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DRAFT WATER RESOURCES MANAGEMENT PLAN 2019

CONSULTATION STATEMENT OF RESPONSE

September 2018

DOCUMENT CONTROL SHEET

Report Title	Draft Water Resources Management Plan 2019 Consultation Statement of Response
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Previous Issue	None
Distribution List	**Internal:** Applicable Management & Affected Depts. **External:** As per Water Resources Planning Guideline **Web:** www.eswater.co.uk/wrmp

DOCUMENT CHANGE RECORD

Release Date	Version	Report Status	Change Details
31 August 2018	1	Final	N/A - first draft

DOCUMENT SIGNOFF

Nature of Signoff	Person	Signature	Date	Role
Reviewed by	Martin Lunn		31/08/18	Head of Technical Strategy & Support
Approved by	Ceri Jones		31/08/18	Assets & Assurance Director on behalf of NWL Board

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1 INTRODUCTION

This document is our draft Water Resources Management Plan 2019 (dWRMP19) Consultation Statement of Response.

We updated our dWRMP19 and then invited statutory consultees, our customers and other interested stakeholders to comment on it. The consultation on our dWRMP19 took place over a 12 week period between Monday 5th March and Sunday 27th May 2018. The dWRMP19 was available for review on our website https://www.eswater.co.uk/your-home/water-resources-management-plan-2019-consultation.aspx.

Consultees were asked to send their written representations on our dWRMP19 to the Secretary of State for Environment Food and Rural Affairs which were then forwarded to Essex & Suffolk Water at the end of the consultation period.

This statement of response details:

(a) the consideration that we have given to the consultation responses;
(b) any changes that have been made or will be made to the dWRMP19 as a result of consideration of those consultation responses and the reasons for doing so; and
(c) where no change has been made to the dWRMP19 as a result of consideration of any consultation response, the reason for this.

If our responses to the consultation comments are accepted by Defra, they will be included in our final WRMP19 which should be published on our website www.eswater.co.uk\wrmp during 2019.

2 CONSULTATION STATEMENT OF RESPONSE

The following consultations responses on our draft Water Resources management Plan 2019 (dWRMP19) were made during the consultation period:

- Broads Authority
- Chelmsford City Council
- EDF
- Environment Agency
- Great Yarmouth Borough Council
- Mayor of London
- Natural England
- National Farmers union (NFU)
- Ofwat
- The Water Forums

The following table presents our response to representation made on our dWRMP19.

2.1 Broads Authority Response

Area of issue	ESW Response	Change Required
The Broads Authority supports maintaining a minimum depth and annual water level fluctuations in the Trinity Broads. However, it is concerned that marginal water depths within the Trinity Broads could be too deep and could have a negative impact on the water plant communities, which are a feature of the designated site. The Broads Authority recommend that ESW use PCLake model to assess this potential impact. The Broads	In our current WRMP 2014, as part of the Environment Agency's Restoring Sustainable Abstraction (Review of Consents) Programme, we planned and delivered a project to remove mud from the Trinity Broads, as the agreed Review of Consents solution. This was to ensure that, during drought years, we could continue to supply drinking water to our customers while maintaining a minimum water depth to support the reed swamp and the designated features that it supports. We understand that, since the approval of this solution, the scientific thinking around sediment removal from shallow lakes has evolved. In particular, if water clarity cannot be maintained through the deeper	We have updated Section 3.8.2 of the WRMP in line with our response.

Area of issue	ESW Response	Change Required
Authority will continue to work with ESW to review the changes and advise if these are likely to affect the achievement of our shared vision as set out in the Trinity Broads Management Plan. The Broads Authority would welcome collaboration in the Broads to assess shared water resources for people and the environment. We welcome further investigation and investment in understanding the outflows from both the Trinity Broads and Fritton and Lound Lakes, with these flows being important to help understand the wider water function in the Broads.	water column, that the water plant communities may be negatively affected. Maintaining water clarity is complex and relies on the interplay between water quality, algal biomass and fish populations, amongst other factors. We understand that the Broads Authority is also trying to understand the potential unintended impacts of sediment removal in some of the Broads it owns. We are committed to continuing to work with the Broads Authority and the other parties in the Trinity Broads Partnership to deliver the Trinity Broads Management Plan and are keen to be involved in any workshops run by the Broads Authority to better understand the complex issues around turbidity, water depth, water quality and plant communities in restored shallow lakes, including the use of models to assess potential impact. We will re-state this commitment in our revised draft WRMP.	
The Broads Authority is supportive of the investigation of the impact of greater use of shared water resources to improve the effectiveness of infrastructure investment (such as shared reservoir storage) as well as the protection of water sources.	Noted.	No change required.
The Broads Authority is supportive of the water efficiency work that ESW has already put in place. Should there be any opportunities for joint messaging with the Broads Authority we would welcome working collaboratively. We consider that this could help place the picture of the Broads into ESW customers mind as they plan for water use and use water.	We welcome the Broads Authority's offer to work collaboratively with water efficiency messaging. We propose that water efficiency is considered through the Broadland CaBA (Catchment Based Approach) Catchment Partnership.	We have updated Section 5.1.8 of the WRMP in line with our response.
We agree that there should be continued priority attention given to dealing rapidly with	Noted.	No change required.

Area of issue	ESW Response	Change Required
water leaks.		
The Broads Authority support the whole farm water management approach by ESW in the Waveney sub-catchment and recommend that this could be promoted in other sub-catchments of the Broads, such as the Bure, including the Trinity Broads.	We currently host an agri-advice partnership on the River Waveney and work closely with other partners to deliver practical advice and guidance to farmers in the catchment on water protection with a particular focus on pesticide use. We take a risk based approach to our catchment work and given limited resources our efforts have to focus on those catchments which cause us greatest concern from a drinking water quality perspective. Generally speaking we do not see high pesticide levels from the River Bure or Trinity Broads and overall raw water quality is very good. Consequently, this area is likely to remain a lower priority for us than the River Waveney. However, we have a long established Trinity Broads partnership through which a low level of catchment management work is delivered. This has previously focused on nutrients from manures. We will continue to monitor water quality within the catchment and through the partnership newsletter, report water quality and provide advice to land managers. Likewise, we will take a similar approach with the Bure working collaboratively with the Broadland Catchment Partnership and the Upper Bure Valley Partnership.	We have updated Section 3.11 of the WRMP in line with our response.

2.2 Chelmsford City Council Response

Area of issue / Comment	ESW Response	Change Required
This Council considers that the draft is clear and comprehensive	Noted.	No change required.
The Council notes that the document outlines there is efficient and sustainable secure supply of water over the plan period; that Chelmsford falls within the Essex Water Resource Zone which has a marginal	Noted.	No change required.

Area of issue / Comment	ESW Response	Change Required
increase in Water Available for Use (WAFU) and therefore raises no issues for the emerging Local Plan and the evidence base used to prepare the Local Plan.		
The Council notes that the WRMP takes into account future population growth by using Local Authority Plan housing growth evidence. It is suggested that Table 4.5 of the WRMP is revised to reflect the relevant plan period and most recent housing figure. The Chelmsford Draft Local Plan Pre-Submission document was published for Regulation 19 consultation in January to March 2018. Within this document, the Local Plan provides for a total of 21,893 new homes over the plan period from 2013 to 2036. However, given the stage of the Local Plan, it should be noted that alongside the Submission of the Local Plan to the Planning Inspectorate, there are a number of proposed changes to the Local Plan. These will be considered by the Council's Development Policy Committee on 7 June 2018 and will include a minor revision to the housing figure. This figure will be published at the end of May 2018.	Due to PR19 deadlines, since 31 May 2018, we have been unable to consider any further changes to property and population. However given our supply surplus, additional housing numbers will not present any problems with supply. Additionally, our WRMP is refreshed every 5 years when the latest Local Authority plans are taken into account.	No change required
The Council recognises the need to ensure water use is efficient. As part of the Local Plan, Policy MP3 reflects this by requiring all new dwellings to meet the Building Regulations optional requirement for water efficiency of 110 litres/person/day. This is supported by the Council's Water Cycle	Noted.	No change required.

Area of issue / Comment	ESW Response	Change Required
Study.		
Chelmsford City Council will continue to actively engage with Essex and Suffolk Water. Please do not hesitate to contact the Council should further detailed comments by required.	Noted.	No change required.

2.3 EDF Response

Area of issue	ESW Response	Change Required
EDF/CGN is proposing to construct and operate new nuclear power stations to be known as Bradwell B in the Essex WRZ and Sizewell C in the Suffolk Blyth WRZ within the 2020 – 2060 planning period. The developments will each require an estimated 2Ml/d supply of water. EDF/CGN request that the demand for Bradwell B and Sizewell C power stations be specifically identified within the WRMP. The inclusion will provide greater accuracy and assist at future stage when EDF/CGN undertakes further public consultation prior to submission of Development Consent Order applications to National Infrastructure Planning.	**Sizewell C** We have updated Section 11.3.2 of our WRMP to specifically name the source of the unconfirmed non-household demand as Sizewell C Power Station. The potential demand for Sizewell C Power Station was included in Section 8.7 of our dWRMP19 as a planning scenario but not in our final plan Distribution Input forecast. This was because at the time of writing the plan, we did not consider that there was sufficient certainty that construction would start in 2022. The scenario showed that the additional 2Ml/d of demand from both the construction and operation of Sizewell C power station would not cause a supply deficit and the need to further reduce customer demand or develop a new resource. EDF and ESW met on 14 May 2018 and again on 15 June 2018 with the Environment Agency to discuss Sizewell C water supply and demand. The EA has highlighted that including the 2 Ml/d of additional demand from Sizewell C in our final plan distribution input forecast would mean that there would be a sustained increase in overall abstraction. As the aquifers from which we abstract in the Blyth WRZ are not meeting the Water Framework Directive “good” status, we then would not be able to demonstrate compliance with the	We have update Section 11.3 of the WRMP in line with our response.

Area of issue	ESW Response	Change Required
	Water Framework Directive “No deterioration” test. The EA has asked that we illustrate, through an additional supply demand balance scenario graph, the effect of the additional Sizewell C demand but with the supply line (known as Water Available for Use or WAFU) being based on recent actual abstraction (i.e. the maximum annual abstraction between 2005 and 2015). We have completed this work which shows (Section 11.3.2) that capping abstraction licence annual licensed quantities at recent actual levels causes a supply deficit and the need for a new supply scheme. Our view continues to be that there remains significant uncertainty regarding the start date and as such it would be wrong to include it in our final plan now. Our view is supported by the National Infrastructure Commission’s (NIC) recommendation to Government that there should only be one more nuclear power station constructed in the country. Once there is greater certainty regarding the Sizewell C construction start date, we will consider this as a material change to our WRMP and will then include the new demand in our final plan Distribution Input forecast. As the EA has said that for the purposes of the WFD no deterioration test we would have to cap our abstraction licences at recent actual volumes, we would not comply with the no deterioration test. Consequently, we would have to develop a new supply and or demand scheme albeit that the cost of this will have to be funded by EDF. We have communicated our position to EDF. **Bradwell B** For the same reasons as Sizewell C power station, we do not believe that there is a sufficient level of certainty regarding the proposed construction start date. Consequently, the potential demand for Bradwell B power station will not be included in the Essex WRZ final plan Distribution Input forecast. Instead, we have presented it as a sensitivity scenario in Section 11.3.1 of the WRMP. This shows that	

Area of issue	ESW Response	Change Required
	the current supply surplus in the Essex WRZ means that the additional 2 Ml/d of demand will not cause a supply deficit and the need to further reduce customer demand or develop a new resource.	

