Appendix 1 – Tabulated responses to WRMP consultation

Table of contents

Brecon Beacons National Park 3

Canal and Rivers Trust 9

Cardiff Reservoir Action Group 11

CCWater 13

Conwy County Borough Council 30

English Heritage 31

Environment Agency 33

Llanelli Flood Forum 42

Llanelli Town Council 43

National Farmers Union 44

Natural England 48

Natural Resources Wales 49

Table of figures

Figure 1 - New Household Connections 36

Figure 2 – Estimated Volume Impact of the revised Household Profile (excluding Census affect) 37

Figure 3 – Estimated Volume Impact of the revised Household Profile (Including Census affect) 38

Figure 4 - Comparison of DCWW Trend & Plan Based Population Projections 39

Figure 5 - New Household Connections 54

Figure 6 - Estimated Volume Impact of the revised Household Profile (excluding Census effect) 55

Figure 7 - Estimated Volume Impact of the revised Household Profile (Including Census effect) 56

Figure 8 - Comparison of DCWW Trend & Plan Based Population Projections 57

Table of tables

Table 1 - Breakdown of Local Authorities by Water Resource Zone 58

Item No.	Comments by:	Issue	Response text	SoR section
1	Brecon Beacons National Park	We note that following Review of Consents, the Brecon Portis WRZ is anticipated to experience a deficit of about 1Ml/day. Our observation is that this improvement in environmental accountability for water resources highlights the fact that there is either enough water for biodiversity in the riverine SAC or for drinking plus industry, not for both needs. We are concerned by the commitment to improving network infrastructure to extend the Brecon WTW supply into the Portis WTW supply and ask how this will help to ensure that needs continue to be met in the Brecon WTW area. We are also concerned that this transfer is preferred, as a low cost option, over a higher commitment to solving leakages, e.g., the Plan envisages a 9:1 volume ratio for moving water from within an SAC catchment versus solving leakages. We welcome the reductions in groundwater abstraction within the Brecon Portis WRZ but ask what solutions DCWW recommends for guaranteeing water supplies to meet current and future demands within the Park.	With regard to the comments 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.	2.10
2	Brecon Beacons National Park	By contrast to the 2012 plan, we welcome the absence of any mention of the requirement for new water treatment works in response to the unavailability of the water asset in the Grwyne Reservoir as a consequence of water discolouration. Given the high level of eroded peat	The use of the Grwyne Fawr reservoir water resource has been retained as an option for consideration within our WRMP either as a source for river regulation or for direct supply. However, our supply/demand analysis concludes that our SEWCUS Water Resource Zone is not in deficit over the planning period. Due to this, although the option to bring this	

		and also moorland grips in the surrounding catchment there, we believe that there can be no doubt that this water discolouration is caused by dissolved organic carbon in the water column. The only possible solution therefore is habitat management improvements sponsored by DCWW at a fraction of the cost of new WTW. This would also be of direct benefit to the Black Mountains Site of Special Scientific Interest, within which this Reservoir sits. It also lies directly at the head of the Grwyne Fawr River, which forms part of the River Usk Special Area of Conservation.	source back into supply and particularly that of river regulation, is attractive from a cost/benefit perspective there is no economic driver for the investment at this time. It is clear from our customer preference work that without a significant driver, our customers would not be willing to pay for such work which would have an upward impact on bills.	
3	Brecon Beacons National Park	We have confined our detailed comments to the Brecon Portis and SEWCUS water resource zones because these affect the Brecon Beacons National Park directly. We are concerned by the assumptions within the Plan that stored capacity in the Usk Reservoir will always be sufficient to provide compensatory flow for the River Usk during periods of drought or dry weather; thus enabling DCWW to continue to abstract from the River Usk to meet demand and/or to meet shortfalls in the SEWCUS catchment. How robust is this assumption? Whilst the water levels within the Usk Reservoir might easily be measured, what commitment is there to undertake volumetric measurements, e.g., bathymetry, to ensure that the assumed volume at Usk Reservoir, of 12,000Ml, is actually available? DCWW already experiences significant siltation problems at both Talybont and Cantref Reservoirs,	The required compensation flows from Usk reservoir to the River 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 at Usk reservoir.	2.4

		which presumably have reduced their storage capacities. What is the risk at the Usk Reservoir?		
4	Brecon Beacons National Park	Dŵr Cymru Welsh Water (DCWW) is a significant land owner in the Park, owning 3.9% of the land area (5197 hectares) and therefore has the potential to exert a significant and positive impact on landscape ecology and biodiversity conservation through catchment management. We note that, disappointingly, catchment management has been excluded from the analysis because it does not promote "increased yield" (Table 11.2). We recommend that this is a short sighted and limited approach; catchment management is not meant to increase yield but it could be a more cost-effective means of maintaining current yield whilst simultaneously achieving added value such as dealing with water quality and quantity issues at source, and investing revenue that is otherwise destined for engineering schemes into the rural economy instead; achieving more resilient, landscape-led water management. The draft plan refers to least cost options and we believe that catchment management would be a least cost option that actually achieves net financial benefits for a wider suite of stakeholders than just DCWW. We recommend South West Water's "Upstream Thinking Initiative" to DCWW: http://www.southwestwater.co.uk/index.cfm?articleid=8329). Assessing the impacts of climate change	A prioritised approach to catchment management is being taken by the team. As such, due to the multiple drivers for improving our understanding of the catchment and morphology at Talybont and Cantref, these reservoirs are being investigated first. The work will continue to be prioritised, however the programme of investigations could potentially be roles out to other sites and assets. With regard to the comments 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.	2.10

		We recommend that greater heed is paid to the likelihood that water supply management is based upon using an ecologically impoverished or suppressed resource. A history of industrial pollution dating back to the Industrial Revolution, combined with the more recent damaging effects of agricultural policy (over grazing), as well as a decline in upland heather moorland management combined with an increase in wild fires, mean that neither water quality nor water quantity are in a 'natural' state. A greater focus on catchment-led solutions would provide greater forecasting resilience.		
5	Brecon Beacons National Park	This is a large and complex consultation plan to comment on effectively and yet water resources are probably the most critical of all natural resources to manage appropriately. Therefore whilst we welcome the opportunity to consult, perhaps it would be helpful in future to develop a Wales Water Resources Strategy through consultation led by the Welsh Government; to which water utilities would then be required to develop their water resource management plans. We recommend that if such a strategy is developed, it focuses equally strongly on water efficiency and re-use measures by all sectors. We recommend that within a Wales Water Resources Strategy, consideration is given to the long term sustainability and resilience of water demands in SE Wales.	NRW produce a Water Resources Strategy document and Welsh Water is not directly involved in the publication of this. The document does have some focus on water efficiency. With regard to the recommendation that consideration is given to the long term sustainability and resilience, 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.	2.11

6	Brecon Beacons National Park	The Plan has identified a wide range of plant and network related water management uncertainties in the SEWCUS WRZ. We believe that under climate change scenarios of increasing drought or dry weather, this implies an increasing limitation in flexibility for moving water between WRZs. There is a finite volume of water asset available within the storage system, so moving water around will eventually be caught by the law of diminishing returns. Therefore we believe that the only means for guaranteeing supply during environmental constraint is through catchment management. Rather than wait for situations to worsen, it would be prudent to invest in this now to provide a more resilient future.	With regard to the comments received 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.	2.10
7	Brecon Beacons National Park	We recommend that greater heed be paid to the evidence presented by the Environment Agency that by the 2050s and presumably on an increasing frequency leading up to that time, the main rivers in Wales and England, including the Wye and Usk, will be increasingly likely to experience regular abnormal low flows throughout June to October below the current seasonal average.	Within our Water Resource Planning, climate change is an integral part of the process both in terms of assessing its potential impact upon the supply and demand components of our baseline scenario and in terms of the most suitable options to be chosen to resolve any forecast shortfalls in supply.	2.6
8	Brecon Beacons National Park	We welcome the influence that Strategic Environmental Assessment, Habitats Regulations Assessment and Review of Consents have exerted on the analyses set out in the Plan; this is a significant improvement on the 2012 plan. We recommend however that there is still some way to go towards fully accounting for the effects of climate change on the available water resource	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	2.6

		assets in all water resource zones.	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.	
9	Brecon Beacons National Park	Within a National Park, we believe that a catchment-led approach to water resource management is essential and also complimentary to the Welsh Government's vision that National Parks should be "areas where new solutions to environmental and rural issues are tried, tested and shared," (paragraph 12 of Welsh Government's draft policy statement on National Parks, "Taking the Long View"). So it is disappointing that DCWW has chosen not to mention its own nascent approach to catchment management in the Park. This includes PhD research into the causes of sedimentation and discolouration in the Cantref Reservoir (one of the Taf Fawr reservoirs) and a grant application made to Natural Resources Wales under the Resilient Ecosystems Fund to undertake extensive habitat manipulation upstream of the Talybont Reservoir in order to ameliorate the effects of sedimentation and discolouration there. The latter project proposal, developed by DCWW themselves, has emerged following their own conclusions that a new water treatment works constructed here during the last decade, has already reached capacity owing to the high levels of turbidity in the water. So clearly an engineered solution has not proven to be sufficient and catchment management is the best way forward. We	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	2.10

		recommend that the pilot water quality modelling study at Talybont Reservoir mentioned in the plan should be expanded into a full catchment based study, rather than one limited in scope and extent to within-reservoir dynamics.	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.	
10	Canal and Rivers Trust	[...] The first is our strong support for additional research into whether it can be demonstrated that there is "no adverse impact" from the abstractions on sites protected by the Habitats Directive. In 2012, we said that: "We believe 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. This might reduce the number of sites where a lack of scientific evidence combined with the default "precautionary principle" has resulted in the Environment Agency seeking reductions in the volumes of water we remove from Habitats Directive sites. This would also give us confidence that the investment suggested in this plan would be beneficial, and deliver value for money."	We thank you for your support for the research into the impacts on the ecology of the rivers Wye and Usk from abstraction aligned with your response to our Final WRMP. 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 t 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.	
11	Canal and Rivers Trust	Over the past year (and in the spirit of the EA Water Resource Planning Guidance), the Trust has been proactive in engaging with a number of Water Companies to explore the options to transfer water using the canal network to meet resource shortfalls under different demand scenarios including drought. We support this approach and will continue to work with Water Companies to develop resilient and cost effective	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.	2.10

		schemes in the future. We note that, while we have had detailed discussions with some water companies to identify potential schemes, these are not reported in a consistent way in the various draft Water Resource Management Plans. We are concerned that such schemes may have been evaluated less positively than alternatives because of the perceived complexity of a canal transfer and the uncertainty over commercial terms between water companies and a third party. The Trust is worried that while there has been a very useful and positive initial contact with Water Companies there is a risk that the schemes will not be pursued unless Defra/ EA/ NRW are active in facilitating/promoting such schemes in the future.		
12	Canal and Rivers Trust	The second aspect that we wish to reiterate relates to the possibility of using the Usk reservoir to regulate flows in the Usk and to supply the Monmouthshire & Brecon Canal. We said " ...if compensation flows are to be provided from the Usk reservoir to allow abstraction downstream, then consideration is also given to using the same mechanism to supply the Monmouthshire & Brecon Canal during periods of low natural flows when the canal abstraction would otherwise be so severely restricted that the waterway could not be maintained."	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.	2.5

