Dŵr Cymru Welsh Water

Draft Water Resources Management Plan

Statement of Response to the Consultation

December 2013

Dŵr Cymru
Welsh Water

1 DRAFT WATER RESOURCE MANAGEMENT PLAN 4

1.1 INTRODUCTION 4
1.2 CONSULTATION 4

2 REVISING OUR DRAFT WATER RESOURCES MANAGEMENT PLAN 7

2.1 KEY ISSUES FOR THE WRMP 7
2.2 ABSTRACTION LICENCE CHANGES 7
2.3 KEY CHANGES FROM OUR DRAFT PLAN 9
2.3.1 Our updated demand forecast 9
2.3.2 Variant to the AMP6 Pembrokeshire scheme 11
2.3.3 Updated SEWCUS DO 11
2.4 OUR PLAN SUMMARISED 12
2.5 CHANGES MADE TO OUR DRAFT WRMP 15
2.6 ANNUAL WRMP REVIEW 17

3 STATEMENT OF RESPONSE TO OUR CONSULTATION 18

3.1 EXECUTIVE SUMMARY AND NON TECHNICAL REPORT 18
3.1.1 Background 18
3.1.2 Consultee Response 18
3.1.3 Welsh Water Responses 19
3.2 INTRODUCTION 21
3.2.1 Background 21
3.2.2 Consultee Response 21
3.2.3 Welsh Water Response 21
3.3 STAKEHOLDER ENGAGEMENT 23
3.3.1 Background 23
3.3.2 Consultee Response 23
3.3.3 Welsh Water Response 24
3.4 WATER SUPPLY CAPABILITY 27
3.4.1 Background 27
3.4.2 Consultee Response 27
3.4.3 Welsh Water Response 27
3.5 SUSTAINABILITY REDUCTIONS 29
3.5.1 Background 29
3.5.2 Consultee Response 29
3.5.3 Welsh Water Response 30
3.6 CLIMATE CHANGE 32
3.6.1 Background 32
3.6.2 Consultee Response 32
3.6.3 Welsh Water Response 32
3.7 WATER DEMAND 34
3.7.1 Background 34
3.7.2 Consultee Response 34
3.7.3 Welsh Water Response 34
3.8 TARGET HEADROOM 37
3.8.1 Background 37
3.8.2 Consultee Response 37
3.8.3 Welsh Water Response 38
3.9 BASELINE SUPPLY DEMAND BALANCE 39
3.9.1 Background 39
3.9.2 Consultee Response 39

3.9.3 Welsh Water Response *39*
3.10 OPTIONS APPRAISAL 40
3.10.1 Background *40*
3.10.2 Consultee Response *40*
3.10.3 Welsh Water Response *42*
3.11 ENVIRONMENTAL APPRAISAL 46
3.11.1 Background *46*
3.11.2 Consultee Response *46*
3.11.3 Welsh Water Response *46*
3.12 TESTING THE PLAN 47
3.12.1 Background *47*
3.12.2 Consultee Response *47*
3.12.3 Welsh Water Response *47*
3.13 FINAL WATER RESOURCES AND DEMAND STRATEGY 49
3.13.1 Background *49*
3.13.2 Consultee Response *49*
3.13.3 Welsh Water Response *49*

4 NEXT STEPS 50

5 FURTHER INFORMATION 51

Figure 1 - Responses received by chapter *6*

Figure 2- Map of zonal surplus/deficit *13*

Table 1 - List of Respondents *5*

Table 2 - Summary of changes to our draft WRMP 2013 ..... *17*

1 Draft Water Resource Management Plan

1.1 Introduction

One of our most important responsibilities, as provided for under the Water Industry Act 1991, is to ensure that Dŵr Cymru Welsh Water can always meet the reasonable water needs of our customers now and into the future. We produce an updated Water Resources Management Plan (WRMP) every five years which demonstrates how we will balance the supply and the demand for water from our customers over the subsequent 25 years. This is our WRMP covering the period up to 2040, and follows the guidance set out by Welsh Government for such Plans. Our aim is to maintain water supply as efficiently as possible in each of the 24 Water Resource Zones (WRZ) we operate, so that water bills are no higher than they need to be, and the impact on our environment is both understood and minimised.

Within the draft WRMP we forecast that six of our twenty four water resources zones (North Eryri-Ynys Mon, Bala, Tywyn Aberdyfi, South Meirionydd, Brecon-Portis and Pembrokeshire) would at some point in the 25 year period have a shortfall in supply. The Plan then identified our preferred set of schemes that we would look to implement in order to resolve these imbalances, ranging from customer side measures via water efficiency activities, through to increased treatment and distribution capability.

1.2 Consultation

It is a statutory requirement that we consult on our draft WRMP in order to give our stakeholders including customers the opportunity to comment on and suggest improvements to our plan. We published our draft WRMP for a 12 week consultation period that ran from the 14th June to the 9th September 2013.

As part of the process we:

- Contacted more than sixty consultee organisations directly
- Published our draft WRMP and supporting documents on our website
- Undertook detailed water resource specific qualitative and quantitative customer preference work as part of our PR14 consultation 'Your Company, Your Say'
- Raised awareness of our plan through our Independent Environment Advisory Panel and provided links through to members own websites publicising the consultation
- Met with CCWater to take them through our draft Plan as we were late in sending our consultation documents to them
- Raised awareness at our PR14 business planning road shows across Wales through customer pamphlets

A list of all the respondents who made representations on the draft WRMP, SEA and HRA is provided in Table 1.

Name		Sector
Brecon Beacons National Park Authority	BBNP	Planning
Canal and Rivers Trust	CRT	Charitable Trust
Cardiff Reservoir Action Group	CRAG	Action Group
Consumer Council for Water	CCWater	NGO
Conwy County Council	CCC	Planning
English Heritage	EH	Statutory
Environment Agency	EA	Statutory
Llanelli Flood Forum	LFF	Action Group
Llanelli Town Council	LTC	Planning
National Farmers Union	NFU	Trade association
Natural England	NE	Executive Non-departmental Public Body
Natural Resources Wales	NRW	Statutory
Ofwat	Ofwat	Statutory
Wye and Usk Foundation	WUF	Charitable Trust

Table 1 - List of Respondents

In total we received comments from fourteen separate respondents on the draft Plan. Thirteen were received directly from WG whilst NFU sent their response directly to us. This representation has been treated in the same manner as the consultations which were received through the formal process.

At the same time we also published for consultation the Strategic Environmental Assessment (SEA) and the Habitats Regulations Assessment (HRA). We received 1 representation on each. Although not a statutory requirement, Welsh Water have also chosen to use this Statement of Response to summarise the comments we received on the SEA and HRA to the draft WRMP.

The draft WRMP contained a number of scenarios around specific variables and issues. We have used the time over the consultation period to examine some of these in further detail, to collect and investigate where possible further information to allow us to confirm the most appropriate scenarios to include within our proposed final WRMP.

We have now reviewed all of our consultation responses and along with this additional information are in a position to suggest amendments to our draft Plan. This Statement of Response:

- Puts the consultation into the context of the draft Plan;
- Reports on comments received;
- Provides a response to each comment;
- Describes areas of the plan where additional information is now available;
- Explains the changes to our plan and actions that we will be taking in response to the consultation and new information.

Chapter 2 below provides information on our draft WRMP to put the changes to our Plan into context. The chapter then highlights these key changes to the plan and provides a summary of actions from the consultation process.

The representations received on all three documents (draft WRMP, SEA, HRA) have been evaluated and arranged in relation to our draft WRMP chapter headings. Chapter 3 provides a summary of the responses received and details our view on these and identifies where changes will be made to the plan. We have generally not included comments on responses which are supportive of the draft WRMP. All the comments received verbatim and our responses to these are tabulated Appendix 1 for ease of reference.

A copy of the Statement of Response has been forwarded to each of the respondents listed in Table 1 and is published on our website at www.dwrcymru.com. In addition we have written to each respondent with a detailed response to their individual comments.

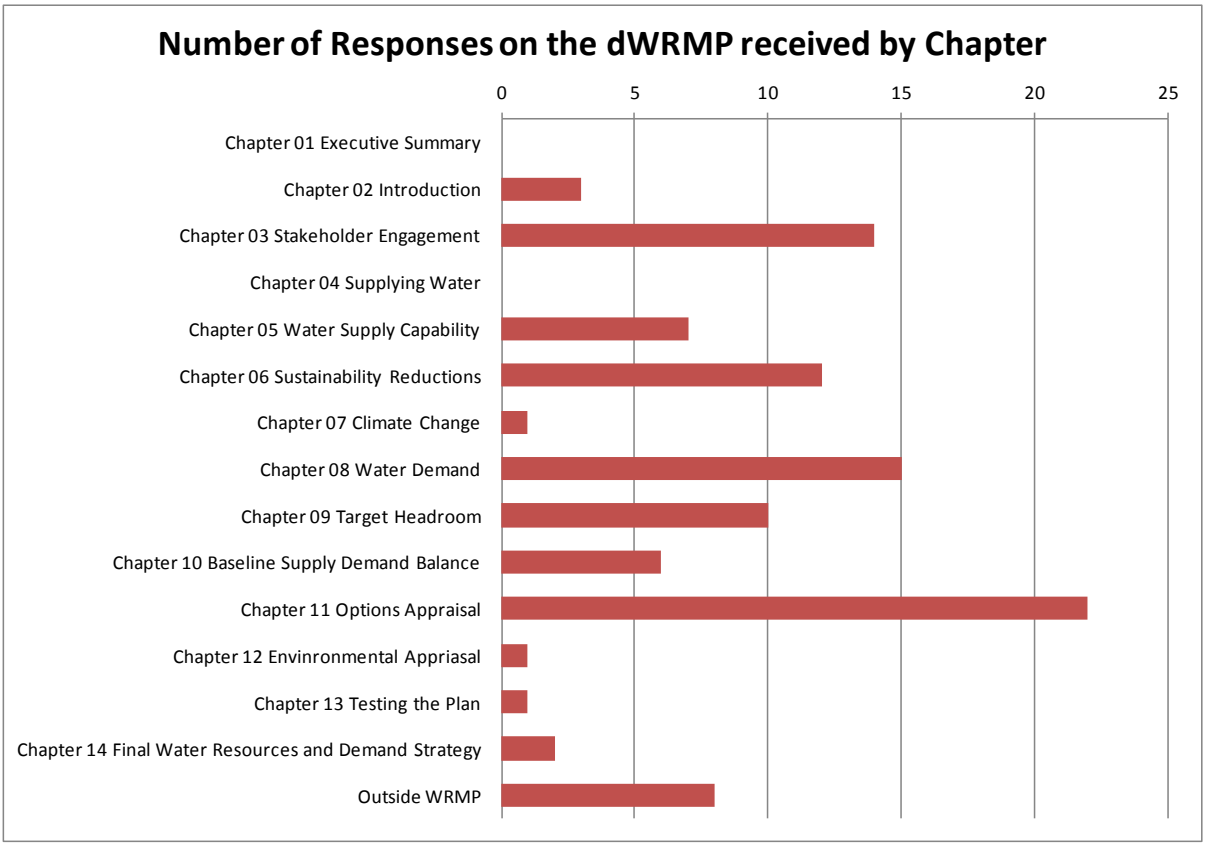


Figure 1 - Responses received by chapter

2 Revising our draft Water Resources Management Plan

2.1 Key Issues for the WRMP

In preparing our draft Plan we took account of a range of issues that had the ability to impact upon our water resource availability. The two found to be the most significant were:

- Updated assessment of the possible impact of climate change on the water environment in Wales, as set out in the latest UK Climate Change Projections published in 2009 ("UKCP09"),
- Natural Resources Wales 'Review of Consents (RoC)' outcomes.

