Cyfoeth Naturiol Cymru
Natural Resources Wales

The Carmarthen Bay Abstraction Licensing Strategy

May 2014

A licensing strategy to manage water resources sustainably

On 1 April 2013 Natural Resources Wales brought together the work of the Countryside Council for Wales, Environment Agency Wales and Forestry Commission Wales, as well as some functions of Welsh Government.

Our purpose is to ensure that the natural resources of Wales are sustainably maintained, used and enhanced, now and in the future.

We work for the communities of Wales to protect people and their homes as much as possible from environmental incidents like flooding and pollution.

We provide opportunities for them to learn, use and benefit from Wales' natural resources.

We work for Wales' economy and enable the sustainable use of natural resources to support jobs & enterprise.

We help businesses and developers to understand and consider environmental limits when they make important decisions.

We work to maintain and improve the quality of the environment for everyone.

We work towards making the environment and natural resources more resilient to climate change and other pressures.

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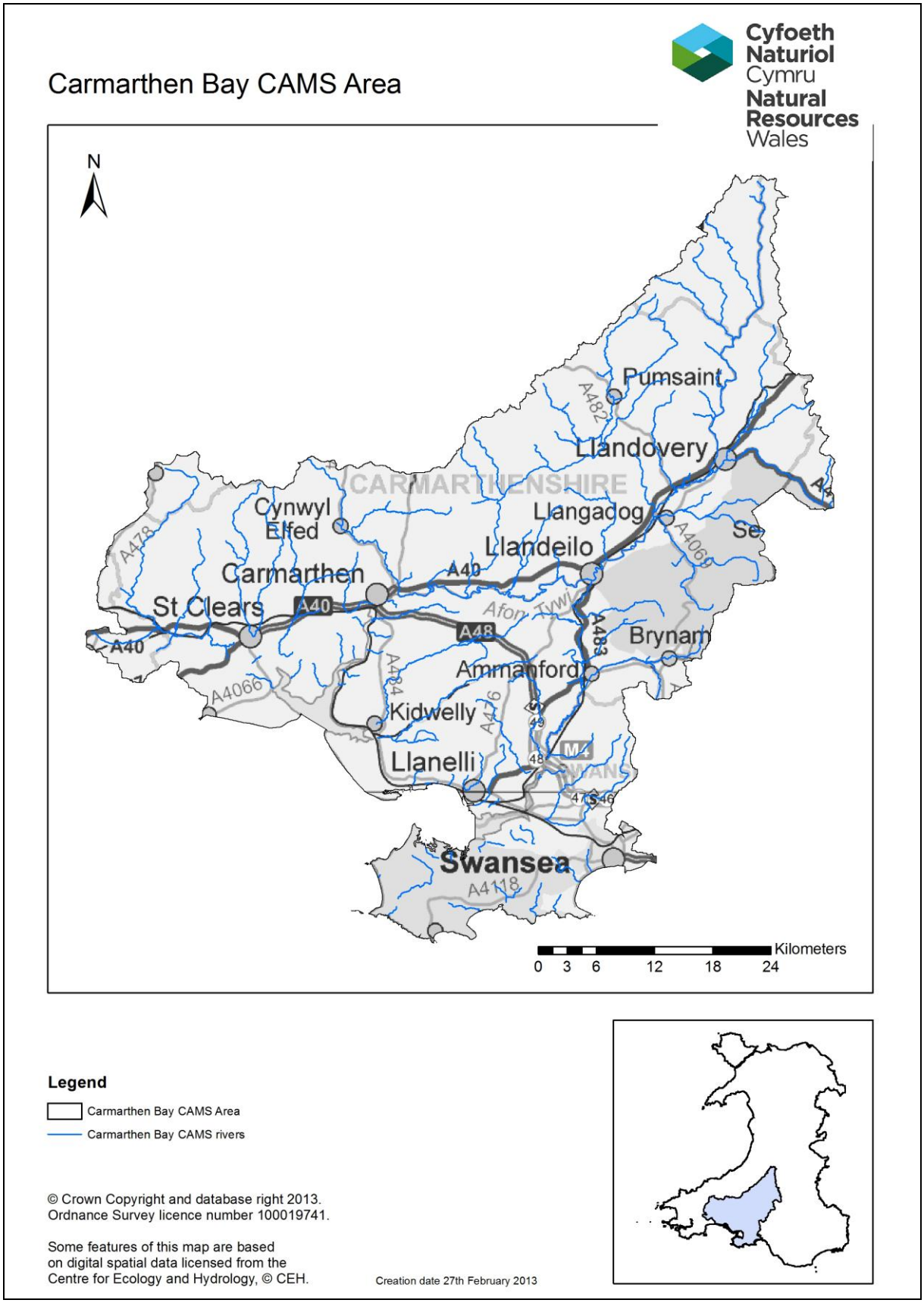

Map 1 - The Carmarthen Bay CAMS (Catchment Abstraction Management Strategy) area

Foreword

Water is the most essential of our natural resources, and it is our job to ensure that we manage and use it effectively and sustainably. The latest population growth and climate change predictions show that pressure on water resources is likely to increase in the future. In light of this, we have to ensure that we continue to maintain and improve sustainable abstraction balancing the needs of society, the economy and the environment.

This licensing strategy sets out how we will manage water resources in the catchment and provides you with information on how we will manage existing abstraction licences and water availability for further abstraction.

Martyn Evans — Ecosystems Planning and Partnerships Manager, South

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1. About the Licensing Strategy

This **Licensing Strategy** sets out how water resources are managed in the Carmarthen Bay Catchment Abstraction Management Strategy (CAMS) area. It provides information about where water is available for further abstraction and an indication of how reliable a new abstraction licence may be.

This strategy was produced in May 2014 and it supersedes the Tywi, Taf & Gwendraeth strategy issued in March 2006 and the Tawe, Loughor & Gower strategy issued in September 2007.

The revised CAMS process

We have developed a more streamlined CAMS process. The new process includes a number of changes to how we produce CAMS:

- We now use CAMS as a "live" assessment which is continuously updated rather than reviewed on a six year cycle;
- We will incorporate consultation on water resource issues into the Water Framework Directive (WFD) River Basin Planning process. However, we will still undertake any targeted consultation for CAMS as required;
- We will produce more concise, customer focused documents in-house and publish these on the internet. Anyone wishing to receive a paper copy of the document may still do so;
- We can now report the results of the resource assessment at a more local level, based on water bodies defined by the WFD. This approach will help us to meet WFD objectives and contribute to River Basin Management Plans (RBMPs);
- We have regrouped the river catchments into fewer CAMS areas. This means less duplication of general information and better use of our resources in producing CAMS.

How CAMS contributes to achieving environmental objectives under the Water Framework Directive (WFD)

The WFD's main objectives are to protect and enhance the water environment and ensure the sustainable use of water resources for economic and social development.

CAMS set out how we will manage the water resources of a catchment and contribute to implementing the WFD.

CAMS contribute to the WFD by:

- providing a water resource assessment of rivers, lakes, reservoirs, estuaries and groundwater, referred to as water bodies under the WFD;
- identifying water bodies that fail flow conditions expected to support good ecological status;
- preventing deterioration of water body status due to new abstractions;
- providing results which inform RBMPs.

When is an abstraction licence required?

You need a licence from us if you want to abstract more than 20 cubic metres (m^3) (4,400 gallons) of water per day from:

- a river or stream;

- a reservoir, lake or pond;
- a canal;
- a spring, or;
- an underground source.

Whether or not a licence is granted depends on the amount of water available after the needs of the environment and existing abstractors are met, and whether the justification for the abstraction is reasonable.

If you want to apply for an abstraction licence or make changes to a licence that you already have then please contact us:

- by telephone on 0300 065 3000
- by email at enquiries@naturalresourceswales.gov.uk
- or visit our website at www.naturalresourceswales.gov.uk.

