H
8	River Tame at Broomstairs Gauging station	VH
9	River Tame at Uppermill Gauging station	VH

Map 5 | Environmental weighting bands for the Tame, Goyt and Etherow



These ecological river flow objectives are then compared with a scenario flow which assumes that all licences are being fully utilised (i.e. the full licensed quantity is being abstracted). This comparison reveals a surplus, balance or deficit. The size of the surplus/deficit corresponds to a resource availability status for the unit.

The surface water resource availability classification indicates whether new licences will be available for abstraction from the river or whether some recovery of resources is required. However, there are significant variations in flow throughout the year. A classification of “over-licensed” or “over-abstracted” generally indicates that no new licences will be granted. However, this applies only at times of low flow. During periods when flows are higher, there may be some water available for abstraction. The classification therefore reflects resource availability at low flow.

Abstraction licences are sometimes managed against this flow variability by the use of “hands-off flow” conditions. These are conditions on licences that require abstraction to cease (or reduce) when the flow in the river falls below a specified level or flow. Therefore, when river flows are above this hands-off flow, abstraction can take place, but when flows are below this, abstraction must cease or be reduced. Low flows will occur more frequently during the summer months.

In order to maximise abstraction while maintaining the variability of flow (required for many aquatic species), a tiered system of “hands-off flows” can be applied. Licences are generally granted with the lowest hands-off flow possible on a first-come-first-served basis. As more licences are granted, the hands-off flow must be increased to maintain sustainable flows in the river.

For potential applicants for new abstraction licences, it is therefore important to know not only the likelihood of obtaining a licence, but also the reliability of a licence if granted with a hands-off flow condition. Within the CAMS resource assessment, reliability is expressed as a percentage. This percentage indicates the minimum amount of time over the long term that the scenario flow exceeds the river flow objective, therefore allowing abstraction to take place.

The resource assessments for both surface water and groundwater have used a scenario that assumes that all licences are being fully used; that is, the full authorised volume is being abstracted. However, many licences are not fully used and therefore, in reality, the resource availability can be different. If the result of a resource assessment is “over-licensed”, data of actual abstraction is used

to establish whether the status is “over-abstracted” (actual flows are lower than ecological river flow objectives). “Over-abstracted” represents abstraction that is already unsustainable whereas “over-licensed” represents the potential for damage should the full licensed amount be abstracted.

4.4 Integration of the surface water and groundwater resource assessments

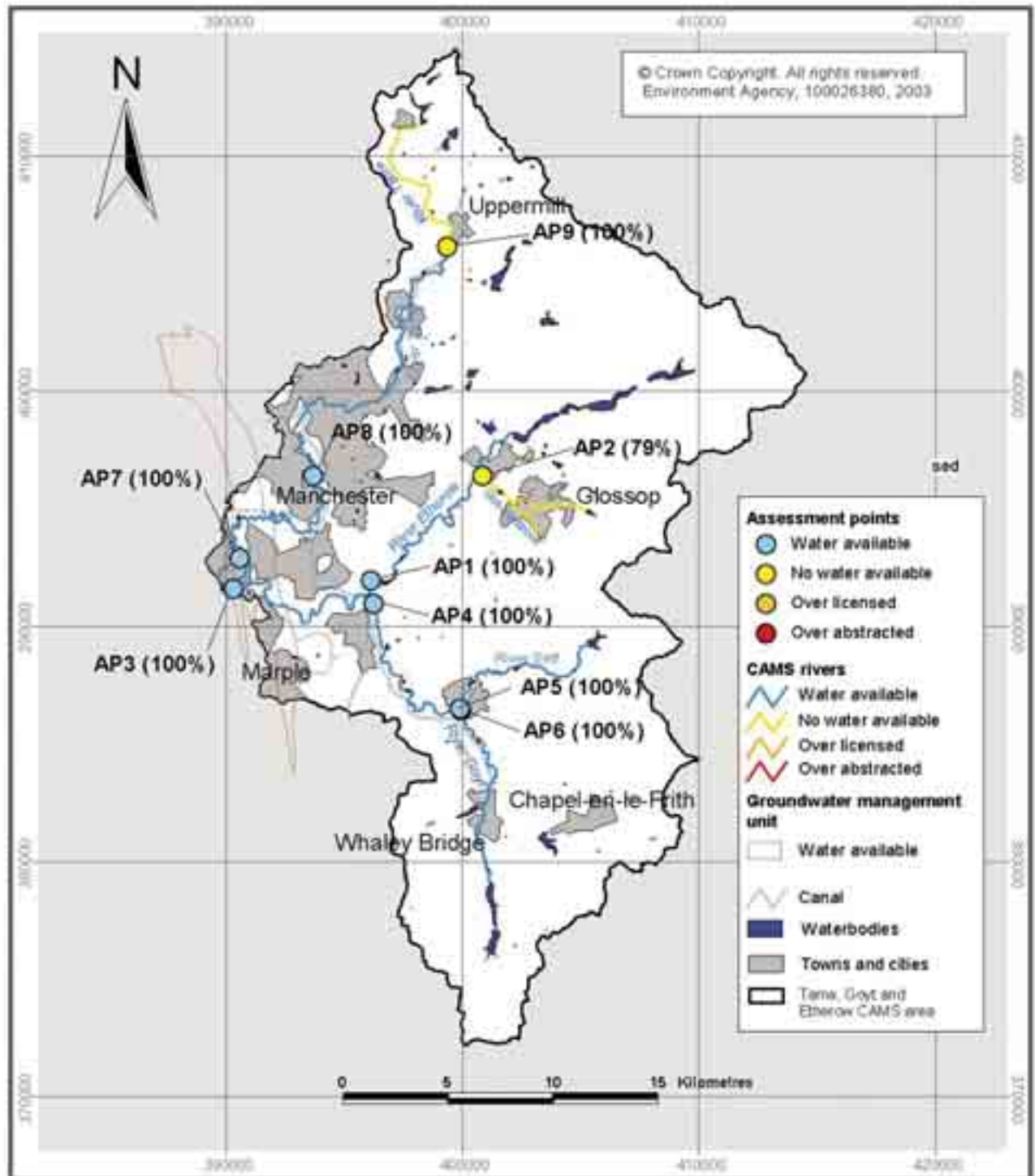
The resource availability results for river reach and groundwater management unit assessments are integrated and iterations made.

