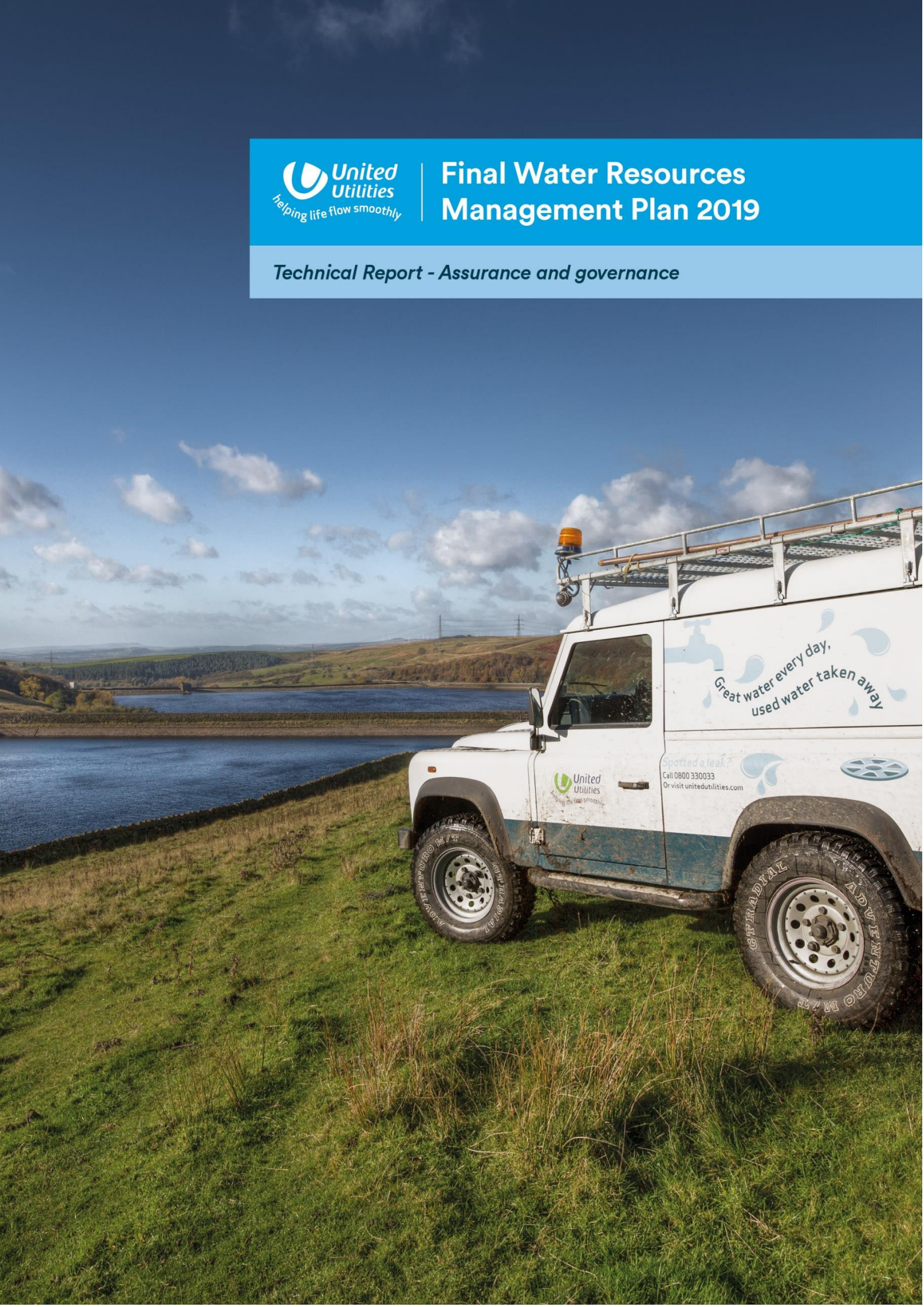
Final Water Resources Management Plan 2019

Technical Report - Assurance and governance



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1. Introduction

1.1 Background

The Water Resources Management Plan 2019 (WRMP19) needs to adhere to the Defra *Guiding principles for water resources planning* (2016) ('guiding principles'); the Environment Agency and Natural Resources Wales *Water Resources Planning Guideline* (2017) ('planning guidelines'); and the Defra Water Resources Management Plan Directions (2017). The guiding principles and planning guidelines advocate some new specific requirements for board assurance of the Water Resources Management Plan.

There are two key statements within this guidance:

1. The Defra guiding principles for the Water Resources Management Plan state an expectation that "with assurance from your company's board we want to see you collaborate with customers, partners and regulators to develop a strong understanding of future needs, explore every option, and build consensus on delivery plans"; and
2. The planning guidelines state the need to gain "assurance from your Board that they are satisfied the plan represents the most cost effective and sustainable long term solution".

For the draft Water Resources Management Plan, we assured the plan against the second statement above. Given the specific requirement defined in the Defra guiding principles, under the first statement around collaboration and consensus, we decided that it was more appropriate to assure this aspect at the revised draft/final plan stage following public consultation (although we ensured that we were 'on track' to meet this statement at the draft plan stage). Therefore, for our final Water Resources Management Plan, our plans have now been assured and endorsed by the United Utilities Water Board (henceforth referred to as 'Company Board', or 'Board') prior to submission.

1.2 Approach to the development and assurance of the plan

The scope, delivery and risk management of the programme of work required to deliver the Water Resources Management Plan has been undertaken by a central programme team, managed through delivery and steering groups, who ultimately report progress to the Strategy Steering Group (chaired by the Chief Executive) and to the Company Board.

We have sought to understand customer views and priorities and ensure that our Water Resources Management Plan reflects these views by:

- Undertaking a substantial programme of customer engagement;
- Directly and proactively engaging with other key regulators and stakeholders to understand their needs, or expectations of the Water Resources Management Plan;
- Using customer research to support the cost-benefit analysis of the potential options in our preferred plan;
- Publishing and consulting on our draft Water Resources Management Plan to inform a revised draft, prior to finalisation and publication of our final plan.

We have sought to ensure that the Water Resources Management Plan is soundly based through the direct work of the internal expert teams and review and challenge processes, with targeted support being provided by external experts in specialist higher risk areas.

The Company Board has been actively engaged in reviewing the development, conclusions and proposed strategy for the Water Resources Management Plan at draft and revised draft stages, and will continue to be engaged through to the final plan.

In addition to the direct challenge, review and sign-off process of the Water Resources Management Plan that has been carried out within the business, we have undertaken an extensive assurance process, completed by CH2M, to ensure submission of a robust plan in line with the planning guidelines and Defra guiding principles. This assurance has been undertaken both as part of the development of the plan and as part of the final sign off process.

Three main phases of assurance have been undertaken on the Water Resources Management Plan at draft and revised draft stages. Additional reviews are planned to be undertaken prior to finalisation of the Water Resources Management Plan.

The findings from this assurance were presented to our Company Board for consideration. In August 2018, the Board endorsed and subsequently assured that our revised draft Water Resources Management Plan represents the most cost effective and sustainable long term solution to the identified needs.

This report therefore aims to:

- Explain our overarching governance process to support development of the Water Resources Management Plan at draft and revised draft stage, including Board engagement (Section 2);
- Outline how this relates to our Board endorsement and assurance of the Water Resources Management Plan at draft and revised draft stage (Section 3); and
- Provide further evidence of our compliance to the Water Resources Management Plan Directions (Section 4.1) and *Water Resources Planning Guideline* (Section 4.2 and Appendix A)

1.3 Changes from draft to final WRMP

Change	Reason	Update(s)	Relevant section(s)
Updates to Board engagement and assurance information	Further engagement undertaken with the Board for assurance of the revised draft plan	Added summary of Board engagement from consultation through to endorsement of our revised draft plan	Section 2.2
Inclusion of Audit Stage 4	Further stage of CH2M assurance for our revised draft plan completed	Additional information added to Section 3 to include a fourth stage to the CH2M scope	Section 3.4
Information on compliance with WRMP Directions updated	Compliance with Directions further to publication of draft plan for consultation	Confirmation of compliance with Direction requirements 5 and 6 following consultation comments received	Table 2 in Section 4.1 (Direction paragraph reference 5 and 6)
New section summarising compliance to new EA planning guideline (July 2018)	Demonstrates how guidance changes have been accounted for in revised draft submission	Additional section and table added	Table 3 in Section 4.2
Table 5 (previously table 3) retained in Appendix A (previously provided in Section 4.2)	Legacy compliance review on draft plan retained for reference	Added specific items for revised draft related to consultation phase only	Table 5 in Appendix A

2. Governance

2.1 Business governance

It is important that the Water Resources Management Plan is developed in engagement with, and given the support of, the wider business for it to be successful. We have therefore implemented a tiered approach to governance to provide internal scrutiny on plan development, promote alignment with wider processes, and support the internal team in developing the plan. This business governance process feeds into and supports final endorsement by the Board.

Table 1 below shows the different levels of groups that are part of the Water Resources Management Plan governance.

Table 1 Internal groups supporting WRMP19 governance

Internal group	Composition	Role in WRMP19 development
WRMP19 Technical steering group	Cross-disciplinary technical representatives from water business	Challenge, review and technical level decisions to support draft plan development
WRMP19 Approvals group	Senior management and Director level group	Main decision-making body for plan development. Strategic decisions and endorsements on the plan
Wholesale Steering Group[1]	Wholesale level business planning group	Updated and engaged on plan implementation and progress – links to wider business planning
PR19 Programme Board	PR19 programme group	Updated and engaged on programme for plan development – links to wider business planning
Strategy Steering Group	Executive level business planning group	Endorses the preferred plan – links to wider business planning
Company Board	Full Company Board	Board endorsement and assurance

This governance process was established with approval from our Wholesale Resilience Board, which reports into our Group Audit and Risk Board.

2.2 Board engagement

The Company Board ultimately forms the top tier of assurance and governance. We originally engaged with our Board early in the process, prior to pre-consultation in September 2016, and regularly engaged with them prior to endorsement of the draft Water Resources Management Plan in November 2017. We engaged or met with the Board on six occasions between September 2016 and November 2017.

We continued to engage with the Board throughout the consultation period on our draft plan and have subsequently provided regular updates on the revised draft plan development. This engagement has taken place on an approximately monthly basis. In July 2018, the Board endorsed and subsequently assured that the revised draft Water Resources Management Plan represents the most cost effective and sustainable long term solution.

3. Audit and assurance

To endorse our plan to the Board, three main phases of assurance have been undertaken on the Water Resources Management Plan at draft and revised draft stages, with an additional stage of independent assurance undertaken by CH2M for the revised draft plan. These phases are described below:

- The first line (internal team) checks and controls were structured around the *WRMP 2019 – Water company checklist* provided by the Environment Agency, with subsequent checks for revised draft plan against the latest (July 2018) planning guidelines and compliance tracking of consultation responses being addressed;
- Second line assurance (independent peer review) was undertaken in two main ways. Internally, through detailed and progressive review of assumptions and calculations, with this process being managed and governed through the appropriate groups described above. In addition, key technical elements within the plan have been subject to external peer review to support plan development. The *WRMP 2019 – Water company checklist* has been used as an operational tool, to assist regulators or other interested parties in seeing how we have met certain elements of the planning guidelines, along with other compliance items covered in Section 4 and the tracking of consultation responses for revised draft plan; and

[1] From Spring 2018 the activities performed by this group previously were combined into the remit of the PR19 Programme Board for revised draft plan submission

- Third line assurance (independent assurance) has been undertaken by CH2M on behalf of our Corporate Audit Team. For our draft plan, this assurance was undertaken in three stages across the development of the plan for consultation. For the revised draft plan, a further stage was completed, building on the approach completed for the draft plan. The outcomes of this process have also been reported via the Group Audit Risk Board.

In support of this overarching assurance, there have also been supporting targeted audits or reviews on specific detailed technical elements of the plan to complement our own in-house reviews, expertise and processes. This has included our AISC and EBSD modelling, supply and demand forecasting models, our Sustainable Economic Level of Leakage (SELL) approach and options identification secondary screening processes. Our WRMP tables have also been assured prior to submission.

The sections below outline the overarching scope of the CH2M assurance stages, including the additional stage completed for the revised draft plan.

3.1 Audit Stage 1 – Preparedness Audit

The first internal audit was undertaken in summer 2016 and focused on two key areas:

- That our Water Resources Management Plan is defined, maintained and tested in line with the relevant planning guidelines, including a review of the robustness of the water resource management planning methodology and controls over key inputs, models and outputs and internal, and external approval procedures; and
- A review of our readiness to adopt the changes to the planning guidelines, supporting UKWIR methodologies and readiness to assess the key strategic questions impacting our next Water Resources Management Plan.

The overall conclusion of the audit was that there were robust controls in place over the production of our Water Resources Management Plan, such that:

- Our internal governance, programme management schedule, staff structure, and technical meetings with internal staff and external stakeholders were all reviewed and found to be well-structured and organised to coordinate work, collaborate on approaches that successfully produced a Water Resources Management Plan which complied with the relevant planning guidelines; and
- Our technical leadership team had enhanced the controls used for WRMP19.

No significant issues were identified by the review and the small number of agreed actions were completed within the agreed timescales.

3.2 Audit Stage 2 – Water Resources Management Plan Processes and Resilience

The second internal audit was undertaken in summer 2017 and was split into two phases.

Phase 1 included the following:

- The definition and maintenance of the Water Resources Management Plan in line with the latest relevant technical guidelines (e.g. Environment Agency/Natural Resources Wales Guidelines; Defra guiding principles; and supporting UKWIR methodologies);
- The testing of the Water Resources Management Plan against different scenarios; and
- Governance meetings and communication with key internal and external stakeholders throughout the planning processes.

Phase 2 of the second audit stage covered the implementation of the Water Resources Management Plan options identification process (including incorporation of third party options) and readiness for options appraisal.

The audit concluded that at this stage in planning, we were well positioned to compose a compliant and thorough Water Resources Management Plan that would lead to more resilient water delivery and that a final view of draft Water Resources Management Plan development would be gathered after the technical documentation and options appraisal was complete. A single action was raised which was completed within the agreed timescale.

3.3 Audit Stage 3 – Water Resources Management Plan Processes

The third internal audit was undertaken between October and November 2017 and was split into two phases.

Phase 1 included the following:

- The definition and maintenance of the Water Resources Management Plan in line with the latest relevant technical guidelines (e.g. EA / NRW Guidelines; Defra Guiding Principles; and supporting UKWIR methodologies);
- The testing of the Water Resources Management Plan against different scenarios; and
- Governance meetings and communication with key internal and external stakeholders throughout the planning processes.

Phase 2 focused on:

- The implementation of the Water Resources Management Plan options appraisal process;
- Considering the associated costs and benefits; and
- Overall need for investment and economic, social and environmental justification for a preferred strategy.

The overall conclusion of the audit was that we had composed a compliant and comprehensive Water Resources Management Plan that should lead to more resilient water delivery, and that the presentation of the preferred plan was explained in terms of how it meets strategic goals and how the option choices represent the best value.

A final assurance statement from the audit team confirmed that our draft Water Resources Management Plan, including our options identification and appraisal process, had been prepared in accordance with the requirements of the Water Resource Planning Guidelines, including Drinking Water Inspectorate (DWI) compliance, which contained assessments for pesticide pollutants for any new potential water sources, including assessments for metaldehyde, and in doing so, our draft plan represented the most cost effective and sustainable long term solution.

3.4 Audit Stage 4 – Revised Draft WRMP

An audit on our approach to development of our revised draft Water Resources Management Plan was undertaken in July 2018. The objective of this audit was to review the adequacy of the revised draft Water Resources Management Plan following updates after consultation, and reaffirm that the plan is compliant with the requirements of the planning guidelines.

The audit focused on the following areas:

- Planning and implementation of our consultation programme;
- Our reassessment of technical reports and modelling;
- Decision making of strategic choices; and
- Taking account of how we have addressed the responses to our formal consultation.

The conclusion of the audit was that our revised draft Water Resources Management Plan has been prepared in accordance with the planning guidelines and represents the most cost effective and sustainable long term solution in compliance with the DWI requirements. It also concluded that our Board has been sufficiently involved in the decision making process and that we have expanded efforts to engage with a broad selection of stakeholders to ensure that our plan is based on consensus to meet the assurance statement from the Defra guiding principles.

4. Compliance

This section provides evidence, either directly or by cross-referencing against the relevant parts of our submission, as to how we have complied with the Defra Water Resources Management Plan Directions (2017). As part of the process of developing the Water Resources Management Plan, we have ensured that we meet all relevant legislation, supported by our environmental appraisal processes associated with the Strategic Environmental Assessment, Habitats Regulations Assessment and Water Framework Directive. This section also summarises how we have addressed relevant amendments to the latest version of the planning guidelines published in July 2018.

4.1 Water Resources Management Plan Direction 2017

The Water Resources Management Plan Direction 2017 came into force on 22 April 2017. It sets out the steps a statutory water undertaker must follow with respect to publication and consultation of a draft Water Resources Management Plan, and the publication of a final plan.

We have provided a clear list of these Directions and cross-referenced evidence that we have complied with each one in our final Water Resources Management Plan in Table 2 below.

