NORTHUMBRIAN WATER living water

DRAFT WATER RESOURCES MANAGEMENT PLAN 2024

CONSULTATION STATEMENT OF RESPONSE

JULY 2023

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Northumbrian Water is a trading division of Northumbrian Water Limited which is a group company of Northumbrian Water Group Limited

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TABLE OF CONTENTS

GLOSSARY

Term / Acronym	Definition
AMP7	Asset Management Period 7 (April 2020 – March 2025)
AMP8	Asset Management Period 8 (April 2025 – March 2030)
ANZP	Average Zonal Night Pressure
APR	Annual Performance Reporting
ASB	Abstraction Sensitivity Band (ASB)
BH	Borehole
BL	Baseline
CACI	Leading specialists in location planning- CACI Ltd
CBA	Cost benefit analysis
CC&B	Our customer billing database
CMOS	Central Market Operating System
CSMG	Common Standards Monitoring Guidance
DEFRA	Department of Environment, Food and Rural Affairs
DI	Distribution Input
DMA/DA	District metering areas / Drainage areas
DMO	Demand Management Option
DO	Deployable Output
DWI	Drinking Water Inspectorate. DWI has responsibilities under the Water Industry Act 1991 relating to the sufficiency and quality of water supplies.
dWRMP	Draft Water Resource Management Plan
DYAA	Dry Year Annual Average
DYCP	Dry Year Critical Period
EA	Environment Agency. The Environment Agency is a statutory consultee for WRMPs. It leads on producing guidance for water companies to use in compiling their WRMP. It has a statutory duty to secure the proper use of water resources in England. The Environment Agency works with water companies as they prepare WRMPs and provide a representation as part of water companies' WRMP consultation. At the statement of response stage, its role changes and it becomes a technical advisor to the Department for Environment, Food & Rural Affairs (Defra) and the Secretary of State.
EBSD	Economic balance of supply and demand
ED	Environmental Destination
EFI	Environmental Flow Indicator
EST	Energy Saving Trust
FL	Full licence
GVA	Gross Value Added
GW	Groundwater
HH	Household (Domestic use customers)
HMWB	Heavily modified waterbody
HOF	Hands off Flow
IROPI	Imperative Reasons of Overriding Public Interest
l/head/day	Litres per head per day (litres per person per day)

l/min / l/hr / l/yr	Litres per minute / litres per hour / litres per year
l/p/d	Litres per property per day (litres per premises per day)
LA	Local Authority
LHN/OAHN	Local Housing Need / Output Area Housing Need
LPA/DPA	Local Planning Authority / District Planning Authority
Max Peak or MP	Maximum Peak abstraction is the maximum volume of water abstracted in any one year during the representative abstraction period.
MCA	Multi Criteria Analysis
MHCLG	Ministry for Housing, Communities and Local Governments
Ml/d	Megalitres per day
MLE	Maximum likelihood estimation
MOSL	Market Operator Service Ltd
MTP	Market Transformation Programme
MUR	Meter under- registration
NAVs	New Appointments and Variations
NE	Natural England
NHH	Non-Household (Business customers whose primary use of water is non-domestic)
NPP	National Population projections
NSERV/SERV1/SERV2	Non service non-household industries / Service industry group 1 / Service industry group 2
NW	Northumbrian Water
NWG	Northumbrian Water Group
NWL	Northumbrian Water Limited
NYAA/ DYAA/ DYCP	Normal Year Annual Average / Dry Year Annual Average / Dry Year Critical Period
OBR	Office for Budget Responsibility
Ofwat	Ofwat is the economic regulator of the water industry. It is a statutory consultee for WRMPs, has been key stakeholder during the development of our plan and will provide a representation as part of our consultation. Our WRMP will primarily inform the supply demand balance part of our business plans which we will submit to Ofwat. Ofwat determines the extent to, and conditions under which, we can recover the costs of investment through our charges to customers.
ONS	Office for National Statistics
p.a.	Per annum (per year)
PCC	Per capita consumption
PHC	Per household consumption
Planning Horizon	Refers to the forecasted years from 2024/25 until 2079/80.
PR19	Price Periodic Review 2019 – Business Plan 2020-2025
Price Review	Ofwat is the economic regulator of the water industry and every five years it sets the investment and service package that customers receive including the price water companies charge their customers. Ofwat carry out a review of these price limits known as a Price Review (PR) every five years. The current Price Review will be completed in 2024 and so is known as PR24 and will set customer bills for the period 2025 to 2030. As part of the Price Review process, water companies submit a business plan which sets out the investment and outcomes for customers and the

	environment that they are required to deliver and how this would impact customer bills. The Business Plan will include the investment needed to deliver the WRMP24 Best Value Plan.
RAA	Recent Actual Average abstraction. Defined by the EA as the total volume of water abstracted during the representative recent actual period divided by the number of years in that period. Defined in 'Water resources planning guideline supplementary guidance – actions required to prevent deterioration' (April 2022
RAPID	Regulators' Alliance for Progressing Infrastructure Development (RAPID) RAPID will help accelerate the development of new strategic water infrastructure and inform future regulatory frameworks. It is made up of the 3 water regulators in England: Ofwat, Environment Agency and DWI. It also works closely with Welsh Government and Natural Resources Wales. Find further information on RAPID's website. Some water companies received additional funding to investigate and develop strategic regional water resource options in the 2019 price review (PR19) final determination.
RBMP	River Basin Management Plan
SAM	Small Area Monitor (unmeasured consumption monitor in NW)
SIC	Standard Industry Classification
SPL	Supply Pipe Leakage
SSSI	Site of Special Scientific Interest
SWU	Study of Water Use (individual unmeasured consumption monitor in NW)
UKCP09 / UKCP18	UK Climate Change projections 2009 / 2018
UKWIR	UK Water Industry Research
Void households	Empty (unoccupied) households
WAM	Whole Area Metering
Water Industry National Environment Programme (WINEP)	A programme of actions (investigations, options appraisals, and implementation schemes) water companies are required to take to meet the environmental legislative requirements that apply to water companies in England.
WFD	Water Framework Directive
WFH	Working from home
WRc	Water Research Commission
WRE	Water Resources East
WReN	Water Resources North regional group
WRMP19	Water Resource Management Plan 2019
WRMP24	Water Resource Management Plan 2024
WRPG	Water Resources Planning Guideline
WRZ	Water Resource Zone

1. INTRODUCTION

This document is our draft Water Resources Management Plan 2024 (dWRMP24) consultation Statement of Response. It has been sent to statutory consultees, and all those who submitted consultation responses, and has been published on our website (www.nwg.co.uk/wrmp).

Our dWRMP24 sets out how we intend to achieve a secure, resilient and sustainable supply of water for our customers and a protected and enhanced environment, both now and in the long term.

We developed our draft WRMP24 between April 2020 and October 2022 taking account of:

- pre-consultation feedback from regulators; and
- feedback received during and following a pre-consultation webinar in January 2022 where we shared our initial baseline supply demand balance position, the planning assumptions used in developing the forecasts, and our ambition to reduce leakage and customer demand (Per Capita Consumption or PCC).

We submitted our draft WRMP24 to Defra on 3 October 2022 and then invited statutory consultees, our customers, and other interested stakeholders to comment on it. The consultation took place over a 12 week period between Friday 18 November 2022 and Friday 24 February 2023. Our dWRMP24 was available for review on our website https://www.nwg.co.uk/responsibility/environment/wrmp/nw-draft-water-resources-management-plan-2024-consultation.

We asked consultees to share their views on our dWRMP24 including those on:

- Our projections of future water needs including those of our customers, businesses and the environment; and
- Our preferred plan including:
  - Our demand management options to reduce leakage by 50% by 2049/50, smart metering, and water efficiency programmes; and
  - In the long term, potential raw water transfers to other water companies.

Consultees were asked to send their written representations on our dWRMP24 to the Secretary of State for Environment Food and Rural Affairs which were then made available to us at the end of the consultation period.

Our regional water resources group, Water Resources North (WReN) has also prepared a regional plan which sets out how it will address the need for resilient and sustainable water supplies at a regional and national level. WReN's Regional Plan has informed our Northumbrian Water draft WRMP24 and was consulted on at the same time as our draft Plan.

We have prepared this consultation Statement of Response which describes:

a. our consideration of the consultation responses;
b. the changes we have made to the dWRMP24 as a result of the consultation responses and the reasons for doing so, and where no change has been made to the dWRMP24 the reasons for this; and
c. how we have taken account of the third round of regional reconciliation planning in which water transfers between companies and regions were agreed.

If our Statement of Response and revised draft WRMP24 are approved by Defra, we envisage that we will be directed to publish our final WRMP24 on our website (www.nwg.co.uk/wrmp) in Autumn 2023.

2. CONSULTATION STATEMENT OF RESPONSE

2.1 OVERVIEW

This section describes how we have considered each of the consultation responses, whether or not a change to the dWRMP24has been made and the reasons for either changing or not changing the dWRMP24.

We would like to thank everyone who responded to our dWRMP24 consultation. Each of the consultation responses are reproduced in Section 3 below along with our consideration and confirmation of changes to our revised dWRMP24.

We have responded to Ofwat's formal consultation response in this document. Separately, we received a number of queries from Ofwat prior to, during and after the formal consultation process. While these queries have not been covered in this document, we have updated our revised draft plan and tables accordingly.

2.2 CONSULTATION RESPONSES

SoR Ref	EA Recommendation	EA Issue	EA Expectations	NW Response
EA1	**Recommendation 1:** Demonstrate resilience and the supply demand balance during the dry year critical period. Provide critical period data, to align with the plan narrative, and clearly explain the assumptions for critical period assessment.	**Issue 1** There is insufficient detail on Dry Year Critical Period supply demand balance and planning table data has not been provided. WRPG S4.8	To resolve this, we expect the company to: • Update the planning tables 3d, 3e, 3f to include critical period data • Provide further information in the main plan to allow the DYCP assessment and baseline and final plan supply demand balance to be clear without reference to technical documents • Explain why the summer months June, July and August were excluded from the calculation of 7-day peak week distribution input (Demand Forecast Technical Report, Section 10.2.3 – Normalisation) and the implications of removing this data	To address each of the points raised, we have: - Updated the planning tables 3d, 3e, 3f and have added a Section 3.3 to cover critical period data; - provided further information in Section 6.3 and 8.4.2 of the main plan to cover baseline and final plan DYCP assessment; The summer months have not been excluded from the critical period calculation. The exclusion of the summer months relates purely to the normalisation part of the process of the critical period uplift. We require a normalised peak DI factor and to calculate this the top ranking peak week (including the summer months) is divided by the peak week that excludes the summer months of June, July and August. This gives the peak factor to apply as part of the critical period process. We have adjusted the wording in the Demand Forecast Technical Report (section 10.2) to make this clearer.

SoR Ref	EA Recommendation	EA Issue	EA Expectations	NW Response
EA2	**Recommendation 2:** Correctly integrate the industrial non-potable system into the Kielder resource zone to provide certainty in the plan that non-potable demands can be met.	**Issue 2** Integration of the Industrial Zone into the Kielder water resources zone: This non-potable system is not clearly represented in the narrative or accounted for correctly in the planning tables. WRPG S4.4	To resolve this, we expect the company to: • Update the planning tables placing the non-potable consumption (demand) in the correct line and ensure that Available non-potable balance (row 49.1BL/FP) indicates the correct non-potable balance. Provide a thorough narrative which explains how the non-potable system is represented in the planning tables, and how the company will account for it when reporting to regulators given that it is not reflected in the SBD value. • Ensure any references to supply demand balance throughout the plan are clear as to whether (or not) the non-potable system is being included. This should be clear to a lay reader • Include the non-potable licences in planning table 1 (though do not include in deployable output calculation) • Ensure raw water abstraction (planning table 3c, row 1FP) includes all abstraction • Provide confirmation the additional demands have been reflected in modelling of the water availability and the relevant environmental assessment has therefore occurred • Include an overview of the Kielder system	To address each of the points raised, we have: - Updated the planning tables placing the non-potable consumption (demand) in lines 1.1 and 12.1 and have ensured that Available non-potable balance (row 49.1BL/FP) indicates the correct non-potable balance; - updated Section 2.1.2 to further explain how the non-potable system is represented in the planning tables, and how we will account for it when reporting to regulators given that it is not reflected in the SBD value. We have also signposted to Section 2.4 of the Technical report; - ensured any references to supply demand balance throughout the plan are clear as to whether (or not) the non-potable system is being included; - Included the non-potable licences in planning table 1 (although we have not include them in the deployable output calculation); - Ensured raw water abstraction (planning table 3c, row 1FP) includes all abstraction; - Included an overview of the Kielder system in Section 2.1 and signposted to the Supply Forecasting technical report. - confirmed in **Section 6 & 8.4** that the baseline and final plan supply demand balance does not include the industrial system. We confirm that the additional non-potable demands have been reflected in modelling of the water availability. This is covered in Section 6 of the Supply Forecasting Technical report. The additional Teesside demand may increase the frequency that Kielder support for the River Tees will be required. We have agreed with the Environment Agency to undertake a wider assessment to confirm how this will impact river flows on both the North Tyne and River Tees and how actual flows could deviate from target flows and to link this in with a new AMP8 WINEP investigation and our Drought Plan. We envisage this work will conclude in 2024.

SoR Ref	EA Recommendation	EA Issue	EA Expectations	NW Response
EA3	**Recommendation 3:** Demonstrate that the uncertainties and risks are managed via adaptive planning. Clarify the assumptions made in the demand forecast for non-household growth on Teesside and demonstrate that the plan includes sufficient flexibility to manage uncertainty through adaptive pathways.	**Issue 3** Uncertainty in the demand forecast especially the non-household growth expected on Teesside WRPG S6.5	We would suggest that the company: • Clarify whether 17-18Ml/d refers to known future growth • Clarify whether an additional 25Ml/d is allocated for unknown but likely future growth • Clarify whether the 25Ml/d allowance has been included in the planning tables twice in error • Annotate Figure 63 to clearly set out the demand increases and start dates (Demand Forecast Technical Report, s6.1.2.4) • Clarify how the 25Ml/d allowance has been determined • Clarify whether the 25Ml/d 'unknown' growth allocation is an upper limit that could be supplied under the current plan (Yorkshire Water) plan references volumes over 50Ml/d require further investment), or whether greater volumes could be supported if further big industrial projects proceed • Clarify whether the degree of growth could be supported without the need for further measures • Clarify whether the company could adapt if demand grows more quickly than currently anticipated, setting out what actions would be required (including YWS transfer being delivered sooner than expected), what would be the triggers for intervention • Clarify whether any infrastructure or licence changes (such as installation of eel screens, power supplies, or bringing inactive sources into operation) will be needed to support growth at Teesside, including under the assumption of unknown growth >25Ml/d, when these would need to be implemented to support various degrees of growth, and how long such changes would take to implement/dates expected i.e. these should be stated as required in the plan • Clarify whether any such implementation can be delivered in good time	We continue to work closely with businesses on Teesside and specifically with Tees Works and Net Zero Teesside. We have updated the non-household demand forecast in our revised dWRMP24 to reflect business' latest forecasts which has resulted in an uplift in both potable and raw water demand. In order to supply the full quantity of raw water by 2028, new river intake eel screens will be required as well as a licence variation to revert licensed quantities back to their original levels. The licences were varied down to reflect what was a reduction in industrial raw water demand at the time. We envisage the eel screens can be operational by 2026 (two years earlier than needed) and the licence variations determined by late 2024 (one year earlier than needed). The Tees Cluster BIES group which the EA is leading provided updated information on Teesside development water consumption. We have also met regularly with Teesside Group which has provided updated information on the water use of businesses on their site. Using information provided by these two groups as well as contacts directly with customers on site and historic use of similar businesses from other sites we have formed a site-specific demand forecast for Teesside. This includes water use for construction, Business As Usual (BAU) operation and employee use. This site has ever-changing water consumption needs and we have included the latest requirements as of May 2023 in our revised draft plan. This has produced an increase to potable demand at Teesside of an average 28Ml/d compared to the information we had at draft plan. We have also updated the dWRMP24 (section 4.6) to address each of the following points. We confirm that: - the 17-18Ml/d in Kielder WRZ for potable demand refers to known future growth. This has been updated in our revised dWRMP24 and reflects the latest potable demands, particularly from Teesside. - our dWRMP24 non-potable demand forecast included an allowance of 25Ml/d for future unknown demand. However, we have removed this from our revised dWRMP24 as we have undertaken further modelling and have instead determined a maximum supply availability of 190Ml/d by 2028 in a 1 in 500 year scenario. This will require a new eel screen on the Low Worsall intake and a variation of two of our Tees abstraction licences. - We confirm we have annotated Figure 63 within the Demand Forecast Technical Report to show when demand increases and from which industry. - if Teesside demand were to exceed 190Ml/d, then this would cause a reduction in the Kielder Water Resource Zone deployable output, although by 2030 our final plan forecast supply headroom is 21.5Ml/d and so an increase in non-potable Teesside demand above 190Ml/d is possible. - if the Yorkshire Water transfer is needed earlier than 2040, then as outlined in Yorkshire Water's draft WRMP24, Riding Mill pumping station will need to be upgraded

SoR Ref	EA Recommendation	EA Issue	EA Expectations	NW Response
			- Change representation of available non-potable water supplies from current forecast to availability - Confirm 25Ml/d - future unknown growth	to include an additional pumping capacity and a new electricity supply as the current supply would be too small for any additional pumps. This is covered in Section 7.3 of the dWRMP24. - given the updated demand forecast and our representation of available non-potable water supplies, an adaptive pathway / programme is no longer required.

SoR Ref	EA Recommendation	EA Issue	EA Expectations	NW Response
EA4		**Issue 4** Adaptive planning and sensitivity testing approach requires clarification WRPG S10.8		**Section 9.2** of our dWRMP24 confirms that no adaptive pathways off our central preferred plan are required. This is because a supply surplus is maintained for each of the alternative supply and demand scenarios modelled, which includes Ofwat's common reference scenarios. We have not included any adaptive pathways in our revised dWRMP24 although we have presented alternative scenarios which include the 140Ml/d Kielder reservoir to United Utilities raw water transfer (see **Section 10.5**). Under this scenario, the Tees (NW) to York (Yorkshire Water) raw water transfer is then removed from our final plan because Kielder reservoir cannot support both. Otherwise, the dWRMP24 contains the same demand management options and does not include any new supply options. We have not considered an alternative scenario for: - a higher non-potable Teesside demand than that allowed for in our central (most likely) preferred plan. This is because we have updated our demand forecast to reflect Teesside business' latest demand forecasts and because we have concluded that we can supply up to 190Ml/d of non-potable water to Teesside; or - a final plan scenario where Yorkshire Water loses its Severn Trent Derwent Reservoir Transfer in 2035 thus meaning the Tees (NW) to York (YW) transfer is needed in 2040. This is because YW has already confirmed that the Tees to York transfer is now needed in 2040 (previously 2050).
EA5	**Recommendation 4:** Ensure the representation of the proposed transfer to Yorkshire Water is aligned with Yorkshire Water's draft WRMP and Water Resources North's regional plan. Provide full details of the transfer to Yorkshire Water in the plan.	**Issue 5** The proposed transfer to Yorkshire Water is not described adequately and does not align with the Yorkshire Water's and Water Resources North (WReN) plans. (See also improvement 11)		**Section 7.3** of our revised dWRMP24 has been updated to provide a more detailed description of the Tees to York [raw water] Transfer option. We have agreed with Yorkshire Water and WReN to include this scheme in our respective preferred final plans from 2040. In YW's draft WRMP24, the Tees to York Transfer was needed by 2050. Consequently, we had intended to have an adaptive pathway in our revised dWRMP24 to confirm the programme should the scheme have been needed earlier (i.e. in 2040). However, YW has confirmed that the scheme is now needed by 2040 and so there is no longer a need for have an early start adaptive pathway. Given the scheme is not needed until 2040, Yorkshire Water's preferred plan has a review point in 2027 and a change point in 2029. This is illustrated in **Section 8.3.1** of our revised dWRMP24. We will continue to work closely with Yorkshire Water and Water Resources North to confirm the transfer is the best value option and/or to refine the date the transfer is needed and will report this in our WRMP24 Annual Review.