Sustainable abstraction

This Licensing Strategy has been produced using evidence and information gathered during the CAMS process. Through this process we consider the impact of abstraction at all flows. This helps to manage future abstraction more sustainably.

We now assess water resources at a sub-catchment level called water bodies. This means that we can provide more detailed information on the availability of water resources in the Carmarthen Bay CAMS area compared to the scale used in the previous strategy.

Within this strategy we also outline where we may need to reduce current rates of abstraction and our approach on time limiting licences.

The background, aims and principles of CAMS, the overarching principles we use when managing abstraction licences and links with other initiatives are detailed in our document Managing Water Abstraction. You should read Managing Water Abstraction when reading this catchment specific licensing strategy.

2. The Carmarthen Bay CAMS area

Since the first CAMS were published we have changed the CAMS areas. The Carmarthen Bay CAMS covers the area formerly included in the Tywi, Taf & Gwendraeth CAMS (2006) and the Tawe, Loughor & Gower CAMS (2007), with the exception of the Tawe (which is now included in the Swansea Bay CAMS).

This CAMS area includes the catchments of the rivers Loughor, Lliedi, Lliw, Llan, Tywi, Taf, Gwendraeths, and Pennard Pill on the Gower, all of which are surface water-dominated catchments. With the exception of Pennard Pill, all the rivers within this CAMS area flow into Carmarthen Bay, also known as the Three Rivers Estuary.

The CAMS area falls largely within the local authority areas of Carmarthenshire and the City and County of Swansea. The main towns in the area are Llanelli, Pontarddulais, Ammanford, Kidwelly, Llandovery, Llandeilo, Carmarthen, St Clears and Whitland.

The CAMS area supports a diverse range of natural habitats and species. This is reflected in the number of designated sites of European and National importance within the area, including Special Sites of Scientific Interest (SSSI) Special Areas of Conservation (SAC) and Special Protection Areas (SPA). Parts of the Brecon Beacons National Park and the Gower Area of Outstanding Natural Beauty (AONB) are also within the CAMS area. All of the rivers in this CAMS area support important fisheries and conservation interests.

The area contains a wide variety of landscape types from wooded, steep valleys and low-lying river floodplains to the estuaries and coastal landscapes of Carmarthen Bay. The features and landscapes of the rivers and estuaries, and the habitats and species that they support, are of importance to the environment and economy of the area. The coastal grazing marshes and the hydrological regimes required for their maintenance are of particular significance.

The CAMS area is predominantly rural with some areas of urban and industrial development. The developed areas are concentrated around Carmarthen and Llanelli and adjacent to the river in the Amman Valley. There is large-scale metal industry associated with the Swansea and Llanelli areas, although only the latter is within this CAMS area.

Agriculture dominates the land use in this area and plays an important role in the local economy in the form of dairy, beef and sheep farming. Forestry accounts for a large percentage of the land use in the upper reaches of the Tywi catchment and on a few of the tributaries.

There are 71 licensed abstractions within the Carmarthen Bay CAMS area, 56 from surface waters and 15 from groundwaters. Over 99% of the total volume licensed for abstraction is from surface waters. This reflects the large proportion of the catchments that are currently exempt from licensing for abstractions from groundwater. Abstractions from groundwater sources over a large part of southwest Wales are currently exempt from licensing by Statutory Instrument (South West Wales River Authority (Exceptions from Control) Order 1965). This groundwater exemption is likely to be removed under the Water Act 2003.

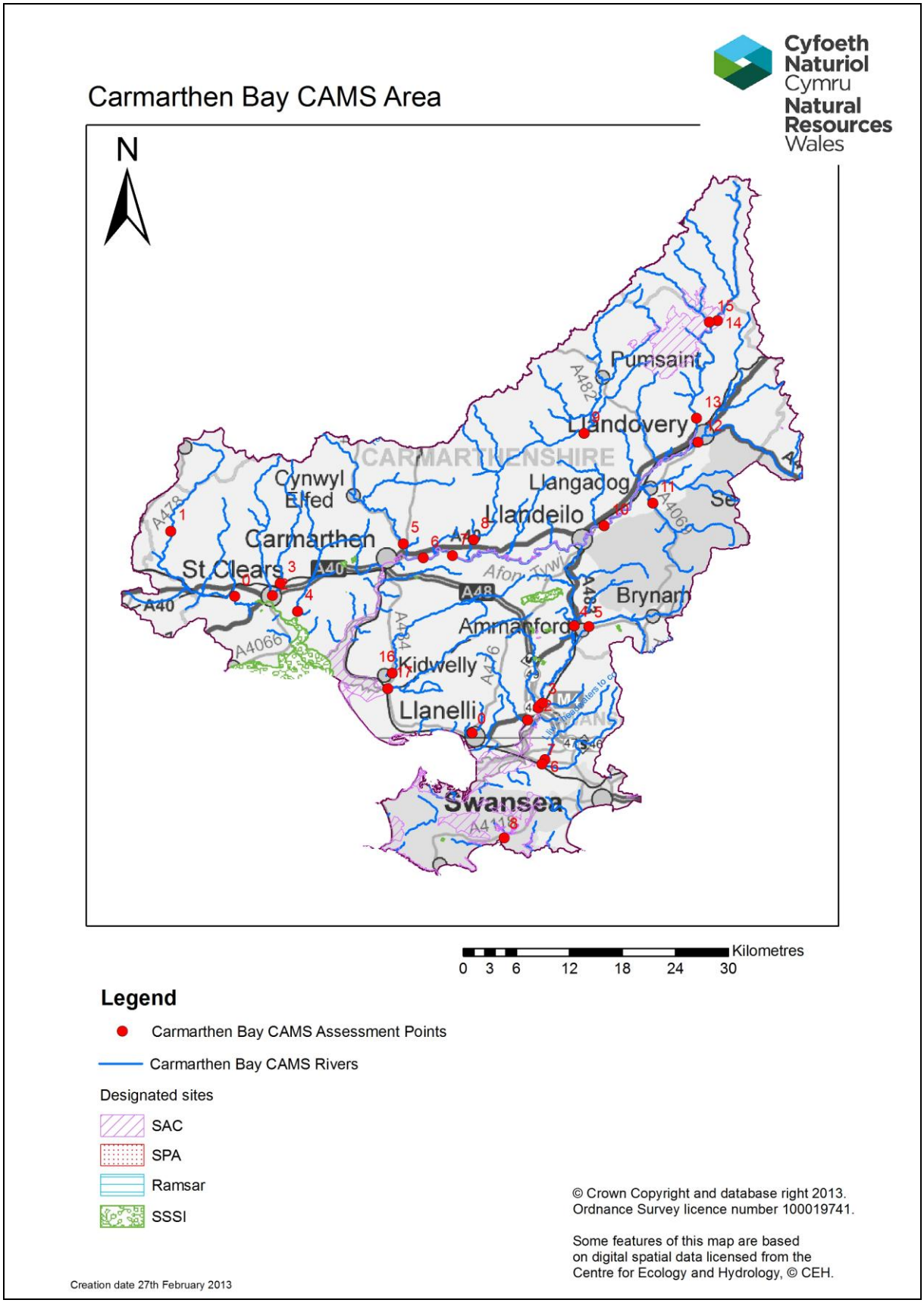
Groundwater is used extensively throughout the area to support large numbers of small domestic and agricultural abstractions. Although these may be numerous, the quantities are not significant.

Abstraction for public water supply accounts for over 90% of the water licensed for abstraction. This is a consumptive use. The main non-consumptive use is lake & pond throughflow, which accounts for less than 7% of the water licensed for abstraction.