However, due to the nature of the geology of the Tame, Goyt and Etherow CAMS area, the major aquifer and surface waters have little connectivity, therefore the groundwater and surface water assessments have not been integrated and the groundwater management unit has been assessed independently.

Map 6 shows the resource availability status of the groundwater management unit and river reaches in the Tame, Goyt and Etherow CAMS area.

Map 6

Tame, Goyt and Etherow CAMS water resource availability. The long term resource reliability percentage is shown in brackets.



4.5 Summary of resource assessment for the water resource management units

Once the resource assessment was complete, the surface water assessment points and groundwater units were combined into water resource management units (WRMUs), based on the similarity of the resource availability status and local issues. These units are used for defining the licensing strategy.

Three water resource management units (WRMUs) were assessed for the Tame, Goyt and Etherow CAMS; two surface water WRMUs and one groundwater WRMU. It is important to understand that the groundwater unit overlaps with a surface water unit. **Map 7** shows the location of the Tame, Goyt and Etherow CAMS water resource management units.

The following sections provide a brief overview of the resource assessment results for each of these WRMUs. Most of the CAMS area has been assessed; however, the CAMS process does not require resource availability assessments for minor aquifers. Therefore assessments have not been carried out on the minor aquifers in the Tame, Goyt and Etherow CAMS.

4.5.1 Water Resource Management Unit 1 (Lower River Tame, River Etherow and River Goyt)

WRMU 1 takes in the middle and lower reaches of the Tame, and the entire lengths of the Goyt and Etherow, which covers approximately 80% of the CAMS area. This unit includes the assessment points AP1, AP3, AP4, AP5, AP6, AP7 and AP8. These assessment points were grouped together because of their “water available” status.

Map 7 illustrates the reaches in WRMU 1 and illustrates the balance between the amount of water required for the environment, the amount of water already licensed and the amount of water available at low flows. This unit contains numerous significant treated wastewater discharges on the River Tame where the river flows through urban areas such as Manchester and Denton.

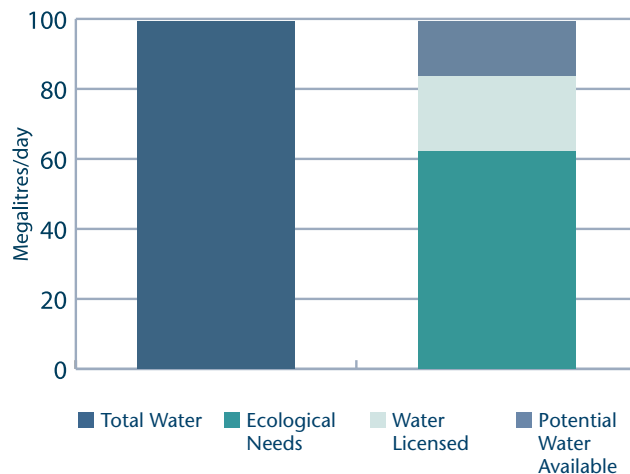


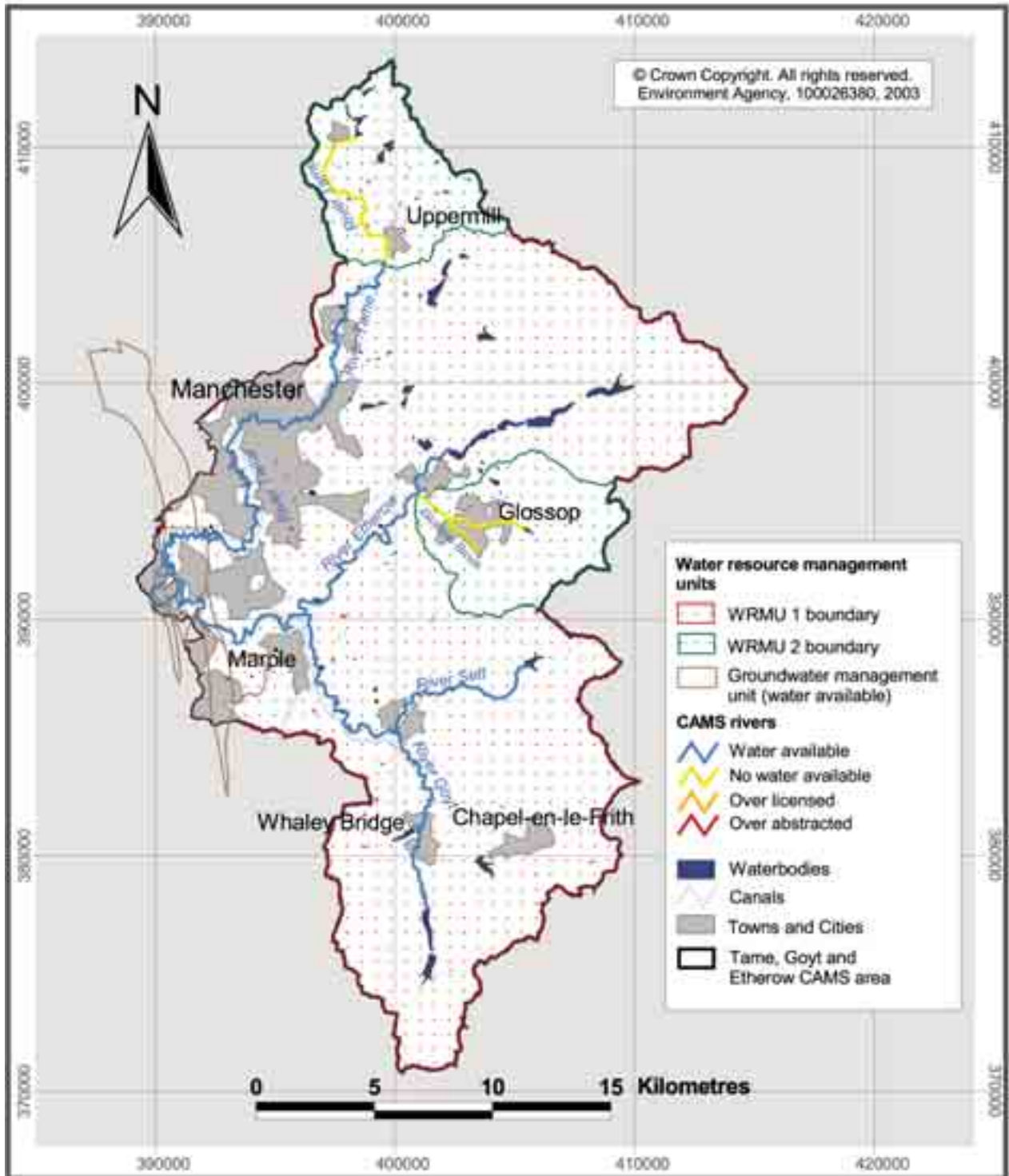
Figure 7 Indicative resource availability across WRMU 1 at low flows

The watercourses in this unit are largely isolated from groundwater by the layer of impermeable boulder clay overlying the geology. There is likely to be some degree of connectivity between minor aquifers and surface water in the uplands where the boulder clay thins. However, as the CAMS process does not apply to minor aquifers, this unit was assessed as being independent of groundwater.