SoR Ref	EA Recommendation	EA Issue	EA Expectations	NW Response
EA6		**Issue 6** Failure of Direction 3c level of service	The company must: • Clearly explain the assumptions used to estimate the risk of customer restrictions • Explain whether the measures in the plan change the levels of service through the planning period	We have updated **Section 2.4** of the dWRMP to: - provide additional explanation of the assumptions used to estimate the risk of customer restrictions - confirm that the measures in the dWRMP do not change our levels of service through the planning period; and - confirm that our planned levels of service apply to both potable and non-potable supplies. We have modelled 1 in 500 deployable output in our water resources system model called Aquator to assess the frequency of level of service implementation.
EA7		**Issue 7** Failure of Direction 3d Emissions		We have updated **Section 11.3** of our dWRMP24 to confirm our baseline greenhouse gas emissions and those of the options in the dWRMP24. We have restructured the section so that there is a sub-section for each of the clauses of the Water Resources Management Plan Direction 2022 as follows: (i) the emissions of greenhouse gases which are likely to arise as a result of each measure; (ii) how those greenhouse gas emissions will contribute individually and collectively to greenhouse gas emissions overall; (iii) steps we intends to take to reduce those greenhouse gas emissions and how they will support the delivery of our net zero greenhouse gas emissions commitment and that of the UK government. We will also signpost to the technical report where demand management option greenhouse gas emission information is presented.

SoR Ref	EA Recommendation	EA Issue	EA Expectations	NW Response
EA8		**Issue 8** Failure of Directions 3(f) and 3(h) Metering	The company must: 3(f) • Clearly set out proportion of smart meters to other meters • Clarify the terminology smart active, enabled, and capable. Refer to AMI and AMR, noting that AMR may or may not meet the definition of smart and ensuring clarity as to what is going on 3(h) • Provide a breakdown of the number of domestic premises with smart meters – clarify the description of the meter values provided in the planning tables (with respect to the example given) and the intentions of the smart metering programme (i.e. confirm whether smart by 2035 applies to all existing meters, all new meters going forward, or any sub-set of new meters) • Provide a breakdown of the number of domestic premises with meters that will not be charged by reference to volume	**Response to Direction 3 (f)** **Section 7.2.2** of the dWRMP24 presented our smart metering strategy for the Kielder and Berwick & Fowberry Water Resource Zones. We have updated this section to clearly set out: i) that all metered properties will have a smart meter by 2035; ii) the proportion of smart meters to other meters. From 2025, all of meters installed will be smart and will only be made active once the network is live. Therefore, 100% of newly installed meters will be smart and 0% will be basic/AMR (Automated Meter Reading) meters. iii) the definitions of smart active and capable meters as well as automated meter reading meters (AMR) and Advanced Metering Infrastructure (AMI). For clarity, these definitions are reproduced as follows: AMI meters are meters using advanced metering infrastructure (AMI) technology. This enables consumption data to be read remotely without having to directly access the meter or property for a manual reading. Consumption data is transferred to the company through an integrated system of smart meters, communications networks, and data management systems. AMI meters are split between AMI/smart capable and AMI/smart active. *AMI/smart capable meters are meters which are capable of acting as AMI meters but are not currently. This could be due to the meter being located in an area where the supporting infrastructure has not yet been installed, or where a reliable comms network cannot be established. It is assumed that such meters will be operating as AMR meters.* *AMI/smart active meters are meters which are acting as AMI meters.* *AMR meters are meters using automated meter reading technology. This enables consumption data to be read remotely without having to directly access the meter or property for a manual reading.* *Basic meters are meters that require manual reads of consumption data through direct access to the meter.* We have included a summary table which confirms the number of smart meters to non-smart meters for each year from 2025 to 2035 where all meters will be smart in 2035. We have also updated Section 7.2.2 to clarify the terminology "smart active and smart capable".

SoR Ref	EA Recommendation	EA Issue	EA Expectations	NW Response
EA9				**Response to Direction 3 (h)** We have updated **Section 7.2.2** of the revised draft WRMP to: i) Provide a breakdown of the number of domestic premises with smart meters and have clarified the description of the meter values provided in the planning tables (with respect to the example given) and the intentions of the smart metering programme (i.e. confirm whether smart by 2035 applies to all existing meters, all new meters going forward, or any sub-set of new meters); and ii) Provide a breakdown of the number of domestic premises with meters that will not be charged by reference to volume.
EA10		**Issue 9** Failure of Direction 3(m) Leakage	The company must: • Clarify throughout the plan any references to base year against which leakage reduction is being assessed • Review the delivery of the 50% reduction and either update the plan to achieve that target as intended, or provide an explanation for the shortfall or clarify why the company feels it is met	We have updated **Section 7.2.1** and **8.3.2** of the dWRMP to reflect the following: - we have recalculated leakage reductions against the 2017/18 baseline rather than against the three year average (2017/18, 2018/19, 2019/20); and - our leakage target is now a 55% (previously 50%) reduction in leakage by 2050. This means that our overall leakage reduction for Northumbrian Water Group (comprised Northumbrian Water and Essex & Suffolk Water) will be a 50% reduction by 2050, thus meeting the national target and Government expectations.
EA11	**Improvement 1:** Improve the assessment and reporting of outage, including improved understanding and analysis of outages on deployable output.	**Issue 10:** Sources and analysis of outage data and outage reporting	Improved outage reporting: The company has presented little evidence in support of its outage assessment within its report. For the Environment Agency to audit the outage assessment, the company will need to improve its reporting of outage, particularly where it has improved its data collation and analysis as described above	We have updated the Outage Allowance technical report which now contains a more detailed explanation of the methodology. We have signposted the reader to the technical report should they require a more detailed description than that in the dWRMP. **Section 3.8** of the dWRMP has been updated to include a more detailed description of the methodology and outage allowance. The outage assessment has been updated to include historic data from 2021-22, the revised outage allowance is 53.62Ml/d for the Kielder WRZ and 0.60Ml/d for the Berwick & Fowberry WRZ.

SoR Ref	EA Recommendation	EA Issue	EA Expectations	NW Response
EA12	**Improvement 2:** Ensure options appraisal and decision-making methodology is transparent and that the preferred options are justified socially, environmentally and economically.	**Issue 11** Decision-making methods are not clear.	Northumbrian Water have not clearly set out the method used to support the decision-making process for the preferred (best value) plan. There is also no clear evidence of any metrics used for the best value plan (BVP) which is typically important for the development of a WRMP. If basing metrics on those derived via WReN, this should be clearly explained along with details of the metrics used in decision-making. A best value plan has been developed using the best practice decision-making process involving EBSD cost modelling and multi-criteria assessment, but the plan does not explain this process. Stating that a process has been followed doesn't provide the evidence for an understanding of the process nor give the customer an opportunity to follow the process. To ensure that the selection of options is sensible, sensitivity testing to different planning assumptions was undertaken. There were no supply deficits caused by any of the scenarios which has been taken by NWL as confirming confidence in the best value plan selected. However, the decision to limit testing to Ofwat common reference scenarios rather than use further plausible scenarios has not been adequately explained (e.g. to optimise timing of options). (See also Recommendation 3).	We have updated **Section 8.2** in our revised dWRMP24 to provide additional detail on decision making processes (including objectives and metrics) against which we have assessed our preferred final plan. The results of this assessment are presented in Section 8.5 and in a technical report entitled "Environmental Best Value Plan Assessment of Northumbrian Water Demand Management Options". We have taken an iterative process in developing our final preferred plan. We have: i) developed a baseline supply demand balance for both our water resource zones; ii) identified demand management options and corresponding demand savings to meet government expectations and the following national targets: - 50% reduction in leakage by 2050; - 110l/head/d PCC by 2050; and - 9% reduction in non-household demand by 2038 and 15% reduction by 2050. For our dWRMP24, once the demand management option savings were applied to our final plan Distribution Input forecast, a supply surplus was maintained in Berwick & Fowberry Water Resource Zone and restored in Kielder zone. Consequently, no supply side options were needed for the Kielder zone. A precautionary options appraisal was undertaken for the Berwick & Fowberry zone because prior to publishing our dWRMP24 WINEP outcomes may have resulted in a supply deficit. However, ultimately, this was not the case. The position remains the same for our revised dWRMP24 which also reports a baseline surplus for the Berwick & Fowberry Water Resource Zone and a baseline deficit for the Kielder Water Resource Zone, but with central demand management options restoring a supply surplus in the Kielder Water Resource Zone in Year 1. We have considered an alternative scenario in Section 10.5 of the dWRMP whereby the Kielder reservoir to United Utilities transfer is included in our final plan which results in the Tees to York Transfer being excluded.

SoR Ref	EA Recommendation	EA Issue	EA Expectations	NW Response
EA13		**Issue 12** Options appraisal process is not clear	All unconstrained options were removed from the resubmitted planning tables (v4), but the reasoning is not clear. This is not ideal as this leaves a very short list of options and it is not clear what options have been considered and ruled out. These tables should contain the unconstrained list of options considered to demonstrate which options the company has considered to derive its plan. There is limited justification given for the timing or scale of options. For example, the reduction of leakage is a steady linear decrease across the planning period. There appears to have been no consideration given to either front loading reductions or deferring the start of leakage measures to investigate impact on cost/value. There is no evidence to suggest that NWL have investigated potential to go further than the 50% reduction required by policy targets. The plan itself notes in the options appraisal and leakage technical report (p10) that the company should try to go beyond the targets but there is no such scenario described.	In the revised dWRMP24 the tables now contain all unconstrained options in Table 4. We have considered an alternative scenario whereby we defer 25% of the AMP8 smart metering programme to AMP9 (see Section 10.6). While this would still allow us to meet the interim PCC target of 122l/head/day by 2037/38, we have discounted it as a feasible option in favour of our smart metering preferred plan which is based on a linear delivery profile (i.e. split equally across AMP8 and 9). This is because a linear profile: i) reduces deliverability risks allowing us to recruit and maintain teams across a ten year period as well as reducing meter and smart network procurement risks. For example, in AMP7 the shortage of microchips has slowed delivery of our smart metering programme; and ii) provides greater flexibility if other demand management options under-perform or non-household growth is larger than expected. We have updated our preferred plan (See Section 8.3.2) to include a programme to reduce leakage by 55% by 2050, 5% higher than the 50% reduction by 2050 in our dWRMP. We believe that this ambitious target is achievable but from a deliverability perspective, given the wider PR24 investment programme, only as a linear programme. Additionally, there is no driver to front-end load the programme as the linear programme still means we will have a 1 in 500 year supply surplus by the end of year 1. We would not want a slower demand management programme than the linear programme as we do need to deliver demand savings in year 1 to eliminate the baseline supply deficit.

SoR Ref	EA Recommendation	EA Issue	EA Expectations	NW Response
EA14		**Issue 13** Options to reduce large treatment works and operational use losses (TWLOU) were not adequately considered/explained	Treatment works and operational use losses in Berwick and Fowberry zone are very large compared to the resources available in this zone. 2.11Ml/d losses equate to 29% of distribution input in 2025/26, rising to 33% in 2049/50. Options appraisal for Berwick and Fowberry screened out increasing efficiency via reduction of treatment works losses at the generic screening stage due to the assumption that sites are already optimised to be compliant with Drinking Water Inspectorate (DWI) requirements (OA report, s3.2, Table 3-2). We would like to understand the DWI requirements justification better to be confident that this option was given sufficient attention. Given the recent assessment of sustainability of these licences, losses of raw water abstracted of such a high volume seems an unnecessary risk to these licences in terms of meeting supply and protecting the environment.	We maintain a supply surplus in the Berwick & Fowberry Water Resource Zone and so an options appraisal is not needed. However, we acknowledge that the level of raw water losses within the Berwick & Fowberry WRZ are high compared to DI, albeit it should be noted that system modelling confirms that the impact on WAFU of these losses is 0.70Ml/d. Consequently, given the environmental sensitivity of our Berwick & Fowberry WRZ abstractions we are committed to the following investigations in the Berwick & Fowberry WRZ: - Investigate raw water leakage, focusing on find and fix; and - Investigate if there are “gentleman agreements” with local farmers to provide them with a small supply of raw water, and if so get these measured and recorded as non-potable supply. **Section 3.9** of the dWRMP24 has been updated to reflect the above commitment.

SoR Ref	EA Recommendation	EA Issue	EA Expectations	NW Response
EA15		**Issue 14** Carbon assessment is poor. Guidance has not been followed correctly, several aspects have not been considered, or evidence has not been presented.	There is no evidence of carbon costs being calculated for all options. (Planning table 4). It is not clear if or how the whole life carbon assessment has been conducted and whether any framework was being followed. There are no obvious mention of PAS 2080 or any other methodologies. Total tonnes of operational and capital carbon were not presented for all options. (Planning table 4). As metrics have not been presented adequately, it cannot be seen if there is consideration of carbon in the decision-making. Carbon has not been considered as a criterion for selecting the best value plan. The least cost plan has been chosen without considering criteria such as carbon or other environmental or social benefits. There is no consideration of uncertainty in carbon assessments. For proper calculation of carbon emissions, any uncertainties in the data should be considered. It has been stated that climate factors have been considered in the SEA but it is not clear if carbon impact has been included.	We have updated **Section 11.3** of our revised dWRMP24 to confirm our baseline greenhouse gas emissions and those of the options in our final plans. We have restructured the section so that there is a sub-section for each of the clauses of the Water Resources Management Plan Direction 2022 as follows: (i) the emissions of greenhouse gases which are likely to arise as a result of each measure; (ii) how those greenhouse gas emissions will contribute individually and collectively to its greenhouse gas emissions overall; (iii) steps we intends to take to reduce those greenhouse gas emissions and how they will support the delivery of our net zero greenhouse gas emissions commitment and that of the UK government We will also signpost to the technical report where demand management option greenhouse gas emission information is presented.
EA16	**Improvement 3:** Publish an improved Strategic Environmental Assessment (SEA) that links clearly with the WRMP, showing the environment is protected.	**Issue 15** SEA Environmental Report lacks clarity with the result that there are several potential issues regarding its effectiveness and compliance with the SEA Regulations		Section 10.1 of the dWRMP24 referenced a separate Environmental Report. As we did not present any supply side options in our dWRMP24, our Environmental Report focused on our proposed package of Demand Management Options (DMOs) and the proposed transfer export to Yorkshire Water. For the revised dWRMP24, the Environmental Report has been reviewed in line with this comment and recommendations and updates have been made where feasible. For the revised dWRMP24 more detail has been added to summary sections in the Environmental Report detailing how, during the operational phase, the DMOs are largely positive and there are no residual moderate or major effects. Additionally, more detail on the proposals and Strategic Environmental Assessment (SEA) outcomes has been added into Section 11.1 of the main revised dWRMP24 itself. A separate Technical Report

SoR Ref	EA Recommendation	EA Issue	EA Expectations	NW Response
				covers the Best Value Planning process specific for the NW DMOs, and how this links to the SEA/Integrated Environmental Assessment (IEA) process.
EA17	**Improvement 4:** Ensure the sustainability of abstractions is adequately accounted for in the plan.	**Issue 16** There are some potential sustainability changes and WINEP outcomes not clearly reflected in the plan.	The sustainability reductions already considered through AMP7 (i.e. Berwick groundwater sources) are reflected in the plan. Other licence reductions have also been identified within the plan – e.g. potential for surrender of unused licences as given in Table 7. However, there are sustainability concerns with other sites which have not been referenced.	We have updated **Section 3.4** to provide further information on other sites where the Environment Agency has raised further sustainability concerns. These include abstractions from the River Coquet, Broken Scar borehole and Birchtrees spring supply.
EA18		**Issue 17** The plan does not fully assess the impact of increased abstraction at existing locations, particularly for the transfer to Yorkshire Water and response to Teesside growth, and demonstrate that it will not cause deterioration to WFD waterbody status. (See Recommendation 4 and Improvement 3)	The plan implies that the Tyne Tees Transfer Tunnel is sufficient mitigation for any issues that may occur on the Kielder supported Tees, Tyne and Wear system in the future. However, we assume that this would rely on extended use of releases from both Kielder reservoir and the tunnel. There are some questions regarding whether/to what degree extended use of Kielder is sustainable (including the carbon impact of pumping at Riding Mill).	The additional Teesside demand may increase the frequency that support for the River Tees from Kielder will be required. We have agreed with the Environment Agency to undertake a wider assessment to confirm how this will impact river flows on both the North Tyne and River Tees and how actual flows could deviate from target flows. We will link this assessment with a similar assessment for our Drought Plan and if possible, with a new AMP8 WINEP investigation.

SoR Ref	EA Recommendation	EA Issue	EA Expectations	NW Response
EA19	**Improvement 5:** Ensure the plan is meeting government expectations for leakage, per capita consumption and non-household demand reduction. Demonstrate how the company is planning to achieve government's per capita consumption target of 110 l/h/d by 2050, and 50% leakage reduction by 2050 using the 2017/18 baseline. Include additional options to reduce non-household consumption and contribute to the Environment Act 2037/38 water demand target	**Issue 18** The plan does not meet the government target for Per Capita Consumption (PCC) of 110 litres/head/day by 2050.	The company states in s8.7.7 that 'The selected demand management options for our final preferred plan have ensured we meet this target. By 2050/51 the average PCC for NW is 107.26 l/hd/d'. However, this does not align with the information presented in the planning tables which has 110.3l/h/d in 2050/51 which does not quite achieve the government target. Note that 'by 2050' in the target refers to 2049/50 (in the dry year annual average final planning scenario). The PCC value provided in the tables for that year is 111.3l/h/d, again not achieving the government target.	We have updated **Section 7** of our dWRMP24 main report and tables. The updated dWRMP24 reaches the government target for a dry year PCC of 110 litres/head/day by 2049/50 with NW PCC reaching 107 l/hd/d in a NYAA scenario and 110 l/hd/d in a DYAA scenario. The dWRMP24 tables and planning tables have been checked to ensure they align.

SoR Ref	EA Recommendation	EA Issue	EA Expectations	NW Response
EA20		**Issue 19** The plan does not meet the government target of 50% leakage reduction from 2017/18 levels by 2050.	The plan states that the preferred option for leakage is a 50% reduction by 2050 (main report s8.7.4). However, the leakage reduction presented is 49% and therefore does not quite achieve the 50% reduction set out by government targets. Some of the figures provided for leakage values do not align, and some of the base year values are not consistent throughout the plan. Issues identified include: • The base year should be from 2017-18 baseline within Ofwat performance commitment data, but the year used in the plan is not referenced consistently throughout • The 2017/18 baseline leakage data provided by Ofwat (based on company reporting in 2022) is 135.8Ml/d for NWL. NWL's plan states base year value is 134.8Ml/d (leakage technical report p10, table section 3) • According to the planning tables final plan leakage is 69.29Ml/d in 2049/50, however the value used in the leakage technical report under 50% scenario is 67.4Ml/d • The 69.29Ml/d final plan leakage (planning tables) represents a reduction of 49% against base year, regardless of whether NWL or Ofwat's value is used.	Please refer to our response to Issue 9. The data tables and dWRMP24 main report have been updated to reflect the changes.