The Tywi Regulation Scheme is a strategic source of potable water for industrial and domestic supplies in South West Wales. Flows in the Tywi are influenced by the operation of Llyn Brianne reservoir which is in the upper catchment. Water is not directly abstracted from the reservoir but is instead released to augment flows in the Tywi for abstraction for public water supply further

downstream. This augmentation has the benefit of saving some of the cost and practical difficulty of piping water from a remote source to areas of population, and can be used to supplement the river at times of low flow.

Map 2 shows the Carmarthen Bay CAMS area.



Map 2 - The Carmarthen Bay CAMS area

3. Water resource availability of the Carmarthen Bay CAMS area

3.1 Resource assessment

Resource assessment is at the heart of abstraction management. To manage water effectively we need to understand how much is available and where it is available, after considering the needs of the environment. We have a monitoring network to measure river flows and groundwater levels. We use this data along with our knowledge of human influences and environmental needs to establish a baseline of water availability for each water body, which builds into a picture for the catchment. The main components that help us to understand the availability of water resources in this assessment are:

- a resource allocation for the environment, defined as a proportion of natural flow, known as the Environmental Flow Indicator (EFI);
- the Fully Licensed (FL) scenario - the situation if all abstraction licences were being used to full capacity;
- the Recent Actual (RA) scenario – the amount of water which has actually been abstracted on average over the previous six years.

River flows change naturally throughout the year, so we want to protect flow variability in our rivers. We use flow statistics to help to do this. Flow statistics are expressed as the percentage of time that flow is exceeded. Resource availability is calculated at four different flows, Q95 (lowest flows), Q70, Q50 and Q30 (highest flows).

This information gives a realistic picture of the current resource availability within a given water body. Water bodies are sub-catchment surface water units or groundwater units on which we carry out assessments and map results.

3.2 Resource availability

3.2.1 Surface water

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 show this we have developed a classification system which 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 may need to be reduced.

The availability of water for abstraction is determined by the relationship between the fully licensed and recent actual flows in relation to the EFI. The results mapped onto these water bodies are represented by different water resource availability colours showing the availability of water resources for further abstraction. The water resource availability colours are explained in Table 1.
In addition to these water resource availability colours we've classified some surface water bodies as having 'high hydrological status', which are coloured blue on the maps. In these water bodies very little actual abstraction occurs and they show virtually undisturbed, or close to natural, flow conditions.

Map 3 shows the water resource availability colours in the Carmarthen Bay CAMS area. There are no water bodies of 'high hydrological status' in this CAMS area.

Another category of water bodies are Heavily Modified Water Bodies (HMWB). These can be classified for many reasons but for water resources they are classified if they contain a lake and/or

reservoir that influences the downstream flow regime of the river. The downstream 'flow modified' water bodies are also classified as heavily modified.

We will add any conditions necessary to protect flows to a new licence during the licence determination procedure. We will base licence conditions on the water resource availability at different flows (high to low). Table 1 lists the implications for licensing for each water resource availability colour.

In cases where there is a flow deficit (RA is below the EFI) or risk of a flow deficit (FL is below the EFI), there may be water available for abstraction at higher flows. This means that water may be scarce at low flows, but may be available to abstract at medium or high flows. A licence may still be granted but with conditions which protect the low flows. This usually takes the form of a Hands off Flow (HOF) condition which requires abstraction to stop when the river flow falls below a certain amount. A river may also be heavily supported by flows from a reservoir and may have unnaturally high 'low' flows which means that the river environment is most vulnerable at medium flows.

Water resource availability colour	**Implication for licensing**
High hydrological regime	There is more water than required to meet the needs of the environment. However, due to the need to maintain the near pristine nature of the water body, further abstraction is severely restricted.
Water available for licensing	There is more water than required to meet the needs of the environment. New licences can be considered depending on local and downstream impacts.
Restricted water available for licensing	Full Licensed flows fall below the EFIs. If all licensed water is abstracted there will not be enough water left for the needs of the environment. No new consumptive licences would be granted. It may also be appropriate to investigate the possibilities for reducing fully licensed risks. Water may be available if you can 'buy' (known as licence trading) the entitlement to abstract water from an existing licence holder.
Water not available for licensing	Recent actual flows are below the EFI. This scenario highlights water bodies where flows are below the indicative flow requirement to help support Good Ecological Status (as required by the Water Framework Directive). Note: We are currently investigating water bodies that are not supporting GES or Good Ecological Potential (GEP). No further consumptive licences will be granted. Water may be available if you can buy (known as licence trading) from an existing licence holder the amount of water equivalent to that recently abstracted.
HMWBs	These water bodies have a modified flow that is influenced by reservoir compensation releases or they have flows that are augmented. These are often known as 'regulated rivers'. They may be managed through an operating agreement, often held by a water company. The availability of water is dependent on these operating agreements. More detail, if applicable, can be found in section 4.2.1 Surface Water. There may be water available for abstraction in discharge rich catchments. You need to contact us to find out more.

Table 1 - Implications of water resource availability colours.

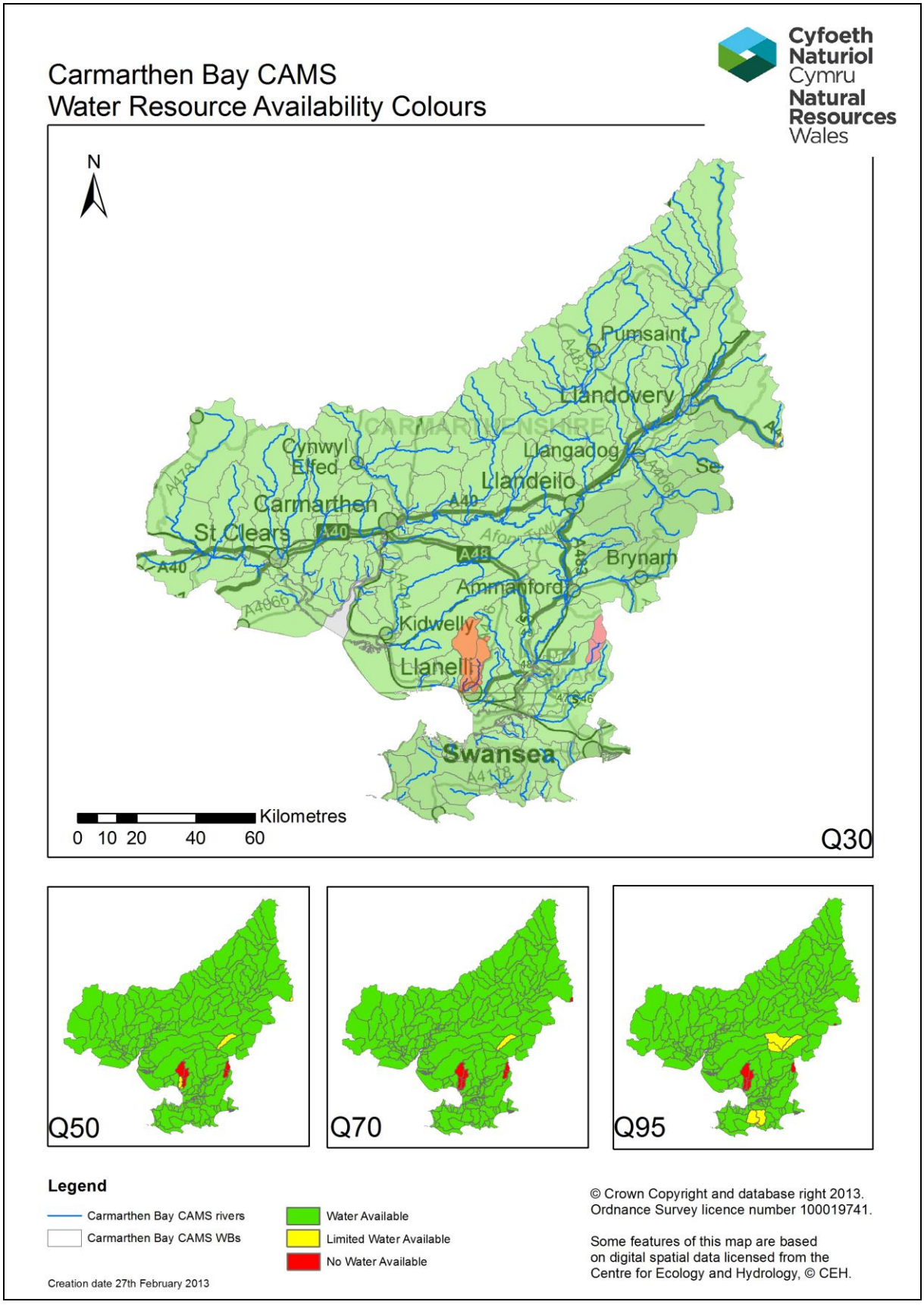
3.2.2 Groundwater

Groundwater availability is guided by the surface water resource availability colours unless we have better information on principle aquifers or are aware of local issues we need to protect.

