



Ricardo
Energy & Environment



SEA Environmental Report

Yorkshire Water's Final Drought Plan 2019

Report for Yorkshire Water Services Limited

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Public

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Non-Technical Summary

Under the Water Industry Act 1991, Yorkshire Water Services Limited (YWSL) is required to prepare and update a Drought Plan (DP) every four years and three months. YWSL's previous Final DP was published in 2013. YWSL has subsequently prepared three draft drought plans (in 2017, 2018 and 2019). This Strategic Environmental Assessment (SEA) has been prepared in support of the development of YWSL's Final DP 2019. The DP provides a comprehensive statement of the actions YWSL will consider implementing during drought conditions to safeguard essential water supplies to customers and minimise environmental impact. It is consistent with YWSL's draft Water Resources Management Plan 2019 (WRMP), the objective of which is to set the strategic plan for the delivery of water resources to balance supply and demand over a 25 year period.

DPs encompass a number of drought options that will only be implemented if and when required. Each drought is different in terms of its severity, season, location and duration and each combination of these factors may require a different response in terms of measures. In the context of drought planning, individual drought options are taken to constitute alternatives. YWSL's Final DP 2019 comprises a total of 64 drought options.

SEA of certain plans and programmes is a statutory requirement under Directive 2001/42/EC, as transposed into UK law by the Environmental Assessment of Plans and Programmes Regulations 2004. The purpose of SEA is to provide high level and strategic protection of the environment by incorporating environmental considerations into the preparation of plans and policy. In the context of drought planning, SEA assists in the identification of the likely significant environmental effects of YWSL's drought management options and how any adverse impacts might be mitigated.

The SEA provides information on the relative environmental performance of alternatives, and is intended to make the decision-making process more transparent. The SEA can, therefore, be used to support the timing and implementation of drought options within the DP.

YWSL has also undertaken a Habitats Regulations Assessment (HRA) of its Final DP 2019, which has been carried out in parallel with the SEA and is reported separately in the HRA Screening Report. The HRA screening process identifies whether each drought option in the DP (either alone, in combination or with other plans or projects) is likely to have significant effects on the integrity of European designated sites, i.e. sites of international conservation importance. The findings of both the SEA and HRA have fed into the revision of the DP in an iterative process.

A SEA Scoping Report was issued in August 2016, and provided an opportunity for the statutory consultees to provide views on the proposed scope and level of detail of this SEA Environmental Report. Issues raised by consultees have been considered in preparing this report.

The findings of the SEA are presented within this Environmental Report, which accompanies YWSL's publication of the Final DP 2019.

Assessment Methodology

The assessment has been 'objectives-led'. SEA objectives have been derived from environmental objectives established in law, policy or other plans and programmes, and from a review of the baseline information. The SEA objectives have been categorised under the following topic areas: biodiversity, flora and fauna; population and human health; material assets and resource use; water; soil, geology and land use; air and climate; archaeology and cultural heritage; and landscape and visual amenity; and inter-relationships.

The overall findings of the SEA describe the extent to which objectives for each topic are met by each of the drought options.

The outputs of the assessment are a completed appraisal framework table for each drought option, and a colour coded summary matrix (ranging from major beneficial impacts to major adverse impacts) which provides a comparative assessment of the residual environmental effects of implementing each drought option (i.e. those impacts remaining after the implementation of mitigation measures).

A cumulative, or in-combination, assessment has also been undertaken which has involved examining the likely significant effects of each of the drought options in combination with each other and in combination with the implementation of other relevant plans and programmes.

Environmental Baseline

Urban areas in the west and south of Yorkshire are principally supplied from reservoirs in the Pennines. Reservoirs located in the Pennines and the valleys of the River Don, Aire, Wharfe, Calder, Nidd and Colne provide the largest upland sources of water in the region. YWSL operates over 100 impounding reservoirs of which two are major pumped storage reservoirs. The total storage capacity of all the supply reservoirs amounts to some 160,000 MI.

A review of the baseline and future environmental baseline was undertaken. The key sustainability issues from the review of the baseline conditions are summarised below.

Biodiversity, Fauna and Flora Key Issues

- The need to protect or enhance the region's biodiversity, particularly protected sites designated for nature conservation.
- The need to avoid activities likely to cause irreversible damage to natural heritage
- The need to take opportunities to improve connectivity between fragmented habitats.
- The need to control the spread of Invasive Non-Native Species (INNS). The need to engage more people in biodiversity issues so that they personally value biodiversity and know what they can do to help, including through recognising the value of the ecosystem services.

Population and Human Health Key Issues:

- The need to ensure water supplies remain affordable especially for deprived or vulnerable communities.
- The need to ensure continued improvements in levels of health across the region, particularly in urban areas and deprived areas.

- The need to ensure public awareness of drought conditions and importance of maintaining resilient, reliable public water supplies without the need for emergency drought measures.
- The need to ensure water quantity and quality is maintained for other users including tourists, recreational users and other users such as farmers.
- The need to ensure a balance between different aspects of the built and natural environment that will help to provide opportunities for local residents and tourists, including opportunities for access to recreation resources and the natural and historic environment.
- The need to accommodate an increasing population.
- Sites of nature conservation importance, heritage assets, water resources, important landscapes and public rights of way contribute to recreation and tourism opportunities and subsequently health and well-being and the economy.

Material Assets and Resource Use Key Issues

- The need to minimise the consumption of resources, including water and energy.
- The need to reduce the total amount of waste produced in the region, from all sources, and to reduce the proportion of this waste sent to landfill.
- The need to continue to reduce leakage from the water supply system.
- Daily consumption of water is higher than the national average in the area and consequently there is a continued need to encourage more efficient water use.

Water Key Issues

- The need to further improve the quality of the region's river, estuarine and coastal waters taking into account WFD status targets.
- The need to maintain the quantity and quality of groundwater resources taking into account WFD status targets.
- The need to improve the resilience, flexibility and sustainability of water resources in the region, particularly in light of potential climate change impacts on surface waters and groundwaters.
- The need to ensure sustainable abstraction to protect the water environment.
- The need to ensure that people understand the value of water.

Flooding is not viewed as a key issue for the SEA water topic, because none of the drought options involve the construction of permanent physical infrastructure within areas at risk of flooding.

Soil, Geology and Landscape Key Issues

- The need to protect geological features of importance and maintain and enhance soil function and health.
- The need to manage the land more holistically at the catchment level, benefitting landowners, other stakeholders, the environment and sustainability of natural resources (including water resources).
- The need to make use of previously developed land (brownfield land) and to reduce the prevalence of derelict land in the region.

Air and Climate Key Issues

- The need to reduce air pollutant and greenhouse emissions and limit air emissions to comply with air quality standards.
- The need to mitigate against climate change through the reduction in greenhouse gas emissions in order to contribute to risk reduction over the long term.
- The need to adapt to the impacts of climate change for example through, sustainable water resource management, water use efficiencies, specific aspects of natural ecosystems (e.g. connectivity) as well as accommodating potential opportunities of climate change.

Archaeology and Cultural Heritage Key Issues

- The need to conserve or enhance sites of archaeological importance and cultural heritage interest, particularly those which are sensitive to the water environment.

Landscape and Visual Amenity Key Issues

- The need to protect and improve the natural beauty of the region's National Parks, AONBs, and other areas of natural beauty.
- It is envisaged that landscape and designated sites will be maintained and enhanced for the enjoyment of the public.

Inter-relationships

It is noted that there are inter-relationships between SEA topics. These include impacts of changes to water flows and quality on biodiversity, the economy, recreation, tourism, navigation, cultural heritage and landscape. Inter-relationships that result in changes to individual effects are considered by evaluation of synergistic effects throughout the assessment.

Findings of the assessments



The findings of the SEA are summarised below. **Table NTS1** sets out the SEA topics and objectives which are identified in **Tables NTS3** and **NTS4**.

For each SEA objective, a residual effects assessment was determined against a significance matrix (**Table NTS2**) which took into account the value/sensitivity of the receptor (e.g. air quality, river water quality, landscape value) and the magnitude of the assessed effect. This significance matrix comprised effects from 'major beneficial' to 'major adverse'. This colour coding was used to complete the columns for residual effects in the visual evaluation matrices summarised in **Tables NTS3** and **NTS4**.

Table NTS1 SEA topics and objectives

SEA Topic	SEA Objective
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over-abstraction on sensitive sites, habitats and species) and consider adaptability to climate change.
	1.2 To avoid introducing or spreading INNS.
Population and human health	2.1 To protect and improve health and well-being and reduce inequalities
	2.2 To protect and enhance opportunities for formal and informal recreation
	2.3 To promote a sustainable economy and thriving communities with good access to the services they need.
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.
Water	4.1 To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies.
	4.2 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.
	4.3 To ensure appropriate and sustainable management of abstractions (or compensation flow) to maintain water supplies whilst protecting ecosystem functions that rely on water resources.
Soil, geology and land use	5.1 To protect and enhance the quality and quantity of soils and to protect and enhance geodiversity.
Air and Climate	6.1 To maintain and improve air quality.
	6.2 To reduce greenhouse gas emissions.
	6.3 To consider the need for adaptive measures for climate change.
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.

Table NTS2 Significance Matrix

Significance of Effect		Value/sensitivity of receptor		
		High	Medium	Low
Effect magnitude (includes scale of effect)	High	Major Beneficial / Major Adverse	Major Beneficial / Major Adverse	Moderate Beneficial / Moderate Adverse
	Medium	Major Beneficial / Major Adverse	Moderate Beneficial / Moderate Adverse	Minor Beneficial / Minor Adverse
	Low	 / 	Minor Beneficial / Minor Adverse	Negligible

 = Significance of effect dependent on value/sensitivity of receptor and magnitude

The definitions for 'significance' ratings as identified in the table above are provided below:

Major - effects represent key factors in the decision-making process. They are generally associated with sites and features of international, national or regional importance. If adverse, such resources/features are generally those which cannot be replaced or relocated.

Moderate - effects are likely to be important considerations at a regional or district scale. If adverse, they are likely to be of potential concern.

Minor - effects are not likely to be decision-making issues. Nevertheless, the cumulative effect of such issues may lead to an increase in the overall effects on a particular area or on a particular resource.

Negligible - effects which are not perceptible, being within normal bounds of variation or the margin of forecasting error.

Demand side options

Demand side measures serve to reduce pressure on water resources by reducing customer demand for water, and therefore reducing abstraction at source (Table NTS3). This will in turn contribute to reducing the amount of energy needed for water abstraction, treatment and distribution. Demand side measures typically provide beneficial effects such as maintaining surface and groundwater flows and promoting efficient and sustainable use of water. Adverse effects on landscaping and horticulture businesses may be associated with sprinkler and temporary use bans, and impacts on businesses due to water use restrictions would increase in severity and spread to other sectors (e.g. recreation and tourism) should ordinary or emergency drought orders be implemented. Impacts from implementation of drought orders could also extend to archaeology and cultural heritage, due to the influence on the setting of cultural assets. Minor adverse effects may also be associated with emissions of air pollutants and greenhouse gas emissions from leakage reduction programme activities.

Supply side options

Supply side options are mainly associated with impacts on surface waters and their ecology (**Table NTS4**). Reductions in surface water levels would also have the potential for adverse impacts on water quality, recreation and on landscape and visual amenity. The river abstraction options were found to have the greatest beneficial effects due to the large volumes of water they would provide, while two reservoir options in the North area were found to have the least adverse effects. The assessment has found that adverse effects associated with the long-term options typically relate to construction of assets required to implement the options. As such, there would be adverse effects on material and resource use, emissions and construction impacts on biodiversity, flora and fauna.

Cumulative Effects

The potential of YW's drought plan to interact with other plans, programmes or large projects was reviewed and it was determined that no cumulative effects will occur. However, there is potential for a number of YW's supply side options to produce cumulative effects.

Mitigation and Monitoring

Consideration of mitigation measures has been an integral part of the SEA process. The SEA appraisals have been based on residual impacts, i.e. those impacts likely to remain after the implementation of reasonable mitigation. Mitigation measures have been identified for each option on a case by case basis and are presented in the assessment framework appraisal tables.

During implementation of one or more drought options, appropriate monitoring will be undertaken to track any potential environmental effects which will in turn trigger deployment of suitable and practicable mitigation measures. Prior to implementation, YWSL will review the specific requirements for environmental monitoring in consultation with the Environment Agency and Natural England.

Consultation

The Draft DP and the SEA Environmental Report were issued to Defra in November 2017 and published on YWSL's website. A seven-week public consultation was held between 22 January and 19 March 2018.

The statutory consultation bodies (Environment Agency, Natural England and Historic England), as well as the public, were invited to express their views on the Environmental Report and were able to use it as a reference point in expressing their views on YWSL's Draft Drought Plan 2017.

A Statement of Response was prepared which explained the changes YWSL will make to the Drought Plan (and accompanying documents, including the SEA) as a result of the consultation. This was published on YWSL's website in May 2018. Comments that were received through this consultation process have been taken into consideration in preparing subsequent updates to the SEA.

Following the period of public consultation (ending March 2018) and preparation of the Statement of Response, YWSL's Revised Draft DP (rdDP) was published in June 2018. However, in December 2018, YWSL applied for two new drought permits which were not previously featured in the dDP or rdDP. This constituted a material change to the Drought Plan and consequently, YWSL issued a formal letter to the Environment Agency, Natural England and Historic England, with its proposed approach for

updating the revised draft Drought Plan. The Draft DP 2019 and the SEA Environmental Report were issued to Defra in June 2019 and published on YWSL's website. A six-week public consultation was held between 15 August and 26 September 2019. A further Statement of Response to the comments received during the consultation, and how they were addressed, has been prepared and accompanies the publication of the Final DP 2019.

Following the publication of the Final DP 2019, YWSL will also publish a 'Post Adoption' Statement setting out how the SEA, and any views expressed by the consultation bodies or the public, influenced the Final DP 2019.

When the DP is implemented during an actual drought event, YWSL will monitor its effects on the environment, helping to ensure that the potential impacts identified in the SEA are considered in practice.

Table NTS3 Visual Evaluation Matrix Summary for Demand Side Options

Option		SEA Topics and Objectives																Commentary
		Biodiversity		Population and Human Health			Material Assets and Resource Use		Water			Soil, Geology and Land Use	Air and Climate			Archaeology and Cultural Heritage	Landscape	
		1.1	1.2	2.1	2.2	2.3	3.1	4.1	4.2	4.3	5.1	6.1	6.2	6.3	7.1	8.1		
Drought publicity campaigns	Adverse																No adverse impacts have been identified for this drought measure.	
	Beneficial	Green		Green		Green	Green	Green	Green				Green	Blue	Blue	Minor beneficial impacts include reducing demand for water and securing essential supplies of water for customers/businesses. Reducing the demand for water will also have minor beneficial effects on maintaining surface water and groundwater levels/flows, sustainable management of abstraction and enabling long term improvements in water efficiency. Reducing water demand will also help to improve the resilience of water supplies to drought.		
Emergency Drought Order	Adverse			Red	Red	Red							Red	Blue	Blue	Major adverse effects are predicted for population and human health, including potential drinking water quality issues, impacts for water-dependent recreational assets and businesses/economy. An emergency drought order is not consistent with sustainable resource use or providing secure water supplies for people and businesses, and will cause significant disruption to domestic and commercial life. Other adverse effects include potential minor impacts on the setting of certain heritage assets and visual amenities.		
	Beneficial	Green		Green			Green	Green	Green				Blue	Blue	Blue	Moderate to minor beneficial effects include a reduction in the demand for water, maintenance of water flows/levels and maintenance of a water supply to consumers in an extreme drought.		
Increased leakage detection and repair activity	Adverse	Blue			Blue		Blue	Blue				Yellow	Yellow			Minor adverse effects identified are associated with emissions to air (air pollutants and greenhouse gas emissions) as a result of construction activities and vehicle movements. All other adverse effects identified are negligible.		
	Beneficial	Green		Green		Green	Blue	Blue	Green	Green			Green	Green		Minor to moderate beneficial effects have been identified with respect to sustainable provision of water through water savings that would have otherwise been lost to leakage after having been abstracted at source. These effects are generally considered to be long term and permanent in nature.		
Introduction of a drought order to ban non-essential water uses	Adverse				Yellow	Red										Moderate to major adverse effects associated with restriction of water use and impacts on recreation and tourism assets, the setting of heritage assets and local visual amenities. Restrictions of water use and impacts on businesses/economy could lead to major adverse effects.		
	Beneficial	Green		Green			Green	Green	Green				Green	Blue	Blue	Major beneficial effects as a result of maintenance of supply to consumers at times of drought. Minor beneficial effects in terms of the effects of reducing demand and improving the resilience of water supplies to drought, maintaining surface water and groundwater levels/flows and sustainable management of abstraction and supporting overall water efficiency.		
Introduction of temporary use ban	Adverse				Yellow	Orange										A moderate adverse effect has been identified in terms of promoting a sustainable economy due to the effect of the ban on some businesses (e.g. landscaping/horticulture) that rely on domestic water-using appliances/uses (e.g. sprinklers/hosepipes).		
	Beneficial	Green		Green			Green	Green	Green				Green	Blue	Blue	Moderate beneficial impacts include reducing the demand for water and securing supply of water for customers/businesses. Reducing the demand for water will also have minor beneficial effects on maintaining surface water and groundwater levels/flows, sustainable management of abstraction and enabling long term improvements in water efficiency. Reducing water demand will also help to improve the resilience of water supplies to drought.		

Table NTS4 Visual Evaluation Matrix Summary for Supply Side Options

Option		SEA Topics and Objectives															Commentary
		Biodiversity		Population and Human Health			Material Assets and Resource Use	Water			Soil, Geology and Land Use	Air and Climate		Archaeology and Cultural Heritage	Landscape		
		1.1	1.2	2.1	2.2	2.3	3.1	4.1	4.2	4.3	5.1	6.1	6.2	6.3	7.1	8.1	
North Area Reservoirs: Drought Permits/Orders																	
North Area Reservoir 2	Adverse	Yellow			Yellow			Light Blue	Red							Yellow	Major adverse impact on flows and levels in receiving watercourses. This would be associated with a minor adverse impact on water quality, moderate adverse impacts on white-clawed crayfish and minor adverse impacts on fish and other NERC and notable species. A reduction in the water levels would also result in a minor adverse impact on the landscape setting of several national trails that run alongside the reach.
	Beneficial			Green		Green	Green			Light Blue				Green			Minor beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with use of existing infrastructure and the appropriate and sustainable management of water supplies.
North Area Reservoir 1	Adverse	Red			Light Blue			Yellow	Red		Light Blue					Yellow	Major adverse impact on flows and levels in receiving watercourses. This would be associated with a minor adverse impact on water quality and a major adverse impact on a number of NERC and notable species. A reduction in the water levels would also result in a minor adverse impact on the landscape setting of several national trails that run alongside the reach.
	Beneficial			Green		Green	Green			Green				Green			Minor beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with use of existing infrastructure and the appropriate and sustainable management of water supplies.
North Area Reservoir 4	Adverse	Orange			Light Blue			Yellow	Red							Light Blue	Major adverse effect on river flows and levels. Moderate adverse effects on biodiversity, where NERC fish and macroinvertebrate species may be affected by the drought option. Due to the option there may be some minor adverse impacts on geomorphology including bank erosion when higher flows return. The visual amenity of the Nidderdale AONB may be adversely affected due to lower water levels.
	Beneficial			Green		Green	Green			Green				Green			Moderate beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with use of existing infrastructure and the appropriate and sustainable management of water supplies.
North Area Reservoir 6	Adverse	Orange			Light Blue			Light Blue	Red								Major adverse impact on flows and levels in receiving watercourses. This would be associated with a negligible adverse impact on water quality and a moderate adverse impact on a number of NERC and notable species. A reduction in the water levels would also result in a negligible adverse impact on canoeing activities in the impacted reaches.
	Beneficial			Green		Green	Green			Green				Green			Minor beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with use of existing infrastructure, the appropriate and sustainable management of water supplies and bolstering resilience to climate change.
North Area Reservoir 3	Adverse	Red			Light Blue			Orange	Red							Light Blue	Major adverse effect on river flows and levels. There would be an associated moderate impact on water quality. These impacts are assessed as resulting in potential major impacts to brown trout and moderate impacts to other NERC and notable species, including White clawed crayfish. There would also be negligible impacts on recreation, angling and visual amenity due to water level reduction.

Option	SEA Topics and Objectives															Commentary	
	Biodiversity		Population and Human Health			Material Assets and Resource Use		Water			Soil, Geology and Land Use		Air and Climate		Archaeology and Cultural Heritage		Landscape
	1.1	1.2	2.1	2.2	2.3	3.1	4.1	4.2	4.3	5.1	6.1	6.2	6.3	7.1	8.1		
Beneficial																Minor beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with use of existing infrastructure and the appropriate and sustainable management of water supplies.	
North West Area Reservoirs: Drought Permits/Orders																	
North Area Reservoir 4	Adverse															Major adverse impact on flow levels in Denholme Beck. This would be associated with a minor adverse impact on water quality and a moderate adverse impact on a number of NERC and notable species. A reduction in the flow level of Denholme Beck would also result in a minor adverse impact on the landscape setting of several national trails that run alongside the reach.	
	Beneficial															Minor beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with use of existing infrastructure and moderate beneficial impacts associated with the appropriate and sustainable management of water supplies.	
North Area Reservoir 6	Adverse															Major adverse impact on water flows and levels in Eldwick Beck. This would be associated with a minor adverse impact on water quality and a number of NERC and Notable species due to the loss of habitat and the stranding of individuals. The reduction in the flow level of Eldwick Beck would also result in a minor adverse impact on the landscape setting of Millennium Way and Dales Way Link national trails, which run alongside the impacted reaches.	
	Beneficial															Minor beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with use of existing infrastructure the appropriate and sustainable management of water supplies.	
North Area Reservoir 10	Adverse															Major adverse impact on water flows and levels in Embassy Beck. This would be associated with a minor adverse impact on water quality and a moderate adverse impact on a number of NERC and notable species due to fragmentation of habitats, increased mortality and changes in morphology or behaviour.	
	Beneficial															Minor beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with use of existing infrastructure and moderate beneficial impacts associated with the appropriate and sustainable management of water supplies.	
North Area Reservoir 5	Adverse															Major adverse impact on water flows and levels in Hewenden Beck. This would be associated with a moderate adverse impact on water quality and a moderate adverse impact on a number of NERC and notable species. A reduction in the flow level of Hewenden Beck would also result in a minor adverse impact on the landscape setting of several national trails that run alongside the reach. There is a minor (uncertain) potential impact on an organised angling club on the impacted reaches.	
	Beneficial															Minor beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with use of existing infrastructure, and moderate beneficial impacts associated with the appropriate and sustainable management of water supplies.	

Option		SEA Topics and Objectives															Commentary	
		Biodiversity		Population and Human Health			Material Assets and Resource Use		Water			Soil, Geology and Land Use	Air and Climate			Archaeology and Cultural Heritage		Landscape
		1.1	1.2	2.1	2.2	2.3	3.1	4.1	4.2	4.3	5.1	6.1	6.2	6.3	7.1	8.1		
North Area Reservoir 2	Adverse	Yellow			Light Blue			Yellow	Red							Yellow	Major adverse impact on water flows and levels in Leeming Water. This would be associated with a moderate adverse impact on water quality and a moderate adverse impact on a number of NERC and notable species. A reduction in the flow level of Leeming Water would also result in a minor adverse impact on the landscape setting of Calder/Aire Link and Bronte Way national trails.	
	Beneficial			Green		Green	Green			Green				Green			Minor beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with use of existing infrastructure and moderate beneficial impacts associated with the appropriate and sustainable management of water supplies.	
North Area Reservoir 3	Adverse	Yellow			Light Blue			Yellow	Red							Yellow	Major adverse impact on water flows and levels in Moorhouse Beck. This would be associated with a moderate adverse impact on water quality and a moderate adverse impact on a number of NERC and notable species. A reduction in the flow level of Moorhouse Beck would also result in a minor adverse impact on the landscape setting of the Calder/Aire Link and Bronte Way national trails.	
	Beneficial			Green		Green	Green			Green				Green			Minor beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with use of existing infrastructure and moderate beneficial impacts associated with the appropriate and sustainable management of water supplies.	
North Area Reservoir 7	Adverse	Yellow			Light Blue			Yellow	Red							Yellow	Major adverse impact on water flows and levels in Jum Beck. This would be associated with a minor adverse impact on water quality and a moderate impact on a number of NERC and notable species due to the stranding of individuals or groups; deterioration or loss of habitats; fragmentation of habitats; increased mortality; and changes in morphology or behaviour.	
	Beneficial			Green		Green	Green			Green				Green			Minor beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with use of existing infrastructure and moderate beneficial impacts associated with the appropriate and sustainable management of water supplies.	
North Area Reservoir 9	Adverse	Yellow			Light Blue			Yellow	Red							Yellow	Major adverse impact on water flows and levels in Silsden Beck. This would be associated with a minor adverse impact on water quality and a moderate adverse impact on a number of NERC and notable species. A reduction in the flow level of Slisden Beck would also result in a minor adverse impact on the landscape setting of Millennium Way national trail which runs alongside Weecher Brow Beck.	
	Beneficial			Green		Green	Green			Green				Green			Minor beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. Drought option also delivers minor beneficial effects associated with use of existing infrastructure and moderate beneficial impacts associated with the appropriate and sustainable management of water supplies.	
North Area Reservoir 1	Adverse	Yellow			Yellow			Yellow	Red								Major adverse impact on water flows and levels in the River Worth. This would be associated with a minor adverse impact on water quality and a moderate adverse impact on a number of NERC and notable species. A reduction in the flow level would also result in a moderate impact on the extensive non-club administered angling along the River Worth.	

Option	SEA Topics and Objectives																Commentary
	Biodiversity		Population and Human Health			Material Assets and Resource Use		Water			Soil, Geology and Land Use		Air and Climate		Archaeology and Cultural Heritage	Landscape	
	1.1	1.2	2.1	2.2	2.3	3.1	4.1	4.2	4.3	5.1	6.1	6.2	6.3	7.1	8.1		
	Beneficial																Minor beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with use of existing infrastructure and moderate beneficial impacts associated with the appropriate and sustainable management of water supplies.
North Area Reservoir 11	Adverse																Minor adverse impact on water flows and levels in the River Dibb. This would be associated with a minor adverse impact on water quality, and a moderate adverse impact on a number of NERC and notable species. The minor reduction in flows and levels would have a minor impact on casual angling in the River Dibb.
	Beneficial																The implementation of this drought option would be associated with minor beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with use of existing infrastructure and moderate beneficial impacts associated with the appropriate and sustainable management of water supplies.
North Area Reservoir 8	Adverse																Major adverse impact on water flows and levels in Weecher Brow Beck. This would be associated with a minor adverse impact on water quality, and a moderate adverse impact on a number of NERC and notable species. A reduction in the flow level of Weecher Brow Beck would also result in a minor adverse impact on the landscape setting of Millennium Way National Trail which runs alongside Weecher Brow Beck.
	Beneficial																Minor beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with use of existing infrastructure and moderate beneficial impacts associated with the appropriate and sustainable management of water supplies.
Calder Area Reservoirs: Drought Permits/Orders																	
Calder Area Reservoir 20	Adverse																Major adverse impact on water levels and flows in Brow Grains Dyke. This would be associated with a moderate adverse impact on water quality and on a number of NERC and notable species. There would also be a minor adverse effect on casual angling in the reach.
	Beneficial																Minor beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with use of existing infrastructure and the appropriate and sustainable management of water supplies.
Calder Area Reservoir 21	Adverse																Major adverse impact on water levels and flows in Hoyle House Clough. This would be associated with moderate adverse impacts on water quality and flora, fauna and biodiversity, particularly brown trout.
	Beneficial																Minor beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with use of existing infrastructure and the appropriate and sustainable management of water supplies.
Calder Area Reservoir 11	Adverse																Major adverse impact on water levels and flows in the receiving watercourses. This would be associated with a minor adverse impact on water quality and a moderate adverse impact on brown trout, otter and grayling. A reduction in water levels would also result in a negligible adverse impact on the landscape setting of Calderdale Way National Trail and an adverse impact on angling.

Option	SEA Topics and Objectives																Commentary
	Biodiversity		Population and Human Health			Material Assets and Resource Use		Water			Soil, Geology and Land Use		Air and Climate		Archaeology and Cultural Heritage	Landscape	
	1.1	1.2	2.1	2.2	2.3	3.1	4.1	4.2	4.3	5.1	6.1	6.2	6.3	7.1	8.1		
	Beneficial																Minor beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with use of existing infrastructure and the appropriate and sustainable management of water supplies.
Calder Area Reservoir 8	Adverse																Major adverse impact on water levels and flows in the River Holme. This would be associated with a moderate adverse impact on water quality and a moderate adverse impact on a number of NERC and notable species. There would also be minor adverse effects on angling activities in the impacted reaches.
	Beneficial																Minor beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with use of existing infrastructure and the appropriate and sustainable management of water supplies.
Calder Area Reservoir 19	Adverse																Major adverse impact on water levels and flows in the receiving watercourses. This would be associated with a minor adverse impact on water quality and a moderate adverse impact on a number of NERC and notable species. A reduction in water levels would also result in a minor adverse impact on the landscape setting of the Kirklees Way National Trail and a moderate adverse impact on an organised angling club.
	Beneficial																Minor beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with use of existing infrastructure and the appropriate and sustainable management of water supplies.
Calder Area Reservoir 22	Adverse																Major adverse impact on water levels and flows in Bradley Brook. This would be associated with a minor adverse impact on water quality and a moderate adverse impact on a number of NERC and notable species.
	Beneficial																Minor beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with use of existing infrastructure and the appropriate and sustainable management of water supplies.
Calder Area Reservoir 7	Adverse																Major adverse impact on water levels and flows in the receiving watercourses. This would be associated with a minor adverse impact on water quality and a moderate adverse impact on a number of NERC and notable species. Minor adverse impacts on the angling quality of the impacted reaches would also result.
	Beneficial																Minor beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with use of existing infrastructure and the appropriate and sustainable management of water supplies.
Calder Area Reservoir 1	Adverse																Moderate adverse impact on water levels and flows in the Gorple Lower Brook and Graining Water. This would be associated with a minor adverse impact on water quality and a moderate adverse impact on brown trout. A reduction in water levels would also result in a negligible adverse impact on the landscape setting of the Pennine Bridleway National Trail.
	Beneficial																Minor beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with use of existing infrastructure and the appropriate and sustainable management of water supplies.

Option		SEA Topics and Objectives															Commentary		
		Biodiversity		Population and Human Health			Material Assets and Resource Use		Water			Soil, Geology and Land Use		Air and Climate				Archaeology and Cultural Heritage	Landscape
		1.1	1.2	2.1	2.2	2.3	3.1	4.1	4.2	4.3	5.1	6.1	6.2	6.3	7.1	8.1			
Calder Area Reservoir 5	Adverse	Orange			Yellow			Yellow	Red							Yellow	Major adverse impact on water levels and flows in the receiving watercourses. This would be associated with a minor adverse impact on water quality and a moderate adverse impact on brown trout. A reduction in water levels would also result in a minor adverse impact on the landscape setting of the Calderdale Way National Trail. Minor adverse impacts on the angling quality of the impacted reaches would also result.		
	Beneficial			Green		Green	Green			Green			Green				Minor beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with use of existing infrastructure and moderate beneficial impacts associated with the appropriate and sustainable management of water supplies.		
Calder Area Reservoir 9	Adverse	Orange			Light Blue			Yellow	Red								Major adverse impact on water levels and flows in the River Ribble. This would be associated with a minor adverse impact on water quality and a moderate adverse impact on a number of NERC and notable species. A reduction in water levels would also result in a negligible adverse impact on the casual angling activities.		
	Beneficial			Green		Green	Green			Green			Green				Minor beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with use of existing infrastructure and minor beneficial impacts associated with the appropriate and sustainable management of water supplies.		
Calder Area Reservoir 17	Adverse	Orange			Orange			Light Blue	Red							Yellow	Major adverse impact on water levels and flows in the Huddersfield Canal. This would be associated with a negligible adverse impact on water quality and a moderate adverse impact on white-clawed crayfish. A reduction in water levels would also result in a minor adverse impact on the landscape setting of the Kirklees Way and the Pennine Way National Trails and a moderate adverse impact on angling.		
	Beneficial			Green		Green	Green			Green			Green				Minor beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with use of existing infrastructure and the appropriate and sustainable management of water supplies.		
Calder Area Reservoir 4	Adverse	Orange			Yellow			Yellow	Red							Yellow	Major adverse impact on water levels and flows in Hebble Brook. This would be associated with a minor adverse impact on water quality and a moderate adverse impact on a number of NERC and notable species. A reduction in water levels would also result in a minor adverse impact on the landscape setting of the Calderdale National Trail and a minor adverse impact on angling.		
	Beneficial			Green		Green	Green			Green			Green				Minor beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with use of existing infrastructure and the appropriate and sustainable management of water supplies.		
Calder Area Reservoir 18	Adverse	Orange			Orange			Yellow	Red							Yellow	Major adverse impact on water levels and flows in the River Colne. This would be associated with a minor adverse impact on water quality and a moderate adverse impact on a number of NERC and notable species. A reduction in water levels would also result in a minor adverse impact on the landscape setting of the Kirklees Way National Trail and a moderate adverse impact on angling.		
	Beneficial			Green		Green	Green			Green			Green				Minor beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with use of existing infrastructure and moderate beneficial impacts associated with the appropriate and sustainable management of water supplies.		

Option		SEA Topics and Objectives																Commentary	
		Biodiversity		Population and Human Health			Material Assets and Resource Use		Water			Soil, Geology and Land Use		Air and Climate			Archaeology and Cultural Heritage		Landscape
		1.1	1.2	2.1	2.2	2.3	3.1	4.1	4.2	4.3	5.1	6.1	6.2	6.3	7.1	8.1			
Calder Area Reservoir 12	Adverse	Orange			Orange			Yellow	Red										Major adverse impact on water levels and flows in the receiving watercourses. This would be associated with a minor adverse impact on water quality and a moderate adverse impact on brown trout and otter. A reduction in water levels would also result in a negligible adverse impact on the landscape setting of the Calderdale Way National Trail and a moderate adverse impact on angling.
	Beneficial			Green		Green	Green			Green				Green					Minor beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with use of existing infrastructure and the appropriate and sustainable management of water supplies.
Calder Area Reservoir 15	Adverse	Orange			Yellow			Yellow	Red									Yellow	Major adverse impact on water levels and flows in Black Brook. This would be associated with a minor (uncertain) adverse impact on water quality and a moderate adverse impact on a number of NERC and Notable species. A reduction in water levels would also result in a minor adverse impact on the landscape setting of the Calderdale National Trail and a minor adverse impact on angling.
	Beneficial			Green		Green	Green			Green				Green					Minor beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with use of existing infrastructure and the appropriate and sustainable management of water supplies.
Calder Area Reservoir 16	Adverse	Orange						Yellow	Red										Major adverse impact on water levels and flows in Bradshaw Clough. This would be associated with a minor adverse impact on water quality and a moderate adverse impact on a number of NERC and Notable species.
	Beneficial			Green		Green	Green			Green				Green					Minor beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with use of existing infrastructure and the appropriate and sustainable management of water supplies.
Calder Area Reservoir 10	Adverse	Orange			Orange			Orange	Red									Yellow	Major adverse impact on water levels and flows in the receiving watercourses. This would be associated with a moderate adverse impact on water quality and a moderate adverse impact on brown trout. A reduction in water levels would also result in a minor adverse impact on the landscape setting of the Calderdale Way National Trail and a moderate adverse impact on angling.
	Beneficial			Green		Green	Green			Green				Green					Moderate beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with use of existing infrastructure and the appropriate and sustainable management of water supplies.
Calder Area Reservoir 13	Adverse	Orange			Yellow			Yellow	Red									Yellow	Major adverse impact on water levels and flows in the Turvin Clough. This would be associated with a minor adverse impact on water quality and a moderate adverse impact on WFD status and brown trout. A reduction in water levels would also result in a minor adverse impact on the landscape setting of the Calderdale Way National Trail and a minor adverse impact on angling.
	Beneficial			Green		Green	Green			Green				Green					Minor beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with use of existing infrastructure and the appropriate and sustainable management of water supplies.
Calder Area Reservoir 2	Adverse	Orange			Orange			Orange	Red										Major adverse impact on water levels and flows in the receiving watercourses. This would be associated with a moderate adverse impact on water quality and a moderate adverse impact on a number of NERC and notable species. A reduction in water levels would also result in a negligible adverse impact on the landscape setting of Calder/Aire Link National Trail and a moderate adverse impact on angling.

Option	SEA Topics and Objectives																Commentary
	Biodiversity		Population and Human Health			Material Assets and Resource Use		Water			Soil, Geology and Land Use		Air and Climate		Archaeology and Cultural Heritage	Landscape	
	1.1	1.2	2.1	2.2	2.3	3.1	4.1	4.2	4.3	5.1	6.1	6.2	6.3	7.1	8.1		
	Beneficial																Moderate beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with use of existing infrastructure and the appropriate and sustainable management of water supplies.
Calder Area Reservoir 6	Adverse																Major adverse impact on water levels and flows in Luddenden Brook. This would be associated with a minor adverse impact on water quality and a moderate adverse impact on a number of NERC and notable species. A reduction in water levels would also result in a minor adverse impact on the landscape setting of the Calderdale National Trail and a minor adverse impact on angling.
	Beneficial																Minor beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with use of existing infrastructure and the appropriate and sustainable management of water supplies.
Calder Area Reservoir 3	Adverse																Major adverse impact on water levels and flows in the receiving watercourses. This would be associated with a moderate adverse impact on water quality and a moderate adverse impact on <i>Helophorus strigifrons</i> . A reduction in water levels would also result in a negligible adverse impact on the landscape setting of the Calder/Aire Link National Trail and a moderate adverse impact on angling.
	Beneficial																Moderate beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with use of existing infrastructure and the appropriate and sustainable management of water supplies.
Calder Area Reservoir 14	Adverse																Moderate adverse impact on water levels and flows across the receiving water courses. This would be associated with a minor adverse impact on water quality and a moderate adverse impact on brown trout. A reduction in water levels would also result in a minor adverse impact on the landscape setting of the Calderdale Way National Trail and a minor adverse impact on angling.
	Beneficial																Minor beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with use of existing infrastructure and the appropriate and sustainable management of water supplies.
South Area Reservoirs: Drought Permits/Orders																	
South Area Reservoir 5	Adverse																Major adverse impact on water flows and levels in River Loxley. This would be associated with a moderate adverse impact on water quality and a moderate adverse impact on a number of NERC and notable species. A reduction in the water level would also result in a minor adverse geomorphological impacts associated with the desiccation of river banks.
	Beneficial																Moderate beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with use of existing infrastructure and bolstering resilience to climate change. There would also be minor beneficial impacts associated with the appropriate and sustainable management of water supplies.
South Area Reservoir 4	Adverse																Moderate adverse impact on flow levels in the impacted reaches. This would be associated with a moderate adverse impact on water quality and a moderate adverse impact on a number of NERC and notable species. A reduction in the flow level would also result in a minor adverse impact on the landscape setting of several national trails that run alongside the river reaches.

Option	SEA Topics and Objectives																Commentary
	Biodiversity		Population and Human Health			Material Assets and Resource Use		Water			Soil, Geology and Land Use		Air and Climate		Archaeology and Cultural Heritage	Landscape	
	1.1	1.2	2.1	2.2	2.3	3.1	4.1	4.2	4.3	5.1	6.1	6.2	6.3	7.1	8.1		
	Beneficial																Minor beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with use of existing infrastructure and bolstering resilience to climate change. There would also be moderate beneficial impacts associated with the appropriate and sustainable management of water supplies.
South Area Reservoir 6	Adverse																Major adverse impact on flow levels in the River Rivelin. This would be associated with a minor adverse impact on water quality and a moderate adverse impact on a number of NERC and notable species. A reduction in the flow level would potentially impact the informal angling and canoeing on the impacted reaches, however, these impacts would be negligible under drought conditions.
	Beneficial																Minor beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with use of existing infrastructure and the appropriate and sustainable management of water supplies.
South Area Reservoir 1	Adverse																Major adverse impact on water flows and levels in the impacted reaches. This would be associated with a moderate adverse impact on water quality and a minor adverse impact on a number of NERC and notable species. A reduction in the water levels would also result in a minor adverse impact on informal angling and a fishery.
	Beneficial																Minor beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with use of existing infrastructure and the appropriate and sustainable management of water supplies.
South Area Reservoir 3	Adverse																Major adverse impact on water flows and levels in the Little Don and the River Don. This would be associated with a moderate adverse impact on water quality and a moderate adverse impact on a number of NERC and notable species. A reduction in the water levels would also result in a minor adverse impact on canoeing and angling activities on the impacted reaches.
	Beneficial																Moderate beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with use of existing infrastructure and the appropriate and sustainable management of water supplies.
South Area Reservoir 2	Adverse																Major adverse impact on flow levels in the River Don. This would be associated with a moderate adverse impact on water quality and a moderate adverse impact on a number of NERC and notable species. A reduction in the flow level would also result in a minor adverse impact on the landscape setting of several national trails that run alongside the reach. Angling activities on the reaches would also be subject to a negligible adverse impact.
	Beneficial																Minor beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with use of existing infrastructure and the appropriate and sustainable management of water supplies.

River Abstractions: Drought Permits/Orders															
Hull increased abstraction	Adverse	Orange			Light Blue			Red	Yellow						Minor hydrological impact which would result in a moderate risk to water quality deterioration in the upper reach associated with dissolved oxygen and total ammonia and major risk in the lower tidal reach based on modelled dissolved oxygen sag near the vicinity of a STW. This would result in moderate adverse impacts on river lamprey, brook lamprey and European eel due to mortality due to oxygen stress and gill clogging.
	Beneficial			Dark Green		Dark Green	Light Green			Light Green				Light Green	Major beneficial impacts on population and human health due to the large deployable output and continued water supply for economic activity. The option utilises existing infrastructure so would have minor beneficial impacts on material assets and resource use, as no construction is required.
Ouse increased abstraction	Adverse	Orange			Light Blue			Light Blue	Yellow				Light Blue	Yellow	Minor reduction in low flows, with associated reduction in wetted width and depth over 21 km of the River Ouse. Minor risk to water quality accounting for the water quality pressures associated with the four STWs present on the river. The flow pressures would result in minor adverse impacts on the nearby Fulford Ings SSSI and on Notable/NERC fish species due to the siltation of spawning gravels and exposure of habitats. The reduced flow level of the River Ouse would also have a minor impact on the landscape setting of the numerous SSSIs in close proximity to the river.
	Beneficial			Dark Green		Dark Green	Light Green			Light Green				Light Green	Major beneficial impacts on population and human health due to the large deployable output and continued water supply for economic activity. In the zone of influence of the drought option water availability is at least 50% so the option will deliver beneficial impacts with regard to sustainable water supply. The option utilises existing infrastructure so would have minor beneficial impacts on material assets and resource use, as no construction is required.
Ure increased abstraction	Adverse	Orange	Light Blue		Yellow			Orange	Yellow				Light Blue	Yellow	Moderate reduction in low flows, with associated reduction in wetted width and depth over 11 km of the River Ure. The risk of water quality deterioration is assessed as high for dissolved oxygen and low for total ammonia, except locally downstream where the risk for total ammonia is moderate. The impact on wetted width and depth, especially in shallow areas of the channel, would have a moderate impact on NERC and notable species due to the siltation of spawning gravels and exposure of habitats. The reduced flow level of the River Ure would have a minor impact on the landscape setting of the Ripon Rowel Walk National trail that runs alongside the River Ure and forms part of the Nidderdale AONB.
	Beneficial			Light Green		Light Green	Light Green			Light Green				Light Green	Major beneficial impacts on population and human health due to the large deployable output and continued water supply for economic activity. In the zone of influence of the drought option water availability is at least 50% so the option will deliver beneficial impacts with regard to sustainable water supply. The option utilises existing infrastructure so would have minor beneficial impacts on material assets and resource use, as no construction is required.
Wharfe increased abstraction	Adverse	Orange			Light Blue			Orange	Yellow					Yellow	Moderate reduction in low flows, with associated reduction in wetted width and depth over 71 km of the River Wharfe. Water quality throughout the study area is assessed as low risk of deteriorating with regards to total ammonia and medium risk for dissolved oxygen. The reduction in flow and associated reduction of the River Wharfe would have a visual impact on the Nidderdale AONB, however, there is limited access to the impacted reach and no national trails are present.
	Beneficial			Dark Green		Dark Green	Light Green			Light Green				Light Green	Major beneficial impacts on population and human health due to the large deployable output and continued water supply for economic activity. In the zone of influence of the drought option water availability is at least 70% so the option will deliver beneficial impacts with regard to sustainable water supply. The option utilises existing infrastructure so would have minor beneficial impacts on material assets and resource use, as no construction is required.
Wharfe annual abstraction increase	Adverse		Light Blue										Light Blue		The drought option would lead to a negligible reduction in flows, with a negligible reduction in wetted width and depth over the River Wharfe. Water quality throughout the study area is assessed as at a negligible risk of deteriorating. The reduction in flow and associated reduction in wetted width and depth of the reaches would have negligible adverse impact on NERC fish species. A negligible reduction in the level of the River Wharfe would have a negligible visual impact on the Nidderdale AONB. There is limited access to the impacted reach with no national trails.

Increased Ouse pumping capacity	Adverse	Yellow	Yellow	White	Light Blue	White	Orange	Yellow	Light Blue	White	Light Blue	Orange	Orange	White	Light Blue	Yellow	Minor adverse impacts on biodiversity and designated sites due to the construction of the additional water treatment capacity and pipeline. There would be a minor adverse impact on the spread of invasive species due to flow and level changes in the River Ouse. The water transfer would only result in minor adverse effects on water flows and levels. There would be moderate adverse effects on resource use energy use, moderate impacts on air quality and moderate impacts on greenhouse emissions as a result of construction and operation of the new pipeline. There would also be minor adverse effects on the landscape setting of the surrounding countryside during the construction phase.
	Beneficial	White	White	Light Green	White	Light Green	White	White	White	Light Green	White	White	White	Light Green	White	White	Minor beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers moderate beneficial impacts associated with the appropriate and sustainable management of water supplies and minor beneficial impacts associated with bolstering resilience to climate change.
Ouse Raw Water Transfer	Adverse	Yellow	Yellow	White	Light Blue	White	Yellow	Orange	Yellow	White	Light Blue	Yellow	Yellow	White	Light Blue	Yellow	Minor adverse impacts on biodiversity and designated sites due to the construction of the pipeline. There would be a minor adverse impact on the spread of invasive species due to the construction of the new pipeline in an area known to support invasive species. The water transfer would result in minor adverse effects on water flows and levels and moderate adverse effects on water quality. There would be minor adverse effects on resource use energy use, air quality and greenhouse emissions as a result of the construction and operation of the new pipeline. There would also be minor adverse effects on the landscape setting of the surrounding countryside during the construction phase.
	Beneficial	White	White	Dark Green	White	Dark Green	White	White	White	Light Green	White	White	White	Light Green	White	White	Major beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers major beneficial effects associated with bolstering resilience to climate change and moderate beneficial impacts associated with the appropriate and sustainable management of water supplies.
Ouse water treatment works extension	Adverse	Yellow	Yellow	White	Light Blue	White	Orange	Orange	Yellow	White	Light Blue	Orange	Orange	White	Light Blue	Yellow	Minor adverse impacts on biodiversity and designated sites due to the construction of the additional water treatment capacity and pipeline. There would be a minor adverse impact on the spread of invasive species due to the construction of the new treatment works in an area known to support invasive species. The water transfer would only result in minor adverse effects on water flows and levels which would be associated with moderate adverse impacts on water quality. There would be moderate adverse effects on resource and energy use, air quality and greenhouse emissions as a result of the construction and operation of the new treatment works. There would also be minor adverse effects on the landscape setting of the surrounding countryside during the construction phase.
	Beneficial	White	White	Dark Green	White	Dark Green	White	White	White	Light Green	White	White	White	Light Green	White	White	Major beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with bolstering resilience to climate change and minor beneficial impacts associated with the appropriate and sustainable management of water supplies.
North West reservoir abstraction	Adverse	Light Blue	Yellow	White	Yellow	White	Yellow	Yellow	Yellow	White	Light Blue	Light Blue	Yellow	White	White	Yellow	Negligible adverse impacts of construction on flora and fauna are possible, however there are no nearby designated sites. Minor adverse impacts on the spread of invasive species during construction, however if best practice is followed this should be mitigated. Minor adverse impacts on access for recreational use during construction phase. Minor adverse impact associated with construction and operation due to an increase in material use, energy consumption and greenhouse emissions. Minor adverse impact on landscape and visual amenity due to the proximity of the Millennium Way National Trail. Minor adverse impacts on water level in the reservoir, and the drought permit may reduce the occurrence of spill events. Minor impacts on water quality within the reservoir, however North West Area Reservoir 9 is known to have water quality issues and this needs to be investigated further. Negligible adverse impact on soils due to the construction element, however this is assumed to be short term and of small scale.

	Beneficial																		Minor beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial impacts associated with the appropriate and sustainable management of water supplies and minor beneficial impacts associated with bolstering resilience to climate change.
Tees – Derwent Pipeline	Adverse																		Minor adverse impacts on biodiversity and designated sites due to the construction of the new pipeline. There would be a minor adverse impact on the spread of invasive species due to flow and level changes in the River Tees. The water transfer would only result in minor adverse effects on water flows and levels by altering the natural flow regime. There would be major adverse effects on resource use energy use, minor impacts on air quality and moderate impacts on greenhouse emissions as a result of the construction and operation of the new pipeline. There would also be moderate adverse effects on land-use and minor adverse effects on the landscape setting of the surrounding countryside during the construction phase.
	Beneficial																		Major beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with bolstering resilience to climate change and minor beneficial effects regarding appropriate and sustainable management of water supplies.
Tees – Swale transfer	Adverse																		Moderate adverse impacts on NERC fish species due to the risk of spreading disease. The water transfer would only result in minor adverse effects on water flows and levels by altering the natural flow regime. As such, flow and level changes would not pose a great risk to the spread of existing invasive species populations, however, there is uncertainty as to the transfer scheme’s overall potential impact regarding catchment river transfers and INNS risks. For example, the transmission of crayfish plague. Without effective mitigation this is considered of major concern. There would be moderate adverse effects on resource use energy use, minor impacts on air quality and moderate impacts on greenhouse emissions as a result of the construction and operation of the new pipeline. There would also be minor adverse effects on the landscape setting of the surrounding countryside during the construction phase.
	Beneficial																		Major beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with bolstering resilience to climate change and moderate beneficial impacts associated with the appropriate and sustainable management of water supplies.

Legend

Colour		Significance of Effect
	Dark Green	Major Beneficial
	Mid Green	Moderate Beneficial
	Light Green	Minor Beneficial
	Negligible	Negligible
	Yellow	Minor Adverse
	Orange	Moderate Adverse
	Red	Major Adverse
	NONE APPLICABLE	NOT APPLICABLE

1 Introduction

1.1 Background and Purpose of Report

Yorkshire Water Services Limited (YWSL) has prepared its Final Statutory Drought Plan (DP) for 2019 and has undertaken Strategic Environmental Assessment (SEA) of its DP. A Habitats Regulations Assessment (HRA) screening was undertaken in parallel.

SEA is a statutory requirement for plans or programmes which could have significant environmental implications, and helps to identify where there are potential impacts and how any negative impacts might be mitigated. More information about SEA, and the rationale for applying it to the Final DP, is provided in Section 1.2 below.

This Environmental Report is the second output of the SEA. In August 2016, a Scoping Report was issued for consultation¹ which summarised the baseline and framework that would be used for the assessment. Issues raised by consultees have been considered in preparing this Environmental Report (see Section 1.8 Consultation).

The Environmental Report presents the baseline information that sets the context for the assessment (Section 3) and provides details of the methods employed in undertaking the assessment (Section 4). The potential impacts of the various DP options are outlined in Section 5, with the impacts of the combinations of options included in the Final DP set out in Section 6. Information regarding mitigation and monitoring is provided in Section 7.

The SEA Environmental Report accompanies YWSL's publication of their Final DP 2019.

1.2 Application of SEA to Drought Planning

1.2.1 Overview of Strategic Environmental Assessment

SEA became a statutory requirement following the adoption of Directive 2001/42/EC (the SEA Directive) on the assessment of effects of certain plans and programmes on the environment. The Directive was transposed into UK legislation by The Environmental Assessment of Plans and Programmes Regulations 2004 (referred to as the SEA Regulations)².

The objectives of SEA are set out in Article 1 of the SEA Directive as follows:

'to provide for a high level of protection of the environment and to contribute to the integration of environmental considerations into the preparation and adoption of plans with a view to promoting sustainable development'.

The SEA Directive requires preparation of an Environmental Report in which the likely significant effects on the environment of implementing the plan or programme, and reasonable alternatives taking into account the objectives and geographical scope of the plan or programme, are identified, described and evaluated.

¹ Cascade Consulting (2016) Strategic Environmental Assessment of Yorkshire Water's Services Limited Draft Drought Plan 2017. Scoping Report. Prepared by Cascade Consulting for Yorkshire Water Services Ltd. August 2016.

² The Environmental Assessment of Plans and Programmes Regulations 2004 (Statutory Instrument 2004 No. 1633) apply to any plan or programme which relates solely or in part to England.

It should be noted, however, that as stated in the Office of the Deputy Prime Minister (ODPM) SEA Guidelines³ *“It is not the purpose of the SEA to decide the alternative to be chosen for the plan or programme. This is the role of the decision-makers who have to make choices on the plan or programme to be adopted. The SEA simply provides information on the relative environmental performance of alternatives, and can make the decision-making process more transparent.”* The SEA can, therefore, be used to support the timing and implementation of actions within the plan, although this needs to be set in the context of applying SEA to drought planning, as described in Section 1.2.2 below.

The range of issues to be included in an SEA is set out in the regulations, and includes: biodiversity; population; human health; fauna; flora; soil; water; air; climatic factors; material assets; cultural heritage and landscape.

SEA is usually focused mainly on environmental impacts. However, it is current best practice within the water industry to examine the broader social effects of water resource management planning, in addition to the environmental effects. As such, the full range of environmental and social effects which are likely to arise from implementation of YWSL’s Final DP 2019 are considered.

As identified above, the Government has produced SEA guidance which sets out the stages of the SEA process⁴. This, together with guidance for undertaking SEA of DPs, which has been produced on behalf of United Kingdom Water Industry Research (UKWIR)⁵, has been used to inform the methodology for the SEA. These documents remain the recommended best practice guidance for preparation of SEAs of DPs.

A DP Guideline was published by the Environment Agency in 2011⁶ and includes recommendations for SEA of DPs. A revised guideline was published by the Environment Agency in December 2015⁷ and this and the guideline on extra information on Environmental Assessment for Water Company Drought Plans⁸ and the Drought Plan Direction⁹ has informed YWSL’s Final DP 2019 and the SEA.

1.2.2 Applying Strategic Environmental Assessment to Drought Planning

The water industry has experience in undertaking and delivering SEAs for the most recent WRMPs. These SEAs assess a wide range of possible water resource options and alternative programmes of options to inform the delivery of a predictable and precise output – a WRMP that defines a preferred programme of water resource options.

DPs are different. They encompass a group of measures that will only be implemented if and when required because of the unpredictable occurrence of a drought event, and thus the actual impact of the plan over its life is subject to very significant uncertainties. There may or may not be a drought during the period of the plan, and each drought is different in terms of severity, season, location, duration and influence of other abstractors within the catchment. Each combination of these factors may require a

3 Office of the Deputy Prime Minister (2005) A Practical Guide to the Strategic Environmental Assessment Directive.

4 Office of the Deputy Prime Minister (2005). A Practical Guide to the Strategic Environmental Assessment Directive.

5 UKWIR (2012) Strategic Environmental Assessment and Habitats Regulation Assessment – Guidance for Water Resources Management Plans & Drought Plans (12/WR/02/A). Prepared by Cascade Consulting.

6 Environment Agency (2011) Water Company Drought Plan Guideline.

7 Environment Agency (2016) *How to write and publish a drought plan*, December 2015. Available at <https://www.gov.uk/guidance/drought-plans-environmental-assessment-and-monitoring#carry-out-an-environmental-assessment>, Accessed 5 June 2018.

8 Environment Agency (2016) Drought Plan Guidance Extra Information: Environmental Assessment for Water Company Drought Plans. May 2016.

9 Defra (2016) Drought Plan Direction 2016

bespoke reaction in terms of measures.

It is impossible to predict in advance which and how many of the measures will be required, and in which order of priority, to respond to each particular drought event. Therefore, SEA of DPs cannot provide a certain prediction of an overall environmental effect of adopting the plan, as its implementation is uncertain. However, for some resource zones with fewer drought options, it may be easier to predict which measures would be implemented in a drought scenario or it may be known that certain combinations would always be deployed simultaneously. The Environmental Report discusses these where relevant.

Instead of attempting to assess a number of potential scenarios, the SEA of YWSL's Final DP includes a cumulative effects assessment in order to ensure that options are not mutually exclusive, or that combinations would not cause significant adverse impacts.

The SEA of YWSL's Final DP is also focussed on the reactive and transient nature of the event when a DP is operational, while maintaining the strategic approach of an SEA. For this, it is important to consider the relationship between the WRMP and the DP. The Environmental Report, baseline review and establishment of the SEA framework attempt to separate the key issues and assessment approaches relevant to the DP from those more applicable to the WRMP. The assessment of individual options (Stage B of the SEA process) concentrates on effects resulting from the implementation of drought management actions rather than the 'natural' impacts of drought.

1.2.3 Requirement for SEA and HRA of YWSL's Drought Plan

Undertaking SEA of a DP helps guide decision making both in the preparation of the DP and during DP operation. For example, the SEA identifies the potential effects across a broad range of environmental topics which are focussed to the situation and established during the scoping phase. As every drought is different in terms of severity, location, duration and hence impact, the output of the SEA for each option will help guide option selection specific to the characteristics of any potential drought. The SEA also includes cumulative assessments to ensure that options are not mutually exclusive, or that combinations would not cause significant adverse impacts. This, therefore, informs decision making at DP development stage and ensures important strategic decisions are made early on in the process.

The SEA Scoping Report which was consulted on in August/September 2016 contained a description of the screening process. It concluded that SEA is required, taking into account a precautionary approach and uncertainties associated with whether it sets a framework for future development consent, and the unknown outcome of the Habitats Regulations Assessment screening (HRA) screening at that time.

An HRA¹⁰ has since been undertaken (see DP Appendix 6), and the outcome of the HRA screening is presented in a separate report.

1.3 Yorkshire Water Services Limited Water Supply System and Drought Planning

1.3.1 Introduction

In the event of a severe drought, YWSL will need to carry out a range of management measures to

¹⁰ Conservation of Habitats and Species Regulations 2017

ensure the provision of adequate supplies of wholesome water to its customers. The YWSL DP sets out the options for dealing with drought conditions, and takes account of recent legislative developments in drought management. Statutory demand management options available to water companies during drought have been extended through provisions in the Flood and Water Management Act 2010. Section 36 of this Act has amended the Water Industry Act 1991 provisions relating to hosepipe bans and allows companies to temporarily restrict a wider range of customer water use activities under a Temporary Use Ban without requiring a drought order. The Drought Direction 1991 was revoked and replaced by the Drought Direction 2011, which sets out those uses that still require a drought order in order to impose restrictions during a drought. This has been updated by the Drought Plan (England) Direction 2016 which contains revised timeframes for submitting the draft DP to the Secretary of State. The actual Direction is provided in Appendix 3 of the DP.

1.3.2 Yorkshire Water: Water Resources and Supply System

YWSL's supply area is geographically bounded in the west and north by the Pennine Hills and the North York Moors respectively. The southern and eastern parts of the company's supply region are low lying and bounded by the North Sea to the East and the Yorkshire/Lincolnshire border to the south. Annual average rainfall in the region is highest in the Pennine areas whilst low lying areas average less than half as much rainfall each year and with little seasonal variation.

1.3.3 Yorkshire Water's Water Resources

Urban areas in the west and south of Yorkshire are principally supplied from reservoirs in the Pennines. Reservoirs located in the Pennines and the valleys of the River Don, River Aire, River Wharfe, River Calder, River Nidd and River Colne provide the largest upland sources of water in the region. YWSL operates over 100 impounding reservoirs, of which two are major pumped storage reservoirs. The total storage capacity of all the supply reservoirs amounts to some 160,000 million litres (MI).

In the eastern and northern parts of the region, river and groundwater abstractions, chiefly from the rivers of the North York Moors and the Yorkshire Wolds respectively, are the major water sources.

1.3.3.1 Yorkshire Water's Supply System

Approximately 45% of supply is derived from impounding reservoirs, 22% from boreholes and 33% from rivers. This varies from year to year depending on weather conditions. YWSL has an agreement with Severn Trent Water to abstract up to 21,550 MI per year from the Derwent Valley Reservoirs in Derbyshire for supply to parts of Sheffield, dependent on the control lines in the reservoirs.

The majority of the company's water resources are connected together by a regional grid network. This enables highly effective conjunctive use of different water resources, which mitigates risk and allows optimal planning, source operation and resilient sources of supply both in drought and during floods.

1.3.3.2 Yorkshire Water's Water Resource Zones

The YWSL region is currently divided into two water resource zones for planning purposes (**Figure 1.1**). Each zone represents a group of customers who receive the same level of service for water supply reliability from either groundwater or surface water sources.

The Grid Surface Water Zone (SWZ) represents a highly integrated surface and groundwater zone that is dominated by the operation of lowland rivers and Pennine reservoirs (**Figure 1.2**). The East SWZ is supplied by a river abstraction and springs in the Whitby Area.

Figure 1.1

[Figure Redacted]

Figure 1.2

[Figure Redacted]

1.4 YWSL Drought Planning Process

1.4.1 Overview and timetable

Water companies in England and Wales are required to prepare and maintain Statutory DPs under Sections 39B and 39C of the Water Industry Act 1991, as amended by the Water Act 2003, which set out the short operational steps a company will take before, during and after a drought. The Water Industry Act 1991 defines a DP as '*a plan for how the water undertaker will continue, during a period of drought, to discharge its duties to supply adequate quantities of wholesome water, with as little recourse as reasonably possible to drought orders or drought permits*'.

YWSL last published its Statutory DP in 2013. The Drought Plan Direction 2016, which reflects changes made by the Water Act 2014 regarding the publication frequency of drought plans, states that revised DPs should be submitted according to the following schedule:

4 (b) for a revised drought plan

- (i) If section 39B(6)(a) of the Act applies, within 6 months after the date on which the material change of circumstances occurs; and*
- (ii) If section 39B(6)(c) of the Act applies, within 4 years and 3 months after the date on which its drought plan, or its last revised drought plan, is published.*

On 1 October 2010, Section 76 of the Water Industry Act 1991 was amended by the commencement of Section 36 of the Flood and Water Management Act 2010. The Water Use (Temporary Bans) Order 2010 also commenced on 1 October 2010 and provides definitions and clarifications on these activities.

YWSL prepared a draft DP in 2017 and a Revised Draft DP which was published in June 2018. However, in December 2018, YWSL applied for two new drought permits which were not previously featured in the dDP or rdDP. This constituted a material change to the Drought Plan and consequently, YWSL issued a formal letter to the Environment Agency, Natural England and Historic England, with its proposed approach for updating the revised draft Drought Plan. Following preparation and consultation on the Draft DP 2019 (see Section 1.8), YWSL have now published the Final DP 2019.

In accordance with current legislation, YWSL will revise and republish the Drought Plan no later than five years after the date the final Drought Plan is published or earlier if required through new legislation or a material change to the plan. In the event of a drought, this version of our Drought Plan supersedes all previous versions.

Permission to abstract water, granted through licences issued by the Environment Agency and held and operated by YWSL, was subject to a 'Review of Consents' in accordance with Regulation 63 of the Conservation of Habitats and Species Regulations 2010 (as amended) (referred to as the Habitats Regulations). This Review of Consents was undertaken by the Environment Agency and included screening to determine a likely significant effect and Appropriate Assessment where likely significant effects are identified, to either affirm an abstraction licence or recommend action to amend the licence conditions. This was in order to ensure that the integrity of European protected sites is not at risk from the impacts of abstraction. Information provided by the outcomes of the Review of Consents was used to support the HRA screening of YWSL's DP 2013¹¹. This identified that none of the drought options included in the 2013 DP required an "Appropriate Assessment" for a Habitats Directive European site.

¹¹ Yorkshire Water Services Ltd (2013) Draft Drought Plan 2013.

As part of the 2019 update to the DP, a HRA screening has been undertaken for all drought options to identify any requirements for Appropriate Assessment. This was undertaken in parallel with the SEA.

Only those drought options which are relevant to the period encompassed by the DP (2019 to 2022) are considered in the SEA and HRA process. To this end, environmental effects of the Final DP options are considered within the context of the current licence operating conditions. Potential new sources (which YWSL may bring on line in the future), new drought options, or revisions to existing options which are only envisaged to become operational post 2022 have, therefore, been excluded from the SEA and HRA screening process. The same approach has also been taken with respect to cumulative plans, projects and programmes, in that only those that are likely to be effective in the period to 2022 are considered in the SEA.

1.4.2 YWSL's Drought Options

The DP identifies triggers that act as decision-points for implementing drought management actions and options. The nature of the triggers varies for each water resource zone, and the nature of the drought management actions or options that will be considered also varies depending on the prevailing drought conditions.

Drought management actions may be applied either company wide, by water resource zone or to target a specific geographic area depending on the nature of the drought event prevailing at the time. The DP contains a range of potential supply-side and demand-side drought management options available to YWSL, for example bringing reserve water sources into use, enhancing the capacity of supply assets to maximise use of available supplies, implementation of drought permits or drought orders and imposing temporary use bans.

The scope of the supply-side drought options is listed in **Table 1.1**. Demand-side options are designed to reduce the demand for water and the options available to YWSL are consistent between all resource zones (see Table 1.2).

Table 1.1 Supply-side drought management option examples

Supply-Side Options	Comments	Option
Re-commissioning of unused or under-utilised licensed water sources	An option to maximise the use of any underutilised licensed resources will include mothballed and recently abandoned assets. These assets will be used to augment supplies or mitigate against the potential impact of drought orders or permits.	<i>North West Area WTW</i>
Increasing the capacity of water supply assets to maximise use of existing licensed sources	This may comprise temporary or permanent measures to increase the capacity of assets such as pumping stations and water treatment works to increase the use of existing licensed water sources.	<i>Ouse increased abstraction</i>
Reducing reservoir compensation releases or prescribed river flow conditions	Requires a drought order or permit	<i>North Area Reservoir 4</i>
Increasing existing abstraction licence volumes	Requires a drought order or permit	<i>Ure increased abstraction</i>

Table 1.2 Demand-side drought management options

Demand-side options	Comments
Drought publicity campaigns	Increased water efficiency messages via increased customer communications.
Increased leakage detection and repair activity	Ensure that all maintenance programmes are up-to-date and undertake additional leakage control, leading to demonstrable water savings.
Introduction of temporary use ban	Restrictions on the use of hosepipes for a range of uses, including the washing of vehicles and boats, watering gardens and sports grounds and filling of paddling pools.
Introduction of a drought order to ban non-essential water uses (defined in the Drought Direction 2016)	Drought order to restrict non-essential water uses to be applied for when reservoir stocks fall below the Drought Control Line
Emergency drought order to temporarily supply water by means of rota cuts or standpipes	An Emergency Drought order may be applied for in the event of an exceptional drought, in consultation and liaison with the Environment Agency, local authorities and the Consumer Council for Water. This situation would be extremely unlikely to occur and would not arise under a repeat of the worst recorded drought events in Yorkshire.

1.4.2.1 Supply-Side Options

Potential drought permit/order sites are identified in **Figures 1.3** and **1.4** and **Table 1.3**. There are 50 supply side standard options and 9 long term options.

Figure 1.3 – Option Locations and Ecological Designations

[Figure Redacted]

Figure 1.4 River Tees-River Swale Transfer Option

[Figure Redacted]

Table 1.3 Supply-side options

Water Source		Type of Drought Management Option
Grid Surface Water Resource Zone		
North Area	<u>Standard Option Reservoirs [5]:</u> North Area Reservoir 1, North Area Reservoir 2, North Area Reservoir 3, North Area Reservoir 4, North Area Reservoir 5	Compensation flow release reductions
	<u>LTO [1]:</u> North Yorkshire Groundwater increased abstraction	Increase in abstraction.
South Area	<u>Standard Option Reservoirs [6]:</u> South Area Reservoir 1, South Area Reservoir 2, South Area Reservoir 3, South Area Reservoir 4, South Area Reservoir 5, South Area Reservoir 6	Compensation flow or maintained flow release reductions
South West / Calder Area	<u>Standard Option Reservoirs [22]:</u> South West Area Reservoir 1, South West Area Reservoir 2, South West Area Reservoir 3, South West Area Reservoir 4, South West Area Reservoir 5, South West Area Reservoir 6, South West Area Reservoir 3, South West Area Reservoir 8, South West Area Reservoir 7, South West Area Reservoir 2, South West Area Reservoir 9, South West Area Reservoir 10, South West Area Reservoir 11, South West Area Reservoir 12, South West Area Reservoir 13, South West Area Reservoir 14, South West Area Reservoir 15, South West Area Reservoir 16, South West Area Reservoir 17, South West Area Reservoir 18, South West Area Reservoir 19, South West Area Reservoir 20, South West Area Reservoir 21, South West Area Reservoir 22	Compensation flow release reductions
North West Area	<u>Standard Option Reservoirs [11]:</u> North West Area Reservoir 1, North West Area Reservoir 2, North West Area Reservoir 3, North West Area Reservoir 4, North West Area Reservoir 5, North West Area Reservoir 6, North West Area Reservoir 7, North West Area Reservoir 8, North West Area Reservoir 9, North West Area Reservoir 10, North West Area Reservoir 11	Compensation flow release reductions
		Increase abstraction to 10 MI/d when reservoir stocks greater than 55 MI.
	<u>LTO [1]:</u> North West Reservoir Abstraction	Increase in abstraction from Reservoir. Water abstracted from the reservoir would be transferred via a temporary pipeline to the aqueduct for subsequent treatment at either Bradford WTW 1 or 2.
Stand Alone	<u>Standard option [6]:</u>	Increase river abstraction rates at lower river flows
	Ouse increased abstraction	
	Ure increased abstraction	Permit river abstraction at low flows
	Wharfe reduced regulated flow	Reduce river regulation requirements.

Water Source		Type of Drought Management Option
	Wharfe increased annual abstraction	Increase annual abstraction limit
	Hull increased abstraction	Reduce hands-off river flow to enable increased abstraction.
	Derwent annual abstraction increase	Increase annual abstraction limit
	<u>LTO: [7]</u> Ouse increased abstraction	Increase the abstraction capacity of the Ouse pumping station by 10 MI/d. This would enable the full daily abstraction licence volume to be abstracted from the Ouse increased abstraction when river flows exceed the prescribed flow set in the abstraction licence (or in a drought permit if granted).
	Ouse water treatment works extension	Additional river abstraction and water treatment capacity (additional 22 MI/d average abstraction) at Ouse abstraction, within existing abstraction licence conditions.
	Ouse Raw Water Transfer	Additional river abstraction capacity of 60 MI/d to enable the full average abstraction licence quantity of 96 MI/d average to be abstracted (130MI/d peak). New raw water pipeline to link to existing raw water pipeline Ouse pumping station to River Derwent Water Treatment Works 1.
	Tees – Swale transfer	Permit abstraction of up to 60 MI/d from the River Tees for transfer by pipeline to the River Swale, with subsequent re-abstraction of the discharged water further downstream from Ouse increased abstraction.
	Tees - Derwent Pipeline This option would not be additional to the River Tees to River Swale Transfer option. Only one of these two options would be implemented.	Abstraction of up to 40 MI/d from the River Tees with construction of new pipelines to transfer the raw water to River Derwent Water Treatment Works.
	Aire abstraction	New river abstraction of up to 50 MI/d
	East Yorkshire Groundwater Option 2	Increase in abstraction.
East Surface Water Resource Zone		
None	n/a	n/a
East Groundwater Resource Zone		
None	n/a	n/a

The Tees – Swale transfer option has been included in the DP as a long term option (LTO) that may be required in the event of an extremely severe drought that extends into a third consecutive year (with reservoir storage continuing to remain at very low levels and falling below the Drought Control Line for a period of 1 to 7 months depending on the severity). A three-year drought has never been experienced in the YWSL region since reliable records began, and there is a very low probability of such an event occurring. Nevertheless, in accordance with national drought planning guidance, it is important for

YWSL to demonstrate that it has considered what actions could be implemented if such a severe drought were to occur in the future.

Following concerns expressed in the consultation feedback on the DP about the potential environmental impacts of the Tees – Swale transfer option, further work has subsequently been carried out to assess the environmental impact. Additionally, concern was also raised in the consultation feedback as to the extent to which alternative feasible options had been considered for implementation in a third year of drought should the Tees – Swale transfer option be found to have unacceptable environmental impacts or if other issues prevented its implementation or operation. In response to this concern, YWSL has included nine alternative drought options to the DP (see **Table 1.3**) that could be implemented in a third year of drought, strengthening the resilience of measures available to the company should a very severe and prolonged drought event occur.

1.4.2.2 Drought Option Implementation and the Role of SEA

In its Final DP 2019, YWSL has set out the triggers that would lead to implementation of each of the drought options summarised above. These triggers are based on specified monthly water storage volumes in appropriate groupings of reservoirs (drought ‘control lines’). Preceding actions are also set out that would occur in advance of the option being implemented (for example, a temporary use ban would be in place prior to applying for a drought permit for the Ouse increased abstraction in the months of April to September). Not all options would necessarily be required in any particular drought: the options required will be dependent on the geographical extent, magnitude, time of year and duration of a drought event.

Most of the options would only be contemplated once reservoir storage falls close to the relevant Drought Control Line for each reservoir storage group. For example, the temporary use ban would be implemented if projected storage six weeks ahead is forecast to cross the Drought Control Line; drought orders or permits would be applied for if storage approaches the Drought Control Line. There is a progressive and sequential approach to option implementation, with those options having the least impact on customers and/or the environment being implemented first, whilst those that have the greatest impact would only be implemented in the event of a very severe drought event (a drought of greater magnitude than any previously experienced drought event).

The SEA assessment of each of these options and their cumulative impacts provides a consistent and relative assessment of the impact of each option to inform the consideration of the appropriate sequencing of option implementation, alongside other factors such as practicability, risks to drinking water quality and security risks. It is noted that some drought options may have different environmental effects depending on the season of implementation (for example, a summer drought compared to a winter drought). As drought measures can theoretically be required and implemented at any time of year, overall impacts are assessed on a worst-case basis in the SEA.

Supporting Information

Drought options included in the SEA and HRA screening have been documented by YWSL in the Final DP 2019, accompanied by drought management action forms (Appendix 6) as previously specified by the Drought Plan Guidance. The information provided in these forms will be used to inform the SEA.

It is noted that some drought options may have different environmental effects depending on the season

of implementation (for example a summer vs a winter drought). As drought measures can theoretically be required and implemented at any time of year, overall impacts have been assessed where possible on a worst-case basis.

Environmental assessment studies of YWSL's drought permit / order sites have been carried out and information from these studies have been used to inform the SEA and HRA.

1.5 Drought Permit/Order Environmental Studies

Environmental Assessment Reports (EARs) have been prepared for the drought permits / order sites identified in **Table 1.3**, to support YWSL's DP.

The aim of these studies was to produce environmental reports that have been agreed with the Environment Agency and Natural England such that in the event of a drought, they are readily available for updating based on the prevailing drought situation at that time. The environmental studies consider all potentially affected habitats and species including, but not limited to, Special Areas of Conservation (SACs), Special Protection Areas (SPAs) and Ramsar features as well as any Site of Special Scientific Interest (SSSI) or species/habitats of principal importance for the conservation of biodiversity in England (identified in the Natural Environment and Rural Communities (NERC) Act 2006 Section 41). The assessment does not, however, address local wildlife sites. The level of risk of a local wildlife site being significantly affected by the implementation of a drought permit / order is being assessed as an addendum to the EARs. The EAR also sets out the limits of the current data and also includes Environmental Monitoring Plan (EMP) recommendations for each drought permit/order site. These environmental studies, undertaken outside of an actual drought event, are intended to be used as the basis for the EAR to be prepared in support of a specific drought permit/ order application, should the need arise.

Information from the assessments support this report and have been used to inform the SEA and HRA.

1.6 Stages of SEA Process

Table 1.4 is an extract from the Government's SEA guidance, the Practical Guide¹² that sets out the main stages of the SEA process and the purpose of each task within the process. This Scoping Report represents Stage A: Tasks A1 to A4 of the SEA process. Specific guidance on the application of the SEA process to DPs is provided in a best practice publication by UKWIR (2012)¹³.

¹² Office of the Deputy Prime Minister (2005). A Practical Guide to the Strategic Environmental Assessment Directive.

¹³ UKWIR (2012) Strategic Environmental Assessment and Habitats Regulation Assessment – Guidance for Water Resources Management Plans & Drought Plans (12/WR/02/A). Prepared by Cascade Consulting.

Table 1.4 SEA Stages and Tasks

Stages in the SEA Process	
SEA Stages and Tasks	Purpose
Stage A: Setting the context and objectives, establishing the baseline and deciding on the scope	
Task A1. Identifying other relevant plans, programmes and environmental protection objectives	To establish how the plan or programme is affected by outside factors to suggest ideas for how any constraints can be addressed, and to help identify SEA objectives
Task A2. Collecting baseline information	To provide an evidence base for environmental problems, prediction of effects, and monitoring; to help in the development of SEA objectives
Task A3. Identifying environmental problems	To help focus the SEA and streamline the subsequent stages, including baseline information analysis, setting of the SEA objectives, prediction of effects and monitoring.
Task A4. Developing SEA Objectives	To provide a means by which the environmental performance of the plan or programme and alternatives can be assessed.
Task A5. Consulting on the scope of the SEA	To ensure the SEA covers the likely significant environmental effects of the plan or programme.
Stage B: Developing and refining alternatives and assessing effects	
Task B1. Testing the plan or programme objectives against SEA objectives	To identify potential synergies or inconsistencies between the objectives of the plan or programme and the SEA objectives and help in developing alternatives.
Task B2. Developing strategic alternatives	To develop and refine strategic alternatives
Task B3. Predicting the effects of the plan or programme, including alternatives	To predict the significant environmental effects of the plan or programme and its alternatives
Task B4. Evaluating the effects of the plan or programme, including alternatives	To evaluate the predicted effects of the plan or programme and its alternatives and assist in the refinement of the plan or programme
Task B5. Mitigating adverse effects	To ensure that adverse effects are identified and potential mitigation measures are considered.
Task B6. Proposing measures to monitor the environmental effects of plan or programme implementation	To detail the means by which the environmental performance of the plan or programme can be assessed.
Stage C: Preparing the Environmental Report	
Task C1. Preparing the environmental report	To present the predicted environmental effects of the plan or programme, including alternatives, in a form suitable for public consultation and use by decision-makers.
Stage D: Consulting on the Draft Plan or programme and the Environmental Report	
Task D1. Consulting the public and consultation bodies on the draft plan or programme and the Environmental Report	To give the public and the consultation bodies an opportunity to express their opinions on the findings of the Environmental Report and to use it as a reference point in commenting on the plan or programme. To gather more information through the opinions and concerns of the public

Stages in the SEA Process	
SEA Stages and Tasks	Purpose
Task D2. Assessing significant changes	To ensure that the environmental implications of any significant changes to the draft plan or programme at this stage are assessed and taken into account
Task D3. Making decisions and providing information	To provide information on how the Environmental Report and consultees opinions were taken into account in deciding the final form of the plan or programme to be adopted
Stage E: Monitoring the significant effects of the plan or programme on the environment	
Task E1. Developing aims and methods for monitoring	To track the environmental effects of the plan or programme to show whether they are as predicted; to help identify adverse effects
Task E2. Responding to adverse effects	To prepare for appropriate responses where adverse effects are identified.

1.7 Structure of Environmental Report

This SEA Environmental Report presents the findings of Tasks B1 to C1 set out in **Table 1.4** and provides the consultation bodies with an opportunity to express their opinions on the findings of the assessment.

This Section (**Section 1**) of the report describes the overall purpose and process of the SEA and background to YWSL's water supply system and drought planning process. It also gives details of consultation on the SEA. The remainder of the report is structured as follows:

Section 2 – Policy Context, provides a review of other policies, plans and programmes which influence the DP.

Section 3 – Environmental Baseline Review, sets out the key environmental issues YWSL has considered in the SEA, drawing on information on the current state of the environment within YWSL's water supply area.

Section 4 – Methodology, provides details of the methods employed in undertaking the assessment including the cumulative effects assessment methodology.

Section 5 – Assessment of Drought Options, presents the potential impacts of the various DP options against the SEA framework.

Section 6 – Cumulative Effects Assessment, discusses the potential in-combination impacts of drought options (intra-zone and inter-zone), demand management options and other plans and projects in the region.

Section 7 – Mitigation and Monitoring, discusses measures envisaged to prevent, reduce and offset any significant adverse effects of implementing the DP and monitoring to track the environmental effects to show whether they are as predicted, to help identify any adverse impacts and trigger deployment of mitigation measures.

1.8 Consultation

1.8.1 Overview

Two opportunities are available for consultation bodies to be formally involved during the SEA process: during the scoping process; and at the environmental reporting stage. These are discussed below.

Following publication of the Final DP, YWSL will prepare a SEA Post-Adoption Statement setting out how the SEA and any views expressed by the consultation bodies or the public have influenced the DP.

1.8.2 Consultation on the Scoping Report

Consultation bodies were invited to express their views on the Scoping Report and the scope of the SEA proposed in accordance with SEA Regulation 12(5).

The Scoping Report was issued on 26 August 2016 to the Environment Agency, Historic England and Natural England. The consultation period ran until 30 September 2016. The Statutory consultees were invited to comment on the report and the proposed scope of the SEA. The issues raised and responses to comments are presented in **Appendix A**.

1.8.3 Consultation on the Environmental Report

The Environmental Report of the draft DP 2017 was produced in accordance with the approach agreed by YWSL and taking into consideration the responses received from consultation bodies in response to the Scoping consultation. It provided assessments of the likely significant effects of the drought options considered and selected by YWSL.

The Draft DP and the SEA Environmental Report were issued to Defra in November 2017 and published on YWSL's website. A seven-week public consultation was held between 22 January and 19 March 2018.

The statutory consultation bodies (Environment Agency, Natural England and Historic England), as well as the public, were invited to express their views on the Environmental Report and were able to use it as a reference point in expressing their views on YWSL's Draft Drought Plan 2017.

A Statement of Response was prepared which explained the changes YWSL will make to the Drought Plan (and accompanying documents, including the SEA) as a result of the consultation. This was published on YWSL's website in May 2018. Comments that were received through this consultation process have been taken into consideration in preparing subsequent updates to the SEA.

Following the period of public consultation (ending March 2018) and preparation of the Statement of Response, YWSL's Revised Draft DP (rdDP) was published in June 2018. However, in December 2018, YWSL applied for two new drought permits which were not previously featured in the dDP or rdDP. This constituted a material change to the Drought Plan and consequently, YWSL issued a formal letter to the Environment Agency, Natural England and Historic England, with its proposed approach for updating the revised draft Drought Plan. The Draft DP 2019 and the SEA Environmental Report were issued to Defra in June 2019 and published on YWSL's website. A six-week public consultation was held between 15 August and 26 September 2019. A further Statement of Response to the comments received during the consultation, and how they were addressed, has been prepared and accompanies the publication of the Final DP 2019.

Following the publication of the Final DP 2019, YWSL will also publish a 'Post Adoption' Statement setting out how the SEA, and any views expressed by the consultation bodies or the public, influenced the Final DP 2019.

When the DP is implemented during an actual drought event, YWSL will monitor its effects on the environment, helping to ensure that the potential impacts identified in the SEA are considered in practice.

1.9 Quality Assurance

ODPM Guidance on SEA contains a Quality Assurance checklist to help ensure that the requirements of the SEA Directive are met. The checklist is reproduced in **Appendix E, Table E1**, indicating where this Environmental Report meets the requirement.

2 Policy Context

2.1 Introduction

Annex 1 of the SEA Directive (Directive 2001/42/EC) requires the following specific baseline information to be included within the Environmental Report to identify the environmental characteristics of areas likely to be significantly affected by the DP:

- *“an outline of the...relationship with other plans and programmes”*
- *“the relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the plan or programme”*
- *“the environmental characteristics of areas likely to be significantly affected”*
- *“any existing environmental problems which are relevant to the plan or programme including, in particular, those relating to any areas of a particular environmental importance, such as areas designated pursuant to Directives 79/409/EEC (the ‘Birds Directive’) and 92/43/EEC (the ‘Habitats Directive’)”*
- *“the environmental protection objectives, established at international, (European) Community or Member State level, which are relevant to the plan or programme and the way those objectives and any environmental considerations have been taken into account during its preparation”.*

In accordance with the SEA Directive, a summary of the key policy messages from the review of relevant policies, plans and programmes is presented in Section 2.2 (full review is presented in **Appendix B**). A summary of environmental baseline key issues is presented in Section 3 (full environmental baseline is presented in **Appendix C**).

2.2 Review of Policies, Plans and Programmes

One of the first steps in undertaking SEA is to identify other relevant policies, plans, programmes and environmental protection objectives. The review of these other plans sets out to establish how YWSL’s DP might be affected by other plans, to identify other environmental protection objectives which the DP should consider and to help to identify the objectives for the SEA.

Potentially relevant plans and programmes were identified at the international, national, regional and local level. If the plan or programme does not have a significant effect on achieving the objectives of the DP or the DP does not have a significant effect on achieving the objectives of the other plan or programme, it was not included.

The full list of international, national, regional and local policies, plans, programmes and strategies reviewed and the key messages, targets and how they relate to SEA topics and SEA objectives are provided in **Appendix B** and listed in **Table 2.1**.