SoR Ref	EA Recommendation	EA Issue	EA Expectations	NW Response
EA21		**Issue 20** The plan does not reference the government target to reduce potable non-household demand 9% by 2037/38.	There is no NHH water efficiency programme in place. The company forecast a 17.4% increase in potable NHH consumption by 2037/38 from 2019/20 levels. The company's draft plan currently includes a substantial increase in non-household consumption. We expect all companies to reduce NHH consumption and contribute to a 9% reduction by 2037/38 as part of the Environment Act target or justify why this not possible.	Our Non-Household (NHH) demand reduction strategy was not developed in time for inclusion in our dWRMP24. However, we have now formed a comprehensive strategy, having liaised with other water companies to learn from their experience and ensure regional alignment. The NHH demand reduction strategy is now outlined in **Section 7.3.2** of our revised dWRMP24 and allowed for in our final plan supply demand balance. Our NHH water efficiency strategy will deliver a 9% reduction in the demand of existing NHHs by 2038 from a 2019/20 baseline. This has been included in our final plan demand forecast. We will work collaboratively with retailers, local planning authorities and the Environment Agency to achieve this target as we will not be able to deliver this alone. The water demand associated with growth (i.e. new NHHs) will not be accounted for as we do not have the confidence that this can be achieved with the high levels of Non-household demand growth in this period. We suggest that Local Planning Authorities and the Environment Agency both have a role to play through development control and environmental permitting to ensure that new development / new permitted processes are water efficient from the start. Interventions associated with our NHH demand reduction strategy include Water Efficiency Solutions for Domestic and Mixed Use, Consultancy for Industry, Infrastructure and Leak Investigation, and Information Provision. Full details can be found in the Water Efficiency Technical Report

SoR Ref	EA Recommendation	EA Issue	EA Expectations	NW Response
EA22	**Improvement 6:** Provide clarity on the proposed metering strategy by setting out the metering approach, how it will be monitored and mitigation the company will put in place if the measures are not being delivered as expected.	**Issue 21** Ensure the metering measures to be adopted are clearly explained.	The metering plan is not easy to understand. Timing of the metering programme requires clarification. At various points the plan references the preferred option being smart by both 2030 and 2035. The metering plan for Berwick and Fowberry requires clarification. The plan refers to the chosen option 5 being identical to option 4 – however option 4 only references the Kielder zone. There is limited information provided on number of installations of meters in order to give a sense of the likely deliverability. Metering technical report s4.2.2 notes that some metering options are very ambitious (over 2,000 meter installs/replacements per week in the Kielder zone) but figures for the chosen option and the Berwick & Fowberry zone are not clear. The main report would benefit from this information. It would also be beneficial to explain the risks in the deliverability of the metering programme and how these may be monitored plus the plan for mitigating them. The extent of where the whole metering area (WAM) will apply isn't easy to follow. Nor is the expected uptake through optants and the implementation of smart metering. While a lot of references are made to these things it is difficult to unpick the actual approach and delivery from a customer perspective. The relatively low level of meter penetration is also not particularly ambitious.	We have updated **Section 7.2.2** of the revised dWRMP24 to: - improve the description of our metering strategy, particularly in our Berwick & Fowberry Water Resource Zone; - include summary tables confirming the numbers of meters installed per year; and - explain risks associated with delivery of the metering programme, how we will track delivery and how we will mitigate risk and lagging delivery. To confirm, our strategy is an Enhanced Optant strategy which means a customer will need to contact NW and request (Opt) for a smart meter and to be billed based on the amount of water they use. The enhanced element is that we will actively encourage customers to move to a metered supply through direct communications. In addition, we will commence a 'whole area metering' programme in places where we will install smart meters in existing boundary boxes. The customer will not automatically be charged by the meter, but will be given comparison bills to enable them to decide whether a measured tariff would be beneficial to them. Our strategy is to: - replace all existing basic/AMR household and non-household meters with smart meters by 2035 (this is now consistent in all reports); and - with immediate effect, install a smart meter where a currently unmeasured customer requests (opts) to move to a metered supply and to be billed on the quantity of water that they use. It should be noted that while a smart meter will be installed, the smart capability may not be switched on until a later date when the communications network goes live. The date that this happens will be area specific. We have updated the description of metering options 4 and 5 and have clarified the differences between the two. The only difference is the timing of when fully smart metering is to be delivered by; option 4 is to have fully smart metering by 2035, whilst Option 5 is at an accelerated rate and would see fully smart metering by 2030. We have clarified where the Whole Area Metering (WAM) approach will be applied. This is on unmeasured premises that have an existing boundary box in place. We will target areas where the smart communications are live first.

SoR Ref	EA Recommendation	EA Issue	EA Expectations	NW Response
EA23	**Improvement 7:** Assure the deliverability of demand management measures in the plan. Set out clear alternative options should the pace of these demand reductions be slower than expected.	**Issue 22** The plan relies on demand management to maintain a positive SDB. The demand savings required to meet government policy targets are substantial. It is therefore essential the company works hard to achieve these savings. However, there remain concerns with deliverability especially as the assumed starting position for the planning period will be difficult to achieve.	The baseline demand forecast assumes that WRMP19 targets for leakage and PCC will be met by 31 March 2025 (main plan s1.6.2). This assumption is required according to planning guidelines but appears to be unlikely to be achievable given that currently PCC is 20l/h/d over forecast and the existing metering programme is behind and unlikely to recover to the forecast levels due to Covid19 (based on Annual Review 2022).	The Berwick & Fowberry Water Resource Zone (WRZ) has a baseline supply surplus and while demand management options are needed to meet national targets for leakage and demand reduction, they are not needed to maintain a positive supply demand balance. Conversely, the Kielder WRZ has a baseline supply deficit. However, the central demand management options in our preferred final plan result in a final plan supply surplus at the end of Year 1 of AMP8. Consequently, we remain confident that there is not a significant risk to maintaining a positive supply demand balance. We have also undertaken stress testing (see **Section 9**), and this has concluded that under different demand scenarios a positive supply demand balance is still maintained. The impact of the Covid-19 pandemic, the associated measures to reduce transmission, and hybrid working have resulted in PCC out-turning higher than was forecast in our WRMP19. It is now unlikely that we will meet our 2024/25 PCC target although we have set out a clear action plan for leakage reduction, metering and water efficiency for the remainder of AMP7 and will report performance in our WRMP19 Annual Review. There are only a finite number of option types that will allow us to bring PCC down in AMP8 and beyond and we have included these in our preferred final plan. As noted by the Environment Agency, we will work hard to achieve these savings. We have updated our household smart metering strategy (see **Section 7.2.3**) and are working to ensure we achieve this. We have recruited additional resource to support installation activity, changed our organisational design to optimise resource availability, and partnered with external suppliers to allow rapid acceleration of installation activity. We will be rolling out the smart communications network across our area of supply over the next two years and, in addition to directly engaging with customers who could benefit most from moving to a metered bill, we are taking a holistic approach to demand reduction, coordinating smart meter installations on a DMA by DMA basis, carrying out whole-community engagement projects alongside targeted water efficiency education, and interventions. DMOs are the only available options to achieve leakage reduction and PCC targets. However, from a security of supply perspective, Berwick & Fowberry Water Resource Zone is already in surplus and Kielder zone returns to surplus in early AMP8. Consequently, we do not consider that alternative measures are required but will ensure our delivery programmes are sufficiently resourced to meet them.

SoR Ref	EA Recommendation	EA Issue	EA Expectations	NW Response
EA24	**Improvement 8:** Improve the approach used for accounting for climate change impacts to include further evidence and justification.	**Issue 24** The approach to assessing and presenting information about the climate change impacts on its sources and supply forecast lacks evidence and justification in places.		We have updated **Section 7** of our Supply Forecast technical report to describe the vulnerability assessment, to provide more information on UKCP18 and on the modelling carried out. We have signposted in the dWRMP24 to the technical report.
EA25	**Improvement 9:** Review resilience in the context of the 2022 drought.	**Issue 25** The company should learn from any issues the company experienced.	The drought of 2022 challenged most companies and was one of the most significant droughts of recent times. The drought saw very high demands and highlighted some areas where resilience needs to be improved. The company should learn from any issues the company experienced. NWL should provide a new section in its statement of response and/or revised draft plan which covers any issues identified. The company should refer to the updated water resources planning guideline for a list of areas should be considered. For example, the company proposed a potential drought option and also experienced issues with reservoir control rule compliance.	We have included a review of the 2022 drought and lessons learnt in a separate Technical Report entitled 'Lessons learned from Drought 2022'. This will be submitted with our revised dWRMP24. However, we did not report any issues relating to drought in 2022 with our supplies remaining resilient. Nevertheless, we have reviewed the lessons learnt from post-drought industry workshops and will apply these in future dry weather / drought.
EA26	**Improvement 10:** Ensure that transfers are clearly set out to ensure security of supply is transparent and improve representation of other appointees in the plan	**Issue 26** Potable water transfers / bulk supplies are not clearly explained or represented in the planning tables	The Environment Agency has reviewed the completeness and consistency of baseline transfers presented in draft WRMPs. We expect these to be presented accurately and consistently in final WRMPs and will cross-check relevant WRMPs to ensure that these are presented correctly, and that resultant supply-demand balance is accurate.	We have reviewed the potable water transfers / bulk supplies and we believe they are clearly represented in the planning tables. Consequently, no changes have been made to this part of the dWRMP24. Detailed information on the NAVs and other Bulk Exports can be found in **section 6.3 and 9.3** on the Demand Forecast Technical Report.

SoR Ref	EA Recommendation	EA Issue	EA Expectations	NW Response
EA27		**Issue 27** There is limited reference to existing and/or potential New Appointees and Variations (NAVS) within the company plan	- NAVS should also have 50% leakage reduction - NAVS import need to align with our exports - need to provide a summary table	We have aligned our exports with the forecast demand from our NAVs and ensured they have reasonable targets for their leakage reductions.

SoR Ref	EA Recommendation	EA Issue	EA Expectations	NW Response
EA28	**Improvement 11:** Clarify levels of service so that they are clear to customers.	**Issue 28** Levels of service require clarification (See also Recommendation 5)	Planned vs actual level of service: The supply forecast technical report s4 indicates both planned and actual levels of service but there is no discussion to explain the distinction between the two. Actual level of service for implementation of level 1 actions is 1 in 10 years, planned level of service is 1 in 20 years. It is not clear why the poorer actual level of service is implemented more frequently than planned and whether this is acceptable. **Level 4 restrictions**: Main report s2.5 and supply forecast technical report s4 indicate that Level 4 restrictions will only result in pressure reduction. Rota cuts and standpipes do not appear in the list of planned actions though they are acknowledged as example actions in the general categorisation table. It is not explained why these actions are not part of NWL's planned service level. This should be added to explain the actions likely to appear in the drought plan. **Non-potable system:** It is not clear whether levels of service quoted apply to both for the non-potable system and potable supplies. As the two systems are largely independent this should be made clear. It is expected that restrictions on non-potable supplies might be different. In which case this should be clearly explained so that customers can see the risk to supplies.	**Section 2.4** of the revised dWRMP24 has been updated to show our actual levels of service. The PR24 'planned' levels of service for our customers are as follows: Restriction Frequency of restriction Annual chance of restriction Level 1: Appeal for restraint 1 in 20 years 5% probability in any one year Level 2: Phase 1 Temporary Use Ban 1 in 150 years 0.66% probability in any one year Level 3: Phase 2 Drought Order Ban 1 in 200 years 0.5% probability in any one year Level 4: Pressure Reduction 1 in 500 years 0.2% probability in any one year Our actual levels of service, as modelled in Aquator XV, based on a DO that is achievable 99.8% of the time (i.e. we are unable to supply this level of demand, on average, one in every 500 years) are as follows. These levels of service apply for both the Kielder WRZ (including the Industrial Supply Zone) and the Berwick & Fowberry WRZ: Restriction Frequency of restriction Annual chance of restriction: Level 1: Appeal for restraint 1 in 10 years 10% probability in any one year Level 2: Phase 1 Temporary Use Ban 1 in 203 years 0.49% probability in any one year Level 3: Phase 2 Drought Order Ban 1 in 387 years 0.25% probability in any one year Level 4: Pressure Reduction 1 in 500 years 0.2% probability in any one year

SoR Ref	EA Recommendation	EA Issue	EA Expectations	NW Response
EA29	**Improvement 12:** Improve the quality of submitted data and documents.	**Issue 29** Data tables	Several parts of the data tables were not completed correctly or were left blank. Where applicable, specific issues have been raised where they relate to a specific recommendation or improvement. Some are also listed with the minor comments. The main outstanding points for NWL to include are: **Planning table 1:** Table 1 does not provide the required information as follows:• It appears that some licences are not included (e.g. 1/25/02/127, 1/25/02/109, 1/23/04/001, + several others) • Grouped licences used conjunctively are not presented clearly in table 1b • Unused licences are mentioned in the narrative but do not appear in table 1c• Tables 1d & 1e are left blank but it is not clear whether this is intentional – include N/A to avoid doubt • Transfers (raw and potable) are not presented in Table 1f & 1g – see also improvement 11.) **Drought measures:** Drought measures are not presented as options in table 5 providing DYAA benefit.	To address the points in this response, our revised dWRMP24 planning tables have been updated as follows: - Table 1 has been updated to include all licences - Grouped licences used conjunctively have been more clearly presented in table 1b - Unused licences have been included in table 1c - Tables 1d & 1e have had N/A inserted rather than being left blank - Transfers (raw and potable) have been presented in Table 1f & 1g - Drought measures have been presented as options in Table 5 providing DYAA benefit.

SoR Ref	EA Recommendation	EA Issue	EA Expectations	NW Response
EA30		**Issue 30** Report and technical documents	The bulk of technical details have been removed to appendices reflecting advice for WRMP19 which is welcomed, however the integration of those technical reports into the main report is limited with little to no referencing to guide the reader to more detailed information. As a result, the overall narrative is fractured and lacking coherence in places and it becomes difficult to understand the conclusions drawn. Several sections would benefit from basic discussion of methods and reasons for decisions, and more interpretation of what figures and/or results would be beneficial. The company must bear in mind that this document should allow a lay reader to have a meaningful understanding of the plan, such that they can comment on it if they wish. There is a lack of consistency between documents (main report and its technical reports, and the planning tables).	We have updated the dWRMP24 so that technical reports are referenced at appropriate points within each section. We have also updated sections to provide further discussion of methods and reasons for decisions, most notably regarding the decision making process and the justification for our preferred final plan.

SoR Ref	EA Recommendation	EA Issue	EA Expectations	NW Response
EA31	Minor Issues	**Issue 31** Assessment of Natural Capital assessment (NCA) & Biodiversity Net Gain assessment (BNG)	The main report states that, in reference to the NCA (and other environmental assessments undertaken for the 'feasible supply options'), 'we have used these assessments to aid our decision-making on options development and the selection of preferred options'. NWL have submitted zero natural capital assessments (NCAs) within their dWRMP due to the absence of supply side options within their submitted draft plan. This is in line with Section 8.3, point L of the WRPG guidance. This absence of requirement for supply side options was driven by the NWL supply / demand equation, rather than the influence of potential environmental impacts. A more accurate statement appears to be that the NCA did not impact decision-making due to the supply demand equation for NW. No BNG results are presented at the option, programme or plan level. This may be in direct conflict with the WRPG guidance, (section 8), which states that 'an assessment of the contribution of the option to the conservation and enhancement of biodiversity and a high level assessment of biodiversity net gain (if the options require planning permission). It is noted that Biodiversity is included within the SEA metrics, and therefore this may be suitable for this case. Biodiversity has been included within the SEA reporting, however there is no evidence biodiversity net gain assessments have taken place as the reporting within the SEA is directional (up, down) rather than an assessment of magnitude of impact or potential mitigations using the Biodiversity Metric.	We have updated section 11.1 of the main report (Integrated Environmental Assessment) to reflect that although we present the environmental assessments for our DMOs and potential supply side options in a separate Environmental Report, due to our supply demand position only the Strategic Environmental Assessment (SEA) for our DMOs are relevant to our preferred plan. The environmental assessments completed on potential supply side options are presented for information only and have not contributed to decision making. We have also clarified that as our DMOs are not associated with changes in land-use, do not have a physical footprint and do not require planning permission, the completion of Habitats Regulations Assessments (HRA), Water Framework Directive (WFD) assessments, Biodiversity Net Gain (BNG) assessments, Natural Capital (NC) assessments and Invasive Non-Native Species (INNS) assessments are not relevant for these options. In our Environmental Report we have reviewed the wording regarding scoping out of BNG and NC assessments to make it clearer why discipline-specific assessments haven't been taken forward and we have updated the methodology with clearer wording to explain why these have been scoped out.

SoR Ref	EA Recommendation	EA Issue	EA Expectations	NW Response
EA32		**Issue 32** Problem characterisation presentation and level of detail	There is outdated text on problem characterisation suggesting a copy/paste from WRMP19 rather than a new assessment. We might expect revisions based on deficits in Kielder zones.	The Problem Characterisation was carried out in 2020 to allow, as per the guidance, the development of a proportional response in terms of the effort and cost devoted to adopting the selected decision making tool. As such the problem characterisation was undertaken using the WRMP19 results to inform the level of complexity and relevant modelling method for WRMP24, either 'conventional', resilience tested' or 'fully risk based' assessment. However, the WRMP24 guidance indicated that we must follow a 'fully risk based' approach to supply modelling using stochastically generated data sets to explore the yield response to drought severity. So even with the baseline deficit in the Kielder WRZ, we have still undertaken our supply and demand forecasts using the more robust methodologies.
EA33		**Issue 33** Text refers to ESW rather than NWL	Section 10.2.2 of the Demand Forecast Technical Report refers to average distribution input (DI) of (ESW) rather than NW, though figures given do appear to reflect DI for NW.	We have updated Section 10.2.2 of the Demand Forecast Technical Report to state NW rather than ESW.
EA34		**Issue 34** Further work on internal metering policy	Current NWL policy is to install a meter internally if there is not a boundary box already in situ. The plan notes access constraints and limitations these places on identification of supply pipe leakage which negates some of the benefit of the introduction of smart active meters. It is not clear how many meters this may affect (how many properties may not have boundary boxes in-situ), we agree that the company should undertake further work to ensure make the most of the smart metering programme.	We have updated our revised dWRMP24 and are now proposing to go with an external first location if no boundary box is currently in situ rather than going for an internal location first. However, we recognise that in ~26% of cases an internal install will still be required.

SoR Ref	EA Recommendation	EA Issue	EA Expectations	NW Response
EA35		**Issue 35** Impact of Treatment Works Losses and Operational Use (TWLOU) on deployable output	Representation of TWLOU in the planning tables and whether they impact on deployable output is unclear due to a discrepancy between the main report and the raw water & Process losses technical report. Main report s3.8.3 states 'Where raw water or process losses have the potential to restrict the amount of water that a WTW can supply, this volume is entered into line 7.6BL of the tables'. The Raw water & Process losses technical report states that 'Where raw water or process losses have the potential to restrict the amount of water that a WTW can supply, this volume is deducted directly from the WRZ DO prior to being entered into the tables'. (Our bold)The atypical approach to reporting losses, while acceptable, presents a risk of reporting issues and misinterpretation of what data is showing. We emphasise the importance of clear explanation.	Section 3.9 of the dWRMP24 has been updated to reflect the revised Raw Water & Process Losses technical report. To account for raw water losses we have, where they have the potential to restrict the amount of water that a WTW can supply, entered this volume into line 7.6BL of the tables. .
EA36		**Issue 36** Climate change assessment findings	Berwick and Fowberry – very little climate change impact has been calculated. This is surprising given that our understanding of predicted climate change impacts suggest they are most significant within the Till and Tweed catchment.	The Fell Sandstone model was built for us by British Geological Survey (BGS) as part of a commission to conceptualise and model the Fell Sandstone aquifer, jointly funded by us the Environment Agency. The rainfall/PET scenarios were developed by Atkins. Inspecting the model's code, BGS have assigned the Murton Crags a horizontal hydraulic conductivity of 2.5 while the Peel Knowe has only 0.75 - this may explain why Murton (MCe) and Thornton Mains (MCe) appear to have quite large responses to drought and climate change whereas Thornton Bog (PKe) changes little.
EA37		**Issue 37** Some references to WINEP investigations are misleading.	There are multiple references to Berwick and Fowberry AMP7 WINEP investigations – these were actually AMP6 investigations with an extension and implementation in AMP7.	We have updated the groundwater deployable output technical report to accurately show that the sustainability investigations originated in AMP6 and were extended with Environment Agency permission into AMP7.

SoR Ref	EA Recommendation	EA Issue	EA Expectations	NW Response
EA38		**Issue 38** Data assurance and alignment with narrative	In some locations, the data in planning tables does not align with the data in tables. For example, total raw water and process losses figures provided in the main report, s3.8.4 do not match the values provided in the planning tables. Table 2c on metering does not reflect the narrative as not populated correctly. The main report s7.2.2 refers to the preferred metering option as option 5. However, the planning tables (table 5) refer to option 2.	We have reviewed all report tables against the data in planning tables to ensure they all align. To clarify, there was an error in the dWRMP24 main report where we referred to option 5 being the chosen demand management option for metering. However, we have corrected this in the revised dWRMP24 to say that option 2 is the chosen demand management option for metering in the NW region. Total raw water and process losses data now aligns with the revised dWRMP24 planning tables.
EA39		**Issue 39** Population forecast	There is an unusual dip in the new properties forecast between years 2046- 2052	We have followed the Water Resources Planning Guideline and associated methodologies in developing our property forecast. The dip in housing growth between 2046 and 2052 is due to the following factors: i) Local Plans are at different stages of development and completeness. There is limited consistency of timing or content of Council Local Plan publications and data. While some areas have plan data for 5 years, others for up to 15 years, the majority of Local Plan housing growth is weighted more heavily towards the short-term horizon. It has been necessary to fill the data gaps required for the WRMP 2100 planning horizon using trend scenario evidence to estimate housing growth for the period after which plan data expires. These factors are reflected in the shape of the growth curves associated with the Housing-Plan scenarios. ii) All LPAs are required to produce a trajectory of expected housing delivery over a plan period, with the anticipated rate of development for specific sites (where appropriate). Housing trajectories are often published as part of the Local Plan and are updated annually in monitoring/land supply reports. iii) The household model uses a combination of household representative rates, communal population statistics and a dwelling vacancy rate to estimate the household and dwelling (property) implication of each population growth trajectory. Growth scenarios for 2050–2100 are underpinned by fertility, mortality and migration assumptions from the ONS 2018-based NPP. A key component of any housing-led scenario is the average ‘occupancy’ associated with the changing housing stock. The general ‘ageing’ of the UK population results in a reduction in average household size, with the older population typically having smaller household sizes compared to the younger population. Since the financial crash of 2007/08, a counter trend brought about by both financial constraints and a mismatch between demand and supply of new homes, has seen a reduction in the speed at which young adults are able to form new

SoR Ref	EA Recommendation	EA Issue	EA Expectations	NW Response
				households, resulting in a dampening of the rate of occupancy reduction. These factors are considered in the housing-led scenario analysis. Section 4.2 has been updated in the Demand Forecast technical report to explain this.