On the first point in relation to our assessment of impact from Climate Change, we have not received any consultation responses which require direct changes to be made to our plan.

On the second point in relation to proposed abstraction licence changes, we have also maintained the position presented within the draft Plan but have provided additional information below as this issue remains very topical with both our regulators and stakeholders. We may need to update our plans if further evidence and analysis indicates that this is necessary in terms of alternative licence conditions. In this case we would identify this within our annual WRMP reporting.

2.2 Abstraction Licence Changes

On this first point above, we have maintained our position presented in our draft WRMP, regarding licence reductions on the Wye and Usk. We have used information presented to us by NRW as part of the NEP, prepared through their modelling reports and draft licence conditions. The Wye and Usk licence changes in the NEP have been given a "Likely" status which means that they will need to be implemented as soon as practicable possible within the Habitats Directive time frame. We have sought funding within the AMP6 period to overcome the operational implications of these proposed licence variations.

The NRW 'Review of Consents' abstraction license changes will reduce our Deployable Output (DO) - the water we can make available to customers - in our SEWCUS by more than 34Ml/d alone, the equivalent water required to serve over 90,000 homes.

We have taken advice from a wide range of stakeholders in the assessment of these abstraction licence reductions, many of whom are of the view that there is a better way to meet the requirements of the Habitats Directive, whilst ensuring water remains available for sustainable development. To substantiate this case to Welsh Government we have undertaken comprehensive environmental studies, in partnership with a range of stakeholders such as the Canal and Rivers Trust, Wye and Usk Foundation and Natural Resources Wales.

These studies have the additional benefit of making it clear what other measures are required, such as improvements to land management, farming practices, the construction of fish passes to allow the migration of salmon and other migratory species to improve further the general health of these rivers.

These changes in time will assist meeting the requirements of other EU Directives such as the Water Framework Directive, all of which will be required by 2027. Our studies are supported by academia, and will be published and peer reviewed when complete.

Until any new information is presented to and reviewed by NRW we will not be in a position to amend our WRMP with any improved licences, if this is necessary. The ongoing investigations are timed to produce outputs in line with Habitats Directive requirements with licences in place by December 2015. The plan is to develop alternative proposals to licence changes on the Wye and Usk in the spring of 2014 allowing NRW sufficient time to accept or otherwise these new proposals.

The timescales for the publication of the Final WRMP is set by Welsh Government and is not directly related to this investigatory work. In the situation where more beneficial new licence conditions are agreed between parties, we would in due course present this within our annual WRMP review updates. If this is material to our plan we may then need to consult our stakeholders including customers on this change, this is only likely to be the case if our SEWCUS WRZ falls into a deficit position in the near future.

The licence amendments driven by the Habitats Directive require a change in the way we operate our water supply systems during critical dry years and drive investment in new water resources only in the Pembrokeshire WRZ. However, the licence changes in the SEWCUS WRZ require new operating regimes and present a very real risk, including an impact upon the raw (i.e. pre treatment) and final quality of the drinking water we supply. Dŵr Cymru Welsh Water's top priority must be to ensure that our drinking water supplies continue to comply with the stringent statutory standards set by Welsh Government and policed by the Drinking Water Inspectorate. We must mitigate against these risks prior to agreeing these abstraction changes. We must also ensure that the operation of our SEWCUS water supply system in particular is resilient during critical dry year events and that we are able to maximise the water that is available for abstraction into the future.

To deal with the impact of the Habitats Directive which must have measures agreed and within our abstraction licences to protect those rivers designated as 'Special Areas of Conservation' (SACs) by December 2015. This Plan therefore:

- Sets out the investments required to support the Plan, and specifically those required to allow any reductions in our abstraction licences, such that they can be included in our future business planning. These come to circa £8m of capital investment to meet supply demand balance issues with associated annual running costs. Further investment in excess of £20m will also be required to improve our water infrastructure so as maintain water quality and customer service standards under the differing abstraction regimes, and to meet the detailed requirements of the licences. These have all been included in our regulatory price review proposals for 2015-20, known as PR14.

- Confirms that we will work closely with our regulators and stakeholders to agree licence modifications by April 2014 or soon thereafter for incorporation into our licences by December 2014, which will take effect no sooner than April 2018.

2.3 Key changes from our draft plan

We have now considered the consultation responses received on our draft Plan and together with some additional information provided on a number of plan components, have updated our plan accordingly. The key areas where we have updated our plan from the draft position are:

- An update to our demand forecast using latest and best information. This is in line with the lower demand forecast scenario presented within our draft WRMP;
- The review and development of a variant solution to the supply demand deficit within the Pembrokeshire zone;
- Minor change to the Deployable Output position for the South East Wales Conjunctive Use System (SEWCUS) water resource zone (WRZ) in response to our RoC operational review. This has placed the zone into a marginal deficit position of c0.5Ml/d in the last year of the planning period 2039/40);
- Minor change to our headroom factors in relation to Climate Change;
- The addition of a new chapter entitled 'Future Improvements'. This chapter will be placed at the end of the document and aims to provide more clarity for key plans or visions for the future, summarised in one place.

2.3.1 Our updated demand forecast

Two demand forecast scenarios were presented within our draft Plan. The higher forecast was based upon an optimistic view of growth generated by econometric modelling, and the lower forecast based on recent actual demand trends. A new forecast has been generated which utilises a combined trend based and econometric based assessment of growth, including 2012 census datasets and improved economic level of leakage profiles for each WRZ. This forecast is both more defensible and lower risk when considering the associated income forecast within the PR14 plan.

This more robust demand forecast is c25Ml/d lower than that presented within the draft WRMP across the region, with normal year demand estimated at c775Ml/d. The key changes to components of the new demand forecast are:

- New household connections;
- Property and population forecasts;
- Non household demand forecasts;
- The sustainable economic level of leakage.

The draft Plan based the forecasted rate of non household connections on the 2008 trend based household projects produced by the Welsh Government. What has transpired is the forecasted connections have not been realised and we have seen the lowest new connection rates in over a decade (for example 2012 / 2013 saw 4,800 connections, compared to the draft Plan forecast of closer to 8,000). Additionally, new legislative requirements placed on domestic fire sprinklers may have compounded this reduction. There is no readily available econometric data which justifies resuming a new connection profile line that is in line with historical connection rates and with the

state of the economy being highly uncertain, the draft Plan forecast was reviewed and a less aggressive recovery profile adopted, meaning less household properties forecasted across the Plan.

The draft Plan forecast for property and population have been updated to take account of our annual return information (for 2012 – 2013), and also the new Census (2011) results. This was an opportunity to forecast from a rebased position using the latest company specific data, and the most up to date snap shot of the population we have. Looking at the last year of the current planning period, the outcome of using different datasets is a net increase in demand containing:

- A decrease in total connected properties from c1,650,000 to c1,600,000; and,
- An increase in total connected population from c3,300,000 to c3,400,000.

The draft Plan forecast for non household demand has been adjusted to take account of more recent and best available data which includes the 2012 – 2013 data sets for DCWW measured non-household demand.

The draft Plan forecast for leakage has been altered through the development of our sustainable economic level of leakage (SELL) position at a WRZ level, which takes account of leakage data formed from improved assessment methods (e.g. cost modelling) and a new position of trunk main leakage (rebased to take account of more recent values we have reported through our 2012/2013 KPI reporting process). The outcome is an increase in leakage at company level from 167Ml/day to 169Ml/day for 2019 / 2020.

Our base demand forecasts also take account of increased water efficiency effort planned in AMP6. We have been delivering water efficiency to our customers through various routes such as engagements with our large business customers, schools, our education and peripatetic teaching capability, the water efficiency welcome packs we issue and other online engagement methods. We plan to do more in the future to maximise the potential for broader delivery with improvements in existing process, and other plans such as:

- Working with stakeholders that have existing routes to market through established communications channels e.g. working with housing associations and their maintenance divisions who can simply and very positively engage and implement water efficiency interventions with their client base;

- Working collaboratively with agents delivering energy efficiency retrofit programmes e.g. reducing water flow has the added benefit of a reduced gas heating bill as you have less water flow and so less water heated during showering, or washing of dishes;

- Making water efficiency accessible through web-enabled solutions, such as intuitive online information and ordering systems within the existing Welsh Water web site, like our water efficiency portal;

- Maximising the opportunity to promote water efficiency through existing interaction with customers, such as through questionnaires embedded into our water efficiency portal. This

also allows the storage and analysis of information received to better understand and assist improvements in the effectiveness of our engagement methods, and products. Moving forward we will be communicating with our current customer base via newsletters which may outline upcoming events and water saving tips.

2.3.2 Variant to the AMP6 Pembrokeshire scheme

In line with consultation responses and our customer engagement work, in Pembrokeshire, we have now looked at a variant to the Bolton Hill to Preseli WTW transfer scheme which is by far the most costly scheme related to the WRMP proposed for delivery in the AMP6 period. In addition in looking at this scheme in greater detail, there is significant cost risk associated with the proposed works to up rate the Bolton Hill WTW.

We have sought an alternative scheme to reduce this cost risk and to help us to ensure affordable bills during the AMP6 period. This new proposal is not to transfer additional treated water from Bolton Hill with a need to up-rate the WTWs but to transfer raw water directly from our Llysyfran Reservoir to the Preseli WTW. This provides some but not all of the resilience benefits of the former scheme but would be lower cost and lower risk.

The introduction of this scheme within the plan meets customer engagement findings by reducing the cost of the AMP6 programme and flattening the cost profile related to water resources over subsequent AMP periods. The plan also includes greater volumes of leakage reduction to be delivered in AMP7 in line with customer preference.

We have now updated our HRA and SEA to examine the potential environmental impact of this scheme which is low, in line with the previously proposed Bolton Hill to Preseli WTWs scheme. The Bolton Hill to Preseli scheme would require additional regulation releases from Llysyfran reservoir which would be abstracted at our Canaston intake. The new scheme would take a similar volume of water from Llysyfran reservoir but is more efficient in terms of pumping operations.

2.3.3 Updated SEWCUS DO

As requested by NRW in their consultation response we have added further justification to the timescale within which we are able to accept abstraction licence changes, particularly on the Wye and Usk rivers. We have re-challenged the modelled representation of the SEWCUS water resource system against operational constraints evidenced this year.

Our reported Deployable Output (DO) figure for the SEWCUS WRZ in the draft Plan was 410 Ml/d. Following the dry spell experienced in summer 2013 and the consequent peaks in customer demand, we have gained a better understanding of the operation of the SEWCUS system under these conditions. We have identified additional constraints within our operational asset base that need to be accounted for within our DO modelling to ensure we are reporting as accurate a picture as possible. Two areas of improvement we have made to our DO estimates are:

- The identification of an error within our DO modelling that was resulting in double counting of the minimum permitted abstraction of ~11Ml/d from the River Usk following licence reductions as set out in NRW's Usk U611 Technical Note;
- The identification of trunk mains capacity constraint from Court Farm WTW to Cardiff;
- The identification of limitations on the maximum capacities of several of our WTWs in relation to what they can produce as a daily average supply into the system;
- A slight increase in supply capability from the Talybont trunk mains resilience solution put forward in response to licence reductions.
- Transient pressures in our Llantrisant raw water transfer main requires a bleed of 8Ml/d to the Court Farm balancing pond to enable water transfer to Llandegfedd. The effect of this is to lower the volume of water that can be transferred from the Llantrisant abstraction to Llandegfedd when available.

When all these changes are implemented within our WRAPSIM software the effect is to reduce the DO of the SEWCUS WRZ by 8 Ml/d to 402 Ml/d.

For the proposed final WRMP we have produced an updated set of demand forecasts for all of our WRZs as described above. For the SEWCUS WRZ this has resulted in a reduction to forecast demand across the planning period of roughly 6Ml/d. The resultant supply demand balance is slightly smaller than that presented in the draft Plan, leaving the zone with a marginal deficit for one year at the end of the planning period (2039/40).