Please refer to section 4.2.2 for further information

Map 3 shows the water resource availability colours in the Carmarthen Bay CAMS area. The same availability is applied to groundwater and surface water.

GWMU resource availability colour	**Implication for licensing**
Water available for licensing	Groundwater unit balance shows groundwater available for licensing. New licences can be considered depending on impacts on other abstractors and on surface water.
Restricted water available for licensing	Groundwater unit balance shows more water is licensed than the amount available **OR** that there are known local impacts likely to occur on dependent wetlands or groundwater levels, or cause intrusions but with management options in place. In restricted groundwater units no new consumptive licences will be granted. It may also be appropriate to investigate the possibilities for reducing fully licensed risks. Water may be available if you can 'buy' (known as licence trading) the entitlement to abstract water from an existing licence holder. In other units there may be restrictions in some areas e.g. in relation to saline intrusion.
Water not available for licensing	Groundwater unit balance shows more water has been abstracted based on recent amounts than the amount available. No further consumptive licences will be granted.



Map 3 - Water resource availability colours for the Carmarthen Bay CAMS

3.3 Resource reliability

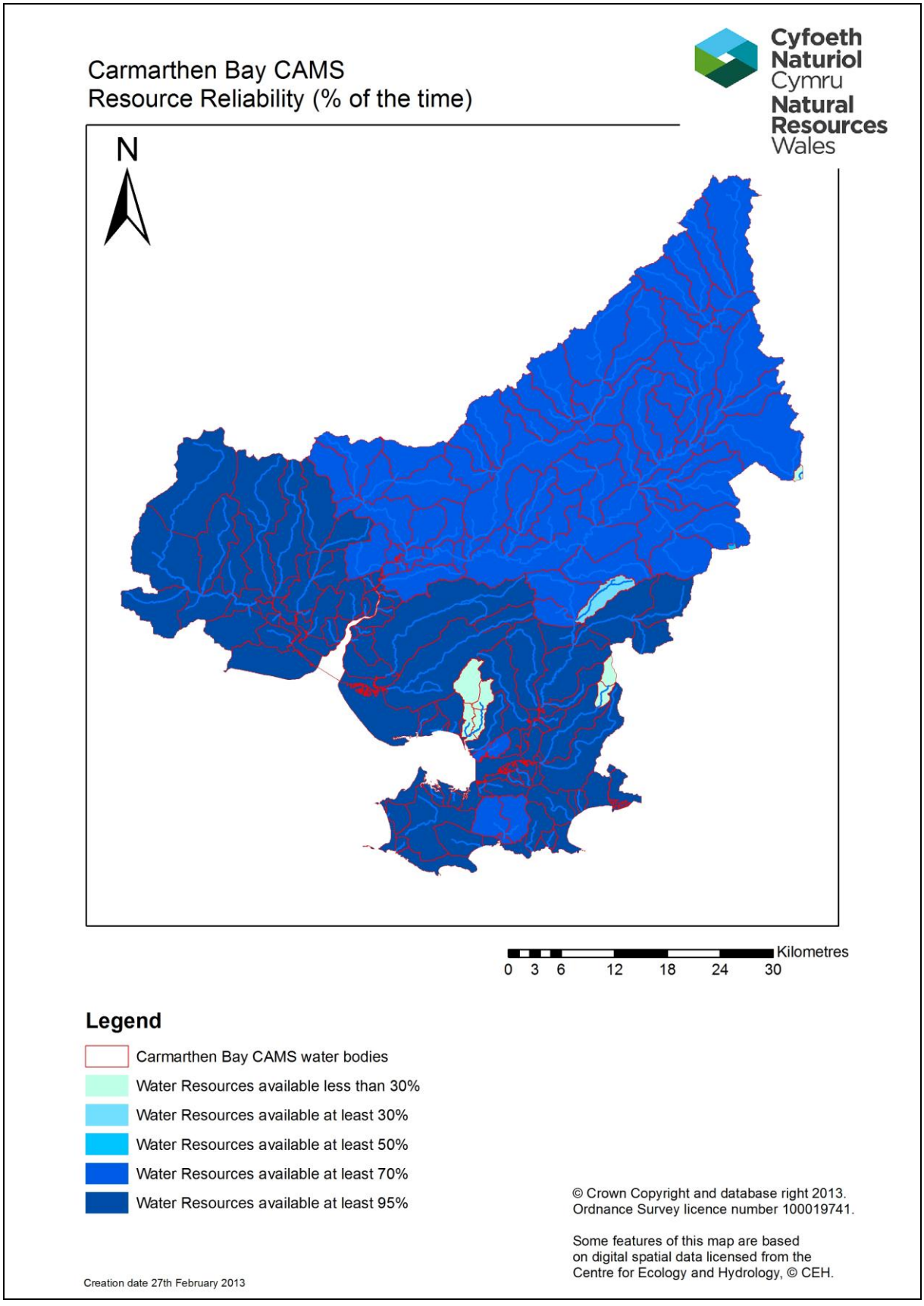
If you want to apply for a licence, it is worth considering that in some areas a new consumptive abstraction may not be 100% reliable. Reliability information is based on CAMS resource availability colours and is a way of presenting the reliability of new abstractions at all flows.

The availability of water for abstraction within a river varies greatly from high to low flows. By assessing the quantity of water available at different flows it is possible to see when there is a surplus or deficit of water and the associated reliability of an abstraction. This is an indication only; actual reliability of a licence will be discussed on application.

Table 2 shows the resource availability colour associated with the percentage reliability of consumptive abstraction. Map 4 gives an indication of the resource reliability in the Carmarthen Bay CAMS area expressed as a percentage of time.

Resource	Percentage of the time additional consumptive resource may be available
	Consumptive abstraction available **less than** 30% of the time.
	Consumptive abstraction available **at least** 30% of the time.
	Consumptive abstraction available **at least** 50% of the time.
	Consumptive abstraction available **at least** 70% of the time.
	Consumptive abstraction available **at least** 95% of the time.
	Not assessed

Table 2 - Percentage reliability of consumptive abstraction.



Map 4 - Water resource reliability expressed as a percentage of time available.

4. How we manage abstractions in the Carmarthen Bay CAMS area

4.1 Principles

The document Managing Water Abstraction outlines the overarching principles that we follow in managing our water resources. How we apply these principles in the Carmarthen Bay CAMS area is outlined in this section. If you want to abstract water it outlines where water is available for further abstraction and the principles we follow in assessing your application for a licence.

Abstraction licence application process

Anyone wanting to take more than 20m^3/day (4,400 gallons) from a 'source of supply' (river, stream, lake, well, groundwater, etc) must have an abstraction licence. The application process for abstraction is similar to the planning process in that we may 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 decision has the right to appeal against it.