SoR Ref	Consultee	Consultee Response	NW Response
40	Ofwat	Quantify and justify any changes in water needs between the end point of WRMP19 and the starting point for WRMP24. This includes explaining any change in the context of whether PR19 schemes and performance targets are being delivered and achieved as planned	The difference between our WRMP19 Distribution Input and dWRMP24 baseline Distribution Input forecasts is due to PCC remaining above our 2024/25 target, which is largely due to the Covid-19 pandemic and new Household and Non household demand. **PCC and the Pandemic** The pandemic has affected a number of customer behaviours including: - Hybrid working with a significant number of office-based employees continuing to choose to work from home for at least part of the week; - Greater water use in the home and garden during the day given hybrid working; - Staycation effect whereby more people have spent their holiday at home or in the UK. This may continue for several years given the limited supply of international holidays; and - Handwashing to avoid the spread of Covid-19. The differences between our WRMP19 and WRMP24 are as follows: - PR19 final plan PCC in 2024/25 = 130.5l/hd/d - PR24 baseline PCC in 2024/25 = 145.8l/hd/d Further detail on the impact of the pandemic on PCC is presented in our 2021/22 and 2022/23 WRMP Annual review reports and in our report entitled, "Impact of Covid 19 on NWG Demand 21_22 Final"[1]. **Water Efficiency** In response to a joint regulators letter, we agreed a water efficiency action plan with Ofwat, Defra and the Environment Agency in October 2021 to mitigate the impact of the pandemic and its associated lockdowns on household consumption. Our action plan for 2022/23 has been delivered in full and included the following: - 4,000 home water and energy saving retrofits each saving c.20 litres per property per day - 3,000 leaking toilet repairs each saving a minimum of 215 litres per property per day - Continue to engage schools and stakeholders to increase the use of online resources for primary schools teachers on The Ripple Effect - c.13,000 bespoke water saving kits to homes - c.20,000 online digital water efficiency engagements - Pilots of innovative new water saving products - Two water efficiency related programme submissions into Round 3 of Ofwat's Water Breakthrough Competition Challenge - A water efficiency related sprint at the 2023 Innovation Festival - A wide-reaching hot weather Water's Worth Saving communications campaign across our region. A more detailed update is provided in our 2023 WRMP19 Annual Review report.

[1] Impact of Covid 19 on NWG Demand 21_22 Final (2022) Northumbrian Water – available on request via waterresources@nwl.co.uk

SoR Ref	Consultee	Consultee Response	NW Response
			Meter Installations Our WRMP19 target is to deliver 87,500 optant meter installations by March 2025. However, even with targeted marketing campaigns, we will not meet this target and forecast an outturn of 58,666 optants. This is largely because of the Covid-19 pandemic and associated lockdowns during which time we were unable to visit customer properties. Additionally, some customers are now using more water than prior to the pandemic and this may have put them off having a water meter. Following the successful installation of a smart network in our Essex & Suffolk Water operating region, our plan for the remainder of AMP7 is to expand the smart network to our Northumbrian Water operating area. We will use this as an opportunity to promote the benefits of smart meters to our customers to encourage increased meter applications. Our new approach seeks to maximise the benefits for leakage and water efficiency rather than focus on the number of meters installed recognising the impact of the pandemic and other factors which could not have been predicted at the time of the PR19 business plan. The PR19 settlement (as amended by the CMA) includes an Outcome Delivery Incentive (ODI) that ensures that where we have not delivered the programme we originally envisaged funding is fully returned to customers. **Leakage** In our 2023 Annual Review[2], we reported that we achieved some of the lowest levels of leakage recorded with leakage for the year out-turning less than we forecast in WRMP2019. We tend to see increased leakage during periods of prolonged dry weather when soils dry out and move as well as during period of cold weather with prolonged frost. During these peak times we have responded quickly by bringing in additional operational resources to fix leaks. We have also increased the number of people that were looking for leaks to enhance our detected leaks to support recovery of our position. During 2022/23, we implemented several new technologies and techniques to help us achieve our leakage goals. We collaborated with industry experts to develop Digital Twins for ten of our District Metered Areas, which gave us a new digital tool to identify leaks on our network. We have implemented new AI sensor technology that makes our leakage detection surveys more efficient. We use our annual Innovation Festival to explore new concepts, such as "no-dig" repair techniques, and emerging sources of data that can enrich the insights we have now. Finally, we are leading on industry collaboration, as we develop the new National Leakage Research and Test Centre. This will be a 5km buried water pipe network purpose built for developing and testing leakage interventions without disrupting customers' supplies or affecting water quality. We continue to evaluate and optimise how we use Smart Meter data, as we build on the penetration of meters already deployed. We will continue to reduce leakage in line with our action plan. Consequently, we are forecasting that we will meet our leakage target of 15% reduction by 2024/25. **Impact on dWRMP24** It is worth highlighting that if we were to meet our PCC target, our revised dWRMP24 would remain the same,

[2] 2023 Water Resources Management Plan 2019 Annual Review (2023) Northumbrian Water – available on request via waterresources@nwl.co.uk

SoR Ref	Consultee	Consultee Response	NW Response
			albeit we would end AMP8 with a marginally higher surplus. This is because longer term targets for leakage and demand reduction are significantly more challenging and will require a step change in our strategy. We have updated the dWRMP24 to provide further detail reflecting the above points.

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41	Ofwat	Outline the options screening process used to get from the unconstrained option list to the feasible option list. This is to ensure that the criteria, and their application, is transparent and consistent. The feasible list must contain an unbiassed suite of options from which best value options can be justified;	We have taken an iterative process in developing our preferred final plan. We first determined a baseline supply demand balance for each of our water resource zones. We forecast a supply surplus in our Berwick & Fowberry zone and a supply deficit in our Kielder zone. We then identified options and corresponding demand savings to meet national statutory targets for leakage reduction (50% by 2050), PCC (110l/head/d by 2050) and business demand reduction (9% by 2038). Once the DMO demand savings were applied to our final plan Distribution Input forecast, a supply surplus was maintained in Berwick & Fowberry WRZ and restored in Kielder WRZ. Consequently supply options were not needed and therefore not considered for the Kielder zone. Even if certain supply-side options that have not been considered did represent better value for money for customers, we would still be legally required to pursue the leakage and demand management actions anyway and pursuing supply-side alternatives instead would lead NWL into contravention of those legal requirements. Our feasible Demand Management Options are presented in both our dWRMP24 main report and tables.
42	Ofwat	Explain the benefit that an additional 24 Ml/d of Kielder outage allowance brings to customers and discuss this with the Environment Agency;	We met with the Environment Agency to discuss our outage assessment. As Kielder WRZ is a large surface water dominated WRZ, the combined maximum treatment capacity of the WTWs far exceeds the 1-500 deployable output of the WRZ. As the outage has been calculated against the maximum treatment capacity rather than the treatment capacity required for a 1-500 return period DO, there is surplus treatment capacity available in the WRZ to allow for some level of outage without impacting on the ability to supply the 1-500 DO, this is illustrated below. Consequently, for our revised draft WRMP24, the WRMP outage allowance has been calculated using the following formula: WRMP Outage Allowance = (1-500 DO) – (Total treatment capacity of the WRZ – Total simulated outage) Where: Total treatment capacity of the WRZ = sum of the maximum WTW capacities as used in the Aquator XV model. Total simulated outage = 90th percentile of the monte carlo simulation. 1-500 DO = 1-500 DO as determined by the stochastic modelling in Aquator XV. A more detailed description of the methodology for calculating the Outage Allowance is in the WRMP24 Outage Allowance technical report which is available on request via waterresources@nwl.co.uk. We have updated our outage allowance (see **Section 3.8**) to take account of last year's outturn outage. The updated allowance is now 56.32Ml/d which is lower than the allowance in the dWRMP24 and in line with the WRMP19 outage allowance of 57.6Ml/d.

SoR Ref	Consultee	Consultee Response	NW Response
43	Ofwat	Demonstrate how its approach to best value decision making has been informed by customer views and preferences on the options available;	We have updated **Section 8.2** in our revised dWRMP24 to provide additional detail on our decision-making process (including objectives and metrics) which we have assessed our preferred final plan against. The results of this assessment are presented in **Section 8.5** and in a technical report entitled "Environmental Best Value Plan Assessment of Northumbrian Water Demand Management Options". We have taken an iterative process in developing our final preferred plan. We: ▪ developed a baseline supply demand balance for both our water resource zones. This confirmed a baseline supply surplus for the Berwick & Fowberry zone and a baseline supply deficit for the Kielder zone; ▪ identified low, medium (central) and high demand management options with associated demand savings; ▪ selected the central demand management options for inclusion in our final plan because these are needed in order to meet the following national targets: o 50% reduction in leakage by 2050; o 122l/head/day by 2037/38 and 110l/head/d PCC by 2050; and o 9% reduction in non-household demand by 2038. ▪ have not needed to consider any supply options because central demand management options required to meet the above national targets maintained a supply surplus in the Berwick & Fowberry zone and restored a supply surplus in the Kielder zone across the full planning period. ▪ confirmed customers views on demand management options as follows: o Leakage: NW participants highly supported company-side leakage reduction o Metering: Opt-in metering was the most supported metering option. Smart metering was the least supported demand management option but is the only way we can achieve 110l/hd/d PCC o Water Efficiency: Water saving programmes / devices had significant support While customer support for smart meters is less than that for traditional meters, smart metering necessarily forms an important part of our final plan. This is because we do not have any alternative options to reduce PCC and without it, we will not meet national PCC targets. We have considered alternative delivery profiles for our final plan demand management options. For example, **Section 10.6** of our revised draft WRMP24 considers alternative delivery profiles for smart metering. This confirms that we could meet the interim PCC target of 122l/h/d by 2037/38 if we delivered just 25% of the smart metering programme in AMP8, and the remaining 75% in AMP9. This would also be sufficient to maintain a supply surplus in the Berwick & Fowberry WRZ and to restore a supply surplus in the Kielder WRZ in AMP8. However, we have decided not to do this, and instead have selected an option where we deliver 50% of the programme in each of AMP8 and AMP9. This is because: ▪ A linear profile reduces deliverability risks, by allowing us to recruit and maintain teams across a ten year period as well as reducing meter and smart network procurement risks. For example, in AMP7, the

SoR Ref	Consultee	Consultee Response	NW Response
			shortage of microchips has slowed delivery of our smart metering programme. Relying on delivering 75% of the programme in AMP9 would mean more risk of not meeting the 2037/38 target. ▪ it provides more flexibility if other demand management options under-perform, or if non-household growth is higher than expected. This is particularly important for the Kielder water resource zone which has a baseline supply deficit; and ▪ our customers supported our linear investment plan in our qualitative affordability and acceptability research – with a balance between wanting to tackle problems now, and affordability. We will provide more detailed evidence in our enhancement case for metering in the PR24 business plan. We have considered an alternative scenario in **Section 10.5** of the dWRMP24 whereby the Kielder reservoir to United Utilities transfer is included in our final plan, which results in the Tees to York Transfer being excluded. A precautionary options appraisal was undertaken for the Berwick & Fowberry zone as prior to publishing our draft WRMP24, WINEP outcomes may have resulted in a supply deficit. However, ultimately, this was not the case.

SoR Ref	Consultee	Consultee Response	NW Response
44	Ofwat	Provide sufficient and convincing evidence to justify why a linear profile to achieve demand reduction targets is optimal from a timing of investment perspective;	Our final preferred plan only includes those Demand Management Options that are needed to meet national leakage and demand reduction targets. We have considered further scenarios whereby only 50% and 75% of the smart meter programme is delivered by the end of AMP9. In both cases, the PCC target of 118 l/head/day by 2040 was not met and so we have discounted these scenarios. This means that our choices on timing are between AMP8 and AMP9. We could meet the interim PCC target of 122l/h/d by 2037/38 if we delivered just 25% of the smart metering programme in AMP8, and the remaining 75% in AMP9. This would also be sufficient to maintain a supply surplus in the Berwick & Fowberry WRZ and to restore a supply surplus in the Kielder WRZ in AMP8. However, we have decided not to do this, and instead have selected an option where we deliver 50% of the programme in each of AMP8 and AMP9. This is because: • A linear profile reduces deliverability risks, by allowing us to recruit and maintain teams across a ten year period as well as reducing meter and smart network procurement risks. For example, in AMP7 the shortage of microchips has slowed delivery of our smart metering programme. Relying on delivering 75% of the programme in AMP9 would mean more risk of not meeting the 2037/38 target. • This provides more flexibility if other Demand Management Options under-perform, or if non-household growth is higher than expected. • Our customers supported our linear investment plan in our qualitative affordability and acceptability research – with a balance between (1) wanting to tackle problems now and (2) affordability. Given the baseline supply deficits forecast in our Kielder Water Resource Zone and uncertainties in reducing PCC, we will continue to plan to deliver our leakage and metering programmes against a linear delivery profile. However, we commit to reviewing our demand management strategies during the development of our WRMP29 in 2027 and will optimise our smart metering programme at that point. We will provide more detailed evidence in our enhancement case for metering in the PR24 business plan. **Section 10.6** has been included in our revised dWRMP24 to present this scenario.

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45	Ofwat	Set out and clearly justify an ambitious strategy for non-household demand reduction. This is to ensure new environmental targets aimed at reducing demand are adhered to. Northumbrian Water should also ensure its ambition for per capita consumption targets are under the dry year annual average scenario;	Our Non-Household (NHH) demand reduction strategy was not developed in time for inclusion in our dWRMP24. However, we have now formed a comprehensive strategy, having liaised with other water companies to learn from their experience and ensure regional alignment. **Section 7.2.3** of our revised dWRMP24 has been updated to include a description of our NHH demand reduction strategy. Our NHH water efficiency strategy delivers a 9% reduction in the demand of existing NHHs by 2038 from a 2019/20 baseline.

SoR Ref	Consultee	Consultee Response	NW Response
46	Ofwat	Northumbrian Water forecast a baseline supply surplus in its Berwick and Fowberry WRZ and a small baseline supply deficit in the Kielder WRZ. No supply-options are selected for the preferred plan because a surplus can be restored by demand savings from the PR24 preferred demand management options. However, we expect the company to fully explore supply-side options where they can be developed at a lower cost in its region to support trading to companies that need the water. The company should present sufficient and convincing evidence that all options and potential recipients has been explored as part of its final WRMP.	Raw Water export options were described in Section 7.2.4 of our dWRMP24 (now Section 7.3 in our revised dWRMP24). Since consulting on our dWRMP24, we have re-confirmed with our neighbouring water companies (United Utilities and Yorkshire Water) their position on importing raw water from NWL. Yorkshire Water has confirmed that the Tees to York Transfer (140Ml/d) is still in its preferred final plan although it is now needed by 2040 and not 2050. United Utilities has confirmed that it now considers its headroom position to be more resilient and so the Kielder Reservoir to UU Transfer (100Ml/d) has still not been included in either its preferred final plan or any adaptive pathways. Additionally, Water Resources North and Water Resources West has considered the Kielder reservoir to United Utilities Transfer as an option to support security of supply and increase resilience for other water companies. A robust reconciliation process has been followed by the regional groups which concluded that the Kielder reservoir to UU Transfer was not required. This is largely because of the high capital cost associated with the scheme and because there were other better value feasible options. Consequently, our preferred final plan only includes the Tees to York Transfer. It is important to note that while our resource assessments have confirmed that we only have sufficient water resources to implement one of the two schemes (i.e. not both), the Kielder reservoir to UU Transfer was not considered to be resource constrained when considered on its own. However, we have presented a scenario in **Section 10.5** of our revised dWRMP24 that illustrates the changes to our preferred final plan that would be required to allow the Kielder reservoir to UU transfer to proceed. The only change would be that the Tees to York transfer would need to be removed as the surplus of water in Kielder reservoir is not sufficient to support both schemes in addition to the rising demand for raw water on Teesside. Nevertheless, we note RAPID would like us to continue to investigate the Kielder reservoir to UU transfer and so we will continue to work with both Yorkshire Water and United Utilities after our respective revised dWRMPs have been submitted. Funding will be required to further investigate the export options and, if needed, to progress as a Strategic Resource Option. We will therefore include a funding allowance in our PR24 Business Plan submission. **Sections 7.3 and 10.5** of our revised dWRMP24 have been updated to reflect the latest position.
47	Ofwat	Northumbrian Water has not described the options screening process used to get from its unconstrained option list to a feasible option list or detailed any assessment criteria used in identifying the options chosen. Rather, a summary of the different option types implemented in consideration with customer preferences over time has been provided. In the final WRMP we expect Northumbrian Water to clearly show the criteria used to select feasible options and state the reasons for rejecting any options.	We have updated **Section 8.2** in our revised dWRMP24 to provide additional detail on our decision-making process (including objectives and metrics) which we have assessed our preferred final plan against. The results of this assessment are presented in **Section 8.5** and in a technical report entitled "Environmental Best Value Plan Assessment of Northumbrian Water Demand Management Options". We have taken an iterative process in developing our final preferred plan. We: ▪ developed a baseline supply demand balance for both our water resource zones. This confirmed a baseline supply surplus for the Berwick & Fowberry zone and a baseline supply deficit for the Kielder zone;

SoR Ref	Consultee	Consultee Response	NW Response
			▪ identified low, medium (central) and high demand management options with associated demand savings; ▪ selected the central demand management options for inclusion in our final plan because these are needed in order to meet the following national targets: o 50% reduction in leakage by 2050; o 122l/head/day by 2037/38 and 110l/head/d PCC by 2050; and o 9% reduction in non-household demand by 2038. ▪ have not needed to consider any supply options because central demand management options required to meet the above national targets maintained a supply surplus in the Berwick & Fowberry zone and restored a supply surplus in the Kielder zone across the full planning period. ▪ confirmed customers views on demand management options as follows: o Leakage: NW participants highly supported company-side leakage reduction o Metering: Opt-in metering was the most supported metering option. Smart metering was the least supported demand management option but is the only way we can achieve 110l/hd/d PCC o Water Efficiency: Water saving programmes / devices had significant support While customer support for smart meters is less than that for traditional meters, smart metering necessarily forms an important part of our final plan. This is because we do not have any alternative options to reduce PCC and without it, we will not meet national PCC targets. We have considered alternative delivery profiles for our final plan demand management options. For example, **Section 10.6** of our revised draft WRMP24 considers alternative delivery profiles for smart metering. This confirms that we could meet the interim PCC target of 122l/h/d by 2037/38 if we delivered just 25% of the smart metering programme in AMP8, and the remaining 75% in AMP9. This would also be sufficient to maintain a supply surplus in the Berwick & Fowberry WRZ and to restore a supply surplus in the Kielder WRZ in AMP8. However, we have decided not to do this, and instead have selected an option where we deliver 50% of the programme in each of AMP8 and AMP9. This is because: ▪ A linear profile reduces deliverability risks, by allowing us to recruit and maintain teams across a ten year period as well as reducing meter and smart network procurement risks. For example, in AMP7, the shortage of microchips has slowed delivery of our smart metering programme. Relying on delivering 75% of the programme in AMP9 would mean more risk of not meeting the 2037/38 target. ▪ it provides more flexibility if other demand management options under-perform, or if non-household growth is higher than expected. This is particularly important for the Kielder water resource zone which has a baseline supply deficit; and ▪ our customers supported our linear investment plan in our qualitative affordability and acceptability research – with a balance between wanting to tackle problems now, and affordability. We will provide more detailed evidence in our enhancement case for metering in the PR24 business plan. Our feasible Demand Management Options are presented in both our dWRMP24 main report and tables.