2.4 Environment Agency Response

Area of issue	ESW Response	Change Required
Recommendation 1 – Protect the environment and ensure long term security of supply by implementing the Water Industry National Environment Programme in full		
We recommend that the company:		
▪ ensures its final plan delivers the requirements identified through the WINEP received after publication of the draft WRMP	Our WINEP only included a sustainability reduction for the River Brett. However, when preparing our draft WRMP, we considered that the level of certainty was low and so presented it as a scenario only. The EA has since undertaken further assessments and has updated the River Brett sustainability reduction to 4.5Ml/d accordingly. We have now included this in our final plan Water Available For Use (WAFU) forecast. The full WINEP has been costed and included in our PR19 Business Plan for completion in AMP7 (2020 to 2025).	We have updated 3.8.3 of our WRMP in line with our response.
▪ fully accounts for the risk of increased demand on the environment and develop alternative options	The new non-household demand in the Blyth WRZ is the water demand for both the construction and operation of Sizewell C Nuclear Power Station. As agreed with the EA and EDF, we have named this demand in the draft final WRMP. We agreed with the EA on 16 May 2018 that we would include a sensitivity supply demand balance scenario where: i. WAFU is based on the annual abstraction licensed quantities of our abstraction licences being capped at recent actual utilisation levels (i.e. the maximum reporting	We have updated Section 11.3.2 of our WRMP in line with our response.

Area of issue	ESW Response	Change Required
	year abstraction between 2005 and 2015); and ii. Distribution Input includes Sizewell C Power Station demand. This scenario is presented in Section 11.3.2 of our WRMP. It shows that the extra demand and reductions in our abstraction licence annual licensed quantities would cause a supply deficit. As described in our response to EDF's consultation response above, we do not believe that there is sufficient certainty over the Sizewell C Power Station's construction start date. Consequently, we have not included this demand in our final plan Distribution Input forecast. When there is sufficient certainty, we will consider this a material change to our WRMP and will update the final plan supply demand balance calculation. We know that the Sizewell C demand cannot be supplied by our existing sources and so a new supply scheme will be required. Therefore we will prepare an options appraisal at that time. We have confirmed our position with EDF, who will need to cover the cost of any new supply scheme. We will commence an options appraisal if EDF still want ESW to supply water to meet demand for both construction and operation of the power station.	
▪ considers a scenario that assesses the impact of potential reductions to licences from groundwater sources from the chalk and crag aquifers towards historic patterns of use. This should include consideration of time-limited licences	There were no sustainability reductions defined for any of our licensed abstraction in the Blyth and Hartismere Water Resource Zones. We had agreed with the EA that: i. we would complete all WFD WINEP investigations in AMP7 by October 2022; ii. where investigations indicate that sustainability reductions are required, we would complete an options appraisal in time to allow any funding requirements for supply, demand and mitigation schemes to feed into the PR24 process; and iii. supply / demand and mitigation schemes would be implemented in AMP8 (2025 to 2030).	We have updated Section 11.2 of our WRMP in line with our response.

Area of issue	ESW Response	Change Required
	Following receipt of the EA's consultation response on our WRMP, we met with the EA on 16 May 2018 and agreed that we will present a further scenario which will present WAFU that is based on our abstraction licence quantities being capped at recent actual utilisation levels (Maximum annual abstraction between 2005 and 2015). We have now completed this work and the supply demand balance scenario is presented in Section 11.2 of our WRMP. This shows that a supply surplus would be maintained without allowing for target headroom. However, there would be a supply deficit when including target headroom. This would be 0.32Ml/d at the start of AMP7 reducing to -0.15Ml/d at the end of AMP7 primarily due to demand savings resulting from leakage reduction. Further reductions in leakage and PCC would mean that there would then be a small supply surplus across the remainder of the planning period.	
▪ sets out how it will manage this risk and ensure solutions are in place to meet any deficits that align with the ambitions of the Water Resources East strategy	As stated above and in Section 11.3.2 of our WRMP, we have confirmed with EDF that their demand cannot be met from our existing Blyth Water Resource Zone WAFU. Consequently, a new water supply scheme, fully funded by EDF, will be required. As stated in Section 2.5.3 of our draft WRMP, we fully support Water Resources East (WRE) and will continue to be an active member going forwards. Should EDF wish to continue to pursue a water supply for Sizewell C Power Station from ESW, we will ensure that the preferred solution aligns with the ambitions of the WRE strategy.	We have updated Section 11.3.2 of our WRMP in line with our response.
▪ ensures that its plan does not risk causing deterioration in water body status.	Section 10.2 of our WRMP already presents a Water Framework Directive (WFD) No Deterioration Assessment. This assessment demonstrates that there is not a significant risk of increased abstraction causing a deterioration in water body status because distribution input reduces over time due to our demand management strategies. We believe that this assessment still remains valid as we will not be including Sizewell C demand in our final plan Distribution Input forecast.	No change required.

Area of issue	ESW Response	Change Required
Recommendation 2 – Provide evidence to support the level of drought resilience and complete Table 10 of the water resources management planning tables		
We recommend that the company:		
• provides evidence of the drought analysis at water resource zone level that clearly demonstrates that each zone, including zones in the Suffolk supply area, is resilient to the 1 in 200 year event	We have provided a summary table covering the 1 in 200 year drought analysis carried out for our sources, and the results of the analysis. All sources are resilient to a 1 in 200 year drought, with the exception of the River Waveney intake in the Northern Central WRZ, and one groundwater source in the Essex WRZ.	We have updated section 2.7 of our WRMP in line with our response.
• explains the methods that have been used to assess levels of service and resilience to drought and why different approaches have been taken for the different water resource zones	We have reviewed the text in the dWRMP with regard to 1 in 200 year drought assessment methodologies, and provided further clarification in the WRMP via a summary table covering each approach used and why, given that due to variation between the characteristics and data coverage of different WRZs where is no single approach that could have been used across all of our WRZs. The Aquator Scottish method was used for the Essex System in the Essex WRZ, in which the Aquator model is run multiple times with incrementally increasing demand, and counts the number of failure years in the analysis period for each demand. The return period for each number of failure years is calculated based on the total record length, and a linear relationship between the demand and return period is established. This method was chosen as there is an Aquator model for the Essex System, but the rainfall-runoff models for the Essex System catchments are not yet set up to be able to be used to create stochastic flow sequences from weather generator data. For the River Bure intake in the Northern Central WRZ, stochastic weather generator rainfall and PET data from the Water Resources East (WRE) project was run through the Northern East Anglia Chalk (NERC) model to develop a River Bure flow series for a 1 in 200 year drought. A spreadsheet analysis of the flow data was carried out to determine daily abstraction potential and calculate a DO for the River Bure, and this approach is consistent with the baseline DO	We have updated section 2.7 of our WRMP in line with our response.

Area of issue	ESW Response	Change Required
	assessment for the River Bure intake. This method is used because there isn't an Aquator model covering the River Bure intake. For the River Waveney in the Northern Central WRZ, stochastic weather generator rainfall and PET data from the WRE project was run through the NERC model to develop a River Waveney flow series for a 1 in 200 year drought. The flows were run through the River Waveney Aquator model to obtain a DO value. For Ormesby Broad, Fritton Lake and Lound Ponds in the Northern Central WRZ, a 1 in 200 year drought assessment was not carried out. This is because there is no water balance model for these systems, so it is hard to assess water levels for different scenarios. The baseline DO is based upon utilisation of the abstractions during the worst historical drought, which is estimated in section 2.9.1 of the WRMP to have a return period of greater than 1 in 200 years. For all groundwater sources in all ESW WRZs, stochastic weather data was run through the Environment Agency regional groundwater model to generate water levels in groundwater sources under a 1 in 200 year drought.	
• provides information to explain the worst historical droughts on record and their relative severity	Rainfall data for critical historical droughts known to have affected the ESW supply areas has been analysed to determine the return periods of the droughts. Monthly rainfall totals for a 5-year period containing the known drought were obtained, and monthly long-term rainfall averages for the 1961-1990 period were calculated. A rainfall deficit for each month in the analysis period was calculated relative to the long-term average, and then summed to obtain a series of cumulative deficits. Plotting the cumulative deficit series allowed a window of dry period analysis to be identified, and the cumulative rainfall and cumulative long-term average rainfall is calculated throughout the analysis period, and the percentage of cumulative rainfall in relation to the cumulative long-term average rainfall is calculated for each month. The Tabony table for the Anglian region, which identified the	We have updated section 2.9.1 of our WRMP in line with our response.

Area of issue	ESW Response	Change Required
	percentage of long-term average rainfall corresponding to a given return period, was used to estimate a return period for a range of drought durations. The results showed that, for Essex WRZ, the 1920-1922 design drought has a return period of greater than 1 in 200 years for the 12-month and 18-month durations. The 1932-1934 Essex drought had a return period of greater than 1 in 200 years for the 18-month and 24-month durations. For the Suffolk WRZs, the 1995-1997 drought had a return period in excess of 1 in 200 years at the 12-month duration in Hartismere WRZ, the 24-month duration in Northern Central WRZ, and the 12- to 24-month durations in Blyth WRZ.	
• sets out sufficient evidence for the 1 in 250 year level of service for level 4 demand restrictions	Extreme Value Analysis of modelled Essex System reservoir storage was carried out to provide evidence that a 1 in 250 year level of service is appropriate for a Level 4 demand restriction. The Essex System Aquator model was run over the full 107-year record at the Essex System PR19 DO demand, and the lowest combined reservoir storage level for each year of the record was extracted and ranked from lowest to highest. Extreme Value Analysis of the 107 ranked annual minimum storage levels was carried out to obtain a fitted distribution that could be extrapolated to estimate storage levels for a range of return periods. Extrapolation of the fitted distribution to a 1 in 250 year level of service returns a combined reservoir storage of 28% for a Level 4 demand restriction. This Level 4 curve sits above the combined emergency storage level of 26.81%.	We have updated section 2.14.2 of our WRMP in line with our response.
• completes Table 10 for each water resource zone	We have completed table 10 for each Water Resource Zone with the supply gain and demand savings or each of the drought actions detailed in our Drought Plan.	We have updated Table 10 in line with our Response.

Area of issue	ESW Response	Change Required
Recommendation 3 – Ensure the plan is legally compliant by adhering to the water resources management plan Directions:		
Direction 3(a) Describe the appraisal methodologies which it used in choosing the measures and its reasons for choosing those measures The company has not provided the information on the appraisal methodologies which it used in choosing the options in its preferred plan and its reasons for choosing those measures. The evidence that the company has used to evaluate compulsory metering, reducing leakage and water efficiency is not clear and there is no cost-benefit analysis to help inform customers. From information provided in the draft plan, the company has not fully considered the Northumbrian Water (Essex and Suffolk) Water Resources Management Plan Direction 2014 on compulsory metering following its 2014 plan. The company must explain its approach to options appraisal and how it has selected preferred options in its plan (linked to improvement 1).	We have now included our demand management options appraisal in the Appendix of our WRMP. This includes a description of the options appraisal approach and the reasons for choosing our preferred options. The options appraisal presents the evidence that we have used to evaluate compulsory metering, leakage reduction and water efficiency schemes including cost-benefit analysis. It also details how we have selected our preferred measures options.	The Options Appraisal has been included in the Appendix of the WRMP.
Direction 3(b) Describe the annual average risk of all restrictions as a percentage, and how they change through the planning period The company should state the average annual risk that it may need to impose temporary water use restrictions, ordinary	We have updated Section 2.14.2 of the WRMP to show the annual risk as a percentage and included a table showing how this risk does not change across the planning period.	We have updated Section 2.14.2 of the WRMP in line with our response.