2.4 Our Plan summarised

This WRMP is compliant with latest Defra, Welsh Government, Natural Resources Wales, and Ofwat Guidance, which has been developed in partnership with the water industry. This guidance has driven a number of improvements in the way in which we measure, model, and understand the operation of our catchments, the impact of climate change, and our forecasting of future demand.

We believe compliance with the Habitats Directive can be achieved as we highlighted in our 2012 WRMP, with licence amendments in the SEWCUS zone and those in Pembrokeshire in place in 2015 as required by the Habitats Directive but not taking effect before April 2018. This allow us to establish what, if any, other abstraction regimes can be accommodated which are environmentally protective, and we hope allow a significant surplus to be retained so as to support sustainable development. This work is ongoing and is currently scheduled for completion in 2014.

We have also taken account of the timescale put forward by Severn Trent Water for licence changes on the River Wye.

This balanced and progressive approach also supports the need for further detailed work during 2015-2020, on the way that SEWCUS will be operated to make sure that there is no drinking water quality or other issues which may arise by such radical changes. In accounting for the lowering of

demand forecast and the minor changes to DO SEWCUS retains a marginal surplus across the planning period in all but the final year when there is a very small deficit of c0.5Ml/d. Over £20m of resilience investment will be required during 2015-2020 to ensure we are able and confident to maintain the quality and quantity of supply throughout the zone that our customers currently enjoy.

The results of these further improvements confirm that, of our 24 water resource zones, 5 (not 6 as per the draft WRMP) are now forecast to be in potential supply demand deficit over the planning period to 2040, as depicted by the red areas in the figure below. The purple colour denotes that the SEWCUS WRZ has a marginal deficit in the supply demand balance (SDB). This is only in the final year of the planning period (2039/40).

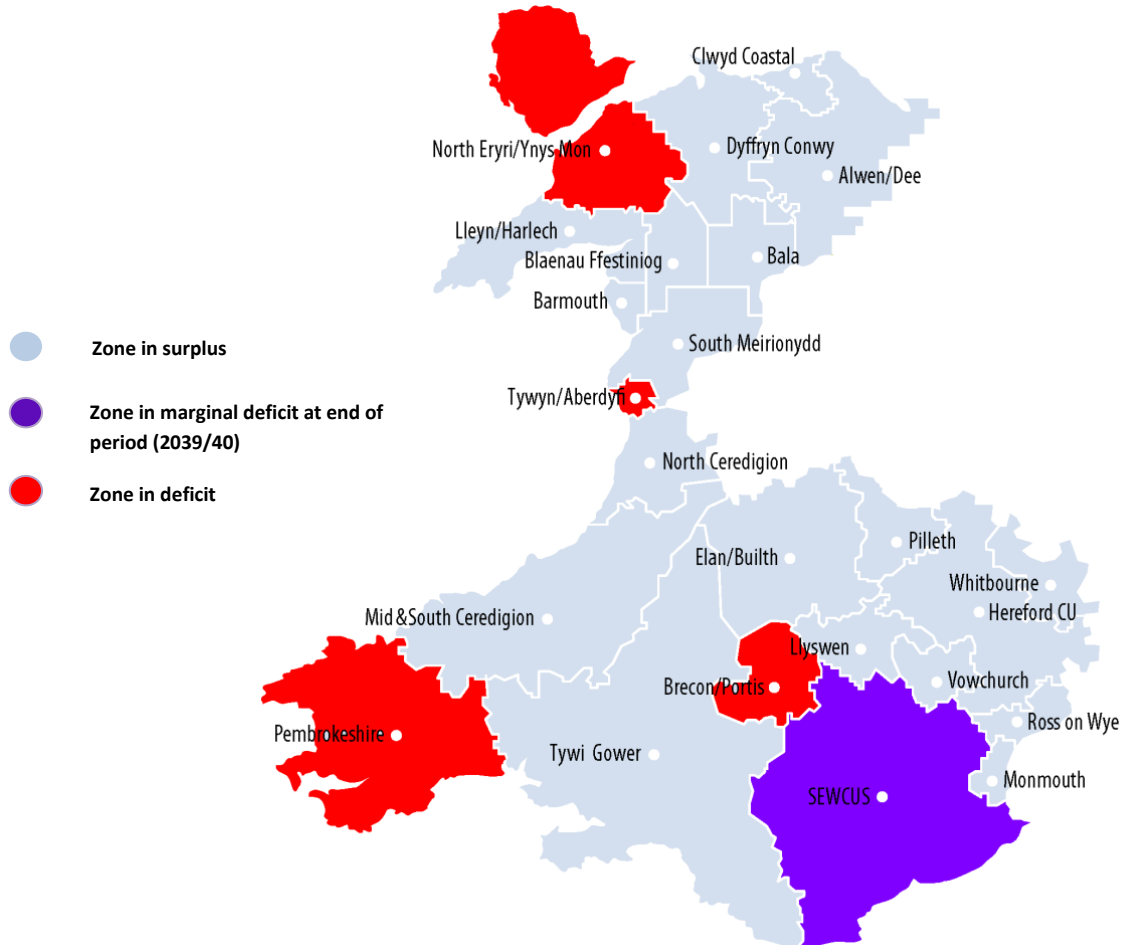


Figure 2- Map of zonal surplus/deficit

For **Pembrokeshire**, where the deficit has been driven by the potential impacts of climate change and the significant impact of the 'Review of Consents', our environmental study work has confirmed the level of licence reductions that might be required on the Eastern Cleddau. These will take effect from April 2018, and will require a transfer of raw water from Llys y Fran reservoir to Preseli WTW of

3.6Ml/d and after 2022 we will also need to import water from the adjacent Tywi Conjunctive Use System (CUS, also known as Tywi Gower WRZ), carry out further leakage reduction of circa 4Ml/d by 2025; and reinstate Milton boreholes (3Ml/d) to maintain a supply demand surplus through to 2040.

In the **Brecon Portis** water resource zone, Habitats Directive driven reductions on the River Usk will constrain our abstractions from the Brecon groundwater source reducing the source output. We have developed a new water resource model for the zone. The modelled simulation of the supply system has improved the accuracy of the zonal deployable output given network constraints and that from the licence reduction. The demand forecast for the zone has also been revised taking account of an improved supply demand balance across the zone. As a result we plan to supplement the available flow in the river Usk with additional releases from the Usk reservoir, when required.

In **North Eryri Ynys Môn**, a deficit by 2026 is driven by a combination of an improved understanding of forecast demand and also the potential impacts of climate change. To maintain the supply demand balance in this zone to 2040, we will transfer water from Cwm Dulyn into the Zone, actively pursue improved leakage levels, and water efficiency work with our customers to improve water available for use by circa 4Ml/d.

In **Tywyn Aberdyfi**, the deficit which is predicted to occur post 2016 in this zone has been driven by the combined potential impact of climate change and an improved demand forecast to 2040. We are proposing to transfer raw water from a new river abstraction at Afon Dysynni and transfer this water to Penybont WTW which has existing spare capacity, thus maximising the use of this existing asset. Further treatment capacity will be required later in the planning period at this asset.

In summary the impacts of the Habitats Directive and climate change will drive significant changes to the way we treat and supply water to our customers. We have identified in this plan the detailed impacts and the best way of dealing with these in each of our water resource zones. The cost of such investments must be weighed against those which we will not be able to afford as a result, such as to reduce sewer flooding to the extent we would otherwise wish. The impacts of environmental pressures on society and the economy must also be properly understood and any decisions made by our Regulators, Welsh Government or ourselves should be based on sound evidence, in a transparent manner. This Plan supports exactly that.

2.5 Changes made to our draft WRMP

Draft WRMP Section	Amendment to draft WRMP due to consultation	Amendments to draft WRMP due to updated information
1 – Executive Summary	Indicate the potential impact on bills of the proposed investment. Production of the Final plan (i.e. technical report), and a supporting report i.e. accessible, shorter and non technical summary document.	
2 – Introduction		Additional sub section which provides more detail as to why we undertake an ecosystem approach and how this links with catchment management. Update latest policy information and drivers.
3 – Stakeholder Engagement	Addition of the key results of our customer preference work and the link with the PR14 process and CCG. An outline of planned improvements in our stakeholder engagement plans / exercises.	Additional information regarding catchment management, and engagement with stakeholders who undertake land management activity within source water catchment areas.
4 – Water Supply Capacity	An updated view of SEWCUS DO as a result of the NRW review of consents exercise. Added detail for inflow sequence calculation, and regarding WRZ with shorter inflow sequences (e.g. Vowchurch and Whitbourne). An outline of our planned improvements to HYSIM modelling and calibration. More detail added covering treatment	

	work operation usage, and raw water loss.	
5 - Sustainability	A text in the report to reflect that the DO modelling of the Wye and Usk was based on 'Likely' licence reductions.	
7 – Water Demand	Provision of text which captures any deviation from using data sources from local authority / welsh government to inform water demand forecast (e.g. new connection rates). Provision of more detail regarding water efficiency and strategy moving forward.	An inclusion of all below changes made, with justifications: • New household connections; • Property and population forecasts; • Non household demand forecasts; • The sustainable economic level of leakage.
8 – Target Headroom	Review headroom profiles for the longer term level of risk. Address the negative numbers present for the uncertainty of climate change impact on DO. Change of Water Efficiency schemes uncertainty range to -7.5% to +2.5%.	
9 – Baseline Supply Demand Balance	Provision of additional information regarding the supply demand balance for Vowchurch and Whitbourne.	
10 – Options Appraisal	Inclusion of total Company carbon emission and projections. Provide more detail as to how the BAG guidance has been used to generate environmental and social costs for options.	
11 – Environmental Appraisal		Updated in line with the amended HRA and SEA and specifically as a result of the variation in the preferred Pembrokeshire solutions.
12 – Testing the plan	Include discussion and solutions regarding Wylfa new development scenario.	
13 – Final Water Resources and Demand Strategy	Provision of more information regarding SEWCUS plans. Ensure clear comparison is given between	Update with any changes associated with the amended HRA and SEA as a result of the new scheme proposed for Pembrokeshire.

	any instances whereby there is a difference between a least cost solutions and the chosen / preferred solution.	An updated future plan for SEWCUS schemes and resilience taking account of RoC.
14 – Future Improvements		Provide an outline of planned improvements / visions.

Table 2 - Summary of changes to our draft WRMP 2013

2.6 Annual WRMP Review

We are committed to reviewing and refreshing the key elements of our Plan on an annual basis. This is an improvement to our planning process and we will continue to consult our stakeholders over any material impacts on the plan over time.

By 2020 we also intend (subject to necessary funding approval by Ofwat) to:

- Publish a revised Drought Plan in 2014 and similarly by 2018 which aligns with our WRMPs;
- To have improved our understanding of the quantity and quality of inflows to our catchments to enhance our water resource understanding and reduce the financial and carbon costs associated with water treatment;
- More generally, use the next few years to undertake further work on the challenge of meeting water resource objectives in Wales including, in particular, the creation of an improved evidence-based understanding of the environmental impact of our abstractions. The major strategic decisions that we make must be the right ones both for current and future generations, and to this end we will seek to work in partnership with our stakeholders, especially our new environmental regulator, Natural Resources Wales.

3 Statement of Response to our Consultation

This section provides a commentary on the consultation responses that we have received relating to specific chapters within our draft WRMP and describes the proposed changes that we will make to our Plan in response to views received. We have highlighted the areas of our Plan where we will make these changes and these are further summarised in Chapter 2 above.

3.1 Executive Summary and Non technical report

3.1.1 Background

In addition to the full Technical Report of the draft WRMP and the supporting data, we also produced an Overview Pamphlet and an Executive Report.