There are many designated conservation sites in this unit and the Peak District National Park covers much of the eastern and southern area. The South Pennines Moor cSAC covers the western boundary and southern tip of this unit. This cSAC also has SPA and SSSI designation. A number of smaller SSSIs are also present, a significant length of the Huddersfield Narrow Canal is designated, as are Toddbrook and Combs reservoir in the south of the unit. In the centre of the unit there are two other SSSIs, Ludworth Intake and Compstall nature reserve. This unit is of particular importance for leisure and recreation activities, for example angling, canoeing, sailing and bird watching.

The resource availability status of this unit is “water available”.

Map 7 | Tame, Goyt and Etherow CAMS water resource management units



4.5.2 Water Resource Management Unit 2 (Upper River Tame and Glossop Brook)

This WRMU includes AP2 and AP9 and encompasses the River Tame above Uppermill and Glossop Brook. These river stretches were grouped together because of their “no water available status” and the similarity of the Upper Tame and Glossop Brook catchments. **Map 7** illustrates the reaches in WRMU 2 and **Figure 8** illustrates the balance between the amount of water required for the environment and the amount of water already licensed.

These watercourses have some connection with minor aquifers in the underlying sandstone geology. However, the CAMS process does not take into account minor aquifers so these watercourses were assessed as being independent of groundwater. There are, at present, abstractions into canals but despite British Waterways’ best endeavours to provide the Agency with information on this matter we are unaware of all the canal feeders and quantities of water abstracted. Therefore, these impacts have not been taken into account as part of the resource assessment.

It was decided that in order to address the environmental concerns of stakeholders it should be assessed as “no water available”. There are large areas of the South Pennine Moors cSAC and SPA within this unit. The unit also includes Ladcastle & Den Quarries SSSI. The discharges made to this unit are predominately from small wastewater treatment works.

The resource availability status of this unit is “no water available”.

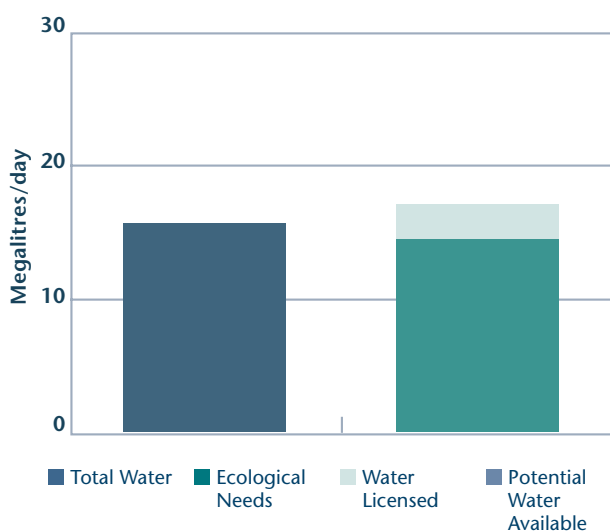


Figure 8 Indicative resource availability across WRMU 2 at low flows

4.5.3 Water Resource Management Unit 3 (The East Manchester Collyhurst Sandstone unit)

WRMU 3 encompasses the East Manchester Collyhurst Sandstone groundwater management unit which extends beyond the surface water CAMS boundary.

Hydraulic connection with the river and recharge to the aquifer is reduced by the low permeability boulder clay which covers much of the unit, for example, along Lady Brook.

The Agency is currently undertaking an investigation of groundwater resources assessment of the whole of the Manchester and East Cheshire Aquifer. This will provide a series of water balances and indicate resource availability for difference aquifer blocks, including the Collyhurst Sandstone WRMU. The preliminary water balances derived from this project have been used to assess the resource availability of this unit.

The resource availability status of this unit is “water available”.

4.5.4 Remaining CAMS areas not in a WRMU

Water resource availability has been assessed for most areas within the Tame, Goyt and Etherow CAMS area, but the following areas were not assessed:

- Catchments upstream of Fernilee, Kinder, Dovestone, Combs and the Longdendale reservoirs. These features are considered to be fixtures in the catchment and the ecology downstream of long-standing reservoirs is generally regarded to have adapted to the flow regime.
- Groundwater has not been assessed in the areas of Tame, Goyt and Etherow CAMS that contain minor aquifers. This is because the CAMS process does not require minor aquifers to be assessed.

Licensing strategy

5.1 Sustainability appraisal

A sustainability appraisal process has been developed to enable the Agency to take account of costs and benefits in the production of CAMS. The process considers the government's four objectives of sustainable development, relating to environment, economics, society and resource use (see below). It uses a largely qualitative, proforma-based approach to consider what the resource availability status for each water resource management unit should or could be after each six-year cycle (Tier 1). This is undertaken for all units in all CAMS areas. It also allows the appraisal of options for recovering water resources, by taking into account the implications of different options on all aspects of sustainability (Tier 2). This is undertaken to determine the most sustainable options for the future management of the catchment including, where necessary, options for recovery of resources. More information on the sustainability appraisal process is provided in *Managing Water Abstraction: The Catchment Abstraction Management Strategy Process*¹⁰.

The sustainability appraisal of the Tame, Goyt and Etherow CAMS considered the impacts of a number of options for the management of water resources against:

- environmental criteria such as designated sites, non-designated sites, water quality, archaeology and heritage, and landscape and geomorphology;
- social criteria such as water company customers, angling, water-based recreation, bankside recreation, health and flood defence;
- economic criteria such as licensed abstractors, impacts on the wider economy, development opportunities, local strengths and disparities, and tourism;
- impacts on natural resources such as energy consumption, energy generation, water use, changes in land use and waste and discharge.