Area of issue	ESW Response	Change Required
drought orders and emergency drought orders as a percentage as required by Direction 3(b). The company should provided a description of how it expects the annual average risk of all restrictions to change through its planning period as a result of implementation of the options in its preferred plan. The company must provide its estimate of the planned annual risk for temporary water use restrictions, ordinary drought orders, and emergency drought orders and how this risk changes across its planning period to meet Direction 3(b). The company must: - state the annual risk of restrictions for temporary water use restrictions, ordinary drought orders and emergency drought orders - provide evidence that it has determined the risk, expressed as a percentage, and how this will change over the 25 year period, following the implementation of the measures in its preferred plan		
Direction 3(c) Describe the assumptions it has made to determine the annual average	We have completed a modelling assessment to determine the frequency of demand restrictions in Essex in terms of the historic	We have updated section 2.14.3 of our

Area of issue	ESW Response	Change Required
risk of all restrictions The company has not described the assumptions or methodology it has used to estimate the annual average risk for temporary use restrictions, ordinary drought orders and emergency drought orders that should be set out as part of Direction 3(b). To comply with Direction 3(c), the company must describe the assumptions it has used to estimate its level of service and the planned annual risk in the planning period of temporary water use restrictions, ordinary drought orders and emergency drought orders.	naturalised flow time series available in the Aquator model. Total reservoir storage volumes were estimated using the average dry year demand forecast for AMP7 and the naturalised flow time series from 1910-2015. Daily combined storage for the Essex reservoirs was exported from the model and compared to the reservoir curves for the implementation of demand reduction actions. The number of occasions that reservoir storage was below the reservoir curves was calculated and used to determine the actual level of service the Essex System customers could expect. The results indicate that ESW is exceeding the 'planned' levels of service. The Level 3 and 4 curves are never crossed, and the Level 2 curve is only crossed once during the 107-year period of analysis, under the 2019/20 Dry Year Essex System DI demand. The Level 1 curve is crossed three times under each demand scenario, in 1921, 1922 and 1934. As the 1921 and 1922 crossings are contained within the same drought, the period between the 1921 crossing and the 1934 crossing define a return period of 13 years.	WRMP in line with our response.
Direction 3(d) Describe the emission of greenhouse gases likely to arise as a result of baseline operations and each measure in its plan The company has provided an estimate of carbon emissions for its baseline and final plan scenarios, however it has not described the greenhouse gas emissions that will occur as a result of each option required to maintain its supply-demand balance, or stated where else this information is available, as required by Direction 3(d). The company has used a fixed rate cost of non-traded carbon as opposed to more	Our operational GHG emissions are among the lowest in the industry and are set to fall over time. The main driver for such a fall is a reducing emissions factor for grid electricity that will lower Scope 2 emissions as the UK power industry makes the transition to low emissions generation. This is a common feature for all water companies. Since the draft WRMP we have entered into a contract for electricity with the power generator Ørsted, commencing April 2018. The power supplied by Ørsted is all from renewable sources and backed by certificates of origin. The latest GHG reporting protocols allow for emissions impact of this to be reflected in the use of market derived emissions factors as an alternative to using location-based or national factors. As a result we can say that our emissions derived from grid electricity – both Scope 2 and Scope 3 emissions linked to	We have updated Section 6.11 in the WRMP in line with our response.

Area of issue	ESW Response	Change Required
recent annual profile cost that the government has made available. The plan does not explicitly recognise or quantify the decline in carbon emissions it expects as a result of enhanced measures. The plan has not explored the carbon emissions associated with its leakage and water efficiency strategies. This means that the benefits of these savings may not be recognised. The company: - must assess the total greenhouse emissions of both its current and each of its future options to comply with Direction 3(d) - must define the carbon implications associated with its demand management components - should update the carbon cost assessment using the more recent data in including traded and non-traded elements using the government's carbon costing toolkit	transmission and distribution – are effectively zero. In our revised WRMP we reflect this new position, providing an estimate of emissions over time applying the market-based factor. We also provide a location-based estimate using the national grid emissions factor for comparison. We have no supply-side proposal in our plan that will impact on our emissions going forward. We do though have demand-side actions that will have an impact. The impact on emissions is provided for each of these, i.e.: ▪ Metering; ▪ Leak management; ▪ Water efficiency measures. In each case we have also taken account of the carbon value in line with HM Treasury guidelines.	
Direction 3(e)(i) Describe the assumptions made regarding the implications of climate change, including in relation to the impact on each of its supply and demand measures The company has provided an estimate of	There are no supply-side options in our plan but demand management measures are included under the headings of: ▪ Metering; ▪ Leak management; ▪ Water efficiency measures.	We have updated Section 8 of our WRMP in line with our response.

Area of issue	ESW Response	Change Required
the impacts of climate change on its future demand and supply forecasts. However, it has not described the impacts of climate change on each of its options in the final planning scenario. This is required by Direction 3(e)(i). The company must include an assessment of the impacts of climate change on each of its measures in the final planning scenario to meet Direction 3(e)(i). This must include an assessment of all options, including both supply- and demand-side options.	The updated WRMP includes an assessment of how climate change might impact on each of these. Only with leakage is there any significant effect.	
Direction 3(f) Describe its metering programme, including costs, approach, implementation and timing of the programme The company has set out the programme costs for its preferred metering strategy for the first five years of its plan, but it has not set out these costs across the planning period. The company must present these costs across the planning period, clearly setting out the installation and operating costs as part of its cost estimate. This is required by Direction 3(f).	We have now included our demand management options appraisal in the Appendix of our WRMP. This includes a description of the options appraisal approach and confirms why the options have been chosen.	We have included our demand management option appraisal in the WRMP appendix.
Direction 3 (h) - Describe its assessment of the cost-effectiveness of domestic metering types The company has not provided an individual assessment of the cost-effectiveness for each type of household metering, including		

Area of issue	ESW Response	Change Required
compulsory, selective, change of occupier and optant as required by Direction 3(h). The plan provides a cost for metering but it is not clear what this includes. The company has not split its metering options or provided cost data for the components of its preferred programme. There are no cost comparisons for different approaches to metering such as compulsory and change of occupier metering. The company must provide a description and cost data for each type of metering required by Direction 3(h). The company must provide an assessment of the cost-effectiveness of each type of metering to meet Direction 3(h). This should be presented individually to allow a comparison of each metering type.		

2.5 Great Yarmouth Borough Council Response

Area of issue	ESW Response	Change Required
In the Council's view the Water Management Plan (WMP) should be much clearer that what it refers to as the 'Suffolk' area includes parts of Norfolk. It is suggested that the introduction, Section 2.1.5 and the map in Appendix 1 should all show the County boundary.	We have updated the Introduction and Figure 3 (Appendix 1) to clarify that the Suffolk Northern Central Water Resource Zone includes parts of coastal Norfolk including the borough of Great Yarmouth.	We have updated the WRMP accordingly.
Table 4.5 of the DWMP (pg. 124-126) is incorrect in relation to the status of the Local Plan for Great Yarmouth, and should be	We recognise the plan is now adopted and have updated the WRMP accordingly.	We have updated Table 4.6 of our

Area of issue	ESW Response	Change Required
amended as follows: a. Great Yarmouth Local Plan i. ~~emerging~~ adopted ii. ~~2020-2036~~ 2013-2030 iii. 7,140 dwellings (note this number is likely to reduce somewhat through a proposed amendment to the Plan to be consulted on during summer 2018).		WRMP in line with our response.
The Council notes the Draft WMP indicates the Northern Central Water Resource Zone within which the Borough lies is indicated to have a surplus of water across the full planning horizon to 2060. It is recognized that the Essex and Suffolk Water supply areas are located within some of the driest areas of the country, and as such face particular challenges including growing demand, uncertainty from climate change and a general lack of new intrinsic water resources in the future. It is acknowledged that new water resources will eventually need to be developed.	Noted.	No change required.
The Borough Council supports endeavours to reduce water consumption. It's Draft Local Plan Part 2 (Site Allocations and Detailed Policies); to be consulted on in summer 2018 includes a draft policy applying the enhanced standard of 110/person/day water efficiency (as set out in part G2 of the 2015 Building	Noted.	No change required.

Area of issue	ESW Response	Change Required
Regulations) to new residential development.		
Great Yarmouth Borough Council wishes to liaise with E&SW on an on-going basis to ensure that the future development proposals for the Great Yarmouth Borough are informed by the water supply situation, and vice versa. Essex and Suffolk Water are encouraged to engage with strategic planning work on water cycles, supply and use. This is being carried forward jointly by all the Norfolk planning authorities under the umbrella of the agreed Norfolk Strategic Planning Framework. For further information on this work please contact Trevor Wiggett, Project Manager for the Framework (trevorwiggett@norwich.gov.uk).	We will be pleased to attend any pertinent Norfolk Strategic Planning Framework meetings.	No change required.

2.6 Mayor of London Response

Area of issue	ESW Response	Change Required
The Mayor is pleased that ESW is taking a long term view for Water Resources Planning, looking ahead 40 years than just the statutory 25 year planning period.	Noted.	No change required.
The Mayor is encouraged that we are able to maintain a supply demand balance across the planning period in all of our water Resource Zones including those that serve east London.	Noted.	No change required.
Water savings from demand management	Noted.	No change required.

Area of issue	ESW Response	Change Required
measures should be maximised in parallel with investment with new supply infrastructure.		
The Mayor notes that we have been able to bring down household consumption through demand management measures including our award winning water efficiency programme.	Noted.	No change required.
The Mayor supports our target to achieve 70% household metering. He suggests that we consider investigating the use of smart meters which may result in greater reductions in household consumption and could help identify customer side leakage.	We have considered the use of smart meters and are now proposing that all new meter installations and replacements will be smart capable. Our ambition is that all metered customers will have the option to view and access information about their consumption via a choice of in-house displays, web portals and apps by 2035. We recognise the range of benefits that the use of smart technologies alongside metering will enable. We will significantly improve our service to customers as smart meters will enable us to offer a wider range of tariffs; enable customers to save water and save money; start delivering our digital service ambition with better, more personalised communication; and resolve issues faster. Smart meters will assist with efficient leakage management; a benefit that will start to be felt in future years as we increase the coverage of smart meters across our areas.	We have updated section 5.2 of the WRMP accordingly.
The Mayor notes that we intend to reduce leakage by 17.5% in AMP7 and that this goes further than Ofwat's 15% minimum requirement. He supports our mains replacement programme and encourages us to use the latest burst prediction technology.	We agree that all forms of new technology will play a vital role in driving leakage levels down. We are committed to investing in innovative technology, including burst prediction techniques, to achieve this.	No change required.
The Mayor recognises our success in reducing non-household demand for a few	Following the introduction of retail competition to 1.2 million business, charities and public sector organisations in 2017, it was rightly	We have updated section 5.1.17 of the

Area of issue	ESW Response	Change Required
major users. However, the Mayor states that our WRMP should set out a plan for reducing non-household demand.	perceived that water efficiency would act as a key benefit for such customers and an opportunity for retail water companies. As a supporter of Waterwise, we agree with their finding in 'Assessing water efficiency services offered by water retailers; March 2018' which was that there is a wide variation in the number and types of services being offered by retail water companies. We also agree with their recommendation and proposal of a Water Efficiency League Table for retailers, given the lack of water efficiency services being offered and the issues with collaboration between wholesalers and retailers. We perceive that such a league table, and the creation of retail water efficiency forum, will ensure retailers deliver more water efficiency services. We will commit to working with Waterwise and the retail water efficiency forum to push this forwards.	WRMP to be clear about our approach.
The mayor notes the importance of a regional resilient water supply and is pleased that we are able to maintain a supply surplus during a drought which occurs on once every 200 years on average.	Noted.	No change required.
The Mayor is particularly interested in regional water resources planning and encourages us to consider how we can further support neighbouring water companies.	We share the ambition of government and regulators that greater focus be given to regional water resource planning through bodies such as Water Resources East (WRE) and Water Resources of the South East (WRSE). We are determined to play a leading role in this process and to ensure that a fully integrated regional planning approach is adopted for the 2024 planning cycle. We fully support both the Water Resources of the South East (WRSE) and Water Resources East (WRE) project both now and in the future. We operate in a water stressed area and so welcome the opportunity to work collaboratively with a wide range of industries to develop a long-term, multi-sector water resource strategy for the East. We have updated Section 2.6 to confirm our continued support and willingness	We have updated section 2.6 of the WRMP to be clear about our approach.