Table 2.1 Key Policy Messages derived from the review of Plans, Policies and Programmes

SEA Topic	Key Messages	Policies
Biodiversity, flora and fauna	Protection and enhancement of biodiversity, particularly internationally and nationally designated sites.	<p>International: United Nations (1992) Convention on Biological Diversity (CBD) European Commission, Birds Directive (2009/147/EC) European Commission, Fresh Water Fish Directive (2006/44/EC) European Commission, Directive on Animal health requirements for aquaculture animals and products thereof, and on the prevention and control of certain diseases in aquatic animals (2006/88/EC) European Commission, Habitats Directive (1992/43/EEC) The Bonn Convention on the Conservation of Migratory Species of Wild Animals (1983) The Bern Convention on the Conservation of European Wildlife and Natural Habitats (1979) Ramsar Convention The Convention on Wetlands of International Importance (1971) European Commission The Water Framework Directive (2000/60/EC) Convention on Biological Diversity, COP Decision X/2, Strategic Plan for Biodiversity 2011-2020 (2010) The Marine Coastal Act 2009</p> <p>National: Countryside Council for Wales (CCW) (2003) Priority Habitats of Wales MHCLG (2012) National Policy Planning Framework Defra (2011) Water for Life - Water White Paper Defra (2011) The Natural Choice: Securing the value of nature. The Natural Environment White Paper Defra (2011) Biodiversity 2020: A Strategy for England’s Wildlife and Ecosystem Services Defra (2010) Delivering a Healthy Natural Environment. Ecosystem Approach Action Plan (updated) Defra (2010) Making Space for Nature: A Review of England’s Wildlife Sites and Ecological Network Defra (2011) UK National Ecosystem Assessment and Defra (2014) UK National Ecosystems Assessment Follow on, Synthesis of Key Findings Defra (2015) The Great Britain Invasive Non-native Species Strategy Defra (2008), England Biodiversity Strategy –climate change adaptation principles Defra (not yet published) Environment Plan (25 years) Environment Agency (undated) Hydroecology: Integration for modern regulation Environment Agency (undated) WFD River Basin Characterisation Project Environment Agency CAMS (various) Natural England’s standing advice on protected species. Conservation of Habitats and Species Regulations 2010 Conservation of Habitats and Species Regulations 2017 The Environmental Damage (Prevention and Remediation) (England) Regulations 2015 The Eels (England and Wales) Regulations 2009 (as amended) Environment (Wales) Act 2016 Natural Environment and Rural Communities Act 2006 Salmon and Freshwater Fisheries Act 1975 The Countryside and Rights of Way (CROW) Act 2000 Wildlife and Countryside Act 1981 (as amended) Water Resources Act 1991 (Amendment) (England and Wales) Regulations 2009 SI3104 4CBG (2012) UK Post-2010 Biodiversity Framework</p> <p>Regional/Local: Environment Agency and Defra (2015) Humber River Basin District River Basin Management Plan</p>
	Promote a catchment-wide or landscape-scale approach to biodiversity management to ensure better protection of the natural environment and heritage.	
	To achieve favourable condition for priority habitats and species, including UK NERC habitats and species.	
	Avoidance of activities likely to cause irreversible damage to nature conservation and natural heritage.	
	Recognise the wider benefits of eco- system services through support for well-functioning ecosystems, respect environmental limits and capacities, and maintain/enhance coherent ecological networks, including provision for fish passage and connectivity for migratory/mobile species.	
	Strengthen the connections between people and nature and realise the value of biodiversity.	

SEA Topic	Key Messages	Policies
		<p>North York Moors National Park Biodiversity Action Plan 2013-2017 Biodiversity Action Plans Yorkshire Dales National Park Local Biodiversity Action Plan (LBAP) 'Nature in the Dales: 2020 Vision' Natural England (2014) Site Improvement Plans (SIPs) for Natura 2000 Sites Natural England National Character Area (NCA) Profiles Humberhead Levels Partnership (2011) Humberhead Levels Nature Improvement Area Business Plan Leeds City region Local authority Green Infrastructure strategies (2010) North York Moors Park Authority (2012) National Park Management Plan Peak District National Park Authority (2014) Peak District National Park Management Plan 2014 – 2019 Yorkshire Dales National Park Authority (2013) Yorkshire Dales National Park Management Plan 2013-2018</p>
Population and human health	Water resources play an important recreation role. A reliable and wholesome water supply is vital to public health protection. Effective water resource management can create opportunities for regeneration	<p>International: United Nations Economic Commission for Europe (1998) Aarhus Convention - Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters The Environment Noise Directive (Directive 2002/49/EC) HM Treasury Infrastructure UK (2014) National Infrastructure Plan The Natural Environment and Rural Communities (NERC) Act (2006) European Commission, Drinking Water Directive (1998/83/EC)</p> <p>National: Defra (2011) Water for Life -Water White Paper Defra (2011) The Natural Choice: securing the value of nature. The Natural Environment White Paper Defra (2005) Securing the Future; Delivering UK Sustainable Development Strategy Defra, Environment Agency, Natural England, Forestry Commission England (2016) Creating a great place for living Environment Agency (2015) Creating a Better Place: Environment Agency Corporate Strategy 2014-2016 Environment Agency (2014) Corporate Plan 2014 - 2016 DCLG (2012) National Policy Planning Framework</p> <p>Regional/Local: North East Regional Committee, Tourism in the North East (2010) North East Local Enterprise Partnership (2014) More and Better Jobs: A strategic economic plan for the North East Leeds City Council, Core Strategy (2014) Hull City Council North York Moors (2016) Local Development Scheme Public Rights of Way Improvement Plans (ROWIPs)</p>
	The issue of water supply is becoming a development constraint in some areas, which is recognised as an issue in the National Planning Policy Framework	
	Economic and Social Regeneration –support enterprise across rural England, targeting greater resources at areas of greatest need	
	To ensure all communities have a clean, safe and attractive environment in which people can take pride	
	Improve productivity and grow the market, develop the size and capability of the workforce and create the right conditions for sustainable growth	
Material assets and resource use	Promote sustainable production and consumption whilst seeking to reduce the amount of waste generated by using materials, energy and water more efficiently	<p>International: United Nations (2002) Commitments arising from the World Summit on Sustainable Development, Johannesburg</p> <p>National: Defra (2011) Government Review of Waste Policy in England 2011 HM Treasury Infrastructure UK (2014) National Infrastructure Plan</p>

SEA Topic	Key Messages	Policies
	<p>Consider issues of water demand, water supply and water quality in the natural environment and ensure a sustainable use of water resources</p> <p>Maintain a reliable public water supply and ensure there is enough water for human uses, as well as providing an improved water environment</p> <p>Accelerating the transition to sustainable forms of energy and achieving regional renewable energy deployment targets</p>	<p>Defra (2008) Future Water: the Government’s water strategy for England Environment Agency (2009) Water Resources Strategy for England and Wales Environment Agency (2010) Water Resources Action Plan for England and Wales Welsh Government, (2014) A Water Strategy for Wales Consultation Document Environment Agency (1999) Restoring Sustainable Abstraction Programme DCLG (2012) National Policy Planning Framework Environment Act 1995 HM Treasury (2015) Fixing the Foundations: creating a more prosperous nation. HM Government, The Natural Choice: Securing the Value of Nature (2011). Natural Environment White Paper, June 2011 Defra (2011), Water for Life, Water White Paper, November 2011 Environment Agency and Natural England (2013) Joint Action Plan National Park Authorities Management Plans National Renewable Energy Action Plan (NREAP) (2010) Renewable Energy Strategy (2009)</p>
Water	<p>Reduce the sources of flooding and harm to people, and the natural, built and historic environment caused by floods and promote sustainable flood risk management measures</p> <p>Promote sustainable water resource management, including a reduction in water consumption</p> <p>Maintain and improve water quality (surface waters, groundwater and bathing waters)</p> <p>Expanding the scope of water protection to all waters, surface waters and groundwater</p>	<p>International: European Commission Floods Directive (2007/60/EC) European Commission The Water Framework Directive (2000/60/EC) European Commission Drinking Water Directive (1998/83/EC) (amended 2015) European Commission Environmental Liability Directive (2004/35/EC) Directive 2006/118EC of the European Parliament and of the council of 12 December 2006 on the protection of groundwater against pollution and deterioration European Commission Revised Bathing Water Quality Directive (76/160/EEC) European Commission Urban Waste Water Treatment Directive (91/271/EEC) European Commission Nitrates Directive (91/676/EEC)</p> <p>National: DCLG (2012) National Policy Planning Framework Defra (2005) Making Space for Water Defra (2012) The UK Climate Change Risk Assessment 2012 Evidence Report Defra (2011) Water for Life - Water White Paper Defra (2011) The Natural Choice: Securing the value of nature. The Natural Environment White Paper Defra (2008) Future Water: the Government’s water strategy for England Environment Agency (1999) Restoring Sustainable Abstraction Programme Environment Agency (2011) National Flood and Coastal Risk Management Strategy for England Environment Agency (2010) Water Resources Action Plan for England and Wales Environment Agency (2009) Water Resources Strategy for England and Wales Environment Agency (2013) Managing Water Abstraction Environment Agency (2014) Corporate Plan 2014 – 2016 Environment Agency (2015) Creating a Better Place: Environment Agency Corporate Strategy 2014-2016 Environment Agency CAMS (various) Environment Agency Catchment Flood Management Plans Environment Agency (1999) Restoring Sustainable Abstraction Programme Strategy Process Environment Agency and Defra (2015) Anglian river basin district, River basin management plan</p>

SEA Topic	Key Messages	Policies
	<p>Improve the quality of the water environment and the ecology which it supports, and continue to provide high levels of drinking water quality</p> <hr/> <p>Ensure appropriate management of abstractions and protect flow and level variability across the full range of regimes from low to high conditions</p>	<p>Environment Agency and Natural Resources Wales (2016) Severn river basin district flood risk management plan 2015-2021</p> <p>Environment Agency and other lead authorities Shoreline Management Plans</p> <p>Environment Agency, Drought response: our framework for England (2015)</p> <p>Flood and Water Management Act (2010)</p> <p>The Water Act (2003)</p> <p>The Water Environment (WFD) (England and Wales) Regulations 2003</p> <p>Water Industry Act 1991 was amended by the commencement of Section 36 of the Flood and Water Management Act 2010</p> <p>Water Resources Act 1991 (Amendment) (England and Wales) Regulations 2009 SI3104</p> <p>The Water Resources Management Plan Regulations 2007</p> <p>UKTAG on the WFD</p> <p>DEFRA (2016) Guiding principles for water resources planning for water companies operating wholly or mainly in England</p> <p>The State of the Environment: Water Resources 2018</p> <p>Regional/Local:</p> <p>Neighbouring water company WRMPs (2014/2015) and Drought Plans (2013-2014)</p> <p>Environment Agency (2016) Humber river basin district flood risk management plan 2015-2021</p> <p>Environment Agency, CAMS (various)</p> <p>Environment Agency, Water Resources Strategy Regional Action Plan for Yorkshire and North East Region (2009)</p> <p>National Park Authorities Management Plans</p> <p>Yorkshire Water Services Ltd, Final Water Resources Management Plan 2010-2035 (2014)</p> <p>Water Level Management Plans and River Restoration Plans:</p> <ul style="list-style-type: none"> • Environment Agency (2010) Restoring the River Hull Headwaters, River Restoration Plan. • River Hull Advisory Board (2015) River Hull Integrated Catchment Strategy (RHICS) • Environment Agency (2010) Restoring the Yorkshire River Derwent, Technical Report. • Yorkshire Esk Rivers Trust (2014) River Esk 3 Year Action Plan (2014-2017) • Natural England (2013) Restoring the River Wharfe SSSI: A River Restoration Plan • Natural England (2010) Restoring the Yorkshire Derwent • Environment Agency (2006) Pevensey Levels SSSI: Water Level Management Plan
Soil, geology and land use	<p>To ensure sensitive and integrated sustainable development</p> <hr/> <p>Maintain the quality and diversity of geology and soils, which can be lost or damaged by insensitive development</p> <hr/> <p>Ensure that soils will be protected and managed to optimise the varied functions that soils perform for society (e.g. supporting agriculture and forestry, protecting cultural heritage, supporting biodiversity, as a platform for construction), in keeping with the principles of sustainable development</p>	<p>International:</p> <p>Council of Europe (2003) European Soils Charter</p> <p>European Commission (2006) Thematic Strategy for Soil Protection</p> <p>National:</p> <p>The Countryside and Rights of Way (CROW) Act 2000</p> <p>Defra (2009) Safeguarding our Soils – A Strategy for England</p> <p>Defra (2004) The First Soil Action Plan for England</p> <p>Environment Agency (2007) Soil a precious resource: Strategy for protecting, managing and restoring soil</p> <p>DCLG (2012) National Policy Planning Framework</p> <p>Defra (2004) Rural Strategy 2004</p> <p>Defra (2006) Sustainable Farming and Food Strategy: Forward Look</p> <p>HMSO (1990) Environmental Protection Act</p> <p>Welsh Assembly Government (2006) Environment Strategy for Wales</p>

SEA Topic	Key Messages	Policies
	<p>Promote mixed use developments and encourage multiple benefits from the use of land in urban and rural areas, recognising that some open land can perform many functions.</p> <p>Encourage reuse of land that has been previously developed (brownfield land), provided that it is not of high environmental value.</p> <p>Promote catchment-wide approach to land use management in order to benefit natural resources, reduce pollution and develop resilience to climate change.</p>	<p>Welsh Assembly Government (2014) National Strategy for Flood and Coastal Erosion Risk Management Wildlife and Countryside Act 1981 (as amended)</p> <p>Regional/local: Natural England - National Character Area (NCA) profiles National Parks Authorities Management Plans Leeds City Council, Core Strategy (2014) Hull City Council North Pennines AONB Partnership, The North Pennines Area of Natural Beauty Management Plan 2014 – 2019 (2014)</p>
Air and climate	<p>To reduce the health risk and environmental degradation from main air pollutants without imposing unacceptable economic or social costs</p> <p>Cut the UK's carbon dioxide emissions by 60% by the year 2050 and in general reduce the levels of greenhouse gas emissions</p> <p>Reduce the effects of air pollution on ecosystems</p> <p>Improve overall air quality</p> <p>Minimise energy consumption, support the use of sustainable/renewable energy and improve resilience to climate change.</p> <p>Build in adaption to climate change to future planning and consider the level of urgency of associated risks of climate change impacts accordingly.</p>	<p>International: The Cancun Agreement (2011) & Kyoto Agreement (1997) European Commission (2008) Ambient Air Quality Directive (2008/50/EC) European Commission (2009) Promotion of the use of energy from renewable sources Directive (2009/28/EC) European Commission (2005) Thematic Strategy on Air Pollution</p> <p>National: Defra (2013) The National Adaptation Programme: Making the country resilient to a changing climate DCLG (2012) National Policy Planning Framework Defra (2012) The UK Climate Change Risk Assessment 2012 Evidence Report Department for Energy and Climate Change (2009) UK Renewable Energy Strategy Department of energy and climate change, Planning our electric future: a White Paper for secure, affordable and low carbon electricity (2011) Defra (2008), England Biodiversity Strategy –climate change adaptation principles Defra (2007) The Air Quality Strategy for England, Scotland and Wales DECC (2007) Energy White Paper: Meeting the Energy Challenge Environment Agency (2014) Corporate Plan 2014 – 2016 Environment Agency (2015) Creating a Better Place: Environment Agency Corporate Strategy 2014-2016 The Climate Change Act 2008 The Energy Act 2013 UKCIP (2009) UK Climate Projections UKCP09 (2009)</p> <p>Regional/Local: Yorkshire and Humber Climate Change Partnership, Climate Change Plan for Yorkshire and Humber (2008) Yorkshire Water Services Ltd, Final Water Resources Management Plan 2010-2035 (2014) Leeds City Council, Core Strategy (2014) Hull City Council</p>
Archaeology and cultural heritage	<p>Built development in the vicinity of historic buildings could have implications for the setting and/or built fabric</p>	<p>International: The Convention for the protection of the architectural heritage of Europe (Granada Convention) The European Convention on the protection of archaeological heritage (Valletta Convention)</p>

SEA Topic	Key Messages	Policies
	<p>Ensure any adverse effects to heritage should be minimised or avoided altogether, particularly to World Heritage Sites</p>	<p>UNESCO World Heritage Convention</p> <p>National: Ancient Monuments and Archaeological Areas Act 1979 DCLG (2012) National Policy Planning Framework English Heritage, (now known as Historic England) (2008), Climate Change and the Historic Environment English Heritage (2016), Heritage at Risk Historic England (2013) Strategic Environmental Assessment, Sustainability Appraisal and the Historic Environment Historic England (2015) The Setting of Heritage Assets, Historic Environment Good Practice Advice in Planning 3 Planning (Listed Buildings and Conservation Areas) Act 1990</p> <p>Regional/Local: English Heritage, (now known as Historic England) Heritage at Risk Register: Yorkshire and Humber (2011) English Heritage, Heritage at Risk Register: North East (2011) Visit England, Yorkshire and the Humber Regional Summary – Research and Highlights (2010) All adopted Development Plan Documents Lake District National Park Authority, A Vision for 2030 (2006) Forest of Bowland AONB, Forest of Bowland Area of Outstanding Natural Beauty 2014 – 2019 (2014) Hadrian’s Wall Heritage Ltd, Hadrian’s Wall Management Plan 2014 – 2019 (2014) Howardian Hills AONB Joint Advisory Committee, Howardian Hills Area of Natural Beauty Management Plan 2014 – 2019 (2014) Lake District National Park Authority, A Vision for 2030 (2006) Leeds City Council, Core Strategy (2014) Nidderdale AONB, Nidderdale Area of Outstanding Natural Beauty Management Plan 2014 – 2019 (2014) North Pennines AONB Partnership, The North Pennines Area of Natural Beauty Management Plan 2014 – 2019 (2014) North York Moors Park Authority, National Park Management Plan (2012) Peak District National Park Authority, Peak District National Park Management Plan 2014 – 2019 (2014) South Yorkshire Partnership, Sub-regional Spatial Strategy Vision for South Yorkshire (2004) Yorkshire Dales National Park Authority, Yorkshire Dales National Park Management Plan 2013-2018 (2013) Saltaire World Heritage Site Management Plan 2014 Fountain Abbey / Studley Royal World Heritage Site Management Plan 2015 - 2021</p>
	<p>Ensure active management of the Region’s environmental and cultural assets. Ensure protection and enhancement of historic assets and their settings, particularly those of international and national importance.</p>	
	<p>Promote heritage and landscape as central to the culture of the region and conserve and enhance distinctive characteristics of landscape and settlements, particularly in the Peak District, North York Moors and Yorkshire Dales National Parks.</p>	
Landscape and visual amenity	<p>Protection and enhancement of urban and rural landscapes (including designated landscapes, landscape character and the countryside).</p>	<p>International: Council of Europe (2006) European Landscape Convention The Marine Coastal Act (2009) European Landscape Convention: Guidelines for managing landscapes (2010)</p> <p>National: The Countryside and Rights of Way (CRoW) Act (2000) Wildlife and Countryside Act 1981 (as amended) DCLG (2012) National Policy Planning Framework Defra (2011) The Natural Choice: Securing the value of nature. The Natural Environment White Paper</p>
	<p>Enhance the value of the countryside by protecting the natural environment for this and future generations</p>	

SEA Topic	Key Messages	Policies
	<p>Take account of the different roles and character of different areas, promoting the vitality of main urban areas, protecting the Green Belts around them, recognising the intrinsic character and beauty of the countryside and supporting thriving rural communities within it.</p>	<p>Defra (2010) Making Space for Nature: A Review of England's Wildlife Sites and Ecological Network</p> <p>Regional/Local: Natural England - National Character Area (NCA) profiles Visit England, Yorkshire and the Humber Regional Summary – Research and Highlights (2010) Forest of Bowland AONB, Forest of Bowland Area of Outstanding Natural Beauty 2014 – 2019 (2014) Hadrian's Wall Heritage Ltd, Hadrian's Wall Management Plan 2014 – 2019 (2014) Howardian Hills AONB Joint Advisory Committee, Howardian Hills Area of Natural Beauty Management Plan 2014 – 2019 (2014) Lake District National Park Authority, A Vision for 2030 (2006) Leeds City Council, Core Strategy (2014) Nidderdale AONB, Nidderdale Area of Outstanding Natural Beauty Management Plan 2014 – 2019 (2014) North Pennines AONB Partnership, The North Pennines Area of Natural Beauty Management Plan 2014 – 2019 (2014) North York Moors Park Authority, National Park Management Plan (2012) Peak District National Park Authority, Peak District National Park Management Plan 2014 – 2019 (2014) South Yorkshire Partnership, Sub-regional Spatial Strategy Vision for South Yorkshire (2004) Yorkshire Dales National Park Authority, Yorkshire Dales National Park Management Plan 2013-2018 (2013) Site Improvement Plans: Yorkshire and Humber (http://publications.naturalengland.org.uk/category/5171232873906176)</p>
<p>Promote landscape as central to the culture of the region and conserve and enhance distinctive characteristics of landscape and settlements, particularly in the Peak District, North York Moors and Yorkshire Dales National Parks</p>		
<p>Cumulative loss of landscape features and character from various sources including increased development.</p>		
<p>Enhance the value of the countryside by protecting the natural environment for this and future generations.</p>		
<p>Improve access to valued areas of landscape character in sustainable ways to enhance its enjoyment and value by visitors and stakeholders. This includes protecting National trails and Public Rights of Way.</p>		

3 Environmental Baseline Review

3.1 Introduction

An essential part of the SEA process is to identify the current baseline conditions and their likely evolution. It is only with knowledge of existing conditions that impacts of the DP can be identified, mitigated and subsequently monitored.

The SEA Directive (Directive 2001/42/EC) requires that the evolution of baseline conditions of the plan area (that would take place with or without implementation of the plan) is identified. This is useful when determining impact significance, particularly with regards to baseline conditions that may already be improving or worsening and the rate of such change.

Full environmental baseline data is presented in **Appendix C** and have been drawn from a variety of sources, including a number of the plans, policies and programmes reviewed as part of the SEA process given in **Table 2.1**. This environmental baseline review also summarises the likely future trends for the environmental issues being considered (where information is available). The key issues arising from the review of baseline conditions are summarised in Section 3.4.

The baseline assessment has drawn on data for the county of Yorkshire, as this region is very closely related to YWSL's water supply operating boundaries. The Final DP 2019 includes Tees – Swale transfer drought permit/order option and a Tees – Derwent Pipeline option (see Table 1.3); consequently, appropriate baseline information relating to the areas affected by these two options outside of the YWSL supply boundary has also been included (see **Figures 1.3** and **1.4**).

3.2 Limitations of the data and assumptions made

Most of the information used in the baseline information relates to the Yorkshire region as a whole. Baseline information is also drawn on which relates to the North East region with respect to the Tees Swale transfer and is focussed only on potential impacts within a 10 km "corridor" of the rivers and pipeline routes of that scheme. As such, this baseline information may not identify the more localised issues that are not necessarily reflective of the general trends of the region. For example, this may include locally important sites for recreation or any localised differences in environmental quality.

Data have generally been sourced from national or regional bodies where information is collected for the Yorkshire region using consistent methods. This allows for a more effective comparison between the regional and national averages; however, reliance on these data sets has in some cases meant that information is a number of years old.

The EARs (see Section 1.5) support this report and have also been used to inform the SEA assessment. The limitations of data used within the EARs (e.g., biodiversity data, River Habitat Surveys (RHS) etc.) are discussed within the individual EARs.

3.3 Overview

The YWSL region has a varied landscape with the Pennines stretching to the West, the North York Moors are in the North whilst the southern and eastern parts of the region are low lying. Annual average rainfall across the region varies; highest near the Pennines, whilst low lying areas average less than

half the volume of rainfall each year, with little seasonal variation.

Urban areas in the west and south of Yorkshire are principally supplied from reservoirs in the Pennines. Reservoirs located in the Pennines and the valleys of the River Don, Aire, Wharfe, Calder, Nidd and Colne provide the largest upland sources of water in the region. YWSL operates over 100 impounding reservoirs, of which two are major pumped storage reservoirs. The total storage capacity of all the supply reservoirs amounts to some 160,000 MI.

The YWSL region is currently divided into two water resource zones for planning purposes (**Figure 1.2**). Each zone represents a group of customers who receive the same level of service for water supply reliability from either groundwater or surface water sources. The Grid Surface Water Zone (SWZ) represents a highly integrated surface and groundwater zone that is dominated by the operation of lowland rivers and Pennine reservoirs (**Figure 1.3**). The East SWZ is supplied by a river abstraction and springs in the Whitby Area.

The baseline has been reviewed for each of the SEA topics, and is presented in full in **Appendix C**. Key issues identified from the baseline are presented in **Section 3.4**.

3.4 Key Issues

3.4.1 Biodiversity, Fauna and Flora Key Issues

The key sustainability issues arising from the baseline assessment for biodiversity are:

- The need to protect or enhance the region's biodiversity, particularly protected sites designated for nature conservation.
- The need to avoid activities likely to cause irreversible damage to natural heritage
- The need to take opportunities to improve connectivity between fragmented habitats.
- The need to control the spread of Invasive Non-Native Species (INNS). The need to engage more people in biodiversity issues so that they personally value biodiversity and know what they can do to help, including through recognising the value of the ecosystem services.

3.4.2 Population and Human Health Key Issues

The key sustainability issues arising from the baseline assessment for population and human health are:

- The need to ensure water supplies remain affordable especially for deprived or vulnerable communities.
- The need to ensure continued improvements in levels of health across the region, particularly in urban areas and deprived areas.
- The need to ensure public awareness of drought conditions and importance of maintaining resilient, reliable public water supplies without the need for emergency drought measures.
- The need to ensure water quantity and quality is maintained for other users including tourists, recreational users and other users such as farmers.
- The need to ensure a balance between different aspects of the built and natural environment that will help to provide opportunities for local residents and tourists, including opportunities for access to recreation resources and the natural and historic environment.
- The need to accommodate an increasing population.

- Sites of nature conservation importance, heritage assets, water resources, important landscapes and public rights of way contribute to recreation and tourism opportunities and subsequently health and well-being and the economy.

3.4.3 Material Assets and Resource Use Key Issues

The key sustainability issues arising from the baseline assessment for Material Assets and Resource Use are:

- The need to minimise the consumption of resources, including water and energy.
- The need to reduce the total amount of waste produced in the region, from all sources, and to reduce the proportion of this waste sent to landfill.
- The need to continue to reduce leakage from the water supply system.
- Daily consumption of water is higher than the national average in the area and consequently there is a continued need to encourage more efficient water use.

3.4.4 Water Key Issues

The key issues arising from the baseline assessment for water are:

- The need to further improve the quality of the region's river, estuarine and coastal waters taking into account WFD status targets.
- The need to maintain the quantity and quality of groundwater resources taking into account WFD status targets.
- The need to improve the resilience, flexibility and sustainability of water resources in the region, particularly in light of potential climate change impacts on surface waters and groundwaters.
- The need to ensure sustainable abstraction to protect the water environment.
- The need to ensure that people understand the value of water.

Flooding is not viewed as a key issue for the SEA water topic, because none of the drought options involve the construction of permanent physical infrastructure within areas at risk of flooding.

3.4.5 Soil, Geology and Landscape Key Issues

The key sustainability issues arising from the baseline assessment for soil, geology and land use are:

- The need to protect geological features of importance and maintain and enhance soil function and health.
- The need to manage the land more holistically at the catchment level, benefitting landowners, other stakeholders, the environment and sustainability of natural resources (including water resources).
- The need to make use of previously developed land (brownfield land) and to reduce the prevalence of derelict land in the region.

3.4.6 Air and Climate Key Issues

The key sustainability issue arising from the baseline assessment for air and climate is:

- The need to reduce air pollutant and greenhouse emissions and limit air emissions to comply with air quality standards.
- The need to mitigate against climate change through the reduction in greenhouse gas emissions in order to contribute to risk reduction over the long term.
- The need to adapt to the impacts of climate change for example through, sustainable water resource management, water use efficiencies, specific aspects of natural ecosystems (e.g. connectivity) as well as accommodating potential opportunities of climate change.

3.4.7 Archaeology and Cultural Heritage Key Issues

The key sustainability issue arising from the baseline assessment for archaeology and cultural heritage is:

- The need to conserve or enhance sites of archaeological importance and cultural heritage interest, particularly those which are sensitive to the water environment.

3.4.8 Landscape and Visual Amenity Key Issues

The key sustainability issue arising from the baseline assessment for landscape and visual amenity is:

- The need to protect and improve the natural beauty of the region's National Parks, AONBs, and other areas of natural beauty.
- It is envisaged that landscape and designated sites will be maintained and enhanced for the enjoyment of the public.

3.4.9 Inter-relationships

It is noted that there are inter-relationships between SEA topics. These include impacts of changes to water flows and quality on biodiversity, the economy, recreation, tourism, navigation, cultural heritage and landscape. Inter-relationships that result in changes to individual effects are considered by evaluation of synergistic effects throughout the assessment.

4 Methodology

4.1 Introduction

This section describes the methodology that has been used to undertake the SEA of the drought options in YWSL's Final DP.

What the SEA Regulations require:

According to Regulation 12:

- (2) *The report shall identify, describe and evaluate the likely significant effects on the environment of –*
- (a) *implementing the plan or programme; and*
 - (b) *reasonable alternatives taking into account the objectives and the geographical scope of the plan or programme*

According to Schedule 2, the Environmental Report should include:

- 6. *The likely significant effects on the environment, including short, medium and long-term effects, permanent and temporary effects, positive and negative effects and secondary, cumulative and synergistic effects...*
- 8. *An outline of the reasons for selecting the alternatives dealt with, and a description of how the assessment was undertaken including any difficulties (such as technical deficiencies or lack of know-how) encountered in compiling the required information.*

4.2 Assessment Methodology and SEA Framework

This section outlines the assessments that have been carried out in the SEA to identify the environmental effects of the drought options listed in YWSL's Final DP 2019.

The environmental assessments of the drought options are be 'objectives-led'. Establishing assessment objectives is a recognised way of considering the environmental effects of a plan and comparing the effects of alternatives. SEA objectives are often derived from environmental objectives established in law, policy or other plans and programmes, or from a review of baseline information and environmental problems (based on the SEA topics listed in Section 3.4).

An assessment framework of objectives has been developed based on:

- The current state of the environment in the YWSL water supply area (see Section 3.3).
- The key environmental issues identified (see Section 3.4).
- The key policy messages and environmental protection objectives identified in the review of policies, and other plans and programmes (see Section 2). It is important that the assessment takes these objectives into account as this will help it to highlight any area where the DP will help or hinder the achievement of the objectives of other plans (e.g. at local, national and international level – see review of Plans, Policies and Programmes in Section 2.2).

Final SEA objectives are set out in **Table 4.1**, alongside the key messages identified from the review of policies, plans and programmes and the key issues from the review of baseline information. The following sections describe how YWSL used these SEA objectives in the assessment of the environmental effects of the drought options. These SEA objectives are intended to reflect changes that contribute to sustainability. By assessing each drought option against the objectives, it is more apparent where drought options might have a negative impact, and where options could be developed to reduce potential impacts.

As well as the overall SEA objectives, a number of key questions have been developed for each SEA topic. These key questions prompt the assessment and ensure it considers all the relevant aspects. The assessment of each option required the following information, some of which was available from the DP (e.g. Appendix 6 forms):

- Option components and location;
- Likelihood of deployment;
- Construction and operation details;
- Amount of water provided (taking yield uncertainty into account); and
- Key elements of the baseline environment, such as location of designated sites.

Table 4.1 SEA Objectives and Assessment Approach

SEA Topic	PPP Key Messages	Baseline Key Issues	SEA Objectives	Indicator Questions
Biodiversity, flora and fauna	Protection and enhancement of biodiversity, particularly internationally and nationally designated sites.	The need to protect and enhance the region's biodiversity, particularly protected sites designated for nature conservation.	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over-abstraction on sensitive sites, habitats and species) and consider adaptability to climate change 1.2 To avoid introducing or spreading INNS.	Will it avoid damage to aquatic, transitional and terrestrial species and habitats including fish populations (particularly migratory fish)?
	Promote a catchment-wide or landscape-scale approach to biodiversity management to ensure better protection of the natural environment and heritage.	The need to take opportunities to improve connectivity between fragmented habitats and take a catchment-scale or landscape-scale approach to biodiversity management.		Will it enhance aquatic, transitional and terrestrial species and habitats?
	To achieve favourable condition for priority habitats and species, including UK NERC habitats and species.	The need to avoid activities likely to cause irreversible damage to the natural environment and natural heritage, particularly irreplaceable habitat such as ancient woodland.		Will it protect the most important sites for nature conservation?
	Avoidance of activities likely to cause damage to nature conservation and natural heritage.			Will it minimise habitat fragmentation and protect connectivity?
	Recognise the wider benefits of eco-system services through support for well-functioning ecosystems, respect environmental limits and capacities, and maintain/enhance coherent ecological networks, including provision for fish passage and connectivity for migratory/mobile species.	The need to engage more people in biodiversity issues so that they personally value biodiversity and know what they can do to help.		Will it provide opportunities for new habitat creation or restoration and link existing habitats?
			Will it ensure the sustainable management of natural habitats, taking into account climate change adaptability?	

SEA Topic	PPP Key Messages	Baseline Key Issues	SEA Objectives	Indicator Questions
	Strengthen the connections between people and nature and realise the value of biodiversity.			<p>Will it affect WFD compliance e.g. good ecological potential/status?</p> <p>Will it protect natural capital and ecosystems from natural capital?</p> <p>Will it improve access to nature for people?</p> <p>Will it increase the spread of invasive species?</p>
Population and human health	To ensure reliable and sustainable supplies of water are maintained for all.	The need to ensure essential water supplies are safeguarded to all communities to protect public health and economic activity.	2.1 To protect and improve health and well-being and reduce inequalities.	Will it help to ensure access to a resilient and secure supply of drinking water?
	To ensure all communities have access to a clean, safe and attractive environment in which people can enjoy and take pride.	The need to ensure continued improvements in levels of health across the region, particularly in urban areas and deprived areas.	2.2 To protect and enhance opportunities for formal and informal recreation.	Will it help to promote healthy communities and protect from risks to health and wellbeing?
	Water resources play an important recreation role. Effective water resource management can create opportunities for regeneration, tourism and the wider economy.	The need to help provide opportunities to local residents and tourists, including opportunities for access to recreation resources and the natural and historic environment.	2.3 To promote a sustainable economy and thriving communities with good access to the services they need.	Will it protect or enhance opportunities for recreation?
	Increase awareness of sustainability, the true value and	The need to ensure all communities contribute to		

SEA Topic	PPP Key Messages	Baseline Key Issues	SEA Objectives	Indicator Questions
	health benefits of water and its efficient use.	sustainable management of natural resources, and for support to be provided to community-led initiatives. The need to promote the health benefits of drinking water and efficient use of water.		
Material assets and resource use	Promote sustainable production and consumption whilst seeking to reduce the amount of waste generated by using materials, energy and water more efficiently.	The need to minimise the consumption of resources, including water and energy.	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	Will it help to minimise the demand for water? Will it increase efficiency in water use? Will it minimise greenhouse gas emissions through energy efficiency? Will it minimise waste? Will it enable efficient water resource management and ensure maintenance of supply?
	Consider issues of water demand, water supply and water quality in the natural environment and ensure a sustainable use of water resources.	The need to ensure all communities contribute to sustainable management of natural resources, and for support to be provided to community-led initiatives.		
	Maintain a reliable public water supply and ensure there is enough water for human uses, as well as providing an improved water environment.			
	Minimise the production of waste, ensure waste management is in line with the 'waste hierarchy', and eliminate waste sent to landfill.	The need to reduce the total amount of waste produced in the region, from all sources, and to reduce the proportion of this waste sent to landfill.		
Water	Maintain and improve water quality (surface waters and groundwater). Improve the quality of the water environment and the	The need to further improve the quality of the region's river, lake, estuarine and coastal waters.	4.1 To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies.	Will it minimise risks of adverse effects on water quality? Will it affect WFD compliance (supporting elements to Good

SEA Topic	PPP Key Messages	Baseline Key Issues	SEA Objectives	Indicator Questions
	<p>ecology which it supports, and continue to provide high levels of drinking water quality.</p> <p>Expand the scope of water protection to all waters, surface waters and groundwater.</p>	<p>The need to maintain the quantity and quality of groundwater resources.</p>		<p>Ecological Potential/Status, including hydromorphology)?</p> <p>Will it affect bathing water compliance?</p> <p>Will it avoid contamination of groundwater?</p>
	<p>Ensure appropriate management of abstraction and protect flow and level variability across the full range of regimes from low to high conditions.</p>	<p>The need to manage and operate water resources sustainably to protect flow and level variability in rivers and groundwaters.</p>	<p>4.2 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.</p>	<p>Will it help to minimise risks associated with unsustainable abstraction of ground and surface waters?</p> <p>Will it abstract from a water resource with resource availability (with reference to CAMS status and WFD considerations)?</p> <p>Will it affect WFD compliance e.g. Good Environmental Status?</p> <p>Will it affect river basin management plans?</p> <p>Will it alter the flow or level regime or residence time of surface waters or groundwaters?</p>
	<p>Develop a resilient and flexible water management approach to cope with changing climate, population and economic conditions.</p> <p>Balance the abstraction of water for supply with the other functions and</p>	<p>The need to improve the resilience, flexibility and sustainability of water resources in the region.</p> <p>The need to balance the needs of population and the economy for reliable</p>	<p>4.3 To ensure appropriate and sustainable management of abstractions (or compensation flow) to maintain water supplies whilst protecting ecosystem functions that rely on water resources.</p>	<p>Will it enable flexible control over the level of abstraction at short notice in response to changing environmental conditions?</p> <p>Will it enable a sustainable use of water resources that</p>

SEA Topic	PPP Key Messages	Baseline Key Issues	SEA Objectives	Indicator Questions
	<p>services the water environment performs or provides.</p> <p>Encourage more efficient use of water and promote awareness of water sustainability.</p>	<p>supplies of water with the needs of the water environment.</p> <p>The need to promote the efficient use of water by all consumers.</p>		<p>balances demand for water with environmental protection?</p> <p>Will it encourage efficient water use?</p> <p>Will it contribute towards improving the awareness of water sustainability and its true value?</p>
Soil, geology and land use	<p>Maintain the quality and diversity of geology and soils, which can be lost or damaged by insensitive development.</p>	<p>The need to protect geological features of importance and maintain and enhance soil function and health.</p>	5.1 To protect and enhance the quality and quantity of soils and to protect and enhance geodiversity.	<p>Will it avoid damage to and protect geologically important sites?</p> <p>Will it avoid damaging the quality of agricultural land?</p>
	<p>Ensure that soils will be protected and managed to optimise the varied functions that soils perform for society (e.g. supporting agriculture and forestry, protecting cultural heritage, supporting biodiversity, as a platform for construction), in keeping with the principles of sustainable development.</p>	<p>The need to make use of previously developed land in urban areas, and to reduce the prevalence of derelict land in the region.</p>		<p>Will it protect, maintain and enhance soil function and health?</p> <p>Will it avoid contributing to coastal erosion?</p>
	<p>Promote catchment-wide approach to land use management in order to benefit natural resources, reduce pollution and develop resilience to climate change.</p>			<p>Will any development make use of previously developed land?</p>
	<p>Promote mixed use developments, and encourage multiple benefits from the use of land in urban and rural areas, recognising that some open land can perform many functions.</p>			

SEA Topic	PPP Key Messages	Baseline Key Issues	SEA Objectives	Indicator Questions
	Encourage reuse of land that has been previously developed (brownfield land), provided that it is not of high environmental value.			
Air and climate	<p>Cut the UK’s carbon dioxide emissions by 80% by the year 2050, including through the contributions being made by water companies to reduce GHG emissions associated with water supply.</p> <p>Reduce the effects of air pollution on ecosystems. Improve overall air quality.</p> <p>Sustain compliance with and contribute towards EU limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and the cumulative impacts on air quality from individual sites in local areas.</p>	<p>The need to mitigate against climate change through the reduction in greenhouse gas emissions from all sectors of the economy in order to contribute to climate change risk reduction over the long term.</p> <p>The need to reduce air pollutant and greenhouse gas emissions arising from industrial processes, energy production and transport and limit air emissions to comply with air quality standards.</p>	<p>6.1 To maintain and improve air quality.</p> <p>6.2 To reduce greenhouse gas emissions.</p> <p>6.3 To consider the need for adaptive measures for climate change.</p>	<p>Will it minimise the need for energy?</p> <p>Will it increase efficiency in the use of energy?</p> <p>Will it reduce or minimise greenhouse gas emissions?</p> <p>Will it reduce vulnerability to potential impacts of climate change on water supply and demand?</p> <p>Will it take into account the need for adaptability to climate change?</p>
	<p>Minimise energy consumption, support the use of sustainable/renewable energy and improve resilience to climate change.</p> <p>Build in adaption to climate change to future planning and consider the level of urgency of associated risks</p>	<p>The need to adapt to the impacts of climate change, including through resilience planning, ensuring resilient and sustainable water resource management, active management of specific aspects of natural ecosystems (e.g.</p>		

SEA Topic	PPP Key Messages	Baseline Key Issues	SEA Objectives	Indicator Questions
	of climate change impacts accordingly.	connectivity) and accommodating potential opportunities of climate change. The need to ensure all communities contribute to sustainable energy use and to support community- led initiatives.		
Archaeology and cultural heritage	Protection and enhancement of historic assets and their settings, particularly those of international and national importance.	The need to protect and enhance heritage assets, particularly those which are sensitive to the water environment. The need to have positive strategies for the conservation and enjoyment of the historic environment, particularly for heritage assets that are most at risk of neglect or decay.	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness, landscape/townscape character and appearance? Will it avoid damage to and protect archaeologically important sites? Will it avoid damage to important wetland areas with potential for paleo-environmental deposits?
Landscape and visual amenity	Protection and enhancement of urban and rural landscapes (including designated landscapes, landscape character and the countryside).	The need to protect and improve the natural beauty of the region's National Parks, AONBs and other areas of high	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes,	Will it result in changes to access to the countryside and open space?

SEA Topic	PPP Key Messages	Baseline Key Issues	SEA Objectives	Indicator Questions
	<p>Take account of the different roles and character of different areas, promoting the vitality of main urban areas, protecting the Green Belts around them, recognising the intrinsic character and beauty of the countryside and supporting thriving rural communities within it.</p> <hr/> <p>Enhance the value of the countryside by protecting the natural environment for this and future generations. Ensure good access to valued areas of landscape character in sustainable ways to enhance its enjoyment and value by visitors and stakeholders. This includes protecting National trails and Public Rights of Way.</p>	<p>landscape and visual amenity value.</p> <p>The need to protect the integrity of Green Belt land, maintaining their openness and permanence.</p> <p>The need to ensure good design for the built environment as a key aspect of sustainable development.</p>	<p>townscapes and the countryside.</p>	<p>Will it avoid adverse impacts and enhance designated landscapes including the protection of OUV features?</p> <p>Will it improve access to the countryside and open space?</p> <p>Will it avoid indirect effects on the landscape resulting from effects of abstraction and low river flows?</p> <p>Will it avoid cumulative effects on landscape features and character from a range of actions and developments?</p>

4.3 Primary Assessment

The appraisal framework set out in **Table 4.1** has been used to assess each of the drought options against the SEA objectives. The appraisal framework was applied to test the performance of the drought options against the SEA objectives. This assessment supported development of YWSL's Final DP 2019, and will inform the selection of options should a drought result in the DP becoming operational.

In the context of drought planning, individual drought options are taken to constitute alternatives. YWSL's Final DP 2019 comprises a total of 64 drought options (59 supply side options (including 9 long term options), 5 demand options). Each of these 'alternatives' (individual drought options) were therefore assessed using the appraisal framework set out in **Table 4.2**. The assessment therefore provides information on the relative environmental performance of alternatives, and is intended to make the decision-making process more transparent. The SEA can, therefore, be used to support the timing and implementation of drought options within the DP.

The appraisal framework (**Table 4.2**) is structured as follows:

- The first and second columns set out the SEA topics and objectives.
- The scale of the effect, which might relate to either geographical scale or the size of the population affected, is identified in the third column on a scale of small, medium to large.
- The impact evaluation includes consideration of the nature of the impact, certainty of effect, duration and permanence (fourth, fifth and sixth columns of **Table 4.2**) in compliance with criteria for determining the likely significance of effects specified in the SEA Directive Article 3(5) and Annex II, and the SEA Regulations Part 2, Regulation 9(2a) and Schedule 1. With respect to duration of temporary effects, short-term impacts are defined as those that last for up to six months, medium term impacts are those that extend for six months to two years whilst longer term temporary impacts are assessed as those that extend to two to five years. A 'significant long term' temporary impact category is used for those temporary effects that continue beyond five years in duration.
- The seventh column identifies the magnitude of the effect on a scale of low, medium and high.
- The value/sensitivity of the receptor(s) is identified in the eighth column on a scale of low, medium and high.
- The ninth column provides a brief commentary and evaluation of the impact of the drought option on the objectives for each topic, with reference to the key questions proposed in **Table 4.1**. This brief commentary assumes the implementation of best practice in implementing the option, therefore the effects are referred to as residual and are largely temporary. Potential mitigation measures for any identified adverse effects arising from each option are identified within the appraisal framework.
- The residual adverse and beneficial effects (after application of best practice approaches and any appropriate mitigation measures) are identified in the tenth and eleventh columns respectively. These were identified separately so as to avoid mixing adverse and beneficial effects. The commentary in column nine, combined with the magnitude (column seven) and value / sensitivity (column eight) informs the residual adverse or beneficial effects.

Where qualitative and/or quantitative information is available for an option (e.g. as identified by an EAR etc.), this was used to inform the assessment.

As described in Section 1.5, EARs have been produced for the supply side drought permit options and these were used to inform the SEA for these options. The EARs define the significance of effects on identified sensitive features based on fragility of the receptors and the likely magnitude of impact experienced. The assessment of effects on water quality described in the EARs took into consideration the requirements of the WFD. Important information held within the EARs is borne out in the commentary of the assessment table if relevant, and the level of significance largely guided the SEA level of significance for the objectives that are informed by the EARs (see **Table 4.1** above).

Objectives or key questions that are not supported by information presented in the EARs are evaluated using spatial analysis, professional judgement and appropriate guidelines.

Equally, where detailed environmental and socio-economic assessments of non-drought permit/order options were carried out (e.g. in relation to water use restrictions), these were also used to inform the SEA.

4.3.1 Changes in Objectives

Due to updates of policies and best practice SEA methodology since the previous SEA, published in 2013, the objectives have been updated. These changes reflect the updated baseline (see Section 3 and **Appendix C**), including updated policies and plans (Section 2 and **Appendix B**). The changes (additions or removal of objectives) relates to current policy (e.g., changes due to the WFD), and help improve the assessment of drought options during the SEA process.

An example of a removal of an objective relates to the flooding: 'to reduce and manage fluvial and surface water flood risk', in the previous 2013 SEA, this objective received a standard response for each drought option. It is considered that such objectives are not needed, as they do not add to the overall strategic assessment.

An example of an addition of an objective relates to the spread of invasive species, as following current policy, invasive species need to be considered.

Objectives have also been reworded from the Scoping Report – this is to not only follow current policies, but also to produce a more coherent set of objectives and related indicator questions for assessment. These changes do not impact on the overall quality of assessment, but merely reflect updated procedure since the last SEA (published in 2013) and make the assessment more robust and relevant to current legislation.

The SEA appraisal framework was used to capture the assessment for each drought option. The results of the option assessments are provided in Section 0.

Varying levels of uncertainty are inherent within the assessment process. Through the application of expert judgement, the uncertainty was minimised. The level of uncertainty of the option assessment for each SEA objective was included in the appraisal framework. Where there was significant uncertainty which precluded an effects assessment category being assigned for a particular drought plan option and SEA objective, an "uncertain" residual effects assessment label was applied to that specific SEA objective.

Table 4.2 SEA Appraisal Framework

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/ medium/ large)	Certainty of effect (low/ moderate/ high)	Duration of effect (short-term/ medium-term/ long-term)	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods): Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over-abstraction on sensitive sites, habitats and species) and consider adaptability to climate change.									
	1.2 To avoid introducing or spreading INNS.									
Population and human health	2.1 To protect and improve health and well-being and reduce inequalities									
	2.2 To protect and enhance opportunities for formal and informal recreation									

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/ medium/ large)	Certainty of effect (low/ moderate/ high)	Duration of effect (short-term/ medium-term/ long-term)	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods): Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
	2.3 To promote a sustainable economy and thriving communities with good access to the services they need.									
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.									
Water	4.1 To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies.									

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/ medium/ large)	Certainty of effect (low/ moderate/ high)	Duration of effect (short-term/ medium-term/ long-term)	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods): Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
	4.2 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.									
	4.3 To ensure appropriate and sustainable management of abstractions (or compensation flow) to maintain water supplies whilst protecting ecosystem functions that rely on water resources.									
Soil, geology and land use	5.1 To protect and enhance the quality and quantity of soils and to protect and enhance geodiversity.									
Air and Climate	6.1 To maintain and improve air quality.									
	6.2 To reduce greenhouse gas emissions.									

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/ medium/ large)	Certainty of effect (low/ moderate/ high)	Duration of effect (short-term/ medium-term/ long-term)	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods): Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
	6.3 To consider the need for adaptive measures for climate change.									
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.									
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.									

For each SEA objective, a residual effects assessment was determined against a significance matrix (**Figure 4.1**) which took into account the value/sensitivity of the receptor (e.g. air quality, river water quality, landscape value) and the magnitude of the assessed effect. This significance matrix comprised effects from ‘major beneficial’ to ‘major adverse’. For the box signifying low magnitude and high receptor value/sensitivity, this could result in a greater than ‘moderate’ effects being assigned dependent on the sensitivity/value of the receptor. This colour coding was used to complete the columns for residual effects in the appraisal framework.

The resulting significance of effects is used in the prioritisation of options. Also, where major adverse effects are predicted, broad measures envisaged to prevent, reduce and as fully as possible offset these effects on the environment (as a result of implementing the DP) are outlined where relevant/appropriate.

Figure 4.1 Significance Matrix

Significance of Effect		Value/sensitivity of receptor		
		High	Medium	Low
Effect magnitude (includes scale of effect)	High	Major Beneficial / Major Adverse	Major Beneficial / Major Adverse	Moderate Beneficial / Moderate Adverse
	Medium	Major Beneficial / Major Adverse	Moderate Beneficial / Moderate Adverse	Minor Beneficial / Minor Adverse
	Low	Significance dependent on value/sensitivity of receptor and magnitude	Minor Beneficial / Minor Adverse	Negligible

 = Significance of effect dependent on value/sensitivity of receptor and magnitude

The definitions for ‘significance’ ratings as identified in the table above are provided below:

Major - effects represent key factors in the decision-making process. They are generally associated with sites and features of international, national or regional importance. If adverse, such resources/features are generally those which cannot be replaced or relocated.

Moderate - effects are likely to be important considerations at a regional or district scale. If adverse, they are likely to be of potential concern.

Minor - effects are not likely to be decision-making issues. Nevertheless, the cumulative effect of such issues may lead to an increase in the overall effects on a particular area or on a particular resource.

Negligible - effects which are not perceptible, being within normal bounds of variation or the margin of forecasting error.


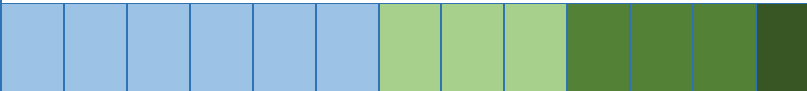
For the ‘high’ effect magnitude (top row), a major effect significance is assigned for both high and

medium value receptors to reflect the magnitude of the effect.

For the **‘low’ effect magnitude and ‘high’ value receptor** (bottom left box), the significance of effect could be minor, moderate or major dependent on the precise nature of the impact or benefit. The commentary column will justify why the effect has been chosen.

The appraisal framework for each option includes a summary comprising an overview of the adverse and beneficial effects. The assessment matrices are provided in **Appendix D**.

Table 4.3 Example SEA Appraisal Framework Summary

Option	[name of option]
Summary commentary of scheme adverse effects	[summary]
SEA objectives adverse effects summary	
Summary commentary of scheme beneficial effects	[summary]
SEA objectives beneficial effects summary	

An appraisal framework table (example provided in **Table 4.3**) has been completed for each drought option (as identified in Section 1) and presented in full in **Appendix D**. The summary of the assessment is presented in Section 5 as a colour-coded visual evaluation (VE) matrix. The VE matrix summarises the likely significance of impacts (which are discussed in full in the completed appraisal framework tables in **Appendix D**).

4.4 Secondary, Cumulative and Synergistic Environmental Effects Assessment

Schedule 2(6) of the SEA Regulations requires the assessment of “*The likely significant effects on the environment, including short, medium and long-term effects, permanent and temporary effects, positive and negative effects, and secondary, cumulative and synergistic effects....*” From here on in “*cumulative effects*” is taken to include secondary and synergistic effects.

Because the combination of options that would be deployed in any one drought cannot be predetermined (Section 1.4.2) a dedicated cumulative effects assessment in order to ensure that options are not mutually exclusive, or that combinations would not cause significant adverse impacts has been undertaken. This involved examining the likely significant effects of each of the drought options individually, in combination with each other, and in combination with the implementation of other plans and programmes. In assessing these effects, consideration has been given to other factors which may affect the receiving environment in the short, medium and long term.

The following cumulative assessments have been undertaken (see Section 6 for results):

1. Within YWSL's entire water supply area, assessment of cumulative impacts of each demand management drought option with every other demand management drought option. Note that demand management drought options are consistent across the whole of YWSL's region. Demand management measures serve to reduce pressure on water resources by reducing the demand for water. Therefore, demand management measures have not been assessed in detail against each supply side and drought permit/order option, other than to acknowledge that they will have a net positive effect by reducing pressure on water resources.
2. For each supply side option, assessment of the cumulative impacts of the option with YWSL's existing abstraction licences that operate within the zone of influence of the drought option.
3. For each supply side option, assessment of cumulative impacts with any other supply side option. Mutually exclusive options (e.g. those that draw upon the same resource or use the same site) have been identified.
4. Assessment of cumulative impacts of YWSL's DP with drought options included in Environment Agency Drought Plans.
5. Assessment of cumulative impacts of YWSL's DP with drought options included in the Canal and River Trust Drought Plans.
6. Assessment of cumulative impacts of YWSL's DP with drought options included in other neighbouring water company DPs.
7. Assessment of cumulative impacts of YWSL's DP with other relevant policies and plans.

Neighbouring water companies were invited to consult on the Draft DP and YWSL also communicated with neighbouring companies regarding the schemes in their respective plans. This enabled potential effects with other plans to be identified, particularly in the context of spatial and temporal proximity. This is especially important in identifying potential water resources impacts, although licence changes would always be subject to further investigation by the companies themselves and the Environment Agency. Potential cumulative effects with wider plans were also assessed. If effects are identified they can be ameliorated with early stage mitigation and associated monitoring.

DPs comprise a group of measures, the implementation of which are dependent on the particular drought conditions experienced and are subject to temporal, spatial and other factors. The exact timing of implementation of drought options will not be known until a drought is experienced. One of the limitations of the cumulative or in-combination assessment of YWSL's Final DP is that whilst an environmental appraisal of each drought option can be undertaken, the lack of predictability of which options will be implemented in any particular drought event means that it may be impossible to provide an accurate cumulative assessment of the impacts of the plan for a possible future drought event.

Cumulative assessments of drought options with each other have been undertaken assuming as a worst case that the operation of the two options could occur simultaneously. Spatial proximity and therefore potential impacts on a common receptor is the primary consideration (e.g. the same

designated area or reach of river).

Due to the uncertainty of timing of implementation of drought options, assessment of each drought option with every other drought option has been undertaken with the intention that in the event of a drought, the findings of the SEA will be reviewed and a cumulative assessment made of the options proposed for implementation at that time, based on the findings of the one-on-one assessments presented in Sections 5.3 and 5.4.

4.5 Limitations of the Study

SEA is a high-level assessment aimed at highlighting potential environmental concerns. The environmental data used in this assessment is based on that which is readily available from existing sources, e.g. statutory organisations, and environmental assessments of drought permit/order options already undertaken by YWSL. No primary research or survey work has been carried out specifically to inform the SEA and, therefore, it is possible that at the individual option level, there may be additional environmental issues that could have an influence on a drought option.

Limitations of the cumulative, or in-combination assessment of YWSL's final DP should also be noted as discussed in Section 4.4, as implementation of drought options are dependent on the particular drought conditions experienced meaning that it may be impossible to provide an accurate cumulative assessment of the impacts of the plan for a possible future drought event.

It should be noted that the EARs which have been prepared for the drought permits / order sites to support YWSL's DP (see Section 1.5) have been undertaken in accordance with the revised Environment Agency Drought Plan Guidance. This states that the level of detail included in the EAR should be based on the level of risk posed by the action that is being assessed (e.g. based on the scale of the impact, the expected frequency of use or the importance or sensitivity of the site). The required level of assessment has been undertaken to help inform any potential residual effects of each drought option. The limitations of the data used for each assessment are discussed in the EARs. The assessment does not, however, address local wildlife sites. The level of risk of a local wildlife site being significantly affected by the implementation of a drought permit / order is being assessed as an addendum to the EARs. For the SEA, assessment is undertaken at the strategic level and it is, therefore, not practical to assess local wildlife sites.

The following information is incorporated from the EARs: impacts on environmental features such as NERC Species, designated sites, landscape and recreation; impact on hydrological flow and associated changes in geomorphological function and water quality. Where particular limitations or outstanding issues are known, these are briefly described in the SEA appraisal tables for the relevant drought option concerned.

5 Assessment of Drought Options

5.1 Drought Options Under Consideration

Demand management schemes which have been assessed are common to all zones and are listed in **Table 1.1** Supply side and drought permit/order drought options which have been assessed for both WRZs are listed in **Table 1.2** and **Table 1.3**.

5.2 Assessment of Schemes Against SEA Objectives

Assessment of drought options has been carried out in accordance with the methodology described in Section 4. Appraisal framework assessment tables have been completed for each drought option, and are presented in full in **Appendix D**. A summary of the assessment is presented in this section as colour-coded VE matrices. For each drought option and each SEA topic and SEA objective listed in the left-hand column of **Table 4.1**, the VE matrix summarises the likely significance of residual impacts. The colour coding represents a range from significant adverse impact in red through to significant beneficial impacts in dark green.

Legend

Colour		Significance of Effect
	Dark Green	Major Beneficial
	Mid Green	Moderate Beneficial
	Light Green	Minor Beneficial
	Negligible	Negligible
	Yellow	Minor Adverse
	Orange	Moderate Adverse
	Red	Major Adverse
	NONE APPLICABLE	NOT APPLICABLE

5.3 Demand Side Options

A visual summary of SEA conclusions for each of the demand side options in YWSL's final DP is provided in **Table 5.1**. The completed appraisal tables for each of the drought options are provided in **Appendix D**.

Overall, demand side measures serve to reduce pressure on water resources by reducing customer demand for water, and therefore reducing abstraction at source. This will in turn contribute to reducing the amount of energy needed for water abstraction, treatment and distribution. Demand side measures typically provide beneficial effects such as maintaining surface and groundwater flows and promoting efficient and sustainable use of water. Adverse effects on landscaping and horticulture businesses may be associated with sprinkler and temporary use bans, and impacts on businesses due to water use restrictions would increase in severity and spread to other sectors (e.g., recreation and tourism) should ordinary or emergency drought orders be implemented. Impacts from implementation of drought orders could also extend to archaeology and cultural heritage, due to the influence on the setting of cultural assets. Minor adverse effects may also be associated with emissions of air pollutants and greenhouse gas emissions from leakage reduction programme activities.

Table 5.1 Visual Evaluation Matrix Summary for Demand Side Options

Option		SEA Topics and Objectives																Commentary
		Biodiversity		Population and Human Health			Material Assets and Resource Use	Water			Soil, Geology and Land Use	Air and Climate			Archaeology and Cultural Heritage	Landscape		
		1.1	1.2	2.1	2.2	2.3	3.1	4.1	4.2	4.3	5.1	6.1	6.2	6.3	7.1	8.1		
Drought publicity campaigns	Adverse																No adverse impacts have been identified for this drought measure.	
	Beneficial	Green		Green		Green	Green	Green	Green					Green	Blue	Blue	Minor beneficial impacts include reducing demand for water and securing essential supplies of water for customers/businesses. Reducing the demand for water will also have minor beneficial effects on maintaining surface water and groundwater levels/flows, sustainable management of abstraction and enabling long term improvements in water efficiency. Reducing water demand will also help to improve the resilience of water supplies to drought.	
Emergency Drought Order	Adverse			Red	Red	Red								Red	Blue	Blue	Major adverse effects are predicted for population and human health, including potential drinking water quality issues, impacts for water-dependent recreational assets and businesses/economy. An emergency drought order is not consistent with sustainable resource use or providing secure water supplies for people and businesses, and will cause significant disruption to domestic and commercial life. Other adverse effects include potential minor impacts on the setting of certain heritage assets and visual amenities.	
	Beneficial	Green		Green			Green	Green	Green					Blue	Blue	Blue	Moderate to minor beneficial effects include a reduction in the demand for water, maintenance of water flows/levels and maintenance of a water supply to consumers in an extreme drought.	
Increased leakage detection and repair activity	Adverse	Blue			Blue		Blue	Blue				Yellow	Yellow		Blue	Blue	Minor adverse effects identified are associated with emissions to air (air pollutants and greenhouse gas emissions) as a result of construction activities and vehicle movements. All other adverse effects identified are negligible.	
	Beneficial	Green		Green		Green	Blue	Blue	Green	Green			Green	Green		Blue	Minor to moderate beneficial effects have been identified with respect to sustainable provision of water through water savings that would have otherwise been lost to leakage after having been abstracted at source. These effects are generally considered to be long term and permanent in nature.	
Introduction of a drought order to ban non-essential water uses	Adverse				Yellow	Red									Blue	Blue	Moderate to major adverse effects associated with restriction of water use and impacts on recreation and tourism assets, the setting of heritage assets and local visual amenities. Restrictions of water use and impacts on businesses/economy could lead to major adverse effects.	
	Beneficial	Green		Green			Green	Green	Green	Green				Green	Blue	Blue	Major beneficial effects as a result of maintenance of supply to consumers at times of drought. Minor beneficial effects in terms of the effects of reducing demand and improving the resilience of water supplies to drought, maintaining surface water and groundwater levels/flows and sustainable management of abstraction and supporting overall water efficiency.	
Introduction of temporary use ban	Adverse				Yellow	Orange									Blue	Blue	A moderate adverse effect has been identified in terms of promoting a sustainable economy due to the effect of the ban on some businesses (e.g. landscaping/horticulture) that rely on domestic water-using appliances/uses (e.g. sprinklers/hosepipes).	
	Beneficial	Green		Green			Green	Green	Green	Green				Green	Blue	Blue	Moderate beneficial impacts include reducing the demand for water and securing supply of water for customers/businesses. Reducing the demand for water will also have minor beneficial effects on maintaining surface water and groundwater levels/flows, sustainable management of abstraction and enabling long term improvements in water efficiency. Reducing water demand will also help to improve the resilience of water supplies to drought.	

5.4 Supply Side Options

A visual summary of the findings of the SEA for each of the drought permit/order options is provided in **Table 5.2**. The following subsections present these findings, indicating which options perform best across the SEA objectives. The completed appraisal tables for each of the drought options are provided in **Appendix D**.

5.4.1 Standard Drought Permit/Order Options

The assessment of drought permit/order options found that the majority of options would have a major adverse effect on surface water flows and levels in the receiving watercourses; with the exception of North West Area Reservoir 11, Calder Area Reservoir 1, South Area Reservoir 4 and the river abstraction options. Impacts would be restricted to the low flow regimes of the watercourses and would be short-term and temporary. Associated impacts on water quality vary from negligible to moderate; with North Area Reservoir 2, Calder Area Reservoir 17, and the River Ouse abstraction options performing best on this SEA objective. The North Area reservoir 2 and North West Area Reservoir 6 options would only have minor adverse effects on biodiversity, flora and fauna while all the other options would be associated with at least moderate adverse effects. Adverse effects on recreation and landscape associated with lower water levels in the impacted watercourses would be minimal, ranging from none to minor across all of the options.

All the drought permit/order options would deliver minor to major beneficial effects on human health and economic activity through maintaining water supply during drought conditions. The options require no construction activities, so there would be minor beneficial effects associated with use of existing infrastructure. The options would also be associated with minor beneficial effects associated with the appropriate and sustainable management of water supplies and bolstering resilience to climate change.

The Ure, Wharfe and Hull River abstraction options have the greatest beneficial effects, as they would deliver large volumes of water during drought events. These options provide major beneficial effects with respect to SEA objectives regarding protecting and enhancing human health and well-being, enabling access to essential services and providing a resilient water supply for customers and the economy.

5.4.2 Long-term Drought Options

The long-term options cannot be implemented without prior construction and planning activity and so are not considered appropriate for implementation in the first two years of a drought (and there are sufficient alternative options that do not require any construction activity to ensure essential supplies can be maintained to customers). As such, the long-term options are not directly comparable with the drought permit/order options discussed in the previous section. The SEA process has been used to carry out strategic environmental impact comparison of the eleven alternative options that might be required if a drought extended to a third consecutive year. The assessments have taken account of the HRA assessments where appropriate, along with findings from environmental reports.

The majority of the long-term options are associated with adverse effects relating to the consumption of resources, air quality and impacts on terrestrial species and habitats due to the construction activities involved. North West Area Reservoir 9 and East Yorkshire Groundwater Option 2 and North Yorkshire

Groundwater increased abstraction options perform best across these objectives as they do not require large scale construction activities and make use of existing infrastructure. These options, in addition to, Calder Area reservoir 5, Tees – Derwent Pipeline and Ouse options, would also be associated with the lowest adverse effects on biodiversity, flora and fauna.

The environmental implications of the Tees-Swale (river transfer) and Aire abstraction are greater than for the other options. In these cases, the impact assessments indicate potentially major adverse impacts on biodiversity, flora and fauna. However, these options also have major beneficial effects, as they would deliver large volumes of water during drought events. These options provide major beneficial effects associated with protecting and enhancing human health and well-being, enabling access to essential services and providing a resilient water supply for customers and the economy.

These conclusions will need to be weighed against other factors, such as practicability, spatial distribution of drought intensity, supply-demand needs and potential risks to drinking water quality (including Drinking Water Safety Plan risk assessment regulations) in determining which option would be implemented first. None of the options are of sufficient environmental impact to exclude them from the Drought Plan as options for a third year of drought. Inclusion of all options provides YWSL with the greatest flexibility to meet what would be a very challenging situation (i.e. third consecutive year of drought) and demonstrates that alternative options are available in case any single option cannot be implemented – or has to cease operation due to observed environmental, drinking water quality or other risks.

In-Drought Monitoring

In line with the Environmental Monitoring Plan, all options would require drought baseline environmental monitoring to be instigated in the second year of drought to examine the prevailing environmental conditions and review the environmental impact risks. This includes, for example, obtaining an understanding of the prevailing distribution of signal crayfish and crayfish plague in the Tees catchment to inform decisions on the risks associated with the Tees – Swale transfer option. The monitoring data will inform decisions on the most appropriate options to implement in consultation with the Environment Agency and Natural England.

Non-drought baseline monitoring

It is recommended that further investigations and/or monitoring are undertaken to improve the baseline understanding of the environmental risks where there are currently uncertainties in the impact assessment for these longer-term drought options. This will improve confidence in the environmental assessments to enable better informed decisions on the most appropriate option to implement in a third year of a drought.

Table 5.2 Visual Evaluation Matrix Summary for Supply Side Options

Option		SEA Topics and Objectives															Commentary
		Biodiversity		Population and Human Health			Material Assets and Resource Use	Water			Soil, Geology and Land Use	Air and Climate			Archaeology and Cultural Heritage	Landscape	
		1.1	1.2	2.1	2.2	2.3	3.1	4.1	4.2	4.3	5.1	6.1	6.2	6.3	7.1	8.1	
North Area Reservoirs: Drought Permits/Orders																	
North Area reservoir 2	Adverse	Yellow			Yellow			Light Blue	Red							Yellow	Major adverse impact on flows and levels in receiving watercourses. This would be associated with a minor adverse impact on water quality, moderate adverse impacts on white-clawed crayfish and minor adverse impacts on fish and other NERC and notable species. A reduction in the water levels would also result in a minor adverse impact on the landscape setting of several national trails that run alongside the reach.
	Beneficial			Green		Green	Green			Light Blue				Green			Minor beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with use of existing infrastructure and the appropriate and sustainable management of water supplies.
North Area Reservoir 1	Adverse	Red			Light Blue			Yellow	Red		Light Blue					Yellow	Major adverse impact on flows and levels in receiving watercourses. This would be associated with a minor adverse impact on water quality and a major adverse impact on a number of NERC and notable species. A reduction in the water levels would also result in a minor adverse impact on the landscape setting of several national trails that run alongside the reach.
	Beneficial			Green		Green	Green			Green				Green			Minor beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with use of existing infrastructure and the appropriate and sustainable management of water supplies.
North Area Reservoir 4	Adverse	Orange			Light Blue			Yellow	Red							Light Blue	Major adverse effect on river flows and levels. Moderate adverse effects on biodiversity, where NERC fish and macroinvertebrate species may be affected by the drought option. Due to the option there may be some minor adverse impacts on geomorphology including bank erosion when higher flows return. The visual amenity of the Nidderdale AONB may be adversely affected due to lower water levels.
	Beneficial			Green		Green	Green			Green				Green			Moderate beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with use of existing infrastructure and the appropriate and sustainable management of water supplies.
North Area Reservoir 6	Adverse	Orange			Light Blue			Light Blue	Red								Major adverse impact on flows and levels in receiving watercourses. This would be associated with a negligible adverse impact on water quality and a moderate adverse impact on a number of NERC and notable species. A reduction in the water levels would also result in a negligible adverse impact on canoeing activities in the impacted reaches.
	Beneficial			Green		Green	Green			Green				Green			Minor beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with use of existing infrastructure, the appropriate and sustainable management of water supplies and bolstering resilience to climate change.
North Area Reservoir 3	Adverse	Red			Light Blue			Orange	Red							Light Blue	Major adverse effect on river flows and levels. There would be an associated moderate impact on water quality. These impacts are assessed as resulting in potential major impacts to brown trout and moderate impacts to other NERC and notable species, including White clawed crayfish. There would also be negligible impacts on recreation, angling and visual amenity due to water level reduction.

Option	SEA Topics and Objectives															Commentary	
	Biodiversity		Population and Human Health			Material Assets and Resource Use		Water			Soil, Geology and Land Use		Air and Climate		Archaeology and Cultural Heritage		Landscape
	1.1	1.2	2.1	2.2	2.3	3.1	4.1	4.2	4.3	5.1	6.1	6.2	6.3	7.1	8.1		
Beneficial																Minor beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with use of existing infrastructure and the appropriate and sustainable management of water supplies.	
North West Area Reservoirs: Drought Permits/Orders																	
North Area Reservoir 4	Adverse															Major adverse impact on flow levels in Denholme Beck. This would be associated with a minor adverse impact on water quality and a moderate adverse impact on a number of NERC and notable species. A reduction in the flow level of Denholme Beck would also result in a minor adverse impact on the landscape setting of several national trails that run alongside the reach.	
	Beneficial															Minor beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with use of existing infrastructure and moderate beneficial impacts associated with the appropriate and sustainable management of water supplies.	
North Area Reservoir 6	Adverse															Major adverse impact on water flows and levels in Eldwick Beck. This would be associated with a minor adverse impact on water quality and a number of NERC and Notable species due to the loss of habitat and the stranding of individuals. The reduction in the flow level of Eldwick Beck would also result in a minor adverse impact on the landscape setting of Millennium Way and Dales Way Link national trails, which run alongside the impacted reaches.	
	Beneficial															Minor beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with use of existing infrastructure the appropriate and sustainable management of water supplies.	
North Area Reservoir 10	Adverse															Major adverse impact on water flows and levels in Embassy Beck. This would be associated with a minor adverse impact on water quality and a moderate adverse impact on a number of NERC and notable species due to fragmentation of habitats, increased mortality and changes in morphology or behaviour.	
	Beneficial															Minor beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with use of existing infrastructure and moderate beneficial impacts associated with the appropriate and sustainable management of water supplies.	
North Area Reservoir 5	Adverse															Major adverse impact on water flows and levels in Hewenden Beck. This would be associated with a moderate adverse impact on water quality and a moderate adverse impact on a number of NERC and notable species. A reduction in the flow level of Hewenden Beck would also result in a minor adverse impact on the landscape setting of several national trails that run alongside the reach. There is a minor (uncertain) potential impact on an organised angling club on the impacted reaches.	
	Beneficial															Minor beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with use of existing infrastructure, and moderate beneficial impacts associated with the appropriate and sustainable management of water supplies.	

Option		SEA Topics and Objectives															Commentary	
		Biodiversity		Population and Human Health			Material Assets and Resource Use		Water			Soil, Geology and Land Use		Air and Climate		Archaeology and Cultural Heritage		Landscape
		1.1	1.2	2.1	2.2	2.3	3.1	4.1	4.2	4.3	5.1	6.1	6.2	6.3	7.1	8.1		
North Area Reservoir 2	Adverse	Orange			Light Blue			Orange	Red							Yellow	Major adverse impact on water flows and levels in Leeming Water. This would be associated with a moderate adverse impact on water quality and a moderate adverse impact on a number of NERC and notable species. A reduction in the flow level of Leeming Water would also result in a minor adverse impact on the landscape setting of Calder/Aire Link and Bronte Way national trails.	
	Beneficial			Green		Green	Green			Green				Green			Minor beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with use of existing infrastructure and moderate beneficial impacts associated with the appropriate and sustainable management of water supplies.	
North Area Reservoir 3	Adverse	Orange			Light Blue			Orange	Red							Yellow	Major adverse impact on water flows and levels in Moorhouse Beck. This would be associated with a moderate adverse impact on water quality and a moderate adverse impact on a number of NERC and notable species. A reduction in the flow level of Moorhouse Beck would also result in a minor adverse impact on the landscape setting of the Calder/Aire Link and Bronte Way national trails.	
	Beneficial			Green		Green	Green			Green				Green			Minor beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with use of existing infrastructure and moderate beneficial impacts associated with the appropriate and sustainable management of water supplies.	
North Area Reservoir 7	Adverse	Orange			Light Blue			Yellow	Red							Yellow	Major adverse impact on water flows and levels in Jum Beck. This would be associated with a minor adverse impact on water quality and a moderate impact on a number of NERC and notable species due to the stranding of individuals or groups; deterioration or loss of habitats; fragmentation of habitats; increased mortality; and changes in morphology or behaviour.	
	Beneficial			Green		Green	Green			Green				Green			Minor beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with use of existing infrastructure and moderate beneficial impacts associated with the appropriate and sustainable management of water supplies.	
North Area Reservoir 9	Adverse	Orange			Light Blue			Yellow	Red							Yellow	Major adverse impact on water flows and levels in Silsden Beck. This would be associated with a minor adverse impact on water quality and a moderate adverse impact on a number of NERC and notable species. A reduction in the flow level of Slisden Beck would also result in a minor adverse impact on the landscape setting of Millennium Way national trail which runs alongside Weecher Brow Beck.	
	Beneficial			Green		Green	Green			Green				Green			Minor beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. Drought option also delivers minor beneficial effects associated with use of existing infrastructure and moderate beneficial impacts associated with the appropriate and sustainable management of water supplies.	
North Area Reservoir 1	Adverse	Orange			Orange			Yellow	Red								Major adverse impact on water flows and levels in the River Worth. This would be associated with a minor adverse impact on water quality and a moderate adverse impact on a number of NERC and notable species. A reduction in the flow level would also result in a moderate impact on the extensive non-club administered angling along the River Worth.	

Option	SEA Topics and Objectives																Commentary
	Biodiversity		Population and Human Health			Material Assets and Resource Use		Water			Soil, Geology and Land Use		Air and Climate		Archaeology and Cultural Heritage	Landscape	
	1.1	1.2	2.1	2.2	2.3	3.1	4.1	4.2	4.3	5.1	6.1	6.2	6.3	7.1	8.1		
	Beneficial																Minor beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with use of existing infrastructure and moderate beneficial impacts associated with the appropriate and sustainable management of water supplies.
North Area Reservoir 11	Adverse																Minor adverse impact on water flows and levels in the River Dibb. This would be associated with a minor adverse impact on water quality, and a moderate adverse impact on a number of NERC and notable species. The minor reduction in flows and levels would have a minor impact on casual angling in the River Dibb.
	Beneficial																The implementation of this drought option would be associated with minor beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with use of existing infrastructure and moderate beneficial impacts associated with the appropriate and sustainable management of water supplies.
North Area Reservoir 8	Adverse																Major adverse impact on water flows and levels in Weecher Brow Beck. This would be associated with a minor adverse impact on water quality, and a moderate adverse impact on a number of NERC and notable species. A reduction in the flow level of Weecher Brow Beck would also result in a minor adverse impact on the landscape setting of Millennium Way National Trail which runs alongside Weecher Brow Beck.
	Beneficial																Minor beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with use of existing infrastructure and moderate beneficial impacts associated with the appropriate and sustainable management of water supplies.
Calder Area Reservoirs: Drought Permits/Orders																	
Calder Area Reservoir 20	Adverse																Major adverse impact on water levels and flows in Brow Grains Dyke. This would be associated with a moderate adverse impact on water quality and on a number of NERC and notable species. There would also be a minor adverse effect on casual angling in the reach.
	Beneficial																Minor beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with use of existing infrastructure and the appropriate and sustainable management of water supplies.
Calder Area Reservoir 21	Adverse																Major adverse impact on water levels and flows in Hoyle House Clough. This would be associated with moderate adverse impacts on water quality and flora, fauna and biodiversity, particularly brown trout.
	Beneficial																Minor beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with use of existing infrastructure and the appropriate and sustainable management of water supplies.
Calder Area Reservoir 11	Adverse																Major adverse impact on water levels and flows in the receiving watercourses. This would be associated with a minor adverse impact on water quality and a moderate adverse impact on brown trout, otter and grayling. A reduction in water levels would also result in a negligible adverse impact on the landscape setting of Calderdale Way National Trail and an adverse impact on angling.

Option	SEA Topics and Objectives																Commentary
	Biodiversity		Population and Human Health			Material Assets and Resource Use		Water			Soil, Geology and Land Use		Air and Climate		Archaeology and Cultural Heritage	Landscape	
	1.1	1.2	2.1	2.2	2.3	3.1	4.1	4.2	4.3	5.1	6.1	6.2	6.3	7.1	8.1		
	Beneficial																Minor beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with use of existing infrastructure and the appropriate and sustainable management of water supplies.
Calder Area Reservoir 8	Adverse																Major adverse impact on water levels and flows in the River Holme. This would be associated with a moderate adverse impact on water quality and a moderate adverse impact on a number of NERC and notable species. There would also be minor adverse effects on angling activities in the impacted reaches.
	Beneficial																Minor beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with use of existing infrastructure and the appropriate and sustainable management of water supplies.
Calder Area Reservoir 19	Adverse																Major adverse impact on water levels and flows in the receiving watercourses. This would be associated with a minor adverse impact on water quality and a moderate adverse impact on a number of NERC and notable species. A reduction in water levels would also result in a minor adverse impact on the landscape setting of the Kirklees Way National Trail and a moderate adverse impact on an organised angling club.
	Beneficial																Minor beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with use of existing infrastructure and the appropriate and sustainable management of water supplies.
Calder Area Reservoir 22	Adverse																Major adverse impact on water levels and flows in Bradley Brook. This would be associated with a minor adverse impact on water quality and a moderate adverse impact on a number of NERC and notable species.
	Beneficial																Minor beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with use of existing infrastructure and the appropriate and sustainable management of water supplies.
Calder Area Reservoir 7	Adverse																Major adverse impact on water levels and flows in the receiving watercourses. This would be associated with a minor adverse impact on water quality and a moderate adverse impact on a number of NERC and notable species. Minor adverse impacts on the angling quality of the impacted reaches would also result.
	Beneficial																Minor beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with use of existing infrastructure and the appropriate and sustainable management of water supplies.
Calder Area Reservoir 1	Adverse																Moderate adverse impact on water levels and flows in the Gorple Lower Brook and Graining Water. This would be associated with a minor adverse impact on water quality and a moderate adverse impact on brown trout. A reduction in water levels would also result in a negligible adverse impact on the landscape setting of the Pennine Bridleway National Trail.
	Beneficial																Minor beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with use of existing infrastructure and the appropriate and sustainable management of water supplies.

Option		SEA Topics and Objectives															Commentary	
		Biodiversity		Population and Human Health			Material Assets and Resource Use		Water			Soil, Geology and Land Use		Air and Climate		Archaeology and Cultural Heritage		Landscape
		1.1	1.2	2.1	2.2	2.3	3.1	4.1	4.2	4.3	5.1	6.1	6.2	6.3	7.1	8.1		
Calder Area Reservoir 5	Adverse	Orange			Yellow			Yellow	Red							Yellow	Major adverse impact on water levels and flows in the receiving watercourses. This would be associated with a minor adverse impact on water quality and a moderate adverse impact on brown trout. A reduction in water levels would also result in a minor adverse impact on the landscape setting of the Calderdale Way National Trail. Minor adverse impacts on the angling quality of the impacted reaches would also result.	
	Beneficial			Green		Green	Green			Green			Green				Minor beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with use of existing infrastructure and moderate beneficial impacts associated with the appropriate and sustainable management of water supplies.	
Calder Area Reservoir 9	Adverse	Orange			Light Blue			Yellow	Red								Major adverse impact on water levels and flows in the River Ribble. This would be associated with a minor adverse impact on water quality and a moderate adverse impact on a number of NERC and notable species. A reduction in water levels would also result in a negligible adverse impact on the casual angling activities.	
	Beneficial			Green		Green	Green			Green			Green				Minor beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with use of existing infrastructure and minor beneficial impacts associated with the appropriate and sustainable management of water supplies.	
Calder Area Reservoir 17	Adverse	Orange			Orange			Light Blue	Red							Yellow	Major adverse impact on water levels and flows in the Huddersfield Canal. This would be associated with a negligible adverse impact on water quality and a moderate adverse impact on white-clawed crayfish. A reduction in water levels would also result in a minor adverse impact on the landscape setting of the Kirklees Way and the Pennine Way National Trails and a moderate adverse impact on angling.	
	Beneficial			Green		Green	Green			Green			Green				Minor beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with use of existing infrastructure and the appropriate and sustainable management of water supplies.	
Calder Area Reservoir 4	Adverse	Orange			Yellow			Yellow	Red							Yellow	Major adverse impact on water levels and flows in Hebble Brook. This would be associated with a minor adverse impact on water quality and a moderate adverse impact on a number of NERC and notable species. A reduction in water levels would also result in a minor adverse impact on the landscape setting of the Calderdale National Trail and a minor adverse impact on angling.	
	Beneficial			Green		Green	Green			Green			Green				Minor beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with use of existing infrastructure and the appropriate and sustainable management of water supplies.	
Calder Area Reservoir 18	Adverse	Orange			Orange			Yellow	Red							Yellow	Major adverse impact on water levels and flows in the River Colne. This would be associated with a minor adverse impact on water quality and a moderate adverse impact on a number of NERC and notable species. A reduction in water levels would also result in a minor adverse impact on the landscape setting of the Kirklees Way National Trail and a moderate adverse impact on angling.	
	Beneficial			Green		Green	Green			Green			Green				Minor beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with use of existing infrastructure and moderate beneficial impacts associated with the appropriate and sustainable management of water supplies.	

Option		SEA Topics and Objectives															Commentary	
		Biodiversity		Population and Human Health			Material Assets and Resource Use		Water			Soil, Geology and Land Use		Air and Climate		Archaeology and Cultural Heritage		Landscape
		1.1	1.2	2.1	2.2	2.3	3.1	4.1	4.2	4.3	5.1	6.1	6.2	6.3	7.1	8.1		
Calder Area Reservoir 12	Adverse	Orange			Orange			Yellow	Red									Major adverse impact on water levels and flows in the receiving watercourses. This would be associated with a minor adverse impact on water quality and a moderate adverse impact on brown trout and otter. A reduction in water levels would also result in a negligible adverse impact on the landscape setting of the Calderdale Way National Trail and a moderate adverse impact on angling.
	Beneficial			Green		Green	Green			Green			Green					Minor beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with use of existing infrastructure and the appropriate and sustainable management of water supplies.
Calder Area Reservoir 15	Adverse	Orange			Yellow			Yellow	Red								Yellow	Major adverse impact on water levels and flows in Black Brook. This would be associated with a minor (uncertain) adverse impact on water quality and a moderate adverse impact on a number of NERC and Notable species. A reduction in water levels would also result in a minor adverse impact on the landscape setting of the Calderdale National Trail and a minor adverse impact on angling.
	Beneficial			Green		Green	Green			Green			Green					Minor beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with use of existing infrastructure and the appropriate and sustainable management of water supplies.
Calder Area Reservoir 16	Adverse	Orange						Yellow	Red									Major adverse impact on water levels and flows in Bradshaw Clough. This would be associated with a minor adverse impact on water quality and a moderate adverse impact on a number of NERC and Notable species.
	Beneficial			Green		Green	Green			Green			Green					Minor beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with use of existing infrastructure and the appropriate and sustainable management of water supplies.
Calder Area Reservoir 10	Adverse	Orange			Orange			Orange	Red								Yellow	Major adverse impact on water levels and flows in the receiving watercourses. This would be associated with a moderate adverse impact on water quality and a moderate adverse impact on brown trout. A reduction in water levels would also result in a minor adverse impact on the landscape setting of the Calderdale Way National Trail and a moderate adverse impact on angling.
	Beneficial			Green		Green	Green			Green			Green					Moderate beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with use of existing infrastructure and the appropriate and sustainable management of water supplies.
Calder Area Reservoir 13	Adverse	Orange			Yellow			Yellow	Red								Yellow	Major adverse impact on water levels and flows in the Turvin Clough. This would be associated with a minor adverse impact on water quality and a moderate adverse impact on WFD status and brown trout. A reduction in water levels would also result in a minor adverse impact on the landscape setting of the Calderdale Way National Trail and a minor adverse impact on angling.
	Beneficial			Green		Green	Green			Green			Green					Minor beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with use of existing infrastructure and the appropriate and sustainable management of water supplies.
Calder Area Reservoir 2	Adverse	Orange			Orange			Orange	Red									Major adverse impact on water levels and flows in the receiving watercourses. This would be associated with a moderate adverse impact on water quality and a moderate adverse impact on a number of NERC and notable species. A reduction in water levels would also result in a negligible adverse impact on the landscape setting of Calder/Aire Link National Trail and a moderate adverse impact on angling.

