



United Utilities

# Strategic Environmental Assessment of the Final Water Resources Management Plan 2019

Post Adoption Statement

**FINAL**



**FINAL****Report for**

Water Resources Team  
 Asset Management  
 United Utilities  
 Haweswater House  
 Lingley Mere Business Park  
 Great Sankey  
 Warrington  
 Cheshire  
 WA5 3LP

**Main contributors**

John Jelbert  
 Alex Melling  
 Pete Davis

**Issued by**


.....  
 Alex Melling

**Approved by**


.....  
 Pete Davis

**Wood**

Doc Ref. B38671rr114i2

h:\projects\38671 uu wrmp support\1  
 client\reports\sea\pas\revised\38671 pas\_final.docm

**Copyright and non-disclosure notice**

The contents and layout of this report are subject to copyright owned by Wood (© Wood Environment & Infrastructure Solutions UK Limited 2019) save to the extent that copyright has been legally assigned by us to another party or is used by Wood under licence. To the extent that we own the copyright in this report, it may not be copied or used without our prior written agreement for any purpose other than the purpose indicated in this report. The methodology (if any) contained in this report is provided to you in confidence and must not be disclosed or copied to third parties without the prior written agreement of Wood. Disclosure of that information may constitute an actionable breach of confidence or may otherwise prejudice our commercial interests. Any third party who obtains access to this report by any means will, in any event, be subject to the Third Party Disclaimer set out below.

**Third party disclaimer**

Any disclosure of this report to a third party is subject to this disclaimer. The report was prepared by Wood at the instruction of, and for use by, our client named on the front of the report. It does not in any way constitute advice to any third party who is able to access it by any means. Wood excludes to the fullest extent lawfully permitted all liability whatsoever for any loss or damage howsoever arising from reliance on the contents of this report. We do not however exclude our liability (if any) for personal injury or death resulting from our negligence, for fraud or any other matter in relation to which we cannot legally exclude liability.

**Management systems**

This document has been produced by Wood Environment & Infrastructure Solutions UK Limited in full compliance with our management systems, which have been certified to ISO 9001, ISO 14001 and OHSAS 18001 by LRQA.

**Document revisions**

No.	Details	Date
1	Draft	August 2019
2	Final	August 2019

FINAL

# Contents

<b>1.</b>	<b>Introduction</b>	<b>5</b>
1.1	United Utilities' Water Resources Management Plan	5
	Preparation of the Water Resource Management Plan	7
	Strategic Environmental Assessment and the Water Resources Management Plan	8
1.2	Purpose of the Post Adoption Statement	8
<b>2.</b>	<b>How environmental considerations have been integrated into the WRMP</b>	<b>10</b>
2.1	Environmental considerations in the WRMP	10
	Supply-demand forecasting	10
	Options identification, appraisal and selection	13
	Consultation and engagement	14
2.2	Environmental considerations in the Strategic Environmental Assessment	14
<b>3.</b>	<b>How the findings of the Environmental Report have been taken into account</b>	<b>20</b>
3.1	Overview	20
3.2	Key findings of the SEA	21
<b>4.</b>	<b>How the opinions expressed in response to the consultation have been taken into account in preparing the Final Plan</b>	<b>24</b>
4.1	Overview	24
4.2	SEA consultation	24
	SEA scoping consultation	24
	Public consultation on the Environmental Report	25
4.3	Consultation on the Draft WRMP	25
<b>5.</b>	<b>The reasons for choosing the WRMP as adopted, in light of the other reasonable alternatives dealt with</b>	<b>28</b>
5.1	Reasons for the selection of the final WRMP	28
<b>6.</b>	<b>The measures decided concerning monitoring</b>	<b>30</b>

Table 2.1	Key economic, social and environmental issues relevant to the WRMP	15
Table 2.2	Assessment framework used to assess the WRMP	16
Table 3.1	Key stages in the development of the Environmental Report and its relationship with the WRMP	20
Table 3.2	Key findings of the Environmental Report	21

**FINAL**

Table 4.1 Summary of consultation responses received on the Draft WRMP19	26
Table 5.1 The alternative plans formulated using different combinations of strategic choices	28
Table 6.1 Measures for monitoring effects	30

---

Appendix A	SEA Compliance
Appendix B	Environmental Report consultation responses

FINAL

# 1. Introduction

This report forms the Post Adoption Statement (PAS) to accompany the final version of United Utilities' Water Resources Management Plan (WRMP). The report describes the way in which United Utilities has taken environmental considerations and the views of consultees into account in the adopted WRMP and fulfils the plan and programme adoption requirements of Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment and the Environmental Assessment of Plans and Programmes Regulations 2004 (SI 2004 No. 1633).

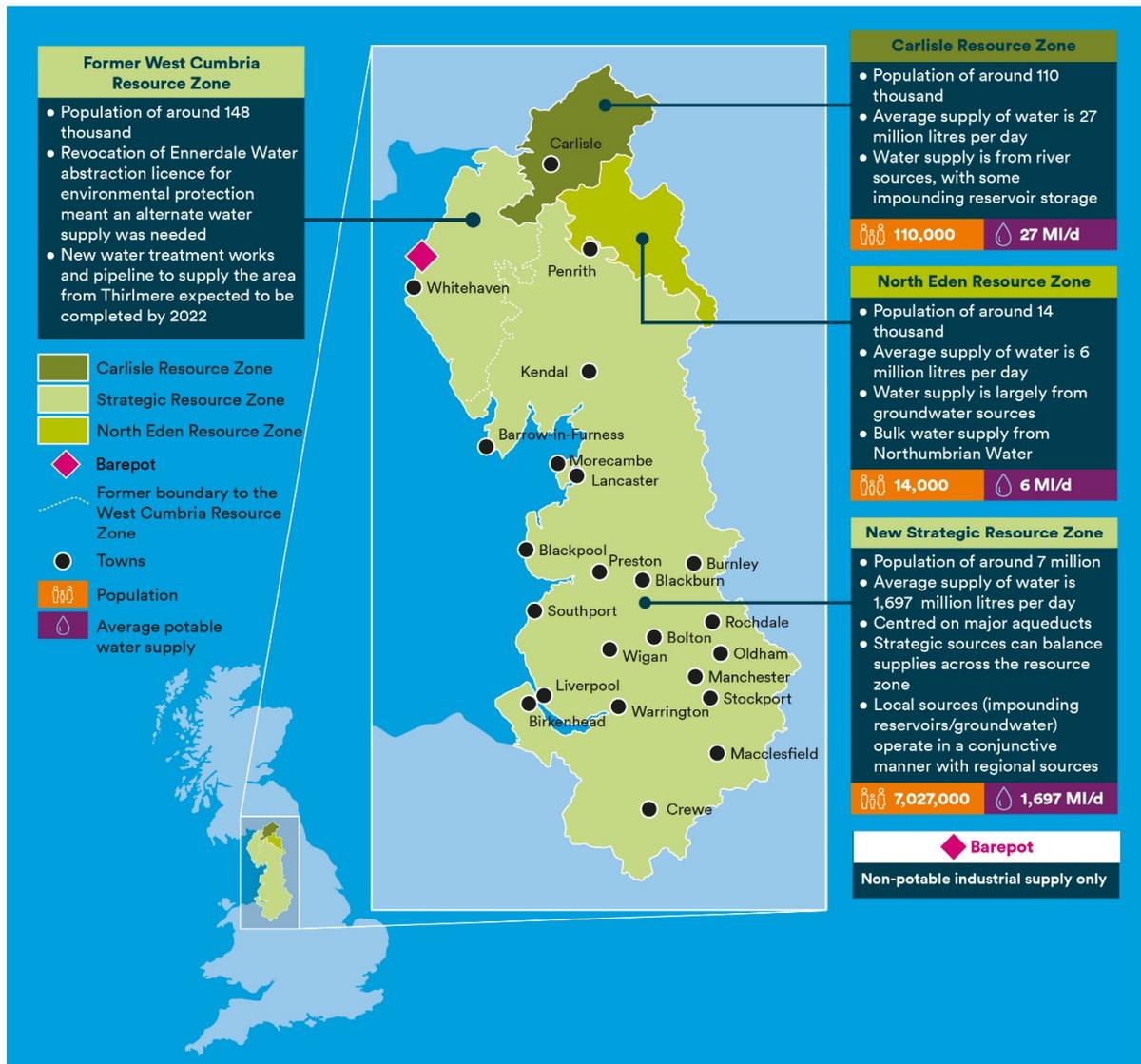
## 1.1 United Utilities' Water Resources Management Plan

- 1.1.1 United Utilities supplies water to some 3 million households and 200,000 business customers in Cumbria, Lancashire, Greater Manchester, Merseyside, most of Cheshire and a small part of Derbyshire. More than 90% of the water supplied by United Utilities comes from rivers and reservoirs, with the remainder from groundwater.
- 1.1.2 Along with all water companies in England and Wales, there is a statutory requirement for United Utilities to prepare, maintain and publish a WRMP that sets out how the balance between water supply and demand, and security of supply will be maintained over the coming 25 years in a way that is economically, socially and environmentally sustainable. These plans are reviewed on a rolling 5 year basis and United Utilities published its WRMP for the period 2020 to 2045 and beyond.
- 1.1.3 The WRMP presents management options by water resource zone (WRZ). WRZs are defined in the Water Resources Planning Guideline<sup>1</sup> as *"an area within which the abstraction and distribution of supply to meet demand is largely self-contained (with the exception of agreed bulk transfers)...Within a WRZ all parts of the supply system and demand centres (where water is needed) should be connected so that all customers in the WRZ should experience the same risk of supply failure and the same level of service for demand restrictions"*.
- 1.1.4 United Utilities' region is currently split into four WRZs: the Integrated Water Resource Zone covering the major conurbations; North Eden; Carlisle and West Cumbria. As a long-term 25-year strategic view, the 2019 WRMP (WRMP19) has been developed to reflect the merging of the West Cumbria and Integrated Resource Zones in 2022 (following the implementation of the 2015 WRMP) and which together will form the Strategic Resource Zone. A new smaller resource zone, Barepot, has also been established to reflect supplies to commercial customers located in the West Cumbria area (these are not connected into the rest of the public water supply network). As a result, WRMP19 has been developed around the four WRZs that will exist from 2022, as shown in **Figure 1.1**. These are: the Strategic Resource Zone; the Carlisle Resource Zone; the North Eden Resource Zone; and Barepot non potable industrial supply zone.

<sup>1</sup> Environment Agency and Natural Resources Wales (2018) *Water Resources Planning Guideline: Interim Update*. Available at: <https://cdn.naturalresources.wales/media/686174/interim-wrpg-update-july18-final-changes-highlighted.pdf>

## FINAL

Figure 1.1 United Utilities' Resource Zones (from 2022 onwards)



1.1.5 In preparing the final WRMP, United Utilities has forecast the future demand for water and available supply (the supply-demand balance) for the 25 year period to 2045 and has determined that there will be a very small baseline deficit (circa 3 megalitres per day (MI/d) in the Strategic Resource Zone at the end of the planning horizon. United Utilities has determined that its demand management plans for WRMP19 offset upward pressures on demand and this deficit, whilst unlocking further benefits in terms of improved levels of service for drought permits and orders.

1.1.6 United Utilities has additionally identified a need to enhance resilience to non-drought hazards; the largest resilience risk being that associated with the regional aqueduct system that supplies water from the Lake District to the Greater Manchester and Pennine areas including parts of Lancashire and south Cumbria. The condition of a particular aqueduct is deteriorating over time and presents a risk in terms of both water quality and water supply. This risk could, in the future, result in a widespread water quality incident (for example, advice to boil water for drinking purposes for over a million properties) or loss of supply to many thousands of properties for an extended period. The development of solutions to address the risks of aqueduct deterioration (and its consequences) to the Strategic Resource Zone is collectively referred to as 'Manchester and Pennine Resilience'.