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48	Ofwat	In the draft WRMP tables, some options information was lacking, with cells left blank or labelled not applicable for water available for use and total Net Present Cost cells. For the final WRMP, we expect all options to be developed to the same level of detail. This will enable the decision-making tool to select an unbiased preferred best value plan from the option portfolio.	We have updated Table 4 so that all options have the requested level of detail.
49	Ofwat	The link between the company WRMP and the Water Resources North (WReN) regional plan is described. There is a discussion around how decision-making addresses option selection and uncertainties, however we would like Northumbrian Water to provide more narrative on the decision-making tools and company-level decision making in its final WRMP.	Please refer to our Decision Making response above.
50	Ofwat	Northumbrian Water has not referred to Ofwat's public value principles. We would like Northumbrian Water to use Ofwat's public value principles, and to reflect expectations set out in the PR24 final methodology, within its best value planning process in its final plan, and to explain how these have been used to inform best value decision making. Where investment is needed, beyond least cost, the value of the additional benefit needs to be presented within the WRMP planning tables. The robustness of this valuation data is important where companies are requesting significant areas of investment. As well as clearly presenting this, the company should provide sufficient and convincing evidence that the costs to deliver the best value plan is outweighed by the additional value it provides.	We have included **section 9.3.8** in our revised dWRMP24 which describes how we have used Ofwat's public value principles in the development of our preferred final plan. We believe that our revised dWRMP24 is aligned to the principles.

SoR Ref	Consultee	Consultee Response	NW Response
51	Ofwat	In its final plan, we expect Northumbrian Water to present a core pathway in line with the WRPG definition that includes low-regret investment to meet future uncertainties and additional option value to allow further flexibility in the future. If Northumbrian Water chooses not to present an adaptive plan, we expect the company to provide a consistent narrative and clear justification for why an adaptive planning approach has not been used. The company should also consider whether uncertainties around the success of demand management options should be included in an adaptive plan.	We have updated **Section 10.2** of our revised dWRMP and have included a diagram to illustrate our core plan. This includes our central demand management options which are considered no regrets because they are the only options that we have available which enable us to meet national targets for leakage reduction (50% reduction by 2050), Per Capita Consumption (PCC) (122l/head/day by 2038 and 110l/head/day by 2050) and Business demand reduction (9% reduction by 2038) targets. For example, we would not meet the PCC targets if less demand management was undertaken. We consider our central DMOs provide the additional option value described in the Water Resources Planning Guideline as they result in sufficient headroom that provides further flexibility in the future should it be needed. Our preferred final plan also includes the Tees to York raw water export to Yorkshire Water. This is also considered no regrets as at this stage, Yorkshire Water has confirmed that it is required, albeit not until 2040, and any investment required in AMP8 and AMP9 is largely going to be for further investigation and detailed engineering design. It is likely that this will be further investigated as part of joint investigations with both NWL and United Utilities, possibly through an SRO. We have tested our central planning scenario against the low and high Ofwat common reference scenarios (**see Section 9**) for Demand, Abstraction Sustainability, Technology and Climate Change and in all instances a supply surplus is maintained. Consequently, we have concluded that an adaptive pathway in relation to demand is not required. We have updated **Section 4.6** of our revised dWRMP24 to include a revised non-household demand forecast which we now consider a precautionary forecast. This includes Tees Works latest raw water and potable demand forecasts which it provided in June 2023. We have confirmed the base actions that are required in order for us to supply up to 190Ml/d of raw water to Teesside which include the construction of eel screens on the Low Worsall river intake and a variation of our Tees abstraction licences. Given we have taken a precautionary approach in our central Plan, we have not included an adaptive pathway for a higher Teesside demand. In view of the very low likelihood of needing the Kielder reservoir to UU Transfer, we have presented this as an alternative scenario (as opposed to a formal adaptive pathway) in **Section 10.5** of our revised dWRMP24.

SoR Ref	Consultee	Consultee Response	NW Response
52	Ofwat	As part of this evidence, Northumbrian Water should clearly set out the impact of each individual Ofwat common reference scenario (combining them could risk producing a very low probability scenario) and compare it to the 'most likely' scenarios on which the preferred plan is based. This should include quantifying the impact on demand of the low and high scenarios for climate change, demand, and abstraction reductions across the planning period. The company should also quantify the estimated impact on the expenditure requirement of: 1) planning based on the high scenarios for climate change, demand, and abstraction reductions, and the slower scenario for technology; and 2) planning based on the low scenarios for climate change, demand, and abstraction reductions, and the faster scenario for technology. This will allow for improved understanding of the drivers of investment, the sensitivity of the plan to future scenarios and confidence in the investments being proposed. Northumbrian Water should use the results of this testing to identify and justify with sufficient and convincing evidence low regret investments, rather than just those that meet both high and low planning needs in a non-adaptive way.	**Section 9.1** of our dWRMP24 presented a final plan supply demand balance for each of the Ofwat common reference scenarios. However, we have updated this section in the revised dWRMP24 to reflect our latest assessment and Distribution Input forecast. In all cases, a supply surplus is maintained for each scenario. We have also included a baseline assessment in **Section 6.4**. We confirm that only the component relevant to the scenario was changed. For example, in the low climate change scenario, all components of the supply demand balance used central planning assumptions except for climate change where the low scenario was used. Our final plan includes Demand Management Options that are needed to meet national targets for leakage and demand reduction. However, as we must still plan to meet these national targets even under the low and high scenarios for climate change, demand, abstraction reductions and technology, there is no difference in expenditure between our preferred final plan and the common reference scenarios.

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53	Ofwat	Provide robust and clear supporting evidence for its data tables. Northumbrian Water (NW) has been unable to quantify the base expenditure impacts of delivering its draft WRMP and the impacts of base expenditure on relevant performance levels. This raises concerns regarding the robustness and reliability of the costs and benefits presented by the company in its preferred programme. It should provide the base expenditure impact of its plan and expected performance levels to be delivered in the final WRMP. The company has identified £102 million of enhancement expenditure (in 2021-22 prices) relating to delivery of its draft WRMP in the 2025-30 period. Over the 2025-50 period the company has estimated a requirement for over £636 million of enhancement expenditure. NW plans to deliver around 66 Ml/d of additional WAFU benefit in 2025-30. The company has proposed a large investment in metering improvements, approximately 77% of total requested enhancement expenditure. These benefits are being delivered at a higher cost with a unit rate of 5.6 £m/Ml/d when compared to other companies, and thus their selection should be sufficiently evidenced and justified in the company's final WRMP. The company should provide sufficient and convincing evidence that the preferred options being selected, across all areas of its plan, are best value in its final WRMP24 and ensure costs are reliable, efficient and appropriately allocated.	We confirm that all dWRMP24 planning table issues were resolved through later resubmissions of the tables. As with our dWRMP24 planning tables, for the revised dWRMP24, we have populated planning tables 5 and 8 to confirm the total cost of each final plan option and the enhancement element. We have updated **Section 8.3** in the revised dWRMP24 to summarise the base costs of our current (AMP7) demand management programme and that of our proposed AMP8 and final plan demand management programme. Our preferred final plan includes: - the raw water export to Yorkshire Water in 2040 known as the Tees to York Transfer; and - central Demand Management Options The costs of the Tees to York Transfer will be met by Yorkshire Water and so all scheme costs have been included in the YW preferred final plan. Our final plan only includes those options required to meet national targets for leakage and demand reduction, namely: - leakage reduction (50% reduction by 2050) - smart metering and water efficiency programmes (110l/head/day by 2050 and 9% reduction in non-household demand by 2038). We do not have any other options that would enable us to meet these targets. These schemes maintain a supply surplus in our Berwick & Fowberry Water Resource Zone and restore a supply surplus in our Kielder zone, without the need for any further supply options. We have costed the Demand Management Options in our final preferred plan using the methods outlined in the Water Resources Planning Guidelines (that is, we are required to use actual 2021/22 unit costs). However, we have since market-tested metering costs as part of our PR24 efficiency challenge and we expect they will be lower in our PR24 business plan, which will use more efficient forecast costs for 2025-30, in 2022/23 prices. These more efficient costs will be beneficial for customers, but we would select the same programme of metering under either set of costs to enable us to meet the national targets for leakage and demand reduction.

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54	Ofwat	Northumbrian Water has not provided sufficient evidence of opportunities to enable co-funding or co-delivery or sufficiently explored commercial models to aid delivery. Further investigation of partnership opportunities for co-funding and co-delivery with stakeholders should be undertaken and set out in the final WRMP.	Our revised dWRMP24 only includes one supply scheme which is the Tees to York raw water transfer to Yorkshire Water. At this point in time, we are not aware of any other water users (e.g. agriculture) who might benefit from the scheme. The scheme is not needed until 2040 although it will be further investigated by Yorkshire Water and NWL over the remainder of AMP7 and through AMP8. As part of this, further investigation can be undertaken to establish whether there are partnership opportunities for co-funding and co-delivery. We have considered whether any of our demand management options meet the requirements for delivery through the Direct Procurement for Customers (DPC) process but have concluded that they do not. **Section 8.3.5** of our revised dWRMP24 has been updated to reflect the latest position.
55	Ofwat	A description of Board engagement in the development of the best value plan is provided, and a description of the groups involved in the decision making process was provided in response to a query raised. We expect Northumbrian Water to include this explanation of its decision making process in the final WRMP.	We have updated **Sections 8.2 and 8.5** of our revised dWRMP24 to include an explanation of our decision making process.
56	CCW	We seek reassurance that the PCC reductions planned in this dWRMP will enable the EIP interim PCC target of reducing household water use to 122 litres per person per day by 31 March 2038 to be achieved.	We confirm that the PCC reductions planned in our dWRMP24 enable the EIP interim PCC target of reducing household water use to 122 litres per person per day by 31 March 2038 to be achieved.
57	CCW	In the plan, there is significant reliance on demand side options and whilst the dWRMP outlines that this will be gained through smart metering, behaviour change programmes and leak detection technology, we felt that the document lacked detail on how this might be achieved.	We have updated **Section 7.2** of our revised dWRMP24 to provide a more detailed description of each of our demand management strategies. This includes a new section covering our strategy for reducing non-household demand.
58	CCW	The dWRMP plans for a whole area approach to an enhanced optant metering scheme which will be fully smart by 2035. We would like to see more detail on the timeline of the roll out.	We have included a timeline for roll out of our Whole Area Metering scheme.

SoR Ref	Consultee	Consultee Response	NW Response
59	CCW	The dWRMP assumes that a 3% reduction in demand will occur for households upgrading to smart meter. We would be interested to learn how the 3% assumption has been arrived at. It is not the fitting of smart meters that will achieve this reduction, it is a behaviour change of customers to use less water that is required. We have yet to see firm evidence that your customers will make the behaviour changes that you require. What pilots do you have to draw upon now to demonstrate this can be achieved?	In PR19, Thames Water and Anglian Water attributed an average saving of 3% specifically to the extra insights into consumption that is received by customers from smart meters compared to dumb meters (*UKWIR (2019) Using smart meters to deliver savings for consumers reference CU02D206*). In the publication of their dWRMP24's both companies have stated they have used a conservative 2% based on a more recent data set. Other water companies have stated employing between 3-5% as a result of behavioural change. The National Infrastructure Commission in their 2018 review of drought resilience state that standard "dumb" meter can reduce average consumption by 15% and smart meters by 17%. Using these results, we have chosen an additional 3% saving for smart meters compared to dumb meters. As smart meters are a relatively new introduction the longevity of smart meter behavioural change savings has yet to be confirmed. Therefore, this percentage saving of 3% remains constant across the planning horizon. This percentage saving relates specifically to behavioural changes in customers only and does not include plumbing loss or supply pipe leakage savings. Please refer to **section 5.3** of the Demand Forecast Technical Report.
60	CCW	With Ofwat's updated charges scheme rules coming into effect from April 2023, we would be interested to hear if the company has explored how innovative tariffs (linked to smart meters) could help to encourage people to reduce water use (households and non-household).	As part of the development of our business plan for AMP8, we are exploring a range of innovative tariff options including support for efficient water usage and higher occupancy households, incentivising reduced demand at peak times, and capping bills for customers with medical requirements. Water pricing is an important tool for improving water efficiency and enhancing social equity. Increasing block tariffs are by far the most common charges for water services and they are used in countries where water has been historically scarce. Key questions we will explore through customer research and trials include developing our understanding of the optimum number of blocks, the volume of water use associated with each block, and the prices to be charged for water use within these blocks. The continued rollout of smart meter technology will provide applications to identify and reward customers for cutting down on their water usage at certain periods or times of day. This could help customers reduce their bills by helping to balance peaks and troughs in water demand during periods of increased usage or warmer weather. This has been successfully used in the energy sector with a quarter of eligible customers taking part to reduce their consumption. We'll be working with retailers and end business users to explore tariff innovation and promote water efficiency advice and we have challenging targets on reducing business demand which will see us work in collaboration with NHH customers to identify and drive further innovation in the market. The rollout of smart metering will be a key enabler to providing proactive and targeted support and advice.

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61	CCW	There is a clearly articulated need to help customers use less water and the experience over recent years has demonstrated how challenging this can be. We believe there is a need for a real step change in the way we engage with the public on these issues, particularly in the areas facing the biggest supply challenges. Companies and other stakeholders need to do more to raise awareness and to persuade people of the need to value water and use it more wisely. This needs to be a key priority as it will also help customers to control their bills.	We agree that a collaborative approach to water efficiency is needed in order to achieve behavioural change and reductions in Per Capita Consumption (PCC). In delivering our water efficiency strategy, we will engage with our stakeholders including local authorities, NGOs, retailers and regional groups to ensure messaging is aligned and to raise awareness of the need to reduce water use to ensure more water is left in the environment. We are in the process of updating our website to include a monthly water resources report. For example, this will help customers understand when reservoir stocks are below average and when they need to take action to reduce their use of water. We have committed to contribute throughout AMP8 to a nationwide campaign to support and increase awareness of water saving with support from Waterwise and all water companies, following the success of the Water's Worth Saving campaign. We also have a successful bid for a Water Literacy Programme which received £864,484 of funding from the Catalyst Stream for a Water Literacy Toolkit. Delivered through all aspects of the community thanks to increased collaboration and network building, the Water Literacy programme is an accredited water environment learning experience that enhances individual consumer knowledge and in turn empowers them to take positive action. The Water Literacy programme will raise awareness of the value of water, educate people about water use and their local water environment and in turn empower positive behaviour change. **Section 7.2.3** of our revised dWRMP24 has been updated to reflect this response.

SoR Ref	Consultee	Consultee Response	NW Response
62	CCW	We would also like to challenge the over reliance on the Government's initiatives (labelling and modified building regulations for new builds). Although these measures are likely to help to reduce water demand, they will still rely on behaviour change, and understanding of the label and the most efficient way to use the relevant white goods. The company needs to build in more thinking on what action it can take to address behaviour change. We note that the company will be providing enhanced support to change water use behaviour to the top 5% highest water users. We would like to see more initiatives such as exploring the possibility and practicality of compulsory metering of houses with large gardens, or on all houses on change of occupier.	It is important that all stakeholders (including but not limited to Government, regulators, water companies, local authorities and housebuilders), work together to see the benefits from labelling and modified building regulations. As stated in the Water UK Pathways to long-term PCC reduction document (https://www.water.org.uk/wp-content/uploads/2019/12/Water-UK-Research-on-reducing-water-use.pdf), "the best strategy for maximising demand reductions involve government and water companies working together to deliver mandatory water labelling" and "The single most cost-effective intervention to save water is a mandatory government-led scheme to label water-using products, linked to tightening Building Regulations and water supply fittings regulations. This would reduce consumption by an additional 31 l/h/d or 2,012 Ml/d by 2065. Of all the interventions analysed, this scores most highly on two key metrics: volume of water saved and benefit-cost ratio, and second overall on marginal cost." It goes on to say, "The strongest performing interventions are those that improve the efficiency of all households over time, through technology and behaviour change" and "tightening building regulations and water supply fittings regulations is particularly important. Without changing these regulations, it is not possible to find a way of cost effectively reducing household consumption below 100l/h/d. On their own (without any labelling initiative), changes to these regulations alone would reduce consumption by 14 l/h/d by 2065". This is clear evidence. We have aligned to the lower estimated demand reduction for Water labelling with No minimum standards. This is the lowest option provided in the WaterUK document. In turn, the demand savings built int" the demand forecasts are conservative and likely not over reliance. For building regulations for new builds we have aligned to the current optional level of 110, which from surveys to local authorities has been adopted in some area already as the standard. This does not reflect the potential enhanced standards recently shared by Defra of 105 and 100. There is a lack of clarity on how labelling will be delivered and so it is not yet feasible to detail plans of how we would support a roll out. For this reason - as outlined above - we have opted to include the lower estimated demand reductions.

SoR Ref	Consultee	Consultee Response	NW Response
63	CCW	Demand management for businesses should be an integral part of any strategy to address risks to future water supplies and meet the EIP's ambition to reduce non-household (for example, business) water use by 9% by 31st March 2038. We note that the non-household demand forecast includes new demand from a very large development at Teesside consisting of net zero carbon capture plants, hydrogen plants, power generation plants and free ports. There are also plans for gigafactory power plants in two other locations in the North East of England. We'd like to hear more about how you will be reaching out to these developments to help them to make their sites as water efficient as possible for example rain water harvesting or waterless toilets. The dWRMP needs to have more detail on how the wholesale company will work with business customers and retailers in the short and long term to reduce demand and increase water efficiency.	Our Non-Household (NHH) demand reduction strategy was not developed in time for inclusion in our dWRMP24. However, we have now formed a comprehensive strategy, having liaised with other water companies to learn from their experience and ensure regional alignment, and have included this in **Section 7.3** of our revised dWRMP24. Our NHH water efficiency strategy delivers a 9% reduction in the demand of existing NHHs by 2038 from a 2019/20 baseline. The demand savings from our NHH strategy have been included in our final plan demand forecast. The water demand associated growth (new NHHs) is not accounted for as we do not have the confidence that this can be achieved with the high levels of Non-household demand growth in this period. Our NHH demand reduction strategy includes options supporting our largest water users. This includes engagement with the new developments mentioned.
64	CCW	The non-household retail market has so far failed to deliver a market for water efficiency assistance for business customers in England to the extent that was envisioned when the non-household retail market opened for all businesses in 2017. While the introduction of a new business demand Performance Commitment by Ofwat in the PR24 final methodology means there will be greater transparency and an opportunity set challenging targets, this is not a regulatory measure that can deliver demand reduction by itself.	We note CCW's response. **Section 7.3** or our revised dWRMP sets out our strategy for reducing Non-household water use. To support this process, a SPRINT was held at our Northumbrian Water Innovation Festival in July 2023 sponsored by Wave, NWGs largest retailer, to further understand current constraints and to identify solutions. The wider learning from this sprint will be fed into our Non-household demand reduction strategy. A key output was identifying and then utilising varying motivations for different stakeholders to prompt action. WReN companies have all worked together to develop proposals based on research with Retailers and Non-Household customers, identifying barriers, solutions and deliverable options to achieve demand reductions.

SoR Ref	Consultee	Consultee Response	NW Response
65	CCW	Wholesale companies' plans need to be clearer on how they will manage business demand. We would like to see greater innovation and ambition in demand management, with the wholesale company showing how it will engage with business customers and retailers on joined up strategies to help reduce demand. We would like to understand if you are planning to accelerate the role out of smart meters for business customers and if so, will you tackle this strategically for example by targeting high users of water?	As above, Section 7.3 of our revised dWRMP sets out our strategy for reducing Non-household water use.
66	CCW	In the non-technical document it states that average megalitres used per day for all NHHs in 2050 forecast if we don't take any action now is 156.5 and after you implement your plan is 156.5. We'd like for it to be made clearer in the plan how much reduction in Ml/d is needed to reach the neutral position.	Our Non-Household (NHH) demand reduction strategy was not developed in time for inclusion in our dWRMP24. However, we have now formed a comprehensive strategy (**see Section 7.3** of revised dWRMP24), having liaised with other water companies to learn from their experience and ensure regional alignment. The NHH demand reduction strategy will be outlined in our revised dWRMP24 and allowed for in our final plan supply demand balance. Our NHH water efficiency strategy delivers a 9% reduction in the demand of existing NHHs by 2038 from a 2019/20 baseline. This is included in our final plan demand forecast. The water demand associated growth (new NHHs) has not been accounted for as we do not have the confidence that this can be achieved with the high levels of Non-household demand growth in this period.
67	CCW	Northumbrian Water is proposing to halve leakage by 2050 in line with sector commitments. We seek reassurance that this dWRMP will enable the company to meet the EIP ambition of reducing leakage by 37% by 31st March 2038. The reductions in leakage will be achieved through a combination of addressing customer supply pipe leakage (alongside optant smart metering) and active leakage and control activities. These proposals seem to be more or less of the same actions the company has been taking to date.	The current leakage profile will deliver a 34% reduction by 2038 but does not meet the 37% target. The leakage reduction interventions are similar to those employed in AMP7 although will be scaled up to deliver the leakage reduction savings. Additionally, we will be using new technology including acoustic loggers to help us find and fix leaks more quickly.