Option	SEA Topics and Objectives																Commentary
	Biodiversity		Population and Human Health			Material Assets and Resource Use		Water			Soil, Geology and Land Use		Air and Climate		Archaeology and Cultural Heritage	Landscape	
	1.1	1.2	2.1	2.2	2.3	3.1	4.1	4.2	4.3	5.1	6.1	6.2	6.3	7.1	8.1		
	Beneficial																Moderate beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with use of existing infrastructure and the appropriate and sustainable management of water supplies.
Calder Area Reservoir 6	Adverse																Major adverse impact on water levels and flows in Luddenden Brook. This would be associated with a minor adverse impact on water quality and a moderate adverse impact on a number of NERC and notable species. A reduction in water levels would also result in a minor adverse impact on the landscape setting of the Calderdale National Trail and a minor adverse impact on angling.
	Beneficial																Minor beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with use of existing infrastructure and the appropriate and sustainable management of water supplies.
Calder Area Reservoir 3	Adverse																Major adverse impact on water levels and flows in the receiving watercourses. This would be associated with a moderate adverse impact on water quality and a moderate adverse impact on <i>Helophorus strigifrons</i> . A reduction in water levels would also result in a negligible adverse impact on the landscape setting of the Calder/Aire Link National Trail and a moderate adverse impact on angling.
	Beneficial																Moderate beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with use of existing infrastructure and the appropriate and sustainable management of water supplies.
Calder Area Reservoir 14	Adverse																Moderate adverse impact on water levels and flows across the receiving water courses. This would be associated with a minor adverse impact on water quality and a moderate adverse impact on brown trout. A reduction in water levels would also result in a minor adverse impact on the landscape setting of the Calderdale Way National Trail and a minor adverse impact on angling.
	Beneficial																Minor beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with use of existing infrastructure and the appropriate and sustainable management of water supplies.
South Area Reservoirs: Drought Permits/Orders																	
South Area Reservoir 5	Adverse																Major adverse impact on water flows and levels in River Loxley. This would be associated with a moderate adverse impact on water quality and a moderate adverse impact on a number of NERC and notable species. A reduction in the water level would also result in a minor adverse geomorphological impacts associated with the desiccation of river banks.
	Beneficial																Moderate beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with use of existing infrastructure and bolstering resilience to climate change. There would also be minor beneficial impacts associated with the appropriate and sustainable management of water supplies.
South Area Reservoir 4	Adverse																Moderate adverse impact on flow levels in the impacted reaches. This would be associated with a moderate adverse impact on water quality and a moderate adverse impact on a number of NERC and notable species. A reduction in the flow level would also result in a minor adverse impact on the landscape setting of several national trails that run alongside the river reaches.

Option	SEA Topics and Objectives																Commentary
	Biodiversity		Population and Human Health			Material Assets and Resource Use		Water			Soil, Geology and Land Use		Air and Climate		Archaeology and Cultural Heritage	Landscape	
	1.1	1.2	2.1	2.2	2.3	3.1	4.1	4.2	4.3	5.1	6.1	6.2	6.3	7.1	8.1		
	Beneficial																Minor beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with use of existing infrastructure and bolstering resilience to climate change. There would also be moderate beneficial impacts associated with the appropriate and sustainable management of water supplies.
South Area Reservoir 6	Adverse																Major adverse impact on flow levels in the River Rivelin. This would be associated with a minor adverse impact on water quality and a moderate adverse impact on a number of NERC and notable species. A reduction in the flow level would potentially impact the informal angling and canoeing on the impacted reaches, however, these impacts would be negligible under drought conditions.
	Beneficial																Minor beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with use of existing infrastructure and the appropriate and sustainable management of water supplies.
South Area Reservoir 1	Adverse																Major adverse impact on water flows and levels in the impacted reaches. This would be associated with a moderate adverse impact on water quality and a minor adverse impact on a number of NERC and notable species. A reduction in the water levels would also result in a minor adverse impact on informal angling and a fishery.
	Beneficial																Minor beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with use of existing infrastructure and the appropriate and sustainable management of water supplies.
South Area Reservoir 3	Adverse																Major adverse impact on water flows and levels in the Little Don and the River Don. This would be associated with a moderate adverse impact on water quality and a moderate adverse impact on a number of NERC and notable species. A reduction in the water levels would also result in a minor adverse impact on canoeing and angling activities on the impacted reaches.
	Beneficial																Moderate beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with use of existing infrastructure and the appropriate and sustainable management of water supplies.
South Area Reservoir 2	Adverse																Major adverse impact on flow levels in the River Don. This would be associated with a moderate adverse impact on water quality and a moderate adverse impact on a number of NERC and notable species. A reduction in the flow level would also result in a minor adverse impact on the landscape setting of several national trails that run alongside the reach. Angling activities on the reaches would also be subject to a negligible adverse impact.
	Beneficial																Minor beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with use of existing infrastructure and the appropriate and sustainable management of water supplies.

River Abstractions: Drought Permits/Orders															
Hull increased abstraction	Adverse	Orange			Light Blue			Red	Yellow						Minor hydrological impact which would result in a moderate risk to water quality deterioration in the upper reach associated with dissolved oxygen and total ammonia and major risk in the lower tidal reach based on modelled dissolved oxygen sag near the vicinity of a STW. This would result in moderate adverse impacts on river lamprey, brook lamprey and European eel due to mortality due to oxygen stress and gill clogging.
	Beneficial			Dark Green		Dark Green	Light Green			Light Green				Light Green	Major beneficial impacts on population and human health due to the large deployable output and continued water supply for economic activity. The option utilises existing infrastructure so would have minor beneficial impacts on material assets and resource use, as no construction is required.
Ouse increased abstraction	Adverse	Orange			Light Blue			Light Blue	Yellow				Light Blue	Yellow	Minor reduction in low flows, with associated reduction in wetted width and depth over 21 km of the River Ouse. Minor risk to water quality accounting for the water quality pressures associated with the four STWs present on the river. The flow pressures would result in minor adverse impacts on the nearby Fulford Ings SSSI and on Notable/NERC fish species due to the siltation of spawning gravels and exposure of habitats. The reduced flow level of the River Ouse would also have a minor impact on the landscape setting of the numerous SSSIs in close proximity to the river.
	Beneficial			Dark Green		Dark Green	Light Green			Light Green				Light Green	Major beneficial impacts on population and human health due to the large deployable output and continued water supply for economic activity. In the zone of influence of the drought option water availability is at least 50% so the option will deliver beneficial impacts with regard to sustainable water supply. The option utilises existing infrastructure so would have minor beneficial impacts on material assets and resource use, as no construction is required.
Ure increased abstraction	Adverse	Orange	Light Blue		Yellow			Orange	Yellow				Light Blue	Yellow	Moderate reduction in low flows, with associated reduction in wetted width and depth over 11 km of the River Ure. The risk of water quality deterioration is assessed as high for dissolved oxygen and low for total ammonia, except locally downstream where the risk for total ammonia is moderate. The impact on wetted width and depth, especially in shallow areas of the channel, would have a moderate impact on NERC and notable species due to the siltation of spawning gravels and exposure of habitats. The reduced flow level of the River Ure would have a minor impact on the landscape setting of the Ripon Rowel Walk National trail that runs alongside the River Ure and forms part of the Nidderdale AONB.
	Beneficial			Light Green		Light Green	Light Green			Light Green				Light Green	Major beneficial impacts on population and human health due to the large deployable output and continued water supply for economic activity. In the zone of influence of the drought option water availability is at least 50% so the option will deliver beneficial impacts with regard to sustainable water supply. The option utilises existing infrastructure so would have minor beneficial impacts on material assets and resource use, as no construction is required.
Wharfe increased abstraction	Adverse	Orange			Light Blue			Orange	Yellow					Yellow	Moderate reduction in low flows, with associated reduction in wetted width and depth over 71 km of the River Wharfe. Water quality throughout the study area is assessed as low risk of deteriorating with regards to total ammonia and medium risk for dissolved oxygen. The reduction in flow and associated reduction of the River Wharfe would have a visual impact on the Nidderdale AONB, however, there is limited access to the impacted reach and no national trails are present.
	Beneficial			Dark Green		Dark Green	Light Green			Light Green				Light Green	Major beneficial impacts on population and human health due to the large deployable output and continued water supply for economic activity. In the zone of influence of the drought option water availability is at least 70% so the option will deliver beneficial impacts with regard to sustainable water supply. The option utilises existing infrastructure so would have minor beneficial impacts on material assets and resource use, as no construction is required.
Wharfe annual abstraction increase	Adverse	Light Blue								Light Blue				Light Blue	The drought option would lead to a negligible reduction in flows, with a negligible reduction in wetted width and depth over the River Wharfe. Water quality throughout the study area is assessed as at a negligible risk of deteriorating. The reduction in flow and associated reduction in wetted width and depth of the reaches would have negligible adverse impact on NERC fish species. A negligible reduction in the level of the River Wharfe would have a negligible visual impact on the Nidderdale AONB. There is limited access to the impacted reach with no national trails.

	Beneficial															The drought option would provide water for public supply which would deliver moderate beneficial impacts on population and human health due to the medium deployable output and continued water supply for economic activity. The option will deliver beneficial impacts with regard to sustainable water supply. The option utilises existing infrastructure so would have minor beneficial impacts on material assets and resource use, as no construction is required.
Derwent annual abstraction increase	Adverse															The drought option would lead to negligible impact on low flows, with negligible effects towards the wetted width and depth over 24 km of the River Derwent from upstream intake to downstream intake. Water quality throughout the study area is assessed as at a negligible risk of deteriorating. All impacts to designated habitats (SSSI and NERC habitats) in the reach of the River Derwent between the upstream intake and the downstream intakes were screened with negligible adverse effects.
	Beneficial															The drought option would provide up to 20 MI/d which would deliver moderate beneficial impacts on population and human health due to the medium deployable output and continued water supply for economic activity. The option utilises existing infrastructure so would have minor beneficial impacts on material assets and resource use, as no construction is required.
Long-term Options																
Aire abstraction	Adverse															Major adverse impacts on biodiversity are possible due to operational impacts on NERC fish species, and construction impacts (uncertain) on NERC species such as badgers, bats, and water voles. The abstraction would have moderate adverse impacts on surface water flows and levels and water quality. Moderate adverse impacts on resources due to energy and resource use associated with construction and operation, resources should be sourced locally. Moderate adverse impacts of operation on water quality due to nearby STW. Minor adverse impacts on the spread of invasive species if best practice is followed. Negligible adverse impacts on recreation such as fishing. Negligible adverse impacts on land-use and geology and visual amenity. There are no nearby AONB and much of the construction element will be below ground once operational.
	Beneficial															Major beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers moderate beneficial impacts associated with the appropriate and sustainable management of water supplies and major beneficial impacts associated with bolstering resilience to climate change.
East Yorkshire Groundwater Option 2	Adverse															Potential moderate adverse impacts on ancient woodland. Potential minor adverse impacts on population and health due to noise, dust and vibration associated with the short-term construction phase. Potential minor adverse impacts on air and climate due to additional energy required for pumping water to provide 9 MI/d and additional use of chemicals for water treatment. Negligible impacts on material assets due to use of existing infrastructure, there may be increased use of chemicals for treatment. Minor adverse impacts on water quality due to the potential pollution risk during construction. Moderate adverse impacts on water due to uncertainty around impacts on groundwater levels. Negligible adverse impacts on archaeology and landscape and visual amenity.
	Beneficial															Minor beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers moderate beneficial impacts associated with the appropriate and sustainable management of water supplies and minor beneficial impacts associated with bolstering resilience to climate change.
North Yorkshire Groundwater increased abstraction	Adverse															No impacts on the North Pennine Dales Meadows SAC. Uncertain minor adverse impacts on Swale Lake SSSI due to the potential reduction in base flow contribution to the River Swale. Minor adverse impacts associated with increased energy and material asset use such as chemicals to treat pumped water during operation. Negligible adverse impacts on water quality due to the minor base flow reductions to the River Swale, which needs to be assessed further. Minor adverse impacts associated with small increase in energy consumption and greenhouse gas emissions.
	Beneficial															Moderate beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial impacts associated with the appropriate and sustainable management of water supplies and bolstering resilience to climate change.

Increased Ouse pumping capacity	Adverse	Yellow	Yellow	White	Light Blue	White	Orange	Yellow	Light Blue	White	Light Blue	Orange	Orange	White	Light Blue	Yellow	Minor adverse impacts on biodiversity and designated sites due to the construction of the additional water treatment capacity and pipeline. There would be a minor adverse impact on the spread of invasive species due to flow and level changes in the River Ouse. The water transfer would only result in minor adverse effects on water flows and levels. There would be moderate adverse effects on resource use energy use, moderate impacts on air quality and moderate impacts on greenhouse emissions as a result of construction and operation of the new pipeline. There would also be minor adverse effects on the landscape setting of the surrounding countryside during the construction phase.
	Beneficial	White	White	Light Green	White	Light Green	White	White	White	Light Green	White	White	White	Light Green	White	White	Minor beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers moderate beneficial impacts associated with the appropriate and sustainable management of water supplies and minor beneficial impacts associated with bolstering resilience to climate change.
Ouse Raw Water Transfer	Adverse	Yellow	Yellow	White	Light Blue	White	Yellow	Orange	Yellow	White	Light Blue	Yellow	Yellow	White	Light Blue	Yellow	Minor adverse impacts on biodiversity and designated sites due to the construction of the pipeline. There would be a minor adverse impact on the spread of invasive species due to the construction of the new pipeline in an area known to support invasive species. The water transfer would result in minor adverse effects on water flows and levels and moderate adverse effects on water quality. There would be minor adverse effects on resource use energy use, air quality and greenhouse emissions as a result of the construction and operation of the new pipeline. There would also be minor adverse effects on the landscape setting of the surrounding countryside during the construction phase.
	Beneficial	White	White	Dark Green	White	Dark Green	White	White	White	Light Green	White	White	White	Light Green	White	White	Major beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers major beneficial effects associated with bolstering resilience to climate change and moderate beneficial impacts associated with the appropriate and sustainable management of water supplies.
Ouse water treatment works extension	Adverse	Yellow	Yellow	White	Light Blue	White	Orange	Orange	Yellow	White	Light Blue	Orange	Orange	White	Light Blue	Yellow	Minor adverse impacts on biodiversity and designated sites due to the construction of the additional water treatment capacity and pipeline. There would be a minor adverse impact on the spread of invasive species due to the construction of the new treatment works in an area known to support invasive species. The water transfer would only result in minor adverse effects on water flows and levels which would be associated with moderate adverse impacts on water quality. There would be moderate adverse effects on resource and energy use, air quality and greenhouse emissions as a result of the construction and operation of the new treatment works. There would also be minor adverse effects on the landscape setting of the surrounding countryside during the construction phase.
	Beneficial	White	White	Dark Green	White	Dark Green	White	White	White	Light Green	White	White	White	Light Green	White	White	Major beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with bolstering resilience to climate change and minor beneficial impacts associated with the appropriate and sustainable management of water supplies.
North West reservoir abstraction	Adverse	Light Blue	Yellow	White	Yellow	White	Yellow	Yellow	Yellow	White	Light Blue	Yellow	White	White	White	Yellow	Negligible adverse impacts of construction on flora and fauna are possible, however there are no nearby designated sites. Minor adverse impacts on the spread of invasive species during construction, however if best practice is followed this should be mitigated. Minor adverse impacts on access for recreational use during construction phase. Minor adverse impact associated with construction and operation due to an increase in material use, energy consumption and greenhouse emissions. Minor adverse impact on landscape and visual amenity due to the proximity of the Millennium Way National Trail. Minor adverse impacts on water level in the reservoir, and the drought permit may reduce the occurrence of spill events. Minor impacts on water quality within the reservoir, however North West Area Reservoir 9 is known to have water quality issues and this needs to be investigated further. Negligible adverse impact on soils due to the construction element, however this is assumed to be short term and of small scale.

	Beneficial																		Minor beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial impacts associated with the appropriate and sustainable management of water supplies and minor beneficial impacts associated with bolstering resilience to climate change.
Tees – Derwent Pipeline	Adverse																		Minor adverse impacts on biodiversity and designated sites due to the construction of the new pipeline. There would be a minor adverse impact on the spread of invasive species due to flow and level changes in the River Tees. The water transfer would only result in minor adverse effects on water flows and levels by altering the natural flow regime. There would be major adverse effects on resource use energy use, minor impacts on air quality and moderate impacts on greenhouse emissions as a result of the construction and operation of the new pipeline. There would also be moderate adverse effects on land-use and minor adverse effects on the landscape setting of the surrounding countryside during the construction phase.
	Beneficial																		Major beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with bolstering resilience to climate change and minor beneficial effects regarding appropriate and sustainable management of water supplies.
Tees – Swale transfer	Adverse																		Moderate adverse impacts on NERC fish species due to the risk of spreading disease. The water transfer would only result in minor adverse effects on water flows and levels by altering the natural flow regime. As such, flow and level changes would not pose a great risk to the spread of existing invasive species populations, however, there is uncertainty as to the transfer scheme’s overall potential impact regarding catchment river transfers and INNS risks. For example, the transmission of crayfish plague. Without effective mitigation this is considered of major concern. There would be moderate adverse effects on resource use energy use, minor impacts on air quality and moderate impacts on greenhouse emissions as a result of the construction and operation of the new pipeline. There would also be minor adverse effects on the landscape setting of the surrounding countryside during the construction phase.
	Beneficial																		Major beneficial impacts on human health and economic activity through maintaining water supply during drought conditions. This drought option also delivers minor beneficial effects associated with bolstering resilience to climate change and moderate beneficial impacts associated with the appropriate and sustainable management of water supplies.

5.5 Habitats Regulations Assessment Screening Report of Drought Plan Summary

YWSL has undertaken the first stage in the HRA process, Screening, on its Final DP options list. It has been carried out in parallel with the SEA and is reported separately in the HRA Screening Report. The screening stage establishes whether any schemes have the potential for a Likely Significant Effect (LSE) on the integrity of a European designated site.

HRA screening of the Final DP 2019 has indicated that LSE on the North Pennine Dales Meadows SAC could not be ruled out as a result of the implementation of the North Yorkshire Groundwater increased abstraction drought option. Similarly, the HRA screening also concluded that that LSE on the South Pennine Moors (Phase 2) SPA could not be ruled out as a result of the construction activities associated with the new pipeline for the River Aire to Esholt long-term drought option. An Appropriate Assessment has been undertaken and is provided as part of the HRA Screening Report. The Appropriate Assessment concludes that abstraction from the proposed North Yorkshire Groundwater increased abstraction drought option will not have an adverse effect on the qualifying features of the North Pennine Dales Meadows SAC. The Appropriate Assessment also concludes that, with the incorporation of suitable mitigation measures, the construction activities associated with the River Aire to Esholt drought option adverse effect on the qualifying features of the South Pennine Moors (Phase 2) SPA.

The HRA screening concludes there are no further LSE on the Humber Estuary European Marine site (EMS) or other European Designated Sites within the drought option areas.

5.6 Summary

In general, the demand side options were found to have beneficial impacts on SEA objectives for population and human health and material assets and resource use. Adverse impacts have been identified with respect to other users where restrictions of water use are involved and also for cultural heritage and emissions.

Impacts on SEA objectives for drought permit/order options were mainly associated with impacts on surface waters and their ecology. Reductions in surface water levels also have the potential for adverse impacts on water quality, recreation and on landscape and visual amenity. The river abstraction options were found to have the greatest beneficial effects due to the large volumes of water they would provide, while two reservoir options in the North area were found to have the least adverse effects.

The assessment has found that adverse effects associated with the long-term options typically relate to additional energy requirements, emissions and materials used to maintain supply. Adverse effects on surface water flows and levels, water quality and biodiversity would be associated with these options. The best performing long-term options against these criteria include North west Reservoir 9 abstraction, East Yorkshire Groundwater Option 2, North Yorkshire Groundwater increased abstraction, the recommission Calder Area Reservoir. However, the other options deliver more beneficial effects on population and human health due to higher deployable outputs.

The assessment showed that a distinction can be made between options that would be considered more sustainable than others and this can be used to inform the order in which they would be implemented.

6 Cumulative Assessment

6.1 Introduction

The cumulative assessments presented in this section have been carried out in line with the methodology described in **Section 4.4**.

6.2 Demand Side Options

Cumulative effects of demand management options

The matrix in **Figure 6.1** illustrates potential incompatibility and cumulative impacts between demand management schemes.

Figure 6.1 Cumulative Impacts Matrix, Demand Management Measures

Leakage reduction						
Sprinkler and hose pipe ban						
Temporary use ban						
Drought order to ban non-essential use						
Emergency drought order						
Demand Management Options	Media / water efficiency campaign	Leakage reduction	Sprinkler and hose pipe ban	Temporary use ban	Drought order to ban non-essential use	

Legend:

	No cumulative effects identified, or beneficial cumulative effects anticipated
	Adverse impacts anticipated
	Options are sequential
	Uncertain – Insufficient information available to undertake assessment

No cumulative impacts between demand side options have been identified.

It is acknowledged that the demand management options ‘Drought Order to ban Essential Use’ and ‘Emergency Drought Order’ are sequential. The ‘Drought Order to ban Essential Use’ will remain in place while the ‘Emergency Drought Order’ is operational, but it is the worst-case scenario for demand management and effects between the two options are not additive.

Cumulative effects with supply side and drought permit / order options

Demand management measures serve to reduce pressure on water resources and will have a positive influence on both supply side and drought permit/order options by reducing customer demand for water, and therefore reducing the abstraction at source.

6.3 Cumulative Effects Between Supply Side Options

This section considers the cumulative effects associated with implementation of all drought options (including strategic long-term alternatives) across the YWSL operational area. The potential cumulative impacts of options within individual areas are considered in the EARs. Each EAR considers the worst-case scenario in which it is assumed that all options are implemented simultaneously within an individual area. This is with the exception of the long-term strategic options, which have been assessed individually (noting that hydrological screening of impacts of these options has been considered, including in combination with the standard drought options, in the Cumulatives Screening Report¹⁴).

Due to the uncertainty of the timing/implementation of the various supply side drought options, the cumulative impacts of drought options across multiple areas has not been assessed in detail. In practice, in the event of a drought the findings of the EARs would be reviewed, and a cumulative assessment made of the precise options proposed for implementation at that time.

The strategic assessment presented in this section has been informed by the Cumulative Options Screening Report along with the location maps of drought options, surface water and groundwater catchments.

Figure 6.2 provides a framework as a basis for capturing cumulative effects that could arise from simultaneous deployment of two or more drought option groups (excluding long-term options) and lists potentially impacted river reaches and estuaries (note: **Figure 6.3** shows the cumulative river reaches).

¹⁴ Ricardo 2017. Appendix 10 – Cumulative Impacts of All Options (Inter-Catchment)

Figure 6.2 Cumulative Effects between Drought Options at the Catchment Level

North Area							
South area reservoir group	Upper Humber						
Calder area reservoir group	Upper Humber	Upper Humber					
NW area reservoir group	Tidal Ouse, Upper Humber	Upper Humber	Aire, tidal Ouse, Upper Humber				
Increased Ouse pumping capacity	Ouse, Upper Humber	Upper Humber	Tidal Ouse, Upper Humber	Tidal Ouse, Upper Humber			
Ure increased abstraction	Ure, Swale, Ouse, Upper Humber	Upper Humber	Tidal Ouse, Upper Humber	Tidal Ouse, Upper Humber	Ouse, Upper Humber		
Wharfe reduced regulated flow	Wharfe	Upper Humber	Tidal Ouse, Upper Humber	Tidal Ouse, Upper Humber	Tidal Ouse, Upper Humber	Tidal Ouse, Upper Humber	
R. Wharfe annual increase	None	None	None	None	None	None	None
Hull increased abstraction	None	None	None	None	None	None	None
R. Derwent abstraction increase	None	None	None	None	None	None	None
DROUGHT OPTION/ GROUP	North area reservoir group	South area reservoir group	Calder area reservoir group	NW area reservoir group	Increased Ouse pumping capacity	Ure increased abstraction	Ure increased abstraction

The following sections consider each of the potential sources of cumulative hydrological impacts identified in **Figure 6.2**. The drought options and potentially impacted river reaches are shown in **Figure 6.3**.

The increased Ouse pumping capacity

Three reservoirs of the North reservoir group (North Area Reservoir 1, North Area Reservoir 2 and North Area Reservoir 3), the Ouse increased abstraction drought option and the Ure increased abstraction drought option could, if simultaneously deployed, impact flows downstream of the Ouse pumping station. The cumulative hydrological impact would be considered minor.

The River Ouse

The North Area Reservoir 1, North Area Reservoir 2, Ure increased abstraction and North Area Reservoir 3 options would result in a flow reduction. This would be considered a negligible hydrological impact.

Tidal Ouse

The Rivers Aire and Wharfe discharge into the tidal River Ouse, downstream of Naburn Weir, meaning that simultaneous operation of the Calder Reservoir group, the North-West reservoir group, the North reservoir group, and the Ouse increased abstraction, Ure increased abstraction and Wharfe increased abstraction options could potentially impact freshwater flows in the tidal Ouse. This flow reduction would be considered as negligible.

The River Ure

The simultaneous implementation of the North Area Reservoir 1 and Ure increased abstraction options would result in a moderate cumulative hydrological impact on the River Ure.

The River Swale

The North Area Reservoir 1, North Area Reservoir 2 and Ure increased abstraction options could cause a flow reduction to the Ure. This level of reduction would be considered a negligible impact.

The River Wharfe

North Area Reservoir 4 and Wharfe increased abstraction drought options could cause reductions in flow in the River Wharfe downstream. This level of reduction would be considered a minor impact.

The River Aire

Potential impacts of simultaneous deployment of all drought options in the North-West Area and Calder Area reservoir groups could result in a minor hydrological impact on the River Aire.

The Humber Estuary

There are potential hydrological cumulative effects on the Humber Estuary. However, results of a detailed assessment of the impacts of the Drought Plan 2008 on the Humber Estuary SAC/SPA, undertaken by Scott Wilson for YWSL and reported in February 2011¹⁵, found that there would be no effect on the qualifying interests for which the Estuary is designated a SAC/SPA. This remains applicable to the Drought Plan 2017 as it contains the same options, except for the addition of Hull increased abstraction. This additional option would not alter the conclusions of the detailed assessment.

Long-term Options

The Tees – Swale transfer would increase flows in the River Ouse by up to 40 Ml/d (less transfer losses)

¹⁵ Scott Wilson (2011). Yorkshire Water Drought Plan: Assessment of Possible Impact on Humber Estuary SPA/SAC. Final Report Revision 2 February 2011. Report for Yorkshire Water.

and would not have any adverse cumulative effects downstream with the Ouse abstraction options.

There are no cumulative effects associated with the Tees – Derwent Pipeline option, whilst the desalination option is assessed as having minor cumulative effects with the Hull increased abstraction.

The cumulative effect assessment does not identify impacts so severe as to preclude any option from being retained in the Drought Plan for consideration in a very severe drought that has extended into a third successive year. Decisions as to which option or options to pursue in the unlikely event of such drought conditions will depend on how much additional water would be required to maintain essential water supplies to customers, prevailing river and environmental conditions (informed by drought monitoring), and the actual supply-side options already implemented in the preceding two years. The decisions would also need to take full account of other material factors including the spatial distribution of drought impacts, practicability and timescales for option implementation, drinking water quality risks and construction risks.

Figure 6.3

[Figure Redacted]

6.4 Cumulative Effects with Yorkshire Water's Existing Abstraction Licences

The supply-side options in the drought plan will generally operate simultaneously with YWSL's abstractions permitted under its water source abstraction licences. The supply-side options do not conflict with the abstraction of water under normal licence conditions and are mutually compatible.

The SEA assessment of each supply-side option has assessed the additional environmental impact of abstracting more water (or reducing compensation flow releases) over and above the pressures on the environment already in place from existing licensed abstractions.

It should be noted that in drought conditions, the amount of water being abstracted from the environment will, in many cases, be less than the full licensed abstraction volumes due to river flow restrictions in abstraction licences and/or lower inflows or river flows precluding full abstraction. It is for this reason that drought permits and orders are required to be able to increase the amount of water available for abstraction.

6.5 Habitats Regulations Assessment Cumulative Assessment

YWSL has undertaken the first stage in the HRA process, Screening, on its Final DP options list. It has been carried out in parallel with the SEA and is reported separately in the HRA Screening Report. The screening stage establishes whether any schemes have the potential for a Likely Significant Effect (LSE) on the integrity of a European designated site. In-combination effects of YWSL's Final DP 2019 with its draft WRMP19, the Environment Agency's regional DPs, and other water company WRMPs and DPs, were not considered likely to have significant adverse effects on European designated sites.

6.6 Cumulative Effects with existing relevant Programmes, Plans, Policies and Projects

6.6.1 Other water company Drought Plans

Assessment of the potential for cumulative impacts with drought options listed in neighbouring water companies' Drought Plans has been undertaken.

It should be noted that not all Drought Plans are necessarily reviewed on the same timescales as YWSL's DP. The information used to carry out these assessments is considered to be the most up to date information available at time of writing, but the assessments should be reviewed at the time of drought option implementation to ensure that no changes to the neighbouring water company drought option has been made in the intervening period, and that the assessment, therefore, remains valid.

6.6.1.1 Severn Trent

The Severn Trent Water 2010 drought plan sets out the bulk supply agreement with YWSL. In 1989, Severn Trent Water and YWSL entered into an agreement for the supply of untreated water from the Derwent Valley reservoirs to the Rivelin reservoirs in Sheffield. The agreement secured a maximum of 21,550MI per year (59MI/d) until March 2084 with the purpose of replacing the Derwent Valley Acts and Orders 1889-1969.

The amount that can be taken by both YWSL and Severn Trent Water is set in operating guidelines

based on the principle that YWSL is entitled to 24.1% of the available water. The minimum supply rate set in the guidelines between Severn Trent Water and YWSL is 35MI/d.

However, there is provision in the agreement to modify these rules and this was carried out in 1995/96 and in 2003. In the event of serious drought in Severn Trent Water's region, YWSL could assist by taking a reduced supply from the Derwent Valley reservoirs. The response from YWSL will depend upon the prevailing water resource situation in Yorkshire, but could result in the South Area reservoir drought permit options being implemented earlier in the event of a drought, and reduced supplies from the Derwent Valley reservoirs to YWSL. As such, there would be no cumulative impacts with Severn Trent's drought plan.

6.6.1.2 United Utilities

No cumulative impacts between drought options in the United Utilities Water PLC Revised Draft Drought Plan 2017 have been identified.

6.6.1.3 Northumbrian Water

The Final Northumbrian Water Limited Drought Plan 2013 describes the discussions with YWSL regarding potential transfers of water from the River Tees to supply YWSL, as discussed in earlier sections. The Final Drought Plan identifies operation of the Northumberland Reservoir 1 transfer scheme and that this would be operated in accordance with the Northumberland Operating Agreement. The water supplied from Northumbrian Water would be supplied only when surplus water is available in the Northumbrian Water supply area and under the conditions of the Northumberland Operating Agreement. Consequently, no cumulative impacts are anticipated.

6.6.1.4 Anglian Water Services Limited

No cumulative impacts between drought options in the Anglian Water Services Draft Drought Plan 2014 have been identified. There is only a very small (0.31 MI/d) transfer of water from YWSL to Anglian Water Services, which would not materially impact on any of the YWSL drought options.

6.6.2 Water Resource Management Plans

The existing (2014) Water Resources Management Plan for YWSL¹⁶ includes no plans to develop new water resources in the foreseeable future and therefore it does not have cumulative effects with the DP. The Water Resources Management Plan is currently being reviewed by YWSL and this may result in a number of options currently included in the DP being developed as permanent schemes to balance supply and demand. However, if this were to occur, there are sufficient other alternative options remaining in the DP to provide the required flexibility and robustness.

Existing Water Resources Management Plans for neighbouring water companies do not include actions that would have cumulative effects with the YWSL Drought Plan. Cumulative effects with measures set out in relevant River Basin Management Plans will need to be monitored over the coming years as decisions are made on the precise actions to be taken to achieve Good Ecological Status or Potential under the Water Framework Directive.

¹⁶ Yorkshire Water Services Limited 2014. Final Water Resources Management Plan. August 2014.

6.6.3 Environment Agency National Drought Action Plan

Assessment of the potential for cumulative impacts of supply side and drought permit/order options with drought options listed in the Draft Environment Agency Yorkshire and North East Drought Plan 2012¹⁷ has been undertaken.

The information used to carry out these assessments is considered to be the most up to date information available at time of writing, but the assessments should be reviewed at the time of actual drought option implementation to ensure that no changes to the Environment Agency Drought Plan have been made in the intervening period, and that the assessment therefore remains valid.

Drought actions and triggers are given in the Environment Agency's Drought Action Plan. Actions described include communications (internal and external), monitoring and potential drought order applications to protect the environment. Of these actions, those which are applicable for cumulative assessment with YWSL's drought options are external communications and potential environmental drought orders.

External communications will have positive cumulative effects with YWSL's media/water efficiency campaign demand side option, as drought communication messages may reinforce each other, thereby resulting in increased demand savings and greater recognition by the public to use water wisely.

Environment Agency environmental drought order actions have the potential to have cumulative impacts with YWSL's drought options. However, no specific potential drought order applications are defined in the Environment Agency's plan, although the situation should be checked in the event of a drought in case any specific need for a drought order application is being considered.

In summary, no cumulative impacts of options in Environment Agency DPs and YWSL's drought options are anticipated. However, due to the uncertainties of potential locations, and potential revisions to the Environment Agency's plan, this should be considered further at the time of any potential application for drought permits/orders by YWSL.

6.6.4 Canal and River Trust Drought Plans

The Canal and River Trust¹⁸ (formerly British Waterways) is currently in the process of updating its internal Drought Plan. Their previous Drought Plan has not been published, but discussions with the Canal and River Trust have indicated that their Drought Plan measures would not have cumulative impacts with those of YWSL. The Trust operates a number of reservoirs in the YWSL region to supply their navigation systems, as well as operating various navigable waterways and canals. Liaison with the Trust about drought management actions would be useful in a drought as some of the YWSL drought permit/order options may have the potential for adverse impacts on river abstractions used to support some of the navigable waterways in Yorkshire, such as the Aire Navigation.

6.6.5 Cumulative effects with any other identified relevant Plans or Policies

No cumulative effects are identified with other relevant existing plans and policies, including national policy statements, national or regional infrastructure plans or with local planning authority plans.

¹⁷ Environment Agency 2012. Yorkshire and North East Drought Plan. Version 1. January 2012.

¹⁸ Canal and Rivers Trust Putting Water into Waterways Water Resources Strategy 2015-2020.

7 Mitigation and Monitoring

7.1 Overview

Key stages of the SEA process comprise Task B5: *Mitigating adverse effects*, Task B6: *Proposing measures to monitor the environmental effects of plan or programme implementation* and Stage E: *Monitoring the significant effects of the plan or programme on the environment* (see Section 1.6, **Table 1.4**). The sections below describe how these tasks have been addressed and how YWSL intend to ensure that mitigation measures are implemented for any adverse effects that are identified and the means by which the environmental performance of the DP can be assessed.

7.2 Mitigation

Consideration of mitigation measures has been an integral part of the SEA process. The methodology for the assessment of the drought options is provided in Section 4. The SEA appraisals have been based on residual impacts, i.e. those impacts likely to remain after the implementation of reasonable mitigation. Certain assumptions have been made regarding this:

- Where suitable mitigation measures are known and identified (e.g. as informed through EARs, where available, or YWSL's drought management action forms in the Final DP 2019 (see **Appendix 5**), these have been taken into account, such that the resultant residual impact has been determined.
- In line with recommendations made in the UKWIR SEA Guidance¹⁹ the SEA appraisals have assumed the implementation of reasonable mitigation, such as the use of good construction practice. This is particularly applicable to unused supply-side options which are currently non-commissioned, and which do not operate as 'business as usual', and would require recommissioning in the event of use as a drought option.
- No mitigation is proposed for abstraction licences which are issued by the Environment Agency based on an assessment of the potential impacts on the environment. These licences already contain flow constraints at low flows or conditions associated with an operating agreement. This is applicable to all supply-side options which would operate with existing abstraction licence limits which have been subject to the Environment Agency's Review of Consents process.

7.3 Monitoring

Monitoring is required to track the environmental effects to show whether they are as predicted, to help identify any adverse impacts and trigger deployment of mitigation measures.

DPs encompass a basket of measures that will only be implemented if and when required because of the unpredictable occurrence of a drought event, and thus the actual impact of the plan over its life is subject to very significant uncertainties.

YWSL's Final DP 2019 includes a range of possible measures to allow YWSL to respond to a particular drought in the most appropriate way. It is impossible to predict in advance which and how many of the

¹⁹ UKWIR (2012) Strategic Environmental Assessment and Habitats Regulation Assessment – Guidance for Water Resources Management Plans & Drought Plans (12/WR/02/A). Prepared by Cascade Consulting.

measures will be required, and in which order of priority, to respond to each particular drought event. Correspondingly, it is therefore difficult to prescribe monitoring for the effects of the DP as a whole, and more appropriate to consider monitoring for drought options with significant environmental effects should these options be implemented during an actual drought.

As described in Section 1.5, EARs have been prepared. The EARs include detailed Environmental Monitoring Plans (EMPs). Monitoring requirements will be summarised in the Final DP 2019 drought management action forms (**Appendix 5**). The DPG requires the environmental assessment and EMPs to be updated regularly. The monitoring requirements will be assessed in more detail through this process. As described in the Final DP 2019, in the event of a drought requiring the implementation of drought option(s), YWSL will review the requirement for environmental monitoring in consultation with the Environment Agency and Natural England.

Appendix A

Statutory Consultee Responses to the Scoping Report

Comments on the SEA Scoping Report produced 26 August 2016, from the Environment Agency, Natural England, and Historic England have been listed below with responses in italics.

Comments from Environment Agency (Ineke Jackson)		YWSL/Cascade Response
C.1	<p>Table A1 and A2.</p> <p>I believe these tables are from our guidance, but I do think they would benefit from a one sentence description of each option.</p>	<p><i>These tables were intended to show what information is to be included in YWSL's Drought Plan Appendix 6. YWSL provides this information for all of the supply-side drought management options.</i></p>
C.2	<p>On Table 3.1</p> <p>What has driven the changes to this table? In particular why certain indicators/objectives have would have been removed? I am unable to review these one by one but would be concerned if removal of some indicators/objectives leads to a difference in the outcome of the environmental report.</p>	<p><i>The main changes to the objectives from the 2013 SEA, shown in the Scoping Report reflect the updated environmental baseline, including updated policies and plans. The changes (additions or removal of objectives) relates to current policy (e.g., changes due to the WFD), and will help improve the assessment of drought options during the SEA process.</i></p> <p><i>After consultation, the SEA approach has been refined and the wording of some objectives updated in the Environmental Report, as discussed in Section 4.3.1. The finalised objectives are shown in Table 4.1 of the Environmental Report for the 2017 Drought Plan.</i></p>

C.3	<p>Invasive species:</p> <p>1. Options for Construction Impacts</p> <p>The risk of spread of INNS and associated pathogens (e.g. crayfish plague) can be mitigated for by appropriate work planning and by the adoption of the principles of check-clean-dry for all operations. Good work planning should include issues such as:</p> <ul style="list-style-type: none"> • An understanding of the distribution of key INNS within the geographical area where works are programmed; • Not working across river catchments within any 48-hour period; • Not moving equipment between operational sites unless absolutely necessary; • Programming work so that sites are completed in a suitable order to be most likely to protect native species and prevent spread of INNS. E.g. sites where native white-clawed crayfish are present to be completed prior to sites where they are absent. <p>2. Reduced Flows</p> <p>Reduced flow will not in itself increase the risk of spread of INNS. However, any actions to mitigate for the reduced flows (e.g. by transferring water from another site) would have a significant potential risk. So refer to 1.</p>	<p><i>Baseline information on invasive species including a distribution map, and change in INNS over 10 years has been added (see Appendix C).</i></p> <p><i>Further, a specific objective related to invasive species has been added to Table 4.1.</i></p> <p><i>Invasive species are specifically referred to and assessed in the Environmental Assessment Reports (EARs) and we thank the EA for the additional information. The specific mitigation measures for INNS are discussed in the EARs.</i></p>
Comments from Historic England (Ian Smith)		YWSL/Cascade Response
C.4	<p>Table 2.1, Archaeology and Cultural Heritage, International</p> <p>For completeness, the following should be included in the list of International Policy documents:- UNESCO World Heritage Convention</p>	<p><i>The additional policy document has been added to the Table (see Table 2.1 in Environmental Report)</i></p>
C.5	<p>Table 2.1, Archaeology and Cultural Heritage, National</p> <p>Given that this SEA only covers part of northern England, it is not clear why there is reference to two documents produced by Cadw.</p> <p>- The DCLS publication “The historic environment – A Force for the Future” has been superseded by subsequent national policy guidance and legislative changes and can be deleted</p>	<p><i>The citations in Table 2.1 have been checked and the Cadw documents have been removed.</i></p> <p><i>The DCLS publication has been deleted.</i></p>
C.6	<p>Table 2.1, Archaeology and Cultural Heritage, Regional/Local</p> <p>It is not clear why this Table only includes the Leeds Core Strategy. It should include all Adopted LDF documents. For simplicity it might be simpler to refer to:- “All Adopted Development Plan Documents”</p>	<p><i>The additional policies and changes have</i></p>

	- This list should also include the Management Plans for the World Heritage Sites at Fountains Abbey/Studley Royal and Saltaire.	<i>been included in Table 2.1.</i>
C.7	Table 2.14 The protected historic wreck does not lie within the area covered by this SEA and is unlikely to be affected by the provisions of the plan.	<i>Table has been updated accordingly (see Appendix C, Table C.14 in Environmental Report).</i>
C.8	Table 2.16, Archaeology and Cultural Heritage, third bullet-point. It would be preferable to amend this bullet-point to make it clear that it refers to effects that will harm these heritage assets. It is suggested it is amended to read:- “Ensure the adverse effects...”	<i>The issues, messages and objectives have been reviewed and are summarised in Table 4.1 of the Environmental Report.</i>
Comments from Natural England (Ruth Reaney)		YWSL/Cascade Response
C.9	Some topics in Table 2.1 could be more comprehensive of plans and programmes at the regional/local level. It should include The Marine and Coastal Act 2009 and the European Landscape Convention; the latter provides an excellent framework for the management, protection and creation of landscapes. Local plans and programmes could be considered here from the LEPs; Site Improvement Plans for Natura2000 sites (list of plans here); SSSI (non-N2K) Water Level Management Plans and River Restoration Plans; NCA plans such as the Humberhead Levels Delivery Plan; Local authority Green Infrastructure strategies e.g. Leeds City region 2011; Kielder operating agreement between Northumbrian Water and EA; and CaBA Catchment management plans; Rights of Way Improvement Plans (ROWIP). The North York Moors National Park Authority (NYMNP) are currently reviewing their management plan so it could be necessary to check the status at the time of preparing the environmental report, and other plans in similar circumstances; Yorkshire Dales National Park Authority (YDNPA) will be reviewing theirs during 2017. The new extension to the YDNPA on 1 August 2016, will increase the area of consideration of options in the national park, in addition to the existing Management plan listed (2013). It may also be relevant to consider the s41 species Action plan produced for outcome 3 of the Biodiversity 2020 strategy by the Terrestrial Biodiversity Group. More information can be found in the following two links http://publications.naturalengland.org.uk/publication/4958719460769792 publications.naturalengland.org.uk/file/6518755878240256	<i>The additional plans and policies have been included (see Table 2.1. in the Environmental Report).</i>
C.10	Section 2.3.2 Limitations of the data and assumptions made We acknowledge there is a limit to how much information can be documented in the SEA for different scales of receptors at the site level within the zone of influence of individual options. Section 2.3.2 should however give some consideration to potential limitations of this level of data in conjunction with the Environmental Assessment Reports (EARS)	<i>This section has been reworded to reflect the fact that information provided in the EARS has been used to inform the</i>

	<p>if necessary. Experience from the assessment of impacts using baseline information for screened SSSIs in the 2013 Drought Plan suggests this level of information a) can be valuable for assessing potential impacts and b) can identify limitations or deficiencies in the data available and hence the uncertainty of conclusions.</p>	<p><i>SEA (see Section 3.2 of the Environmental Report). The assessments documented in the EARs consider all potentially affected habitats and species including, but not limited to, Special Areas of Conservation (SACs), Special Protection Areas (SPAs) and Ramsar features as well as any Site of Special Scientific Interest (SSSI) or species / habitats of principal importance for the conservation of biodiversity in England (identified in the NERC Act 2006 Section 41), and local wildlife sites.</i></p>
<p>C.11</p>	<p>Section 2.3.4 Biodiversity, Flora and Fauna</p> <p>The INNS future baseline section needs to include future trajectory and trends of INNS, together with a commentary about existing baseline distribution. This could assist with assessing scale/magnitude/risk of option impacts particularly in relation to water transfer options.</p> <p>The recent State of Nature report 2016 is useful to consider here as a national baseline of Biodiversity Flora and Fauna.</p> <p>Whilst acknowledging it may not be practical to list and assess all s41 species in the SEA, sufficient information should be available through the SEA or the Environmental Assessment Reports to make meaningful and strategic decisions about the use of drought permits. The SEA Environmental Report should explain where any gaps in baseline information are, and how the water company will fill these gaps in sufficient time, should a drought permit be required. A reference to the Species and Habitat Review report 2007 for a full list of the s41 species could be made in addition to the list in section 2.3.4 to inform the SEA assessment. Other notable species such as Sea lamprey, Great crested newts and Freshwater pearl mussel could be added to the list depending on the reason/criteria for the existing list of species. Records of protected species should be sought from appropriate local biological record centres, nature conservation organisations, groups and individuals; and consideration should be given to the wider context of</p>	<p><i>The INNS future baseline and the national baseline of Biodiversity Flora and Fauna has been updated (Appendix C).</i></p> <p><i>See response to Comment C10. above. The EARs for each drought management option provide a full list of ecological species / habitats / local wildlife sites identified within the potentially affected zone of hydrological influence and</i></p>

	<p>the site for example in terms of habitat linkages and protected species populations in the wider area, to assist in the impact assessment. If a potential risk to protected species is identified for any drought option, then the area likely to be affected by the drought option should be thoroughly surveyed by competent and licensed ecologists at the appropriate and ideally optimal times of year for relevant species and the survey results, impact assessments and appropriate accompanying mitigation strategies included as part of the Environmental Assessment Report. Natural England has adopted standing advice for protected species which includes links to guidance on survey and mitigation.</p>	<p><i>document the impact assessment. The EARs highlight gaps in the data and include relevant mitigation and monitoring recommendations. It is not the purpose of the SEA to document this level of detail. The EARs inform the SEA assessment. Section 4.5 of the Environmental Report has been included to explain the assessment procedure further. The section also highlights what information from the EARs is incorporated into the SEA.</i></p>
C.12	<p>Table 2.2</p> <p>The list of SPA and SACs should include Moorhouse and Upper Teesdale SAC and the confirmed MCZ designations along the Yorkshire coast. In January 2016 the Government designated 23 MCZ sites in Tranche 2. Holderness Inshore MCZ and Runswick Bay MCZ were part of those Tranche 2 sites designated along the Yorkshire coast, therefore authorities will need to consider whether any plans or projects are capable of affecting the protected features of those MCZs. Natural England does not know which sites DEFRA will take forward for the third tranche of MCZs. Information on Runswick Bay MCZ and its features can be found here and for Holderness Inshore MCZ and its features can be found here.</p>	<p><i>The marine conservation zones are discussed in Appendix C, and included on Figure 1.3 of the Environmental Report.</i></p>
C.13	<p>Table 2.3</p> <p>To supplement the aggregated number of designated sites in Table 2.3 there should be some reference to the assessment methodology to establish the baseline, or any additional work to establish it, at individual sites to assess potential impacts of drought options in the SEA, for example the process undertaken for SSSIs in the 2013 Drought Plan. We recommend that condition assessments for SSSIs provide a current baseline comparator, at least partially, than the overall number of designated sites e.g. percentage in favourable or unfavourable recovering condition. You explained some of the process being developed to consider impacts of options to local wildlife sites in our meeting on 07/09/2016. Information about the sites and the process of how they'll be considered in the impact assessment for the</p>	<p><i>See responses to Comments C10 and C11. above.</i></p> <p><i>Examples of impacts have been included in the SEA matrix tables, on different topic areas including biodiversity. More detailed information on specific impacts</i></p>

	<p>Environmental Report should be included alongside Table 2.3 and Figure 2.1. Sufficient information should be available through the SEA or the EARS to make meaningful and strategic decisions about the use of drought permits.</p> <p>There would be value in summarising, with examples, ways in which different types of drought options have the potential to affect biodiversity. For example lower water levels, slower flows, water quality deterioration or the transfer or proliferation of invasive species.</p>	<p><i>can be found in the EARs.</i></p>
<p>C.14</p>	<p>Future baseline</p> <p>Acknowledgement of the impacts of climate change on biodiversity would be valuable, highlighting the need to help wildlife adapt to a changing climate. Climate Change is a key theme within both the Natural Environment White Paper The Natural Choice: securing the value of nature (2011) and the England Biodiversity Strategy Biodiversity 2020: A strategy of wildlife and ecosystem services, (2011). Biodiversity 2020 seeks an increase in the resilience of biodiversity to climate change and other pressures. It also recognises that managing our natural environment is important to wider mitigation and adaptation efforts. Biodiversity 2020 contains a specific target to restore at least 15% of degraded ecosystems as a contribution to climate change mitigation and adaptation and requires. Natural England to review the Sites of Special Scientific Interest (SSSI) Notification Strategy to take account of long term climate change. Climate change adaptation and mitigation are stated aims of the Common Agricultural Policy.</p> <p>Natural England have developed a National Biodiversity Vulnerability Tool which could be useful resource for YW when assessing options in the ER against the Biodiversity and Air & Climate baseline (e.g. adapting specific aspects of ecosystems to climate change) and objectives. It is a national GIS model which shows the vulnerability of biodiversity action plan (BAP) priority habitats to climate change. The national scale GIS outputs can help you prioritise and target action on the Lawton Review Making Space for Nature 2010 priorities of better habitat management, bigger patches of habitat and joined up networks of habitat to adapt and build their resilience. More information about the model is on our website here.</p>	<p><i>It should be noted that the Drought Plan assessed in this SEA relates to the next 5 years and it is more applicable for the Water Resources Management Plan to be subject to the assessment of impacts of climate change.</i></p> <p><i>Text will, however, be updated in the 'Future Baseline' section of Appendix C in the Environmental Report to address the fact that climate change is likely to have an impact on wildlife in the future by exacerbating existing pressures such as changes to the timing of seasonal activity and water scarcity and that there is therefore a need to allow wildlife to adapt to climate change.</i></p> <p><i>The vulnerability tool was assessed for the Yorkshire area. However, the model is too detailed for the high level assessment required for an</i></p>

		<p><i>SEA, with a range of vulnerabilities surrounding the drought options. Therefore, an overall vulnerability could not be ascertained at a strategic level.</i></p>
<p>C.15</p>	<p>Section 2.3.5 – Population and Human health Rights of way (PRoW), access land, coastal access and National trails</p> <p>It is possible that an option/s could coincide with and affect rights of way, national trails or the new England Coast Path (ECP), which should be evaluated and appropriate mitigation incorporated for any adverse impacts. The National Trails website provides information including contact details of the National Trail Officer. We also recommend reference to the relevant Right of Way Improvement Plans (ROWIP) to identify any public rights of way that should be maintained or enhanced. Information about the England Coast Path can be found here. More detailed maps of local stretches for the Yorkshire coast identifying work to improve coastal access for example relocating bridges inland will be available in December/January. Any proposals regarding the ECP, or the path itself when opened, should not form any necessary barrier to development or change in land use. Guidance states that planners should be mindful of the ECP but altering the course of the path at some later date is (relatively) straightforward, should the need arise as new PRoW is not being created. There is a need to protect and enhance the green infrastructure network should be recognised.</p>	<p><i>PRoW and National trails are assessed in the EARs. This information is integrated into the landscape and recreation topic (see Appendix C of Environmental Report and Table 4.1).</i></p> <p><i>Coastal paths were assessed, however, none are located near the drought management options assessed.</i></p>
<p>C.16</p>	<p>Section 2.3.11 Landscape and visual amenity</p> <p>Yorkshire Water will need to consider potential impacts of the drought plan on local landscape character beyond National Parks and AONBs. The SEA and EARS should include sufficient baseline information to make meaningful and strategic decisions about the use of drought permits. For many drought options, it may be straightforward to screen out any potential landscape and visual impacts. The SEA should explain where any gaps in baseline information are, and how the water company will fill these gaps in sufficient time, should a drought permit be required. Landscape assessment methodologies should be used to assess the potential impacts of the drought plan on local landscape character. We encourage the use of Landscape Character Assessment (LCA), based on the good practice guidelines produced jointly by the Landscape Institute and Institute of Environmental Assessment in 2013. LCA provides a sound basis for guiding, informing and understanding the ability of any location to accommodate change and to make positive proposals for conserving, enhancing or regenerating character, as detailed proposals are developed. Natural England supports the publication Guidelines for Landscape and Visual Impact Assessment, produced by the Landscape Institute and the Institute of Environmental Assessment and Management in 2013 (3rd edition). The methodology set out is almost universally used for landscape and visual impact assessment. The assessment should refer to the relevant National</p>	<p><i>Many of the drought options do not involve construction. A strategic and high level approach has been taken considering designations such as AONBs as appropriate. It is not considered that detailed assessment (as undertaken as part of an Environmental Impact Assessment) is required for this SEA.</i></p> <p><i>The National Character Areas have been included.</i></p>

	Character Areas which can be found on our website. Information on Landscape Character Assessment is also available on our website.	<i>Landscape character assessments have not been included due to the high level strategic approach (see above).</i>
C.17	Table 2.4 A point of clarification about the nature of Table 2.4 is it lists the National Character Areas and their key messages rather than designated sites; therefore we recommend it supports the baseline in section 2.3.11. We also note that North Pennines NCA is largely within the region of County Durham.	<i>Noted, the title of Table C4 Appendix C of the Environmental Report has been amended.</i>
C.18	Table 3.1 We welcome the additional indicator questions in the Biodiversity, flora and fauna topic as they are relevant to new policies such as biodiversity 2020, natural capital and future baseline climate pressures, however we would hope this does not create a disproportionate level of extra work. There seems to be a typo regarding the Natural Capital and ecosystems indicator question in Table 3.1. There seems to be a reference typo in section 3.2.1 to Table 3.2 when it should be Table 3.1?	<i>The additional indicator questions reflect changes in policy and legalisation since the last Drought Plan 2013. All references and corrections have been updated (see Section 4 of Environmental Report).</i>
C.19	Natural England would be pleased to review copies of the EARS for SSSI and International designated sites, prior to the statutory consultation on the draft Drought plan and it's SEA. However please be aware this is pre-consultation advice which is now chargeable through our Discretionary Advice Service (DAS). This offers quality, tailored advice at an early stage of plan development, helping to reduce uncertainty and risk of delay further along the application process. Please see the DAS link on .gov.uk pages for information about the service https://www.gov.uk/guidance/developers-get-environmental-advice-on-yourplanning-proposals . I am happy to discuss this further with you if you wish.	<i>Noted, with thanks.</i>
C.20	Prioritisation of drought actions Any proposed drought action affecting a designated site should be properly justified. Such actions should only be proposed where there is a considerable risk to water supply from significant and infrequent drought events, and should not represent routine responses to relatively frequent water shortages. Reasonable steps to reduce water demand should be taken before drought actions are carried out. Actions with a high environmental risk should be selected only as a last resort. The level of risk will be determined by the:	<i>This will be addressed in the Drought Plan and at the potential time of application for a drought permit.</i>

	<ul style="list-style-type: none"> • sensitivity of the site affected • extent of the impact • Availability of mitigation options. 	
C.21	<p>Table 3.3</p> <p>In our meeting on 07/09/2016 you indicated the hashed box in the matrix (Table 3.3) will also reflect uncertainty, however this explanation needs more clarity in the method of utilising the matrix.</p>	<p><i>The text has been reviewed and updated to explain the methodology further (see Section 4.3 of Environmental Report).</i></p>
C.22	<p>Habitat Regulations Assessment (HRA)</p> <p>A HRA is an important element to inform the SEA. Reflecting our advice in the meeting 07/09/2016, the HRA for the 2013 Drought plan relied heavily on that from 2008 and is now out of date. Therefore we suggest Yorkshire Water carefully reviews the relevance and suitability alongside any new data, sites, plans/projects that can act in combination and changes to the baseline to ensure the HRA is relevant to the draft Drought plan options. An emerging issue to be evaluated and resolved in the HRA, and for SSSI-only sites, is the possible interaction of the drought plan options with new abstraction licences for managed wetlands that are European sites. It will be important to understand not only how the drought plan option will directly affect the European site, but also if the drought scheme's use under a drought order will have any implications for access of water for conservation management of European managed wetlands sites.</p>	<p><i>Noted. The HRA is a separate document to the SEA and has been updated for the 2017 drought plan. Wetlands are considered in the EARs within a 500m buffer of the impacted reaches. If identified, the impact of the drought option on conservation objectives, site management and water level management is included.</i></p>

Appendix B

Review of Policy, Plans and Programmes

The findings of the review of policy, plans and programmes are set out in **Table B1**. The purpose of the review and the key findings are set out in Section 2.2 of this Environmental Report. This table sets out the purpose and objectives of the policy, plans and programmes, their potential relationship with Yorkshire Water's Final Drought Plan 2019 and the potential implications of the plan objectives for the objectives of the SEA.

Table B1 Summary of the Policy, Plans and Programmes reviewed and their link to the Strategic Environmental Assessment

Objectives identified in the Policy, Plan or Programme	Influences on the DP and the SEA objectives
International	
The Bern Convention on the Conservation of European Wildlife and Natural Habitats (1979)	
<p>International convention which aims to ensure conservation of wild flora and fauna species and their habitats. Special attention is given to endangered and vulnerable species, including endangered and vulnerable migratory species specified in appendices.</p> <p>Enforced in European legislation through the Habitats Directive (92/43/EEC) and Birds Directive (79/409/EEC).</p>	<p>The impacts of the DP options on internationally designated sites, species and important Bird habitats must be considered as part of the SEA.</p>
The Bonn Convention on the Conservation of Migratory Species of Wild Animals (1983)	
<p>Aims to conserve terrestrial, marine and avian migratory species throughout their range.</p> <p>Enforced in European legislation through the Habitats Directive (92/43/EEC) and Birds Directive (79/409/EEC).</p>	<p>The impacts of the DP options on important Bird habitats (i.e. Ramsar sites and SPA designated sites) must be considered as part of the SEA.</p>
The Cancun Agreement (2011) & Kyoto Agreement (1997)	
<p>The agreement represent key steps forward in capturing plans to reduce greenhouse gas emissions and to help developing nations protect themselves from climate impacts and build their own sustainable futures. It includes a shared vision to keep global temperature rise to below two degrees Celsius.</p>	<p>The SEA should seek to promote a reduction in greenhouse gas emissions.</p>
The Convention for the protection of the architectural heritage of Europe (Granada Convention)	
<p>This sets the framework for the approach to conservation across Europe.</p>	<p>The SEA should take into account the need to conserve heritage.</p>
Council of Europe (2003) European Soils Charter	
<p>Sets out common principles for protecting soils across the EU and will help.</p>	<p>The SEA should seek to ensure that the quality of the regions land, including soils, is protected or enhanced.</p>
Council of Europe (2006), European Landscape Convention	

Objectives identified in the Policy, Plan or Programme	Influences on the DP and the SEA objectives
<p>European Landscape Convention (ELC) is the first international convention to focus specifically on landscape. Natural England implements the European Landscape Convention in England. The aims of the 2009/10 action plan are:</p> <p>Lead on improving the protection, planning and management of all England’s landscapes</p> <p>Raise the quality, influence and effectiveness of policy and practical instruments</p> <p>Increase the engagement in and enjoyment of landscapes by the public</p> <p>Collaborate with partners across the UK and Europe.</p>	<p>The implementation of the DP may influence landscape or the enjoyment of landscapes in the Yorkshire River Basin District and as such the SEA should seek to maintain or enhance the quality of the regions landscapes and the potential enjoyment of these landscapes.</p>
<p>The Environment Noise Directive (Directive 2002/49/EC)</p>	
<p>The END aims to —define a common approach intended to avoid, prevent or reduce on a prioritised basis the harmful effects, including annoyance, due to the exposure to environmental noise. It also aims to provide the basis for developing EU measures to reduce noise emitted by major sources, in particular road and rail vehicles and infrastructure, aircraft, outdoor and industrial equipment and mobile machinery.</p>	<p>The SEA assessment framework should include for the protection against excessive noise.</p>
<p>European Commission (2008) The 2008 ambient air quality directive (2008/50/EC)</p>	
<p>The 2008 ambient air quality directive (2008/50/EC) sets legally binding limits for concentrations in outdoor air of major air pollutants that impact public health such as particulate matter (PM10 and PM2.5) and nitrogen dioxide (NO2). As well as having direct effects, these pollutants can combine in the atmosphere to form ozone, a harmful air pollutant (and potent greenhouse gas) which can be transported great distances by weather systems.</p>	<p>The implementation of the DP may have some influence on air quality, either directly or indirectly through construction or operation activities. The SEA should seek to ensure that the region’s air quality is maintained or enhanced, and that emissions of air pollutants are kept to a minimum.</p>
<p>European Commission (2009) Promotion of the use of energy from renewable sources Directive (2009/28/EC)</p>	
<p>This promotes the use of energy from renewable sources.</p>	<p>The SEA should seek to promote the use of renewable energy.</p>
<p>European Commission (2009), Birds Directive (2009/147/EC)</p>	
<p>The Directive provides a framework for the conservation and management of, and human interactions with, wild birds in Europe. It sets broad objectives for a wide range of activities, although the precise legal mechanisms for their achievement are at the discretion of each Member State (in the UK delivery is via several different statutes).</p>	<p>The SEA should seek to protect and conserve important bird habitats.</p>

Objectives identified in the Policy, Plan or Programme	Influences on the DP and the SEA objectives
European Commission, Floods Directive (2007/60/EC)	
<p>The Directive's aim is to reduce and manage the risks that floods pose to human health, the environment, cultural heritage and economic activity. The Directive shall be carried out in coordination with the Water Framework Directive, notably by flood risk management plans and river basin management plans being coordinated, and through coordination of the public participation procedures in the preparation of these plans.</p>	<p>The SEA should seek to ensure that flood risk in the region is not adversely affected by the implementation of the DP.</p>
European Commission (2006) Fresh Water Fish Directive (2006/44/EC)	
<p>The Directive seeks to protect those fresh water bodies identified by Member States as waters suitable for sustaining fish populations. For those waters, it sets physical and chemical water quality objectives for salmonid waters and cyprinid waters.</p> <p>The Directive is designed to protect and improve the quality of rivers and lakes to encourage healthy fish populations.</p>	<p>The SEA should seek to promote the protection of river and lake water quality in order to maintain and develop suitable environments that will sustain fresh water fish populations.</p>
European Commission, Animal health requirements for aquaculture animals and products thereof, and on the prevention and control of certain diseases in aquatic animals (2006/88/EC)	
<p>The Directive establishes:</p> <p>Animal health requirements for the placing on the market, importation and transit of aquaculture animals and their products;</p> <p>Minimum measures to prevent diseases in aquaculture animals;</p> <p>Minimum measures to be taken in response to suspected or established cases of certain diseases in aquatic animals.</p>	<p>The implementation of the DP may influence biodiversity in the Yorkshire River Basin District and as such the SEA should seek to maintain or enhance the quality of habitats and biodiversity.</p>
European Commission, Environmental Liability Directive (2004/35/EC)	
<p>The Directive establishes a framework for environmental liability based on the "polluter pays" principle, with a view to preventing and remedying environmental damage.</p>	<p>The SEA should seek to ensure that the DP avoids causing direct or indirect damage to the aquatic environment or contamination of land that creates a significant risk to human health.</p>
European Commission (2000), The Water Framework Directive (2000/60/EC)	
<p>This Directive establishes a framework for the protection of inland surface waters, transitional waters, coastal water and groundwater. It also encourages the sustainable use of water resources.</p> <p>Key objectives are general protection of the aquatic ecology, specific protection of unique and valuable habitats, protection</p>	<p>The SEA should seek to promote the protection and enhancement of all water resources.</p>

Objectives identified in the Policy, Plan or Programme	Influences on the DP and the SEA objectives
of drinking water resources, and protection of bathing water.	
European Commission, Drinking Water Directive (1998/83/EC)	
<p>The objective of the Drinking Water Directive is to protect the health of the consumers in the European Union and to make sure the water is clean and of good quality.</p> <p>To make sure drinking water everywhere in the EU is healthy, clean and tasty, the Drinking Water Directive sets standards for the most common substances (so-called parameters) that can be found in drinking water. A total of 48 microbiological and chemical parameters must be monitored and tested regularly.</p>	The SEA should seek to ensure that objectives address water quality in the region, particularly drinking water quality.
European Commission, Urban Waste Water Treatment Directive (1991/271/EC)	
<p>The Directive's objective is to protect the environment from the adverse effects of urban waste water discharges and discharges from certain industrial sectors and concerns the collection, treatment and discharge of domestic waste water, mixture of waste water and waste water from certain industrial sectors.</p>	The SEA should seek to maintain, protect and improve water quality across the region.
European Commission (1992), Habitats Directive (1992/43/EC)	
<p>The aim of the Directive is to promote the maintenance of biodiversity by requiring Member States to take measures to maintain or restore natural habitats and wild species listed on the Annexes to the Directive at a favourable conservation status, introducing robust protection for those habitats and species of European importance.</p>	The impacts of the DP options on internationally designated sites and species must be considered as part of the SEA.
European Commission (2006) Thematic Strategy for Soil Protection	
<p>The Thematic Strategy for Soil Protection consists of a Communication from the Commission to the other European Institutions, a proposal for a framework Directive (a European law), and an Impact Assessment.</p>	The SEA assessment framework should include soils.
European Landscape Convention (Florence Convention)	
<p>The European Landscape Convention is an international convention focusing specifically on landscape. The UK Government signed the European Landscape Convention in 2006 and it became binding from March 2007.</p>	The SEA should take landscape quality into account and include water quality in the assessment framework.
Ramsar Convention The Convention on Wetlands of International Importance (1971)	
<p>The Convention on Wetlands (Ramsar, Iran, 1971) (the "Ramsar Convention") is an intergovernmental treaty that embodies the commitments of its member countries to maintain the ecological character of their Wetlands of</p>	The impacts of the DP options on important wetland habitats must be considered as part of the

Objectives identified in the Policy, Plan or Programme	Influences on the DP and the SEA objectives
International Importance and to plan for the "wise use", or sustainable use, of all of the wetlands in their territories.	SEA.
United Nations (1992), Convention on Biological Diversity (CBD)	
<p>The main objectives are:</p> <ul style="list-style-type: none"> • Conservation of biological diversity • Sustainable use of its components • Fair and equitable sharing of benefits arising from genetic resources 	The commitment to conserving biological diversity must be considered in any DP options and the SEA should seek to promote the protection and enhancement of biodiversity.
United Nations Economic Commission for Europe (1998) Aarhus Convention - Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters	
<p>The Aarhus Convention grants the public rights regarding access to information, public participation and access to justice, in governmental decision-making processes on matters concerning the local, national and transboundary environment. It focuses on interactions between the public and public authorities.</p> <p>The Aarhus Convention has been ratified by the European Community, which has begun applying Aarhus-type principles in its legislation, notably the Water Framework Directive (Directive 2000/60/EC).</p>	<p>The Convention is designed to improve the way ordinary people engage with government and decision-makers on environmental matters. It helps to ensure that environmental information is easy to get hold of and easy to understand.</p> <p>The SEA should seek to provide easily understood information to the public on the environmental implications of the DP and its constituent options.</p>
United Nations (2002), Commitments arising from the World Summit on Sustainable Development, Johannesburg	
<p>The World Summit on Sustainable Development proposed broad-scale principles which should underlie sustainable development and growth.</p> <p>It included objectives such as:</p> <ul style="list-style-type: none"> • Greater resource efficiency • Work on waste and producer responsibility • New technology development • Push on energy efficiency • Integrated water management plans needed • Minimise significant adverse effects on human health and the environment from chemicals by 2020. 	<p>These commitments are the highest level definitions of sustainable development. The DP should be influenced strongly by all of these themes and should seek to take its aims into account.</p> <p>The SEA should seek to promote the achievement of the sustainable development objectives outlined in this plan.</p>
National	

Objectives identified in the Policy, Plan or Programme	Influences on the DP and the SEA objectives
Ancient Monuments and Archaeological Areas Act 1979	
This act addresses the protection of scheduled monuments including the control of works affecting scheduled monuments. It also addresses archaeological areas.	The DP and SEA should take account of the need to protect scheduled monuments and archaeological areas.
The Climate Change Act 2008	
This act sets carbon targets for 2050. The net carbon account for 2050 at least 80% lower than 1990 baseline.	This target needs to be taken into account by the SEA.
Conservation of Habitats and Species Regulations 2017	
The Conservation of Habitats and Species Regulations 2017 are the principal means by which the Habitats Directive is transposed in England and Wales as such its main objective is to promote the maintenance of biodiversity.	The impacts of the DP options species diversity must be considered as part of the SEA.
The Countryside and Rights of Way (CROW) Act, 2000	
<p>The Act provides for increased public access to the countryside and strengthens protection for wildlife.</p> <p>The main provisions of the Act are as follows:</p> <ul style="list-style-type: none"> Extends the public's ability to enjoy the countryside whilst also providing safeguards for landowners and occupiers Creates new statutory right of access to open country and registered common Land Use Consultants Modernises Right of Way system Gives greater protection to SSSIs Provides better management arrangements for AONBs Strengthens wildlife enforcement legislation. 	<p>The DP may have an effect on public access to the countryside.</p> <p>The SEA should include objectives that take into account public access, protection of SSSIs and the management of relevant landscape designations.</p>
MHCLG (2019) National Planning Policy Framework	
<p>Presumption in favour of sustainable development. Core planning principles include taking account of the development needs of an area; contribute to conserving and enhancing the environment; re-use of previously developed land; conserve heritage assets; deliver sufficient community facilities to meet local needs. Delivering sustainable development includes:</p> <ul style="list-style-type: none"> • Building a strong competitive economy; • Supporting a prosperous rural economy; • Promoting sustainable transport; Requiring good design; • Promoting healthy communities; Protecting green belt land; 	<p>The DP and SEA should take account of the key components of sustainable development, Also, reservoirs contribute to recreation and visual amenity.</p>

Objectives identified in the Policy, Plan or Programme	Influences on the DP and the SEA objectives
<ul style="list-style-type: none"> • Meeting the challenge of climate change, flooding and coastal change; • Conserving and enhancing the natural environment; • Conserving and enhancing the historic environment; • Facilitating the sustainable use of minerals. <p>Reservoirs are included within the definition of open space - of public value due to opportunities for sport and recreation and providing a visual amenity.</p>	
<p>Department for Energy and Climate Change (2007) Energy White Paper: Meeting the Energy Challenge</p>	
<p>Meeting the energy challenge’, sets our international and domestic energy strategy, in the shape of four policy goals:</p> <ul style="list-style-type: none"> • Aiming to cut CO2 emissions by some 60% by about 2050, with real progress by 2020 • Maintaining the reliability of energy supplies • Promoting competitive markets in the UK and beyond • Ensuring every home is heated adequately and affordably. 	<p>The implementation of the DP may have an influence upon Yorkshire Water’s total energy use. The SEA should seek to promote energy efficiency, as well as seeking to reduce the effects of climate change through greenhouse gas emissions. The SEA should also promote the use of renewable energy, where relevant.</p>
<p>Department of energy and climate change (2011) Planning our electric future: a White Paper for secure, affordable and low carbon electricity</p>	
<p>This white paper outlines a package of reforms so that by 2030 there will be a flexible, smart and responsive electricity system, powered by a range of low carbon sources of electricity. This includes engaging with consumers on energy use. Decarbonisation is important in meeting the 2050 targets.</p>	<p>The implementation of the DP may have an influence upon Yorkshire Water’s total energy use. The SEA should seek to promote energy efficiency, as well as seeking to reduce the effects of climate change through greenhouse gas emissions. The SEA should also promote the use of renewable energy, where relevant.</p>
<p>Defra (2011) Government Review of Waste Policy in England 2011</p>	
<p>The review is guided by the “waste hierarchy”, EU obligations and targets on waste management, carbon impacts, environmental objectives and the costs and benefits of different policy options.</p> <p>The Governments vision include a move beyond the current throwaway society to a “zero waste economy” in which material resources are re-used, recycled or recovered wherever possible, and only disposed of as the option of very last resort.</p>	<p>The DP may involve options that involve the generation of waste (e.g. either through construction requirements or operation of supply side options). The SEA should seek to enhance recycling and minimise the amount of waste going to landfill.</p>

Objectives identified in the Policy, Plan or Programme	Influences on the DP and the SEA objectives
Defra (2012) The UK Climate Change Risk Assessment 2012 Evidence Report	
Five themes are identified that form the priorities for adaptation in the UK.	The SEA should take into account the need for climate change adaptation.
Defra (2011) Water for Life - Water White Paper	
This sets out market reform in the water sector.	The DP should take into account the contents of this paper.
Defra and Environment Agency (2015) How to Write and Publish a Drought Plan	
<p>This sets out how to assess the environmental effects of actions to maintain supply and how to mitigate. An environmental assessment must include details of changes as a result of actions to:</p> <ul style="list-style-type: none"> Water flow or level regimes Water quality Ecology (sensitive features, habitats and species) Designated sites (habitats and species) Fish populations (in particular migratory fish) <p>Additionally, an assessment must include effects on WFD status and consider effects on river basin management plans.</p> <p>Assessments should also take into account the Handbook for Scoping Projects: Environmental Assessment and the EclA Guidelines.</p> <p>For SEAs of a DP, guidance should be followed in the DCLG (2005) Practical Guide to the Strategic Environmental Assessment Directive and UKWIR (2012) Strategic Environmental Assessment and Habitats Regulations Assessment: Water Resources Management Plans and DPs.</p> <p>Need to identify what needs to be done to mitigate or reduce adverse effects and provide compensation for effects that remain following mitigation. This includes the identification of pre-drought, in-drought and post drought mitigation actions.</p>	The SEA must take into account the approach to environmental assessment and what needs to be done to mitigate or reduce adverse effects and provide compensation for effects that remain following mitigation.
Defra (2011) The Natural Choice: securing the value of nature, The Natural Environment White Paper	
Addresses the Government’s approach to valuing economic and social benefits of a healthy natural environment while continuing to recognise nature’s intrinsic value. It describes the vision of the Government for this to be the first generation to leave the natural environment of England in a better state than it inherited, requiring placing the value of nature at the heart of decision-making – in Government, local communities and businesses. Approaches to mainstream the value of nature across society include:	The DP supports the provisioning service of freshwater through ensuring security of supply during times of drought. The media campaigns that form part of the Demand side DP options may contribute towards increasing the awareness of the population to the value the provisioning

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<ul style="list-style-type: none"> • facilitating greater local action to protect and improve nature; • creating a green economy, in which economic growth and the health of our natural resources sustain each other, and markets, business and Government better reflect the value of nature; • strengthening the connections between people and nature to the benefit of both; and • showing leadership in the European Union and internationally, to protect and enhance natural assets globally 	<p>services of water. Other related ecosystem services may include:</p> <ul style="list-style-type: none"> • Provisioning Services: Biodiversity • Regulating Services: Water Regulation • Cultural services: Recreation and ecotourism • Cultural services: Cultural heritage values • Cultural services: Aesthetic <p>The SEA should ensure the DP effects the related provisioning services in the least damaging way through informing the DP formulation and selection of DP options during times of Drought.</p>
<p>Defra (2011) UK National Ecosystem Assessment and Defra, 2014, UK National Ecosystems Assessment Follow on, Synthesis of Key Findings</p>	
<p>Ecosystems services from natural capital contribute to the economic performance of the nation.</p> <p>Information and tools to enable decision makers to understand the wider value of ecosystems and their associated services.</p>	<p>For the purposes of the readership integrating an ecosystems services approach into the SEA is not being undertaken. However, it is realised that through the ‘Objective-led’ approach, many of the services relevant to the DP can be considered through the objectives and key questions for example:</p> <p>Provisioning Services: Freshwater</p> <p>Provisioning Services: Biodiversity</p> <p>Regulating Services: Water Regulation</p> <p>Cultural services: Recreation and ecotourism</p> <p>Cultural services: Cultural heritage values</p> <p>Cultural services: Aesthetic</p> <p>The SEA should ensure the DP effects the related provisioning services in the least damaging way through informing the DP formulation and selection of DP</p>

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	<p>options during times of Drought.</p> <p>In the event of further guidance being issued on incorporating ESA into SEA, the anticipated approach is sufficiently flexible that it should be able to accommodate this (subject to timing).</p>
<p>Defra (2010) Making Space for Nature: A Review of England’s Wildlife Sites and Ecological Network</p>	
<p>This independent review of England’s wildlife sites and the connections between them sets objectives and recommendations to help achieve a healthy natural environment that will allow our plants and animals to thrive.</p>	<p>The SEA should seek to maintain or enhance the quality of habitats and biodiversity.</p>
<p>Defra (2009) Safeguarding our soils – A Strategy for England</p>	
<p>The new Soil Strategy for England – Safeguarding our Soils – outlines the Government’s approach to safeguarding our soils for the long term. It provides a clear vision to guide future policy development across a range of areas and sets out the practical steps that we need to take to prevent further degradation of our soils, enhance, restore and ensure their resilience, and improve our understanding of the threats to soil and best practice in responding to them.</p> <p>The Governments vision is that: By 2030, all England’s soils will be managed sustainably and degradation threats tackled successfully. This will improve the quality of England’s soils and safeguard their ability to provide essential services for future generations.</p>	<p>The SEA should seek to ensure that the quality of the regions soils and their management is protected or enhanced.</p>
<p>Defra (2015) The Great Britain Invasive Non-native Species Strategy</p>	
<p>The Strategy is intended to provide a strategic framework, updated from the 2008 framework, within which the actions of government departments, their related bodies and key stakeholders can be better co-ordinated. Its overall aim is to minimise the risks posed, and reduce the negative impacts caused, by invasive non-native species in Great Britain.</p>	<p>The implementation of the DP may influence biodiversity in the Yorkshire River Basin District and the south east and as such the SEA should seek to maintain or enhance the quality of habitats and biodiversity.</p>
<p>Defra (2008) Future Water: the Government’s water strategy for England</p>	
<p>This strategy is the high level Government document which outlines how the Government wants the water sector to look by 2030, considering issues of water demand, water supply, water quality in the natural environment, surface water drainage, river and coastal flooding, greenhouse gas emissions and charging.</p> <p>that “by 2030 at the latest, we have:</p>	<p>The SEA should seek to ensure that the themes included in the strategy objectives are also reflected in the SEA objectives, particularly around water quality in the region, the quality of aquatic ecology, drinking water quality, resource use, energy use</p>

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<p>Improved the quality of our water environment and the ecology which it supports, and continued to provide high levels of drinking water quality from our taps</p> <p>Sustainably managed risks from flooding and coastal erosion, with greater understanding and more effective management of surface water</p> <p>Ensured a sustainable use of water resources, and implemented fair, affordable and cost-reflective charges.</p>	<p>and greenhouse gas emissions, and adaptation to climate change.</p>
<p>Defra (2007) The Air Quality Strategy for England, Scotland and Wales</p>	
<p>This strategy identifies air quality objectives and policy options to further improve air quality in the UK from into the long term. The options are intended to provide important benefits to quality of life and help protect the environment as well as the direct benefits to public health.</p>	<p>The implementation of the DP may have some influence on air quality, either directly or indirectly through construction or operation activities. The SEA should seek to ensure that the region's air quality is maintained or enhanced, and that emissions of air pollutants are kept to a minimum.</p>
<p>Defra (2011) Biodiversity 2020: A Strategy for England's Wildlife and Ecosystem Services</p>	
<p>The objective for the next decade is: 'to halt overall biodiversity loss, support healthy well-functioning ecosystems and establish coherent ecological networks, with more and better places for nature for the benefit of wildlife and people.' Four action areas are:</p> <p>A more integrated large-scale approach to conservation on land and at sea</p> <p>Putting people at the heart of biodiversity policy</p> <p>Reducing environmental pressures</p> <p>Improving our knowledge.</p>	<p>The SEA must consider impacts on biodiversity. The implementation of the DP may influence biodiversity in the area and as such the SEA should seek to maintain or enhance the quality of habitats and biodiversity, and take regards of priority species.</p>
<p>Defra (2008) England Biodiversity Strategy –climate change adaptation principles</p>	
<p>Government strategy presenting five principles that are fundamental to conserving biodiversity during climate change. The precautionary principle underlies all the principles.</p>	<p>The SEA must consider the impacts on biodiversity whilst also taking into account the potential for future climate change.</p>
<p>Defra (2005) Making space for water: taking forward a new government strategy for flood and coastal erosion risk management in England</p>	
<p>The strategy outlines how to manage the risks from flooding and coastal erosion in the UK. The strategy aims to reduce the threat of flooding to people and their property, and to deliver the greatest environmental, social and economic benefit, consistent with the Government's sustainable</p>	<p>The SEA should seek to ensure that flood risk in the region is not adversely affected by the implementation of the DP.</p>

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development principles.	
Defra (2005) Securing the Future: Delivering UK Sustainable Development Strategy	
The strategy for sustainable development aims to enable all people to satisfy their basic needs and enjoy a better quality of life without compromising the quality of life of future generations. The strategy places a focus on protecting natural resources and enhancing the environment.	The SEA must seek to ensure that objectives relating to sustainable development, sustainable resource use and protecting the natural environment, are considered when assessing the potential impacts of the DP.
Defra (2004) The First Soil Action Plan for England	
This plan is a comprehensive statement on the state of the UK's soils and how Government and other partners were working together to improve them. Ensure that England's soils will be protected and managed to optimise the varied functions that soils perform for society (e.g. supporting agriculture and forestry, protecting cultural heritage, supporting biodiversity, as a platform for construction), in keeping with the principles of sustainable development.	The SEA should seek to ensure that the quality of the region's land, including soils, is protected or enhanced.
Defra (2004) Rural Strategy	
The strategy sets out rural and countryside policy, and draws upon from lessons learnt following the rural white paper. Objectives include supporting economic and social regeneration across rural England and enhance the value of the countryside and protect the natural environment for this and future generations.	The implementation of certain DP options may have an effect upon rural communities and the countryside. The SEA should also seek to ensure that the quality of the region's landscapes, natural resources and biodiversity are maintained or enhanced.
Defra (2002) The Strategy for Sustainable Farming and Food – facing the future	
This strategy sets out how industry, Government and consumers could work together to secure a sustainable future for our farming and food industries. The strategy's objectives are to support the viability and diversity of rural and urban economies and communities, respect and operate within the biological limits of natural resources (especially soil, water and biodiversity) and achieve consistently high standards of environmental performance by reducing energy consumption, by minimising resource inputs, and use renewable energy wherever possible.	The implementation of the DP may have some indirect links with the food industry, through ensuring the availability of water for food based activities. The SEA should also seek to promote the most effective use of the region's natural resources, including soil, biodiversity and energy resources.
Defra (2015) The government's response to the Natural Capital Committee's third State of Natural Capital report	
This provides a number of recommendations such as: Agreement for the development of a 25 year plan for a healthy	Outputs from the SEA process will help to inform any future

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<p>natural economy. This includes helping organisations understand the economic, social and cultural value the impact their actions have on it and how to use the knowledge for better decisions; identify most important and threatened environmental assets; protection of designated areas; address outstanding monitoring and data issues to enable better decisions about strategic investments in natural capital.</p> <p>Assigning institutional responsibility for monitoring the state of natural capital.</p> <p>Organisations that manage land and water assets should create a register of natural capital for which they are responsible.</p>	<p>potential development by Yorkshire Water of Natural Capital Accounting (NCA) approaches to assessing environmental asset performance. Government (led by HM Treasury and Defra) is increasingly using NCA to support future environmental policy and decision-making, and there may be future expectations on water companies to follow suit.</p>
<p>Department for Culture, Media and Sport (2001) The Historic Environment – A Force for the Future</p>	
<p>This strategy outlines the Governments policy regarding the historic environment. The strategy has key aims and objectives that demonstrate the contribution the historic environment makes to the country’s economic and social well-being.</p>	<p>The implementation of the DP may have an influence on the heritage of the region, particular if options affect surface water levels. The SEA should seek to ensure any adverse effects on heritage assets are minimised or avoided.</p>
<p>The Energy Act 2013</p>	
<p>This provides the legislative framework for delivering secure, affordable and low carbon energy. It includes provisions for decarbonisation,</p>	<p>The implementation of the DP may have an influence upon Yorkshire Water’s total energy use. The SEA should seek to promote energy efficiency, as well as seeking to reduce the effects of climate change through greenhouse gas emissions. The SEA should also promote the use of renewable energy, where relevant.</p>
<p>Environment Act, 1995</p>	
<p>The Environment Act set up the EA to manage resources and protect the environment in England and Wales</p>	<p>The SEA should seek to promote the protection and enhancement of all water resources without having negative effects on other aspects of the Environment.</p>
<p>Environment Agency (2014) Corporate Plan 2014 - 2016</p>	
<p>This sets out the EA’s priorities for the environment between 2014 and 2016. Priority areas include:</p> <p>A changing climate</p> <p>Increasing the resilience of people, property and businesses to</p>	<p>The SEA should seek to ensure that priorities are also reflected in the SEA objectives particularly regarding the protection and improvement of water, land and</p>

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<p>the risks of flooding and coastal erosion</p> <p>Protecting and improving water, land and biodiversity</p>	<p>biodiversity.</p>
<p>Environment Agency (2010), Water Resources Action Plan for England and Wales</p>	
<p>The strategy has four main aims:</p> <p>Adaptation to and mitigation of climate change;</p> <p>A better water environment;</p> <p>Sustainable planning and management of water resources;</p> <p>People valuing water and the water environment.</p>	<p>The SEA should seek to ensure that strategy objectives are also reflected in the SEA objectives particularly regarding the sustainable management of water resources and protecting the environment.</p>
<p>Environment Agency (2009), Water Resources Strategy for England and Wales</p>	
<p>This is the national EA strategy for water resource management in the long term. It looks to 2050 and considers the impacts of climate change, the water environment, water resource and valuing water. Aims and objectives include:</p> <p>Ensure water is used efficiently in homes and buildings, and by industry and agriculture</p> <p>Provide greater incentives for water companies and individuals to manage demand</p> <p>Share existing water resources more effectively</p>	<p>The SEA should seek to ensure that strategy objectives are also reflected in the SEA objectives, particularly around water resource use and availability in the region.</p>
<p>Environment Agency (2015) Creating a Better Place: Environment Agency Corporate Strategy 2014-2016</p>	
<p>The strategy sets out the EA’s ambitions for the environment between 2014 and 2016. Priority areas include:</p> <p>A changing climate</p> <p>Increasing the resilience of people, property and businesses to the risks of flooding and coastal erosion</p> <p>Protecting and improving water, land and biodiversity</p> <p>Improving the way the EA works as a regulator to protect people and the environment and support sustainable growth</p>	<p>The SEA should seek to maintain, protect and improve water quality across the region and ensure efficient use of resources. The SEA should seek to ensure that strategy objectives are also reflected in the SEA objectives particularly regarding the protection and improvement of water, land and biodiversity.</p>
<p>Environment Agency (2013), Managing Water Abstraction</p>	
<p>This sets out how the EA manages water resources in England and Wales.</p>	<p>The SEA should consider the range of impacts that changes to abstractions could have on the environment, including water bodies, biodiversity, and water users.</p>
<p>Environment Agency, Shoreline Management Plans</p>	
<p>A large-scale assessment of the risks associated with coastal processes with the aim to help reduce these risks to people</p>	<p>The SEA should seek to promote a reduction of the risks identified</p>

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<p>and the developed, historic and natural environments. Coastal processes include tidal patterns, wave height, wave direction and the movement of beach and seabed materials.</p> <p>The second generation of Shoreline Management Plans (SMPs) are in production, covering the entire 6000 kilometres of coast in England and Wales. This generation of plans aim to incorporate sea level rise resulting from climate change and current defences with limited life and improvement requirements.</p>	<p>in the Shoreline Management Plans.</p>
<p>Environment Agency (undated) WFD River Basin Characterisation Project: Technical Assessment Method - River abstraction and flow regulation</p>	
<p>This paper describes the method used to assess the likelihood of river water bodies achieving the relevant WFD objectives as a result of artificial influences on low river flows.</p>	<p>Implementation of the DP may impact river water quality. The SEA should seek to promote the protection and enhancement of biodiversity and river water quality across the region.</p>
<p>Environment Agency (undated) Hydroecology: Integration for modern regulation</p>	
<p>This paper describes clear way forward in terms of hydroecology and a strategic direction to its development and application.</p>	<p>The DP and SEA should ensure relevant ecological considerations are integral to water resource evaluation and management decisions across the range of temporal and spatial scales.</p>
<p>The Environmental Damage (Prevention and Remediation) (England) Regulations 2015</p>	
<p>These regulations amend the 2009 regulations and provide additional protection to habitats and species identified on Annexes 1 and 2 of the EC Habitats Directive (92/43/EEC), SSSIs and, in some cases, classified waterbodies from environmental damage where an operator has intended to cause damage or been negligent to the potential for damage.</p> <p>Applies to the most serious categories of environmental damage, including:</p> <p>Contamination of land that results in a significant risk of adverse effects on human health</p> <p>Adverse effects on surface water or groundwater consistent with a deterioration in the water's status</p> <p>Adverse effects on the integrity of a Site of Special Scientific Interest (SSSI) or on the conservation status of species and habitats protected by EU legislation outside SSSIs.</p>	<p>The SEA should seek to ensure that the guidance provided by the regulations is considered when assessing the DP.</p>
<p>The Eels (England and Wales) Regulations 2009</p>	

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<p>Implement European Council Regulations 1100/2007 establishing measures for the recovery of the stock of European eel. The Regulations will help implement delivery Eel Management Plans. They address eel records and re-stocking, close season and reduction of fishing effort, passage of eels and entrainment.</p> <p>The key objective is to ensure that at least 40% of the potential production of silver eels returns to the sea to spawn. This will be achieved by reducing exploitation of all life-stages of the eel and restoration of their habitats.</p>	<p>The SEA should seek to should seek to maintain or enhance the quality of habitats and biodiversity, and take regard of protected species identified. This should include migratory fish species and their migratory passage.</p>
<p>English Heritage, now known as Historic England (2016) Heritage at Risk</p>	
<p>Heritage at Risk is a national project that aims to identify the endangered sites (historic buildings and places with increased risks of neglect and decay) and then help secure them for the future. Regional Heritage at Risk Registers were most recently published in 2017.</p>	<p>The SEA should seek to protect and enhance heritage and landscape.</p>
<p>English Heritage, now known as Historic England (2008) Climate Change and the Historic Environment</p>	
<p>Sets out the current thinking on the implications of climate change for the historic environment. It is intended both for the heritage sector and also for those involved in the wider scientific and technical aspects of climate change; in the development of strategies and plans relating to the impact of climate change; or in projects relating to risk assessment, adaptation and mitigation.</p>	<p>The SEA should seek to assess the implications of the DP in combination with climate change and the potential impacts on heritage and the historic environment.</p>
<p>Flood and Water Management Act, 2010 as amended</p>	
<p>The Flood and Water Management Act 2010 aims to provide better, more comprehensive management of flood risk for people, homes and businesses. It aims improve efficiency in the water industry, improve the affordability of water bills for certain groups and individuals, and help ensure continuity of water supplies to the consumer.</p>	<p>The DP also aims to ensure continuity of water supplies across the region are maintained.</p>
<p>Historic England (2013) Strategic Environmental Assessment, Sustainability Appraisal and the Historic Environment</p>	
<p>Guidance for addressing the historic environment in Strategic Environmental Assessment or Sustainability Appraisal. It identifies the recommended list of plans, programmes and policies for review, approach to baseline review, potential sustainability issues.</p>	<p>The SEA should consider the potential effects of the DP on the historic environment, particularly designated assets and their settings, and to important wetland areas with potential for paleo-environmental deposits. Historic characterisation can supplement information about designations. Sustainability issues, objectives and indicators</p>

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	identified in this document should be taken into account in the SEA.
Historic England (2015) Historic Environment Good Practice Advice in Planning Note 3	
This provides guidance on managing change within settings of heritage assets. This includes archaeological remains, historic buildings, sites, areas and landscapes.	The SEA should take into account effects on settings of heritage assets.
HM Treasury Infrastructure UK (2014) National Infrastructure Plan	
<p>The Plan focuses on economic infrastructure: the networks and systems in energy, transport, digital communication, flood protection, water and waste management. These are all critical to support economic growth through the expansion of private sector businesses across all regions and industries, to enable competitiveness and to improve the quality of life of everyone in the UK.</p> <p>The objectives for the water sector are ‘to secure a fair deal for customers while enabling water companies to continue to attract low-cost investment needed to provide the high quality, resilient water services customers want.’</p>	The DP could result in the production of additional waste. The SEA should seek to reduce the production of waste and ensure it is treated in line with the widely adopted ‘waste hierarchy’ and not sent to landfill. The DP can contribute to the providing resilient water services.
Natural Environment and Rural Communities Act, 2006	
<p>This Act makes provision about bodies concerned with the natural environment and rural communities in connection with wildlife, sites of special scientific interest, National Parks and the Broads.</p> <p>The Natural Environment and Rural Communities Act is designed to help achieve a rich and diverse natural environment and thriving rural communities.</p>	The SEA should seek to maintain or enhance the quality of habitats and biodiversity. The impacts of the DP on any designated features, as highlighted in the Natural Environment and Rural Communities Act, should be addressed.
Planning (Listed Buildings and Conservation Areas) Act 1990	
This addresses listed buildings including prevention of deterioration and damage and preservation and enhancement of conservation areas.	The DP and SEA should take account of the need to protect listed buildings and conservation areas.
Salmon and Freshwater Fisheries Act, 1975	
<p>The Act lays down the present basic legal framework within which salmon and freshwater fisheries in England are regulated.</p> <p>Proposals have been made to extend the legislation to apply to more fish species e.g. coarse fish, eel and lamprey species. These proposals are currently under review.</p> <p>The Act covers legislation on fishing methods and related offences, obstructions to fish passage, salmon and freshwater fisheries administration and law enforcement. Proposed</p>	The Act Provides statutory requirements for maintaining fish passage. The SEA will cover fish passage as an element of at least one sustainability objective. The SEA should seek to address any potential issues or effects on existing measures to address fish passage.