**FINAL**

- 1.1.7 In this context, the WRMP19 includes the following strategic choices:
- adopt an enhanced leakage reduction comprising a total of 190 MI/d over the planning period, a reduction of just over 40% from the baseline position of 448MI/d. By the end of 2024/25, United Utilities plans to reduce leakage by at least 91 MI/d, or 20%;
  - improve the level of service for drought permits and orders to augment supply from 1 in 20 years to 1 in 40 years (moving from 5% to 2.5% annual average risk);
  - increase resilience to other hazards, specifically for the regional aqueduct system associated with Manchester and Pennine Resilience. This involves rebuilding all single line sections of the relevant aqueduct (Solution D in the Revised Draft WRMP).
- 1.1.8 WRMP19 encompasses a combination of preferred demand management measures and resilience options designed to achieve the three strategic choices outlined above. The preferred options have been selected following a rigorous process of options identification and appraisal, environmental assessment and stakeholder engagement, including consultation on the Draft WRMP.
- 1.1.9 Development of the Revised Draft WRMP included two alternative trading options. Both alternatives included Manchester and Pennine Resilience Solution D and the leakage reduction and network metering options that comprise the Preferred Plan, alongside different portfolios of feasible resource and demand management options to facilitate the export of water during periods of drought. Water trading has not been included in the Final WRMP as potential importing companies did not selected imports from the northwest in their preferred WRMPs during the core 25-year period of the planning horizon. However, whilst, water trading does not form part of United Utilities' Final Plan, it remains the company's preference to continue to work with others on water trading beyond WRMP19 and into the WRMP24 planning round. The strategy to facilitate a potential future trade has therefore been retained within an adaptive pathway, which could form a future preferred plan if water trading was subsequently required in future.

**Preparation of the Water Resource Management Plan**

- 1.1.10 Consistent with the Water Resources Planning Guideline<sup>2</sup>, the development of the WRMP has included the completion of three key stages:
- the publication of a Draft WRMP for public consultation following submission to Defra in December 2017;
  - the publication of a Revised Draft WRMP and the publication of a Statement of Response describing the consultation on the Draft WRMP and how the company took into account the comments received in the preparation of the Revised Draft WRMP; and
  - the publication of a Final WRMP.
- 1.1.11 The Draft WRMP was published on 2<sup>nd</sup> March with consultation concluding on the 25<sup>th</sup> May 2018. Formal written responses on the Draft WRMP were received from a total of 25 consultees, as well as informal feedback from the consultation events and other interactions. United Utilities subsequently published the Revised Draft WRMP along with the Statement of Response to the consultation in September 2018.
- 1.1.12 Following a review of the Statement of Response to the consultation and the changes made in the Revised Draft WRMP, Defra requested more information on the plan. United Utilities responded to this request in April 2019. Subsequently, the Secretary of State for Environment, Food and Rural

<sup>2</sup> Environment Agency and Natural Resources Wales (2018) *Water Resources Planning Guideline*. Available at: <https://cdn.naturalresources.wales/media/686174/interim-wrpg-update-july18-final-changes-highlighted.pdf>

**FINAL**

Affairs issued a direction to publish the WRMP to United Utilities. Following the receipt of direction to publish, United Utilities has published the final WRMP. WRMP19 is available on United Utilities' website at: <https://www.unitedutilities.com/corporate/about-us/our-future-plans/water-resources/water-resources-management-plan/>

## Strategic Environmental Assessment and the Water Resources Management Plan

- 1.1.13 Strategic Environmental Assessment (SEA) is a statutory requirement<sup>3</sup> for plans and programmes that could have significant environmental effects. The SEA process identifies, describes and evaluates potential effects; proposing where appropriate, mitigation and/or enhancement measures.
- 1.1.14 Consultation on the scope of the SEA was undertaken by United Utilities when the Scoping Report<sup>4</sup> for the SEA of the Draft WRMP was published in November 2016 for a consultation period of five weeks. Consultation responses were used to refine the proposed scope and approach to the SEA.
- 1.1.15 The Draft WRMP was then subject to SEA. This assessed the likely significant effects on the environment of the Draft WRMP including an assessment of all the feasible options and the preferred options. The findings of the assessments were presented in the Environmental Report<sup>5</sup> that was published for consultation alongside the Draft WRMP in March 2018. In addition, an assessment of the Manchester and Pennine Resilience solutions identified by United Utilities was undertaken in a manner consistent with the assessment of the feasible water management options. This assessment was presented as supplementary information<sup>6</sup> to the Environmental Report.
- 1.1.16 A revised Environmental Report was completed to accompany the Revised Draft WRMP, published in September 2018.
- 1.1.17 This PAS has been published on United Utilities' website at: <https://www.unitedutilities.com/corporate/about-us/our-future-plans/water-resources/water-resources-management-plan/>

## 1.2 Purpose of the Post Adoption Statement

- 1.2.1 Article 9 of the SEA Directive and regulation 16 (4) of the SEA Regulations require that when a plan or programme is adopted (in this case, the WRMP), the consultation bodies, the public and any other Member States consulted on the Environmental Report are informed and the following specific information is made available:
- the plan as adopted;
  - a statement summarising:
    - ▶ how environmental considerations have been integrated into the WRMP;
    - ▶ how the Environmental Report has been taken into account;

<sup>3</sup>Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment (the SEA Directive) and *Statutory Instrument 2004 No. 1633 – The Environmental Assessment of Plans and Programmes Regulations 2004*. In Wales, this was transposed into legislation on 12<sup>th</sup> July 2004 as *Statutory Instrument 2004 No.1656 - The Environmental Assessment of Plans and Programmes (Wales) Regulations 2004*.

<sup>4</sup> Amec Foster Wheeler (2016) *Strategic Environmental Assessment of the Water Resources Management Plan 2019: Scoping Report*.

<sup>5</sup> Amec Foster Wheeler (2018) *Strategic Environmental Assessment of the Draft Water Resources Management Plan 2019: Environmental Report*.

<sup>6</sup> Amec Foster Wheeler (2018) *Strategic Environmental Assessment of the Draft Water Resources Management Plan 2019 - Environmental Report Supplementary Information: Draft Resilience Options*.

**FINAL**

- ▶ how opinions expressed in response to the consultation on the Draft WRMP and the Environmental Report have been taken into account;
- ▶ the reasons for choosing the WRMP, as adopted, in the light of the other reasonable alternatives dealt with; and
- ▶ the measures that are to be taken to monitor the significant environmental effects of the implementation of the WRMP.

1.2.2 The purpose of this Post Adoption Statement is to provide the specific information outlined under each of the points listed above and which is presented in the following sections of this statement.

**FINAL**

## 2. How environmental considerations have been integrated into the WRMP

### 2.1 Environmental considerations in the WRMP

2.1.1 The subsections that follow set out how environmental considerations have been taken into account by United Utilities during the following key stages of the development of WRMP19:

- supply-demand forecasting;
- options identification, appraisal and selection; and
- consultation and engagement.

#### Supply-demand forecasting

2.1.2 All water companies in England and Wales are required to set out a baseline forecast of demand for water for a minimum of 25 years, assuming current demand policies. This must be compared against a baseline forecast of available water supply, including current resources and future planned supply schemes/policies in order to determine whether there is likely to be a deficit in any WRZ over the planning horizon of the WRMP.

2.1.3 In calculating the baseline forecast of available water supply for the WRMP, United Utilities has taken into account a range of environmental factors, which are summarised below.

#### Sustainable Abstractions

2.1.4 Reduction in abstraction from environmentally sensitive sites has the potential to significantly reduce the quantity of water that can be reliably abstracted from some water sources and result in the need for significant expenditure to enhance water supply capability and/or reduce demand for water. In this context, the environmental sensitivity of the area in which United Utilities operates has been a key consideration in the development of the WRMP. In the United Utilities supply area, there are 69 Natura 2000 sites including 41 Special Areas of Conservation (SACs), 14 Special Protection Areas (SPAs) and 14 Ramsar Sites. Additionally, there are also four Marine Conservation Zones (MCZs) in the inshore/offshore waters of the United Utilities supply area, which protect a range of nationally important marine wildlife, habitats and geology.<sup>7</sup> There are also currently proposals to extend two SPAs in the area, which involve extending the existing Upper Solway Flats and Marshes SPA to create the Solway Firth SPA, and extending the Liverpool Bay / Bae Lerpwl SPA. The United Utilities supply area has 160,086 hectares (ha) of land designated as Sites of Special Scientific Interest (SSSIs). The largest SSSIs cover intertidal or upland areas; elsewhere sites tend to be small and fragmented, particularly in the south of the region. At October 2017, 92.1% of the North West's SSSIs were in 'favourable' or 'unfavourable recovering' condition whilst 7.9% were classified as being in 'unfavourable no change' or 'unfavourable declining' condition.<sup>8</sup>

2.1.5 Under the Habitats Directive (92/43/EEC) and implementing regulations<sup>9</sup>, the Environment Agency (EA) is required to ensure that its 'permissions' (i.e. abstraction licences and discharge consents) and subsequently consented operations have no adverse effect on the 'integrity' of the SACs and SPAs

<sup>7</sup> JNCC (2016) *Marine Conservation Zones* [available at: <http://jncc.defra.gov.uk/page-4525>]

<sup>8</sup> Natural England (2017) *Condition of SSSI Units in Region: North West* [available at: <https://designatedsites.naturalengland.org.uk/SearchRegion.aspx>]

<sup>9</sup> HM Government (2017) *The Conservation of Habitats and Species Regulations 2017*

**FINAL**

that form part of the pan-European network of Natura 2000 sites. Allowances for sustainability reductions totalling 42.5Ml/d were included in the Final WRMP 2015. The key driver for the majority of the reductions is the requirements of the Water Framework Directive (WFD). The greatest sustainability reductions are in the Former West Cumbria Resource Zone, which has had a reduction of 37.5Ml/d and is primarily related to the EA's revocation of the Ennerdale abstraction licence. The River Ehen contains England's only viable population of the protected freshwater mussel, and new evidence identified that the abstraction licence did not allow for sufficient water flow for this species. This resulted in the licence being revoked in order to protect the mussel population. United Utilities has also agreed to surrender licenses at Crummock Water, Dash Beck, Overwater and Chapel House as part of the River Ehen Compensatory Measures package. This will take place in 2022 when the West Cumbria Water Supply Project (Thirlmere Transfer pipeline) becomes operational. United Utilities has also included two new future sustainability changes in the baseline supply forecast, which are the implementation of compensation flows at Dean Clough Reservoir and at Grizedale Reservoir.