13	Cardiff Reservoir Action Group	RAG believe the Water Resources Management Plan (WRMP) should include Llanishen and Lisvane Reservoirs for the following reasons: 1. Llanishen Reservoir Can Only Be Used As A Reservoir The Minster for Housing and Regeneration announced in April that Llanishen Reservoir cannot be built over. As Llanishen Reservoir can only now be used as a reservoir why not include this in DCWW plans? 2. WRMP Sensitivity Analysis Shows Supply-Demand Shortfall The draft WRMP includes a 'Sensitivity Analysis'. In this Sensitivity Analysis', if the 'upper risk level' is taken then demand outstrips supply in the 2030s. Also according to the draft WRMP the SEWCUS area (Cardiff is part of this area) is an area with 'High Climate Vulnerability' where 'Climate Vulnerability' is defined as "the extent to which a system is susceptible to, or unable to cope with, adverse effects of climate change including climate vulnerability and extremes." Therefore why not use Llanishen Reservoir to cover the 'upper risk level' and the risk from adverse effects of climate change? 3. Huge Population Increase Planned for Cardiff By 2026 The Cardiff Council draft LDP suggests 41,100 new homes are planned for Cardiff by 2026. Also a piece in the Western Mail, dated 23rd July 2013	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.	2.10

	(see http://www.walesonline.co.uk/news/wales-news/population-wales-cities-rocket-numbers-5269406), quotes a Welsh Government analysis of census data which anticipates a massive increase in Cardiff's population with an extra 113,000 residents by 2036. Overall in South Wales (from Swansea to Monmouthshire) population is set to rise by 192,100, equivalent to an extra city the size of Swansea. Further, the WRMP Executive Report states-"We will also set out what additional surpluses can be created so as to bring water hungry industry to Wales and those parts of England we supply." However the WRMP Overview Booklet says, rather surprisingly, that water demand is forecast to reduce from now to 2040. This, it states, is "based on population and property development forecasts published by the Welsh Government, local government, also reduced leakage and estimate of usage by DCWW." So a massive increase in population coupled with bringing in water hungry business to South Wales suggests DCWW's assertion that water demand will fall appears wrong. Surely it would be judicious to bring back into use Llanishen Reservoir to create, what the WRMP Executive Report calls, 'additional surplus'? Otherwise we have the prospect that the reservoir	

		falls into disrepair and becomes unusable. Then in 20 years time because of water shortages we find we need to flood a valley in the Brecon Beacons (with all the possible public outcry and protest) when we could have used a reservoir on our 'doorstep'? 4. Celsa UK Takeover of Reservoir Ownership Lisvane Reservoir currently supplies Celsa UK's steel plant in Cardiff. It was announced this week that Celsa are to take over ownership of both Llanishen and Lisvane Reservoirs from Western Power Distribution. So the opportunity is now there for Dŵr Cymru Welsh Water to explore with Celsa UK ways in which Llanishen Reservoir can be brought back in to use. This will address the above issues.		
14	CCWater	The final WRMP should explain the water resources management and PR14 processes and their timeline better. It should explain how WRMPs fit in within the PR14 process and how they influence each other-this link is currently missing. Feedback from the Dŵr Cymru 'Your Company. Your Say' consultation' should be considered when revising this WRMP.	The comment is noted and we will look to provide some additional commentary in our Final WRMP as to how these two processes are linked. We are aware that the time line for the two plans are not well aligned and that setting the WRMP submission date earlier would help in this. Of the feedback received on our PR14 public consultation, we have received no adverse comments in relation to the cost of our WRMP proposals in relation to our PR14 business plan.	
15	CCWater	The biggest challenge identified in Dŵr Cymru's water resources PR14 research by its own customers was that of effective communication of	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	2.3

		water resources related issues and what you do to deliver and safe and reliable service. Customers seemed to be unaware of water resources management plans, the current consultation on WRMP and what you do for them. We note that you have produced a video and a public pamphlet to accompany the consultation document- your pamphlet presents a summary of deficit Water Resource Zones (WRZs) and key proposals for addressing those but neither of these outputs cover the likely issues you discuss elsewhere	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.	
16	CCWater	Your non-technical report and its summary does not seem offer a full picture of all likely issues and costs you discuss in other parts of the dWRMP. You should revise your non-technical document to accurately reflect all issues, assessments and uncertainties; likely proposals and solutions; and costs and impacts on services and customers' bills.	We will not be producing a non-technical report for the final WRMP but 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 will outline our proposed solutions to resolve any forecast supply deficits. The advice received from CCWater on the production of a non-	2.1

		We think your non-technical report is not a public friendly document. A more customer friendly consultation document could have allowed your customers and stakeholders to engage better in a discussion about the management of water resources in Wales. It is very important to incorporate in your non technical summary of the WRMP a succinct reasoning on why the options you have selected are the best for your customers (services and good value for money) and what alternative options you have considered and rejected.	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.
17	CCWater	We would like to be assured that all possible impacts on your, but also neighbouring supplies, are fully considered so that appropriate strategies are put in place to maintain services to customers. We are aware that you are in discussion with Dee Valley Water and Severn Trent. We would like to understand how discussions that you have with Bristol Water on transfer of resources from South East Wales Conjunctive Use System zone (SEWCUS) are progressing as it is important that impacts on your customers' services and bills are considered carefully before sharing resources or considering investment in a zone that you tell us is in surplus but with a very small headroom.	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.

18	CCWater	Overall engagement and consultation: We were disappointed that the statutory consumer body (CCWater) was missed off your consultation list. We would like to see a list of your stakeholders and business customers engaged to be assured of the breadth of your consultation. We also think that not linking the dWRMP's consultation better with your PR14 'Your Company. Your say consultation' and the public road shows has been a missed opportunity.	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 dWRMP within the defined consultation period. We will include a list of consultees as an annexe to the consultation request letters. The dWRMP 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 dWRMP consultation.	2.3
19	CCWater	Our research indicates that 98% of customers are satisfied with the reliability of current water supply in Wales. Safe, reliable and clean drinking water remains a top priority for your customers in Wales. Water customers stress a reliable basic service (72%) and affordable water bills (64%) are more important than investment to eliminate the likelihood of any water restrictions. Investment to eliminate restrictions such as hosepipe is rated as a low priority and 78% of water customers are unwilling to pay anything more to prevent hosepipe bans. Customers tell us	Our own customer preference work related to water resources, as reported through the CCG, is in line with that stated in your consultation. With regard to your response on the level of service our plan does not propose to improve this above our current policy in line with customer preference. Regarding your 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 your comments, we are planning to invest in new	

		that the imposition of rota cuts and the use of standpipes are unacceptable. In your PR14 customer research on water resources dealing with long term interruptions of water supply was not much of a priority for your customers whilst addressing short term interruptions seemed worth paying more for probably because of the likelihood of their occurrence. So we would like to understand better that you are exploring options alternative to potentially costly capital intensive solutions to ensure improved resilience and reliability in any areas you supply in Wales.	infrastructure and further investigation to mitigate against this risk and to ensure reliability of supply.
20	CCWater	Currently, 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. One in ten customers in Wales tells us they cannot afford their bills. In 2012 fewer Dŵr Cymru water customers find their bills affordable which possibly reflects continuing pressures on household income. We think that your WRMP should acknowledge that delivering affordable bills and a safe and reliable water supply are outcomes you aim for	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.

		and to explain how you are planning to reconcile those. We think you should review your WRMP and make sure it is explicitly reflective of customer research that we refer to in this response.	We have review this scheme and have now developed a variant to this scheme which removes cost risk, provides a lower cost solution in AMP6 and maintains our supply/demand balance. This will help to maintain affordable bills.	
21	CCWater	The final WRMP and your PR14 business plan should demonstrate you have responded to customer research feedback and Customer Challenge Group (CCG) challenges. We would like to see a summary of the key issues and customer priorities from your customer research on water resources. We would expect you to ensure that your CCG has an opportunity to discuss and review the dWRMP at one of its meetings. Your final plan should explicitly explain how customer views have been considered.	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. 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.	2.3
22	CCWater	In your PR14 research, customers identified demand management (water efficiency, education and leakage management) as the best way to address water resources issues.	Within our Water Demand forecast, we have made the commitment that the level of investment in Water Efficiency under AMP5 would continue into AMP6 because the base year for our forecasts included current levels of activity and investment. Any reduction in activity would result in increased	2.10