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<p>extensions to the legislation (under review) include the provision of fish passes and screening of water abstraction and discharge points for coarse fish, eel and lamprey species.</p>	
<p>The Water Act, 2003</p>	
<p>The Water Act 2003 is in three Parts, relating to water resources, regulation of the water industry and other provisions. The four broad aims of the Act are:</p> <p>The sustainable use of water resources</p> <p>Strengthening the voice of consumers</p> <p>A measured increase in competition</p> <p>The promotion of water conservation.</p>	<p>The implementation of the DP may have an effect through its role in maintaining supplies of water. The SEA should seek to promote sustainable use of water resources.</p>
<p>The Water Environment (WFD) (England and Wales) Regulations, 2003</p>	
<p>These Regulations make provision for the purpose of implementing in river basin districts within England and Wales The Water Framework Directive (2000/60/EC) of the European Parliament. The Regulations require a new strategic planning process to be established for the purposes of managing, protecting and improving the quality of water resources.</p>	<p>The SEA should seek to promote the protection and enhancement of all water resources. The SEA should seek to maintain, protect and improve water quality across the region and ensure efficient use of resources.</p>
<p>Water Resources Act, 1991 (Amendment) (England and Wales) Regulations 2009 SI3104</p>	
<p>Amends Water Resources Act 1991 by extending the use of Water Protection Zones and Works Notices, in particular to deal with harm to aquatic ecosystems caused by the physical characteristics of a water course or lake, such as quantity, structure and substrate of river/lake bed.</p> <p>Aligns the Water Resources Act with the hydromorphological requirements of the WFD</p>	<p>The SEA should include objectives that cover hydromorphological aspects and seek to ensure that hydromorphological features within the plan are maintained or enhanced.</p>
<p>Wildlife and Countryside Act, 1981</p>	
<p>The Act is the principle mechanism for providing legislative protection of wildlife in Great Britain.</p> <p>Species listed in Schedule 5 of the Act are protected from disturbance, injury, intentional destruction or sale. Other provisions outlaw certain methods of taking or killing listed species. This Act is brought up to date regularly to ensure the most endangered animals are on the schedule.</p> <p>The Act also improved protection for the most important wildlife habitats.</p>	<p>Some aspects of the DP may have effects on habitats and species in the TWUL supply area and beyond. The SEA should seek to maintain or enhance the quality of habitats and biodiversity, and take regard of protected species and habitats.</p>
<p>UKTAG on the WFD e.g. Phase 3 Review of Environmental Standards</p>	
<p>UKTAG prepares technical guidance designed to facilitate consistent implementation of the WFD in the UK.</p>	<p>The SEA should seek to ensure that the guidance provided by the</p>

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<p>This report identifies standards for certain chemicals known as specific pollutants, developments in assessments of risk to groundwater, non-native species, standards for flows in rivers, standards for levels in lakes, standards for acidity in rivers and standards in intermittent discharges.</p>	<p>plan are considered when assessing the DP, especially with respect to objectives relating to ecology, water quality and water quantity. The SEA should also ensure the guidance in the plan is used in relation to other related regulations for example the Habitats Directive. The guidance could contribute to the formulation of any criteria for assessing significance of effects.</p>
<p>UK Climate Projections UKCP09. UKCIP, 2009</p>	
<p>The UKCP09 Projections provide a basis for studies of impacts and vulnerability and decisions on adaptation to climate change in the UK over the 21st century. Projections are given of changes to climate, and of changes in the marine and coastal environment; recent trends in observed climate are also discussed.</p> <p>The methodology gives a measure of the uncertainty in the range of possible outcomes; a major advance beyond previous national scenarios</p> <p>The Projections will allow planners and decision-makers to make adaptations to climate change. In order to do so they need as much good information as possible on how climate change will evolve. They are one part of a UK government programme of work to put in place a new statutory framework on, and provide practical support for, adaptation.</p>	<p>The DP does take account of UKCP09 projections as its formulation through the WRMP process which takes account of climate change in its supply and demand projections. The SEA should also use UKCP09 projections in the broader assessment of climate change effects and any potential cumulative effects. For example the ecological requirements of aquatic habitats that may be affected by the DP will also be influenced by climate change.</p>
<p>Water Industry Act 1991 was amended by the commencement of Section 36 of the Flood and Water Management Act 2010</p>	
<p>This makes provision for general duties of water undertakers including those associated with water resources management plans and sets out supply duties.</p>	<p>The DP must take into account this legislation.</p>
<p>The Water Resources Management Plan Regulations 2007</p>	
<p>This provides the legislation for the preparation of water resources management plans.</p>	<p>The DP should take account of these requirements.</p>
<p>The State of the Environment: Water Resources 2018</p>	
<p>This provides a review and projection of the natural and anthropogenic pressures on water resources. The key findings of the report are as follows:</p> <p>Impacts of pressures on water resources due to increase population growth, changing climate and changes to land use.</p> <p>Abstraction, drainage and altered water levels are major</p>	<p>The DP should take account of the pressures on water resource highlighted in the report. The SEA should take into consideration these pressures when assessing impacts on</p>

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<p>causes of damage to wetlands.</p> <p>In 2017, abstraction from around 28% of groundwater bodies and up to 18% of surface waters was at higher than sustainable levels.</p> <p>In 2016, unsustainable abstraction prevented at least 6% and possibly up to 15% of river water bodies from meeting good ecological status or potential.</p> <p>Winter rainfall has increased since the mid-18th century; summer rainfall has decreased slightly over the same period.</p> <p>High winter river flows have increased over the past 30 years, with a subsequent increase in the frequency and magnitude of flooding.</p> <p>There is no clear trend in droughts, but summer river flows and groundwater levels may decrease in the future.</p>	<p>environmental receptors.</p>
<p>Regional</p>	
<p>Biodiversity Action Plans</p> <p>North York Moors National Park Biodiversity Action Plan 2013-2017</p> <p>Yorkshire Dales National Park Local Biodiversity Action Plan (LBAP) 'Nature in the Dales: 2020 Vision'</p>	
<p>Local biodiversity action plan objectives include those associated with maintaining and safeguarding the current extent of protected designations and recognised habitats and achieving favourable status for these areas.</p>	<p>The DP may have an effect on BAP objectives. The SEA should include objectives that take into account the objectives of the BAP where relevant (e.g. conservation designation status).</p>
<p>North York Moors National Park Authority (2016) Local Plan: First Steps</p>	
<p>North York Moors National Park Authority are currently reviewing their Local Plan. The First Steps document sets out the framework for the final plan.</p>	<p>The SEA should take the objectives of this plan into account.</p>
<p>Yorkshire Dales National Park (2016) Local Plan 2015-2030</p>	
<p>The Yorkshire Dales Local Plan 2015 to 2030 is a strategy for new development in the National Park. It sets out local policy to steer development decisions and guide planning applications.</p>	<p>The SEA should take the objectives of this plan into account.</p>
<p>English Heritage, now known as Historic England, Heritage at Risk Register:</p> <p>Yorkshire (2017)</p> <p>North East (2017)</p> <p>North West (2017)</p> <p>East Midlands (2017)</p>	

Objectives identified in the Policy, Plan or Programme	Influences on the DP and the SEA objectives
<p>Historic England Corporate Plan 2015-2018 is reducing the risk to heritage assets.</p> <p>In order to achieve this aim we are working to:</p> <ul style="list-style-type: none"> • Better understand the nature and extent of risk • Encourage others to save and re-use heritage at risk • Build the capacity of the sector to deliver solutions for heritage at risk • Provide advice and grants to help remove heritage from the register 	<p>It is unlikely the DP will have an effect on the Heritage at Risk Register.</p>
<p>Environment Agency (2016) Humber river basin district flood risk management plan 2015-2021</p>	
<p>Social objectives</p> <p>Understanding Flood Risk and Working in Partnership</p> <p>Community Preparedness and Resilience</p> <p>Reduce Community Disruption</p> <p>Flood Risk and Development</p> <p>Reduce risk to people</p> <p>Economic objectives</p> <p>Reduce economic damage</p> <p>Maintenance of main river and existing assets</p> <p>Transport Services</p> <p>Flood risk to agricultural land</p> <p>Tourism</p> <p>Environmental objectives</p> <p>Water Framework Directive</p> <p>Designated Nature Conservation Sites</p> <p>Designated Heritage sites</p> <p>Reservoir objectives</p> <p>Reservoir flood risk</p>	<p>The DP may have an effect on FRMP objectives. The SEA should include objectives that take into account the objectives of the FRMP where relevant (e.g. WFD status).</p>
<p>Environment Agency, CAMS (various)</p>	
<p>The Water Framework Directive’s main objectives are to protect and enhance the water environment and ensure the sustainable use of water resources for economic and social development. Catchment Abstraction Management Strategies (CAMS) set out how we will manage the water resources of a catchment and contribute to implementing the WFD.</p> <p>CAMS contribute to the WFD by:</p> <p>providing a water resource assessment of rivers, lakes,</p>	<p>The DP operation may have the potential to affect several of the CAMS objectives. The SEA will include objectives that take into account the objectives of the CAMS where relevant.</p>

Objectives identified in the Policy, Plan or Programme	Influences on the DP and the SEA objectives
<p>reservoirs, estuaries and groundwater referred to as water bodies under the WFD;</p> <p>identifying water bodies that fail flow conditions expected to support good ecological status;</p> <p>preventing deterioration of water body status due to new abstractions;</p> <p>providing results which inform River Basin Management Plans (RBMPs)</p>	
<p>Forest of Bowland AONB, Forest of Bowland Area of Outstanding Natural Beauty 2014 – 2019 (2014)</p>	
<p>Objectives include those associated with conserving and enhancing the AONB.</p>	<p>The DP operation may have the potential to affect several of the objectives for managing the Forest of Bowland AONB. The SEA will include objectives that take into account the objectives of the Forest of Bowland AONB management where relevant.</p>
<p>Hadrian’s Wall Heritage Ltd, Hadrian’s Wall Management Plan 2014 – 2019 (2014)</p>	
<p>Management of the world heritage site</p> <p>Boundaries of the world heritage site and its buffer zone</p> <p>Protection of the world heritage site</p> <p>Protection of undesignated archaeological remains</p> <p>Metal detecting</p> <p>Risk preparedness and disaster management</p> <p>Conservation of archaeological sites</p> <p>Rural land management</p> <p>Archaeological research</p> <p>Sustainable transport and physical access</p> <p>Developing the visitor experience and understanding of the world heritage site</p> <p>Sustainable development and prosperity</p> <p>Engaging with communities</p> <p>Marketing the world heritage site</p> <p>Education and learning</p>	<p>It is unlikely the DP will have an effect on the objectives of Hadrian’s Wall Management Plan.</p>
<p>Howardian Hills AONB Joint Advisory Committee, Howardian Hills Area of Natural Beauty Management Plan 2014 – 2019 (2014)</p>	
<p>Objectives include those associated with conserving and enhancing the AONB.</p>	<p>The DP operation may have the potential to affect several of the objectives for managing the</p>

Objectives identified in the Policy, Plan or Programme	Influences on the DP and the SEA objectives
	Howardian Hills AONB. The SEA will include objectives that take into account the objectives of the Howardian Hills AONB management where relevant.
Lake District National Park Authority, A Vision for 2030 (2006)	
<p>A prosperous economy</p> <p>World class visitor experiences</p> <p>Vibrant communities</p> <p>A spectacular landscape, its wildlife and cultural heritage</p>	<p>The DP may have an effect on the National Park objectives. The SEA should include objectives that take into account the objectives of the Lake District National Park where relevant (e.g. achieving excellent visitor experiences, spectacular landscape and wildlife).</p>
Leeds City Council, Core Strategy (2014)	
<p>Environmental objectives are listed below:</p> <p>Managing Environmental Resources: In safeguarding the environment of the District, the Core Strategy needs to:</p> <p>17. Protect natural habitats and take opportunities to enhance biodiversity through the creation of new habitats and by improving and extending wildlife corridors.</p> <p>18. Secure development which has regard to its impact on the local environment and is resilient to the consequences of climate change, including flood risk.</p> <p>19. Promote opportunities for low carbon and energy efficient heat and power, for both new and existing development.</p> <p>20. Make efficient use of natural resources, including the implementation of sustainable design and construction techniques, the use of minerals, and the effective minimisation and management of waste.</p> <p>21. Protect and enhance Green Infrastructure, strategic green corridors, green space, and areas of important landscape character, taking the opportunity to improve their quality, connectivity and accessibility through the development process.</p>	<p>The DP may have an effect on the Core Strategy objectives. The SEA should include objectives that take into account the objectives of Leeds Core Strategy where relevant (e.g. protecting natural habitats).</p>
Leeds City region Local authority Green Infrastructure strategies (2010)	
<p>The plan aims to maintain and enhance green infrastructure to:</p> <ul style="list-style-type: none"> • Address climate change adaptation and mitigation • Tackle flood alleviation and water management • Improve quality of place • Improve physical and mental health 	<p>The SEA will take these objectives into account where the DP may have an effect on green infrastructure.</p>

Objectives identified in the Policy, Plan or Programme	Influences on the DP and the SEA objectives
Sustain economic growth and investment	
Natural England (2014) Site Improvement Plans (SIPs) for Natura 2000 Sites	
<p>Site improvement plans: Yorkshire & Humber</p> <p>This SIP includes the priorities and new measures required to achieve water-dependent Natura 2000 objectives under the Water Framework Directive. The actions in this SIP for the water dependent (excluding non-water dependent) habitats inform part of the River Basin Management Plan and its consultation.</p> <p>Specific objectives for each Natura 2000 site relating to species and habitats.</p>	<p>The DP may have an effect on Site Improvement Plans (SIPs) for Natura 2000 Sites and the Humber RBMP.</p> <p>The SEA should include objectives that take into account the objectives of the Natura 2000 Sites and the Humber RBMP where relevant (e.g. WFD status).</p>
Natural England National Character Area (NCA) Profiles	
<p>There are over 20 NCAs within Yorkshire Waters operating boundary. Each of these have individual objective relating to specific landscapes, habitats and species.</p> <p>Generalised objectives for each of these include:</p> <ul style="list-style-type: none"> Conserve characteristic historic structures Protect the area's rich and diverse archaeology Protect the area's high levels of tranquillity Protect, manage and enhance the good rights of way network Manage and enhance existing habitats Encourage the maintenance of traditional land management practices Protect, and encourage sympathetic management Protect and manage geological features Plan for climate change mitigation and adaptation 	<p>The DP may have an effect on NCAs. The SEA should include objectives that take into account the objectives of the NCAs where relevant (e.g. manage and enhance existing habitats).</p>
Nidderdale AONB, Nidderdale Area of Outstanding Natural Beauty Management Plan 2014 – 2019 (2014)	
<p>Objectives include those associated with conserving and enhancing the AONB.</p>	<p>The DP operation may have the potential to affect several of the objectives for managing the Nidderdale AONB. The SEA will include objectives that take into account the objectives of the Nidderdale AONB management where relevant.</p>
North East Local Enterprise Partnership (2014) More and Better Jobs: A strategic economic plan for the North East	

Objectives identified in the Policy, Plan or Programme	Influences on the DP and the SEA objectives
<p>Halve the gap between the North East and the national average (excluding London) on three quantifiable measures:</p> <p>Gross value added (GVA) per full time equivalent (FTE), with wages and profits rewarding workers and investors and sustaining high levels of employment.</p> <p>Private sector employment density, with more companies and jobs driving a high growth economy.</p> <p>Activity rate, with no one left behind, and those distant from or disadvantaged in the labour market helped to take advantage of the opportunities created by a successful growing economy.</p> <p>Fully close the gap on one quantifiable measure:</p> <p>Employment rate, with the scale and quality of employment matching an increasingly better qualified and higher skilled workforce.</p>	<p>Unlikely that these objectives will be effected by the objectives of the DP SEA.</p>
<p>North Pennines AONB Partnership, The North Pennines Area of Natural Beauty Management Plan 2014- 2019</p>	
<p>Objectives include those associated with conserving and enhancing the AONB.</p>	<p>The DP operation may have the potential to affect several of the objectives for managing the North Pennines AONB. The SEA will include objectives that take into account the objectives of the North Pennines AONB management where relevant.</p>
<p>North York Moors (2016) Local Development Scheme</p>	
<p>Each Local Development Document produced will be subject to SEA/SA to ensure that they reflect the principles of sustainable development and that the effects of the document on sustainability can be monitored.</p>	<p>The DP operation may have the potential to affect the of the objectives of the LDS. The SEA will include objectives that take into account the objectives of the LDS where relevant.</p>
<p>North York Moors Park Authority (2012) National Park Management Plan</p>	
<p>The Plan aims to achieve the long-standing vision for the Park:</p> <p>A place managed with care and concern for future generations.</p> <p>A place where the diversity and distinctiveness of the landscape, villages and buildings is cherished.</p> <p>A place where biological and cultural diversity, and other special qualities are conserved and enhanced.</p> <p>A place where the environment and way of life is respected and understood.</p> <p>A place where communities are more self sustaining and</p>	<p>The DP operation may have the potential to affect the objectives of the National Park Management Plan. The SEA will include objectives that take into account the objectives of the National Park Management Plan where relevant.</p>

Objectives identified in the Policy, Plan or Programme	Influences on the DP and the SEA objectives
<p>economic activity engenders environmental and recreational benefits.</p> <p>A place that is special to people and that provides pleasure, inspiration and spiritual well being; where calm and quality of life are celebrated.</p> <p>A place where visitors are welcome and cultural and recreational opportunities and experiences are accessible.</p> <p>A place that continues to adapt to change whilst National Park purposes continue to be furthered and pursued.</p> <p>A place where natural resources are managed sustainably and environmental limits are recognised.</p>	
<p>Peak District National Park Authority (2014) Peak District National Park Management Plan 2014 – 2019</p>	
<p>DL 1 Landscape The diverse national park landscapes will adapt to challenges whilst retaining their special qualities and natural beauty</p> <p>DL 2 Cultural Heritage Our cultural heritage and distinctive local traditions will be sustained and enhanced as an integral part of modern Peak District life</p> <p>DL 3 Biodiversity and ecosystems The richness of the natural environment will be conserved, restored and enhanced so wildlife can thrive, ecological systems continue to improve and its diverse geology is retained and valued</p> <p>DL 4 Climate Change Greenhouse gas emissions will be reduced and a healthy national park will adapt to the effects of climate change</p> <p>WI 1 Sustainable Tourism The national park will strengthen its role as a welcoming place and premier destination, synonymous with escape, adventure, enjoyment and sustainability</p> <p>WI 2 Access for all The Peak District will be an unrivalled setting for opportunities which enable people to develop a deeper understanding and appreciation of the place, and which instil a desire to contribute to the conservation, community and economy of the national park</p> <p>WI 3 Getting involved Visitors and residents will be inspired to act in a way that sustains the environment and the special qualities of the Peak District</p> <p>WI 4 Recreation Accessible and diverse recreation opportunities will be available for all, encouraging healthy living, enjoyment of the landscape and a sense of adventure</p> <p>TV 1 Sense of Place Thriving villages, hamlets and the market town of Bakewell will adapt to new challenges whilst retaining their valued historic and cultural integrity</p> <p>TV 2 Sustainable Living Communities and individuals will feel inspired to live sustainably and help shape the place they live</p>	<p>The DP operation may have the potential to affect the objectives of the National Park Management Plan. The SEA will include objectives that take into account the objectives of the National Park Management Plan where relevant.</p>

Objectives identified in the Policy, Plan or Programme	Influences on the DP and the SEA objectives
<p>in</p> <p>TV 3 Access to Services Residents will have sustainable access to local services and employment</p> <p>TV 4 Affordable Housing More opportunities will be found to provide locally needed affordable housing</p> <p>ES 1 Farming and Land Management Profitable farming, through food production, land management and farm based business, will promote and contribute to the special qualities of the national park, and is recognised as essential to its character and health</p> <p>ES 2 Economic Diversity There will be a diversity of thriving businesses supporting and contributing to the economy and local communities which are critical to the long term future of the national park</p> <p>ES 3 Environmental Goods The Peak District landscape will be managed by farmers and other land managers to increase the potential economic return from public goods, such as clean water, carbon storage and renewables</p> <p>ES 4 Green Economy Traditional and modern economic development that is innovative, well managed and appropriate to the landscape will be supported</p>	
Public Rights of Way Improvement Plans (ROWIPs)	
<p>Objectives include those associated with each local authority's rights of way improvement plans.</p>	<p>The DP operation may have the potential to affect the objectives of the ROWIPs. The SEA will include objectives that take into account the objectives of the ROWIPs where relevant.</p>
Yorkshire Dales National Park Authority (2013) Yorkshire Dales National Park Management Plan 2013-2018	
<p>By 2040, the Yorkshire Dales National Park will be:</p> <ul style="list-style-type: none"> • A distinctive, living, working, cultural landscape that tells the on-going story of generations of people interacting with their environment; • A friendly, open, and welcoming place with outstanding opportunities to enjoy its special qualities; • Home to the finest variety of wildlife in England; • Resilient and responsive to the impacts of climate change, storing more carbon each year than it produces; • Providing an outstanding range of benefits for the nation based on its natural resources, landscape and cultural heritage, which underpin a flourishing local economy; • Home to strong, self-reliant and balanced communities with good access to the services they need. 	<p>The DP operation may have the potential to affect several of the ambitions for the management of the Yorkshire Dales National Park. SEA will include objectives that take into account the ambitions for the management of the Yorkshire Dales National Park where relevant (e.g. landscape quality and character, historic and cultural features, habitats and biological diversity, climate change and better use of resources).</p>

Objectives identified in the Policy, Plan or Programme	Influences on the DP and the SEA objectives
Yorkshire Water Services Ltd, Final Water Resources Management Plan 2010-2035 (2014)	
See WRMP.	The DP will take into account the objectives of Yorkshire Water's WRMP.
Water Resources Management Plans from adjacent water companies	
These set out the plans to manage water resources by companies in adjacent areas.	The DP should not conflict with the other water company operations especially drought options that may be operated simultaneously.
Humberhead Levels Partnership (2011) Humberhead Levels Nature Improvement Area Business Plan	
<p>Objectives of the Plan:</p> <ol style="list-style-type: none"> 1 Creation of key habitats of the inner estuary in additional sites 2 Achieve sustainable water management in an arable landscape through enhancement of riparian habitats along connecting rivers and drains. 3 Increase the hydrological integrity of England's largest lowland mire system. 4 Deliver sustainable management of existing biodiversity assets via developing the local green economy 5 Increase community links to biodiversity sites to raise voluntary support for site management, heritage conservation and interpretation 	The DP will take into account the objectives of the plan.
Local	
Drought Plans from adjacent water companies	
<p>These include:</p> <p>Anglian Water</p> <p>Northumbrian Water</p> <p>Severn Trent Water</p> <p>United Utilities</p>	The DP and SEA to take these into account.
River Restoration and Water Level Management Plans	
Natural England (2013) Restoring the River Wharfe SSSI: A	The DP may have an effect on River Restoration Plans for non-

Objectives identified in the Policy, Plan or Programme	Influences on the DP and the SEA objectives
River Restoration Plan Natural England (2010) Restoring the Yorkshire Derwent Environment Agency (2006) Pevensey Levels SSSI: Water Level Management Plan	Natura 2000 sites. The SEA should include objectives that take into account the objectives of these sites where relevant.

Appendix C

Environmental Baseline Review

1 Biodiversity, Fauna And Flora

1.1 Baseline

Biodiversity is the variety of plants (flora) and animals (fauna) in an area, and their associated habitats. The importance of preserving biodiversity is recognised from an international to a local level. Biodiversity has importance in its own right, and has value in terms of quality of life and amenity. The Yorkshire Water supply area includes a number of sites that are designated as important for biodiversity at an international, national or local level (see **Figure C1**). Special Protection Areas (SPA)¹, Special Areas of Conservation (SAC)² and Ramsar³ sites are listed in **Table C1**.

Table C1 Special Protection Areas, Special Areas of Conservation and Ramsar within the Yorkshire Water supply area

Site and Designation	Water Resource Zone
SPA	
North York Moors	Grid; East SW; East GW (within WRZs)
Hornsea Mere	Grid (within WRZ)
Flamborough Head & Bempton Cliffs	East GW (within WRZ)
Lower Derwent Valley	Grid (within WRZ)
North Pennine Moors	Grid (within WRZ)
Peak District Moors (South Pennine Moors Phase 1)	Grid (within WRZ) and East of YW supply area
Humber Estuary	Grid (within WRZ) and South/South East of YW supply area
South Pennine Moors Phase 2	Grid (within WRZ) and East of YW supply area
Thorne & Hatfield Moors	Grid (within WRZ)
North Pennine Moors	Grid (within WRZ) and North of YW supply area
North Pennine Moors	Kielder (Tees-Swale option, river and pipe transfer)
SAC	
Flamborough Head	East GW (within WRZ)
Ingleborough Complex	Grid (within WRZ)
Beast Cliff-Whitby (Robin Hood's Bay)	East SW (within WRZ)

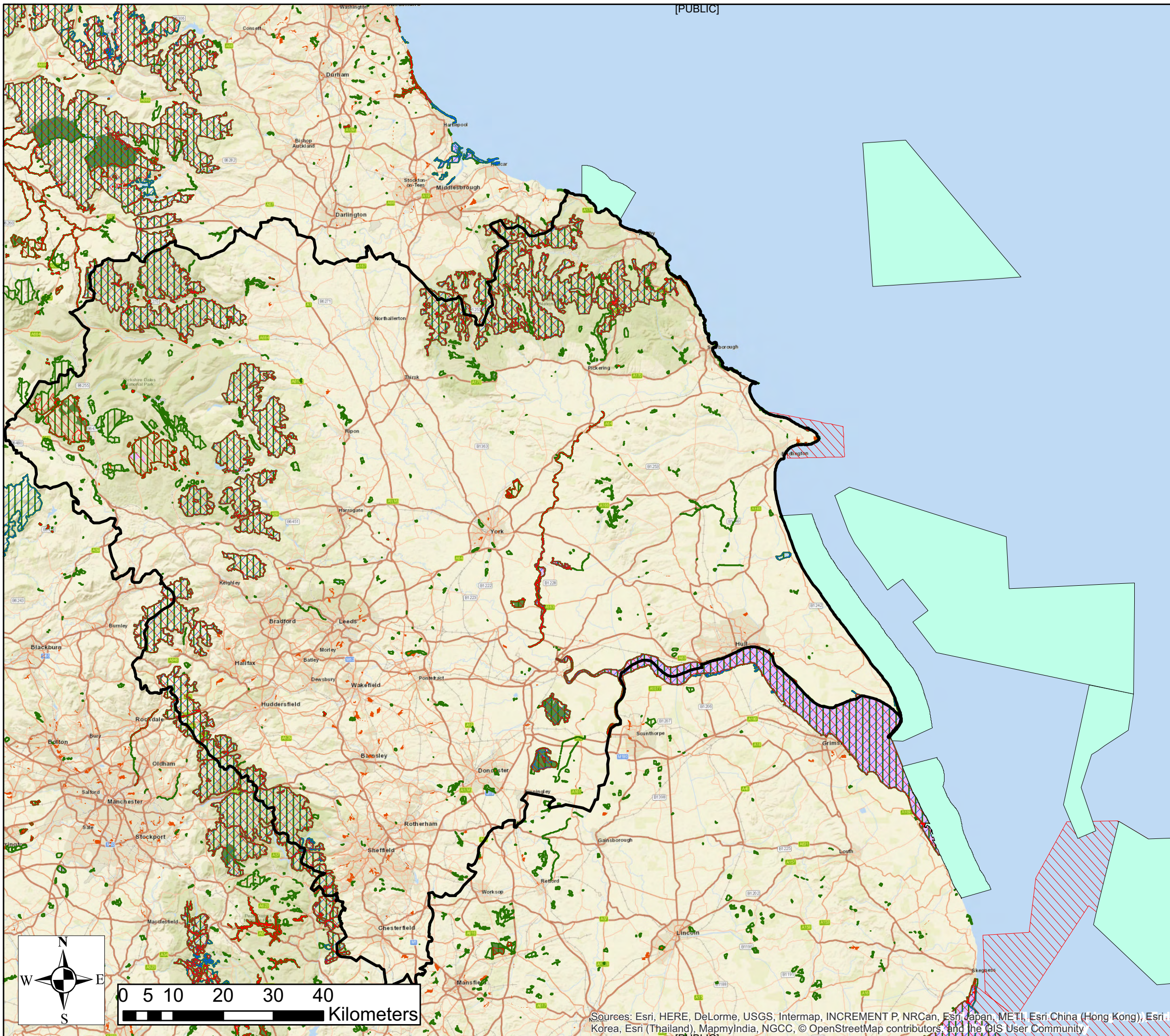
¹ Special Protection Areas (SPAs) are strictly protected sites classified in accordance with Article 4 of the EC Directive on the conservation of wild birds (79/409/EEC), also known as the Birds Directive, which came into force in April 1979. They are classified for rare and vulnerable birds, listed in Annex I to the Birds Directive, and for regularly occurring migratory species. www.jncc.org.uk

² Special Areas of Conservation (SACs) are strictly protected sites designated under the EC Habitats Directive. Article 3 of the Habitats Directive requires the establishment of a European network of important high-quality conservation sites that will make a significant contribution to conserving the 189 habitat types and 788 species identified in Annexes I and II of the Directive (as amended). www.jncc.org.uk

³ Ramsar sites are wetlands of international importance designated under the Ramsar Convention.

Site and Designation	Water Resource Zone
Lower Derwent Valley	Grid (within WRZ)
Strensall Common	Grid (within WRZ)
North Pennine Moors	Grid (within WRZ) and North of YW supply
River Derwent	Grid (within WRZ)
Kirk Deighton	Grid (within WRZ)
Arnecliffe & Park Hole Woods	East SW (within WRZ)
Ox Close	Grid (within WRZ)
North York Moors	Grid; East SW; East GW (within WRZ) and North of YW supply area
Craven Limestone Complex	Grid (within WRZ)
Skipwith Common	Grid (within WRZ)
North Pennine Dales Meadows	Grid (within WRZ) and West of YW supply area
Ellers Wood & Sand Dale	East GW (within WRZ)
Fen Bog	East SW (within WRZ)
South Pennine Moors	Grid (within WRZ) and West/South West of YW supply area
Hatfield Moor	Grid (within WRZ)
Denby Grange Colliery Ponds	Grid (within WRZ)
Thorne Moor	Grid (within WRZ)
Humber Estuary	Grid (within WRZ) and South/South East of YW supply area
River Eden	Directly North of Grid WRZ
Rochdale Canal	~4km West of Grid WRZ
Asby Complex	~3km North of Grid WRZ
Border Mires, Kielder-Butterburn	Kielder (Tees-Swale option)
North Pennines Dales Meadows	Kielder (Tees-Swale option)
Tyne & Allen River Gravels	Kielder (Tees-Swale option)
North Pennines Moors	Kielder (Tees-Swale option, , river and pipe transfer)
Moorhouse and Upper Teesdale	Kielder (Tees-Swale option, , river and pipe transfer)

Site and Designation	Water Resource Zone
Ramsar	
Malham Tarn	Grid (within WRZ)
Humber Estuary	Grid (within WRZ) and South/South East of YW supply area
Lower Derwent Valley	Grid (within WRZ)



[PUBLIC]

Legend


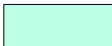






-  Yorkshire Water Operational Area
-  Marine Conservation Zones
-  SAC
-  SPA
-  SSSI
-  RAMSAR
-  NNR
-  LNR

Figure title
 Yorkshire Water Drought Plan
 SEA Environmental Report
 Ecologically Designated Sites

NGR 459983, 451928	SCALE 1:675,000	DATE June 2017
DRAWN BY E. Hargreaves	SHEET 1	

DRAWING NUMBER
Figure C1

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[PUBLIC]

Table C2 provides numbers of Sites of Special Scientific Interest (SSSI)⁴, National Nature Reserves (NNRs)⁵ and Marine Conservation Zones (MCZs)⁶ within each WRZ in Yorkshire Water's supply area. SSSIs and NNRs relate to the country's best wildlife and geological sites. These are shown on **Figure C1**.

Table C2 Nationally Designated Nature Conservation Sites

Water Resource Zone	Number of SSSIs	Number of NNRs	Number of MCZs
Grid	Total in Yorkshire Water supply area: 368	Total in Yorkshire Water supply area: 11	Total in Yorkshire Water Supply area: 2
East GW			
East SW			
Kielder (Tees-Swale option – river transfer)	Total in Tees Swale Transfer 5km corridor: 33	Total in Tees Swale Transfer within 5km corridor: 1	-
Kielder (Tees-Swale option – pipe transfer)	Total in Tees Swale Transfer 5km corridor: 32	Total in Tees Swale Transfer within 5km corridor: 1	-

In addition to the NNRs listed in Table C2, there are 134 Local Nature Reserves⁷ (LNRs) within the SEA Study Area (**Figure C1**).

There are a range of designated Natural Environment and Rural Communities (NERC) Act Section 41 habitats within the Yorkshire Water supply area⁸. NERC habitats with the zones of influence of a number of the proposed DP options are detailed in Environmental Impact Screening Reports undertaken by Cascade Consulting⁹ although these habitat inventories may have changed since the date of publication. NERC habitats include rivers and streams, blanket bogs, reedbeds, fens and meadows. NERC priority species include:

- Otter
- Water vole
- Atlantic salmon
- European eel
- Sea/Brown trout
- River lamprey
- White clawed crayfish
- Snakeshead Fritillary
- Loddon Lilly

⁴ Natural England has responsibility for identifying and protecting the SSSIs in England under the Wildlife and Countryside Act 1981 (as amended by the Countryside and Rights of Way Act 2000). www.naturalengland.org.uk

⁵ NNRs are protected under Sections 16 to 29 of the National Parks and Access to the Countryside Act, 1949 and the Wildlife and Countryside Act, 1981.

⁶ The Marine and Coastal Access Act 2009 allows for the creation of Marine Conservation Zones (MCZs). MCZs protect a range of nationally important marine wildlife, habitats, geology and geomorphology, and can be designated anywhere in English and Welsh territorial and UK offshore waters.

⁷ A LNR is a statutory designation made under Section 21 of the National Parks and Access to the Countryside Act 1949, and amended by Schedule 11 of the Natural Environment and Rural Communities Act 2006, by principal local authorities.

⁸ Defra (accessed July 2016) MAGIC Interactive map: Habitat Inventories (<http://magic.defra.gov.uk/>)

⁹ Cascade Consulting (2016) Drought Planning Options Impact Screening (Options 1-10)

- Creeping Marshwort
- Narrow-leaved water-dropwort
- River water-dropwort
- Fine-lined pea Mussel
- Freshwater Pea Mussel
- Depressed River Mussel
- Greater Water Parsnip
- Club-tailed Dragonfly
- Tassel Stonewort
- Desmoulins Whorl Snail
- Snipe
- Lapwing
- Natterer's Bat
- Daubenton's Bat
- Pipistrelle Bat.

Natural England has defined a series of 120 Natural Areas as a means to conserve nature in England. They are areas of countryside identified by the unique combination of physical attributes, wildlife, land use and culture. Key messages regarding habitat type relevant to the Yorkshire Water supply area are presented in **Table C3 and C4**.

Table C3 Natural Character Areas in the Yorkshire Water Supply Area

Natural Area	WRZ	Region	Key Messages
North Pennines	Grid	Yorkshire / County Durham	<p>Expansive moorlands, grasslands and flower-rich meadows are important features;</p> <p>Upland bogs and acid grassland cover much of the area;</p> <p>The area attracts large numbers of insects, waders and birds of prey;</p> <p>Varied geology (including gorges, shakeholes, caves and pavements) and associated waterfalls are important features.</p>
Tees Lowlands	Grid	North East	<p>Low lying land adjacent to the River Tees;</p> <p>Grazing marsh, open water and wetlands are important features.</p>

Natural Area	WRZ	Region	Key Messages
Yorkshire Dales	Grid	Yorkshire	Glaciated, upland landscape of rounded hills and moors; Geologically important karst limestone landforms, cave systems and exposures of carboniferous rocks with associated systems and exposures of carboniferous rocks with associated habitats of international importance.
Forest of Bowland	Grid	Yorkshire	The area is dominated by rolling heather moorland and blanket bog; Internationally important grouse and sheep populations;
Lancashire Plain and Valleys	Grid	Yorkshire	Intensively farmed area with arable, horticulture and dairy farming; Significant area for wintering waders and wildfowl due to the area's proximity to internationally important estuaries; Numerous field ponds supporting great crested newt populations; Water vole populations present in the network of field drains of the coastal plain.
Southern Pennines	Grid	Yorkshire/ North West	Upland areas of heather moorland, blanket bog and acid grassland are essential character of the area Internationally important populations of red grouse, curlew, merlin, golden plover, dunlin and short-eared owl.
Pennine Dales Fringe	Grid	Yorkshire	Rolling landscapes at the transition between the Pennines and Yorkshire Dales.
Vale of York and Mowbray	Grid	Yorkshire	Riverine habitats such as Lower Derwent Valley supporting internationally important flood meadow grasslands and breeding/wintering bird populations; Important heathland areas.
North York Moors and Hills	Grid; East SW, East GW	Yorkshire	Large expanse of open heather moorland, supporting vegetation and breeding birds (in particular Golden Plover and Merlin); Species-rich limestone grassland and calcareous fens on southern fringe of the area.

Natural Area	WRZ	Region	Key Messages
Vale of Pickering	Grid; East SW, East GW	Yorkshire	Floodplain grasslands (supported by the River Derwent) which are particularly important for breeding and wintering bird populations.
Yorkshire Wolds	Grid; East GW	Yorkshire	Crescent-shaped area of hills with near-vertical cliffs; Small spring-fed flushes arising from the Western escarpment and the coastal parts of the Wolds.

Table C4 Natural England Natural Areas within Yorkshire Water Supply Area (or Tees Swale Transfer area)

Natural Area	Water Resource Zone(s)	Region	Key Messages
Holderness	Grid; East GW	Yorkshire	Low lying plain of boulder clay, with areas of gravel and sand; Area supports a variety of wildlife associated with the river Hull and adjacent wetlands.
Humber Estuary	Grid	Yorkshire	Internationally important site Migratory wildfowl, Vast expanses of exposed mudflats.
Humberhead Levels	Grid	Yorkshire	Plains dominated by major river systems (Ouse and Trent); Peatland areas internationally important for their nature conservation features.
Southern Magnesian Limestone	Grid	Yorkshire	Base-rich flushes, river and streams forming important wetland features; Important geological sections including limestone gorges and caves containing Pleistocene sediments.
Coal Measures	Grid	Yorkshire	Area characterised by dense populations of towns/cities developed as a result of underlying coal fields (Shales and sandstones of late Carboniferous age c. 320-295 million years old).
Dark Peak	Grid	Yorkshire	Area of peat covered hills dissected by narrow cloughs; Dominated by upland heather and blanket bog; Reservoirs are key characteristic feature of the area.
Derbyshire Peak Fringe and Lower Derwent	Grid	Yorkshire	Area dominated by rivers and reservoirs providing important habitats for pondweeds, great crested newts, migrating waders and wildfowl.

Border Uplands	Kielder (NWL)	North East	Area of peat and glacial drift covered hills; Dominated by moorland and blanket bog; Rivers are of considerable ecological importance.
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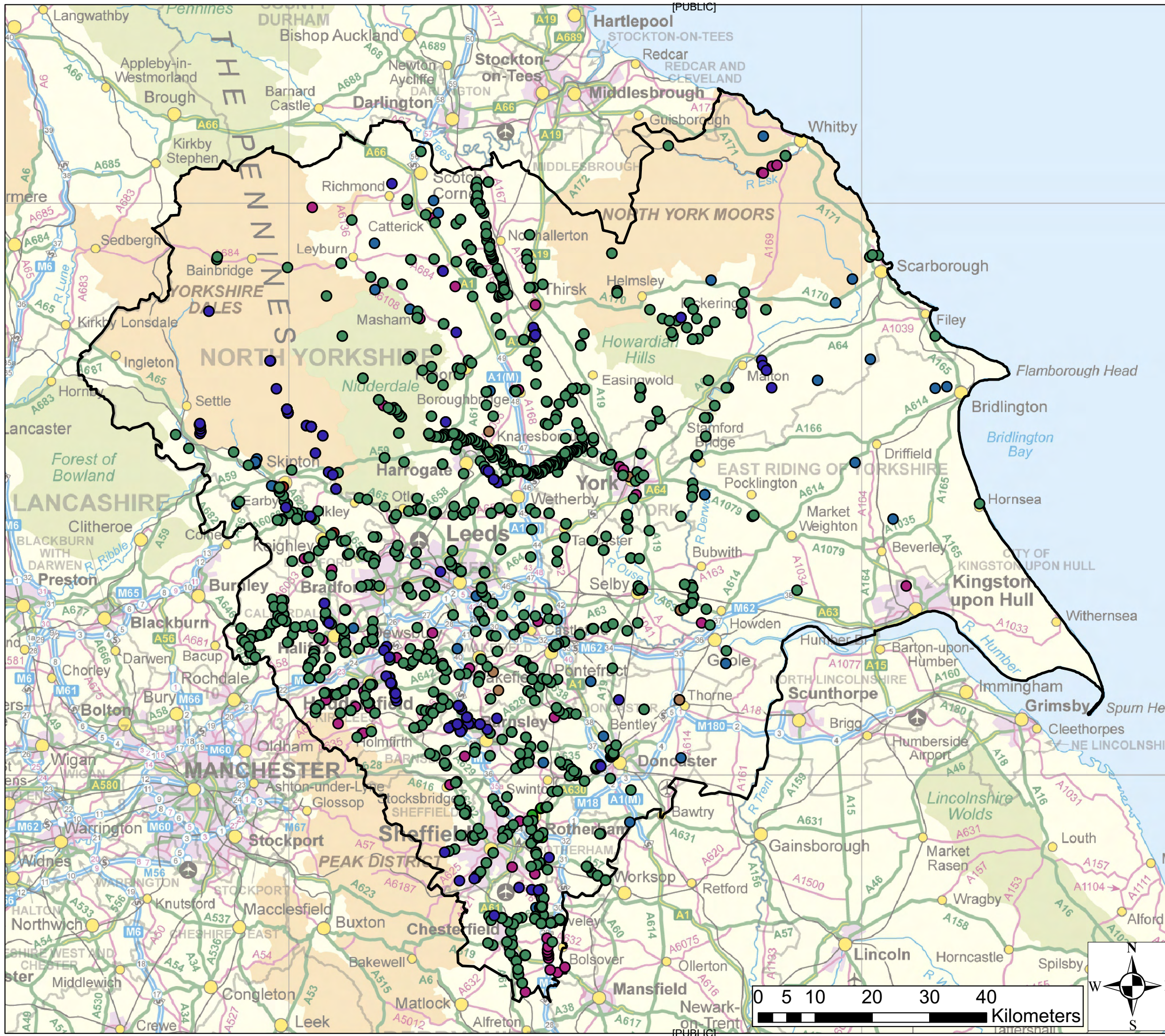
1.1.1 Invasive Non-native Species

Invasive non-native species are widespread across the river catchments of Yorkshire. Key invasive species include terrestrial plants such as Himalayan Balsam and Giant Hogweed; aquatic macrophytes such as Floating Pennywort, Signal Crayfish and Zebra Mussels (**Table C5**). Key invasive species are shown on **Figure C2**.

Table C5 – Recorded Number of Key Invasive Species on Main Rivers of Yorkshire from 1985 to 2015¹⁰

	Zebra Mussels <i>Dreissena polymorpha</i>	Signal Crayfish <i>Pacifastacus leniusculus</i>	Himalayan Balsam <i>Impatiens glandulifera</i>	Japanese Knotweed <i>Fallopia japonica</i>	Giant Hogweed <i>Heracleum mantegazzianum</i>	Floating Pennywort <i>Hydrocotyle ranunculoide s</i>
1985-1990	-	3	-	-	-	-
1991-1995	-	-	-	10	3	-
1996-2000	3	13	-	29	12	-
2001-2005	11	25	-	7	3	-
2006-2010	11	54	51	7	13	48
2011-2015	1	3	83	3	1	1
Total	26	98	134	56	32	49

¹⁰ The species of concern have been taken from the Environment Agency Yorkshire Area Biosecurity Protocol. January – March 2016



Legend

- Species Name**
- Demon Shrimp
 - Floating Pennywort
 - Giant Hogweed
 - Himalayan Balsam
 - Japanese Knotweed
 - Signal Crayfish
 - Zebra Mussel
- Yorkshire Water Operational Area

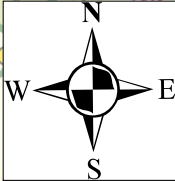
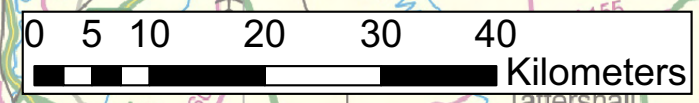
Figure title
 Yorkshire Water Drought Plan
 SEA Environmental Report
 Invasive Species

NGR 459983, 451928	SCALE 1:650,000	DATE May 2017
DRAWN BY J.Richardson	SHEET 1	

DRAWING NUMBER
Figure C2

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1.1.2 Works being undertaken to demonstrate compliance with the Eel Regulations

During AMP5 (2010-2015) the Environment Agency reviewed the compliance of relevant assets such as river intakes, against the 2009 Eels Regulations, which seek to reverse the rapid decline in eel populations over recent years. The Regulations aim to achieve 40 percent escapement of adult eels relative to the level of escapement under pristine conditions. As a result of this review, YWSL were served notice to deliver solutions to prevent eel impingement and entrainment at three of their river intake sites as a matter of high priority (i.e. solutions delivered by 2020). Specialist aquatic and fish engineering consultants APEM Ltd were commissioned to undertake an independent review of compliance and confirmed that the intake screens at two of the sites were partially compliant with the Regulations, and therefore only relatively minor modifications were required. The schemes of work at both these sites are to be delivered during 2018/19. The third site requires a much bigger scheme to ensure compliance with the Regulations. This scheme is being investigated and designed during 2018/19, for construction during 2019/20.

No further YWSL assets have been identified as being non-compliant by the review and so no further schemes are expected to be delivered during AMP7 and beyond.

1.2 Future Baseline

It is not expected that many additional biodiversity sites will be designated under international or national legislation, with the focus therefore on achieving the conservation objectives set for each of these sites. A range of measures are included in the management plans for each site to contribute to these objectives and, assuming sufficient resources are in place, it is likely that the condition of these sites will improve over the next two or three decades to reach the objectives. These timescales recognise the time required for environmental changes to arise following positive interventions. A similar trend is likely for achievement of objectives associated with the NERC priority habitats.

The number of locally designated sites may increase slightly in response to growing community activities and the development of local environmental initiatives. An improving trend in condition of these sites is also anticipated with greater resources (particularly voluntary resources) devoted to their protection and enhancement.

As part of the post 2010 policy framework for SSSIs, Natural England has developed a trajectory to achieve the move from “recovering” into “favourable” condition with monitoring of sites to measure success. The Natural Environment White Paper¹¹ identified the Government’s aims to work to achieve more, bigger, better and less-fragmented areas for wildlife, including no net loss of priority habitat and an increase of at least 200,000 hectares in the overall extent of priority habitats and at least 50% of SSSI to be in favourable condition, while maintaining at least 95% in favourable or recovering condition.

More broadly, the White Paper and subsequent Government policy encourages partnership working by a wide range of organisations (including water companies where applicable) to take a catchment and/or landscape-scale perspective to the management of biodiversity, flora and fauna. Catchment-based approaches are likely to be increasingly taken with respect to the delivery of biodiversity and ecological objectives for water-dependent sites and species, with partnership working a key component of the delivery of improvement activities.

Climate change is likely to have an impact on wildlife in the future by exacerbating existing pressures such as changes to the timing of seasonal activity, and water scarcity. It is acknowledged that there is

¹¹ Defra (2011) The Natural Choice: securing the value of nature. Natural Environment White Paper.

a need to allow wildlife to adapt to the impacts of climate change. Climate may limit species' distributions indirectly through the impact of invasive species on native species along climatic gradients¹². It will affect the abundance and diversity of natural enemies, competitors and species that constitute resources, as well as a species' ability to compete for resources or resist natural enemies.

1.3 Key Issues

The key sustainability issues arising from the baseline assessment for biodiversity are:

- The need to protect or enhance the region's biodiversity, particularly protected sites designated for nature conservation.
- The need to avoid activities likely to cause irreversible damage to natural heritage.
- The need to take opportunities to improve connectivity between fragmented habitats.
- The need to control the spread of Invasive Non-Native Species (INNS).
- The need to engage more people in biodiversity issues so that they personally value biodiversity and know what they can do to help, including through recognising the value of the ecosystem services.

2 Population and Human Health

2.1 Baseline

2.1.1 Population

The North East / Yorkshire and the Humber region has centers of densely populated urban areas within a generally more sparsely populated wider area. Kingston upon Hull is the most densely populated area with a mid-2017 average population density of 3,648 people per km², compared to an average of 427 in England as a whole¹³. When comparing population and household statistics and projections (**Table C6**), it is important to note that whilst the population growth rate for the whole of England over the period 2016-2026 was 5.9%, Yorkshire and The Humber and the North East both saw lower growth rates of 3.5% and 1.9%, respectively.

Table C6 Population¹⁴ and Household¹⁵ statistics and projections (millions)

Period	2016		2026		2041		% change over period	
	Population	No. Households	Population	No. Households	Population	No. Households	Population	No. Households
Yorkshire and the Humber	5.4	2.3	5.6	2.6	3.5%		12%	
North East of England	2.6	1.15	2.7	1.24	1.9%		8%	

¹² Pateman & Hodgson (2015) Biodiversity Climate change impacts report card technical paper. Available from: <http://www.nerc.ac.uk/research/partnerships/lwec/products/report-cards/biodiversity/papers/source06/>

¹³ ONS (2017) Population Estimates for UK, England and Wales, Scotland and Northern Ireland: Mid-2017

¹⁴ ONS (2011) Regional Profiles - Population and Migration (based on mid-2010 population estimates, published on 30 June 2011)

¹⁵ ONS (2018) Household projections in England: 2016-based

2.1.2 Human Health and Deprivation

The DP has the potential to influence quality of life, including human health, well-being, amenity and community, through actions to maintain essential water supplies during drought conditions. There could be beneficial (e.g. actions to provide additional supply of water will help safeguard public health) or adverse impacts (e.g. noise and disruption from temporary infrastructure required to pump water).

It has been shown that, in some cases, people in disadvantaged areas experience greater exposure to negative impacts on human health including air pollution, flooding, and proximity to large industrial and waste management sites¹⁶. The Index of Multiple Deprivation combines a number of indicators, chosen to cover a range of economic, social and housing issues¹⁷, into a single deprivation score for each Lower Super Output Area¹⁸ in the UK. This allows each area to be ranked relative to one another according to their level of deprivation. The Indices are used widely to analyse patterns of deprivation, identify areas that would benefit from special initiatives or programmes and as a tool to determine eligibility for specific funding streams.

Data relating to drinking water quality, pollution incidents and air quality, which could also be affected by the DP, and as a result affect amenity and human health are covered in separate sections of this report.

2.1.3 Recreation and Tourism

The DP has the potential to affect areas with recreational value through increased abstraction from rivers and reservoirs. There are a variety of opportunities for recreation and tourism within the Yorkshire Water supply area. Many of the recreational and cultural offerings are represented in other topic areas in the baseline. For example, the WRZs include a number of water resources of recreational importance including many reservoirs for sailing or fishing and river sections of particular importance with respect to navigation (e.g. The River Ouse) and angling (e.g. The River Ure). Section 2.3.4 identifies the large number of nature reserves that are present within the Yorkshire Water supply area. Section 2.3.10 identifies the importance of the Yorkshire Water supply area with respect to heritage assets, including two internationally recognised World Heritage Sites¹⁹ (plus a further one when considering the Tees Swale Transfer), 131 Registered Parks and Gardens (plus a further 11 when considering the Tees Swale Transfer) and 2,934 Scheduled Monuments (plus a further 178 when considering the Tees Swale Transfer). Section 2.3.11 describes the landscape baseline, which includes three Areas of Outstanding Natural Beauty (AONB) (plus a further one when considering the Tees Swale Transfer). Public open space, Rights of Way, walking routes or cycle routes are also important with respect to recreation and tourism. The National Planning Policy Framework (NPPF)²⁰ states planning policies should protect and enhance public rights of way and access.

Tourism is the fifth largest industry in the UK and supports 3.1 million jobs in England (forming England's third largest employer), contributing £126.9 billion to the economy²¹. In 2017, there were >7 million visitors to the top 20 paid attractions in Yorkshire and Humberside, generating over £100 million in spend²².

¹⁶ Defra (2006) Air Quality and Social Deprivation in the UK: an environmental inequalities analysis

¹⁷ Income Deprivation, Employment Deprivation, Health Deprivation and Disability, Education Skills and Training Deprivation, Barriers to Housing and Services, Living Environment Deprivation, and Crime.

¹⁸ Super Output Areas (SOAs) are a set of geographical areas developed following the 2001 census. The aim was to produce a set of areas of consistent size, whose boundaries would not change, suitable for the publication data of such as the Indices of Deprivation. They are an aggregation of adjacent Output Areas with similar social characteristics. Lower Layer Super Output Areas (LSOAs) typically contain 4 to 6 OAs with a population of around 1500.

¹⁹ World Heritage Sites are places of international importance for the conservation of mankind's cultural and natural heritage. The World Heritage List was set up by the World Heritage Convention, established by UNESCO in 1972. www.english-heritage.org.uk

²⁰ Communities and Local Government (2012) National Policy Planning Framework

²¹ Deloitte (2013) *The Economic Contribution of the Visitor Economy: UK and the Nations*. London

²² Visit England (2017) Yorkshire and the Humber Regional Summary https://www.visitbritain.org/sites/default/files/vb-corporate/Documents-Library/documents/England-documents/most_visited_paid_yorkshire_humber_2017.pdf

2.2 Future Baseline

Population is expected to grow at a rate between 1.9% and 3.5% across the region (see **Table C6**), with an increasing proportion of people at or above state pension age. Household projections show potential increases of between 8% and 12% across the region, with an increasing proportion of one person households²³.

In response to recent studies access to the recreational resources, green spaces and the historic environment will have greater importance in future planning²⁴. The NPPF suggests a range of areas that should be taken into account, including the provision of appropriate facilities for recreation that preserve the openness of the green belt.

The National Ecosystem Assessment and the Marmot Review, Fair Society, Healthy Lives, demonstrate the positive impact that nature has on mental and physical health and as a result the Government intends to establish a Green Infrastructure Partnership²⁵ with civil society to support the development of green infrastructure in England.

Improvements to the quality of the water environment and certain potential climate change impacts will present opportunities for an expanding tourist industry in the region²⁶.

2.3 Key Issues

The key sustainability issues arising from the baseline assessment for population and human health are:

- The need to ensure water supplies remain affordable especially for deprived or vulnerable communities.
- The need to ensure continued improvements in levels of health across the region, particularly in urban areas and deprived areas.
- The need to ensure public awareness of drought conditions and importance of maintaining resilient, reliable public water supplies without the need for emergency drought measures.
- The need to ensure water quantity and quality is maintained for other users including tourists, recreational users and other users such as farmers.
- The need to ensure a balance between different aspects of the built and natural environment that will help to provide opportunities for local residents and tourists, including opportunities for access to recreation resources and the natural and historic environment.
- The need to accommodate an increasing population.
- Sites of nature conservation importance, heritage assets, water resources, important landscapes and public rights of way contribute to recreation and tourism opportunities and subsequently health and well-being and the economy.

²³ ONS (2010) *Housing Statistical Release - Household Projections 2008 to 2033, England*.

²⁴ Defra (2011) *The Natural Choice: securing the value of nature, The Natural Environment White Paper*

²⁵ Green infrastructure is a term used to refer to the living network of green spaces, water and other environmental features in both urban and rural areas.

²⁶ Defra (2012) *The UK Climate Change Risk Assessment 2012 Evidence Report*.

3 Material Assets and Resource Use

3.1 Baseline

3.1.1 Water Use

In 2017/18, Yorkshire Water abstracted and treated 1,300MI/d (million litres per day) of water for supply to customers, with leakage from the water distribution system for 2017/18 reported as 300MI/d²⁷.

3.1.2 Resource use and waste

The need for society to reduce the amount of waste it generates, by using materials more efficiently, and improving the management of waste that is produced, in order to achieve sustainable living, is realised more today than it was a decade ago. Landfill volumes have nearly halved since 2000; household recycling rates have climbed to more than 40%; waste generated by businesses declined by 29% in the six years to 2009 and business recycling rates are above 50%²⁸. In line with the widely adopted 'waste hierarchy', best practice for waste management is to reduce, re-use, recycle and recover, and only then should disposal (or storage) in landfill be considered.

Data on waste arisings is collected in a range of categories. The activities of the water industry contribute to construction, demolition and excavation waste, through construction of new infrastructure. The water industry also contributes to several waste streams through the operation of facilities. Waste streams include commercial and industrial waste (statistics include waste arisings from the power and utilities sector, which includes water supply and sewage treatment), and also hazardous wastes from industrial wastewater treatment. **Table C7** shows the latest available data for waste arising by region.

Table C7 Waste Arisings by Region

Waste Figures	North East	Yorkshire and The Humber
Commercial and Industrial waste arisings produced in region (million tonnes) (2009) ²⁹	2.4	6.9
Construction & Demolition Environmental Waste (2006) ³⁴	4.8	10.4
Total waste produced by region (2009) ³⁵	12.2	30.2

DP options which require provision of temporary infrastructure may result in the use of raw materials and the production of waste. The operation of the DP may result in the use of additional power and/or treatment chemicals and production of waste.

3.2 Future Baseline

The Government's National Infrastructure Plan³⁰ (2011) includes visions to manage natural capital sustainably; treat water and waste in ways that sustain the environment and enable the economy to prosper; ensure a supply of water that meets the needs of households, businesses and the environment now and in the future and deal with waste in accordance with the waste hierarchy moving towards a zero-waste economy. Yorkshire Water's current economic level of leakage target is to reduce its regional level of water leakage from to 297.1 MI/d. By 2018/19, the target leakage is reduced by

²⁷ Yorkshire Water Services Limited (2018) Annual Report and Financial Statements.

<https://www.yorkshirewater.com/sites/default/files/Yorkshire%20Water%202015%20Annual%20Report%20Publication.pdf>

²⁸ Defra (2011) Government Review of Waste Policy in England 2011

²⁹ Defra (2011) Government Review of Waste Policy in England 2011

³⁰ HM Treasury Infrastructure UK (2011). National Infrastructure Plan.

5MI/d to 292.1, with a further reduction to 287.1 in 2019/2020. Yorkshire Water's water resources plan for 2014 will include updated projections and targets for per capita water consumption, commercial demand for water and the social and economic level of leakage targets over the next 25 years.

3.3 Key Issues

The key sustainability issues arising from the baseline assessment for Material Assets and Resource Use are:

- The need to minimise the consumption of resources, including water and energy.
- The need to reduce the total amount of waste produced in the region, from all sources, and to reduce the proportion of this waste sent to landfill.
- The need to continue to reduce leakage from the water supply system.
- Daily consumption of water is higher than the national average in the area and consequently there is a continued need to encourage more efficient water use.

4 Water

4.1 Baseline

In the context of the Water Framework Directive (WFD), the water environment includes rivers, lakes, estuaries, groundwater and coastal waters out to one nautical mile. The aquatic environment of the Humber River Basin has been characterised as part of the UK Government's reporting obligations to the EU under the WFD and this provides the most appropriate baseline reference³¹.

The WFD brings together the planning processes of a range of other European Directives. These Directives establish protected areas to manage water, nutrients, chemicals, economically significant species, and wildlife – and have been brought into line with the planning timescales of the WFD.

4.1.1 Surface Waters: Rivers and Canals

The Yorkshire Water supply area lies within the Humber River Basin District and is comprised of the following catchments³²:

- Esk & Coast
- Swale, Ure, Nidd and Upper Ouse
- Derwent (Humber)
- Hull and East Riding
- Aire and Calder
- Don and Rother

A large canal network extends from the Southern section of Yorkshire Water's supply area as far as Ripon in the North West and Driffield in the East.

³¹ Defra (2005) Water Framework Directive: Summary report of the characterisation, impacts and economics analyses required by Article 5, Humber River Basin District

³² Environment Agency (2009) River Basin Management Plan: Humber River Basin District

Elements of the Tees Swale Transfer option are located with the Northumbrian River Basin District and is comprised of the following relevant catchments:

- Tees
- Wear
- Tyne

Approximately 33% of Yorkshire Water's supply is derived from rivers³³. Major rivers within the Yorkshire Water supply area include the Wharfe, Ouse and Derwent.

4.1.2 Surface Waters: Lakes and Reservoirs

There are a total of 136 lakes and reservoirs in the Humber River Basin District, of which two are natural water bodies, 22 are artificial water bodies and 108 heavily modified water bodies. Approximately 45% of Yorkshire Water's supply is from impounding reservoirs. Many of these reservoirs are important landscape characteristics and often provide nationally/ internationally important recreational resources and wildlife habitats.

4.1.3 Groundwater

Approximately 22% of Yorkshire Water's supply is from groundwaters, derived from assets within the Grid SWZ or East GWZ. There are two major aquifers in the region, the Sherwood Sandstone and the Magnesian Limestone, supporting large groundwater abstractions. The Sherwood Sandstone is a major drinking water supply.

Under the WFD, there are two separate classifications for groundwater bodies; chemical status and quantitative status. A groundwater body will be classified as having poor quantitative status where:

- low groundwater levels are responsible for an adverse impact on rivers and wetlands normally reliant on groundwater
- where abstraction of groundwater has led to saline intrusion
- where it is possible that the amount of groundwater abstracted will not be replaced each year by rainfall.

For a groundwater body to be at good status overall, both chemical status and quantitative status must be good.

4.1.4 Estuaries

The Humber Basin has over 165km of coastline and 33,000km² of estuarine environments. The Yorkshire coastline provides a vital tourism industry to the region and there are 23 designated bathing waters in the Humber River Basin³⁴. 100% of the estuaries within the Humber Estuary Operational catchment had good chemical water quality in 2015, whilst 33% were of good ecological status³⁵.

4.1.5 Monitoring

There is an adequate coverage of hydrometric and water quality data in the study area. In order for this to remain the case, the existing monitoring regime, undertaken by Yorkshire Water and the Environment Agency, should continue as at present.

4.1.6 Catchment Abstraction Management Strategies

A national review of abstraction licences was undertaken by the Environment Agency through the CAMS process in 2004. This has been revised in subsequent years, with the latest version published in 2013³⁶.

³³ Yorkshire Water Services Limited (2014) Water Resources Management Plan 2010 - 2035

³⁴ Environment Agency (2015) Part 1: Humber river basin district River Basin management plan

³⁵ <http://environment.data.gov.uk/catchment-planning/OperationalCatchment/3228/Summary>

³⁶ <https://www.gov.uk/government/collections/water-abstraction-licensing-strategies-cams-process>

Where applicable and relevant, updated CAMS information will be detailed in the Environmental Report if the data are made available.

CAMS areas are based on river catchment boundaries and overlap with Yorkshire Water's supply area, as summarised in **Table C8**.

Table C8 Catchment Abstraction Management Strategies in the Yorkshire Water Supply Area

WRZ	Relevant CAMS
Grid	Aire & Calder; Don & Rother; Hull & East Riding; Swale, Ure, Nidd & Upper Ouse; Wharfe & Lower Ouse
East SW Zone	Esk & Coast
East GW Zone	Derwent; Hull & East Riding
Kielder (Tees Swale option)	Tees, Tyne & Wear

CAMS seek to identify where additional water abstractions can be made from the environment, where no additional abstractions can be made and where action is needed to address over-abstraction (or over-licensed resource allocation). **Table C9** provides a breakdown of the resource availability status in the Yorkshire Water supply area.

Table C9 Resource Availability Status in the Yorkshire Water Supply Area (listing each relevant CAMS, with relevant CAMS management units in brackets)

Resource availability status assessed by the Environment Agency in the CAMS process		
Relevant CAMS	Relevant CAMS Management Unit	Resource availability status
Aire & Calder	1. Aire Headwaters	Water available
	2. Upper Aire	Water available
	3. River Worth	Water available
	4. Upper Mid Aire	Water available
	5. Lower Mid Aire	Water available
	6. Lower Aire	Water available
	7. Upper Calder	Water available
	8. Mid Calder	Water available
	9. River Colne	Water available
Don & Rother	9. Lower Calder	Water available
	1. Upper Rother	Water available
	2. Lower Rother	Water available
	3. River Sheaf	Water available
	4. Upper Don	Water available
	5. Middle Don	Water available
	6. Lower Dearne	Water available
	7. Upper Dearne	Water available
	8. Lower Went	Water available
9. Went Walden Stubbs	Water available	
Hull & East Riding	1. Kelk Beck	Restricted water available for licensing
	2. Upper West Beck	Water available
	3. Upper Hull	Water not available for licensing
	4. Driffield Canal	Water available
	5. Upper Mires Beck	Restricted water available for licensing
	6. Lower Mires Beck	No water available

Resource availability status assessed by the Environment Agency in the CAMS process		
Relevant CAMS	Relevant CAMS Management Unit	Resource availability status
	7. Rover Foulness	Water available
	8. Back Delfin	Restricted water available for licensing
	9. Market Weighton Canal	Water available
Wharfe & Lower Ouse	1. Addingham	Water available
	2. River Dibb	Water available (above Grimwith reservoir only)
	3. River Washburn	Water not available for licensing
	4. River Wharfe	Water available
	5. Tadcaster	Restricted water available for licensing
	6. Cock Beck	Water available
Swale, Ure, Nidd & Upper Ouse	1. Naburn	Restricted water available for licensing
	2. Foss	Water available
	3. Skelton	Water available
	4. Nidd	Water available
	5. Crimple	Water available
	6. Kyle	Water available
	7. Swale (confluence with Ure)	Water available
	8. Ure	Water not available for licensing
	9. Hunsingore	Water available
	10. Bat Bridge	Restricted water available for licensing
	11. Cod Beck	Water available
	12. Crakehill	Water available
	13. Westwick	Water not available for licensing
	14. Birstwith	Water not available for licensing
	15. Kilgram	Water available
	16. Wiske	Water available
	17. Bedale	Water available
	18. Swale at Morton	Restricted water available for licensing
Esk & Coast	1. Staithes	Restricted water available for licensing
	2. Upper Esk	Water available
	3. Lower Esk	Water not available for licensing
	4. Murk Esk	Restricted water available for licensing
Derwent	1. Ness	Restricted water available for licensing
	2. Howe Bridge	Restricted water available for licensing
	3. West Ayton	Water not available for licensing
	4. Low Marishes	Restricted water available for licensing
	5. River Hertford	Water not available for licensing
	6. Kirkham Bridge	Water available
	7. Buttercrambe	Water available

Resource availability status assessed by the Environment Agency in the CAMS process		
Relevant CAMS	Relevant CAMS Management Unit	Resource availability status
	8. Sutton upon Derwent	Restricted water available for licensing
	9. East Cottingworth	Water not available for licensing
	10. Barmby Tidal Barrage	Not assessed
Tees	1. Skerne	Restricted water available for licensing
	2. Leven	Water available
	3. Upper Tees	Water available
	4. Middle Tees	Water available
	5. Lower Tees	Water available
Tyne	1. River Team	Water available
	2. River Derwent	Water available
	3. Lower Tyne	Water available
	4. South Tyne	Water available
	5. River Allens	Water available
	6. North Tyne	Water available
	7. River Rede	Water available
Wear	1. Upper Wear	Water available
	2. Middle Wear	Water available
	3. Browney	Water available
	4. Lower Wear	Water available
	6. Gaunless	Water available

4.1.7 Water Quality

Historically water quality has been classified using the Environment Agency General Quality Assessment (GQA) classification. Since 2007, water quality has been monitored and classified according to WFD requirements.

For surface waterbodies there are two separate classifications, ecological and chemical. For a waterbody to be in overall 'good' status, both ecological and chemical status must be at least 'good'. The ecological measures include water quality, quantity and the habitat, including the health of river insects and plants. These are scrutinised and an assessment made of the overall status. **Table C10** summarises the key statistics for the catchments within the Yorkshire Water supply area. Similar data are being examined for catchments affected for the Tees Swale transfer option.

Table C10 Key statistics of WFD Catchment within the Yorkshire Water Supply Area

RBD	Relevant RBMP catchment	% at good ecological status or potential		% at good chemical status		% at good status overall	
		RBMP 2015	Target 2021	RBMP 2015	Target 2021	RBMP 2015	Target 2021
Humber	Idle and Torne	9	9	91	91	9	9
	Derbyshire Derwent	27	31	84	85	25	29
	Derwent Humber	14	14	100	100	14	14
	Lower Trent and Erewash	6	12	100	100	6	12
	Wharfe and Lower Ouse	15	15	96	96	15	15
	Louth Grimsby & Ancholme	6	23	100	100	6	23
	Hull & East Riding	14	18	100	100	14	18
	Don and Rother	8	8	97	97	8	8
	Esk & Coast	50	57	100	100	50	57
	Swale, Ure, Nidd & Upper Ouse	15	16	95	95	15	16
	Aire & Calder	6	6	99	99	6	6

For groundwater, there are two separate classifications for groundwater bodies: chemical status and quantitative status. Each must be reported in addition to the overall groundwater body status. For a groundwater body to be at good status overall, both chemical status and quantitative status must be good. In addition to assessing status, there is also a requirement to identify and report where the quality of groundwater is deteriorating as a result of pollution and which may lead to a future deterioration in status. The Humber River Basin District RBMP reports that 89% of groundwater was assessed as at good quantitative status now and forecast to 2015.

Groundwaters are an important resource in the Humber River Basin District. A significant proportion of drinking water comes from the groundwaters of the chalk and sandstone. The main pressures on groundwaters are abstraction for drinking water supply and contamination with nitrates and pesticides. Historic mining in the west of the river basin on the coal measures has had a significant impact on the groundwater quality. Unsustainable abstraction from groundwater can lower groundwater levels and affect dependent river flows or wetlands, or can induce the intrusion of poorer quality water from the sea or from deeper aquifers.

The Environment Agency is half way through a monitoring programme aimed at reducing the uncertainty in the classification of waterbodies. The number of uncertain failures is 9%. The main reasons for failure, and the contribution of each, are presented in **Table C11** below, which identifies 3% of waterbodies failing as a result of insufficient flow/abstraction.

Table C11 Main reasons for waterbodies failing to achieve good ecological status or potential

Reason for failure	Contribution (%)
Physical modification	11%
Diffuse source	31%
Flow	3%
Point source	35%
Suspect data	6%
Unknown reason (pending investigation)	9%
Other pressures	1%
INNS	0.2%
<i>Natural</i>	4%

4.2 Future Baseline

4.2.1 Water Quality

The Water Framework Directive sets a target of aiming to achieve at least 'good status' in all waterbodies by 2015. However, provided that certain conditions are satisfied, in some cases the achievement of good status may be delayed until 2021 or 2027.

4.2.2 Flooding

The NPPF states that inappropriate development in areas at risk of flooding (in Flood Zone 1³⁷, Flood Zone 2³⁸, Flood Zone 3a³⁹ or Flood Zone 3b - the functional floodplain); should be avoided by directing development away from areas at highest risk. The NPPF requires that where development is necessary, it should be made safe without increasing flood risk elsewhere, as defined in the Technical Guidance to the NPPF⁴⁰. The NPPF requires the application of a sequential, risk-based approach (operated through Strategic Flood Risk Assessment) to the location of development to avoid where possible flood risk to people and property and to manage any residual risk, taking account of the impacts of climate change. Following application of the Sequential Test, if it is not possible, consistent with wider sustainability objectives, for the development to be located in zones with a lower probability of flooding, the Exception Test can be applied if appropriate. This includes development for water-compatible uses (e.g. water transmission infrastructure and pumping stations) and essential infrastructure (e.g. water treatment works that need to remain operational in times of flood).

The Environment Agency has produced 77 Catchment Flood Risk Plans (CFMPs) for England and Wales. Through the CFMPs, inland flood risk across all of England and Wales has been assessed for the first time. The CFMP considers all types of inland flooding, from rivers, ground water, surface water and tidal flooding. The role of CFMPs is to establish flood risk management policies which will deliver sustainable flood risk management for the long term. This is essential if for effective investment decisions for the future and to help prepare ourselves effectively for the impact of drought events as a result of climate change. The CFMPs will help target the areas that are at greatest risk and provide information on the likely future flood risk, which will help establish the future baseline. For the Yorkshire Water supply region, the following CFMPs have been produced:

- River Esk and Coastal Streams
- River Derwent

- River Ouse
- River Hull & Coastal Streams
- River Aire
- River Calder
- River Don

The River Tyne, River Wear and River Tees CFMPs will aid the future development of the Tees Swale Transfer.

4.2.3 Water Availability Forecast

Yorkshire Water's 2014 Water Resource Management Plan⁴¹ and its 2013 DP provide details on how water resources will be managed and secured for the future, including in response to the risks presented by climate change. The Water Resources Management Plan identifies that the Yorkshire Water region will remain in a water supply surplus throughout the planning period to 2034/35. This reflects the current and forecast economic climate and associated impact on new development and water use. The integration of the Grid SWZ and East GWZ during 2012 will improve supply system resilience and no additional investment is forecast to maintain the water supply/demand balance to 2034/35.

The Environment Agency Water Resource Strategy for the Yorkshire and North East Region⁴² used future scenarios to look at future pressures on water resources. The scenarios consider a range of responses by Government, regulators, water companies, abstractors and individuals to the way that water is used and managed. They are not forecasts, but show a range of possible demands in the future. By 2050, climate change could reduce summer river flows by up to 80%. Greater concentrations of rainfall in intense events are likely to result in increased ratios of runoff to recharge, leading to further reductions in recharge rates of groundwater. The Water Resource Strategy for Yorkshire and North East Region shows how the actions within the Water Resources Strategy for England and Wales will be implemented locally. The action plan identified three key priorities (with associated actions) for the Yorkshire and North East Region:

4.2.4 Catchment Management

- Develop an understanding of upland catchments through investigations with external partners into peat restoration
- Work with water companies to reduce carbon emissions and minimise need to treat water for colour and nitrates through catchment management
- Support Catchment Sensitive Farming Officers in delivering the England Catchment Sensitive Farming Initiative (ECSFI).

4.2.5 Valuing Water

- Work with agricultural communities and local businesses to promote water efficiency
- Undertake campaigns to raise awareness of sustainable water use, efficiency and reuse
- Work with abstractors when licenses are issues to ensure they understand their permits and provide advice on sustainable water use.

³⁷ Low probability of river or sea flooding (<0.1%) which has critical drainage problems

³⁸ Medium probability of river (1%-0.1%) or sea flooding (0.5%-0.1%)

³⁹ High probability of river (>1%) or sea flooding (>0.5%)

⁴⁰ Communities and Local Government (2012) Technical guidance to the National Policy Planning Framework

⁴¹ Yorkshire Water (2009), Water Resources Management Plan 2010-2035

4.2.6 Minimising and adapting to the impacts of climate change

- Develop a regional water resources model and incorporate the outputs of national science projects to understand the impacts of climate change in the Yorkshire and North East region
- Support hydropower developments across the Yorkshire and North East region.

The UK Climate Change Risk Assessment (CCRA) 2017 Evidence Report⁴³ draws together and interprets the evidence gathered by CCRA regarding current and future threats and opportunities for the UK posed by the impacts of climate change up until 2100. Findings of the assessment include:

- Increasing pressure on the UK's water resources due to changes in hydrological conditions, population growth and regulatory requirements to maintain good ecological status
- Major supply-demand deficits were identified for five river basins including the Humber river basin district
- Increases in water demand for irrigation of crops
- Lower summer river flows across the UK due to warming and drying conditions
- An increase in precipitation in winter months due to a combination of greater depths and more frequent heavy rainfall events suggesting runoff with potential negative impacts on flood risk and sewer overflows in urban environments
- Flash-flooding associated releases from combine sewer overflows (CSO) could in turn increase associated illnesses at the coast due to the varying microbial pathogens in the marine environment.

4.3 Key Issues

The key issues arising from the baseline assessment for water are:

- The need to further improve the quality of the regions river, estuarine and coastal waters taking into account WFD status targets.
- The need to maintain the quantity and quality of groundwater resources taking into account WFD status targets.
- The need to improve the resilience, flexibility and sustainability of water resources in the region, particularly in light of potential climate change impacts on surface waters and groundwaters.
- The need to ensure sustainable abstraction to protect the water environment.
- The need to ensure that people understand the value of water.

Flooding is not viewed as a key issue for the SEA water topic, because none of the drought options involve the construction of permanent physical infrastructure within areas at risk of flooding.

⁴² Environment Agency (2009) Water Resources Strategy – A Regional Action Plan for Yorkshire and North East Region.