Table 2 Water Resources Management Plan Direction 2017

Direction paragraph	Direction text	How United Utilities have complied with this requirement in our Water Resources Management Plan
2	**A water undertaker must prepare a water resources management plan for a period of at least 25 years commencing on 1st April 2020.**	We have prepared our final Water Resources Management Plan for the 25-year period of 2020/21 to 2044/45. Our assessment of need as part of the supply-demand balance is provided in Section 4.6 of our *Final WRMP19* main report. To ensure testing of our plans in the longer-term, we have explored beyond the planning horizon, into the 2080s, for some aspects of the plan (see Section 9 of the *Final WRMP19* main report).
3(a)	**the appraisal methodologies which it used in choosing the measures which it has identified in accordance with section 37A(3)(b) and its reasons for choosing those measures;**	Our appraisal methodologies are summarised in our *Final WRMP19* main report, in particular, Section 5 and Section 6. These are also covered in detail in our *Final WRMP19 Technical Report - Demand for water*, *Final WRMP19 Technical Report - Options identification* and *Final WRMP19 Technical Report - Options appraisal*.
3(b)	**for the first 25 years of the planning period, its estimate of the average annual risk, expressed as a percentage, that it may need to impose prohibitions or restrictions on its customers in relation to the use of water under each of the following— (i) section 76; (ii) section 74(2)(b) of the Water Resources Act 1991(b); and (iii) section 75 of the Water Resources Act 1991, and how it expects the annual risk that it may need to impose prohibitions or restrictions on its customers under each of those provisions to change over the course of the planning period as a result of the measures which it has identified in accordance with section 37A(3)(b);**	This is detailed in Section 16.2 of our *Final WRMP19 Technical Report - Supply forecasting*, which outlines the average annual risk across the 25-year planning period for each resource zone. We had previously only presented our assessments for the Strategic and Carlisle resource zones in the submission at the draft plan stage (given the extremely high resilience performance of the other zones). However, following dialogue with the Environment Agency, we have now presented the assessments for our Barepot and North Eden resource zones too, and included this information in Section 16.2 of our *Final WRMP19 Technical Report - Supply forecasting*.
3(c)	**the assumptions it has made to determine the estimates of risks under sub-paragraph (b), including but not limited to drought severity;**	The assumptions we have made to determine the estimates of risks as specified in sub-paragraph (b) are outlined in Section 16.2 of our *Final WRMP19 Technical Report - Supply forecasting.*
3(d)	**the emissions of greenhouse gases which are likely to arise as a result of each measure which it has identified in accordance with section 37A(3)(b), unless that information has been reported and published elsewhere and the water resources management plan states where that information is available;**	The greenhouse gas emissions that could arise from our preferred plan are summarised in Section 5.2.2 of our *Final WRMP19 Technical Report - Options appraisal*, which has been updated for our final plan to set out greenhouse gas emissions for our current baseline operations, and future operations.

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Direction paragraph	Direction text	How United Utilities have complied with this requirement in our Water Resources Management Plan
3(e)	**the assumptions it has made as part of the supply and demand forecasts contained in the water resources management plan in respect of— (i) the implications of climate change, including in relation to the impact on supply and demand of each measure which it has identified in accordance with section 37A(3)(b); (ii) household demand in its area, including in relation to population and housing numbers, except where it does not supply, and will continue not to supply, water to domestic premises; and (iii) non-household demand in its area, except where it does not supply, and will continue not to supply, water to non-domestic premises or to an acquiring licensee;**	The implications of climate change on each option, and the potential risk of climate change preventing the options from delivering the desired supply system benefit, has been assessed for all resource management options. This is detailed in Section 7.2.3 of our *Final WRMP19 Technical Report - Options identification* and has been investigated further for feasible options as detailed in Section 4.1 of our *Final WRMP19 Technical Report - Options appraisal.* Our forecast of household consumption, including our forecast of population and housing numbers, is set out in Section 2 of our *Final WRMP19 Technical Report - Demand for water*. Our forecast for non-household consumption, including how we have utilised economic forecasting, is set out in Section 3 of our *Final WRMP19 Technical Report - Demand for water.*
3(f)	**its intended programme for the implementation of domestic metering and its estimate of the cost of that programme, including the costs of installation and operation of meters;**	We thank the Environment Agency for their comments and have ensured that this information is provided in the final plan. As outlined in Section 3.3 of this Statement of Response, metering is an important component of our demand management activity. We have provided this further information in Section 2.2 of our *Final WRMP19 Technical Report - Demand for water*. We have provided additional detail around the implementation and costs over time for our metering programme.
3(g)	**its estimate of the number of premises which will become subject to domestic metering during the planning period as a result of— (i) optant metering; (ii) change of occupancy metering; (iii) new build metering; (iv) compulsory metering; or (v) selective metering, and its estimate of the impact on demand for water in its area of any increase in the number of premises subject to domestic metering;**	Our full customer metering plan is set out in Section 2.2 of our *Final WRMP19 Technical Report - Demand for water*. The forecast numbers of new household connections are provided in Section 2.1.2 of our *Final WRMP19 Technical Report - Demand for water* and the forecast number of customers that will opt for a meter are provided in Section 2.2.6 of our *Final WRMP19 Technical Report - Demand for water*. This excludes compulsory metering as there are no areas of serious water stress in our region.
3(h)	**its assessment of the cost-effectiveness of domestic metering as a mechanism for reducing demand for water by comparison with other measures which it might take to meet its obligations under Part III of the Act;**	We have considered a number of metering options, as described in detail in Section 3.6.1 of our *Final WRMP19 Technical Report - Options identification*. A comparison of cost-effectiveness of different metering types is explained in Section 2.2 of our *Final WRMP19 Technical Report - Demand for water*, and the relative AISC to other option types can be seen in Appendix A of our *Final WRMP19 Technical Report - Option appraisal*.
3(i)	**its intended programme to manage and reduce leakage, including anticipated leakage levels and how those levels have been determined; and**	Our preferred plan strategic choice for leakage reduction is described in detail in Section 6.2 of our *Final WRMP19* main report, which details our proposed future leakage reduction levels. Section 7.4.2 of the main report covers our preferred plan,

Direction paragraph	Direction text	How United Utilities have complied with this requirement in our Water Resources Management Plan
		and thus the proposed programme to meet these future levels, building on the baseline activities specified in Section 4.2 of the plan. Further supporting detail can be found in Section 4 of our *Final WRMP19 Technical Report - Demand for water* and Section 3.1 of our *Final WRMP19 Technical Report – Options appraisal*.
3(j)	**if leakage levels are expected to increase at any time during the planning period, why any increase is expected.**	Leakage does not rise at any time throughout the planning horizon, as shown in Section 4.7 of our *Final WRMP19 Technical Report - Demand for water* (and the supporting planning tables).
4	**Except where the Secretary of State otherwise permits, a water undertaker must send its draft water resources management plan to the Secretary of State in accordance with section 37B(1) before 1st December 2017.**	We submitted our draft Water Resources Management Plan by 1st December 2017, as evidenced in our cover letter supplied with our submission.
5	**1. Except where the Secretary of State otherwise permits, a water undertaker must publish its draft water resources management plan in accordance with section 37B(3)(a) for consultation within 30 days beginning with the date on which the Secretary of State directs it to do so.** **2. Except where the Secretary of State otherwise permits, a water undertaker must publish its final water resources management plan in accordance with section 37B(8)(a) within 30 days beginning with the date on which the Secretary of State directs it to do so.**	We published our draft Water Resources Management Plan for consultation on 2 March 2018 within the 30 days of being directed to do so by the Secretary of State.
6	**Except where the Secretary of State otherwise permits, a water undertaker must publish the statement required by regulation 4(2)(a) of the Water Resources Management Plan Regulations 2007(a), and send a copy of the statement to the persons specified in regulation 4(2)(b), within 26 weeks beginning with the date of publication of the draft water resources management plan.**	We published our Statement of Response to the formal consultation on our draft Water Resources Management Plan in August 2018, within 26 weeks of publishing the plan.

4.2 Water Resources Planning Guidelines July 2018

In July 2018, revised Water Resources Planning Guidelines were published. We have outlined how we have complied with these revisions in Table 3 below.

Table 3 Water Resources Planning Guidelines July 2018

Section	Theme	Old Text	July 2018 amendment	Our response
2.12	Timescales	• Start of public consultation - January 2018 • Statement of response - July 2018	• Start of public consultation - Spring 2018 • Statement of response - Summer/Autumn 2018	Our public consultation was held from the 2 March to the 25 May 2018. Our Statement of Response was published alongside the revised draft Water Resources Management Plan submission on 31 August 2018.
3.1	HRA	N/a	Ensured that any previous HRA of existing options remains current and covers any material changes in circumstance. Any HRA needs to be able available for review and assessment by Natural England and other regulators.	Our final preferred plan and options have been assessed by our environmental consultants, Wood (previously Amec Foster Wheeler), to ensure that all information remains up to date and that any material changes have been accounted for. A revised HRA report has been published alongside our final Water Resources Management Plan submission.
3.9	LoS	N/a	You should consider the costs and benefits of changing your level of service.	We have considered the costs and benefits of changes to our levels of service as outlined in Section 6.3 of our *Final WRMP19* main report and Section 3.2 of our *Final WRMP19 Technical Report – Options appraisal*. Our analysis shows that we already have a resilient system to drought so we have decided not to invest specifically to improve our levels of service based on customer engagement and valuations. However, our plans for leakage reductions do improve our drought levels of service for drought permits / orders and drought resilience more broadly.
4.5	INNS	n/a	In England, you should refer to the position statement sent to water companies wholly or mainly in England in February 2017 which sets out the Environment Agency's position regarding managing the risk of the spread of INNS through raw water transfers. The position statement is	Following the publication of the position statement 'Managing the risk of spread of Invasive Non-Native Species' we have considered whether options will link isolated catchments or link catchments which are already connected, this initial assessment will inform whether mitigation measures need to be

Section	Theme	Old Text	July 2018 amendment	Our response
			supported by a map which sets out the catchments which are considered isolated. The position statement is applicable to catchments within England and to any transfers which transfer raw water into England. In Wales, you should carry out an assessment of the risk of spreading INNS and discuss this with Natural Resources Wales.	included in designing nay new transfers. More detail of this approach can be found in our *Final WRMP19 Technical Report – Options appraisal in* Section 5.2.4.
4.10	Drinking water quality	• Updated from previous dates Ofwat guidance now changed to DWI guidance (old text referred to DWI PR14 Guidance - Water Resource Planning here: • http://dwi.defra.gov.uk/stakeholders/price-review-process/PR14-guidance-wrmp.pdf)	You must ensure you comply with section 68(1) of the Water Industry Act 1991 that covers your duty to supply wholesome water. Wholesomeness requirements are set out in the Water Supply (Water Quality) Regulations 2016 (as amended) (in England) and the Water Supply (Water Quality) Regulations 2018 (in Wales), and associated amendments. These duties must be reviewed when you include any type of transfers of potable water. Further guidance is provided: • Information Letter 1/2014 on Metaldehyde and other pesticides http://dwi.defra.gov.uk/stakeholders/information-letters/2014/01-2014.pdf DWI Long Term Planning for the quality of drinking water supplies: http://www.dwi.gov.uk/stakeholders/guidance-and-codes-of-practice/ltpg.pdf • Information Letter 1/2012 on Regulation 15 Compliance Arrangements here: http://dwi.defra.gov.uk/stakeholders/information-letters/2012/06-2012.pdf	We have complied with the latest water quality and DWI regulations as shown in Section 5.1 of our *Final WRMP19 Technical Report – Options identification*. Ensuring our compliance with DWI requirements was a key part of our assurance on the plan, as outlined in Section 10.2 of the *Final WRMP19* main report and this technical report.

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Section	Theme	Old Text	July 2018 amendment	Our response
5.6	Forecasting leakage	Your demand forecast must estimate baseline leakage over your planning period. Ideally you should determine your base year leakage using the approach outlined in Consistency of Reporting Performance Measures (UKWIR 2017).	Your demand forecast must estimate baseline leakage over your planning period. Ideally you should determine your base year leakage using the approach outlined in Leakage reporting guidance (Ofwat and Water UK, March 2018).	We have updated our *Final WRMP19 Technical Report – Demand for Water* to provide detail of the impact of the reporting changes in Section 4.9. We have made considerable progress between 2016/17 and 2017/18, and after some significant improvements in data are seeing a difference of less than 1% in leakage calculated with the old and new reporting definitions..
5.6	Forecasting leakage	n/a	We expect you to meet Ofwat's challenge of reducing leakage by 15% by 2025 and to explore the use of innovative approaches to achieve leakage reductions in line with leading companies. Following the National Infrastructure Commission (NIC) report on England's Water Infrastructure, we also expect you to continue to reduce leakage in the longer term. This means leakage should continue to be reduced beyond 2025. This should be shown in the final plan and reflected in the tables. You may wish to include any additional reasons for reducing leakage by more than 15% by 2025 and setting more challenging long term targets, if you can demonstrate:	Taking account of consultation feedback, the latest customer research, further innovations in leakage options and the latest guidance position stated here we have further increased both our short and long-term leakage reduction aspirations from those presented in the draft plan. Our *Final WRMP19* main report (Sections 6.2 and 7.4.2) and Statement of Response summarise these changes. We are now proposing a reduction of 20% by 2025 and 42% by 2045.
6.2	Resilience options		The Environment Agency with UK Water Industry Research (UKWIR) and Natural Resources Wales have built on previous work from January 2016 to produce the Drought Vulnerability Framework (DVF). The framework provides an approach that water companies can use to improve the understanding of the vulnerability of their systems to drought and demonstrate this graphically by producing 'drought response surfaces' (DRS) for their water resources zones (WRZs).	As discussed in our engagement activities with the Environment Agency, we have already future committed resources to implementing the drought vulnerability framework in a timely manner. This will be incorporated into our Annual WRMP review after our current WRMP19 submission in line with the guidance. Detail of our plans can be found in Section 4.4.8 of our *Final WRMP19* main report.

Section	Theme	Old Text	July 2018 amendment	Our response
			The Environment Agency and Natural Resources Wales will work with you to determine the most appropriate approach and timing to implement the drought vulnerability framework and to incorporate it into the annual review of WRMPs. [4]https://www.gov.uk/government/publications/understanding-the-performance-of-water-supply-systems-during-mild-to-extreme-droughts	
6.3	Third party options	Ofwat's Market Information Platform, to be introduced in 2018	You are encouraged to engage with third parties who could provide solutions to you at a lower cost than your own solutions. Ofwat's water resources Market Information will aid third parties in developing bids by making water company data more accessible. Bids could include services such as the provision of water, leakage detection and demand management options.	We have engaged with third parties throughout our water resources planning process and as stated in the guidance, we will be publishing our market information tables alongside our WRMP19 documents in a timely manner.

Appendix A – WRMP 2019 Water company checklist

This appendix covers compliance to the planning guidelines, which utilises the *WRMP 2019 – Water company checklist* as provided by the Environment Agency. We used this checklist as an operational tool, and also to assist regulators or other interested parties in seeing how we have met certain elements of the planning guidelines.

The checklist in Table 4 below was previously submitted as part of our draft Water Resources Management Plan and points to content in that submission, either where summarised in the *Draft WRMP19* main report and/or in the supporting technical reports depending on the nature of the compliance item. In some instances, we have provided a supporting comment in an additional column within the checklist itself; this is typically where we are referencing wider business activities that complement the Water Resources Management Plan process, but are not entirely detailed within it, where this is not appropriate or required (including to ensure an accessible plan submission).

The compliance review responses relating to our draft plan have been retained in their original form for legacy reference and have not been revised for this latest version of the plan. Any specific compliance items raised in consultation have been subsequently addressed and refined through the Statement of Response and revised draft Water Resources Management Plan submission. We have, however, added some specific items for the final Water Resources Management Plan where relevant, regarding the consultation phase and publication of our Statement of Response.

Table 4 WRMP19 Water company checklist – Water Resources Planning Guideline

No.	Action or approach	Draft WRMP ref.	Supporting comments
Section 2 – Process of forming and maintaining a WRMP			
2.1 The legal requirements			
1	You have considered and taken into account links between your WRMP and River Basin Management Plans.	• Draft WRMP19 Technical Report - Options Identification, Section 6.2.2 (Approach) and Appendix B - Catchment options • Amec. (2017). Strategic Environmental Assessment of the Draft Water Resources Management Plan 2019: Environmental Report Appendix B	The plan interfaces and incorporates WINEP and sustainability considerations (e.g. WFD no deterioration) associated with our sources, which we have engaged with environmental regulators upon. This serves as key link to deliver River Basin Management Plans objectives. This is detailed in the Draft WRMP19 Technical Report – Supply forecasting.