Each application is determined on its own merits

Whilst this document may say that water is available for further abstraction, this does not guarantee that all applications will be successful. We will determine each application based on its own merits and any local impacts.

A licence does not guarantee that water is available

It's 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. Licence holders need to understand the implications of this as it affects the reliability of supply. For example, in drier years it's more likely that these constraints will come into effect and abstraction is more likely to be stopped.

Abstractions are managed to protect the environment.

No ecological deterioration

We assess the impact of new applications to make sure that the resultant river flows:

- will maintain a good ecology or, if the ecology is not good, will not deteriorate the ecology of our rivers further;
- will maintain the near pristine condition of high hydrological regime water bodies.

We will also take action if necessary to limit the increase in current abstraction if we think this will lead to deterioration of the ecology or the near pristine condition of our high hydrological regime water bodies.

These principles apply to the water body in which the abstraction is located and also to all downstream water bodies that may be affected by any abstraction-related reduction in flow. Doing this means that we will maintain the water body status as reported in the River Basin Management Plans (2009) and ensure compliance with the European Union Water Framework Directive.

Water efficiency and demand management

We need to make the best use of our existing water resources. Adopting water efficiency and demand management measures can help us to 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 will promote the wise and efficient use of water and actions to limit demand (and reduce leakage) to curb the growth in abstraction and limit the impact on flows and any consequent impact on the environment. For further details on our general approach to licensing please see the document Managing Water Abstraction.

Impoundments

An impoundment is a dam, weir or other construction in an inland waterway that obstructs or impedes flow and/or raises water levels. Applications for impoundments will be dealt with on a case-by-case basis.

Hydropower

Water abstraction for hydropower schemes is non-consumptive, with all water used usually returned to the watercourse. HOF and maximum abstraction volumes are determined in line with our guidance and based on the assessment of environmental risk for each scheme. For further information please refer to the hydropower section on our website.

4.2 Abstraction restrictions

When issuing a licence we have to protect the environment and rights of other abstractors. To do this we may add conditions to licences.

Time limited licences

In recognition of changing pressures on water resources all new licences and variations (other than downward variations or minor variations having no environmental impact) will have a time limit imposed. This allows for the periodic review of abstraction licences where circumstances have changed since the licence was granted.

All new licences within a CAMS area have a **common end date** (CED) so that they can be reviewed at the same time. CEDs are assigned on a 12 year cycle. When an application is made within six years of the CED, we will generally apply the subsequent CED to any licence granted. This is to avoid issuing shorter and shorter duration licences as the CED approaches. This means that the initial CED on a licence may be between six and 18 years duration. On replacement the duration will then usually be 12 years.

However, where we are uncertain about the long term impacts of an abstraction, we will grant a short term licence during which time potential impacts are monitored.

Eighteen of the licences in the Carmarthen Bay CAMS area are time-limited. The next CED for the Carmarthen Bay CAMS is 2030, and the subsequent one is 2042.

Additional information about the replacement of time limited licences is available in Managing Water Abstraction.

4.2.1 Surface water

We assess surface water flows at Assessment Points (APs), which are significant points on the river, often where two major rivers join or at a gauging station.

Tables 3a and 3b give an indication of how much water is available for further abstraction and the associated restrictions that we may apply to new and varied abstraction licences. River flows in the

headwaters or on unassessed tributaries may be much lower than at CAMS APs. Abstractions from these river reaches may be subject to different restrictions and quantities than those stated below.

Each HOF is linked to an AP and is dependent on the resource availability at that AP. In some cases additional restrictions may apply to licences where there is a more critical resource availability downstream, to protect the ecological requirements of the river. This is detailed in the last column of Table 3 if applicable.

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

Tables 3a and 3b detail the APs in the Carmarthen Bay CAMS area with corresponding potential HOFs that may be applied to a licence, the average number of days water may be available under this restriction and the approximate volume of water in megalitres per day (Ml/d) that may be available. In cases where there is water available at all flows we may apply a Minimum Residual Flow (MRF) to protect very low flows. We will assess this on a case-by-case basis.

Considerations specific to each AP for water availability, restrictions, etc, are detailed in the section below the tables.

AP	Name	Water Resource Availability Colour at Q95	HOF Restriction (Ml/d) and percentile flow (Q)	Number of days per year abstraction may be available	Approximate volume available with restriction (Ml/d)	Is there a gauging station at this AP?	Additional restrictions
1	Lliedi upstream of Buckleys culvert	Water not available for licensing	N/A	0	0	No	See licensing strategy below.
2	Morlais at tidal limit	Water available for licensing	MRF 3.2Ml/d	365	0.3	No	See licensing strategy below.
3	Gwili at tidal limit	Water available for licensing	MRF 2.1Ml/d	365	0.1	No	See licensing strategy below.
4	Loughor at tidal limit / Pontarddulais gauging station	Water available for licensing	MRF 45.4Ml/d	365	2.0	Yes	See licensing strategy below.
5	Loughor at Tir y Dail gauging station	Restricted water available for licensing	HOF2 49.1Ml/d (Q85)	310	1.5	Yes	See licensing strategy below.
6	Amman downstream Pontamman level station	Water available for licensing	MRF 14.5Ml/d	365	1.6	No	See licensing strategy below.
7	Lliw at tidal limit upstream of Llan confluence	Restricted water available for licensing	-	-	-	No	See licensing strategy below.
8	Llan at tidal limit	Water available	MRF 5.3Ml/d	365	0.4	No	See licensing

	upstream of Lliw confluence	for licensing					strategy below.
9	Pennard Pill at tidal limit	Restricted water available for licensing	HOF2 10.1Ml/d (Q85)	310	1.4	No	See licensing strategy below.

Table 3a - Water availability for the assessment points of the Loughor & Gower CAMS catchments

AP	Name	Water Resource Availability Colour at Q95	HOF Restriction (Ml/d) and percentile flow (Q)	Number of days per year abstraction may be available	Approximate volume available with restriction (Ml/d)	Is there a gauging station at this AP?	Additional restrictions
1	Taf at Clog-y-Fran gauging station	Water available for licensing	MRF 37.2Ml/d	365	8.4	Yes	See licensing strategy below.
2	Taf at Login	Water available for licensing	MRF 12.8Ml/d	365	3.2	No	See licensing strategy below.
3	Cynin at tidal limit	Water available for licensing	MRF 10.8Ml/d	365	2.2	No	See licensing strategy below.
4	Dewi Fawr at Glasfryn Ford gauging station	Water available for licensing	MRF 3.7Ml/d	365	1.2	Yes	See licensing strategy below.
5	Cywyn at tidal limit	Water available for licensing	MRF 9.9Ml/d	365	1.2	No	See licensing strategy below.
6	Gwili at Glangwili gauging station	Water available for licensing	MRF 21.4	365	1.8	Yes	Abstractions from the Gwili need to be considered in conjunction with the Tywi. See licensing strategy below.
7	Tywi at tidal limit	Water available for licensing	HOF1 361.2Ml/d (Q95)	347	18.6	No	This AP has a higher HOF to protect flows under the HD. See licensing strategy

							below.
8	Tywi at Capel Dewi gauging station	Water available for licensing	HOF1 356.5 (Q95)	347	17.8	Yes	A higher HOF has been imposed to protect the SAC. See licensing strategy below.
9	Cothi at Felin Mynachdy gauging station	Water available for licensing	MRF 44.8Ml/d	365	3.2	Yes	See licensing strategy below.
10	Cothi at Moelfre	Water available for licensing	MRF 26.2Ml/d	365	2.8	No	See licensing strategy below.
11	Tywi at Manorafon gauging station	Water available for licensing	HOF1 196.1Ml/d (Q95)	347	9.8	Yes	A higher HOF has been imposed to protect the SAC. See licensing strategy below.
12	Sawdde at Felin-y-Cwm gauging station	Water available for licensing	MRF 17.4Ml/d	365	3.7	Yes	See licensing strategy below.
13	Bran, Llandovery	Water available for licensing	MRF 10.1Ml/d	365	0.6	No	See licensing strategy below.
14	Tywi at Dolau Hirion gauging station	Water available for licensing	HOF1 68.9 (Q95)	347	3.5	Yes	A higher HOF has been imposed to protect the SAC. See licensing strategy below.
15	Tywi at Ystradffin	Water available for licensing	HOF1 31.1Ml/d Q95	347	1.6	No	A higher HOF has been imposed to protect the SAC. See licensing strategy below.