Area of issue	ESW Response	Change Required
	to work with WRSE also. We already have traded 20Ml/d of our supply surplus with Thames Water and continue to have discussions with all of our neighbouring water companies regarding further trades.	
The Mayor notes the disruption caused by mains renewal schemes, bursts and their subsequent repair and encourages us to work closely with TfL, the London Boroughs and the City of London Corporation to improve co-ordination and data sharing.	We have updated our WRMP to confirm the following: For planned water main renewal schemes, we attend quarterly coordination meetings run by the all of the London Borough authorities within our area of supply. At these meetings, TfL are also present and we present our planned programme of schemes for the year ahead and discuss these as necessary. In addition to these quarterly meetings, we also provide interim programmes of work and organise/attend any necessary scheme specific consultation and stakeholder meetings. For emergency work, we work closely with TfL to ensure that any emergency works are carried out with as little disruption as possible. We liaise with TfL and when working on traffic sensitive roads will endeavour, where possible to carry out our work outside of traffic sensitive times.	We have updated Section 5.3.8 of our WRMP in line with our response.
Our WRMP recognises that a lack of customer awareness is a barrier to the uptake of social tariffs. The Mayor states that all water companies must ensure that their priority services registers are up to date. He encourages us to work closely with a range of charities and other water companies to share data and to help increase the number of customers on social tariffs and on priority service registers.	We are committed to eliminating Water Poverty in our supply areas by 2030. Many water companies to date have looked at the issue of affordability and have generally focussed on social tariffs as being the only solution to help customers who struggle to pay their bills. Our approach is different and leads the industry to look at the causes of water poverty, not just the end problem of affordability of the bill. Social tariffs remain a significant feature of this and We involved our customers in the design and creation of tariff solutions to support those in financial need. Our customers have told us they support a cross-subsidy to expand our social tariff, enabling us to now offer up to 50% discounts for customers who are genuinely struggling to pay their water and wastewater bills. Whilst still in the first few months, we are pleased with the significant take up of this tariff – seeing an	We have updated Section 5.2.4 of our WRMP in line with our response.

Area of issue	ESW Response	Change Required
	improved response from those in need as a result of a solution designed by customers for customers. Developing an up to date Priority Services Register is a key priority, but it is also recognised by CCWater and others that customer needs change daily. We have therefore begun training our staff to actively support those who may experience challenges to sign up to our Priority Register directly and empower our staff who see vulnerability to act by signing those customers up to the list – as well as training them to be responsive to issues that appear when an issue that requires extra support arises – making sure the list is as up-to-date as possible at all times.	

2.7 Natural England Response

Area of issue	ESW Response	Change Required
Natural England recognise the substantial emphasis placed on demand management in our dWRMP which has reduced the extent to which new supply options have had to be developed.	Noted.	No change required.
Natural England notes that we will provide benefits to the natural environment alongside its water supply work through a number of environmental projects in AMP7.	Noted.	No change required.
Demand Management Natural England strongly supports the demand management options in our dWRMP for improved metering, leakage reduction and water efficiency measures. This is in line with Natural England's Conservation 21, Ofwat	Noted.	No change required.

Area of issue	ESW Response	Change Required
ambitious leakage targets, Defra's 25 Year Environment Plan, and Section 82 of the Water Act 2003 which places an environmental duty on the water undertakers 'to further water conservation', in addition to duties in the Water Industry Act (section 3(2)(a) 1991) to promote efficient use of water by its customers. Natural England notes that our dWRMP demonstrates evidence that this duty has been taken into account and that this has been pursued demand management within the plan rather than increasing supply.		
Natural Capital and Ecosystem services *Natural England notes that* WISER recommends that companies trial natural capital asset accounts (including quantity and condition) and ecosystem service assessments (including qualitative and quantitative assessments) to help companies better understand the flow of benefits.	We are seeking to understand and monitor the impact we have on our five identified capitals (financial, manufactured, natural, human & intellectual, social). Our essential core function is not the limit of our role or ambition, and the contribution we make is much wider than this. Better understanding how we depend on and interact with the capitals will enable us to reap the benefits of successfully managing those interactions with potential benefits for the business, society and the natural world. Engagement with staff and stakeholders has identified seven key areas of natural capital that are of specific importance to us: ▪ Greenhouse gases ▪ Air pollution ▪ Ecosystem services & land use ▪ Flood attenuation ▪ Water and sewage pollution ▪ Water resource management and use ▪ Waste disposal (including sludge) We are making good progress on this journey and have identified three opportunities that we are currently pursuing:	We have included new sections in our WRMP including section 2.20 on Natural Capital and section 2.18 on WISER in line with our response.

Area of issue	ESW Response	Change Required
	▪ Adapting the investment process to include impact on the five capitals in the decision making to ensure well-rounded decisions are made. ▪ Including capitals-related data in its Management Information and Business Intelligence systems, to be able to understand and monitor progress. ▪ External reporting of progress via its 'our contribution' reports. Looking at our own landholding, we have produced a number of ecosystem service assessments; displaying them as interactive pdfs to enable engagement with a wide audience. These include a mixture of qualitative and quantitative measures. We have also embarked on a biodiversity site ranking exercise. It aims to rank all 2,000 sites in terms of biodiversity value – using the Defra metric as the starting point, but building on that to include measures such as the presence of priority habitats or species, site connectivity and the presence of invasive species. This will provide a superb baseline of information to enable us to measure the impact of our activities on the biodiversity of our landholding and hopefully, as Natural England's eco-metric develops, that can then be used to show the benefit or harm that could come from the development of other eco-system services on the land.	
Enhancing Resilience *Natural England notes that its "Conservation 21" conservation strategy* focuses on the importance of natural processes to build long term resilience in our wildlife, landscapes and seas.	Our Water Industry National Environment Programme (WINEP) is all about increasing the resilience of the natural environment. We will investigate the sustainability of our Suffolk groundwater abstractions in AMP7 and will take action in AMP8 if any of the investigations conclude that any of our abstraction are unsustainable. Our WINEP includes an holistic water management project in the River Chelmer catchment. Working in partnership, we will look to improve the resilience of the project area by improving water flow, water quality and habitat management. Additionally we have WINEP schemes that will look to improve the quality of the Drinking Water	No change required.

Area of issue	ESW Response	Change Required
	Protected Area's upstream of our abstraction intakes through agri-advice catchment partnerships. Further information on our WINEP can be found in Section 3.8 of our WRMP.	
Climate Change Natural England notes that the Climate Change Act 2008 sets the legal framework for adaptation policy in the UK, preparing for the likely impacts of climate change. It recognises the consideration given to climate change in developing the plan, in particular in forecasting available supplies.	Noted.	No change required.
Detailed comments on specific proposals Natural England welcomes the environmental improvements that will be made through our AMP7 Water Industry National Environment Programme (WINEP) delivered by the company, in tandem with the measures included in the dWRMP. It notes that the sustainability reductions included in the WRMP will benefit the natural environment and require ever more efficient use of water. Work on Invasive Non-Native Species will allow demand to be met with reduced risk of ecological harm, while biodiversity projects will allow the company's water resource assets to also provide improved habitats for wildlife. Of particular note is the new and expanded catchment schemes that will protect the quality of drinking water whilst also providing a wider range of environmental benefits such as habitat enhancements.	Noted.	No change required.

2.8 National Farmers Union (NFU) Response

Area of issue	ESW Response	Change Required
NFU notes that farms are often both household and business customers and that it would like to see a clear provision in plans to deliver uninterrupted water supplies to rural areas. For animal welfare reasons, livestock farms require a rapid response to any interruptions to supply. NFU notes that the agricultural sector is vulnerable to temporary use bans and that it would like to see consistency between WRMPs and Drought Plans. It would like us to confirm levels of service for wholesale supplies to the amenity and horticulture sector.	ESW's levels of service apply to all of its household customers regardless of whether they are urban or rural in nature. Our levels of service are confirmed in Section 2.14 of our WRMP.	No change required.
NFU is concerned that the opening up of the retail market for business customers could provide a barrier to communication when farmers and the wholesaler are trying to resolve supply issues. NFU is keen to build new relationships with retailers and wholesalers.	We recognise the concern highlighted by the NFU but are strongly of the view, and committed to ensuring that our view is the actual experience, that the new retail market with the correct behaviours between Wholesalers, Retailers and any third party should not present a communication difficulty. The landscape for engagement has changed in the new water retail market but retailers and wholesalers cannot allow this to create communication difficulties. Our approach remains unchanged and where non-household customers wish to engage with us directly on matters relating to water supply, we will continue to do so, but we will advise and inform the relevant retailer as a matter of courtesy and to see if they wish to be involved in the discussion. If this matter does cause issues in our operating areas we will	No change required.

Area of issue	ESW Response	Change Required
	proactively engage with the NFU on a regional and if necessary national basis. We will also produce a guidance note for "Farmers" and publish this on our website to provide clear guidance on how to engage with us on Retail related matters. It is important that non-household customers understand that we can no longer engage with them directly on their bills and that their chosen Retailer may also want to help them and add value to any discussions they want to have with us. The degree of interest or involvement will vary from retailer to retailer and therefore it could also be beneficial for them to discuss the matter with their water retailer. Farmers can be assured that we will continue to engage proactively with them on matters of water supply.	
Farmers as Land Managers NFU is keen to build on the existing catchment management initiatives in our supply area that are delivering improvements in catchment water quality.	ESW is grateful for the input and support NFU has provided to many of the catchment partnerships ESW either hosts or participates in. Our AMP7 catchment management programme is significantly bigger than our current AMP6 programme and we see NFU (and its members) as key stakeholders who we will need to work closely with in order to successfully deliver our AMP7 catchment management schemes.	No change required.
Farmers as Abstractors NFU believes that there could be significant opportunities to develop multi-sector water storage facilities. It would like to continue to work with us and other members of Water Resources East to explore such opportunities.	We strongly support Water Resources East which takes a regional, multi-sector approach to considering both water demand and supply in the short, medium and long term. We will continue to work with NFU and Water Resources East to see whether opportunities for multi-sector water storage facilities exist.	No change required.
Whilst we welcome the objectives described in dWRMP19, its long term success will depend on the level of real delivery on the ground, and how quickly action takes place. In summary, our ambitions for the dWRMP19 are that it should:		
1. Demonstrate an appetite for **effective engagement between farmers and**	We believe that we already have a very good working relationship with the NFU locally through our Catchment Partnerships to which the	No change required.