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No.	Action or approach	Draft WRMP ref.	Supporting comments
2	You have considered and taken into account links between your WRMP and your Business Plan.	See comments, relevant throughout WRMP19 submission	Evident throughout the submission, with overarching governance and processes for WRMP19 interfacing into that for the Business Plan, as summarised earlier in this report. Key links in particular are referenced in Section 1 (Introduction), Section 2 (Customer and stakeholder involvement) and Section 4.7 (Resilience). Further alignment / integration activities will continue to final WRMP, noting different timescales to submit draft WRMP19 relative to Business Plan.
3	You have considered and taken into account links between your WRMP and your Drought Plan.	• Draft WRMP19 Main Report, Section 3.4 (Water resources management), Section 4.4.8 (Extreme droughts, and links to our Drought Plan), Section 6.3 (Improved level of service for drought permits and orders)	
4	You have considered and accounted for links between your WRMP and the Environment Agency's drought plans and/or Natural Resources Wales' drought plans as appropriate.	As above and comments.	This is inherent also through the alignment to our own Drought Plan, which also considers this link. It is also worth specifically noting that alignment to the River Dee operating rules / drought actions by Natural Resources Wales during drought is represented in our modelling approach as covered by Draft WRMP19 Technical Report – Supply forecasting.
5	You have considered and taken into account links between your WRMP and flood risk management plans.	• Draft WRMP19 Technical Report – Water Supply Resilience, Section 3 (Resilience Risk identification) • Draft WRMP19 Main Report – Section 3.4 (Recent events and operations) • Amec. (2017). Strategic Environmental Assessment of the Draft Water Resources Management Plan 2019: Environmental Report Section Assessment Framework for the SEA of the Draft WRMP and Appendix B	
6	You have considered and taken into account links between your WRMP and any local plans produced by Local Authorities.	• Draft WRMP19 Main Report, Section 4.3.3 (Growth in population and household properties) • Draft WRMP19 Technical Report - Demand for water, Section 2.1 (Population, properties and occupancy)	

No.	Action or approach	Draft WRMP ref.	Supporting comments
7	You have considered and taken into account the requirements of the relevant legislation listed in Section 2.1, including the WRMP Direction 2017 for water companies in England and WRMP (Wales) Directions 2016 for water companies in Wales.	All relevant legislation has been taken account of through the WRMP process, including: • Defra WRMP Direction - Draft WRMP19 Technical report - Assurance and Governance, Section 4.1 • Drinking water regulations – Assured as described in Section 3.3 and 4.10 compliance items below • Environmental and planning legislation within Amec. (2017). Reports (i.e. SEA, HRA, WFD etc.)	A number of areas of legislation are also dealt with through inclusion of WINEP in the WRMP.
2.2 Early engagement with regulators, customers and interested parties			
8	You have followed the principles of UKWIR's 'Decision Making Process' and 'Risk Based Planning' frameworks to: · characterise the problem you need to solve · choose the best decision making process for appraising the options available to you · determine your approach for dealing with risks in your plan · determine methods for supply, demand, outage and headroom calculations that are consistent with your chosen options appraisal method and risk composition	• Draft WRMP19 Technical report - Options appraisal, Section 1 (Introduction) • Draft WRMP19 Technical Report - Supply forecasting, Section 3 (Risk based planning for our supply forecast)	
9	You have prepared a method statement which clearly explains the choice and justification of methods, and communicated your statement to statutory consultees including the Environment Agency and/or Natural Resources Wales, Ofwat, licensed suppliers in your area that operate through your supply system any other relevant parties.	• Draft WRMP19 Main Report, Section 2 and Draft WRMP19 Technical Report – Customer and stakeholder engagement, Section 2	

No.	Action or approach	Draft WRMP ref.	Supporting comments
10	You have engaged with the Environment Agency and/or Natural Resources Wales to discuss the approaches laid out in your method statement and have appropriately recorded the outcomes of this engagement.	• Draft WRMP19 Main Report, Section 2.4 (Regulator Liaison) • Draft WRMP19 Technical Report - Customer and Stakeholder engagement, Section 2.1 and 2.2	
11	You have engaged with your Board, customers and other parties to discuss the approaches laid out in your method statement. You have appropriately recorded and incorporated the outcomes of this engagement.	• Draft WRMP19 Main Report, Section 9.1 and earlier within this document • Draft WRMP19 Technical report - Customer and Stakeholder engagement, Section 2 (Regulator liaison), Section 2.2 (Pre-consultation - autumn 2017) and Section 3 (External Engagement - Customers)	
2.3 Hold a pre-consultation			
12	You have held pre-consultation discussions with statutory consultees, including the Environment Agency and/or Natural Resources Wales, Ofwat and licenced water suppliers that operate through your supply system, revising your proposed approach accordingly.	• Draft WRMP19 Main Report, Section 2.2 (Pre-consultation on this Water Resources Management Plan) • Draft WRMP19 Technical Report - Customer and stakeholder engagement, Section 2.2 (Pre-consultation - autumn 2016)	
13	You have accounted for outcomes of pre-consultation discussions with other consultees (including consumers, companies with which you share supply or have bulk supply) and have revised your proposed approach accordingly.	• Draft WRMP19 Main Report, Section 2.2 (Pre-consultation on this Water Resources Management Plan) • Draft WRMP19 Technical Report - Customer and stakeholder engagement, Section 2.2 (Pre-consultation - autumn 2016)	

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No.	Action or approach	Draft WRMP ref.	Supporting comments
14	You have indicated how consultee feedback has been incorporated into the methods and approaches you will use to produce your draft plan.	• Draft WRMP19 Main Report, Section 2.2 (Pre-consultation on this Water Resources Management Plan) • Draft WRMP19 Technical Report - Customer and stakeholder engagement, Section 2.2 (Pre-consultation - autumn 2016)	
2.4 Write a draft plan			
15	You have accounted for pre-consultation outcomes and followed any written Directions received from the Secretary of State and/or Welsh Ministers. For water companies in England, follow the WRMP Direction 2017. For water companies in Wales, follow the WRMP (Wales) Direction 2016.	• Draft WRMP19 Technical report - Customer and stakeholder engagement, Section 2.2.3 (Outcome of pre-consultation) • Draft WRMP19 Technical Report - Assurance and governance, Section 4.1 (Water Resources Management Plan Direction 2017)	
16	You have used a logical structured layout for your draft WRMP and included a separate non-technical overview, and supported the main technical document with appendices.	We have produced both a Draft WRMP19 Customer Booklet and supported the WRMP19 Main Report with a higher-level "summary of our plan" section. For the first time, in the interests of transparency, we have also published our Technical Reports as part of our submission.	
2.5 Send your draft plan			
17	You have appropriately flagged national security information or data within the draft WRMP, ready for redaction if necessary following security checking.	-	We have updated any information or data as required from Security Review. There are no redactions required and have provided a compliance statement from CH2M on our submission.
18	You have flagged commercially confidential or sensitive information or data that you prefer should not be published.	-	We have sought advice from the Commercial team and have ensured the main WRMP19 document and supporting documents are written appropriately. We have therefore not needed to flag information or data in our submission as commercially confidential or sensitive.

No.	Action or approach	Draft WRMP ref.	Supporting comments
2.6 Publish and distribute your draft plan			
19	You have not published your draft plan until instructed to do so by the Secretary of State or the Welsh Ministers and have followed the WRMP Regulations 2007 in making your plan publically available.		We will submit to Defra by 1st Dec and await approval from SoS for publishing and consultation to start.
20	You have redacted sensitive information prior to publication.		We have updated any information or data as required from Security Review. There are no redactions required.
21	You have prepared a statement for issue with the draft plan, which explains where commercially sensitive information has been redacted and clearly explains the process for making representations on the draft plan.		We have submitted the draft plan on or by 1st Dec with an accompanying letter to Defra, Ofwat and EA which indicates that there is no commercially sensitive information in the submitted documents. When the draft plan is published on our website we will include a statement indicating how to consult on the plan. The Executive Summary also clearly describes the Consultation stage and how to engage
22	You have taken appropriate steps to advertise the publication of the plan and to explain its contents to key stakeholders at the start of or during the consultation period.	• Final WRMP19 Section 2.6 Consultation on the Draft Version of this plan •Final WRMP19 Technical report - Customer and stakeholder engagement, Section 3 Consultation	We published the plan for consultation on the 2nd March 2018 advertising it to over 700 statutory and non-statutory stakeholders as well as publishing on our website, we also used social media to promote our publication and consultation
2.7 Carry out a public consultation on your draft plan			
23	You have allowed for a consultation period appropriate for the complexity of the plan, and that gives you adequate time to prepare a response to consultation feedback by the specified deadline (26 weeks after publication).	•Final WRMP19 Section 2.6 Consultation on the Draft Version of this plan •Final WRMP19 Technical report - Customer and stakeholder engagement, Section 3 Consultation	We submitted our response to our consultation at the end of August, within 26 weeks after our draft WRMP19 publication on the 2nd March
2.8 Publish a statement of response			
24	You prepared and published your statement of response by the specified deadline.	-	We submitted and published our statement of response at the end of August and thus within 26 weeks of publication.

No.	Action or approach	Draft WRMP ref.	Supporting comments
25	You have considered all consultation responses in your statement and have explained whether/how you have acted on them and why.	•Revised Draft WRMP19 Statement of Response, Appendix A	We have detailed our responses to our formal consultation representations in our Statement of Response, these are broken down in detail in Appendix A (and key topics summarised in the main body of the document).
26	You have set out any changes due to other factors during the consultation period (for example, external influences).	• Final WRMP19 Section 1.6 Summary of Changes •All Final WRMP19 Technical reports, Section 1.1 Changes from draft to final WRMP19	We have set out the key changes made to the plan in the *Final WRMP19* main report in Section 1.6, and in accompanying technical reports where changes have been made in their respective Section 1.1 for specific lower levels of detail.
27	You have clearly set out the main changes you have made for the final plan and have accompanied your statement with an updated version of the draft plan if changes are substantive.	N/A - Post-revised draft WRMP19 submission	-
28	You have notified any party that responded to the consultation as you publish the statement of response (and revised draft WRMP if necessary).	-	We have notified all respondents to our formal consultation upon publishing our statement of response and again upon publishing our revised Draft WRMP19
29	You have considered the impact of any changes to your draft WRMP that might affect your Drought Plan, Business Plan or other plans.	-	We have no material changes from our current RDWRMP19 that directly affects our Drought Plan. Changes that affect our wider business plans will be reflected in the consistency between our RDWRMP and PR19 business plans.
2.9 Send your draft final plan			
30	You have submitted your statement of response and final draft plan (if different to the draft WRMP) to the Secretary of State or Welsh Ministers, repeating the checklist steps as given in Section 2.6. The final draft plan should take account of any additional works required by Defra or the Welsh Government or advised by the Environment Agency or Natural Resources Wales following your statement of response.	N/A - Post-revised draft WRMP19 submission	
31	You have undertaken any additional works as required by the Environment Agency or Natural Resources Wales following their review of your final draft plan, and have fully checked all changes.	N/A - Post-revised draft WRMP19 submission	

No.	Action or approach	Draft WRMP ref.	Supporting comments
32	You have completed and submitted the WRMP tables alongside the final WRMP.	N/A - Post-revised draft WRMP19 submission	
2.10 Publish your final plan			
33	You have accounted for any relevant Directions with regards to publishing your final plan and the appropriate permissions from the Secretary of State or Welsh Ministers have been given.	N/A - Post-revised draft WRMP19 submission	
34	You have notified any party that responded to the consultation as you publish the final plan.	N/A - Post-revised draft WRMP19 submission	
2.11 Revise and review your final plan			
35	You have planned for annual review of the published plan in line with the Annual Review guidelines.	N/A - Post-revised draft WRMP19 submission	We recognise and plan for Annual WRMP reviews, and have referenced how these might be used in a number of places throughout the submission on a number of specific areas.
36	You will consult with the Environment Agency and/or Natural Resources Wales on any material changes that you wish to make to your plan in future.	N/A - Post-revised draft WRMP19 submission	
Section 3 – Technical Methods			
3.1 Developing your plan			
37	Your plan consistently complies with relevant government policy documents/publications.	• Draft WRMP19 Technical report Assurance and Governance, Section 4 (Compliance) • Draft WRMP19 Main Report – Summary of our Plan, provides overview of key areas to address Defra guiding principles (also referenced at key points through submission)	This is evident throughout all of our documents that form a part of our Draft WRMP19 submission, where appropriate. See also Item 46

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No.	Action or approach	Draft WRMP ref.	Supporting comments
38	You have provided a full explanation of the planning period assumed in the plan, which covers, as a minimum, the statutory period from 2020 to 2045.	• Draft WRMP19 Main Report, Section 1.1 (Background)	
39	You have included a robust forecast of the water you have available to supply customers with for each year within the planning period, accounting for climate change, and demonstrating that supply is both efficient and sustainable. You have achieved this by following the steps in Section 4 of this checklist.	• Draft WRMP19 Main Report, Section 3 (Our water supply system) and Section 4.6.1 (Initial Baseline)	
40	You have included a robust forecast of customers' demand for water during each year within the planning period, accounting for climate change. You have achieved this by following the steps in Section 5 of this checklist.	• Draft WRMP19 Main Report, Section 4.3 (Customer's future demand for water) and Section 4.6.1 (Initial Baseline)	
41	You have allowed for uncertainties in your calculations and forecasts for both supply and demand over the planning period, and have used best practice methods to quantify uncertainty.	• Draft WRMP19 Main Report, Section 4.5 (Target headroom)	
42	You have compared supply and demand to determine whether there is a surplus or deficit in any of your resource zones.	• Draft WRMP19 Main Report, Section 4.6 (Supply-demand balances)	
43	If you are in surplus in any of your resource zones you have flagged to other water companies that water is available for trading.	• Draft WRMP19 Main Report, Section 6.5 (National Water Trading) • Draft WRMP19 Technical Report – Options identification, Sections 3.7 and 8	
44	If you are in deficit in any of your resource zones, you have considered all reasonable options for addressing the deficit, including options for increasing supplies, reducing demand and cross-company/third party options	• Draft WRMP19 Main Report, Section 5 • Draft WRMP19 Technical Report – Options identification	
45	Where new options are required, you have given opportunity for neighbouring companies or third parties to bid into your plan.	•Draft WRMP19 Main Report, Section 5.2 • Draft WRMP19 Technical Report – Options identification, Section 3.7	

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No.	Action or approach	Draft WRMP ref.	Supporting comments
46	You have adopted options that support the environmental objectives set out in RBMPs and if required, have carried out a Habitats Regulations Assessment including appropriate assessments, and a Strategic Environmental Assessment (SEA).	• Draft WRMP19 Technical Report – Options identification, Section 6 and 7 • Draft WRMP19 Technical Report – Options appraisal • Amec. (2017). Strategic Environmental Assessment of the Draft Water Resources Management Plan 2019: Environmental Report. • Amec. (2017). Draft Water Resources Management Plan 2019: Habitats Regulations Assessment. • Amec. (2017). Draft Water Resources Management Plan 2019: Water Framework Directive Assessment.	In support of the development of UU's draft WRMP19, Amec Foster Wheeler has completed a Strategic Environmental Assessment (SEA), a Habitats Regulations Assessment (HRA), a Water Framework Directive (WFD) assessment and a full Environmental & Social (E&S) costings assessment. The SEA has included information from the three RBMPs that lie within the North West region (North West, Solway Tweed and Dee) and additional the Severn RBMP (which includes Lake Vyrnwy is a source to the United Utilities supply area which lies within the plan area). The SEA has identified relevant environmental objectives from a review of over 100 plans and programmes. This has included the Wellbeing and Future Generations Act 2015, the relevant Defra strategies and White Papers and EA plans such as the RBMPs. These objectives have been taken into account in the SEA assessment framework applied to the WRMP options identification process. Specifically, there is a question in the assessment framework related to the RBMPs, 'Will the option support the achievement of environmental objectives set out in River Basin Management Plans?'. The SEA has used this framework to identify, describe and evaluate likely significant effects arising of the dWRMP and reasonable alternatives and where appropriate, the SEA has also noted the support for these objectives. Furthermore, the WRMP Options Appraisal process has used the findings of the Environmental & Social costings (in conjunction with other assessments and evidence) to inform the selection of the preferred options.
47	If you supply customers in Wales or your plan affects catchments in Wales, you have worked with Welsh Government and Natural Resources Wales with regards to understanding implications of the Environment (Wales) Act and Wellbeing of Future Generations (Wales) Act in developing your plan and how your plan contributes to Nature Recovery Plans.	• Draft WRMP19 Main Report, Section 1.3.2 (Key influences and themes for this plan)	We have engaged with both Welsh Government and Natural Resources Wales on our plan

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No.	Action or approach	Draft WRMP ref.	Supporting comments
48	If you supply customers in England, you have adopted options that support the well-being of future generations, are compatible with Defra's long term plans for the environment including Biodiversity 2020, and whose social and environmental benefits/costs are properly understood and taken account of.	• Draft WRMP19 Main Report, Section 1.3.2 (Key influences and themes for this plan) • Amec. (2017). Strategic Environmental Assessment of the Draft Water Resources Management Plan 2019: Environmental Report. • Amec. (2017). Draft Water Resources Management Plan 2019: Habitats Regulations Assessment. • Amec. (2017). Draft Water Resources Management Plan 2019: Water Framework Directive Assessment.	In support of the development of UU's draft WRMP19, Amec Foster Wheeler has completed a Strategic Environmental Assessment (SEA), a Habitats Regulations Assessment (HRA), a Water Framework Directive (WFD) assessment and a full Environmental & Social (E&S) costings assessment. The SEA has identified relevant environmental objectives from a review of over 100 plans and programmes. This has included the Wellbeing and Future Generations Act 2015 and the relevant Defra strategies and White Papers. These objectives have been taken into account in the SEA of the WRMP options. Where appropriate, the SEA has noted the support for these objectives. Furthermore, the WRMP Options Appraisal process has used the findings of the Environmental & Social costings (in conjunction with other assessments and evidence) to inform the selection of the preferred options.
49	You have included confirmed or likely sustainability changes that you have been informed about.	• Draft WRMP19 Main Report, Section 4.4.3 (Sustainability changes)	
50	You have demonstrated a system that can cope with droughts of a magnitude and duration that you reasonably expect to occur in your area over your chosen planning period and have considered contingencies for challenging but plausible droughts beyond the capabilities of your supply system (with relevant links to your Drought Plan) including whether they require options to provide additional resilience.	• Draft WRMP19 Technical Report - Supply forecasting, Section 17 (Drought links Table 10)	
51	You have documented the impact of drought interventions on supply and demand and links with your Drought Plan.	• Draft WRMP19 Technical Report - Supply forecasting, Section 17 (Drought links Table 10)	See also references under Item 3
52	You have accounted for the views of customers, other interested parties, statutory and non-statutory consultees in developing your plan.	• Draft WRMP19 Main Report, Section 2 (Customer and stakeholder involvement), Section 6 (Strategic choices) and Section 7 (Preferred plan and alternatives) • Draft WRMP19 Technical Report – Customer and stakeholder engagement	

No.	Action or approach	Draft WRMP ref.	Supporting comments
53	You have produced a flexible and adaptive plan that allows for risks and uncertainties in decisions, calculations and forecasts undertaken as part of the development of the plan.	• Draft WRMP19 Main Report, Section 7 (Preferred plan and alternatives) and Section 8 (Testing our plan)	
54	You have gained Board buy-in with respect to the cost and long-term sustainability of proposals.	• Draft WRMP19 Main Report, Section 9 (Assurance and board engagement)	
55	You have provided all the necessary supporting information at WRZ level and entered this in the water resources planning tables.	• WRMP19 Tables	
3.2 Defining a water resource zone			
56	You have defined your Water Resource Zones (WRZs) using the Environment Agency's WRZ assessment methods (Water Resource Zone Integrity, 2016).	• Draft WRMP19 Technical Report - Supply forecasting, Section 2.2 (Changes in assumptions from our 2015 Plan)	
57	You have demonstrated that, for each WRZ: · the abstraction and distribution of supply is largely self-contained (excepting agreed bulk transfers). · the majority of customers experience the same risk of supply failure and same level of service for demand restrictions. You have explained and justified any deviations from the above.	• Draft WRMP19 Technical Report - Supply forecasting, Section 2.2 (Changes in assumptions from our 2015 Plan)	
3.3 Problem characterisation			
58	You have applied the problem characterisation step of the WRMP 2019 Methods – Decision Making Process: Guidance (UKWIR, 2016) to determine the nature of the planning problem (including scale and complexity) as well as related issues, risks and uncertainties.	•Draft WRMP19 Main Report, Section 3.7 (Problem characterisation)	