	As awareness of water efficiency campaigns is consistently lower in Wales than in England and in 2012 there was a further drop in Dŵr Cymru customers' awareness by 6%, we think it is imperative for your water resources management plan to better reflect your overall strategy to address this issue. Our recent research on the experiences and perceptions of customers and their households into saving water could be useful to you in further reviewing your water efficiency strategy. Customer engagement, views and priorities – Resources And your water resources PR14 research indicated that there was not much appetite to pay more towards water resources management and customers would not like to see new reservoirs, unless it is absolutely necessary. Customers wanted the company to promote metering more, to not share its resources and to consider recycling water whilst limiting abstractions as necessary. Water efficiency We would still like your final WRMP to be clearer on how you have considered a wider range of demand management options, specifically on water efficiency activity to support long term	demand not catered for in the plan. Feedback from our focus groups indicated this was clearly supported by customers. Ofwat have confirmed that the previous volumetric target will be altered in AMP 6 to become a Per Capita Consumption metric. The reason for this is to enable competition in the retail sector and to ensure that household demand is managed. Our Business Customer Team (Dŵr Cymru Customer Services) are currently working with business customers to deliver water efficiency audits, technology retrofits and meter data logging to help Non Household customers manage their consumption. 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 have developed 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 will also use this portal to enable various projects and initiatives, for instance our demand forecasting work identifies showers and leaking WC's to be a potential threat going forward, we will be able to undertake projects, delivered through the portal to assist us in tackling these areas of concern. We are currently in a procurement process to enable the portal to go live, however we expect this to occur in December 2013 to support our winter lagging campaign. In addition, we are working with the Welsh Government Arbed (Energy, carbon

		behavioural change across all your WRZs - not just in response to specific WRZs in deficit. For example, we cannot see any specific information on water efficiency activity and retrofitting in SEWCUS WRZ other than a generic mention to potential savings of water and an indicative cost which seems reasonable and worthwhile to the uninformed eye. We think your WRMP should elaborate more clearly and with specific detail on your company strategy, action plan and cost benefit assessment for water efficiency as part of your demand management options. We would like to see how you have considered going over and above water efficiency campaigns and retrofitting for specific zones only. We would also like to understand what you mean by 'web enabled solutions' to water management.	and affordability agendas) scheme through collaborative working with housing developers, the Energy Saving Trust and Wilmott Dixon homes to retrofit 10,000+ properties. 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 are investing heavily in improving our understanding of customer demand through an improved per capita consumption monitor into AMP 6 and will be undertaking diverse customer consumption surveys. We have recently procured improved data sets regarding econometric factors that drive customer usage behaviour; this will enable us to target activities at particular groups more effectively. We have included a series of research projects to help evaluate the effectiveness of water efficiency behavioural and technological interventions with past customers to help inform the 2017 WRMP. We are currently developing our Water Efficiency strategy based on our recent planning exercise for inclusion with our Business Plan which will available in early December. This information will be packaged and communicated within the FWRMP.
23	CCWater	This dWRMP seems to be based on more up-to-date data and investigations to present an improved assessment of the future availability of water resources in Wales.	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

		However we note the increase in the number of deficit Water Resources Zones (WRZs) from three to six and the redefinition of the SEWCUS WRZ as in surplus. 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 * Are based on accurate data on population growth, leakage * Incorporate an accurate consideration of future economic development, particularly expected industrial demand which could put water resources under pressure in the future We also note that you incorporated up to date data on population growth but wanted to know if you included predictions presented in Environment Agency's and Natural Resources Wales Water Stressed Areas reports (June 2011 and July 2013).	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.
24	CCWater	Driven by an improved understanding of forecast demand your draft WRMP presents a different picture of deficit Water Resource Zones (WRZs) compared to the recently published WRMP (August 2012). The number of deficit zones has now doubled from three to six, which is closer to the number you presented in your draft WRMP for consultation in	NRW made only minor comments on how we have accounted for the effects of climate change within our Headroom calculations and so we take this to mean that our incorporation of climate change within our planning calculations is robust and in line with best practice guidance.

		2009. This fluctuation in the number of deficit zones seems to be mainly in response to comments on the accuracy of the climate change predictions from previous consultations - something that seems reassuring. We would like to hear that your climate change predictions find Natural Resources Wales (NRW) in agreement.		
25	CCWater	We are pleased that you are adopting a more proactive approach to leakage management and encouraged to see that your dWRMP presents leakage reduction as an option in many of your deficit WRZs. But we would like to be able to understand better that you are implementing the most cost beneficial solutions for your customers. We are pleased that you are adopting a more proactive approach to leakage management. We are encouraged to see that your dWRMP presents leakage reduction as an option to address deficit in Pembrokeshire, Bala, North Eryri Ynys Mon WRZs and that you 'pledge not to allow leakage to rise at the company level or in any resource zone to the point at which it drives new supply or demand options'.	We have explored alternatives to options with high capital costs and 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 water 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 to ensure no impact upon security of supply to our customers. Where schemes such as water efficiency measures or enhanced leakage are the most cost effective measures and appropriate in scale they will naturally be selected through our option selection process.	2.10

		Water customers identified leakage as a barrier to reducing their consumption of water and changing their behaviour in CCWater research. In our more recent research on leakage they also told us that whilst they recognise companies are doing their bit to control leakage they still would like more done to prevent it. 60% customers in Wales cite leakage as a priority for water companies to address and overall our research findings seem consistent with the company's PR14 research in that leakage is identified as a key water resources management option. But customers in Wales also told us they are more likely to prefer keeping their water bills down and they would rather see companies divert funds from other service areas such as, for example, environmental improvements to leakage management rather than pay more. We would therefore like to discuss leakage with you in more detail to ensure customers priorities are fully reflected in your WRMP and PR14 business plan and to understand that the most cost-beneficial solutions for customers are implemented.		
26	CCWater	In the summary of your plans you present the costs of water resources management proposals as £9m for capital investment, annual running costs of	The expenditure set out in our draft WRMP equates to around 0.5% of the total Company expenditure anticipated in AMP6 and the resultant anticipated impact on household bills is less	2.1

		£0.5m per year and a further capital investment in excess £20m to maintain water quality under differing abstraction regimes and to meet license requirements. We cannot understand what the £20m investment could be. We would like to understand what impact these costs could have on customers' bills so we would like that your final WRMP and your statement of response explains more clearly what, why and how much you need to spend.	than £3 p.a. The additional £20m investment referred to in our Plan relates to the delivery of several key network schemes within our SEWCUS Water Resource Zone (WRZ) very real practical challenges associated with operating the SEWCUS system in a dry year under the proposed new licence arrangements which NRW have confirmed are needed to meet the requirements of the Habitats Regulations.	
27	CCWater	With regard to the deficit in Pembrokeshire WRZ, we are also concerned about statements about uncertainty and accuracy of inflows and abstraction studies on the Eastern Cleddau at Pont Hywel in 2012 (due to the heavy rain that year). We assume that investigations are being repeated this year and that these results will be communicated to us.	Investigations into our Pont Hywel abstraction in Pembrokeshire have been ongoing since 2010, in full collaboration with EA Wales and CCW (now both NRW). During this summer we have encountered the ideal flow conditions for us to finish off our data collection and we will be reporting on the findings of this work shortly.	2.5
28	CCWater	Whilst we recognise that Dŵr Cymru has employed CACI Ltd to undertake research on industrial and commercial growth in Wales, we still need to be reassured that the ever changing industrial landscape on the shores of Milford Haven has been given sufficient attention.	With regard to accounting for the industrial demand at Milford Haven, we employ a consistent approach across development, which 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	2.7

			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.	
29	CCWater	We continue to ask that you explained to us how you have explored whether phasing in sustainability changes to abstraction licence proactively and when required by Natural Resource Wales could help you identify a more accurate deficit, enable better contingency planning and help phase in likely impacts on customers' bills. The delivery of reductions to abstractions for sustainability must be at a pace that is affordable and acceptable to customers so we continue to ask that you explore whether phasing in sustainability changes to abstraction licences proactively would be cost beneficial to customers and that you manifest how you would cope with limitations operationally. We would like evidence on your customer feedback on abstractions which indicated they thought you should implement sustainability reductions and meet their costs effectively with no impacts on their bills. The cost of any measures to address issues arising from abstractions limitations should not outweigh their benefits. We heard from you that there are operational challenges in doing so and ask these are clearly	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. 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 are set by Welsh Government and 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.	2.5

		summarised in your statement of response together with a succinct explanation as to why they are obstacles to phasing abstraction limitations.	
30	CCWater	We note that licence amendments (sustainability reductions) in Pembrokeshire and SEWCUS WRZs will be delayed. For the SEWCUS WRZ whilst reductions will be in place in 2015 as required by the Habitats Directive they will not take affect until April 2018 and even then they might be delayed. We also note that changes to abstractions would be in conflict with Severn Trent water resources use and that further investigation is being undertaken and are overseen by technical group that includes Natural Resources Wales and Environment Agency to help address any cross-boundary water resources issues. Whilst we are unable to comment on technical aspects of abstraction licensing and look to Natural Resource Wales to assure us of the appropriateness of your approach, we would like to be know that the: * Completion of this WRMP will not be delayed because of on-going investigations, inaccuracies or disagreement on the levels of abstraction in your water company area. * The predictions and assumptions you base your	We agree with you 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.