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68	CCW	Addressing leakage, is a top priority for customers. Leakage is an emotive subject, it is seen as being wasteful and can affect companies' efforts to encourage customers to reduce their own water use.	We note CCW's comment. We have increased our leakage reduction ambition in our revised dWRMP24 with our strategy now delivering a 55% reduction by 2050 (previously 50% reduction by 2050 in our dWRMP24). We have updated Section 7.2.1 and 8.3.2 of the dWRMP24 to reflect this.
69	CCW	Customers also need to be educated on what to do when they spot a leak. Companies should make it easy for customers to report a leak and also have a transparent process for keeping customers updated on the progress of the actions the company is taking in response to the report. This will build trust and provide confidence to customers that Northumbrian Water are acting on customer efforts to help tackle leakage on its network.	We will make all reasonable endeavours to inform our customers on how they should report leaks. We currently have a leakage portal on our website where customers can check if a leak has already been reported, report a new leak and track the progress of a repair. We will review our current offering to see if the process of reporting leaks can be improved.
70	CCW	We would like to see a profiled leakage reduction plan, the glidepath and leakage technical report referred to in the plan. It is disappointing that there are no links to these in the documents. We are pleased to see that a commitment to collaboration with other water companies to develop new ways of working features in your plan.	The reports were available on request. We will share these with CCW.
71	CCW	Given that some water companies find the scale of the water resources needed cannot be met with solutions within their own supply areas, it is encouraging to see that potential raw water transfers have been explored through the regional water resources groups.	We note CCW's comment.
72	CCW	In the plan for the potential transfer of water to Yorkshire Water, it is unclear whether the revenue gained by doing this will be passed on to Northumbrian Water customers. Given that delivering the whole dWRMP will mean an increase on customers' bills, we want to see a commitment that any revenue gains from water transfer will be passed on to customers by way of affordability support.	Should the Tees to York Transfer proceed, we confirm that the revenue will be considered as part of future price reviews and that NW customers will share in the gains from any trade.

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73	CCW	The bill impact of the 'best value plan' that the company is proposing would be around a 4% impact on charges in the region. This price increase will be in addition to the bill impacts from other regulatory requirements and investment needs and the company has acknowledged in the dWRMP that it is aware that this is a concern for customers. We welcome the affordability support that the company is currently offering. In addition to the support from the company, we consider that a single water affordability scheme for England and Wales is needed to make sure that those most in need are protected from higher bills due to increasing environmental investment pressures.	We support the introduction of a sustainable, single social tariff to eliminate water poverty and we have worked closely with Defra, CCWater and others to support further analysis of how such a single social tariff might be implemented. We are disappointed that work to explore a single water affordability scheme is no longer progressing. For PR24, we wanted to make sure that our support became more consistent with the approach across England and Wales in the absence of the introduction of a single scheme. We have updated our affordability and inclusivity strategy. We will go even further in AMP8 to meet this challenge through innovation and partnership working as well as our shareholders providing an additional £20m of financial support to customers through a new hardship fund.
74	CCW	It is very disappointing that we are unable to comment on whether the plan has taken into consideration the views of customers as the link to the research on page 10 of the non-technical customer summary document does not work. It is vital that Northumbrian Water can clearly demonstrate a golden thread between customer engagement, research and customer priorities in its plan.	**Section 8.5** of our revised dWRMP24 summarises the performance of our preferred final plan against WRMP objectives and metrics including customer views. Customers strongly support leakage reduction and water efficiency and, of the metering options, prefer traditional meters over smart meters. However, smart metering provides the largest demand savings and without it we would not be able to meet the national PCC targets. Consequently, our smart metering programme remains a core part of our final preferred plan. A more detailed description of customer's views is presented in a technical report entitled PR24 Customer Research Summaries and will be available to download here.
75	CCW	The Non-technical summary document should be accessible and informative to the public as a helpful document for setting the scene of the Water Resource Management Plan. At present, we feel it should be improved in order to engage those readers who are new to the subject. This is particularly important as the WReN customer engagement report1 showed that Northumbrian Water's customers understood the least about the research they were engaged in. It would be helpful to provide customers with guidance, in the non-technical version, on what you would like them to comment on as you have done on the Executive Summary version.	We have updated our customer summary in light of this response.
76	CCW	The research also revealed that customers felt that "a focus on education was something that was felt to be potentially missing". Improving the draft plan will benefit the company and consumers by providing material and	We have updated our Customer Summary so that it has a greater focus on education.

SoR Ref	Consultee	Consultee Response	NW Response
		tools to better engage on water resource issues in the future.	
77	CCW	While the non-technical summary is clearly written, we believe it could be improved. It would benefit from the use of more infographics to help to enhance comprehension and understanding within all sections of the document, for example, illustrating what proportion of the predicted demand reduction will be achieved by smart meters driving a change in peoples' water consumption etc. We would also recommend the use of video clips for engagement with a much wider audience. This is particularly important when it comes to issues that both directly impact on customers such as smart metering and water saving or their priorities such as leakage reduction.	We have updated the customer summary to take account of this response.
78	CCW	For those readers who choose to take a deeper look into the plan, it would be helpful to include footnotes, page numbers or preferably direct links directly within the Non-technical summary highlighting where in the technical documents they can find the underlying information.	We have provided additional signposting to technical reports in our summary documents as well as in our main report.
79	Waterwise	There is a general need in water resource planning to improve the understanding of future non-household PWS needs and the opportunities for NHH demand reduction. This area was weak in WRMP19 and has been challenging since retail market separation. We would therefore still like to see the WReN plan more clearly set out those NHH PWS sectors with high water use in the region, including mapping where they intersect with areas of current or future water deficits. The plan should also include a commitment to collaborate with water retailers, NHH users, their "trade" bodies and Waterwise to help encourage and support them in reducing demand and improving resilience.	We note Waterwise's feedback and have continued to work with WReN on this. The publicly available MOSL water efficiency dashboard provides detail of the NHH PWS sectors with high water use by water resource zone. Our Non-Household (NHH) demand reduction strategy is described in our revised draft Plan and allowed for in our final plan supply demand balance. Ofwat requires collaboration with water retailers as part of the performance commitment and we have committed to working with all stakeholders to reduce NHH demand. Our new demand reduction strategy is comprehensive and has been developed through liaison with other water companies, regional water resources groups, retailers and business in order to learn from their experience, ensure regional alignment, and ensure that the strategy includes options that deliver the demand reductions required.

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80	Waterwise	In terms of the **needs of the environment** we are pleased that WReN has modelled the Enhance environmental destination scenarios alongside BAU and BAU+ and that more information on this has been included in the main plan document. However, we note on p21 that the plan targets "meeting the BAU+ for the River Derwent abstraction at York linked to achievement of Common Standards Monitoring Guidance (CSMG) targets for the River Derwent, effective from 2050 in line with regulatory expectations". However, the regulators expectations set out here in May 2022 refer to "applying CSMG flow targets at European designated riverine sites by 2050 at the latest". Greater clarity is needed in the plan of the proposed date when the target will be met and we would like to see options explored that can meet it before 2050.	This response is in relation to a Yorkshire Water abstraction and so has been shared with WReN and Yorkshire Water.
81	Waterwise	The new **UK Water Efficiency Strategy** was published in September 2022 and should be referenced in the plan.	We fully support the Waterwise Water Efficiency Strategy 2030 (published in September 2022) and played an active role in its creation. The national strategy clearly outlines the need for demand management and the important roles of various stakeholders including wholesale water companies, retail water companies, Government, regulators, environmental charities and other sectors. Our household and non-household water efficiency strategies align to the national strategy across several of the Strategic Objectives. We lead the working group for Strategic Objective 7 (water efficiency measures are included in building retrofit programmes) and are actively involved in working groups supporting delivery of other Strategic Objectives. This is noted in Section 7.3.
82	Waterwise	There is a **lack of any demand reduction information or options for NHH PWS usage**. Looking at the dWRMP data-sets Yorkshire Water are predicting no change in NHH demand by 2050 whilst NWL are predicting the NHH PWS demand will actually increase by 33%. This is very surprising given the likely Environment Act 9% NHH demand reduction target and Ofwat's anticipated performance commitment. We believe it is an area where significant savings can be made. Thames Water's smart metering indicates as much as 26% of the supply to NHH sites is continuous flow and may be leaking and their Smarter Business Visits have yielded significant savings from NHH sites.	Our Non-Household (NHH) demand reduction strategy was not developed in time for inclusion in our dWRMP24. However, we have now formed a comprehensive strategy (see **Section 7.3** of revised dWRMP24), having liaised with other water companies to learn from their experience and ensure regional alignment. The NHH demand reduction strategy will be outlined in our revised dWRMP24 and allowed for in our final plan supply demand balance. Our NHH water efficiency strategy will deliver a 9% reduction in the demand of existing NHHs by 2038 from a 2019/20 baseline. This has been included in our final plan demand forecast. The water demand associated growth (new NHHs) has not been accounted for as we do not have the confidence that this can be achieved with the high levels of Non-household demand growth in this period.

SoR Ref	Consultee	Consultee Response	NW Response
83	Waterwise	The Plan on a Page should be amended to remove the **reference to white goods as the water label** is intended to cover a wider product range.	This is a reference to Water Resources North's Plan on a page and not specifically to our NW WRMP24.
84	Waterwise	We would also suggest the final plan more clearly highlights the need for future development to be more water efficient. Current Building Regulation has only one passing reference The plan should reference the government **Roadmap for more water efficient buildings** which will be published in early 2023 and will include plans for more ambitious Building Regulations and standards.	Comment noted and additional reference added in Section 7.3. For building regulations for new builds we have aligned to the current optional level of 110l/head/day, which from surveys to local authorities has been adopted in some areas already as the standard. This does not reflect the potential enhanced standards recently shared by Defra of 105l/head/day and 100l/head/day.
85	Waterwise	We are pleased to see both Yorkshire Water and NWL including for HH and NHH **smart metering**. However, the pace of this is too slow relying on installation in new homes and optants.	In addition to smart meters being installed in new homes and for customers who apply for a meter, we are also proactively replacing both HH and NHH meters with smart meters over the course of AMP 8 & AMP 9. We will be introducing whole area metering smart meter installations in the NW region, where we will install meters in existing boundary boxes on unmeasured properties and give customers comparison bills with the option to switch to a measured tariff. A change from our dWRMP24 to the revised dWRMP24 is that we are now including a NHH metering strategy in our plans, which will see us install a smart meter on all of the unmeasured NHH premises and will also replace all existing NHH meters with a smart one.
86	Waterwise	A great deal of our impact is delivered through challenging others through consultations such as this to ensure **equity, diversity and inclusion** has been considered in all policy and planning decisions. We are pleased to see that you have committed to an objective to produce a plan "is not detrimental to social wellbeing" however that objective could be reframed to commit to making a positive contribution to improving social wellbeing. We encourage as you develop the final plan to consider the impacts on social justice and how you will understand impacts of decisions, including in the long-term following trade-offs, on the diverse members of the WReN community.	We have developed our strategy to support customers as the metering programme progresses, focusing on providing 'on the ground' help. For example, we will engage with customers in the community to offer free water-saving advice, water-saving kits, and home audits, provide information and guidance on support tariffs, and advise and educate customers on accessing digital resources such as our mobile app and website. Additionally, we will proactively communicate information where we suspect leakage and support customers with free supply-pipe repairs where relevant. To support the elderly and those with visible and non-visible disabilities, we will offer alternative meter placement if the location would result in the customer being otherwise unable to access and read a meter for themselves, and targeted financial support will be given to customers in financial hardship through schemes like social tariffs and Bill-Cap WaterSure, which is a scheme intended to assist customers who may use higher than average amounts of water and are claiming means-tested benefits. Water pricing is an important tool for improving water efficiency and enhancing social equity and the continued rollout of smart meter technology will provide applications to identify and reward customers for cutting down on their water usage at certain periods or times of day. This could help customers save money off their bills by helping to balance peaks and troughs in water demand during periods of increased usage or warmer weather. We want to use this opportunity to fully engage with our customers to increase what we know about them, so we

SoR Ref	Consultee	Consultee Response	NW Response
			can provide personalised and tailored advice and support on the best tariff for them alongside signposting to additional support, Priority Services registration, and water efficiency advice.
87	Waterwise	At Waterwise, we're committed to driving equity and preventing discrimination at work and in the work we do. A great deal of our impact is delivered through challenging others through consultations such as this to ensure equity, diversity and inclusion has been considered in all policy and planning decisions. We encourage as you develop the final plan to consider the impacts on social wellbeing and how you will understand impacts of decisions, including in the long-term following trade-offs, on the diverse members of the NW customer base.	Please refer to our response above.

SoR Ref	Consultee	Consultee Response	NW Response
88	Waterwise	The draft plan is relatively very light on detail when it comes to the water efficiency options being proposed for AMP8. We would like to see a lot more information in Section 7.2.3 or cross referenced to an annex that should set out what each of the options and component activities comprises; their anticipated water (and energy) savings; the scale of activity planned and how that compares with AMP7. The plan does refer to a Water Efficiency Technical Report however we have been unable to find it on your website (along with the metering and leakage technical reports).	Our dWRMP24 is supported by a suite of Technical Reports which contain further detail of the assessments. We felt that our main dWRMP24 document gave the right level of detail for our stakeholders and customers, but recognise that in some cases stakeholders might want to see the more detailed reports. As stated on our dWRMP24 Consultation webpage, technical reports referenced in the main report are available on request via waterresources@nwl.co.uk . We have updated the main report and in light of our consultation feedback, have added additional detail where we've felt this is required.
89	Waterwise	The savings metric used of l/hd/d in Table 26 is also confusing and we haven't seen it used in other dWRMPs. It is also not clear from Table 26 what the difference is between the high and medium scenarios as the items listed are the same. We assume it is a difference in terms of scale but it is not evident in the plan.	L/hd/d is reduction in PCC over the population so relevant for the understanding of impact. The high option scenario increases the scale of four of the options that have not been delivered previously (Find and Fix Teams – bulk supply, Toilet Rebates, Home Flow Restrictions, and Unmeasured Property Engagement)
90	Waterwise	It is not clear from the draft plan which of the three water efficiency scenarios (high, medium and low) has been chosen and why although the Executive Summary does refer to the Medium option as preferred. This decision and decision making process needs to be clearer in the final plan.	We confirm that the medium (central) option is our preferred scenario for all Demand Management Options. This is because the central option is needed to meet national targets for reducing leakage and household and non-household demand. Our final preferred plan only includes those demand management options that are needed to meet national leakage and demand reduction targets We have considered further scenarios whereby only 50% and 75% of the smart meter programme is delivered by the end of AMP 9. In both cases, the PCC target of 118 l/head/day by 2040 was not met and so we have discounted these scenarios. This means that our choices on timing are between AMP8 and AMP9. We could meet the interim PCC target of 122l/h/d by 2037/38 if we delivered just 25% of the smart metering programme in AMP8, and the remaining 75% in AMP9. This would also be sufficient to maintain a supply surplus in the Berwick & Fowberry WRZ and to restore a supply surplus in the Kielder WRZ in AMP8. However, we have decided not to do this, and instead have selected an option where we deliver 50% of the programme in each of AMP8 and AMP9. This is because: ▪ A linear profile reduces deliverability risks, by allowing us to recruit and maintain teams across a ten year period as well as reducing meter and smart network procurement risks. For example, in AMP7, the shortage of microchips has slowed delivery of our smart metering programme. Relying on delivering 75% of the programme in AMP9 would mean more risk of not meeting the 2037/38 target. ▪ This provides more flexibility if other demand management options under-perform, or if non-household growth is higher than expected.

SoR Ref	Consultee	Consultee Response	NW Response
			▪ Our customers supported our linear investment plan in our qualitative affordability and acceptability research – with a balance between wanting to tackle problems now, and affordability. We will provide more detailed evidence in our enhancement case for metering in the PR24 business plan. Further detail is provided in the Options Appraisal Technical Report which is available on request via waterresources@nwl.co.uk.
91	Waterwise	We strongly support the company in continuing its free leaky loo fix which is a sector leading scheme and Waterwise is keen to help promote this initiative and to work on a collaborative campaign on leaky loos with other water companies, the BMA as recommended in our position statement.	Comment noted. We will continue to offer support to customers to identify and repair their toilets.
92	Waterwise	We are pleased to see the home visit programme continuing but would like to see more information in the final plan on the scale of the programme compared to what was delivered in AMP6 and AMP7. Whilst we understand the principle of targeting home visits at 5% of high water users we don't believe the company should fully discount a programme in the longer term for more average water users, particularly those who may be financially vulnerable given the cost of living crisis and the potential for water and energy bill savings.	Our revised dWRMP24 has been updated (see Section 7.3) to include further detail on our approach to delivering water efficiency interventions to 'more average users' and those that may be more financially vulnerable. This will be tied into our plans for delivery of water efficiency activity incorporated within the smart metering programme.

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93	Waterwise	A number of water sector trials across the UK (Sussex, Affinity, NWL, UU) are finding that flow controllers can reduce consumption by around 30-64 litres per property per day with further larger scale programmes being planned by several companies in AMP8. This might be what is meant by “home flow restrictions” in the water efficiency options Table 26 but it would be useful to confirm that in the final plan and to provide more detail on what is proposed (see earlier comments). Waterwise would support NW including a programme to fit these devices alongside the meter as part of the smart metering roll-out or alternatively in all new build homes/on change of occupancy. As well as targeting new build homes the company could also work with local authorities and housing associations to install them in social housing.	Home flow restrictions' does refer to the use of flow controllers as described. We have provided clarification in Section 7.3 of the revised dWRMP24.
94	Waterwise	We very much support the water sector in rolling out smart meters and are pleased to see NW committing to ensure that all its meters are smart enabled by 2035. However, the draft plan is only predicting meter penetration of 68% in 2050 which is significantly lower than all other water companies in England. Our research coupled with the experiences of Anglian and Thames Water to date have shown that smart metering is a game changer when it comes to reducing leakage and engaging with customers on water use and water wastage. Our preferred metering approach to deliver the benefits of smart metering is Option 3 with the company rolling our smart meters on an area by area basis to its full customer base over 2-3 AMPs.	Our region is not categorised by the Environment Agency as being a Serious Water Stressed Area. This is because we benefit from Kielder reservoir and the Tyne Tees Transfer. Consequently our starting (2025) and forecast meter penetration by 2050 is lower than other companies like Thames Water and Anglian Water which are both located in serious water stressed areas. We are forecasting that our demand management strategies will enable us to meet leakage reduction and PCC targets without the need for universal metering (i.e. all properties measured even if they are not billed on a measured supply)and so cannot justify the additional cost and subsequent increase to customer bills.
95	Waterwise	The company needs to include NHH customers in the smart meter roll-out given that around 30% of water used is outside the home and there are significant opportunities to reduce NHH demand.	Our revised dWRMP24 preferred final plan now includes NHH smart metering (**see Sections 7.2.3 and 8.3.2**). We are proposing to meter the remaining NHH premises that are still unmeasured and plan to replace all existing basic/AMR NHH meters with smart ones over AMP 8 & AMP 9. The smart network will be established across the NW region over AMP8, and our strategy will be to install/replace NHH meters to smart, in areas where the smart network is switched on first.
96	Waterwise	Linked to the smart meter roll-out we would like to see the company include specific investment in AMP8 to launch an app, platform or portal to share smart meter consumption information and targeted insights with customers.	We confirm that the smart comms network that will enable the smart meters to work will be delivered in NW over AMP8 and customers will be able to access their consumption data via the app that has been developed already.