⁴³ Defra (2016) The UK Climate Change Risk Assessment 2017 Evidence Report

5 Soil, Geology and Land Use

5.1 Baseline

5.1.1 Geology

There is a great diversity in the composition of the geology across the region. The geology of North Yorkshire comprises a range of sedimentary rocks that slope gently to the east so that the oldest rocks are present in the west of the County and the youngest in the east. The Carboniferous Limestone and the overlying Upper Carboniferous Millstone Grit dominate the exposure in the west and give rise to the characteristic upland countryside of the Yorkshire Dales and the North Pennines. There is a distinctive difference in the two habitats that these rock types support; with limestone giving rise to calcareous soils whilst shales and sandstones of the Millstone Grit giving rise to acidic soils and large areas of upland grassland and bog. The South Yorkshire area is underlain by rocks of Carboniferous age which are tilted gently to the south-east so that the oldest part of the succession occurs in the west. The moors to the west of Sheffield are formed in the shales and hard coarse-grained sandstone beds of the Millstone Grit. The West Yorkshire area is underlain by rocks of Carboniferous age which are tilted gently to the south-east so that the oldest part of the succession occurs in the west. The moors to the west of Bradford and Calderdale are formed in the shales and hard coarse-grained sandstone beds of the Millstone Grit. The geology of the East Riding of Yorkshire represents a relatively simple arrangement with the older marine clays, limestone and sandstones of Jurassic age occurring in the west of the County and younger Cretaceous rocks in the east. The topography of the area is dominated by the Chalk Wolds which are a crescent shaped series of hills stretching from the coast north of Bridlington to the Humber Bridge.

The variety of underlying geology in the region is reflected in the region's soils, the agricultural value of which varies across the region.

Arable and horticultural land is the predominant agricultural land use type in Yorkshire Water's supply region, with the majority of this land primarily located from the centre of the region to the east, with grazing and rough grassland confined mostly to the Peak District. There are pockets of dense shrub heathland present in the North Yorkshire Moors and Peak District. The Agricultural Land Classification System developed by Defra provides a method for assessing the quality of farmland, principally for the use in planning. The system divides the quality of land into five categories as well as non-agricultural and urban; the regional data is shown in **Figure C3**.

The 'best and most versatile land' is generally defined as the agricultural land which falls into Grades 1, 2 and 3a. The 'best and most versatile' quality of the agricultural land is largely found to the east of the Pennines, in the Vale of York and north of Kingston upon Hull.

5.2 Future Baseline

The vision of Defra's Soils Strategy for England⁴⁴ is for all England's soils to be managed sustainably and degradation threats tackled successfully by 2030. This will improve the quality of England's soils and safeguard their ability to provide essential services for future generations.

The Water White Paper described the Government's intentions to take forward a catchment-based approach to water quality and diffuse pollution and work towards Common Agricultural Policy reforms that will promote the farming industry's role as custodian of the natural environment⁴⁵. The Water White Paper also identified that the strategic policy statement for Ofwat and revised social and environmental

guidance would give a strong steer on Government support for approaches that offer good value for customers and the potential to prevent and manage future risks to drinking water quality. These policy objectives were reflected in regulatory guidance from Government for the 2014 water resources management planning process and the 2014 water company price review process. The catchment-based approach has now been implemented across England, with catchment partnerships now in place across the YWSL region to take forward the approach over the coming years.

⁴⁴ Defra (2009), Safeguarding our soils – A Strategy for England

⁴⁵ Defra (2011) Water for Life - Water White Paper

Legend

Yorkshire Water Operating Area

Agricultural Land Classification

Grade 1

Grade 2

Grade 3

Grade 4

Grade 5

Non Agricultural

Urban

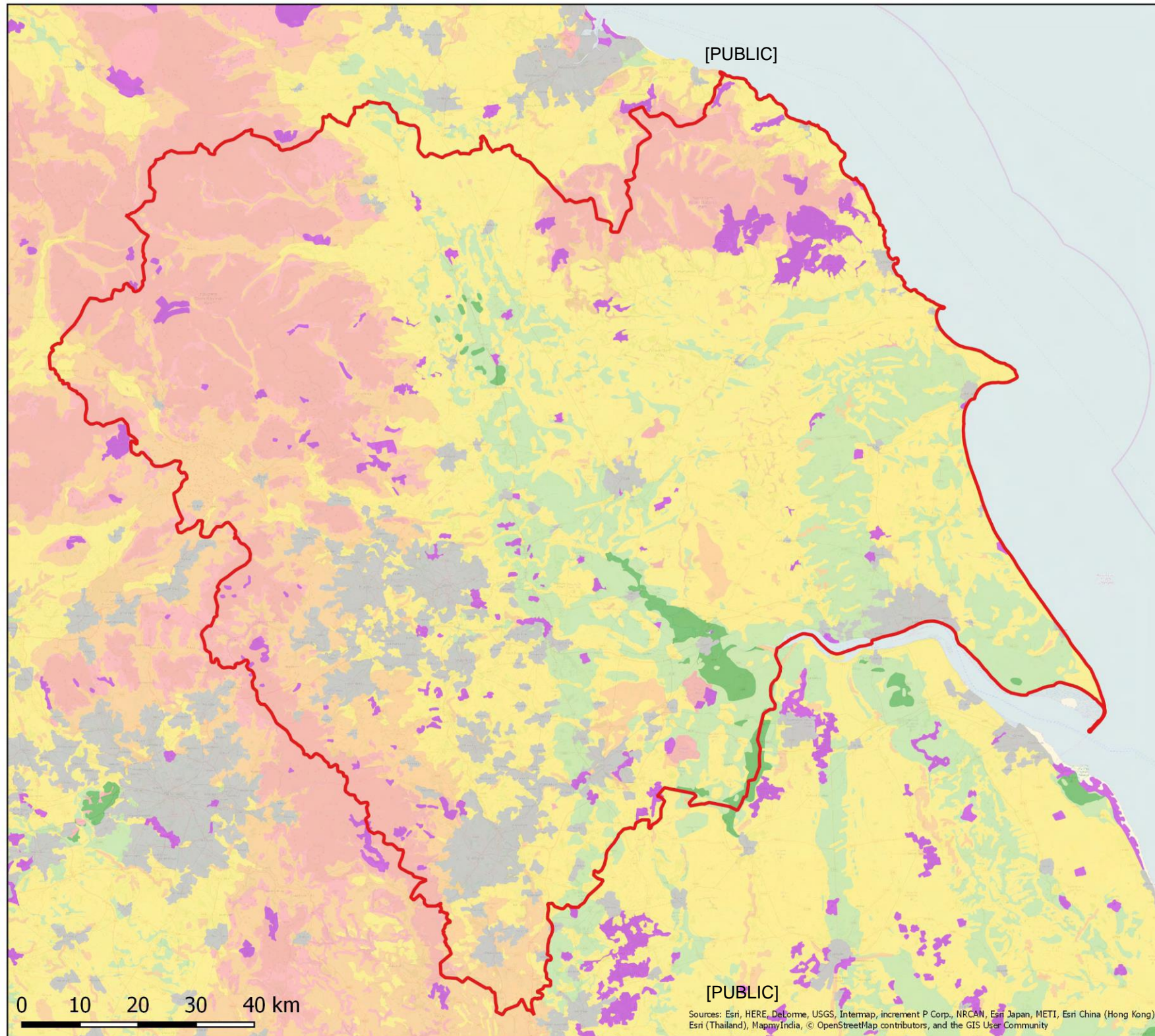


Figure Title: Yorkshire Water Drought Plan
SEA Environmental Report
Agricultural Land Classification

Author: J Kenyon

Revision: Final

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Figure C3

Date: May 2017



One of the core planning principles of the National Policy Planning Framework (NPPF) is to encourage the effective use of land by reusing land that has been previously developed (brownfield land), provided that it is not of high environmental value. The NPPF also places great importance with respect to Green Belt policy, the aim of which is to prevent urban sprawl by keeping land permanently open. Green Belt serves five purposes: to check the unrestricted sprawl of large built-up areas; to prevent neighbouring towns merging into one another; to assist in safeguarding the countryside from encroachment; to preserve the setting and special character of historic towns; and to assist in urban regeneration, by encouraging the recycling of derelict and other urban land. Although the NPPF promotes a presumption in favour of sustainable development, this does not apply where proposed developments may affect European or other designated sites covered by specific policies.

There are a number of Environmentally Sensitive Areas (ESAs) in the region including the parts of the North Peak and the Pennine Dales. The ESA Scheme is designed to protect and enhance the environment by offering payments to landowners and occupiers in these areas to adopt environmentally beneficial agricultural practices⁵². The scheme has now been superseded by the Environmental Stewardship Scheme. Continued development of this scheme is expected to see an improvement in land use in the future.

5.3 Key Issues

The key sustainability issues arising from the baseline assessment for soil, geology and land use are:

- The need to protect geological features of importance and maintain and enhance soil function and health.
- The need to manage the land more holistically at the catchment level, benefitting landowners, other stakeholders, the environment and sustainability of natural resources (including water resources).
- The need to make use of previously developed land (brownfield land) and to reduce the prevalence of derelict land in the region.

6 Air and Climate

6.1 Baseline

Drought options could influence CO₂ emissions through additional pumping and treatment requirements. The DP is a response plan that sets out to address the supply of water during times of drought, which may become more prevalent and intense due to the effects of climate change. The DP itself functions as a form of adaptation to some of the effects of climate change.

Drought options may involve the operation of abstraction and treatment operations in locations where such operations do not normally take place, with the potential for negative effects, although generally only in the short term.

The 2009 UK Climate Projections (UKCP09) estimate that summers in the Yorkshire and Humber River Basin district are likely to become drier and winters wetter⁴⁶. In northern and upland areas, an increase in the number of extreme rainfall events is estimated, as is the frequency of dry spells (over ten consecutive days without rain). The Yorkshire Water DP includes measures and options to deal with a drought more severe than has occurred on record.

Future climate change will influence processes within the hydrological cycle such as runoff and evapotranspiration.

⁴⁶ UKCP09: <http://ukclimateprojections.defra.gov.uk/content/view/1358/499/>

⁴⁷ Defra (2016) The UK Climate Change Risk Assessment 2017 Evidence Report

The UK Climate Change Risk Assessment (CCRA) 2017 Evidence Report⁴⁷ indicates an urgent need for early adaptation action (i.e. within the next 5 years) in managing water resources, particularly in areas with increasing water scarcity

The key sustainability issues arising from the baseline assessment for air and climate are presented below.

6.1.1 Local Air Quality

Options in the DP may require increased pumping of water (carbon emissions) and potentially provision of new temporary infrastructure construction. Therefore, there is the potential for negative effects on air quality through emissions associated with construction requirements or through the operation of the DP options.

The air quality baseline situation can be best described through reference to information produced by the local authorities in the Yorkshire Water WRZs that have declared Air Quality Management Areas (AQMA). A local authority declares an AQMA when UK National air quality objectives are unlikely to be met. The majority of the AQMAs in the UK have been declared because of emissions from road transport. Reference to AQMAs will be made when considering any adverse on air quality of the DP options.

6.1.2 Climate

Climate monitoring and risk assessments have improved significantly over the last two decades but there are still limits to the understanding of future climate change impacts. Whatever happens to future 'greenhouse gas' emissions, there is already a certain amount of global warming "locked in" due to historic emissions due to the inertia and lags in the global climate system. Mitigation through reduction in greenhouse gas emissions will contribute to risk reduction over the long term (100 years). Adaptation is however needing to start now in order to reduce the costs and damages of potential impacts and to take advantage of opportunities that result from a changing climate.

The predominant greenhouse gas of interest is carbon dioxide (CO₂). National and regional CO₂ emissions estimates and how they are apportioned to their source categories are provided in **Table C12**.

Table C12 UK CO₂ emissions (2016)

Region	Total emissions (million tonnes CO ₂)	Per capita emissions (tonnes CO ₂ per capita)	Percentage Contribution by Source Sector		
			Industry & Commercial	Domestic	Transport
Yorkshire & The Humber	37.4	6.9	48.6%	23.6%	30.0%
North East	15.5	5.9	48.1%	25.3%	26.6%
UK	378.9	6.5	36.8%	27.7%	33.8%

Source: Department for Business, Energy & Industrial Strategy, BEIS (2018)

There has been a 29% decrease in total emissions between 2005-2016 in the Yorkshire and the Humber region compared with the UK average of 31% decrease⁴⁸.

Future climate change will influence processes within the hydrological cycle such as runoff and evapotranspiration. The potential impact of climate change on Yorkshire Water's water resources in the future is summarised in **Table C13**.

⁴⁸ UK local authority and regional carbon dioxide emissions national statistics: 2005 to 2016, Department for Business, Energy & Industrial Strategy

Table C13 Impact of Climate Change on Water Resources

Sector		Impact
Water Resources	(i) water supply	<ul style="list-style-type: none"> Reduction in water source yields, either in total or at certain times of the year. Increased evaporation losses from surface water stores. Increased sediment and pollution runoff into watercourses caused by changes in farm management practices adopted to adapt to climate change. Increased risk of algal blooms and pollution in reservoirs.
	(ii) water demand	<ul style="list-style-type: none"> Increase in demand in summer months leading to increase in average and peak requirements. Increased pressure on treatment and distribution system.
Flood management		<ul style="list-style-type: none"> Increased riverine flood risk and storm occurrence due to increased rainfall, leading to increased risk of flooding to water resource assets and adverse temporary effects on raw water quality
Water quality management		<ul style="list-style-type: none"> Lowered water quality in lowland rivers, with implications for in-stream ecosystems and water abstractions. Altered potential for polluting incidents
Navigation		<ul style="list-style-type: none"> Lower summer flows leading to reduced navigation opportunities in rivers and canals.
Aquatic ecosystems		<ul style="list-style-type: none"> Altered habitat potential, with species at their environmental margins most affected.
Water-based recreation		<ul style="list-style-type: none"> Impacts through changes in river flows and water quality.

6.1.3 Adaptation to Climate Change

The UK Climate Change Risk Assessment (CCRA) 2017 Evidence Report⁴⁹ draws together and interprets the evidence gathered by CCRA regarding current and future threats and opportunities for the UK posed by the impacts of climate change up until 2100. Overall, the findings of the CCRA indicate that the greatest need for early adaptation action (i.e. within the next 5 years) is in the following areas:

- Flood and coastal erosion risk management
- Specific aspects of natural ecosystems, including managing productivity and biodiversity (the management of forest pests and diseases, low summer river flows and the movement of plants and animal species are all highlighted as high priorities for action)
- Managing water resources, particularly in areas with increasing water scarcity
- Overheating of buildings and infrastructure in the urban environment
- Health risks associated with heatwaves and other risks that may affect the NHS
- Opportunities for the UK economy, particularly to develop climate adaptation products and services.

6.2 Future Baseline

Government and international targets indicate significant cuts in greenhouse gas emissions will take place by 2027. The UK is currently projected to meet its first three legislated carbon budget targets (until 2022)⁵⁰. Objectives are being achieved for many air pollutants (lead, benzene, 1,3-butadiene and

⁴⁹ Defra (2016) The UK Climate Change Risk Assessment 2017 Evidence Report

⁵⁰ DECC (2015) Updated energy and emissions projections 2015

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/501292/eepReport2015_160205.pdf

carbon monoxide (CO)). However, measurements show that long-term reducing trends for NO₂⁵¹ and PM10⁵² are flattening or even reversing at a number of locations, despite current policy measures. Projections suggest with a high degree of certainty that objectives for PM10, NO₂ and O₃⁵³ will not be achieved by 2020⁵⁴. Climate change is a key theme with regards to biodiversity⁵⁵, climate change is likely to have an impact on biodiversity in the future by exacerbating pressures such as changes to the timing of seasonal activity and water scarcity.

The CCRA considered more than 700 risks and selected 100 risks for detailed review. A selection of threats and opportunities identified under the 'medium scenario' are summarised in **Figure C4**.

As well as reducing the carbon footprint, Yorkshire Water are investing in flood resilience measures such as building flood protection walls around treatment works and raising control panels for electrical equipment above flood levels. They are working in partnership with the government to make sure that critical national infrastructure is able to cope with future weather events. This includes working with local authorities, emergency services and others to test and improve joint emergency response plans.

Together with leading academics and experts, Yorkshire Water is also working on research studies and innovative solutions like Sustainable Urban Drainage Systems (SUDs) and real time models of our river networks. These projects will help the company understand and manage the water cycle better so that it can maintain high levels of customer service in a way that is cost effective and which delivers multiple benefits for people, wildlife and the environment.

6.3 Key Issues

The key sustainability issue arising from the baseline assessment for air and climate is:

- The need to reduce air pollutant and greenhouse emissions and limit air emissions to comply with air quality standards.
- The need to mitigate against climate change through the reduction in greenhouse gas emissions in order to contribute to risk reduction over the long term.
- The need to adapt to the impacts of climate change for example through, sustainable water resource management, water use efficiencies, specific aspects of natural ecosystems (e.g. connectivity) as well as accommodating potential opportunities of climate change.

⁵¹ Nitrogen dioxide

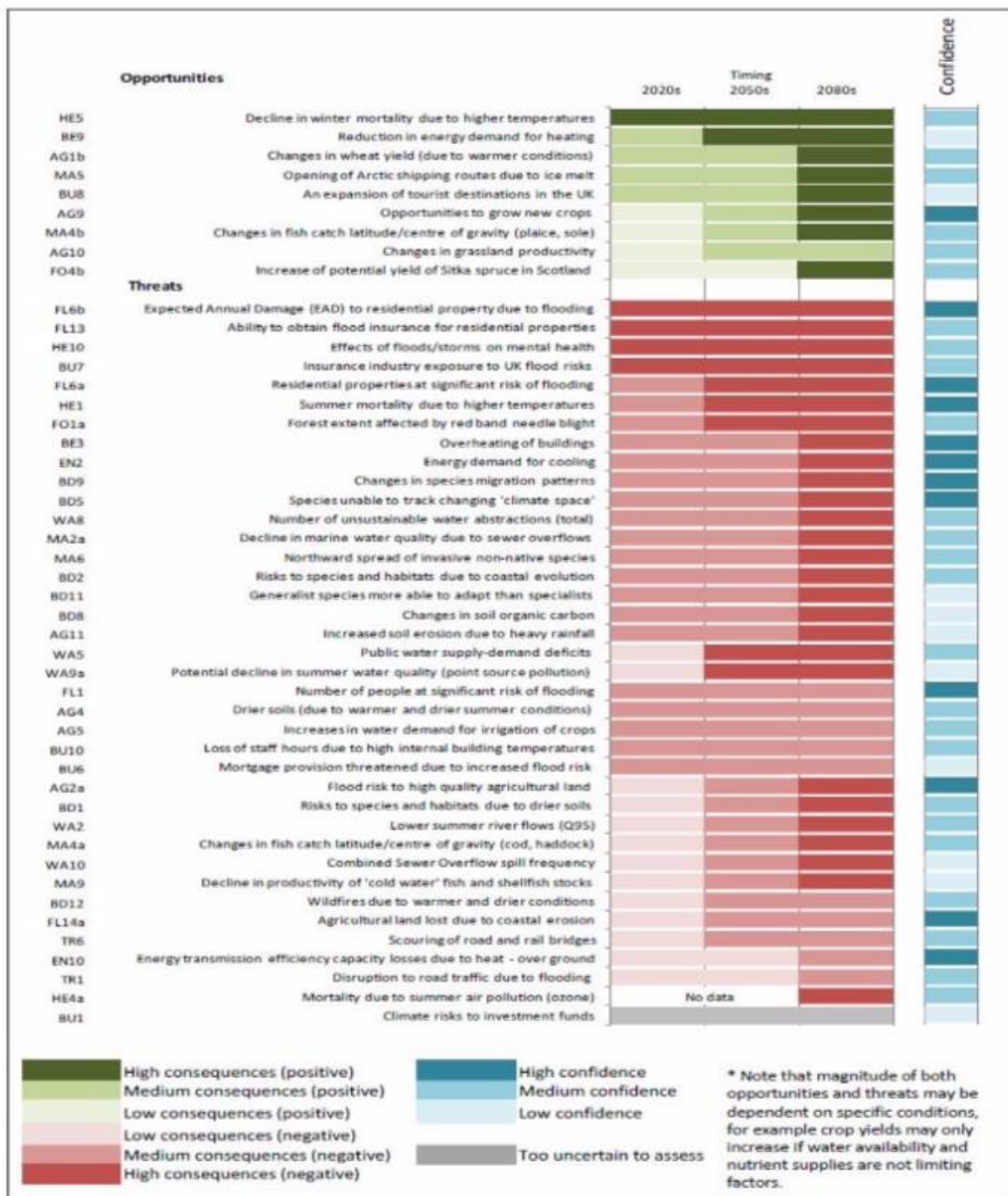
⁵² Particulates with a diameter of 10µm or less

⁵³ Ozone

⁵⁴ Defra (2007), The Air Quality Strategy for England, Scotland and Wales

⁵⁵ Natural Environment White Paper The Natural Choice: Securing the Value of Nature (2011); DEFRA Biodiversity 2020: A strategy of wildlife and ecosystem services (2011).

Figure C4 Summary of natural environment impacts with an indication of direction ,magnitude and confidence (CCRA, 2012)



7 Archaeology and Cultural Heritage

7.1 Baseline

The Yorkshire Water supply area and Tyne-Tees corridor includes three internationally recognised World Heritage Sites⁵⁶: Saltaire; Sudley Royal Park including the ruins of Fountains Abbey; the Frontiers of the Roman Empire (Hadrian's Wall).

There are approximately 2,934 Scheduled Monuments (SMs) located within Yorkshire Water supply area and 178 within 5km of impacted reaches of the Tyne-Tees corridor.

The key sustainability issues arising from the baseline assessment for archaeology and cultural heritage are presented below.

Options in the DP could affect historic landscape character and historic structures associated with the water environment, or the historical context of their setting. Archaeological remains are also sensitive to changes in water quality, water levels (for example waterlogged deposits), pollution and land use practices.

Registered Parks and Gardens also make up part of the UK's cultural heritage of national importance. There are approximately 131 sites designated as such in the WRZs. Nationally important archaeological sites are statutorily protected as designated heritage assets. **Table C14** shows the designated heritage asset count nationally, regionally and within the Yorkshire Water supply area (and the Tees Swale Transfer area).

Table C14 Designated Heritage Assets

Asset	England	Yorkshire and Humber	North East	Yorkshire Water Supply Area*	Tees Swale Transfer (within 5km of impacted reaches)*
World Heritage Site	19	2	2	2	1
Scheduled Monuments	19,858	2,639	1,397	2,934	178
Conservation Areas	9,866	890	296	unknown	Unknown
Listed Buildings	378,360	31,554	12,414	30,809	3,301
Registered Historic Parks and Gardens	1,664	124	55	131	11
Registered Historic Battlefields	47	7	6	7	0

Source: Historic England: Heritage Indicators 2018 *designated assets were identified from GIS datasets available from Historic England at <http://services.english-heritage.org.uk/NMRDataDownload/>

Historic England has been collecting data on buildings at risk for more than a decade. The National Heritage at Risk Register systematically checks the condition of problem buildings, initially focused on buildings at risk, but now adapted to serve other types of heritage asset. The number of grade I and II* buildings at risk fell by 17% between 1999 and 2007. However, there has been a significant slow-down in the annual rate of decrease since then⁵⁷. In the Yorkshire and Humber area, 67.6% of buildings or structures on the baseline 1999 Register have been removed due to their futures being secured, this is comparable with the national figure of 64.4%⁵⁸. For other types of heritage assets, the long-term trends are not yet firmly established but a very small reduction in the number of sites on the Register between 2009 and 2010 has been reported. Nationally, 1.71% of Scheduled Monuments are at risk of from water

abstraction or dewatering. However, other assets such as those composed of organic material and preserved in waterlogged or anaerobic conditions are proportionately more at risk (e.g. palaeo-environmental deposits).

There are a number of floodplains within the Yorkshire Water supply area which are either known or suspected to be of high importance for waterlogged archaeology. Such evidence includes both material (wooden artefacts and structures such as trackways) and evidence of past environmental change from the deposits themselves.

The waterlogged conditions that preserve these remains may be rain-fed or groundwater fed. If the latter, then clearly abstraction levels can be a critical factor in maintaining conditions in which preservation of the remains is viable. In addition, there are waterlogged deposits that are specifically associated with chalk, such as springs and their intimately associated wetlands which again can contain important archaeological information, especially palaeo-environmental evidence.

7.2 Future Baseline

The NPPF was introduced in 2012 to replace the Planning Policy Statements. The NPPF aimed to make the planning system less complex and more accessible, and changed the emphasis on planning to have a presumption in favour of development. However, core planning principles include those aiming to protect heritage assets, including “*conserve heritage assets in a manner appropriate to their significance, so that they can be enjoyed for their contribution to the quality of life of this and future generations*”⁵⁹.

Recent and ongoing national economic difficulties may have a negative effect on removing heritage assets from the heritage at risk register. Climate change could have variable impacts on heritage assets in the future. Some types of assets and landscapes have already experienced and survived significant climatic changes in the past and may demonstrate considerable resilience in the face of future climate change. However, many more historic assets are potentially at risk from the direct impacts of future climate change⁶⁰.

7.3 Key Issues

The key sustainability issue arising from the baseline assessment for archaeology and cultural heritage is:

- The need to conserve or enhance sites of archaeological importance and cultural heritage interest, particularly those which are sensitive to the water environment.

⁵⁶ World Heritage Sites are places of international importance for the conservation of mankind's cultural and natural heritage. The World Heritage List was set up by the World Heritage Convention, established by UNESCO in 1972. www.english-heritage.org.uk

⁵⁷ English Heritage, now known as Historic England (2011) Heritage at Risk Registers (Yorkshire and the Humber; North East).

⁵⁸ Historic England (2018): Heritage at Risk (Yorkshire)

⁵⁹ CLG (2012) National Planning Policy Framework, Communities and Local Government. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/6077/2116950.pdf

⁶⁰ English Heritage, now known as Historic England, (2010) Climate Change and the Historic Environment

8 Landscape and Visual Amenity

8.1 Baseline

The landscape character network⁶¹ defines landscape character as 'a distinct, recognisable and consistent pattern of elements in the landscape that makes one landscape different from another, rather than better or worse'. Some landscapes are special because they have a particular amenity value, such as those designated as Areas of Outstanding Natural Beauty (AONB). Others may have an intrinsic value as good examples or be the only remaining examples of a particular landscape type. Some landscapes are more sensitive to development whereas others have a greater capacity to accommodate development. Assessments of landscape character and landscape sensitivity enable decisions to be made about the most suitable location of development to minimise impacts on landscapes.

8.1.1 Nationally Designated Sites

There are three National Parks (**Figure C5**) in the Yorkshire Water area which are protected by national legislation and water companies also have a statutory duty to have regard to the protection and conservation of national parks in carrying out their functions as a water undertaker. National Character Areas (**Figure C5**) have also been considered. There are 27 within the Yorkshire and Humber Region and include the North Pennines, Yorkshire Dales, Southern Pennines and Holderness. There are also four national trails in the area including the Pennine Way, Wolds Way, Cleveland Way and Pennine Bridleway.

AONBs are defined as 'precious landscapes whose distinctive character and natural beauty are so outstanding that it is in the nation's interest to safeguard them'⁶². They are designated under the National Parks and Access to the Countryside Act, 1949, strengthened by the Countryside and Rights of Way Act, 2000. The primary purpose of the AONB is 'to conserve and enhance the natural beauty of the landscape'. As outlined in **Table C15**, there are three AONB within the Yorkshire Water supply area (Howardian Hills, Nidderdale and Forest of Bowland) and a further AONB within a 5km corridor of the Tees Swale Transfer option (The North Pennines AONB). The North Pennines AONB has been awarded the UNESCO-backed status of 'European Geopark' (the first in Britain) in recognition of the area's world class earth heritage and the efforts being made to conserve and interpret it. Each of these AONBs has a Management Plan describing the special qualities of the area which contribute to the national significance of the landscape, identifies major trends and opportunities in the area and presents a 5-year programme of actions from 2009-2014. Natural England Natural Areas also take account of landscape value and amenity.

⁶¹ www.landscapecharacter.org.uk, accessed 22nd July 2016

⁶² Accessed at www.landscapecharacter.org.uk, accessed 22nd July 2016

Legend

- Yorkshire Water Operating Area
- Area of Natural Beauty
- National Parks

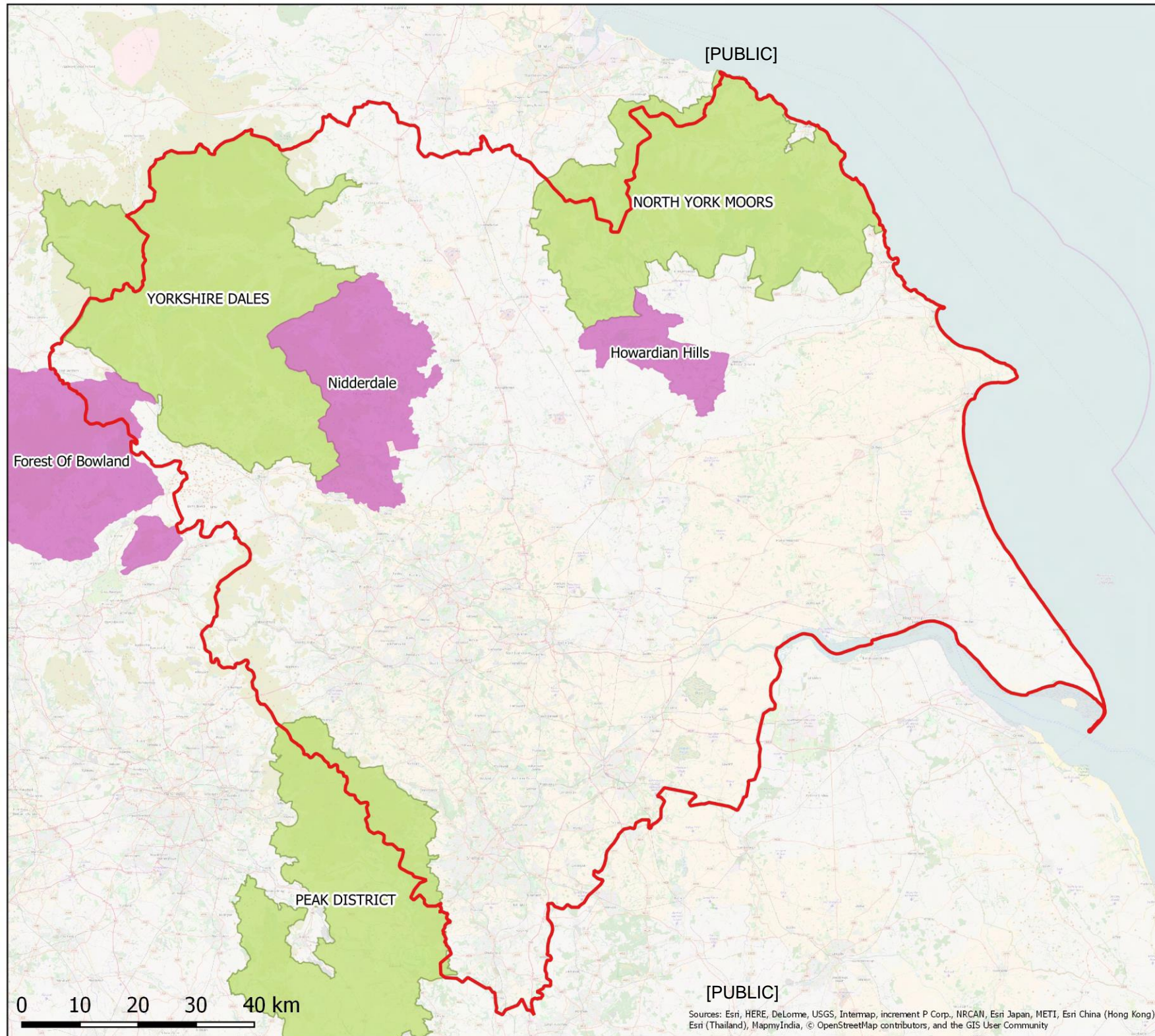


Figure Title: Yorkshire Water Drought Plan
SEA Environmental Report Landscape
Designations

Author: J Kenyon

Revision: Final

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Figure: C5

Date: May 2017

Table C15 AONBs within the Yorkshire Water Supply Area

Name of Site	Water Resource Zone	Key Characteristics
Howardian Hills	Grid SW; East GW	Jurassic limestone creating distinctive character. In effect, the irregular 180m ridges of the Howardian Hills are a southern extension of the rocks of the North York Moors. Notably famous for a number of fine country houses, whose parklands are an intrinsic part of the landscape value
Nidderdale	Grid SW.	Includes the wooded dales of the Washburn, Laver, Burn and dale of Nidd itself. Landscape is dominated by its millstone grit geology. Glaciation and differential resistance to weathering of the sand, shale and gritstones produce distinctive features
The North Pennines	Tees-Swale DP option.	Landscape contains many habitats of exceptional conservation value, including blanket bog, upland heath, species-rich hay meadows, oak and ash woodlands, juniper scrub, flushes and springs and unimproved and heavy- metal rich grasslands. It contains flowering plants on the calcareous grasslands of Teesdale which are unique in the UK. Internationally important numbers of birds, including 10,000 pairs of breeding waders and 80% of England's black grouse, breed and feed on the open moors and adjacent grasslands. The AONB includes parts of the Pennine Dales Environmentally Sensitive Area
Forest of Bowland	Grid SW	Internationally important landscape of heather moorland and blanket bog; Area host to rare bird species and important grouse/sheep populations; Majority of land is privately owned and used for agricultural purposes

The DP has the potential to influence the landscape and visual amenity through the change in water levels of rivers and reservoirs (either positively or negatively).

8.2 Future Baseline

The NPPF highlights the different roles and character of different areas, promoting the vitality of our main urban areas, protecting the Green Belts around them, recognising the intrinsic character and beauty of the countryside and supporting thriving rural communities within it. The NPPF states that great weight should be given to conserving landscape and scenic beauty in National Parks and AONBs, which have the highest status of protection. It identifies that planning permission should be refused for major developments in these designated areas except in exceptional circumstances and where it can be demonstrated they are in the public interest.

8.3 Key Issues

The key sustainability issue arising from the baseline assessment for landscape and visual amenity is:

- The need to protect and improve the natural beauty of the region's National Parks, AONBs, and other areas of natural beauty.
- It is envisaged that landscape and designated sites will be maintained and enhanced for the enjoyment of the public.

9 Inter-relationships

It is noted that there are inter-relationships between SEA topics Inter-relationships that result in changes to individual effects are considered through the assessment of synergistic effects.

Appendix D

Assessment Tables

Drought Plan Option Name: Drought publicity campaigns

Drought Plan Option Description: Campaigns to raise public awareness can be carried out in a number of ways using a variety of different types of media. The central message is to urge all customers to conserve water, especially during periods of drought. This message must be underpinned by explanations of the background to the prevailing conditions and how the drought might continue to intensify. In addition, the Company may promote enhanced uptake of its water efficiency programmes.

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over-abstraction on sensitive sites, habitats and species) and consider adaptability to climate change.	Moderate	Medium	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The campaigns to raise public awareness can be carried out in a number of ways using a variety of different types of media. This measure will have no adverse impacts on biodiversity, flora or fauna, or designated sites of nature conservation interest. However the measure will reduce consumer demand for water and thereby reduce the requirement for abstraction from Yorkshire Water's sources, with the potential for positive impacts on flow sensitive habitats/species.	None	Minor beneficial
Biodiversity, flora and fauna	1.2 To avoid introducing or spreading INNS.	n/a	n/a	n/a	n/a	n/a	n/a	Media campaigns are considered to have no impact on avoiding the introduction or spreading of INNS.	None	None
Population and human health	2.1 To protect and improve health and well-being and reduce inequalities	Medium	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The media campaign will result in water savings which will contribute towards improving the security of supply for customers in Yorkshire Water's supply region. The media campaign will also help raise awareness of the importance and value of water environment for health and well-being.	None	Minor beneficial
Population and human health	2.2 To protect and enhance opportunities for formal and informal recreation.	n/a	n/a	n/a	n/a	n/a	n/a	No impacts on recreation, tourism or navigation are anticipated as a result of the media campaign.	None	None
Population and human health	2.3 To promote a sustainable economy and thriving communities with good access to the services they need.	Medium	Medium	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The media campaign will result in water savings which will contribute towards improving the security of water supply for businesses in the region, therefore protecting the local economy.	None	Minor beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	Medium	Medium	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The media campaign will not involve any increased material resource use. This measure will reduce the amount of water used in the region. It will not involve any increased waste production.	None	Minor beneficial

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.1 To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies.	Medium	Medium	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The media campaign is considered to have a beneficial impact on the water environment, acknowledging that reduced consumer demand for water will result in reduced requirement for abstraction from water sources in the Yorkshire Water operating area.	None	Minor beneficial
Water	4.2 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	Medium	Medium	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	Reductions in demand for water due to this drought plan measure would result in reduced requirement for abstraction from Yorkshire Water's sources, reducing associated abstraction impacts on surface water and groundwater quality in drought conditions.	None	Minor beneficial
Water	4.3 To ensure appropriate and sustainable management of water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	Medium	Medium	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The media campaign is considered to have beneficial impacts on water abstraction management, acknowledging that reduced consumer demand for water will result in reduced requirement for abstraction at Yorkshire Water's sources.	None	Minor beneficial
Soil, geology and land use	5.1 To protect and enhance the quality and quantity of soils and to protect and enhance geodiversity.	n/a	n/a	n/a	n/a	n/a	n/a	No impacts on geology, geomorphology and quality/quantity of soils are anticipated as a result of the media campaign.	None	None
Air and Climate	6.1 To maintain and improve air quality.	n/a	n/a	n/a	n/a	n/a	n/a	No impacts on air quality are anticipated as a result of the media campaign.	None	None
Air and climate	6.2 To reduce greenhouse gas emissions.	n/a	n/a	n/a	n/a	n/a	n/a	The media campaign will not involve an increase in energy consumption or associated greenhouse gas emissions.	None	None
Air and climate	6.3 To consider the need for adaptive measures for climate change.	Small	High	Short-term	Temporary	Low (beneficial)	High (beneficial)	Demand management measures are a key component of Yorkshire Water's Drought Plan. The Plan aims to ensure the resilience of water supplies to drought which may become more prevalent due to climate change.	None	Minor beneficial

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	Medium	Medium	Short-term	Temporary	Low (beneficial)	Low (beneficial)	The media campaign is considered to have no direct impact on the historic environment, heritage assets and their settings and archaeologically important sites. There is the potential for reduced consumer demand for water to result in reduced requirement for abstraction at Yorkshire Water's sources, potentially reducing any impacts of drought-related effects on archaeology and cultural heritage assets.	None	Negligible beneficial
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	Medium	Medium	Short-term	Temporary	Low (beneficial)	Low (beneficial)	The media campaign is considered to have no direct impact on landscape and visual amenity or any changes to access to the countryside or open space. There is the potential for reduced consumer demand for water to result in reduced requirement for abstraction at Yorkshire Water's sources, potentially reducing any impacts of drought-related landscape or visual impacts.	None	Negligible beneficial

Drought Plan Option Name: Emergency Drought Order

Drought Plan Option Description: Emergency drought orders allow water companies to restrict supplies to customers through the imposition of rota cuts and/or the introduction of standpipes. These measures exist to deal with the very remote possibility of a drought much worse than any seen in the last century or more in the UK. Emergency Drought Orders have not been put in place in the UK since 1976. Ministers have made it clear that such measures should be avoided at all costs and introduced only as a last resort. The Company will make full use of all other measures before considering whether the severity of drought conditions mean that Emergency Drought Orders might be required.

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over-abstraction on sensitive sites, habitats and species) and consider adaptability to climate change.	Medium	Moderate	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	An emergency drought order is considered to have no impact on biodiversity, flora and fauna, other than to acknowledge that reduced consumer demand for water will result in reduced requirement for abstraction from Yorkshire Water sources in drought and, therefore, potential for positive impacts on flow, sensitive habitats/species etc.	None	Minor beneficial
Biodiversity, flora and fauna	1.2 To avoid introducing or spreading INNS.	N/A	N/A	N/A	N/A	N/A	N/A	An emergency drought order is not likely to have an impact on avoiding the introduction or spreading of INNS, with reduced abstraction requirements leaving more water in river systems.	None	None
Population and human health	2.1 To protect and improve health and well-being and reduce inequalities	Medium	High	Short-term	Temporary	High (adverse) Medium (beneficial)	Medium (adverse) Medium (beneficial)	An emergency drought order will provide water savings which will contribute towards maintaining the provision of water supplies for priority essential uses, preventing a complete loss of supply to customers. Drinking water quality may be adversely affected due to the intermittent nature of supplies and there may be a requirement under certain circumstances for customers to boil water for potable uses to protect public health. Customers will face considerable disruption to their daily lives as a result of intermittent supply provision.	Major adverse	Moderate beneficial
Population and human health	2.2 To protect and enhance opportunities for formal and informal recreation.	Medium	Moderate	Short-term	Temporary	High (adverse)	Medium (adverse)	Depending on the scale of the drought order restrictions, there could potentially be significant impacts on recreation and tourism, particularly activities that may benefit directly or indirectly from water usage (e.g. swimming pools, sports pitches, the setting of tourist attractions and visual impacts on the grounds of popular tourist sites).	Major adverse	None

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Population and human health	2.3 To promote a sustainable economy and thriving communities with good access to the services they need.	Medium	Moderate	Short to medium-term	Temporary to permanent	High (adverse)	Medium (adverse)	Depending on the scale of the required drought order demand restrictions, there could potentially be significant impacts on businesses/economy, particularly those that benefit directly or indirectly from water usage (e.g. window cleaning businesses, sports and leisure facilities, garden and landscape orientated businesses). Hotels and other holiday/tourist accommodation and camping sites will likely be adversely affected. In the worst case scenario, publicity regarding water restrictions may cause a loss of tourism revenue, as tourists delay or cancel trips to the affected area. Hospitality businesses are also likely to be adversely affected.	Major adverse	None
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	Medium	Moderate	Medium-term	Temporary to permanent	Low (beneficial)	Medium (beneficial)	An emergency drought order will reduce the demand for water in the region, thereby reducing water resource use. It will not result in any increase in the generation of waste.	None	Minor beneficial
Water	4.1 To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies.	Low	Low	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	Reductions in demand for water would result in reduced requirement for increased abstraction from Yorkshire Water's sources, reducing associated impacts on surface water and groundwater quality during drought conditions.	None	Minor beneficial
Water	4.2 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	Medium	Moderate	Medium-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought order will not directly result in, or modify any abstraction (surface water or groundwater). Reduction in demand for water will result in a reduced requirement for abstraction at Yorkshire Water's sources, minimising impacts on water levels and river flows in drought conditions.	None	Minor beneficial
Water	4.3 To ensure appropriate and sustainable management of water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	Medium	Moderate	Medium-term	Temporary	Low (beneficial)	Medium (beneficial)	Reduction in demand for demand for water will result in reduced requirement for abstraction from Yorkshire Water's sources, helping provide some protection for water-dependent ecosystems.	None	Minor beneficial

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Soil, geology and land use	5.1 To protect and enhance the quality and quantity of soils and to protect and enhance geodiversity.	N/A	N/A	N/A	N/A	N/A	N/A	No impacts on geology, geomorphology and quality/quantity of soils are anticipated as a result of the use of an emergency drought order.	None	None
Air and Climate	6.1 To maintain and improve air quality.	N/A	N/A	N/A	N/A	N/A	N/A	No impacts on air quality are anticipated as a result of the use of an emergency drought order.	None	None
Air and climate	6.2 To reduce greenhouse gas emissions.	N/A	N/A	N/A	N/A	N/A	N/A	The use of an emergency drought order will not involve any increased resource use, or increased greenhouse gas emissions.	None	None
Air and climate	6.3 To consider the need for adaptive measures for climate change.	Small	High	Short-term	Temporary	High (adverse) Low (beneficial)	Medium (adverse)	The drought order is a last resort to maintain priority essential water supplies to customers; as such it is not a measure that improves the resilience of the water supply system to climate change threats.	Major adverse	Negligible beneficial
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	Medium	Moderate	Medium-term	Temporary	Low (adverse) Low (beneficial)	Low (Adverse) Low (beneficial)	There may be minor adverse impacts associated with the setting of some heritage assets, for example, visual impacts on registered parks and gardens and /or the grounds of listed buildings due to restrictions on the use of water for any non-essential purposes. Notwithstanding these impacts, the ban is considered unlikely to have any direct impact on the historic environment, heritage assets and archaeologically important sites. There is the potential for reduced consumer demand for water to result in reduced requirement for abstraction at Yorkshire Water's sources, potentially reducing the magnitude of any drought-related effects on archaeology and cultural heritage assets.	Negligible adverse	Negligible beneficial
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	Medium	Moderate	Medium-term	Temporary	Low (adverse) Low (beneficial)	Low (adverse) Low (beneficial)	There may be some localised adverse effects on townscapes and the setting of some visual amenities due to the restrictions on water use for any non-essential purposes. However, the ban is considered to have no direct impact on landscape and visual amenity or any changes to access to the countryside or open space. There is the potential for reduced consumer demand for water to result in reduced requirement for abstraction at Yorkshire Water's sources, potentially reducing the magnitude of any drought-related effects on landscape or visual amenity.	Negligible adverse	Negligible beneficial

Drought Plan Option Name: Increased leakage detection and repair activity

Drought Plan Option Description: This drought option involves a range of leakage reduction activities through find and fix approaches. The potential savings that could be achieved through this option are uncertain.

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over-abstraction on sensitive sites, habitats and species) and consider adaptability to climate change.	Medium (beneficial)	High	Long-term	Permanent	Low (adverse) Low (beneficial)	Low (adverse) Medium (beneficial)	Construction activities associated with leakage detection and repair activities may result in disturbance to local habitats and species during the works. The majority of works are anticipated to be in an urban setting. Assuming best practice construction methods, impacts of the construction phase are anticipated to be negligible. The reduction in water lost through leakage will result in reduced requirement for abstraction at source and therefore, potential for positive impacts on flow and sensitive habitats/species.	Negligible adverse	Minor beneficial
Biodiversity, flora and fauna	1.2 To avoid introducing or spreading INNS.	N/A	N/A	N/A	N/A	N/A	N/A	Leakage detection and repair activities will not affect the spread of INNS.	None	None
Population and human health	2.1 To protect and improve health and well-being and reduce inequalities	Medium (beneficial) Small (adverse)	Medium	Long-term (beneficial)	Permanent (beneficial)	Low (beneficial)	High (beneficial)	The drought option will help to ensure levels of service are maintained through enabling provision of water that would have otherwise been lost to leakage.	None	Moderate beneficial
Population and human health	2.2 To protect and enhance opportunities for formal and informal recreation.	Small (adverse)	Low	Short-term (adverse)	Temporary (adverse)	Low (adverse)	Low (adverse)	Construction activities associated with leakage detection and repair activities may result in nuisance effects associated with traffic and noise. However, these will be short term at any one location (likely to be urban) and assuming best practice construction methods, effects will be minimal. It is assumed that public rights of way will be maintained during repair activities and there will be no effects on recreational opportunity.	Negligible adverse	None
Population and human health	2.3 To promote a sustainable economy and thriving communities with good access to the services they need.	Medium (beneficial)	Low	Long-term (beneficial)	Permanent (beneficial)	Low (beneficial)	High (beneficial)	Option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity.	None	Moderate beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	Small (beneficial) Small (adverse)	High	Long-term	Permanent	Low (beneficial) Low (adverse)	Low (beneficial) Low (adverse)	Increased leakage reduction activity through 'fix and find' approaches will result in the reduction of water lost in the supply network and therefore the energy and chemicals used to treat it. It utilises existing infrastructure. Repairs may require raw materials. It has been assumed that any materials required would be obtained locally.	Negligible adverse	Negligible beneficial

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.1 To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies.	Medium (beneficial)	Moderate	Long-term (beneficial)	Permanent (beneficial)	Low (beneficial)	Medium (beneficial)	The drought option will not directly result in, or modify any abstraction (surface water or groundwater) and therefore will not effect surface water or groundwater levels. However, the reduction in water lost through leakage will result in reduced requirement for abstraction at source.	None	Minor beneficial
Water	4.2 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	Medium (beneficial) Small (adverse)	Moderate	Long-term (beneficial) Short-term (adverse)	Permanent (beneficial) Temporary (adverse)	Low (beneficial) Low (adverse)	Low (beneficial) Low (adverse)	Construction activities associated with leakage detection and repair activities may result in the potential for impacting on local surface and groundwater quality. Assuming best practice construction methods, impacts of the construction phase are anticipated to be negligible. The reduction in water lost through leakage will result in reduced requirement for abstraction at source, and therefore also mitigate any surface water quality effects associated with abstraction.	Negligible adverse	Negligible beneficial
Water	4.3 To ensure appropriate and sustainable management of water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	Medium (beneficial)	High	Long-term (beneficial)	Permanent (beneficial)	Low (beneficial)	Medium (beneficial)	The option will contribute to more sustainable abstractions by reducing the amount of water already abstracted that is lost through leakage.	None	Minor beneficial
Soil, geology and land use	5.1 To protect and enhance the quality and quantity of soils and to protect and enhance geodiversity.	Small (adverse)	High	Short-term (adverse)	Temporary (adverse)	Low (adverse)	Low (adverse)	Construction activities associated with Increased leakage reduction activity and 'fix and find' approaches may result in localised disturbance to geology and land use. However, repair activity will be on pipelines which are already in situ.	Negligible adverse	None
Air and Climate	6.1 To maintain and improve air quality.	Small (adverse)	Low	Short-term (adverse)	Temporary (adverse)	Low (adverse)	High (adverse)	Vehicle trips necessary for leakage detection and repair will cause emissions affecting air quality, including some within Air Quality Management Areas in Yorkshire Water's supply area.	Minor adverse	None
Air and climate	6.2 To reduce greenhouse gas emissions.	Medium	Moderate	Short-term (adverse) Long-term (beneficial)	Temporary (adverse) Permanent (beneficial)	Low (beneficial) Low (adverse)	Medium (beneficial) Medium (adverse)	Vehicle trips necessary for leakage detection and repair will cause emissions of greenhouse gas emissions. Leakage detection and repairs will result in the reduction of water lost in the supply network and long term energy savings associated with this reduction (decreased greenhouse gas emissions associated with decreased need for water treatment and pumping).	Minor adverse	Minor beneficial

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Air and climate	6.3 To consider the need for adaptive measures for climate change.	Small (beneficial)	High	Long-term (beneficial)	Permanent (beneficial)	Low (beneficial)	High (beneficial)	Demand management measures are a key component of Yorkshire Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought which may become more prevalent due to climate change.	None	Minor beneficial
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	Small (adverse)	Moderate	Short-term (adverse)	Temporary	Low (adverse)	Low (adverse)	Increased leakage reduction activity through 'fix and find' approaches will be on pipelines which are already in situ, and as such, it is not anticipated that any sites of archaeological or cultural heritage importance will be affected. The setting of any surrounding heritage assets may be impacted for the short term, however, considering the option is an acceleration of ongoing leakage reduction activity this is considered negligible.	Negligible adverse	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	Small (adverse)	Moderate	Short-term (adverse)	Temporary	Low (adverse)	Low (adverse)	The majority of works are anticipated to be in an urban setting. Assuming best practice construction methods, impacts of the construction phase are anticipated to be negligible. The scheme will have no direct effect on landscape and visual amenity in operation.	Negligible adverse	None

Drought Plan Option Name: Introduction of a drought order to ban non-essential water uses

Drought Plan Option Description: The Company has recourse to a range of restrictions to Non-Essential Use. However, it can take a significant time to apply for and then implement a Drought Order. The Company might decide not to exercise all its powers until severe drought conditions are reached.

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over-abstraction on sensitive sites, habitats and species) and consider adaptability to climate change.	Medium	Medium	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The ban is considered to have no impact on biodiversity, flora and fauna, other than to acknowledge that reduced consumer demand for water will result in reduced requirement for abstraction from Yorkshire Water's sources and, therefore, potential for positive impacts on flow, sensitive habitats/species etc.	None	Minor beneficial
Biodiversity, flora and fauna	1.2 To avoid introducing or spreading INNS.	n/a	n/a	n/a	n/a	n/a	n/a	The ban is likely to have no impact on avoiding the introduction or spreading of INNS,	None	None
Population and human health	2.1 To protect and improve health and well-being and reduce inequalities	Medium	Medium	Short-term	Temporary	Medium (beneficial)	Medium (beneficial)	The ban will provide water savings which will contribute towards improving security of supply of water in the Yorkshire Water supply region. Drinking water quality will not be affected by the restrictions and there will be no impact on essential water uses that are necessary to maintain public health and well-being of the population served by Yorkshire Water.	None	Moderate beneficial
Population and human health	2.2 To protect and enhance opportunities for formal and informal recreation.	Medium	Low	Short-term	Temporary	Medium (adverse)	Medium (adverse)	There may be potential for moderate impacts upon recreational activities due to restrictions on filling of swimming pools, watering of sports pitches, etc. There may be moderate impacts associated with the setting of tourist attractions, for example water features and parks/gardens associated with popular tourist sites.	Moderate adverse	None
Population and human health	2.3 To promote a sustainable economy and thriving communities with good access to the services they need.	Medium	Medium	Short-term	Temporary	High (adverse)	Medium (adverse)	The ban carries the risk of some economic impact on businesses that benefit directly or indirectly from certain water uses that would be prohibited under the ban (e.g. sports and leisure facilities). The ban may result in some business loss if the water-related operations have to be suspended.	Major adverse	None
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	Medium	Low	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The ban will reduce the demand for water in the region, improving the efficiency of existing water resource use. It will not result in any increase in the generation of waste.	None	Minor beneficial

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.1 To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies.	Low	Low	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The ban will not directly result in, or modify any abstraction (surface water or groundwater). Reduction in demand for water will result in a reduced requirement for abstraction at Yorkshire Water's sources, minimising impacts on water levels and river flows in drought conditions.	None	Minor beneficial
Water	4.2 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	Low	Low	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	Reductions in demand for water would result in a reduced requirement for increased abstraction from Yorkshire Water's sources, reducing associated impacts on surface water and groundwater quality during drought conditions.	None	Minor beneficial
Water	4.3 To ensure appropriate and sustainable management of water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	Low	Low	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	Reduction in demand for demand for water will result in reduced requirement for abstraction from Yorkshire Water's sources, helping provide some protection for water-dependent ecosystems.	None	Minor beneficial
Soil, geology and land use	5.1 To protect and enhance the quality and quantity of soils and to protect and enhance geodiversity.	n/a	n/a	n/a	n/a	n/a	n/a	No impacts on geology, geomorphology and quality/quantity of soils are anticipated as a result of the drought order to ban non-essential use.	None	None
Air and Climate	6.1 To maintain and improve air quality.	n/a	n/a	n/a	n/a	n/a	n/a	No impacts on air quality are anticipated as a result of the ban.	None	None
Air and climate	6.2 To reduce greenhouse gas emissions.	n/a	n/a	n/a	n/a	n/a	n/a	The ban will not involve an increase in energy consumption or associated greenhouse gas emissions.	None	None
Air and climate	6.3 To consider the need for adaptive measures for climate change.	Low	Low	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	Demand management measures are a key component of Yorkshire Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought which may become more prevalent due to climate change.	None	Minor beneficial

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	Low	Low	Short-term	Temporary	Low (beneficial) Low (adverse)	Low (beneficial) Low (adverse)	There may be minor adverse impacts associated with the setting of some heritage assets, for example, visual impacts on registered parks and gardens and /or the grounds of listed buildings. Notwithstanding these impacts, the ban is considered unlikely to have any direct impact on the historic environment, heritage assets and archaeologically important sites. There is the potential for reduced consumer demand for water to result in reduced requirement for abstraction at Yorkshire Water's sources, potentially reducing the magnitude of any drought-related effects on archaeology and cultural heritage assets.	Negligible adverse	Negligible beneficial
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	Low	Low	Short-term	Temporary	Low (beneficial) Low (adverse)	Low (beneficial) Low (adverse)	There may be some localised adverse effects on townscapes and the setting of some visual amenities due to the ban on watering of gardens and grounds. However, the ban is considered to have no direct impact on landscape and visual amenity or any changes to access to the countryside or open space. There is the potential for reduced consumer demand for water to result in reduced requirement for abstraction at Yorkshire Water's sources, potentially reducing the magnitude of any drought-related effects on landscape or visual amenity.	Negligible adverse	Negligible beneficial

Drought Plan Option Name: Introduction of temporary use ban

Drought Plan Option Description: This measure involves the temporary ban on water use to reduce demand. It could be introduced relatively quickly and in phased manner under new powers created by the FWMA 2010 can be applied on a WRZ basis.

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over-abstraction on sensitive sites, habitats and species) and consider adaptability to climate change.	Medium	Moderate	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	A temporary use ban is considered to have no impact on biodiversity, flora and fauna, other than to acknowledge that reduced consumer demand for water will result in a reduced requirement for abstraction at Yorkshire Water's sources and, therefore, there is the potential for positive impacts on flow, sensitive habitats/species etc.	None	Minor beneficial
Biodiversity, flora and fauna	1.2 To avoid introducing or spreading INNS.	n/a	n/a	n/a	n/a	n/a	n/a	The temporary use ban is likely to have no impact on avoiding the introduction or spreading of INNS, with reduced abstraction requirements leaving more water in river systems.	None	None
Population and human health	2.1 To protect and improve health and well-being and reduce inequalities	Medium	High	Short-term	Temporary	Medium (beneficial)	Medium (beneficial)	A temporary use ban will provide water savings will contribute towards improving security of supply of water in the Yorkshire Water supply region. Drinking water quality will not be affected by the restrictions and the measures do not restrict essential water uses that are important in maintaining health and well-being of the population served by Yorkshire Water.	None	Moderate beneficial
Population and human health	2.2 To protect and enhance opportunities for formal and informal recreation.	Small	Low	Short	Temporary	Medium (adverse)	Low (adverse)	Reducing the demand for non-essential water use is unlikely to have any impacts for recreation, tourism and navigation. There may be some limited domestic impact, for example not being able to refill or maintain a domestic swimming pool.	Minor adverse	None
Population and human health	2.3 To promote a sustainable economy and thriving communities with good access to the services they need.	Medium	Moderate	Short to medium-term	Temporary	Medium (adverse)	Medium (adverse)	The principal impact will be on domestic customers as the ban would preclude the use of water for those use categories set out under the temporary use ban powers. The ban may indirectly adversely impact business which benefit from the sale of certain water-using appliances such as hosepipes and sprinklers.	Moderate adverse	None
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	Medium	Moderate	Medium-term	Temporary	Low (beneficial)	Medium (beneficial)	The ban will reduce the demand for water in the region, improving the efficiency of existing water resource use. It will not result in any increase in the generation of waste.	None	Minor beneficial

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.1 To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies.	Low	Low	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	Reductions in demand for water would result in reduced requirement for abstraction at source, reducing the risk of associated impacts on surface water and groundwater quality in drought conditions.	None	Minor beneficial
Water	4.2 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	Medium	Moderate	Medium-term	Temporary	Low (beneficial)	Medium (beneficial)	The ban will not directly result in, or modify any abstraction (surface water or groundwater). Reduction in demand for demand for water will result in reduced requirement for abstraction from Yorkshire Water's sources, reducing the impacts on water levels and river flows in drought conditions.	None	Minor beneficial
Water	4.3 To ensure appropriate and sustainable management of water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	Medium	Moderate	Medium-term	Temporary	Low (beneficial)	Medium (beneficial)	Reduction in demand for water will result in a reduced requirement for abstraction from Yorkshire Water's sources, helping provide some protection for water-dependent ecosystems.	None	Minor beneficial
Soil, geology and land use	5.1 To protect and enhance the quality and quantity of soils and to protect and enhance geodiversity.	n/a	n/a	n/a	n/a	n/a	n/a	No impacts on geology, geomorphology and quality/quantity of soils are anticipated as a result of the temporary use ban.	None	None
Air and Climate	6.1 To maintain and improve air quality.	n/a	n/a	n/a	n/a	n/a	n/a	No impacts on air quality are anticipated as a result of the temporary use ban.	None	None
Air and climate	6.2 To reduce greenhouse gas emissions.	n/a	n/a	n/a	n/a	n/a	n/a	The ban will not involve an increase in energy consumption or associated greenhouse gas emissions.	None	None
Air and climate	6.3 To consider the need for adaptive measures for climate change.	Small	High	Long-term	Permanent	Low (beneficial)	Medium (beneficial)	Demand management measures are a key component of Yorkshire Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought which may become more prevalent due to climate change.	None	Minor beneficial

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	Medium	Moderate	Medium-term	Temporary	Low (beneficial) Low (adverse)	Low (beneficial) Low (adverse)	There may be minor adverse impacts associated with the setting of some heritage assets, for example, visual impacts on registered parks and gardens and /or the grounds of listed buildings due to restrictions on the use of water for any non-essential purposes. Notwithstanding these impacts, the ban is considered unlikely to have any direct impact on the historic environment, heritage assets and archaeologically important sites. There is the potential for reduced consumer demand for water to result in reduced requirement for abstraction at Yorkshire Water's sources, potentially reducing the magnitude of any drought-related effects on archaeology and cultural heritage assets.	Negligible adverse	Negligible beneficial
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	Medium	Moderate	Medium-term	Temporary	Low (beneficial) Low (adverse)	Low (beneficial) Low (adverse)	There may be some localised adverse effects on townscapes and the setting of some visual amenities due to the ban on watering of gardens and grounds. However, the ban is considered to have no direct impact on landscape and visual amenity or any changes to access to the countryside or open space. There is the potential for reduced consumer demand for water to result in reduced requirement for abstraction from Yorkshire Water's sources, potentially reducing the magnitude of any drought-related effects on landscape or visual amenity.	Negligible adverse	Negligible beneficial

Drought Plan Option Name: North Area 1

Drought Plan Option Description: Reduced compensation flow release from North Area Reservoir 1 from 13.6 MI/d to 4.5 MI/d to the receiving watercourse.

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over-abstraction on sensitive sites, habitats and species) and consider adaptability to climate change.	Medium	Low	Short-term	Temporary	Medium (adverse)	High (adverse)	Impacts on Ripon Parks SSSI are assessed as negligible. A hydrogeological impact assessment and baseline monitoring of the groundwater levels in the area indicates that groundwater flow is towards the River Ure, which acts as a major sink for groundwater. As such, the risk from an increase in abstraction to Ripon Parks SSSI is considered to be negligible. The sensitivity of Nosterfield LNR to the drought option is uncertain. In accordance with the precautionary principle the residual effect is classified as major adverse. The drought option will impact wetted width, especially in shallow areas of the channel, potentially reducing habitat availability. The drought option is assessed as having an impact on the following NERC and Notable species due to due fragmentation of habitats, increased mortality and siltation of spawning gravels: Minor impact for Barbel, Bullhead, Grayling and Riolus sub violaceus. Moderate impact for Atlantic Salmon, Brook Lamprey, Brown Trout, European eel, River lamprey, Grayling and White-clawed crayfish. Major impact for Atlantic Salmon, European eel and River Lamprey. There is a moderate risk of deterioration of WFD status (macroinvertebrates).	Major adverse	None
Biodiversity, flora and fauna	1.2 To avoid introducing or spreading INNS.	N/A	N/A	N/A	N/A	N/A	N/A	Invasive species utilise flow of the watercourse for dispersal. The implementation of the drought option will lead to a reduction in flow and is therefore not anticipated to increase the spread of aquatic invasive non-native species.	None	None
Population and human health	2.1 To protect and improve health and well-being and reduce inequalities	Small	Moderate	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option will deliver 9.1 MI/d helping to maintain essential public water supplies during drought conditions, and therefore help maintain public health and well-being.	None	Minor beneficial
Population and human health	2.2 To protect and enhance opportunities for formal and informal recreation.	Medium	Moderate	Short-term	Temporary	Low (adverse)	Low (adverse)	Flows during a drought will be low such that further reduction in flows would not be likely to further reduce the angling quality of the reach. Canoeing on the Ure may still be suitable under drought conditions. However, the impact of the drought option is unlikely to be significant against a baseline of drought conditions.	Negligible adverse	None
Population and human health	2.3 To promote a sustainable economy and thriving communities with good access to the services they need.	Small	Moderate	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity.	None	Minor beneficial

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	Small	Moderate	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	No impacts on material assets are anticipated. The option involve modifications to compensation flow only and no changes to energy use, generated waste or sustainable designs are envisaged. The option will make use of existing infrastructure.	None	Minor beneficial
Water	4.1 To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies.	Medium	Moderate	Short-term	Temporary	Low (adverse)	Medium (adverse)	There is medium risk that the drought option flow reduction would reduce the downstream dissolved oxygen saturation below values which support 'good' or 'high' status for fish and invertebrates. There is a low risk that there would be an increase the downstream total ammonia concentration saturation above values which support 'good' or 'high' status for fish and invertebrates. Water quality pressures include three STWs which have a minor impact on oxygen balance and ammonia concentration. The sum of these impacts are assessed as minor.	Minor adverse	None
Water	4.2 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	Medium	Moderate	Short-term	Temporary	High (adverse)	Medium (adverse)	The drought option would lead to a major reduction in low flows, with associated reduction in wetted width and depth over a 9km stretch of impacted reaches. There would be a minor impact over a further 23km. However, habitats and navigation would not be majorly impacted due to the minor hydrological impact on medium to high flow regimes.	Major adverse	None
Water	4.3 To ensure appropriate and sustainable management of water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	Medium	Moderate	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option would contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity. The risk to the WFD Status of the impacted reaches is moderate.	None	Minor beneficial
Soil, geology and land use	5.1 To protect and enhance the quality and quantity of soils and to protect and enhance geodiversity.	Medium	Moderate	Short-term	Temporary	Low (adverse)	Low (adverse)	There are no land use changes associated with reduced compensation flow. It is anticipated that there will be no impacts on geologically sensitive sites.	Negligible adverse	None
Air and Climate	6.1 To maintain and improve air quality.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option involves the lowering of HOF with no change in existing abstraction volumes and therefore not impact air quality.	None	None

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Air and climate	6.2 To reduce greenhouse gas emissions.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option will not result in an increase in energy use, therefore, no changes to greenhouse gas emissions are envisaged.	None	None
Air and climate	6.3 To consider the need for adaptive measures for climate change.	Small	Moderate	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	Drought options are a key component of Yorkshire Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought conditions which may become more prevalent due to climate change.	None	Minor beneficial
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	N/A	N/A	N/A	N/A	N/A	N/A	Nearby ancient monuments are not water-dependent and would not be impacted by the drought option.	None	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	Medium	Moderate	Short-term	Temporary	Low (adverse)	Medium (adverse)	A significant reduction in the level of Pott Beck and River Burn will have a visual impact on the Nidderdale AONB. However, there is limited access to the impacted reach with no national trails.	Minor adverse	None

Drought Plan Option Name: North Area 2

Drought Plan Option Description: Reduced compensation flow release from North Area Reservoir 2 from 0.45 Ml/d to 0/15 MNI/d to the receiving watercourse.

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over-abstraction on sensitive sites, habitats and species) and consider adaptability to climate change.	Medium	Low	Short-term	Temporary	Low (adverse)	Medium (adverse)	There are no designated sites within the zone of influence of the drought option. The drought option would impact wetted width, especially in shallow areas of the channel, potentially reducing habitat availability. The drought option would have a moderate impact on white-clawed crayfish and <i>Graptodytes falvipehove</i> . There is a low risk for deterioration of WFD Status (macroinvertebrates) and minor risk for WFD Status (fish).	Minor adverse	None
Biodiversity, flora and fauna	1.2 To avoid introducing or spreading INNS.	N/A	N/A	N/A	N/A	N/A	N/A	Invasive species utilise flow of the watercourse for dispersal. The implementation of the drought option will lead to a reduction in flow and is therefore not anticipated to increase the spread of aquatic invasive non-native species.	None	None
Population and human health	2.1 To protect and improve health and well-being and reduce inequalities	Small	Moderate	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option will deliver 0.3 Ml/d helping to maintain essential public water supplies during drought conditions, and therefore help maintain public health and well being.	None	Minor beneficial
Population and human health	2.2 To protect and enhance opportunities for formal and informal recreation	Small	Moderate	Short-term	Temporary	Low (adverse)	Medium (adverse)	The drought option would have a low impact on angling and drought conditions are not conducive to canoeing.	Minor adverse	None
Population and human health	2.3 To promote a sustainable economy and thriving communities with good access to the services they need.	Small	Moderate	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity.	None	Minor beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option involves modifications to compensation flow only and no significant changes to energy use, generated waste or sustainable designs are envisaged. The option will make use of existing infrastructure.	None	Minor beneficial
Water	4.1 To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies.	Medium	Moderate	Short-term	Temporary	Low (adverse)	Low (adverse)	The water quality deterioration risk from dissolved oxygen saturation decline and increase in total ammonia concentration is assessed as low. There are no localised water quality pressures.	Negligible adverse	None
Water	4.2 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	Medium	Moderate	Short-term	Temporary	High (adverse)	Medium (adverse)	The drought option would lead to a major reduction in low flows over 2 km and a minor reduction over 10km, with associated reduction in wetted width and depth. However, this would be localised where the bank is shallow. The drought option would not impact on the moderate to high flow regime in the receiving watercourses.	Major adverse	None

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.3 To ensure appropriate and sustainable management of water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives.	Medium	Low	Short-term	Temporary	Low (beneficial)	Low (beneficial)	The drought option would contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity. The drought option would be accompanied by water conservation campaigns to promote the efficient use of water to protect the environment and safeguard supplies. The overall WFD status is Moderate and water availability is 30-50% in the zone of influence of the option.	None	Negligible beneficial
Soil, geology and land use	5.1 To protect and enhance the quality and quantity of soils and to protect and enhance geodiversity.	N/A	N/A	N/A	N/A	N/A	N/A	There are no land use changes associated with reduced compensation flow. It is anticipated that there will be no impacts on geologically sensitive sites.	None	None
Air and Climate	6.1 To maintain and improve air quality.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option involves modifications to compensation flow only and will therefore not result in any emissions to atmosphere.	None	None
Air and climate	6.2 To reduce greenhouse gas emissions.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option will not result in an increase in energy use, therefore, no changes to greenhouse gas emissions are envisaged. The use of existing infrastructure will minimise increases in greenhouse gas emissions.	None	None
Air and climate	6.3 To consider the need for adaptive measures for climate change.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	Drought options are a key component of Yorkshire Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought which may become more prevalent due to climate change.	None	Minor beneficial
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	N/A	N/A	N/A	N/A	N/A	N/A	Nearby ancient monuments and heritage sites are not water-dependent and would not be impacted by the drought option.	None	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	Small	Moderate	Short-term	Temporary	Low (adverse)	Medium (adverse)	A significant reduction in the level of Holborn Beck would have a visual impact on the Nidderdale AONB. However, there is limited access to the impacted reach with no national trails.	Minor adverse	None

Drought Plan Option Name: North Area 3

Drought Plan Option Description: Reduced Compensation Flow Release from North Area Reservoir 3 from 0.91 MI/d to 0.30 MI/d.

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over-abstraction on sensitive sites, habitats and species) and consider adaptability to climate change.	Medium	Low	Short-term	Temporary	Medium (adverse)	High (adverse)	The drought option will impact wetted width, especially in shallow areas of the channel, potentially reducing habitat availability. The drought option is assessed as having an impact on the following NERC and Notable species due to due fragmentation of habitats, increased mortality and siltation of spawning gravels: Major impact on Brown Trout, Moderate impact on Bullhead and Grayling. Moderate impact on White-clawed crayfish and a moderate risk of deterioration of WFD status (macroinvertebrates).	Major adverse	None
Biodiversity, flora and fauna	1.2 To avoid introducing or spreading INNS.	N/A	N/A	N/A	N/A	N/A	N/A	Invasive species utilise flow of the watercourse for dispersal. The implementation of the drought option will lead to a reduction in flow and is therefore not anticipated to increase the spread of aquatic invasive non-native species.	None	None
Population and human health	2.1 To protect and improve health and well-being and reduce inequalities	Small	Moderate	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option will deliver 9.1 MI/d helping to maintain essential public water supplies during drought conditions, and therefore help maintain public health and well-being.	None	Minor beneficial
Population and human health	2.2 To protect and enhance opportunities for formal and informal recreation.	Medium	Moderate	Short-term	Temporary	Low (adverse)	Low (adverse)	Flows during a drought will be low such that further reduction in flows would not be likely to further reduce the angling quality of the reach. Canoeing on the Ure may still be suitable under drought conditions. However, the impact of the drought option is unlikely to be significant against a baseline of drought conditions.	Negligible adverse	None
Population and human health	2.3 To promote a sustainable economy and thriving communities with good access to the services they need.	Small	Moderate	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity.	None	Minor beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	Small	Moderate	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	No impacts on material assets are anticipated. The option involve modifications to compensation flow only and no changes to energy use, generated waste or sustainable designs are envisaged. The option will make use of existing infrastructure.	None	Minor beneficial

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.1 To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies.	Medium	Moderate	Short-term	Temporary	Medium (adverse)	Medium (adverse)	There is low risk that the drought option flow reduction would reduce the downstream dissolved oxygen saturation below values which support 'good' or 'high' status for fish and invertebrates. There is a moderate risk that there would be an increase the downstream total ammonia concentration saturation above values which support 'good' or 'high' status for fish and invertebrates. Water quality pressures include one STW which is assessed as resulting in a moderate impact on oxygen balance and ammonia concentration. Overall the impacts are assessed as moderate.	Moderate adverse	None
Water	4.2 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	Medium	Moderate	Short-term	Temporary	High (adverse)	Medium (adverse)	The drought option would lead to a major reduction in low flows, with associated reduction in wetted width and depth over a 9km stretch of impacted reaches. There would be a minor impact over a further 23km. However, habitats and navigation would not be majorly impacted due to the minor hydrological impact on medium to high flow regimes.	Major adverse	None
Water	4.3 To ensure appropriate and sustainable management of water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	Medium	Moderate	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option would contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity. The risk to the WFD Status of the impacted reaches is moderate.	None	Minor beneficial
Soil, geology and land use	5.1 To protect and enhance the quality and quantity of soils and to protect and enhance geodiversity.	Medium	Moderate	Short-term	Temporary	Low (adverse)	Low (adverse)	There are no land use changes associated with reduced compensation flow. It is anticipated that there will be no impacts on geologically sensitive sites.	Negligible adverse	None
Air and Climate	6.1 To maintain and improve air quality.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option involves the lowering of HOF with no change in existing abstraction volumes and therefore not impact air quality.	None	None
Air and climate	6.2 To reduce greenhouse gas emissions.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option will not result in an increase in energy use, therefore, no changes to greenhouse gas emissions are envisaged.	None	None
Air and climate	6.3 To consider the need for adaptive measures for climate change.	Small	Moderate	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	Drought options are a key component of Yorkshire Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought conditions which may become more prevalent due to climate change.	None	Minor beneficial

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	N/A	N/A	N/A	N/A	N/A	N/A	Nearby ancient monuments are not water-dependent and would not be impacted by the drought option.	None	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	Medium	Moderate	Short-term	Temporary	Low (adverse)	Medium (adverse)	A significant reduction in the level of Pott Beck and River Burn will have a visual impact on the Nidderdale AONB. However, there is limited access to the impacted reach with no national trails.	Minor adverse	None

Drought Plan Option Name: North Area 4

Drought Plan Option Description: Reduced Compensation Flow Release from North Area Reservoir 4 from 18.185 Ml/d to 6.06 Ml/d.

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over-abstraction on sensitive sites, habitats and species) and consider adaptability to climate change.	Small	High	Short term	Temporary	Medium (adverse)	Medium (adverse)	There are no designated sites nearby. The drought permit will impact areas of wetted width, especially in shallow areas of the channel, potentially reducing habitat availability and the marginal areas where ammocoetes develop. Specific locations of the shallow sections of the channel, which will be impacted the most are uncertain. Moderate impacts on NERC Fish species within the reach (Atlantic Salmon, Brook Lamprey and Brown Trout) due to siltation of spawning gravels, exposure of habitat etc. The impact on macroinvertebrates is considered to be short term. Migratory fish may also be impacted by the presence of weirs within the reach. Minor impacts are expected to affect <i>Metalype fragilis</i> due to changes in wetted width and depth. Further, minor impacts are expected for graylings and bullheads. Moderate impacts are expected on the WFD status of Macroinvertebrates which are temporary and reversible. Minor impacts are expected on the WFD status of fish, which is considered temporary and reversible.	Moderate adverse	None
Biodiversity, flora and fauna	1.2 To avoid introducing or spreading INNS.	N/A	N/A	N/A	N/A	N/A	N/A	The implementation of this drought permit is not anticipated to increase the spread of aquatic invasive non-native species because the flows within the rivers will be lower.	None	None
Population and human health	2.1 To protect and improve health and well-being and reduce inequalities	Small	High	Short term	Temporary	Medium (beneficial)	Medium (beneficial)	The drought permit will help to maintain essential public water supplies during drought conditions and therefore help maintain public health and well-being. The drought option will provide 12.12Ml/d.	None	Moderate beneficial
Population and human health	2.2 To protect and enhance opportunities for formal and informal recreation.	Small	Moderate	Short term	Temporary	Low (adverse)	Low (adverse)	Angling could potentially be adversely affected due to lower fish stocks, however this is likely to be temporary and will require further assessment at the stage a drought permit is applied for.	Negligible adverse	None
Population and human health	2.3 To promote a sustainable economy and thriving communities with good access to the services they need.	Small	Moderate	Short term	Temporary	Medium (beneficial)	Medium (beneficial)	Implementation of the drought permit will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity.	None	Moderate beneficial

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	Small	Moderate	Short term	Temporary	Low (beneficial)	Medium (beneficial)	The option involves modifications to compensation flow only and no changes to energy use, generated waste or sustainable designs are envisaged. The option will make use of existing infrastructure.	None	Minor beneficial
Water	4.1 To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies.	Small	Moderate	Short term	Temporary	Low (adverse)	Medium (adverse)	Water quality impact risk is assessed as being minor in Reach 1. There are no localised water quality pressures within the influence of the drought option. There is no risk to groundwater contamination.	Minor adverse	None
Water	4.2 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	Small	Moderate	Short term	Temporary	High (adverse)	Medium (adverse)	The drought permit will temporary increase abstraction for water supply, there is a major hydrological impact on the reach. The drought permit will lead to a reduction in low flows, with associated reduction in wetted width and depth, however these will be localised where the bank is shallow (the specific areas are uncertain). The drought permit will not impact on the moderate to high flow regime in the receiving watercourses.	Major adverse	None
Water	4.3 To ensure appropriate and sustainable management of water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	Small	Moderate	Short term	Temporary	Medium (beneficial)	Medium (beneficial)	Local water availability is 30%. The drought permit will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity with no permanent adverse effects on the environment. Drought permit will be accompanied by water conservation campaigns to promote efficient use of water to protect the environment and safeguard supplies.	None	Minor beneficial
Soil, geology and land use	5.1 To protect and enhance the quality and quantity of soils and to protect and enhance geodiversity.	N/A	N/A	N/A	N/A	N/A	N/A	There would be no land use changes associated with this drought permit.	None	None
Air and Climate	6.1 To maintain and improve air quality.	N/A	N/A	N/A	N/A	N/A	N/A	The drought permit involves modification to compensation flow only, no changes to energy use are anticipated. There are no AQMA nearby.	None	None
Air and climate	6.2 To reduce greenhouse gas emissions.	N/A	N/A	N/A	N/A	N/A	N/A	The drought permit involves modifications to compensation flow only. No changes to greenhouse gas emissions, are envisaged.	None	None

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Air and climate	6.3 To consider the need for adaptive measures for climate change.	Small	High	Short term	Temporary	Low (beneficial)	Medium (beneficial)	Drought permits are a key component of Yorkshire Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought which may become more prevalent due to climate change.	None	Minor beneficial
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	N/A	N/A	N/A	N/A	N/A	N/A	No known water-dependent cultural heritage or archaeology sites are located within or adjacent to the impacted reaches.	None	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	Small	Moderate	Short term	Temporary	Low (adverse)	Low (adverse)	A major hydrological impact on the River Washburn will adversely impact the visual amenity of Nidderdale AONB, however as the river reach forms a small portion of the AONB, impacts are expected to be local and short term. The drought permit will enable higher water levels to be maintained for longer in North Area Reservoir 4 (less shoreline exposure), but the receiving reach will experience lower water levels.	Negligible adverse	None

Drought Plan Option Name: North Area 6

Drought Plan Option Description: Reduced compensation flow release from North Area Reservoir 6 from 16.9-3.9 MI/d to 1.3-6.7 MI/d to the receiving watercourse.

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over-abstraction on sensitive sites, habitats and species) and consider adaptability to climate change.	Small	Low	Short-term	Temporary	Low (adverse)	Medium (adverse)	There are no designated sites within the zone of influence of the drought option. The drought option would impact wetted width, especially in shallow areas of the channel, potentially reducing habitat availability. The drought option would have a moderate impact on brook lamprey and bullhead and a major impact on brown trout. There is a moderate risk for deterioration of WFD Status (macroinvertebrates) and for WFD Status (fish).	Moderate adverse	None
Biodiversity, flora and fauna	1.2 To avoid introducing or spreading INNS.	N/A	N/A	N/A	N/A	N/A	N/A	Invasive species utilise flow of the watercourse for dispersal. The implementation of the drought option will lead to a reduction in flow and is therefore not anticipated to increase the spread of aquatic invasive non-native species.	None	None
Population and human health	2.1 To protect and improve health and well-being and reduce inequalities	Small	Moderate	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option will deliver 2.6-10.2 MI/d helping to maintain essential public water supplies during drought conditions, and therefore help maintain public health and well being.	None	Minor beneficial
Population and human health	2.2 To protect and enhance opportunities for formal and informal recreation	Small	Moderate	Short-term	Temporary	Low (adverse)	Medium (adverse)	There is canoeing known to take place in the impacted reaches, however, it is unlikely to be impacted over the duration of the drought permit. Canoeing events rely on specific high volume releases, although these may reduce during a drought the reduction is not related to the drought permit for North Area 6.	Negligible adverse	None
Population and human health	2.3 To promote a sustainable economy and thriving communities with good access to the services they need.	Small	Moderate	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity.	None	Minor beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option involves modifications to compensation flow only and no significant changes to energy use, generated waste or sustainable designs are envisaged. The option will make use of existing infrastructure.	None	Minor beneficial

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.1 To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies.	Medium	Moderate	Short-term	Temporary	Low (adverse)	Low (adverse)	Water quality in River Washburn, Reach 1 (validated by data analysis) described as supporting high WFD status for fish and invertebrates without the drought option. Water quality throughout the study area is assessed to be at low risk of deterioration during the implementation of the drought option. No potentially significant water quality pressures from consented discharges in the study area	Negligible adverse	None
Water	4.2 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	Medium	Moderate	Short-term	Temporary	High (adverse)	Medium (adverse)	The drought option would lead to a major reduction in low flows over 3 km with an associated reduction in wetted width and depth. However, this would be localised where the bank is shallow. The drought option would not impact on the moderate to high flow regime in the receiving watercourses.	Major adverse	None
Water	4.3 To ensure appropriate and sustainable management of water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives.	Medium	Low	Short-term	Temporary	Low (beneficial)	Low (beneficial)	The drought option would contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity. The drought option would be accompanied by water conservation campaigns to promote the efficient use of water to protect the environment and safeguard supplies.	None	Minor beneficial
Soil, geology and land use	5.1 To protect and enhance the quality and quantity of soils and to protect and enhance geodiversity.	N/A	N/A	N/A	N/A	N/A	N/A	There are no land use changes associated with reduced compensation flow. It is anticipated that there will be no impacts on geologically sensitive sites.	None	None
Air and Climate	6.1 To maintain and improve air quality.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option involves modifications to compensation flow only and will therefore not result in any emissions to atmosphere.	None	None
Air and climate	6.2 To reduce greenhouse gas emissions.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option will not result in an increase in energy use, therefore, no changes to greenhouse gas emissions are envisaged. The use of existing infrastructure will minimise increases in greenhouse gas emissions.	None	None
Air and climate	6.3 To consider the need for adaptive measures for climate change.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	Drought options are a key component of Yorkshire Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought which may become more prevalent due to climate change.	None	Minor beneficial
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	N/A	N/A	N/A	N/A	N/A	N/A	Nearby ancient monuments and heritage sites are not water-dependent and would not be impacted by the drought option.	None	None

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	N/A	N/A	N/A	N/A	N/A	N/A	There are no landscape designations in proximity to the impacted reaches of the drought option.	None	None

Drought Plan Option Name: South Area 1

Drought Plan Option Description: Reduced compensation flow release from South Area Reservoir 1 from 2.7 MI/d to 0.9 MI/d.