Area of issue	ESW Response	Change Required
ESW (together with regulators) to understand how to better work together to make water use more sustainable	NFU's Regional Environment Adviser and/or local County Advisers are invited. While these groups currently focus on water quality rather than quantity, we would be happy to work with the NFU to help promote sustainable water use to farmers and would welcome discussion on this. Both ESW and NFU are members on the Water Resources East group and we are confident that this partnership will help to achieve good engagement between ourselves and the NFU, as well as other partners and regulators such that we can work closely together to deliver effective solutions to ensure long term sustainable water use.	
2. Recognise the importance of climate change and its potential impact on water resources during **drought events**. Further research may be needed to better understand how to reduce uncertainty in water resources planning for the benefit of farmers	Our draft WRMP climate change assessments have all been followed using approved methods outlined in the Environment Agency Water Resources Planning Guideline. In preparation for our next period review (PR24), a joint UK Water Industry Research (UKWIR) and Environment Agency project entitled "Climate Change Modelling and the WRMP" has just been completed. This sets out the climate change methodology that all water companies will be required to follow. The methodology utilises the output from the latest CP18 climate change projections.	No change required.
3. Contribute to **improvements in resilience** which underpin water company operations, including prevention of abstraction that has (or is likely to have) a damaging effect on the environment. Moreover, explain how quickly any necessary remedial action will be taken	Our Water Industry National Environment Programme (WINEP) is all about increasing the resilience of the natural environment. We will investigate the sustainability of all of our Suffolk groundwater abstractions in AMP7 and will take action in AMP8 if any of the investigations conclude that any of our abstraction are unsustainable. We will also be investigating the sustainability of emergency use boreholes in Essex. Any remedial action here will be implemented before 2025.	No change required.
4. Commit ESW to a **twin-track approach** (if not multi-track approach) that assesses demand management	Our draft WRMP confirms that all four of our water resource zones have a supply surplus. Consequently, no new supply schemes are required. However, we strongly support a twin track approach and will	No change required.

Area of issue	ESW Response	Change Required
and new resource options on a long-term basis, taking full cost and benefit account of environmental and social effects	look to reduce water demand through our water efficiency, leakage reduction and metering schemes. These are all outlined in Section 5 of our WRMP.	
5. Favour the introduction of **compulsory household metering**, particularly in areas where water resources are under stress to the point of full cost/benefit justification, and as soon as practicable alongside improved tariffs and measures to protect those on low incomes	All Water Resource Zones (WRZs) in ESW are within areas classed as seriously water stressed by the Environment Agency. As such, with customer and Secretary of State support, we could compulsory meter the whole area. Our customer research clearly shows this is not supported, and has therefore not been proposed, but we have examined this as an option. Our Water Forum, which also includes CCWater, endorse our customers views.	Compulsory metering is considered in our demand management options appraisal which is now included in the WRMP Appendix.
6. Contain **water efficiency plans** to encourage and incentivise engagement and action on water usage between ESW and its customers	We feel that Section 5.1 of the draft Water Resources Management Plan suitably details and summarises our water efficiency plans to encourage and incentivise engagement and action on water consumption. We have detailed a wide range of water saving programmes. Our inclusion of a water efficiency options appraisal in the WRMP appendix should address this further.	We have included an options appraisal as an appendix in the WRMP.
7. Recognise the importance of **leakage reduction plans** that take full account of environmental costs and benefits, and fully achieve sustainable economic levels as quickly as possible	As in our draft WRMP, our draft final WRMP includes an ambitious leakage reduction plan to reduce leakage by 17.5% in AMP7 between 2020 and 2025.	No change required.
8. Explore opportunities for ESW to further investigate **sharing water resources** and developing new resources in partnership with other companies, and with other sectors (like farming)	We will continue to be an active member of Water Resources East as outlined in Section 2.6 of our WRMP and will consider trading water in line with our Water Resources Market Information position that is detailed on our website (www.eswater.co.uk/wrmp).	No change required.
9. Acknowledge government's commitment to **reduce water use**, as	We will acknowledge the Government's call for water companies to	We have updated

Area of issue	ESW Response	Change Required
stated in Defra's 25 year environment plan	take bold action to reduce water demands, both now and for the future. We look forward to working with the Government to set ambitious personal consumption targets and will be well placed to provide evidence for their assessment of cost-effective measures to meet it.	section 5.1.13 of the WRMP accordingly.
10. **Look beyond its current focus on public water supplies**. There is a need for increased awareness of the needs of other water users such as farming, and how best we can drive forward efficiency and optimise water use	We will continue to be an active member of Water Resources East as outlined in Section 2.6 of our WRMP. This is best placed to consider the needs of other water users such as farming.	No change required.
Water supply forecasts We are pleased to note that Water Available for Use has marginally increased, with no water resource development driven by climate change assumptions. This will be of comfort to farmer abstractors who feel increasingly squeezed between water company demands and environmental regulation.	Noted.	No change required.
Environmental improvements We note the range of measures achieved during AMP6 and the schemes agreed for AMP7. Given local pressures on the environment, and the 'no deterioration' obligations of the Water Framework Directive (WFD), it is not clear to us whether further action may need to be taken to meet environmental targets. We support Defra's water abstraction plan that sets out how the government will reform	We have completed a WFD No Deterioration Assessment in Section 10.2 of our WRMP. This confirms that while there will be an increase in population, the amount of water we will need to abstract will actually fall over the statutory 25 year planning period due to our ambitious demand management schemes. For example, leakage will reduce by 17.5% in AMP7 between 2020 and 2025. Our part of the Water Industry National Environment Programme (WINEP), as outlined in Section 3.8 of our WRMP, will require us to investigate the sustainability of all of our Suffolk groundwater abstractions in AMP7. If sustainability reductions or alternative mitigation measures are required, these will be delivered in AMP8.	No change required.

<table>
<tr><th>Area of issue</th><th>ESW Response</th><th>Change Required</th></tr>
<tr><td>water abstraction management in future years by introducing more catchment focus for sharing resources (enabled by a digital abstraction service) and we look forward to engaging with ESW on achieving innovative and sustainable water use in the future.</td><td>We will also be investigating the sustainability of emergency use boreholes in Essex. Any remedial action here will be implemented before 2025.</td><td></td></tr>
<tr><td>Environmental improvements and catchment management
Carefully designed catchment management schemes can be popular with farmers and high uptake can deliver environmental benefits.
We would be interested to learn more about the five catchment schemes proposed in the dWRMP19, and we will be happy to explore ways to work in partnership with ESW to develop catchment approaches and support farmers in their efforts to improve the water environment.</td><td>We have agreed five catchment schemes as part of the new WINEP. Four of these schemes will focus on our primary driver, water quality Drinking Water Protected Area (DRPA), whilst the fifth will also look to deliver a wider range of multiple benefits through a more holistic approach to water management (Natural Environment Rural Communities (NERC) driver).

The four water quality schemes will look to address the substances identified in our DWI Undertakings and covered by our Safeguard Zone Action plans, and those for which the Drinking Water Protected Area is considered to be ‘at risk’. These are listed in the table below.
<table>
<tr><th>Scheme</th><th>Catchment</th><th>Substances</th></tr>
<tr><td>DrWPA - River Stour</td><td>Stour (Lamarsh - R. Brett)</td><td>Metaldehyde, Clopyralid, Nitrate</td></tr>
<tr><td>DrWPA - Lower Stour</td><td>Stour (d/s R. Brett)</td><td>Metaldehyde, Clopyralid</td></tr>
<tr><td>DrWPA - River Blackwater</td><td>Blackwater (Combined Essex)</td><td>Metaldehyde, Clopyralid, Mecocrop, Propyzamide, Carbetamide</td></tr>
<tr><td>DrWPA - River Waveney</td><td>Waveney (Ellingham Mill - Burgh St. Peter)</td><td>Metaldehyde, Propyzamide, Carbetamide</td></tr>
</table></td><td>No change required.</td></tr>
</table>

Area of issue	ESW Response	Change Required
	We already have formal partnerships on the Chelmer, Blackwater and Waveney and are keen to build on these partnerships as well as formalising an existing liaison group on the River Stour. We will work with external partners to deliver farmer engagement, newsletters and events to provide advice on the storage, handling and application of pesticides, fertilisers and manure; soil management; water course protection; environmental stewardship and general farm environmental management. In the highest risk areas for metaldehyde, for example the direct inflows to our reservoirs (where we cannot employ abstraction management) we will offer paid for product substitution to remove the financial disincentive to farmers to make the switch from metaldehyde to ferric phosphate. We will continue to offer grant support to farmers for pesticide handling facilities, bunded wash-down area and biobeds / biofilters and will also be looking to fund 'slow the flow' features to reduce runoff and sediment loss in some catchments. The fifth scheme will focus on the River Chelmer, specifically the Wid, Can, Chignall Brook and Roxwell Brook catchments, and we will continue to work through the Chelmer and Blackwater Partnership with other organisations to deliver a multi-benefit project delivering a range of measures to protect water quality and provide biodiversity enhancements through habitat creation. Through the PR19 process ESW will offer a grant scheme to support measures such as arable reversion for the highest risk fields, 12-24m watercourse buffer strip on cultivated land, the installation of sediment attenuation ponds, reed beds and in-field bunds, the installation of biofilters and roofed wash-down areas and will use remote sensing mapping to identify highest risk areas. The NFU are represented on all of our Catchment Partnerships and we would welcome their input in developing our catchment management schemes for PR19 through this channel.	

Area of issue	ESW Response	Change Required
Household demand forecast On the face of it the household consumption targets described in the dWRMP19 appear cautious. We support government's commitment to see water use fall, as stated in its 25 year environment plan. We note that in its report 'Preparing for a drier future', the National Infrastructure Commission says that *'savings to 600 Ml/day by 2050 and near universal smart metering would reduce average (measured and unmeasured) water consumption in England from the current 141 to 118 litres per person per day, similar to Water UK's most ambitious pathway'.*	We have increased the level of ambition with regards to water efficiency. In conjunction with smart metering, we will commit to reducing per capita consumption in the ESW area from 149.1 litres per person per day in 2016/17 to 118.6 litres per person per day in 2040. This equates to a 20.4% reduction over that time horizon. In the shorter term, we will deliver an ambitious programme of water efficiency activity that will reduce per capita consumption in the ESW operating area to 136.0 litres per person per day.	We have updated section 5.1.15 of the WRMP accordingly.
Non-household demand forecast Forecast of flat demand to 2060 is noted.	Noted.	No change required.
Customer metering We note ESW's decision to make cautious progress with its metering policy through its proposals for 'area metering'. It is difficult for us to assess whether the proposals are sufficiently ambitious, but we believe that in the longer term compulsory metering is needed as part of an overall plan to drive down demand.	Since submitting our draft WRMP in November 2017, we have now increased optant metering by a further 25% per annum throughout AMP7.	We have updated Section 5.2 of our WRMP to reflect our response.
Leakage strategy Whilst the NFU recognises that it is not always technically viable (nor economically sound) to achieve zero leakage, more needs to be done to understand the full benefits - as well as costs - of leakage reduction, and to	We have included in our draft final WRMP our PR19 demand management options appraisal which includes the costs and benefits of the various components.	We have included our demand management options appraisal in the draft final WRMP

Area of issue	ESW Response	Change Required
achieve economic leakage levels as quickly as possible.		appendix.
Water efficiency strategy We are pleased to note that ESW remains on track to meet its efficiency target and we applaud its flagship 'Every Drop Counts' project. Demand management will be crucial to the overall success of the plan, and we agree in particular that '*there will be a transition whereby the importance of behaviour change grows exponentially'.* The use of new technologies and smart metering combined with exploring the potential for new digital platforms are all to be welcomed.	We welcome this comment on our performance in AMP6 and our Every Drop Counts programme. We have considered the use of smart meters and are now proposing that all new meter installations and replacements will be smart capable. Our ambition is that all metered customers will have the option to view and access information about their consumption via a choice of in-house displays, web portals and apps by 2035. We recognise the range of benefits that the use of smart technologies alongside metering will enable, most notably being the significant improvement to our service to customers as smart meters will enable us to offer a wider range of tariffs; enable customers to save water and save money; start delivering our digital service ambition with better, more personalised communication; and resolve issues faster.	We have updated section 5 of our WRMP in line with our response.
Drought resilience We are comforted to note that all water resource zones are deemed to be resilient to extreme drought events.	Noted.	No change required.