No.	Action or approach	Draft WRMP ref.	Supporting comments
59	You have demonstrated that the effort and cost you have given to the selection of a decision-making process is proportional to the problem. You have described the significance of the choice of decision making method and its wider implications with respect to the plan outcomes.	• Draft WRMP19 Technical Report - Options appraisal, Section 1 (Introduction) and Section 2 (Approach)	
60	You have adopted processes outlined in WRMP 2019 Methods – Decision Making Process: Guidance (UKWIR, 2016) using methods that are most appropriate for your company.	• Draft WRMP19 Technical Report - Options appraisal, Section 1 (Introduction) and Section 2 (Approach)	
61	You have explained how/why the solutions(s) you have identified have been arrived at, and given assurance that uncertainties have not been double counted.	• Draft WRMP19 Technical Report - Options appraisal, Section 4 (Extended methods and assessing national water trading) and Section 6 (Supply-demand scenarios and stress testing)	
62	You have applied the Economics of Balancing Supply and Demand [EBSD] method (UKWIR, 2002) to determine a benchmark solution for comparison.	• Draft WRMP19 Technical Report - Options appraisal, Section 2 (Approach) and Section 5 (Preferred plan and alternatives)	
3.4 Drought risk assessment			
63	You have explained how you have followed the processes outlined in WRMP 2019 Methods – Risk Based Planning: Guidance (UKWIR, 2016) to identify an appropriate design drought.	• Draft WRMP19 Technical Report – Supply forecasting, Section 3 (Risk based planning for our supply forecast) and Section 4 (What is included in our supply forecast)	
64	You have clearly set out and justified the risk composition you have selected for each WRZ and the reasons that lead you to select that option, including the availability of data where more complex risk compositions have been used.	• Draft WRMP19 Technical Report - Supply forecasting, Section 3 (Risk based planning for our supply forecast)	
65	Where different risk compositions are used in different parts of your supply system, you have explained this clearly and justified your reasoning. Also, where a more complex risk composition has been adopted but later abandoned to a simpler	• Draft WRMP19 Technical Report - Supply forecasting, Section 3 (Risk based planning for our supply forecast)	

No.	Action or approach	Draft WRMP ref.	Supporting comments
	approach, this has been noted but your WRMP reflects the final risk composition adopted.		
66	You have included a drought resilience statement in your plan which is consistent with your chosen risk composition, and have explained how this reflects the hydrological risks that drought may impose on your supply system.	• Draft WRMP19 Main Report, Section 6.3.1 (Investing to increase resilience to extreme droughts)	
3.5 Planning scenarios			
67	You have demonstrated that your plan is based on the dry year annual average for demand.	• Draft WRMP19 Main Report, Section 4.3.8 (Our Baseline forecast of demand for water)	
68	You have reiterated the design drought you are basing your plan on for supply, and have based this on the drought risk assessment activities carried out under Section 3.4.	• Draft WRMP19 Technical Report - Supply forecasting, Section 3 (Risk based planning for our supply forecast)	
69	If you have chosen to consider how you will deal with a period of peak strain (critical period), you have set out which WRZs this applies to, the reasons for this and have described the underlying factors that impact on the supply-demand balance during the critical period.	• Draft WRMP19 Technical Report - Demand for water, Section 7.3 (“Critical period” and “peak” type uplifts)	
70	You have explained the assumptions made when assessing your baseline figures for your demand forecast. Your documentation includes assumptions about mains renewal and capital maintenance, your baseline forecast of consumer need, losses through leakage and operating losses. You have demonstrated that the baseline case represents what happens excluding any changes in operations or company policy.	• Draft WRMP19 Technical Report - Demand for water, Section 4 (Leakage)	

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No.	Action or approach	Draft WRMP ref.	Supporting comments
71	You have described how/where you have allowed for uncertainty in your demand forecast and how this is appropriate to your selected methods.	• Draft WRMP19 Technical Report - Demand for water, Section 10 (Allowing for uncertainty (target headroom and scenarios))	
72	You have explained the assumptions made when assessing baseline figures for your supply forecast. You have demonstrated that the baseline case represents the supplies that can be maintained through a design drought as appropriate for your company area.	• Draft WRMP19 Technical Report - Supply forecasting, Section 2.2. (Change in assumptions from our 2015 Plan) • Draft WRMP19 Technical Report - Supply forecasting, Section 6 (What is covered in our deployable output forecast)	
73	You have reported the baseline figures for supply and demand in the water resources planning tables at WRZ level.	• Draft WRMP19 Tables - (4. BL SDB)	
74	For your final plan, you have explained any decisions related to developing options to manage or meet the forecast demand of your customers.	• Draft WRMP19 Main Report, Section 7.7 (The preferred plan) • Draft WRMP19 Technical Report - Options appraisal, Section 5 (Preferred plan and alternatives)	
75	You have documented each of the demand side options considered and the reason for choosing each option. If relevant, you have categorised your options as – change to existing policies, operations, infrastructure and resilience solutions (including drought measures and orders).	• Draft WRMP19 Technical Report - Options identification, Section 3.2.16 (Drought Permits and Drought Orders (DPS)), Section 3.5 (UUWN+ Distribution management options), Section 3.6 (UUWN+ Customer management options), Section 3.7 (Third Party options) and Appendix G (List of all options and screening outcomes) • Draft WRMP19 Technical Report - Water supply resilience, documents our approach to incorporating wider water service resilience risks into our Draft WRMP	Our approach to documenting demand management options are discussed in the technical report and how/why these have been selected as unconstrained options.

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No.	Action or approach	Draft WRMP ref.	Supporting comments
76	You have considered all available demand and supply side options in the process of developing your preferred plan. You have explained how you have done this, and demonstrated how third party and collaborative options with other companies have been evaluated. You have accounted for opportunities to improve resilience at regional level.	• Draft WRMP19 Technical Report - Options Identification, Section 3 (Unconstrained Options), Section 4 (Primary Screening), Section 5 (Feasible Options), Section 6 Environmental Assessments) and Section 7 (Secondary Screening) • Draft WRMP19 Technical Report - Water supply resilience, documents our approach to incorporating wider water service resilience risks into our Draft WRMP	We have accounted for regional resilience within our WRMP through our assessment of our baseline risk position (Section 4.7 – resilience to other hazards) and through our identification of a preferred plan (Section 7 – preferred plan and alternatives). Our preferred plan delivers a degree of improved resilience through the proposed leakage reductions. Through our assessments reported in Section 4.7 and further detailed in the WRMP19 Technical Report – Water supply resilience we have also identified a significant regional resilience risk referred to as “Manchester and Pennines Resilience” and are consulting on options to manage this risk.
77	You have provided details of and explained your preferred programme of solutions to restore your supply-demand balance under a dry year average annual scenario.	• Draft WRMP19 Main Report, Section 7.7 (The preferred plan)	
78	You have provided details of and explained your preferred programme of solutions to restore your supply-demand balance under a critical period scenario, if relevant.	N/A	The only WRZ under a critical period scenario is the Carlisle RZ. The Carlisle RZ does not suffer a deficit in its supply-demand balance, therefore this item is not considered relevant.
79	Where you are in deficit in dry year average annual or critical period scenarios, you have demonstrated how you have addressed these deficits and how your plan allows you to be compliant with your statutory duties.	• Final WRMP19 Main Report, Section 7 Preferred plan	We have a small deficit in the final 4 years of the planning period in our SRZ, this is addressed in our preferred plan options.
80	You have indicated clearly if you have included resilience solutions for more challenging but plausible droughts beyond the capabilities of your final plan.	• Draft WRMP19 Main Report, Section 6.3.1 (Investing to increase resilience to extreme droughts)	
81	If you are in surplus, and you have still decided to include options in your plan, you have explained the benefits from this (such as more efficient supply of water, improvements in long-term resilience, demand reduction etc.)	• Draft WRMP19 Main Report, Section 7 (Preferred plan and alternatives)	
3.6 Levels of service			

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No.	Action or approach	Draft WRMP ref.	Supporting comments
82	For water companies wholly or mainly in England you have clearly set out your level of service as an annual percentage risk of restrictions, and set out if/how you expect it to change across the planning period as you implement supply-demand or resilience measures.	• Draft WRMP19 Technical Report - Supply forecasting, Section 16 (Level of service)	
83	You have presented evidence to demonstrate that your level of service is appropriate and have used appropriate assumptions and methodologies to develop your levels of service.	• Draft WRMP19 Main Report, Section 6.3 (Improved level of service for drought permits and orders) • Draft WRMP19 Technical Report - Supply forecasting, Section 6.1.7 (Level of service representation) and Section 16 (Level of service) • Draft WRMP19 Technical Report - Options appraisal, Section 3 (Strategic choices for our region) • Draft WRMP19 Technical Report – Customer and stakeholder engagement	
84	You have engaged with your customers and stakeholders and their views have been considered when developing your level of service. You have communicated your level of service appropriately.	• Draft WRMP19 Main Report, Section 1.4 (Level of service: balancing customer and environmental needs), and Section 2.2 (Pre-consultation on this Water Resources Management Plan) • Draft WRMP19 Main Report, Section 6.3 (Improved level of service for drought permits and orders) and Section 7 (Preferred and alternative plans) • Draft WRMP19 Technical Report - Customer and stakeholder engagement	
85	For water companies in England, you have set out a reference level of service that would mean resilience to an event of approximately 0.5% risk of annual occurrence (1:200 year drought event). You have presented this as a scenario and explained how you have modelled the drought event used.	•Draft WRMP19 Technical Report - Supply forecasting, Section 10.4 (Scaling and uncertainty)	

No.	Action or approach	Draft WRMP ref.	Supporting comments
86	You have quantified the deployable output and incremental costs of your reference level of service scenario and explained how you have calculated these. You have set out if and how this could be achieved at any point in the planning period.	•Draft WRMP19 Main Report, Section 6.3.1 (Investing to increase resilience to extreme droughts)	
Section 4 – Developing your supply forecast			
4.1 How to develop your supply forecast			
87	Your approach to calculating your supply forecast is consistent with your risk composition choice, and the risk and uncertainty involved have been quantified using appropriate methods.	• Draft WRMP19 Technical Report - Supply forecasting, Section 3 (Risk based planning for our supply forecast)	
88	You have discussed your approach to calculating your supply forecast as early as possible with the Environment Agency or Natural Resources Wales.	• Draft WRMP19 Main Report Section 2 • Draft WRMP19 Technical Report - Supply forecasting, Section 1 (Introduction)	
89	You have considered all individual components making up the supply forecast, and taken account of pressures on future supplies including (but not limited to): · climate change · abstraction licence changes due to abstraction reform or sustainability improvements · pollution or contamination implication for sources · development and new infrastructure · changes in contractual arrangements relating to transfers. You have clearly documented all assumptions made.	• Draft WRMP19 Technical Report - Supply forecasting, Section 4 (What is included in our supply forecast)	Section 4 of the Draft WRMP19 Technical Report - Supply forecasting signposts to the sections that address each of the bullet point components.
90	You have recorded in the water resources planning tables the quantities for all baseline supply components as well as the amount of water that your analysis indicates you can reliably supply.	• Draft WRMP19 tables - (1. BL Licences) and (2. BL Supply)	

No.	Action or approach	Draft WRMP ref.	Supporting comments
91	As part of your supply assessment, you have determined and explained how your supply system behaves during the design drought.	• Draft WRMP19 Technical Report - Supply forecasting, Section 5 (Baseline deployable output)	
92	You have explained links between your WRMP and your drought plan, including the likelihood of achieving planned levels of service and their impact on available supply.	• Draft WRMP19 Technical Report - Supply forecasting, Section 6.1.7 (Level of service representation), Section 16 (Level of service) and Section 17 (Drought Links Table 10)	
93	You have explained how drought interventions (drought permits and orders) that are contained within the drought plan have been dealt with in the WRMP in accordance with levels of service, and outlined any contingencies for extreme droughts that exceed the capability of your system to meet.	• Draft WRMP19 Technical Report - Supply forecasting, Section 6.1.7 (Level of service representation), Section 16 (Level of service) and Section 17 (Drought Links Table 10)	
94	For water companies in England you have not included benefits drawn from supply drought measures (e.g. drought permits and orders) in your baseline supply forecast.	• Draft WRMP19 Technical Report - Supply forecasting, Section 6.1.7 (Level of service representation)	
95	For water companies wholly or mainly in Wales, you should have discussed inclusion of supply drought measures in baseline forecasts with Natural Resources Wales or Environment Agency.	N/A	
4.2 What should be included in your supply forecast?			
96	You have provided a breakdown of your supply forecast for the dry year annual average scenario for all WRZs and presented this in the planning tables.	• WRMP19 Tables - (2. BL Supply)	
97	You have explained your decision to include a critical period, if relevant, and have provided a supply forecast for it.	• Draft WRMP19 Technical Report - Supply forecasting, Section 4 (What is included in our supply forecast)	

No.	Action or approach	Draft WRMP ref.	Supporting comments
98	Where you abstract water for supply, your supply forecast for that WRZ sets out the deployable output, future changes to deployable output (e.g. from sustainability changes or climate change), transfers and future inputs from third parties, outage and other short-term losses, operational losses related to abstraction or treatments.	• Draft WRMP19 Technical Report - Supply forecasting, Section 15 (Water available for use)	
99	Where you receive a raw or treated water import from a third party, your supply forecast reflects the contractual arrangements with this third party supplier.	• Draft WRMP19 Technical Report - Supply forecasting, Section 11.1 (Existing transfers)	
100	You have demonstrated that your supplier will be able to maintain supply during your design drought and that levels of service can be achieved. You have demonstrated that your supplier has assessed that their statutory and policy obligations can be met.	N/A	According to the guidance text this item applies ''if your WRZ receives all of its water via transfers of third parties'' This does not apply to any of our water resource zones.
101	You have expressed the supply forecast as the Water Available for Use (WAFU).	• Draft WRMP19 Technical Report - Supply forecasting, Section 15 (Water available for use)	Also included throughout main report
4.3 What should be covered in your deployable output assessment?			
102	You have explained which factors constrain deployable output, such as hydrological yield, licensed quantities/constraints, pumping constraints, transfer issues, water quality and treatment.	• Draft WRMP19 Technical Report - Supply forecasting, Section 5 (Baseline deployable output) and Section 6 (What is covered in our deployable output forecast)	
103	You have identified where deployable output is constrained by licences that are time limited and due to expire in the period covered by the plan, and evaluated the risks of non-renewal.	• Draft WRMP19 Technical Report - Supply forecasting, Section 6.1.5 (Asset constraints and licences)	
104	You have checked that licenced volumes are sustainable and that their use will not cause deterioration.	• Draft WRMP Technical Report - Supply forecasting, Section 6.1.5 (Asset constraints and licences) and Section 7 (Our role in achieving sustainable abstraction)	

No.	Action or approach	Draft WRMP ref.	Supporting comments
105	Your method for deployable output determination is consistent with your risk composition and the methods outlined in Handbook of source yield methodologies (UKWIR, 2014) or WRMP 2019 Methods – Risk Based Planning: Guidance (UKWIR, 2016); you have fully explained and documented your choice of method and supporting techniques.	• Draft WRMP19 Technical Report - Supply forecasting, Section 6.1 (Deployable output approach)	
106	You have described how deployable output will be affected by demand side drought restrictions according to the level of service you have planned for.	• Draft WRMP19 Technical Report - Supply forecasting, Section 17.5 (Outcomes from populating the Drought Links table)	
4.4 Your role in achieving sustainable abstraction			
107	Your proposals support WFD obligations and RBMP objectives in relation to sustainable abstraction.	• Draft WRMP19 Main Report – Section 7 (Preferred and alternative plans) • Amec. (2017). Draft Water Resources Management Plan 2019: Habitats Regulations Assessment. • Amec. (2017). Draft Water Resources Management Plan 2019: Water Framework Directive Assessment. • Amec. (2017). Strategic Environmental Assessment of the Draft Water Resources Management Plan 2019: Environmental Report. • Draft WRMP19 Technical Report - Supply forecasting, Section 7 (Our role in achieving sustainable abstraction)	In support of the development of UU's draft WRMP19, Amec Foster Wheeler has completed a Strategic Environmental Assessment (SEA), a Habitats Regulations Assessment (HRA), a Water Framework Directive (WFD) assessment and a full Environmental & Social (E&S) costings assessment. The SEA has identified the relevant RBMP objectives and has considered them within the assessment of the WRMP options. The Water Framework (WFD) assessment has considered feasible options and the Preferred Plan options. The WFD Assessment is reported separately but informs the SEA Environmental Report as part of the assessment of feasible and preferred options.