**Water Framework Directive**

- 2.1.6 There are 1,266 surface water bodies covered by three River Basin Management Plans (RBMPs) that lie within the North West region (North West, Solway Tweed and Dee). Additionally, Lake Vyrnwy is a source to the United Utilities supply area which lies within the Severn RBMP district. All the water bodies in the region have been classified for their ecological status and have objectives set for 2021, 2027 and beyond.
- 2.1.7 Assessments of water body status in 2015, under the Water Framework Directive (WFD) (2000/60/EC), showed that around a third of surface water bodies across all districts had good ecological status/potential, with the Solway Tweed River Basin District having the greatest percentage of bodies at good or better status/potential (42%). Conversely, the Severn had the lowest proportion of bodies at good or better status/potential (20%). The percentage of bodies with this status is expected to increase to 2021. Out of the areas with groundwater bodies, the Dee had the greatest percentage at good or better status (100%). The Severn district, meanwhile, had the lowest proportion of groundwater bodies at good status (79%).
- 2.1.8 Consistent with the WFD, United Utilities has undertaken a separate WFD Assessment of the WRMP to ensure that the plan is compliant with the objectives of the WFD. This has included an assessment of existing abstractions, changes to abstractions (within licence limits) and proposed new abstractions (specifically, feasible (constrained) and preferred water resource management options, where relevant). All construction and operational aspects of options in the WRMP have been considered in the WFD Assessment in order to determine whether there will be serious damage to, or deterioration of the status of, waterbodies under the WFD.
- 2.1.9 Each new feasible option was assessed to identify whether it would comply with the WFD. Separate assessments were completed for each waterbody or Protected Area which could be impacted by the options. The assessments determined if the options in the plan could:
- cause a deterioration at element or waterbody level (only relevant elements based on the waterbody designation will be assessed);
  - prevent the achievement of RBMP objectives; and/or
  - prevent the achievement of Protected Area objectives.
- 2.1.10 The findings of the WFD Assessment were used to inform the assessment of options as part of the SEA process, and in particular the assessment of options against SEA Objective 3: *To protect and enhance the quantity and quality of surface and groundwater resources and the ecological status of*

**FINAL**

- water bodies*. The results of this work were used to indicate where there were significant potential impacts documented as part of the WFD Assessment process and screen out options accordingly.
- 2.1.11 The assessments of data provided by United Utilities and the EA regarding the current abstraction licences indicates that although there is some residual risk, overall, the operation of the licences, the reductions noted by the EA, and the schemes identified for AMP6 should be enough to mitigate against any significant risks to the WFD water bodies and they are therefore compliant with the requirements of the WFD.
- 2.1.12 The WFD Assessment for the preferred options that comprise WRMP19 were reviewed and updated to ensure that the plan was fully assessed in terms of its potential impacts on WFD water bodies. For the final WRMP19, the options assessed were the resilience options that comprise the preferred Manchester and Pennine Resilience Solution D. The assessment results indicated that one of the options that constitutes Solution D could have a medium level of impact against WFD objectives, and as such will require further assessment at the detailed planning (project) stage. However, the impact assessments were based on a precautionary approach, and with further mitigation, the option is unlikely to result in significant or long-term potential impacts. As such, it will be possible to be compliant with WFD objectives.

**Resilience**

- 2.1.13 National guidance<sup>10</sup> has emphasised the importance of assessing and improving resilience of water supply systems and water resources. This has included determining resilience to droughts, and the severity of the drought that would require the imposition of severe restrictions to water supplies beyond the use of hosepipe and non-essential use bans.
- 2.1.14 To address this, in line with specific guidance<sup>11</sup>, the WRMP19 plans for both the worst drought on record (1933/1934) and droughts more severe than those on record, to ensure that water supply can continue without restrictions, even in a drought so severe that it might be seen only once every two hundred years.
- 2.1.15 In addition to assessing supply, demand and leakage management options, the assessments undertaken in support of WRMP19 have also considered options to enhance resilience to non-drought hazards; the largest resilience risk being that associated with the regional aqueduct system that supplies water from the Lake District to the Greater Manchester and Pennine areas including parts of Lancashire and south Cumbria. The five Manchester and Pennine Resilience solutions identified by United Utilities offered varying degrees of risk reduction, were significantly different in terms of technical and geographical scope, and would give rise to varying levels and types of environmental effect. Manchester and Pennine Resilience Solution D was selected for inclusion in the final WRMP19 as this is the option that was preferred by customers, supported by stakeholders, is the most cost-beneficial, and is the most robust to a range of decision metrics.
- 2.1.16 Solution D involves rebuilding all single line sections of the aqueduct. In terms of the simplified presentation of the risk as three indicative events, it means:
- reducing the future 10 year probability that 1.2 million properties could be affected by water quality problems for at least one week from 65% to less than 5%;
  - reducing the future 10 year probability that that 120,000 properties could be affected by supply interruptions for up to three months from 35% to less than 5%;

<sup>10</sup> Environment Agency and Natural Resources Wales (2018) *Water Resources Planning Guideline: Interim Update*. Available at: <https://cdn.naturalresources.wales/media/686174/interim-wrpg-update-july18-final-changes-highlighted.pdf>

<sup>11</sup> UKWIR (2016) *WRMP 2019 Methods – Risk Based Planning*. Report ref: 16/WR/02/11

**FINAL**

- reducing the future 10 year probability that 240,000 properties could be affected by supply interruptions for up to two weeks from 10% to 5%.

**Options identification, appraisal and selection**

- 2.1.17 As set out in **Section 1**, United Utilities has identified a supply demand deficit over the lifetime of the plan. The identification, appraisal and selection of options to address the supply demand deficit has been informed by detailed consideration of their potential environmental effects. Options considered in preparing WRMP19 were broadly categorised as production and resource, demand or distribution options.
- 2.1.18 The process of options identification included a review of as many potential solutions as possible (the 'unconstrained list' of options) to identify 'feasible' (constrained) water management options to address the predicted deficit. These 'feasible' options were then reviewed in relation to financial, environmental and social costing to identify 'preferred options' to resolve the supply deficits
- 2.1.19 The approach involved a multi-stage, multi-criteria screening process that included consideration of the statutory SEA, HRA and WFD assessment processes, technical and operational feasibility, resilience considerations and evidence from customer research. The inclusion of the statutory environmental assessment processes helped to embed environmental considerations into the options assessment process from the outset.
- 2.1.20 The unconstrained options list was developed through a review of options identified for previous WRMPs and was supplemented by the generation of new options, through consideration of new options identified by United Utilities and also those from new market entrants, and termed third parties, through United Utilities' market engagement exercise and a review of regulatory and best practice guidance. These unconstrained options were reviewed and subject to a "primary screening" to identify any over-riding constraints to option promotion, development and implementation. These included environmental risks such as risks to international and national designated conservation sites and possible effects on designated landscapes and cultural features.
- 2.1.21 Following the initial "primary" screening exercise, a feasible list of options was identified. These were then subject to a "secondary" screening process involving a wider and more detailed set of assessment criteria that built on the initial primary screening criteria. The criteria included explicit linkages to the provisional findings of the statutory SEA, HRA and WFD assessment processes, ensuring integration of the statutory environmental assessments.
- 2.1.22 In total, 146 feasible resource management, demand management and leakage reduction and network metering options were developed to address the deficits and subsequently assessed. United Utilities identified several strategic choices in the Draft WRMP, to help protect and, where possible, benefit customers, and the environment. Using different combinations of preferred options to support these choices, United Utilities identified four alternative plans for the Draft WRMP, which were assessed.
- 2.1.23 The development, assessment and selection of resilience options to address Manchester and Pennine resilience mirrored the assessment of the unconstrained, feasible and preferred options to address the supply-demand deficit in the Unities Utilities operational area. In total, 34 resilience options, different combinations of which formed five potential Manchester and Pennine Resilience solutions, were assessed.
- 2.1.24 In addition, and consistent with the requirement set out in the Water Resources Management Plan (England) Direction 2017, United Utilities calculated carbon emissions and carbon costs for each feasible option. This information was used within the SEA and environmental and social costing assessment undertaken of the feasible and preferred options.

**FINAL**

- 2.1.25 The contribution of the WRMP19 to Wales' well-being goals established under the Well-being of Future Generations (Wales) Act 2015<sup>12</sup> and the objective for the sustainable management of natural resources established under the Environment (Wales) Act 2016<sup>13</sup> was also undertaken,
- 2.1.26 United Utilities then examined the options and combinations of options to develop optimised programmes to address the forecast supply deficit and resilience risks. The final WRMP19 is unchanged from the Revised Draft WRMP, except that the timing of some of the leakage options has altered, bringing forward the leakage savings in order to achieve a 20% leakage reduction by 2025 instead of 15% as set out in the Revised Draft WRMP. In this context, the final WRMP19 includes the following strategic choices:
- adopt an enhanced leakage reduction comprising a total of 190 MI/d over the planning period, a reduction of just over 40% from the baseline position of 448MI/d. By the end of 2024/25, United Utilities plans to reduce leakage by at least 91 MI/d, or 20%;
  - improve the level of service for drought permits and orders to augment supply from 1 in 20 years to 1 in 40 years (moving from 5% to 2.5% annual average risk);
  - increase resilience to other hazards, specifically for the regional aqueduct system associated with Manchester and Pennine Resilience. This involves rebuilding all single line sections of the relevant aqueduct (Solution D).
- 2.1.27 WRMP19 encompasses a combination of preferred demand management measures and resilience options designed to achieve the three strategic choices outlined above. The preferred options have been selected following a rigorous process of options identification and appraisal, environmental assessment and stakeholder engagement, including consultation on the Draft WRMP.

**Consultation and engagement**

- 2.1.28 United Utilities has undertaken extensive stakeholder and customer engagement during the preparation of the WRMP. This has included ongoing engagement with the statutory SEA consultation bodies and in particular, United Utilities has liaised closely with the EA to ensure that the WRMP complies with the requirements of the statutory environmental assessments.

**2.2 Environmental considerations in the Strategic Environmental Assessment**

- 2.2.1 To provide the context for the SEA, and in compliance with the SEA Directive and SEA Regulations, the relevant aspects of the current state of the environment and its evolution without the WRMP were considered at the outset of the SEA process, along with the environmental characteristics likely to be significantly affected by the plan. This information was contained in the SEA Scoping Report and subsequently updated as part of the Environmental Report.
- 2.2.2 The key environmental, social and economic issues identified in United Utilities' operational area and subsequently reflected in the assessment of WRMP options are summarised in **Table 2.1**.

<sup>12</sup> Available from <http://www.legislation.gov.uk/anaw/2015/2/contents/enacted>

<sup>13</sup> Available from <http://www.legislation.gov.uk/anaw/2016/3/contents/enacted>

**FINAL**

Table 2.1 Key economic, social and environmental issues relevant to the WRMP

Topic	Key Economic, Social and Environmental Issues Taken into Account when Assessing the WRMP
<b>Biodiversity</b>	<ul style="list-style-type: none"> <li>• The need to protect and enhance sites designated for nature conservation.</li> <li>• The need to protect and enhance non-designated sites.</li> <li>• The need to reverse the fragmentation of biodiversity in the North West region.</li> <li>• The need to continue to increase and improve the condition of priority habitats and habitats of priority species, and restore populations of these species and other specially protected species.</li> <li>• The need to prevent the spread/introduction of invasive non-native species.</li> <li>• The need to maintain/enhance ecological connectivity.</li> <li>• The need to work within environmental limits and capacities.</li> </ul>
<b>Geology and Soils</b>	<ul style="list-style-type: none"> <li>• The need to maintain or improve the quality of soils/agricultural land.</li> <li>• The need to protect and enhance sites designated for their geological interest.</li> <li>• The need to protect peatlands in the North West.</li> <li>• The need to make use of previously developed land, and to reduce the prevalence of derelict land.</li> <li>• The need to maintain soil function.</li> </ul>
<b>Water</b>	<ul style="list-style-type: none"> <li>• The need to maintain and improve water quality.</li> <li>• The need to maintain seasonal flows in groundwater and surface water.</li> <li>• The need to ensure the continued risk of flooding is mitigated effectively.</li> <li>• The need to prevent the deterioration of Water Framework Directive (WFD) waterbodies, achieve protected area objectives and achieve water body status objectives.</li> </ul>
<b>Air Quality and Climate</b>	<ul style="list-style-type: none"> <li>• The need to minimise emissions of pollutant gases and particulates and enhance air quality.</li> <li>• The need to reduce the need to travel and promote sustainable modes of transport.</li> <li>• The need to reduce greenhouse gas emissions arising from implementation of the WRMP.</li> <li>• The need to take into account, and where possible adapt to, the potential effects of climate change.</li> <li>• The need to increase environmental resilience to the effects of climate change.</li> </ul>
<b>Human Environment</b>	<ul style="list-style-type: none"> <li>• The need to ensure that water resource requirements of people and visitors can be met at all times, in a sustainable way.</li> <li>• The need to ensure that water resources remain affordable.</li> <li>• The need to ensure that the WRMP measures do not adversely affect the health and well-being of any member of the community.</li> <li>• The need to ensure that vulnerable people are not affected by implementation of the WRMP measures.</li> <li>• The need to ensure that the WRMP measures do not have an adverse economic impact.</li> <li>• The need to avoid disruption through effects on the transport network.</li> <li>• The need to ensure resilience of water supply/treatment infrastructure against climate change effects.</li> </ul>
<b>Material Assets and Resource Use</b>	<ul style="list-style-type: none"> <li>• The need to promote water efficiency measures (including metering).</li> <li>• The need to ensure that leakage is managed at a sustainable economic level.</li> <li>• The need to maintain the balance between supply and demand for water.</li> <li>• The need to reduce energy consumption.</li> <li>• The need to ensure the sustainable and efficient use of resources such as construction materials.</li> <li>• The need to minimise waste arisings, promote reuse, recovery and recycling and minimise the impact of wastes on the environment and communities.</li> </ul>
<b>Cultural Heritage</b>	<ul style="list-style-type: none"> <li>• The need to conserve and enhance the historic significance of buildings, monuments, features, sites, places, areas and landscapes of archaeological and cultural heritage interest, and their settings.</li> <li>• The need to avoid damage to important wetland areas with potential for palaeoenvironmental deposits.</li> </ul>