2.9 Ofwat Response

Area of issue	ESW Response	Change Required
Plan Building Blocks While the draft plan proposes a 1-in-250 year return period for level 4 restrictions, for example standpipes, it appears that performance has only been tested against a 1-in-200 year	The Essex System deployable output for a 1 in 250 year return period level of service has been calculated using the Aquator Scottish Method to be 393 Ml/d, which is 1 Ml/d less than the 1 in 200 year return period drought deployable output and 1 Ml/d higher than the Essex System baseline deployable output. An assessment of actual levels of service shows that the 1 in 250 year level of service Level 4 demand restriction curve will never be crossed during the planning horizon.	We have updated section 2.14.2 of our WRMP in line with our response.

Area of issue	ESW Response	Change Required
drought event. The evidence used to support the higher level of service should be provided in the final plan.		
Pressure reduction rather than rota cuts has been identified for the level 4 level of service restriction. Further detail is required in the final plan on how it would work in practice and that the expected levels of water savings are comparable to other measures.	Defra and the Environment Agency held a drought workshop called Exercise Arica in November 2017. This considered Level 4 (Stand pipe and Rota Cuts) restrictions on the use of water during drought. It was largely agreed that imposing such restrictions were impractical and could lead to civil unrest. Instead, reducing the water pressure in water company networks was considered a more viable Level 4 option. Consequently, we have used pressure reduction as our Level 4 restriction on water use in our WRMP. Reducing water pressure would reduce the flow of water to properties which in turn would result in lower household consumption. In some cases, most notably high rise tower blocks, pressure reduction could result in nil supply. To ensure customers in such building receive a supply, we would provide bottled water and tankered supplies. Further work is required to estimate the demand savings which we will report in future Annual Reviews of our WRMP. It is important to note that our actual levels of service assessment in our WRMP concludes that we would never need to impose a Level 4 restriction for a drought with a return period of 1 in 200 years or for our design droughts which have a return period greater than in 200 years.	We have updated section 2.14.2 of our WRMP in line with our response.
There is limited evidence of non-drought resilience to the full range of potential hazards and threats being assessed in the draft plan. For example the plan makes no reference to flood risk or freeze-thaw events. Greater clarity on this should be provided in the final plan.	We have updated Section 2.11 – Resilience to non-drought hazards. This includes an assessment of resilience in terms of flood risk and also to freeze / thaw events. All of our water supply assets were assessed to be resilient to pluvial, fluvial and coastal flood risk in our PR14 flood risk assessments. We will review and update our flood risk assessment when the CP18 climate projections are issued. The “Beast from the East” presented some challenging conditions to the water industry. We were proud that there was no increase in the level of interruptions to supply in that period beyond that experienced in any normal week which	We have updated section 2.11 of our WRMP in line with our response.

Area of issue	ESW Response	Change Required
	demonstrates the resilience of our network to freeze / thaw events. We will however review the impact of the "Beast from the East" on the water industry and apply learning where relevant to do so.	
Customer participation There is limited evidence of customer participation in the development of the draft plan and greater clarity is needed to provide us with confidence that customers were able to participate effectively in the planning process. In the plan, reference is made to the outcomes of customer participation, but the supporting evidence presented is relatively limited. Specifically: – There are only limited details on the number and range of customers consulted in the development of the draft plan. – There appears to be a reliance on older small studies for key parts of the draft plan. For example, the level of service for a temporary use ban appears to have been informed by a small survey of 40 customers	Our customers are at the heart of everything we do and every decision we make. We carry out an ongoing and comprehensive programme of bespoke activity around short-, medium- and long-term strategic aspects of service, including operational service, inclusivity, charges and the future. This section provides more information about the research, participation and engagement activities that have shaped our WRMP plan. Our plan is shaped upon insight derived from several of our qualitative and quantitative customer research and engagement projects into areas which influence water resource management and water efficiency. Our rationale for this approach is founded in our 'Defining the Conversation' and 'Communicating Risk' research projects, which took place in late 2016 and early 2017. Defining the Conversation (2016 and 2017) explored what matters most to our customers about the services we provide and which areas of service they most want to influence. Our customers told us that we should engage with them to understand their views on customer service, value for money and trust. In regards to other areas of service, the majority viewpoint was that we should 'just deal with it', meaning that they trusted us to deliver the service, using our internal expertise without having to consult customers or external specialists. The areas of service participants most frequently stated we should 'just deal with' relate to water resource management and included 'supplying a reliable and sufficient supply of water' and 'providing clean, clear drinking water that tastes good'. Customers also told us that we should engage with other expert organisations when considering how to manage our performance in the wider environment. Our Communicating Risk (2017) research was about engaging our customers around how they prefer probability, chance and risk to be communicated. We conducted this research for two reasons; firstly because we knew that some of our customers, who are less comfortable with numbers, struggle to interpret numerical	We have added Section 1.3.3 in to the WRMP in line with the response.

Area of issue	ESW Response	Change Required
completed in 2011. Use of such information could drive misleading outcomes for customers and should be reviewed. It is also unclear whether feedback from customer research has influenced the selection of the preferred options, such as leakage, and whether any research was undertaken on the package of options or on each attribute independently. Greater clarity is required on this area and this should include whether willingness to pay values have been determined and how they have influenced option selection.	presentations of risk. This includes the types of ratios typically used to indicate the likelihood of drought or appeal for restraint (e.g. a 1 in 200 year drought). During the research we presented participants with different numeric options (i.e. percentages, ratios, fractions, and visual formats) and asked them to order them from the most to least likely to happen. A considerable minority instantly switched off, perturbed by their belief that they struggle with numbers. This disengagement impacts on the reliability of any data resulting from customer research into risk management. Secondly, we knew that our customers tend to perceive risks based on what they have seen or heard, rather than first-hand experience or performance data. Hence, more common service failures such as bursts and leakage tend to be prioritised higher than addressing longer term strategic issues, such as water resource management. Our Communicating Risk research findings supported the findings of Defining the Conversation in that participants told us that there are some complex aspects of service which they expect us to manage and plan for without the need for consultation. The most often cited areas of population increases, climate change and ageing infrastructure all relate to our approach to water resource management. Over 2017 and 2018 we engaged our customers on water resource management options, as part of the shaping of our plan. Informed from our engagement and risk research findings we chose to concentrate on demand management options, rather than the more complex and poorly understood levels of service, such as hose pipe ban frequency. Our project explored the views of 831 of our customers' on leakage, metering, tariffs, consumption and preferences for managing the supply demand balance. Participants were asked how they would allocate a £10 budget across five potential water resource management investment options, in order to understand their priorities.	

<table>
<tr><th>Area of issue</th><th>ESW Response</th><th>Change Required</th></tr>
<tr><td></td><td>
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<tr><td>1. Highest Priority</td><td>Build more reservoirs, water treatment works and pipes</td></tr>
<tr><td>2.</td><td>Reduce consumption with compulsory water meters at all customers’ homes</td></tr>
<tr><td>3.</td><td>Inform customers about water meters for optional meters</td></tr>
<tr><td>4.</td><td>Reducing leaks</td></tr>
<tr><td>1. Lowest Priority</td><td>Installing water meters whenever someone moves house</td></tr>
</table>

In addition to this research we have gone on an extensive journey to understand the views of our customers and have conducted several other projects which touch on elements of water resource management planning including:
▪ Trust & Value (2017)
▪ Service Measures (2017)
▪ Communicating Risk (2017)
▪ Behaviour change and funds (2017)
▪ Tariff Structures (2017)
▪ Resilience, Asset Health and Long-Term Affordability (2017)
▪ Long-Term Strategy Consultation (2018)

The key messages from customers, from these projects, which have influenced the design of our WRMP are:
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<tr><th>Area of issue</th><th>ESW Response</th><th>Change Required</th></tr>
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<table>
<tr><th>Customer research finding</th><th>How the research influenced our WRMP</th></tr>
<tr><td>1. Increasing supply capacity is prioritised over demand management</td><td>We understand customers to be saying that they want us to plan ahead and develop new resources rather than pursue an aggressive demand management policy. We do not actually have a supply deficit in our operating area which requires us to invest in new water resources at this time. We do plan to reduce demand further in order to reduce the amount of water that is wasted through leakage and also in the way it is used. However, we want to respect what our customers have told us and our ambitions relating to water consumption are shaped accordingly.</td></tr>
<tr><td>2. Customers prefer water meters to be optional</td><td>We are introducing ‘whole area metering’ with opt-in measured billing to replace change of occupier metering.</td></tr>
<tr><td>3. Customers take individual responsibility for levels of water consumption but also expect us to do more to encourage water efficiency in future.</td><td>We commit to sustained gradual reductions in consumption which will enable us to put customer experience first. We will invest in both existing and new approaches to incentivise water efficiency.</td></tr>
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Our independent Water Forum, whose role it is to challenge us to always make sure we put our customers at the heart of our future plans and pricing, were updated on the development of our WRMP in November 2017. Members challenged the presentation of return periods, suggesting that percentage chance of restrictions would be much more meaningful (e.g. 5% chance in 20 years as opposed to a 1 in 20 year restriction). We noted in response that the use of return periods, expressed as annual ratio (e.g. 1 in 20 years) was explicitly required by DEFRA. Members also
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Area of issue	ESW Response	Change Required
	agreed that our selective metering strategy was a good scheme. These views have shaped our draft WRMP plan, which is currently going through a final round of testing as part of our PR19 Acceptability Research. A representative sample of our customers are being given the opportunity to look at a summary of our whole PR19 Business Plan and to tell us whether or not they accept it. A section of the summary specifically relates to water resource management. Here participants can read about how from 2020 we will focus on: ▪ Improving how we can move water around our regions to reduce the chance of customers' water supplies being interrupted ▪ Always making sure that local communities have sufficient water to meet their needs ▪ Reducing the risks of hazards like climate change and extremes of weather impacting on our ability to maintain water and wastewater services to customers ▪ Increasing our ability to respond to and recover from long-term interruptions to the water supply which could impact up to 100,000 customers ▪ We will continue to make sure that none of our customers are at risk of supply restrictions in a 1 in 200 year drought ▪ We will reduce interruptions to water supply lasting longer than twelve hours ▪ Offering our customers smart water meters Our customers are asked one 'killer question' to measure their acceptability of our whole business plan:	

Area of issue	ESW Response	Change Required
	To summarise, in our proposed plan we will make improvements to the services you receive between 2020 and 2025, and will also reduce the risk of more serious problems happening in the future. Our plan is built on what customers have already said is important to them and will be delivered for a lower bill than you pay today. On the basis of this information, do you accept Northumbrian Water's plan? **Yes – I accept the plan** **No – I don't accept the plan** **Don't know** The acceptability research has not concluded at the time of preparing this summary. However, initial results on acceptability is high	
The draft plan is generally well structured and easy to navigate, with clear headings, sub-headings and appendices. The inclusion of a non-technical summary at the front of the plan makes it more accessible, though greater use of summary tables for each section would further aid the reader.	We have prepared a new non-technical summary that includes further summary tables and info-graphics. This will be available on our website once we have published our WRMP.	We have prepared a new non-technical summary.
The draft plan suggests that Essex & Suffolk Water has engaged with its Customer Challenge Group (CCG) although it is not clear how this engagement has shaped the draft plan and this should be clarified in the final plan.	When the company started developing the draft Water Resources Management Plan (dWRMP) they presented sections and gave details to the Northumbrian and Essex & Suffolk Water Forums. The Forums then reviewed and discussed the draft WRMP and provided a number of challenges in their formal response to Defra. At the Forums Water Quality sub-group meeting on 28 June 2018, they discussed the company's response to the challenges made by EA, Ofwat and the Water Forums to its draft WRMP and concluded that they were happy with what had been done.	We have updated Section 1.3.2 of our WRMP in line with our response.