The Overview Pamphlet described why and how we plan to maintain future water supplies and provided a summary of our plans. This bilingual document, explains the purpose of the Water Resource Management Plan, the changes to supply and demand that are anticipated to impact our water resources situation, the options available to us to resolve any potential deficits, and the investment options.

The Executive Report summarised the full technical report in a more readable form for non-experts. It contains a bilingual executive summary and a condensed explanation of the process and methodology of producing the Water Resources Management Plan, including elements such as how headroom is calculated, how demand is forecasted, etc, along with a zonal breakdown detailing the preferred options to resolve supply demand deficits.

The Executive Report opened with an Executive Summary which summarised the key significant issues affecting the plan and the measures which we propose to implement to resolve supply demand deficit in the six zones identified as being in deficit.

3.1.2 Consultee Response

Comments received in relation to the executive summary and the non-technical documents were received from Ofwat and CCWater.

Ofwat remarked that Dŵr Cymru has not set the draft WRMP in context for customers by indicating the potential impact on bills of its proposed investment and that we should present this information in the final WRMP.

CCWater requested that the non technical document is extended to include the following:

- A succinct reasoning on why the options we have selected are the best for our customers and what alternatives options we have considered and rejected;
- Acknowledgement that delivering affordable bills and a safe and reliable water supply are outcomes we aim for and explain how we are planning to reconcile these;
- Accurate reflection of all issues, assessments and uncertainties; likely proposals and solutions; and costs and impacts on services and customers' bills.

CCWater additionally raised concerns that where our summary presents the costs of water resources management proposals (including £20m to maintain water quality under differing abstraction regimes and to meet licence requirements) this investment is not clearly justified, nor is the impact on customer bills explained.

CCWater also commented that any supply-demand or resilience issues in SEWCUS needs to be clearly explained, as well as the investigation and mitigations planned to deal with these potential issues within a zone which contains 40% of our customers. Finally, they highlighted that the proposed pipeline to connect South East and South West Wales is not addressed in either the video or public pamphlet.

3.1.3 Welsh Water Responses

With regard to the request that we set the draft WRMP in context for customers by indicating the potential impact on bills, we will indicate the potential impact on bills of the proposed investment in our final WRMP. The water resource management plan and its associated expenditure are set within the context of and accounted for within the PR14 business plan we have developed, however this is ongoing and approval of the plan will not be received from Ofwat until 2015. Our PR14 business plan has been extensively consulted upon with our customers and stakeholders, including an in-depth study as outlined below regarding our customers willingness to pay for any water resource related investments.

Total expenditure corresponding to the 2015-20 proposals in the draft WRMP is forecast at £8m which includes funding for the development of subsequent water resource and drought plans during the AMP6 period. This is around 0.5% of the total expenditure anticipated in AMP6 and the resultant anticipated impact on household bills is less than £3 p.a. We are also proposing to spend an additional £20m on network schemes in our SEWCUS Water Resource Zone (WRZ) to overcome the increased risks to water supply from the loss of abstraction licence capability on the Wye and Usk. This work also aligns to other asset drivers and represents around 1% of the total AMP6 budget.

The investment programme focuses on improving infrastructure that maximises the benefit to the customer, and is in part driven by the views received by customers during engagement exercises for PR14. Engagement with our customers, including qualitative and quantitative research, indicates all water supply-demand measures were valued positively by households, and all but one (inter-company transfers) were valued positively by businesses. This is in line with WRMP planning guidance which suggests that the least cost programme of solutions should be presented or where justified as a best value programme.

There was considerable support from customer engagement for demand management measures and particularly leakage reduction would be preferred along with the re-introduction of existing water resources where these are currently mothballed. Metering was thought to be the fairest way to pay for water services. However, the key finding that cuts across our customer preference research is that all but the most environmentally driven customers would prefer not to pay any additional cost or in other words would prefer least cost options to resolve any supply demand deficits.

In line with consultation responses and our customer engagement work, in Pembrokeshire, we have now looked at a variant to the Bolton Hill to Preseli transfer scheme which has cost risk associated with works to up rate the Bolton Hill WTW. The alternative to this scheme is to transfer raw water from Llysyfran to Preseli. This provides some but not all of the resilience benefits of the former scheme but would be lower cost and lower risk.

The introduction of this scheme within the plan meets customer engagement findings by reducing the cost of the AMP6 programme and flattening the cost profile related to water resources over subsequent AMP periods. The plan also includes greater volumes of leakage reduction to be delivered in AMP7 in line with customer preference.

In response to the query regarding the content of the non-technical report, we will not be producing a non-technical report for the final WRMP, and instead will produce an accessible summary document which is far shorter and non-technical. This will be a simple summary of the issues that we face over the planning period and proposed solutions to resolve these. The advice received from CCWater on the production of a non-technical report is appreciated, and we will use this to guide the production of the summary document to be released with the final WRMP. In the future, non technical documents will not be used to explain the process of producing a water resource management plan but will focus on what the outcomes of the plan mean for our customers. Our intention is to produce only the non-technical pamphlet and a full technical report based on the feedback received on the draft WRMP documents.

The potential to transfer water from our Tywi Gower to the SEWCUS WRZ via a South West to South East transfer main has been included within the draft WRMP as an option. This was also used as an example of a resilience scheme within our PR14 customer engagement work. The scheme is not required on supply demand grounds but has been considered further when considering the impact on the SEWCUS WRZ of proposed licence reduction on the Wye and Usk.

SEWCUS resilience objectives have been explored more fully in relation to the consultation responses received by NRW and are commented on below. We will provide an update on the SEWCUS resilience work within the final WRMP.

3.2 Introduction

3.2.1 Background

The introduction to our draft Water Resources Management Plan sets out the context within which the draft WRMP was prepared, and the processes that were applied. As part of this, the chapter explained the Glas Cymru not for profit model which frames every decision we make as a company. The chapter also explained the legal responsibility we have to prepare and maintain water resources plans, the regulatory framework we operate within and the approach taken to the development of the plan. Key to this is the fact that the plan which has been produced this time around promotes the best value schemes for customer and the environment (not necessarily least cost). We have used the information we gathered from our customers in our PR14 consultation work, to better understand their views and needs, and establish what 'best value' is for them.

The chapter made reference to the ecosystems approach which was adopted in the development of the plan, following the recommendation of Countryside Council for Wales in their response to our consultation for our revised draft WRMP 2011 and the Welsh Government green paper 'Sustaining A Living Wales'. The ecosystems approach is a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way (CBD 1993). It recognises that people and society are integral components of ecosystems and their management and conservation (UK NEA2011) and aims to quantify or measure the full extent of services received from the environment i.e. Supporting services, regulating services, provisioning services, and cultural services.

3.2.2 Consultee Response

Responses were received from the NFU and CCWater, with NFU focused on the subsection 'an ecosystems approach' and CCW concerned about the value for money of the plan as detailed in the subsection 'our approach to the development of the plan'.

NFU were of the opinion that if any recommendation is made which came under the broader policy of an ecosystems approach and which impacted farmers, we should ensure that farmers are adequately supported and financially compensated where appropriate.

CCWater provided feedback on our customers and stated:

'One in ten customers in Wales tells us they cannot afford their bills. … Your customer satisfaction with value for money of water services is lower than satisfaction with your services by 17% and those who think charges affordable are most likely to be satisfied with it - we think that you should continue to seek to address this gap'.

3.2.3 Welsh Water Response

With regard to adequately supporting farmers, we continue to engage and support the farming community through educational workshops, such as those undertaken in the Llysyfran catchment, where we recently held a nutrient management event at our visitors centre. Representatives from

14 of the farms within the catchment attended and provided feedback that they would be willing to take advice and implement improved nutrient management on their farms.

With regard to the comments received from NFU regarding financial remuneration where policy recommendations impact farmers, we have so far not developed any policy which impacts farmers by requesting them to undertake activities and we do not have any powers to do this beyond those provided by the Flood and water management Act 2010 regarding the imposition of water restrictions. If there are instances where damage to the environment is occurring and can be attributed to the actions of a land-owner or lease holder, we look to the NRW to resolve these issues.

As with the response above related to affordability, we have followed both WRMP Planning guidance in developing wherever possible a least cost programme of water resource or demand management solutions in response to WRZ deficits. We must, however, plan to resolve these deficits in line with our stated levels of service. Customer preference work presented to the CCG indicated that increased use of hosepipe bans (Lower LoS) was one of the least desired approaches to increasing water resource capability.

3.3 Stakeholder engagement

3.3.1 Background

Our stakeholder engagement chapter explains the multitude of different ways our stakeholders have helped inform the development of the Water Resources Management Plan. The chapter explains key stakeholder links, the directions and guidelines we followed, the use of previous customer engagement processes and the draft consultation.

Key stakeholder links were used to collect a large number of informative documents which are listed in the chapter. The documents and strategies were used to shape the thinking behind the Water Resources Management Plan.

Welsh Water have engaged and worked closely with EA and NRW throughout the production of the plan and received specific instructions from NRW on their requirements. We have also had meetings with Ofwat on specific issues that could have an impact on bills. These requirements, as well as the contents of the Welsh Government Direction are summarised in the chapter.

In preparing for the draft WRMP we undertook wide pre-consultation with our stakeholders. This process is explained briefly in the chapter and demonstrates how we sought to provide external organizations with an understanding of the overall approach to be taken by us and highlight key differences from our previous plan.

We have taken our Independent Environmental Advisory Panel, which consists of over 25 of the leading environmental bodies acting in Wales through the planning process. We have also helped these organisations to reach out to their members to encourage a review of our plans.

Also, alongside our PR14 customer engagement work, we have undertaken specific consultation on water resource issues which feed both into our PR14 Customer Challenge Group (CCG) and to be accounted for within our final plan.

3.3.2 Consultee Response

A large number of consultation responses were received relating to issues around stakeholder engagement, with the majority of these comments coming from CCWater, although there was also representation from Ofwat, NRW and NFU on this subject.

CCWater consultation response focussed on the issues of how we had considered customers views when developing the draft WRMP. Particular areas where additional information has been requested are our dealings with the PR14 Customer Challenge Group and our use of up-to-date willingness to pay survey information. These concerns were echoed in the responses from Ofwat and NRW.

CCWater also requested that the final WRMP provides an improved explanation of the timeline and linkages between the Water Resources Management Plan process and the Price Review 2014 (PR14) process. They also felt that the level of detail in the non-technical report was too high and that if we had produced a more customer-friendly document, we would have allowed our customers and

stakeholders to better engage in a discussion about the management of water resource in Wales. Ofwat expressed similar concerns that the draft Plan was not sufficiently publicly available.

CCWater expressed their disappointment that they were not directly consulted by us (due to an administrative error) at the same time as others in the consultation process and requested assurance of the breadth of consultation, including an annexed list of all stakeholders who were consulted. They recommended that consultation responses to Your Company Your Say which related to the draft WRMP should be considered and vice versa.

Ofwat have stated that they "have not been able to determine the role that Welsh Water's CCG (customer challenge group) has played in development of the dWRMP" and that DCWW should clarify the CCG's role in its final plan.

NFU stated that a closer working relationship between Welsh Water and farmers would benefit both parties, and provided the example of South West Water where the Rivers Trust are used as an intermediary between themselves and farmers. They also suggested that the appointment of Welsh Water Farming Industry Liaison officers would be beneficial, with a "4-way partnership between Welsh Water, Natural Resources Wales, Welsh Government and the farmers in a catchment".

3.3.3 Welsh Water Response

With respect to the opportunity of linking the draft WRMP with the 'Your Company Your Say' (YCYS) consultation, the consultation periods had significant overlap; however marrying the two consultations simply because they coincided would have been inappropriate as the consultations are vastly different in scale and detail.