¹⁰ See footnote 1

¹¹ See footnote 4

More details of the sustainability appraisal completed for the Tame, Goyt and Etherow CAMS can be found in the *technical document*¹¹ (final version) available from your CAMS contact (details in Section 1).

5.2 Catchment overview of licensing strategy

This section outlines elements of the final strategy that apply to the whole CAMS area.

The Agency operates a rigorous enforcement policy and carries out regular inspections to ensure that licence holders are complying with the conditions on their licences.

Monitoring will continue to be carried out for all surface water units to increase our knowledge of flows throughout the catchment. This will include further fisheries and ecology monitoring to ensure that there is sufficient information for environmental weighting assessment at the review of the Tame, Goyt and Etherow CAMS strategy in six years' time, and to monitor the impact of this strategy until then.

5.2.1 Links between the Tame, Goyt and Etherow CAMS and regional and national strategies

CAMS sit within a long-term framework provided by the Agency's national and regional water resources strategies *Water Resources for the Future*¹² published in 2001. The National Strategy defines a strategic framework for water resources management, including abstraction licensing, with a forward look of 25 years. It is based on the following key principles:

- Sustainable development: the idea of ensuring a better quality of life for everyone, now and for generations to come.
- The "twin-track" approach, which takes a balanced view, seeking the efficient use of water while recognising that additional abstraction may be necessary.

¹² *Water Resources for the Future: A Strategy for the North West Region*, Environment Agency (2001) & *Water Resources for the Future: A Strategy for England and Wales*, Environment Agency (2001)

- Robustness to uncertainty and change (e.g. the ability to respond to climate change) – we must consider all the options, and adopt a flexible approach.
- The precautionary principle: where there is uncertainty about the consequences, decisions should be cautious, and we should seek to clarify the source of uncertainty. If there is a serious risk of environmental damage because of a proposed abstraction, the decision about that abstraction should ensure the environment is protected.
- Maintaining the security of public water supplies in the area.

In addition to the National Water Resources Strategy, there are other national initiatives that have implications for the management of water in the Tame, Goyt and Etherow CAMS area. The national Restoring Sustainable Abstraction (RSA) programme catalogues sites that are affected or could be affected by abstraction. The catalogue includes National Environment Programme (NEP) sites, Asset Management Plan (AMP) schemes and Habitats Directive sites, where consents need to be reviewed. Within the Tame, Goyt and Etherow CAMS, abstraction licences influencing the South Pennine Moors cSAC/SPA as well as the many SSSIs will need to be considered.

We have completed preliminary assessments for a number of these sites under the Habitats Directive and if further investigation of licences is required, we will contact the licence holder at the appropriate stage in the process. For further information on the Habitats Directive, refer to *Managing Water Abstraction*¹³ (Annexe 2, page 32).

The Agency's North West Water Resources Strategy considers how to meet regional needs for abstraction for public water supply, industry and agriculture over the next 25 years in a sustainable manner. Some of these considerations could have an impact on the Tame, Goyt and Etherow catchment, although they could be more important in subsequent CAMS cycles:

- protection and enhancement of the natural environment of the region;
- continued emphasis on demand management and efficient use of water in the home, commercial premises, by industry and by agriculture should reduce the need for additional abstraction;
- efficient management of existing sources of supply and integrated networks to maximise reliability and flexibility;
- possible utilisation of rising groundwater for abstraction;

¹³ See footnote 1

¹⁴ See footnote 1

- additional source development in the United Utilities (Water) Plc Integrated Resource Zone around 2015 may affect the use of sources in the Tame, Goyt and Etherow CAMS area;
- encouragement of the development of winter storage reservoirs on farms where feasible and where there is a shortfall of summer irrigation water.

5.2.2 CAMS and drought

Droughts are prolonged periods of below average rainfall resulting in low river flows, reservoirs, and/or low recharge of groundwater. Depending on the duration, intensity, and the area affected, this may impose a significant strain on both water resources and the environment. Droughts are variable and relatively rare events and therefore considerable flexibility is required in their management.

The CAMS resource assessment uses river flow and groundwater data from the 1960s onwards (as available). This may include periods of drought, but does not necessarily include the worst events on record. The CAMS process looks at managing water resources in a range of conditions. However, it does not specifically address the management of drought situations.

Both the Water Companies and the Environment Agency produce specific drought plans which include a series of progressive actions to be taken as a drought is threatened, develops, and abates. The Water Company's drought plan sets out emergency measures that may be required in the event of a drought to reduce the risk to public water supply, for example possible drought permits. The Agency's drought plans document the arrangements for regulating the water companies, minimising environmental risk, and managing and co-ordinating drought activities. Further information about managing drought situations can be found in *Managing Water Abstraction*¹⁴ and the *technical document*¹⁵ (final version).

5.2.3 Licence determination

*Managing Water Abstraction*¹⁶ sets out a summary of who can apply for an abstraction licence, and how the Agency determines licence applications and impoundment licences. It also describes the circumstances in which a licence is not required. Refer to *Managing Water Abstraction* (Annexe 2)¹⁷ for further information on exempt purposes.

¹⁵ See footnote 4

¹⁶ See footnote 1

¹⁷ See footnote 1

The strategy outlined in this document will be achieved within the framework of the legislation for abstraction licensing; i.e. Water Resources Act 1991 and associated legislation.

Any new applications that are within 3km of a Habitats Directive site will be required to demonstrate that the application/proposal will not have a detrimental impact on the features of the protected site.

The strategy does not override the continuing requirement to determine each licence application on its own merits. For example, it may not be possible to grant certain licences in areas with “water available” status due to the need to safeguard local environmental interests and/or other abstractors; existing licence holders will be safeguarded. Conversely, the water resource availability status of “no water available” applies specifically to low flow conditions, and licences may be available with restrictions. (For further details see Sections 5.3, 5.4 and 5.5 on the strategy for specific WRMUs units and Section 5.2.5 on hands-off flows)

5.2.4 Approach to time-limiting

For applications for new and varied licences received on or after 1 October 2001, our policy is to issue the licence with a time limit.

The normal renewal period is 12 years for the Tame, Goyt and Etherow CAMS and the common end date is 31 March 2017. All new licences will be issued to this common end date but the renewal period may shorten as this date approaches. The Agency also has the discretion to apply shorter time limits to licences and, in exceptional cases, permit longer durations.