## FINAL

Topic	Key Economic, Social and Environmental Issues Taken into Account when Assessing the WRMP
Landscape	<ul style="list-style-type: none"> <li>The need to conserve the natural beauty of the area, especially within designated sites such as National Parks and Areas of Outstanding Natural Beauty.</li> <li>The need to conserve and enhance the landscape distinctiveness of the area.</li> </ul>

2.2.3 The issues listed above were reflected in the objectives and guide questions that collectively comprised the framework used to assess the WRMP (see **Table 2.2**).

Table 2.2 Assessment framework used to assess the WRMP

Topic Area	SEA Objective	Guide Questions
<b>Biodiversity</b>	1. To protect and enhance biodiversity, key habitats and species, working within environmental capacities and limits.	<i>Will the option protect and enhance where possible the most important sites for nature conservation (e.g. internationally or nationally designated conservation sites such as SACs, SPAs, Ramsar and SSSIs)?</i>
		<i>Will the option protect and enhance non-designated sites and local biodiversity?</i>
		<i>Will the option provide opportunities for new habitat creation or restoration and link existing habitats as part of the development process?</i>
		<i>Will the option lead to a change in the ecological quality of habitats due to changes in groundwater/river water quality and/or quantity?</i>
		<i>Will the option protect, and enhance where appropriate, coastal and marine habitats and species?</i>
<b>Geology and Soils</b>	2. To ensure the appropriate and efficient use of land and protect and enhance soil quality and geodiversity.	<i>Will the option prevent the spread/introduction of invasive non-native species?</i>
		<i>Will additional land be required for the development or implementation of the option or will the option require below ground works leading to land sterilisation?</i>
		<i>Will the option utilise previously developed land?</i>
		<i>Will the option protect and enhance protected sites designated for their geological interest and wider geodiversity?</i>
		<i>Will the option minimise the loss of best and most versatile agricultural land?</i>
		<i>Will the option minimise conflict with existing land use patterns?</i>
		<i>Will the option minimise land contamination?</i>
<b>Water – Quantity and Quality</b>	3. To protect and enhance the quantity and quality* of surface and groundwater resources and the ecological status of water bodies.	<i>Will the option affect geomorphology?</i>
		<i>Will the option minimise the demand for water resources?</i>
		<i>Will the option protect and improve surface, groundwater, estuarine and coastal water quality?</i>
		<i>Will the option result in changes to river flows?</i>
		<i>Will the option result in changes to groundwater levels?</i>

## FINAL

Topic Area	SEA Objective	Guide Questions
<b>Water – Flood Risk</b>	4. To reduce the risk of flooding.	<i>Will the option prevent the deterioration of Water Framework Directive (WFD) waterbody status (or potential)?</i>
		<i>Will the option support the achievement of protected area objectives?</i>
		<i>Will the option support the achievement of environmental objectives set out in River Basin Management Plans?</i>
		<i>Will the option ensure a new activity or new physical modification does not prevent the future achievement of good status for a water body?</i>
<b>Air Quality</b>	5. To minimise emissions of pollutant gases and particulates and enhance air quality.	<i>Will the option have the potential to cause or exacerbate flooding in the catchment area now or in the future?</i>
		<i>Will the option have the potential to help alleviate flooding in the catchment area now or in the future?</i>
		<i>Will the option be at risk of flooding now or in the future?</i>
<b>Climate Change</b>	6. To limit the causes and potential consequences of climate change.	<i>Will the option adversely affect local air quality as a result of emissions of pollutant gases and particulates?</i>
		<i>Will the option exacerbate existing air quality issues (e.g. in Air Quality Management Areas)?</i>
		<i>Will the option maintain or enhance ambient air quality, keeping pollution below Local Air Quality Management thresholds?</i>
		<i>Will the option reduce the need to travel or encourage sustainable modes of transport?</i>
<b>Human Environment - Health</b>	7. To ensure the protection and enhancement of human health.	<i>Will the option reduce or minimise greenhouse gas emissions?</i>
		<i>Will the option have new infrastructure that is energy efficient or make use of renewable energy sources?</i>
		<i>Will the option reduce vulnerability to the effects of climate change by appropriate adaptation?</i>
		<i>Will the option increase environmental resilience to the effects of climate change?</i>
<b>Human Environment - Social and Economic Well-Being</b>	8. To maintain and enhance the economic and social well-being of the local community.	<i>Will the option ensure the continuity of a safe and secure drinking water supply?</i>
		<i>Will the option affect opportunities for recreation and physical activity?</i>
		<i>Will the option maintain surface water and bathing water quality within statutory standards?</i>
		<i>Will the option adversely affect human health by resulting in increased nuisance and disruption (e.g. as a result of increased noise levels)?</i>
<b>Human Environment - Social and Economic Well-Being</b>	8. To maintain and enhance the economic and social well-being of the local community.	<i>Will the option ensure sufficient infrastructure is in place for predicted population increases?</i>
		<i>Will the option ensure sufficient infrastructure is in place to sustain a seasonal influx of tourists?</i>
		<i>Will the option help to meet the employment needs of local people?</i>

## FINAL

Topic Area	SEA Objective	Guide Questions
		<i>Will the option ensure that an affordable supply of water is maintained and vulnerable customers protected?</i>
		<i>Will the option improve access to local services and facilities (e.g. sport and recreation)?</i>
		<i>Will the option contribute to sustaining and growing the local and regional economy?</i>
		<i>Will the option avoid disruption through effects on the transport network?</i>
		<i>Will the option be resilient to future changes in resources (both financial and human)?</i>
<b>Material Assets and Resource Use - Water Resources</b>	9. To ensure the sustainable and efficient use of water resources.	<i>Will the option lead to reduced leakage from the supply network?</i>
		<i>Will the option improve efficiency in water consumption?</i>
<b>Material Assets and Resource Use – Waste and Resource Use</b>	10. To promote the efficient use of resources.	<i>Will the option source and use recycled aggregates/materials in construction, ahead of using 'new' materials?</i>
		<i>Will the option promote the re-use and recycling of waste materials and reduce the proportion of waste sent to landfill?</i>
		<i>Will the option encourage the use of sustainable design and materials?</i>
		<i>Will the option reduce or minimise energy use?</i>
<b>Cultural Heritage</b>	11. To conserve and enhance cultural and historic assets.	<i>Will the option conserve or enhance the historic environment, including heritage assets such as historic buildings, conservation areas, features, places and spaces, and their settings?</i>
		<i>Will the option avoid or minimise damage to archaeologically important sites?</i>
		<i>Will the option avoid damage to important wetland areas with potential for palaeoenvironmental deposits?</i>
		<i>Will the option affect public access to, or enjoyment of, features of cultural heritage?</i>
<b>Landscape</b>	12. To conserve and enhance landscape character.	<i>Will the option avoid adverse effects on, and enhance where possible, protected/designated landscapes (including woodlands) such as National Parks or AONBs?</i>
		<i>Will the option protect and enhance landscape character, townscape and seascape?</i>
		<i>Will the option affect public access to existing landscape features?</i>
		<i>Will the option minimise adverse visual impacts?</i>

\*Please note that water quality in this context does not concern drinking water quality but instead the quality of waterbodies.

2.2.4 The effects of the WRMP were assessed in two stages. The first stage comprised a high level assessment of all feasible options (including supply-side, demand management and leakage reduction options) against the 12 SEA assessment objectives. A more detailed assessment was then undertaken of the preferred options. This assessment considered:

- the nature of the potential effect (what is expected to happen);

**FINAL**

- the timing and duration of the potential effect (e.g. short, medium or long term);
  - the geographic scale of the potential effect (e.g. local, regional, national);
  - the location of the potential effect (e.g. whether it affects rural or urban communities, or those in particular parts of the supply area);
  - the potential effect on vulnerable communities or sensitive habitats;
  - the reasons for whether the effect is considered significant;
  - the reasons for any uncertainty, where this is identified; and
  - the potential to avoid, minimise, reduce, mitigate or compensate for the identified effect(s) with evidence (where available).
- 2.2.5 An important part of the SEA process is the assessment of reasonable alternatives. For the purposes of the SEA of the WRMP, the feasible options have been assessed as reasonable alternatives to the preferred options that comprise the Preferred Plan. In addition, reasonable alternatives to the plan as a whole have also been considered, specifically four alternative plans identified by United Utilities for the Draft WRMP and, subsequently, two alternative 'trading portfolios'.
- 2.2.6 To support United Utilities' decision making, and to ensure consistency between the assessment of the Manchester and Pennine Resilience solutions and the feasible options contained in the Draft WRMP, the component options that make up each Manchester and Pennine Resilience solution were also assessed, as well as the solutions themselves, to inform the selection of the preferred Manchester and Pennine Resilience solution.

FINAL

## 3. How the findings of the Environmental Report have been taken into account

### 3.1 Overview

3.1.1 The SEA Environmental Report and WRMP have been developed in tandem. **Table 3.1** details key stages of the SEA and its relationship with the development of the WRMP.