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No.	Action or approach	Draft WRMP ref.	Supporting comments
108	You have determined if changes to your abstractions are required to meet RBMP objectives, and you have discussed the scope of changes with the Environment Agency or Natural Resources Wales as part of WINEP for PR19.	•Draft WRMP19 Technical Report - Supply forecasting, Section 7 (Our role in achieving sustainable abstraction)	We have described how we have ensured that our existing abstractions are sustainable. We have worked closely with the Environment Agency on developing understanding of potential WFD impacts for existing sources. The Sustainable Catchments review (issued by the EA in February 2017) assessed which of our sources has the potential to cause WFD deterioration if used at their full licensed volume. All of the Category 1 licences will be addressed in AMP6 or early AMP7. We have no Category 2 licences. For Category 3 licences impacting on surface water bodies we have worked with the EA to deduce the "tipping point" abstraction that causes deterioration and in all, but one case our current licence or operational constraints manage the risk of deterioration - we have included a licence constraint at this site in our dWRMP19 scenario. For Category 3 licences impacting on groundwater bodies we have constrained future abstraction to the recent actual in the dWRMP19 scenario. Category 3 deterioration risks are beyond 2027 and we will be investigating them all further in AMP7 to confirm the risk and option appraise solutions if required. We are currently agreeing the proposals for the WINEP with the Environment Agency, but this has not been agreed or finalised ahead of submission of the draft WRMP.
109	You have determined that all existing abstractions (including any planned increases to abstracted volumes with current licence limits, and any time limited licences) are compliant with RBMP objectives and any other legally binding environmental objectives.	• Draft WRMP19 Technical Report - Supply forecasting, Section 6.1.5 (Asset constraints and licences) and Section 7 (Our role in achieving sustainable abstraction) • Amec. (2017) Draft Water Resources Management Plan 2019: Water Framework Directive Assessment (Section 2)	Where there are concerns around the sustainability of licences in future these have been included in the Water Industry National Environment Programme for investigation we have described how we have ensured that our existing abstractions are sustainable. We have worked closely with the Environment Agency on developing understanding of potential WFD impacts for existing sources. The Sustainable Catchments review (issued by the EA in February 2017) assessed which of our sources has the potential to cause WFD deterioration if used at their full licensed volume. All of the Category 1 licences will be addressed in AMP6 or early AMP7. We have no Category 2 licences. For Category 3 licences impacting on surface water bodies we have worked with the EA to deduce the "tipping point" abstraction that causes deterioration and in all but one case our current

No.	Action or approach	Draft WRMP ref.	Supporting comments
			licence or operational constraints manage the risk of deterioration - we have included a licence constraint at this site in our dWRMP19 scenario. For Category 3 licences impacting on groundwater bodies we have constrained future abstraction to the recent actual in the dWRMP19 scenario. Category 3 deterioration risks are beyond 2027 and we will be investigating them all further in AMP7 to confirm the risk and option appraise solutions if required. We are currently agreeing the proposals for the WINEP with the Environment Agency, but this has not been agreed or finalised ahead of submission of the draft WRMP. The Water Framework Directive Assessment report has included an assessment of existing licences (Section 2)
110	You have liaised with Environment Agency and/or Natural Resources Wales to determine if you have any abstractions from water bodies that are at risk from deterioration.	• Draft WRMP19 Technical Report - Supply forecasting, Section 7 (Our role in achieving sustainable abstraction) • Amec. (2017) Draft Water Resources Management Plan 2019: Water Framework Directive Assessment (Section 2)	We have described how we have ensured that our existing abstractions are sustainable. We have worked closely with the Environment Agency on developing understanding of potential WFD impacts for existing sources. The Sustainable Catchments review (issued by the EA in February 2017) assessed which of our sources has the potential to cause WFD deterioration if used at their full licensed volume. All of the Category 1 licences will be addressed in AMP6 or early AMP7. We have no Category 2 licences. For Category 3 licences impacting on surface water bodies we have worked with the EA to deduce the "tipping point" abstraction that causes deterioration and in all but one case our current licence or operational constraints manage the risk of deterioration - we have included a licence constraint at this site in our dWRMP19 scenario. For Category 3 licences impacting on groundwater bodies we have constrained future abstraction to the recent actual in the dWRMP19 scenario. Category 3 deterioration risks are beyond 2027 and we will be investigating them all further in AMP7 to confirm the risk and option appraise solutions if required. We are currently agreeing the proposals for the WINEP with the Environment Agency but this has not been agreed or finalised ahead of submission of the draft WRMP. The WFD no-deterioration methodology was issued to EA on 8 August 2017. Includes constraints to include in draft WRMP19

No.	Action or approach	Draft WRMP ref.	Supporting comments
			modelling to avoid deterioration caused by existing licences. WINEP v2 includes the need for WFD deterioration investigations in AMP7 at those sites identified as being at risk through the Sustainable Catchments review.
111	You have reviewed potential mitigation measures for any waterbodies at risk and put into place plans to manage the risk of deterioration, or where deterioration has occurred because of your actions, you have put in place plans to restore the waterbody.	• Draft WRMP19 Technical Report - Supply forecasting, Section 7 (Our role in achieving sustainable abstraction)	The Sustainable Catchments review (issued to the EA in Feb 2017) assessed which of our sources has the potential to cause WFD deterioration if used at their full licensed volume. All of the Category 1 licences will be addressed in AMP6 or early AMP7. We have no Category 2 licences. For Category 3 licences impacting on surface water bodies we have worked with the EA to deduce the "tipping point" abstraction that causes deterioration and in all but one case our current licence or operational constraints manage the risk of deterioration - we have included a licence constraint at this site in our dWRMP19 scenario. For Category 3 licences impacting on groundwater bodies we have constrained future abstraction to the recent actual in the dWRMP19 scenario. Category 3 deterioration risks are beyond 2027 and we will be investigating them all further in AMP7 to confirm the risk and option appraise solutions if required.
112	You have completed all investigations and options appraisals in your PR14 water industry NEP for AMP6 by the agreed dates and included any options needed to manage any sustainability changes in your plan.	• Draft WRMP19 Technical Report - Supply forecasting, Section 7 (Our role in achieving sustainable abstraction)	AMP6 investigations on track with the exception of the HMWB Stage 3 options appraisals. The EA have been delayed in producing their Stage 2 assessments for 21 sites and these will now not be available until November 2018. This means that we will not be able to complete any subsequent Stage 3 options appraisals in time for the WRMP - therefore, there is uncertainty in this area. We have included our best estimate of likely supply changes in the dWRMP scenario.

No.	Action or approach	Draft WRMP ref.	Supporting comments
113	You have considered any regulator measures to improve fish/eel passage or water quality and accounted for likely impact on supply forecasts.	• Draft WRMP19 Technical Report - Supply forecasting, Section 7.2 (Future changes – Strategic Resource Zone)	WINEPv2 (Sept 2017) included new requirements for fish/eel passage, some of these may have a supply impact to ensure sufficient flows for fish migration are provided down the pass. However, as these were new requirements in WINEPv2 we do not have any designs developed and hence have no view as to the potential supply impact; so these have not been included in the dWRMP scenario. There are some raw water quality driven schemes in the WINEPv2 and the supply impacts associated with these have been included in the dWRMP scenario.
4.5 Invasive Non-Native Species (INNS)			
114	You have considered whether/how any current or future abstractions or operations might cause the spread of INNS and have determined measures to reduce the risk of this. You have liaised with Environment Agency and/or Natural Resources Wales to discuss the risk of INNS and reflected the outcomes of this in your plan.	• Draft WRMP19 Technical Report - Supply Forecasting, Section 8 (Invasive non-native species) • Draft WRMP19 Technical Report - Options identification, Section 5 (Feasible Options) • Draft WRMP19 Technical Report – Options appraisal, Section 5.3 (Our preferred plan) • Amec. (2017). Strategic Environmental Assessment of the Draft Water Resources Management Plan 2019: Environmental Report.	In support of the development of UU's draft WRMP19, Amec Foster Wheeler has completed a Strategic Environmental Assessment (SEA) assessment of the feasible plan options. The SEA specifically includes the need to prevent the spread/introduction of INNS in the assessment framework, and any effects arising from relevant WRMP feasible options, identified, described and evaluated as appropriate. This need is included under the Biodiversity topic area and the appropriate legislation has been referenced (Table 2.1, Plans and Programmes Reviewed for the SEA of the Draft WRMP) which includes Defra, Scottish Government, Welsh Government (2015) The Great Britain Invasive Non-native Species Strategy. The SEA, will be subject to consultation with the statutory environmental consultation bodes, which include the EA and NRW.
115	For water companies in England, you have reflected the February 2017 position statement and its principles in your plan.	• Draft WRMP19 Technical Report - Supply Forecasting, Section 8 (Invasive non-native species) • Draft WRMP19 Technical Report - Options identification, Section 5 (Feasible Options) • Draft WRMP19 Technical Report – Options appraisal, Section 5.3 (Our preferred plan)	In addition to item 114, we have reflected the February 2017 position statement as communicated to water companies in Draft WRMP19 Technical Report – Options appraisal, Section 5.3 which includes details of the high-level INNS risk assessment for our Preferred Plan.
4.6 How to include changes to your abstraction licence in your plan			

No.	Action or approach	Draft WRMP ref.	Supporting comments
116	You have liaised with the Environment Agency or Natural Resources Wales to determine the likely impact of sustainability measures on abstraction licences and agreed a mutually acceptable timescale for the implementation of new licence conditions.	• Draft WRMP19 Technical Report - Supply forecasting, Section 6.1.5 (Asset constraints and licences)	All sustainability changes listed in WINEPv1 are included in WRMP19. The WINEPv1 only includes revocation of Ennerdale / Crummock / Overwater / Chapel House abstraction licences. In WINEPv2 several schemes previously under the "adaptive management" measure are now classed as "sustainability changes". All of these are covered by the draft WRMP scenario, however, the certainty of some of the schemes has altered. This will be reflected in the final WRMP.
117	You have determined the impact of any sustainability reductions on your deployable output and included these in your plan appropriately.	• Draft WRMP19 Technical Report - Supply forecasting, Section 7 (Our role in achieving sustainable abstraction)	
118	You have assessed the impact of possible future sustainability changes on your plan through scenario testing and not included any uncertainty about sustainability changes within your plan.	• Draft WRMP19 Technical Report - Supply forecasting, Section 7 (Our role in achieving sustainable abstraction) • Draft WRMP19 Technical Report – Target Headroom	
119	Where changes to abstraction licences or new options threaten security of supply and there are no alternatives, you have considered and prepared evidence for exemption under Article 4.7 of the WFD.	• Draft WRMP19 Technical Report - Options Appraisal (Barepot licence reduction scenario) is included in Section 6 (Supply Demand scenarios and stress testing) • Draft WRMP19 Technical Report - Supply forecasting, Section 10 (Climate change)	There are no changes to abstraction licences in the Preferred Plan which could threaten security of supply
4.7 Abstraction reform – evidence needs			

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No.	Action or approach	Draft WRMP ref.	Supporting comments
120	For catchments managed by the Environment Agency, you have not included any changes to DO from abstraction reform. You have identified sources having unused licence volumes that are required for emergency purposes and have explained how you define these (e.g. drought source or other purposes).	• Draft WRMP19 Technical Report - Supply forecasting, Section 9 (Abstraction reform - evidence needs)	
121	For catchments managed by Natural Resources Wales, you have included evidence to justify retaining any of your daily or annual licensed volumes within your plan. You have discussed the evidence requirements with Natural Resources Wales.	• Draft WRMP19 Technical Report - Supply forecasting, Section 9 (Abstraction reform - evidence needs)	Our sources managed by NRW are the Upper Dee (Horseshoe Falls at Llangollen and Fron) and Vyrnwy. NRW re-issued our Upper Dee abstraction licence in 2016 to include Habitats Directive Review of Consents changes and this includes a review of the licence volumes. We have an AMP6 scheme to provide new flow releases on Vyrnwy's two catchwaters (Cownwy and Marchnant) - once this is done, we will be updating the abstraction licence - we need to preserve the surplus on this to facilitate trading with Thames Water. Only the lower River Severn is classed as an Enhanced catchment, therefore changes to the Upper Dee or Vyrnwy as a result of abstraction reform are unlikely. Abstraction reform has not been explicitly considered - the surplus on licences has not be identified or justified.
122	If you operate using licences within the three cross-border catchments (Rivers Dee, Wye and Severn), you have included information in your plan that justifies retention of any unused volumes associated with those licences.	• Draft WRMP19 Technical Report - Supply forecasting, Section 9 (Abstraction reform - evidence needs)	We have abstraction sources on both the River Dee and River Severn, which are key components of our system Deployable Output. Our sources managed by NRW are the Upper Dee (Horseshoe Falls at Llangollen and Fron) and Vyrnwy. NRE re-issued our Upper Dee abstraction licence in 2016 to include Habitats Directive Review of Consents changes and this includes a review of the licence volumes. We have an AMP6 scheme to provide new flow releases on Vyrnwy's two catchwaters (Cownwy and Marchant) - once this is done, we will be updating the abstraction licence - we need to preserve the surplus on this to facilitate trading with Thames Water. Only the lower River Severn is classed as an Enhanced catchment, therefore changes to the Upper Dee or Vyrnwy as a result of abstraction reform are unlikely. Abstraction reform has not been explicitly considered - the surplus on licences has not be identified or justified.

No.	Action or approach	Draft WRMP ref.	Supporting comments
4.8 Climate change			
123	You have determined the impact of climate change on river flows and groundwater recharge using one of the three methods set out in the guideline.	• Draft WRMP19 Technical Report - Supply forecasting, Section 10 (Climate change)	
124	You have assessed and clearly demonstrated the vulnerability and risks your sources and supplies face for each of your WRZs.	• Draft WRMP19 Technical Report - Supply forecasting, Section 10.1 (Basic vulnerability assessment)	
125	You have set out and justified your assessment methods, outlined any assumptions made and clearly presented your results, explaining any differences in methodology between your resource zones.	• Draft WRMP19 Technical Report - Supply forecasting, Section 10.2 (Calculating river flows) and Section 10.3 (Calculating deployable output impacts)	
126	You have clearly explained whether and how climate change has been accounted for in your headroom assessment and have reported this separately.	• WRMP19 Technical Report - Target headroom, Section 3.1.8 (S8: Uncertainty of impact of climate change on source yields)	
127	You have set out if/how you have used scaling methods to account for climate change that has already happened, and how this has affected your supplies.	• Draft WRMP19 Technical Report - Supply forecasting, Section 10.4 (Scaling and uncertainty)	
128	You have calculated the impacts of climate change on supply and have entered this into the water resources planning tables as changes to DO.	• Draft WRMP19 Technical Report - Supply forecasting, Section 10.4 (Scaling and uncertainty)	
4.9 Water transfers			
129	You have quantified all water transfers including all raw and potable imports/exports and entered this in the water resources planning tables. You have noted the direction of transfers along with the potential to change the direction if needed.	• Draft WRMP19 Technical Report - Supply forecasting, Section 11 (Water transfers) • Draft WRMP19 Tables - (2. BL Supply)	
130	You have documented agreed limits between supplier and recipient companies for all transfers, including any contractual variations that might apply (e.g. in times of drought).	• Draft WRMP19 Technical Report - Supply forecasting, Section 11 (Water transfers)	

No.	Action or approach	Draft WRMP ref.	Supporting comments
131	You have documented the total volume available to you via transfer for each year of your plan (accounting for operational or infrastructure constraints that may reduce quantities).	• Draft WRMP19 Technical Report - Supply forecasting, Section 11 (Water transfers) • Draft WRMP19 Tables - (2. BL Supply)	
132	You have assessed and documented the quality of transferred water and any impact of the transfer on the quality of receiving waters.	• Draft WRMP19 Technical Report - Supply forecasting, Section 11 (Water transfers) • Amec. (2017). Draft Water Resources Management Plan 2019: Water Framework Directive Assessment. • Amec. (2017). Strategic Environmental Assessment of the Draft Water Resources Management Plan 2019: Environmental Report.	In support of the development of UU's draft WRMP19, Amec Foster Wheeler has completed a Water Framework (WFD) assessment of feasible options and the Preferred Plan options. The WFD Assessment is reported separately, but informs the SEA Environmental Report as part of the assessment of feasible and preferred options, particularly in respect of the potential effects on water quality and also biodiversity.
4.10 Drinking water quality			
133	You have supported objectives for drinking water in protected areas.	• Draft WRMP19 Technical Report - Options Identification, Section 3.2 (UUWR Resource Management options)	Section 3.2 of the Options Identification technical report discusses our approach to catchment management in terms of business as usual (e.g. SCaMP) and also how we have assessed viability for the options identification process. Additionally, and of relevance to all compliance items in this section, the DWI have released their Guidance note on the Long term planning for the quality of drinking water supplies. It requests written confirmation from the Board that the draft WRMP takes account of all statutory drinking water quality obligations and that the WRMP includes plans to meet their statutory obligations in full. This forms part of our Board assurance.
134	You have checked that the drinking water arising from the water treatment regime applied meets the Standards of the Drinking Water Directive plus any other legislation.	• Draft WRMP19 Main Report, Section 1.3.2 (Key influences and themes for this plan) • Draft WRMP19 Technical Report – Options Identification, Section 5.2.	Our existing system is obliged to meet the regulatory requirements for drinking water quality. Any proposed changes to the supply system that have been considered in the options identification process, have been designed to meet the required regulatory water quality standards and this has been documented in the underpinning assumptions. See Draft WRMP19 Technical Report – Options Identification, Section 5.2.

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No.	Action or approach	Draft WRMP ref.	Supporting comments
135	You have abided by Section 68(1) of the Water Industry Act 1991 in terms of quality of supplied water, and applied this to water from your own sources as well as transfers.	• Draft WRMP19 Technical Report - Supply forecasting, Section 12 (Drinking water quality) • Draft WRMP19 Technical Report – Options Identification, Section 5.2.	Our existing system is obliged to meet the regulatory requirements for drinking water quality. Any proposed changes to the supply system that have been considered in the options identification process, have been designed to meet the required regulatory water quality standards and this has been documented in the underpinning assumptions. We have referenced our water quality regulatory obligations. See Draft WRMP19 Technical Report – Options identification, Section 5.2.
136	You have considered appropriate measures to prevent deterioration of water quality in a protected area.	• Draft WRMP19 Technical Report - Options Identification, Section 3.2 (UUWR Resource Management options)	Options Identification Technical Report, Section 3.2, discusses our approach to catchment management in terms of business as usual (e.g. SCaMP) and also how we have assessed viability for the options identification process.
137	You have recorded how you have calculated treatment works losses and operational use for each WRZ.	• Draft WRMP19 Technical Report - Supply forecasting, Section 14 (Raw water and process losses)	
138	You have provided diagrams and other supporting evidence for complex major works that can be used in pre-consultation discussions with the Environment Agency or Natural Resources Wales.	N/A	We have discussed treatment works losses and operational use regarding when discussing supply forecasts with the EA during our bi-monthly liaison meetings. No further information provision was required as part of this process, our engagement on WRMP methodologies or pre-consultation.
139	You have considered options to reduce losses where possible, especially if your plan has a supply-demand balance deficit.	• Draft WRMP19 Technical Report - Options identification, Section 3.3 (UUWR Production Management options)	Raw water losses have also been specifically considered as an option type and we have examined the potential for water treatment works process losses.
140	You have considered measures to protect supplies against long term risks of pollution.	• Draft WRMP19 Technical Report - Options identification, Section 3.2 (UUWR Resource Management options)	Section 3.2 of the Options Identification technical report discusses our approach to catchment management in terms of business as usual (e.g. SCaMP) and also how we have assessed viability for the options identification process. This is further detailed in Appendix B of the Options Identification technical Report.
141	You have considered measures to reduce the treatment process whilst still complying with the requirements of the drinking water regulations.	• Draft WRMP19 Technical Report - Options Identification, Section 3.2 (UUWR Resource Management options)	Section 3.2 of the Options identification technical report discusses our approach to catchment management in terms of business as usual (e.g. SCaMP) and also how we have assessed viability for the options process. This is further

No.	Action or approach	Draft WRMP ref.	Supporting comments
			detailed in Appendix B of the Options Identification technical Report.
142	You have demonstrated that all sources you may rely on have been correctly identified and measures taken to provide protection where necessary, e.g. SPZs around groundwater abstractions.		All of our drinking water sources have identified catchments, and source protection zones for groundwater abstractions, which have been designated by the Environment Agency. It is mandatory for water companies to carry out risk assessments of all of their water supply systems, from source to tap, adopting a drinking water safety plan approach. We do this for all our sources. Any new sources of water without current abstraction licences that are required as part of the Preferred Plan will require detailed source to tap risk assessments and in the case of new groundwater sources, Source Protection Zones will need to be described in conjunction with the Environment Agency.
143	You have applied your approach consistently across all WRZs.		Appraised consistently, please refer to compliance items 137-142
4.11 Outage			
144	You have documented your outage allowance and your approach is in line with WRMP 19 methods - Risk based planning (UKWIR, 2016) or the Outage allowances (UKWIR 1995) approach.	• Draft WRMP19 Technical Report - Supply forecasting, Section 13.1 (Planned and unplanned outage events) and 13.2 (Methodology and assessment)	
145	You have entered outage calculations in the water resources planning tables.	• Draft WRMP19 Tables - (2. BL Supply)	
146	You have included details of options you propose for reducing outage, particularly in cases of a supply-demand balance deficit.	• Draft WRMP19 Technical Report - Options identification, Section 3.2 (UUWR Resource Management options)	Outage reduction has been considered as an unconstrained options type. None of our water resource zones are predicted to be in deficit.
4.12 Water available for use			
147	You have clearly set out the total WAFU, and demonstrated how changes in deployable output, transfers, operational use and outage impact on the calculated total.	• Draft WRMP19 Technical Report - Supply forecasting, Section 15 (Water available for use)	
Section 5 – Developing your demand forecast			
5.1 What should be covered in your demand forecasts?			