		WRMP are accurate and therefore give us an accurate picture of your deficit zones now. * Cross border issues have been discussed with all the relevant water companies and also with contribution from the Environment Agency in England.		
31	CCWater	We are pleased you have completed a strategic environmental assessment but note that it lacks a bit on the social impacts and possible disruptions to the public. This could be relevant to explore if in the revised WRMP you propose any significant construction to address water resources management issues.	The aim of our SEA is to inform the plan regarding significant wider environmental issues that inform the plan as to best value solutions. However, the disruption impacts that you describe within your response are taken account of within the cost benefit assessment of each option through use of our regulators Benefits Assessment Guidance. This defines how we should take account of social and environmental costs within our assessment including disruptions to the public for instance associate with improved leakage reduction.	
32	CCWater	And in your concurrent PR14 public consultation you propose building an East-West Transfer Main in SEWCUS to connect to 'address water shortage during exceptionally dry periods', a proposal that we cannot identify in you non-technical dWRMP report. However, in your 'Your Company. Your Say consultation' on you plans for 2015-20218 you also propose to build a 'pipeline between south east and south west Wales to protect areas that are vulnerable to water shortages during exceptionally dry periods'. It is hard for us to place this specific proposal in	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.	2.1

	your dWRMP and even more difficult to find a clear and transparent reasoning of what is actually required and why to ensure that a) water supply is reliable for your customers in the SEWCUS zone and b) that you meet the requirements presented by Natural Resources Wales. We would like to be assured that: * All the proposals you refer to in your PR14 plans are also included in this WRMP (i.e. the supply pipe connecting south east to south west proposal to 'protect areas that are vulnerable to water shortages during exceptionally dry periods'). It is therefore important to explain in your dWRMP and statement of response: * The risks and probability of impacts on water supply * The full range of options you have examined to address potential impacts and deliver resilient water supply * How you justify a major capital investment proposal on the basis of increasing resilience (supply pipeline connecting south east to south west) * What the likely cost and impact of the proposed pipeline to connect south west and east Wales could be on bills	

		* How you have considered water efficiency and retrofitting activity in SEWCUS WRZ as one of the alternative to capital intensive solutions		
33	CCWater	SEWCUS WRZ is deemed to be in (marginal) surplus but you are implying potential issues could arise. Your final WRMP, the non-technical report and its summary should clearly explain what the issues are in the SEWCUS WRZ, what investigations and mitigations are planned to deal with those and any likely impacts on your customers, 40% of which reside in this WRZ. We would like to be assured that: * Your predictions for the SEWCUS zone are accurate and find Natural Resources Wales in agreement * The outcome of these investigations will inform and not delay the completion of an accurate WRMP * An accurate investment and demand management plan of action for the SEWCUS zone will be included in your final WRMP and will inform the development of your PR14 business plan * You are exploring solutions other than just costly capital investment to provide a reliable and resilient water supply in your area- sustainable	Since the publication of our dWRMP2013, 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.	2.5

		solutions need to demonstrated in your plan	
34	Conwy County Borough Council	Pg 12 refers to working farmers and other landowners to reduce the amount of potential pollutants entering our rivers and seas. In Conwy we identify spikes in shellfish results at certain times of the year depending on what is occurring further up the Conwy River. There is a possibility that this is linked to farms and other commercial activities in the Conwy Valley area. We would therefore ask that you specifically work with farmers and landowners in the Conwy River Catchment area to identify and address any potential causes of pollution in this area. This would link into some recent research conducted by Bangor University in this area. * Pg 15 refers to controlling overflow spills in Swansea and Loughor area to protect shellfish beds. There are many commercial shellfish beds in North Wales which may be affected by sewage spills. We would ask that reference is made to shellfish beds throughout Wales rather than just those in Swansea and the Loughor area. * Pg 17 refers to run off from agricultural land and conducting research to how improvements to welsh water assets may improve compliance with bathing water standards. We would ask that some of this work is carried out in the Conwy Estuary area which would have an impact on the bathing beaches at West Shore and Conwy, as well as having an impact on shellfish beds in the estuary.	The comments which you provided related to the public consultation on our Business Plan – this consultation was called 'Your Company, Your Say'. Your comments were gratefully received and forwarded to the team managing the 'Your Company, Your Say' consultation who will take them into consideration.

35	English Heritage	English Heritage welcomes the consideration the draft WRMP gives to the environment. The draft plan outlines ongoing studies and proposals in support of delivering environmental improvements to water quality and water resources as required by the Environment Agency's National Environment Programme in response to key drivers, such as the Water Framework Directive and the Habitats Directive. English Heritage recognises that whilst these improvements are aimed at delivering other environmental objectives, their introduction and operation can also have implications (positive and negative) for the historic environment. In particular, changes in hydrology can effect buried, waterlogged archaeological and palaeo-environmental (relict wetland) remains of significant interest and fragility. The historic environment interest of wetland areas therefore needs to be considered as carefully as their biodiversity interest. English Heritage hence recommends that potential implications on the significance of heritage assets are fully taken into account as part of the national programme.	The support of the consideration of the environment by English Heritage is noted as is the advice on the consideration of historic environment interest.
36	English Heritage	Following on from the above point, the draft plan outlines that environmental studies are continuing in relation to the Rivers Wye and Usk in order to help inform the range of measures required to assist in meeting European Directives. A significant proportion of the catchment of the River Wye is	The information regarding the historic water environment and ongoing projects in Herefordshire is noted.

		within Herefordshire. In this area a number of projects are underway associated with improving understanding of heritage related water management features, such as historic weirs and watermills. English Heritage is working with Herefordshire Council to help ensure that the findings of these projects will help inform decision-making on changes to the water environment. These pilot projects are part of English Heritage's National Heritage Protection Plan with further information available via: http://www.english-heritage.org.uk/professional/protection/national-heritage-protection-plan/plan/activities/4b1. The lower reaches of the River Lugg has also been subject to an archaeological assessment and community-led project via LEADER+: (http://archaeologydataservice.ac.uk/archives/view/lugg_eh_2007/ http://www.helm.org.uk/guidance-library/leader/leader.pdf	
37	English Heritage	The draft plan indicates that catchment management schemes are being considered in support of its environmental objectives. English Heritage recommends that any proposals are carefully scoped and assessed as to any potential implications for the historic environment, this including opportunities for the improved management of heritage assets (designated and non-designated).	The advice of English Heritage with regard to the scoping and assessment of implications for the historic environment to catchment management solutions is noted.
38	English Heritage	The main baseline activities proposed in the draft plan principally relate to leakage control and water	The support of English Heritage for leakage management solutions is noted.

		efficiency measures. English Heritage is supportive of demand management and water efficiency schemes since they are beneficial for the environment by helping to reduce the volume of water that needs to be abstracted, treated and put into supply and hence reducing pressures on the environment and the need for new infrastructure. This benefits the historic environment, because of the impacts new infrastructure and changes in hydrology can have on designated and non-designated heritage assets, including their setting.		
39	Environment Agency	The dWRMP uses a relatively short record for its deployable output assessment. The deployable output model for Hereford, Ross on- Wye and Vowchurch uses a 39 year record and for Whitbourne a 55 year record. The WRP guidance requires a reliable, long term record (back to at least before 1920) to be used to assess deployable output. This is to ensure deployable output is tested against a range of resource conditions. Level of service for these zones is stated as > 1 in 39 and >1 in 55 (Appendix D) on the basis that during the 39-55 year records used, no restrictions were triggered. The company level of service is 1 in 20 for hosepipe bans. A longer record would allow more robust testing for these individual zones. The plan refers to a 2007 technical report as justification for the chosen length of records. We are unable to assess this report as it has not been provided as part of the plan.	We will provide the 2007 Report so that you 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 Operating Area that can be used robustly to generate inflow sequences. We are therefore constrained by the data available which means that we undertake modelling on data records shorter in length than that recommended by the WRP guidance but which still contain the most severe droughts experienced in Wales.	2.4

		Dŵr Cymru need to provide more evidence in the final plan to justify using a short inflow (39-55 year) record for Hereford, Ross-on-Wye, Vowchurch and Whitbourne zones. The company should consider extending its flow series to robustly test its level of service, or provide further evidence to justify using shorter records than advised.		
40	Environment Agency	The plan is not consistent in reporting the calculation of inflows for Vowchurch and Whitbourne. The main report states that Vowchurch and Whitbourne inflows are derived by transposing gauges from nearby catchments. Appendix D (Deployable Output Assessment) states Vowchurch and Whitbourne inflows are derived from naturalised flow records. The final plan should clarify how Vowchurch and Whitbourne's flow series have been derived and remove the inconsistency between the appendices and main plan.	For the Final Plan we will amend any inconsistencies in the text and state clearly how these inflow sequences have been calculated.	2.4
41	Environment Agency	It is not clear from the plan if DCWW have used Local Authority (LA) forecast information for the English water resource zones. The plan does state that 'English LAs have been assumed 100% LDP delivery' but the accompanying graph suggests that an 'adjusted trend based' forecast has been used. The trend based forecast is considerably lower than the LADP forecast and by the end of the	It is the company 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 Our approach allows consideration of the historical new connection performance observed by the company. It has already been established that the trend based projections appear to overestimate the level of new household growth. It also accounts for and is consistent with the original trend based	2.7

	planning period is lower than historic new connections. The plan could therefore be underestimating property and population growth which may put security of supplies at risk by the end of the planning period. (DCWW – Demand Forecasting Technical Report p9). Dŵr Cymru should clarify which property and population forecasts have been used in the plan for these zones. If the company has deviated from local authority forecasts the final plan should include clear justification for any changes or adjustments made to ensure projections have not been under-estimated.	profile, albeit projecting from a lower stating point. The trend based profile shows a general reduction in the number of new households over the plan period. On the basis that new household connections may be generally overstated this will apply across the entire plan period and not only in the earlier stages of the projections. It is therefore assumed the entire profile should shift downwards as a result. Since the issue of the draft plan we have reviewed new household connections for the company as part of our annual review process. 2012-13 saw the lowest new connection rates experienced over the past decade, with levels falling to c.4,800 new connections. This was unexpected and did not following the observed increase in new household connections experience during 2011-12 which at the time suggested some level of recovery in the house building sector. Figure 1 below shows the New Household connections profiles used in the draft and final plans and also shows the historical new connections and trend based projections for comparative purposes.