Table 3.1 Key stages in the development of the Environmental Report and its relationship with the WRMP

Strategic Environmental Assessment	WRMP	Relationship
<b>Scoping</b>		
<p><b>The scoping stage of the SEA identified other relevant plans, programmes and environmental protection objectives which could be affected by, or which could affect, the WRMP.</b></p> <p><b>The scoping stage also characterised the relevant aspects of the current state of the environment and its evolution without the WRMP.</b></p>	<p>The WRMP used the plans and programmes identified to ensure that it was fully in compliance with local, national and international policy and legislation.</p> <p>Baseline information supported early optioneering.</p>	<p>The links between the other relevant plans, programmes, policies and strategies that were applicable to the WRMP and its Environmental Report were outlined. These included plans and programmes at an international, European or national level covering a variety of topics.</p> <p>Information on environmental issues helped determine constraints on the suitability of certain options.</p> <p>The SEA objectives ensured that the full range of social, economic and environmental issues was considered in the WRMP's development.</p>
<b>Assessment</b>		
<p><b>Testing the plan or programme objectives against the SEA objectives</b></p>	<p>The Environment Report and the WRMP were developed together.</p>	<p>The Environmental Report and option appraisals were jointly used to derive the WRMP.</p>
	<p>The WRMP considered unconstrained water management options within the Strategic Resource Zone identified as being potentially in deficit. The unconstrained list of water management options was screened using a set of criteria resulting in a shortlist of feasible options that were taken forward for further assessment in the deficit zone.</p>	<p>The SEA objectives were used to help inform and refine option screening criteria. High level environmental constraints were identified.</p>
<p><b>The SEA assessed feasible options comprising 81 resource management options, 27 demand management options and 38 leakage reduction options. Additionally, a total</b></p>	<p>The capital, operating and social and environmental costs of the feasible options were assessed and their environmental effects, taking into account</p>	<p>The feasible options were subject to a range of assessments including SEA as well as assessment of environmental and social costs and benefits. The findings of</p>

**FINAL**

Strategic Environmental Assessment	WRMP	Relationship
<b>of 34 resilience options, different combinations of which formed five potential Manchester and Pennine Resilience solutions, were also assessed in preparing the Draft WRMP and Revised Draft WRMP.</b>	the findings of the SEA, WFD Assessment, HRA and E&S costings, were considered. Along with ongoing discussion with stakeholders, this information was used to identify potential preferred options.	the SEA helped to identify the preferred options.
<b>The SEA included a high level assessment of four plan alternatives and a detailed assessment of the options comprising the Preferred Plan, in addition to alternative combinations of preferred options for water trading.</b>	Consultation was undertaken on the WRMP to incorporate the opinions of stakeholders and customers on economic, customer and financial aspects of the WRMP. The long and short term risks of each option were also taken into account.	The findings of the SEA helped to identify the Preferred Plan and selection of component options. The findings of the detailed assessment included mitigation measures that were incorporated into the WRMP.
<b>Reporting</b>		
The key findings of the Environmental Report are presented along with United Utilities' response in <b>Table 3.2</b> below. The extent to which the findings have informed the final WRMP is detailed in <b>Section 5</b> of this Post Adoption Statement.		
<b>Consultation</b>		
Responses to consultation on the Environmental Report are presented along with the United Utilities' responses in <b>Section 4</b> and <b>Appendix B</b> . The extent to which the consultation has informed the final WRMP is detailed in <b>Section 5</b> of this Post Adoption Statement.		
<b>Monitoring</b>		
Proposals for monitoring identified in <b>Section 6</b> of this Post Adoption Statement will be implemented by United Utilities.		

## 3.2 Key findings of the SEA

- 3.2.1 As demonstrated in **Table 3.1** above, the SEA process has played an important role in the development of the WRMP. The key findings of the Environmental Report are summarised in **Table 3.2** together with United Utilities' response.

Table 3.2 Key findings of the Environmental Report

No.	Key Environmental Report Findings	Response
1	Capital investment associated with WRMP19 would generate supply chain benefits, employment opportunities and increased spend in the local economy by contractors and construction workers. In combination, the scale of investment associated with the preferred options would be substantial and in consequence, the WRMP19 has been assessed as having an overall significant positive effect on wellbeing (SEA Objective 8). However, HGV movements, pipeline/tunnel works and the provision of above	The findings of the assessment are noted. Best practice procedures will be followed for all construction works and opportunities will be sought to go above and beyond standards set down in guidance. To maximise benefits to the local economy, United Utilities will seek, where possible, to: <ul style="list-style-type: none"> <li>• use local labour; and</li> <li>• appoint local contractors/sub-contractors and use locally sourced materials.</li> </ul>

## FINAL

No.	Key Environmental Report Findings	Response
	ground infrastructure would be likely to cause some temporary traffic disruption and other potential impacts associated with noise and dust etc., generating a minor negative effect on this objective also.	In order to minimise potential disruption to local highways networks during construction, United Utilities will undertake a Transport Assessment at the project stage (where appropriate) to support the identification of mitigation measures which may include, for example, avoiding works and HGV movements during peak traffic periods.
2	<p>Construction of the preferred options would result in significant adverse effects against three of the twelve objectives within the SEA Assessment Framework.</p> <p>The operation of plant and machinery and vehicle movements during the construction phase of Manchester and Pennine Resilience Solution D and the leakage reduction and network metering options would generate emissions to air which could affect air quality. There would also be emissions to air related to the transportation of water efficiency devices and/or workers associated with the preferred demand management options. Reflecting the number of vehicle movements likely to be associated with Solution D in particular, the WRMP19 has been assessed as having a significant negative effect on air quality (SEA Objective 5).</p> <p>For the majority of options that comprise WRMP19, there would be carbon emissions arising from embodied carbon (in, for example, construction materials and noise loggers) in addition to plant operation and vehicle movements. Taken together, total emissions associated with the preferred options would be in excess of 1,000,000tCO<sub>2</sub>e and the WRMP19 has therefore been assessed as having an overall significant negative effect on climate change (SEA Objective 6).</p> <p>Implementation of WRMP19 would also require raw materials, fuel for vehicles and plant and generate waste which has been assessed as having a significant negative effect on resource use (SEA Objective 10).</p>	<p>The findings of the assessment are noted.</p> <p>Mitigation will be considered during the planning phases of each of the individual schemes. Best practice procedures will be followed for all construction works and opportunities will be sought to go above and beyond standards set down in guidance. Detailed air quality and transport assessments will be undertaken as part of the Environmental Impact Assessment (EIA) process (if/as required).</p> <p>HGV movements will, where possible, be timed so as to avoid peak traffic periods e.g. between 7am-9am and 4pm-6pm. Measures to mitigate air quality impacts arising from construction activities will be considered within a Construction and Environmental Management Plan. These measures may include, for example, dust suppression, use of lower emissions plant, and monitoring.</p> <p>Measures to reduce greenhouse gas emissions during construction will be considered including, for example, the use of low emission plant.</p> <p>Opportunities to utilise reused/recycled materials will be considered where appropriate. Construction wastes will be reused/recycled where possible. Measures to reduce energy usage during implementation will be considered including, for example, the use of low energy plant.</p>
3	<p>Minor negative effects have been identified in respect of biodiversity (SEA Objective 1), geology and soils (SEA Objective 2), water quantity and quality (SEA Objective 3), flood risk (SEA Objective 4), health (SEA Objective 7) and landscape (SEA Objective 12). This reflects construction-related impacts including land take, emissions to air and noise as well as the introduction of plant and machinery into landscapes and views.</p>	<p>The findings of the assessment are noted.</p> <p>Mitigation will be considered during the planning phases of each of the individual schemes. Best practice procedures will be followed for all construction works and opportunities will be sought to go above and beyond standards set down in guidance. These issues would also be considered further at the project stage as part of the EIA process (as required).</p>
4	<p>WRMP19 will help to ensure continuity of water supply to United Utilities' customers and support population and economic growth; the Plan has therefore been assessed as having a significant positive effect on health (SEA Objective 7) and wellbeing (SEA Objective 8).</p>	<p>The findings of the assessment are noted.</p>
5	<p>Through the implementation of the preferred leakage reduction programme, WRMP19 would reduce the frequency of drought permits and orders from 1 in 20</p>	<p>The findings of the assessment are noted.</p>

**FINAL**

No.	Key Environmental Report Findings	Response
	<p>years on average to 1 in 40 years on average, and help to improve the resilience of the water supply to the impacts of climate change. In terms of climate change mitigation, the lower levels of leakage may reduce greenhouse gas emissions and energy use associated with reduced treatment and pumping of water and lower energy use from heating water in the home. In this regard, total peak annual reductions associated with the preferred demand management and leakage reduction and network metering options would be approximately 3,500 tCO<sub>2</sub>e per year, although during aqueduct outage (to facilitate the construction of new connections under Manchester and Pennine Resilience Option 112), there would be an increase in energy and resource use required to treat water. Overall, WRMP19 has been assessed as having a mixed significant positive and minor negative effect on climate change (SEA Objective 6) and resource use (SEA Objective 10).</p>	<p>Measures to reduce greenhouse gas emissions during construction will be considered including, for example, the use of low emission plant.</p> <p>Opportunities to utilise reused/recycled materials will be considered where appropriate. Construction wastes will also be reused/recycled where possible. Measures to reduce energy usage during implementation will be considered including, for example, the use of low energy plant.</p> <p>Opportunities to maximise the use of renewable energy sources, including alternative fuel sources will be considered during aqueduct outages. Opportunities to minimise CO<sub>2</sub> emissions associated with staff travel, including provision of alternative modes of transport, will also be considered.</p>
6	<p>The operation of the leakage reduction programme detailed in WRMP19 is expected to generate a leakage reduction of 190 MI/d, from a baseline position of 448.2 MI/d to 259 MI/d. The operation of the preferred leakage reduction programme would lower demand for water abstraction and limit the requirement to take water from the environment at times of drought; this could benefit the water environment. Overall, this has been assessed as having a significant positive effect on water resources (SEA Objective 9) and a positive effect on water quantity and quality (SEA Objective 3).</p>	<p>The findings of the assessment are noted.</p>
7	<p>As the tunnels associated with Manchester and Pennine Resilience Solution D would be constructed within the saturated zone of the aquifer, the presence of a low permeability linear structure may alter groundwater flows and levels (particularly where the tunnels are shallower and within the zone of active groundwater flow) and affect surface water. However, a detailed study of the geology of the tunnel route has not been undertaken at this time, and good connections between the groundwater and surface water environment have been assumed (and which would be subject to further investigation at implementation). Overall, a negative effect on water quantity and quality (SEA Objective 3) has been identified at this stage, although some uncertainty remains.</p>	<p>The findings of the assessment are noted.</p> <p>Further detailed WFD Assessment will be undertaken at the project stage in respect of Manchester and Pennine Resilience Solution D. This will include consideration of more detailed design information, detailed geological study and investigation of the water environment (in particular links between the groundwater and surface water environments), detailed impact assessment, and more detailed review of WFD objectives to ensure that the effects highlighted in the Environmental Report are appropriately accounted for and suitably mitigated if/where appropriate.</p>
8	<p>No operational effects are expected on biodiversity (SEA Objective 1), geology and soils (SEA Objective 2), flood risk (SEA Objective 4), air quality (SEA Objective 5), cultural heritage (SEA Objective 11) or landscape (SEA Objective 12).</p>	<p>The findings of the assessment are noted.</p>

**FINAL**

## 4. How the opinions expressed in response to the consultation have been taken into account in preparing the Final Plan

### 4.1 Overview

4.1.1 Consultation has been an integral part of the SEA of WRMP19. This has included the following main stages of consultation:

- consultation with the statutory SEA bodies on the scope of the SEA; and
- formal public consultation on the Environmental Report of the Draft WRMP.

4.1.2 Consultation on the WRMP has included:

- numerous surveys, technical stakeholder groups, customer research and engagement activities throughout the process of developing the WRMP;
- an extensive early pre-consultation with regulators and stakeholders in 2016, before work commenced on the plan;
- working closely with the United Utilities' Customer Challenge Group 'YourVoice';
- formal consultation on the Draft WRMP (alongside which the SEA Environmental Report was published); and
- publication of a Statement of Response, outlining how the comments received on the Draft WRMP have been taken into account in the development of the final WRMP.

4.1.3 A summary of the outcomes of the consultation on the SEA and Draft WRMP are provided in the sections that follow.

### 4.2 SEA consultation

#### SEA scoping consultation

4.2.1 The first stage of the SEA was the production of a Scoping Report. This reviewed plans and programmes that could affect the WRMP or be affected by it, outlined baseline information for the plan area and set out the proposed framework for assessing potential environmental effects. The SEA Scoping Report<sup>14</sup> for WRMP19 was issued for consultation to the statutory consultation bodies (the Environment Agency, Natural England, Historic England, Natural Resources Wales, Cadw and the Welsh Government) for a five week period ending 12<sup>th</sup> December 2016.