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No.	Action or approach	Draft WRMP ref.	Supporting comments
148	You have provided a demand forecast for the dry year annual average where demand is unrestricted, which includes adjustments for likely future changes in demand due to factors such as climate change, population growth, household size, property numbers, and current company demand management policy/activity.	• Draft WRMP19 Main Report, Section 4.3 (Customer's future demand for water) • Draft WRMP19 Technical Report - Demand for water, Section 7.1 (Dry year uplift and weather patterns)	
149	You have provided a demand forecast for the critical period (if considered in your plan) that accounts for the factors you expect will drive demand during the critical period, such as seasonal changes or population growth.	• Draft WRMP19 Main Report, Section 4.3.7 (Climate change and weather patterns) • Draft WRMP19 Technical Report - Demand for water, Section 7.3 (“Critical period” and “peak” type uplifts)	
150	You have provided a demand forecast for the final plan dry year annual average which includes adjustments to reflect solutions identified through your options appraisal.	• Draft WRMP19 Technical Report - Demand for water, Section 6 (Overall baseline and final planning demand forecast from the base year) and Section 8 (Overall baseline and final planning dry year demand forecast)	
151	You have provided a demand forecast for the final plan critical period which includes adjustments to reflect solutions identified through your options appraisal.	• Draft WRMP19 Technical Report - Demand for water, Section 6 (Overall baseline and final planning demand forecast from the base year) and Section 8 (Overall baseline and final planning dry year demand forecast)	
152	You have explained how demand forecasts have been arrived at and documented any underlying assumptions, including how you have determined unrestricted demand.	• Draft WRMP19 Main report, Section 4.3 (Customer's future demand for water) • Draft WRMP19 Technical Report - Demand for water, Section 7.1 (Dry year uplift and weather patterns)	
153	You have explained your reconciliation of current best estimates of demand with other parts of the water balance.	• Draft WRMP19 Technical Report - Demand for water (Appendix B)	
5.2 Forecast household demand			

No.	Action or approach	Draft WRMP ref.	Supporting comments
154	You have demonstrated how you have arrived at your forecast of population and property numbers and the assumptions on which these are based.	• Draft WRMP19 Main Report Section 4.3.3 (Growth in population and household properties) • Draft WRMP19 Technical Report - Demand for water, Section 2.1 (Population, properties and occupancy)	
155	You have demonstrated an understanding of what is driving future household demand and how you have estimated this.	• Draft WRMP19 Main Report, Section 4.3 (Customer's future demand for water) • Draft WRMP19 Technical Report - Demand for water, Section 2 (Household consumption)	
156	You have included forecast savings data for existing water efficiency initiatives in your baseline forecast.	• Draft WRMP19 Main Report, Section 4.2.3 (Water efficiency) •Draft WRMP19 Technical Report - Demand for water, Section 2.3.1 (Water efficiency in households)	
5.3 Forecast population, properties and occupancy			
157	For water companies supplying customers in England you have aligned your method for forecasting population and property growth with the most recent local plans published for your area(s), and accounted for potential changes in published figures if a local plan is not yet finalised.	• Draft WRMP19 Technical Report - Demand for water, Section 2.1 (Population, properties and occupancy)	
158	Where no local plan project(s) exist to inform your plan, you have used other appropriate methods such as household projections for Dept. for Communities, Local Government, those produced for DCLG by the ONS or the methods outlined in Population, household property and occupancy forecasting (UKWIR, 2016). You have documented and explained assumptions and data sources used.	• Draft WRMP19 Technical Report - Demand for water, Section 2.1 (Population, properties and occupancy)	
159	You have provided evidenced justification if your property forecasts deviate from planned figures.	• Draft WRMP19 Technical Report - Demand for water, Section 2.1 (Population, properties and occupancy)	

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No.	Action or approach	Draft WRMP ref.	Supporting comments
160	You have accounted for the planning period in your forecast property and population figures and have explained where/if different forecasting methods are applied for different time horizons, especially if your planning period is longer than 25 years.	• Draft WRMP19 Technical Report - Demand for water, Section 2.1 (Population, properties and occupancy)	
161	For companies supplying customers in Wales, you have based your forecast population and property figures on the latest Local Authority population and property projections published by the Welsh Government. Your analysis of the uncertainties in your forecast population and property figures has been informed by local development plans in your supply area.	• Draft WRMP19 Technical Report - Demand for water, Section 2.1 (Population, properties and occupancy)	
162	You have demonstrated that your plan does not constrain supply such that it may not meet planned property forecasts.	• Draft WRMP19 Technical Report - Demand for water, Section 2.1 (Population, properties and occupancy)	Our demand forecasts are based on plan-based property forecasts and all resource zones are in surplus.
163	You have engaged with local planning authorities to inform your analysis and understand uncertainties in your forecast population and property figures.	• Draft WRMP19 Technical Report - Demand for water, Section 2.1 (Population, properties and occupancy)	
164	You have properly communicated limitations in your forecast and uncertainty associated with your forecast.	• Draft WRMP19 Technical Report - Demand for water, Section 2.1 (Population, properties and occupancy) and Section 8 (Overall baseline and final planning dry year demand forecast)	
165	You have described assumptions and supporting information that you have used to develop property and occupancy forecasts, including uncertainties.	• Draft WRMP19 Technical Report - Demand for water, Section 2.1 (Population, properties and occupancy) and Section 8 (Overall baseline and final planning dry year demand forecast)	
166	You have explained how you have allocated unaccounted for populations for each WRZ, including your assumptions.	• Draft WRMP19 Technical Report - Demand for water, Section 2.1 (Population, properties and occupancy)	
167	You have accounted for local council and neighbourhood plans, when calculating future demand.	• Draft WRMP19 Technical Report - Demand for water, Section 2.1 (Population, properties and occupancy)	

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No.	Action or approach	Draft WRMP ref.	Supporting comments
5.4 Forecasting your customers' demand for water			
168	You have selected a method for forecasting demand that is appropriate to each WRZ, based on the supply-demand situation, any problem characterisation approaches you have considered and the data available.	• Draft WRMP19 Technical Report - Demand for water, Section 2.4 (Forecasting method) and Section 3.3 (Forecasting method)	
169	Your method for forecasting demand is aligned with the following guidelines: · WRMP-19 Household demand forecasting - Integration of behavioural change into demand forecasting and water efficiency practices (UKWIR 2016). · Customer behaviour and water use – good practice for household consumption forecasting (UKWIR, 2012).	• Draft WRMP19 Technical Report - Demand for water, Section 2.4 (Forecasting method) and Section 3.3 (Forecasting method)	
170	You have documented your reasons for choice of method, including your assumptions and their associated uncertainties.	• Draft WRMP19 Technical Report - Demand for water, Section 2.4 (Forecasting method) and Section 3.3 (Forecasting method)	
171	You have demonstrated a forecast demand for the critical period scenario (if appropriate) as well as the dry year annual average.	• Draft WRMP19 Technical Report - Demand for water, Section 8 (Overall baseline and final planning dry year demand forecast)	
172	You have provided a breakdown of total consumption, per capita consumption and micro-components within the water resources planning tables.	• WRMP19 Tables - (3.BL Demand)	
5.5 Forecasting your non-household consumption			
173	You have calculated a demand forecast for non-households.	• Draft WRMP19 Main Report, Section 4.3.6 (Economic conditions) • Draft WRMP19 Technical Report - Demand for water, Section 3 (Non-household consumption)	

No.	Action or approach	Draft WRMP ref.	Supporting comments
174	You have described your assumptions about customer/property types that you have considered as non-household and demonstrated that your decisions are aligned with part 17C of the Water Industry Act 1991 and guidance on non-household customers as reported in Eligibility guidance on whether non-household customers in England and Wales are eligible to switch their retailer. You have consulted with retailers of water to non-household customers.	• Draft WRMP19 Technical Report - Demand for water, Section 3 (Non-household consumption)	
175	You have accounted for the likely other retailers to non-household sectors in your area following the changes introduced in April 2017 and have consulted with retailers of water to non-household customers.	• Draft WRMP19 Main Report, Section 4.3.4 (Changes in water use behaviour and design standards) and Section 4.3.6 (Economic conditions) • Draft WRMP19 Technical Report - Demand for water, Section 3 (Non-household consumption)	
176	You have determined non-household demand into different economic sectors, for example by using the UK SIC codes or applying a service and non-service split approach.	• Draft WRMP19 Main Report, Section 4.3.6 (Economic conditions) •Draft WRMP19 Technical Report - Demand for water, Section 3 (Non-household consumption)	
177	You have assessed the likely new uptake of public water from non-household customers / sectors that previously used private supplies.	• Draft WRMP19 Technical Report - Demand for water, Section 3 (Non-household consumption)	
178	You have examined and taken account of planned or existing water saving initiatives by both the wholesaler and retailer and have determined in the likely saving in non-household demand.	• Draft WRMP19 Main report, Section 4.3.4 (Changes in water use behaviour and design standards) and Section 4.3.6 (Economic conditions) • Draft WRMP19 Technical Report - Demand for water, Section 3 (Non-household consumption)	
179	You have included forecast savings data for existing water efficiency initiatives in the baseline forecast that you have presented.	• Draft WRMP19 Technical Report - Demand for water, Section 3.1 (Eligibility review)	
5.6 Forecasting leakage			

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No.	Action or approach	Draft WRMP ref.	Supporting comments
180	You have determined baseline leakage over the planning period and explained your method in the WRMP	• Draft WRMP19 Main Report Section 4.2.2 (Leakage management) • Draft WRMP19 Technical Report - Demand for Water, Section 4.6 (Current performance and "base year" total leakage)	
181	You have used UKWIR Consistency of reporting performance measures (2017) to forecast levels of leakage.	• Draft WRMP19 Technical Report - Demand for Water, Section 4.9 (Leakage convergence)	
182	If you are unable to use the guidance outlined in Consistency of Reporting Performance Measures (UKWIR 2017), you have explained why you have not used the revised approach for base year leakage, what steps you are taking to comply with the new approach and when this data will be available.	• Draft WRMP19 Technical Report - Demand for Water, Section 4.9 (Leakage convergence)	
183	Where the revised approach to calculating base year leakage leads to uncertainty or significant changes in your base year or projected leakage, you have used scenarios to demonstrate how this affects your plan and any options you have selected.	• Draft WRMP19 Technical Report - Demand for Water, Section 4.9 (Leakage convergence)	
184	You have described how your approach to calculating base year leakage affects your ability to meet government aspirations to reduce leakage over the planning period.	• Draft WRMP19 Technical Report - Demand for Water, Section 4.7 (Leakage forecast and setting stretching targets)	
185	You have accounted for any actions or policies that may reduce leakage (e.g. mains improvements) in your leakage forecast.	• Draft WRMP19 Technical Report - Demand for Water, Section 4.8 (Delivering enhanced leakage reduction)	
186	You have accounted for your customers' views on leakage reduction and their resulting willingness to participate in demand management activities.	• Draft WRMP19 Main Report, Section 2.2 (Pre-consultation on this Water Resources Management Plan) and Section 6.2 (Enhancing leakage reduction) •Draft WRMP19 Technical Report – Customer and stakeholder engagement, Section 3.3 (What customer research have we conducted?) •Draft WRMP19 Technical Report -	

No.	Action or approach	Draft WRMP ref.	Supporting comments
		Demand for Water, Section 4.7 (Leakage forecast and setting stretching targets)	
187	You have included all feasible options for further leakage control, and any other options you are actively investigating with support from your customers.	• Draft WRMP19 Technical Report - Demand for Water, Section 4.3 (Economic appraisal of leakage) • Draft WRMP19 Technical Report - Options Identification, Section 3.5 (UUWN+ Distribution management options)	
5.7 Other components of demand			
188	You have included details on other components of demand, the methods you have adopted for their calculation and your source datasets.	• Draft WRMP19 Technical Report - Demand for water, Section 5 (Minor components)	
5.8 Metering			
189	You have reported household metering figures in the water resources planning tables.	• WRMP19 Tables - (3.BL Demand)	
190	For water companies in England, you have complied with the WRMP Direction 2017 with regard to household metering.	• Draft WRMP19 Technical Report - Demand for water, Section 2.2 (Customer metering and tariffs)	
191	If you are in an area of serious water stress, you have considered the costs and benefits of compulsory metering.	• Draft WRMP19 Technical Report - Demand for water, Section 2.2.3 (The requirements for metering)	
192	You have assessed which tariffs are appropriate to your company as part of your options appraisal and included in your plan as appropriate.	• Draft WRMP19 Technical Report - Options identification, Section 3.6 (UUWN+ Customer management options)	
5.9 Impacts of climate change			

No.	Action or approach	Draft WRMP ref.	Supporting comments
193	You have documented the allowance included in your plan for the impact of climate change on demand, including the assumptions on which this is based.	• Draft WRMP19 Main Report, Section 4.3.7 (Climate change and weather patterns) • Draft WRMP19 Technical Report - Demand for water, Section 7.2 (Climate change demand uplifts)	
194	If your allowance is outside expected impact range (<3%), you have robustly demonstrated and justified the reasons for this.	• Draft WRMP19 Main Report, Section 4.3.7 (Climate change and weather patterns) • Draft WRMP19 Technical Report - Demand for water, Section 7.2 (Climate change demand uplifts)	
5.10 Allowing for uncertainty			
195	You have reduced uncertainty by using the most up to date methods and data when determining supply and demand forecasts.	• Draft WRMP19 Technical Report - Demand for water, our whole report outlines our methods and data used in our demand forecasts • Draft WRMP19 Technical Report - Supply forecasting, our whole report outlines our methods and data used in our supply forecasts	
196	You have analysed, quantified and discussed any uncertainties associated with your calculations of dry year annual average demand (and critical period scenarios if applicable).	• WRMP19 Technical Report - Target headroom, Section 3.2 (Demand side components)	
197	You have used risk-based planning techniques to assess individual components of uncertainty, avoiding any double counting for (e.g. for target headroom components) or omission of uncertainties.	• Draft WRMP19 Technical Report - Supply forecasting, Section 3 (Risk based planning for our supply forecast), Section 6.1 (Deployable output approach) and Section 13.1 (Planned and unplanned outage events) • Draft WRMP19 Technical Report -	

No.	Action or approach	Draft WRMP ref.	Supporting comments
		Options appraisal, Section 5 (Preferred plan and alternatives)	
198	Alternatively, if you have applied an older target headroom approach to assess individual components of uncertainty, you have justified why this is appropriate. You have evaluated target headroom with regards to risk appetite and have allowed risk to increase with time as adaptations will occur in practice.	• WRMP19 Technical Report - Target headroom, Section 2 (Methodology and approach) and Section 4 (Percentile Choice)	
199	You have documented all assumptions and information used in the assessment of uncertainties and have discussed the relative significance of uncertainties showing which impact most on each WRZ.	• WRMP19 Technical Report - Target headroom, Section 4 (Percentile Choice)	
200	You have considered options for reducing uncertainty in the planning period.		We have completed an exercise to understand whether the options we have considered could reduce uncertainty, by correlating them to components of headroom. Two of our Preferred Plan options (WR159 and WR160) have a direct link to the 'Compensation over-release' component of headroom.
201	You have communicated uncertainty such that customers can clearly understand the issues and risks.	• Draft WRMP19 Main Report, Section 4.5 (Target headroom)	Section 4.5 of our Draft WRMP19 Main Report gives a customer friendly overview of uncertainty and target headroom, with detail provided throughout our WRMP19 Technical Report - Target headroom. We have reported other areas of risk, e.g. drought resilience in both % and return period depending what the reader is most comfortable with.