Area of issue	ESW Response	Change Required
Demand forecast The draft plan appears to have followed the relevant guidance and assessed demand through consideration of appropriate components, including the use of local authority plan-based projections.	Noted.	No change required.
We would like further clarification regarding PCC estimates and engagement on non-household demand. In particular: – The company needs to provide further explanation on the baseline and preferred plan demand trends in terms of the constituent components, in particular on PCC. We are unsure of the reasons for the relatively high baseline PCC and need clarity regarding the reasons for the small reduction in PCC achieved by metering domestic properties and the value of the PCC selected for new build homes. – Essex & Suffolk Water has developed a methodology	We have increased the level of ambition with regards to water efficiency and also incorporated stretching smart metering plans to support this. We will commit to reducing per capita consumption in the ESW area from 149.1 litres per person per day in 2016/17 to 118.6 litres per person per day in 2040. This equates to a 20% reduction over that time horizon. In the shorter term, we will deliver an ambitious programme of water efficiency activity that will reduce per capita consumption in the ESW operating area to 136.0 litres per person per day by 2025. The value of the PCC selected for all new homes across the forecasted years have a PCC of 118 l/h/d. As a result of the introduction of water efficiency standards into Part G of the Building Regulations which came into force in April 2010, it is a requirement that all new homes are built to deliver consumption not exceeding 125 l/h/d. In 2017, ESW completed analysis of consumption in new homes built after 2012, the results showing that the PCC was lower than the 125 l/h/d standard. Over the years of producing WRMP's various methods have been used to forecast non-household demand. Economic forecasts used to produce non household water forecasts have proved unreliable and given to dramatic change even between the draft plan and draft final plan. Talking with large users has also proved fruitless as even if future closure is planned they do not inform us before their own workforce being informed at the appropriate time. Their forecasts of potential growth, based on future economic forecasts prove equally unreliable, certainly beyond a few years.	We have updated Section 5 of our WRMP in line with our response.

Area of issue	ESW Response	Change Required
that uses trend data based on historical usage to forecast non-household demand. However, it does not appear the company has engaged with large users or retailers to enhance and validate this forecast and should consider the steps it could take to achieve this.	The retailers are not mature enough for this year to produce reliable forecasts and they would meet with the same degree of uncertainty from their larger customers that we have found. We have used trend analysis for the previous two WRMP's and these have proved sufficiently accurate.	
Supply forecast The overall approach to the supply forecast appears satisfactory. However, we have concerns that the supply forecasts appear to have been developed for a slightly lower level of service than that proposed by the plan and would like greater clarity to be provided on outage and bulk imports. In particular: – As noted in section 1, supply has only been assessed for a 1-in-200 year drought event and not for the adopted 1-in-250 year return period level of service. The impact on supply of the more severe drought event should be clarified in the final plan; and – The outage allowance in the draft plan (7% of supply) is	The Essex System deployable output for a 1 in 250 year return period level of service has been calculated using the Aquator Scottish Method to be 393 Ml/d, which is 1 Ml/d less than the 1 in 200 year return period drought deployable output and 1 Ml/d higher than the Essex System baseline deployable output. An assessment of actual levels of service shows that the 250 year level of service Level 4 demand restriction curve will never be crossed during the planning horizon. Our PR19 Outage Allowance was based on out-turn outage from the preceding five years. For Essex, outage was higher particularly at our Layer Treatment Works. This was because of higher than expected unplanned outage due to poor water quality (turbidity and algae). The elevated turbidity was a consequence of the recent enlargement of Abberton Reservoir which required all of the concrete margins of the reservoir in being removed for environmental gain. Consequently, wash of the margins resulted in elevated turbidity. However, now that the margins have vegetated and have stabilised, we believe that this will not be an issue going forwards. Additionally, since enlarging the reservoir, algal blooms have resulted in greater unplanned outage. We do not currently understand the reason for the more severe algal blooms which might be due to the enlargement of the reservoir (changed to reservoir dynamics) or to other factors such as climate change. Consequently, we have included in our PR19 Business Plan a resilience scheme to	We have updated section 2.14.2 of our WRMP in line with our response. No changes proposed for the Outage comment.

Area of issue	ESW Response	Change Required
higher than the industry average (6%) and has nearly doubled since the previous plan (4%). The draft plan does not provide sufficient explanation for this increase and we expect more detail in the final plan.	include a front end treatment process to remove algae before raw water passes onto our current primary filters. We believe that that this will significantly reduce our unplanned outage. Additionally, outage at our Chigwell Treatment Works was elevated in 2016 due to algae in the raw water. We have since installed a new treatment system which removes algae from filter wash water before it is recycled back to the head of the works. We believe that this will also reduce our out-turn outage at this treatment works. Together, we believe these schemes will reduce our outage to industry average.	
There are inconsistencies in the reporting of the import from Thames Water. The draft plan suggests that while the current licence arrangements only allow for a net import of 71Ml/d, 84Ml/d was imported in 2016–17. This should be clarified in the final plan.	We have an agreement with Thames Water to supply our Chigwell Treatment Works with 91Ml/d of raw water. However, in 2015, we entered into a separate agreement with Thames Water and traded 20Ml/d of raw water back to Thames Water. In a normal year, the agreement still allows us to take the full 91Ml/d. However, for the purposes of defining dry year deployable output, we assume Thames Water will take the 20Ml/d leaving 71Ml/d to supply Chigwell treatment works.	We have updated section 3.2.1 of our WRMP in line with our response.
Forecast uncertainty Uncertainty is not a significant driver of the plan and the overall approach is in accordance with guidelines. However clarity is needed in the final plan on the approach to headroom as Essex & Suffolk Water appears to adopt a non-standard approach to the allocation between the climate change component of headroom and other components.	All of ESW's groundwater and surface water sources have been assessed for the impact of climate change on deployable output. The EA's Guidance has been followed and the uncertainty of the impact of climate change on deployable output for the surface water and groundwater sources has been included in ESW's Target Headroom assessment. The monte carlo simulation has been run for all four of ESW's WRZs with all headroom components and then with all components except the climate change components. The difference between these two figures has been calculated to analyse the sensitivity and contribution of the climate change components to headroom uncertainty. This method to calculate the climate change component contribution would provide a similar result to running the monte carlo simulation with only the climate change components. Monte carlo simulations are probabilistic, calculating different headroom figures each time the simulation is run. The difference	We have updated section 7 of our WRMP.

Area of issue	ESW Response	Change Required
	between the simulations is likely to be similar to the difference between the slightly different methods of determining the climate change component contributions and so would not be significant. However, updates on the approach to the allocation between the climate change component and other headroom components will be made prior to publishing the Final WRMP if required.	
Supply-demand balance The supply-demand balance components have mostly been forecast in line with the guidance. However, the impact of possible sustainability licence reductions to the Suffolk groundwater licences has not been included as a scenario. In the final plan the likelihood and quantity of reductions here should be explored to identify if this could cause a deficit.	There were no sustainability reductions defined for any of our licensed abstraction in the Blyth and Hartismere Water Resource Zones. We had agreed with the EA that: iv. we would complete all WFD WINEP investigations in AMP7 by October 2022; v. where investigations indicate that sustainability reductions are required, we would complete an options appraisal in time to allow any funding requirements for supply, demand and mitigation schemes to feed into the PR24 process; and vi. supply / demand and mitigation schemes would be implemented in AMP8 (2025 to 2030). Following receipt of the EA's consultation response on our WRMP, we met with the EA on 16 May 2018 and agreed that we will present a further scenario which will present WAFU that is based on our abstraction licence quantities being capped at recent actual utilisation levels. We have now completed this work and the supply demand balance scenario is presented in Section 11.2 of our WRMP. This shows that capping licensed quantity at recent actual levels causes a supply deficit and will drive investment in a supply scheme.	We have updated Section 11.2 of our WRMP in line with our response.
Options Essex and Suffolk Water has presented a sub-set of options that include an ambition to reduce leakage by over 17.5% by 2025 which we welcome. We have concerns around the approach taken	We have included our demand management options appraisal in Appendix 1 of our draft Final WRMP. This presents the costs and benefits of each demand management measure and the rational for including or discounting these options in our final plan.	We have included the options appraisal in the appendix of our WRMP in line with the ESW

Area of issue	ESW Response	Change Required
to options, as there is a lack of clarity on the development of unconstrained options, screening criteria, third party options and the scope for further trading. There are also issues with the planning tables which reduce the transparency of the draft plan. Further specific comments:		Response.
Only preferred options are included in the draft plan and it is unclear if there was an unconstrained list of options to which screening criteria were applied. This should be clarified in the final plan. Information should also be provided on the screening criteria used to demonstrate that the options appraisal process is robust and has identified the best options for customers.	We have now included our demand management options appraisal in the Appendix of our WRMP. This includes a description of the options appraisal approach and includes both a list of un-constrained and constrained options..	We have included the Options Appraisal in the WRMP Appendix.
The draft plan does not include any third party provision of options. No information is provided on the approach to third party engagement and the company should provide clarity on its approach and consider what it could do in order to promote these options.	We have produced a Bid Assessment Framework which is designed to set out the principles, policies and procedures that we will adopt to ensure a level playing field is created when assessing a bid from a third party for the provision of water resources and/or leakage demand management services against our own provision. It aims to provide clarity and confidence to third party bidders about the process and that all bids will be assessed in a fair and transparent way against any in house solutions. We are willing to accept bids from any party that would bring innovation and allow us to identify more efficient ways of delivering water resources, demand management	We have included a new Bid Assessment Framework section (Section 2.15) in our WRMP in line with our response.

Area of issue	ESW Response	Change Required
	and leakage services without adding avoided costs. We have published the water resources market information on our website (www.eswater.co.uk/wrmp). Through this bid assessment framework we are looking to promote innovation which will allow us to deliver water resources, demand management and leakage services more efficiently for the benefit of customers. This will ultimately mean a reduced cost for our customers.	
Essex & Suffolk Water currently has a large import agreement with Thames Water and part of this has been reversed due to the surplus in the Essex zone. The draft plan suggests that there is not enough water available for further trades, however, it is not clear if a full appraisal of the scope for trading has been completed. For example lower levels of demand could enable further trading and we would expect to see greater consideration of trading opportunities in the final plan.	We have updated Section 5 of our WRMP to reflect our latest ambitious targets for reducing demand through our leakage reduction, metering and water efficiency options. We continue to discuss trading options with our neighbouring water companies which are based on our latest supply demand balance position.	We have update Section 5 of our WRMP to reflect our response.
The company proposes to reduce leakage by over 15% by 2025 which shows a good level of ambition. After 2025, it proposes significant further reductions to leakage of 34% by 2045. However, only a single leakage option is presented and cost information on this has been omitted from the draft plan. Greater clarity on the approach to leakage should	We have now included further information in our demand management Options Appraisal which is included in the WRMP Appendix.	We have included our demand management options appraisal in the WRMP Appendix.