4.2.2 Four responses to the consultation were received, which resulted in amendments to the baseline information and assessment framework that was used to assess the Draft WRMP (a schedule of consultation responses to the Scoping Report was contained in Appendix F of the Environmental Report for the Draft WRMP).

---

<sup>14</sup> Amec Foster Wheeler (2016) *Strategic Environmental Assessment of the Water Resources Management Plan 2019: Scoping Report*.

**FINAL****Public consultation on the Environmental Report**

- 4.2.3 Following submission to Defra in December 2017, United Utilities published an Environmental Report alongside the Draft WRMP19 for consultation for 12 weeks from 2<sup>nd</sup> March to 25<sup>th</sup> May 2018. The Environmental Report indicated that United Utilities welcomed, in particular, views on whether consultees agreed:
- that the Environmental Report had correctly identified the likely significant effects of the Draft WRMP and if not, what other significant effects consultees thought had been missed, and why;
  - with the conclusions of the Environmental Report and the recommendations for avoiding, reducing or off-setting significant effects associated with the implementation of the Draft WRMP and if not, what consultees thought should be the key recommendations and why; and,
  - with the proposed arrangements for monitoring the significant effects of the implementation of the WRMP and if not, what measures would consultees propose?
- 4.2.4 Responses were received to the consultation from the following four organisations (a schedule of consultation responses to the Environmental Report of the Draft WRMP was contained in Appendix G of the Environmental Report for the Revised Draft WRMP):
- Environment Agency;
  - Natural England;
  - Lake District National Park Authority; and
  - Natural Resources Wales.
- 4.2.5 For the purposes of transparency, the schedule of responses is in **Appendix B** of this PAS.

**4.3 Consultation on the Draft WRMP**

- 4.3.1 Prior to starting work on WRMP19, United Utilities completed an extensive pre-consultation phase with regulators and stakeholders in autumn 2016, where over 450 stakeholders and consultees were contacted, four public stakeholder events were held, and a briefing note was published highlighting the key expected plan themes. Numerous comments and questions were received during this pre-consultation process, which supported the development of the Draft WRMP19.
- 4.3.2 The Draft WRMP19 was issued for public consultation for 12 weeks on the 2<sup>nd</sup> March to 25<sup>th</sup> May 2018. During the consultation process United Utilities:
- contacted approximately 700 statutory and non-statutory stakeholders directly via email;
  - publicised the consultation on the United Utilities corporate website;
  - publicised the consultation through social media platforms;
  - held three consultation events (in Knutsford, Bolton and Penrith);
  - offered a webinar, however only one participant (Lake District National Park) was interested in this method of consultation, so United Utilities met with them personally instead;
  - met with the EA on several occasions to discuss the plan and clarify their consultation comments; and
  - had ongoing 'business as usual' engagement with stakeholders and regulators within which the consultation was promoted and there were opportunities to discuss the plan.

**FINAL**

- 4.3.3 In total, 25 formal consultation responses were submitted to the Secretary of State from United Utilities consultees, as well as informal feedback from consultation events and other activities. The organisation and the themes that they raised in their response is summarised in **Table 4.1** below. A summary of the responses received, and United Utilities' replies is available in Section 3 of the Statement of Response document, with full versions of the consultation responses and United Utilities' responses available in Appendix A of the Statement of Response document'.

**Table 4.1** Summary of consultation responses received on the Draft WRMP19

Consultee	Theme(s) of Response
Canal & River Trust	Consultation and engagement; environment; preferred plan; water trading
Carlisle City Council	Consultation and engagement
Cheshire West and Chester Council	Consultation and engagement
Copeland Borough Council	Environment; levels of service; preferred plan
Customer Challenge Group (YourVoice)	Consultation and engagement; demand management and leakage; levels of service; resilience; water trading
Environment Agency	Drought resilience; environment; demand management and leakage; levels of service; preferred plan; resilience; water trading
Friends of the Lake District	Consultation and engagement; demand management and leakage; drought resilience; environment; levels of service; preferred plan; water trading
Group Against Reservoir Development	Water trading
Individuals (four responses)	Drought resilience; environment; demand management and leakage; levels of service (2); water trading (2)
Lake District National Park Authority	Demand management and leakage; drought resilience; environment; levels of service; water trading
National Farmers' Union	Demand management and leakage; environment; resilience
Natural England	Demand management and leakage; environment; levels of service; preferred plan; resilience; water trading
Natural Resources Wales	Environment; preferred plan; water trading
Northumberland County Council	Demand management and leakage; levels of service; resilience; water trading
North West Wildlife Trusts	Demand management and leakage; environment
NuGeneration Limited	Demand management and leakage
Ofwat	Consultation and engagement; demand management and leakage; drought resilience; levels of service; preferred plan; resilience; water trading
South Cumbria Rivers Trust	Demand management and leakage; drought resilience; levels of service
South Lakeland District Council	Demand management and leakage; drought resilience; levels of service; preferred plan; water trading
Welsh Government	Environment; preferred plan; water trading

**FINAL**

Consultee	Theme(s) of Response
Windermere Lake Cruises Limited	Demand management and leakage; drought resilience; environment; levels of service; water trading
Windermere Marina Village	Demand management and leakage; drought resilience; levels of service

- 4.3.4 The Statement of Response to the consultation describing how the responses to the consultation were taken into account, and a copy of the Revised Draft WRMP19 were published and made available through United Utilities' website on the 31<sup>st</sup> August 2018 at:  
<https://www.unitedutilities.com/corporate/about-us/our-future-plans/water-resources/developing-our-water-resources-management-plan/>
- 4.3.5 Following a review of the Statement of Response to the consultation and the changes made in the Revised Draft WRMP19, Defra requested further information in support of WRMP19 prior to the Secretary of State making a decision on the next steps. This information was submitted by United Utilities on the 5<sup>th</sup> April 2019 and on 23<sup>rd</sup> July 2019 the Secretary of State gave United Utilities direction to publish the final WRMP19.

**FINAL**

## 5. The reasons for choosing the WRMP as adopted, in light of the other reasonable alternatives dealt with

### 5.1 Reasons for the selection of the final WRMP

5.1.1 United Utilities has chosen the final WRMP using industry good practice methods. This includes consideration of technical feasibility, financial costs and benefits, and quantified impacts on the environment and community, taking into account the findings of the SEA, HRA and WFD Assessment as well as ongoing engagement and input from customers and key stakeholders.

5.1.2 United Utilities considered four alternative plans as part of the development of the Draft WRMP. Alternative Plan 4 was selected as the Preferred Plan because it contains all of the strategic choices proposed by United Utilities to address customer and stakeholder views. The aforementioned strategic choices relate to:

- enhanced leakage reduction;
- improved levels of service;
- increased water supply resilience to non-drought hazards; and
- national water trading.

Table 5.1 The alternative plans formulated using different combinations of strategic choices

		Strategic Choices			
		Enhanced leakage reduction	Improved level of service - frequency of drought permits and orders to augment supply	Water supply resilience to hazards other than drought	National water trading
Alternative Plans	Plan 1 Continued demand management	✘	✘	✘	✘
	Plan 2 Plan 1, plus enhanced leakage reduction, with improved level of service for drought permits/orders to augment supply	✔	✔	✘	✘
	Plan 3 Plan 2, plus resilience to other hazards	✔	✔	✔	✘
	Plan 4 Plan 3, plus national water trading	✔	✔	✔	✔

5.1.3 The consultation process confirmed support for Alternative Plan 4; however, the Revised Draft WRMP Preferred Plan was based on Alternative Plan 3, as it did not include a water trading component. This is because a water trade from the North West is not included in the preferred plans of other water companies. It remains United Utilities' preference to continue to work with other water companies on water trading beyond WRMP19 towards the WRMP24 planning round, and therefore the strategy to facilitate a potential future trade has been retained within an adaptive

**FINAL**

- pathway, which could form a future preferred plan if water trading was subsequently required in future.
- 5.1.4 Alternative Plan 1 had the lowest cost of all plan alternatives, but did not deliver any of the strategic choices identified by United Utilities. Alternative Plan 2 had additional costs compared to Alternative Plan 1, but would help to meet customer and regulatory aspirations on leakage reduction, and at the same time provide environmental benefits and allow United Utilities to improve its level of service for drought permits in 2025. However, whilst offering lower costs than Alternative Plan 3, Alternative Plan 2 would not allow United Utilities to address pressing supply system resilience needs.
- 5.1.5 In this context, the final WRMP includes the following strategic choices:
- adopt an enhanced leakage reduction comprising a total of 190 MI/d over the planning period, a reduction of just over 40% from the baseline position of 448MI/d. By the end of 2024/25, United Utilities plans to reduce leakage by at least 91 MI/d, or 20%;
  - improve the level of service for drought permits and orders to augment supply from 1 in 20 years to 1 in 40 years (moving from 5% to 2.5% annual average risk);
  - increase resilience to other hazards, specifically for the regional aqueduct system associated with Manchester and Pennine Resilience. This involves rebuilding all single line sections of the relevant aqueduct (Solution D).
- 5.1.6 The final WRMP encompasses a combination of preferred demand management measures and resilience options designed to achieve the three strategic choices outlined above. The preferred solution for Manchester and Pennine Resilience (Solution D) has been selected over the alternative options as it represents the best solution for customers (in terms of having relatively low residual risk, and a low annual bill increase of £11) and the environment to provide resilient water supplies for the long term.
- 5.1.7 Overall, United Utilities' comprehensive option identification and appraisal process means that, from a very large pool of options, only the most applicable have been selected in the final WRMP. This is critical to ensuring that WRMP19 represents the most cost effective and sustainable solution in the long term.

## FINAL

## 6. The measures decided concerning monitoring

- 6.1.1 The SEA Directive requires the significant environmental effects of implementing a plan to be monitored. Monitoring the effects of the WRMP can help to answer questions such as:
- Were the SEA predictions of effects accurate?
  - Is the WRMP contributing to the achievement of the SEA objectives?
  - Are mitigation measures performing as well as expected?
  - Are there any adverse effects? Are these within acceptable limits, or is remedial action desirable?
- 6.1.2 United Utilities expect to monitor the effects of the WRMP alongside the other impacts of their operations, and as such, are likely to rely on existing sources of information that are collected either by United Utilities or by other relevant organisations such as the EA or Natural England.
- 6.1.3 Consistent with the proposals of the Environmental Report, potential effects against all the SEA objectives have been included in the monitoring framework, which is set out in **Table 6.1**. United Utilities will take a broad view of the findings of their ongoing monitoring processes to identify whether the WRMP has any significant unforeseen effects. Where these are identified, United Utilities may be required to put in place specific monitoring arrangements and will consider how best to mitigate or avoid the adverse consequences.