Even with the efforts made to ensure clarity as to which consultation related to which document, we still received comments from three consultees on the 'Your Company Your Say' consultation addressed to the draft WRMP consultation– the contents of these responses were forwarded to the team handling 'Your Company Your Say'.

The YCYS consultation covered our entire AMP6 programme and represented at that time £2bn over 6 years (now reduced to £1.5bn over 5 years) of potential investment, whereas the draft WRMP represented nearer £10m, i.e. around a half of a percent of the total AMP 6 spend. To link the consultations could have led to the misconception that the documents are comparable in terms of the scale of the work proposed within them. However, Water resource issues have been specifically covered within the customer engagement exercise for PR14 to maximise the benefit to the customer from our water resources strategy to be put forward within our final WRMP.

A Customer Challenge Group (CCG) was formed to help direct DCWW in both engaging with customers and to challenge the robustness of this process and our response to customer preferences.

The customer preference work related to water resources was undertaken by independent consultants and this was presented to the CCG for review and comment. The water resource programme of work for PR14 has also been reviewed by the CCG alongside the other work programmes in the context of our overall PR14 proposal. The Chair of the CCG also sat as an

observer on the PR14 environment scrutiny committee. This provided an opportunity for a member of the CCG to fully understand the principle driver for water resource spend within PR14, namely interventions driven by Habitats Directive Review of Consents and the regulatory position requiring solutions to meet this impact.

It is very clear to us through our wider PR14 customer engagement and water resources preference work that value for money is a high priority. The water resource planning process is designed to ensure that all available water resource and demand management options are considered and that least cost solutions are incorporated within our plan unless there is a solid justification, for instance on environmental grounds for talking a best value approach.

Our customers do not wish to have a reduced level of service in terms of water use restrictions but we have reviewed our proposed options to maintain the current level of service provided. Of these options the Bolton Hill to Preseli solution is by far the greatest expense, although costing a relatively small amount in comparison to the total proposed business plan spend in AMP6.

The key results of our customer preference work and link to the PR14 process and CCG will be added to the consultation section of our proposed final WRMP.

With regard to the channels used to publicise and make available the draft Water Resources Management Plan, consideration was given to the breadth and depth of the public consultation. In this we were mindful that customers can feel bombarded with information if it is not presented at the right level.

Using forms of communication such as extensive local media coverage and full publications in libraries was considered to be too broad, particularly as the consultation period overlapped with the consultation for the PR14 business plan which is more relevant to customers. As such, key stakeholders were the primary targets of consultation. The general public was targeted through a succinct booklet which was made available through the YCYS road-shows and was available online. This pamphlet contained easily understood messages and encouraged and directed customers to look at the greater detail held on our website.

In addition we also raised awareness of our plan through our Independent Environment Advisory Panel and provided links through to members own websites publicising the consultation.

We acknowledge that still more can be done to ensure that our stakeholders are adequately consulted regarding our plans and we will comment on this in our improvements for the future section of the final report.

The omission of CCWater from the original consultation e-mail list was simply a transcription error from our consultation list and was to say the least a regrettable error. We were however pleased that this was identified and grateful that CCWater were able to provide a comprehensive response to the draft WRMP within the defined consultation period. We will include a list of consultees as an annexe to the consultation request letters.

The draft WRMP and the Your Company Your Say (YCYS) for PR14 consultation periods had significant overlap, however marrying the two consultations simply because they coincided would

have been inappropriate because they are vastly different both in scale and detail. Even with the efforts made to ensure clarity as to which consultation related to which document, we still received comments from three consultees on the Your Company Your Say consultation addressed to the draft WRMP consultation.

In response to NFU's suggestion that farming liaison officers are appointed by Welsh Water, we wish to highlight that since 2011, we have had a catchment management team in place. The team is presently focused on undertaking root-cause analysis where it is believed that catchment management may have a role to play in the protection of our raw water resources. The root-cause analysis will ultimately be used in the production of educational events. Such events have already been undertaken in the Llysyfran catchment in Pembrokeshire. This event was attended by local farmers, EA Wales (now NRW), Afonydd Cymru and Dŵr Cymru Welsh Water.

Where the catchment management team interacts with individual farmers, we undertake this in accordance with the preferred approach of NRW, which is for us to contact NRW and for them to be the point of contact for farmers. This approach ensures that farmers receive a consistent approach from both us and NRW. The catchment management team does deal directly with farmers where this is the appropriate method but this is only to resolve specific issues.

NFU also requested that more information was provided on a local basis. Water Resource Planning is done on a Water Resource Zone basis in accordance with EA guidance. A Water Resource Zone is defined as the largest area in which all resources can be shared, and hence they represent a group of customers who receive the same Level of Service. These areas are often far bigger than individual farms, making more detailed representation very difficult.

3.4 Water Supply Capability

3.4.1 Background

Our water supply capability chapter aims to clearly set out and report the technical analysis and modelling tasks that have been used to derive updated Deployable Output (DO) values. The section (along with Appendix D) is designed to meet the requirements of the EA/NRW, Ofwat, Defra and Welsh Government, as set out in the WRMP planning guidance.

Our 2013 draft WRMP significantly improved on our final WRMP 2012 by including modelled water resource systems for all zones. The methodology used to derive the DO values is based on the principles of behavioural analysis, consistent with the guidance. Simulations have been undertaken using the WRAPSim water resources modelling software. The development of the modelling approach was undertaken through a number of pre-consultation meetings with EA Wales (Now NRW).

3.4.2 Consultee Response

We received consultation responses from both NRW and EA relating to the modelling of our water supply capability. BBNP also had some comments with regard to the zones which affect BBNP directly.

CCWater requested assurance that all possible impacts on our supplies are fully considered so that appropriate strategies are put in place to maintain services to customers.

EA requested more evidence is provided in the final WRMP to justify the use of a short inflow series for Hereford, Ross-on-Wye, Vowchurch and Whitbourne. They also asked us to consider extending the flow series to robustly test the level of service. EA also highlighted some inconsistencies in the reporting of the calculation of inflows for Vowchurch and Whitbourne.

NRW commended the updated and validated HYSIM rainfall-runoff modelling and the use of this for the updated deployable output values, but raised queries about the calibration of inflows and reservoir storage levels, giving specific mention to Barmouth, Lleyn Harlech and North Eryri Ynys Mon. NRW also advised that treatment works losses should be summarised at a WRZ level in the main report.

BBNP were concerned that Usk Reservoir may not have enough capacity to provide additional hands- off flow for downstream abstraction within SEWCUS. They also took the opportunity to inquire as to whether siltation may have reduced the capacity of Usk reservoir.

3.4.3 Welsh Water Response

In response to the comment from CCWater regarding the impacts on water supply capability from cross company transfers, we account for all potential impacts upon the availability of our supplies within the water resource planning process and this is fully audited by our regulators Natural Resources Wales and Environment Agency to ensure we have utilised the most up to date information. We have not reported any planned transfers to Bristol Water within our Plan but

dialogue will continue to ensure that all options are considered to the benefit of our customers and the environment.

With regard to the EA's comments on flow series for Vowchurch and Whitbourne, this is noted and we will include fuller detail in the final WRMP about how the inflow sequences have been calculated. In response to the request for the justification of the relatively short flow record for Hereford, Ross-on-Wye, Vowchurch and Whitbourne, we will provide the 2007 technical report so that the EA are able to fully understand the hydrological reasoning behind our choice of record length. Essentially, there are insufficient reliable, long-term hydrological records available within our Operative Area that can be used to robustly generate inflow sequences. We are therefore constrained by the data available which means that we undertake modelling on record lengths shorter than that recommended by the WRP guidance but which, in all reality, still contains the most severe droughts experienced in Wales and parts of England covered by DCWW.

With regard to the comments received from NRW on the subject of HYSIM and model calibration, we would tend to agree with the comment made that there remains some uncertainty around inflow estimates using our HYSIM models. We have identified the need for further work to improve our reservoir inflow estimates in AMP6, thus improving our water resource capability analysis, and we will note this within the final WRMP. More specifically we are aware that this will require some improvements to our metering estate, and we will also be undertaking work to better assess any leakage in our raw water mains.

We have now trained our water resources technicians to undertake river flow gauging which will now enable us, along with existing consultant partners to be more responsive in acquiring flow data with which to calibrate HYSIM models. Overall, we will be reviewing existing flow balance work across our reservoir systems to improve our understanding of inflows.

AMP 6 investment cases have also been put forward to help improve the understanding of elements of the supply assets / network and this in turn will help the modelling ability to improve accuracy.

With regard to the comments received from NRW on the methodology used to calculate treatment works losses, a methodology is in place which draws on key components including raw water metered flow data, theoretical process utilisation, and waste water meter flow data. An outline of the process is already present within the draft WRMP, however DCWW have a supporting report that elaborates on this.

Additional information will be included within the final WRMP which will assist in understanding the methodology, as well as a summary table outlining Treatment Works Operational Use (TWOU) losses for all WRZ's with any associated explanations at the table base.

In response to the concerns of BBNP that there may be insufficient stored capacity within the Usk reservoir to augment supply into SEWCUS, the required compensation flows from the Usk will always be met as this is a statutory requirement of our abstraction licence. Within our AMP 6 programme, subject to Ofwat funding, we are looking to undertake bathymetric surveys to determine the current capacity of the Usk reservoir.

3.5 Sustainability reductions

3.5.1 Background

As outlined in Section 6 of our draft Water Resources Management Plan, the implementation of the Habits Directive will have a significant impact upon our available raw water resources during a dry year. The NRW/EA Review of Consents (RoC) process identified around 20 of our abstraction licences where modifications of some sort are required in order to reach a conclusion of 'no likely adverse affect' upon the Natura 2000 set of European designated sites within our operating area.

3.5.2 Consultee Response

Within three of our WRZs (Brecon-Portis, SEWCUS and Pembrokeshire) the impacts of the licence modifications will significantly reduce our Deployable Output (DO) and contribute to forecast shortfalls in our supply demand balances. This is therefore a key issue that affected the development of our Plan and unsurprisingly attracted a number of responses.

The comments received primarily focused on three aspects of the RoC process:

- The evidence base used by EA/NRW to define the level of sustainability reductions;
- Concerns about the potential impacts to timescales from unresolved differences on implementation of sustainability reductions;
- The importance of delivering sustainability reductions at a pace that is affordable to customers.

Concerns over the evidence based used to determine sustainability reductions were raised by the CRT, who commented that

"...There may be a case for a programme of scientific investigation that would allow us better to define what each of the features in sites protected under the Habitats Directive need in terms of river flow"

The Wye and Usk Foundation (WUF) had similar reservations about the evidence base and recommended that further work needs to be undertaken to resolve concerns around "EA's simulation modelling of the SEWCUS supply system" and impacts of the proposals on salmon migration.

The recommendation of WUF was that the final WRMP should be delayed pending the outcome of the investigation, an opinion differing to that of CCWater who expressed their concern about the impacts of the current investigations on timelines for completion and requested assurance that there would not be delays arising from this work.

CCWater commented several times regarding the need to deliver sustainability reductions at a pace which customers find affordable and acceptable and asked us to explore whether phasing in sustainability changes to abstraction licenses would be cost beneficial to customers. NRW comments on the pace of delivery of sustainability reductions was that any delay to the implementation of

license changes beyond December 2015 would need to be properly justified and kept to as short a time as possible.

CCWater also expressed concern about our statements regarding the problems experienced in undertaking the studies on inflows and abstractions at Pont Hywel on the Eastern Cleddau.

Ofwat were unclear on whether 'likely' or 'confirmed' sustainability reductions had been included in the DO forecast and requested that we clarify this in the plan.