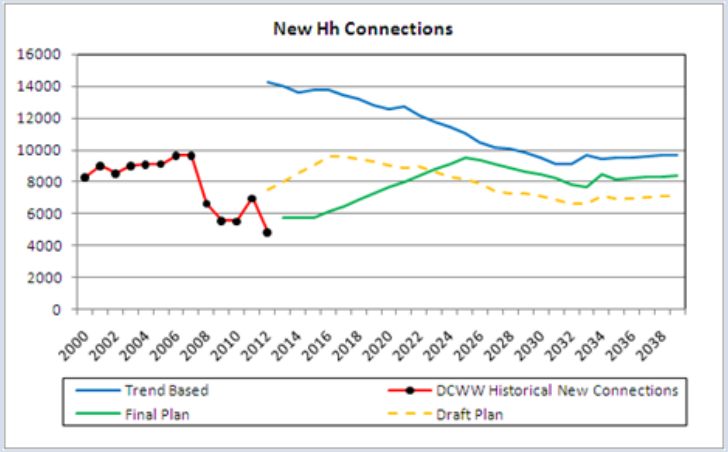


Figure 1 - New Household Connections

As a result of the observed connections during 2012-13 the level of new household connections used within the draft plan have been reviewed and amended to a less aggressive recovery profile. The projections adopted within the final plan show a static profile until 2015/16 and a more gradual recovery to resume trend levels by 2025/26. This change results in new household connections that are more in line with pre-recession average levels in the latter part of the plan.

At a company level the materiality of this change is a shift in population between the measured and unmeasured household categories and a resultant increase in household demand. An additional consideration is that the population projections have also been rebased to 2012-13, which incorporates the Census 2011 results. This has resulted in an overall increase in total population within our supply area and this has shifted the population forecast profile upwards projecting from a higher position. The inevitably increases household demand as a result

of this upward shift in population.

Figures 2 and 3 below shows the affect of the Census 2011 and the revised new connection profile used within the final plan on household demand. Excluding the effect of the census, the use of the revised profile within the final plan produces a marginal increase in household demand at the company level.

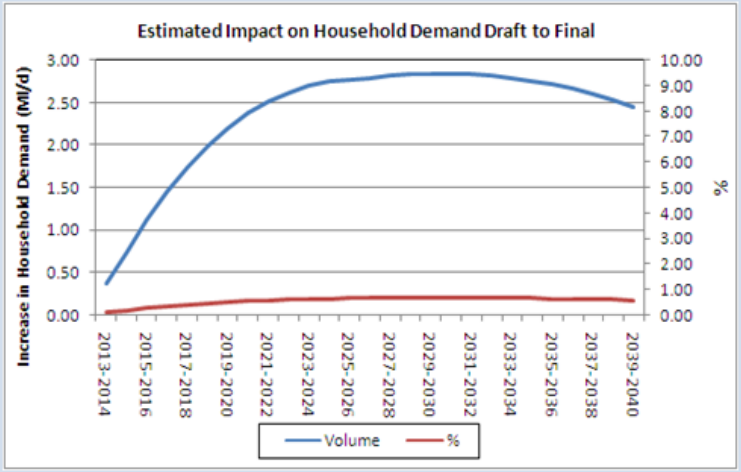


Figure 2 – Estimated Volume Impact of the revised Household Profile (excluding Census affect)

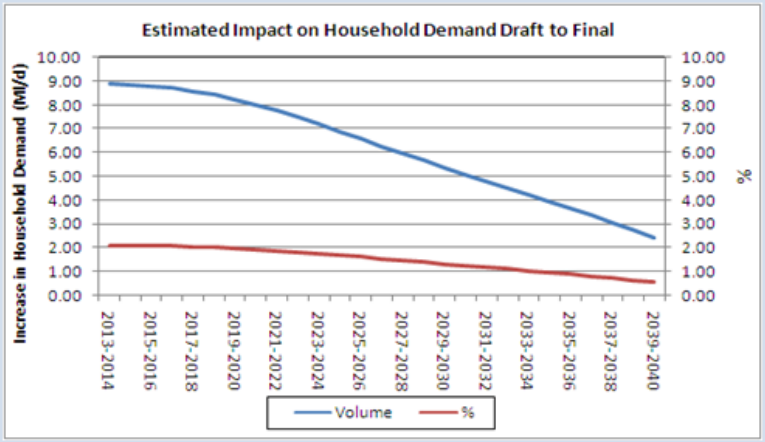


Figure 3 – Estimated Volume Impact of the revised Household Profile (Including Census affect)

To confirm our projections of population are based on 2008 Trend based estimates produce by the Welsh Government. For comparative purposes the plan based population and the Trend based estimates are shown in figure 4 below:

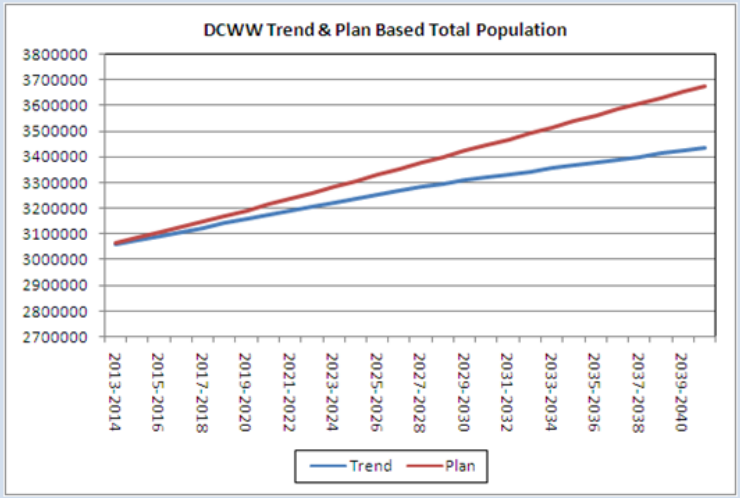


Figure 4 - Comparison of DCWW Trend & Plan Based Population Projections

42	Environment Agency	The values of target headroom are very small towards the end of planning period. Target headroom should take into account the uncertainties within the supply demand balance and such a small THR allowance towards the end of the planning period has the potential to put security of supplies at risk Dŵr Cymru should review its THR allowance.	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.	2.8

43	Environment Agency	The planning tables for Vowchurch, Ross, Hereford and Whitbourne all contain negative values for the CC component of THR (Table WRP1 BL). The plan states that these zones are not impacted by CC which is reflected in both the headroom uncertainty report and the CC assessment. It is not clear how the negative values in the planning tables have been derived. Dŵr Cymru should either revise the negative values in the planning tables or provide information on how they have been derived and justified.	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.	2.8
44	Environment Agency	DCWW have used a triangular distribution skewed towards the lower end for calculating the demand component of THR. The demand forecast component of target headroom are: This is likely to result in a lower central value thus reducing headroom. The demand forecasting component of THR accounts for approximately 35% rising to 40% plus of the zones in England and is one of the largest contributors. The skewed distribution could be underestimating the uncertainty within this component. The company needs to ensure all uncertainties are adequately covered. Dŵr Cymru should explain why a skewed triangular distribution has been used for calculating the	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.	2.8

		demand component of target headroom for Vowchurch, Hereford and Whitbourne zones.	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).	
45	Environment Agency	No treatment work losses have been included in the supply demand balance for the Vowchurch water resource zone. Dŵr Cymru should provide information of what the impact is on the supply demand balance of treatment work losses in the Vowchurch zone, to provide confidence around the marginal surplus reported for this zone. No treatment work losses have been included in the supply demand balance for the Vowchurch water resource zone. We recommend that the company provides more information about treatment work losses. This information is important to be able to quantify the impact of treatment work losses on the supply demand balance Dŵr Cymru should provide some evidence of what the impact is on the supply demand balance of treatment work losses in the Vowchurch zone.	The water treatment process at Vowchurch only involves chlorination of the raw water together with UV filtration and as such does not include any waste water output and so process losses are essentially zero. In addition, the principal boreholes that feed Vowchurch, have a combined raw mains length of some 300m. Given such very small lengths of main and the understanding of borehole and mains condition, any associated raw water losses are considered negligible	
46	Environment Agency	In the plan Vowchurch and Whitbourne are in balance at the start of the planning period, but move into surplus as the target headroom profiles reduce from 95% to 75%. Improvements which have been suggested to the target headroom and inclusion of treatment work	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	2.9

		losses, have the potential to increase THR. This adds greater uncertainty to the supply demand balance for these zones. Dŵr Cymru should review the supply demand balance for the Vowchurch and Whitbourne zones in light of these suggestions.	equilibrium throughout the planning period.
47	Environment Agency	Dŵr Cymru Welsh Water has not presented sufficient evidence in its draft plan to demonstrate compliance with all Directions. The company should provide more detail to show how it complies Direction 3(c) which requires us to identify: The emissions of greenhouse gases which are likely to arise as a result of each measure which it had identified in accordance with section 37A(3)(b) The company has provided detailed assessment of carbon emissions for each option, however, to ensure compliance with direction 3(c), we recommend that further information is given for carbon emissions for the whole company across the planning period.	This was an omission and we have now included this information within our Final Plan with a graph that shows WRMP carbon emissions alongside the wider company carbon emissions.
48	Llanelli Flood Forum	The Welsh Water RainScape scheme is an impressive but expensive way to stop rain entering local sewers. Instead of just slowing it down, ways to capture it and re-use it should be investigated. This would tackle the problem at an earlier stage before the rain reached the drains. This would be a double win, because not only would there be less	Your comments were gratefully received and also forwarded to the team managing the 'Your Company, Your Say' PR14 Business Plan consultation who will take them into consideration. Llanelli lies within the Tywi Conjunctive Use System Water Resource Zone which is not currently forecast to be in supply

		surface water and overall water volume to dispose of, but the direct use of surface water to flush household toilets, would also save Welsh Water on the supply side, reducing the amount of water requiring expensive purification processes. These schemes could be included in new builds, plus research should be carried out to fit these schemes to existing properties. Welsh Water could give water butts free to the public so that rain can be stored for use on gardens. Welsh Water could also develop practical ways of capturing rain water and feeding it back into households to be used in toilets. The Llanelli Flood Forum would welcome local trialling of such schemes.	demand deficit across the planning period and so we are only promoting our baseline water efficiency activities within this area. Although it is outside the scope of the Water Resources Management Plan, Welsh Water are looking to pioneer new ways of incorporating and retrofitting Water Efficiency measures to properties; We are sponsoring research with the Water Research Centre on how to practically deliver retrofitting of rainwater harvesting into properties. Greater effectiveness of retrofitting water efficiency schemes can be achieved by targeting large, municipal buildings, such as schools and large office blocks. We are actively looking at this type of scheme for our AMP6 programme.
49	Llanelli Town Council	Llanelli Town Council supports the Llanelli Flood Forum's response (below) to the draft Resources Management Plan	Your comments were gratefully received and also forwarded to the team managing the 'Your Company, Your Say' PR14 Business Plan consultation who will take them into consideration. Llanelli lies within the Tywi Conjunctive Use System Water Resource Zone which is not currently forecast to be in supply demand deficit across the planning period and so we are only promoting our baseline water efficiency activities within this area. Although it is outside the scope of the Water Resources Management Plan, Welsh Water are looking to pioneer new ways of incorporating and retrofitting Water Efficiency measures to properties; We are sponsoring research with the Water Research Centre on how to practically deliver retrofitting of rainwater harvesting into properties.