No.	Action or approach	Draft WRMP ref.	Supporting comments
202	You have explained where there are any uncertainties related to non-replacement of time-limited licences (TLLs).	• WRMP19 Technical Report - Target headroom, Section 3.1.3 (S3: Time-limited licences)	
203	You have not included an allowance for possible future sustainability changes in headroom, and where relevant you have explored this through scenario analysis.	• Draft WRMP19 Technical Report – Target headroom, Section 3.1.1 (S1: Vulnerable surface water licences) • Draft WRMP19 Technical Report - Supply forecasting, Section 7 (Our role in achieving sustainable abstraction) • Draft WRMP19 Technical Report - Options appraisal, Section 5 (Preferred plan and alternatives)	
Section 6 – Deciding on future options			
6.1 Considerations when choosing future solutions			
204	You have considered all options that will address any deficit(s) between supply and demand in any WRZ at any time during the planning period. You have justified your preferred solution(s) in your final plan.	• Draft WRMP19 Main Report, Section 5.1 (Overview - the need to consider all possible options) and Section 7.7 (The preferred plan) • Draft WRMP19 Technical Report - Options identification, Section 3 (Unconstrained Options)	We have completed a wide reaching exercise to define both our own and third party options; our engagement approach for the latter is documented in the draft WRMP and accompanying Technical Report - Options identification (Section 3.7). The Preferred Plan options are discussed within our main WRMP (Section 7), supported with further justification in the supporting Technical Report.
205	You have distinguished whether options apply to the dry year annual average and/or critical period scenarios, and your final plan addresses deficits in all scenarios for all WRZs across the planning period.	• Draft WRMP19 Main Report, Sections 4.6 (Supply-demand balances), Section 6 Strategic choices for our region), Section 7 (Preferred plan and alternatives) and Section 8 (Testing our plans) • Draft WRMP19 Technical Report - Options appraisal, Section 5 (Preferred plan and alternatives)	There is no supply-demand deficit under the dry year or critical period scenarios (see below) under the baseline case. Options have been considered to support other drivers described under the Sections 6 and 7 of the main report. Scenario testing of the plan is dealt with under Section 8 of the main report. Only one of our resource zones has a critical period scenario, the Carlisle Resource Zone. There is no supply-demand deficit in this RZ; in any case there is no distinction in the way that

No.	Action or approach	Draft WRMP ref.	Supporting comments
			our Carlisle RZ options apply to a dry year or critical period scenario.
206	You have considered options that will allow you to improve your service to customers, provide long-term best value, benefit the environment or collaborate with other water companies. You have justified your preferred solution(s) in your final plan.	• Draft WRMP19 Main Report, Section 5.4 (Feasible options development and secondary screening) and Section 7 (Preferred plan and alternatives)	We have considered this as part of our Preferred Plan as described in the Draft WRMP19 Main Report, Section 7.7 (The preferred plan). This is built from strategic choices that relate to this compliance item, including: enhanced demand management which unlocks level of service improvements and benefits the environment; improved resilience associated with our largest risks; and explores transfers of water to the South East. We have completed assurance that the plan represents the most cost effective, sustainable long-term solution.
207	You have documented all factors that have led you to consider options (whether in deficit or not) in your plan, including reasons.	• Draft WRMP19 Main report, Section 6 (Strategic choices for our region) and Section 7 (Preferred plan and alternatives)	We have documented through the WRMP sections how we have arrived at our Preferred Plan. Section 6 discusses the possible choices that we have considered in order to help protect and, where possible, benefit customers and the environment. These are related to: enhanced leakage reduction, improved level of service, increased resilience to other hazards and National water trading. Section 7 discusses how we have arrived at our Preferred Plan and the alternatives we have considered.
208	You evaluated the environmental impacts of all possible and discarded options that could have unacceptable impacts that could not be overcome. You have further considered only those options that support achievement of RBMP objectives and would not result in deterioration.	• Draft WRMP19 Section Main Report, Section 5.3 (Unconstrained options and primary screening) and Section 5.4 (Feasible options development and secondary screening) • Draft WRMP19 Technical Report - Options identification, Section 4 (Primary Screening), Section 6 (Environmental Assessments) and Section 7 (Secondary Screening)	We completed high-level environmental assessments as part of primary screening in order to discount options that had unacceptable and unmitigatable impacts. Our approach to secondary screening included further detailed analysis of impacts through the environmental assessments that we completed, part of which included WFD assessments within which RBMP objectives/no deterioration was included. This work was underpinned by the Amec Foster Wheeler reports on SEA, WFD and HRA.

No.	Action or approach	Draft WRMP ref.	Supporting comments
		• Amec. (2017). Draft Water Resources Management Plan 2019: Habitats Regulations Assessment. • Amec. (2017). Draft Water Resources Management Plan 2019: Water Framework Directive Assessment. • Amec. (2017). Strategic Environmental Assessment of the Draft Water Resources Management Plan 2019: Environmental Report.	
209	You have considered the need to undertake an SEA or HRA for each option, and if appropriate undertaken them as a result.	• Draft WRMP19 Main Report, Section 5.4.2 (Strategic Environmental Assessment) and Section 5.4.3 (Habitats Regulation Assessment) • Draft WRMP19 Technical Report - Options identification, Section 7 (Secondary screening) • Amec. (2017). Draft Water Resources Management Plan 2019: Habitats Regulations Assessment. • Amec. (2017). Strategic Environmental Assessment of the Draft Water Resources Management Plan 2019: Environmental Report.	Amec Foster Wheeler have completed both SEA and HRA on feasible options and of the options that form part of the WRMP Preferred Plan.
6.2 Resilience options			
210	You have evaluated whether options are needed to improve resilience to significant vulnerabilities which are not addressed within the planned level of service, and if needed explained this fully.	• Draft WRMP19 Main report, Section 4.7 (Resilience to Other Hazards) • Draft WRMP19 Main report, Section 6.3.1 (Covers resilience to drought)	Defines the approach to system testing for other resilience hazards over and above drought, and explained process to identify options.
211	The hazards you considered when evaluating resilience options were those listed in Resilience planning: good practice guide (UKWIR, 2013), and you have also considered hazards other than drought.	• Draft WRMP19 Main Report, Section 4.7.2 (Overview of resilience considerations)	Explains the path from UKWIR guidance to hazards explicitly assessed. Further detail is in the Draft WRMP19 Technical Report – Water supply resilience

No.	Action or approach	Draft WRMP ref.	Supporting comments
212	You have considered the results of the Water Resources Long Term Planning Framework (Water UK, 2016), and WRSE and/or WRE as appropriate and incorporated the outcomes into your plan.	• Draft WRMP19 Main Report, Section 3.8 (The national context)	
213	If resilience options have been considered, you have considered the costs and benefits and justified the solution.	• Draft WRMP19 Main Report, Section 6.4 (Resilience to non-drought hazards)	Explains the current state of progression through customer and stakeholder research for Manchester and Pennines Resilience Options. We are consulting on 5 potential solutions based on cost and benefit.
214	You have demonstrated customer support for the options you have proposed to improve resilience and the level of resilience the options will provide, and have a business case for the additional spending that resilience measures will involve.	• Draft WRMP19 Technical report - Customer and stakeholder engagement, Section 4 (Water supply resilience research) • Draft WRMP19 Main Report, Sections 4.7 and 6.4, supported by Draft WRMP19 Technical report – Water supply resilience	
215	You have described the option(s) in detail and have conducted the appraisal of resilience options to the same standard as non-resilience options.	• Draft WRMP19 Main Report, Section 5.6 (Water supply (non-drought) resilience options and implications) • Draft WRMP19 Technical report – Water supply resilience - Appendix	
6.3 Third party options			
216	You have considered options, where appropriate, that involve engaging with third parties to help deliver solutions at lower cost, such as upstream services, leakage detection and demand management. You have used the Market Information Platform to assess third party bids (when available).	• Draft WRMP19 Main report, Section 5.2 (Seeking innovation - our approach to market engagement) • Draft WRMP19 Technical Report - Options Identification, Section 3.7 (Third party options)	

No.	Action or approach	Draft WRMP ref.	Supporting comments
217	You have subjected options involving third parties to the same scrutiny and testing as other options.	• Draft WRMP19 Main Report, Section 5.2 (Seeking innovation - our approach to market engagement) • Draft WRMP19 Technical Report - Options Identification, Section 3.7 (Third party options)	We have assessed all options in the same way through primary and secondary screening. Primary screening was completed by an external consultancy to ensure independence and our approach to secondary screening was audited by the same external consultancy to ensure that our approach was consistent.
218	Where relevant, your plans clearly sets out which options within the final planning scenario are third party options.	• Draft WRMP19 Main Report, Section 7.7 (The preferred plan) • Draft WRMP19 Technical Report - Options appraisal, Section 5 (Preferred plan and alternatives)	
6.4 Upstream competition			
219	For water companies in England, you have checked that there are no requirements with regards to reforms relating to competitive services for supply to/removal from your network following the Water Act 2014.	• Draft WRMP19 Main Report, Section 1.3.2 (Key influences and themes for this plan)	We have continued to monitor and engage regarding the upstream competition agenda. We have checked relevant publications from Defra and Ofwat for any subsequent requirements since publication of the WRPG to account for in the WRMP. We have checked in particular the Ofwat PR19 methodology and Ofwat's Market Information Guidelines. From this review we have identified the need to publish data tables of market information required by Ofwat alongside the draft WRMP. We are also developing access prices as part of the Business Plan submission and for inclusion in the relevant Price Review tables.
6.5 Assessing solutions for your plan			
220	Your appraisal of options follows the eight stage approach outlined in WRMP 2019 Methods – decision making process guidance (UKWIR, 2016). 1. Collate and review planning information. 2. Identify unconstrained options. 3. Problem characterisation and evaluate strategic needs/complexity.	• Draft WRMP19 Technical Report - Options identification, whole document describes how we have identified options • Draft WRMP19 Technical Report - Options appraisal, whole document describes how we have appraised options	We have outlined our approach in full in these two technical reports.

No.	Action or approach	Draft WRMP ref.	Supporting comments
	4. Decide modelling method. 5. Identify and define data inputs. 6. Undertake decisions making modelling / options appraisal. 7. Stress testing and sensitivity analysis. 8. Final planning forecast and comparison to EBSD benchmark.		
221	You have demonstrated that your final planning forecast is your best value plan, not necessarily the least cost solution, accounting for all criteria that sensitivity analysis has established are important to the plan.	• Draft WRMP19 Main Report, Section 7.7 (The preferred plan) • Draft WRMP19 Technical Report - Options appraisal, whole document describes how we have appraised options	
6.6 Unconstrained list			
222	You have developed an unconstrained list of all plausible technically feasible options, including drought measures, and have at least considered options presented in WR27 Water resources tools (UKWIR, 2012) and the EBSD method.	• Draft WRMP19 Main Report, Section 5.3 (Unconstrained options and primary screening) • Draft WRMP19 Technical Report - Options identification, Section 3 (Unconstrained Options)	With reference to the UKWIR WR27 document, we have compiled an extensive list of unconstrained options as outlined in the draft WRMP and accompanying Technical Report - Options identification. This includes options to consider utilisation of drought permits
223	For water companies in England, you have included third party options (see 6.3) in the unconstrained list, and have demonstrated you have invited or considered third party collaborations or provide a clear explanation of why third party option have not been included.	• Draft WRMP19 Section 5.3 (Unconstrained options and primary screening) • Draft WRMP19 Technical Report - Options Identification, Section 3 (Unconstrained Options)	We have completed a wide reaching third party engagement approach and this is documented in the draft WRMP and accompanying Options Identification Technical Report (Section 3.7)
6.7 Feasible list			

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No.	Action or approach	Draft WRMP ref.	Supporting comments
224	Your feasible list is a subset of your unconstrained list and you have demonstrated that all options on your preferred list are suitable for promotion.	• Draft WRMP19 Section 5.4. Feasible options development, Section 7.7 (The preferred plan) • Draft WRMP19 Technical report - Options identification, Section 5 (Feasible Options)	Our methodology in order to define our unconstrained to feasible options and then feasible to feasible (constrained) options is documented in both the draft WRMP and the Technical Report - Options identification. Those options that form part of the Preferred Plan, have been assessed through primary and secondary screening and have been assessed against many different criteria, such as climate change risk and environmental/social risks (SEA/HRA/WFD). We have identified an alternative option for the Preferred Plan where there may be environmental risks identified. Therefore, for the draft WRMP submission, we believe the Preferred Options are suitable and promotable.
225	You have communicated your feasible list to the Environment Agency and/or Natural Resources Wales as soon as possible and discussed it with them.	• Draft WRMP19 Technical Report - Options Identification Section 5.1 (Overview)	We have discussed the development of our options with the EA and NRW during the development of our draft WRMP. Our list of options was discussed with them during 2017 at a workshop in the spring followed by a share of our full list of options, which included the screening outputs, in September 2017. A meeting took place on 12th October 2017 between UU, EA, NRW and NE.
226	You have clearly described the screening criteria you have used to identify feasible options and have applied these consistently to achieve a balance between the number of options included and availability of realistic choices.	• Draft WRMP19 Main Report, Section 5.3 (Unconstrained options and primary) screening and Section 5.4 (Feasible options development and secondary screening) • Draft WRMP19 Technical Report - Options identification Section 4 (Primary screening) and Section 7 (Secondary Screening)	The primary screening was completed by Amec Foster Wheeler in order to ensure a consistent approach between UU and third party options. The approach to secondary screening was also audited by Amec Foster Wheeler.
227	You have provided a full description of all feasible options that you have considered, including main operational features, expected implementation extent, conceptual diagram etc.	• Draft WRMP19 Main Report, Section 7.7 (The preferred plan) • Draft WRMP19 Technical Report - Options identification (Appendix F)	Draft WRMP19 Technical Report - Options identification includes details and description of the main features of feasible options (Appendix F). Draft WRMP, Section 7.7 includes details of those options that form part of the Preferred Plan. We have conceptualised these onto a map of our supply region describing the main operational features.
228	You have compared each feasible option to the baseline case, and provided a profile of the extra water available over the 80 years from initial investment in the option.	• WRMP19 Tables - (5. Feasible options)	

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No.	Action or approach	Draft WRMP ref.	Supporting comments
229	Where you are transferring water / commissioning new sources and this increases the risk of non-compliance, you have included steps to mitigate those risks (e.g. INNS, discolouration, nitrates, pesticides).	• Draft WRMP19 Technical Report - Options Appraisal, Section 5.3.4 (Environmental appraisal) • Please also refer to drinking water quality section above for related compliance items • Amec. (2017). Draft Water Resources Management Plan 2019: Water Framework Directive Assessment.	In support of the development of UU's draft WRMP19, Amec Foster Wheeler has completed a Water Framework (WFD) assessment. The WFD assessment has assessed the WRMP options to identify if they will comply with the WFD (and so whether the options could affect existing water bodies water quality). We have used these results as part of our Secondary Screening. Draft WRMP19 Technical Report – Options appraisal, Section 5.3, includes details of the high level INNS risk assessment for our Preferred Plan. Our Engineering assumptions have considered known water quality risks, such as nitrate and pesticides. This would require further analysis as part of detailed design associated with the Preferred Plan options, if adopted.
230	You have assessed the level of customer support for each option.	• Draft WRMP19 Technical Report - Options appraisal, Section 2.6 (Customer support for each option type) • Draft WRMP19 Technical Report - Customer and stakeholder engagement, Section 3 (Customer engagement)	
231	You have appropriately estimated the amount of time needed to investigate and implement the option and have proposed an earliest start date based on your review.	• Draft WRMP19 Technical Report - Options identification, Section 5.2 (Option scopes and assumptions) • Draft WRMP19 Main report, Section 7.7 (The preferred plan)	We have provided details of the project duration timescales, which have been derived from the Engineering and Estimating assumptions, within the Technical Report - Options identification. Option durations are provided from norm data received from UU Project Control. The Preferred Plan options are described on the timeline (Section 7.7) as being required between 2025 and 2035 to support water trading. Further detailed analysis on project start dates and durations will be completed, building on the current assumptions, if the Preferred Plan options are adopted.

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No.	Action or approach	Draft WRMP ref.	Supporting comments
232	You have appropriately assessed and reported the risks and uncertainties associated with each option, including the likelihood of reduced yield due to factors such as climate change, environmental constraints and customer behaviour. You have considered the flexibility of the option to adapt to future uncertainty.	• Draft WRMP19 Technical Report - Options identification, Section 4 (Primary Screening) and Section 7 (Secondary Screening)	We have accounted for uncertainty when defining option capacities for resource management options, within the engineering assumptions and also when screening the options. An assessment of climate change risk was included as part of our approach to secondary screening along with assessments of environmental risk as captured within the SEA, HRA and WFD reports. The Preferred Plan options are considered to be robust when it comes to the effects of climate change, with reference to our climate change assessment for existing groundwater sources. For demand options, we have accounted for decay rates (savings from devices will deteriorate over time) when calculating benefits of these options. We have used results of previous research projects to derive uptake rates; we made sure that all options were realistic and deployable. We have consulted with UU domestic retail throughout the process to ensure they are comfortable with the numbers we are using when ascribing attributes to these types of options.
233	You have explained any factors or constraints specific to the option, and have highlighted any links or dependencies on other existing schemes, other options and any mutual exclusivity with another option.	• Draft WRMP19 Technical Report - Options Identification, Section 5.2 (Option scopes and assumptions)	We have allocated constraints into the design of options wherever possible, such as known water quality parameters. We have described where options are mutually inclusive, this is particularly relevant for demand management options (e.g. leakage). Generally, the resource management options are mutually exclusive. We have combined resource management options where possible (e.g. when abstraction would be from the same catchment or waterbody) in order to avoid options being selected that are mutually inclusive. In the links can be described. However, the Preferred Plan options are mutually exclusive.
234	You have described how the option will be utilised and the impact on costs.	• Draft WRMP19 Technical Report - Options appraisal, Section 6 (Supply-demand scenarios and stress testing)	

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No.	Action or approach	Draft WRMP ref.	Supporting comments
235	You have assessed the environmental impacts of the option, including implications for RBMP objectives, and have undertaken and reported the outcomes of a Habitats Regulations Assessment (HRA) if the option has been found to potentially affect any designated site.	• Draft WRMP Main Report, Section 5.4 (Feasible options development and secondary screening) • Draft WRMP Technical Report - Options identification, Section 6 (Environmental Assessments) • Amec. (2017). Draft Water Resources Management Plan 2019: Habitats Regulations Assessment. • Amec. (2017). Draft Water Resources Management Plan 2019: Water Framework Directive Assessment. • Amec. (2017). Strategic Environmental Assessment of the Draft Water Resources Management Plan 2019: Environmental Report.	In support of the development of UU's draft WRMP19, Amec Foster Wheeler has completed a Strategic Environmental Assessment (SEA), a Habitats Regulations Assessment (HRA), a Water Framework Directive (WFD) assessment and a full Environmental & Social (E&S) costings assessment. The SEA has identified the relevant RBMP objectives and has considered them within the assessment of the WRMP options. The HRA has assessed whether the WRMP options will have any likely significant effects on any European sites, either alone or 'in combination' with other projects or plans. Furthermore, we have used the HRA outputs and included an alternative option within our Preferred Plan portfolio where risks have been identified.
236	You have undertaken a cost-benefit appraisal of the option, including a cost breakdown over the 80 year period and covering capital, operating and financing costs. Your method is aligned to Ofwat's most recent guidance for PR19 and the WRPG, and gives Average Incremental Costs (AIC) based on maximum capacity costs divided by maximum capacity outputs expressed as net present value (NPV). You have explained how you arrived at your AIC figure.	• Draft WRMP19 Technical Report - Options appraisal, Section 2.2 (Core methods) and (Appendix A)	
237	As part of the cost-benefit appraisal, you have evaluated the environmental and social (including carbon) costs and benefits of the options and show either a monetised profile of Average Incremental and Social Costs (AISC), or a non-monetised assessment of impacts. You have stated your approach to calculation of AISC.	• Draft WRMP19 Technical Report - Options appraisal, Section 2.2 (Core methods) and (Appendix A)	