Applications for renewals will be subject to the usual statutory application procedures. In any case, the renewal of a licence will normally be dependent upon the applicant meeting three tests:

- Continued justification of need.
- Demonstration of efficient use of water.
- Environmental sustainability.

Licence holders will be notified in advance as their licence reaches the expiry date to allow them time to make an application for renewal, if required. If a licence is not likely to be renewed or will be renewed on significantly more restrictive terms, the Agency will aim to give six years’ notice.

Applications to renew a licence should be submitted no less than three months before expiry to allow for determination of the application.

¹⁸ See footnote 1

For further information on time-limiting, refer to *Managing Water Abstraction*¹⁸ (Section 5) .

5.2.5 Approach to hands-off conditions

It is Agency practice normally to apply a flow condition to a new surface water abstraction using hands-off flow conditions or levels. These are conditions on licences that require abstraction to cease (or reduce) when the flow in the river falls below a specified amount.

Any proposed abstraction will need to be very small in relation to the flow in the river, or result in no net loss (even over a short river stretch), for a hands-off flow condition not to be included on the licence. The guiding principle is that the new abstraction must not adversely affect existing protected rights to abstract water, other lawful users and environmental interests. Successive proposals may result in higher hands-off flow conditions in order to safeguard previously established rights. In certain circumstances, it may be necessary to use river levels, rather than flows, as a control. Where necessary we will use a tiered approach as set out in the RAM Framework hands-off flows to meet the ecological river flow objective.

The principle of the RAM Framework is to allow abstraction while maintaining the variability of low flow through a tiered system of hands-off flows. Licences are generally granted with the lowest hands-off flow possible on a first-come-first-served basis. As more licences are granted, the hands-off flow must be increased to maintain sustainable flows in the river.

Wherever possible the flow condition will be specified at an Agency flow gauging station so that enforcement is as effective as possible. There are situations where this may not be feasible and the applicant will be required to install and maintain a measuring device to appropriate British Standards. It will be made clear to the applicant of their responsibility and the conditions of the licence. Further guidance on hands-off flow conditions will be given to licence applicants.

5.2.6 Guidance on the conditions which may be applied to new groundwater abstractions

For the majority of the Tame, Goyt and Etherow CAMS area, a groundwater resource assessment has not been carried out (as there are only very limited areas of major Permo-Triassic age sandstone aquifers present in the CAMS area). However, all licensed groundwater abstractions in the catchment have been assessed for their impact on river flow. New applications for groundwater licences will continue

to be assessed for their impact on other abstractors and river flows. Conditions will be applied to new groundwater abstraction licences dependent on the strategy for the individual WRMUs (see Sections 5.3, 5.4, 5.5 and 5.6 for more details) and will be appropriate to any potential impacts on river flows.

5.2.7 Water efficiency

The Agency will encourage all abstractors to employ water efficient methods to reduce demand. These are largely a matter of common sense, thinking about ways water is used and then targeting for reduction. Licence holders are notified that they will be required to demonstrate efficient use of water for the renewal of time-limited licences.

5.3 Water Resource Management Unit 1 (Lower River Tame, River Etherow and River Goyt)

5.3.1 Resource availability status and results of the sustainability appraisal

WRMU 1 has a resource availability status of “water available”. Using the Agency’s sustainability appraisal, alternative management options were considered. The strategy for this WRMU is to remain at the current status of “water available” and allow further abstraction beyond the current full licensed limit. Further abstraction will be permitted up to a level that does not cause a failure to meet the ecological river flow objective. The rivers within this unit have either a “High” or “Very High” environmental sensitivity to abstraction (See **Figure 9**).

This option allows further abstraction, whilst protecting the ecology and the recreation interests in the unit. When issuing new licences, we will consider the environmental sensitivity of the different river reaches, and how to protect lawful users downstream.

5.3.2 Guidance on the assessment of new applications

Currently, water is available all the time, based on long-term average conditions. Therefore:

- there is a presumption to grant new licences within this unit, subject to normal determination

criteria and local circumstances, in accordance with the Water Resources Act 1991 and associated legislation;

- when assessing new licence applications, any impacts on the South Pennine Moors cSAC and SPA will be considered;
- where hands-off flows are required, these will be set in respect of site-specific issues. We will consider using the RAM Framework to set tiered restrictions to protect flow variability, as appropriate.

As the number of licences granted increases they will be subject to more restrictive flow conditions, and as a result, the overall reliability of consumptive licences will be reduced.

5.3.3 Renewals and management of existing licences

There will be a presumption of the renewal of time-limited licences and time-limited variations in accordance with the Agency’s time-limiting policy and associated renewal criteria (Section 5.2.4).

Figure 9 | The River Etherow at Broadbottom.



5.4 Water Resource Management Unit 2 (Upper River Tame and Glossop Brook)

5.4.1 Resource availability status and results of the sustainability appraisal

WRMU2 has a resource availability status of “no water available”. Using the Agency’s sustainability appraisal, alternative management options were considered. The strategy for this WRMU is to remain at the “no water available” resource status. This option balances the economic and environmental needs of WRMU 2 by limiting further abstraction to times when river flows are high. The rivers within this unit have a “Very High” environmental sensitivity to abstraction (see **Figure 10**).

Figure 10 | Glossop Brook at Dinting Vale, Glossop.



5.4.2 Guidance on the assessment of new applications

Currently there is no water available at low flow periods of the year based on long-term average conditions. Therefore:

- there is some scope to grant new licences within this unit at higher flows, subject to normal determination criteria and local circumstances, in accordance with the Water Resources Act 1991 and associated legislation;
- there will be restrictions on new licences during times of low flow implemented through hands-off flows;
- there will be a presumption against consumptive abstraction when flows are not meeting the ecological river flow objective. Non-consumptive abstractions will be considered, provided they do not compromise the current ecological status of the reaches within WRMU 2.

Site-specific issues will primarily determine hands-off flows, however, we will consider using the RAM Framework to set tiered restrictions to protect flow variability, as appropriate. As more licences are granted, the hands-off flow must be increased, and as a result, the reliability of water abstractions will be reduced (see Section 5.2.5).

5.4.3 Renewals and management of existing licences

There will be a presumption of the renewal of time-limited licences and time-limited variations in accordance with the Agency’s time-limiting policy and associated renewal criteria (Section 5.2.4).