			Greater effectiveness of retrofitting water efficiency schemes can be achieved by targeting large, municipal buildings, such as schools and large office blocks. We are actively looking at this type of scheme for our AMP6 programme.	
50	National Farmers Union	It is our belief that a closer working relationship between Welsh Water and farmers would benefit both parties. Looking at examples in other Water Authorities would be a good start particularly in South West England which has a climate not too dissimilar to our own. The South West Water approach is to use third parties (in their case the Rivers Trust) as honest brokers or an independent and trusted intermediary between themselves and farmers. It is a helpful and it seems a successful model. Early engagement and involvement with the farming community in a catchment is essential to find out what is practical and reasonable. Any action undertaken by famers needs to be based on good sound evidence and information. Most farmers would be happy to do something if you tell them why they need to do it, what they need to do and what the results are. Benefits would be a slowdown in the projections for future water charges for all users.	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.	2.3

		We believe 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.		
51	National Farmers Union	NFU Cymru are concerned that the plan, as written, contains very little detail on sewer flooding and leakage and small rural sewage work treatments that Welsh Water are responsible for. These are important areas as under the Water Framework Directive, we move forward together to meet the increasingly stringent EU requirements under this Directive. Improvement of septic tanks is also an issue. Welsh Water may not be directly responsible for these but, as this response is going directly to Welsh Government, they are worthy of mentioning in the overall picture. NFU Cymru also have some concerns that Dŵr Cymru's responsibility, working in conjunction with the Lead local flood authorities, is not perhaps as widely covered in the document as it should be. Flash flood events are likely to become increasingly common during the next 25 years and increased resilience in our infrastructure to this will be required.	Any issue concerning sewerage, sewage treatment or flash flooding would fall outside of the scope of the Water Resources Management Plan, however these issue will be picked up in the business plan. Consultation on the business plan was undertaken between 5th July and 30th August and a summary report of the feedback received will be placed on the Welsh Water webpage before the end of the year.	
52	National Farmers Union	Suffolk and Essex Water provide advice for farmers on pesticide issues in the Chelmer and Blackwater	With regard to adequately supporting farmers, we continue to engage and support the farming community through	2.2

		catchments which has been well received by members there. The right incentives are also important. Notably South West Waters Upstream Thinking Initiative took the approach to minimise long term spending on water treatment by providing funds for farmers to reduce diffuse pollution and runoff. We believe that it is key, that if farmers are undertaking changes in management at the request of a water company then those farmers need to be adequately supported and compensated for such changes. It does show that the partnership approach can work and perhaps should feature more strongly in Welsh Water's plan going forward.	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 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.	
53	National Farmers Union	We also note, in some of your zones, your proposals are to seek more extraction from rivers. Welsh Government must take a balanced approach to extraction licenses and bear in mind that with climate change, more irrigation of agricultural land for food production may also be required for some of these rivers. NFU Cymru is encouraging farmers to become more resilient to climate change by considering on-farm reservoirs for storage of winter rains. 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,	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.	2.6

		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.		
54	National Farmers Union	We are not entirely convinced that the plan, as written, reflects the appropriate balance between the financial, social and environmental costs. Whilst we understand that Dŵr Cymru's priorities must be to meet their customers need, we see an opportunity over the next 25 years for working much more closely with landowners and occupiers in Wales.	We have followed 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.	2.2
55	National Farmers Union	We note the six Water Resource Zones that are forecast to be in water supply deficit. We welcome your intention to implement increased leakage reduction as part of the plan. We ask however that you concentrate on this all over Wales as it is often the lack of an early detection of a water leak that not only leads to unnecessary water loss, but often extortionate water bills experienced by some of our members for water they have not used. Any developments for an early alert anywhere in the water grid of a leak can only be a win/win situation. We ask that you look at systems that will enable you to do this. We also ask that you take lack of knowledge of a leak into account before sending out water bills and also take this into account when seeking payment recovery.	The leakage levels outlined in the plan are economically derived, our management systems monitor distribution losses on a daily basis with leak trends visible on the network at a 30minute resolution. The enhanced schemes outlined in the plan are additional least cost measures to address deficits, being lower cost than other options such as alternative sources of capital infrastructure. We are aware of the effects an unidentified leak may have on individual household bills, and as such have a policy and systems to help customers manage the effects of this. 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	2.7

			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.	
56	National Farmers Union	We realise that this is an overall strategy document but as written there is not a great deal of detail on a local basis. Consultation on proposed actions needs to be as local as possible and not dealt with in general terms and needs building in to the final plan.	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.	2.3
57	Natural England	Natural England is a non-departmental public body. Our statutory purpose is to ensure that the natural environment of England is conserved, enhanced, and managed for the benefit of present and future generations, thereby contributing to sustainable development. More information on our role in advice to the water sector can be found in Annex 1 to this letter. Our interest with Welsh Water's draft WRMP is only with any implications for our responsibilities in England. Natural England has welcomed the opportunity to work with Welsh Water, their consultants and Natural Resources Wales (and its predecessors) during preparatory work on the required Strategic Environmental Assessment (SEA) and Habitats Regulations Assessment (HRA). From our reading of the plan and the accompanying SEA and HRA, it is apparent that of the water resource zones that were in deficit, none	Please be assured that Natural Resources Wales have responded with regard to the SEA and HRA elements of the plan.	

		border England. Two deficit zones border the Severn Trent water company supply areas in Wales (Bala and South Meirionydd), but there are no preferred options to address the deficits in these or any other zones that have implications for Severn Trent or other areas of England. We would be happy to comment further should the need arise but if in the meantime you have any queries, please do not hesitate to contact us.	
58	Natural Resources Wales	Dŵr Cymru has used the views of customers from its last willingness to pay surveys (2008) to inform certain parts of the draft plan, such as level of service and leakage control. The company is carrying out a customer survey for the 2014 Price Review and the company should use these more recent results and the views from the Customer Challenge Groups to inform the final plan.	We are focussed on supporting the needs and wishes of our customers. This is demonstrated in undertaking both wide consultation on our draft WRMP and also in commissioning consultants to analyse customer preferences specially to water resources issues and relating these to the wider AMP6 primary cross driver willingness to pay exercise. In line with WRMP planning guidance, the plan has used the BAG in establishing social and environmental costs of individual schemes. It has not been possible at this time to include directly the quantitative findings of this research within the optimisation process for determining least cost schemes as this work is not consistent with the BAG and may double count social and environmental costs derived through existing willingness to pay work. The customer preference work has been taken into account in preparing our final WRMP. Through qualitative and quantitative analysis of the results of the exercise, we have gained insight into which types of water resource and demand management schemes customers prefer. Overall the research demonstrates that the vast majority of customers are not

strongly engaged in water resource issues. The key findings of the research are:

• Level of service - There is evidence to show that neither domestic or business customers would like to see a lower LoS in response to a water resource shortfall.

• Demand management measures and particularly leakage reduction would be preferred along with the re-introduction of existing sources. Metering was thought to be the fairest way to pay for water services.

• The key finding of the research was 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 deficit.

The above outcomes align with the results of the customer engagement exercises of 2008, and hence the approaches adopted to inform the WRMPs to meet customers' needs and wishes will be similar across the two iterations of the WRMP. Our programme of asset improvements driven by the plan is relatively small with the most significant cost related to the deficit in the Pembrokeshire WRZ and resilience schemes driven by the abstraction licence reductions in our SEWCUS WRZ.