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97	Waterwise	The dWRMP24 plan is weak in terms of explaining future non-household PWS needs and setting out any options or plans to reduce NHH water demand (business water saving visits, incentive schemes). This is a major omission especially in light of the government's Environment Act target (which includes NHH demand reduction) and Ofwat's performance commitment for NHH demand reduction. Indeed the plan includes a significant increase in NHH demand (see table below) linked to new energy infrastructure in Teesside. It is not clear from the plan how the private energy sector is contributing to the costs to water bill payers of meeting this huge additional demand or what measures they will be taking to optimise/reduce their additional water demand.	We have updated our revised dWRMP24 to include our Non-Household demand reduction strategy (see **Section 7.3**). This will enable us to meet the national target of 9% reduction in business water use by 2038. The demand savings have been included in our final preferred plan supply demand balance.

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98	Waterwise	We are pleased to see that Northumbrian Water recognises the potential contributions to demand reduction from government policies such as water labelling of products and improved efficiency standards for new development. However it is unclear from the plan what the scale of the assumed contribution to PCC reduction due to policy measures is when compared to what can be achieved without these policy measures. On water labelling the plan on p78 and in the Exec Summary should not refer to this as applying just to “white goods” as the proposed government scheme is broader than that and includes taps for example. We are asking all companies to include a budget in their final plans to support/promote the roll-out of water labelling in AMP8 helping to explain to their customers why it is important and how they can use the label. The trial of an incentive scheme could also be considered. We welcome the company's ongoing support in working with Waterwise to advocate for more supportive policies for example on new build and retrofit. The company should consider how its developer incentives can be refreshed to help minimise the water demand footprint of new development and Thames Water have a good existing example of this.	We have noted the comment on use of the term "white goods". We have aligned to the lower estimate saving for water labelling with no minimum standards. For building regulations for new builds we have aligned to the current optional level of 110l/head/day, which from surveys to local authorities has been adopted in some areas already as the standard. This does not reflect the potential enhanced standards recently shared by Defra of 105 and 100l/head/day. There is a lack of clarity on exactly when and how labelling will be delivered and so detailing plans of how NW would support a roll out is not feasible at this stage. A collaborative national direction and action would enable the greatest benefit, not wholesaler-only led action, but of course we will play an active role in engaging our customers around water labelling. Our developer incentive has been in place this AMP. We await to see the results and impact of the Thames Water work on new development incentive (water neutrality).
99	Natural England	Natural England has concerns that NW has not carried out its own assessments for the proposed Yorkshire Water transfer and has not taken the opportunity to undertake in-depth consideration of the potential impacts of the proposal.	We have undertaken hydrological modelling of the Kielder Water Resource Zone to confirm what the sustainable surplus of water is within the current system as constrained by abstraction and transfer licences and infrastructure. The Environmental Assessments for the proposed water export to Yorkshire Water (YW) are detailed within Yorkshire Water’s Environmental Report for their revised dWRMP24, although the outcomes of these assessments, where they have been made available, are summarised within our Environmental Report, especially in terms of potential cumulative and in-combination effects with our DMO-Preferred package of options. We will continue to work collaboratively with YW, directly and through WReN. While the scheme is not needed until 2040, YW is committed to a full assessment of all options including the Kielder to Tees transfer and developing other suitable options which will be fully assessed, including cumulative SEA assessments for all options. We will work closely with YW, possibly through a Strategic Resource Option (SRO), to ensure all NWL aspects have been considered including Kielder reservoir, the Tyne Tees Transfer and the River Tees itself. We have made this commitment in **Section 11.1** of our revised dWRMP24.

SoR Ref	Consultee	Consultee Response	NW Response
100	Natural England	Natural England has concerns that the supply-demand balance in the dWRMP relies entirely on ambitious demand management options and would request that NW clarifies if an adaptive approach has been fully considered. In addition, Natural England suggests that the demand calculation, particularly in relation to climate change scenarios and non-household, and the options for proposed demand reductions could be more transparent and robust.	Our approach to water resources planning is to take a twin track approach and in the first instance plan to reduce demand prior to new supply options. We believe this is the right approach as a reduction in leakage and demand results in reduced abstraction from rivers, reservoirs and from groundwater sources, less water treatment and distribution, and therefore lower energy and chemical use and carbon emissions. Our preferred plan only includes central demand management options that are required for us to meet national targets for leakage reduction, Per Capita Consumption (PCC) and reductions in business demand. The demand savings from these options in early AMP8 mean that we are able to offer 1 in 500 year resilience to extreme restrictions on water use during drought. Additionally, we have tested our resilience against a high demand scenario (see **Section 9**), where PCC out turns higher than our central PCC forecast but still maintain a supply surplus. Consequently, we do not believe that an adaptive plan is required. We have updated **Section 7.2.3** of our revised dWRMP24 to include our strategy for reducing non-household demand and to confirm the associated demand savings that we have included in our final plan distribution input forecast and wider supply demand balance.
101	Natural England	Natural England would encourage the water company to be ambitious and forward-thinking in terms of ensuring sites and species that are water dependent, including European sites, SSSIs, Ramsars, priority habitat and protected species, are protected and enhanced. The Environmental Destination as defined in the Regional Plan modelling that has been relied upon by NW may not go far enough or fast enough to meet the nature recovery obligations set out in Annex 2.	Natural England's comment, in relation to the Environmental Destination as defined in the Regional Plan modelling that has been relied upon by NW within our dWRNP24, is noted. While we do not intend to make any changes to our revised dWRMP24 as a result, we would ask Natural England to note that as part of our AMP8 WINEP we have committed to working with Yorkshire Water and WReN on a joint options appraisal of Environmental Destination in the North East with the intention of confirming actions required within our WRMP29 to move us along the required pathway.
102	Historic England	We are concerned by inadequate reference to the historic environment in the plan. We observe generally a lack of suitable references to the historic environment in the dWRMP24. In section 2 of our letter we explain why the historic environment is important in relation to water plans. For example on p14, under protecting and enhancing our environment a direct reference could be made to the conservation and enhancement of heritage assets. Section 10.2 does not provide specific mention of the historic environment. Whilst this may be a consideration as part of NW's action for the environment , we would encourage this to be made clear, recognising the relationship between the water environment and the historic environment.	Within our Environmental Report the historic environment is considered as part of the SEAs under the topic: "To conserve/protect and enhance the historic environment including the significance of designated and non-designated cultural heritage (including archaeology and built heritage), including any contribution made to that significance by setting." In the tables in Section 11.1 of our Revised Draft WRMP24 the summary SEA outcomes (during construction and operation) for each DMO package and supply side option are indicated against the 'Historic Environment' SEA topic. Historic Environment is considered as part of the Baseline in Section 3.3 of the separate Environmental Report. As our preferred plan does not require any supply side options and our DMOs are not associated with changes in land-use, do not have a physical footprint, and do not require planning permission, they are very unlikely to impact on the historic environment and heritage assets.

SoR Ref	Consultee	Consultee Response	NW Response
103	Historic England	We note the lack of need for any supply side measures within the NW area. We understand from the report that even in the most extreme droughts the NW area has surplus water when taking account of the demand side measures such as reducing leakage, reducing customer demand etc. However there may be a need for a transfer to a new pipeline to the Yorkshire Water from the River Tees from 2049. We understand at this stage there is little detail on the exact siting of this at present but would welcome early engagement to carefully manage any impacts to the historic environment. We take this opportunity to emphasise that, when laying new pipelines, known archaeological remains and unknown potential for archaeological remains represent both a constraint and a consideration to factor into decision-making, informed by liaison with heritage professionals (in such circumstances case, archaeological advisers).	We have noted this comment from Historic England. No update is recommended to our own Environmental Report or Section 11 of our dWRMP24 in response. We would also comment that any pipeline required to enable the transfer of water from Northumbrian Water to Yorkshire Water would be fully assessed, including with respect to the historic environment and archaeological remains, within Yorkshire Water's dWRMP24 and associated Environmental report as it is a scheme they are promoting.

SoR Ref	Consultee	Consultee Response	NW Response
104	UK Water Retailer Council	We note the company's commitment to continue installing new or replacing existing meters with smart meters in AMP8 and to achieve a fully smart meter portfolio by 2035. However we are unclear on three points: 1. Will the commitment in AMP8 through AMP9 also apply to non-household (NHH) properties? If not, what would be the reason for differentiating? 2. Will these meters, especially for NHH properties, be the versions you refer to as 'smart capable' or 'smart active' ? If the former what would be the transition programme to the latter? 3. Your preferred option for metering demand management is *Option 5: Targeted enhance optant and WAM programme – High Impact 2 (smart by 2030).* However we note your Best Value Plan objectives propose for all meters to be smart by 2035, i.e. a delay from your preferred demand management option. Please could you confirm therefore in your final plan the objectives and programme for smart(er) metering, for NHH customer properties.	Our revised dWRMP24 now includes NHH smart metering. We are proposing to meter the remaining NHH premises that are still unmeasured and plan to replace all existing basic/AMR NHH meters with smart ones over AMP8 &AMP9 (by 2035). The smart network will be established across the NW region over AMP8 and our strategy will be to install/replace NHH meters to smart, in areas where the smart network is switched on first.

SoR Ref	Consultee	Consultee Response	NW Response
105	UK Water Retailer Council	On water efficiency your draft plan states - The key focus of the strategy is targeting our highest using customers to establish understanding and removal of barriers to efficient practices to maximise water savings, over a longer period. As set out at the beginning of this letter, the NHH Market account for around 30% of all water delivered, i.e. around 3Bn litres/day. 3% of those NHHs (i.e. use around 70% of that (i.e. around 20% of all water consumed) For Northumbrian Water, MOSL data suggests there are 5,630 larger meters (i.e. 40mm and above) accounting for 5.75% of the meter asset base. In normal circumstances these should be recording far higher demand than even the highest using household customers. The target demand reductions required in the NHH market will require significantly improved data quality, granularity and availability. This cannot be achieved without smart(er) metering – primarily AMI based. Will the company therefore be including NHHs in their focused strategy and targeting these larger NHH meters. Without such a focus we would be concerned that the company would struggle to archive the 9% reduction in NHH demand required by Government and set out in the 'Environmental Improvement Plan. 2023'. We believe further clarity on the company's ambition and proposals for delivering this target in the NHH market should therefore be made clear in their final plan.	Our Non-Household (NHH) demand reduction strategy was not developed in time for inclusion in our dWRMP24. However, we have now formed a comprehensive strategy (see **Section 7.3** of our revised dWRMP24), having liaised with other water companies to learn from their experience and ensure regional alignment. The NHH demand reduction strategy is outlined in our revised dWRMP24 and allowed for in our final plan supply demand balance. Our NHH water efficiency strategy delivers a 9% reduction in the demand of existing NHHs by 2038 from a 2019/20 baseline. This is included in our final plan demand forecast. The water demand associated growth (new NHHs) has not been accounted for as we do not have the confidence that this can be achieved with the high levels of Non-household demand growth in this period. Please see previous response for clarification around NHH smart metering plans which in turn will provide assurance about the need for improved data quality, granularity and availability. We have made a change from the dWRMP24 to the revised dWRMP24 and are now including NHH smart metering in our plan. We are proposing to meter the remaining NHH premises that are still unmeasured and plan to replace all existing basic/AMR NHH meters with smart ones over AMP8 & AMP9. The smart network will be established across the NW region over AMP8 and our strategy will be to install/replace NHH meters to smart, in areas where the smart network is switched on first.

SoR Ref	Consultee	Consultee Response	NW Response
106	UK Water Retailer Council	We believe all water companies should include in their Final WRMPs: 1. When referring to customers, defining whether household or non-household 2. Confirmation that NHH customers will be included in • The company's rollout of smarter meter installation programmes • The delivery of water efficiency advice and measures. In both cases companies should set out their plans and how they propose to engage and collaborate with retailers and NHH customers. 3. Confirm the number of smart(er) meters they intend to rollout during AMP8, broken down by HH – NHH and by AMR – AMI. 4. Demonstrate how they have taken account of evidence from the existing research work on smart(er) metering already in the Market, commissioned by MOSL, and the trials already carried out by other water companies	Section 7.3 of our revised dWRMP24 has been updated to provide clarity when referring to HH or NHH customers. To confirm, we intend to install 328,313 smart meters on HH premises and 31,913 NHH smart meters over AMP8. We are not proposing to install any basic/AMR meters.
107	Waterscan	We strongly support NW 's proactive investment and infrastructure to tackle leakage, from innovative technology to the incubation hub linked to its National Leak Research Centre. One of the projects connected to the Research Centre is 'Stream', a new, open source data sharing platform that is currently in development. We would be interested to find out more about how NW intends to integrate Stream ' into the wider water market, particularly in terms of its plans to share data with other companies, utilities and the wider public. We would also like more insight into how NW foresees 'Stream' will complement or compete with MOSL's plans for a centralised data cleanse service and data standardisation	We are actively engaging with other stakeholders in the. We believe that the work we're doing will complement MOSL's work as we have a much wider scope. However, there will be opportunities to link data to the centralised and standardised MOSL data where appropriate. Stream will support both open and restricted shared data and so we hope to support both centralised and de-centralised datasets .

SoR Ref	Consultee	Consultee Response	NW Response
108	Wave Utilities	Smart Metering: We believe the stated ambitions around smart metering do not go far enough. NHH demand makes up a significant proportion of overall water demand and we believe targeting these customers with smart metering will both improve market data, ensure correct revenues and also crucially deliver significant water demand reductions. We would as a minimum hope to see a clear commitment to a point in time when NWL will only use smart meters to replace broken ones, review largest consuming meters and replace with smart and target long unread meters. We would seek further clarity on the intentions specifically relating to NHH smart meter roll out and ask that the strong resource position does not result in delays to this activity.	We have taken on board comments to include NHH premises in our smart metering strategy and confirm they will now be included our in the final plan in our revised dWRMP24 (see **Section 8.3.2**). We are proposing to meter the remaining NHH premises that are still unmeasured and will replace existing NHH basic/AMR meters with smart ones. The smart network will be established across the NW region over AMP8, and our strategy will be to install and replace NHH meters to smart in areas where the smart network is switched on first.
109	Wave Utilities	Industrial decarbonisation and the impact this will have on future industrial water demand (potentially from 2026 / 27). Conversations with NWL have commenced on this subject which may have a significant impact on water resources in the northern operating area. We would like to seek greater focus and engagement on this critical subject.	We continue to work closely with businesses on Teesside and specifically with Tees Works and Net Zero Teesside and are in the process of setting up an NWL director led group to provide the focus and engagement needed given the significant increase in NHH growth on Teesside. We have updated the non-household demand forecast in our revised dWRMP24 to reflect businesses latest forecasts which has resulted in an uplift in both potable and raw water demand. In order to supply the full quantity of raw water by 2026, new river intake eel screens will be required as well as a licence variation to revert licensed quantities back to their original levels. The licences were varied down to reflect what was a reduction in industrial raw water demand at the time. We have made this commitment in **Section 4.6** of our revised dWRMP24.
110	National Trust	The Trust expects that the final WRMP would incorporate: An environmentally responsible and sustainable approach to development, with clear SMART aims and objectives; The use of the mitigation hierarchy in all aspects of planning and programming – e.g. Leakages of water resources to be addressed prior to new development of assets; The development of strategic/regional level drought resilience measures in parallel with the new infrastructure programme; A clear communication and education strategy on management of demand; A commitment to full and effective engagement and communication with all stakeholders that may be affected.	Our revised dWRMP24 takes a twin track approach and includes Demand Management Options (DMOs) that are needed to meet national targets for leakage reduction (50% reduction by 2050) and Per Capita Consumption (PCC) (110l/head/d by 2050). The demand savings from our DMOs are sufficient to maintain a 1 in 500 year supply surplus from 2025. Consequently, there are no supply schemes to increase deployable output in our own supply area. The only supply scheme in our preferred final plan is the Tees to York raw water transfer to Yorkshire Water in 2040 which is possible because of the supply surplus within the Kielder Water Resource Zone. A clear communication and education strategy on management of demand is part of our overall strategy to increase water meter uptake and reduce PCC. No changes have been made to our NW revised dWRMP24 but reflecting your comments and those of CCW above we have further improved our customer summary document to make these factors clear.

SoR Ref	Consultee	Consultee Response	NW Response
111	National Trust	We note that that plan identifies from 2040 the potential for raw water export from the River Tees to Yorkshire Water, supported by Kielder reservoir via the Tyne Tees Transfer system. We have commented on this provision as part of our response to Yorkshire Water's dWRMP. Clearly there is work to do in developing this option and at this point it is not possible to ascertain if any physical construction works are likely which might impact on NT property. It is important that for any new development of physical assets the need and justification is clearly set out, in comparison to other options or alternatives. In addition, the likely adverse impacts on cultural heritage, landscape, nature and in respect of climate change should be fully assessed, and minimised and/or mitigated as appropriate. We would also expect proposed developments to maximise the potential benefits for people and nature. The National Trust's position with regard to this proposal is reserved.	We note National Trust's reserved position. We work collaboratively with YW directly and through WReN and YW is committed to full assessment of all options including the Tees transfer and developing other suitable options which will be fully assessed, including cumulative SEA assessments for all options. **No changes have been made to our NW revised dWRMP24.**
112	National Trust	Future consultation - Where there are specific areas of National Trust land potentially affected by any stage of the overarching dWRMP options that we have not been specifically identified above, due to the absence of specific asset details and locations in the dWRMP, and/or due to the necessary optionality that such a long-term plan necessitates, the Trust would welcome further engagement on NW's dWRMP24 prior to its finalisation.	We work collaboratively with YW directly and through WReN and YW is committed to further engagement with key stakeholders and interested parties as the scheme is developed. **No changes have been made to our NW revised dWRMP24.**
113	Arqiva	We believe that Northumbrian Water must build-in AMI as a central component to its WRMP and pursue an ambitious rollout from AMP8. AMI provides water companies with hourly data on the amount of water delivered to a property, 24 hours a day, 7 days a week, with data transmitted securely from water meters to water company data centres. This level of insight enables water companies to deliver a range of benefits. Companies that do not deliver AMI risk delays to delivering these benefits, or not realising them at all.	Our plan is to only install AMI meters as we move into AMP8. The smart networks will be rolled out across the NW region over AMP8 and, we will have smart meter network coverage across the NW region by the end of AMP8.

SoR Ref	Consultee	Consultee Response	NW Response
114	Everflow	From our review of WRMPs, many wholesalers are intending to roll out smart meters from 2025 or have already started. However, there are no set dates for when every business will have one. Wholesalers that have already rolled out smart meters identified around 25% of the water being used by NHH customers is continuous flow – a large proportion of this could be leakage and/or wastage. Smart meters enable leaks to be detected much quicker so that wasted water can be minimised. One million smaller NHH customers use water in a very similar way to households (toilets, sinks, etc.) and have similar meter sizes and usage. We would like clarity on how many smart meters (AMI not AMR) you intend to deploy in AMP8 and beyond, including visibility for retailers on when and where they will be rolled out, to avoid duplication of effort or customers paying for loggers when they don't need to.	A change from our dWRMP24 to our revised dWRMP24 is that we are proposing to meter 3,418 currently unmeasured NHH premises with a smart meter and replace 28,495 existing NHH basic/AMR meters with smart meters in AMP8. Our NHH smart metering programme continues into AMP9 when we will meter 3,415 currently unmeasured NHHs with a smart meter and replace 28,495 existing NHH basic meters with smart meters. The smart network will be rolled out across our NW region over AMP8, and we plan to install/replace NHH meters where the network is switched on first.
115	Everflow	We would like wholesalers to align with the national NHH metering strategy position on data sharing. Proactive logging and continuous flow/high usage alerts for customers via retailers are also key to obtaining 'in the moment' conversations about water efficiency which NHH customers are more likely to engage with, so smart data should be shared with the customers' retailer. We would also urge wholesalers to pool their NHH benchmarking data (ideally nationally) and share this with retailers operating in their area, so that the benefits of big data can be realised and result in better targeting of water efficiency and leakage services by retailers.	We support the National Meter Strategy on data sharing and will continue to be involved in industry discussions around this.