BBNP commented that they felt that greater heed needs to be paid to the evidence presented by the EA regarding the frequency of historically abnormally low flows experienced by the Wye and the Usk. When commenting on the use of Usk reservoir releases to support downstream abstractions, CRT asked us to consider using the same mechanism to support the Monmouth and Brecon Canal during periods of natural low flow.

NFU informed us that they are encouraging farmers to become more resilient to climate change by considering on-farm reservoirs for storage of winter rain and said "There could be possibilities for a more joined up approach to use some of the larger water bodies on farmland as part of the network in future, particularly in those areas that are in defect or only marginally in surplus. Early liaison, planning and adequate recognition through compensation would however be required if this is to work."

3.5.3 Welsh Water Response

It is clear that the position we should present within the WRMP, regarding licence reductions on the Wye and Usk, is that which has been provided to us by NRW as part of the NEP, prepared through their modelling reports and draft licence conditions. These have been given a "Likely" status in the NEP for AMP6 delivery. This will be highlighted within the final WRMP.

However, within our draft Water Resources Management Plan we have made reference to the considerable amount of work currently ongoing on the Rivers Wye, Usk and Cleddau to enable us to better understand the interaction of these Habitats Directive sites and our operations which might ideally provide a better licensing outcome for all interested parties.

We believe that the review of abstraction permissions should be fully evidenced and that where we are having a proven significant impact upon the environment then we should take action along with other bodies to resolve these impacts. However, until this evidence is collated, reported on and reviewed by NRW in terms of an alternative abstraction regime, due to our Habitats Regulations obligations we have included licence changes on the rivers Wye and Usk to be implemented in April 2018. This will provide us with sufficient time to undertake the necessary investigations and infrastructure development to enable us to accept variations to licences without undue risk to water supply.

We agree with CCWater that this WRMP should not be delayed due to ongoing investigations into abstraction licence reductions. Until any new information is presented to and reviewed by NRW we will not be in a position to amend our WRMP with any improved licences, if this is necessary.

The timescales for the publication of the Final WRMP is set by Welsh Government and is not directly related to this investigatory work. In the situation where new licence conditions are agreed between parties, we would in due course present this within our annual WRMP review updates.

We believe that we have presented an accurate view of the supply/demand position within our WRZ's. However, we continually update our plan as new and better data becomes available to make future plans even more robust. We also need to update our work in line with ever changing guidance from our regulators and their view on environmental issues including climate change.

We have discussed the cross border issues related to licence changes with both NRW and the Environment Agency, Midlands region as you might expect.

With regard to the use of river regulation from the Usk Reservoir, our water resource models allow for the potential use of Usk reservoir within both our Tywi CUS and SEWCUS Water Resource Zones and to understand the optimal use of this water resource during dry years. We would be pleased to discuss the use of Usk for the benefit of the Canal system but this should not be to the detriment of our customers in terms of operational cost or to the environment when we would look to use Usk to support our abstractions from the River Usk during critical drought periods.

Since the publication of our draft WRMP, our independent consultants have produced a technical report, "Assessment of Key Risks in SEWCUS from Implementation of Habitats Directives Outcomes – Final Report, AMEC 2013". This was reviewed by NRW who required additional information to further justify the date of April 2018 proffered in our draft plan for the date at which licence changes on the Wye and Usk could be implemented.

A further technical report has been prepared and reported to NRW and in principle agreement has been reached that resilience work is required prior to implementation of licence changes on the Wye and Usk. This conclusion has been noted in NRWs response on our Business Plan proposals, "We support the company's proposals to investigate and resolve the potential water quality issues arising from implementing our Review of Consents abstraction licence changes on the rivers Wye and Usk and its proposals to invest in resilience schemes in SEWCUS to enable the company to implement these licence changes".

Our report provides the timescale for the delivery of these schemes which reflects the date of April 2018 for licence implementation and we have discussed and agreed what outcomes should be monitored towards achieving or outperforming this delivery timescale.

On the Cleddau, licence changes will take the Pembrokeshire zone into a supply demand deficit position. We are currently completing both investigations and drafting licences to confirm in detail the level of reductions and associated licence conditions. We have now reviewed our scheme requirement to enable licence reductions to be implemented. The Llysyfran to Preseli scheme which will be included within our final plan will potentially take less time for completion than the scheme offered in our draft plan. This will enable licence reductions to be addressed as soon as practicably possible.

3.6 Climate Change

3.6.1 Background

The WRPG (EA et al 201b) states that:

"A water company must assess the likely impact of climate change on its plan and report the likely implication for deployable output. A water company should agree the vulnerability of the sources to climate change with the Environment Agency before undertaking the climate change impact assessment, and should include the findings of the assessed impacts of climate change when forming its plan. Where a company believes that climate change is having an immediate impact upon its deployable output, it should present the evidence for this in its plan."

Hence, we must assess the effect of climate change on WRZ DO by assessing the implications of it for river flows and groundwater recharge. We should also assess the impact of climate change on any future supply side options through the option appraisal process as well as impacts on demand.

3.6.2 Consultee Response

BBNP was welcoming of the influence that SEA, HRA and Review of Consents have exerted on the analyses set out and commended them as "a significant improvement on the 2012 plan". BBNP extended from this to recommend that there is still some way to go towards fully accounting for the effects of climate change on the available water resource assets in all water resource zones.

The National Farmers Union commented that it is encouraging farmers to become more resilient to climate change by considering on-farm reservoirs for storage of winter rains. They expressed their belief that there could be possibilities for a more joined up approach to use some of the larger water bodies on farmland as part of the network in future, particularly in those areas that are in deficit or only marginally in surplus.

3.6.3 Welsh Water Response

Within our Water Resource Management Planning, climate change is an integral part of the process both in terms of assessing its potential impact upon the supply and demand position but also in terms of the most suitable options to be chosen to resolve any forecast shortfalls in supply. We undertake a comprehensive option appraisal process to ensure any potential sources of water that we could utilise for customer supply are considered. We have not so far considered the use of storage reservoirs owned and operated by third parties but acknowledge this is something we may wish to look at in the future.

We undertake climate change assessments on the supply and demand components within each of our 24 WRZs. The methodology for assessing climate change impacts has been undertaken in accordance with relevant guidance, which for those zones in deficit, requires further climate changes assessment on the options which we have reviewed to resolve the deficit. We are also continuing to work with EA and NRW to refine our climate change modelling work, and incorporate the best data available. This work is done nationally to ensure all Water Companies are using best practice

approaches and so ensure our modelling offer the best insight possible to how climate change will affect us.

3.7 Water Demand

3.7.1 Background

Forecasting future demand for water as accurately as possible is a major component of the WRMP. It is something we continually work on to ensure we are not developing unnecessary resources or under-forecasting the required supply and leaving our customers vulnerable to a shortfall. Demand forecasts for the Draft Plan were prepared in accordance with the EA's Water Resources Planning Guideline for the 25 year design horizon of the WRMP plus the three 'pre-plan' years for the remainder of the AMP.

The chapter summarises the water demand forecasting methodology. It begins with what elements are included in the calculation of the based year, and continues to provide an explanation of the various components of demand which have been assessed including policies that drive forecasts such as building standards, climate change impacts on demand, the changing nature of how the customer base is billed over time, the effects of a changing structure within the Water Industry and the status of the economic recovery.

3.7.2 Consultee Response

Consultation comments regarding demand issues were received from NRW, EA, NFU and CCWater. The comments which were received broadly divided into two categories: Queries were received regarding the methodology used for calculating the demand projections and the sources of data used for elements such as population growth, and challenges on the levels of leakage and water efficiency.

NRW, EA and CCWater all requested clarity on elements of the development of the demand projections, with CCW stating

"We would like your statement of response to this consultation to assure us that this time your supply and demand predictions are well informed and accurate based on precise future economic development and industry growth data, and population growth information."

The comments from NRW and EA were more specific as to the nature of the data required, with NRW requesting that we provide a comparison between the Welsh Government and the Local Authority projections to demonstrate how they differ.

CCWater and NFU were encouraging of the leakage reduction strategy that is provided in the draft WRMP but suggested more ambitious levels of leakage reduction, with CCWater citing evidence that leakage reduction is a priority for customers.

3.7.3 Welsh Water Response

With regard to the household projections made, it is the company's view that our new household projections represent a sound estimate of new household growth in light of historical activity and the economic climate, whilst being based upon official projections as much as possible. Particular consideration has been given to historical new connection performance observed by the company

which show trend based projections to appear to overestimate the level of new household growth. Additional information on the development of the demand forecasts will be provided in the final WRMP and will go into considerably more detail on this.

With regard to the request to show a comparison between the population projections of DCWW and the Welsh Government and local authorities, this has been undertaken and the graph will be available to view in the final plan. We have also produced a table showing the proportion of each local planning authority in each resource zone. This table will also be available to view in the final plan.

With regard to implementing increased leakage detection across the whole of Wales, we remain committed to reducing company leakage levels in line with economically derived values as well as implementing additional plans for those areas forecast to be in deficit.

We acknowledge the benefits of early leak awareness and have begun developing a system that will reduce response times.

With regard to taking knowledge of customer side leaks into account before billing, we have a policy and systems in place to help customers manage the effects of this. During AMP6 we are planning to trial the benefits of enhanced systems to further benefit the customer.

In response to the recommendation that we re-evaluate water efficiency options on a resource basis for deficit zones, we can confirm that the uptake rate of specific zonal level schemes has been assessed in comparison with wider publicised results as well as our own experience of delivering projects in Wales. We will continue to calibrate our assumptions through AMP6 to inform future business planning.

We believe that we have used the most appropriate data and information available to us in developing the WRMP. We have now updated our demand forecast with latest census data and re-based our forecast on our latest water demand return position. This information will be provided in our final WRMP. The techniques and methodologies use are in line with Government guidance which is very prescriptive. In terms on non-household demand, we have outlined our approach within our statement of response which takes a trend based approach in the short term while using econometric modelling for the medium to long term. We will always need to update this information as new demand related information becomes available.

Within guidance, we are only able to plan to meet forecast demand taking into account uncertainties in data through a target headroom allowance. This methodology aims to balance the points made in this specific response with that of you other responses regarding level of service and maintaining affordable customer bills.

The water stressed area reports you refer to take demand data from our previous WRMPs and are not in line with best available information.

In response to the comment from CCWater that the industrial demand at Milford Haven must be taken into account, our approach is to forecast demand as accurately as possible from currently known levels. Our headroom assessment is used to take account of the uncertainty within the

forecasts. From this position, we regularly engage with business customers to review our understanding of measured usage and planned future needs. We also engage as early as possible with new customers to enable us to evaluate whether we are able to meet the demand from any proposed new development and if not immediately investigate potential options to do so through the development of new sources or demand management. In this way we aim to ensure that we can help to secure inward investment in Wales.

3.8 Target Headroom

3.8.1 Background

Target Headroom is the planning margin or buffer that a water company should allow between supply and demand to cater for specific uncertainties in the overall supply demand balance. The calculation of an appropriate uncertainty allowance is very important in that this ensures the security of supply within a WRZ.

Headroom is divided into supply side elements and demand side elements. For each component of supply and demand headroom, a figure for uncertainty is applied and the elements are summed.

3.8.2 Consultee Response

Headroom is a key element of the plan. The section is necessarily technical and expert understanding is a pre-requisite to any rigorous review of the chapter.

As such, EA and NRW were the only responders to provide comments on the chapter. Their comments were detailed and raised queries around both general methodologies and results for specific zones within their respective operating boundaries. There were some common questions from the two respondents, along the following three lines:

(1) It was felt that the values of target headroom are too small towards the end of the planning period and respondents thought that this position should be reviewed to "ensure the company has not under-estimated the risks and uncertainties..."

(2) Both responses questioned the use of a skewed triangular distribution for the demand component of headroom, which EA stated was "likely to result in a lower central value, thus reducing headroom".