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over-abstraction on sensitive sites, habitats and species) and consider adaptability to climate change.	Small	Low	Short-term	Temporary	Medium (adverse)	Medium (adverse)	The reduced flows will result in a number of impacts, including: the stranding of individuals or groups; deterioration or loss of habitats; fragmentation of habitats; increased mortality; and changes in morphology or behaviour. The drought option is assessed as having an impact on the following NERC and notable species: Moderate impact for white-clawed crayfish. There is a uncertain minor risk of deterioration of WFD status (invertebrates) and a negligible risk to WFD status (fish).	Moderate adverse	None
Biodiversity, flora and fauna	1.2 To avoid introducing or spreading INNS.	N/A	N/A	N/A	N/A	N/A	N/A	Invasive species utilise flow of the watercourse for dispersal. The implementation of the drought option will lead to a reduction in flow and is therefore not anticipated to increase the spread of aquatic invasive non-native species.	None	None
Population and human health	2.1 To protect and improve health and well-being and reduce inequalities	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option will deliver up to 1.8MI/d, helping to maintain essential public water supplies during drought conditions, and therefore help maintain public health and well-being.	None	Minor beneficial
Population and human health	2.2 To protect and enhance opportunities for formal and informal recreation.	Small	Moderate	Short-term	Temporary	Low (adverse)	Medium (adverse)	A Fishery and informal angling is present on the impacted reach that would be subject to major flow reductions. However, these impacts will be minor against a baseline of drought conditions.	Minor adverse	None
Population and human health	2.3 To promote a sustainable economy and thriving communities with good access to the services they need.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity.	None	Minor beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	No impacts on material assets are anticipated. The option involves modifications to compensation flow only and no changes to energy use, generated waste or sustainable designs are envisaged. The option will make use of existing infrastructure.	None	Minor beneficial
Water	4.1 To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies.	Small	Moderate	Short-term	Temporary	Medium (adverse)	Medium (adverse)	The risk of water quality deterioration below what supports good WFD status for fish and invertebrates is medium for dissolved oxygen and low for total ammonia. One WwTW presents a local water quality pressure, in combination with the option South Area Reservoir 2.	Moderate adverse	None
Water	4.2 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	Small	Moderate	Short-term	Temporary	High (adverse)	Medium (adverse)	The drought option would lead to a major reduction in low flows over 1.5 km of Scout Dyke and a moderate reduction over 12.7 km of the River Don. However, impacts on habitats and navigation would be short-term and restricted to the low flow regimes of the water courses.	Major adverse	None

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.3 To ensure appropriate and sustainable management of water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity. The drought option will be accompanied by water conservation campaigns to promote efficient use of water to protect the environment and safeguard supplies. Water availability is at least 70% in the zone of influence of the drought option.	None	Minor beneficial
Soil, geology and land use	5.1 To protect and enhance the quality and quantity of soils and to protect and enhance geodiversity.	N/A	N/A	N/A	N/A	N/A	N/A	There are no land use changes associated with reduced compensation flow. It is anticipated that there will be no impacts on geologically sensitive sites.	None	None
Air and Climate	6.1 To maintain and improve air quality.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option involves a reduction in compensation flow with no change in existing abstraction volumes and would therefore not result in any increases in emissions to atmosphere.	None	None
Air and climate	6.2 To reduce greenhouse gas emissions.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option would not be associated with an increase in energy consumption, therefore, no changes to greenhouse gas emissions are envisaged.	None	None
Air and climate	6.3 To consider the need for adaptive measures for climate change.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	Drought options are a key component of Yorkshire Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought conditions which may become more prevalent due to climate change.	None	Minor beneficial
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	N/A	N/A	N/A	N/A	N/A	N/A	There are numerous Scheduled Ancient Monuments in proximity to the impacted reaches of the drought option. However, they are not water dependent, as such, they would not be impacted.	None	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	N/A	N/A	N/A	N/A	N/A	N/A	There are no designated landscapes in proximity to the impacted reaches of the drought option.	None	None

Drought Plan Option Name: South Area 2

Drought Plan Option Description: Reduced maintained flow downstream of South Area Reservoir 2 from 9.1 MI/d to 3 MI/d.

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over-abstraction on sensitive sites, habitats and species) and consider adaptability to climate change.	Medium	Moderate	Short-term	Temporary	Medium (adverse)	Medium (adverse)	The reduced flows will result in a number of impacts, including: the stranding of individuals or groups; deterioration or loss of habitats; fragmentation of habitats; increased mortality; and changes in morphology or behaviour. The drought option is assessed as having an impact on the following NERC and notable species: Minor impact for <i>Sialis nigripes</i> and <i>Oreodytes davisii</i> . Moderate impact for white-clawed crayfish, brown trout, bullhead and grayling. The risk of deterioration to WFD status (fish) is moderate and minor to WFD status (invertebrates).	Moderate adverse	None
Biodiversity, flora and fauna	1.2 To avoid introducing or spreading INNS.	N/A	N/A	N/A	N/A	N/A	N/A	Invasive species utilise flow of the watercourse for dispersal. The implementation of the drought option will lead to a reduction in flow and is therefore not anticipated to increase the spread of aquatic invasive non-native species.	None	None
Population and human health	2.1 To protect and improve health and well-being and reduce inequalities	Medium	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option will provide 6.1MI/d helping to maintain essential public water supplies during drought conditions and therefore help maintain public health and well-being.	None	Minor beneficial
Population and human health	2.2 To protect and enhance opportunities for formal and informal recreation.	Medium	Moderate	Short-term	Temporary	Low (adverse)	Low (adverse)	There is informal angling present on the River Don which would be subject to moderate adverse effects. Canoeing takes place on the reaches, however, drought conditions would not be conducive to canoeing.	Negligible adverse	None
Population and human health	2.3 To promote a sustainable economy and thriving communities with good access to the services they need.	Medium	Moderate	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	Implementation of the drought option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity with no permanent adverse effects on the environment.	None	Minor beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	Medium	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option involves a reduction in compensation release only and no changes to energy use, generated waste or sustainable designs are envisaged. The option will make use of existing infrastructure.	None	Minor beneficial
Water	4.1 To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies.	Medium	Moderate	Short-term	Temporary	Medium (adverse)	Medium (adverse)	The risk of water quality deterioration is high for dissolved oxygen and low for total ammonia concentrations. Two WwTWs present, in combination with the South area Reservoir 1 drought option, local water quality pressures, particularly associated with ammonia quality.	Moderate adverse	None

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.2 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	Medium	Moderate	Short-term	Temporary	High (adverse)	Medium (adverse)	The drought option would lead to a major reduction in low flows over 24.1km of the River Don. However, impacts on habitats and navigation would be short-term and restricted to the low flow regimes of the water courses.	Major adverse	None
Water	4.3 To ensure appropriate and sustainable management of water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	Medium	Moderate	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity. Drought option will be accompanied by water conservation campaigns to promote efficient use of water to protect the environment and safeguard supplies.	None	Minor beneficial
Soil, geology and land use	5.1 To protect and enhance the quality and quantity of soils and to protect and enhance geodiversity.	N/A	N/A	N/A	N/A	N/A	N/A	There are no land use changes associated with reduced compensation flow. It is anticipated that there will be no impacts on geologically sensitive sites.	None	None
Air and Climate	6.1 To maintain and improve air quality.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option involves a reduction in compensation flow with no change in existing abstraction volumes and would therefore not result in any increases in emissions to atmosphere.	None	None
Air and climate	6.2 To reduce greenhouse gas emissions.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option would not be associated with an increase in energy consumption, therefore, no changes to greenhouse gas emissions are envisaged.	None	None
Air and climate	6.3 To consider the need for adaptive measures for climate change.	Small	Moderate	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	Drought options are a key component of Yorkshire Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought conditions which may become more prevalent due to climate change.	None	Minor beneficial
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	N/A	N/A	N/A	N/A	N/A	N/A	There are no known water-dependent cultural heritage or archaeology sites in proximity to the impacted reaches of the drought option.	None	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	Medium	Moderate	Short-term	Temporary	Low (adverse)	Medium (adverse)	The Trans Pennine Trail and Sheffield County Walk run in close proximity to the River Don which forms part of their landscape setting. The moderate reduction in flows would have a small visual impact on the setting of the trails.	Minor adverse	None

Drought Plan Option Name: South Area 3

Drought Plan Option Description: Reduced compensation flow release from South Area Reservoir 3 from 16-21.7 MI/d to 5.3 MI/d.

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over-abstraction on sensitive sites, habitats and species) and consider adaptability to climate change.	Medium	Moderate	Short-term	Temporary	Medium (adverse)	Medium (adverse)	The reduced flows will result in a number of impacts, including: the stranding of individuals or groups; deterioration or loss of habitats; fragmentation of habitats; increased mortality; and changes in morphology or behaviour. The drought option is assessed as having an impact on the following NERC and notable species: Moderate impact for white-clawed crayfish, brown trout, bullhead and grayling. There is a minor risk of deterioration of WFD status (invertebrates) and a moderate risk to WFD status (fish).	Moderate adverse	None
Biodiversity, flora and fauna	1.2 To avoid introducing or spreading INNS.	N/A	N/A	N/A	N/A	N/A	N/A	Invasive species utilise flow of the watercourse for dispersal. The implementation of the drought option will lead to a reduction in flow and is therefore not anticipated to increase the spread of aquatic invasive non-native species.	None	None
Population and human health	2.1 To protect and improve health and well-being and reduce inequalities	Small	High	Short-term	Temporary	Medium (beneficial)	Medium (beneficial)	The drought option will deliver up to 16.4MI/d helping to maintain essential public water supplies during drought conditions, and therefore help maintain public health and well-being.	None	Moderate beneficial
Population and human health	2.2 To protect and enhance opportunities for formal and informal recreation.	Medium	Moderate	Short-term	Temporary	Low (adverse)	Medium (adverse)	Canoeing and informal angling is present on the impacted reach that would be subject to major/moderate flow reductions. However, these impacts will be minor against a baseline of drought conditions.	Minor adverse	None
Population and human health	2.3 To promote a sustainable economy and thriving communities with good access to the services they need.	Small	High	Short-term	Temporary	Medium (beneficial)	Medium (beneficial)	The option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity.	None	Moderate beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	No impacts on material assets are anticipated. The option involves modifications to compensation flow only and no changes to energy use, generated waste or sustainable designs are envisaged. The option will make use of existing infrastructure.	None	Minor beneficial

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.1 To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies.	Medium	Moderate	Short-term	Temporary	Medium (adverse)	Medium (adverse)	The risk of water quality deterioration below what supports good WFD status for fish and invertebrates is medium for dissolved oxygen and total ammonia. Two WWTs present, in combination with the South Area 1 and 2 drought options, a local water quality pressure.	Moderate adverse	None
Water	4.2 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	Medium	Moderate	Short-term	Temporary	High (adverse)	Medium (adverse)	The drought option would lead to a major reduction in low flows over 20.2km of the Little Don and the River Don. However, impacts on habitats and navigation would be short-term and restricted to the low flow regimes of the water courses.	Major adverse	None
Water	4.3 To ensure appropriate and sustainable management of water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	Medium	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity. The drought option will be accompanied by water conservation campaigns to promote efficient use of water to protect the environment and safeguard supplies. Water availability is at least 70% in the zone of influence of the drought option.	None	Minor beneficial
Soil, geology and land use	5.1 To protect and enhance the quality and quantity of soils and to protect and enhance geodiversity.	N/A	N/A	N/A	N/A	N/A	N/A	There are no land use changes associated with reduced compensation flow. It is anticipated that there will be no impacts on geologically sensitive sites.	None	None
Air and Climate	6.1 To maintain and improve air quality.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option involves a reduction in compensation flow with no change in existing abstraction volumes and would therefore not result in any increases in emissions to atmosphere.	None	None
Air and climate	6.2 To reduce greenhouse gas emissions.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option would not be associated with an increase in energy consumption, therefore, no changes to greenhouse gas emissions are envisaged.	None	None
Air and climate	6.3 To consider the need for adaptive measures for climate change.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	Drought options are a key component of Yorkshire Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought conditions which may become more prevalent due to climate change.	None	Minor beneficial
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	N/A	N/A	N/A	N/A	N/A	N/A	There are no designated heritage assets in proximity to the impacted reaches of the drought option.	None	None

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	Medium	Moderate	Short-term	Temporary	Low (adverse)	Low (adverse)	The Trans Pennine trail is in close proximity to the impacted reach that will be subject to major flow reductions. However, the visual impact will be negligible in the context of existing drought conditions.	Negligible adverse	None

Drought Plan Option Name: South Area 4

Drought Plan Option Description: Reduced compensation flow release from South Area Reservoir 4 from 9-12 MI/d to 3 MI/d .

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over-abstraction on sensitive sites, habitats and species) and consider adaptability to climate change.	Medium	Low	Short-term	Temporary	Medium (adverse)	Medium (adverse)	The reduced flow levels would potentially reduce habitat availability and impact the following NERC and Notable species: Moderate impact for brown trout, Atlantic Salmon, and white-clawed crayfish. Minor impact for grayling, bullhead and <i>Riolus subviolaceus</i> . The risk of deterioration to WFD status (macroinvertebrates and fish) is moderate.	Moderate adverse	None
Biodiversity, flora and fauna	1.2 To avoid introducing or spreading INNS.	N/A	N/A	N/A	N/A	N/A	N/A	Invasive species utilise flow of the watercourse for dispersal. The implementation of the drought option will lead to a reduction in flow and is therefore not anticipated to increase the spread of aquatic invasive non-native species.	None	None
Population and human health	2.1 To protect and improve health and well-being and reduce inequalities	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought permit will provide up to 9 MI/d helping to maintain essential public water supplies during drought conditions and therefore help maintain public health and well-being.	None	Minor beneficial
Population and human health	2.2 To protect and enhance opportunities for formal and informal recreation.	Medium	High	Short-term	Temporary	Low (adverse)	Low (adverse)	Angling could potentially be adversely affected due to impacts on fish population/ distribution, however, the impacts would be short-term and temporary.	Negligible adverse	None
Population and human health	2.3 To promote a sustainable economy and thriving communities with good access to the services they need.	Small	Moderate	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	Implementation of the drought permit will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity with no permanent adverse effects on the environment.	None	Minor beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	Small	Moderate	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option involves a reduction in compensation release only and no changes to energy use, generated waste or sustainable designs are envisaged. The option will make use of existing infrastructure.	None	Minor beneficial

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.1 To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies.	Medium	Moderate	Short-term	Temporary	Medium (adverse)	Medium (adverse)	The risk of water quality deterioration is low for dissolved oxygen and medium for total ammonia concentrations. One WwTW, in combination with the South Area 1, 2 and 3 Drought options present a local water quality pressure particularly associated with ammonia concentrations.	Moderate adverse	None
Water	4.2 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	Medium	Moderate	Short-term	Temporary	High (adverse)	Medium (adverse)	The drought option would lead to a major reduction in low flows over 1.5 km of Ewden Beck and moderate reduction over 9.9 km of the River Don with an associated reduction in wetted width and depth. However, impacts on habitats and navigation would be short-term and restricted to the low flow regimes of the water courses.	Moderate adverse	None
Water	4.3 To ensure appropriate and sustainable management of water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	Medium	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought permit will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity with no permanent adverse effects on the environment. The drought permit will be accompanied by water conservation campaigns to promote efficient use of water to protect the environment and safeguard supplies.	None	Minor beneficial
Soil, geology and land use	5.1 To protect and enhance the quality and quantity of soils and to protect and enhance geodiversity.	N/A	N/A	N/A	N/A	N/A	N/A	There are no land use changes associated with reduced compensation flow. It is anticipated that there will be no impacts on geologically sensitive sites.	None	None
Air and Climate	6.1 To maintain and improve air quality.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option involves a reduction in compensation flow with no change in existing abstraction volumes and would therefore not result in any increases in emissions to atmosphere.	None	None
Air and climate	6.2 To reduce greenhouse gas emissions.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option would not be associated with an increase in energy consumption, therefore, no changes to greenhouse gas emissions are envisaged.	None	None
Air and climate	6.3 To consider the need for adaptive measures for climate change.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	Drought options are a key component of Yorkshire Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought conditions which may become more prevalent due to climate change.	None	Minor beneficial

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	N/A	N/A	N/A	N/A	N/A	N/A	No known water-dependent cultural heritage or archaeology sites are located within or adjacent to the impacted reaches.	None	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	Medium	Moderate	Short-term	Temporary	Low (adverse)	Medium (adverse)	The Trans Pennine Trail and Sheffield County Walk run in close proximity to the River Don which forms part of their landscape setting. The moderate reduction in flows would have a small visual impact on the setting of the trails.	Minor adverse	None

Drought Plan Option Name: South Area 5

Drought Plan Option Description: Reduced compensation flow release from South Area Reservoir 5 from 18 MI/d to 6 MI/d.

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over-abstraction on sensitive sites, habitats and species) and consider adaptability to climate change.	Small	Moderate	Short-term	Temporary	Medium (adverse)	Medium (adverse)	There are no designated sites that are hydrologically connected to the impacted reaches. Reduced flows in the reaches would result in increased mortality and risk of stranding of NERC species. The drought option is assessed as having an impact on the following NERC and notable species: Moderate adverse impact on white-clawed crayfish, Atlantic salmon and brown trout. Minor adverse impact on barbel and bullhead. There is a moderate risk to the deterioration of WFD status (invertebrates and fish).	Moderate adverse	None
Biodiversity, flora and fauna	1.2 To avoid introducing or spreading INNS.	N/A	N/A	N/A	N/A	N/A	N/A	Invasive species utilise flow of the watercourse for dispersal. The implementation of the drought option will lead to a reduction in flow and is therefore not anticipated to increase the spread of aquatic invasive non-native species.	None	None
Population and human health	2.1 To protect and improve health and well-being and reduce inequalities	Small	High	Short-term	Temporary	Medium (beneficial)	Medium (beneficial)	The drought option will provide 12 MI/d helping to maintain essential public water supplies during drought conditions and therefore help maintain public health and well-being.	None	Moderate beneficial
Population and human health	2.2 To protect and enhance opportunities for formal and informal recreation.	Small	Moderate	Short-term	Temporary	Low (adverse)	Low (adverse)	Angling could be adversely affected due to impacts on fish population/distribution in downstream reaches. However, flows during a drought will already be low, such that further reduction in flows would not be likely to further reduce the angling quality of the reach.	Negligible adverse	None
Population and human health	2.3 To promote a sustainable economy and thriving communities with good access to the services they need.	Small	High	Short-term	Temporary	Medium (beneficial)	Medium (beneficial)	Implementation of the drought option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity.	None	Moderate beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	Small	Moderate	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option involves a reduction in compensation release only; and no changes to energy use, generated waste or sustainable designs are envisaged. The option will make use of existing infrastructure.	None	Minor beneficial

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.1 To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies.	Medium	Moderate	Short-term	Temporary	Medium (adverse)	Medium (adverse)	There is a medium risk that the reduction in low flows would lead to a decline of downstream dissolved oxygen saturation and low risk for downstream ammonia concentrations. There is one localised water quality pressure; A WwTW which would present a minor risk to water quality (ammonia, BOD) during implementation of the drought option.	Moderate adverse	None
Water	4.2 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	Medium	Moderate	Short-term	Temporary	High (adverse)	Medium (adverse)	There would be a major adverse impact on flow levels in the impacted reaches with an associated reduction in wetted width and depth. However, these impacts would be localised to places where the bank is shallow.	Major adverse	None
Water	4.3 To ensure appropriate and sustainable management of water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	Medium	Moderate	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity with no permanent adverse effects on the environment. Drought option will be accompanied by water conservation campaigns to promote efficient use of water to protect the environment and safeguard supplies.	None	Minor beneficial
Soil, geology and land use	5.1 To protect and enhance the quality and quantity of soils and to protect and enhance geodiversity.	Medium	Moderate	Short-term	Temporary	Medium (adverse)	Low (adverse)	There would be no land use changes associated with this drought option. The impact on fluvial geomorphology due to lower flows is assessed as minor adverse, due to potential for increased erosion of river banks and sediment deposition at selected sites.	Minor adverse	None
Air and Climate	6.1 To maintain and improve air quality.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option involves a reduction in compensation flow with no change in existing abstraction volumes and would therefore not result in any increases in emissions to atmosphere.	None	None
Air and climate	6.2 To reduce greenhouse gas emissions.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option would not be associated with an increase in energy consumption, therefore, no changes to greenhouse gas emissions are envisaged.	None	None
Air and climate	6.3 To consider the need for adaptive measures for climate change.	Medium	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	Drought options are a key component of Yorkshire Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought which may become more prevalent due to climate change.	None	Minor beneficial
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	N/A	N/A	N/A	N/A	N/A	N/A	There are no known water-dependent cultural heritage or archaeology sites in proximity to the impacted reaches.	None	None

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	Medium	Moderate	Short-term	Temporary	Low (adverse)	Low (adverse)	There are no designated landscapes in the immediate vicinity and the visual impact on the surrounding countryside would be short-term and temporary.	Negligible adverse	None

Drought Plan Option Name: South Area 6

Drought Plan Option Description: Reduced compensation flow release from South Area Reservoir 6 from 10.3 MI/d to 3.4 MI/d.

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over-abstraction on sensitive sites, habitats and species) and consider adaptability to climate change.	Small	Low	Short-term	Temporary	Medium (adverse)	Medium (adverse)	The reduced flows would result in a number of impacts, including: the stranding of individuals or groups; deterioration or loss of habitats; fragmentation of habitats; increased mortality; and changes in morphology or behaviour. The drought option is assessed as having an impact on the following NERC and notable species: Minor impact for <i>Sisyra terminalis</i> Moderate impact for brown trout and white-clawed crayfish, Atlantic salmon, bullhead, brook lamprey and grayling. There is a moderate risk of deterioration of WFD status (fish) and a major risk to WFD status (invertebrates).	Moderate adverse	None
Biodiversity, flora and fauna	1.2 To avoid introducing or spreading INNS.	N/A	N/A	N/A	N/A	N/A	N/A	Invasive species utilise flow of the watercourse for dispersal. The implementation of the drought option will lead to a reduction in flow and is therefore not anticipated to increase the spread of aquatic invasive non-native species.	None	None
Population and human health	2.1 To protect and improve health and well-being and reduce inequalities	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option will deliver up to 6.9MI/d helping to maintain essential public water supplies during drought conditions, and therefore help maintain public health and well-being.	None	Minor beneficial
Population and human health	2.2 To protect and enhance opportunities for formal and informal recreation.	Small	Moderate	Short-term	Temporary	Low (adverse)	Low (adverse)	There is informal angling present on the impacted reaches. However, flows during a drought will be low such that further reduction in flows would not be likely to further reduce the angling quality of the reach. Canoeing takes place on the reaches, however, existing drought conditions would not be conducive to canoeing so impacts would be negligible.	Negligible adverse	None
Population and human health	2.3 To promote a sustainable economy and thriving communities with good access to the services they need.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity.	None	Minor beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	Small	Moderate	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	No impacts on material assets are anticipated. The option involves modifications to compensation flow only and no changes to energy use, generated waste or sustainable designs are envisaged. The option will make use of existing infrastructure.	None	Minor beneficial
Water	4.1 To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies.	Small	Moderate	Short-term	Temporary	Medium (adverse)	Medium (adverse)	The risk of water quality deterioration below what supports good WFD status for fish and invertebrates is medium for dissolved oxygen and low for total ammonia. There are no water quality pressures in the area.	Moderate adverse	None

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.2 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	Small	Moderate	Short-term	Temporary	High (adverse)	Medium (adverse)	The drought option would lead to a major reduction in low flows, with associated reduction in wetted width and depth over 6.7km of the River Rivelin. However, impacts on habitats and navigation would be short-term and restricted to the low flow regimes of the water courses.	Major adverse	None
Water	4.3 To ensure appropriate and sustainable management of water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity. The drought option will be accompanied by water conservation campaigns to promote efficient use of water to protect the environment and safeguard supplies. Water availability is at least 70% in the zone of influence of the drought option.	None	Minor beneficial
Soil, geology and land use	5.1 To protect and enhance the quality and quantity of soils and to protect and enhance geodiversity.	N/A	N/A	N/A	N/A	N/A	N/A	There are no land use changes associated with reduced compensation flow. It is anticipated that there will be no impacts on geologically sensitive sites.	None	None
Air and Climate	6.1 To maintain and improve air quality.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option involves a reduction in compensation flow with no change in existing abstraction volumes and would therefore not result in any increases in emissions to atmosphere.	None	None
Air and climate	6.2 To reduce greenhouse gas emissions.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option would not be associated with an increase in energy consumption, therefore, no changes to greenhouse gas emissions are envisaged.	None	None
Air and climate	6.3 To consider the need for adaptive measures for climate change.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	Drought options are a key component of Yorkshire Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought conditions which may become more prevalent due to climate change.	None	Minor beneficial
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	N/A	N/A	N/A	N/A	N/A	N/A	A Scheduled Ancient Monument is in proximity to the impacted reaches. However, the asset is not water dependant so would not be impacted by the drought option.	None	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	N/A	N/A	N/A	N/A	N/A	N/A	There are no landscape designations in proximity to the impacted reaches of the drought option.	None	None

Drought Plan Option Name: Calder Area 1

Drought Plan Option Description: Reduced compensation flow release from Calder Area Reservoir 1 from 2.7 MI/d to 1.86 MI/d.

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over-abstraction on sensitive sites, habitats and species) and consider adaptability to climate change.	Small	Moderate	Short-term	Temporary	Medium (adverse)	Medium (adverse)	The reduced flows would result in a number of impacts on fish species including: the stranding of individuals or groups; deterioration or loss of habitats; fragmentation of habitats; increased mortality; and changes in morphology or behaviour. As a result, NERC and Notable species would be subject to the following adverse impacts: Moderate impact for brown trout. There is a minor risk of deterioration of WFD status (invertebrates and fish).	Moderate adverse	None
Biodiversity, flora and fauna	1.2 To avoid introducing or spreading INNS.	N/A	N/A	N/A	N/A	N/A	N/A	Invasive species utilise flow of the watercourse for dispersal. The implementation of the drought option would lead to a reduction in flow and is therefore not anticipated to increase the spread of aquatic invasive non-native species.	None	None
Population and human health	2.1 To protect and improve health and well-being and reduce inequalities	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option would deliver up to 0.84 MI/d helping to maintain essential public water supplies during drought conditions, and therefore help maintain public health and well-being.	None	Minor beneficial
Population and human health	2.2 To protect and enhance opportunities for formal and informal recreation.	N/A	N/A	N/A	N/A	N/A	N/A	There are no opportunities or threats to recreational activities for this drought option.	None	None
Population and human health	2.3 To promote a sustainable economy and thriving communities with good access to the services they need.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity.	None	Minor beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	No impacts on material assets are anticipated. The option involves modifications to compensation flow only and no changes to energy use, generated waste or sustainable designs are envisaged. The option will make use of existing infrastructure.	None	Minor beneficial

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.1 To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies.	Small	Moderate	Short-term	Temporary	Low (adverse)	Medium (adverse)	The risk of water quality deterioration below what supports good WFD status for fish and invertebrates is low for dissolved oxygen and for total ammonia. There are no water quality pressures on the impacted reaches.	Minor adverse	None
Water	4.2 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	Small	Moderate	Short-term	Temporary	Medium (adverse)	Medium (adverse)	The drought option would lead to a major reduction in low flows, with an associated reduction in wetted width and depth over a 0.6 km stretch of the Gorple Lower Brook. There would also be a moderate impact over a further 1.4 km. However, impacts on habitats and navigation would be short-term and restricted to the low regimes of the water courses.	Moderate adverse	None
Water	4.3 To ensure appropriate and sustainable management of water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought permit will be accompanied by water conservation campaigns to promote efficient use of water to protect the environment and safeguard supplies. Water availability is at least 70% in the zone of influence of the drought option.	None	Minor beneficial
Soil, geology and land use	5.1 To protect and enhance the quality and quantity of soils and to protect and enhance geodiversity.	Small	Moderate	Short-term	Temporary	Low (adverse)	Low (adverse)	There are no land use changes associated with reduced compensation flow. It is anticipated that there will be no impacts on geologically sensitive sites.	Negligible adverse	None
Air and Climate	6.1 To maintain and improve air quality.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option involves a reduction in compensation flow with no change in existing abstraction volumes and would therefore not result in any increases in emissions to atmosphere.	None	None
Air and climate	6.2 To reduce greenhouse gas emissions.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option would not be associated with an increase in energy consumption, therefore, no changes to greenhouse gas emissions are envisaged.	None	None
Air and climate	6.3 To consider the need for adaptive measures for climate change.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	Drought options are a key component of Yorkshire Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought conditions which may become more prevalent due to climate change.	None	Minor beneficial

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	N/A	N/A	N/A	N/A	N/A	N/A	Nearby ancient monuments are not water-dependent and would not be impacted by the drought option.	None	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	Small	Moderate	Short-term	Temporary	Low (adverse)	Low (adverse)	A significant reduction in the water level of the impacted reaches would have a visual impact on the landscape setting of the Pennine Bridleway National Trail. However, the reduced water levels of the reaches would be short-term and temporary.	Negligible adverse	None

Drought Plan Option Name: Calder Area 2

Drought Plan Option Description: Reduced compensation flow release from Calder Area Reservoir 2 from 3.7-7.56 MI/d to 2.59 MI/d.

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over-abstraction on sensitive sites, habitats and species) and consider adaptability to climate change.	Small	Moderate	Short-term	Temporary	Medium (adverse)	Medium (adverse)	The reduced flows would result in a number of impacts on fish species including: the stranding of individuals or groups; deterioration or loss of habitats; fragmentation of habitats; increased mortality; and changes in morphology or behaviour. As a result, NERC and Notable species would be subject to the following adverse impacts: Minor impact for bullhead and grayling Moderate impact for brown trout There is a minor risk of deterioration of WFD status (fish) and a moderate risk to WFD status (invertebrates).	Moderate adverse	None
Biodiversity, flora and fauna	1.2 To avoid introducing or spreading INNS.	N/A	N/A	N/A	N/A	N/A	N/A	Invasive species utilise flow of the watercourse for dispersal. The implementation of the drought option would lead to a reduction in flow and is therefore not anticipated to increase the spread of aquatic invasive non-native species.	None	None
Population and human health	2.1 To protect and improve health and well-being and reduce inequalities	Small	High	Short-term	Temporary	Medium (beneficial)	Medium (beneficial)	The drought option would deliver up to 12.5 MI/d helping to maintain essential public water supplies during drought conditions, and therefore help maintain public health and well-being.	None	Moderate beneficial
Population and human health	2.2 To protect and enhance opportunities for formal and informal recreation.	Small	Moderate	Short-term	Temporary	Medium (adverse)	Medium (adverse)	There is an angling club and casual angling present on the impacted reaches. The impact on the club and some of the casual angling activities would range from minor to moderate. There are a number of other recreational activities in proximity to the impacted reaches, however, they would not be affected over the duration of the implementation of the drought option.	Moderate adverse	None
Population and human health	2.3 To promote a sustainable economy and thriving communities with good access to the services they need.	Small	High	Short-term	Temporary	Medium (beneficial)	Medium (beneficial)	The option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity.	None	Moderate beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	No impacts on material assets are anticipated. The option involves modifications to compensation flow only and no changes to energy use, generated waste or sustainable designs are envisaged. The option will make use of existing infrastructure.	None	Minor beneficial

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.1 To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies.	Small	Moderate	Short-term	Temporary	Medium (adverse)	Medium (adverse)	The risk of water quality deteriorating from implementation of the drought option is would be in the rural Alcomden Water and Hebden Water and moderate in the more urbanised Reaches 3 and 4, due to consented discharges.	Moderate adverse	None
Water	4.2 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	Small	Moderate	Short-term	Temporary	Major (adverse)	Medium (adverse)	The drought option would lead to a major reduction in low flows, with an associated reduction in wetted width and depth over a 14.8 km stretch of Alcomden Water, Hebden Water and the River Calder. There would be a moderate impact over a further 7.5 km of the River Calder. However, impacts on habitats and navigation would be short-term and restricted to the low regimes of the water courses.	Major adverse	None
Water	4.3 To ensure appropriate and sustainable management of water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	Small	High	Short-term	Temporary	Medium (beneficial)	Medium (beneficial)	The drought option will be accompanied by water conservation campaigns to promote efficient use of water to protect the environment and safeguard supplies. Water availability is at less than 30% in the zone of influence of the drought option.	None	Moderate beneficial
Soil, geology and land use	5.1 To protect and enhance the quality and quantity of soils and to protect and enhance geodiversity.	N/A	N/A	N/A	N/A	N/A	N/A	There are no land use changes associated with reduced compensation flow. It is anticipated that there will be no impacts on geologically sensitive sites.	None	None
Air and Climate	6.1 To maintain and improve air quality.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option involves a reduction in compensation flow with no change in existing abstraction volumes and would therefore not result in any increases in emissions to atmosphere.	None	None
Air and climate	6.2 To reduce greenhouse gas emissions.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option would not be associated with an increase in energy consumption, therefore, no changes to greenhouse gas emissions are envisaged.	None	None
Air and climate	6.3 To consider the need for adaptive measures for climate change.	Small	High	Short-term	Temporary	Medium (beneficial)	Medium (beneficial)	Drought options are a key component of Yorkshire Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought conditions which may become more prevalent due to climate change.	None	Moderate beneficial

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	N/A	N/A	N/A	N/A	N/A	N/A	The bridge over Hebden Water Scheduled Ancient Monument would not be impacted by the flow reductions over the duration of the implementation of the drought option.	None	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	Small	Moderate	Short-term	Temporary	Low (adverse)	Low (adverse)	A significant reduction in the water level of the impacted reaches would have a visual impact on the landscape setting of the Calder/Aire Link National Trail. However, the reduced water levels of the reaches would be short-term and temporary.	Negligible adverse	None

Drought Plan Option Name: Calder Area 3

Drought Plan Option Description: Reduced compensation flow release from Calder Area Reservoir 3 from 3.2-6.5 Ml/d to 2.2 Ml/d.

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over-abstraction on sensitive sites, habitats and species) and consider adaptability to climate change.	Small	Moderate	Short-term	Temporary	Medium (adverse)	Medium (adverse)	The reduced flows would result in a number of impacts on fish species including: the stranding of individuals or groups; deterioration or loss of habitats; fragmentation of habitats; increased mortality; and changes in morphology or behaviour. As a result, NERC and Notable species would be subject to the following adverse impacts: Minor impact for <i>Helophorus strigifrons</i> There is a moderate risk of deterioration of WFD status (invertebrates).	Moderate adverse	None
Biodiversity, flora and fauna	1.2 To avoid introducing or spreading INNS.	N/A	N/A	N/A	N/A	N/A	N/A	Invasive species utilise flow of the watercourse for dispersal. The implementation of the drought option would lead to a reduction in flow and is therefore not anticipated to increase the spread of aquatic invasive non-native species.	None	None
Population and human health	2.1 To protect and improve health and well-being and reduce inequalities	Small	High	Short-term	Temporary	Medium (beneficial)	Medium (beneficial)	The drought option would deliver up to 10.7 Ml/d helping to maintain essential public water supplies during drought conditions, and therefore help maintain public health and well-being.	None	Moderate beneficial
Population and human health	2.2 To protect and enhance opportunities for formal and informal recreation.	Small	Moderate	Short-term	Temporary	Moderate (adverse)	Moderate (adverse)	There is an angling club and casual angling present on the impacted reaches. The impact on the club and some of the casual angling activities would range from minor to moderate. There are a number of other recreational activities in proximity to the impacted reaches, however, they would not be affected over the duration of the implementation of the drought option.	Moderate adverse	None
Population and human health	2.3 To promote a sustainable economy and thriving communities with good access to the services they need.	Small	High	Short-term	Temporary	Medium (beneficial)	Medium (beneficial)	The option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity.	None	Moderate beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	No impacts on material assets are anticipated. The option involves modifications to compensation flow only and no changes to energy use, generated waste or sustainable designs are envisaged. The option will make use of existing infrastructure.	None	Minor beneficial

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.1 To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies.	Small	Moderate	Short-term	Temporary	Medium (adverse)	Medium (adverse)	The risk of water quality deteriorating from implementation of the drought option would be low for both dissolved oxygen and total ammonia in the rural upper reaches and moderate in the more urbanised reaches, due to the presence of consented discharges.	Moderate adverse	None
Water	4.2 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	Small	Moderate	Short-term	Temporary	Major (adverse)	Medium (adverse)	The drought option would lead to a major reduction in low flows, with an associated reduction in wetted width and depth over a 15.6 km stretch of Graining Water, Hebden Water and the River Calder. There would be a moderate impact over a further 6.5 km of the River Calder. However, impacts on habitats and navigation would be short-term and restricted to the low regimes of the water courses.	Major adverse	None
Water	4.3 To ensure appropriate and sustainable management of water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option will be accompanied by water conservation campaigns to promote efficient use of water to protect the environment and safeguard supplies. Water availability is at least 70% in the zone of influence of the drought option.	None	Minor beneficial
Soil, geology and land use	5.1 To protect and enhance the quality and quantity of soils and to protect and enhance geodiversity.	N/A	N/A	N/A	N/A	N/A	N/A	There are no land use changes associated with reduced compensation flow. It is anticipated that there will be no impacts on geologically sensitive sites.	None	None
Air and Climate	6.1 To maintain and improve air quality.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option involves a reduction in compensation flow with no change in existing abstraction volumes and would therefore not result in any increases in emissions to atmosphere.	None	None
Air and climate	6.2 To reduce greenhouse gas emissions.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option would not be associated with an increase in energy consumption, therefore, no changes to greenhouse gas emissions are envisaged.	None	None
Air and climate	6.3 To consider the need for adaptive measures for climate change.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	Drought options are a key component of Yorkshire Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought conditions which may become more prevalent due to climate change.	None	Minor beneficial

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	N/A	N/A	N/A	N/A	N/A	N/A	The bridge over Hebden Water Scheduled Ancient Monument would not be impacted by the flow reductions over the duration of the implementation of the drought option.	None	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	Small	Moderate	Short-term	Temporary	Low (adverse)	Low (adverse)	A significant reduction in the water level of the impacted reaches would have a negligible visual impact on the landscape setting of the Calder/Aire Link National Trail. However, the reduced water levels of the reaches would be short-term and temporary.	Negligible adverse	None

Drought Plan Option Name: Calder Area 4

Drought Plan Option Description: Reduced compensation flow release from Calder Area Reservoir 4 from 3.4 MI/d to 1.1 MI/d.

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over-abstraction on sensitive sites, habitats and species) and consider adaptability to climate change.	Small	Moderate	Short-term	Temporary	Medium (adverse)	Medium (adverse)	The reduced flows would result in a number of impacts on fish species including: the stranding of individuals or groups; deterioration or loss of habitats; fragmentation of habitats; increased mortality; and changes in morphology or behaviour. As a result, NERC and Notable species would be subject to the following adverse impacts: Moderate impact for brown trout, bullhead, otter and water vole. There is a moderate risk of deterioration of WFD status (invertebrates and fish).	Moderate adverse	None
Biodiversity, flora and fauna	1.2 To avoid introducing or spreading INNS.	N/A	N/A	N/A	N/A	N/A	N/A	Invasive species utilise flow of the watercourse for dispersal. The implementation of the drought option would lead to a reduction in flow and is therefore not anticipated to increase the spread of aquatic invasive non-native species.	None	None
Population and human health	2.1 To protect and improve health and well-being and reduce inequalities	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option would deliver up to 2.3 MI/d helping to maintain essential public water supplies during drought conditions, and therefore help maintain public health and well-being.	None	Minor beneficial
Population and human health	2.2 To protect and enhance opportunities for formal and informal recreation.	Small	Moderate	Short-term	Temporary	Medium (adverse)	Low (adverse)	There is casual angling present on Hebble Brook. The reduced flows would have a minor adverse effect on the angling quality of the reach.	Minor adverse	None
Population and human health	2.3 To promote a sustainable economy and thriving communities with good access to the services they need.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity.	None	Minor beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	No impacts on material assets are anticipated. The option involves modifications to compensation flow only and no changes to energy use, generated waste or sustainable designs are envisaged. The option will make use of existing infrastructure.	None	Minor beneficial

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.1 To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies.	Small	Moderate	Short-term	Temporary	Low (adverse)	Medium (adverse)	The risk of water quality deterioration below what supports good WFD status for fish and invertebrates is low for dissolved oxygen and total ammonia. There are no water quality pressures present on the reach.	Minor adverse	None
Water	4.2 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	Small	Moderate	Short-term	Temporary	Major (adverse)	Medium (adverse)	The drought option would lead to a major reduction in low flows, with an associated reduction in wetted width and depth over a 11.9 km stretch of Hebble Brook. However, impacts on habitats and navigation would be short-term and restricted to the low regimes of the water courses.	Major adverse	None
Water	4.3 To ensure appropriate and sustainable management of water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option will be accompanied by water conservation campaigns to promote efficient use of water to protect the environment and safeguard supplies. Water availability is at least 70% in the zone of influence of the drought option.	None	Minor beneficial
Soil, geology and land use	5.1 To protect and enhance the quality and quantity of soils and to protect and enhance geodiversity.	N/A	N/A	N/A	N/A	N/A	N/A	There are no land use changes associated with reduced compensation flow. It is anticipated that there will be no impacts on geologically sensitive sites.	None	None
Air and Climate	6.1 To maintain and improve air quality.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option involves a reduction in compensation flow with no change in existing abstraction volumes and would therefore not result in any increases in emissions to atmosphere.	None	None
Air and climate	6.2 To reduce greenhouse gas emissions.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option would not be associated with an increase in energy consumption, therefore, no changes to greenhouse gas emissions are envisaged.	None	None
Air and climate	6.3 To consider the need for adaptive measures for climate change.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	Drought options are a key component of Yorkshire Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought conditions which may become more prevalent due to climate change.	None	Minor beneficial

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	N/A	N/A	N/A	N/A	N/A	N/A	The nearby Scheduled Ancient Monuments are not water-dependent and would not be impacted by the drought option.	None	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	Small	Moderate	Short-term	Temporary	Low (adverse)	Medium (adverse)	A significant reduction in the water level of the impacted reaches would have a visual impact on the landscape setting of the Calderdale Way National Trail. However, the reduced water levels of the reaches would be short-term and temporary.	Minor adverse	None

Drought Plan Option Name: Calder Area 5

Drought Plan Option Description: Reduced compensation flow release from Calder Area Reservoir 5 from 1.3 MI/d to 0.44 MI/d.

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over-abstraction on sensitive sites, habitats and species) and consider adaptability to climate change.	Small	Moderate	Short-term	Temporary	Medium (adverse)	Medium (adverse)	The reduced flows would result in a number of impacts on fish species including: the stranding of individuals or groups; deterioration or loss of habitats; fragmentation of habitats; increased mortality; and changes in morphology or behaviour. As a result, NERC and Notable species would be subject to the following adverse impacts: Moderate impact for brown trout. There is a moderate risk of deterioration of WFD status (invertebrates and fish).	Moderate adverse	None
Biodiversity, flora and fauna	1.2 To avoid introducing or spreading INNS.	N/A	N/A	N/A	N/A	N/A	N/A	Invasive species utilise flow of the watercourse for dispersal. The implementation of the drought option would lead to a reduction in flow and is therefore not anticipated to increase the spread of aquatic invasive non-native species.	None	None
Population and human health	2.1 To protect and improve health and well-being and reduce inequalities	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option would deliver up to 0.9 MI/d helping to maintain essential public water supplies during drought conditions, and therefore help maintain public health and well-being.	None	Minor beneficial
Population and human health	2.2 To protect and enhance opportunities for formal and informal recreation.	Small	Moderate	Short-term	Temporary	Low (adverse)	Medium (adverse)	There is casual angling present on Walsden Water. The reduced flows would have a minor adverse effect on the angling quality of the reach.	Minor adverse	None
Population and human health	2.3 To promote a sustainable economy and thriving communities with good access to the services they need.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity.	None	Minor beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	No impacts on material assets are anticipated. The option involves modifications to compensation flow only and no changes to energy use, generated waste or sustainable designs are envisaged. The option will make use of existing infrastructure.	None	Minor beneficial

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.1 To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies.	Small	Moderate	Short-term	Temporary	Low (adverse)	Medium (adverse)	The risk of water quality deteriorating from implementation of the drought option is uncertain, assumed low in the rural Reaches 1 and 2 and moderate in the urbanised Reach 3.. There are no significant water quality pressures.	Minor adverse	None
Water	4.2 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	Small	Moderate	Short-term	Temporary	Major (adverse)	Medium (adverse)	The drought option would lead to a major reduction in low flows, with an associated reduction in wetted width and depth over a 4 km stretch of Gorpley Clough, Midgeleden Brook and Walsden Brook. There would be a minor impact over a further 6.5 km of the River Calder. However, impacts on habitats and navigation would be short-term and restricted to the low regimes of the water courses.	Major adverse	None
Water	4.3 To ensure appropriate and sustainable management of water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option will be accompanied by water conservation campaigns to promote efficient use of water to protect the environment and safeguard supplies. Water availability is at least 70% in the zone of influence of the drought option.	None	Minor beneficial
Soil, geology and land use	5.1 To protect and enhance the quality and quantity of soils and to protect and enhance geodiversity.	N/A	N/A	N/A	N/A	N/A	N/A	There are no land use changes associated with reduced compensation flow. It is anticipated that there will be no impacts on geologically sensitive sites.	None	None
Air and Climate	6.1 To maintain and improve air quality.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option involves a reduction in compensation flow with no change in existing abstraction volumes and would therefore not result in any increases in emissions to atmosphere.	None	None
Air and climate	6.2 To reduce greenhouse gas emissions.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option would not be associated with an increase in energy consumption, therefore, no changes to greenhouse gas emissions are envisaged.	None	None
Air and climate	6.3 To consider the need for adaptive measures for climate change.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	Drought options are a key component of Yorkshire Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought conditions which may become more prevalent due to climate change.	None	Minor beneficial

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	N/A	N/A	N/A	N/A	N/A	N/A	Nearby ancient monuments are not water-dependent and would not be impacted by the drought option.	None	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	Small	Moderate	Short-term	Temporary	Low (adverse)	Medium (adverse)	A significant reduction in the water level of the impacted reaches would have a visual impact on the landscape setting of the Calderdale Way National Trail. However, the reduced water levels of the reaches would be short-term and temporary so the impact would only be minor.	Minor adverse	None

Drought Plan Option Name: Calder Area 6

Drought Plan Option Description: Reduced compensation flow release from Calder Area Reservoir 6 from 3 MI/d to 1 MI/d.

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over-abstraction on sensitive sites, habitats and species) and consider adaptability to climate change.	Small	Moderate	Short-term	Temporary	Medium (adverse)	Medium (adverse)	The reduced flows would result in a number of impacts on fish species including: the stranding of individuals or groups; deterioration or loss of habitats; fragmentation of habitats; increased mortality; and changes in morphology or behaviour. As a result, NERC and Notable species would be subject to the following adverse impacts: Moderate impact for brown trout, otter and white-clawed crayfish. There is a moderate risk of deterioration of WFD status (invertebrates).	Moderate adverse	None
Biodiversity, flora and fauna	1.2 To avoid introducing or spreading INNS.	N/A	N/A	N/A	N/A	N/A	N/A	Invasive species utilise flow of the watercourse for dispersal. The implementation of the drought option would lead to a reduction in flow and is therefore not anticipated to increase the spread of aquatic invasive non-native species.	None	None
Population and human health	2.1 To protect and improve health and well-being and reduce inequalities	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option would deliver up to 2 MI/d helping to maintain essential public water supplies during drought conditions, and therefore help maintain public health and well-being.	None	Minor beneficial
Population and human health	2.2 To protect and enhance opportunities for formal and informal recreation.	Small	Moderate	Short-term	Temporary	Medium (adverse)	Low (adverse)	There is casual angling present on the impacted reaches. The reduced flows would have a minor adverse effect on the angling quality of the reach.	Minor adverse	None
Population and human health	2.3 To promote a sustainable economy and thriving communities with good access to the services they need.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity.	None	Minor beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	No impacts on material assets are anticipated. The option involves modifications to compensation flow only and no changes to energy use, generated waste or sustainable designs are envisaged. The option will make use of existing infrastructure.	None	Minor beneficial
Water	4.1 To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies.	Small	Low	Short-term	Temporary	Low (adverse)	Medium (adverse)	Water quality in Luddenden Brook described as typically supporting good WFD status for fish and invertebrates without the drought option. Few water quality data are available for days of lower reservoir outflow and an assessment of the risk of water quality deteriorating from implementation of the drought option is uncertain, assumed low in this rural reach.	Minor adverse	None

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.2 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	Small	Moderate	Short-term	Temporary	Major (adverse)	Medium (adverse)	The drought option would lead to a major reduction in low flows, with an associated reduction in wetted width and depth over a 9.3 km stretch of Luddenden Brook. However, impacts on habitats and navigation would be short-term and restricted to the low regimes of the water courses.	Major adverse	None
Water	4.3 To ensure appropriate and sustainable management of water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option will be accompanied by water conservation campaigns to promote efficient use of water to protect the environment and safeguard supplies. Water availability is at least 70% in the zone of influence of the drought option.	None	Minor beneficial
Soil, geology and land use	5.1 To protect and enhance the quality and quantity of soils and to protect and enhance geodiversity.	N/A	N/A	N/A	N/A	N/A	N/A	There are no land use changes associated with reduced compensation flow. It is anticipated that there will be no impacts on geologically sensitive sites.	None	None
Air and Climate	6.1 To maintain and improve air quality.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option involves a reduction in compensation flow with no change in existing abstraction volumes and would therefore not result in any increases in emissions to atmosphere.	None	None
Air and climate	6.2 To reduce greenhouse gas emissions.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option would not be associated with an increase in energy consumption, therefore, no changes to greenhouse gas emissions are envisaged.	None	None
Air and climate	6.3 To consider the need for adaptive measures for climate change.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	Drought options are a key component of Yorkshire Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought conditions which may become more prevalent due to climate change.	None	Minor beneficial
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	N/A	N/A	N/A	N/A	N/A	N/A	There are no heritage assets in proximity to the impacted reaches of the drought option.	None	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	Small	Moderate	Short-term	Temporary	Low (adverse)	Medium (adverse)	A significant reduction in the water level of the impacted reaches would have a visual impact on the landscape setting of the Calderdale Way National Trail. However, the reduced water levels of the reaches would be short-term and temporary so the impact would only be minor.	Minor adverse	None

Drought Plan Option Name: Calder Area 7

Drought Plan Option Description: Reduced compensation flow release from Calder Area Reservoir 7 from 3.2-10.6 MI/d to 2.2 MI/d.

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over-abstraction on sensitive sites, habitats and species) and consider adaptability to climate change.	Small	Moderate	Short-term	Temporary	Medium (adverse)	Medium (adverse)	The reduced flows would result in a number of impacts on fish species including: the stranding of individuals or groups; deterioration or loss of habitats; fragmentation of habitats; increased mortality; and changes in morphology or behaviour. As a result, NERC and Notable species would be subject to the following adverse impacts: Moderate impact for brown trout, bullhead and white-clawed crayfish There is a moderate risk of deterioration of WFD status (invertebrates and fish).	Moderate adverse	None
Biodiversity, flora and fauna	1.2 To avoid introducing or spreading INNS.	N/A	N/A	N/A	N/A	N/A	N/A	Invasive species utilise flow of the watercourse for dispersal. The implementation of the drought option would lead to a reduction in flow and is therefore not anticipated to increase the spread of aquatic invasive non-native species.	None	None
Population and human health	2.1 To protect and improve health and well-being and reduce inequalities	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option would deliver up to 4.4 MI/d helping to maintain essential public water supplies during drought conditions, and therefore help maintain public health and well-being.	None	Minor beneficial
Population and human health	2.2 To protect and enhance opportunities for formal and informal recreation.	Small	Moderate	Short-term	Temporary	Low (adverse)	Medium (adverse)	There is casual angling present on the impacted reaches. The reduced flows would have a minor adverse effect on the angling quality of the reach.	Minor adverse	None
Population and human health	2.3 To promote a sustainable economy and thriving communities with good access to the services they need.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity.	None	Minor beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	No impacts on material assets are anticipated. The option involves modifications to compensation flow only and no changes to energy use, generated waste or sustainable designs are envisaged. The option will make use of existing infrastructure.	None	Minor beneficial

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.1 To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies.	Small	Moderate	Short-term	Temporary	Low (adverse)	Medium (adverse)	Water quality in Digley Brook (assumed) and River Holme (validated by data analysis) described as supporting good WFD status for fish and invertebrates without the drought option. Therefore, the risk of water quality deterioration upon the implementation of the drought option is assessed as low, except immediately downstream of consented discharges, where the risk is high.	Minor adverse	None
Water	4.2 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	Small	Moderate	Short-term	Temporary	Major (adverse)	Medium (adverse)	The drought option would lead to a major reduction in low flows, with an associated reduction in wetted width and depth over a 6.3 km stretch of Digley Brook and the River Holme. There would be a moderate impact over a further 9 km of the River Holme. However, impacts on habitats and navigation would be short-term and restricted to the low regimes of the water courses.	Major adverse	None
Water	4.3 To ensure appropriate and sustainable management of water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought permit will be accompanied by water conservation campaigns to promote efficient use of water to protect the environment and safeguard supplies. Water availability is less than 30% in the zone of influence of the drought option.	None	Minor beneficial
Soil, geology and land use	5.1 To protect and enhance the quality and quantity of soils and to protect and enhance geodiversity.	N/A	N/A	N/A	N/A	N/A	N/A	There are no land use changes associated with reduced compensation flow. It is anticipated that there will be no impacts on geologically sensitive sites.	None	None
Air and Climate	6.1 To maintain and improve air quality.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option involves a reduction in compensation flow with no change in existing abstraction volumes and would therefore not result in any increases in emissions to atmosphere.	None	None
Air and climate	6.2 To reduce greenhouse gas emissions.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option would not be associated with an increase in energy consumption, therefore, no changes to greenhouse gas emissions are envisaged.	None	None
Air and climate	6.3 To consider the need for adaptive measures for climate change.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	Drought options are a key component of Yorkshire Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought conditions which may become more prevalent due to climate change.	None	Minor beneficial

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	N/A	N/A	N/A	N/A	N/A	N/A	There are a number of nearby heritage assets but they are not water-dependent and would not be impacted by the drought option.	None	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	N/A	N/A	N/A	N/A	N/A	N/A	There are no designated landscapes in proximity to the impacted reaches of the drought option.	None	None

Drought Plan Option Name: Calder Area 8

Drought Plan Option Description: Reduced compensation flow release from Calder Area Reservoir 8 from 4.8-6.9 MI/d to 2.3 MI/d.

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over-abstraction on sensitive sites, habitats and species) and consider adaptability to climate change.	Small	Moderate	Short-term	Temporary	Medium (adverse)	Medium (adverse)	The reduced flows would result in a number of impacts on fish species including: the stranding of individuals or groups; deterioration or loss of habitats; fragmentation of habitats; increased mortality; and changes in morphology or behaviour. As a result, NERC and Notable species would be subject to the following adverse impacts: Moderate impact for brown trout, bullhead and white-clawed crayfish. There is a moderate risk of deterioration of WFD status (invertebrates and fish).	Moderate adverse	None
Biodiversity, flora and fauna	1.2 To avoid introducing or spreading INNS.	N/A	N/A	N/A	N/A	N/A	N/A	Invasive species utilise flow of the watercourse for dispersal. The implementation of the drought option would lead to a reduction in flow and is therefore not anticipated to increase the spread of aquatic invasive non-native species.	None	None
Population and human health	2.1 To protect and improve health and well-being and reduce inequalities	Small	High	Short-term	Temporary	Low (beneficial)	High (beneficial)	The drought option would deliver up to 4.6 MI/d helping to maintain essential public water supplies during drought conditions, and therefore help maintain public health and well-being.	None	Minor beneficial
Population and human health	2.2 To protect and enhance opportunities for formal and informal recreation.	Small	Moderate	Short-term	Temporary	Low (adverse)	Medium (adverse)	There is casual angling present on the impacted reaches. However, flows during a drought will be low such that further reduction in flows would only lead to a minor reduction in the angling quality of the reach. The caravan site would not be impacted over the duration of the implementation of the drought option.	Minor adverse	None
Population and human health	2.3 To promote a sustainable economy and thriving communities with good access to the services they need.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity.	None	Minor beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	No impacts on material assets are anticipated. The option involves modifications to compensation flow only and no changes to energy use, generated waste or sustainable designs are envisaged. The option will make use of existing infrastructure.	None	Minor beneficial

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.1 To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies.	Small	Moderate	Short-term	Temporary	Medium (adverse)	Medium (adverse)	Water quality in the River Holme is described as supporting good WFD status for fish and invertebrates without the drought option. Therefore, the risk of water quality deterioration upon the implementation of the drought option would be low, except immediately downstream of consented discharges, where the risk is high.	Moderate adverse	None
Water	4.2 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	Small	Moderate	Short-term	Temporary	Major (adverse)	Medium (adverse)	The drought option would lead to a major reduction in low flows, with an associated reduction in wetted width and depth over a 6.3 km of the River Holme. There would be a moderate impact over a further 9 km of the River Holme. However, impacts on habitats and navigation would be short-term and restricted to the low regimes of the water courses.	Major adverse	None
Water	4.3 To ensure appropriate and sustainable management of water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought permit will be accompanied by water conservation campaigns to promote efficient use of water to protect the environment and safeguard supplies. Water availability is at least 70% in the zone of influence of the drought option.	None	Minor beneficial
Soil, geology and land use	5.1 To protect and enhance the quality and quantity of soils and to protect and enhance geodiversity.	N/A	N/A	N/A	N/A	N/A	N/A	There are no land use changes associated with reduced compensation flow. It is anticipated that there will be no impacts on geologically sensitive sites.	None	None
Air and Climate	6.1 To maintain and improve air quality.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option involves a reduction in compensation flow with no change in existing abstraction volumes and would therefore not result in any increases in emissions to atmosphere.	None	None
Air and climate	6.2 To reduce greenhouse gas emissions.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option would not be associated with an increase in energy consumption, therefore, no changes to greenhouse gas emissions are envisaged.	None	None
Air and climate	6.3 To consider the need for adaptive measures for climate change.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	Drought options are a key component of Yorkshire Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought conditions which may become more prevalent due to climate change.	None	Minor beneficial

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	N/A	N/A	N/A	N/A	N/A	N/A	The Cairnfield in Hagg Wood Scheduled Ancient Monument is not water-dependent and would not be impacted by the drought option.	None	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	N/A	N/A	N/A	N/A	N/A	N/A	There are no landscape designations in proximity to the impacted reaches of the drought option.	None	None

Drought Plan Option Name: Calder Area 9

Drought Plan Option Description: Reduced compensation flow release from Calder Area Reservoir 9 from 2.4 MI/d to 1.3 MI/d.

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over-abstraction on sensitive sites, habitats and species) and consider adaptability to climate change.	Small	Moderate	Short-term	Temporary	Medium (adverse)	Medium (adverse)	The reduced flows would result in a number of impacts on fish species including: the stranding of individuals or groups; deterioration or loss of habitats; fragmentation of habitats; increased mortality; and changes in morphology or behaviour. As a result, NERC and Notable species would be subject to the following adverse impacts: Moderate impact for brown trout and white-clawed crayfish. There is a moderate risk of deterioration of WFD status (invertebrates and fish).	Moderate adverse	None
Biodiversity, flora and fauna	1.2 To avoid introducing or spreading INNS.	N/A	N/A	N/A	N/A	N/A	N/A	Invasive species utilise flow of the watercourse for dispersal. The implementation of the drought option would lead to a reduction in flow and is therefore not anticipated to increase the spread of aquatic invasive non-native species.	None	None
Population and human health	2.1 To protect and improve health and well-being and reduce inequalities	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option would deliver up to 2.3 MI/d helping to maintain essential public water supplies during drought conditions, and therefore help maintain public health and well-being.	None	Minor beneficial
Population and human health	2.2 To protect and enhance opportunities for formal and informal recreation.	Small	Moderate	Short-term	Temporary	Low (adverse)	Low (adverse)	There is casual angling present on the impacted reaches. However, flows during a drought will be low such that further reduction in flows would not be likely to further reduce the angling quality of the reach.	Negligible adverse	None
Population and human health	2.3 To promote a sustainable economy and thriving communities with good access to the services they need.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity.	None	Minor beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	No impacts on material assets are anticipated. The option involves modifications to compensation flow only and no changes to energy use, generated waste or sustainable designs are envisaged. The option will make use of existing infrastructure.	None	Minor beneficial

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.1 To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies.	Small	Moderate	Short-term	Temporary	Low (adverse)	Medium (adverse)	Water quality in the River Ribble is described as supporting high WFD status for fish and invertebrates without the drought option. Water quality throughout the study area would be at low risk of deteriorating from the implementation of the drought option.	Minor adverse	None
Water	4.2 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	Small	Moderate	Short-term	Temporary	Major (adverse)	Medium (adverse)	The drought option would lead to a major reduction in low flows, with an associated reduction in wetted width and depth over a 3 km stretch of the River Ribble. There would be a moderate impact over a further 4.7 km of the River Holme. However, impacts on habitats and navigation would be short-term and restricted to the low regimes of the water courses.	Major adverse	None
Water	4.3 To ensure appropriate and sustainable management of water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option will be accompanied by water conservation campaigns to promote efficient use of water to protect the environment and safeguard supplies. Water availability is less than 30% in the zone of influence of the drought option.	None	Minor beneficial
Soil, geology and land use	5.1 To protect and enhance the quality and quantity of soils and to protect and enhance geodiversity.	N/A	N/A	N/A	N/A	N/A	N/A	There are no land use changes associated with reduced compensation flow. It is anticipated that there will be no impacts on geologically sensitive sites.	None	None
Air and Climate	6.1 To maintain and improve air quality.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option involves a reduction in compensation flow with no change in existing abstraction volumes and would therefore not result in any increases in emissions to atmosphere.	None	None
Air and climate	6.2 To reduce greenhouse gas emissions.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option would not be associated with an increase in energy consumption, therefore, no changes to greenhouse gas emissions are envisaged.	None	None
Air and climate	6.3 To consider the need for adaptive measures for climate change.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	Drought options are a key component of Yorkshire Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought conditions which may become more prevalent due to climate change.	None	Minor beneficial

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	N/A	N/A	N/A	N/A	N/A	N/A	Nearby ancient monuments are not water-dependent and would not be impacted by the drought option.	None	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	N/A	N/A	N/A	N/A	N/A	N/A	There are no landscape designations in proximity to the impacted reaches of the drought option.	None	None

Drought Plan Option Name: Calder Area 10

Drought Plan Option Description: Reduced compensation flow release from Calder Area Reservoir 10 from 18 MI/d to 6 MI/d.

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over-abstraction on sensitive sites, habitats and species) and consider adaptability to climate change.	Small	Moderate	Short-term	Temporary	Medium (adverse)	Medium (adverse)	The reduced flows would result in a number of impacts on fish species including: the stranding of individuals or groups; deterioration or loss of habitats; fragmentation of habitats; increased mortality; and changes in morphology or behaviour. As a result, NERC and Notable species would be subject to the following adverse impacts: Moderate impact for brown trout. Minor impacts regarding Grayling and Bullhead. There is a moderate risk of deterioration of WFD status (fish) and a minor risk to WFD status (invertebrates).	Moderate adverse	None
Biodiversity, flora and fauna	1.2 To avoid introducing or spreading INNS.	N/A	N/A	N/A	N/A	N/A	N/A	Invasive species utilise flow of the watercourse for dispersal. The implementation of the drought option would lead to a reduction in flow and is therefore not anticipated to increase the spread of aquatic invasive non-native species.	None	None
Population and human health	2.1 To protect and improve health and well-being and reduce inequalities	Small	High	Short-term	Temporary	Medium (beneficial)	Medium (beneficial)	The drought option would deliver up to 12 MI/d helping to maintain essential public water supplies during drought conditions, and therefore help maintain public health and well-being.	None	Moderate beneficial
Population and human health	2.2 To protect and enhance opportunities for formal and informal recreation.	Small	Moderate	Short-term	Temporary	Medium (adverse)	Medium (adverse)	There is an organised angling club present on the impacted reaches. Due to the major reduction in water flows and levels there would be a moderate adverse impact on the angling quality of the reach.	Moderate adverse	None
Population and human health	2.3 To promote a sustainable economy and thriving communities with good access to the services they need.	Small	High	Short-term	Temporary	Medium (beneficial)	Medium (beneficial)	The option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity.	None	Moderate beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	No impacts on material assets are anticipated. The option involves modifications to compensation flow only and no changes to energy use, generated waste or sustainable designs are envisaged. The option will make use of existing infrastructure.	None	Minor beneficial

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.1 To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies.	Small	Moderate	Short-term	Temporary	Medium (adverse)	Medium (adverse)	Water quality in the lower River Ryburn described as supporting good WFD status for fish and invertebrates without the drought option. Water quality throughout the study area would be at low risk of deteriorating, from the implementation of the drought option, except locally downstream of consented water quality pressures where the risk is high.	Moderate adverse	None
Water	4.2 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	Small	Moderate	Short-term	Temporary	Major (adverse)	Medium (adverse)	The drought option would lead to a major reduction in low flows, with an associated reduction in wetted width and depth over a 11.1 km stretch of the receiving watercourses. There would be a moderate impact over a further 4.6 km of the River Calder. However, impacts on habitats and navigation would be short-term and restricted to the low regimes of the water courses.	Major adverse	None
Water	4.3 To ensure appropriate and sustainable management of water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	Small	High	Short-term	Temporary	Medium (beneficial)	Medium (beneficial)	The drought option will be accompanied by water conservation campaigns to promote efficient use of water to protect the environment and safeguard supplies. Water availability is less than 30% in the zone of influence of the drought option.	None	Moderate beneficial
Soil, geology and land use	5.1 To protect and enhance the quality and quantity of soils and to protect and enhance geodiversity.	N/A	N/A	N/A	N/A	N/A	N/A	There are no land use changes associated with reduced compensation flow. It is anticipated that there will be no impacts on geologically sensitive sites.	None	None
Air and Climate	6.1 To maintain and improve air quality.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option involves a reduction in compensation flow with no change in existing abstraction volumes and would therefore not result in any increases in emissions to atmosphere.	None	None
Air and climate	6.2 To reduce greenhouse gas emissions.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option would not be associated with an increase in energy consumption, therefore, no changes to greenhouse gas emissions are envisaged.	None	None
Air and climate	6.3 To consider the need for adaptive measures for climate change.	Small	High	Short-term	Temporary	Medium (beneficial)	Medium (beneficial)	Drought options are a key component of Yorkshire Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought conditions which may become more prevalent due to climate change.	None	Moderate beneficial

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	N/A	N/A	N/A	N/A	N/A	N/A	There are a number of scheduled ancient monuments in proximity to the impacted reaches of the drought option, however, they are not water-dependent and would not be impacted by the drought option.	None	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	Small	Moderate	Short-term	Temporary	Low (adverse)	Medium (beneficial)	A significant reduction in the water level of the impacted reaches would have a visual impact on the landscape setting of the Calderdale Way National Trail. However, the reduced water levels of the reaches would be short-term and temporary so the impact would only be minor.	Minor adverse	None

Drought Plan Option Name: Calder Area 13

Drought Plan Option Description: Reduced compensation flow release from Calder Area Reservoir 13 from 6.8 MI/d to 2.3 MI/d.

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over-abstraction on sensitive sites, habitats and species) and consider adaptability to climate change.	Small	Moderate	Short-term	Temporary	Medium (adverse)	Medium (adverse)	The reduced flows would result in a number of impacts on fish species including: the stranding of individuals or groups; deterioration or loss of habitats; fragmentation of habitats; increased mortality; and changes in morphology or behaviour. As a result, NERC and Notable species would be subject to the following adverse impacts: Minor impact for bullhead, grayling and barbel Moderate impact for brown trout. There is a moderate risk of deterioration of WFD status (invertebrates and fish).	Moderate adverse	None
Biodiversity, flora and fauna	1.2 To avoid introducing or spreading INNS.	N/A	N/A	N/A	N/A	N/A	N/A	Invasive species utilise flow of the watercourse for dispersal. The implementation of the drought option would lead to a reduction in flow and is therefore not anticipated to increase the spread of aquatic invasive non-native species.	None	None
Population and human health	2.1 To protect and improve health and well-being and reduce inequalities	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option would deliver up to 4.5 MI/d helping to maintain essential public water supplies during drought conditions, and therefore help maintain public health and well-being.	None	Minor beneficial
Population and human health	2.2 To protect and enhance opportunities for formal and informal recreation.	Small	Moderate	Short-term	Temporary	Medium (adverse)	Low (adverse)	There is casual angling present on Cragg Brook. The major flow reduction would have a minor adverse impact on the angling quality of the brook.	Minor adverse	None
Population and human health	2.3 To promote a sustainable economy and thriving communities with good access to the services they need.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity.	None	Minor beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	No impacts on material assets are anticipated. The option involves modifications to compensation flow only and no changes to energy use, generated waste or sustainable designs are envisaged. The option will make use of existing infrastructure.	None	Minor beneficial

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.1 To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies.	Small	Moderate	Short-term	Temporary	Low (adverse)	Medium (adverse)	Water quality in Turvin Clough is described as supporting high WFD status for fish and invertebrates without the drought option. Water quality throughout the study area would be at low risk of deteriorating from the implementation of the drought option.	Minor adverse	None
Water	4.2 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	Small	Moderate	Short-term	Temporary	Major (adverse)	Medium (adverse)	The drought option would lead to a major reduction in low flows, with an associated reduction in wetted width and depth over a 6.3 km stretch of the Turvin Clough. There would be a moderate impact over a further 6 km. However, impacts on habitats and navigation would be short-term and restricted to the low regimes of the water courses.	Major adverse	None
Water	4.3 To ensure appropriate and sustainable management of water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option will be accompanied by water conservation campaigns to promote efficient use of water to protect the environment and safeguard supplies. Water availability is at least 70% in the zone of influence of the drought option.	None	Minor beneficial
Soil, geology and land use	5.1 To protect and enhance the quality and quantity of soils and to protect and enhance geodiversity.	N/A	N/A	N/A	N/A	N/A	N/A	There are no land use changes associated with reduced compensation flow. It is anticipated that there will be no impacts on geologically sensitive sites.	None	None
Air and Climate	6.1 To maintain and improve air quality.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option involves a reduction in compensation flow with no change in existing abstraction volumes and would therefore not result in any increases in emissions to atmosphere.	None	None
Air and climate	6.2 To reduce greenhouse gas emissions.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option would not be associated with an increase in energy consumption, therefore, no changes to greenhouse gas emissions are envisaged.	None	None
Air and climate	6.3 To consider the need for adaptive measures for climate change.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	Drought options are a key component of Yorkshire Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought conditions which may become more prevalent due to climate change.	None	Minor beneficial

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	N/A	N/A	N/A	N/A	N/A	N/A	Nearby ancient monuments are not water-dependent and would not be impacted by the drought option.	None	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	Small	Moderate	Short-term	Temporary	Low (adverse)	Medium (adverse)	A significant reduction in the water level of the impacted reaches would have a visual impact on the landscape setting of the Calderdale Way National Trail. However, the reduced water levels of the reaches would be short-term and temporary so the impact would only be minor.	Minor adverse	None

Drought Plan Option Name: Calder Area 14

Drought Plan Option Description: Reduced compensation flow release from Calder Area Reservoir 14 from 2.6 MI/d to 1.8 MI/d

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over-abstraction on sensitive sites, habitats and species) and consider adaptability to climate change.	Small	Moderate	Short-term	Temporary	Medium (adverse)	Medium (adverse)	The reduced flows would result in a number of impacts on fish species including: the stranding of individuals or groups; deterioration or loss of habitats; fragmentation of habitats; increased mortality; and changes in morphology or behaviour. As a result, NERC and Notable species would be subject to the following adverse impacts: Moderate impact for brown trout There is a moderate risk of deterioration of WFD status (fish) and moderate risk to WFD status (invertebrates).	Moderate adverse	None
Biodiversity, flora and fauna	1.2 To avoid introducing or spreading INNS.	N/A	N/A	N/A	N/A	N/A	N/A	Invasive species utilise flow of the watercourse for dispersal. The implementation of the drought option would lead to a reduction in flow and is therefore not anticipated to increase the spread of aquatic invasive non-native species.	None	None
Population and human health	2.1 To protect and improve health and well-being and reduce inequalities	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option would deliver up to 1.8 MI/d helping to maintain essential public water supplies during drought conditions, and therefore help maintain public health and well-being.	None	Minor beneficial
Population and human health	2.2 To protect and enhance opportunities for formal and informal recreation.	Small	Moderate	Short-term	Temporary	Medium (adverse)	Low (adverse)	There is casual angling present on Cragg Brook. The major flow reduction would have a minor adverse impact on the angling quality of the brook.	Minor adverse	None
Population and human health	2.3 To promote a sustainable economy and thriving communities with good access to the services they need.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity.	None	Minor beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	No impacts on material assets are anticipated. The option involves modifications to compensation flow only and no changes to energy use, generated waste or sustainable designs are envisaged. The option will make use of existing infrastructure.	None	Minor beneficial

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.1 To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies.	Small	Moderate	Short-term	Temporary	Low (adverse)	Medium (adverse)	Water quality in Withens Clough and Turvin Clough is described as supporting high WFD status for fish and invertebrates without the drought option. Water quality throughout the study area would be at low risk of deteriorating from the implementation of the drought option.	Minor adverse	None
Water	4.2 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	Small	Moderate	Short-term	Temporary	Medium (adverse)	Medium (adverse)	The drought option would lead to a major reduction in low flows, with an associated reduction in wetted width and depth over a 1.9 km stretch of Withens Clough. There would be a moderate impact over a further 3.5 km of Cragg Brook. However, impacts on habitats and navigation would be short-term and restricted to the low regimes of the water courses.	Moderate adverse	None
Water	4.3 To ensure appropriate and sustainable management of water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option will be accompanied by water conservation campaigns to promote efficient use of water to protect the environment and safeguard supplies. Water availability is at least 70% in the zone of influence of the drought option.	None	Minor beneficial
Soil, geology and land use	5.1 To protect and enhance the quality and quantity of soils and to protect and enhance geodiversity.	N/A	N/A	N/A	N/A	N/A	N/A	There are no land use changes associated with reduced compensation flow. It is anticipated that there will be no impacts on geologically sensitive sites.	None	None
Air and Climate	6.1 To maintain and improve air quality.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option involves a reduction in compensation flow with no change in existing abstraction volumes and would therefore not result in any increases in emissions to atmosphere.	None	None
Air and climate	6.2 To reduce greenhouse gas emissions.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option would not be associated with an increase in energy consumption, therefore, no changes to greenhouse gas emissions are envisaged.	None	None
Air and climate	6.3 To consider the need for adaptive measures for climate change.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	Drought options are a key component of Yorkshire Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought conditions which may become more prevalent due to climate change.	None	Minor beneficial
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	N/A	N/A	N/A	N/A	N/A	N/A	Nearby ancient monuments are not water-dependent and would not be impacted by the drought option.	None	None

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	Small	Moderate	Short-term	Temporary	Low (adverse)	Medium (adverse)	A significant reduction in the water level of the impacted reaches would have a visual impact on the landscape setting of the Calderdale Way National Trail. However, the reduced water levels of the reaches would be short-term and temporary so the impact would only be minor.	Minor adverse	None

Drought Plan Option Name: Calder Area 15

Drought Plan Option Description: Reduced compensation flow release from Calder Area Reservoir 15 from 3.5 MI/d to 1.2 MI/d.

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over-abstraction on sensitive sites, habitats and species) and consider adaptability to climate change.	Small	Moderate	Short-term	Temporary	Medium (adverse)	Medium (adverse)	The reduced flows would result in a number of impacts on fish species including: the stranding of individuals or groups; deterioration or loss of habitats; fragmentation of habitats; increased mortality; and changes in morphology or behaviour. As a result, NERC and Notable species would be subject to the following adverse impacts: Minor impact for bullhead Moderate impact for brown trout, European eel and otter. There is a moderate risk of deterioration of WFD status (invertebrates and fish).	Moderate adverse	None
Biodiversity, flora and fauna	1.2 To avoid introducing or spreading INNS.	N/A	N/A	N/A	N/A	N/A	N/A	Invasive species utilise flow of the watercourse for dispersal. The implementation of the drought option would lead to a reduction in flow and is therefore not anticipated to increase the spread of aquatic invasive non-native species.	None	None
Population and human health	2.1 To protect and improve health and well-being and reduce inequalities	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option would deliver up to 2.3 MI/d helping to maintain essential public water supplies during drought conditions, and therefore help maintain public health and well-being.	None	Minor beneficial
Population and human health	2.2 To protect and enhance opportunities for formal and informal recreation.	Small	Moderate	Short-term	Temporary	Medium (adverse)	Low (adverse)	There is casual angling present on Black Brook. The major reduction in water levels and flows would have a minor adverse impact on the angling quality of the reach.	Minor adverse	None
Population and human health	2.3 To promote a sustainable economy and thriving communities with good access to the services they need.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity.	None	Minor beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	No impacts on material assets are anticipated. The option involves modifications to compensation flow only and no changes to energy use, generated waste or sustainable designs are envisaged. The option will make use of existing infrastructure.	None	Minor beneficial

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.1 To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies.	Small	Low	Short-term	Temporary	Low (adverse)	Medium (adverse)	Water quality in Black Brook described as supporting high WFD status for fish and invertebrates without the drought option. Few water quality data are available for days of lower reservoir outflow and the risk of water quality deteriorating from implementation of the drought option is uncertain but assumed to be low in this rural reach.	Minor adverse	None
Water	4.2 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	Small	Moderate	Short-term	Temporary	Major (adverse)	Medium (adverse)	The drought option would lead to a major reduction in low flows, with an associated reduction in wetted width and depth over a 8.7 km stretch of Black Brook. However, impacts on habitats and navigation would be short-term and restricted to the low regimes of the water courses.	Major adverse	None
Water	4.3 To ensure appropriate and sustainable management of water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option will be accompanied by water conservation campaigns to promote efficient use of water to protect the environment and safeguard supplies. Water availability is at least 50% in the zone of influence of the drought option.	None	Minor beneficial
Soil, geology and land use	5.1 To protect and enhance the quality and quantity of soils and to protect and enhance geodiversity.	N/A	N/A	N/A	N/A	N/A	N/A	There are no land use changes associated with reduced compensation flow. It is anticipated that there will be no impacts on geologically sensitive sites.	None	None
Air and Climate	6.1 To maintain and improve air quality.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option involves a reduction in compensation flow with no change in existing abstraction volumes and would therefore not result in any increases in emissions to atmosphere.	None	None
Air and climate	6.2 To reduce greenhouse gas emissions.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option would not be associated with an increase in energy consumption, therefore, no changes to greenhouse gas emissions are envisaged.	None	None
Air and climate	6.3 To consider the need for adaptive measures for climate change.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	Drought options are a key component of Yorkshire Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought conditions which may become more prevalent due to climate change.	None	Minor beneficial

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	N/A	N/A	N/A	N/A	N/A	N/A	Nearby ancient monuments are not water-dependent and would not be impacted by the drought option.	None	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	Small	Moderate	Short-term	Temporary	Low (adverse)	Medium (adverse)	A significant reduction in the water level of the impacted reaches would have a visual impact on the landscape setting of the Calderdale National Trail. However, the reduced water levels of the reaches would be short-term and temporary.	Minor adverse	None

Drought Plan Option Name: Calder Area 16

Drought Plan Option Description: Reduced compensation flow release from Calder Area Reservoir 16 from 1.4 MI/d to 0.5 MI/d.

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over-abstraction on sensitive sites, habitats and species) and consider adaptability to climate change.	Small	Moderate	Short-term	Temporary	Medium (adverse)	Medium (adverse)	The reduced flows would result in a number of impacts on fish species including: the stranding of individuals or groups; deterioration or loss of habitats; fragmentation of habitats; increased mortality; and changes in morphology or behaviour. As a result, NERC and Notable species would be subject to the following adverse impacts: Moderate impact for water vole, otter and white-clawed crayfish There is a moderate risk of deterioration of WFD status (fish) and a minor risk to WFD status (invertebrates).	Moderate adverse	None
Biodiversity, flora and fauna	1.2 To avoid introducing or spreading INNS.	N/A	N/A	N/A	N/A	N/A	N/A	Invasive species utilise flow of the watercourse for dispersal. The implementation of the drought option would lead to a reduction in flow and is therefore not anticipated to increase the spread of aquatic invasive non-native species.	None	None
Population and human health	2.1 To protect and improve health and well-being and reduce inequalities	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option would deliver up to 0.9 MI/d helping to maintain essential public water supplies during drought conditions, and therefore help maintain public health and well-being.	None	Minor beneficial
Population and human health	2.2 To protect and enhance opportunities for formal and informal recreation.	N/A	N/A	N/A	N/A	N/A	N/A	There are no opportunities or threats to formal or informal recreation.	None	None
Population and human health	2.3 To promote a sustainable economy and thriving communities with good access to the services they need.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity.	None	Minor beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	No impacts on material assets are anticipated. The option involves modifications to compensation flow only and no changes to energy use, generated waste or sustainable designs are envisaged. The option will make use of existing infrastructure.	None	Minor beneficial

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.1 To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies.	Small	Moderate	Short-term	Temporary	Low (adverse)	Medium (adverse)	Water quality in Bradshaw Clough is described as supporting good WFD status for fish and invertebrates without the drought option. The risk of water quality deteriorating from implementation of the drought option is uncertain but assumed to be low in this rural location.	Minor adverse	None
Water	4.2 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	Small	Moderate	Short-term	Temporary	Major (adverse)	Medium (adverse)	The drought option would lead to a major reduction in low flows, with an associated reduction in wetted width and depth over a 2.6 km stretch of Bradshaw Clough. However, impacts on habitats and navigation would be short-term and restricted to the low regimes of the water courses.	Major adverse	None
Water	4.3 To ensure appropriate and sustainable management of water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option will be accompanied by water conservation campaigns to promote efficient use of water to protect the environment and safeguard supplies. Water availability is at least 70% in the zone of influence of the drought option.	None	Minor beneficial
Soil, geology and land use	5.1 To protect and enhance the quality and quantity of soils and to protect and enhance geodiversity.	N/A	N/A	N/A	N/A	N/A	N/A	There are no land use changes associated with reduced compensation flow. It is anticipated that there will be no impacts on geologically sensitive sites.	None	None
Air and Climate	6.1 To maintain and improve air quality.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option involves a reduction in compensation flow with no change in existing abstraction volumes and would therefore not result in any increases in emissions to atmosphere.	None	None
Air and climate	6.2 To reduce greenhouse gas emissions.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option would not be associated with an increase in energy consumption, therefore, no changes to greenhouse gas emissions are envisaged.	None	None
Air and climate	6.3 To consider the need for adaptive measures for climate change.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	Drought options are a key component of Yorkshire Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought conditions which may become more prevalent due to climate change.	None	Minor beneficial

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	N/A	N/A	N/A	N/A	N/A	N/A	Nearby ancient monuments are not water-dependent and would not be impacted by the drought option.	None	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	N/A	N/A	N/A	N/A	N/A	N/A	There are no landscape designations in proximity to the impacted reaches of the drought option.	None	None

Drought Plan Option Name: Calder Area Reservoir 17

Drought Plan Option Description: Reduced compensation flow release from Calder Area Reservoir 17 from 9 Ml/d to 1 Ml/d.

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over-abstraction on sensitive sites, habitats and species) and consider adaptability to climate change.	Small	Moderate	Short-term	Temporary	Medium (adverse)	Medium (adverse)	The reduced flows would result in a number of impacts on fish species including: the stranding of individuals or groups; deterioration or loss of habitats; fragmentation of habitats; increased mortality; and changes in morphology or behaviour. As a result, NERC and Notable species would be subject to the following adverse impacts: Minor impact for water vole. Moderate impact for white-clawed crayfish.	Moderate adverse	None
Biodiversity, flora and fauna	1.2 To avoid introducing or spreading INNS.	N/A	N/A	N/A	N/A	N/A	N/A	Invasive species utilise flow of the watercourse for dispersal. The implementation of the drought option would lead to a reduction in flow and is therefore not anticipated to increase the spread of aquatic invasive non-native species.	None	None
Population and human health	2.1 To protect and improve health and well-being and reduce inequalities	Small	High	Short-term	Temporary	Low (beneficial)	High (beneficial)	The drought option would deliver up to 7.8 Ml/d helping to maintain essential public water supplies during drought conditions, and therefore help maintain public health and well-being.	None	Minor beneficial
Population and human health	2.2 To protect and enhance opportunities for formal and informal recreation.	Small	Moderate	Short-term	Temporary	Medium (adverse)	Medium (adverse)	There is casual angling present on the Huddersfield Canal. The drought option would have a moderate adverse impact on the angling quality.	Moderate adverse	None
Population and human health	2.3 To promote a sustainable economy and thriving communities with good access to the services they need.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity.	None	Minor beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	No impacts on material assets are anticipated. The option involves modifications to compensation flow only and no changes to energy use, generated waste or sustainable designs are envisaged. The option will make use of existing infrastructure.	None	Minor beneficial

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.1 To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies.	Small	Moderate	Short-term	Temporary	Low (adverse)	Low (adverse)	Although the Huddersfield Narrow Canal is an artificial waterbody, water quality is generally very good. There are no WFD water quality standards for canals, as such, there would be no risk to the deterioration of WFD status.	Negligible adverse	None
Water	4.2 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	Small	Moderate	Short-term	Temporary	Major (adverse)	Medium (adverse)	The drought option would lead to a major reduction in low flows, with an associated reduction in wetted width and depth over a 50 km stretch of the Huddersfield Canal. The reduced water level would make the canal non-navigable for canal boats. However, this impact would be short-term and temporary.	Major adverse	None
Water	4.3 To ensure appropriate and sustainable management of water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option will be accompanied by water conservation campaigns to promote efficient use of water to protect the environment and safeguard supplies. Water availability is less than 30% in the zone of influence of the drought option.	None	Minor beneficial
Soil, geology and land use	5.1 To protect and enhance the quality and quantity of soils and to protect and enhance geodiversity.	N/A	N/A	N/A	N/A	N/A	N/A	There are no land use changes associated with reduced compensation flow. It is anticipated that there will be no impacts on geologically sensitive sites.	None	None
Air and Climate	6.1 To maintain and improve air quality.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option involves a reduction in compensation flow with no change in existing abstraction volumes and would therefore not result in any increases in emissions to atmosphere.	None	None
Air and climate	6.2 To reduce greenhouse gas emissions.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option would not be associated with an increase in energy consumption, therefore, no changes to greenhouse gas emissions are envisaged.	None	None
Air and climate	6.3 To consider the need for adaptive measures for climate change.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	Drought options are a key component of Yorkshire Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought conditions which may become more prevalent due to climate change.	None	Minor beneficial

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	N/A	N/A	N/A	N/A	N/A	N/A	One Scheduled Ancient Monument is not water-dependent and would not be impacted by the drought option.	None	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	Small	Moderate	Short-term	Temporary	Low (adverse)	Medium (adverse)	A significant reduction in the water level of the impacted reaches would have a visual impact on the landscape setting of the Kirklees Way and Pennine Way National Trails. However, the reduced water levels of the reaches would be short-term and temporary.	Minor adverse	None

Drought Plan Option Name: Calder Area Reservoir 18

Drought Plan Option Description: Reduced compensation flow release from Calder Area Reservoir 18 from 7.3 MI/d to 2.4 MI/d.