Table 6.1 Measures for monitoring effects

Objective	Indicator	Source of Information	Commentary
<b>1. To protect and enhance biodiversity, key habitats and species, working within environmental capacities and limits.</b>	Condition of specific protected sites (e.g. SACs, SPAs and Ramsar)	Natural England (NE), Natural Resources Wales (NRW)	Open communication between NE, NRW and United Utilities results in up-to-date information and identification of any potential issues.
	Condition of SSSIs on water industry land holdings	NE, NRW, United Utilities	Condition assessment of designated land on United Utilities' landholdings, both area and condition may change.
	Biological monitoring (macroinvertebrates, macrophytes, fisheries, bird surveys)	Environment Agency (EA), NRW, United Utilities, Angling clubs, BTO	Using data sets and comparing them against other monitored information such as levels and flows will assist in identifying whether there are any adverse effects and if mitigation measures are performing as well as expected.
	Number and area of new or restored habitats	United Utilities	United Utilities could consider recording the number of locations and area of habitats created or restored.
	<b>2. To ensure the appropriate and efficient use of land and</b>	Number/ floorspace of water infrastructure built on previously developed land	United Utilities

**FINAL**

Objective	Indicator	Source of Information	Commentary
<b>protect and enhance soil quality and geodiversity.</b>			ground infrastructure built on previously developed land.
	Condition of sites designated for geological interest (e.g. geological SSSIs) on water industry land holdings	United Utilities	Condition assessment of designated land on United Utilities' landholdings, both area and condition may change.
<b>3. To protect and enhance the quantity and quality of surface and groundwater resources and the ecological status of water bodies.</b>	River flow and level characteristics	United Utilities, EA, NRW	Monitoring can be compared to historic records.
	River flows, river levels, lake and reservoir levels. Water quality of surface waters	United Utilities, EA, NRW	At sensitive sites previous studies should be used to inform monitoring and assessment. For example RoC documentation and any Drought Permit (DP) Environmental Assessments and associated environmental monitoring plans.
	Groundwater levels, recharge characteristics and abstracted groundwater quality	United Utilities, EA, NRW	At sensitive sites previous studies should be used to inform monitoring and assessment. For example RoC documentation and any Drought Permit (DP) Environmental Assessments and associated environmental monitoring plans.
<b>4. To reduce the risk of flooding.</b>	Number of properties that experience internal flooding from public sewers	United Utilities, EA, NRW	United Utilities report these data to Ofwat as part of the statutory returns process.
<b>5. To minimise emissions of pollutant gases and particulates and enhance air quality.</b>	Number of vehicle movements/distance travelled	United Utilities	United Utilities could consider recording the number of vehicle movements and distance travelled as an indicator of air quality impacts.
<b>6. To limit the causes and potential consequences of climate change.</b>	Quantity of greenhouse gas emissions per megalitre of water supplied	United Utilities	United Utilities' energy managers can use company data taken from the Annual Report, and guidance from the UKWIR greenhouse gas workbook and BEIS (Department for Business, Energy & Industrial Strategy) conversion factors to derive this information.
	Energy used in the operational phase of water treatment and supply	United Utilities	United Utilities should hold and record energy consumption data e.g. via accounts / invoices to enable

**FINAL**

Objective	Indicator	Source of Information	Commentary
			quantification of the proposed indicator.
	Renewable energy generated; renewable energy purchased	United Utilities	United Utilities should record renewable energy generation data, in addition to data on renewable energy purchased e.g. via accounts / invoices.
<b>7. To ensure the protection and enhancement of human health.</b>	Compliance with drinking water standards at customers' taps (%)	United Utilities	United Utilities reports these data to Ofwat as part of the statutory returns process (Annual Performance Report) and to the Drinking Water Inspectorate.
	Compliance with water quality standards under the EC Bathing Waters Directive	EA	The EA monitors the compliance of bathing waters and reports this annually.
	Number of United Utilities sites with public access which provide sporting, recreational and leisure resources and number of visits per year	United Utilities	United Utilities holds information on the number of annual visitors to sites where specific visitor facilities are provided.
	Number of nuisance-related complaints e.g. noise, dust	United Utilities	United Utilities could record the number of nuisance-related complaints made in relation to implementation of the WRMP.
<b>8. To maintain and enhance the economic and social well-being of the local community.</b>	Population and projected population change over time (per WRZ)	United Utilities	United Utilities reports these data to Ofwat as part of the statutory returns process and as part of the Strategic Business Plan.
<b>9. To ensure the sustainable and efficient use of water resources.</b>	Levels of leakage	United Utilities	These indicators will help identify whether the WRMP does contribute to the achievement of this SEA objective.
	Trends in overall per capita consumption.	United Utilities	United Utilities should record and report these data.
<b>10. To promote the efficient use of resources.</b>	Amount of recycled / reused materials used	United Utilities	Information on the use of recycled / reused materials should be held by construction managers and accounts (contractors / consultants accounts, waste or procurement records).
	Proportion of waste sent to landfill	United Utilities	Information on quantities, classification and proportion of waste disposed to landfill should be held by United Utilities.

**FINAL**

Objective	Indicator	Source of Information	Commentary
	Chemicals used in water supply	United Utilities	Information (quantities, composition) on chemical use should be held in accounts.
<b>11. To conserve and enhance cultural and historic assets.</b>	Loss / damage or discovery / protection of cultural, historic and industrial heritage features. Including loss of landscapes of Historic Interest and natural heritage features (including for example field systems, field boundaries) that contribute to the cultural and historic distinctiveness of the area.	United Utilities, Historic England, Cadw	Historic England/Cadw's regional field monument wardens monitor the condition of all statutorily protected monuments.
<b>12. To conserve and enhance landscape character.</b>	Loss or damage to landscape character and features of designated sites.	United Utilities	United Utilities could consider recording the number and floorspace of new buildings above ground infrastructure that are built within designated landscape sites.

**FINAL**



**FINAL**

# Appendix A SEA Compliance

**Table A.1** details the SEA Regulations’ requirements of the Post Adoption Procedures and indicates where relevant information required can be found in this report.

Table A.1 Compliance of this Report with the Requirements of the SEA Regulations

SEA Regulations Requirement	Location in the Post Adoption Statement (where appropriate)
<b>Information as to adoption of plan or programme (SEA regulation 16)</b>	
<p><b>(1) As soon as reasonably practicable after the adoption of a plan or programme for which an environmental assessment has been carried out under these Regulations, the responsible authority shall -</b></p> <p><b>(a) make a copy of the plan or programme and its accompanying environmental report available at its principal office for inspection by the public at all reasonable times and free of charge; and</b></p> <p><b>(b) take such steps as it considers appropriate to bring to the attention of the public</b></p> <p style="padding-left: 20px;"><b>(i) the title of the plan or programme;</b></p> <p style="padding-left: 20px;"><b>(ii) the date on which it was adopted;</b></p> <p style="padding-left: 20px;"><b>(iii) the address (which may include a website) at which a copy of it and of its accompanying environmental report, and of a statement containing the particulars specified in paragraph (4), may be viewed or from which a copy may be obtained;</b></p> <p style="padding-left: 20px;"><b>(iv) the times at which inspection may be made; and</b></p> <p style="padding-left: 20px;"><b>(v) that inspection may be made free of charge.</b></p>	<p>A copy of the WRMP and accompanying reports and documentation is available at:</p> <p><a href="https://www.unitedutilities.com/corporate/about-us/our-future-plans/water-resources/water-resources-management-plan/">https://www.unitedutilities.com/corporate/about-us/our-future-plans/water-resources/water-resources-management-plan/</a></p> <p>A paper copy of the WRMP, Environmental Report and this Post Adoption Statement are available for public viewing at:</p> <p>Haweswater House</p> <p>Lingley Mere Business Park</p> <p>Lingley Green Avenue</p> <p>Great Sankey</p> <p>Warrington</p> <p>WA5 3LP</p> <p>The office is open from 9am until 5pm Monday to Friday.</p>
<p><b>(2) As soon as reasonably practicable after the adoption of a plan or programme -</b></p> <p><b>(a) the responsible authority shall inform—</b></p> <p style="padding-left: 20px;"><b>(i) the consultation bodies;</b></p> <p style="padding-left: 20px;"><b>(ii) the persons who, in relation to the plan or programme, were public consultees for the purposes of regulation 13; and</b></p> <p style="padding-left: 20px;"><b>(iii) where the responsible authority is not the Secretary of State, the Secretary of State;</b></p> <p><b>and</b></p> <p><b>(b) the Secretary of State shall inform the Member State with which consultations in relation to the matters referred to in paragraph 3.</b></p>	<p>A copy of the WRMP and accompanying reports and documentation is available at:</p> <p><a href="https://www.unitedutilities.com/corporate/about-us/our-future-plans/water-resources/water-resources-management-plan/">https://www.unitedutilities.com/corporate/about-us/our-future-plans/water-resources/water-resources-management-plan/</a></p> <p>A copy of the SEA Environmental Report is available at:</p> <p><a href="https://www.unitedutilities.com/corporate/about-us/our-future-plans/water-resources/water-resources-management-plan/">https://www.unitedutilities.com/corporate/about-us/our-future-plans/water-resources/water-resources-management-plan/</a></p> <p>This Post Adoption Statement addresses (iii) and contains particulars specified in paragraph (4) as outlined below.</p>



**FINAL**

SEA Regulations Requirement	Location in the Post Adoption Statement (where appropriate)
<p>(3) The matters are -</p> <p>(a) that the plan or programme has been adopted;</p> <p>(b) the date on which it was adopted; and</p> <p>(c) the address (which may include a website) at which a copy of—</p> <p style="padding-left: 40px;">(i) the plan or programme, as adopted,</p> <p style="padding-left: 40px;">(ii) its accompanying environmental report, and</p> <p style="padding-left: 40px;">(iii) a statement containing the particulars specified in paragraph (4),</p> <p>may be viewed, or from which a copy may be obtained.</p>	
<p>(4) The particulars referred to in paragraphs (1)(b)(iii) and (3)(c)(iii) are -</p>	
<p>(a) how environmental considerations have been integrated into the plan or programme;</p>	Section 2
<p>(b) how the environmental report has been taken into account;</p>	Section 3
<p>(c) how opinions expressed in response to -</p> <p style="padding-left: 40px;">(i) the invitation referred to in regulation 13(2)(d);</p> <p style="padding-left: 40px;">(ii) action taken by the responsible authority in accordance with regulation 13(4),</p> <p>- have been taken into account;</p>	<p>Section 4 and United Utilities Statement of Response, available at:</p> <p><a href="https://www.unitedutilities.com/corporate/about-us/our-future-plans/water-resources/water-resources-management-plan">https://www.unitedutilities.com/corporate/about-us/our-future-plans/water-resources/water-resources-management-plan</a></p>
<p>(d) how the results of any consultations entered into under regulation 14(4) have been taken into account;</p>	Not applicable - no transboundary consultation with other EU Member States took place
<p>(e) the reasons for choosing the plan or programme as adopted, in the light of the other reasonable alternatives dealt with; and</p>	Section 5
<p>(f) the measures that are to be taken to monitor the significant environmental effects of the implementation of the plan or programme.</p>	Section 6.
<b>Monitoring of implementation of plans and programmes (SEA regulation 17)</b>	
<p>(1) The responsible authority shall monitor the significant environmental effects of the implementation of each plan or programme with the purpose of identifying unforeseen adverse effects at an early stage and being able to undertake appropriate remedial action.</p>	<p>Monitoring procedures are set out in Section 6.</p> <p>United Utilities will identify effects and undertake remedial action (as necessary) as the WRMP is implemented.</p>

**FINAL**

SEA Regulations Requirement	Location in the Post Adoption Statement (where appropriate)
<b>(2) The responsible authority's monitoring arrangements may comprise or include arrangements established otherwise than for the express purpose of complying with paragraph (1).</b>	The monitoring procedures set out in Section 6 will complement existing monitoring arrangements where possible.