5.5 Water Resources Management Unit 3 (The East Manchester Sandstone Collyhurst Unit)

WRMU 3 has a resource availability status of “water available”. This unit forms the eastern boundary of the Manchester and East Chester aquifer. Because WRMU 3 only forms a small area of this extensive aquifer the Agency proposes to combine the sustainability appraisal for this unit with the sustainability appraisal for the Mersey Bollin CAMS, to be published in 2005. By postponing this appraisal we will also be able to make use of the results of a study currently being done on the whole of the Manchester and East Cheshire Aquifer. This study will increase our understanding of the aquifer and guide our proposed management strategy.

5.5.1 Guidance on the assessment of new applications

Because of uncertainty over actual rates of recharge to the aquifer and the degree of river/groundwater interaction, new licences may be time-limited to less than the six-year CAMS review cycle and may require groundwater level monitoring from the abstraction borehole and/or purpose drilled observation boreholes. In critical situations, hands-off levels conditions may be applied to protect other uses or sensitive aquatic eco-systems.

5.5.2 Renewals and management of existing licences

There will be a presumption of the renewal of time-limited licences and time-limited variations in accordance with the Agency’s time-limiting policy and associated renewal criteria (Section 5.2.4).

5.6 Remaining areas not in a WRMU

Not all rivers and aquifers were included in the resource assessment for the Tame, Goyt and Etherow CAMS. However, these areas were given some consideration at the resource assessment phase to ensure that there is a strategy for managing these areas.

5.6.1 Guidance on the assessment of new applications

Current licensing practice will apply to all areas not included in a WRMU. The Agency will retain the presumption that water is available for new licences, subject to normal determination criteria.

5.6.2 Renewals and management of existing licences

There will be a presumption of the renewal of time-limited licences and time-limited variations in accordance with the Agency’s time-limiting policy and associated renewal criteria (Section 5.2.4).

5.7 Opportunities for water rights trading in the Tame, Goyt and Etherow CAMS area

One of the objectives of the CAMS process is to facilitate water rights trading. The term “water rights trading” refers to the transferring of licensable water rights from one party to another, for benefit. It involves a voluntary transfer of a right to abstract water between abstractors, using the abstraction licensing process. More detailed information is available in Section 4 of *Managing Water Abstraction*¹⁹.

A guidance leaflet (*Water Rights Trading*) was published and sent to Licence Holders towards the end of 2002 explaining the scope for abstraction licence trading within current legislation. Further

information on water trading is available on the Environment Agency website. Consultation on more detailed proposals followed in July 2003. After considering responses to the consultation exercise, in the winter of 2003, further information will be made available to update Licence Holders on the Agency's conclusions for a detailed framework within which water rights trading will take place

Table 3 Summary of licensing strategy for each WRMU

	WRMU 1	WRMU 2	WRMU 3	Comments
Current Status 2004	Water available	No Water available	Water available	
Target Status 2010	Water available	No Water available	Water available	
Management Options				
Continue current practice			✓	This would involve continuing the current practice in accordance with the Water Resources Act 1991 and other local considerations. Hands-off levels will be set according to site-specific issues
Adopt RAM Framework - (using hands-off flow conditions to protect flow variability)	✓	✓		WRMU 1 will allow the surplus water to be abstracted but consideration will be given to protecting flow variability through setting tiered hands-off flow conditions. With regard to WRMU2, site-specific issues will primarily determine hands-off flow conditions, and additional consideration will be given to using the RAM Framework.
Monitoring	✓	✓		Monitoring will continue to be carried out for the surface water units to increase our understanding within the catchment.

¹⁹ See footnote 1

5.8 The impact of the Water Act 2003

The Government, as well as the Environment Agency and other organisations, considers that significant changes to the water abstraction authorisation system are now needed in order to help ensure that we continue to use water resources sustainably. Over the last few years, Government proposals and decisions have been set out in a series of consultation and decision papers, resulting in the publication of a draft Water Bill in November 2000. The Bill was debated in Parliament and received Royal Assent in November 2003. The new Water Act 2003 will complement existing Agency initiatives, such as the review and curtailment of damaging abstractions, the development of a framework for trading in water rights, implementation of the Agency's policy on time-limiting licences and the development of CAMS.

When enacted, the responsibility for many of its provisions will fall to the Agency and will result in significant changes to the water resources authorisation system over a period of years. In order to support the implementation of the new legislation, the Agency will produce clear guidance both for Agency staff and existing or potential licence holders and other key stakeholders in order to explain and facilitate the introduction of these important changes.

Future developments in the CAMS area

In the rural parts of the Tame, Goyt and Etherow CAMS area there is the possibility of demand for greater use of direct river or groundwater abstraction for agricultural or domestic purposes. However, over recent decades there has been no net increase in abstraction and more recently a decline in abstraction has been seen, particularly in the industrial sector. In the urban areas, groundwater demand is likely to continue to fall due to the reduction in demand from industry across the area.

We will continue to monitor all of the surface water units to increase our knowledge and understanding of flows throughout the catchment. Further fisheries and ecology monitoring will ensure that we can carry out the environmental weighting assessment to complete the review of the Tame, Goyt and Etherow CAMS in six years' time, and monitor the impact of the strategy until that time.

Post-CAMS appraisal

The Agency will review the Tame, Goyt and Etherow CAMS in 2008 and publish the reviewed strategy in 2010. The success of the first CAMS can be assessed using the following indicators:

- New licences granted where there is a surplus of water available and applications satisfy the statutory determination requirements.
- The resource status of each Water Resource Management Unit remains unchanged or improves.
- A routine monitoring programme is undertaken which includes monitoring flows throughout the catchment and monitoring the environment, including ecological, fisheries and physical factors. This will identify any potential changes to the current situation, highlighting improvements or deterioration resulting from abstraction activity.
- We will continue to regularly visit licence holders to ensure they comply with licence conditions, and to encourage water efficiency measures.
- Protected rights of existing abstractors and existing lawful users are not adversely affected.

Appendix 1

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. Significant individual abstraction records are reported to the Environment Agency each year.

Abstraction impact

River abstractions directly from the river. For surface water abstractions behind impoundments, need to take storage into account. Similarly for groundwater abstractions, need to translate abstraction into stream flow depletion both spatially (identifying the river reaches impacted) and temporally (indicating the monthly profile of stream flow depletion).