In response to 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 uprate 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.	
59	Natural Resources Wales	Dŵr Cymru has reviewed and updated the deployable output values for each of its 24 water resource zones, including updating and validating its HYSIM rainfall-runoff modelling. In general, the 2012 inflows are an improvement on previous HYSIM modelling. However, the calibration for some of the inflows and/or reservoir storage could be improved within the Barmouth, Lleyn Harlech and North Eryri Ynys Mon resource zones. The company should outline further work to improve calibration for the inflows within these zones within its final plan.	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 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.	2.4
60	Natural Resources Wales	Dŵr Cymru makes a general statement on the methodology used to calculate treatment work losses which is relatively simple in its approach. The company should describe treatment work losses for each water resource zone. It provides details of treatment work losses in the planning tables, but it has not summarised this information in the main report.	The methodology written into the WRMP document has been reviewed and now clarifies the approach taken. The approach is still an analysis of three methods of calculating losses at a treatment works and an average of the analysis is concluded. The approach has not changed but it has been updated to the base year. A summary table outlining TWOU losses for all WRZs has also been added.	2.4

61	Natural Resources Wales	We recommend the company provides further evidence to support why it cannot implement the changes to its licences until 2018. Any extension beyond December 2015 needs to be properly justified and kept to as short a time as possible and we will continue to explore short-term management arrangements with the company to protect the designated sites over the period until the licence changes become effective.	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 where they stated: "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 that 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	2.5

			Preseli scheme which will be included within our final plan is likely to take significantly 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.	
62	Natural Resources Wales	We recommend Dŵr Cymru reviews the household projections it has used in the main demand forecasts. The company has not directly used the Welsh Government household projections, as it believes these are too high in the early years. However, it has followed the trend of these projections from around 2020 onwards. This results in the increase in the number of households per year after the mid 2020s being lower than the numbers per year before the recession started in 2007, whereas the Welsh Government projections do not fall below the pre-recession household numbers. We recommend the company should consider whether it has under-estimated the household projections from the mid 2020s onwards and assess what impact this may have on demand.	It is the company 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. Our approach allows consideration of the historical new connection performance observed by the company. It has already been established that the trend based projections appear to overestimate the level of new household growth. It also accounts for and is consistent with the original trend based profile, albeit projecting from a lower starting point. The trend based profile shows a general reduction in the number of new households over the plan period. On the basis that new household connections may be generally overstated, this will apply across the entire plan period and not only in the earlier stages of the projections. It is therefore assumed the entire profile should shift downwards as a result. Since the issue of the draft plan we have reviewed new household connections for the company as part of our annual review process. 2012-13 saw the lowest new connection rates experienced over the past decade, with levels falling to c.4,800 new connections. This was unexpected and did not follow the observed increase in new household connections experienced during 2011-12 which at the time suggested some level of recovery in the house building sector.	2.7

Figure 5 below shows the New Household connections profiles used in the draft and final plans and also shows the historical new connections and trend based projections for comparative purposes.

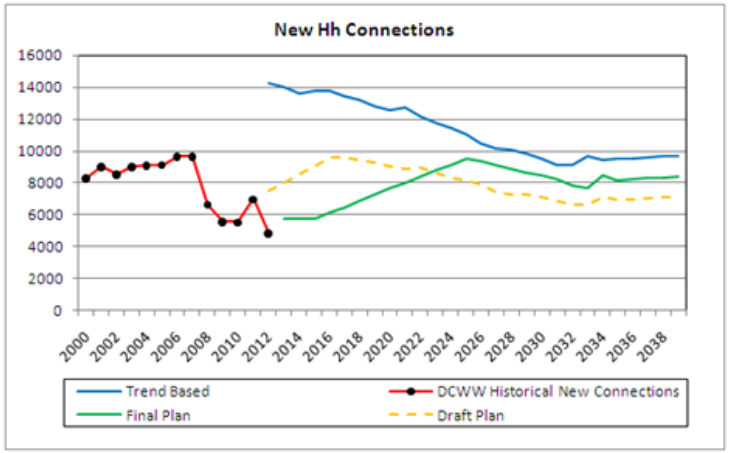


Figure 5 - New Household Connections

As a result of the observed connections during 2012-13 the level of new household connections used within the draft plan have been reviewed and amended to a less aggressive recovery profile. The projections adopted within the final plan show a static profile until 2015/16 and a more gradual recovery to resume trend levels by 2025/26. This change results in new household connections that are more in line with pre-recession average levels in the latter part of the plan.

At a company level the materiality of this change is a shift in population between the measured and unmeasured household categories and a resultant increase in household demand. An additional consideration is that the population projections have

also been rebased to 2012-13, which incorporates the Census 2011 results. This has resulted in an overall increase in total population within our supply area and this has shifted the population forecast profile upwards projecting from a higher position. This inevitably increases household demand as a result of this upward shift in population.

Figures 6 and 7 below shows the effect of the Census 2011 and the revised new connection profile used within the final plan on household demand. Excluding the effect of the census, the use of the revised profile within the final WRMP produces a marginal increase in household demand at the company level.

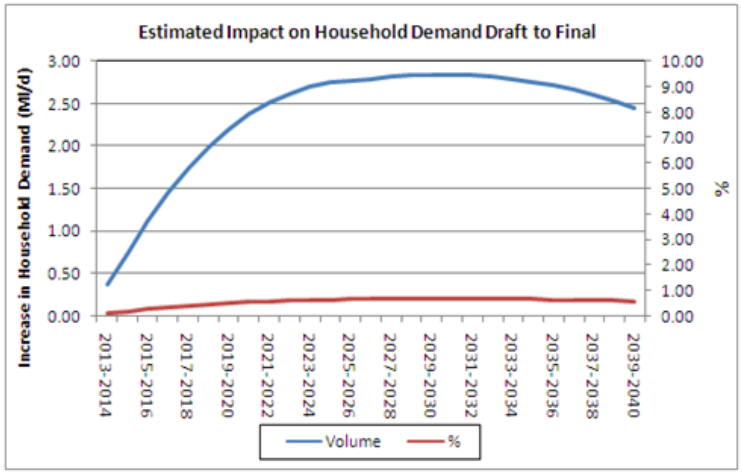


Figure 6 - Estimated Volume Impact of the revised Household Profile (excluding Census effect)

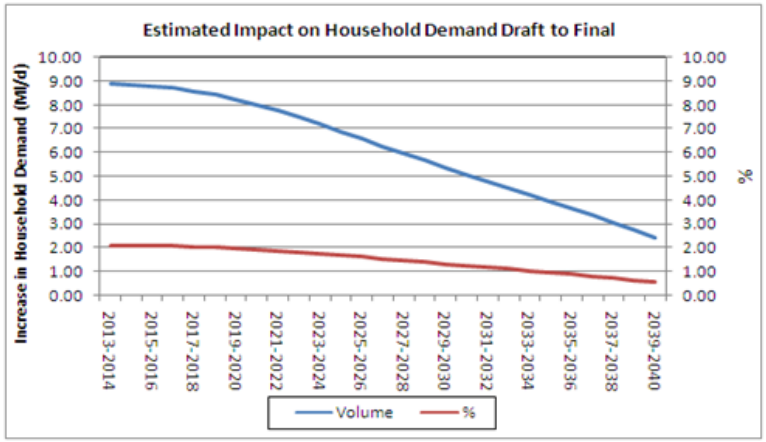
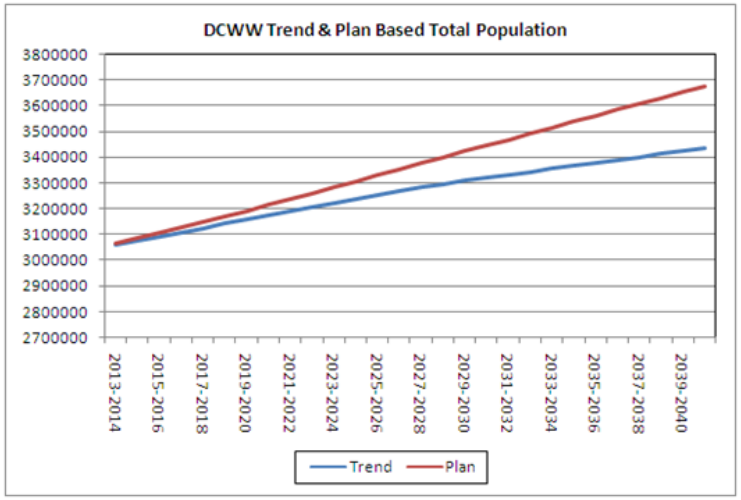


Figure 7 - Estimated Volume Impact of the revised Household Profile (Including Census effect)

63	Natural Resources Wales	We believe Dŵr Cymru has under-estimated the volume of water saved from its water efficiency options. The company has appraised its water efficiency options at a company-wide level and consequently the percentage of customers predicted to participate in the projects and the total volume of water saved are very low when these options are applied at the resource zone level; effectively making these options unviable. We recommend the company re-evaluates all water efficiency options in a targeted and focused way on a resource zone basis for all deficit zones.	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. Data on actual savings of water efficiency devices have been used in a robust method to evaluate achievable and sustainable water efficiency savings. We have found that these assumptions are as applicable at a company level as they are at a zonal level. Our assumptions will be calibrated through AMP6 to inform future business planning.	2.7
64	Natural Resources Wales	Dŵr Cymru has used population projections from both the Welsh Government and local authorities to calculate the future household demand for water. The company should show a comparison between these two projections to demonstrate	To confirm our projections of population are based on 2008 Trend based estimates produce by the Welsh Government. For comparative purposes the plan based population and the Trend based estimates are shown in figure 8 below:	2.7

		how they differ. This could be similar to the chart it provided to compare household growth projections in its demand forecasting technical report. This will be useful to help the understanding of uncertainty in demand and the impact of this in headroom.	 **Figure 8 - Comparison of DCWW Trend & Plan Based Population Projections**
65	Natural Resources Wales	Dŵr Cymru should provide a table showing the proportion of each local planning authority (LPA) population in each resource zone so that it is easier to understand how it calculated the population figures for each resource zone. This would also help LPAs understand which resource zones supply their area.	The table is below

WRZ	Local Authority																									
	Blaenau Gwent	Bridgend	Caerphilly	Cardiff	Carmarthenshire	Ceredigion	Conwy	Denbighshire	Flintshire	Forest of Dean	Gwynedd	Herefordshire	Isle of Anglesey	Malvern Hills	Merthyr Tydfil	Monmouthshire	Neath Port Talbot	Newport	Pembrokeshire	Powys	Rhondda Cynon Taff	South Shropshie	Swansea	The Vale of Glamorgan	Torfaen	Wrexham
8001							0.2				44.9		100.0													
8012							16.3	62.8	0.0																	
8014							1.8	32.3	82.5		0.1															0.0
8020							0.1	0.0			3.5															
8021											4.2															
8026							0.0				5.5															
8033											3.9															
8034											30.2															
8035							81.6	0.0			0.3															
8036											7.4									0.0						
8101										0.3		11.5														
8102																				15.8						
8103										0.0		72.6		0.0						0.2		0.1				
8105												0.8								6.5						
8106										0.0		0.0				15.4										
8107												0.4								6.4		0.1				
8108																				9.0						
8110												4.3				0.0				0.0						
8111												8.7		0.3								0.0				
8201		99.3			88.0	0.1											100.0			7.5	0.6		100.0	21.1		
8202					7.1	58.4													7.3							
8203						41.5					0.0									0.0						
8206					5.0														92.7							
8121	100.0	0.7	100.0	100.0						6.7		0.0			100.0	84.6		100.0		7.0	99.4			78.9	100.0	