**FINAL**

# Appendix B Environmental Report consultation responses



**FINAL**

Table B.1 Summary of the consultation responses (on the Environmental Report accompanying the Draft WRMP)

Consultee	Report Section/ Option/ Consultation Question	Consultee Response Summary	Response/Action
<b>Environment Agency</b>	Section 6/ Option B2: Thames Water Trading Enabling Works	States that the Environmental Report should include a cumulative assessment of the water trading proposals.	<p>Comment noted. As set out in Section 6.3 of the Draft WRMP Environmental Report, United Utilities had agreed with Thames Water that any environmental impacts downstream of Lake Vyrnwy in the Severn and Thames catchments associated with a possible transfer would be assessed in Thames Water's Water Resources Management Plan.</p> <p>Whilst water trading remains United Utilities' preference, a bulk transfer does not currently feature in Thames Water's (or any other water company's) emerging WRMP and therefore water trading is no longer being pursued as part of the Preferred Plan for WRMP19. Notwithstanding this, the assessment of Option B2 has been revised to reflect the findings of the Thames Water Draft WRMP Environmental Report (which considered the downstream effects of a transfer). This revised assessment is presented in Appendix D and Appendix F to this report.</p>
	Option WR101: Franklaw Z site plus increased Franklaw WTW treatment capacity and Option WR099b: Worsthorne Borehole (Hurstwood IR)	States that it does not appear that impacts on priority species and habitats have been considered within the SEA. Considers that the potential impacts on fish, especially Atlantic salmon, should be considered for options that may also impact surface water such as Franklaw and Worsthorne. Highlights that salmon stocks in the River Wyre catchment are classified as being 'At Risk' and a considerable amount of work has been done to improve access for salmonid fish into the River Brun in recent years.	<p>Comment noted. For the avoidance of doubt, the SEA has considered effects on priority species and habitats such as Atlantic salmon and this is reflected in the appraisal matrices (under SEA Objective 1) contained in Appendix D and Appendix E to the Environmental Report.</p> <p>With specific regard to Options WR099b and WR101, the Environment Agency's comments are noted. However, for the reasons set out above, the options no longer form part of United Utilities' Preferred Plan for WRMP19.</p> <p>No change.</p>
	Sections 1.3 and 1.4	Considers that it is unclear how the feasible options appraised were identified as the preferred options. States that this is	Comment noted. The options identification and appraisal process is detailed in Sections 1.3 and 1.4 of the Draft WRMP

**FINAL**

Consultee	Report Section/ Option/ Consultation Question	Consultee Response Summary	Response/Action
		particularly relevant where more than one feasible option was provided for the same asset. For example, three feasible options are provided for the Worsthorne Borehole (WR099a, b and c). WR099b is listed in the preferred options even though it has the greatest number of negative effects of the three Worsthorne Borehole options (a, b and c) presented in the plan.	Environmental Report and further information in relation to the selection of the preferred WRMP options is contained in supporting technical documentation <sup>15</sup> . In consequence, it is not considered necessary to include further information in the Environmental Report.  No change.
	Manchester and Pennine Resilience	Notes that two of the five potential solutions proposed to improve the resilience of customer supplies include new abstractions. States that the Environment Agency is concerned that this new abstraction (particularly from the lower River Ribble) has the potential to limit the opportunity for other potential abstractors to get an abstraction licence in the catchments upstream and that this risk should be reflected in the SEA under Objective 8 (as it could limit local economic growth).	Comment noted. United Utilities has identified Solution D as the preferred Manchester and Pennine Resilience solution. This solution comprises Manchester and Pennine Aqueduct sections T01 to T06, which would involve the construction of new tunnels, and Option 112, that would involve implementing Manchester and Pennine Aqueduct outage. In consequence, there would be no new abstractions required under this solution and therefore there is no potential for impacts on existing or future abstractors.  No change.
	Section 6	Notes that the SEA associated with the Manchester and Pennine Resilience solutions does not consider the cumulative effects of these solutions with the effects of the options proposed as the preferred plan in the wider WRMP.	Comment noted. Section 6.2 of the Draft WRMP Environmental Report includes a high level assessment of plan alternatives. This includes Plan Alternative 4 which comprises of continued demand management, a programme of leakage reduction, water trading and the Manchester and Pennine Resilience programme. However, as highlighted in the Environmental Report, as United Utilities' preferred Manchester and Pennine Resilience solution had not been determined at that stage, the assessment of this element of the WRMP was necessarily undertaken at a high level, commensurate with the level of information/detail available at this time.

<sup>15</sup> United Utilities (2017) *Draft Water Resources Management Plan 2019: Technical Report – Options Identification* and United Utilities (2017) *Draft Water Resources Management Plan 2019: Technical Report – Options Appraisal*.

## FINAL

Consultee	Report Section/ Option/ Consultation Question	Consultee Response Summary	Response/Action
			<p>Subsequently, an SEA of alternative solutions was undertaken to help inform the selection of the preferred Manchester and Pennine Resilience solution. The accompanying report set out that, once the preferred solution had been identified, it would be subject to further detailed assessment if required.</p> <p>In this context, a detailed assessment of the preferred Manchester and Pennine Resilience solution (Solution D) is contained in Appendix E of this Environmental Report and the cumulative effects of the WRMP including Solution D are assessed in Section 6.</p>
	Manchester and Pennine Resilience	<p>Considers that the cumulative assessment of minor positive effects appears to be treated differently to minor negative effects. For example, for Solution A, minor positive health effects resulting from the operational phase have been accumulated to a significant positive effect overall. In contrast, minor negative effects on air quality or landscape (from construction) are accumulated to be minor negative overall. This similarly applies to the negative health effects of Solution E.</p>	<p>Disagree. The significant positive effects identified in respect of health reflect the potential for a Manchester and Pennine Resilience solution to significantly enhance the resilience of supply to over two million customers, ensuring the long term continuity of a clean and safe water supply at a regional scale. In contrast, adverse effects on air quality and landscape would be largely localised and temporary such that they would not be significant. However, where a solution is considered likely to result in substantial emissions to air, and/or involve extensive works within nationally designated landscapes (e.g. Solutions B, C and E), the potential for significant negative effects on these air quality and landscape has been identified.</p> <p>No change.</p>
	Manchester and Pennine Resilience	<p>States that some of the construction effects appear to be concluded to be minor on the basis of their temporary and short-term nature (for example, biodiversity and traffic disruption). However, when it comes to the wellbeing effects of the capital investment and the construction jobs created (presumably equally temporary and short term), this is considered to be a significant positive effect.</p>	<p>Disagree. Whilst works would be temporary, the scale of investment associated with the construction of the Manchester and Pennine Resilience solutions would be regionally, if not nationally, significant. In contrast, effects on biodiversity and transport would be localised and would therefore not be considered significant.</p> <p>No change.</p>

## FINAL

Consultee	Report Section/ Option/ Consultation Question	Consultee Response Summary	Response/Action
	Manchester and Pennine Resilience	Considers there to be an inconsistency in the treatment of geology in the assessment of Solution D. In the context of biodiversity effects, the potential effects on groundwater are discounted on the basis of geological investigations. However, in the context of impacts on the water environment, the document states that a detailed study of the geology of the route has not been undertaken and the relationship between ground and surface waters are based on assumptions.	<p>Comment noted. The findings of the SEA in respect of biodiversity reflect those of the HRA which states that geological investigations have indicated that the risk of works affecting groundwater bodies is minimal due to the dominance of low-permeability geological formations and the depth of the pipeline. In contrast, the effects in respect of water (SEA Objective 3) reflect the WFD Assessment which highlights that a <i>detailed</i> study of the geology of the tunnel route has not been undertaken at this stage such that in the context of that assessment, its methodology and regulatory requirements, some uncertainty remains.</p> <p>In this context, it is fully anticipated that a detailed geological study in support of Solution D would be undertaken at the project stage.</p> <p>No change.</p>
<b>Natural England</b>	Manchester and Pennine Resilience	Welcomes the SEA of the five solutions but states that their presentation is confusing.	<p>Comment noted. Without further information from Natural England, it is unclear how the solutions could be presented in a different manner.</p> <p>Sections 5.5 and 6.3 of the revised Environmental Report does however contain the summary of the assessment of all five solutions, along with the assessment of the preferred solution for Manchester and Pennine Resilience.</p> <p>No change.</p>
	Manchester and Pennine Resilience	Considers that the SEA does provide “pointers” to which of the solutions and their constituent options provide the greatest resilience benefit and which are most harmful to the environment.	<p>Comment noted.</p> <p>No change.</p>
	Option B2: Thames Water Trading Enabling Works	States that it would be helpful if the WRMP included an assessment of the effect of a potential transfer to Thames Water in terms of the effects outside United Utilities’ supply area (e.g. from	Comment noted. As set out in Section 6.3 of the Draft WRMP Environmental Report, United Utilities had agreed with Thames Water that any environmental impacts downstream of Lake Vyrnwy in the Severn and Thames catchments associated with a

**FINAL**

Consultee	Report Section/ Option/ Consultation Question	Consultee Response Summary	Response/Action
		new pipeline construction and transfer of water to the River Severn).	possible transfer would be assessed in Thames Water's Water Resources Management Plan.  Whilst water trading remains United Utilities' preference, a bulk transfer does not currently feature in Thames Water's (or any other water company's) emerging WRMP and therefore water trading is no longer being pursued as part of the Preferred Plan for WRMP19. Notwithstanding this, the assessment of Option B2 has been revised to reflect the findings of the Thames Water Draft WRMP Environmental Report (which considered the downstream effects of a transfer). This revised assessment is presented in Appendix D and Appendix F to this report.
<b>Lake District National Park Authority (LDNPA)</b>	Do you think that the Environmental Report has correctly identified the likely significant effects of the draft Water Resources management Plan? If not, what other significant effects do you think we have missed, and why?	Yes, although the LDNPA would be keen to work with United Utilities in the future to understand in more detail the impact upon the World Heritage Site's Outstanding Universal Value.	Comment noted. The assessment of both feasible and preferred WRMP options, as well as the Manchester and Pennine Resilience solutions, has identified where there is the potential for effects on the Lake District National Park World Heritage Site. No change is therefore proposed at this stage.  United Utilities welcomes the opportunity to work with the LDNPA on future WRMPs.
	Do you agree with the conclusions of the Environmental Report and the recommendations for avoiding, reducing or off-setting significant effects associated with the implementation of the draft Water Resources Management Plan? If not, what do	Yes.	Comment noted.  No change.

## FINAL

Consultee	Report Section/ Option/ Consultation Question	Consultee Response Summary	Response/Action
	you think should be the key recommendations and why?		
	Do you agree with the proposed arrangements for monitoring the significant effects of the implementation of the Water Resources Management Plan? If not, what measures do you propose?	Yes. The LDNPA would be willing to work with United Utilities to develop indicators in relation to monitoring the impact of the WRMP on the Lake District National Park World Heritage Site and supports any approaches to using natural capital the company may take in the future to assess change in the natural assets of the Lake District.	Comment noted. United Utilities welcomes the opportunity to work with the LDNPA in finalising the monitoring framework for the WRMP.
<b>Natural Resources Wales (NRW)</b>	Section 6.5	Notes that the SEA has considered how the WRMP, in relation to United Utilities' operations in Wales, contributes to the objectives and goals of the Well-being of Future Generations (Wales) Act 2015 and Environment (Wales) Act 2016. States that for clarity, the company should summarise this information within the final plan.	Comment noted. As per this response, the information requested will be included in the final WRMP.
	Section 6.5	States that United Utilities should consider working with Thames Water and Severn Trent Water and other interested stakeholders to jointly investigate opportunities to improve the environment and contribute to the Welsh Government's wellbeing goals around Llyn Vyrnwy.	Comment noted. United Utilities would welcome the opportunity to work with other stakeholders in respect of Lake Vyrnwy.
	Section 6/ Option B2: Thames Water Trading Enabling Works	Notes that United Utilities' preferred plan includes supply schemes that could affect Wales including a trade to export water from Llyn Vyrnwy and a 30 MI/d third party supply at Hurlleston. States that if these options, or any other option, that could affect Wales are progressed further for the final plan, NRW would expect the company to consult NRW on any revised SEA Environmental Report.	Comment noted. Whilst water trading remains United Utilities' preference, a bulk transfer does not feature in Thames Water's (or any other water company's) emerging WRMP and therefore water trading is no longer being pursued as part of the preferred plan for WRMP19.  No change.

**wood.**