No.	Action or approach	Draft WRMP ref.	Supporting comments
238	For supply options, as part of your cost-benefit appraisal you have determined supplementary costs required to distribute the new supply (e.g. service reservoirs, pumping stations, mains upgrades), excluding costs associated with local infrastructure enhancements.	• Draft WRMP19 Technical Report - Options identification, Section 5 (Feasible Options)	For resource/supply option scopes, we have considered not only the requirements for the new source of supply, but we have also included those scope items necessary to make the new option work within our existing supply system. We have used Aquator™ water resources modelling analysis to support this activity, to ensure that option scopes are realistic, don't include superfluous costs and make the best use of the existing infrastructure. Scopes include items such as the new water treatment works facilities required (or modified existing treatment works wherever possible), new raw water and treated water infrastructure, new pumping stations and new service reservoirs where appropriate. These items have all been costed using the same approach.
239	You have evaluated whole-life costs that include treatment, pumping, network, storage, maintenance and operation costs (the latter included control measures relating to water quality optimisation, fluoridation, chemical stabilisation, aesthetic impacts on consumers and control of disinfection by-products.	• Draft WRMP19 Technical Report - Options identification, Section 5.2 (Option scopes and assumptions) • Draft WRMP19 Technical Report - Options appraisal Section 2.2 (Core methods)	
6.8 Environmental and social impacts			
240	You have considered the environmental and social impact of each option of the feasible list.	• Draft WRMP19 Main Report, Section 5.4 (Feasible options development and secondary screening) • Draft WRMP19 Technical report - Options identification, Section 6.1 (Environmental & Social (E&S) costs)	In support of the development of UU's draft WRMP19, Amec Foster Wheeler has completed the Environmental & Social (E&S) costings assessment. Alongside our own summary documentation the approach is written up in Environmental and Social Costs of Draft Water Resources Management Plan 2019 Options: Final Report
241	You have assessed impacts using a method that is proportionate to the scale of the problem and have fully justified your approach.	• Draft WRMP19 Technical report Options identification, Section 6 (Environmental Assessments)	In support of the development of UU's draft WRMP19, Amec Foster Wheeler has completed a Strategic Environmental Assessment (SEA), a Habitats Regulations Assessment (HRA), a Water Framework Directive (WFD) assessment and a full Environmental & Social (E&S) costings assessment. The SEA has identified the relevant RBMP objectives and has considered them within the assessment of the WRMP options. The HRA has assessed whether the WRMP options will have any likely significant effects on any European sites,

No.	Action or approach	Draft WRMP ref.	Supporting comments
			either alone or 'in combination' with other projects or plans. Furthermore, we have used the HRA outputs and included an alternative option within our Preferred Plan portfolio where risks have been identified. We consider that our comprehensive approach to understand potential impacts is proportionate and justified in the context of the overall WRMP process.
242	You have applied an Ecosystem Services approach to environmental evaluation, if appropriate, and your method gives accountable and transparent outcomes that consider stakeholder needs.	• Draft WRMP19 Main Report, Section 5.4.1 (Environmental and social costs)	
243	You demonstrate that you have used the best available evidence and data in your assessment, and the conclusions you draw are robust, locally valid and justifiable.	• Draft WRMP19 Technical Report - Options identification, Section 6 (Environmental Assessments) • Amec. (2017). Draft Water Resources Management Plan 2019: Habitats Regulations Assessment. • Amec. (2017). Draft Water Resources Management Plan 2019: Water Framework Directive Assessment. • Amec. (2017). Strategic Environmental Assessment of the Draft Water Resources Management Plan 2019: Environmental Report.	In support of the development of UU's draft WRMP19, Amec Foster Wheeler has completed a Strategic Environmental Assessment (SEA), a Habitats Regulations Assessment (HRA), a Water Framework Directive (WFD) assessment and a full Environmental & Social (E&S) costings assessment. We have provided Amec Foster Wheeler with the full detail of our proposed options in order that they can consider all of the potential impacts within the SEA framework. The SEA framework and approach was agreed with the regulators as part of the SEA Scoping exercise in 2016. The SEA has considered a wide range of potential impacts, consulted from a wide range of legislation, data and guidance documents. We consider that the comprehensive approach we have adopted has provided us with sound, valid evidence based decisions which can be justified for the preparation of our draft WRMP document.
244	You provide a clear audit trail of your appraisal of environmental and social impacts and explain the data you use, the results and recommendations from the appraisal.	• Draft WRMP19 Technical Report - Options identification, Section 6 (Environmental Assessments) and Section 7 (Secondary Screening)	In support of the development of UU's draft WRMP19, Amec Foster Wheeler has completed a Strategic Environmental Assessment (SEA), a Habitats Regulations Assessment (HRA), a Water Framework Directive (WFD) assessment and a full Environmental & Social (E&S) costings assessment. The E&S report is comprehensive and provides a clear explanation and audit trail of the process and data used to assess the environmental and social costs of the feasible options, and the subsequent outputs that have been used to inform selection of our Preferred Plan options.

No.	Action or approach	Draft WRMP ref.	Supporting comments
6.9 Solutions driven by changes to existing abstraction licences			
245	You have worked with the Environment Agency or Natural Resources Wales to understand the cost effectiveness of solutions that are driven by changes to existing abstraction licences.	• Draft WRMP19 Technical Report - Supply forecasting, Section 7 (Our role in achieving sustainable abstraction)	We work closely with environmental regulators as part of all potential licence changes. All the sustainability changes listed in WINEPv1 relate to the Habitats Directive for which there is no cost test. For Naddle (local driver), as part of our investigation we have completed a CBA which has shown it to be disproportionately costly - this evidence has been sent to the EA. In WINEPv2 several schemes previously under the "adaptive management" measure are now classed as "sustainability changes". There is a disproportionate cost test as part of the Stage 3 options appraisal to ensure solutions are cost beneficial - there may be an issue where the EA have assigned a "no deterioration" driver (e.g. sites where there is no existing compensation flow release) as these do not have a cost test applied (like Habitats Directive issues).
246	You explain how any solution driven by changes to existing abstraction licences meets the objectives of the Habitats Directive, Wildlife and Countryside Act and Water Framework Directive and prevents any deterioration of water bodies.	• Draft WRMP19 Main Report, Section 4 (Our baseline position) • Draft WRMP19 Technical Report - Supply forecasting, Section 7 (Our role in achieving sustainable abstraction)	Provides summary position of sustainability drivers. There are no specific options driven by changes to existing licences.
247	You have considered whether measures needed to meet sustainability and environmental objectives (e.g. related to HD, WCA and WFD) are cost-effective and cost-beneficial, and are supported by customers.	• Draft WRMP19 Technical Report - Supply forecasting, Section 7 (Our role in achieving sustainable abstraction)	In WINEPv2 several schemes previously under the "adaptive management" measure are now classed as "sustainability changes". There is a disproportionate cost test as part of the Stage 3 options appraisal to ensure solutions are cost beneficial - there may be an issue where the EA have assigned a "no deterioration" driver (e.g. sites where there is no existing compensation flow release) as these do not have a cost test applied (like Habitats Directive issues).
248	You have explained how the cost has been evaluated (where cost include non-monetised costs) and that the benefit outweighs the cost, the option is not disproportionately costly and has the lowest overall costs even when accounting for the need for customer support.	• Draft WRMP19 Technical Report - Options appraisal, Section 3 (Strategic choices for our region) and Section 4 (Extended methods and assessing natural water trading)	This activity has been completed as part of individual project cost benefit assessments. The references provided relate to our WRMP options appraisal.
6.10 Deciding on a solution			

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No.	Action or approach	Draft WRMP ref.	Supporting comments
249	You have explained the approach you have taken to arrive at the best solution(s), making use, as appropriate, of the UKWIR Decision Making process to develop a decision-making framework and identify methods to determine which solution(s) is/are best.	• Draft WRMP19 Technical Report - Options appraisal, Section 2 (Approach)	
250	You have used the EBSD method within the process of identifying best solution(s), e.g. to provide a benchmark against which outcomes of alternative methods can be compared.	• Draft WRMP19 Technical report - Options appraisal, Section 5 (Preferred plan and alternatives)	
251	You have explained which methods other than EBSD have been used within the process of identifying best solutions, including justification for their appropriateness, such as differences and improvements.	• Draft WRMP19 Main Report, Section 7.2 (Options appraisal process)	
252	You have clearly and transparently set out the economic, social and environmental justifications for your final choice of solution, and demonstrated why you have decided on this approach and discounted others. You have provided a clearly reasoned justification for how the decision has been made, as well as the decision. Your explanations are able to be clearly interpreted by customers, interested parties and regulators.	• Draft WRMP19 Main Report, Section 7.7 (The preferred plan)	
253	You have considered how future changes might affect the solution or whether any potential future changes might make it redundant.	• Draft WRMP19 Main Report, Section 8 (Testing our plans)	
254	You have considered the resilience of the solution against a range of possible futures.	• Draft WRMP19 Main Report, Section 8 (Testing our plans)	
255	You demonstrate that the possible futures considered include potential future impacts of regional or cross sector demand.	• Draft WRMP19 Main Report, Section 8.2 (Strategic Resource Zone scenarios)	
256	You have assessed the costs and benefits of the chosen solution, and have set out your assessment of whether the benefits of implementing the solution are greater than the costs. Your preferred solution is best value.	• Draft WRMP19 Main Report, Section 7.7 (The preferred plan)	

No.	Action or approach	Draft WRMP ref.	Supporting comments
257	You have described the steps you have taken to carry out a Strategic Environment Assessment and Habitat Regulations Assessment for your chosen solution, or demonstrated why this is not needed. Where relevant, you have incorporated any outcomes from the SEA and/or HRA into your final plan.	• Draft WRMP19 Main Report Section 7.7 (The preferred plan) • Amec. (2017). Strategic Environmental Assessment of the Draft Water Resources Management Plan 2019: Environmental Report (e.g. Appendix E, assessment matrices) • Amec. (2017). Draft Water Resources Management Plan 2019: Habitats Regulations Assessment. (Section 5)	The SEA and HRA documents not only consider the potential impacts of the individual options, but also consider the impacts of the Preferred Plan options. We have also used the outcomes of the HRA to include an alternative option as a surrogate for one of the Preferred Plan options, thereby demonstrating how we have incorporated the outcomes of the environmental assessments into the final plan proposals.
258	Where the option involves sharing resources, you have explained who will have ultimate rights to the water and why. You have also provided details of how the option will operate, funding mechanisms, legal arrangements, drought implications.	• Draft WRMP19 Main Report, Section 7.6 (Alternative plan 4 - plan 3 plus national water trading) • Draft WRMP Technical Report - Options Identification, Section 8 (United Utilities export options)	
6.11 Water Framework Directive			
259	You have considered and prioritised solutions that promote the requirements of Article 7 of the WFD and are consistent with RBMP objectives and solutions, highlighting how you will or are working with others to achieve this.	• Draft WRMP19 Technical Report - Options identification, Section 6.4.1 (Overview)	In support of the development of UU's draft WRMP19, Amec Foster Wheeler has completed a Water Framework (WFD) assessment. The WFD assessment has assessed the WRMP options to identify if they will comply with the WFD (and so whether the options could affect existing water bodies water quality). The WFD assessment has determined if the options: • Could cause a deterioration at element or water body level (only relevant elements based on the water body designation will be assessed); • Could prevent the achievement of River Basin Management Plan (RBMP) objectives; and/or Could prevent the achievement of protected area objectivesWhere such effects have been identified, mitigation measures have been proposed. The WFD assessment has included consideration of the requirements of Article 7 of the Directive. It has not been possible to define where we will work with others in relation to options. However, our approach to Catchment Management and where we work with other bodies and regulators is detailed in Draft WRMP19 Technical Report - Options identification (Section 3.2.15) to achieve these environmental objectives.

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No.	Action or approach	Draft WRMP ref.	Supporting comments
260	You have described how the impact of changes to the operation of existing sources and / or the impacts of new sources on WFD water body status has been established, and that you have rejected sources that might cause deterioration or prevent the achievement of good status.	• Draft WRMP19 Technical Report - Supply forecasting, Section 7 (Our role in achieving sustainable abstraction) • Draft WRMP19 Technical Report - Options identification, Section 4 (Primary Screening), Section 5 (Feasible Options), Section 6 (Environmental Assessments) and Section 7 (Secondary Screening) • Amec. (2017). Draft Water Resources Management Plan 2019: Water Framework Directive Assessment.	We have described how we have ensured that our existing abstractions are sustainable. We have worked closely with the Environment Agency on developing understanding of potential WFD impacts for existing sources. The Sustainable Catchments review (issued by the EA in February 2017) assessed which of our sources has the potential to cause WFD deterioration if used at their full licensed volume. All of the Category 1 licences will be addressed in AMP6 or early AMP7. We have no Category 2 licences. For Category 3 licences impacting on surface water bodies we have worked with the EA to deduce the "tipping point" abstraction that causes deterioration and in all but one case our current licence or operational constraints manage the risk of deterioration - we have included a licence constraint at this site in our dWRMP19 scenario. For Category 3 licences impacting on groundwater bodies we have constrained future abstraction to the recent actual in the dWRMP19 scenario. Category 3 deterioration risks are beyond 2027 and we will be investigating them all further in AMP7 to confirm the risk and option appraise solutions if required. For any future options within our Preferred Plan, we have considered potential environmental impacts when assessing new options for consideration and this has been documented. In support of the development of UU's draft WRMP19, Amec Foster Wheeler has completed a Strategic Environmental Assessment (SEA), a Habitats Regulations Assessment (HRA), a Water Framework Directive (WFD) assessment and a full Environmental & Social (E&S) costings assessment.
261	You have described any intended actions that may cause deterioration of status/potential or prevent good status/potential being achieved. You have discussed this with the Environment Agency or Natural Resources Wales and made a clear statement in the plan of any potential impacts of any intended actions.	• Draft WRMP19 Technical Report - Supply forecasting, Section 7 (Our role in achieving sustainable abstraction) • Draft WRMP19 Technical Report - Options identification, Section 4 (Primary Screening), Section 5 (Feasible Options), Section 6 (Environmental Assessments) and Section 7 (Secondary Screening) • Draft WRMP19 Main Report, Section 7.7	Our position is described in Section 7.7 of the main report. In support of the development of UU's draft WRMP19, Amec Foster Wheeler has completed a Water Framework (WFD) assessment. The WFD assessment has assessed the WRMP options to identify if they will comply with the WFD (and so whether the options could affect existing water bodies water quality). The WFD assessment has determined if the options: • Could cause a deterioration at element or water body level (only relevant elements based on the water body designation

No.	Action or approach	Draft WRMP ref.	Supporting comments
			will be assessed); • Could prevent the achievement of River Basin Management Plan (RBMP) objectives; and/or • Could prevent the achievement of protected area objectives Where such effects have been identified, mitigation measures have been proposed. The WFD assessments will all be subject to discussion and consultation with the EA and NRW. It should be noted that any supply side options are driven by water trading and thus a long-term consideration, so there is opportunity to further investigate options, and refine through future planning cycles if required.
262	You have included targeted and cost effective restoration measures, and have considered how you will apply adaptive management measures solely or working in partnership with other relevant organisations.	• Draft WRMP19 Main Report, Section 7 (Preferred Plan and alternatives) • Draft WRMP19 Technical Report - Options identification Section 4 (Primary Screening), Section 5 (Feasible Options), Section 6 (Environmental Assessments) and Section 7 (Secondary Screening) • Draft WRMP19 Main Report, Section 7.7	As above. Therefore, we have not included restoration measures or adaptive management within the Preferred Plan at this stage.
6.12 Testing your plan			
263	You have explained the scenario testing you have undertaken to evaluate the resilience of your plan to a range of risks.	• Draft WRMP19 Technical report - Options appraisal, Section 4 (Extended methods and assessing national water trading), Section 5 (Preferred plan and alternatives) and Section 6 (Supply-demand scenarios and stress testing)	
264	Based on scenario testing, you have described the factors and risks having the most significant impact on your plan, and the possible timings of these impacts.	• Draft WRMP19 Main Report, Section 8 (Testing our plans)	
265	You have explained the scenario testing you have undertaken to show the plan is robust to minor changes to supply and demand forecasts in the near future and to more moderate changes as the plan progresses.	• Draft WRMP19 Main Report, Section 8 (Testing our plans)	

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No.	Action or approach	Draft WRMP ref.	Supporting comments
266	You have explained the scenario testing you have undertaken to compare your preferred plan with, or to identify, alternative options.	• Draft WRMP19 Technical report - Options appraisal, Section 5 (Preferred plan and alternatives) and Section 6 (Supply-demand scenarios and stress testing)	
267	Based on scenario testing, you have justified how you will manage risk and future uncertainties (e.g. in response to new evidence becoming available), and what you will monitor to help manage these risks.	• Draft WRMP19 Technical report - Options appraisal, Section 4 (Extended methods and assessing national water trading), Section 5 (Preferred plan and alternatives) and Section 6 (Supply-demand scenarios and stress testing)	
268	Based on scenario testing, you have explained when and why important decisions should be made within the period of the plan.	• Draft WRMP19 Technical report - Options appraisal, Section 4 (Extended methods and assessing national water trading), Section 5 (Preferred plan and alternatives) and Section 6 (Supply-demand scenarios and stress testing)	
269	You have explained how scenario testing demonstrates that you have not over-planned for a worst-case scenario that is very unlikely.	• Draft WRMP Main Report, Section 8 (Testing our plans)	