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over-abstraction on sensitive sites, habitats and species) and consider adaptability to climate change.	Small	Moderate	Short-term	Temporary	Medium (adverse)	Medium (adverse)	The reduced flows would result in a number of impacts on fish species including: the stranding of individuals or groups; deterioration or loss of habitats; fragmentation of habitats; increased mortality; and changes in morphology or behaviour. As a result, NERC and Notable species would be subject to the following adverse impacts: Minor impact for bullhead and grayling Moderate impact for brown trout and white-clawed crayfish There is a moderate risk of deterioration of WFD status (fish) and moderate risk to WFD status (invertebrates).	Moderate adverse	None
Biodiversity, flora and fauna	1.2 To avoid introducing or spreading INNS.	N/A	N/A	N/A	N/A	N/A	N/A	Invasive species utilise flow of the watercourse for dispersal. The implementation of the drought option would lead to a reduction in flow and is therefore not anticipated to increase the spread of aquatic invasive non-native species.	None	None
Population and human health	2.1 To protect and improve health and well-being and reduce inequalities	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option would deliver up to 4.9 MI/d helping to maintain essential public water supplies during drought conditions, and therefore help maintain public health and well-being.	None	Minor beneficial
Population and human health	2.2 To protect and enhance opportunities for formal and informal recreation.	Small	Moderate	Short-term	Temporary	Medium (adverse)	Medium (adverse)	There is an organised angling club present on the River Colne. The reduction in flows and water levels would have a moderate adverse impact on the angling club.	Moderate adverse	None
Population and human health	2.3 To promote a sustainable economy and thriving communities with good access to the services they need.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity.	None	Minor beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	No impacts on material assets are anticipated. The option involves modifications to compensation flow only and no changes to energy use, generated waste or sustainable designs are envisaged. The option will make use of existing infrastructure.	None	Minor beneficial

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.1 To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies.	Small	Moderate	Short-term	Temporary	Low (adverse)	Medium (adverse)	Water quality in the River Colne is described as supporting high WFD status for fish and invertebrates without the drought option. Few water quality data are available for days of lower flow and the risk of water quality deteriorating from the implementation of the drought option is uncertain but assumed to be low in the upper rural reaches.	Minor adverse	None
Water	4.2 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	Small	Moderate	Short-term	Temporary	Major (adverse)	Medium (adverse)	The drought option would lead to a major reduction in low flows, with an associated reduction in wetted width and depth over a 7.3 km stretch of the River Colne. There would be a moderate impact over a further 5.9 km. However, impacts on habitats and navigation would be short-term and restricted to the low regimes of the water courses.	Major adverse	None
Water	4.3 To ensure appropriate and sustainable management of water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option will be accompanied by water conservation campaigns to promote efficient use of water to protect the environment and safeguard supplies. Water availability is at least 70% in the zone of influence of the drought option.	None	Minor beneficial
Soil, geology and land use	5.1 To protect and enhance the quality and quantity of soils and to protect and enhance geodiversity.	N/A	N/A	N/A	N/A	N/A	N/A	There are no land use changes associated with reduced compensation flow. It is anticipated that there will be no impacts on geologically sensitive sites.	None	None
Air and Climate	6.1 To maintain and improve air quality.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option involves a reduction in compensation flow with no change in existing abstraction volumes and would therefore not result in any increases in emissions to atmosphere.	None	None
Air and climate	6.2 To reduce greenhouse gas emissions.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option would not be associated with an increase in energy consumption, therefore, no changes to greenhouse gas emissions are envisaged.	None	None
Air and climate	6.3 To consider the need for adaptive measures for climate change.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	Drought options are a key component of Yorkshire Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought conditions which may become more prevalent due to climate change.	None	Minor beneficial
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	N/A	N/A	N/A	N/A	N/A	N/A	There are no heritage assets in proximity to the impacted of the drought option.	None	None

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	Small	Moderate	Short-term	Temporary	Low (adverse)	Medium (adverse)	A significant reduction in the water level of the impacted reaches would have a visual impact on the landscape setting of the Kirklees Way National Trail. However, the reduced water levels of the reaches would be short-term and temporary.	Minor adverse	None

Drought Plan Option Name: Calder Area 19

Drought Plan Option Description: Reduced compensation flow release from Calder Area Reservoir 19 from 8 MI/d to 2.7 MI/d.

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over-abstraction on sensitive sites, habitats and species) and consider adaptability to climate change.	Small	Moderate	Short-term	Temporary	Medium (adverse)	Medium (adverse)	The reduced flows would result in a number of impacts on fish species including: the stranding of individuals or groups; deterioration or loss of habitats; fragmentation of habitats; increased mortality; and changes in morphology or behaviour. As a result, NERC and Notable species would be subject to the following adverse impacts: Minor impact for bullhead. Moderate impact for brown trout, grayling and white-clawed crayfish. There is a moderate risk of deterioration of WFD status (fish) and minor to WFD status (invertebrates).	Moderate adverse	None
Biodiversity, flora and fauna	1.2 To avoid introducing or spreading INNS.	N/A	N/A	N/A	N/A	N/A	N/A	Invasive species utilise flow of the watercourse for dispersal. The implementation of the drought option would lead to a reduction in flow and is therefore not anticipated to increase the spread of aquatic invasive non-native species.	None	None
Population and human health	2.1 To protect and improve health and well-being and reduce inequalities	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option would deliver up to 5.4 MI/d helping to maintain essential public water supplies during drought conditions, and therefore help maintain public health and well-being.	None	Minor beneficial
Population and human health	2.2 To protect and enhance opportunities for formal and informal recreation.	Small	Moderate	Short-term	Temporary	Medium (adverse)	Medium (adverse)	There is an organised angling club present on the River Colne. The reduction in flows and water levels would have a moderate adverse impact on the angling club.	Moderate adverse	None
Population and human health	2.3 To promote a sustainable economy and thriving communities with good access to the services they need.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity.	None	Minor beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	No impacts on material assets are anticipated. The option involves modifications to compensation flow only and no changes to energy use, generated waste or sustainable designs are envisaged. The option will make use of existing infrastructure.	None	Minor beneficial

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.1 To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies.	Small	Moderate	Short-term	Temporary	Low (adverse)	Medium	Water quality in the Wessenden Brook and River Colne is described as supporting good WFD status for fish and invertebrates without the drought option. Therefore, the water quality deterioration risk imposed by the implementation of the drought option would be low.	Minor adverse	None
Water	4.2 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	Small	Moderate	Short-term	Temporary	Major (adverse)	Medium (adverse)	The drought option would lead to a major reduction in low flows, with an associated reduction in wetted width and depth over a 7.8 km stretch of Wessenden Brook and the River Colne. There would be a moderate impact over a further 5.9 km of the River Colne. However, impacts on habitats and navigation would be short-term and restricted to the low flow regimes of the water courses.	Major adverse	None
Water	4.3 To ensure appropriate and sustainable management of water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought permit will be accompanied by water conservation campaigns to promote efficient use of water to protect the environment and safeguard supplies. Water availability is less than 30% in the zone of influence of the drought option.	None	Minor beneficial
Soil, geology and land use	5.1 To protect and enhance the quality and quantity of soils and to protect and enhance geodiversity.	N/A	N/A	N/A	N/A	N/A	N/A	There are no land use changes associated with reduced compensation flow. It is anticipated that there will be no impacts on geologically sensitive sites.	None	None
Air and Climate	6.1 To maintain and improve air quality.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option involves a reduction in compensation flow with no change in existing abstraction volumes and would therefore not result in any increases in emissions to atmosphere.	None	None
Air and climate	6.2 To reduce greenhouse gas emissions.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option would not be associated with an increase in energy consumption, therefore, no changes to greenhouse gas emissions are envisaged.	None	None
Air and climate	6.3 To consider the need for adaptive measures for climate change.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	Drought options are a key component of Yorkshire Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought conditions which may become more prevalent due to climate change.	None	Minor beneficial

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	N/A	N/A	N/A	N/A	N/A	N/A	There are no heritage assets in proximity to the impacted of the drought option.	None	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	Small	Moderate	Short-term	Temporary	Low (adverse)	Medium (adverse)	A significant reduction in the water level of the impacted reaches would have a visual impact on the landscape setting of the Kirklees Way National Trail. However, the reduced water levels of the reaches would be short-term and temporary.	Minor adverse	None

Drought Plan Option Name: Calder Area 20

Drought Plan Option Description: Reduced compensation flow release from Calder Area Reservoir 20 from 2.7 MI/d to 0.9 MI/d.

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over-abstraction on sensitive sites, habitats and species) and consider adaptability to climate change.	Small	Moderate	Short-term	Temporary	Medium (adverse)	Medium (adverse)	The reduced flows would result in a number of impacts on fish species including: the stranding of individuals or groups; deterioration or loss of habitats; fragmentation of habitats; increased mortality; and changes in morphology or behaviour. As a result, NERC and Notable species would be subject to the following adverse impacts: Minor impact for bullhead. Moderate impact for brown trout and otter. There is a moderate risk of deterioration of WFD status for fish, and a minor risk of WFD status deterioration for invertebrates.	Moderate adverse	None
Biodiversity, flora and fauna	1.2 To avoid introducing or spreading INNS.	N/A	N/A	N/A	N/A	N/A	N/A	Invasive species utilise flow of the watercourse for dispersal. The implementation of the drought option would lead to a reduction in flow and is therefore not anticipated to increase the spread of aquatic invasive non-native species.	None	None
Population and human health	2.1 To protect and improve health and well-being and reduce inequalities	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option would deliver up to 1.8 MI/d helping to maintain essential public water supplies during drought conditions, and therefore help maintain public health and well-being.	None	Minor beneficial
Population and human health	2.2 To protect and enhance opportunities for formal and informal recreation.	Small	Moderate	Short-term	Temporary	Low (adverse)	Medium (adverse)	There is casual angling present on the impacted reaches. The reduced flows would have a minor adverse impact on the angling quality of the reach.	Minor adverse	None
Population and human health	2.3 To promote a sustainable economy and thriving communities with good access to the services they need.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity.	None	Minor beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	No impacts on material assets are anticipated. The option involves modifications to compensation flow only and no changes to energy use, generated waste or sustainable designs are envisaged. The option will make use of existing infrastructure.	None	Minor beneficial

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.1 To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies.	Small	Moderate	Short-term	Temporary	Medium (adverse)	Medium (adverse)	Water quality in Brow Grains Dyke is described as supporting good WFD status for fish and invertebrates without the drought option. Water quality throughout the study area would be at low risk of deteriorating from the implementation of the drought option, except locally downstream of consented discharges which contribute to water quality pressures, where the risk is moderate.	Moderate adverse	None
Water	4.2 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	Small	Moderate	Short-term	Temporary	Major (adverse)	Medium (adverse)	The drought option would lead to a major reduction in low flows, with an associated reduction in wetted width and depth over a 7.8 km stretch of Blackmoorfoot Brow Grains Dyke. However, impacts on habitats and navigation would be short-term and restricted to the low regimes of the water courses.	Major adverse	None
Water	4.3 To ensure appropriate and sustainable management of water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option will be accompanied by water conservation campaigns to promote efficient use of water to protect the environment and safeguard supplies. Water availability is at least 70% in the zone of influence of the drought option.	None	Minor beneficial
Soil, geology and land use	5.1 To protect and enhance the quality and quantity of soils and to protect and enhance geodiversity.	N/A	N/A	N/A	N/A	N/A	N/A	There are no land use changes associated with reduced compensation flow. It is anticipated that there will be no impacts on geologically sensitive sites.	None	None
Air and Climate	6.1 To maintain and improve air quality.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option involves a reduction in compensation flow with no change in existing abstraction volumes and would therefore not result in any increases in emissions to atmosphere.	None	None
Air and climate	6.2 To reduce greenhouse gas emissions.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option would not be associated with an increase in energy consumption, therefore, no changes to greenhouse gas emissions are envisaged.	None	None
Air and climate	6.3 To consider the need for adaptive measures for climate change.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	Drought options are a key component of Yorkshire Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought conditions which may become more prevalent due to climate change.	None	Minor beneficial
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	N/A	N/A	N/A	N/A	N/A	N/A	There are a number of Scheduled Ancient Monuments in proximity to the impacted reaches, however, they are not water-dependent and would not be impacted by the drought option.	None	None

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	N/A	N/A	N/A	N/A	N/A	N/A	There are no designated landscapes in proximity to the impacted reaches of the drought option.	None	None

Drought Plan Option Name: Calder Area 21

Drought Plan Option Description: Reduced compensation flow release from Calder Area Reservoir 21 from 0.6 MI/d to 0.2 MI/d.

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over-abstraction on sensitive sites, habitats and species) and consider adaptability to climate change.	Small	Moderate	Short-term	Temporary	Medium (adverse)	Medium (adverse)	The reduced flows would result in a number of impacts on fish species including: the stranding of individuals or groups; deterioration or loss of habitats; fragmentation of habitats; increased mortality; and changes in morphology or behaviour. As a result, NERC and Notable species would be subject to the following adverse impacts: Negligible impact for otter Moderate impact for brown trout There is a moderate risk of deterioration of WFD status (fish) and minor risk to WFD status (invertebrates).	Moderate adverse	None
Biodiversity, flora and fauna	1.2 To avoid introducing or spreading INNS.	N/A	N/A	N/A	N/A	N/A	N/A	Invasive species utilise flow of the watercourse for dispersal. The implementation of the drought option would lead to a reduction in flow and is therefore not anticipated to increase the spread of aquatic invasive non-native species.	None	None
Population and human health	2.1 To protect and improve health and well-being and reduce inequalities	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option would deliver up to 0.4 MI/d helping to maintain essential public water supplies during drought conditions, and therefore help maintain public health and well-being.	None	Minor beneficial
Population and human health	2.2 To protect and enhance opportunities for formal and informal recreation.	N/A	N/A	N/A	N/A	N/A	N/A	There are no opportunities or threats for recreation associated with this drought option.	None	None
Population and human health	2.3 To promote a sustainable economy and thriving communities with good access to the services they need.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity.	None	Minor beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	No impacts on material assets are anticipated. The option involves modifications to compensation flow only and no changes to energy use, generated waste or sustainable designs are envisaged. The option will make use of existing infrastructure.	None	Minor beneficial

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.1 To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies.	Small	Moderate	Short-term	Temporary	Medium (adverse)	Medium (adverse)	Water quality in Hoyle House Clough is described as supporting good WFD status for fish and invertebrates without the drought option. The risk of water quality deteriorating from the implementation of the drought option is uncertain but assumed to be moderate in this urbanised location.	Moderate adverse	None
Water	4.2 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	Small	Moderate	Short-term	Temporary	Major (adverse)	Medium (adverse)	The drought option would lead to a major reduction in low flows, with an associated reduction in wetted width and depth over a 1.8 km stretch of Hoyle House Clough. However, impacts on habitats and navigation would be short-term and restricted to the low regimes of the water courses.	Major adverse	None
Water	4.3 To ensure appropriate and sustainable management of water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option will be accompanied by water conservation campaigns to promote efficient use of water to protect the environment and safeguard supplies. Water availability is at least 70% in the zone of influence of the drought option.	None	Minor beneficial
Soil, geology and land use	5.1 To protect and enhance the quality and quantity of soils and to protect and enhance geodiversity.	N/A	N/A	N/A	N/A	N/A	N/A	There are no land use changes associated with reduced compensation flow. It is anticipated that there will be no impacts on geologically sensitive sites.	None	None
Air and Climate	6.1 To maintain and improve air quality.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option involves a reduction in compensation flow with no change in existing abstraction volumes and would therefore not result in any increases in emissions to atmosphere.	None	None
Air and climate	6.2 To reduce greenhouse gas emissions.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option would not be associated with an increase in energy consumption, therefore, no changes to greenhouse gas emissions are envisaged.	None	None
Air and climate	6.3 To consider the need for adaptive measures for climate change.	Small	High	Short-term	Temporary	Low (beneficial)	Medium	Drought options are a key component of Yorkshire Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought conditions which may become more prevalent due to climate change.	None	Minor beneficial

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	N/A	N/A	N/A	N/A	N/A	N/A	There are no heritage in proximity to the impacted reaches of the drought option.	None	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	N/A	N/A	N/A	N/A	N/A	N/A	There are no designated landscapes in proximity to the impacted reaches of the drought option.	None	None

Drought Plan Option Name: Calder Area 22

Drought Plan Option Description: Reduced compensation flow release from Calder Area Reservoir 22 from 1.4 MI/d to 0.5 MI/d.

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over-abstraction on sensitive sites, habitats and species) and consider adaptability to climate change.	Small	Moderate	Short-term	Temporary	Medium (adverse)	Medium (adverse)	The reduced flows would result in a number of impacts on fish species including: the stranding of individuals or groups; deterioration or loss of habitats; fragmentation of habitats; increased mortality; and changes in morphology or behaviour. As a result, NERC and Notable species would be subject to the following adverse impacts: Moderate impact for brown trout and white-clawed crayfish. There is a moderate risk of deterioration of WFD status (fish) and a minor risk to WFD status (invertebrates).	Moderate adverse	None
Biodiversity, flora and fauna	1.2 To avoid introducing or spreading INNS.	N/A	N/A	N/A	N/A	N/A	N/A	Invasive species utilise flow of the watercourse for dispersal. The implementation of the drought option would lead to a reduction in flow and is therefore not anticipated to increase the spread of aquatic invasive non-native species.	None	None
Population and human health	2.1 To protect and improve health and well-being and reduce inequalities	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option would deliver up to 0.9 MI/d helping to maintain essential public water supplies during drought conditions, and therefore help maintain public health and well-being.	None	Minor beneficial
Population and human health	2.2 To protect and enhance opportunities for formal and informal recreation.	N/A	N/A	N/A	N/A	N/A	N/A	There is unlikely that any angling activities take place on the impacted reaches.	None	None
Population and human health	2.3 To promote a sustainable economy and thriving communities with good access to the services they need.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity.	None	Minor beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	No impacts on material assets are anticipated. The option involves modifications to compensation flow only and no changes to energy use, generated waste or sustainable designs are envisaged. The option will make use of existing infrastructure.	None	Minor beneficial

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.1 To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies.	Small	Moderate	Short-term	Temporary	Low (adverse)	Medium (adverse)	Water quality in Bradley Brook is described as supporting good WFD status for fish and invertebrates without the drought option. The risk of water quality deteriorating from the implementation of the drought option is uncertain but assumed to be low in this rural location, except locally downstream of consented water quality pressures.	Minor adverse	None
Water	4.2 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	Small	Moderate	Short-term	Temporary	Major (adverse)	Medium (adverse)	The drought option would lead to a major reduction in low flows, with an associated reduction in wetted width and depth over a 3 km stretch of Bradley Brook. However, impacts on habitats and navigation would be short-term and restricted to the low regimes of the water courses.	Major adverse	None
Water	4.3 To ensure appropriate and sustainable management of water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought permit will be accompanied by water conservation campaigns to promote efficient use of water to protect the environment and safeguard supplies. Water availability is at least 70% in the zone of influence of the drought option.	None	Minor beneficial
Soil, geology and land use	5.1 To protect and enhance the quality and quantity of soils and to protect and enhance geodiversity.	N/A	N/A	N/A	N/A	N/A	N/A	There are no land use changes associated with reduced compensation flow. It is anticipated that there will be no impacts on geologically sensitive sites.	None	None
Air and Climate	6.1 To maintain and improve air quality.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option involves a reduction in compensation flow with no change in existing abstraction volumes and would therefore not result in any increases in emissions to atmosphere.	None	None
Air and climate	6.2 To reduce greenhouse gas emissions.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option would not be associated with an increase in energy consumption, therefore, no changes to greenhouse gas emissions are envisaged.	None	None
Air and climate	6.3 To consider the need for adaptive measures for climate change.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	Drought options are a key component of Yorkshire Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought conditions which may become more prevalent due to climate change.	None	Minor beneficial

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	N/A	N/A	N/A	N/A	N/A	N/A	There are no heritage in proximity to the impacted reaches of the drought option.	None	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	N/A	N/A	N/A	N/A	N/A	N/A	There are no designated landscapes in proximity to the impacted reaches of the drought option.	None	None

Drought Plan Option Name: Calder Area 11

Drought Plan Option Description: Reduced compensation flow release from Calder Area Reservoir 11 from 3.4 MI/d to 2.27 MI/d.

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over-abstraction on sensitive sites, habitats and species) and consider adaptability to climate change.	Small	Moderate	Short-term	Temporary	Medium (adverse)	Medium (adverse)	The reduced flows would result in a number of impacts on fish species including: the stranding of individuals or groups; deterioration or loss of habitats; fragmentation of habitats; increased mortality; and changes in morphology or behaviour. As a result, NERC and Notable species would be subject to the following adverse impacts: Moderate impact for brown trout, otter, and grayling. Minor impact for Bullhead. There is a moderate risk of deterioration of WFD status (fish) and a minor to moderate risk to WFD status (invertebrates).	Moderate adverse	None
Biodiversity, flora and fauna	1.2 To avoid introducing or spreading INNS.	N/A	N/A	N/A	N/A	N/A	N/A	Invasive species utilise flow of the watercourse for dispersal. The implementation of the drought option would lead to a reduction in flow and is therefore not anticipated to increase the spread of aquatic invasive non-native species.	None	None
Population and human health	2.1 To protect and improve health and well-being and reduce inequalities	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option would deliver up to 2.3 MI/d helping to maintain essential public water supplies during drought conditions, and therefore help maintain public health and well-being.	None	Minor beneficial
Population and human health	2.2 To protect and enhance opportunities for formal and informal recreation.	Small	Moderate	Short-term	Temporary	Medium (adverse)	Medium (adverse)	There is an organised angling club present on the impacted reaches. Due to the major reduction in water flows and levels there would be a moderate adverse impact on the angling quality of the reach.	Moderate adverse	None
Population and human health	2.3 To promote a sustainable economy and thriving communities with good access to the services they need.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity.	None	Minor beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	No impacts on material assets are anticipated. The option involves modifications to compensation flow only and no changes to energy use, generated waste or sustainable designs are envisaged. The option will make use of existing infrastructure.	None	Minor beneficial

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.1 To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies.	Small	Moderate	Short-term	Temporary	Low (adverse)	Medium (adverse)	Water quality in the lower River Ryburn described as supporting good WFD status for fish and invertebrates without the drought option. Water quality throughout the study area would be at a low risk of deteriorating, from implementation of the drought option, except locally downstream of consented water quality pressures where the risk is high.	Minor adverse	None
Water	4.2 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	Small	Moderate	Short-term	Temporary	Major (adverse)	Medium (adverse)	The drought option would lead to a major reduction in low flows, with an associated reduction in wetted width and depth over a 3 km stretch of Booth Dean Clough. There would be a moderate impact over a further 6.3 km if the River Ryburn. However, impacts on habitats and navigation would be short-term and restricted to the low regimes of the water courses.	Major adverse	None
Water	4.3 To ensure appropriate and sustainable management of water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought permit will be accompanied by water conservation campaigns to promote efficient use of water to protect the environment and safeguard supplies. Water availability is less than 30% in the zone of influence of the drought option.	None	Minor beneficial
Soil, geology and land use	5.1 To protect and enhance the quality and quantity of soils and to protect and enhance geodiversity.	N/A	N/A	N/A	N/A	N/A	N/A	There are no land use changes associated with reduced compensation flow. It is anticipated that there will be no impacts on geologically sensitive sites.	None	None
Air and Climate	6.1 To maintain and improve air quality.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option involves a reduction in compensation flow with no change in existing abstraction volumes and would therefore not result in any increases in emissions to atmosphere.	None	None
Air and climate	6.2 To reduce greenhouse gas emissions.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option would not be associated with an increase in energy consumption, therefore, no changes to greenhouse gas emissions are envisaged.	None	None
Air and climate	6.3 To consider the need for adaptive measures for climate change.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (adverse)	Drought options are a key component of Yorkshire Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought conditions which may become more prevalent due to climate change.	None	Minor beneficial
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	N/A	N/A	N/A	N/A	N/A	N/A	One Scheduled Ancient Monument is not water-dependent and would not be impacted by the drought option.	None	None

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	Small	Moderate	Short-term	Temporary	Low (adverse)	Low (adverse)	A significant reduction in the water level of the impacted reaches would have a visual impact on the landscape setting of the Calderdale Way National Trail. However, the reduced water levels of the reaches would be short-term and temporary so the impact would only be minor.	Negligible adverse	None

Drought Plan Option Name: Calder Area Reservoir 12

Drought Plan Option Description: Reduced compensation flow release from Calder Area Reservoir 12 from 5.9 MI/d to 1.9 MI/d.

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over-abstraction on sensitive sites, habitats and species) and consider adaptability to climate change.	Small	Moderate	Short-term	Temporary	Medium (adverse)	Medium (adverse)	The reduced flows would result in a number of impacts on fish species including: the stranding of individuals or groups; deterioration or loss of habitats; fragmentation of habitats; increased mortality; and changes in morphology or behaviour. As a result, NERC and Notable species would be subject to the following adverse impacts: Moderate impact for brown trout and otter. Minor impact for bullhead and grayling. There is a moderate risk of deterioration of WFD status (fish) and a minor to moderate risk to WFD status (invertebrates).	Moderate adverse	None
Biodiversity, flora and fauna	1.2 To avoid introducing or spreading INNS.	N/A	N/A	N/A	N/A	N/A	N/A	Invasive species utilise flow of the watercourse for dispersal. The implementation of the drought option would lead to a reduction in flow and is therefore not anticipated to increase the spread of aquatic invasive non-native species.	None	None
Population and human health	2.1 To protect and improve health and well-being and reduce inequalities	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option would deliver up to 4 MI/d helping to maintain essential public water supplies during drought conditions, and therefore help maintain public health and well-being.	None	Minor beneficial
Population and human health	2.2 To protect and enhance opportunities for formal and informal recreation.	Small	Moderate	Short-term	Temporary	Medium (adverse)	Medium (adverse)	There is an organised angling club present on the impacted reaches. Due to the major reduction in water flows and levels there would be a moderate adverse impact on the angling quality of the reach.	Moderate adverse	None
Population and human health	2.3 To promote a sustainable economy and thriving communities with good access to the services they need.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity.	None	Minor beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	No impacts on material assets are anticipated. The option involves modifications to compensation flow only and no changes to energy use, generated waste or sustainable designs are envisaged. The option will make use of existing infrastructure.	None	Minor beneficial
Water	4.1 To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies.	Small	Moderate	Short-term	Temporary	Low (adverse)	Medium (adverse)	Water quality in the lower River Ryburn described as supporting good WFD status for fish and invertebrates without the drought option. Water quality throughout the study area would be at a low risk of deteriorating, from implementation of the drought option, except locally downstream of consented water quality pressures where the risk is high.	Minor adverse	None

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.2 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	Small	Moderate	Short-term	Temporary	Major (adverse)	Medium (adverse)	The drought option would lead to a major reduction in low flows, with an associated reduction in wetted width and depth over a 1.3 km stretch of Booth Dean Clough. There would be a moderate impact over a further 6.3 km of the River Ryburn. However, impacts on habitats and navigation would be short-term and restricted to the low regimes of the water courses.	Major adverse	None
Water	4.3 To ensure appropriate and sustainable management of water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option will be accompanied by water conservation campaigns to promote efficient use of water to protect the environment and safeguard supplies. Water availability is less than 30% in the zone of influence of the drought option.	None	Minor beneficial
Soil, geology and land use	5.1 To protect and enhance the quality and quantity of soils and to protect and enhance geodiversity.	N/A	N/A	N/A	N/A	N/A	N/A	There are no land use changes associated with reduced compensation flow. It is anticipated that there will be no impacts on geologically sensitive sites.	None	None
Air and Climate	6.1 To maintain and improve air quality.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option involves a reduction in compensation flow with no change in existing abstraction volumes and would therefore not result in any increases in emissions to atmosphere.	None	None
Air and climate	6.2 To reduce greenhouse gas emissions.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option would not be associated with an increase in energy consumption, therefore, no changes to greenhouse gas emissions are envisaged.	None	None
Air and climate	6.3 To consider the need for adaptive measures for climate change.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	Drought options are a key component of Yorkshire Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought conditions which may become more prevalent due to climate change.	None	Minor beneficial
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	N/A	N/A	N/A	N/A	N/A	N/A	Nearby ancient monuments are not water-dependent and would not be impacted by the drought option.	None	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	Small	Moderate	Short-term	Temporary	Low (adverse)	Low (adverse)	A significant reduction in the water level of the impacted reaches would have a visual impact on the landscape setting of the Calderdale Way National Trail. However, the reduced water levels of the reaches would be short-term and temporary so the impact would only be minor.	Negligible adverse	None

Drought Plan Option Name: North West Area 1

Drought Plan Option Description: A reduction in the North West Area 1 from 6-8 MI/d to 1.2-1.8 MI/d.

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over-abstraction on sensitive sites, habitats and species) and consider adaptability to climate change.	Small	Low	Short-term	Temporary	Medium (adverse)	Medium (adverse)	The reduced flows will result in a number of impacts, including: the stranding of individuals or groups; deterioration or loss of habitats; fragmentation of habitats; increased mortality; and changes in morphology or behaviour. The drought option is assessed as having a moderate adverse impact on White-clawed crayfish. There is a minor risk of deterioration of WFD status (invertebrates) and a moderate risk to WFD status (fish).	Moderate adverse	None
Biodiversity, flora and fauna	1.2 To avoid introducing or spreading INNS.	N/A	N/A	N/A	N/A	N/A	N/A	Invasive species utilise flow of the watercourse for dispersal. The implementation of the drought option will lead to a reduction in flow and is therefore not anticipated to increase the spread of aquatic invasive non-native species.	None	None
Population and human health	2.1 To protect and improve health and well-being and reduce inequalities.	Small	Moderate	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option will deliver up to 5.3 MI/d helping to maintain essential public water supplies during drought conditions, and therefore help maintain public health and well-being.	None	Minor beneficial
Population and human health	2.2 To protect and enhance opportunities for formal and informal recreation.	Small	Moderate	Short-term	Temporary	Medium (adverse)	Medium (adverse)	The drought option will have a moderate impact extensive non-club administered angling along the River Worth.	Moderate adverse	None
Population and human health	2.3 To promote a sustainable economy and thriving communities with good access to the services they need.	Small	Moderate	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity.	None	Minor beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	Small	Moderate	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	No impacts on material assets are anticipated. The option involves modifications to compensation flow only and no changes to energy use, generated waste or sustainable designs are envisaged. The option will make use of existing infrastructure.	None	Minor beneficial
Water	4.1 To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies.	Small	Moderate	Short-term	Temporary	Low (adverse)	Medium (adverse)	The risk of water quality deterioration below what supports good WFD status for fish and invertebrates is low for dissolved oxygen and ammonia. There are no localised water quality pressures.	Minor Adverse	None
Water	4.2 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	Small	Moderate	Short-term	Temporary	High (adverse)	Medium (adverse)	The drought option would lead to a major reduction in low flows, with associated reduction in wetted width and depth over 9.2 km of the River Worth. However, impacts on habitats and navigation would be short-term and restricted to the low flow regimes of the water courses.	Major adverse	None

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.3 To ensure appropriate and sustainable management of water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives.	Small	Moderate	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity. The drought option will be accompanied by water conservation campaigns to promote efficient use of water to protect the environment and safeguard supplies. Water availability is at least 70% in the zone of influence of the drought option.	None	Minor beneficial
Soil, geology and land use	5.1 To protect and enhance the quality and quantity of soils and to protect and enhance geodiversity.	N/A	N/A	N/A	N/A	N/A	N/A	There are no land use changes associated with reduced compensation flow. It is anticipated that there will be no impacts on geologically sensitive sites.	None	None
Air and Climate	6.1 To maintain and improve air quality.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option involves a reduction in compensation flow with no change in existing abstraction volumes and would therefore not result in any increases in emissions to atmosphere.	None	None
Air and climate	6.2 To reduce greenhouse gas emissions.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option would not be associated with an increase in energy consumption, therefore, no changes to greenhouse gas emissions are envisaged.	None	None
Air and climate	6.3 To consider the need for adaptive measures for climate change.	Small	Moderate	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	Drought options are a key component of Yorkshire Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought conditions which may become more prevalent due to climate change.	None	Minor beneficial
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	N/A	N/A	N/A	N/A	N/A	N/A	There are no heritage assets or sites of archaeological importance within proximity to the impacted reaches.	None	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	N/A	N/A	N/A	N/A	N/A	N/A	There are no landscape designations in proximity to the impacted reaches of the drought option.	None	None

Drought Plan Option Name: North West Area 2

Drought Plan Option Description: Reduced compensation flow release from North West Area Reservoir 2 from 3.25 MI/d to 1.5 MI/d.

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over-abstraction on sensitive sites, habitats and species) and consider adaptability to climate change.	Small	Moderate	Short-term	Temporary	Medium (adverse)	Medium (adverse)	The reduced flows will result in a number of impacts, including: the stranding of individuals or groups; deterioration or loss of habitats; fragmentation of habitats; increased mortality; and changes in morphology or behaviour. The drought option is assessed as having an impact on the following NERC and notable species: Minor impact for bullhead and <i>Riolus sub violaceus</i> . Moderate impact for brown trout and white-clawed crayfish. There is a moderate risk of deterioration of WFD status (invertebrates and fish).	Moderate adverse	None
Biodiversity, flora and fauna	1.2 To avoid introducing or spreading INNS.	N/A	N/A	N/A	N/A	N/A	N/A	Invasive species utilise flow of the watercourse for dispersal. The implementation of the drought option will lead to a reduction in flow and is therefore not anticipated to increase the spread of aquatic invasive non-native species.	None	None
Population and human health	2.1 To protect and improve health and well-being and reduce inequalities	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option will deliver up to 3.5 MI/d helping to maintain essential public water supplies during drought conditions, and therefore help maintain public health and well-being.	None	Minor beneficial
Population and human health	2.2 To protect and enhance opportunities for formal and informal recreation.	Small	Moderate	Short-term	Temporary	Low (adverse)	Low (adverse)	There is extensive non-club administered angling along the River Rother. However, flows during a drought will be low such that further reduction in flows would not be likely to further reduce the angling quality of the reach.	Negligible adverse	None
Population and human health	2.3 To promote a sustainable economy and thriving communities with good access to the services they need.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity.	None	Minor beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	No impacts on material assets are anticipated. The option involve modifications to compensation flow only and no changes to energy use, generated waste or sustainable designs are envisaged. The option will make use of existing infrastructure.	None	Minor beneficial

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.1 To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies.	Small	Moderate	Short-term	Temporary	Medium (adverse)	Medium (adverse)	The risk of water quality deterioration below what supports good WFD status for fish and invertebrates is low for dissolved oxygen and medium for total ammonia. Water quality pressures include one STW and the North West Area Reservoir 3 drought option.	Moderate adverse	None
Water	4.2 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	Small	Moderate	Short-term	Temporary	Major (adverse)	Medium (adverse)	The drought option would lead to a major reduction in low flows, with an associated reduction in wetted width and depth over a 4.9 km stretch of Leeming Water and Bridgehouse Beck. There would be a moderate impact over a further 4.7 km. However, impacts on habitats and navigation would be short-term and restricted to the low regimes of the water courses.	Major adverse	None
Water	4.3 To ensure appropriate and sustainable management of water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity. The drought option will be accompanied by water conservation campaigns to promote efficient use of water to protect the environment and safeguard supplies. Water availability is at least 70% in the zone of influence of the drought option.	None	Minor beneficial
Soil, geology and land use	5.1 To protect and enhance the quality and quantity of soils and to protect and enhance geodiversity.	N/A	N/A	N/A	N/A	N/A	N/A	There are no land use changes associated with reduced compensation flow. It is anticipated that there will be no impacts on geologically sensitive sites.	None	None
Air and Climate	6.1 To maintain and improve air quality.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option involves a reduction in compensation flow with no change in existing abstraction volumes and would therefore not result in any increases in emissions to atmosphere.	None	None
Air and climate	6.2 To reduce greenhouse gas emissions.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option would not be associated with an increase in energy consumption, therefore, no changes to greenhouse gas emissions are envisaged.	None	None
Air and climate	6.3 To consider the need for adaptive measures for climate change.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	Drought options are a key component of Yorkshire Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought conditions which may become more prevalent due to climate change.	None	Minor beneficial

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	N/A	N/A	N/A	N/A	N/A	N/A	Nearby ancient monuments are not water-dependent and would not be impacted by the drought option.	None	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	Small	Moderate	Short-term	Temporary	Low (adverse)	Medium (adverse)	A significant reduction in the level of Bridgehouse Beck and Leeming Water would have a visual impact on the landscape setting of the Calder/Aire Link and Bronte Way National Trails respectively. However, the reduced flow of the reaches would be short-term and temporary.	Minor adverse	None

Drought Plan Option Name: North West Area 3

Drought Plan Option Description: Reduced compensation flow release from North West Area Reservoir 3 from 3.4 MI/d to 1.5 MI/d.

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over-abstraction on sensitive sites, habitats and species) and consider adaptability to climate change.	Small	Moderate	Short-term	Temporary	Medium (adverse)	Medium (adverse)	The impact of reduced flows will result in a number of impacts, including: the stranding of individuals or groups; deterioration or loss of habitats; fragmentation of habitats; increased mortality; and changes in morphology or behaviour. The drought option is assessed as having an impact on the following NERC and notable species: Minor impact for bullhead. Moderate impact for brown trout and white-clawed crayfish. There is a moderate risk to WFD status (fish) and a minor risk of deterioration of WFD status (invertebrates).	Moderate adverse	None
Biodiversity, flora and fauna	1.2 To avoid introducing or spreading INNS.	N/A	N/A	N/A	N/A	N/A	N/A	Invasive species utilise flow of the watercourse for dispersal. The implementation of the drought option will lead to a reduction in flow and is therefore not anticipated to increase the spread of aquatic invasive non-native species.	None	None
Population and human health	2.1 To protect and improve health and well-being and reduce inequalities	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option will deliver up to 1.25MI/d helping to maintain essential public water supplies during drought conditions, and therefore help maintain public health and well-being.	None	Minor beneficial
Population and human health	2.2 To protect and enhance opportunities for formal and informal recreation.	Small	Moderate	Short-term	Temporary	Low (adverse)	Low (adverse)	There is extensive non-club administered angling along the River Worth. However, flows during a drought will be low such that further reduction in flows would not be likely to further reduce the angling quality of the reach.	Negligible adverse	None
Population and human health	2.3 To promote a sustainable economy and thriving communities with good access to the services they need.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity.	None	Minor beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	No impacts on material assets are anticipated. The option involve modifications to compensation flow only and no changes to energy use, generated waste or sustainable designs are envisaged. The option will make use of existing infrastructure.	None	Minor beneficial

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.1 To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies.	Small	Moderate	Short-term	Temporary	Medium (adverse)	Medium (adverse)	The risk of water quality deterioration below what can support good WFD status for fish and invertebrates is low for dissolved oxygen and medium for total ammonia. Water quality pressures include one STW and the North West Reservoir 2 drought option.	Moderate adverse	None
Water	4.2 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	Small	Moderate	Short-term	Temporary	High (adverse)	Medium (adverse)	The drought option would lead to a major reduction in low flows, with associated reduction in wetted width and depth over a 4.9 km stretch of Moorhouse Beck and Bridgehouse Beck. There would be a moderate impact over a further 4.7 km of the River Worth. However, impacts on habitats and navigation would be short-term and restricted to the low regimes of the water courses.	Major adverse	None
Water	4.3 To ensure appropriate and sustainable management of water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity. The drought permit will be accompanied by water conservation campaigns to promote efficient use of water to protect the environment and safeguard supplies. Water availability is at least 70% in the zone of influence of the drought option.	None	Minor beneficial
Soil, geology and land use	5.1 To protect and enhance the quality and quantity of soils and to protect and enhance geodiversity.	N/A	N/A	N/A	N/A	N/A	N/A	There are no land use changes associated with reduced compensation flow. It is anticipated that there will be no impacts on geologically sensitive sites.	None	None
Air and Climate	6.1 To maintain and improve air quality.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option involves a reduction in compensation flow with no change in existing abstraction volumes and would therefore not result in any increases in emissions to atmosphere.	None	None
Air and climate	6.2 To reduce greenhouse gas emissions.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option would not be associated with an increase in energy consumption, therefore, no changes to greenhouse gas emissions are envisaged.	None	None
Air and climate	6.3 To consider the need for adaptive measures for climate change.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	Drought options are a key component of Yorkshire Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought conditions which may become more prevalent due to climate change.	None	Minor beneficial

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	N/A	N/A	N/A	N/A	N/A	N/A	There are no heritage assets or sites of archaeological importance within proximity to the impacted reaches.	None	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	Small	Moderate	Short-term	Temporary	Low (adverse)	Medium (adverse)	A significant reduction in the level of Bridgehouse Beck and Leeming Water would have a visual impact on the landscape setting of the Calder/Aire Link and Bronte Way National Trails respectively. However, the reduced flow of the reaches would be short-term and temporary.	Minor adverse	None

Drought Plan Option Name: North West Area 4

Drought Plan Option Description: Reduced compensation flow release from North West Area Reservoir 4 from 1.8-3.6 MI/d to 1.2-1.8 MI/d.

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over-abstraction on sensitive sites, habitats and species) and consider adaptability to climate change.	Small	Moderate	Short-term	Temporary	Medium (adverse)	Medium (adverse)	The reduced flows will result in a number of impacts, including: the stranding of individuals or groups; deterioration or loss of habitats; fragmentation of habitats; increased mortality; and changes in morphology or behaviour. The drought option is assessed as having an impact on the following NERC and notable species: Minor impact for bullhead. Moderate impact for brown trout and white-clawed crayfish. There is a minor risk of deterioration of WFD status (invertebrates) and a moderate risk to WFD status (fish).	Moderate adverse	None
Biodiversity, flora and fauna	1.2 To avoid introducing or spreading INNS.	N/A	N/A	N/A	N/A	N/A	N/A	Invasive species utilise flow of the watercourse for dispersal. The implementation of the drought option will lead to a reduction in flow and is therefore not anticipated to increase the spread of aquatic invasive non-native species.	None	None
Population and human health	2.1 To protect and improve health and well-being and reduce inequalities	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option will deliver up to 1.8MI/d, helping to maintain essential public water supplies during drought conditions, and therefore help maintain public health and well-being.	None	Minor beneficial
Population and human health	2.2 To protect and enhance opportunities for formal and informal recreation.	Small	Moderate	Short-term	Temporary	Low (adverse)	Low (adverse)	There is casual angling present on the impacted reach. However, flows during a drought will be low such that further reduction in flows would not be likely to further reduce the angling quality of the reach.	Negligible adverse	None
Population and human health	2.3 To promote a sustainable economy and thriving communities with good access to the services they need.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity.	None	Minor beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	No impacts on material assets are anticipated. The option involves modifications to compensation flow only and no changes to energy use, generated waste or sustainable designs are envisaged. The option will make use of existing infrastructure.	None	Minor beneficial

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.1 To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies.	Small	Moderate	Short-term	Temporary	Low (adverse)	Medium (adverse)	The risk of water quality deterioration below what supports good WFD status for fish and invertebrates is low for dissolved oxygen and total ammonia. One STW presents a local water quality pressure, particularly associated with ammonia quality which will slightly raise the risk of water quality deterioration.	Minor adverse	None
Water	4.2 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	Small	Moderate	Short-term	Temporary	High (adverse)	Medium (adverse)	The drought option would lead to a major reduction in low flows, with associated reduction in wetted width and depth over 1.6 km of Denholme Beck. However, impacts on habitats and navigation would be short-term and restricted to the low flow regimes of the water courses.	Major adverse	None
Water	4.3 To ensure appropriate and sustainable management of water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity. The drought option will be accompanied by water conservation campaigns to promote efficient use of water to protect the environment and safeguard supplies. Water availability is at least 70% in the zone of influence of the drought option.	None	Minor beneficial
Soil, geology and land use	5.1 To protect and enhance the quality and quantity of soils and to protect and enhance geodiversity.	N/A	N/A	N/A	N/A	N/A	N/A	There are no land use changes associated with reduced compensation flow. It is anticipated that there will be no impacts on geologically sensitive sites.	None	None
Air and Climate	6.1 To maintain and improve air quality.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option involves a reduction in compensation flow with no change in existing abstraction volumes and would therefore not result in any increases in emissions to atmosphere.	None	None
Air and climate	6.2 To reduce greenhouse gas emissions.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option would not be associated with an increase in energy consumption, therefore, no changes to greenhouse gas emissions are envisaged.	None	None
Air and climate	6.3 To consider the need for adaptive measures for climate change.	Small	Moderate	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	Drought options are a key component of Yorkshire Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought conditions which may become more prevalent due to climate change.	None	Minor beneficial
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	N/A	N/A	N/A	N/A	N/A	N/A	There are no heritage assets or sites of archaeological importance within proximity to the impacted reaches.	None	None

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	Small	Moderate	Short-term	Temporary	Low (adverse)	Medium (adverse)	A significant reduction in the flow level of the impacted reaches would have a visual impact on the landscape setting of several national trails that run alongside Denholme Beck. However, the reduced flow of the reaches would be short-term and temporary.	Minor adverse	None

Drought Plan Option Name: North West Area 5

Drought Plan Option Description: Reduced compensation flow release from North West Area Reservoir 5 from 6.3 MI/d to 3.15 MI/d.

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over-abstraction on sensitive sites, habitats and species) and consider adaptability to climate change.	Small	Moderate	Short-term	Temporary	Medium (adverse)	Medium (adverse)	Reduced flows will result in a number of impacts, including: the stranding of individuals or groups; deterioration or loss of habitats; fragmentation of habitats; increased mortality; and changes in morphology or behaviour. The drought option is assessed as having an impact on the following NERC and notable species: Minor impact for bullhead. Moderate impact for brown trout and white-clawed crayfish. There is a moderate risk of deterioration of WFD status (invertebrates & fish).	Moderate adverse	None
Biodiversity, flora and fauna	1.2 To avoid introducing or spreading INNS.	N/A	N/A	N/A	N/A	N/A	N/A	Invasive species utilise flow of the watercourse for dispersal. The implementation of the drought option will lead to a reduction in flow and is therefore not anticipated to increase the spread of aquatic invasive non-native species.	None	None
Population and human health	2.1 To protect and improve health and well-being and reduce inequalities	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option will deliver up to 4.2MI/d, helping to maintain essential public water supplies during drought conditions, and therefore help maintain public health and well-being.	None	Minor beneficial
Population and human health	2.2 To protect and enhance opportunities for formal and informal recreation.	Small	Low	Short-term	Temporary	Medium (adverse)	Low (adverse)	There is an organised angling club present on the impacted reach. The potential impact on the angling club is uncertain, however, flows during a drought will be low such that a further reduction in flow is not likely to reduce the angling quality of the reach.	Minor adverse	None
Population and human health	2.3 To promote a sustainable economy and thriving communities with good access to the services they need.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity.	None	Minor beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	No impacts on material assets are anticipated. The option involves modifications to compensation flow only and no changes to energy use, generated waste or sustainable designs are envisaged. The option will make use of existing infrastructure.	None	Minor beneficial

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.1 To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies.	Small	Moderate	Short-term	Temporary	Medium (adverse)	Medium (adverse)	Due to the major hydrological impact in the upper reach, the risk of water quality deterioration below what can support good WFD status for fish and invertebrates is moderate for total ammonia and low for dissolved oxygen. There are no water quality pressures from consented discharges in the study area.	Moderate adverse	None
Water	4.2 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	Small	Moderate	Short-term	Temporary	Major (adverse)	Medium (adverse)	The drought option would lead to a major reduction in low flows, with associated reduction in wetted width and depth over 6.3km of Hewenden Beck.	Major adverse	None
Water	4.3 To ensure appropriate and sustainable management of water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity. The drought option will be accompanied by water conservation campaigns to promote efficient use of water to protect the environment and safeguard supplies. Water availability is at least 70% in the zone of influence of the drought option.	None	Minor beneficial
Soil, geology and land use	5.1 To protect and enhance the quality and quantity of soils and to protect and enhance geodiversity.	N/A	N/A	N/A	N/A	N/A	N/A	There are no land use changes associated with reduced compensation flow. It is anticipated that there will be no impacts on geologically sensitive sites.	None	None
Air and Climate	6.1 To maintain and improve air quality.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option involves a reduction in compensation flow with no change in existing abstraction volumes and would therefore not result in any increases in emissions to atmosphere.	None	None
Air and climate	6.2 To reduce greenhouse gas emissions.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option would not be associated with an increase in energy consumption, therefore, no changes to greenhouse gas emissions are envisaged.	None	None
Air and climate	6.3 To consider the need for adaptive measures for climate change.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	Drought options are a key component of Yorkshire Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought conditions which may become more prevalent due to climate change.	None	Minor beneficial
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	N/A	N/A	N/A	N/A	N/A	N/A	There are no heritage assets or sites of archaeological importance within proximity to the impacted reaches.	None	None

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	Small	Moderate	Short-term	Temporary	Low (adverse)	Medium (adverse)	A significant reduction in the level of Harden Beck would have a visual impact on the landscape setting of several national trails that run alongside Harden Beck. However, the reduced flow of the reaches would be short-term and temporary.	Minor adverse	None

Drought Plan Option Name: North West Area 6

Drought Plan Option Description: Reduced compensation flow release from North West Area Reservoir 6 from 1 MI/d to 0.33 MI/d.

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over-abstraction on sensitive sites, habitats and species) and consider adaptability to climate change.	Small	Moderate	Short-term	Temporary	Low (adverse)	Medium (adverse)	Reduced flow levels in the impacted reaches will result in a number of impacts, including: the stranding of individuals or groups; deterioration or loss of habitats; fragmentation of habitats; increased mortality; and changes in morphology or behaviour. The drought option is assessed as having an impact on the following NERC and notable species: Minor impact for bullhead. Moderate impact for brown trout and white-clawed crayfish. There is a minor risk of deterioration of WFD status (fish) and uncertain minor risk for WFD status (invertebrates).	Minor adverse	None
Biodiversity, flora and fauna	1.2 To avoid introducing or spreading INNS.	N/A	N/A	N/A	N/A	N/A	N/A	Invasive species utilise flow of the watercourse for dispersal. The implementation of the drought option will lead to a reduction in flow and is therefore not anticipated to increase the spread of aquatic invasive non-native species.	None	None
Population and human health	2.1 To protect and improve health and well-being and reduce inequalities	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option will deliver up to 0.67 MI/d, helping to maintain essential public water supplies during drought conditions, and therefore help maintain public health and well-being.	None	Minor beneficial
Population and human health	2.2 To protect and enhance opportunities for formal and informal recreation.	Small	Low	Short-term	Temporary	Low (adverse)	Low (adverse)	There is casual angling present on the impacted reach. The potential impact on the angling club is low and flows during a drought will be low such that a further reduction in flow is not likely to reduce the angling quality of the reach.	Negligible adverse	None
Population and human health	2.3 To promote a sustainable economy and thriving communities with good access to the services they need.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity.	None	Minor beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	No impacts on material assets are anticipated. The option involves modifications to compensation flow only and no changes to energy use, generated waste or sustainable designs are envisaged. The option will make use of existing infrastructure.	None	Minor beneficial

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.1 To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies.	Small	Moderate	Short-term	Temporary	Low (adverse)	Medium (adverse)	There is a low risk of deterioration of WFD status associated with dissolved oxygen and ammonia in the impacted reaches. There are no water quality pressures from consented discharges in the study area.	Minor adverse	None
Water	4.2 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	Small	Moderate	Short-term	Temporary	Major (adverse)	Medium (adverse)	The drought option would lead to a major reduction in low flows, with associated reduction in wetted width and depth over 3.4km of Eldwick Beck. However, these impacts will be short-term and temporary.	Major adverse	None
Water	4.3 To ensure appropriate and sustainable management of water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity. The drought permit will be accompanied by water conservation campaigns to promote efficient use of water to protect the environment and safeguard supplies. Water availability is at least 70% in the zone of influence of the drought option.	None	Minor beneficial
Soil, geology and land use	5.1 To protect and enhance the quality and quantity of soils and to protect and enhance geodiversity.	N/A	N/A	N/A	N/A	N/A	N/A	There are no land use changes associated with reduced compensation flow. It is anticipated that there will be no impacts on geologically sensitive sites.	None	None
Air and Climate	6.1 To maintain and improve air quality.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option involves a reduction in compensation flow with no change in existing abstraction volumes and would therefore not result in any increases in emissions to atmosphere.	None	None
Air and climate	6.2 To reduce greenhouse gas emissions.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option would not be associated with an increase in energy consumption, therefore, no changes to greenhouse gas emissions are envisaged.	None	None
Air and climate	6.3 To consider the need for adaptive measures for climate change.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	Drought options are a key component of Yorkshire Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought conditions which may become more prevalent due to climate change.	None	Minor beneficial
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	N/A	N/A	N/A	N/A	N/A	N/A	There are 16 scheduled ancient monuments within proximity to the impacted reaches. However, the monuments are not water dependent and would not be impacted by the drought option.	None	None

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	Small	Moderate	Short-term	Temporary	Low (adverse)	Medium (adverse)	A significant reduction in the level of Harden Beck would have a visual impact on the landscape setting of Millennium Way and Dales Way Link which run alongside Loadpit Beck. However, the reduced flow of the reaches would be short-term and temporary.	Minor adverse	None

Drought Plan Option Name: North West Area 9

Drought Plan Option Description: Reduced compensation flow release from North West Area Reservoir 9 from 2.4 MI/d to 0.8 MI/d.

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over-abstraction on sensitive sites, habitats and species) and consider adaptability to climate change.	Small	Low	Short-term	Temporary	Medium (adverse)	Medium (adverse)	The reduced flows will result in a number of impacts, including: the stranding of individuals or groups; deterioration or loss of habitats; fragmentation of habitats; increased mortality; and changes in morphology or behaviour. The drought option is assessed as having an impact on the following NERC and Notable species: Minor impact for bullhead, European eel and Grayling. Moderate impact for brown trout. Major impact for White-clawed Crayfish Negligible impact on otter. There is a moderate risk of deterioration of WFD status (fish) and a moderate risk for WFD status (invertebrates).	Moderate adverse	None
Biodiversity, flora and fauna	1.2 To avoid introducing or spreading INNS.	N/A	N/A	N/A	N/A	N/A	N/A	Invasive species utilise flow of the watercourse for dispersal. The implementation of the drought option will lead to a reduction in flow and is therefore not anticipated to increase the spread of aquatic invasive non-native species.	None	None
Population and human health	2.1 To protect and improve health and well-being and reduce inequalities	Small	Moderate	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option will deliver up to 1.6MI/d helping to maintain essential public water supplies during drought conditions, and therefore help maintain public health and well-being.	None	Minor beneficial
Population and human health	2.2 To protect and enhance opportunities for formal and informal recreation.	Small	Low	Short-term	Temporary	Low (adverse)	Low (adverse)	There is casual angling present on Silsden Beck. However, flows during a drought will be low such that a further reduction in flow is not likely to reduce the angling quality of the reach.	Negligible adverse	None
Population and human health	2.3 To promote a sustainable economy and thriving communities with good access to the services they need.	Small	Moderate	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity.	None	Minor beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	Small	Moderate	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	No impacts on material assets are anticipated. The option involves modifications to compensation flow only and no changes to energy use, generated waste or sustainable designs are envisaged. The option will make use of existing infrastructure.	None	Minor beneficial
Water	4.1 To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies.	Small	Moderate	Short-term	Temporary	Low (adverse)	Medium (adverse)	There is a low risk of deterioration of WFD status associated with dissolved oxygen and ammonia in the impacted reaches. There are no water quality pressures from consented discharges in the study area.	Minor adverse	None

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.2 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	Small	Moderate	Short-term	Temporary	High (adverse)	Medium (adverse)	The drought option would lead to a major reduction in low flows, with an associated reduction in wetted width and depth over 3km of Silsden Beck. However, these impacts will be limited to the low flow regime of the water course.	Major adverse	None
Water	4.3 To ensure appropriate and sustainable management of water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	Small	Moderate	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity. The drought option will be accompanied by water conservation campaigns to promote efficient use of water to protect the environment and safeguard supplies. Water availability is at least 70% in the zone of influence of the drought option.	None	Minor beneficial
Soil, geology and land use	5.1 To protect and enhance the quality and quantity of soils and to protect and enhance geodiversity.	N/A	N/A	N/A	N/A	N/A	N/A	There are no land use changes associated with reduced compensation flow. It is anticipated that there will be no impacts on geologically sensitive sites.	None	None
Air and Climate	6.1 To maintain and improve air quality.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option involves a reduction in compensation flow with no change in existing abstraction volumes and would therefore not result in any increases in emissions to atmosphere.	None	None
Air and climate	6.2 To reduce greenhouse gas emissions.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option would not be associated with an increase in energy consumption, therefore, no changes to greenhouse gas emissions are envisaged.	None	None
Air and climate	6.3 To consider the need for adaptive measures for climate change.	Small	Moderate	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	Drought options are a key component of Yorkshire Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought conditions which may become more prevalent due to climate change.	None	Minor beneficial
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	N/A	N/A	N/A	N/A	N/A	N/A	There are no heritage assets or sites of archaeological importance in proximity to the impacted reaches of the drought option.	None	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	Small	Moderate	Short-term	Temporary	Low (adverse)	Medium (adverse)	A significant reduction in the level of Silsden Beck would have a visual impact on the landscape setting of Millennium Way National Trail which runs alongside Weecher Brow Beck. However, the reduced flow of the reaches would be short-term and temporary.	Minor adverse	None

Drought Plan Option Name: North West Area 10

Drought Plan Option Description: Reduced compensation flow release from North West Area Reservoir 10 from 1.86 Ml/d to 0.39 Ml/d.

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over-abstraction on sensitive sites, habitats and species) and consider adaptability to climate change.	Small	Moderate	Short-term	Temporary	Medium (adverse)	Medium (adverse)	A reduction in flow levels will result in a number of impacts, including: the stranding of individuals or groups; deterioration or loss of habitats; fragmentation of habitats; increased mortality; and changes in morphology or behaviour. The drought option is assessed as having an impact on the following NERC and notable species: Minor impact for <i>Riolus subvioaceus</i> . Moderate impact for brown trout, bullhead, grayling, otter and white-clawed crayfish. There is a moderate risk of deterioration of WFD status (fish) and a minor risk for WFD status (invertebrates).	Moderate adverse	None
Biodiversity, flora and fauna	1.2 To avoid introducing or spreading INNS.	N/A	N/A	N/A	N/A	N/A	N/A	Invasive species utilise flow of the watercourse for dispersal. The implementation of the drought option will lead to a reduction in flow and is therefore not anticipated to increase the spread of aquatic invasive non-native species.	None	None
Population and human health	2.1 To protect and improve health and well-being and reduce inequalities	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option will deliver up to 0.79Ml/d, helping to maintain essential public water supplies during drought conditions, and therefore help maintain public health and well-being.	None	Minor beneficial
Population and human health	2.2 To protect and enhance opportunities for formal and informal recreation.	Small	Moderate	Short-term	Temporary	Low (adverse)	Low (adverse)	There is casual angling present on Embassy Beck. However, flows during a drought will be low such that a further reduction in flow is not likely to reduce the angling quality of the reach.	Negligible adverse	None
Population and human health	2.3 To promote a sustainable economy and thriving communities with good access to the services they need.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity.	None	Minor beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	No impacts on material assets are anticipated. The option involves modifications to compensation flow only and no changes to energy use, generated waste or sustainable designs are envisaged. The option will make use of existing infrastructure.	None	Minor beneficial
Water	4.1 To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies.	Small	Moderate	Short-term	Temporary	Low (adverse)	Medium (adverse)	There is a low risk of deterioration of WFD status associated with dissolved oxygen and ammonia in the impacted reaches. There are no water quality pressures from consented discharges in the study area.	Minor adverse	None

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.2 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	Small	Moderate	Short-term	Temporary	High (adverse)	Medium (adverse)	The drought option would lead to a major reduction in low flows, with an associated reduction in wetted width and depth over 6.8 km of Embassy Beck, Haw Beck and Eller Beck. However, these impacts will be limited to the low flow regime of the water course.	Major adverse	None
Water	4.3 To ensure appropriate and sustainable management of water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity. The drought option will be accompanied by water conservation campaigns to promote efficient use of water to protect the environment and safeguard supplies. Water availability is at least 70% in the zone of influence of the drought option.	None	Minor beneficial
Soil, geology and land use	5.1 To protect and enhance the quality and quantity of soils and to protect and enhance geodiversity.	N/A	N/A	N/A	N/A	N/A	N/A	There are no land use changes associated with reduced compensation flow. It is anticipated that there will be no impacts on geologically sensitive sites.	None	None
Air and Climate	6.1 To maintain and improve air quality.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option involves a reduction in compensation flow with no change in existing abstraction volumes and would therefore not result in any increases in emissions to atmosphere.	None	None
Air and climate	6.2 To reduce greenhouse gas emissions.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option would not be associated with an increase in energy consumption, therefore, no changes to greenhouse gas emissions are envisaged.	None	None
Air and climate	6.3 To consider the need for adaptive measures for climate change.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	Drought options are a key component of Yorkshire Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought conditions which may become more prevalent due to climate change.	None	Minor beneficial
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	N/A	N/A	N/A	N/A	N/A	N/A	One Scheduled Ancient Monument is in proximity to the impacted reaches of the drought option. However, the monument is not water dependent and would not be affected by implementation of the drought measure.	None	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	N/A	N/A	N/A	N/A	N/A	N/A	There are no landscape features or national trails in proximity to the impacted reaches of the drought option.	None	None

Drought Plan Option Name: North West Area 7

Drought Plan Option Description: Reduced compensation flow release from North West Area Reservoir 7 from 0.79 Ml/d to 0.26 Ml/d.

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over-abstraction on sensitive sites, habitats and species) and consider adaptability to climate change.	Small	Moderate	Short-term	Temporary	Medium (adverse)	Medium (adverse)	The reduced flows will result in a number of impacts, including: the stranding of individuals or groups; deterioration or loss of habitats; fragmentation of habitats; increased mortality; and changes in morphology or behaviour. The drought option is assessed as having an impact on the following NERC and Notable species: Minor impact for bullhead. Moderate impact for brown trout and white-clawed crayfish. There is a moderate risk of deterioration of WFD status (fish) and minor risk for WFD status (invertebrates).	Moderate adverse	None
Biodiversity, flora and fauna	1.2 To avoid introducing or spreading INNS.	N/A	N/A	N/A	N/A	N/A	N/A	Invasive species utilise flow of the watercourse for dispersal. The implementation of the drought option will lead to a reduction in flow and is therefore not anticipated to increase the spread of aquatic invasive non-native species.	None	None
Population and human health	2.1 To protect and improve health and well-being and reduce inequalities	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option will deliver up to 0.53Ml/d helping to maintain essential public water supplies during drought conditions, and therefore help maintain public health and well-being.	None	Minor beneficial
Population and human health	2.2 To protect and enhance opportunities for formal and informal recreation.	Small	Low	Short-term	Temporary	Low (adverse)	Low (adverse)	The presence of angling on Jum Beck is unknown. Flows during a drought will be low such that a further reduction in flow is not likely to reduce the angling quality of the reach.	Negligible adverse	None
Population and human health	2.3 To promote a sustainable economy and thriving communities with good access to the services they need.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity.	None	Minor beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	No impacts on material assets are anticipated. The option involves modifications to compensation flow only and no changes to energy use, generated waste or sustainable designs are envisaged. The option will make use of existing infrastructure.	None	Minor beneficial

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.1 To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies.	Small	Moderate	Short-term	Temporary	Low (adverse)	Medium (adverse)	There is a low risk of deterioration of WFD status associated with dissolved oxygen and ammonia in the impacted reaches. There are no water quality pressures from consented discharges in the study area.	Minor adverse	None
Water	4.2 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	Small	Moderate	Short-term	Temporary	Major (adverse)	Medium (adverse)	The drought option would lead to a major reduction in low flows, with associated reduction in wetted width and depth over 1.6km of Jum Beck. However, these impacts will be short-term and temporary.	Major adverse	None
Water	4.3 To ensure appropriate and sustainable management of water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity. The drought permit will be accompanied by water conservation campaigns to promote efficient use of water to protect the environment and safeguard supplies. Water availability is at least 70% in the zone of influence of the drought option.	None	Minor beneficial
Soil, geology and land use	5.1 To protect and enhance the quality and quantity of soils and to protect and enhance geodiversity.	N/A	N/A	N/A	N/A	N/A	N/A	There are no land use changes associated with reduced compensation flow. It is anticipated that there will be no impacts on geologically sensitive sites.	None	None
Air and Climate	6.1 To maintain and improve air quality.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option involves a reduction in compensation flow with no change in existing abstraction volumes and would therefore not result in any increases in emissions to atmosphere.	None	None
Air and climate	6.2 To reduce greenhouse gas emissions.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option would not be associated with an increase in energy consumption, therefore, no changes to greenhouse gas emissions are envisaged.	None	None
Air and climate	6.3 To consider the need for adaptive measures for climate change.	Small	High	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	Drought options are a key component of Yorkshire Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought conditions which may become more prevalent due to climate change.	None	Minor beneficial
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	N/A	N/A	N/A	N/A	N/A	N/A	There are no heritage assets or sites of archaeological importance in proximity to the impacted reaches of the drought option.	None	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	N/A	N/A	N/A	N/A	N/A	N/A	There are no landscape assets in proximity to the impacted reaches of the drought option.	None	None

Drought Plan Option Name: North West Area 8

Drought Plan Option Description: Reduced compensation flow release from North West Area Reservoir 8 from 0.43 Ml/d to 0.14 Ml/d.

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over-abstraction on sensitive sites, habitats and species) and consider adaptability to climate change.	Small	Low	Short-term	Temporary	Medium (adverse)	Medium (adverse)	The reduced flows will result in a number of impacts, including: the stranding of individuals or groups; deterioration or loss of habitats; fragmentation of habitats; increased mortality; and changes in morphology or behaviour. The drought option is assessed as having an impact on the following NERC and notable species: Minor impact for bullhead. Moderate impact for brown trout and white-clawed crayfish. There is a moderate risk of deterioration of WFD status (invertebrates & fish).	Moderate adverse	None
Biodiversity, flora and fauna	1.2 To avoid introducing or spreading INNS.	N/A	N/A	N/A	N/A	N/A	N/A	Invasive species utilise flow of the watercourse for dispersal. The implementation of the drought option will lead to a reduction in flow and is therefore not anticipated to increase the spread of aquatic invasive non-native species.	None	None
Population and human health	2.1 To protect and improve health and well-being and reduce inequalities	Small	Moderate	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option will deliver up to 0.29Ml/d helping to maintain essential public water supplies during drought conditions, and therefore help maintain public health and well-being.	None	Minor beneficial
Population and human health	2.2 To protect and enhance opportunities for formal and informal recreation.	Small	Low	Short-term	Temporary	Low (adverse)	Low (adverse)	The presence of angling on Weecher Brow Beck is unknown. Flows during a drought will be low such that a further reduction in flow is not likely to reduce the angling quality of the reach.	Minor adverse	None
Population and human health	2.3 To promote a sustainable economy and thriving communities with good access to the services they need.	Small	Moderate	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity.	None	Minor beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	Small	Moderate	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	No impacts on material assets are anticipated. The option involves modifications to compensation flow only and no changes to energy use, generated waste or sustainable designs are envisaged. The option will make use of existing infrastructure.	None	Minor beneficial
Water	4.1 To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies.	Small	Moderate	Short-term	Temporary	Low (adverse)	Medium (adverse)	There is a low risk of deterioration of WFD status associated with dissolved oxygen and ammonia in the impacted reaches. There are no water quality pressures from consented discharges in the study area.	Minor adverse	None

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.2 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	Small	Moderate	Short-term	Temporary	Major (adverse)	Medium (adverse)	The drought option would lead to a major reduction in low flows, with associated reduction in wetted width and depth over 1 km of Weecher Brow Beck and 4 km of Gill Beck.	Major adverse	None
Water	4.3 To ensure appropriate and sustainable management of water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	Small	Moderate	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity. The drought option will be accompanied by water conservation campaigns to promote efficient use of water to protect the environment and safeguard supplies. Water availability is at least 70% in the zone of influence of the drought option.	None	Minor beneficial
Soil, geology and land use	5.1 To protect and enhance the quality and quantity of soils and to protect and enhance geodiversity.	N/A	N/A	N/A	N/A	N/A	N/A	There are no land use changes associated with reduced compensation flow. It is anticipated that there will be no impacts on geologically sensitive sites.	None	None
Air and Climate	6.1 To maintain and improve air quality.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option involves a reduction in compensation flow with no change in existing abstraction volumes and would therefore not result in any increases in emissions to atmosphere.	None	None
Air and climate	6.2 To reduce greenhouse gas emissions.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option would not be associated with an increase in energy consumption, therefore, no changes to greenhouse gas emissions are envisaged.	None	None
Air and climate	6.3 To consider the need for adaptive measures for climate change.	Small	Moderate	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	Drought options are a key component of Yorkshire Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought conditions which may become more prevalent due to climate change.	None	Minor beneficial
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	N/A	N/A	N/A	N/A	N/A	N/A	There are four Scheduled Monuments in proximity to the impacted reaches. However, they are not water dependent and would not be impacted by the drought option.	None	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	Small	Moderate	Short-term	Temporary	Low (adverse)	Medium (adverse)	A significant reduction in flow levels would have a visual impact on the landscape setting of Millennium Way National Trail which runs alongside Weecher Brow Beck. However, the reduced flow of the reaches would be short-term and temporary.	Minor adverse	None

Drought Plan Option Name: North West Area 11

Drought Plan Option Description: Reduced compensation flow release from North West Area Reservoir 11 from 3.8 MI/d to 1.27 MI/d.

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over-abstraction on sensitive sites, habitats and species) and consider adaptability to climate change.	Small	Low	Short-term	Temporary	Medium (adverse)	Medium (adverse)	The reduced flows will result in a number of impacts, including: the stranding of individuals or groups; deterioration or loss of habitats; fragmentation of habitats; increased mortality; and changes in morphology or behaviour. The drought option is assessed as having an impact on the following NERC and notable species: Minor impact for bullhead and white-clawed crayfish. Moderate impact for Atlantic Salmon and brown trout. There is a moderate risk of deterioration of WFD status (fish) and a minor risk of deterioration of WFD status (invertebrates).	Moderate adverse	None
Biodiversity, flora and fauna	1.2 To avoid introducing or spreading INNS.	N/A	N/A	N/A	N/A	N/A	N/A	Invasive species utilise flow of the watercourse for dispersal. The implementation of the drought option will lead to a reduction in flow and is therefore not anticipated to increase the spread of aquatic invasive non-native species.	None	None
Population and human health	2.1 To protect and improve health and well-being and reduce inequalities	Small	Moderate	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option will deliver up to 0.29 MI/d helping to maintain essential public water supplies during drought conditions, and therefore help maintain public health and well-being.	None	Minor beneficial
Population and human health	2.2 To protect and enhance opportunities for formal and informal recreation.	Small	Low	Short-term	Temporary	Low (adverse)	Low (adverse)	The reduction in flows and levels in the impacted reaches would have a minor impact on casual angling activities.	Minor adverse	None
Population and human health	2.3 To promote a sustainable economy and thriving communities with good access to the services they need.	Small	Moderate	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity.	None	Minor beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	Small	Moderate	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	No impacts on material assets are anticipated. The option involves modifications to compensation flow only and no changes to energy use, generated waste or sustainable designs are envisaged. The option will make use of existing infrastructure.	None	Minor beneficial
Water	4.1 To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies.	Small	Moderate	Short-term	Temporary	Low (adverse)	Medium (adverse)	Water quality in River Dibb described as typically supporting high WFD status for fish and invertebrates without the drought option. Water quality throughout the study area assessed as at low risk of deteriorating, from implementation of the drought option.	Minor adverse	None

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.2 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	Small	Moderate	Short-term	Temporary	Major (adverse)	Medium (adverse)	The drought option would lead to a minor reduction in low flows, with an associated reduction in wetted width and depth over 5.2 km of the River Dibb.	Minor adverse	None
Water	4.3 To ensure appropriate and sustainable management of water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	Small	Moderate	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity. The drought option will be accompanied by water conservation campaigns to promote efficient use of water to protect the environment and safeguard supplies. Water availability is at least 70% in the zone of influence of the drought option.	None	Minor beneficial
Soil, geology and land use	5.1 To protect and enhance the quality and quantity of soils and to protect and enhance geodiversity.	N/A	N/A	N/A	N/A	N/A	N/A	There are no land use changes associated with reduced compensation flow. It is anticipated that there will be no impacts on geologically sensitive sites.	None	None
Air and Climate	6.1 To maintain and improve air quality.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option involves a reduction in compensation flow with no change in existing abstraction volumes and would therefore not result in any increases in emissions to atmosphere.	None	None
Air and climate	6.2 To reduce greenhouse gas emissions.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option would not be associated with an increase in energy consumption, therefore, no changes to greenhouse gas emissions are envisaged.	None	None
Air and climate	6.3 To consider the need for adaptive measures for climate change.	Small	Moderate	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	Drought options are a key component of Yorkshire Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought conditions which may become more prevalent due to climate change.	None	Minor beneficial
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	N/A	N/A	N/A	N/A	N/A	N/A	One Scheduled Ancient Monument is in proximity to the impacted reaches. However, it is not water dependent and would not be impacted by the drought option.	None	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	Small	N/A	N/A	N/A	N/A	N/A	There are no designated landscapes in proximity to the impacted reaches.	None	None

Drought Option Name: Ouse increased abstraction

Drought Plan Option Description: The drought option involves an increased abstraction volume from the Ouse increased abstraction where an abstraction permit is currently in operation. The option would provide a benefit of up to 60 MI/d dependent on flows in the river.

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over-abstraction on sensitive sites, habitats and species) and consider adaptability to climate change.	Large	Low	Short-term	Temporary	Medium (adverse)	Medium (adverse)	Risks to Naburn SSSI (a mosaic of species-rich flood meadow grassland), Fulford Ings SSSI (a floodplain mire) and Church Ings SSSI and Acaster South Ings SSSI (both neutral grassland communities) has been assessed as minor. The drought option will impact wetted width, especially in shallow areas of the channel, potentially reducing habitat availability. The drought option is assessed as having a moderate impact on the following NERC species and notable species due to siltation of spawning gravels, exposure of habitat: Atlantic salmon, brown sea trout, allis shad, twaite shad, barbel, river lamprey, sea lamprey and European eel. There is no risk of WFD status deterioration below the good/moderate boundary for fish and invertebrates.	Moderate adverse	None
Biodiversity, flora and fauna	1.2 To avoid introducing or spreading INNS.	N/A	N/A	N/A	N/A	N/A	N/A	Invasive species utilise flow in the watercourse for dispersal. Implementation of the drought option will lead to a reduction in flow, and is therefore not anticipated to increase the spread of aquatic invasive non-native species.	None	None
Population and human health	2.1 To protect and improve health and well-being and reduce inequalities	Large	Moderate	Short-term	Temporary	High (beneficial)	Medium (beneficial)	The drought option would provide up to 60 MI/d, helping to maintain essential public water supplies during drought conditions, and will therefore help maintain public health and well being.	None	Major beneficial
Population and human health	2.2 To protect and enhance opportunities for formal and informal recreation	Large	Moderate	Short-term	Temporary	Low (adverse)	Low (adverse)	The drought option would only cause a minor reduction in flow, therefore recreational activities such as angling are unlikely to be impacted.	Negligible adverse	None
Population and human health	2.3 To promote a sustainable economy and thriving communities with good access to the services they need.	Large	Moderate	Short-term	Temporary	High (beneficial)	Medium (beneficial)	The drought option would contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity.	None	Major beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	Large	Moderate	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	No adverse impacts on material assets are anticipated. The option involves relatively minor modifications to abstraction volumes only and no significant changes to energy use, generated waste or sustainable designs are envisaged. The option will make use of existing infrastructure.	None	Minor beneficial
Water	4.1 To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies.	Large	Moderate	Short-term	Temporary	Low (adverse)	Low (adverse)	Water quality throughout the study area is as at low risk of deterioration from implementation of the drought option. There are four localised water quality pressures (YWSL STWs) within the influence of the drought option, which have all been assessed as a minor impact risk.	Negligible adverse	None

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.2 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	Large	Moderate	Short-term	Temporary	Low (adverse)	Medium (adverse)	The drought option would lead to a minor reduction in low flows, with associated reduction in wetted width and depth over 21 km of the River Ouse. The drought option would not impact on the moderate to high flow regime in the receiving watercourses. There are four localised flow pressures in the upper reach, which collectively are assessed as having a minor impact when the drought option is operated.	Minor adverse	None
Water	4.3 To ensure appropriate and sustainable management of abstractions (or compensation flow) to maintain water supplies whilst protecting ecosystem functions that rely on water resources.	Large	Moderate	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity. The drought option will be accompanied by water conservation campaigns to promote efficient use of water to protect the environment and safeguard supplies. Water availability is at least 50% in the zone of influence of the drought option.	None	Minor beneficial
Soil, geology and land use	5.1 To protect and enhance the quality and quantity of soils and to protect and enhance geodiversity.	N/A	N/A	N/A	N/A	N/A	N/A	There are no land use changes associated with the implementation of the drought option. It is anticipated that there will be no impacts on geologically sensitive sites.	None	None
Air and Climate	6.1 To maintain and improve air quality.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option involves only minor modifications to abstraction volumes, and would therefore not result in any significant increases in emissions to atmosphere.	None	None
Air and climate	6.2 To reduce greenhouse gas emissions.	Large	Moderate	Short-term	Temporary	Low (adverse)	Low (adverse)	The increase in abstraction volumes would be associated with a negligible change in energy use, and therefore no significant increase in greenhouse gas emissions are envisaged. The use of existing infrastructure will minimise increases in greenhouse gas emissions.	Negligible adverse	None
Air and climate	6.3 To consider the need for adaptive measures for climate change.	Large	Moderate	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	Drought options are a key component of Yorkshire Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought, which may become more prevalent due to climate change.	None	Minor beneficial
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	N/A	N/A	N/A	N/A	N/A	N/A	Nearby ancient monuments and heritage sites are not water-dependent, and would not be impacted by the drought option.	None	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	Large	Moderate	Short-term	Temporary	Low (adverse)	Medium (adverse)	The potential impact on the landscape setting of the numerous SSSIs adjacent to the impacted reaches has been assessed as minor, as the level of flow reduction would be short-term and not easily perceptible.	Minor adverse	None

Drought Plan Option Name: Ure increased abstraction

Drought Plan Option Description: The drought option involves an increased abstraction volume from the Ure increased abstraction where an abstraction permit is currently in operation. The option would provide a benefit of up to 3.27 Ml/d dependent on flow levels in the river.

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over-abstraction on sensitive sites, habitats and species) and consider adaptability to climate change.	Small	Low	Short-term	Temporary	Medium (adverse)	Medium (adverse)	The drought option will impact wetted width, especially in shallow areas of the channel, potentially reducing habitat availability. The drought option is assessed as having a moderate impact on the following NERC and notable species due to siltation of spawning gravels and exposure of habitat: Atlantic salmon, brown/sea trout, grayling, bullhead, barbel, river lamprey, European eel and fine lined pea mussels. Evidence from a hydrogeological study indicates that groundwater levels in the Mar Field Fen SSSI (fen, marsh and swamp communities) are near surface and at some locations artesian. The superficial deposits are the main water bearing aquifer that supports the SSSI. Groundwater flows from the adjacent Marfield Quarry ponds through the SSSI and drains into the River Ure, and as such the SSSI is not likely to be sensitive to changes in river stage and flow. The risk of deterioration of WFD status regarding invertebrates has been assessed as minor.	Moderate adverse	None
Biodiversity, flora and fauna	1.2 To avoid introducing or spreading INNS.	Small	Moderate	Short-term	Temporary	Low (adverse)	Low (adverse)	Invasive non-native species have been identified in the impacted reaches. The potential hydrological changes associated with the drought option are not expected to increase the spread of <i>Oncorhynchus mykiss</i> , Himalayan balsam (<i>Impatiens glandulifera</i>) and Japanese knotweed (<i>Fallopia japonica</i>). Based on the expected changes in hydrology and water quality there is a risk that freshwater shrimp (<i>Crangonyx pseudogracilis</i>) abundances will increase if the native freshwater gammarid populations decrease as a result of the drought option. However, the impact on gammarid populations is expected to be short-term and as such the proliferation of the invasive freshwater shrimp is expected to be short-term and of low magnitude.	Negligible adverse	None
Population and human health	2.1 To protect and improve health and well-being and reduce inequalities	Small	Moderate	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option would deliver 3.27 Ml/d, helping to maintain essential public water supplies during drought conditions, and therefore help maintain public health and well being.	None	Minor beneficial
Population and human health	2.2 To protect and enhance opportunities for formal and informal recreation	Small	Moderate	Short-term	Temporary	Low (adverse)	Medium (adverse)	Ure increased abstraction supports a high density of salmon and is considered to be important for anglers. The impacted of the drought option is assessed as minor and alternative angling locations would be available during the implementation of the drought.	Minor adverse	None
Population and human health	2.3 To promote a sustainable economy and thriving communities with good access to the services they need.	Small	Moderate	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity.	None	Minor beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	Small	Moderate	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	No impacts on material assets are anticipated. The option involves relatively minor modifications to abstraction volumes only and no significant changes to energy use, generated waste or sustainable designs are envisaged. The option will make use of existing infrastructure.	None	Minor beneficial

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.1 To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies.	Small	Moderate	Short-term	Temporary	Medium (adverse)	Medium (adverse)	The risk of water quality deterioration is assessed as high for dissolved oxygen and low for total ammonia, except locally downstream where the risk for total ammonia is moderate.	Moderate adverse	None
Water	4.2 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	Small	Moderate	Short-term	Temporary	Medium (adverse)	Low (adverse)	The drought option would lead to a moderate reduction in low flows, with associated reduction in wetted width and depth over 11 km of the River Ure. The drought option would not impact on the moderate to high flow regime in the receiving watercourses.	Minor adverse	None
Water	4.3 To ensure appropriate and sustainable management of abstractions (or compensation flow) to maintain water supplies whilst protecting ecosystem functions that rely on water resources.	Small	Moderate	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity. The drought option will be accompanied by water conservation campaigns to promote efficient use of water to protect the environment and safeguard supplies. Water availability is at least 50% in the zone of influence of the drought option.	None	Minor beneficial
Soil, geology and land use	5.1 To protect and enhance the quality and quantity of soils and to protect and enhance geodiversity.	N/A	N/A	N/A	N/A	N/A	N/A	There are no land use changes associated with the implementation of the drought option. It is anticipated that there will be no impacts on geologically sensitive sites.	None	None
Air and Climate	6.1 To maintain and improve air quality.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option involves minor modifications to abstraction volumes and would therefore not result in any significant increases in emissions to atmosphere.	None	None
Air and climate	6.2 To reduce greenhouse gas emissions.	Small	Moderate	Short-term	Temporary	Low (adverse)	Low (adverse)	Increase in abstraction volumes would be associated with a negligible change in energy use and therefore no significant increase in greenhouse gas emissions are envisaged.	Negligible adverse	None
Air and climate	6.3 To consider the need for adaptive measures for climate change.	Small	Moderate	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	Drought options are a key component of Yorkshire Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought which may become more prevalent due to climate change.	None	Minor beneficial
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	N/A	N/A	N/A	N/A	N/A	N/A	Nearby ancient monuments and heritage sites are not water-dependent, and would not be impacted by the drought option.	None	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	Small	Moderate	Short-term	Temporary	Low (adverse)	Medium (adverse)	The Ripon Rowel Walk National trails runs alongside the River Ure and forms part of the Nidderdale AONB. However, the flow level reduction under drought conditions would not be perceptible.	Minor adverse	None

Drought Plan Option Name: Wharfe increased abstraction

Drought Plan Option Description: The drought option involves an increased abstraction volume from the River Wharfe where an abstraction permit is currently in operation. The option would provide a benefit of up to 22.7 MI/d dependent on flow levels in the river.