SoR Ref	Consultee	Consultee Response	NW Response
116	Everflow	There is low demand for water efficiency services among businesses1 - even when they are offered for 'free' to the non-household customer. Retailers' relationships with their customers are key to improving this and communications by wholesalers and retailers must be coordinated. We would like more detail on how water efficiency services will be offered to different categories of NHH customers. We want to be able to offer water efficiency services consistently nationwide so that water saving is simpler for NHHs to engage with. We would prefer a nation-wide approach to demand reduction so that multi-site customers have clarity about the services and funding and/or incentives available to them. This is another reason why wholesalers need to focus their efforts on incentivising and collaborating with retailers.	Our Non-Household (NHH) demand reduction strategy was not developed in time for inclusion in our dWRMP24. However, we have now formed a comprehensive strategy, having liaised with other water companies to learn from their experience and ensure regional alignment. The NHH demand reduction strategy has been outlined in our revised dWRMP24 and allowed for in our final plan supply demand balance. Our NHH water efficiency strategy will deliver a 9% reduction in the demand of existing NHHs by 2038 from a 2019/20 baseline. This has been included in our final plan demand forecast. The water demand associated growth (new NHHs) has not been accounted for as we do not have the confidence that this can be achieved with the high levels of Non-household demand growth in this period. Whilst we do not have full control over efforts to ensure options for national delivery, we will actively engage retailers (and others) to work towards this.

SoR Ref	Consultee	Consultee Response	NW Response
117	Everflow	We would like to see true collaboration between wholesalers and business retailers that delivers value for customers, as well as environmental and water security benefits. Funding also needs to reflect actual costs of engaging and delivering such services. Wholesaler water efficiency incentive schemes for retailers to date have been based on per litre usage reductions, and there are inadequate commercial retailer incentives. Due to low business engagement and willingness to pay for leakage and water efficiency services, retailers therefore have not been able to cover the costs of water efficiency services and delivering them. We would echo Waterwise's request last year for a wholesaler commitment to greater collaboration with retailers in the plan, and a more detailed plan for how they will deliver demand reduction in the NHH sector. This could involve: • Technical support with abstraction options • Providing a sterner 'police' type function when customers don't respond to retailers about potential leaks and over consumption (e.g., issuing leak notices and showing local connections with water deficits/risks to supply or the environment) • Sharing smart meter and logger data • Sharing plans for smart meter/logger roll outs • Offering white label services (as most wholesalers already do for meter reading) for leak detection and repair, water efficiency site surveys and installing water efficiency products. However, we believe a competitive market for these services would serve customers best, so do not think that wholesalers should offer these directly to NHH customers.	A change from the dWRMP24 to the revised dWRMP24 is that we are now including NHH metering in our plan. We are proposing to meter those NHH premises that are still unmeasured and replace existing basic/AMR meters with smart ones. We support the Nation Meter Strategy on data sharing and will continue to be involved in industry discussions around this. Ofwat requires collaboration with water retailers as part of the performance commitment and we have committed to working with all stakeholders to reduce NHH demand. We have already engaged with our two largest retailers, Wave and Everflow, who make up c.90% of our NHH connections. We have shared our plans as they have developed with both to ensure alignment and avoid any barriers. Up to and after 2025 we will continue to interact to identify the best ways of delivering together and engaging NHH customers.

SoR Ref	Consultee	Consultee Response	NW Response
118	Everflow	Retaining TUBs and NEUBs for peak demand or droughts is regrettable for our customers, but if they must be used, we ask that the plan details how retailers will be involved in customer communications around these. Ideally communication protocols should be agreed in advance so that they can be sent out in a timely and organised way.	Temporary Use Bans (TUBs) and Non-essential Use Bans (NEUBs) are drought actions in our drought plan which is published on our website at www.nwg.co.uk/droughtplan. TUBs and NEUBs are feasible drought actions and so necessarily must form part of our Drought Plan and WRMP24. We commit to reviewing Wholesale / Retail communication protocols regarding TUBs and NEUBs by 31 March 2024. No changes have been made to our NW revised dWRMP24.
119	MOSL	Having reviewed all water companies' draft plans and the best-value regional plans, we do not believe that they are currently considering the needs and potential of the NHH market sufficiently. We are pleased to see a number of commitments to the NHH market in your draft WRMP. Overall, however, we are unclear whether the commitments around smart metering included NHHs as well as households. We would like clarity on your NHH smart metering and water efficiency commitments in advance of and as part of your final plan. Despite Defra's guidance to consider the NHH market in companies 'best value' plans, several WRMPs make minimal reference to the market in the main document. In some cases, important NHH information is found only as part of the appendices. Considering that the NHH market accounts for 30 per cent of water consumed in England, it is essential that key points are included in the main document – not only as business customers have a key role to play in supporting the industry meeting its demand reduction targets, but also because NHH customers' awareness of water security challenges remains low.	A change from the dWRMP24 to the revised dWRMP24 is that we are now including NHH metering in our plan. We are proposing to meter those NHH premises that are still unmeasured and replace existing basic/AMR meters with smart ones. We are proposing to meter 3,418 currently unmeasured NHHs with a smart meter and replace 28,495 existing NHH basic meters with smart meters in AMP8. The smart network will be rolled out across our NW region over AMP8, and we plan to install/replace NHH meters where the network is switched on first.

SoR Ref	Consultee	Consultee Response	NW Response
120	MOSL	Despite the challenges we have outlined - as we discussed at our recent CEO Forum - there are several aspects of the market that make it ideally placed to support your water reduction targets. The first is scale. As a market that consumes a third of the potable water in England and Wales – three billion litres per day – the NHH market can, and should, be making a proportionate contribution to your water reduction targets. The second is structure. Just one per cent of NHH customers use half of the water in the market (three per cent use nearer 70 per cent – or 20 per cent of all consumption). Just 11,000 large meters and 152,000 medium-sized meters account for 72 per cent of consumption in the market. This represents a significant opportunity for water companies to address a large proportion of the market's water usage through a targeted programme of smart meter replacements or upgrades (AMI, AMR, smart loggers, etc.). Wholesalers that have rolled out smart meters to date have also identified around 25 per cent of the water being used by NHH customers is continuous flow – a large proportion of this could be leakage and/or wastage. I would like to remind you of the research MOSL commissioned from Artesia Consulting in 2022, which established a strong business case for rolling out smart metering to NHH customers at the same time as domestic customers. It also recommended companies without large-scale meter investment programmes would benefit from replacing or upgrading selected NHH customers' meters, particularly the largest customers and/or where businesses are in close proximity. One million of the smaller NHH customers are virtually indistinguishable from households in terms of the amount of water they consume, how they use water (toilets, sinks, etc.) and meter sizes. We recommend that wholesalers treat the smallest NHH customers effectively as households when it comes to meter replacement programmes, water conservation advice and devices, in order to minimise operating costs and maximise the economies of scale.	We have noted this recommendation. We have now formed a comprehensive NHH demand reduction strategy (see Section 7.3 of our revised dWRMP24), having liaised with other water companies to learn from their experience and ensure regional alignment. The NHH demand reduction strategy has been outlined in our revised dWRMP24 and allowed for in our final plan supply demand balance. Our approach with smaller NHHs will largely focus on 'domestic' water use. A change from our dWRMP to our revised dWRMP is that we are proposing to meter 3,418 currently unmeasured NHH premises with a smart meter and replace 28,495 existing NHH basic/AMR meters with smart meters in AMP 8. Our NHH smart metering programme continues into AMP 9 where we will meter 3,415 currently unmeasured NHHs with a smart meter and replace 28,495 existing NHH basic meters with smart meters in AMP 9. The smart network will be rolled out across our NW region over AMP8, and we plan to install/replace NHH meters where the network is switched on first.

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121	MOSL	Ensuring references to 'customers' are clear, in terms of whether you are referring to households, NHHs or all customers.	We have updated our revised dWRMP24 to clarify when we are referring to household or non-household customers.
122	MOSL	A clear statement regarding the recognition of the size and importance of the NHH market and the role it plays in delivering your WRMP, reducing water demand and wastage	We recognise the importance of the NHH market and the role it plays in reducing water demand. We have updated **Section 7.2** in our revised draft WRMP to summarise our strategy for reducing non-household demand by 9% by 2038 and 15% by 2050. The full detail is included in the Water Efficiency Technical report.
123	MOSL	Reference to Defra's nine per cent water reduction target for the NHH market by 2038 and your detailed plans for achieving this target	Our Non-Household (NHH) demand reduction strategy was not developed in time for inclusion in our dWRMP24. However, we have now formed a comprehensive strategy (see **Section 7.3** of our revised dWRMP24), having liaised with other water companies to learn from their experience and ensure regional alignment. The NHH demand reduction strategy has been outlined in our revised dWRMP24 and allowed for in our final plan supply demand balance. Our NHH water efficiency strategy delivers a 9% reduction in the demand of existing NHHs by 2038 from a 2019/20 baseline. This has been included in our final plan demand forecast. The water demand associated growth (new NHHs) has not been accounted for as we do not have the confidence that this can be achieved with the high levels of Non-household demand growth in this period.
124	MOSL	Greater use of the research by MOSL and the Metering Committee to determine the business case for NHH smart metering and the benefits of making meter data available to retailers and customers.	A change from the dWRMP to the revised dWRMP is that we are now including NHH metering in our plan. We are proposing to meter those NHH premises that are still unmeasured and replace existing basic/AMR meters with smart ones. We support the Nation Meter Strategy on data sharing and will continue to be involved in industry discussions around this.
125	MOSL	Clarity on the number of smart meters you intend to deploy in AMP8 and beyond – visibility for retailers on when they will be rolled out and where will help avoid duplication of effort.	We are proposing to meter 3,418 currently unmeasured NHHs with a smart meter and replace 28,495 existing NHH basic meters with smart meters in AMP 8. Our NHH smart metering programme continues into AMP 9 where we will meter 3,415 currently unmeasured NHHs with a smart meter and replace 28,495 existing NHH basic meters with smart meters in AMP 9.
126	MOSL	Where appropriate, cross-referencing the findings of other water companies smart meter rollouts to support smart meter proposals and the scale of water saving opportunities	Thames Water and Anglian Water in PR19 attributed an average saving of 3% specifically to the extra insights into consumption that is received by customers from smart meters compared to dumb meters . (UKWIR (2019) Using smart meters to deliver savings for consumers reference CU02D206). In the publication of their dWRMP24's both companies have stated they have used a conservative 2% based on a more recent data set. Other water companies have stated employing between 3-5% as a result of behavioural change. The National Infrastructure Commission in their 2018 review of drought resilience state that standard "dumb" meter can reduce average consumption by 15% and smart meters by 17%. These results from the industry have informed our choice of a 3% saving for smart meters compared to dumb meters. As smart meters are a relatively new introduction the longevity of smart meter behavioural change savings has yet to be confirmed. Therefore, this percentage saving of 3% remains constant across the planning horizon. This percentage saving relates specifically to behavioural changes in customers only and does not

SoR Ref	Consultee	Consultee Response	NW Response
			include plumbing loss or supply pipe leakage savings. Please refer to **section 5.3** of the Demand Forecast Technical Report.
127	MOSL	An approach that treats smallest NHH customers the same as households for the purposes of water conservation messages and devices.	We have noted this recommendation. We have now formed a comprehensive NHH demand reduction strategy, having liaised with other water companies to learn from their experience and ensure regional alignment. Our NHH demand reduction strategy is now included in **Section 7.3** of our revised dWRMP24 and allowed for in our final plan supply demand balance. Our approach with smaller NHHs will largely focus on 'domestic' water use.
128	MOSL	Explanation of how water efficiency services would be offered to different categories of NHH customers – multi-site, industrial customers, commercial/offices etc.	Our Non-Household (NHH) demand reduction strategy is now presented in **Section 7.3** of our revised dWRMP24 and allowed for in our final plan supply demand balance. Various interventions will be targeted to sectors/customer segments accordingly to drive greatest benefit. These include Water Efficiency Solutions for Domestic and Mixed-type Use and Consultancy for Industry.
129	MOSL	Explanation of how you plan to work with retailers collaboratively to engage with customers to reduce water consumption and carry out water efficiency interventions.	Ofwat require collaboration with water retailers as part of the performance commitment and we have committed to working with all stakeholders to reduce NHH demand. We have already engaged with our two largest retailers, Wave and Everflow, who make up c.90% of our NHH connections. We have shared our plans as they have developed with both to ensure alignment and avoid any barriers. Up to and after 2025 we will continue to interact to identify the best ways of delivering together and engaging NHH customers.
130	MOSL	Exploration of how you plan to work with retailers to avoid denial of PR24 outperformance payments – e.g., a pain/gain sharing mechanism or incentives for retailer water efficiency offerings.	As stated in Section 7.3 we have already engaged with our two largest retailers, Wave and Everflow, who make up c.90% of our NHH connections. We have shared our plans as they have developed with both to ensure alignment and avoid any barriers. Up to and after 2025 we will continue to interact to identify the best ways of delivering together. Discussion focused on the relationships Retailers have with their customers could lead to a higher level of engagement, with funding required for Retailers to take this on over and above their current level of engagement. Decisions of how to best to manage this will be agreed ahead of delivery from April 2025 with Retailers involvement.
131	MOSL	A country-wide approach to demand reduction, regardless of whether water company regions are designated as being 'water stressed' or not, recognising all areas have local demand challenges.	We note MOSL's comment and agree that a country-wide approach to demand reduction is required regardless of whether a region is classed as being water stressed. Fresh water is a finite resource and reduced demand means less water is abstracted from the environment thus allowing it to function more naturally. However, there are wider benefits as reducing demand also results in a reduction in the use of chemicals and energy at our treatment works which also supports our us meeting our Net Zero ambition.
132	MOSL	Unclear if NHH as well as HH rollout	A change from the dWRMP to the revised dWRMP is that we are now including NHH metering in our plan. Our target is for all NHH properties to have a smart meter by 2035. We have updated Section ? Of the revised draft WRMP to reflect this.
133	MOSL	Engage retailers to reduce demand - detail unclear	Ofwat require collaboration with water retailers as part of the performance commitment and we have committed to working with all stakeholders to reduce NHH demand. We have already engaged with our two largest retailers, Wave and Everflow, who make up c.90% of our NHH connections. We have shared our plans as they have developed with both to ensure alignment and avoid any barriers. Up to and after 2025 we will continue to interact to identify the best ways of delivering together and engaging NHH customers.

SoR Ref	Consultee	Consultee Response	NW Response
			We held a sprint at our Innovation Festival 2023 in July 2023. The sprint, sponsored by Wave, focused on collaborative working and how retailers, wholesaler and businesses can work more closely to reduce non-household demand.
134	WReN	There is a general need in water resource planning to improve the understanding of future non-household PWS needs and the opportunities for NHH demand reduction. This area was weak in WRMP19 and has been challenging since retail market separation. We would therefore still like to see the WReN plan more clearly set out those NHH PWS sectors with high water use in the region, including mapping where they intersect with areas of current or future water deficits. The plan should also include a commitment to collaborate with water retailers, NHH users, their "trade" bodies and Waterwise to help encourage and support them in reducing demand and improving resilience.	The publicly available MOSL water efficiency dashboard provides detail of the NHH PWS sectors with high water use by water resource zone. Our Non-Household (NHH) demand reduction strategy is now presented in **Section 7.3** or our revised dWRMP24 and allowed for in our final plan supply demand balance. Ofwat require collaboration with water retailers as part of the performance commitment and we have committed to working with all stakeholders to reduce NHH demand. Our new demand reduction strategy is comprehensive and has been developed through liaison with other water companies, regional water resources groups, retailers and business to learn from their experience, ensure regional alignment and that the strategy includes options that will deliver the demand reductions required.
135	WReN	The new UK Water Efficiency Strategy was published in September 2022 and should be referenced in the plan.	We have updated our revised dWRMP24 to reference the UK Water Efficiency Strategy.
136	WReN	There is a lack of any demand reduction information or options for NHH PWS usage. Looking at the dWRMP data-sets Yorkshire Water are predicting no change in NHH demand by 2050 whilst NWL are predicting the NHH PWS demand will actually increase by 33%. This is very surprising given the likely Environment Act 9% NHH demand reduction target and Ofwat's anticipated performance commitment. We believe it is an area where significant savings can be made. Thames Water's smart metering indicates as much as 26% of the supply to NHH sites is continuous flow and may be leaking and their Smarter Business Visits have yielded significant savings from NHH sites.	Our Non-Household (NHH) demand reduction strategy was not developed in time for inclusion in our dWRMP24. However, we have now formed a comprehensive strategy, having liaised with other water companies to learn from their experience and ensure regional alignment. The NHH demand reduction strategy is presented in Section 7.3 of our revised dWRMP24 and allowed for in our final plan supply demand balance. Our NHH water efficiency strategy will deliver a 9% reduction in the demand of existing NHHs by 2038 from a 2019/20 baseline. This has been included in our final plan demand forecast. The water demand associated growth (new NHHs) has not been accounted for as we do not have the confidence that this can be achieved with the high levels of Non-household demand growth in this period.
137	WReN	The Plan on a Page should be amended to remove the reference to white goods as the water label is intended to cover a wider product range.	Comment noted. The reference to white goods as the water label has been amended.

SoR Ref	Consultee	Consultee Response	NW Response
138	WReN	We would also suggest the final plan more clearly highlights the need for future development to be more water efficient. Current Building Regulation has only one passing reference. The plan should reference the government Roadmap for more water efficient buildings which will be published in early 2023 and will include plans for more ambitious Building Regulations and standards.	We have updated **Section 7.3** of our revised dWRMP24 to reflect this comment. For new builds, we have aligned our PCC target to the current optional Building Regulations PCC of 110l/head/day. We have completed a survey of local planning authorities and confirm that this is increasingly being adopted as the standard. However, this does not reflect the potential enhanced standards recently shared by Defra of 105l/head/day and 100l/head/day.
139	WReN	We are pleased to see both Yorkshire Water and NWL including HH and NHH smart metering. However, the pace of this is too slow relying on installation in new homes and optants.	In addition to smart meters being installed in new homes and customers who apply for a meter, we are also proactively replacing both HH &NHH meters with smart meters over the course of AMP8 and AMP9. Furthermore, we will be introducing Whole Area Metering (WAM) smart meter installations in the NW region, where we will install meters in existing boundary boxes on unmeasured properties. We will provide customers with a comparison of measured and unmeasured bills and give them the option to switch to a measured tariff. We have a linear profile for delivering our smart metering programme which we are confident we can deliver. We could deliver just 25% of the smart metering programme in AMP8, and the remaining 75% in AMP9 or vice versa. However, we have decided not to do this, and instead have selected an option where we deliver 50% of the programme in each of AMP8 and AMP9. This is because: ▪ A linear profile reduces deliverability risks, by allowing us to recruit and maintain teams across a ten year period as well as reducing meter and smart network procurement risks. For example, in AMP7, the shortage of microchips has slowed delivery of our smart metering programme. Relying on delivering 75% of the programme in AMP9 would mean more risk of not meeting the 2037/38 target. ▪ This provides more flexibility if other demand management options under-perform, or if non-household growth is higher than expected.

SoR Ref	Consultee	Consultee Response	NW Response
140	WReN	A great deal of our impact is delivered through challenging others through consultations such as this to ensure equity, diversity and inclusion has been considered in all policy and planning decisions. We are pleased to see that you have committed to an objective to produce a plan “is not detrimental to social wellbeing” however that objective could be reframed to commit to making a positive contribution to improving social wellbeing. We encourage as you develop the final plan to consider the impacts on social justice and how you will understand impacts of decisions, including in the long-term following trade-offs, on the diverse members of the WReN community.	We have developed our strategy to support customers as the metering programme progresses, focusing on providing ‘on the ground’ help. For example, we will engage with customers in the community to offer free water-saving advice, water-saving kits, and home audits, provide information and guidance on support tariffs, and advise and educate customers on accessing digital resources such as our mobile app and website. Additionally, we will proactively communicate information where we suspect leakage and support customers with free supply-pipe repairs where relevant. To support the elderly and those with visible and non-visible disabilities, we will offer alternative meter placement if the location would result in the customer being otherwise unable to access and read a meter for themselves and targeted financial support will be given to customers in financial hardship through schemes like social tariffs and Bill-Cap WaterSure, which is a scheme intended to assist customers who may use higher than average amounts of water and are claiming means-tested benefits. Water pricing is an important tool for improving water efficiency and enhancing social equity and the continued rollout of smart meter technology will provide applications to identify and reward customers for cutting down on their water usage at certain periods or times of day. This could help customers save money off their bills by helping to balance peaks and troughs in water demand during periods of increased usage or warmer weather. We want to use this opportunity to fully engage with the customers to increase what we know about our customers, so we can provide personalised and tailored advice and support on the best tariff for them alongside signposting to additional support, Priority Services registration, and water efficiency advice.