16	Doethie at Craig Clun Gwyn gauging station	Water available for licensing	MRF 6.7	365	0.5	Yes	See licensing strategy below.
17	Gwendraeth Fach at tidal limit	Water available for licensing	MRF 10.8	365	2.8	No	See licensing strategy below.
18	Gwendraeth Fawr at tidal limit	Water available for licensing	MRF 8.0Ml/d	365	1.6	No	See licensing strategy below.

Table 3b - Water availability for the assessment points of the Tywi, Taf & Gwendraeth catchments

Loughor & Gower catchments

AP1, Lliedi upstream of Buckleys culvert

There is no water available for licensing within this assessment point. This means that:

- No new consumptive abstraction licences will be granted at any flows.
- Non-consumptive licences would be considered, dependent on location, and may be subject to restrictions.
- Any new licences would be issued with appropriate HOF conditions.
- There are SACs within the CAMS area which are water dependent. Therefore we will need to take into account requirements of the Habitats Regulations, where appropriate, which may mean more stringent restrictions than set out in the CAMS.

For existing licences:

- There will be no impact on existing abstraction licences, other than those which have been identified as a result of the Habitats Directive Review of Consents. We will already have contacted you if this applies to your licence.
- There is a presumption of renewal, subject to the other renewal criteria and local considerations.
- Renewals may be subject to minor changes, including the addition of water efficiency conditions.
- Renewals may be subject to change depending on WFD assessments, determined by the ecological status of the waterbody. This will be discussed at as early a stage as possible with the licence holder.

The Lower Lliedi reservoir dominates the downstream flow regime and therefore influences our licensing strategy.

AP2, Morlais at tidal limit
AP3, Gwili at tidal limit
AP4, Loughor at tidal limit / Pontarddulais gauging station
AP6, Amman downstream of Pontamman level station
AP8, Llan at tidal limit upstream of Lliw confluence

There is water available for licensing within these assessment points. This means that:

- New licences will be issued, with HOF conditions where appropriate.

- There are SACs within the CAMS area which are water dependent. Therefore we will need to take into account requirements of the Habitats Regulations, where appropriate, which may mean more stringent restrictions than set out in the CAMS.

For existing licences:

- There will be no impact on existing abstraction licences, other than those which have been identified as a result of the Habitats Directive Review of Consents. We will already have contacted you if this applies to your licence.
- There is a presumption of renewal, subject to the other renewal criteria and local considerations.
- Renewals may be subject to minor changes, including the addition of water efficiency conditions.
- Renewals may be subject to change depending on WFD assessments, determined by the ecological status of the waterbody. This will be discussed at as early a stage as possible with the licence holder.

AP5, Loughor at Tir y Dail gauging station

There is restricted water available for licensing within this assessment point. This means that:

- New licences will be issued with appropriate HOF conditions.
- There are SACs within the CAMS area which are water dependent. Therefore we will need to take into account requirements of the Habitats Regulations, where appropriate, which may mean more stringent restrictions than set out in the CAMS.

For existing licences:

- There will be no impact on existing abstraction licences, other than those which have been identified as a result of the Habitats Directive Review of Consents. We will already have contacted you if this applies to your licence.
- There is a presumption of renewal, subject to the other renewal criteria and local considerations.
- Renewals may be subject to minor changes, including the addition of water efficiency conditions.
- Renewals may be subject to change depending on WFD assessments, determined by the ecological status of the waterbody. This will be discussed at as early a stage as possible with the licence holder.

AP7, Lliw at tidal limit upstream of Llan confluence

There is water available for licensing within these assessment points. This means that:

- New consumptive licences will be considered in the lower reaches of the catchment. Please see below.
- New licences will be issued with HOF conditions where appropriate.
- There are a SAC and a SPA within this AP which are water dependent. Therefore we will need to take into account requirements of the Habitats Regulations, where appropriate, which may mean more stringent restrictions than set out in the CAMS.

For existing licences:

- There will be no impact on existing abstraction licences, other than those which have been identified as a result of the Habitats Directive Review of Consents. We will already have contacted you if this applies to your licence.
- There is a presumption of renewal, subject to the other renewal criteria and local considerations.
- Renewals may be subject to minor changes, including the addition of water efficiency conditions.
- Renewals may be subject to change depending on WFD assessments, determined by the ecological status of the waterbody. This will be discussed at as early a stage as possible with the licence holder.

Flows in the mid and upper reaches of the catchment are influenced by the Lliw reservoirs. Compensation flow releases from the lower reservoir have been set to vary seasonally and support the downstream ecology. To ensure protection of the river environment, it would not be appropriate to allow further abstraction from these compensation flows.

The AP itself is in the lower reaches of the Lliw, at the tidal limit, approximately 10km downstream from the lower Lliw reservoir. While there is water available in this lowest reach, there is no water available upstream of the reservoirs or for some distance downstream of the lower reservoir.

Therefore, new abstractions will be considered on a case-by-case basis, dependent on location, and will be subject to restrictions where appropriate.

AP9, Pennard Pill at tidal limit

There is restricted water available for licensing within this assessment point. This means that:

- New licences will be issued with appropriate HOF conditions.
- There are SACs within the CAMS area which are water dependent. Therefore we will need to take into account requirements of the Habitats Regulations, where appropriate, which may mean more stringent restrictions than set out in the CAMS.

For existing licences:

- There will be no impact on existing abstraction licences, other than those which have been identified as a result of the Habitats Directive Review of Consents. We will already have contacted you if this applies to your licence.
- There is a presumption of renewal, subject to the other renewal criteria and local considerations.
- Renewals may be subject to minor changes, including the addition of water efficiency conditions.
- Renewals may be subject to change depending on WFD assessments, determined by the ecological status of the waterbody. This will be discussed at as early a stage as possible with the licence holder.

Tywi, Taf & Gwendraeth catchments

AP1, Taf at Clog-y-Fran gauging station
AP2, Taf at Login
AP3, Cynin at tidal limit
AP4, Dewi Fawr at Glasfryn Ford gauging station
AP5, Cywyn at tidal limit
AP6, Gwili at Glangwili gauging station
AP17, Gwendraeth Fach at tidal limit
AP18, Gwendraeth Fawr at tidal limit

There is water available for licensing within these assessment points. This means that:

- New licences will be issued, with HOF conditions where appropriate.
- When determining applications for abstraction from the Gwili, consideration must be given to the effect flows from the Gwili have on dilution of flows in the lower Tywi at periods of low flows. Consumptive abstractions may need to be licensed with restrictive conditions to protect low flows.

For existing licences:

- There is a presumption of renewal, subject to the other renewal criteria and local considerations.
- Renewals may be subject to minor changes, including the addition of water efficiency conditions.
- Renewals may be subject to change depending on WFD assessments, determined by the ecological status of the waterbody. This will be discussed at as early a stage as possible with the licence holder.

AP9, Cothi at Felin Mynachdy gauging station
AP10, Cothi at Moelfre
AP12, Sawdde at Felin-y-Cwm gauging station
AP13, Bran, Llandovery
AP16, Doethie at Craig Clun Gwyn gauging station

There is water available for licensing within these assessment points. This means that:

- New licences will be issued, with HOF conditions where appropriate.
- As these are tributaries of the Tywi new licences will be subject to the requirements of the Habitats Regulations, as well as the above, which may mean more stringent restrictions than set out in the CAMS.