(3) The responses also highlighted that the planning tables contain negative values for the climate change component of Total Headroom and requested clarification on how the negative values had been derived.

NRW requested clarification on the justification for the uncertainty reduction in yield for water efficiency options in target headroom, believing that the reduction may be too precautionary resulting in de-selection of water efficiency options.

NRW asked that in addition to changing the headroom risk profile to test the sensitivity of the plan, we should also consider how this affects the preferred set of options to test the robustness of its options and the timing of investment.

The also asked that we revise the assessment of the impact of climate change on the supply component (S8) of the target headroom for the South Meirionydd WRZ.

3.8.3 Welsh Water Response

We accept that the values of target headroom for some resource zones are very small towards the end of the planning period. The main reason for this is the fall in risk profile over time as demanded within WRMP planning guidance. We have reviewed our profiles and concluded that it is appropriate for the zones to remain at this level. A change in profile of approximately 10% does not put these zones in to deficit, so there is no risk that in the latter years schemes will be required.

In that headroom will be re-assessed and that methodologies may change during each 5 year planning round, the longer term values used are only of significance where large scale schemes with long lead times are being considered. This issue has been assessed through sensitivity in the plan and is not at issue for any of Welsh Waters WRZ.

With regard to the shape of the distribution, the triangular distribution is the most appropriate distribution due to the variable nature of the upper and lower bands. A recalculation of the variance has occurred as a result of the reviewed demand forecast.

At the request of NRW, further clarification has been included in the technical report.

The D2 element of headroom is made up of two sub elements : D2-1 and D2-2.

- D2-1 is the uncertainty element related to household projections. This includes uncertainty related to PCC (per capita consumption) and population growth.
- D2-2 is the uncertainty element related to non-household projections. The uncertainty is based on the history of actual demand and forecasts between 1999 - 2012.

When these two elements are combined, the peak value of the distribution is not necessarily at the centre of the triangle (i.e. a scalene triangle is formed).

With regard to the negative values for the Climate Change component of THR, the reason for the negative values in the tables is a function of the reducing target headroom profile and a small demand side climate change headroom element. Due to the small impact to the tables, where this occurs we will zero the negative values such that they no longer influence the overall target headroom.

With regard to the query on the Water Efficiency headroom allowances, as previously discussed at meetings between DCWW and NRW, post the production of the draft WRMP 2013, the inclusion of 30% uncertainty in Headroom for Water Efficiency schemes was an error. This has been corrected in the Headroom models and all Water Efficiency schemes will include the Final WRMP 2012 agreed values of -7.5% to +2.5%.

Finally, in response to the query on the S8 component in South Meirionydd, the climate change assessment on Deployable Output concluded that South Meirionydd was a low vulnerability zone. It concluded that there was no impact from Climate Change, however the target headroom included a small risk to Climate Change which produced a negative value. Therefore this has been remodelled excluding the Climate Change risk on supply.

3.9 Baseline Supply Demand Balance

3.9.1 Background

The Baseline Supply Demand Balance chapter of our WRMP gives a brief explanation of the fundamental concepts behind supply demand balance, explaining the various terms used and how these feed in to the calculations which underpin our assessment of whether a zone is in a surplus or deficit for the planning period.

The majority of the chapter is taken up by the zonal overviews for each of the 24 WRZs. These zonal overviews provide a resource snapshot, explaining the various key sources of water for a given zone, the connectivity or conjunctive operation of the sources and any imports or exports to the zone. The zonal overview then explains the 2012 final WRMP status and the current projection.

3.9.2 Consultee Response

Comments on specific zones detailed within the chapter were received from the EA and CCWater.

The EA stated that we should provide more information on the treatment work losses in the Vowchurch zone, as no treatment work losses are included in the supply demand balance for the zone.

The EA also explained their understanding that the reduction in target headroom across the planning period was moving both Vowchurch and Whitbourne from deficit into surplus. The EA was concerned that if two of the recommendations they made elsewhere in their response were implemented, this could place uncertainty on the surplus status of the zone, namely (1) the inclusion of Treatment Works Operational Use (TWOU) for Vowchurch and (2) that the target headroom is too small at the end of the planning period.

3.9.3 Welsh Water Response

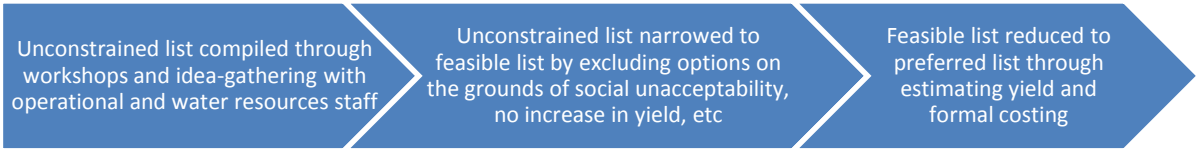
With regard to the losses at Vowchuch, the process at the water treatment works is very simple. Vowchuch does not have a waste water output, and no discharge licence is held. In addition, the main boreholes that feed Vowchurch are located some 150m and 250m distance away from the water treatment works. Given such small lengths of main incoming to the works and the understanding of borehole condition through survey and other means, any associated leakage from the mains is considered negligible. Consequentially, the effect to the supply demand balance of the treatment works losses is also considered negligible.

The reason for a balanced SDB during most years within the Whitbourne and Vowchurch WRZ is that any potential deficits are addressed through an increased import of potable water from the neighbouring Hereford WRZ i.e. a network operation to address the specific demand experienced, so that the SDB for the WRZ will remain balanced. Our current position for the Whitbourne WRZ is that it remains in supply demand equilibrium throughout the planning period.

3.10 Options Appraisal

3.10.1 Background

The Options Appraisal section of our draft WRMP explains the process which we have undertaken to assess the various methods available to address supply demand deficit. The methodology for the process which we followed is defined in the Water Resources Planning Guidelines and consists of three key steps:



The draft Water Resources Management Plan lists 62 unconstrained options identified in workshops involving operational and water resources management staff. In the workshops as wide a range of schemes as possible are collected, which UKWIR guidance requires take no account of environmental or planning restrictions, health and safety regulations, legal restrictions, promotability or risk1. The chapter explains the process for collecting these schemes and then explains the Multi Criteria Analysis which is used in screening the options to identify those to be taken forward to the costing stage.

The chapter then continues to explain how the options that remained after screening were assessed to determine the increase in yield, the capital and operational costs, and the carbon costs associated with them, and gives some indication on how we calculate environmental and social costs.

3.10.2 Consultee Response

Eight of our consultee responders had comments to provide on this section with a range of issues being flagged.

CRT, BBNP and EH all provided comments on specific option types they felt were either favourable or insufficiently considered.

The CRT were supportive of discussions with Water Companies to explore options to transfer water using the canal network in a drought to meet resource shortfalls, but were concerns that such schemes may have been evaluated less positively because of the perceived commercial and legal uncertainties. CRAG requested that we consider using the former Llanishen and Lisvane reservoirs as a supply side option for augmenting SEWCUS resources.

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[1] UKWIR, 2012, Water Resources Planning Tools 2012. (12/WR/27/6)

BBNP provided a response which comprehensively explained their opinion that catchment management solutions should have been included in the analysis of the feasible options. BBNP provided examples of other working practices and ongoing projects within Welsh Water to draw attention to the good work which is already being undertaken by Welsh Water in this area. They expressed their opinion that in some circumstances, the only remedy to poor quality raw water is a catchment based approach, rather than investment in capital infrastructure.

BBNP also raised concerns that the options selection for Brecon was not the best solution and asked how network connectivity upgrades as a low cost option are preferred to a higher commitment to reducing leakage.

BBNP also had comments to make on SEWCUS. The belief was expressed that increasing flexibility of transfer of water within the zone will eventually cease to be a practicable solution to the impacts of climate change and again petitioned us to consider how catchment management could be used to guarantee supply.

EH praised the consideration the Options Appraisal chapter of the draft Water Resources Management Plan gives to the environment and was widely supportive of the plan. They highlighted the need to ensure that any supply side options which are developed in the future are undertaken with due regard to the buried, water logged and palaeo-environmental remains of significant interest and fragility. Support for the selection of leakage reduction measures and water efficiency promotion was also prominent in the response.

The EA made a single comment on the Options Appraisal element of the document – that the draft Water Resource Management Plan was not compliant with direction 3(c) which requires further information on the carbon footprint likely to arise as a result of each measure which it had identified.

NRW also only made a single comment – that we did not include sufficient information on the implementation of the BAG guidance and how this was used to calculate Environmental and Social costs.

Ofwat commented that clarification is needed on two issues: Firstly, whether the traded or non-traded price of carbon has been used in the plan, and; Secondly how we have taken account of the potential for new sources of water to be better value that existing sources.

CCW asked that we keep them abreast of any negotiations regarding transfer of water between ourselves and other water companies.

They also requested assurance that all options contained within the PR14 proposals are also contained within the WRMP, including the South East – South West transfer main.

CCW expressed their support for the number of options which have been considered which don't involve capital expenditure but asked for more information on the ways in which Water Efficiency measures have been considered generally as a means to reduce demand.

Finally, CCW reminded us that 98% of customers are satisfied with their service and that further investment to reduce the frequency of hosepipe bans is not a customer priority. A reliable basic

service and affordable water bills are important to customers so CCW asked us to elaborate on how we are considering options other than costly capital schemes.

3.10.3 Welsh Water Response

With regard to the comment received from EA, the projections showing the impact on company carbon use of the draft WRMP were unintentionally omitted and will be included in the final WRMP. As the impact of the water resources schemes carbon use on the whole company is relatively small, we will show the impact of the carbon footprint on the clean water side of the business.

We will also include detail on how the BAG guidance was used to produce the Environmental and Social costs for the water resources options, as picked up in the NRW response. The support of EH for the environmental assessment of options is appreciated, as is the support for leakage side options which have reduced potential impact on the historic environment. The guidance and recommendations from EH on the importance of scoping and assessment of historic environment is noted.

In response to the query from Ofwat regarding the cost of carbon which was used, our approach has moved on with improved DECC guidance since the original report in 2009, when the shadow price of carbon was the prevailing method of valuing carbon emissions. When this work was delivered, we did not have the appropriate costings in place to fully differentiate between traded and non-traded carbon, however we did differentiate between embodied and operational carbon, which included carbon from both traded and non-traded emissions sources. We have therefore provided the total carbon emissions as tonnes. Since this work was completed, we have developed the carbon emissions factors across our business, to align with our cost models. The carbon emission factors have been built to allow for non-traded emissions to be reviewed separately from the traded carbon, if required by the regulators in the future, but we are continuing to review carbon emissions in tonnes, to include traded and non-traded emissions, as a standard.

With regard to the comments from BBNP on implementation of a catchment management approach, this is already underway with the inception of Welsh Water's Catchment Water Quality team in 2011. The team have the same direction and perform essentially the same function as South West Water's Upstream Thinking Initiative. While we agree that catchment management is an important aspect of ensuring water quality, catchment management programmes are not recognised as providing an increase in yield and as such are not appropriate solutions to supply demand deficit. This is an area we intend to re-evaluate in AMP6 to establish what if any benefits can be forthcoming from such an approach to our water resources.

A prioritised approach to catchment management is being taken by the Catchment Water Quality Risk Team and our Water Quality team to this issue.

Based on some of the comments received, it seems there are a few points on which some clarification is required –

1) Welsh Water did not make an application to the Resilient Ecosystems Fund for catchment management work in the Talybont Reservoir Catchment as the value of the intended works fell significantly short of the minimum project value set by Natural Resources Wales; however Welsh Water will continue to seek funding opportunities to enable management work to be undertaken.