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over-abstraction on sensitive sites, habitats and species) and consider adaptability to climate change.	Large	Low	Short-term	Temporary	Medium (adverse)	Medium (adverse)	The impact to East Keswick Fitts SSSI (a meandering section of the River Wharfe providing valuable invertebrate habitat) has been assessed as negligible. The drought option will impact wetted width, especially in shallow areas of the channel, potentially reducing habitat availability. The drought option is assessed as having a moderate impact on the following NERC species and notable species due to siltation of spawning gravels and exposure of habitat: brown trout, Atlantic salmon, white clawed crayfish, otter and water vole. The risk of deterioration of WFD status regarding invertebrates has been assessed as minor.	Moderate adverse	None
Biodiversity, flora and fauna	1.2 To avoid introducing or spreading INNS.	N/A	N/A	N/A	N/A	N/A	N/A	Invasive species utilise flow of the watercourse for dispersal. The implementation of the drought option will lead to a reduction in flow, and is therefore not anticipated to increase the spread of aquatic invasive non-native species.	None	None
Population and human health	2.1 To protect and improve health and well-being and reduce inequalities.	Large	Moderate	Short-term	Temporary	High (beneficial)	Medium (beneficial)	The drought option would provide 22.7 MI/d helping to maintain essential public water supplies during drought conditions, and therefore help maintain public health and well-being.	None	Major beneficial
Population and human health	2.2 To protect and enhance opportunities for formal and informal recreation.	Large	Moderate	Short-term	Temporary	Low (adverse)	Low (adverse)	The drought option would only cause a minor reduction in flow, therefore recreational activities such as angling are unlikely to be impacted.	Negligible adverse	None
Population and human health	2.3 To promote a sustainable economy and thriving communities with good access to the services they need.	Large	Moderate	Short-term	Temporary	High (beneficial)	Medium (beneficial)	The drought option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity.	None	Major beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	Large	Moderate	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	No impacts on material assets are anticipated. The option involves relatively minor modifications to abstraction volumes only and no significant changes to energy use, generated waste or sustainable designs are envisaged. The option will make use of existing infrastructure.	None	Minor beneficial

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.1 To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies.	Large	Moderate	Short-term	Temporary	Medium (adverse)	Medium (adverse)	Water quality throughout the study area is assessed as low risk of deteriorating with regards to total ammonia and medium risk for dissolved oxygen. This risk may increase locally, downstream of consented water quality pressures. There are 14 localised water quality pressures (including YWSL STW's) within the influence of the drought option; 7 YWSL STW's have been assessed as a low impact risk (particularly associated with ammonia).	Moderate adverse	None
Water	4.2 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	Large	Moderate	Short-term	Temporary	Low (adverse)	Medium (adverse)	The drought option would lead to a moderate reduction in low flows, with associated reduction in wetted width and depth over 71 km of the River Wharfe. The drought option would not impact on the moderate to high flow regime in the receiving watercourses. Impacted reaches are navigable, however the drought option unlikely to affect river levels on this stretch, most of which is tidal. on this stretch, most of which is tidal.	Minor adverse	None
Water	4.3 To ensure appropriate and sustainable management of abstractions (or compensation flow) to maintain water supplies whilst protecting ecosystem functions that rely on water resources.	Large	Moderate	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option would contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity. The drought option will be accompanied by water conservation campaigns to promote efficient use of water to protect the environment and safeguard supplies. Water availability is at least 70% in the zone of influence of the drought option.	None	Minor beneficial
Soil, geology and land use	5.1 To protect and enhance the quality and quantity of soils and to protect and enhance geodiversity.	Large	Moderate	Short-term	Temporary	N/A	N/A	There are no land use changes associated with the implementation of the drought option. It is anticipated that there will be no impacts on geologically sensitive sites.	None	None
Air and Climate	6.1 To maintain and improve air quality.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option involves minor modifications to abstraction volumes and would therefore not result in any significant increases in emissions to atmosphere.	None	None
Air and climate	6.2 To reduce greenhouse gas emissions.	N/A	N/A	N/A	N/A	N/A	N/A	The increase in abstraction volumes would be associated with a negligible change in energy use and therefore no significant increase in greenhouse gas emissions are envisaged. The use of existing infrastructure will minimise increases in greenhouse gas emissions.	None	None
Air and climate	6.3 To consider the need for adaptive measures for climate change.	Large	Moderate	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	Drought options are a key component of Yorkshire Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought which may become more prevalent due to climate change.	None	Minor beneficial
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	N/A	N/A	N/A	N/A	N/A	N/A	Nearby ancient monuments and heritage sites are not water-dependent, and would not be impacted by the drought option.	None	None

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	Large	Moderate	Short-term	Temporary	Low (adverse)	Medium (adverse)	A significant reduction in the level of the River Wharfe will have a visual impact on the Nidderdale AONB. However, there is limited access to the impacted reach with no national trails.	Minor adverse	None

Drought Plan Option Name: The River Wharfe annual abstraction increase

Drought Plan Option Description: The drought option involves an increase in the annual abstraction volume from the River Wharfe where an abstraction permit is currently in operation. This option will not change the daily licence limits. The benefit of the option will depend on when permission is granted, as it is related to the number of days left in the licensing year.

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over-abstraction on sensitive sites, habitats and species) and consider adaptability to climate change.	Large	Low	Short-term	Temporary	Low (adverse)	Low (adverse)	The impact to East Keswick Fitts SSSI (a meandering section of the River Wharfe providing valuable invertebrate habitat) has been assessed as negligible. The drought option has been assessed as having a negligible impact on river flow and level. The drought option is assessed as having a negligible impact on the NERC species and notable species: brown trout, Atlantic salmon, white clawed crayfish, otter and water vole. The risk of deterioration of WFD status regarding invertebrates has been assessed as negligible.	Negligible adverse	None
Biodiversity, flora and fauna	1.2 To avoid introducing or spreading INNS.	N/A	N/A	N/A	N/A	N/A	N/A	Invasive species utilise flow of the watercourse for dispersal. The implementation of the drought option will lead to a negligible reduction in flow, and is therefore not anticipated to increase the spread of aquatic invasive non-native species.	None	None
Population and human health	2.1 To protect and improve health and well-being and reduce inequalities.	Large	Moderate	Short-term	Temporary	Medium (beneficial)	Medium (beneficial)	The drought option would help to maintain essential public water supplies during drought conditions, and therefore help maintain public health and well-being.	None	Moderate beneficial
Population and human health	2.2 To protect and enhance opportunities for formal and informal recreation.	Large	Moderate	Short-term	Temporary	Low (adverse)	Low (adverse)	The drought option would only cause a negligible reduction in flow, therefore recreational activities such as angling will not be impacted.	None	None
Population and human health	2.3 To promote a sustainable economy and thriving communities with good access to the services they need.	Large	Moderate	Short-term	Temporary	Medium (beneficial)	Medium (beneficial)	The drought option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity.	None	Moderate beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	Large	Moderate	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	No impacts on material assets are anticipated. The option involves relatively minor modifications to abstraction volumes only and no significant changes to energy use, generated waste or sustainable designs are envisaged. The option will make use of existing infrastructure.	None	Minor beneficial
Water	4.1 To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies.	Large	Moderate	Short-term	Temporary	Low (adverse)	Low (adverse)	Water quality throughout the study area is assessed as negligible risk of deteriorating.	None	None

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.2 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	Large	Moderate	Short-term	Temporary	Low (adverse)	Low (adverse)	The drought option is assessed as having a negligible impact on river flow. In the River Wharfe, between the intake and the tidal limit, the reduction in daily average flows (assessed as up to 23.6Ml/d and would be confirmed at time of application) at moderate river flow conditions is no greater than a 5% effect, at high flows this is considerably less and there would be no impact on low flows. The drought permit would be implemented for a duration of up to 3 months during the period January to March.	Negligible adverse	None
Water	4.3 To ensure appropriate and sustainable management of abstractions (or compensation flow) to maintain water supplies whilst protecting ecosystem functions that rely on water resources.	Large	Moderate	Short-term	Temporary	Low (adverse)	Medium (beneficial)	The drought option would contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity. The drought option will be accompanied by water conservation campaigns to promote efficient use of water to protect the environment and safeguard supplies.	None	Minor beneficial
Soil, geology and land use	5.1 To protect and enhance the quality and quantity of soils and to protect and enhance geodiversity.	Large	Moderate	Short-term	Temporary	N/A	N/A	There are no land use changes associated with the implementation of the drought option. It is anticipated that there will be no impacts on geologically sensitive sites.	None	None
Air and Climate	6.1 To maintain and improve air quality.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option involves minor modifications to abstraction volumes and would therefore not result in any significant increases in emissions to atmosphere.	None	None
Air and climate	6.2 To reduce greenhouse gas emissions.	N/A	N/A	N/A	N/A	N/A	N/A	The increase in abstraction volumes would be associated with a negligible change in energy use and therefore no significant increase in greenhouse gas emissions are envisaged. The use of existing infrastructure will minimise increases in greenhouse gas emissions.	None	None
Air and climate	6.3 To consider the need for adaptive measures for climate change.	Large	Moderate	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	Drought options are a key component of Yorkshire Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought which may become more prevalent due to climate change.	None	Minor beneficial
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	N/A	N/A	N/A	N/A	N/A	N/A	Nearby ancient monuments and heritage sites are not water-dependent, and would not be impacted by the drought option.	None	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	Large	Moderate	Short-term	Temporary	Low (adverse)	Low (adverse)	The drought option would result in a negligible reduction in the level of the River Wharfe, which will have a negligible visual impact on the Nidderdale AONB. However, there is limited access to the impacted reach with no national trails.	Negligible adverse	None

Drought Plan Option Name: Hull increased abstraction

Drought Plan Option Description: The drought option involves a lowering of the Hands Off Flow of an existing abstraction licence that is currently in operation on the Hull increased abstraction. The option would provide a benefit of up to 20.5 Ml/d dependent on flow levels in the river. The option involves no construction activities or material change in the operation of the abstraction facility.

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over-abstraction on sensitive sites, habitats and species) and consider adaptability to climate change.	Large	Low	Short-term	Temporary	Medium (adverse)	Medium (adverse)	Puffin bog SSSI provides habitat for breeding birds (reed bunting, reed and sedge warblers). However, the fen is not river-water fed, but is supplied by springs that emerge in the valley. The drought option is assessed as having an impact on the following NERC and Notable species due to mortality as a result of water quality deterioration (oxygen stress, gill clogging): Moderate impact risk for river lamprey, brook lamprey and European eel. Minor impact for bullhead and barbel.	Moderate adverse	None
Biodiversity, flora and fauna	1.2 To avoid introducing or spreading INNS.	N/A	N/A	N/A	N/A	N/A	N/A	Invasive species utilise flow of the watercourse for dispersal. The drought option involves the lowering of a Hands Off Flow (HOF) which would lead to a minor reduction in flow, and is therefore not anticipated to increase the risk of the spread of invasive non-native species.	None	None
Population and human health	2.1 To protect and improve health and well-being and reduce inequalities.	Large	Moderate	Short-term	Temporary	High (beneficial)	Medium (beneficial)	The drought option would provide 20.5 Ml/d, helping to maintain essential public water supplies during drought conditions, and therefore help maintain public health and well being.	None	Major beneficial
Population and human health	2.2 To protect and enhance opportunities for formal and informal recreation.	Large	Moderate	Short-term	Temporary	Low (adverse)	Low (adverse)	Angling is unlikely to be impacted by flow reduction, however, the water quality implications of reduced flow on estuarine flushing (of one STW effluent plume) on fisheries may become apparent.	Negligible adverse	None
Population and human health	2.3 To promote a sustainable economy and thriving communities with good access to the services they need.	Large	Moderate	Short-term	Temporary	High (beneficial)	Medium (beneficial)	The drought option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity.	None	Major beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	Large	Moderate	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	No adverse impacts on material assets are anticipated. The drought option involves the lowering of a HOF with no change in existing abstraction quantities and no changes to energy use, generated waste or sustainable designs are envisaged. The option will make use of existing infrastructure.	None	Minor beneficial
Water	4.1 To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies.	Large	Moderate	Short-term	Temporary	High (adverse)	High (adverse)	Due to the major hydrological impact in Reach 1, the risk of water quality deterioration is moderate for dissolved oxygen and low for total ammonia. The risk to water quality in Reach 2 (tidal section) has been assessed as high, based on modelled dissolved oxygen sag near the vicinity of a STW. There is one localised water quality pressures (YWSL STW) within the influence of the drought option, which has been assessed as a high impact risk.	Major adverse	None
Water	4.2 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	Large	Moderate	Short-term	Temporary	Medium (adverse)	Low (adverse)	The drought option would lead to a major reduction in low flows, with associated reduction in wetted width and depth over 0.1 km of the River Hull. There would also be an uncertain reduction in fresh water inflow in the tidal zone of the river, spanning 30km. The drought option will not impact on the moderate to high flow regime in receiving watercourses. The watercourse is navigable, however however impacts on navigation would be minimal.	Minor adverse	None
Water	4.3 To ensure appropriate and sustainable management of abstractions (or compensation flow) to maintain water supplies whilst protecting ecosystem functions that rely on water resources.	Large	Moderate	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity. The drought option will be accompanied by water conservation campaigns to promote efficient use of water to protect the environment and safeguard supplies. Water availability is at least 70% in the zone of influence of the drought option.	None	Minor beneficial

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Soil, geology and land use	5.1 To protect and enhance the quality and quantity of soils and to protect and enhance geodiversity.	N/A	N/A	N/A	N/A	N/A	N/A	There are no land use changes associated with the implementation of the drought option. It is anticipated that there will be no impacts on geologically sensitive sites.	None	None
Air and Climate	6.1 To maintain and improve air quality.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option involves the lowering of the HOF of the abstraction, and would not result in any significant increases in emissions to atmosphere.	None	None
Air and climate	6.2 To reduce greenhouse gas emissions.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option will not result in an increase in energy use, therefore, no changes to greenhouse gas emissions are envisaged. The use of existing infrastructure will minimise increases in greenhouse gas emissions.	None	None
Air and climate	6.3 To consider the need for adaptive measures for climate change.	Large	Moderate	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	Drought options are a key component of Yorkshire Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought, which may become more prevalent due to climate change.	None	Minor beneficial
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	N/A	N/A	N/A	N/A	N/A	N/A	Nearby ancient monuments and heritage sites are not water-dependent and would not be impacted by the drought option.	None	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	N/A	N/A	N/A	N/A	N/A	N/A	There are no designated landscapes in the immediate vicinity.	None	None

Drought Plan Option Name: The River Derwent increased abstraction

Drought Plan Option Description: The drought option involves an increase in the abstraction volume in a licensing year from the River Derwent / River Derwent Site 1, with an equivalent reduction in the annual licence volume permitted to be taken from an upstream abstraction point on the River Derwent Site 2.

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over-abstraction on sensitive sites, habitats and species) and consider adaptability to climate change.	Large	Low	Short-term	Temporary	Low (adverse)	Low (adverse)	HRA screening has concluded that the drought permit will not result in likely significant effects on the designated features of the River Derwent SAC/SSSI, or the Lower Derwent Valley SAC, SPA and Ramsar site, Derwent Ings SSSI or Brighton Meadows SSSI and Ramsar site. All impacts to SSSI and NERC habitats in the reach of the River Derwent between the upper intake and the lower intakes were screened with negligible adverse effects.	Negligible adverse	None
Biodiversity, flora and fauna	1.2 To avoid introducing or spreading INNS.	N/A	N/A	N/A	N/A	N/A	N/A	Invasive species utilise flow of the watercourse for dispersal. The implementation of the drought option will lead to a reduction in flow, and is therefore not anticipated to increase the spread of aquatic invasive non-native species.	None	None
Population and human health	2.1 To protect and improve health and well-being and reduce inequalities.	Large	Moderate	Short-term	Temporary	Medium (beneficial)	Medium (beneficial)	The drought option would help maintain essential public water supplies during drought conditions, and therefore help maintain public health and well-being.	None	Moderate beneficial
Population and human health	2.2 To protect and enhance opportunities for formal and informal recreation.	Large	Moderate	Short-term	Temporary	Medium (beneficial)	Low (beneficial)	The drought option would cause a minor increase in flows, therefore minor beneficial effects are anticipated towards recreational activities such as angling.	None	Minor beneficial
Population and human health	2.3 To promote a sustainable economy and thriving communities with good access to the services they need.	Large	Moderate	Short-term	Temporary	Medium (beneficial)	Medium (beneficial)	The drought option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity.	None	Moderate beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	Large	Moderate	Short-term	Temporary	Low (adverse)	Medium (beneficial)	No impacts on material assets are anticipated. The option involves relatively minor modifications to abstraction volumes only and no significant changes to energy use, generated waste or sustainable designs are envisaged. The option will make use of existing infrastructure.	None	Minor beneficial
Water	4.1 To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies.	Large	Moderate	Short-term	Temporary	Low (adverse)	Low (adverse)	Water quality throughout the study area is assessed as negligible risk of deteriorating.	None	None

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.2 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	Medium	Moderate	Short-term	Temporary	Low (adverse)	Low (adverse)	The drought permit application for the River Derwent is to increase the annual abstraction limit at the lower intake by 2,300 MI/year, and to correspondingly decrease the annual abstraction limit at the upper intake by 2,300 MI/year. The daily limits at each site, and all aggregate volumes are unchanged. The hydrological effects of the drought permit are considered probable and would be an increase in River Derwent flows downstream of the upper intake as far as the lower intake, with the daily flow unaffected downstream of the lower intake. Overall, the magnitude of the effect on flows is considered indiscernible in the context of the River Wharfe's daily variability and all hydrological impacts are considered reversible. The drought permit is assessed as with negligible effect on the hydrology of the River Derwent throughout the study area.	Negligible adverse	None
Water	4.3 To ensure appropriate and sustainable management of abstractions (or compensation flow) to maintain water supplies whilst protecting ecosystem functions that rely on water resources.	Large	Moderate	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option would provide up to 20MI/d which would contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity. The drought option will be accompanied by water conservation campaigns to promote efficient use of water to protect the environment and safeguard supplies.	None	Minor beneficial
Soil, geology and land use	5.1 To protect and enhance the quality and quantity of soils and to protect and enhance geodiversity.	Large	Moderate	Short-term	Temporary	N/A	N/A	There are no land use changes associated with the implementation of the drought option. It is anticipated that there will be no impacts on geologically sensitive sites.	None	None
Air and Climate	6.1 To maintain and improve air quality.	N/A	N/A	N/A	N/A	N/A	N/A	The drought option involves minor modifications to abstraction volumes and would therefore not result in any significant increases in emissions to atmosphere.	None	None
Air and climate	6.2 To reduce greenhouse gas emissions.	N/A	N/A	N/A	N/A	N/A	N/A	The increase in abstraction volumes would be associated with a negligible change in energy use and therefore no significant increase in greenhouse gas emissions are envisaged. The use of existing infrastructure will minimise increases in greenhouse gas emissions.	None	None
Air and climate	6.3 To consider the need for adaptive measures for climate change.	Large	Moderate	Short-term	Temporary	Low (beneficial)	Medium (beneficial)	Drought options are a key component of Yorkshire Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought which may become more prevalent due to climate change.	None	Minor beneficial
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	N/A	N/A	N/A	N/A	N/A	N/A	Nearby ancient monuments and heritage sites are not water-dependent, and would not be impacted by the drought option.	None	None

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	Large	Moderate	Short-term	Temporary	Low (adverse)	Low (adverse)	Overall, the magnitude of the effect on flows is considered indiscernible in the context of the River Wharfe's daily variability. Therefore, visual impacts on the areas of nature conservation in the vicinity of the River Wharfe are considered negligible.	Negligible adverse	None

Drought Plan Option Name: East Yorkshire Groundwater Option 2

Drought Plan Option Description: This drought option would involve relocating a borehole to enable the use of the existing abstraction licence from the East Yorkshire Groundwater Option 2 (4-6MI/d annual average) by up to 5MI/d; increasing the annual average abstraction to 9 MI/d. This option would only be implemented in the occurrence of a three-year drought.

SEA topics and objectives		Assessment of option									
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods)	Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over-abstraction on sensitive sites, habitats and species) and consider adaptability to climate change.	Small	Moderate	Short term	Temporary	Medium (adverse)	Medium (adverse)	The HRA screening of this option assessed the potential impact on the Skipwith Common SAC (UK0030276) and the River Derwent SAC (UK0030253). Hydrological impacts of the drought option are unlikely to influence this site. Impacts resulting from this are unlikely to lead to significant effects on qualifying features as reductions in the groundwater levels are unlikely to directly lead to measurable reductions. The site is sufficiently distanced from proposed infrastructure for direct and in-direct impacts to be unlikely. HRA screening also assessed potential impacts on the Lower Derwent Valley SAC (UK0012844), the Lower Derwent Valley SPA (UK9006092) and the Lower Derwent Valley Ramsar (UK11037). Abstraction would be within the existing borehole licence limit. The small scale of the abstraction would be unlikely to affect flows in the River Derwent. The site is sufficiently distanced from proposed infrastructure for direct and in-direct impacts to be unlikely. The new borehole would be located next to an existing reservoir, which is surrounded by an ancient woodland, a lowland acid oak woodland with ornithological interest. There is existing access to the site. The construction of the new borehole would be likely to cause temporary impacts related to noise, vibration and dust; however, it is expected that these impacts on the neighbouring woodland would be mitigated through best practice construction and timing the construction to avoid adverse impacts on bird populations. The exact route of the pipework connecting the new borehole to the water treatment works and reservoir is unknown and there is a risk of adverse impact on the ancient woodland through disturbance to root structure during excavation activities. At this stage a moderate adverse effect has been assessed pending further design details and method statements to demonstrate whether mitigation measures can avoid impact on the ancient woodland. Once operational, the scale of abstraction is relatively small in comparison to overall abstraction from the aquifer, but the abstraction is from the Wharfe and Lower Ouse WFD groundwater body which is classified as having a poor impact on surface waters. The additional actual abstraction is assessed as having the potential for no greater than minor adverse effects on aquatic flora and fauna.		Moderate adverse	None
Biodiversity, flora and fauna	1.2 To avoid introducing or spreading INNS.	Small	Moderate	Long term	Permanent	Low (adverse)	Low (adverse)	There is a small risk of introducing/spreading INNS during construction, mitigation measures will be implemented to avoid this. Invasive species on site will be identified and removed or treated in advance of construction works. Operation of the scheme is not expected to introduce or spread INNS, as it would not involve movement of people or resources (e.g. water) between sites or catchments.		Negligible adverse	None
Population and human health	2.1 To protect and improve health and well-being and reduce inequalities	Small	Moderate	Short term	Temporary	Low (adverse) Low (beneficial)	Medium (adverse) Medium (beneficial)	The drought option would deliver 9 MI/d helping to maintain essential public water supplies during drought conditions and therefore help maintain public health. The construction of the new borehole and pipeline may have a temporary, minor, adverse impact upon residents located near to the local population (population density 138/km2), particularly residents in close proximity to the construction site, due to nuisance from noise, dust and vibration.		Minor adverse	Minor beneficial
Population and human health	2.2 To protect and enhance opportunities for formal and informal recreation	Small	Moderate	Short term	Temporary	Low (adverse)	Medium (adverse)	The construction work may temporarily impact those who use the woods for informal recreation and ornithology through disturbance from noise, dust and vibration. The construction activity may also have some temporary impact upon recreation due to potential disruption to public paths and rights of access through a woodland and to facilities including the local community centre. These effects would be mitigated as far as possible through best practice construction measures. Once operational, there is unlikely to be any permanent effects on recreation, human health or access to the environment.		Minor adverse	None
Population and human health	2.3 To promote a sustainable economy and thriving communities with good access to the services they need.	Small	Moderate	Short term	Temporary	Low (beneficial)	Medium (beneficial)	Implementation of the drought option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity.		None	Minor beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	Small	Moderate	Short term	Temporary	Low (adverse)	Low (adverse)	Scheme construction will require some use of materials at a scale consistent with the size of the scheme (new pumping station and pipeline). However the scheme will make good use of a large part of existing infrastructure. Once operational, minimal material inputs will be required, other than for regular maintenance but some minor additional resources will be needed for treatment chemicals and power for pumping.		Negligible adverse	None
Water	4.1 To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies.	Small	Low	Short term	Temporary	Low (adverse)	Medium (adverse)	Pollution risks from construction activity should be mitigated by best practice methods. There may be a negligible adverse impact on river water quality at low flows due to the potential impact of reduction in base flow from the aquifer as a result of the increased abstraction, however this needs to be assessed further as the hydrological connectivity is unknown. Downstream impacts to the River Ouse are unlikely given the small abstraction compared to flows within the River Ouse.		Minor adverse	None
Water	4.2 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	Small	Low	Short term	Temporary	Medium (adverse)	Medium (adverse)	The abstraction is from the Wharfe and Lower Ouse and Sherwood Sandstone WFD groundwater body (GB40401G702400), which is classified as having poor quantitative status due to depressed groundwater levels. Although abstraction would be within existing licence limits, the increase in actual abstraction could have a moderate adverse effect, although not sufficient to lead to deterioration in WFD status to "bad". The previous abstraction abstracted the same quantities as this proposed scheme. Therefore it is unlikely to affect the water balance on a groundwater body scale, however further investigation is required.		Moderate adverse	None

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.3 To ensure appropriate and sustainable management of abstractions (or compensation flow) to maintain water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	Small	Low	Short term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option will be accompanied by water conservation campaigns to promote efficient use of water to protect the environment and safeguard supplies.	None	Minor beneficial
Soil, geology and land use	5.1 To protect and enhance the quality and quantity of soils and to protect and enhance geodiversity.	Small	Moderate	Long-term	Temporary	Low (adverse) Low (beneficial)	Low (adverse) Low (beneficial)	Construction of the new borehole and pipeline will have a short term, temporary but negligible effect on the quality and quantity of the soils in the area. Given the small-scale of the borehole, no long-term adverse effects are anticipated on soils, geology or overall land-use management.	Minor adverse	None
Air and Climate	6.1 To maintain and improve air quality.	Small	Moderate	Short term	Temporary	Low (adverse)	Medium (adverse)	Construction work and vehicle movements associated with construction phase will give rise to temporary air pollutant emissions and dust over the short term (6 months), but these will be minimised through best construction practices. There are no AQMAs within proximity of the scheme. Operation of the scheme will require a small increase in energy consumption associated with the increased groundwater pumping and additional water treatment. Air emissions would be negligible as energy would be supplied from the grid so would not be local.	Negligible adverse	None
Air and climate	6.2 To reduce greenhouse gas emissions.	Small	Moderate	Short term	Temporary	Low (adverse)	Medium (adverse)	Construction work and vehicle movements associated with construction phase will give rise to temporary GHG emissions over the short term (6 months), but these will be minimised through best construction practices. Construction is anticipated to result in emission of 1,269t/CO2. The increased energy consumption during operation would be associated with a negligible increase in GHG emissions	Minor adverse	None
Air and climate	6.3 To consider the need for adaptive measures for climate change.	Small	Moderate	Short term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option will be accompanied by water conservation campaigns to promote efficient use of water to protect the environment and safeguard supplies.	None	Minor beneficial
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	Small	Moderate	Long-term	Temporary	Low (adverse)	Low (adverse)	There are no known water dependent cultural heritage assets that might be affected by the potential small reduction in base flow due to the abstraction. Construction work has the potential to disturb unknown buried assets, however this would be further evaluated by desk studies and other investigations prior to construction. A watching brief, surveys and investigation may be implemented during construction if required to reduce the risk of adverse impact to any unknown heritage assets.	Negligible adverse	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	Small	Moderate	Short term	Temporary	Low (adverse)	Low (adverse)	There are no designated landscapes in proximity to the scheme. There may be small scale, temporary adverse effects locally on visual amenity due to construction activity within a woodland setting. However given the small-scale of the borehole, permanent visual impact is unlikely and would be mitigated by screening and design measures. Operation of the scheme is assessed would have no greater than a negligible impact on landscape and visual amenity arising from the potential small reduction in base flow due to the abstraction.	Negligible adverse	None

Drought Plan Option Name: North Yorkshire Groundwater increased abstraction

Drought Plan Option Description: The drought option relates to an increased abstraction from the North Yorkshire Groundwater increased abstraction in which, during a drought abstraction would increase from 8-10MI/d (annual average) and 12.5-14.5MI/d (daily maximum). No additional construction is required.

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over-abstraction on sensitive sites, habitats and species) and consider adaptability to climate change.	Small	Moderate	Short term	Temporary	Low (adverse)	Medium (adverse)	Stage 1 HRA screening has indicated that likely significant effects on the North Pennine Dales Meadows SAC could not be ruled out as a result of the implementation of the North Yorkshire Groundwater increased abstraction scheme. HRA Guidance indicates that the Plan making authority (in this case Yorkshire Water) shall adopt, or otherwise give effect to the Plan, only after having ascertained that it will not adversely affect the integrity of a European site. As such, a Stage 2 HRA was required to determine whether the implementation of the North Yorkshire Groundwater increased abstraction scheme could impact on the conservation objectives or the qualifying features of the North Pennine Dales Meadows SAC. The units of the SAC most likely to be affected by the scheme are located between 4.9km and 6.7km from the boreholes location. Analysis of geological and borehole data indicate that the SACs are above the groundwater water table level and that the SACs are designated for non-water dependant features. As such, it is concluded that abstraction from the proposed North Yorkshire Groundwater increased abstraction will not have a significant adverse effect on the qualifying features of the North Pennine Dales Meadows SAC. There is no construction associated with this option. No operational impacts on NERC Species are envisaged due to the lack of hydraulic connectivity between the groundwater and surface water, however there is some residual uncertainty in relation to the impacts of increased groundwater abstraction from the boreholes. The scheme is in proximity to Swale Lakes SSSI, which is a water dependent site situated downstream on the River Swale flood plain. The site is supported by surface water flows and river sands and gravels – it is not in direct hydraulic connectivity, though there is uncertainty in relation to the potential reduction of baseflow contributions to the River Swale, which supports the Swale Lakes SSSI.	Minor adverse	None
Biodiversity, flora and fauna	1.2 To avoid introducing or spreading INNS.	N/A	N/A	N/A	N/A	N/A	N/A	No impacts on invasive species are envisaged during operation of this drought option.	None	None
Population and human health	2.1 To protect and improve health and well-being and reduce inequalities	Small	Moderate	Short term	Temporary	Medium (beneficial)	Medium (beneficial)	The drought option would deliver an additional 2 MI/d helping to maintain essential public water supplies during drought conditions and therefore help maintain public health.	None	Moderate beneficial
Population and human health	2.2 To protect and enhance opportunities for formal and informal recreation.	N/A	N/A	N/A	N/A	N/A	N/A	There is no construction associated with this option. There are no recreational areas nearby and no national trails, therefore impacts are not expected during the implementation of the drought option.	None	None
Population and human health	2.3 To promote a sustainable economy and thriving communities with good access to the services they need.	Small	Moderate	Short term	Temporary	Medium (beneficial)	Medium (beneficial)	Implementation of the drought option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity with no permanent adverse effects on the environment.	None	Moderate beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	Small	Moderate	Short term	Temporary	Low (adverse)	Medium (adverse)	There is no construction associated with this option. Once operational, minimal material inputs will be required, other than for regular maintenance but some minor additional resources will be needed for treatment chemicals and power for pumping.	Minor adverse	None

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.1 To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies.	Small	Moderate	Short term	Temporary	Low (adverse)	Low (adverse)	There may be a negligible adverse impact on river water quality at low flows due to the potential impact of a minor reduction in baseflow from the Millstone Grit and Carboniferous Limestone aquifer as a result of the increased abstraction, however this needs to be assessed further.	Negligible adverse	None
Water	4.2 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	Small	Moderate	Short term	Temporary	Low (adverse)	Low (adverse)	There may be a local, negligible impact on baseflow to the River Swale from the Millstone Grit and Carboniferous Limestone aquifer as a result of the increased abstraction. This would require further investigation.	Negligible adverse	None
Water	4.3 To ensure appropriate and sustainable management of water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	Small	Moderate	Short term	Temporary	Medium (beneficial)	High (beneficial)	The drought option will be accompanied by water conservation campaigns to promote efficient use of water to protect the environment and safeguard supplies. Water availability is at least 50% in the zone of influence of the drought option.	None	Moderate beneficial
Soil, geology and land use	5.1 To protect and enhance the quality and quantity of soils and to protect and enhance geodiversity.	N/A	N/A	N/A	N/A	N/A	N/A	There is no additional land take or excavations or construction associated with the scheme, therefore no impacts are anticipated.	None	None
Air and Climate	6.1 To maintain and improve air quality.	Small	Moderate	Short term	Temporary	Low (adverse)	Medium (adverse)	The small increase in energy consumption would be associated with minor adverse effects on air quality.	Minor adverse	None
Air and climate	6.2 To reduce greenhouse gas emissions.	Small	Moderate	Short term	Temporary	Low (adverse)	Medium (adverse)	The increase in energy consumption would also be associated with a minor increase in greenhouse gas emissions.	Minor adverse	None
Air and climate	6.3 To consider the need for adaptive measures for climate change.	Small	Moderate	Short term	Temporary	Medium (beneficial)	Medium (beneficial)	Drought options are a key component of Yorkshire Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought which may become more prevalent due to climate change.	None	Moderate beneficial
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	N/A	N/A	N/A	N/A	N/A	N/A	There are no listed or designated assets within proximity to the scheme. There are no known water dependent heritage assets that might be affected by the potential small reduction in baseflow due to the abstraction.	None	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	N/A	N/A	N/A	N/A	N/A	N/A	There are no landscape designations in proximity to the scheme.	None	None

Drought Plan Option Name: Increased Ouse pumping capacity

Drought Plan Option Description: This scheme is to increase the pumping capacity at Ouse pumping station to 150 MI/d by removing operational or infrastructure constraints. Construction of a 800mm diameter and 1,000mm diameter steel pipe, laid through ~28km corridor of mostly agricultural land would also be required. The potential additional resource from the drought option is an average 10 MI/d. Ouse pumping station pumps to a WTW, with a design flow of 136 MI/d, however the maximum achievable flow is 124 MI/d.

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over-abstraction on sensitive sites, habitats and species) and consider adaptability to climate change.	Large	Medium	Short term	Permanent	Low (adverse)	Medium (adverse)	The proposed pipeline passes approximately 500m from Eccup Reservoir SSSI (which supports a range of wintering and passage wildfowl) and the potential construction impacts have been assessed as minor risk taking account of best practice construction methods. Uncertainty surrounds the potential impact from the pipeline construction on various NERC species (birds, great crested newts, bats, otter, water vole, common reptiles, badgers), however best construction methods such as constructing at certain times in the year (e.g., out of spawning season), or washing construction vehicles should mitigate many of these potential impacts. Impacts from operation of the scheme on the aquatic environment are assessed as negligible.	Minor adverse	None
Biodiversity, flora and fauna	1.2 To avoid introducing or spreading INNS.	Large	Medium	Short term	Permanent	Low (adverse)	Medium (adverse)	Invasive species (Japanese knotweed, giant hogweed & Himalayan balsam) are known to be present in the areas that would undergo construction. There is a risk of potentially spreading these species through the construction phase. It is assumed that appropriate mitigation measures will be undertaken to reduce the risk of the spread of invasive species. The operational phase of the scheme poses no risk to the spread of invasive species.	Minor adverse	None
Population and human health	2.1 To protect and improve health and well-being and reduce inequalities	Large	Medium	Short term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option would deliver 10 MI/d helping to maintain essential public water supplies during drought conditions and therefore help maintain public health.	None	Minor beneficial
Population and human health	2.2 To protect and enhance opportunities for formal and informal recreation.	Large	Medium	Short term	Temporary	Low (adverse)	Low (adverse)	There are angling activities present in the River Ouse, however, the negligible flow reduction in the watercourse is not anticipated to have an impact on the quality of the angling.	Negligible adverse	None
Population and human health	2.3 To promote a sustainable economy and thriving communities with good access to the services they need.	Large	Medium	Short term	Temporary	Low (beneficial)	Medium (beneficial)	The option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity.	None	Minor beneficial

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	Large	Medium	Short term	Permanent	Medium (adverse)	Medium (adverse)	The scheme's construction would involve a medium scale consumption of resources and once operational additional chemicals and energy would be required for water treatment and distribution. To mitigate the adverse effects, resources for construction would be sourced locally where possible.	Moderate adverse	None
Water	4.1 To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies.	Large	Medium	Short term	Temporary	Low (adverse)	Medium (adverse)	The increased abstraction would have a negligible impact on flow levels and therefore water quality. The additional flow can only be abstracted when river flows are above the prescribed limit set in the abstraction licence (or drought option if this has been granted under the drought option option). The WFD status is sensitive to flow level change.	Minor adverse	None
Water	4.2 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	Large	Medium	Short term	Temporary	Low (adverse)	Low (adverse)	The drought option would have a negligible impact on surface and groundwater flows.	Negligible adverse	None
Water	4.3 To ensure appropriate and sustainable management of water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	Large	Medium	Short term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option will be accompanied by water conservation campaigns to promote efficient use of water to protect the environment and safeguard supplies. Water availability is at least 50% in the zone of influence of the drought option.	None	Minor beneficial
Soil, geology and land use	5.1 To protect and enhance the quality and quantity of soils and to protect and enhance geodiversity.	Large	Medium	Short term	Temporary	Low (adverse)	Low (adverse)	There would be negligible land use changes associated with this drought option. There are anticipated to be no impacts on geologically important sites.	Negligible adverse	None

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Air and Climate	6.1 To maintain and improve air quality.	Large	Medium	Short term	Temporary	Medium (adverse)	Medium (adverse)	The construction phase of the new pipeline and additional assets would give rise to dust emissions that could impact nearby sensitive environmental receptors. However, these effects would be minimised through best practice construction methods, as such, the residual effects would only be moderate adverse. During the operational phase of the scheme, there would be increased energy use associated with pumping and treatment processes. There would be a proportional increase in emissions to atmosphere, however, energy would be supplied from the grid so emissions would not be localised.	Moderate adverse	None
Air and climate	6.2 To reduce greenhouse gas emissions.	Large	Medium	Short term	Temporary	Medium (adverse)	Medium (adverse)	The construction phase of the new pipeline and the pumping and treatment processes involved in the operational phase would be associated with an increase in energy use. This would result in moderate adverse effects associated with the increase in greenhouse gas emissions.	Moderate adverse	None
Air and climate	6.3 To consider the need for adaptive measures for climate change.	Large	Medium	Short term	Temporary	Low (beneficial)	Medium (beneficial)	Drought plan options are a key component of Yorkshire Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought which may become more prevalent due to climate change.	None	Minor beneficial
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	Large	Medium	Short term	Temporary	Low (adverse)	Low (adverse)	There are no known cultural heritage or archaeology sites dependent on flows in the River Ouse. There is the potential for cultural heritage or archaeology sites within the vicinity of the pipeline route to be impacted. However, assuming best practice constructions methods and the implementation of mitigations measures then these impacts would be negligible.	Negligible adverse	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	Large	Medium	Short term	Temporary	Low (adverse)	Medium (adverse)	There are some limited construction impacts on visual amenity anticipated in rural areas of agricultural land during river intake and pipeline construction, but this would be a short-term impact. No other impacts are anticipated during the operation of the scheme.	Minor adverse	None

Drought Plan Option Name: Ouse Raw Water Transfer

Drought Plan Option Description: The scheme would utilise the existing Ouse abstraction raw water licences (130 MI/d peak, 96 MI/d average). Under this option, raw water abstracted from the Ouse abstraction would be pumped via a new pipeline to an existing 1,200mm raw water main connecting the to the River Derwent Water Treatment Works 1. This scheme would maximise make more use of the existing Acomb Landing abstraction licence. Following commissioning of the expanded Ouse WTW the capacity of the works will increase to 35MI/d. This scheme would utilise the remaining 60MI/d average allowance available under the existing abstraction licence, with the raw water piped to River Derwent Water Treatment Works 1 for treatment. Modelling for the 2014 WRMP showed this option would provide an annual average 40MI/d in a dry year scenario. Use in a drought could be greater depending on water availability in the River Ouse and at other sources supplying River Derwent Water Treatment Works 1. As such, a deployable output of 60MI/d is assumed for the drought option.

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over-abstraction on sensitive sites, habitats and species) and consider adaptability to climate change.	Medium	High	Short term	Permanent	Low (adverse)	Medium (adverse)	The construction of the pipeline has the potential to impact numerous designated sites through habitat destruction and disturbance of susceptible species. However, the adverse effects would be limited to minor through pipeline route diversion and best practice construction techniques. There are a number of NERC fish species (Atlantic salmon, European eel, barbel, sea trout, river lamprey, sea lamprey, allis shad, twaite shad) that could potentially be impacted by the operation of the scheme. However, the abstraction will be within existing abstraction licence limits which have been reviewed by the Review of Consents process under the Habitats Directive. Impacts are therefore assessed as minor adverse. Uncertainty surrounds the potential impact from construction on various NERC species (birds, great crested newts, bats, otter, water vole, common reptiles, badgers), but best practice construction activity will mitigate adverse effects. The peak abstraction impacts on the river Ouse at low flows (Q99) are assessed as minor and the abstraction would be within existing abstraction licence conditions. Impacts on downstream SSSIs near the river reaches are assessed as having a minor impact.	Minor adverse	None
Biodiversity, flora and fauna	1.2 To avoid introducing or spreading INNS.	Medium	Moderate	Short term	Permanent	Low (adverse)	Medium (adverse)	Invasive species (Japanese knotweed, giant hogweed & Himalayan balsam) are known to be present in the areas that would undergo construction. There is a risk of potentially spreading these species through the construction phase. It is assumed that appropriate mitigation measures will be undertaken to reduce the risk of the spread of invasive species. The operational phase of the scheme poses no risk to the spread of invasive species.	Minor adverse	
Population and human health	2.1 To protect and improve health and well-being and reduce inequalities	Medium	Moderate	Short term	Temporary	High (beneficial)	Medium (beneficial)	The drought option would provide up to 60 MI/d helping to maintain essential public water supplies during drought conditions and therefore help maintain public health.	None	Major beneficial
Population and human health	2.2 To protect and enhance opportunities for formal and informal recreation.	Medium	Moderate	Short term	Temporary	Low (adverse)	Low (adverse)	There are angling activities present in the River Ouse, however, the minor flow reduction in the watercourse is not anticipated to have a significant impact on the quality of the angling.	Negligible adverse	None

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Population and human health	2.3 To promote a sustainable economy and thriving communities with good access to the services they need.	Medium	Moderate	Short term	Temporary	High (beneficial)	Medium (beneficial)	The option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity.	None	Major beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	Medium	High	Short term	Temporary	Low (adverse)	Medium (adverse)	The scheme's construction (1.6 km pipeline) would involve a small scale consumption of resources and once operational additional chemicals and energy would be required for water treatment and distribution. To mitigate the adverse effects, resources for construction would be sourced locally where possible.	Minor adverse	None
Water	4.1 To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies.	Medium	Moderate	Short term	Temporary	Medium (adverse)	Medium (adverse)	The drought option in combination with a sewage treatment works (STW) downstream in the Ouse could pose a risk of water quality deterioration. The drought option abstraction could reduce river flow available to dilute the effluent which could lead to an increase in total ammonia and BOD contributions of 7% from Ouse STW 1 at summer low flow.	Moderate adverse	None
Water	4.2 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	Medium	Moderate	Short term	Temporary	Low (adverse)	Medium (adverse)	The hydrological impact on low flows would be minor adverse across the impacted reaches of the Ouse. The associated reduction in wetted width and depth could potentially impact habitats hydrologically connected to the River Ouse. The minor flow reduction would have no impact on navigation.	Minor adverse	None
Water	4.3 To ensure appropriate and sustainable management of water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	Medium	Moderate	Short term	Temporary	Low (beneficial)	Medium (adverse)	The drought option will be accompanied by water conservation campaigns to promote efficient use of water to protect the environment and safeguard supplies. Water availability is at least 50% in the zone of influence of the drought option.	None	Minor beneficial
Soil, geology and land use	5.1 To protect and enhance the quality and quantity of soils and to protect and enhance geodiversity.	Medium	Moderate	Short term	Temporary	Low (adverse)	Low (adverse)	The small amount of land required to accommodate the new pipeline would have negligible adverse effects on land use and it is anticipated that there would be no impact on geologically sensitive sites.	Negligible adverse	None
Air and Climate	6.1 To maintain and improve air quality.	Medium	Moderate	Short term	Temporary	Low (adverse)	Medium (adverse)	The construction phase of the new pipeline and additional assets would give rise to dust emissions that could impact nearby sensitive environmental receptors. However, these effects would be minimised through best practice construction methods, as such, the residual effects would only be minor adverse. During the operational phase of the scheme, there would be increased energy use associated with pumping and treatment processes. There would be a proportional increase in emissions to atmosphere, however, energy would be supplied from the grid so emissions would not be localised.	Minor adverse	None

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Air and climate	6.2 To reduce greenhouse gas emissions.	Medium	Moderate	Short term	Temporary	Low (adverse)	Medium (adverse)	The construction phase of the new pipeline and the pumping and treatment processes involved in the operational phase would be associated with an increase in energy use. This would result in minor adverse effects associated with the increase in greenhouse gas emissions.	Minor adverse	None
Air and climate	6.3 To consider the need for adaptive measures for climate change.	Medium	Moderate	Short term	Temporary	Low (beneficial)	Medium (beneficial)	Drought measures are a key component of Yorkshire Water's Drought Plan. The Drought Plan aims to ensure resilience of water supplies to drought.	None	Minor beneficial
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	Medium	High	Short term	Temporary	Low (adverse)	Low (adverse)	No known water-dependent cultural heritage or archaeology sites are located within or adjacent to the impacted reaches. There would be negligible construction impacts assessed for other cultural heritage or archaeology sites located in the vicinity of the scheme, with good construction practices adopted.	Negligible adverse	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	Medium	High	Short term	Temporary	Low (adverse)	Medium (adverse)	Some limited construction impact on visual amenity during river intake and pipeline (1.6km) construction, but this would be localised and short-term impact. No other impacts are anticipated during operation of the scheme.	Minor adverse	None

Drought Plan Option Name: Ouse water treatment works extension

Drought Plan Option Description: This option involves the construction of additional water treatment capacity at Ouse WTW to enable YWSL to abstract water from the River Ouse up to the limit of the abstraction licence. The licence allows for abstraction Ouse abstraction of 96MI/d average and 130MI/d peak. This enables an additional 22MI/d yield (average) – with an additional 25MI/d (average) abstracted and 3MI/d returned as WTW washwater. The scheme also includes the construction of a new river intake on the River Ouse.

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over-abstraction on sensitive sites, habitats and species) and consider adaptability to climate change.	Medium	High	Short term	Permanent	Low (adverse)	Medium (adverse)	The construction phase of the scheme would result in adverse effects on designated sites in proximity to new treatment works. Uncertainty surrounds the potential impact from construction on various NERC species (birds, great crested newts, bats, otter, water vole, common reptiles, badgers). Best practice construction methods would also be implemented to further reduce residual effects on environmental receptors. As such, the construction phase of the scheme would only have minor adverse impacts on biodiversity, flora and fauna. The operational phase of the scheme would result in adverse effects on designated sites and NERC species (Atlantic salmon, European eel, barbel, sea trout, river lamprey, sea lamprey, allis shad, twaite shad) hydrologically connected to the impacted reaches of the drought option. However, the abstraction will be within existing abstraction licence limits which have been reviewed by the Review of Consents process under the Habitats Directive. Potential impacts are therefore considered to be minor adverse.	Minor adverse	None
Biodiversity, flora and fauna	1.2 To avoid introducing or spreading INNS.	Medium	Moderate	Short term	Permanent	Low (adverse)	Medium (adverse)	Invasive species (Japanese knotweed, giant hogweed & Himalayan balsam) are known to be present in the areas that would undergo construction. There is a risk of spreading these species through the construction phase. It is assumed that appropriate mitigation measures will be undertaken to reduce the risk of the spread of invasive species. The operational phase of the scheme poses no risk to the spread of invasive species.	Minor adverse	None
Population and human health	2.1 To protect and improve health and well-being and reduce inequalities	Medium	Moderate	Short term	Temporary	High (beneficial)	Medium (beneficial)	The drought option would deliver 22 MI/d, helping to maintain essential public water supplies during drought conditions and therefore help maintain public health and well-being.	None	Major beneficial
Population and human health	2.2 To protect and enhance opportunities for formal and informal recreation.	Medium	Moderate	Short term	Temporary	Low (adverse)	Low (adverse)	There are angling activities present in the River Ouse, however, the minor flow reduction in the watercourse is not anticipated to have a significant impact on the quality of the angling.	Negligible adverse	None
Population and human health	2.3 To promote a sustainable economy and thriving communities with good access to the services they need.	Medium	Moderate	Short term	Temporary	High (beneficial)	Medium (beneficial)	The option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity.	None	Major beneficial

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	Medium	High	Short term	Temporary	Medium (adverse)	Medium (adverse)	The scheme's construction (new treatment works) would involve a medium scale consumption of resources and once operational additional chemicals and energy would be required for water treatment and distribution. To mitigate the adverse effects, resources for construction would be sourced locally where possible.	Moderate adverse	None
Water	4.1 To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies.	Medium	Moderate	Short term	Temporary	Medium (adverse)	Medium (adverse)	The drought option in combination with a sewage treatment works (STW) could pose a risk of water quality deterioration. The drought option abstraction could reduce river flow available to dilute the effluent which could lead to an increase in total ammonia and BOD contributions of 7% from Ouse STW 1 at summer low flow.	Moderate adverse	None
Water	4.2 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	Medium	Moderate	Short term	Temporary	Low (adverse)	Medium (adverse)	The hydrological impact on low flows across the impacted reaches would be minor adverse. This change in flow would reduce the wetted width and depth and potentially have an impact on habitats hydrologically connected to the River Ouse. The minor flow reduction would have no impact on navigation.	Minor adverse	None
Water	4.3 To ensure appropriate and sustainable management of water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	Medium	Moderate	Short term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option will be accompanied by water conservation campaigns to promote efficient use of water to protect the environment and safeguard supplies. Water availability is at least 50% in the zone of influence of the drought option.	None	Minor beneficial
Soil, geology and land use	5.1 To protect and enhance the quality and quantity of soils and to protect and enhance geodiversity.	Medium	Moderate	Short term	Temporary	Low (adverse)	Low (adverse)	The small amount of land required to accommodate the new treatment works would have negligible adverse effects on land use and it is anticipated that there would be no impact on geologically sensitive sites.	Negligible adverse	None
Air and Climate	6.1 To maintain and improve air quality.	Medium	Moderate	Short term	Temporary	Medium (adverse)	Medium (adverse)	The construction phase of the new WTW and associated infrastructure would give rise to dust emissions that could impact nearby sensitive environmental receptors. However, these effects would be minimised through best practice construction methods, as such, the residual effects would only be minor adverse. During the operational phase of the scheme, there would be increased energy use associated with pumping and treatment processes. There would be a proportional increase in emissions to atmosphere, however, energy would be supplied from the grid so emissions would not be localised.	Moderate adverse	None

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Air and climate	6.2 To reduce greenhouse gas emissions.	Medium	Moderate	Short term	Temporary	Medium (adverse)	Medium (adverse)	The construction phase of the new treatment works and the treatment processes involved in the operational phase would be associated with an increase in energy use. This would result in minor adverse effects associated with the increase in greenhouse gas emissions.	Moderate adverse	None
Air and climate	6.3 To consider the need for adaptive measures for climate change.	Medium	Moderate	Short term	Temporary	Low (beneficial)	Medium (beneficial)	Drought plan options are a key component of Yorkshire Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought which may become more prevalent due to climate change.	None	Minor beneficial
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	Medium	High	Short term	Temporary	Low (adverse)	Low (adverse)	No known water-dependent cultural heritage or archaeology sites are located within or adjacent to the impacted reaches. Potential impacts on other cultural heritage or archaeology sites due to the construction phase of the scheme would be negligible as appropriate mitigation measures would ensure that assets are not impacted.	Negligible adverse	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	Medium	High	Short term	Temporary	Low (adverse)	Medium (adverse)	The construction of the new treatment works would have a temporary minor adverse impact on visual amenity of the surrounding countryside, however, permanent impacts are considered to be negligible when accounting for appropriate design and visual screening. The impact on the natural flow regime in the impacted water courses would not be perceptible.	Minor adverse	None

Drought Plan Option Name: Tees - Derwent Pipeline

Drought Plan Option Description: The scheme comprises a complete pipeline connection between the River Tees and the River Derwent Water Treatment Works 1. A new pipeline and inline pumping station will connect the existing Blackwell to Birkby pipeline to a high point and a new break pressure tank at the Yorkshire Water site. From here the water will flow by gravity via a new pipeline to Shipton, from where it will join a pumping station to River Derwent Water Treatment Works 1 raw water pipeline. This option utilises the existing Northumbrian Water Ltd River Tees intake and pumping station at Blackwell. The option would deliver a deployable output of up to 40 MI/d.

SEA topics and objectives				Assessment of option						
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over-abstraction on sensitive sites, habitats and species) and consider adaptability to climate change.	Medium	Moderate	Medium-term	Permanent	Low (adverse)	Medium (adverse)	<p>Preliminary environmental assessment and HRA of the scheme construction and operation has highlighted a number of potential, but uncertain adverse effects on several designated European sites, SSSIs and NERC species (including impacts of supporting transfer flows from Northumberland Reservoir 2 and/or Northumberland Reservoir 1 via the North Tyne to Tees tunnel).</p> <p>-Tyne Waters meet SSSI in Reach 1 (Tyne): impacts on flooding of site are assessed unlikely, however further investigation is required.</p> <p>- In Reach 2A (Tees) the impact on North Pennine Moors SPA, Moor House-Upper Teesdale SAC and Upper Teesdale SSSI in the Cow Green/Upper River Tees area is assessed as negligible impact: the Tees abstraction is unlikely to adversely affect Northumberland Reservoir 2 water levels and is within current licenced limits. Impacts of the licence were assessed as part of Review of Consents under Habitats Directive.</p> <p>- Impacts on Appleby Fells SSSI are assessed as negligible due to negligible impact on Northumberland Reservoir 2 levels, however further investigation is needed.</p> <p>Reach 2B (Tees): Impact on Hell Kettles SSSI assessed as negligible given the hydrological characteristics of the site and that there will be no net impact on flows in the Tees. However, there may be construction impacts.</p> <p>The impacts in the Tees catchments on NERC fish species are assessed as minor in relation to changes in-disease transfer risks, invasive species migration,-due to River North Tyne transfers.</p> <p>There are uncertain construction impacts on NERC and notable species including Otter, Great Crested Newt, Bats, and common reptiles. The sensitivity of WFD status of the surrounding waterbodies is assessed as minor.</p>	Minor adverse	None
Biodiversity, flora and fauna	1.2 To avoid introducing or spreading INNS.	Medium	Moderate	Medium-term	Permanent	Medium (adverse)	High (adverse)	The risk of the spread of signal crayfish and crayfish plague would be minor for the native white clawed crayfish (NERC species) in the Tees catchments as a result of flow and level changes. There is also the potential for other invasive species be spread during construction, however, this is currently uncertain.	Minor adverse	None
Population and human health	2.1 To protect and improve health and well-being and reduce inequalities	Large	Moderate	Medium-term	Temporary	High (beneficial)	Medium (beneficial)	The drought option would provide 40 MI/d, helping to maintain essential public water supplies during drought conditions and therefore help maintain public health.	None	Major beneficial
Population and human health	2.2 To protect and enhance opportunities for formal and informal recreation.	Large	Moderate	Medium-term	Temporary	Low (adverse)	Low (adverse)	The scheme would not affect access to open spaces, but may have a negligible adverse impact on a golf course and caravan site in close proximity to the impacted reaches.	Negligible adverse	None
Population and human health	2.3 To promote a sustainable economy and thriving communities with good access to the services they need.	Large	Moderate	Medium-term	Temporary	High (beneficial)	Medium (beneficial)	The option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity.	None	Major beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	Large	Moderate	Medium-term	Temporary	High (adverse)	Medium (adverse)	The scheme's construction (+50 km pipeline) would involve a large scale consumption of resources and once operational, additional chemicals and energy would be required for water treatment and distribution. To mitigate the adverse effects, resources for construction would be sourced locally where possible.	Major adverse	None
Water	4.1 To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies.	Medium	Moderate	Medium-term	Temporary	Low (adverse)	Medium (adverse)	The risk of water quality deterioration would be negligible as the drought option would not lower flows in the River Tees. Negligible impacts associated with reduced dilution of effluent can be expected. The sensitivity of the WFD status is assessed as minor.	Minor adverse	None

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.2 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	Medium	Moderate	Medium-term	Temporary	Low (adverse)	Medium (adverse)	The drought option involves transfer of surplus licensed water and does not require abstraction in excess of current licensed volumes for the River Tees or the River Tyne. Flows in the River Tees will be supported by releases from Northumberland. Reservoir 2 and those from the River Tyne by releases from Northumberland Reservoir 1. The transfers may result in amelioration of drought of drought impacts in reaches where flows may be increased, which may be important ecologically. However, flow releases and transfers do lead to some alterations to the natural flow regime which could have minor adverse impacts on habitats.	Minor adverse	None
Water	4.3 To ensure appropriate and sustainable management of water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	Large	Moderate	Medium-term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option will be accompanied by water conservation campaigns to promote efficient use of water to protect the environment and safeguard supplies.	None	Minor beneficial
Soil, geology and land use	5.1 To protect and enhance the quality and quantity of soils and to protect and enhance geodiversity.	Large	Moderate	Medium-term	Temporary	Medium (adverse)	Medium (adverse)	The land required to accommodate the new pipeline and other features of the scheme would have minor adverse effects on land use and it is anticipated that there would be no impact on geologically sensitive sites.	Moderate adverse	None
Air and Climate	6.1 To maintain and improve air quality.	Large	Moderate	Medium-term	Temporary	Low (adverse)	Medium (adverse)	The construction phase of the new pipeline would give rise to dust emissions that could impact nearby sensitive environmental receptors. However, these effects would be minimised through best practice construction methods, as such, the residual effects would only be minor adverse. During the operational phase of the scheme, there would be increased energy use associated with pumping and treatment processes. There would be a proportional increase in emissions to atmosphere, however, energy would be supplied from the grid so emissions would not be localised.	Minor adverse	None
Air and climate	6.2 To reduce greenhouse gas emissions.	Large	Moderate	Medium-term	Temporary	Medium (adverse)	Medium (adverse)	The construction phase of the new pipeline and the pumping and treatment processes involved in the operational phase would be associated with an increase in energy use. This would result in major adverse effects associated with the increase in greenhouse gas emissions.	Moderate adverse	None
Air and climate	6.3 To consider the need for adaptive measures for climate change.	Large	Moderate	Medium-term	Temporary	Low (beneficial)	Medium (beneficial)	Drought plan options are a key component of Yorkshire Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought conditions which may become more prevalent due to climate change.	None	Minor beneficial
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	Large	Moderate	Medium-term	Temporary	Low (adverse)	Low (adverse)	No known water-dependent cultural heritage or archaeology sites are located within or adjacent to the impacted reaches. Potential impacts on other cultural heritage or archaeology sites due to the construction phase of the scheme would be negligible, as appropriate mitigation measures would ensure that assets are not impacted.	Negligible adverse	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	Large	Moderate	Medium-term	Temporary	Low (adverse)	Medium (adverse)	The construction of the pipeline would have a temporary minor adverse impact on visual amenity of the surrounding countryside, however, permanent impacts are considered to be negligible when accounting for appropriate design and visual screening. The impact on the natural flow regime in the impacted water courses would not be perceptible.	Minor adverse	None

Drought Plan Option Name: Tees - Swale Transfer

Drought Plan Option Description: This drought option would transfer water from the River Tees and/or the River Tyne (via the River Tees) to an existing abstraction point on the River Ouse . Transfers from the Tyne to the Tees would only occur when there is insufficient water available from resources in the Tees catchment. YWSL identify that the option would only be implemented during a water resources drought as a last resort. The likelihood of its implementation is further reduced by a likely lead-in period of 18 months due to the requirement for construction of a 15.7km pipeline. The transfer would require construction of a pipeline to extend an already constructed but as yet unused pipeline. Water would then be transferred using the river system of the Rivers Swale and Ouse to the existing abstraction on the Ouse. The drought option would deliver up to 42M/d.

SEA topics and objectives				Assessment of option							
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods)	Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over-abstraction on sensitive sites, habitats and species) and consider adaptability to climate change.	Large	Moderate	Short term	Permanent	Medium (adverse)	Medium (adverse)	<p>Preliminary environmental assessment and the HRA highlighted potential, but uncertain adverse effects on several designated European sites, SSSIs and NERC species (including impacts of supporting transfer flows from Northumberland Reservoir 2 and/or Northumberland Reservoir 1 via the North Tyne to Tees tunnel).</p> <ul style="list-style-type: none"> - Tyne Waters meet SSSI in Reach 1 (Tyne): impacts on flooding of site are assessed as minor, but some uncertainty remains. - In Reach 2A (Tees) the impact on North Pennine Moors SPA, Moor House-Upper Teesdale SAC and Upper Teesdale SSSI in the Cow Green/Upper River Tees area is assessed as negligible impact: the Tees abstraction is unlikely to adversely affect Northumberland Reservoir 2 water levels and is within current licensed limits. - Impacts on Appleby Fells SSSI are assessed as negligible due to negligible impact on Northumberland Reservoir 2. - Reach 2B (Tees): impact on Hell Kettles SSSI assessed as negligible given the hydrological characteristics of the site. - Negligible impact on NERC species (Fish) in Reach 1A (Tyne) as risk of entrainment due to abstraction can be mitigated. - The impacts in the Tees catchments on NERC fish species are assessed as minor in relation to changes in water chemistry, disease transfer risks, invasive species migration, temperature and flow/level changes due to River North Tyne transfers. - Adverse effects in the Swale catchment on NERC fish species are assessed as moderate due to risk of mortality or harm if there was a transfer of a notifiable fish disease from the Tees. - Uncertain effects in the Swale catchment regarding NERC species Freshwater White – clawed Crayfish. - Uncertain construction impacts on NERC Species, including otter, great crested newt, badger and common reptiles. - The sensitivity of the WFD status is assessed as minor. 		Moderate adverse	None
Biodiversity, flora and fauna	1.2 To avoid introducing or spreading INNS.	Large	Moderate	Short term	Permanent	Medium (adverse)	High (adverse)	<p>There is uncertainty surrounding the likely effect of flow and level impacts upon existing invasive species populations and their ability to distribute further within the watercourse. However, the minor hydrological impact is not considered likely to significantly impact upon the species as hydrological conditions and water levels are only subject to slight change.</p> <p>There is uncertainty as to the transfer scheme's overall potential impact regarding catchment river transfers and INNS risks. For example, the transmission of crayfish plague. Without effective mitigation this is considered of major concern. Uncertainty also surrounds the impact of construction on the spread of invasive species such as Japanese knotweed.</p>		Major adverse	
Population and human health	2.1 To protect and improve health and well-being and reduce inequalities	Large	Moderate	Short term	Temporary	High (beneficial)	Medium (adverse)	The drought option would deliver 42 M/d helping to maintain essential public water supplies during drought conditions and therefore help maintain public health.		None	Major beneficial
Population and human health	2.2 To protect and enhance opportunities for formal and informal recreation.	Large	Moderate	Short term	Temporary	Low (adverse)	Medium (adverse)	The scheme will not affect access to open spaces but may have a minor impact on informal recreational activities. The Teesdale Way runs along the River Swale, construction may impact access, however during the operation no issues are anticipated. Navigation would not be affected.		Minor adverse	None
Population and human health	2.3 To promote a sustainable economy and thriving communities with good access to the services they need.	Large	Moderate	Short term	Temporary	High (beneficial)	Medium (adverse)	The option would contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity.		None	Major beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	Large	Moderate	Short term	Temporary	Medium (adverse)	Medium (adverse)	The scheme's construction (15.7 km pipeline) would involve a medium scale consumption of resources and once operational, additional chemicals and energy would be required for water treatment and distribution. To mitigate the adverse effects, resources for construction would be sourced locally where possible.		Moderate adverse	None
Water	4.1 To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies.	Large	Moderate	Short term	Temporary	Low (adverse)	Low (adverse)	Water quality impact risk has been assessed as negligible as the drought option would not lower river flows (and will increase flows in some reaches). Negligible impacts associated with reduced dilution of effluent can be expected.		Negligible adverse	None

SEA topics and objectives				Assessment of option						
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.2 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	Autumn/ Winter 2016	Moderate	Short term	Temporary	Low (adverse)	Medium (adverse)	The drought option involves transfer of surplus licensed water, and does not require abstraction in excess of current licensed volumes for the River Ouse, River Tees or the River Tyne. Flows in the River Tees will be supported by releases from Northumberland Reservoir 2 and those from the River Tyne by releases from Northumberland Reservoir 1. The transfers may result in amelioration of drought impacts in reaches where flows are increased, which may be important ecologically. However, flow releases and transfers do lead to some alterations to the natural flow regime, although well within the normal flow ranges of each river. The change in wetted width and depth is there is therefore expected to not vary outside the natural regime of the river.	Minor adverse	None
Water	4.3 To ensure appropriate and sustainable management of water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	Large	Moderate	Short term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option will be accompanied by water conservation campaigns to promote efficient use of water to protect the environment and safeguard supplies. Water availability is at least 50% in the zone of influence of the drought option.	None	Minor beneficial
Soil, geology and land use	5.1 To protect and enhance the quality and quantity of soils and to protect and enhance geodiversity.	Large	Moderate	Short term	Temporary	Low (adverse)	Low (adverse)	There would be no permanent land use changes associated with the construction of the pipeline associated with this option. No impacts on geologically important sites are anticipated. Impacts on soils during construction would be negligible as they would be ameliorated through best practice construction techniques and appropriate mitigation measures.	Negligible adverse	None
Air and Climate	6.1 To maintain and improve air quality.	Large	Moderate	Short term	Permanent	Low (adverse)	Medium (adverse)	The construction phase of the new pipeline would give rise to dust emissions that could impact nearby sensitive environmental receptors. However, these effects would be minimised through best practice construction methods, as such, the residual effects would only be minor adverse. During the operational phase of the scheme, there would be increased energy use associated with pumping and treatment processes. There would be a proportional increase in emissions to atmosphere, however, energy would be supplied from the grid so emissions would not be localised.	Minor adverse	None
Air and climate	6.2 To reduce greenhouse gas emissions.	Large	Moderate	Short term	Permanent	Medium (adverse)	Medium (adverse)	The construction phase of the new pipeline and the pumping and treatment processes involved in the operational phase would be associated with an increase in energy use. This would result in moderate adverse effects associated with the increase in greenhouse gas emissions.	Moderate adverse	None
Air and climate	6.3 To consider the need for adaptive measures for climate change.	Large	Moderate	Short term	Permanent	Low (beneficial)	Medium (adverse)	Supply-side options are a key component of Yorkshire Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought which may become more prevalent due to climate change.	None	Minor beneficial
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	Large	Moderate	Short term	Temporary	Low (adverse)	Low (adverse)	No known water-dependent cultural heritage or archaeology sites are located within or adjacent to the impacted reaches. Impacts on other cultural heritage or archaeology sites due to construction or operation of the scheme are assessed as negligible.	Negligible adverse	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	Large	Moderate	Short term	Temporary	Low (adverse)	Medium (adverse)	Construction of pipelines and outfall structure and re-commissioning of assets will have a temporary minor adverse impact on visual amenity, but permanent impacts assessed as negligible with appropriate design and screening where appropriate. Potential minor adverse impact on water levels in Northumberland Reservoir 2 and Northumberland Reservoir 1 due to additional abstraction compared to normal. Potential minor beneficial impact on river reaches where flows are increased by transfers.	Minor adverse	None

Drought Plan Option Name: North West reservoir abstraction (additional abstraction from and transfers)

Drought Plan Option Description: The drought option would involve increasing abstraction from North West Area Reservoir 9 to provide a benefit of up to 3 Ml/d. Water abstracted from the reservoir would be transferred via a temporary pipeline to an aqueduct for subsequent treatment at either Bradford WTW 1 or Bradford WTW 2.

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over-abstraction on sensitive sites, habitats and species) and consider adaptability to climate change.	Small	Moderate	Short term	Temporary	Low (adverse)	Low (adverse)	The extent of construction required for a temporary pipeline from the reservoir to the an aqueduct is currently unknown, however there are no nearby designated sites. During operation the hydrological changes on river flow level would be negligible, so there would be a negligible impact on habitats and NERC species.	Negligible adverse	None
Biodiversity, flora and fauna	1.2 To avoid introducing or spreading INNS.	Small	Moderate	Short term	Permanent	Low (adverse)	Medium (adverse)	During construction of a the new pipeline, there is potential for the spread of terrestrial invasive species. However, with best practice mitigation measures (e.g. washing construction vehicles), the spread of invasive species would be minimised.	Minor adverse	
Population and human health	2.1 To protect and improve health and well-being and reduce inequalities	Small	Moderate	Short term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option would deliver 3 Ml/d helping to maintain essential public water supplies during drought conditions and therefore help maintain public health.	None	Minor beneficial
Population and human health	2.2 To protect and enhance opportunities for formal and informal recreation.	Small	Moderate	Short term	Temporary	Low (adverse)	Medium (adverse)	The scheme may affect access to open spaces through construction of temporary assets, and have a minor impact on informal recreation activities. During the operational phase it is anticipated that there would be no impacts on recreational activities.	Minor adverse	None
Population and human health	2.3 To promote a sustainable economy and thriving communities with good access to the services they need.	Small	Moderate	Short term	Temporary	Low (beneficial)	Medium (beneficial)	Implementation of the drought option will contribute to the maintenance of supply reliability in drought conditions, ensuring a resilient supply for customers and economic activity.	None	Minor beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	Small	Moderate	Short term	Temporary	Low (adverse)	Medium (adverse)	Resources for construction of additional components to the scheme will be sourced locally where possible. Once operational, there will be a minor increase in energy consumption.	Minor adverse	None

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.1 To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies.	Small	Low	Short term	Temporary	Low (adverse)	Medium (adverse)	There are known water quality issues within the reservoir (reservoir stratification, algal blooms etc.) and the operation of this drought option could cause further water quality impacts, however, this is uncertain.	Minor adverse	None
Water	4.2 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	N/a	Moderate	Short term	Temporary	Low (adverse)	Medium (adverse)	The operation of the drought option will cause potential minor changes to the water level of North West Area Reservoir 9 due to the abstraction.	Minor adverse	None
Water	4.3 To ensure appropriate and sustainable management of water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	Small	Moderate	Short term	Temporary	Low (beneficial)	Medium (beneficial)	The drought option will be accompanied by water conservation campaigns to promote efficient use of water to protect the environment and safeguard supplies. Water availability is at least 70% in the zone of influence of the drought option.	None	Minor beneficial
Soil, geology and land use	5.1 To protect and enhance the quality and quantity of soils and to protect and enhance geodiversity.	Small	Moderate	Short term	Temporary	Low (adverse)	Low (adverse)	The potential effects on land-use associated with the construction work are considered small scale, temporary and reversible. The scheme will not affect any sites designated for geological interest.	Negligible adverse	None
Air and Climate	6.1 To maintain and improve air quality.	Small	Moderate	Short term	Temporary	Low (adverse)	Low (adverse)	The increased energy use required during the operation of the option would be associated with negligible adverse effects on air quality.	Negligible adverse	None
Air and climate	6.2 To reduce greenhouse gas emissions.	Small	Moderate	Short term	Temporary	Low (adverse)	Medium (adverse)	The increased energy use would also be associated with negligible increases in greenhouse gas emissions.	Minor adverse	None
Air and climate	6.3 To consider the need for adaptive measures for climate change.	Small	Moderate	Short term	Temporary	Low (beneficial)	Medium (beneficial)	Drought plan options are a key component of Yorkshire Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought which may become more prevalent due to climate change.	None	Minor beneficial
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	N/A	N/A	N/A	N/A	N/A	N/A	There are no heritage assets or sites of archaeological importance in proximity to the zone of influence of the option.	None	None

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	Small	Moderate	Short term	Temporary	Low (adverse)	Medium (adverse)	A significant reduction in the level of North West Area Reservoir 9 would have a visual impact on the landscape setting of Millennium Way National Trail. However, the reduced level of the reservoir would be short-term and temporary.	Minor adverse	None

Drought Plan Option Name: Aire abstraction

Drought Plan Option Description: Involves the construction and use of a new river abstraction on the Aire abstraction to provide 50MI/d during any month of the year.

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Biodiversity, flora and fauna	1.1 To conserve and enhance biodiversity, including designated sites of nature conservation interest and protected habitats and species (with particular regard to avoiding the effects of over-abstraction on sensitive sites, habitats and species) and consider adaptability to climate change.	Large	Medium	Short term	Temporary	Medium (adverse)	High (adverse)	Uncertainty surrounds the potential impact from construction on various NERC species near the new river abstraction (birds, great crested newts, bats, otter, water vole, common reptiles, badgers). The proposed pipeline passes within 500m of South Pennine Moors SAC/SPA/SSSI. Potential impacts could arise during the construction phase as a result of noise and dust generation, but best practice design and construction methods should mitigate this risk. The proposed pipeline crosses the Leeds and Liverpool Canal SSSI and near to the Bingley South Bog SSSI. Impact risk has been assessed as minor assuming best practice methods deployed. There is the potential risk of major impact for aquatic NERC species during operation (brown trout, grayling, bullhead, European eel, white-clawed crayfish, barbel) in the reach immediately downstream of the intake, but reducing after 1km to minor impact risk with the increased flow contributions from River Aire STW 1. Negligible impact 30km downstream. Operation of the scheme has been assessed as minor impact risk risk for Mickleton Ings SSSI, and uncertain risk for Leeds and Liverpool Canal SSSI and Fairburn and Newton Ings SSSI.	Major adverse	None
Biodiversity, flora and fauna	1.2 To avoid introducing or spreading INNS.	Large	Medium	Long term	Permanent	Low (adverse)	Medium (adverse)	Construction impacts on spread of invasive species are uncertain. It is assumed that appropriate measures (such as washing construction vehicles as they leave site etc.) will be taken to mitigate the spread of invasive species, however these species will be present along the construction route. Operational impacts are not anticipated to increase the spread of invasive species.	Minor adverse	None
Population and human health	2.1 To protect and improve health and well-being and reduce inequalities	Large	Medium	Short term	Temporary	High (beneficial)	Medium (beneficial)	The drought option will help to maintain essential public water supplies during drought conditions and therefore help maintain public health / wellbeing by supplying 50MI/d.	None	Major beneficial
Population and human health	2.2 To protect and enhance opportunities for formal and informal recreation	Large	Medium	Short term	Temporary	Low (adverse)	Low (adverse)	During construction, access to areas used for recreation may be reduced, however if best practice is followed, suitable diversions will be put in place. There are no national trails nearby. During operation the scheme will not affect access to open spaces but may have a minor impact on informal recreation activities such as fishing, however water levels will be naturally low during a drought.	Negligible adverse	None
Population and human health	2.3 To promote a sustainable economy and thriving communities with good access to the services they need.	Large	Medium	Short term	Temporary	High (beneficial)	Medium (beneficial)	Implementation of the drought option will contribute to the maintenance of supply reliability in drought conditions (50MI/d), ensuring a resilient supply for customers and economic activity with no permanent adverse effects on the environment, if best practice is followed.	None	Major beneficial
Material assets and resource use	3.1 To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill.	Large	Medium	Long term	Permanent	Medium (adverse)	Medium (adverse)	Resources for construction of additional components to the scheme will be sourced locally where possible. The scheme construction will require some use of materials at a scale consistent with the size of the new abstraction and some of the infrastructure is already in place. Once operational, there will be some additional energy and chemical use to pump and treat the water.	Moderate adverse	None

SEA topics and objectives		Assessment of option								
Topic	Objective	Scale of effect: geographical &/ or population affected (small/medium/large)	Certainty of effect (low/ moderate/ high)	Short-term/ medium-term/ long-term	Permanence of effect (permanent/ temporary)	Magnitude of effect (low/ medium/ high)	Value/ sensitivity of receptor (low/ medium/ high)	Potential residual effect on sensitive receptors (assuming good practice construction methods) Commentary	Residual adverse effect significance (likely to remain after reasonable mitigation)	Residual beneficial effect significance (likely to remain after reasonable mitigation)
Water	4.1 To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies.	Large	Medium	Short term	Temporary	Medium (adverse)	Medium (adverse)	During operation abstraction upstream of River Aire Sewage Treatment Works (STW) 1, will reduce dilution of effluent due to a reduction in low flow regime. A further STW is located in the impacted reach downstream. Abstraction under drought conditions will therefore likely have a moderate adverse effect on water quality.	Moderate adverse	None
Water	4.2 To avoid adverse impact on surface and groundwater levels and flows, including when this impacts on habitats and/or navigation.	Large	Medium	Short term	Temporary	Medium (adverse)	Medium (adverse)	The drought option will lead to a major reduction in low flows in the 1 km reach to the sewage treatment works during operation. This will likely have impacts on wetted width and habitat availability. However, downstream of this, the impact is minor. The drought option will not impact on the moderate to high flow regime in the river.	Moderate adverse	None
Water	4.3 To ensure appropriate and sustainable management of abstractions (or compensation flow) to maintain water supplies whilst protecting ecosystem functions that rely on water resources including contributing to the achievement of WFD objectives	Large	Medium	Short term	Temporary	Low (adverse)	Medium (adverse)	The drought option will be accompanied by water conservation campaigns to promote efficient use of water to protect the environment and safeguard supplies. Water availability is at least 70% in the zone of influence of the drought option.	None	Minor beneficial
Soil, geology and land use	5.1 To protect and enhance the quality and quantity of soils and to protect and enhance geodiversity.	Large	Medium	Short term	Temporary	Low (adverse)	Low (adverse)	There would be negligible land use changes associated with this drought option and no impacts on geologically important sites are envisaged.	Negligible adverse	None
Air and Climate	6.1 To maintain and improve air quality.	Large	Medium	Short term	Permanent	Low (adverse)	Medium (adverse)	Construction work and vehicle movements associated with construction phase will give rise to air emissions and dust over the short term, these will be minimised through best construction practices. However, there will be small-scale carbon impact from construction of new assets. Increased pumping and treatment of water (replacing gravity reservoir supplies), so some energy use is envisaged during operation. There are no AQMA sites nearby.	Minor adverse	None
Air and climate	6.2 To reduce greenhouse gas emissions.	Large	Medium	Short term	Permanent	Low (adverse)	Medium (adverse)	Construction work and vehicle movements associated with construction phase will give rise to GHG emissions, these will be minimised through best construction practices. During operation, there will be increased pumping and treatment of water (replacing gravity reservoir supplies), so some additional greenhouse emission are envisaged during operation.	Minor adverse	None
Air and climate	6.3 To consider the need for adaptive measures for climate change.	Large	Medium	Short term	Permanent	Low (beneficial)	Medium (beneficial)	Drought plan options are a key component of Yorkshire Water's Drought Plan. The Plan aims to ensure resilience of water supplies to drought which may become more prevalent due to climate change.	None	Minor beneficial
Archaeology and Cultural Heritage	7.1 To conserve and enhance the historic environment, heritage assets and their settings and protect archaeologically important sites.	Large	Medium	Short term	Permanent	Low (adverse)	Low (adverse)	Several sites of archaeological and cultural heritage value are in proximity to impacted river reaches, including Saltaire World Heritage Site and Kirkstall Abbey, but there are no water-dependent sites. The pumping station and pipeline construction impacts would be contained to a small area. Best practice design and construction methods should be used to mitigate impacts. No operational impacts due to lower river flows are anticipated.	Negligible adverse	None
Landscape and Visual Amenity	8.1 To protect, enhance the quality of and improve access to designated and undesignated landscapes, townscapes and the countryside.	Large	Medium	Short term	Temporary	Low (adverse)	Medium (adverse)	There are some limited construction impacts on visual amenity anticipated in rural areas during river intake and pipeline construction, but this would be short-term. During operation there would be little above ground assets once construction completed. There are no AONB nearby.	Minor adverse	None

Appendix E

Quality Assurance Checklist

ODPM Guidance¹ on SEA contains a Quality Assurance checklist to help ensure that the requirements of the SEA Directive are met. The checklist is reproduced in Table E1, indicating where this Environmental Report meets the requirements.

Table E1 Quality Assurance Checklist

Checklist item	Comments
Objectives and context	
The plan's or programme's purpose and objectives are made clear.	The purpose of the Final DP 2019 is set out in Section 1 of this Environmental Report.
Environmental issues and constraints, including international and EC environmental protection objectives, are considered in developing objectives and targets.	Objectives of other relevant plans and programmes are set out in Section 2.2 and Appendix B.
SEA objectives, where used, are clearly set out and linked to indicators and targets where appropriate.	SEA objectives are set out in Section 4.2 of this Environmental Report.
Links with other related plans, programmes and policies are identified and explained.	Links are identified in Section 2 and Appendix B of this Environmental Report.
Conflicts that exist between SEA objectives, between SEA and plan objectives and between SEA objectives and other plan objectives are identified and described	Cumulative effects such as those associated with the Final DP and other plans are addressed in Section 6. Yorkshire Water has not identified any objectives for the Drought Plan, hence there are no conflicts with the SEA objectives.
Scoping	
Consultation Bodies are consulted in appropriate ways and at appropriate times on the content and scope of the Environmental Report.	The Scoping Report is a part of the consultation process required to meet the requirements of the SEA Directive and was circulated to consultees. Further consultation was undertaken on the Draft DP 2018 and accompanying Environmental Report, as well as the Draft DP 2019 and accompanying Environmental Report. The consultation process is described in Section 1.8
The assessment focuses on significant issues.	The scope of the assessment reflects the geographic extent of YWSL water resource zones, and provides a comprehensive approach to assessment (reflecting the large number of interactions dependent on the continued supply of water) which has enabled the subsequent assessment to determine which impacts are considered to be significant.

¹ Office of the Deputy Prime Minister (2005) *A Practical Guide to the Strategic Environmental Assessment Directive*.

Checklist item	Comments
Technical, procedural and other difficulties encountered are discussed; assumptions and uncertainties are made explicit.	Difficulties and assumptions are set out in Section 4.5 of this Environmental Report.
Reasons are given for eliminating issues from further consideration.	The SEA objectives provide a comprehensive basis for assessment. Changes (additions or removal of SEA objectives) are described in Section 4.3.1.
Alternatives	
Realistic alternatives are considered for key issues, and the reasons for choosing them are documented.	The appraisal framework was used to assess drought options, as set out in this Environmental Report.
Alternatives include 'do minimum' and/or 'business as usual' scenarios wherever relevant.	
The environmental effects (both adverse and beneficial) of each alternative are identified and compared.	Assessment of alternatives (the drought options) have been considered in this Environmental Report.
Inconsistencies between the alternatives and other relevant plans, programmes or policies are identified and explained.	Assessment of alternatives (the drought options) have been considered in this Environmental Report.
Reasons are given for selection or elimination of alternatives.	Assessment of alternatives (the drought options) have been considered in this Environmental Report.
Baseline information	
Relevant aspects of the current state of the environment and their likely evolution without the plan or programme are described.	The current state of the environment and predicted future baseline is set out in Section 3 and Appendix C of this Environmental Report for each SEA topic.
Environmental characteristics of areas likely to be significantly affected are described, including areas wider than the physical boundary of the plan area where it is likely to be affected by the plan.	The environmental characteristics of the YWSL's water supply area, and bordering regions where appropriate, are described in Section 1.3.
Difficulties such as deficiencies in information or methods are explained.	Difficulties and limitations are set out in Section 3.2 (and Section 4.5 for wider methodology).
Prediction and evaluation of likely significant environmental effects	
Effects identified include the types listed in the Directive (biodiversity, population, human health, fauna, flora, soil, water, air, climate factors, material assets, cultural heritage and landscape), as relevant; other likely environmental effects are also covered, as appropriate.	Potential effects have been set out in the Environmental Report in Section 5, Section 6 and Appendix D.

Checklist item	Comments
Both positive and negative effects are considered, and the duration of effects (short, medium or long-term) is addressed.	The nature and duration of potential effects have been set out in the Environmental Report, using an appraisal framework set out in Section 4 of this Environmental Report. Effects are assessed in Sections 5 and 6 and Appendix D of the Environmental Report.
Likely secondary, cumulative and synergistic effects are identified where practicable.	These effects have been identified and described in Section 6 of this Environmental Report.
Inter-relationships between effects are considered where practicable.	These effects have been considered within the assessment in Section 5 and Appendix D and also in Section 6 of this Environmental Report where practicable.
The prediction and evaluation of effects makes use of relevant accepted standards, regulations, and thresholds.	Relevant standards have been used where appropriate in undertaking the assessment in the Environmental Report.
Methods used to evaluate the effects are described.	The Environmental Report includes information on the methods used for evaluation of potential effects in Section 4.
Mitigation measures	
Measures envisaged to prevent, reduce and offset any significant adverse effects of implementing the plan or programme are indicated.	Mitigation measures for potential negative effects have been incorporated into the assessment undertaken in preparing the Environmental Report, and are described in Section 7.2.
Issues to be taken into account in project consents are identified.	Such mitigating measures, if required, will be highlighted against the drought options. It is noted that Environmental Assessment Reports which include Environmental Management Plans have been prepared for most of the Drought Permit / Order sites.
The Environmental Report	
Is clear and concise in its layout and presentation.	The Environmental Report is clear and concise. See Section 1.7.
Uses simple, clear language and avoids or explains technical terms.	The Environmental Report uses simple, clear language, and explain technical terms, as appropriate.
Uses maps and other illustrations where appropriate.	The Environmental Report has used maps and illustrations where appropriate.
Explains the methodology used.	The SEA methodology has been described in Section 1.6 and Section 4 of the Environmental Report.
Explains who was consulted and what methods of consultation were used.	The consultation process is described in Section 1.8.

Checklist item	Comments
Identifies sources of information, including expert judgement and matters of opinion.	Sources of information have been detailed in the Environmental Report.
Contains a non-technical summary covering the overall approach to the SEA, the objectives of the plan, the main options considered, and any changes to the plan resulting from the SEA.	The Environmental Report includes a Non-Technical Summary.
Consultation	
The SEA is consulted on as an integral part of the plan-making process.	This Scoping Report and Environmental Report are part of the consultation process required to meet the requirements of the SEA Directive. Both have been circulated to consultees. The consultation process is described in Section 1.8.
Consultation Bodies and the public likely to be affected by, or having an interest in, the plan or programme are consulted in ways and at times which give them an early and effective opportunity within appropriate time frames to express their opinions on the draft plan and Environmental Report.	The Scoping Report and Environmental Report are part of the consultation process required to meet the requirements of the SEA Directive. Both have been/will be circulated to consultees. The consultation process is described in Section 1.8.
Decision-making and information on the decision	
The environmental report and the opinions of those consulted are taken into account in finalising and adopting the plan or programme.	Responses from consultation on the Environmental Report of the Draft DP 20197 have been incorporated into the development of the final Environmental Report. After finalisation of the DP, a statement will be published describing how the SEA and the responses to consultation have been taken into account during the preparation of the DP.
An explanation is given of how they have been taken into account.	Consultation responses, and how they have been incorporated in the final Environmental Report have been incorporated in the report (see Appendix A for how consultation comments to the Scoping Report have been addressed in the Environmental Report and Section 1.8 regarding the Statement of Response). After finalisation of the DP, a statement will be published describing how the SEA and the responses to consultation have been taken into account during the preparation of the DP.
Reasons are given for choosing the plan or programme as adopted, in the light of other reasonable alternatives considered.	This is set out in the Final DP 2019.
Monitoring measures	

Checklist item	Comments
Measures proposed for monitoring are clear, practicable and linked to the indicators and objectives used in the SEA.	See Section 7.3 of this Environmental Report which provides an overview of proposals for monitoring.
Monitoring is used, where appropriate, during implementation of the plan or programme to make good deficiencies in baseline information in the SEA.	Suggestions for monitoring have been made in the Environmental Report (see Section 7.3), with monitoring taking place following implementation of the DP, further to consultation with regulatory authorities including the Environment Agency, Natural England and Historic England.
Monitoring enables unforeseen adverse effects to be identified at an early stage. (These effects may include predictions which prove to be incorrect.)	Suggestions for monitoring have been made in the Environmental Report (see Section 7.3), with monitoring taking place following implementation of the DP, further to consultation with regulatory authorities including the Environment Agency, Natural England and Historic England.
Proposals are made for action in response to significant adverse effects.	Mitigation measures for adverse effects are suggested in the Environmental Report (see Section 7.2).