For existing licences:

- There is a presumption of renewal, subject to the other renewal criteria and local considerations.
- Renewals may be subject to minor changes, including the addition of water efficiency conditions.
- Renewals may be subject to change depending on WFD assessments, determined by the ecological status of the waterbody. This will be discussed at as early a stage as possible with the licence holder.

Applications within these assessment points will have to be considered on a case-by-case basis and in conjunction with flows in the Tywi for two reasons. Firstly, these rivers support species identified as being of European importance under the Tywi SAC designation. Secondly, consumptive abstraction within these catchments would affect flows in the Tywi.

AP7, Tywi at tidal limit
AP8, Tywi at Capel Dewi gauging station
AP11, Tywi at Manorafon gauging station
AP14, Tywi at Dolau Hirion gauging station
AP15, Tywi at Ystradffin

There is water available for licensing within these assessment points. This means that:

- New licences will be issued with appropriate HOF conditions.
- Licensing of non-consumptive and small consumptive abstractions from the natural flows in the Tywi would be considered at all flows.

- Any large consumptive abstractions would be considered on a case-by-case basis but would only be licensed with increased supporting flows from Llyn Brianne. Applications for such abstractions would require an environmental assessment.
- New licences will be subject to the requirements of the Habitats Regulations, as well as the above, which may mean more stringent restrictions than set out in the CAMS.

For existing licences:

- There will be no impact on existing abstraction licences, other than those which have been identified as a result of the Habitats Directive Review of Consents. We will already have contacted you if this applies to your licence.
- There is a presumption of renewal, subject to the other renewal criteria and local considerations.
- Renewals may be subject to minor changes, including the addition of water efficiency conditions.
- Renewals may be subject to change depending on WFD assessments, determined by the ecological status of the waterbody. This will be discussed at as early a stage as possible with the licence holder.

Tywi Special Area of Conservation (SAC)

The main river Tywi has been designated under the Habitats Directive as a SAC. All new licence applications within and upstream of this designated site will be subject to assessment under the Habitats Directive. This will involve assessing their potential impact on the designated species and habitats, alone and in combination with other licences.

To protect the habitats and species of the SAC, it is necessary for us to be more precautionary than the CAMS assessment. This means that most new licences will include HOF conditions.

4.2.1.1 Heavily Modified Water Bodies

Flows in the Tywi are influenced by the operation of Llyn Brianne dam in the upper catchment. Water is not directly abstracted from the reservoir but is instead released to augment flows in the Tywi for abstraction for public water supply further downstream. The scheme is controlled under an Operating Agreement authorised by Natural Resources Wales. In addition to releasing water for subsequent abstraction for water supply, flows are also released to support other abstractions and to provide freshet releases for the benefit of fisheries when required. Salmon and sea trout benefit from higher flows for migration following extended periods of low flows. In addition, if there is no overspill from the dam at the end of October, spate flows are simulated by releasing more water.

From the resource assessment, the upper reach of the catchment has a resource availability colour of ‘water not available for licensing’. The reason for this is that during periods of naturally high flows (i.e. during winter flows), Llyn Brianne is refilling and therefore reduces the high flows that would naturally occur in the rest of the catchment. The resource assessment determined that the remaining reaches of the catchment and the upper reaches at medium and low flows have a resource availability colour of ‘water available’.

As most flows are protected in the majority of the catchment and flows in the Tywi can be supplemented by increased flows from Llyn Brianne if required and additional abstraction can be supported in this way, the resource availability status for the whole Tywi is considered to be ‘water available’.

4.2.1.2 Important local features that may affect water availability

European law provides a very high level of protection to two types of designated sites due to their high conservation value. These are:

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

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

There are a number of designated sites within South West Wales with water-related features. All new licence applications near or within these sites will be subject to assessment under the Habitats Directive. This will involve assessing their potential impact on the designated species and habitats, alone and in combination with other licences.

If our assessment shows that a new application could potentially have an impact on a SAC/SPA we have to follow strict rules when determining that licence. These include:

- we may be able to grant the licence but only with a short time limit. This allows us to monitor the impact of the abstraction on a SAC/SPA and change the licence if necessary;
- if we can't determine 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 the application according to the principles in this document.

The Environment Agency completed its review of all existing abstraction licences in 2010 to establish their potential impact on the designated species and habitats. They identified a number of licences where changes are needed to comply with the Habitats Directive. We are working with licence holders to implement these changes by 2015.

Developers in catchments near or within a designated site should contact us to discuss water availability and conditions which may be applied to licences.

4.2.2 Groundwater

Where groundwater abstractions directly impact on surface water flows, the impact is measured at the surface water AP. Licences may be issued with conditions relating to surface water flows, such as the same HOF conditions which would apply to a surface water abstraction (see Tables 3a and 3b). This would require the groundwater abstraction to cease when surface water flows are low.

Where groundwater abstractions are likely to impact surface water features, or reduce baseflow to a river, a Hands off Level (HOL) condition may be applied to the abstraction. This is a groundwater level below which an abstractor is required to reduce or stop abstraction.

Abstractions from groundwater sources over a large part of southwest Wales are currently exempt from licensing by Statutory Instrument (South West Wales River Authority (Exceptions from Control) Order 1965) (see Map 5). This groundwater exemption is likely to be removed under the Water Act 2003.

Applications for groundwater abstractions within licensable areas would be subject to the normal determination criteria. This includes investigations such as pump tests to assess yield and localised impacts. Any licences would be issued with restrictive conditions where appropriate. Consent to drill and test pump groundwater abstractions must be obtained before any works commence. Please contact us for further information.