Abstraction licence

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

Aquifer

A geological formation, group of formations or part of a formation that can store and transmit water in significant quantities.

Assessment point

Critical point in a catchment at which an assessment of available resources has been made. APs are located at the extremities of identified reaches and water resource management units.

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.

Borehole

A well sunk into a water-bearing rock from which water will be pumped.

Canal

An artificial watercourse used for navigation.

Catchment

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

Confluence

The point where two or more streams or rivers meet.

Consumptive use

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

Demand

The requirements for water for human use.

Demand management

The implementation of policies or measures which serve 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.

Derogation

In legal terms, the taking away of protected rights under the Water Resources Act due to the granting of a new licence.

Discharge

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

Drift

A loose deposit of sand, gravel, clay etc.

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 on the environment.

EU 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.

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 flow/level requirements

River flow or water level needs within a catchment to prevent ecological damage.

Environmental river flow objectives

The minimum river flows from the area required to protect ecological and other environmental objectives.

Environmental weighting

An assessment of a river's sensitivity to abstraction based on physical characteristics, fisheries, macrophyte and macroinvertebrates for a catchment/sub-catchment.

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 occurring below ground in natural formations (typically rocks, gravels and sands).

Groundwater management units

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

The EU Wild Birds Directive (1979) and the EU Habitats Directive (1992) – implemented in UK law through the Conservation (Natural Habitats, &c) Regulations (1994) – are collectively known as the Habitats Directive. A network of sites has been established to protect important and threatened species.

Hands-off flow

A condition attached to the abstraction licence so that if the flow in the river falls below the flow specified on a licence then the abstractor may be required to stop or reduce the abstraction.

Hands-off level

Level below which an abstractor may be required to stop or reduce abstraction (i.e. groundwater level or river stage, to be specified on a licence, as a condition of that licence).

Hydrogeology

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

Hydrology

The study of water on and below the Earth's surface.

Hydrometric network

Networks of sites monitoring rainfall; river flow; river, lake, tidal and groundwater levels; and some climate parameters. The data is used extensively for water resources management and planning, water quality and ecological protection and improvement, flood defence design, flood forecasting and flood warning.

Irrigation

Supply land with water by means of artificial canals, ditches etc., especially to promote the growth of food crops.

Local Environment Action Plan

(Previously Catchment Management Plan). The process by which the Agency plans to respond to the environmental issues in a catchment. A consultation plan is published followed by an action plan, which is reviewed every five years.

Licence

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

Licence application

Formal request by an individual or organisation to the competent authority for a licence. For abstraction licences, the competent authority is the Environment Agency.

Licence determination

A decision by the competent authority on whether, and on what terms, to grant or refuse a licence application, by reference to the authority's regulatory powers and duties.

Licence trading

A commercial transaction for the purpose of transferring an abstraction licence between two parties.

Licensed abstraction and discharge impacts

The impacts of abstractions and discharges calculated for current abstraction licences and discharges based on full uptake of licensed abstraction rates and consumptiveness assumptions.

Low flow

The flow that is exceeded for a given percentage of the time. For example Q95 is the flow that is exceeded 95 per cent of the time, which means that the flow will only fall this low 5 per cent of the time.

Main river

The watercourse shown on the statutory "Main River Maps" held by the Agency and DEFRA (formerly known as MAFF). The Agency has permissive powers to carry out works of maintenance and improvements on these rivers.

Managing Water Abstraction

Document produced in May 2001 on the CAMS process, updated July 2002.

Natura 2000

The Habitats Directive will establish and protect a network across Europe of the most important areas for wildlife, to be known as Natura 2000. This will include all SPAs and cSACs on sites that are already SSSIs.

Nitrate Vulnerable Zones

Areas designated with surface water and/or groundwater vulnerable to nitrate pollution.

Non-consumptive

This is where all abstracted water is returned to the source a relatively short distance downstream of the abstraction point.

OFWAT

Office of Water Services.

Permeability

The characteristic of a rock or soil that determines the rate at which fluids pass through the rock or soil under the influence of differential pressure.

Precipitation

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

Protected right

Protected rights include all existing licensed abstractions, and certain exempt abstractions for domestic and agricultural purposes (excluding spray irrigation) not exceeding 20 m³/d.

Public water supply

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

Q95

The flow of a river which is exceeded on average for 95 per cent 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

A length of river.

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.

Revocation

Cancellation of a licence and its associated rights and benefits.

Rio Earth Summit, 1992

This was the United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro. It was the largest ever gathering of world leaders (over 150 heads of government). At this conference 153 countries signed the Convention on Biological Diversity.

River

An open channel in which inland surface water can flow.

River corridor

The continuous area of river, river banks and immediately adjacent land alongside a river and its tributaries.

River flow objectives (RFOs)

The minimum river outflows from the area, required to protect ecological objectives, effluent dilution requirements, navigation and amenity in-river needs.

River reach

Stretch of a river between two assessment points, delineated for the purposes of abstraction licensing and resource management.

Saline intrusion

The ingress of salt water into an aquifer, from sea or estuary, due to groundwater depression normally caused by excessive groundwater abstraction.

Site of Biological Interest (SBI)

An area given a county/regional designation because of its biological conservation value.

Scenario abstraction and discharge impacts

The amount by which all the abstractions in the area reduce natural outflows from it, taking into account the consumptiveness of the use, the location of any effluent return and any lags or smoothing between abstraction and outflow impact. Based on an assumed abstraction and discharge scenario (e.g. full licensed rate, 'existing', 'recent actual' etc.).

Scenario flows

The flows that would leave the assessment point in the specified year, based on the assumed scenario abstractions and discharges.

Special Area of Conservation (SAC)

Classified under the EU Habitats Directive and agreed with the EU to contribute to biodiversity by maintaining and restoring habitats and species.

Special Protection Area (SPA)

Classified as such under the EU Birds Directive to provide protection to birds, their nests, eggs and habitats.

Spray irrigation

Water sprayed onto grassland, fruit, vegetables etc. Can have a high impact on water resources.

Springs

These occur where the water table intersects the ground surface.

Site of Special Scientific Interest (SSSI)

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

Strata

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

Surface water

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

Surface water catchment

The area from which run-off 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. This involves meeting four objectives simultaneously:

- social progress which recognises the needs of everyone;
- effective protection of the environment;
- prudent use of natural resources;
- maintenance of high and stable levels of economic growth and employment.