We will continue to work in partnership with NRW on the catchment issues affecting Talybont reservoir and this work will be expanded into a full catchment management plan in AMP6. There are a number of land use challenges in this catchment, including the need for the immediate destruction of trees infected with Phytophthora Ramoram and general land management issues.

2) Cantref Reservoir has recently experienced prolonged episodes of high levels of suspended sediment within the reservoir following heavy rainfall events, which in turn has affected the way in which Welsh Water has operated the Cantref Water Treatment Works. Welsh Water have funded a PhD, based at Aberystwyth University, to investigate the origins of the sediment in the reservoir, how rainfall events influence its transportation within the catchment and to the reservoir, and to understand if the land management regime has influenced this. This work was not presented in the draft WRMP as it would have been inappropriate to prejudge the outcomes of the PhD which will be received in July 2014.

With regard to the comments received from BBNP on Brecon, the options identified for the zone are a combination of demand management and improved connectivity of the zone; hence there is no net increase in the volume of water that will be abstracted from within the Usk SAC catchment.

It should now be noted that due to the improvements to our demand forecast and updating of leakage information with latest information, the Brecon/Portis zone has a smaller deficit than identified within the draft WRMP and this is primarily driven by the review of consents at which will reduce our unsupported abstraction at the Brecon boreholes. In order to maintain the current rates of abstraction we are proposing to make additional releases of water from Usk reservoir at times of low river flow to ensure there is no derogation to the ecology of this European protected site. This allows the maintenance of our abstraction at Brecon. No other schemes are now required during the planning period.

With regard to the comments received from BBNP on SEWCUS, the methodology for assessing climate change impacts is detailed in chapter seven of the draft WRMP. In order to reflect the status of SEWCUS as by far the largest WRZ, the zone was reassigned from medium to high vulnerability for climate change assessment. This reclassification represents an additional level of analysis over and above what is strictly required by the guidance. Allowance for climate change uncertainties are then included in headroom allowances to ensure resilience.

In terms of the concerns raised by CCWater about SEWCUS requesting further information, this comment is noted and we will include fuller details of the resilience work we have undertaken in SEWCUS and our investment proposals in AMP6 as described in section 2.1 of this statement of response.

In response to the comment from CCWater on our Water Demand forecast, we have made the commitment that the level of investment in Water Efficiency under AMP5 would continue into

AMP6 as the base year for our forecasts included current levels of activity and investment. Any reduction in activity would result in increased demand not catered for in the plan. During our customer focus groups this was clearly supported by customers. Ofwat have confirmed that the previous volumetric target will be altered in AMP6 to become a Per Capita Consumption metric. We understand that the reason for this is to enable increased competition in the retail sector to take place and to ensure that household demand is better managed.

We have outlined our plans in AMP6 within the Water Demand forecast to refocus our water efficiency activity on domestic properties and to support wider social agendas including affordability and energy/ carbon offsetting. We have found that the key barriers to water efficiency are cost to communicate and cost to install, to address this we are developing an on-line portal that will assist customers making the change from measured to unmeasured billing arrangements through self selection and education of water efficiency devices and positive behavioural steps.

We plan to continue to promote water efficiency at grass roots through our education centres where we deliver the program to some 12,000 pupils per year. We are developing future delivery plans for schools and pupils to further the curriculum based workshops we have delivered to date.

We have developed our Water Efficiency strategy based on our recent planning exercise for our Business Plan which is available as of early December - This information will also be communicated within the final WRMP.

In response to CCWater's comment that they would like to better understand that we have explored alternatives to options with high capital costs, the option types to resolve supply demand deficits are not limited to water resource scheme - equal consideration is given to both leakage and water efficiency options.

Although targeting leakage levels below SELL (Strategic Economic Level of Leakage) and efficiency options can be an attractive solution in terms of capital and carbon costs, the scale of these schemes is not always proportionate to the scale of the deficit in a given zone.

It is crucial that any projected supply demand deficit is wholly resolved wherever schemes such as water efficiency measures or leakage are the most cost effective measures and appropriate in scale they will naturally be highlighted through our optimisation process.

Our latest optimisation process facilitates the selection of both resource and demand side options. Incremental demand side options, such as leakage and water efficiency, have been designed with small step sizes, such that if cost beneficial, they will be part of the optimal solution.

The support of CCWater for the variety of measures that have been considered to deal with supply demand deficit is noted and appreciated. We will include fuller detail of the resilience work we have undertaken in SEWCUS and our investment proposals for AMP6 as discussed briefly in section 2.1.

In response to the comments from CRAG, all new housing planned within our operating area has been accounted for within our demand forecasts and so we are basing our calculations upon the latest data available. As our SEWCUS WRZ deficit zone is not forecast to have a shortfall in supply then we do not need to consider new sources of water at this stage. Our proposals for the SEWCUS

WRZ are based upon optimisation of the existing resources we have to ensure that we provide the best value service we can to our customers and the environment in which we operate.

With regard to the comment from CRT we are enthusiastic to continue discussions regarding schemes that would be mutually beneficial. We can assure CRT that given our customer preferences we are seeking options that improve the efficiency of our operation or result in a least cost solution to any deficits within our WRZs. However, no schemes have been put forward to date that meet these objectives.

Finally, in response to the comment from CCWater on customer's priorities, our own customer preference work related to water resources, as reported through the CCG, is in line with that stated in CCWater's consultation. With regard to CCWater's response on the level of service, our plan does not propose to improve this above our current policy in line with customer preference. Regarding the point made regarding resilience, we agree that the priority must be to ensure that our drinking water supplies are reliable and continue to comply with the stringent statutory water quality standards. Through investigation we have identified the potential risk to supplies in the SEWCUS system related to changes in operation in response to proposed abstraction licence changes.

In order to improve resilience against these changes and in line with the comments from CCWater, we are planning to invest in new infrastructure and further investigation to mitigate against this risk and to ensure reliability of supply.

3.11 Environmental Appraisal

3.11.1 Background

The environmental appraisal section explains how DCWW has managed any potential significant environmental risks that have been identified as a result of the implementation of any chosen least cost options to address water resource zone deficits or where schemes that are more environmentally beneficial might be preferred as part of a best value plan.

The environmental appraisal process is driven by statutory requirements, and there are two key appraisal processes which include a SEA and a habitats regulation assessment HRA.

- The SEA process is fully integrated into the option selection process, which firstly assesses the environmental baseline (i.e. the current environmental state, as well as any existing problems) of an area impacted by an option. The economic, environmental and social impacts and mitigation is then reviewed against environmental baseline.

- The HRA is an assessment of the potential effects that selected options may have, should they reside within areas of land designated under the Natura 2000 network European protected sites.

Both the SEA and HRA are key processes included in the development of options, with the outcomes of the HRA being incorporated into the SEA.

There has been, and continues to be close consultation with CCWater/NRW and Natural England at all stages of the environmental assessment process to ensure that outcomes are as robust and appropriate as they can be.

3.11.2 Consultee Response

The only comment received specifically on this section of the plan (and not on the HRA or SEA documents) came from BBNP who recommended that a Wales Water Resources Strategy Document should be developed and should give consideration to the long term sustainability and resilience of water demands in South East Wales.

3.11.3 Welsh Water Response

NRW produce a Water Resources Strategy document and Welsh Water is not directly involved in the publication of this. We will raise this with NRW (and EA) as part of our regular discussions with them on WRMP issues, to ensure their policy related documentation is aligned with our thinking and the needs of our customers.

3.12 Testing the plan

3.12.1 Background

As outlined in the WRMP guidance it is prudent to both test the key assumptions made within the plan and also to look at the potential impact on the plan of foreseeable changes that might occur during the planning horizon. This will ensure that:

- our plan is robust to minor changes to supply and demand forecasts in the near future;
- account is taken of the main risks we face in managing the balance between supply and demand;
- we are not planning for a highly uncertain worst case that is unlikely to occur; and
- we have identified if there are any factors that have a large effect on the plan, and their timings, so that these impacts can be managed and mitigated through flexible, adaptive planning.

The chapter outlines how this testing is undertaken.

3.12.2 Consultee Response

The only consultee to respond on this matter was NRW who advised that a full appraisal of all options for NEYM is carried out, including water efficiency and leakage, and treats NEYM as a whole and not Wylfa B in isolation.

If Wylfa B's water demand needs are confirmed prior to publication of the plan, NRW would like to see that Dŵr Cymru consider this in the demand forecast and consider whether this constitutes a material change.

3.12.3 Welsh Water Response

Since 2010 Welsh Water has been fully involved in understanding the water supply requirements for the proposed Wylfa B development and has actively participated in the planning consultation process. Our involvement has been to ensure that the water supply needs of the site can be fully met within our North Eryri Zone without detriment to the security of supply to our customers. The options appraisal align with existing processes and include water efficiency, leakage control options, supply options, and an assessment of cost benefit. We have already considered a range of additional resource schemes to meet the additional Wylfa B demands in the document 'Wylfa B Fresh Water Supply Feasibility Study', with options including further enhanced demand management, the linking of Alaw and Cefni reservoirs and the raising of Alaw reservoir.

Any development will be evaluated as part of the whole of the NEYM supply zone, as they would for any other development or forecast deficit. Additional option modelling is currently taking place and the results of this modelling exercise will be used in the options appraisal for the supply of water to Wylfa B and the wider NEYM zone. We understand that the draft WRMP does not list the schemes

related to the Wylfa scenario put forward but simply states that the options and solutions put forward within the base plan would be brought forward to meet the additional level of demand. We have had meetings with both the Energy Island group and Welsh Government representatives to better understand the timescale for the proposed development but these are still unknown as is the level of demand required by the development. We will, therefore not be including the additional demand related to the Wylfa B power station within our demand forecast. We are updating the demand forecast in relation to other aspects, as described in our Statement of Response, for the final plan and will also update the Wylfa scenario work. We will provide a table of solutions related to the Wylfa scenario within the final plan.

3.13 Final water resources and demand strategy

3.13.1 Background

The Final water resources and demand strategy chapter provides a zonal review of the preferred options. It clarifies the implementation timescales and how these will satisfy any deficits that may have arisen.

Crucially, the chapter identifies the differences between the least cost solution and the preferred (best value) solution and gives some explanation as to the drivers for the shift between options.

3.13.2 Consultee Response

The only comment received that directly relates to this chapter was received from Ofwat who commented that they found it difficult to compare the company's least cost solution with its preferred solution. Ofwat advised that it would be helpful in the final WRMP if the two solutions were presented alongside one another together with an explanation of the key differences between them.

The Environment Agency commented that the draft WRMP did not present sufficient evidence to demonstrate compliance with all Directions, and stated that we should provide more detail to comply with direction 3(c). This direction requires us to identify the emissions of greenhouse gases which are likely to arise as a result of each measure which we identified in accordance with section 37A(3)(b).

3.13.3 Welsh Water Response

For all zones in the draft WRMP the least cost option was also the preferred solution. If there is any change from this in the final WRMP, this will be clearly stated and justified with an explanation of why we have deviated from the least cost solution. In this instance we will also provide a comparison of least cost and best value will be provided.

The absence of company carbon data showing the impact of the water resources options on the total company carbon footprint was an omission. We have now included this information in our Final Plan with a graph that shows WRMP carbon emissions alongside the wider company carbon emissions.

4 Next Steps

We genuinely appreciate the time taken by our consultees in responding to our draft WRMP. All the comments and representations received will be taken into consideration in the preparation and publication of our 2013 final Plan.

The next steps we will take to complete our 2013 final WRMP can be summarised as follows:

- Publication of this Statement of Response; December 2013
- Review of Statement of Response by Welsh Ministers; December 2013
- Direction from Welsh Government: date to be determined by Welsh Government
- Publication of our final WRMP: date to be determined by Welsh Government

5 Further Information

Electronic copies of this Statement of Response are available from our website at:

www.dwrcymru.com/

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