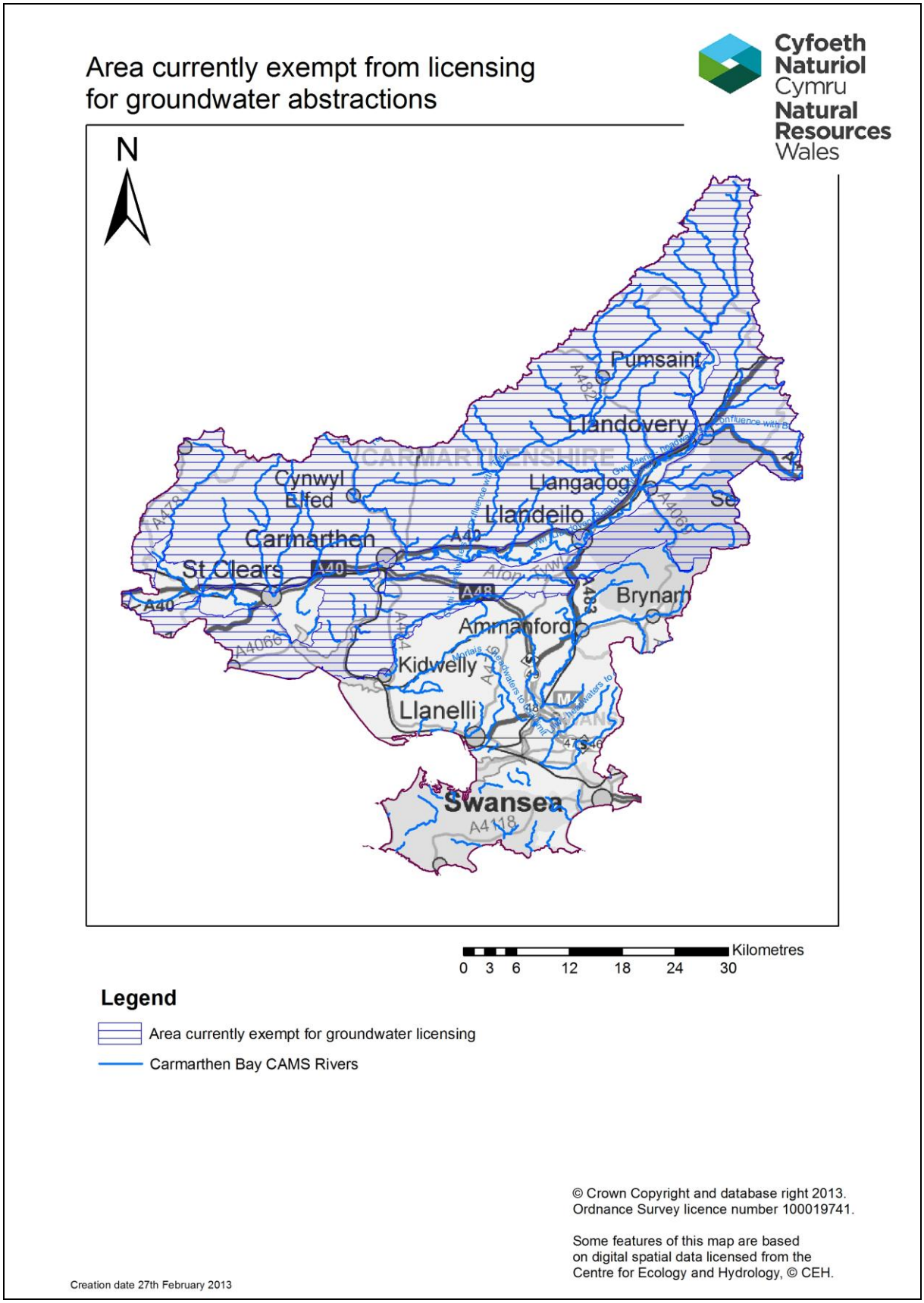
4.2.3 Estuaries & coast

Estuaries are not included in the CAMS resource assessment as tidal influences cannot be assessed in the same way as inland waters.

Many coastal streams within this CAMS area have not been assessed using the CAMS resource assessment methodology. Compared to the CAMS assessed rivers, these smaller streams provide a relatively small resource. They generally have a catchment area of less than 20km^2 and lack hydrological and ecological data to support any assessment of resources. The CAMS resource assessment is undertaken at a catchment scale with catchment significant resources. It is not a tool for smaller local assessments of smaller resources.

However, the WFD has made an assessment of these smaller catchments and an indication of water availability from these resources is included in Map 3.

Applications for abstractions from resources in catchments outside those assessed by the CAMS will be assessed on a case-by-case basis through the licence determination process.



Map 5 – Area exempt from licensing for groundwater abstractions

4.3 Opportunities for licence trading

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

In licensing trades, as with new abstraction licences, we need to make sure that we do not cause any deterioration in WFD water body status, both within the water body / bodies where the trade will take place, or to downstream water bodies. The table below provides a guide to the potential for trading in water bodies of a particular CAMS water resource availability colour, as shown on Map 3.

CAMS water resource availability colour	Our approach to trading
High hydrological regime	Opportunities for trading water rights will be limited.
Water available for licensing	Allow trades of recent actual abstraction and licensed abstraction, but little demand for trading expected within water body as water is available for new abstractions.
Restricted water available for licensing	There may be opportunities for licence holders to trade up to their full licensed quantities, but the quantities of water available to trade may be restricted once levels of actual abstraction reach sustainable limits.
Water not available for licensing	We will only trade recent actual abstraction, but no increase in recent actual abstraction is permitted in the water body. Licensed abstraction may be recovered for the environment.
HMWBs	Opportunities for trading will depend on local operating agreements and local management.

To find out more about licence trading please go to the gov.uk website.

4.4 New Authorisations

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

As a result we will be able to manage water resources more effectively by ensuring that all significant activities influencing the availability of water, and its impact on the environment, are undertaken in a sustainable manner.

Government are still developing their policies as to how to resolve some of the issues raised during the consultation process. Government will publish their proposals before new regulations are

implemented, and expect to do this at least 3 months before commencement so that we can issue guidance to those affected by the changes.

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

A large proportion of this CAMS area is currently exempt for groundwater licensing, as shown in Map 5. This groundwater exemption is likely to be removed under the Water Act 2003.

4.5 Restoring Sustainable Abstraction

Where water abstractions cause or potentially cause environmental damage, we may need to change or even revoke existing abstraction licences. We investigate abstraction licences causing such issues through the Restoring Sustainable Abstraction (RSA) programme. We can then work with licence holders to develop options on how to improve sustainability. Information on how licences in the RSA programme are dealt with can be found in the Environment Agency's guide, Changing Water Abstraction & Impoundment Licences, available on the gov.uk website.

The RSA programme has provided us with a framework for undertaking both the Habitats Directive review of consents and the WFD water resources investigations. We also identified a number of RSA schemes through the first round of CAMS.

Glossary of terms

Abstraction	Removal of water from a source of supply (surface or groundwater).
Abstraction licence	The authorisation granted by Natural Resources Wales (or the Environment Agency in England) to allow the removal of water.
Assessment Point Unit	Point at which the flow from upstream catchment is assessed.
Catchment	The area from which precipitation and groundwater will collect and contribute to the flow of a specific river.
Consumptive abstraction	Abstraction where a significant proportion of the water is not returned either directly or indirectly to the source of supply after use. For example for the use of spray irrigation.
Discharge	The release of substances (i.e. water, sewage, etc.) into surface waters.
Environmental flow indicator	Flow indicator to prevent environmental deterioration of rivers, set in line with new UK standards set by UKTAG.
Full licence	A licence to abstract water from a source of supply over a period of 28 days or more.
Groundwater	Water that is contained in underground rocks.
Hands off flow	A condition attached to an abstraction licence which states that if flow (in the river) falls below the level specified on the licence, the abstractor will be required to reduce or stop the abstraction.
Hands off level	A river flow or borehole (groundwater) level below which an abstractor is required to reduce or stop abstraction.
Impoundment	An impoundment is a structure that obstructs or impedes the flow of inland water, such as a dam, weir or other constructed works.
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 m^3/d.
Surface water	This is a general term used to describe all water features such as rivers, streams, springs, ponds and lakes.
Transfer licence	A licence to abstract water from one source of supply over a period of 28 days or more for the purpose of; 1. transferring water to another source of supply; or, 2. transferring water to the same source of supply, but at another point, in the course of dewatering activities in connection with mining, quarrying, engineering, building or other operations (whether underground or on the surface); without intervening use.
Water body	Units of either surface water or groundwater at which assessments are completed for WFD.

List of abbreviations

AMP	Asset Management Plans
AP	Assessment Point
ASB	Abstraction Sensitivity Bands
AWB	Artificial Water body
CAMS	Catchment Abstraction Management Strategies
CED	Common End Date
Defra	Department of Environment Fisheries and Rural Affairs
EFI	Ecological Flow Indicator
FL	Full Licensed (scenario)
GEP	Good Ecological Potential
GES	Good Ecological Status
GW	Groundwater
HES	High Ecological Status
HMWB	Heavily Modified Water Body
HOF	Hands off Flow
HOL	Hands off Level
LDE	Level Dependent Environment
Ml/d	Megalitres per day
maOD	Metres above ordnance datum
Q95	The flow of a river which is exceeded on average for 95% of the time.
RA	Recent Actual (scenario)
RSA	Restoring Sustainable Abstraction
RBMP	River Basin Management Plans
SAC	Special Areas of Conservation
SPA	Special Protection Areas
SSSI	Sites of Special Scientific Interest
SW	Surface water
UKTAG	United Kingdom's Technical Advisory Group
WB	Water body
WFD	Water Framework Directive
WRGIS	Water Resources Geographical Information System