Area of issue	ESW Response	Change Required
be provided in the final plan and clear costing should be provided to assure us that the proposed leakage reductions have been assessed appropriately.		
Metering is forecast to increase by 6% by 2025 as a result of maintaining current optant strategies. By 2045 Essex & Suffolk Water is forecast to have a meter penetration of 80%, which is below the national average forecast of 85%. However, it is unclear in the long term if the metering approach is optimal in the regional context, as lower levels of demand would free up water for trading. Further considerations: – The short term increase in metering is supported by the additional installation of 'not for revenue meters' whereby unmeasured customers who have an existing meter box will be fitted with a meter and provided information to encourage billed switching. This is an example of good practice. – While Essex & Suffolk Water	We have now included our metering strategy options appraisal in the Appendix of our WRMP. A description of the options appraisal approach and a summary of the options appraisal have been included in the WRMP in section 5.	We have included our demand management options appraisal in the WRMP Appendix.

Area of issue	ESW Response	Change Required
operate in an area classed as seriously water stressed by the Environment Agency there is no plan for compulsory metering as it is not supported by customers.		
Essex & Suffolk Water has demonstrated effective water efficiency engagement with customers through the Every Drop Counts programme. This includes an area by area approach to maximise its impact, customer incentives, promoting behavioural change and retrofit programmes. However, in the final plan greater clarity on the costs and benefits of the various strands will help show that an optimal level of each activity is proposed.	We have now included our water efficiency options appraisal in the Appendix of our WRMP. A description of the options appraisal approach and a summary of the options appraisal have been included in the WRMP.	We have included our demand management options appraisal in the WRMP Appendix.
Linked to this, even with the proposed reductions in PCC, its level will remain relatively high. For example, measured PCC is forecast to be in the top three for the industry throughout the planning period. Further evidence is required in the final plan to explain why this is the case and we would expect greater ambition to reduce consumption	We have increased the level of ambition with regards to water efficiency. In conjunction with smart metering, we will commit to reducing per capita consumption in the ESW area from 149.1 litres per person per day in 2016/17 to 118.6 litres per person per day in 2040. This equates to a 20.4% reduction over that time horizon. In the shorter term, we will deliver an ambitious programme of water efficiency activity that will reduce per capita consumption in the ESW operating area to 136.0 litres per person per day.	We have updated section 5.1.15 of the WRMP accordingly.

Area of issue	ESW Response	Change Required
over the planning period.		
There are no supply options identified in the draft plan. However, it does reference the Abberton to Hanningfield pipeline which will be promoted at PR19 to support resilience. As no significant detail has been provided on this option we are not providing comments on it at this stage.	Noted. Further detail on resilience schemes is provided in our PR19 Business Plan.	No change required.
Only preferred options have been added to the table of feasible options. All feasible options should be included in this table. Cost information has been omitted from leakage options which reduces the transparency of the draft plan.	We have updated the tables. Cost information on schemes is included in our demand management options appraisal.	We have updated the WRMP Tables and included in our demand management options appraisal in the WRMP Appendix.
Decision making As the only options presented are preferred there is no transparency on how the final programme was selected, for example, whether scenarios influenced the decision and if the deliverability of the programme has been assessed. In particular:	We have now included our metering strategy options appraisal in the Appendix of our WRMP. A description of the options appraisal approach and a summary of the options appraisal have been included in the WRMP in section 5.	We have included our demand management options appraisal in the WRMP Appendix.
▪ As no evidence of non-preferred options has been found there is	We have now included our metering strategy options appraisal in the Appendix of	We have

Area of issue	ESW Response	Change Required
a lack of transparency regarding option appraisal and the decision making process. In the final plan for clarity we would expect to see a clear summary that concisely explains how and by whom the preferred portfolio was decided on.	our WRMP. A description of the options appraisal approach and a summary of the options appraisal have been included in the WRMP in section 5.	included our demand management options appraisal in the WRMP Appendix.
▪ Board assurance was part of Defra's guiding principles for water resources planning. Evidence of Board assurance is limited to approval of the plan noted on the document control sheet and this raises a concern about the robustness of plan development. This is compounded as there is limited description of the quality assurance of the plan. For the final plan we expect to see assurance that the company Board are satisfied that the plan represents the most cost effective and sustainable long term solution.	We have updated our WRMP and included new sections covering our approach to assurance (Section 1.6) and a Board Assurance Statement (front of WRMP after Control Sheet). **Our Approach to Assurance** We have used a three line of defence model for assurance, similar to that used for our other regulatory returns. Each piece of data has been provided by someone of appropriate skill and experience and has been peer reviewed. The key approach, assumptions and strategy have been approved by key directors (principally the former Water Director and the Assets and Assurance Director) a summary paper which included high level approach and strategy was approved by the Board. In addition to the above external assurance and consultancy was sought in areas of highest risk. Edge Analytics were used to calculate the population and property forecasts which is key data underpinning much of the plan. PwC were our principal external assurance provider and were engaged to provide the principal assurance over our WRMPs, their scope included: ▪ Gaining an understanding of the overall approach to the production of the WRMPs;	We have included a Board Assurance Statement and Section 1.6 covering our approach to assurance..

Area of issue	ESW Response	Change Required
	▪ Gaining an understanding of the detailed underlying processes and assumptions made which were then used to prepare the WRMPs; ▪ Tracing a sample of these non-financial and investment data points to a mix of source documentation and the outputs of detailed calculations and models; ▪ Testing a sample of inputs into the calculations and models by tracing these back to source systems and documentation; ▪ Performing a critical strategic assessment of the WRMPs, specifically assessing their content against the requirements and guidance published by Defra and the Environment Agency; and ▪ Assessing the extent to which the data in the WRMPs has been accurately extracted into the Water Resource Market Information data tables. Any recommendations made have been incorporated into the plan. **Board Assurance Statement** We have included the following Board Assurance Statement: Having reviewed the draft final WRMPs, the Northumbrian Water Limited Board makes the following statement: ▪ The Board is satisfied the plan represents the most cost effective and sustainable long term solution; ▪ The Board believes it has sufficiently collaborated with customers, partners and regulators to develop a strong understanding of future needs, explore every option, and build consensus on delivery plans; ▪ The Board confirms the integrity of the risk assessment process put in place by the company for all of its water supplies; ▪ The Board is satisfied that the WRMPs take account of all statutory drinking water quality obligations, and plans to meet all drinking water quality legislation in full; and The Board confirms that Northumbrian Water complies with its duties on drinking water quality matters in its broader resilience and resource planning arrangements.	

Area of issue	ESW Response	Change Required
National and regional considerations Essex & Suffolk Water are part of Water Resources East (WRE) though the draft plan only provides limited information on interactions with this group. Further specific comments: – The company should clarify how the Water UK national project has informed their draft plan. – Additional clarity should be provided to explain the relationship between the – draft plan and WRE outputs. This could include the identification of options or longer term planning outcomes.	**Water UK Long Term Water Resources Plan** The primary aim of this project was to develop a strategy and framework for the long-term planning of water resources at a national level, and in doing so to assess the long-term water needs and the available options to meet them. The project considered droughts worse than those within the historic record and worse than current levels of service plan for. It looked ahead 50 years and undertook new modelling of droughts, assessed climate change impacts and provided conclusions on the national scale resilience of water supplies. The study concluded that: i. there is a significant and growing risk arising from drought, climate change, population growth and sustainability reductions; ii. there is a strong case for government to promote a consistent national minimum level of resilience for water resources; iii. there is an economic benefit of increased resilience because the investment needed to increase resilience is 'modest' compared to the potential reactive costs to drought and flood; iv. companies should continue to seek a twin-track approach which includes demand management and supply enhancement including transfers between companies; and v. there is a strong case for 'adaptive planning' to support company WRMPs. While individual companies will need to make investment in the next 25 year planning period, nationally, 2040 and 2065 were identified as key points in time to make investment. The report considered ESW within a group called South East (Anglian sub-region). For this group, the study concluded that there is currently some supply/demand surplus in this sub-Region (i.e. our Essex WRZ), but this could be eroded by growth and sustainability reductions over the time horizon if current planning assumptions are maintained. The risk to resilience as a result of the need to tackle potentially unsustainable abstraction is significant and immediate. Since the report was published, we have developed our final plan demand management options. With our ambitious demand management options, all four of our WRZs maintain a surplus	We have updated Section 2 of our WRMP in line with our response.

Area of issue	ESW Response	Change Required
	across the planning period. We continue to be in discussions with neighbouring water companies regarding potential trades from both our Essex and Northern Central WRZs. These discussions will continue with progress being reported through WRMP Annual Reviews. The reports conclusion that the group is at risk of sustainability reductions still applies. AMP7 NEP investigations could result in sustainability reductions which could cause a supply deficit in our Blyth and Hartismere Water Resource Zones. If this turns out to be the case, we would need to identify schemes with WRE to bring the WRZ back into surplus. We have updated our WRMP to include a dedicated section (2.5) on the WaterUK project. **Water Resources East** We strongly support the aims of the Water Resources East group. Along with other water companies, we have a lead role and have been active members of the Technical and Leadership groups. We have fed into the group our supply demand balance position which has always been that we have a supply surplus in each of our Water Resource Zones. Therefore, for our WRMP19, we have not been seeking new supplies of water. Through the technical group, we have worked with WRE's consultants to develop the regional model which has been used to develop the Baseline Vulnerability Assessment. As already described in our WRMP, this highlighted that the resilience of water supplies, for example, in the county of Suffolk, could be vulnerable to future droughts by 2060. This is partly because of the reliance of the county on groundwater supplies from the Chalk and Crag aquifers and the likelihood that abstraction licences could be subject to reductions in annual licensed quantities to ensure they are sustainable. The sustainability of our Suffolk groundwater abstraction licences will be investigated in AMP7 (2020 to 2025) as part of the Water Industry National Environment Programme (WINEP). If sustainability reductions do cause a future supply deficit, we will work with WRE to develop new supply schemes to address any deficit that could not be addressed through demand management alone.	

2.10 The Water Forums Response

Area of issue	ESW Response	Change Required
Overall Plan		
It would be useful to have a shorter, summary version that is in a more user-friendly format and uses language that is accessible for more customers. NWG does some exceptionally good customer communications, but this document does not live up to that benchmark.	We have prepared a new non-technical summary of our WRMP. We believe it is now in a more user friendly format, with info graphics and uses language that is more accessible for our customers.	We will publish the new non-technical summary alongside the updated WRMP.
The WRMP should clearly tie into the company's long-term strategy and its emerging PR19 business plan		
It would be helpful for the plan to include more emphasis on: -acknowledging the PR19 resilience narrative. -their thinking on innovation, e.g. efficiency, leakage and metering -the work done with neighbours and stakeholders, both inside and outside the industry.	We have updated the WRMP to include more narrative covering resilience, innovation and customer engagement.	We have updated Section 1 of the WRMP.