Threshold

A hands-off flow (HOF) value within a sequence of HOFs, each interval (INT) MI/d higher than the previous.

Tidal limit

The most upstream point within an estuary or river where water levels are subject to tidal variation.

Time-limited licence

Licence with specified end date.

Treatment works (also waste water treatment works)

Sewage treatment works or water treatment works.

Uptake

The degree to which a licensed entitlement is actually abstracted over a long period of time (sometimes related to the purpose and type of licence).

Water Level Management Plans (WLMPs)

These provide a framework by which the water level requirements of a particular site can be discussed 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

The naturally replenished flow or recharge of water in rivers or aquifers.

Water resource management unit

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

Water resources strategies (The)

Strategy for water resource planning in England and Wales over the next 25 years to 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 table

Top surface of the saturated zone within the aquifer.

Watercourse

A stream, river, canal or channel along which water flows.

Wetland

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

Appendix 2

List of abbreviations

AOD (also m AOD)	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 in metres, hence m AOD	m AOD	Metres Above Ordnance Datum (mean sea level at Newlyn Cornwall 1915–1921)
AP	Assessment point	M³/s	Cubic metres per second
BAP	Biodiversity Action Plan	MAF	Minimum Acceptable Flow, Section 21 of the Water Resources Act 1991
BW	British Waterways	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, = tcmd, thousand cubic metres per day
CAMS	Catchment Abstraction Management Strategy.	MI/a	MI/a = MI per year = Megalitres per year
DEFRA	Department for Environment, Food and Rural Affairs (succeeds DETR)	mm	Millimetres
DETR	Department of the Environment, Transport and the Regions	NRA	National Rivers Authority (now incorporated within the UK Environment Agency)
EU	European Union	OFWAT	Office of Water Services
EW	Environmental Weighting of a river reach based on its physical, macrophyte, fisheries and macroinvertebrate scores	PWS	Public Water Supply
FDC	Flow Duration Curve	Q50	Flow exceeded during 50 per cent of period over which flow data are being considered
GQA	General Quality Assessment	Q95	Flow exceeded during 95 per cent of period over which flow data are being considered
HOF	Hands-off flow	RFO	River Flow Objectives
Km	Kilometres	RQO	River Quality Objective
Km²	Square kilometres	SAC	Special Area of Conservation
NVZ	Nitrate Vulnerable Zones – areas designated with surface water and/or groundwater as vulnerable to nitrate pollution	SPA	Special Protection Area
LEAP	Local Environment Agency Plan (previously Catchment Management Plan). The process by which the Agency plans to respond to the environmental issues in a catchment. A consultation plan is published followed by an action plan, which is reviewed every five years.	SSSI	Site of Special Scientific Interest i.e. an area given a UK statutory designation because of its conservation value
		SBI	Site of Biological Interest – an area given a county/regional designation because of its biological conservation value
		WRMU	Water Resource Management Unit

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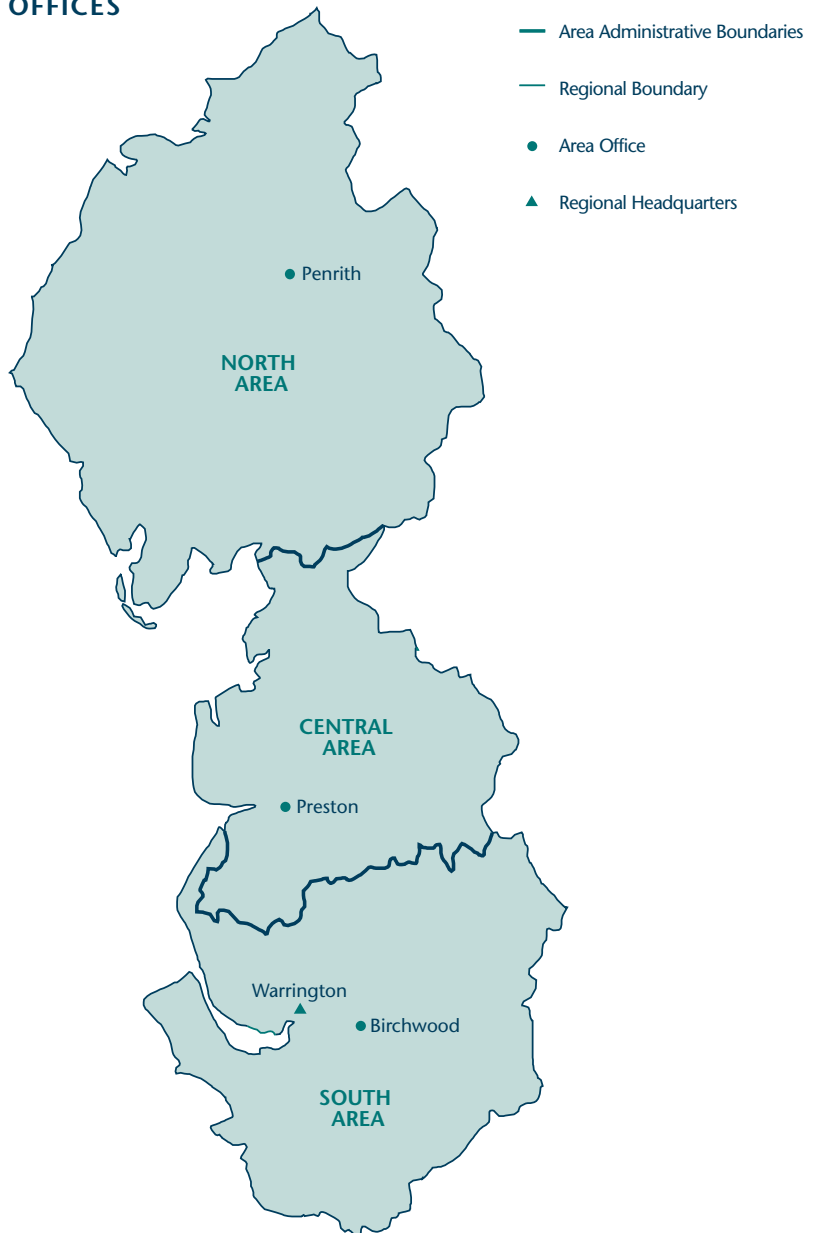
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