Table 1 - Breakdown of Local Authorities by Water Resource Zone

66	Natural Resources Wales	We recommend Dŵr Cymru revises the assessment of the impact of climate change on supply component (S8) of target headroom for the South Meirionydd resource zone. The company has reported negative values for this component of headroom. This is inconsistent with the company's assessment of the impact of climate change on deployable output for this zone that showed there was no impact on supply under any of the climate change scenarios. From these results, we would expect there to be no uncertainty for the impact of climate change on supply in headroom for this zone.	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.	2.8
67	Natural Resources Wales	We recommend Dŵr Cymru provides supporting evidence for the negative values for climate change uncertainty in target headroom included in the planning tables for 10 resource zones in addition to South Meirionydd. The company should clarify whether the negative values are driven by the impact of climate change on supply or demand.	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.	
68	Natural Resources Wales	We recommend Dŵr Cymru explains how it has calculated the demand component (D2) of headroom for households and non-households. [...] We recommend the company explains why some zones have been given a skewed triangular distribution for the demand component (D2) of headroom.	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).	
69	Natural Resources Wales	Dŵr Cymru has included a -30% uncertainty for the yield derived from its water efficiency options in target headroom. We would like clarity on the reasoning behind this as we believe it is too precautionary. The high level of uncertainty may result in water efficiency options not being chosen as preferred options.	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%.	2.8
70	Natural Resources Wales	The values of target headroom for some resource zones are very small (less than two per cent of supply) towards the end of the planning period. We recommend the company reviews the target headroom assessments for these resource zones taking account of the recommendations below to ensure the company has not under-estimated the risks and uncertainties for these zones.	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	2.8

			assessed through sensitivity in the plan and is not at issue for any of Welsh Waters WRZ.
71	Natural Resources Wales	Dŵr Cymru has demonstrated how it changed the headroom risk profile to test the sensitivity of its plan and the impact this had on the supply demand balance. The company should also show how this affects the preferred set of options to test the robustness of its options and the timing of investment.	We undertake sensitivity analysis of the preferred options within our process, as our optimiser software has the capability to create a % variance to component input data, which includes target headroom. The findings of the sensitivity analysis will be included within the final WRMP, but it should be noted that it has not changed the options which have been chosen to address our deficits in line , which are based on the headroom glidepath of the draft WRMP which was an approach which took account of the EA / NRW feedback, for us to accept a greater level of risk towards the end of the planning period. What has been experienced by changing the variance in components (typically between -5% to +5%), is that variance which contributes to a reduction in total water available for use would require a chosen supply scheme to be implemented earlier, and may now precede leakage or water efficiency schemes. In some instances additional supply schemes were required as the leakage and water efficiency options did not possess the required yields to manage the additional deficit. Conversely when a variance change increases the total water available for use, this would have deferred chosen schemes, with the severity of increase dictating possible removal of schemes entirely, which appeared to lean more towards leakage and water efficiency schemes due to their smaller yields compared to supply schemes. Additional text will be added into the WRMP which outlines the above optimiser processes and the outcomes of the sensitivity

			analysis undertaken.	
72	Natural Resources Wales	The company should provide more detail about how it has used the Benefits Assessment Guide (BAG) to calculate the environmental and social costs and benefits in the options appraisal. The company has provided the end costs, but has not provided the supporting evidence to clarify how the costs have been derived.	We accept that the draft WRMP lacked detail on the methodology behind our calculation of the environmental and social costs of schemes using the Benefits Assessment Guidance. For the Final WRMP a new appendix will be produced to capture the deficit zone environmental and social costs detailed breakdowns and this will be provided to you once completed.	2.10
73	Natural Resources Wales	Dŵr Cymru has tested the scenario of increasing demand by 4.5 Ml/d to supply Wylfa B nuclear power station and the potential increases in deficit for both the dry year and critical period planning scenarios. However, the company has not presented any options to resolve the potential increased deficits. We recommend the company carries out a proper appraisal of all the options for NEYM zone as a whole, including water efficiency and leakage control options and does not consider options for Wylfa B in isolation. If the volume of water required for Wylfa B is confirmed in time for the final plan, Dŵr Cymru should include this demand within its main forecast and options appraisal for NEYM. The company should consider whether this may cause a material change to the plan. Otherwise, the scenario included for Wylfa B should include a proposed set of options to meet this additional demand to demonstrate how the company will maintain a secure supply of water.	We remain closely involved in the planning process for the future development and as soon as the specifics are known we will start the engagement with developers to ensure a healthy supply demand balance is maintained, and in this instance we would accelerate our preferred plan. The options appraisal will align with existing processes and will include water efficiency, leakage control options, and supply, 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. 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	2.12

			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 also provide a table of solutions related to the Wylfa scenario within the final plan.	
74	OFWAT	Welsh Water should consider improving its customer engagement process. The Executive Report implies that stakeholders can only obtain the dWRMP from the company's website or through direct mail. We expect the company to consider making use of additional forms of communication, such as using local media, and making the draft plan accessible in places such as public libraries	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	2.3

			stakeholders are adequately consulted regarding our plans and we will comment on this in our improvements for the future section of the final report.	
75	OFWAT	The company appears to have based the dWRMP on customers' preferences for levels of service and water resources options taken from a 2008 willingness to pay (WTP) survey. The dWRMP does state that the final plan will be updated to reflect 2013 WTP survey results and we expect the company to fulfil this commitment.	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. 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.	2.1

76	OFWAT	We have not been able to determine the role that Welsh Water's CCG (customer challenge group) has played in development of the dWRMP. The company should clarify the CCG's role in its final plan.	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. 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.	2.3
77	OFWAT	It does not appear that the company has set the dWRMP in context for customers by indication the potential impact on bills of its proposed investment. The company should present this information in its final plan.	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. 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	2.1

			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 risk to water supply from the loss of abstraction licence on the Wye and Usk. This work also aligns to other asset drivers and represents around 1% of the total AMP6 budget.	
78	OFWAT	We cannot tell whether the company has included the impact of 'confirmed' and 'likely' sustainability reductions in its deployable output (DO) forecast. The dWRMP states that the company has included the impacts of reductions due to the Environment Agency's proposed licence amendments following completion of Stage 4 of the review of consents process, but whether this includes the 'confirmed' and 'likely' categories is unclear. The company should clarify this in its final plan.	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.	2.5
79	OFWAT	While the dWRMP sets out the approach used to calculate the cost of carbon, it is not clear whether the traded or non-traded price of carbon has been used. The company should clarify this in its final plan.	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	2.10

			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.	
80	OFWAT	Neither is it clear how Welsh Water has taken account of the potential for new sources of water to be better value that existing sources. The company should have clarified in its final plan how the potential operation cost savings of such options have been factored into the options appraisal process.	We currently do not have sufficient cost information within our water resource models to enable us to determine whether it would be economic for us to invest in new sources of water when compared to the operation of our existing sources. This is an area that we are looking to improve during AMP 6 as we seek to increase our Production Planning capability. Within Welsh Water we are currently running an Internal Benchmark Review whereby capital expenditure will be approved for schemes which lead to an overall reduction in operational costs. To date no schemes have been proposed to replace existing sources of water with new sources of water.	
81	OFWAT	It is difficult to compare the company's least cost solution with its preferred solution. It would be helpful in the final plan if the two solutions were presented alongside one another together with and explanation of the key differences between them.	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.	2.13
82	Wye and Usk Foundation	The Wye and Usk Foundation would normally furnish a comprehensive response to this plan. However, we are working with DCWW, CRT and EA to resolve the position over the Review of Consents process of our two SAC rivers. Clearly, the outcome of this will have a significant bearing on the WRMP. Currently, we are jointly developing the appropriate modelling systems, assessing the impacts of abstraction on fish and reviewing the	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. Until any new information is presented to and reviewed by NRW we will not be in a position to amend our WRMP with any	2.5

	effectiveness of the currently proposed RoC licence changes. Although this is progressing well, it is not expected to be finished until spring 2014. Until this work has been completed it is not possible to make a valued judgement of how the plan affects our particular area of concern. However, without wishing to pre-empt the outcome of the joint DCWW/EA/CRT/WUF work, we think it likely that it will show: 1. There are flaws in the EA's simulation modelling of the SEWCUS supply system which make the basis of the RoC licence changes unsound. 2. The currently proposed RoC licences do not sufficiently address the impact of abstraction and reservoirs on migration of salmon in the Wye and Usk. 3. The currently proposed RoC licences do not provided adequate protection to the Wye in extreme droughts. 4. The currently proposed licences do not sufficiently address diurnal variations in abstraction from the lower Usk. 5. The currently proposed RoC licences do not strike the optimum balance between environmental protection and minimising the impact on supplies and water company customer charges.	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.	

We think it likely that the current joint DCWW/EA/CRT/WUF work will lead to significant changes in the RoC licences which will have a fundamental impact on DCWW's Water Resource Management Plan. Therefore we propose that:

• Either, the final WRMP is delayed until the outcome of the joint DCWW/EA/CRT/WUF work is known with the final WWRMP changed accordingly

• Or, the final WRMP recognises that the RoC process is not complete and a further revision to the plan will be needed – a similar approach to that adopted for DCWW's 2009 plan which was revised in 2011.

In our opinion, one or other of these approaches is essential to protect the environment, ensure compliance with EU directives and serve the interests of DCWW's customers.